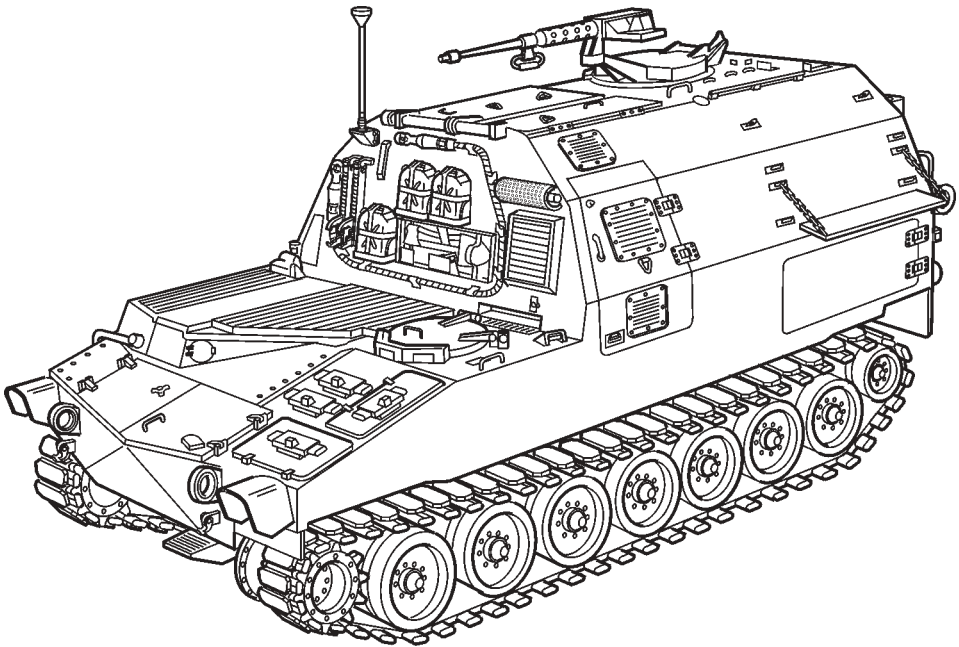


TM 9-2350-372-10

TECHNICAL MANUAL

OPERATOR'S MANUAL FOR CARRIER, AMMUNITION, TRACKED, M992A2 NSN 2350-01-368-9500 (EIC: AE2)



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

SUPERSEDURE NOTICE:

Modified: This manual is to be used after MWO 9-2350-293-30-3 dated 1 March 2005 has been applied.

Unmodified: TM 9-2350-293 Series manuals are to be used until MWO 9-2350-293-30-3 dated 1 March 2005 has been applied.

**HEADQUARTERS
DEPARTMENT OF THE ARMY
OCTOBER 2005**

WARNING SUMMARY

This Warning Summary contains general safety warnings and hazardous materials warnings that must be understood and applied during operation and maintenance of the Field Artillery Ammunition Support Vehicle (FAASV). Failure to observe these precautions could result in serious injury or death.

The following is a list of explanations of the safety and hazardous materials icons used in the Warning Summary.

EXPLANATION OF SAFETY WARNING ICONS



EAR PROTECTION: Headphones over ears shows that noise level will harm ears.



ELECTRICAL: Electrical wire to arm with electricity symbol running through human body shows that shock hazard is present.



ELECTRICAL: Electrical wire to hand with electricity symbol running through hand shows that shock hazard is present.



FALLING PARTS: Arrow bouncing off human shoulder and head shows that falling parts present a danger to life or limb.



FLYING PARTICLES: Arrows bouncing off face show that particles flying through the air will harm face.

WARNING SUMMARY (continued)

EXPLANATION OF SAFETY WARNING ICONS (continued)



HEAVY OBJECT: Human figure stooping over heavy object shows physical injury potential from improper lifting technique.



HEAVY PARTS: Hand with heavy object on top shows that heavy parts can crush and harm.



HEAVY PARTS: Foot with heavy object on top shows that heavy parts can crush and harm.



HEAVY PARTS: Heavy object on human figure shows that heavy parts present a danger to life or limb.



HEAVY PARTS: Heavy object pinning human figure against wall shows that heavy, moving parts present a danger to life or limb.



HELMET PROTECTION: Arrow bouncing off head with helmet shows that falling parts present a danger.

WARNING SUMMARY (continued)

EXPLANATION OF SAFETY WARNING ICONS (continued)



HOT AREA: Hand over object radiating heat shows that part is hot and can burn.



MOVING PARTS: Human figure with arm caught between gears shows that the moving parts of the equipment present a danger to life or limb.



MOVING PARTS: Hand with fingers caught between gears shows that the moving parts of the equipment present a danger to life or limb.



MOVING PARTS: Hand with fingers caught between rollers shows that the moving parts of the equipment present a danger to life or limb.



SHARP OBJECT: Pointed object in hand shows that a sharp object presents a danger to limb.



SHARP OBJECT: Pointed object in hand shows that a sharp object presents a danger to limb.

WARNING SUMMARY (continued)

EXPLANATION OF SAFETY WARNING ICONS (continued)



SHARP OBJECT: Pointed object in foot shows that a sharp object presents a danger to limb.



SLICK FLOOR: Wavy line on floor with legs shows that slick floor presents a danger of falling.



BIOLOGICAL: Abstract symbol bug shows that a material may contain bacteria or viruses that present a danger to life or health.



CHEMICAL: Drops of liquid on hand show that the material will cause burns or irritation to human skin or tissue.



EXPLOSION: Rapid expansion symbol shows that the material may explode if subjected to high temperatures, sources of ignition, or high pressure.



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

WARNING SUMMARY (continued)

EXPLANATION OF SAFETY WARNING ICONS (continued)



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



POISON: Skull and crossbones show that a material is poisonous or is a danger to life.



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

WARNING SUMMARY (continued)

CARBON MONOXIDE HAZARDS

WARNING



CARBON MONOXIDE (EXHAUST GAS) CAN KILL YOU.

WARNING

Carbon monoxide is a colorless, odorless, DEADLY POISONOUS gas. When breathed, it deprives the body of oxygen and causes SUFFOCATION. Breathing air with carbon monoxide produces symptoms of headache, dizziness, loss of muscular control, a sleepy feeling, and coma. Permanent BRAIN DAMAGE or DEATH can result from serious exposure.

The following precautions MUST be followed to make sure personnel are safe whenever personnel heater, main engine, or APU engine is operated for any purpose:

- DO NOT operate personnel heater, APU, or engine of vehicle in enclosed area without adequate ventilation.
- DO NOT idle engine for long periods without ventilator blower operating. If tactical situation permits, open hatches.
- DO NOT drive any vehicle with inspection plates, cover plates, or engine compartment doors removed unless necessary for maintenance purposes.
- NEVER sleep in a vehicle when the heater or APU is operating or the engine is idling.
- BE ALERT at all times during vehicle operation for exhaust odors and exposure symptoms. If either is present, IMMEDIATELY EVACUATE AND VENTILATE the area. Treatment for affected personnel shall be: Expose to fresh air; keep warm; DO NOT PERMIT PHYSICAL EXERCISE; if necessary, give artificial respiration as described in FM 21-11; and get medical attention.
- BE AWARE: Neither the gas particulate filter unit nor the field protection mask for nuclear-biological-chemical protection will protect you from carbon monoxide poisoning.

WARNING

THE BEST DEFENSE AGAINST CARBON MONOXIDE POISONING IS GOOD VENTILATION.

WARNING SUMMARY (continued)

BATTERY HAZARDS

WARNING



Lead-acid batteries can explode. Do not smoke, have open flames, or make sparks around a battery, especially if the caps are off. If a battery is giving off gas, it can explode and cause injury to personnel.

WARNING

Ventilate area when charging or using battery in an enclosed space.

WARNING

Wear safety goggles and acid-proof gloves when battery cover must be removed or when checking electrolyte level.

WARNING

Avoid contact between battery electrolyte and skin, eyes, or clothing. If electrolyte spills, take immediate action to stop burning effects as follows:

- External. Immediately flush with cold running water to remove all acid.
- Eyes. Flush with cold water for at least 15 minutes. Seek immediate medical attention.
- Internal. Drink large amounts of water or milk. Follow with milk of magnesia, beaten egg, or vegetable oil. Seek immediate medical attention.
- Clothing or Vehicle. Wash at once with cold water. Neutralize with baking soda or household ammonia solution.

WARNING

Wear safety glasses or goggles when checking batteries. Always check electrolyte level with engine stopped. Do not smoke or use exposed flame when checking battery; explosive gases are present and severe injury to personnel can result.

WARNING SUMMARY (continued)

BATTERY HAZARDS (continued)

WARNING

Set MASTER switch to OFF and remove batteries or disconnect battery ground cables prior to performing maintenance in immediate battery area and prior to working on electrical system. Such disconnections prevent electrical shock to personnel or equipment.

WARNING

Battery acid (electrolyte) is extremely harmful. Always wear safety goggles and rubber gloves, and do not smoke when performing maintenance on batteries. Injury will result if acid contacts skin or eyes. Wear rubber apron to prevent damage to clothing.

WARNING

Before working with batteries, remove all jewelry, such as rings, identification tags, bracelets, and so on. If jewelry contacts battery terminal, a direct short may result in instant heating of tools, damage to equipment, and injury or death to personnel.

WARNING

When removing batteries, always disconnect ground cables first. Failure to do so may result in injury or death to personnel.

WARNING

When checking connections, do not let tools touch battery box. A direct short, arcing, tool heating to red hot, or battery explosion may result, causing injury or death to personnel.

WARNING

HEAT/COLD ACTIVITY HAZARD

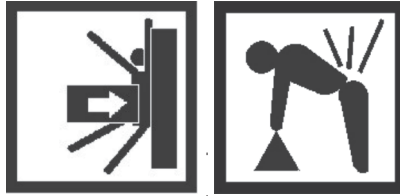
Requirements for Water Intake and Work/Rest Cycles

Leaders and supervisors must be aware of the potential for heat and cold injuries. For prevention guidelines, refer to local procedures and to TB MED 507 and TB MED 81.

WARNING SUMMARY (continued)

GENERAL OPERATION HAZARDS

WARNING



When traveling over rough terrain, soft ground, or wet/icy surfaces, slow down and shift to a lower gear. When driving on a floor, dock, or bridge, ensure that combined weights of machine and load do not exceed safe limit. Check for sufficient overhead clearance.

WARNING

Do not back up vehicle without ground guide. Limited vision can lead to vehicle damage and injury to personnel. Use at least two ground guides when backing; if only one guide is used, stop operations if communications between driver and ground guide are interrupted.

WARNING

Do not let vehicle coast downhill with transmission in the “N” (neutral) position. Vehicle may increase speed and go out of control, resulting in injury or death to personnel.

WARNING

If you lose a track (break a track shoe or vehicle throws a track), extreme caution must be exercised in maintaining control. Immediately release accelerator pedal and let vehicle coast to a stop. Do not apply braking action, brake pedal, laterals, pivots, or any type of steering controls. Braking causes vehicle to pull to the active, or good, track and could result in a rollover. If absolutely necessary, apply braking action ONLY if the vehicle is approaching a ravine or cliff or if you perceive the outcome to be catastrophic, probably resulting in fatalities. When rollover is imminent, all crew members should immediately withdraw inside vehicle, tighten seatbelts, and hold onto a secure fixture until vehicle comes to a complete stop.

WARNING

The area must be clear of personnel before operating the vehicle.

WARNING SUMMARY (continued)

GENERAL OPERATION HAZARDS (continued)

WARNING

When operating the vehicle, observe the following precautions:

- Always drive carefully. Drive with extra caution until you can operate the equipment with skill.
- Do not move vehicle until all doors and hatches are secured and all equipment is properly stowed.
- Never move vehicle without first receiving a signal from the ammunition team chief.

WARNING

Do not block engine air intake grille with camouflage or other materials.

TOWING HAZARD

WARNING



When hooking or unhooking towbar or tow cable from a disabled vehicle, set parking brake or chock tracks of disabled vehicle before hooking or unhooking towbar or tow cable. If towed vehicle is not chocked or parking brake is not set, disabled vehicle may move, causing injury or death to personnel and/or damage to equipment.

WARNING SUMMARY (continued)

FUEL-HANDLING HAZARDS

WARNING



Fuel is very flammable and can explode easily. To avoid serious injury or death, keep fuel away from open flame or any spark (ignition source).

WARNING

Never allow flame or any smoking within 50 feet of fueling operations.

WARNING

Fuel is very flammable and can explode easily. To avoid serious injury or death, post signs that read NO SMOKING WITHIN 50 FEET OF VEHICLE when working with open fuel, fuel lines, or fuel tanks.

WARNING

Fuel is very flammable and can explode easily. To avoid serious injury or death:

- Keep at least a B-C fire extinguisher within easy reach when working with fuel or fuel system.
- Do not work on fuel system when engine is hot; fuel can be ignited by a hot engine.
- Clean fuel tank to purge any flammable liquid or vapors before welding, grinding, or using any heat-producing device near the fuel tank.

WARNING

Fuel is very flammable and can explode easily. To avoid serious injury or death when refueling, stop vehicle, shut down engine, and apply parking brake. Make sure no open flame is near area. Never smoke. Never add fuel with engine running. Do not have driver seated when adding fuel. After fuel is added, securely close reservoir cap; a loose cap can cause a fuel leak or be a fire hazard. Before starting vehicle, check to see that no fuel is spilled on or around vehicle.

WARNING

Ground fuel funnel or nozzle against filler neck to prevent sparks, and be sure to replace fuel tank cap.

WARNING SUMMARY (continued)

PERSONNEL HEATER HAZARDS

WARNING



If heater operates improperly fuel may overflow, causing danger of fire or explosion.

WARNING

Be alert during heater operation for exhaust odors or signs of exposure to carbon monoxide. Carbon monoxide can kill you. If you suspect that carbon monoxide is present, shut off heater and ventilate vehicle.

WARNING

Do not place flammable materials or explosives on or near personnel heater. To prevent injury to personnel and damage to equipment, do not block or restrict heater vent.

WARNING

Do not use vehicle MASTER switch to shut down heater, as fuel vapors may accumulate in ventilating air circuit.

FIRE EXTINGUISHER (CO₂) HAZARDS

WARNING



Remain CALM. Avoid breathing CO₂. It may quickly cause rapid breathing, loss of consciousness, and suffocation. Quickly exit vehicle if situation permits. If unable to exit, ventilate to remove the extinguisher gas. The driver is at the greatest risk. Ventilate the vehicle before reentry. Failure to follow this emergency procedure can result in serious injury or death to personnel.

WARNING SUMMARY (continued)

FIRE EXTINGUISHER (CO₂) HAZARDS (continued)

WARNING

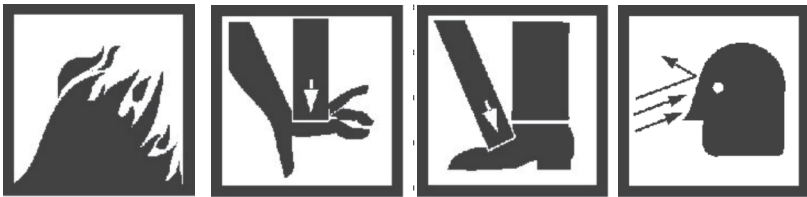
Fire extinguisher CO₂ can cause severe burns. Do not touch the cone when using fire extinguisher or discharge directly on skin.

WARNING

Handle fire extinguisher carefully. Do not bang or drop cylinder. Extinguisher may accidentally discharge and cause injury to personnel.

AUTOMATIC FIRE EXTINGUISHING SYSTEM (AFES) HAZARDS

WARNING



Any Automatic Fire Extinguishing System (AFES) unit in need of maintenance or repair is extremely prone to accidental discharge, which could lead to frostbite or other injury. Small parts or tools become dangerous projectiles when propelled by Halon 1301 or HFC-227ea Discharging at 750 psi (5171 kPa). Do not strike fire extinguisher bottles with tools, and do not drop fire extinguisher bottles. To prevent accidental discharge, be careful when handling fire extinguisher bottles.

WARNING SUMMARY (continued)

PROJECTILE RACK ASSEMBLY HAZARDS

WARNING



Before moving projectile rack assemblies, park vehicle on level ground. If vehicle is not level, projectile racks may tip, causing injury or death to personnel or damage to equipment.

WARNING

Before moving projectile rack assembly toward rear of vehicle, make sure floor will provide a level resting place. If floor is not level rack may tip, causing injury or damage.

WARNING

If both projectile rack assemblies are to be moved, move right assembly first. After left projectile rack assembly is moved, leave hoisting hook attached; this support is necessary because the assemblies tend to tip forward when both are moved back.

WARNING SUMMARY (continued)

AMMUNITION HAZARDS

WARNING



Ammunition carrying explosives must be handled with care at all times. The explosive in primers and fuses is very sensitive to shock and high temperatures. Keep ammunition away from heaters. If ammunition is dropped, heated, thrown, tumbled, or dragged, an explosion may result, causing death or injury to personnel and destruction of equipment. Disassembly of ammunition is not authorized.

WARNING

Handle projectiles carefully. Contact between projectiles and fire extinguisher could cause extinguisher to discharge, resulting in injury to personnel or damage to vehicle.

WARNING

To avoid injury to back, hands, and feet, use caution and proper lifting techniques when manually handling projectiles.

WARNING SUMMARY (continued)

HEAVY PARTS HAZARDS

WARNING



WARNING

Many vehicle components, such as seats, doors, universal joints, and track, are very heavy and should be handled carefully. Have an assistant help when lifting heavy components.

WARNING

Universal joints are heavy. Keep hands out from underneath universal joints when they are disconnected. Failure to do so may result in injury to personnel.

WARNING

Commander's seat assembly is very heavy. It must be adequately supported before quick-release pin is removed. Failure to do so may result in serious injury. Deployment of commander's seat shall always be a two-person operation.

WARNING

Seats are heavy. Support seats before pulling quick-release pins. Hinged seats, backrests, and support brackets may swing down, causing personal injury.

WARNING

Battery access doors, transmission access doors, and auxiliary power unit side door are very heavy. Keep hands clear when opening or closing doors.

WARNING SUMMARY (continued)

WARNING

Track is very heavy. Keep hands and feet from beneath track while it is being lifted.

WARNING

Duffle bag shelves are heavy. To avoid serious injury, stand clear of shelf when it is being deployed.

HIGH-INTENSITY NOISE HAZARDS

WARNING



Protect your hearing. Due to high-intensity noise, hearing protection is required when operating this vehicle.

WARNING

High-intensity noise, hearing protection required. Hearing can be PERMANENTLY DAMAGED if a person is exposed to constant high noise levels of 85 decibels or greater.

WARNING

Personnel within 38 yards (35 m) of the machine gun must wear approved single hearing protection (e.g., earplugs) when the machine gun is being fired. Failure to do so could result in injury to personnel.

WARNING

Personnel within 689 yards (630 m) of the howitzers must wear approved hearing protection during firing. Follow the hearing protection warnings and obey the hazard zones identified in TM 9-2350-314-10. Failure to do so could result in injury to personnel.

WARNING SUMMARY (continued)

WARNING

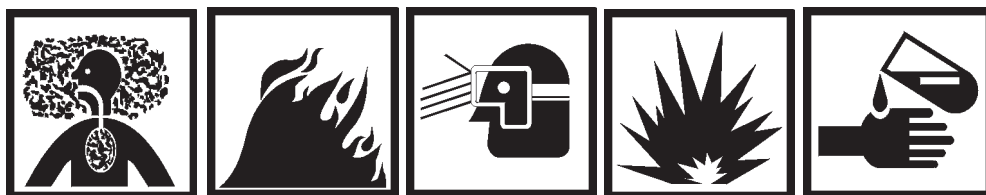
Personnel within nine yards (eight meters) of the vehicle must wear approved single hearing protection when the main engine or auxiliary power unit is running. Failure to do so could result in injury to personnel.

WARNING

Operation of the vehicle is limited to 68 miles (110 km) per 24-hour period for crews wearing the H-374 (VIC-3) combat vehicular crewman (CVC) helmet with the Active Noise Reduction (ANR) on. Operation is limited to 8 miles (13 km) per 24-hour period for crews wearing the H-374 (VIC-3) CVC with the ANR off. If the mission exceeds the recommended distances for a 24-hour period, double hearing protection (e.g., earplugs and CVC) must be worn. Failure to do so could result in injury to personnel.

CLEANING SOLVENT HAZARDS

WARNING



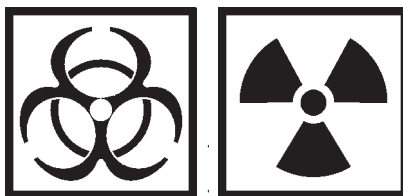
Solvent cleaning compound is an environmentally compliant product and is low in toxicity. However, it may be irritating to the eyes and skin due to its base stock. The use of protective gloves and goggles is required. Use the solvent cleaning compound in well-ventilated areas and keep away from open flames and other sources of ignition.

WARNING

If personnel become dizzy while using solvent cleaning compound, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush them with water and get immediate medical attention.

WARNING SUMMARY (continued)**CHEMICAL AGENT RESISTANT COATING (CARC) HAZARD****WARNING**

Unusable Chemical Agent Resistant Coating (CARC) mixtures are considered hazardous waste and will require disposal in accordance with Federal, State, Department of Defense, Department of the Army, and local installation hazardous waste regulations. Consult the installation environmental office for proper disposal guidance. Mixed CARC is extremely flammable. Use only in well-ventilated areas. Keep away from open flames, sparks, and other ignition sources.

**NUCLEAR, BIOLOGICAL, OR CHEMICAL (NBC)
EXPOSURE AND VEHICLE AIR FILTER HAZARDS****WARNING**

NBC-contaminated air filters must be handled and disposed of only by authorized and trained personnel. The unit commander or senior officer in charge of maintenance personnel must ensure that prescribed protective clothing (FM 3-4) is used and that prescribed safety measures and decontamination procedures (FM 3-5) are followed. The local unit's standard operating procedure is responsible for final disposal of contaminated air filters. Failure to comply with this warning may cause severe injury to personnel.

WARNING

The NBC protection filters use a type of carbon that contains Chromium VI, which is a known carcinogen. Damaged or unusable filters are classified as hazardous waste must be handled and disposed by authorized and trained personnel.

WARNING SUMMARY (continued)

- Do not throw away damaged or unusable filters as trash.
- Turn in damaged or unusable filters to your Hazardous Waste Management Office or Defense Reutilization and Marketing Office.

WARNING

If NBC exposure is suspected, all air filter media should be handled by personnel wearing protective equipment. Consult your unit NBC officer or NBC NCO for appropriate handling or disposal instructions.

WARNING

NBC-contaminated filters must be handled using adequate precautions and must be disposed of by trained personnel.

WARNING

Filters are completely safe to handle and use if they are not damaged in such a way that carbon leaks from them. If carbon does leak use protection, such as a dust respirator, to cover nose and mouth. Put carbon in a container, such as a self-sealing plastic bag, and turn it in to your Hazardous Waste Management Office or Defense Reutilization and Marketing Office.

WARNING

Disposal of hazardous waste is restricted by law. Violation is subject to criminal penalties.

LIST OF EFFECTIVE PAGES/WORK PACKAGES

Date of issue for original pages / work packages is:

Original .. 0 .. 1 October 2005

TOTAL NUMBER OF PAGES FOR FRONT AND REAR MATTER IS 70 AND TOTAL NUMBER OF WORK PACKAGES (WP'S) IS 79, CONSISTING OF THE FOLLOWING:

| Page / WP No. | *Change No. |
|----------------------------|----------------|
| Cover | 0 |
| a - v | 0 |
| A/B blank | 0 |
| i/ii blank | 0 |
| iii - vi | 0 |
| vii - x | 0 |
| WP 0001 00 - 0071 00 | 0 |
| Index 1 - Index 24 | 0 |

*Zero in this column indicates an original page or work package.

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON D.C., 1 OCTOBER 2005

TECHNICAL MANUAL

OPERATOR'S MANUAL

**CARRIER, AMMUNITION, TRACKED
M992A2**

NSN 2350-01-368-9500 (EIC: AE2)

**REPORTING ERRORS AND RECOMMENDING
IMPROVEMENTS**

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms), located in the back of this manual, directly to: Commander, U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-LC-CIP-WT, Rock Island, IL 61299-7630. You may also send in your recommended changes via electronic mail or by fax. Our fax number is DSN 793-0726, Commercial (309) 782-0726. Our e-mail address is amsta-ac-nml@ria.army.mil. A reply will be furnished to you.

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

SUPERSEDURE NOTICE:

Modified: This manual is to be used after MWO 9-2350-293-30-3 dated 1 March 2005 has been applied.

Unmodified: TM 9-2350-293 Series manuals are to be used until MWO 9-2350-293-30-3 dated 1 March 2005 has been applied.

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HOW TO USE THIS MANUAL

This operator's manual was designed to provide you with the information you need to operate and maintain the M992A2 vehicle.

The information contained in this manual is presented in six chapters. Each chapter is divided into Work Packages (WPs) covering operating procedures and other information for specific vehicle systems and components. Each WP is assigned a six-digit number, beginning with the number 0001 00. The pages of each WP are numbered consecutively, using the six-digit WP number followed by -1, -2, -3, and so on (e.g., p. nos. 0051 00-1, 0051 00-2, 0051 00-3).

When a reference is made to a WP table, figure, or page number, refer to that portion of the text.

To find general information pertaining to a broad range of information, such as vehicle troubleshooting, preventive maintenance checks and services (PMCS), or vehicle descriptions:

1. Identify the desired topic.
2. Find the general topic in the table of contents in the front of this manual.
3. Refer to the page called out in the table of contents.

To find specific information relating to a component or system:

1. Determine the name or function of the component/system.
2. Find the name or function in the subject-index listing at the end of this manual.
3. Refer to the page called out in the subject-index listing.

Note that WP 0066 00, "References" gives the full title of every publication referenced in this manual. In addition, acronyms and abbreviations used in the manual are listed and spelled out on page 0001 00-2.

You must read and understand the contents of this manual BEFORE operating the M992A2 vehicle.

Throughout this manual, you will see the phrase "notify Unit maintenance." When instructed to notify Unit maintenance, do exactly that; Unit maintenance personnel have the tools and training to efficiently and correctly perform the next level of maintenance.

HOW TO USE THIS MANUAL (continued)

WARNINGS, CAUTIONS, AND NOTES

Throughout this manual you will see WARNING, CAUTION, and NOTE headings. Warnings and cautions precede the step(s) to which they apply. Notes can precede or follow the step(s) to which they apply. There are good reasons for every one of these notices.

WARNING

A warning is used to alert the user to hazardous operating and maintenance procedures, practices, or conditions that could result in injury or death. Warnings must be strictly observed.

CAUTION

A caution is used to alert the user to hazardous operating or maintenance procedures, practices, or conditions that could result in damage to, or destruction of, equipment or mission effectiveness. Cautions must be strictly observed.

NOTE

A note highlights an essential operating or maintenance procedure, condition, or statement.

CHAPTER CONTENTS

Chapter 1, "Description and Theory of Operation" explains the theory of operation for specific M992A2 vehicle systems, such as the powerpack and auxiliary power unit.

Chapter 2, "Operator Instructions" details how to operate the M992A2 and its subsystems, including a description of operator's controls and indicators, portable instrument panel checkout procedure, operation of vehicle lights, hydraulic pump operation, and emergency procedures.

Chapter 3, "Troubleshooting Procedures" contain a list of common malfunctions and recommended tests, inspections, and corrective actions for the M992A2 vehicle. A Symptom Index is included to assist in the tracing of common malfunctions.

HOW TO USE THIS MANUAL (continued)

Chapter 4, "Maintenance Instructions" contains the vehicle maintenance procedures that crewmembers are authorized to perform, such as engine cooling system maintenance, refueling, and track maintenance. Preventive Maintenance Checks and Services (PMCS) are also included in this chapter. PMCS refers to the step-by-step care, inspection, and service of equipment to maintain it in good condition and to find problems before extensive and time-consuming repairs or replacements are needed.

Chapter 5, "Automatic Fire Extinguishing System (AFES)" describes the equipment and outlines the location of components pertaining to the M992A2 vehicle AFES. Also included are operator's instructions and emergency procedures.

Chapter 6, "Supporting Information" contains the following supporting information: references, components of end item and basic issue items lists, additional authorization list, expendable and durable items list, and lubrication instructions.

GENERAL INFORMATION

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

GENERAL INFORMATION

SCOPE

This manual contains information you need to operate the M992A2, Tracked Ammunition Carrier. The primary use of the M992A2 is to provide overland transport of 155-millimeter projectiles and charges from ammunition supply points to howitzers in the field. Included in the manual are instructions for the proper use of on-board ammunition handling and stowage equipment, as well as driving and crew maintenance procedures.

In terms of driving capabilities and limitations, the M992A2 is comparable to the M109A6 howitzer. The speed, mobility, and maneuverability of the M992A2 equals that of the M109A6, making the M992A2 well suited for efficient resupply of ammunition to M109A6 howitzers.

MAINTENANCE FORMS, RECORDS, AND REPORTS

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 738-750, Functional Users Manual for The Army Maintenance Management Systems (TAMMS).

REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR'S)

If your M992A2 needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Put it on an SF 368 (Product Quality Deficiency Report). Mail it to: Commander, U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-TR-E/PQDR, Warren, MI 48397-5000. We will send you a reply.

HAND RECEIPT (HR) MANUAL

This manual has a companion document with a TM (technical manual) number followed by "HR" (hand receipt). TM 9-2350-372-10HR consists of preprinted hand receipts that list the end-item-related equipment that must be accounted for: Components of End Item (COEI), Basic Issue Items (BII), and Additional Authorization List (AAL). As an aid to property accountability, additional HR manuals may be requisitioned through normal publication channels.

GENERAL INFORMATION (continued)**0001 00****CORROSION PREVENTION AND CONTROL (CPC)**

CPC of Army materiel is a continuing concern. Any corrosion problems with this item be reported so that they can be corrected and improvements made to prevent the problem in future items.

While corrosion is typically associated with rusting of metals, it can also include deterioration of other materials, such as rubber and plastic. Unusual cracking, softening, swelling, or breaking of these materials may be a corrosion problem.

If a corrosion problem is identified, it can be reported using SF 368, Product Quality Deficiency Report. Use of key words such as "corrosion," "rust," "deterioration," or "cracking" will ensure that the information is identified as a CPC problem.

The form should be submitted to the address specified in DA PAM 738-750, Functional Users Manual for The Army Maintenance Management System (TAMMS).

OZONE DEPLETING SUBSTANCES (ODS'S)

The continued use of ODSs has been prohibited by Executive Order 12856, dated 3 August 1993. A listing of these substances will be provided by the acquiring activity.

DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

Refer to TM 750-244-6 for procedures on destruction of military vehicles. Destruction of munitions is covered in TM 43-0002-33.

PREPARATION OF EQUIPMENT FOR STORAGE OR SHIPMENT

Refer to Work Package (WP) 0061 00 for procedures on preparation of the M992A2 for shipment.

LIST OF ABBREVIATIONS AND ACRONYMS

| | |
|----------------|---|
| A | annually |
| AAL | Additional Authorization List |
| AFES | Automatic Fire Extinguishing System |
| AFES/MDS | Automatic Fire Extinguishing System Manual Discharge System |
| AHE | ammunition handling equipment |
| ANR | Active Noise Reduction |
| AOAP | Army Oil Analysis Program |
| APU | Auxiliary Power Unit |

LIST OF ABBREVIATIONS AND ACRONYMS (continued)

| | |
|-------------|--|
| BE | bale |
| BII | Basic Issue Items |
| BIT | Built-In Test |
| BITE | Built-In Test Equipment |
| C | Celsius |
| CAGEC | Commercial and Government Entity Code |
| cal. | caliber |
| CARC | Chemical Agent Resistant Coating |
| CK | cyanogen chloride |
| cm | centimeter |
| CN | can |
| COEI | Components of End Item |
| COMB. | combination |
| CPC | Corrosion Prevention and Control |
| cu | cubic |
| CVC | Combat Vehicular Crewman |
| D | day, daily |
| DA | Department of the Army |
| DIA | diameter |
| DOD | Department of Defense |
| DR | drum |
| E | empty |
| EA | each |
| e.g. | for example |
| EIR | Equipment Improvement Recommendation |
| Ext. | extinguisher |
| F | Fahrenheit, full |
| FAASV | Field Artillery Ammunition Support Vehicle |
| FFCS | Full Function Crew Station |
| GAA | Grease, Automotive and Artillery |
| gal. | gallon |
| GL | gallon |
| GPS | Global Positioning System |
| H | hour |
| HD | hundred |
| HR | Hand Receipt |
| IAW | In Accordance With |
| ILLUS | illustration |
| in. | inch |
| IR | infrared |
| kg | kilogram |
| km | kilometer |

LIST OF ABBREVIATIONS AND ACRONYMS (continued)

| | |
|--------|--|
| kph | kilometers per hour |
| KT | kit |
| L | liter, low |
| LAW | lubricating oil for aircraft weapons |
| lb, LB | pound |
| LED | Light-Emitting Diode |
| LG | large |
| L.H. | left hand |
| LHR/CS | low heat rejection/cold start |
| m | meter |
| M | monthly |
| MACS | Modular Artillery Charge System |
| max. | maximum |
| MCS | Master Control Station |
| MDS | Manual Discharge System |
| mi | mile |
| mm | millimeter |
| MOM | momentary |
| mph | miles per hour |
| MSD | Maintenance Support Device |
| MTOE | Modification Table of Organization and Equipment |
| MWRH | Mounted Water Ration Heater |
| N | neutral |
| NBC | Nuclear, Biological, or Chemical |
| NCO | Noncommissioned Officer |
| OC | on condition |
| ODS | Ozone Depleting Substance |
| OFSA | Optical Fire Sensing Assembly |
| oz, OZ | ounce |
| p. | page |
| PG | package |
| PLGR | Precision Lightweight GPS Receiver |
| PMCS | Preventive Maintenance Checks and Services |
| pp. | pages |
| psi | pounds per square inch |
| PT | pint |
| PTT | push-to-talk |
| qt, QT | quart |

LIST OF ABBREVIATIONS AND ACRONYMS (continued)

| | |
|-----------------|--|
| QTY | quantity |
| QTY. RECM. | quantity recommended |
| QTY. RQR. | quantity required |
| R.H. | right hand |
| RL | roll |
| rpm | revolutions per minute |
| RSI | Remote Status Indicator |
| S | semiannual; semiannually |
| SCEA | Standard Control Electronic Amplifier |
| S/N | serial number |
| STE/ICE | Simplified Test Equipment/Internal Combustion Engine |
| T/A | test and alarm |
| TAMMS | The Army Maintenance Management System |
| 3D | three dimensional |
| TM | technical manual |
| TOE | Table of Organization and Equipment |
| TU | tube |
| U/M | unit of measure |
| V dc | Volt, direct current |
| VFP | Ventilated Face Piece |
| VFPS | Ventilated Face Piece System |
| W/ | with |
| W/O | without |
| WP | Work Package |

END OF WORK PACKAGE

CHAPTER 1
DESCRIPTION AND THEORY OF OPERATION

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

EQUIPMENT DESCRIPTION AND DATA

EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES

The M992A2 is a field artillery ammunition support vehicle comparable in speed, mobility, and survivability to current artillery weapons (M109A6 self-propelled howitzer class).

Capabilities

This full-tracked, self-propelled, diesel-powered vehicle is highly mobile and maneuverable. It is capable of long-range, high-speed operation on improved roads and is well suited to rough terrain, muddy or marshy ground, sand, snow, or ice. The M992A2 can also ford waterways where maximum depth is 42 inches (106.68 cm).

Features

The M992A2 has the following features:

- Modular Artillery Charge System (MACS), two projectile rack assemblies, vertical stowage assembly, and related components.
- A diesel-powered Auxiliary Power Unit (APU) used to drive the vehicle electrical system and recharge vehicle batteries.
- Simplified Test Equipment for the Internal Combustion Engine (STE/ICE).
- Automatic Fire Extinguishing System (AFES).

AFES is an automatic and manual electrical system that, when activated, provides fire-extinguishing capability for the engine and crew compartments. It consists of test and alarm panels, sensors, and associated equipment explained later in this section and in the "Automatic Fire Extinguishing System" chapter.

Automatic electrical operation will automatically sense and discharge an agent to extinguish hydrocarbon fires. The crew system provides an automatic electrical second-shot capability if the fire continues burning or if a second fire occurs.

To manually discharge the fire-extinguishing agent, manual electrical operation must be manually activated by the crew. The crew system second-shot manual electrical activation is available if the fire continues to burn; it must be manually activated by a crew member.

These systems will not activate unless the crew/engine test and alarm panel maintenance switches are in the horizontal POWER ON normal operational position.

Features (continued)

- On-board Nuclear, Biological, and Chemical (NBC) agent detection and protection system.
- Ammunition storage racks and compartments.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

The locations and descriptions of major components used to operate the M992A2 effectively are as follows:

MAIN ENGINE EXHAUST OUTLET (1): Provides outlet for main engine exhaust gases.

APU ENGINE EXHAUST OUTLET (2): Provides outlet for APU engine exhaust gases.

IDLER WHEELS (3): Right and left idler wheels guide, support, and maintain tension for the track.

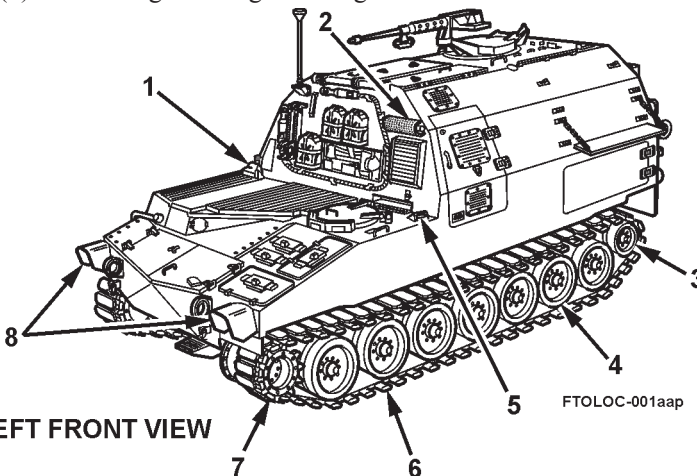
ROADWHEELS (4): Seven sets per side provide support and guide the track.

LANYARD CABLE PULL HANDLE (5): Provides for emergency manual discharge of one engine compartment and two crew compartment fire extinguishers to extinguish fires in the engine and crew compartments.

TRACKS (6): Eighty two-pin, rubber-padded track shoes per side provide support and traction in various terrains.

DRIVE SPROCKETS (7): Left and right sprockets are mounted on the final drives to drive each track.

HEADLAMPS (8): Provide light for night driving under normal or blackout conditions.



M992A2 LEFT FRONT VIEW

FTOLOC-001aap

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (continued)

REAR CREW COMPARTMENT DOORS (1): Provides access to and from the crew compartment and ballistic protection to personnel and material during vehicle operation.

COMMANDER'S CUPOLA (2): Provides access to machine gun mount; rotates manually 360 degrees (6,400 mils).

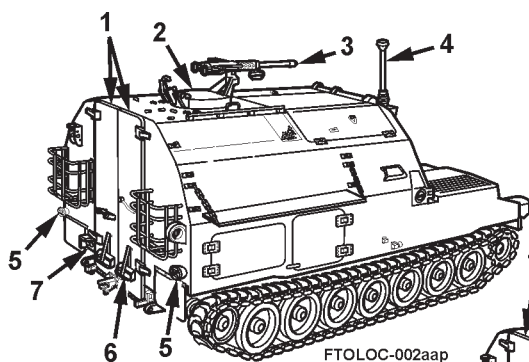
MACHINE GUN (3): M2, 0.50-caliber heavy barrel provides protection for the vehicle.

AN/PSN-11 (PLGR) (4): Satellite Signals Navigation Set Antenna, in conjunction with Global Positioning System (GPS) unit, provides highly accurate, continuous, all-weather, three-dimensional (3D) position, velocity, and time.

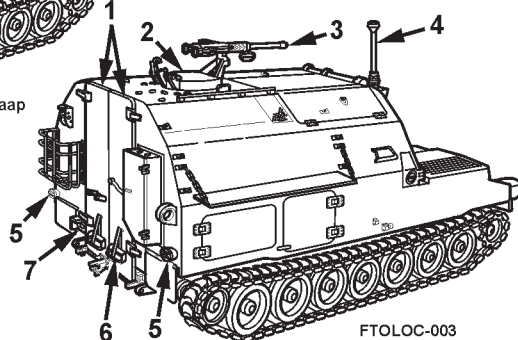
TAILLIGHT/STOPLIGHT (5): Two combination taillight/stoplight units provide rear light for night driving under normal and blackout conditions.

M13 DECONTAMINATING APPARATUS, PORTABLE (6): Used to spray decontaminating agent DS-2 on surfaces of the vehicle and equipment to reduce the level of chemical toxic agents.

REAR NATO SLAVE RECEPTACLE (7): Used to connect the M992A2 electrical system with that of another vehicle to provide power access.



VEHICLES S/N 1 THROUGH 344



M992A2 RIGHT REAR VIEW

VEHICLES S/N 345 AND ABOVE

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (continued)

M992A2 Engine, Transmission, and Driver's Compartments

FORWARD NATO SLAVE RECEPTACLE (1): Used to provide power access and connect the M992A2 electrical system with that of another vehicle for slave-starting operations.

DRIVER'S COOLING FAN (2): Fan helps cool driver during operations in hot weather.

DRIVER'S STEERING CONTROLS (3): Allow driver to control vehicle direction.

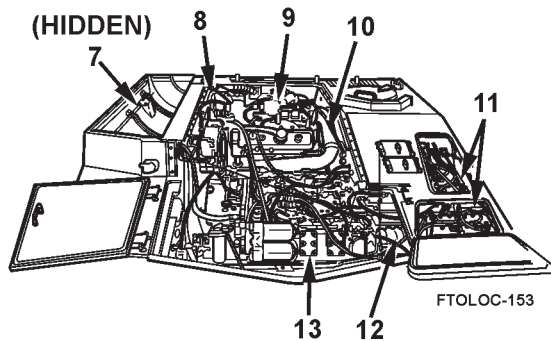
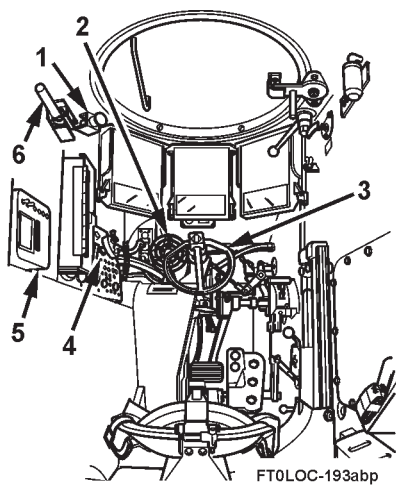
DRIVER'S CONTROLS AND INDICATORS (4): Contained entirely in the driver's compartment, allow driver to operate and monitor vehicle systems.

APU CONTROL BOX (5): Allows driver to monitor the APU system when operating the vehicle's electrical system or recharging batteries.

LANYARD CABLE PULL HANDLE (6): Allows driver to manually discharge one engine compartment fire extinguisher bottle without leaving the vehicle.

UPPER AND LOWER FUEL TANKS (7) (upper tank shown): Store fuel to power the main engine and the APU.

COOLING FANS AND RADIATOR (8): Provide cooling to main engine.



EQUIPMENT DESCRIPTION AND DATA (continued)

0002 00**LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (continued)****M992A2 Engine, Transmission, and Driver's Compartments (continued)**

MAIN ENGINE (9): Diesel, 8V71T, low heat rejection/cold start (LHR/CS) engine provides power to drive transmission.

MAIN ENGINE EXHAUST SYSTEM (10): Expels exhaust gases from main engine.

BATTERIES (11): Four 12-volt lead-acid batteries connect to provide 24-volt vehicle electrical system.

FINAL DRIVE ASSEMBLIES (12): Transfer direct drive from transmission to drive sprockets.

TRANSMISSION (13): XTG-411-4 transmission contains cross-drive torque converter and provides four speeds forward and two reverse.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (continued)

M992A2 Crew and Cargo Compartment

LEFT REAR CHARGE CANISTER STOWAGE SHELVES (1): 2 X 8 honeycomb and shelves provide stowage for PA161, PA103A2, PA91, PA96, PA99, PA103, and M13A2 canisters; fuses, 0.50-caliber ammunition, primers, and three copperhead rounds.

MOUNTED WATER RATION HEATER (MWRH) (2): Provides ability to heat rations and water.

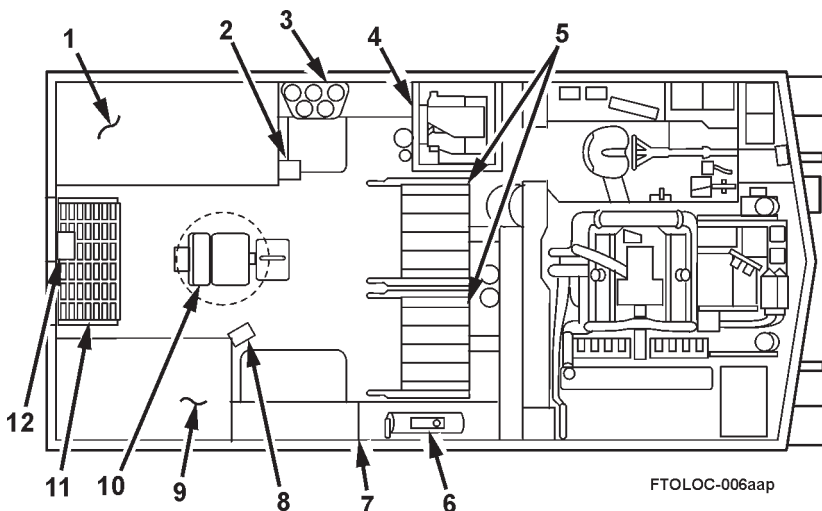
LEFT FRONT VERTICAL STOWAGE ASSEMBLY (3): Provides stowage for five 155-millimeter projectiles.

LEFT FRONT SPONSON (below APU compartment) (4): Provides stowage for eight fuse boxes.

PROJECTILE RACK ASSEMBLIES (5): Two projectile rack assemblies, each containing five removable and interlocking rack sections, provide stowage capacity for 90 155-millimeter projectiles. Shelves above the rack assemblies provide stowage for PA161, M13A2, and M14A2 canisters.

PERSONNEL HEATER (6): Provides heat in crew compartment.

RIGHT FRONT SPONSON (below personnel heater) (7): Provides stowage for PA161 or M13A2 canisters, or MK19 grenade boxes.



LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (continued)

M992A2 Crew and Cargo Compartment (continued)

AN/PSN-11 (8): Provides stowage for AN/PSN-11 (precision lightweight GPS receiver, or PLGR).

RIGHT REAR CHARGE CANISTER STOWAGE SHELVES (9): 4 X 6 honeycomb and shelves provide stowage for PA161, PA103A2, PA91, PA96, PA99, PA103, and M13A2 canisters; 0.50-caliber ammunition, and primers.

COMMANDER'S SEAT (10): Provides seating for the commander.

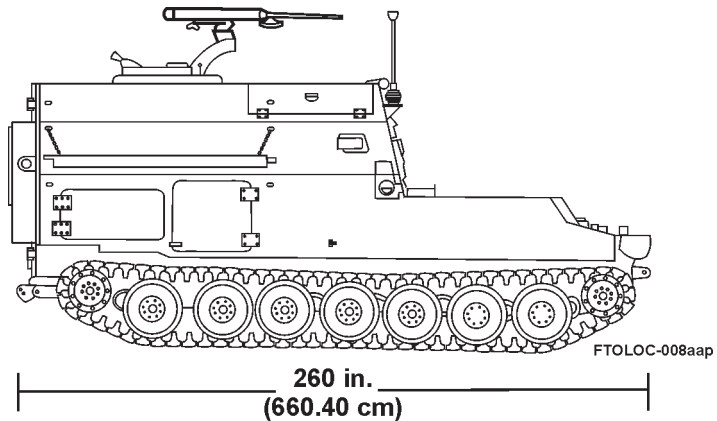
FOLDING REAR PLATFORM (11): Provides an extended staging surface for loading of equipment, munitions, and personnel.

REAR DOOR STEP (12): Provides improved entry/exit to crew compartment for loading/unloading of vehicle.

EQUIPMENT DATA (continued)

Capacities

| | |
|---|------------------------------|
| Fuel tanks (upper and lower) (diesel) | 135 gal. (511.03 L) |
| Engine crankcase | 9 1/2 gal. (35.96 L) dry |
| | 6 3/4 gal. (25.55 L) |
| Transmission | 24 1/2 gal. (92.73 L) dry |
| | 14 gal. (53 L) refill |
| Cooling system | 20 1/4 gal. (76.65 L) dry |
| | 14 1/2 gal. (54.89 L) refill |
| Final drive | 2 qt (1.89 L) |
| Fan gear case | 0.43 qt (0.41 L) |
| APU engine (HATZ) | |
| Crankcase | 4.3 qt (4.1 L) |
| Coolant | 6 qt (5.7 L) |



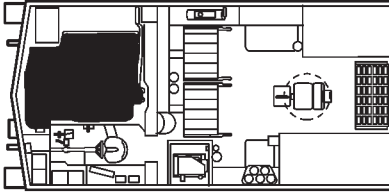
Performance

| | |
|---------------------------------------|--------------------|
| Maximum speed | 35 mph (56.31 kph) |
| Maximum speed, reverse | 7 mph (11.26 kph) |
| Cruising range | 220 mi (353.98 km) |
| Grade-ascending ability (max.) | 60 percent |
| Grade-descending ability (max.) | 60 percent |
| Maximum trench-crossing width | 72 in. (182.88 cm) |
| Maximum vertical wall | 21 in. (53.34 cm) |
| Minimum turning radius | 1 vehicle length |
| Fording depth | 42 in. (106.68 cm) |

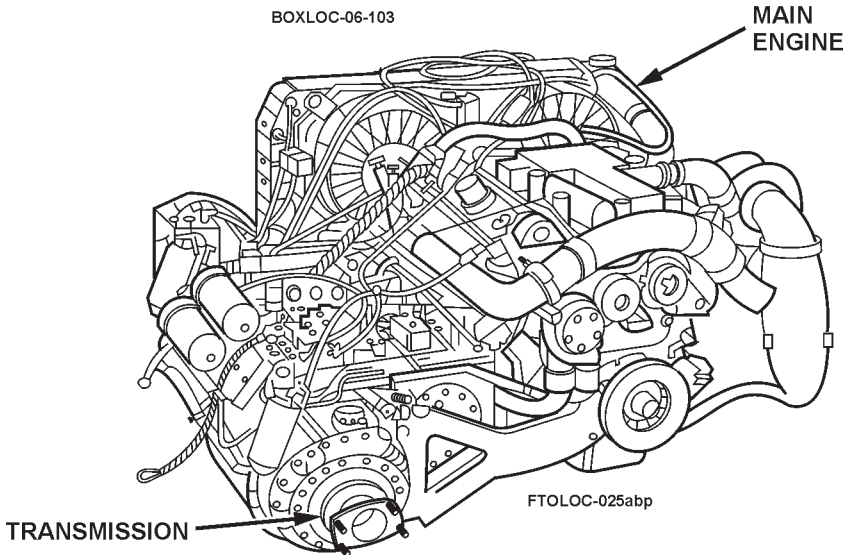
END OF WORK PACKAGE

OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

THEORY OF OPERATION: POWERPACK



BOXLOC-06-103



MAIN ENGINE: A turbocharged, 2-cycle, V-8 engine provides 440 horsepower at 2300 rpm necessary to drive the vehicle transmission.

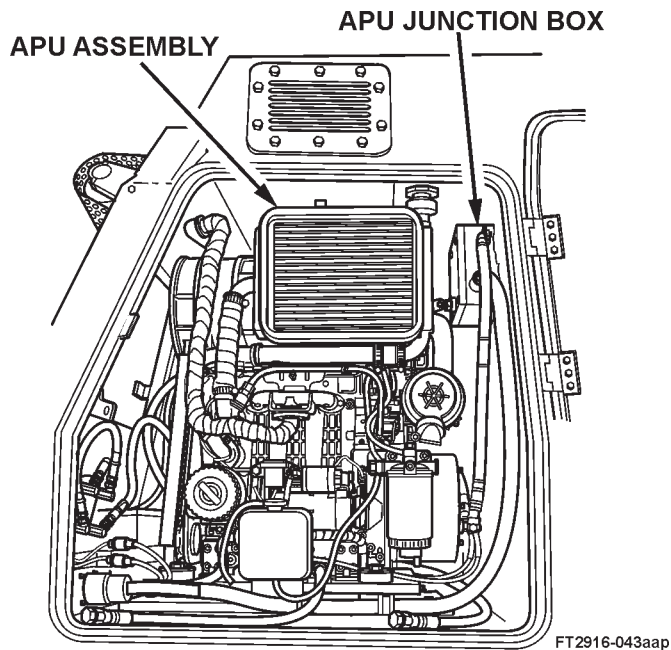
TRANSMISSION: Transmission, differential, steering, and braking are combined into one unit. A cross-drive torque converter transmits torque to final drive assemblies. The transmission provides 4-speed forward and 2-speed reverse capability.

END OF WORK PACKAGE

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

THEORY OF OPERATION: AUXILIARY POWER UNIT (APU)

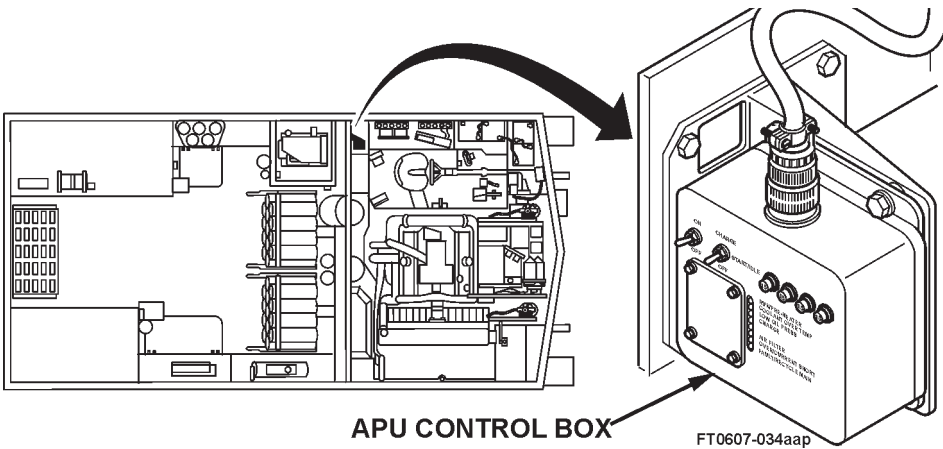
The APU system provides an alternate source of power separate from the vehicle's main engine. There are three major components of the APU system: the APU assembly, junction box, and APU control box. All components work in conjunction to provide power for the vehicle's electrical system and for charging the batteries. The interface between the APU system and vehicle batteries is located at the positive and negative terminals of the junction box located inside the APU compartment.



APU ASSEMBLY: Consists of a 3-cylinder, 4-cycle, water-cooled, 25 horsepower, HATZ diesel engine with an attached generator. The assembly produces and 10 kW of electric power for operating the vehicle's electrical system and generates up to 360 amps @ 28Vdc for battery charging.

APU JUNCTION BOX: Serves as the interface point between the APU system and vehicle batteries. The junction box has four terminals; one set of positive and negative terminals is located inside the crew compartment and used to interface with the vehicle's battery cables. The other set of positive and negative terminals interface to the APU generator positive and negative terminals. The junction box contains a current sensor that measures the current being demanded from the alternator. This sensor provides current limiting and short circuit protection.

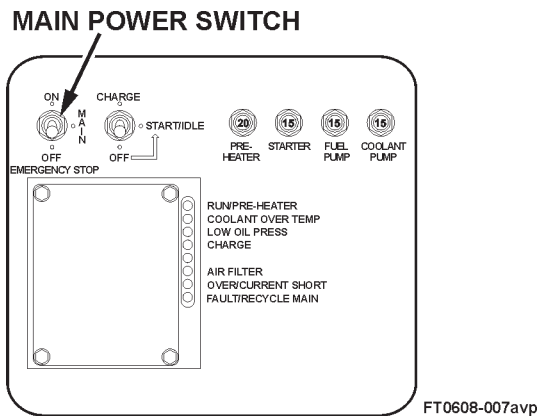
APU CONTROL BOX: Houses the main power and charge/start-idle/off switches, APU engine governor controller, circuit breakers, and LED display. The APU control box enables the operator to control the operation and monitor the function of the APU system from the driver's compartment.



MAIN POWER SWITCH: The main power switch provides power (battery voltage) to the APU control box.

When switched ON, the APU control box performs polarity checks of the APU system, and if correct, all the LEDs of the APU control box will flash for a few seconds. If a polarity is incorrect, the APU control box will not turn on.

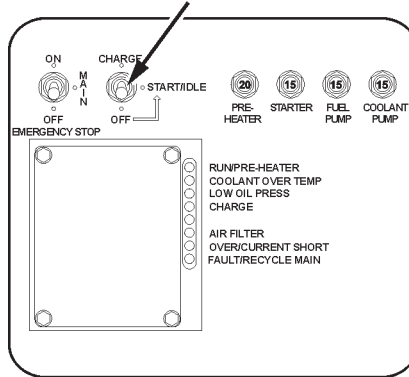
The MAIN POWER switch is used to shut the APU down in cases of emergency and reset the APU control box when a fault has been detected.



THEORY OF OPERATION: APU (continued)**0004 00**

CHARGE/START-IDLE/OFF SWITCH: Three-position toggle switch used to set the APU in start-idle, charge, and off modes.

START-IDLE MODE: When placed in the START/IDLE position the external fuel pumps are energized and the APU engine begins an automatic start sequence. The APU engine consists of an air pre-heater where the ambient temperature is measured and depending upon this temperature, will regulate pre-heat time. The user will see that the engine is in pre-heat mode by a flashing green LED in the RUN/PRE-HEATER position on the APU control panel.

CHARGE/START-IDLE/OFF SWITCH

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The engine starter will crank for up to 20 seconds before attempting another crank. Once the engine starts, the starter will disengage after engine speed reaches a minimum of 400 rpm. The engine will attempt to crank 3 times before requiring a MAIN POWER switch recycle. A red LED in the FAULT/RECYCLE MAIN position on the APU control panel indicates this fault.

Upon successful start, the engine will run in idle mode. Successful engine start and running will be indicated by a solid green light in the RUN/PRE-HEATER LED as opposed to the flashing green in pre-heat mode. Engine idle is set at 1400 rpm.

CHARGE MODE: After engine pre-heat and successful start, the CHARGE mode can be initiated by moving the CHARGE/START/IDLE/OFF switch from START/IDLE to CHARGE position. In the charge mode, the engine governor/controller will regulate the APU engine speed to provide 28 Vdc to the batteries. The engine speed will vary between 2400 and 3200 rpm depending on load conditions.

OFF MODE: After APU operations it is recommended that the CHARGE/START/IDLE/OFF switch be moved from CHARGE to the START/IDLE position, and allow the APU engine to idle for a period of 1 to 2 minutes before placing the switch in the OFF position.

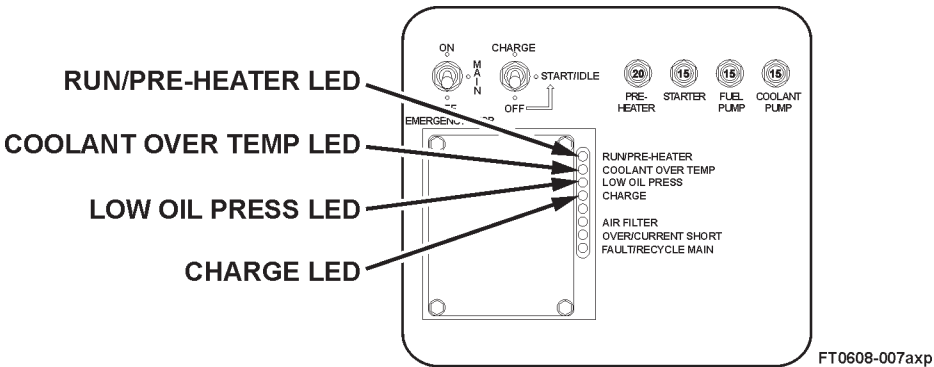
LEDs:

RUN/PRE-HEATER: During a start attempt, this GREEN LED will flash during the engine pre-heat period. Once the LED stops flashing the starter will activate and crank the engine for up to 20 seconds. When the engine is running the LED will stay illuminated (not flashing).

COOLANT OVER TEMP: This RED LED will illuminate when the engine temperature rises above 205°F (96°C) for at least 5 seconds. The engine will immediately shut down. To reset this fault, recycle the MAIN switch.

LOW OIL PRESS: This RED LED illuminates when the engine oil pressure drops below 17 psi (117 kPa) for at least 5 seconds. The engine will then immediately shut down. Note that immediately following an engine start the low oil pressure signal will be ignored for at least 5 seconds before proper monitoring of the pressure signal. To reset this fault, recycle the MAIN switch.

CHARGE: This RED LED illuminates when the voltage at the junction box drops below 24 volts.



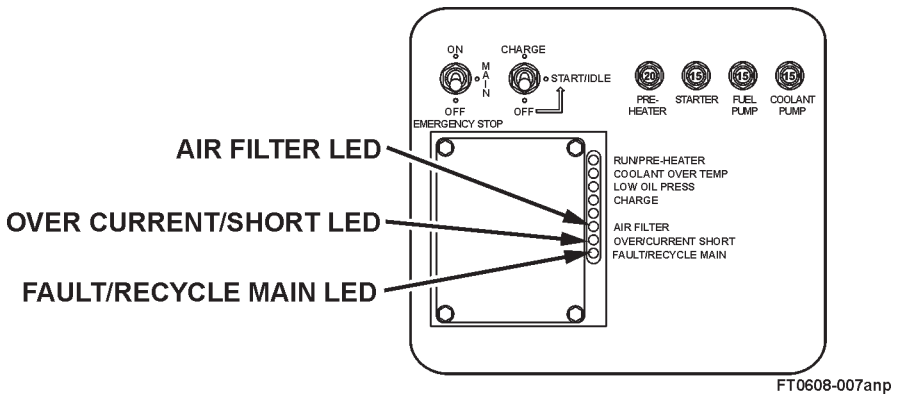
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LEDs (continued):

AIR FILTER: This RED LED will illuminate when the air filter pressure rises above 20 inches of water for at least 5 seconds. This is an indication that the air filter needs replacing. The engine will not shut down for this condition.

OVER CURRENT/SHORT: When in charge mode this RED LED will illuminate if a current greater than 400 amp DC is drawn from the alternator for more than 0.25 seconds. To reset this fault, recycle the MAIN switch.

FAULT/RECYCLE MAIN RED LED: Illuminates when the engine over speed exceeds 3300 RPM, or if the engine fails to start after three attempts. In each condition, the engine will immediately shut down and not crank until the MAIN switch is turned OFF.



LEDs (continued):

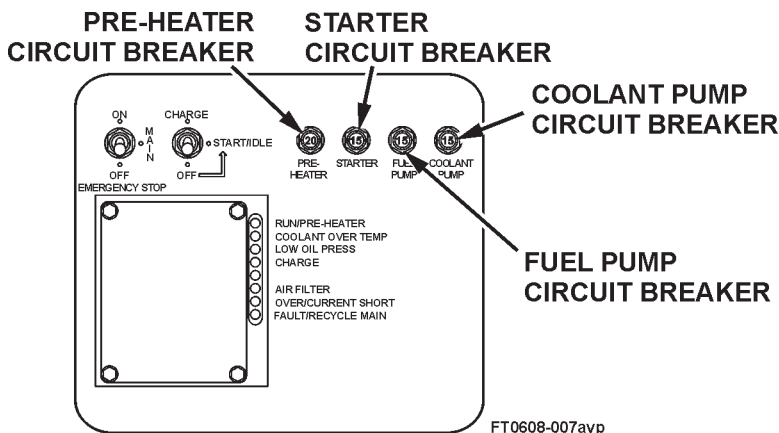
CIRCUITBREAKERS:

PRE-HEATER: This 20-amp DC circuit breaker provides protection to the system from a short in the engine glow plugs or cables. When the circuit breaker trips the button will pop out and expose a white strip around the neck of the button. When resetting the breaker (by depressing the button back in) turn off the MAIN switch first. The APU may start with this fault condition, depending upon ambient conditions.

STARTER: This 15-amp DC circuit breaker provides protection to the system from a cable or starter solenoid coil short to chassis. When the circuit breaker trips the button will pop out and expose a white strip around the neck of the button. When resetting the breaker (by depressing the button back in) turn off the MAIN switch first. The APU will not start with this fault condition.

FUEL PUMP: This 15-amp DC circuit breaker provides protection to the system from a cable or internal fuel pump short to chassis. When the circuit breaker trips the button will pop out and expose a white strip around the neck of the button. The engine will not immediately turn off but will eventually shut down due to lack of fuel. When resetting the breaker (by depressing the button back in) turn off the MAIN switch first. The engine will potentially start and run using the existing fuel in the engine system. The engine will eventually consume the existing fuel and shutdown.

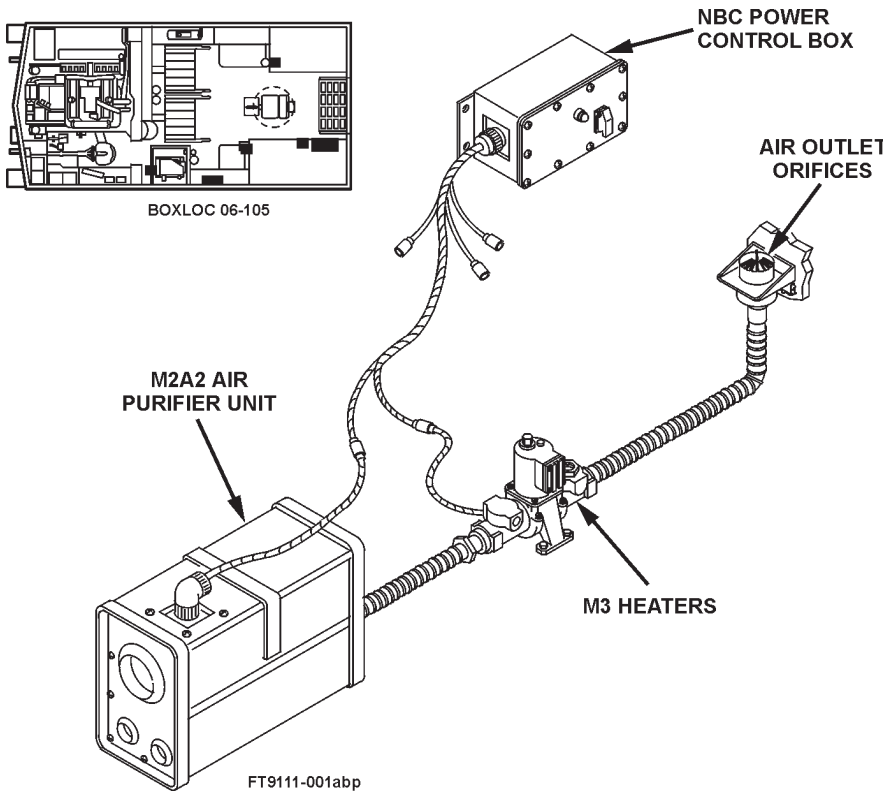
COOLANT PUMP: This 15-amp DC circuit breaker provides protection to the system from a cable or internal coolant pump short to chassis. When the circuit breaker trips the button will pop out and expose a white strip around the neck of the button. The engine will operate with this fault condition. When resetting the breaker (by depressing the button back in) turn off the MAIN switch first.



END OF WORK PACKAGE

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

THEORY OF OPERATION: VENTILATED FACE PIECE SYSTEM (VFPS)



M2A2 AIR PURIFIER UNIT: Removes all known chemical agents from the air. The air purifier can produce a flow of 12 cubic feet (0.34 cu m) of breathable air per minute. The pure air is supplied to up to four crew members through hoses to four air outlet orifices and individual M25A1 face pieces. The air purifier unit consists of an M13 particulate filter, an M12A1 gas filter, and an M1A1 air purifier precleaner in a steel housing.

AIR OUTLET ORIFICE: Provides stowage locations for hoses that connect to canisters on M25A1 face pieces. Three orifices are located in the crew compartment, and one is located in the driver's compartment.

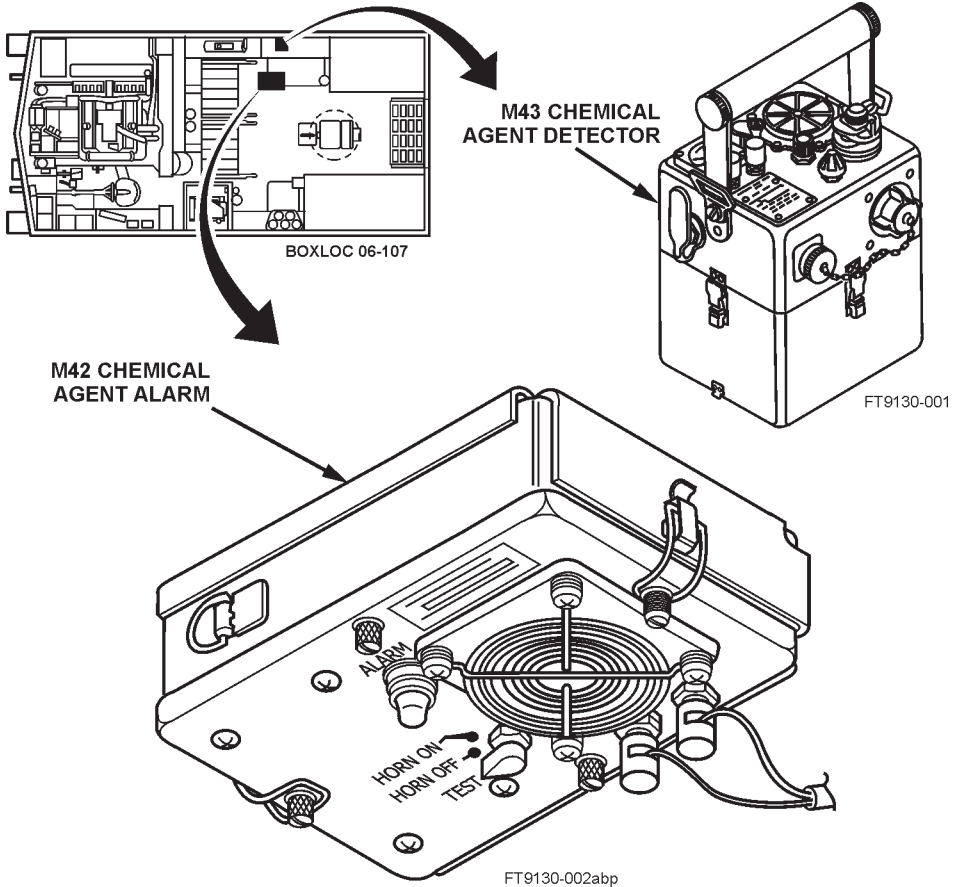
NUCLEAR, BIOLOGICAL, OR CHEMICAL (NBC) POWER CONTROL BOX: Contains ON/OFF switch for operation of the VFPS.

M3 HEATERS: Warms the air before it reaches the face pieces. A heater is connected in-line to each M25A1 face piece. Each heater is individually temperature adjusted and operated. Heaters must be turned on when operating the VFPS in outside temperatures of less than 40°F (4.4°C).

END OF WORK PACKAGE

OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

THEORY OF OPERATION: CHEMICAL AGENT DETECTION AND ALARM SYSTEM



M43 CHEMICAL AGENT DETECTOR: Senses the presence of very low concentrations of chemical agents and breathable aerosols. When contaminants are sensed by the detector, an electrical signal is sent to the chemical agent alarm. The detector unit may be operated using power from the vehicle's electrical system, and it also may be battery operated.

M42 CHEMICAL AGENT ALARM: Signals to crew members that chemical agents have been sensed by the M43 detector. The alarm provides an audible and visual signal or a visual signal only, depending on setting.

END OF WORK PACKAGE

CHAPTER 2
OPERATOR INSTRUCTIONS

OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS

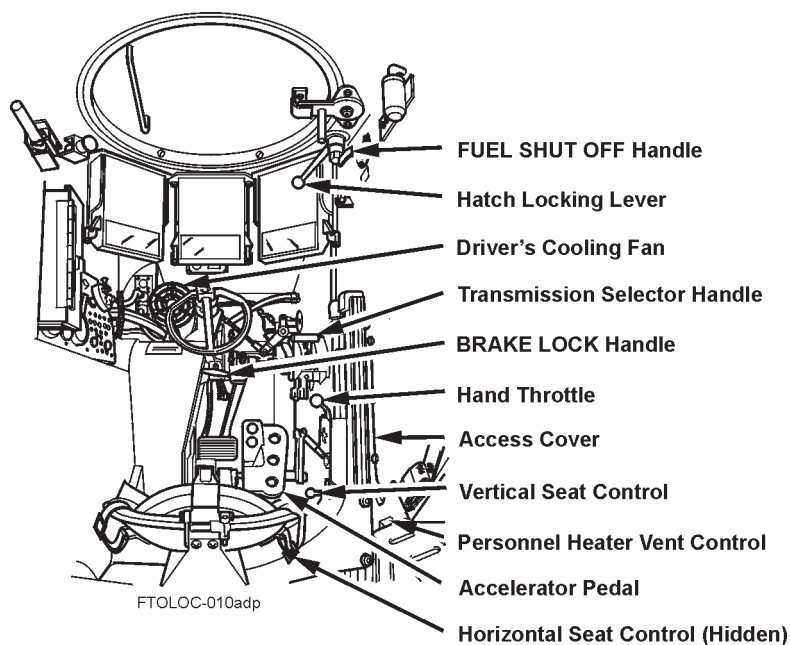
THIS WORK PACKAGE COVERS:

Driver's Controls and Indicators, Crew Controls and Indicators, and Powerpack

DRIVER'S CONTROLS AND INDICATORS

NOTE

Detailed information for use of the controls and indicators can be found in Work Packages 0008 00 through 0039 00.



DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS (continued)

0007 00

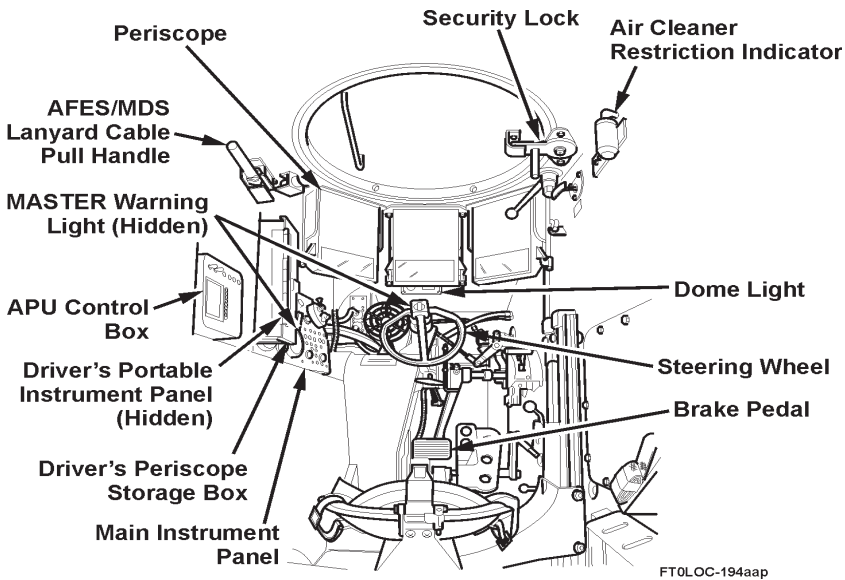
DRIVER'S CONTROLS AND INDICATORS (continued)

Security Lock

Prevents intrusion from outside.

A pivoting plate is positioned to engage metal hatch-mounted bracket.

Pivoting the lock handle forward locks the hatch; pivoting rearward releases the security lock.



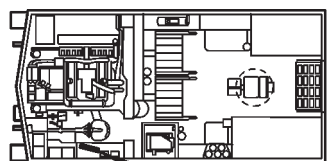
FT0LOC-194aap

DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS (continued)

0007 00

DRIVER'S CONTROLS AND INDICATORS (continued)

| REFERENCE NO. | CONTROL OR INDICATOR | FUNCTION |
|---------------|--------------------------------|---|
| 1 | WATER TEMP Gage | Indicates temperature of main engine coolant. |
| 2 | ENGINE OIL PRESSURE Gage | Indicates pressure of main engine oil. |
| 3 | FUEL Level Gage | Indicates amount of fuel in either upper or lower tank. |
| 4 | BATTERY Gage | Indicates charge level of batteries. |
| 5 | MASTER Switch | Controls all vehicle electrical power. |
| 6 | TRANSMISSION OIL PRESSURE Gage | Indicates pressure of transmission oil. |
| 7 | MASTER Power Indicator | Indicates when MASTER switch is on. |
| 8 | COOLANT Level Indicator | Indicates low engine coolant level. |
| 9 | TRANSMISSION OIL TEMP Gage | Indicates temperature of transmission oil. |

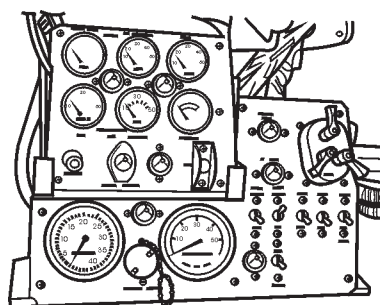


BOXLOC 06-031aap

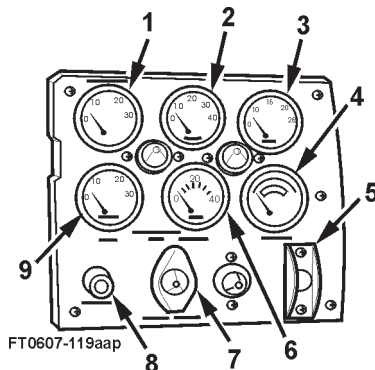
Driver's Portable Instrument Panel

Provides personnel with ability to monitor main engine functions while outside driver's compartment.

To remove panel, pull free of driver's instrument panel and slide into mounting bracket outside driver's compartment.



FT0607-120aap



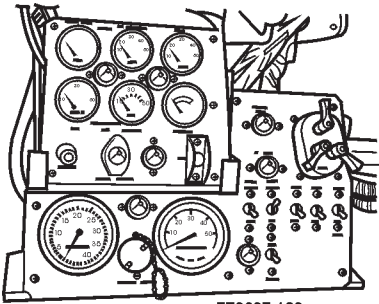
FT0607-119aap

DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS (continued)

0007 00

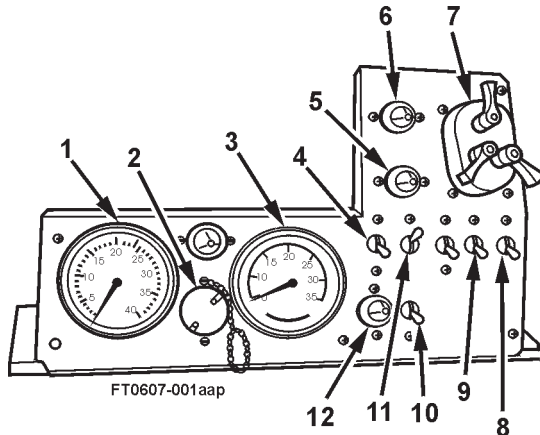
DRIVER'S CONTROLS AND INDICATORS (continued)

| REFERENCE NO. | CONTROL OR INDICATOR | FUNCTION |
|---------------|------------------------------|--|
| 1 | Tachometer/Hour Meter | Indicates engine speed in revolutions per minute and hours of operation. |
| 2 | AUXILIARY OUTLET | Provides power for auxiliary 24-volt tools. |
| 3 | Speedometer/Odometer | Indicates vehicle speed in miles per hour and miles traveled. |
| 4 | FUEL PRIME Switch | Controls fuel pump to prime system. |
| 5 | HI-BEAM Indicator | Indicates when headlight high beams are on. |
| 6 | PARKING BRAKE Indicator | Indicates parking brake is engaged. |
| 7 | SERVICE LIGHT Switch | Controls vehicle lights. |
| 8 | UPPER/LOWER FUEL GAGE Switch | Allows operator to check level in upper and lower fuel tanks. |
| 9 | BILGE PUMP Switch | Controls operation of bilge pump. |
| 10 | STARTER Switch | Controls operation of main engine starter. |
| 11 | GLOW PLUG Switch | Controls operation of glow plug. |
| 12 | GLOW PLUG Indicator | Indicates when glow plug system has been activated. |



MAIN Instrument Panel

Allows driver to monitor engine functions while operating vehicle.



**DESCRIPTION AND USE OF OPERATOR CONTROLS
AND INDICATORS (continued)**

0007 00

DRIVER'S CONTROLS AND INDICATORS (continued)

The accessory control box controls heat and ventilation of the crew compartment and provides reset capability for AFES shutdown of the APU and heater.

The HEATER/APU RESET switch (1) resets the APU and heater when the AFES is activated.

The VENTILATOR RESET switch (2) is for resetting the ventilator when crew AFES is activated.

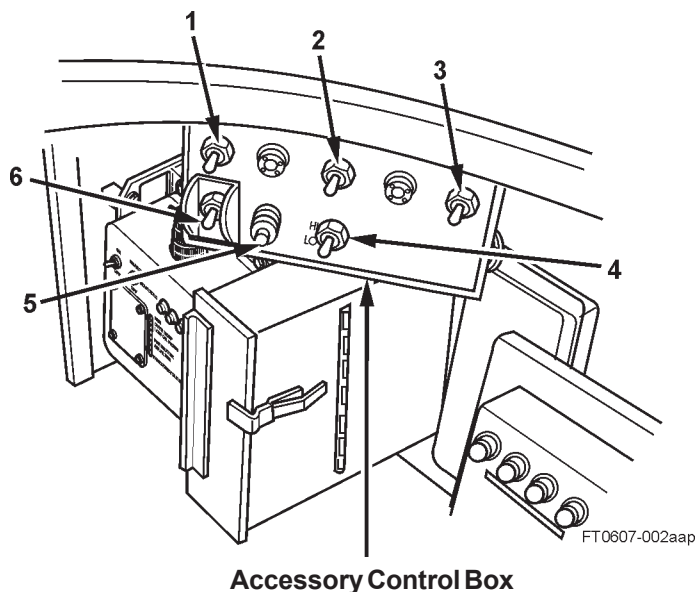
Outside air can be drawn into the crew compartment by selecting INTAKE on the VENTILATOR BLOWER control (3). Fumes can be removed from the crew compartment area by selecting the EXHAUST setting.

The HEAT SELECTOR switch (4) allows the driver to choose either low or high heat.

An indicator light (5) comes on when the heater is operating.

The HEATER CONTROL switch (6) starts and runs the heater.

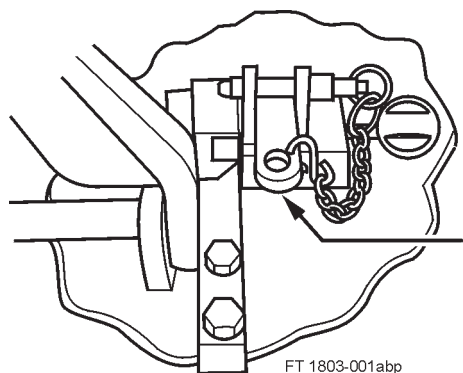
For operating instructions for the personnel heater, see page 0028 00-2.

**Accessory Control Box**

**DESCRIPTION AND USE OF OPERATOR CONTROLS
AND INDICATORS (continued)**

0007 00

DRIVER'S CONTROLS AND INDICATORS (continued)



Driver's Hold-Open Latch

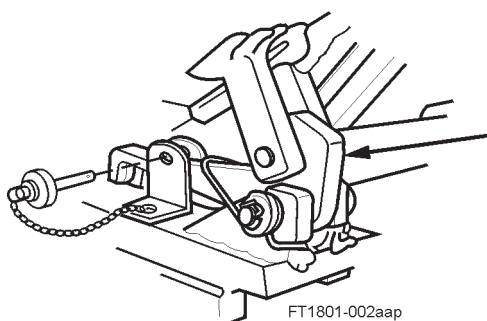
Holds hatch door open for entry, exit, or driving with the seat raised.

Spring-loaded lockpin automatically engages when door is fully raised.

Quick-release pin provides driver with protection from falling hatch door should spring-loaded lockpin fail.

To release latch, remove quick-release pin from horizontal position and stow in forward hole, then pull latch knob outward.

CREW CONTROLS AND INDICATORS



**Commander's Cupola
Hold-Open Latch**

Holds commander's cupola hatch door open when commander is observing ammunition loading or unloading or is operating the 0.50-caliber machine gun.

Spring-loaded latch automatically engages when hatch door is open 120 degrees.

Quick-release pin provides commander with protection from falling hatch during operation.

To release latch, remove quick-release pin from horizontal position and stow in forward hole, then push latch handle to release latch.

DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS (continued)

0007 00

CREW CONTROLS AND INDICATORS (continued)

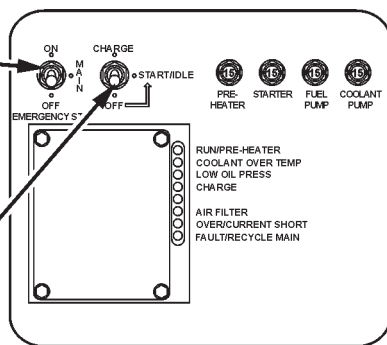
Auxiliary Power Unit (APU) Control Box

MAIN POWER Switch

The main power switch provides power (battery voltage) to the APU control box.

CHARGE/START-IDLE/OFF Switch

Three-position toggle switch used to set the APU in start-idle, charge, and off modes.



FT0608-007alp

LED Front Panel

Displays unusual and fault conditions of the APU.

RUN/PREHEATER

During a start attempt, this GREEN LED will flash during the engine pre-heat period. Once the LED stops, flashing the starter will activate and crank the engine for up to 20 seconds. When the engine is running the LED will stay illuminated (not flashing).

COOLANT OVER TEMP

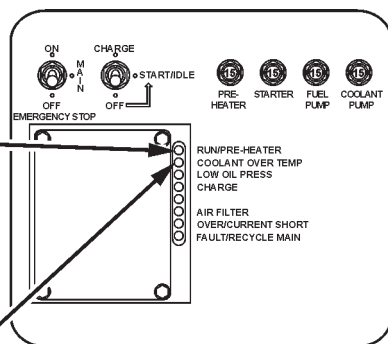
This RED LED will illuminate when the engine temperature rises above 221°F (105°C) for at least 5 seconds. The engine will immediately shut down. To reset this fault, recycle the MAIN switch.

LOW OIL PRESS

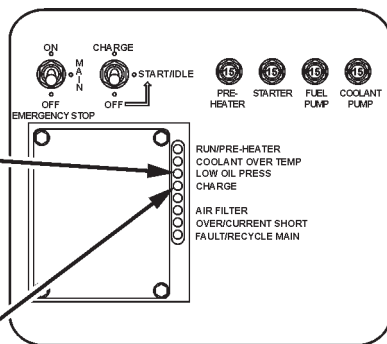
This RED LED illuminates when the engine oil pressure drops below 17 psi (117 kPa) for at least 5 seconds. The engine will immediately shut down. Note that immediately following an engine start the low oil pressure signal will be ignored for at least 5 seconds before proper monitoring of the pressure signal. To reset this fault, recycle the MAIN switch.

CHARGE

This LED illuminates when the voltage at the junction box terminals drops below 24 volts.



FT0608-007amp



FT0608-007app

DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS (continued)

0007 00

CREW CONTROLS AND INDICATORS (continued)

Auxiliary Power Unit (APU) Control Box (continued)

NOTE

If the alternator loses coolant flow it will overheat, causing failure to the diodes.

AIR FILTER

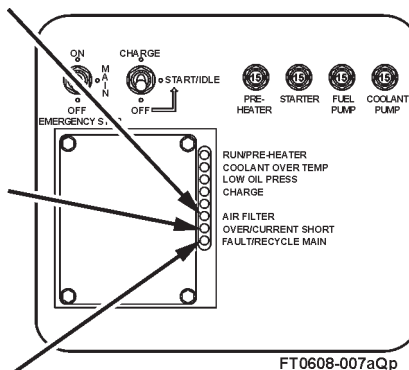
This RED LED will illuminate when the air filter pressure rises above 20" H2O for at least 5 seconds. This is an indication that the air filter needs replacing. The engine will not shut down for this condition.

OVER CURRENT/SHORT

When in charge mode this RED LED will illuminate if a current greater than 400 amp DC is drawn from the alternator for more than 0.25 seconds. To reset this fault, recycle the MAIN switch.

FAULT/RECYCLE MAIN

This RED LED illuminates if the APU engine runs above 3300 rpm or fails to start after three attempts. To reset this fault, recycle the main power switch.



DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS (continued)

0007 00

CREW CONTROLS AND INDICATORS (continued)

Circuit Breakers

Protects the APU system from overcharge and shorts occurring in the electrical system.

PRE-HEATER

This 20-amp DC circuit breaker provides protection to the system from a short in the engine glow plugs or cables. When the circuit breaker trips the button will pop out and expose a white strip around the neck of the button. Turn off the MAIN switch before resetting the breaker by depressing the button. The APU may start with this fault condition, depending upon ambient conditions.

STARTER

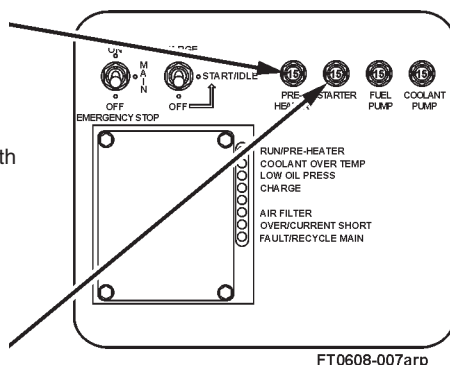
This 15-amp DC circuit breaker provides protection to the system from a cable or starter solenoid coil short to chassis. When the circuit breaker trips the button will pop out and expose a white strip around the neck of the button. Turn off the MAIN switch before resetting the breaker by depressing the button. The APU will not start with this fault condition.

FUEL PUMP

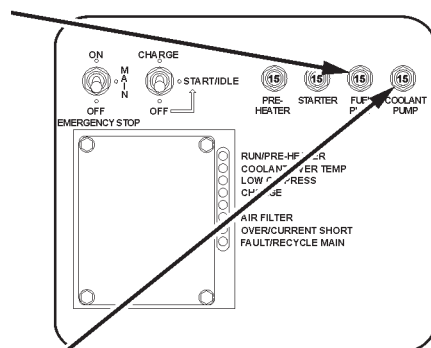
This 15-amp DC circuit breaker provides protection to the system from a cable or internal fuel pump short to chassis. When the circuit breaker trips the button will pop out and expose a white strip around the neck of the button. The engine will not immediately turn off but will eventually shut down due to lack of fuel. Turn off the MAIN switch before resetting the breaker by depressing the button. The engine will potentially start and run using the existing fuel in the engine system. The engine will eventually consume the existing fuel and shutdown.

COOLANT PUMP

This 15-amp DC circuit breaker provides protection to the system from a cable or internal coolant pump short to chassis. When the circuit breaker trips the button will pop out and expose a white strip around the neck of the button. The engine will operate with this fault condition. The LED labeled AUX COOLANT PUMP will light. Turn off the MAIN switch before resetting the breaker by depressing the button.



FT0608-007arp



FT0608-007asp

**DESCRIPTION AND USE OF OPERATOR CONTROLS
AND INDICATORS (continued)**

0007 00

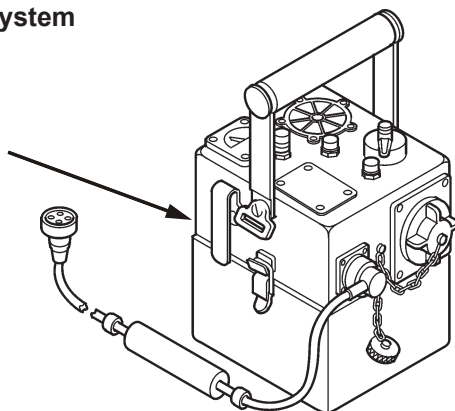
CREW CONTROLS AND INDICATORS (continued)

Chemical Agent Detection and Alarm System

Chemical Agent Detector M43

Detects very low concentrations of chemical agent vapors and inhalable aerosols. Detector may be operated continuously but must be serviced every 12 hours.

Refer to TM 3-6665-225-12 for detailed description of this unit.

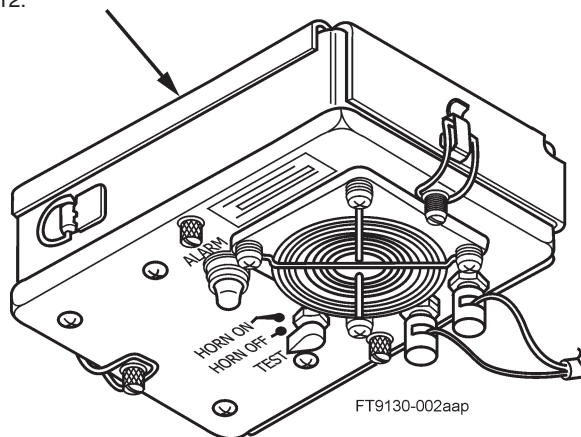


FT9130-003aap

Chemical Agent Alarm M42

When connected to M43 detector, M42 alarm provides remote audible and/or visual signal if M43 detector senses a chemical agent.

For a detailed description of this unit, refer to TM 3-6665-225-12.



FT9130-002aap

DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS (continued)

0007 00

CREW CONTROLS AND INDICATORS (continued)

Ventilated Face Piece System (VFPS)

**Air Purifier Control Box
Power Indicator Lamp**

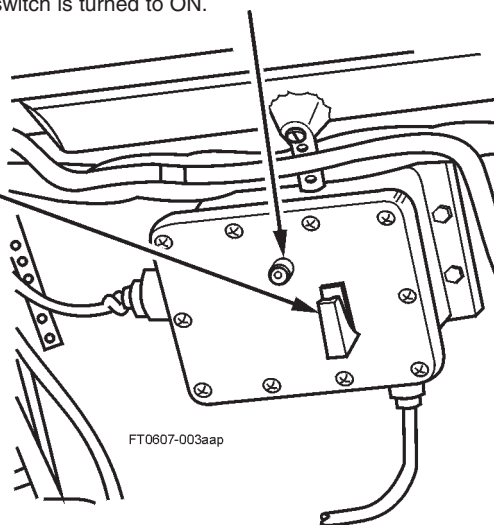
This blue-green lamp lights when on/off switch is turned to ON.

**Air Purifier Control
Box On/Off Switch**

When turned to ON, this switch activates air purifier unit and supplies electrical power for operation of M3 heaters.

This switch is a two-position toggle switch covered by a red guard.

The switch lever is positioned up for ON and down for OFF.



M3 Heater Control Knob

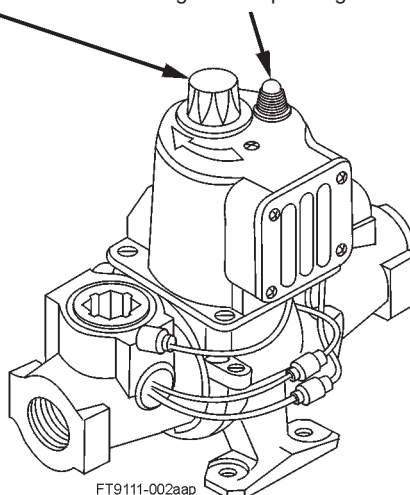
When turned, the knob controls warming of breathable, filtered air received at each ventilated face piece (VFP).

When NBC power control box on/off switch is set to ON, control knob at each heater can be turned on and adjusted for desired heater.

Turning control knob clockwise increases heat. Each heater is individually controlled.

**M3 Heater
Indicator Lamp**

When a heater is turned on, its blue-green lamp will light.



DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS (continued)

0007 00

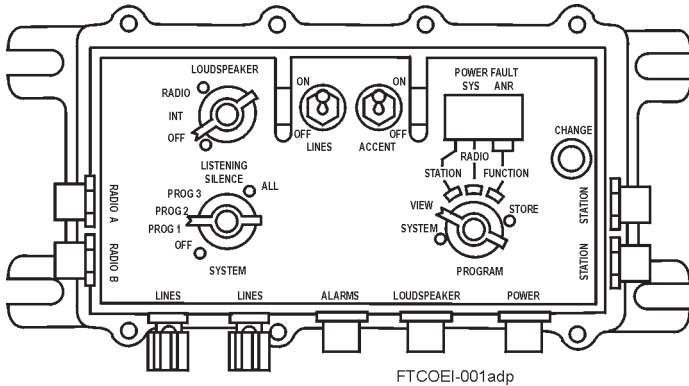
CREW CONTROLS AND INDICATORS (continued)

Intercommunications Equipment AN/VIC-3(V)

CD-82/VRC

This is the master control station for the AN/VIC-3(V) intercommunication system. Unit must be properly set up for intercommunications system to work.

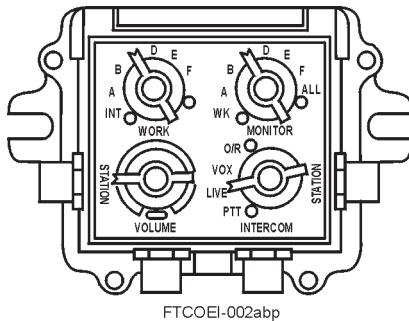
Refer to TM 11-5830-263-10 for a detailed description of this unit.



C-12357/VRC

This is the individual control box for each crew member using an audio accessory. The audio accessory connects with intercommunications system via receptacles at base of C-12357/VRC.

Refer to TM 11-5830-263-10 for a detailed description of this unit.



DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS (continued)

0007 00

CREW CONTROLS AND INDICATORS (continued)

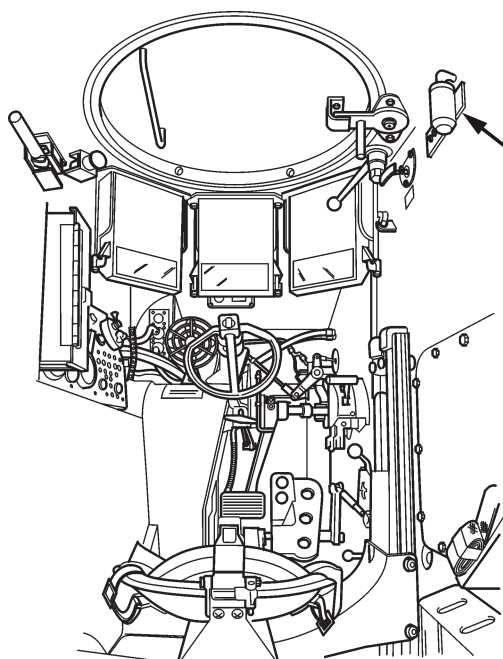
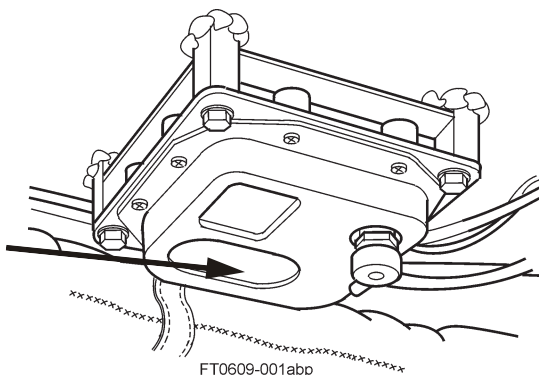
Miscellaneous Controls and Indicators

Dome Lights

Five dome lights provide lighting for interior of cargo compartment.

Each unit is individually switched on and off.

Turning knob fully clockwise turns on white light. To turn on blue-green light, press safety switch and turn knob counterclockwise past stop. To turn light off, turn knob to center position.



FT0LOC-010ahp

Air Cleaner Restriction Indicator

Indicates a restricted or blocked filter.

Signal window displays a yellow sleeve that indicates amount of restriction in air cleaner. When sleeve climbs into red zone, air cleaner filter is restricted and requires service.

**DESCRIPTION AND USE OF OPERATOR CONTROLS
AND INDICATORS (continued)**

0007 00

CREW CONTROLS AND INDICATORS (continued)

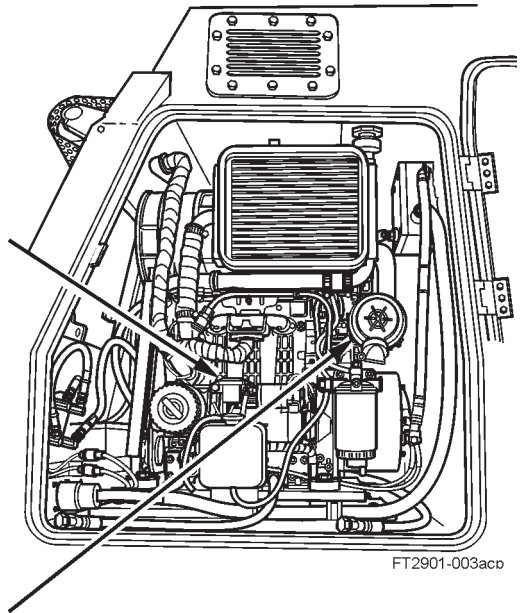
Miscellaneous Controls and Indicators (continued)

APU Hour Meter

Located in APU compartment, the hour meter measures hours of APU operation in 1/10-hour increments.

APU Generator Air Filters

Filters and precleans air intake into APU generator.

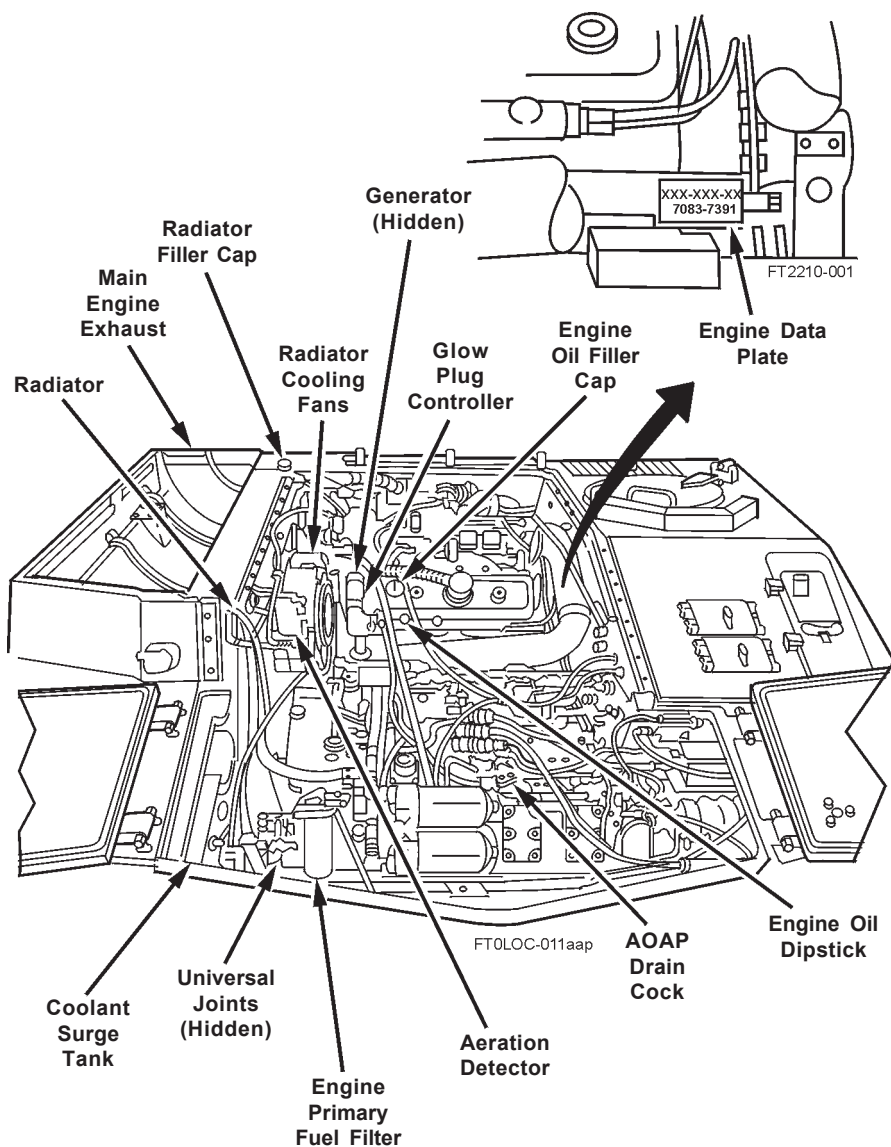


FT2901-003acc

**DESCRIPTION AND USE OF OPERATOR CONTROLS
AND INDICATORS (continued)**

0007 00

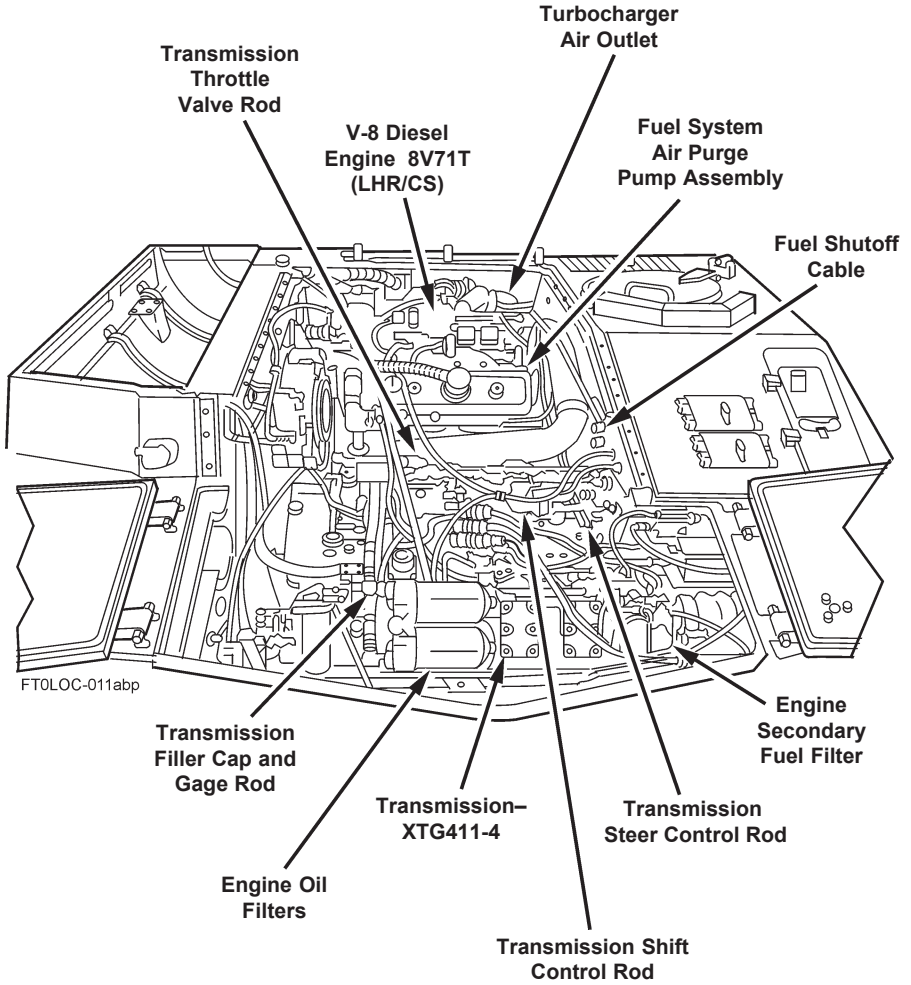
POWERPACK



**DESCRIPTION AND USE OF OPERATOR CONTROLS
AND INDICATORS (continued)**

0007 00

POWERPACK (continued)



END OF WORK PACKAGE

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

OPERATION UNDER USUAL CONDITIONS

ASSEMBLY AND PREPARATION FOR USE

Before operating a new or reconditioned vehicle, make sure Unit maintenance services the vehicle.

INITIAL ADJUSTMENT AND DAILY CHECKS

Perform the Preventive Maintenance Checks and Services (PMCS) in Work Packages (WPs) 0043 00 through 0046 00 to make sure all adjustments and checks are completed.

OPERATING PROCEDURES

Be familiar with all controls, instruments, and procedures before attempting to operate the vehicle.

WARNING

- **Fasten the seatbelt. Drive carefully. Take it easy until you can operate with skill.**
- **If a track is thrown while vehicle is moving, do not apply the brake; allow vehicle to coast to a halt.**
- **Do not move vehicle until all latches and doors are secured in closed position and all equipment is properly stowed.**
- **High-intensity noise, hearing protection is required. Hearing can be PERMANENTLY DAMAGED if a person is exposed to constant high noise levels of 85 decibels or greater.**
- **During operation of main engine, decibel levels exceed safe levels for human hearing. Wear approved hearing protection devices when working in high noise level areas. Failure to do so could result in injury to personnel.**
- **Personnel within 38 yards (35 m) of the machine gun must wear approved single hearing protection (e.g., earplugs) when the machine gun is being fired. Failure to do so could result in injury to personnel.**

- Personnel within 689 yards (630 m) of the howitzers must wear approved hearing protection during firing. Follow the hearing protection warnings and obey the hazard zones identified in TM 9-2350-314-10. Failure to do so could result in injury to personnel.
- Personnel within nine yards (8 meters) of the vehicle must wear approved single hearing protection when the main engine is running. Failure to do so could result in injury to personnel.
- Operation of the vehicle is limited to 68 miles (110 km) per 24-hour period for crews wearing the H-374 [AN/VIC-3(V)] Combat Vehicular Crewman (CVC) helmet with the Active Noise Reduction (ANR) on. Operation is limited to 13 km per 24-hour period for crews wearing the H-374 [AN/VIC-3(V)] CVC with the ANR off. If the mission exceeds the recommended distances for a 24-hour period, double hearing protection (e.g., earplugs and CVC) must be worn. Failure to do so could result in injury to personnel.

CAUTION

- Never leave vehicle unattended while engine is running.
- This vehicle does not have an automatic transmission. It must be shifted manually.
- To prevent overheating and damage to transmission and engine, observe the following precautions:
 - When starting from a halt, begin with transmission selector lever in first gear.
 - Do not hold vehicle on an incline with transmission in gear.
 - Prior to shutting down engine, set hand throttle at 1000-1200 rpm for three to five minutes or until coolant temperature measures 185°F (85°C) or lower. Then run at idle for one to three minutes.
 - Do not block engine air intake grille with camouflage or other materials.
 - Do not operate engine at idle for more than 10 minutes. Using hand throttle at fast idle setting (1000 rpm) will help reduce engine overheating.

END OF WORK PACKAGE

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

STARTING MAIN ENGINE

INITIAL SETUP:
Maintenance Level
Operator

WARNING

Whenever vehicle is operated with hatch door opened, hatch door must be locked.

WARNING

High-intensity noise, hearing protection required. Hearing can be **PERMANENTLY DAMAGED** if a person is exposed to constant high noise levels of 85 decibels or greater.

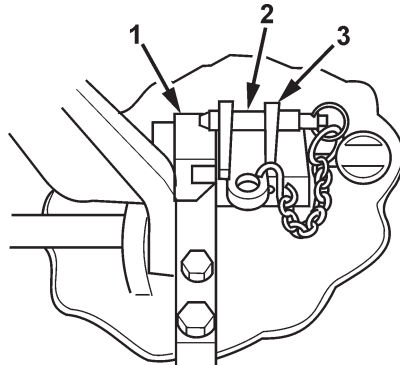
WARNING

During operation of main engine or auxiliary power unit, decibel levels exceed safe levels for human hearing. Wear approved hearing protection devices when working in high noise level areas. Failure to do so could result in injury to personnel.

WARNING

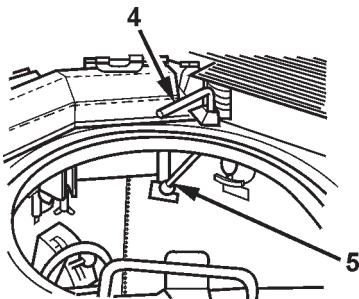
Personnel within nine yards (8 meters) of the vehicle must wear approved single hearing protection when the main engine or auxiliary power unit is running. Failure to do so could result in injury to personnel.

1. Make sure driver's hatch door will lock in opened and closed positions. Lock driver's hatch door in desired position.
 - Lock opened. Engage hold-open lock (1) with latching pin positioned over flat portion of hatch cover locking tab. Remove quick-release pin (2) from stowage position, and insert pin (2) through horizontal bracket (3) and over flat portion of hatch door locking tab.

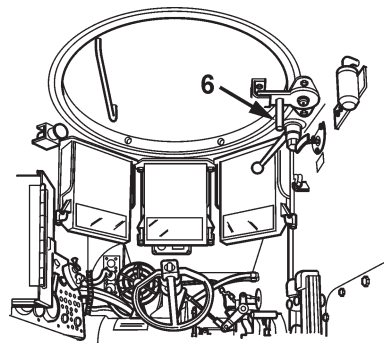


FT1803-020aap

- Lock closed. With hatch door closed, turn locking handle (5) to the rear to lock external hatch door latch (4).
- Security lock. To prevent entry from out-side, push security latch handle (6) forward.



FT1803-021aap

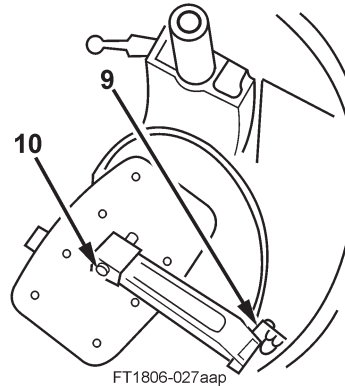
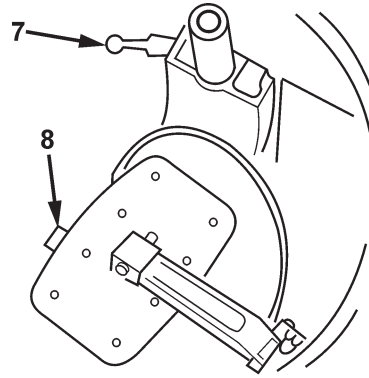


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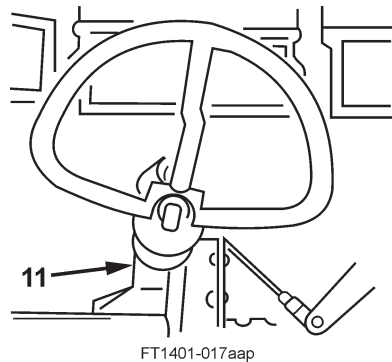
STARTING MAIN ENGINE (continued)**0009 00**

2. Adjust driver's seat as necessary.

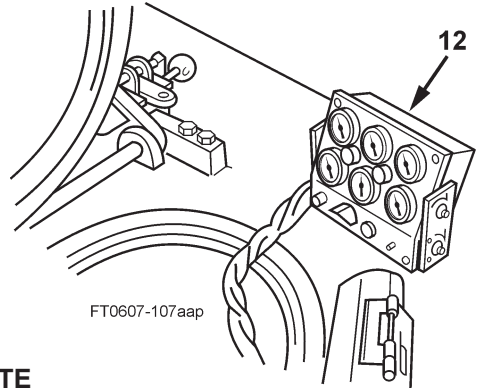
- Adjusting up and down. Hold seat down and pull up on adjusting lever (7). With lever raised, lift or press seat to obtain correct height. Release adjusting lever to lock in position.
- Adjusting forward and backward. Pull up on adjusting tab (8) and move seat forward or backward. Release adjusting tab to lock in position.
- Backrest positioning. Press pawl (9) and rotate backrest up and back. When backrest is positioned vertically, reposition pawl to lock backrest.
- Adjusting backrest height. Remove adjusting pin (10) and lower or raise backrest. When desired height is obtained, install pin in adjusting holes.



3. Adjust steering wheel by pressing sleeve bearing (11) forward and rotating steering wheel up or down. Raise wheel if driving with hatch open; lower wheel when driving with hatch closed. When correct adjustment is obtained, release sleeve bearing to lock position.

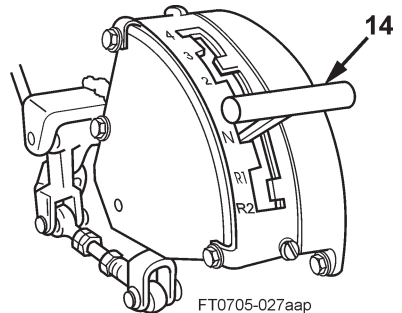
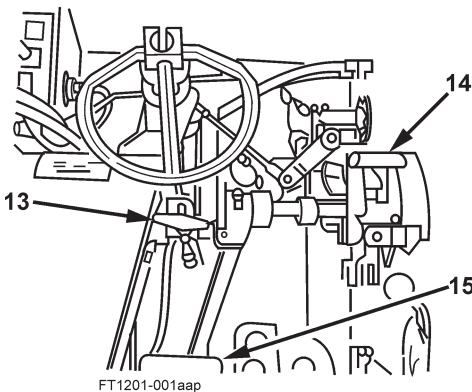


4. If driving in raised position, clip portable instrument panel (12) into bracket (on top of hull just left of driver's hatch door).



NOTE

- Use the following procedure for starting engine in normal-temperature climates +40°F (4.4°C). Refer to cold-weather starting procedures (p. 0032 00-1) when temperature is below +40°F (4.4°C), or if engine will not start in moderately cold climates.
 - Before applying the service brake pedal while on steep slopes (greater than 20 percent), adjust the driver's seat so you can apply maximum leverage to the brake pedal.
5. Set parking brake by pressing on service brake pedal (15) and pulling out and down on parking BRAKE LOCK handle (13). Parking brake will be set when handle is released in this position. If stopping on a steep slope, press on service brake pedal (15), pull out and down on parking BRAKE LOCK handle (13), release, and press on service brake pedal (15) again.
 6. Shift transmission selector lever (14) to N (neutral), and make sure it locks into position.



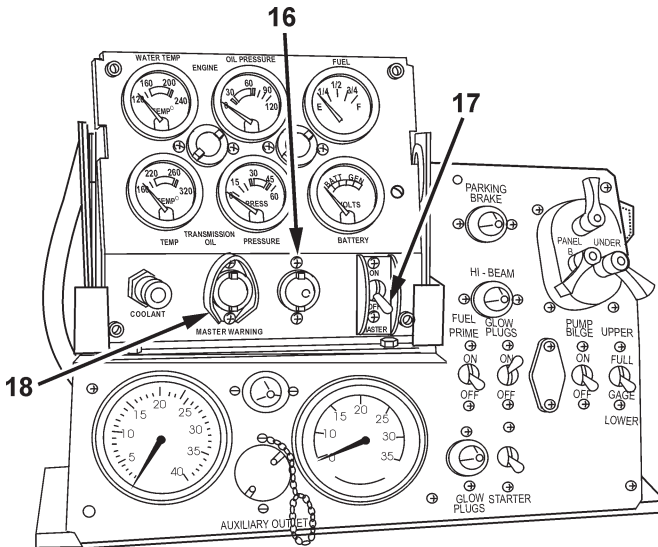
CAUTION

Before starting engine, you should check for hydrostatic lock. Intermittently actuate STARTER switch (with MASTER switch set to ON and FUEL SHUT OFF handle pulled out). The following symptoms indicate hydrostatic lock:

- Engine starts to turn over with starter, then stops.
- Starter sounds as if straining when engine is cranking.
- Engine seems to bind.

If you suspect hydrostatic lock, stop cranking immediately and notify Unit maintenance.

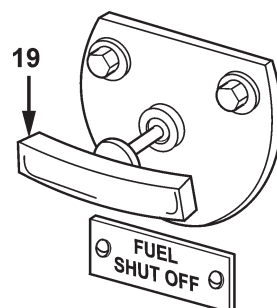
7. Turn MASTER switch (17) to ON. Indicator lamp (16) and MASTER power light (18) should light with MASTER switch (17) set to ON.



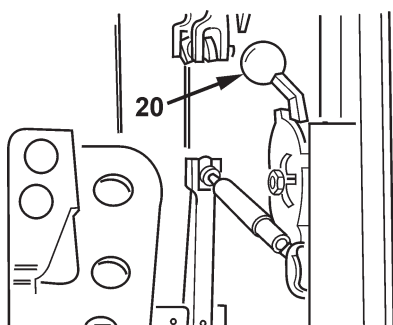
STARTING MAIN ENGINE (continued)

0009 00

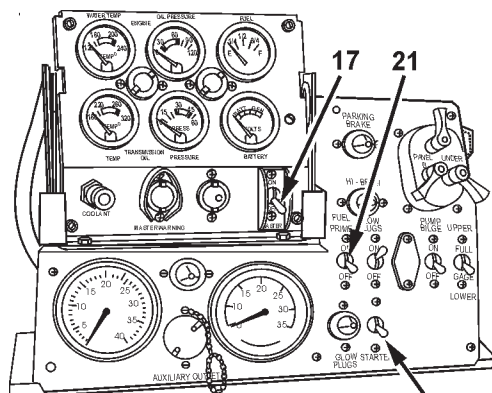
8. Pull FUEL SHUT OFF handle (19) to OFF position before checking for hydrostatic lock.
9. Check for hydrostatic lock by intermittently activating STARTER switch (22) (with MASTER switch [17] set to ON and FUEL SHUT OFF handle [19] pulled out).
10. Release FUEL SHUT OFF handle (19).
11. Place throttle control lever (20) in idle position.
12. If fuel filters have been drained since last start, hold FUEL PRIME switch (21) to ON for one minute, then release switch.



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FT0312-029abp



FT0607-109acp

22

WARNING

Protect your hearing. Due to high-intensity noise, hearing protection is required when operating this vehicle.

CAUTION

Do not operate starter continuously for over 30 seconds. If engine does not start, allow one-minute cool-off period before engaging starter again. Notify Unit maintenance if engine fails to start after fourth try.

NOTE

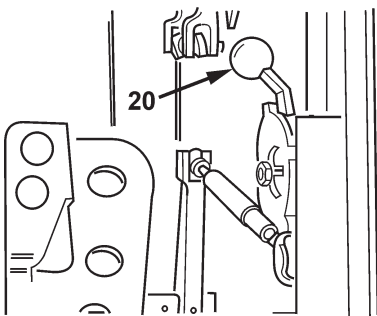
An electrical relay prevents driver from operating starter continuously for more than 30 seconds. If tactical situation dictates, commander can use combat starter override switch (p. 0039 00-4) to allow continuous cranking of starter for more than 30 seconds.

13. Push and hold engine STARTER switch (22) to START until engine starts.

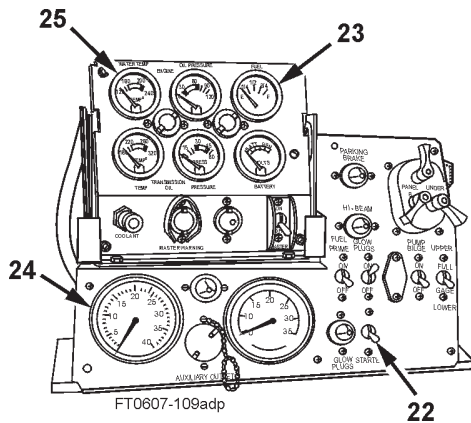
NOTE

If you notice a shrill whine (above normal turbine whine), rubbing, unusual vibrations, and/or sudden increase in exhaust smoke, shut off engine and notify Unit maintenance.

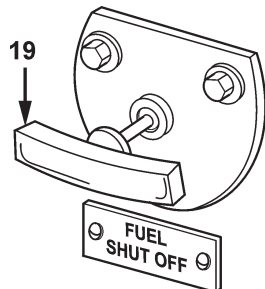
14. Set throttle control lever (20) so that tachometer (24) reads 550 to 600 rpm. While engine is idling at this speed, watch ENGINE OIL PRESSURE gage (23). If ENGINE OIL PRESSURE gage (23) does not register 5 to 30 psi (34 to 207 kPa) within 15 seconds of start, immediately pull FUEL SHUT OFF handle (19) to stop engine and notify Unit maintenance.



FT0312-029abp



15. Idle engine for about two minutes; then move throttle control lever (20) to set engine speed at 1000 rpm (fast idle) on tachometer (24). Continue to warm engine until ENGINE WATER TEMP gage (25) registers at least 170°F (77°C).



FT0312-032abp

16. Perform portable instrument panel checkout procedure (p. 0010 00-1) during engine warmup.

END OF WORK PACKAGE

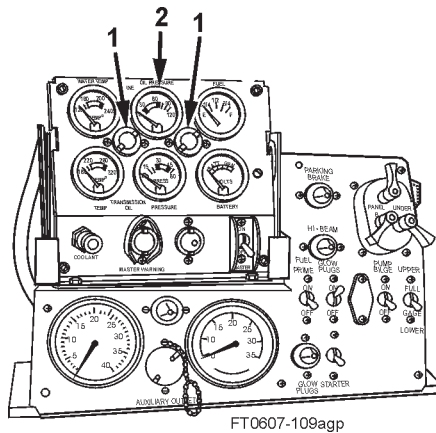
OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

PORTABLE INSTRUMENT PANEL CHECKOUT PROCEDURE

INITIAL SETUP:
Maintenance Level
 Operator

Frequently check the portable instrument panel gages and indicators on this page and pages 0010 00-2 and 0010 00-3 to make sure vehicle powerpack continues to operate correctly. If the normal indications are not observed during this check, refer to the troubleshooting procedures in Chapter 3.

1. Instrument panel lights (1) should be set to OFF at this time. Turn on lights, if desired, to illuminate portable instrument panel using light switch assembly on main instrument panel.



CAUTION

If engine oil pressure is below 30 psi at 1000 rpm, check oil level.

2. ENGINE OIL PRESSURE gage (2) should indicate between 30 and 50 psi (207 and 345 kPa) at 1000 rpm and between 50 and 70 psi (345 and 483 kPa) at 2100 rpm. Maximum allowable pressure is 70 psi (483 kPa).

**PORTABLE INSTRUMENT PANEL CHECKOUT
PROCEDURE (continued)**

0010 00

WARNING

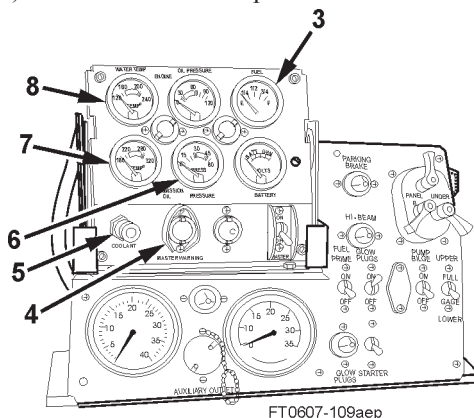
Never allow flame or any smoking within 50 feet of fueling operations.

3. FUEL gage (3) should be near FULL mark at start of operations. If necessary, shut down engine and fill tanks.
4. MASTER WARNING light (4) should go out after engine has run for 15 seconds.

CAUTION

If the MASTER WARNING light goes on during operation, immediately check ENGINE OIL PRESSURE gage, TRANSMISSION OIL PRESSURE gage, TRANSMISSION OIL TEMP gage, and ENGINE WATER TEMP gage (steps 2, 7, 8, and 9, respectively) for readings in the normal ranges. If gage readings are correct but lamp stays lit, notify Unit maintenance.

5. COOLANT level indicator lamp (5) should be set to OFF.
6. Press COOLANT level indicator lamp (5) to check whether lamp works.
7. TRANSMISSION OIL PRES-SURE gage (6) should indicate 18-45 psi (124-310 kPa) at 1835-1900 rpm. Minimum allowable pressure is 10 psi (69 kPi) at 1000 rpm.
8. TRANSMISSION OIL TEMP gage (7) should indicate 220°F to 240°F (104°C to 115°C). Maximum allowable temperature is 300°F (149°C).
9. ENGINE WATER TEMP gage (8) should indicate between 170°F and 185°F (77°C and 85°C). Maximum allowable temperature is 230°F (110°C).



FT0607-109aep

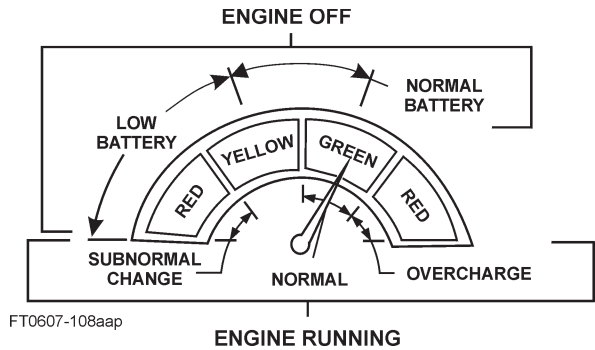
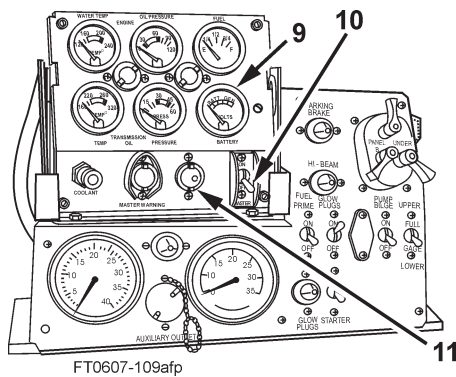
**PORTABLE INSTRUMENT PANEL CHECKOUT
PROCEDURE (continued)**

001000

10. BATTERY gage (9) needle should be in GREEN (normal) range.

CAUTION

If generator charging rate indicates subnormal charge or overcharge, notify Unit maintenance.



11. MASTER switch (10) will be set to ON during vehicle operation.
12. Master indicator light (11) should be on whenever MASTER switch is set to ON. If light does not go on when switch is set to ON, or if light remains lit when switch is set to OFF, notify Unit maintenance.

END OF WORK PACKAGE

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

OPERATION OF DOME LIGHTS AND DRIVING LIGHTS

THIS WORK PACKAGE COVERS:

Operation of Dome Lights and Light Switch Assembly

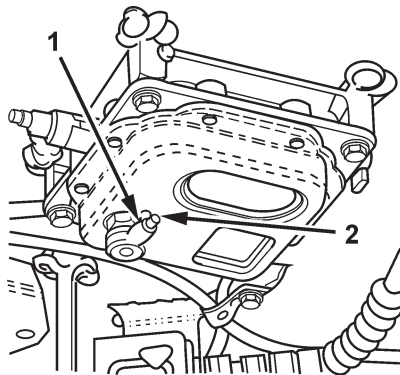
INITIAL SETUP:

Maintenance Level

Operator

OPERATION OF DOME LIGHTS

1. To set blue-green light to ON, turn knob (1) fully clockwise.
2. To set white light to ON, press safety switch (2) and turn knob (1) counterclockwise past stop.
3. To set both lights to OFF, position knob (1) in center position.

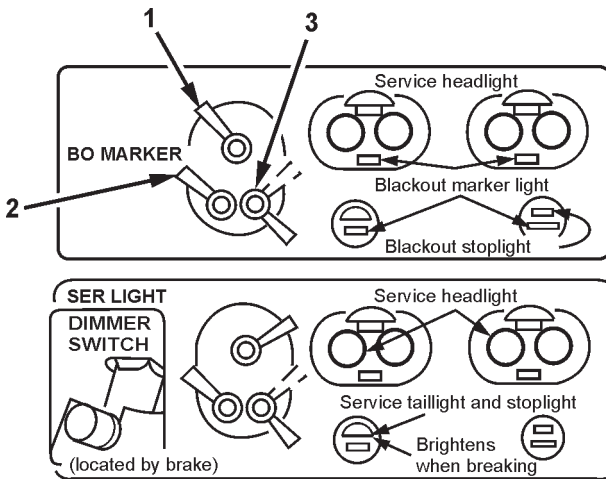


FT0609-024aap

OPERATION OF LIGHT SWITCH ASSEMBLY

The panels below show which lamps are turned on by different positions of main light switch.

1. Push up safety switch (2) to release main light switch (1). Release safety switch (2) after main light switch (1) is properly positioned.
2. Push up on instrument panel light switch (3) to turn on instrument panel lights.



FT0607-110aap

END OF WORK PACKAGE

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

SHIFTING THE TRANSMISSION

INITIAL SETUP:

Maintenance Level

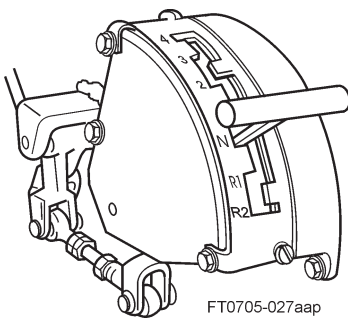
Operator

The transmission is equipped with a shift inhibitor that restricts movement of the transmission selector lever. This prevents downshifting of transmission until vehicle speed drops within correct operating limits for desired gear range.

While downshifting, always brake vehicle to prevent vehicle speed from overrunning engine speed.

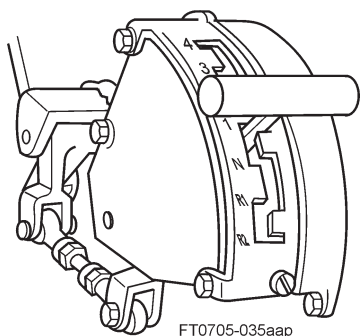
CAUTION

- **Never descend an incline with transmission in neutral.**
- **Do not hold vehicle on incline with transmission in gear; instead, lock brake and shift transmission to neutral.**
- **Always shift to a lower transmission gear range when engine rpm is less than 1725.**



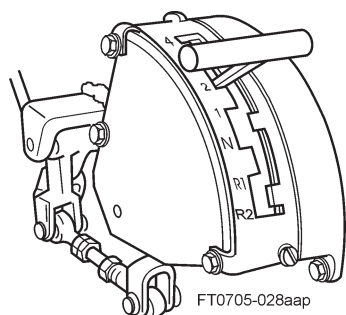
NEUTRAL (N) should be used when:

- Vehicle is stopped or parked.
- Engine is being started or shut down.
- Idling.



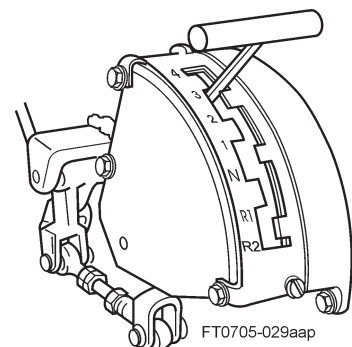
FIRST GEAR (1) should be used when:

- Setting vehicle in forward motion during field operation. Upshift to higher gear when vehicle speed permits.
- Ascending or descending steep grades and driving on soft, muddy, or rough terrain.
- Making short, forward radius turns. Short forward radius turns on hard surfaces should be initiated from a standstill. Top speed is six miles per hour.



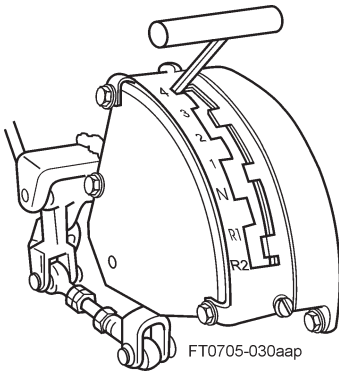
SECOND GEAR (2) should be used when:

- Towing heavy loads.
- Ascending or descending steep grades and driving on extremely soft, muddy, or rough terrain.
- Making short, forward radius turns. Top speed is nine miles per hour.



THIRD GEAR (3) should be used when:

- Vehicle is operating on hard-surfaced roads, until sufficient speed (12 to 15 mph) permits shifting to FOURTH GEAR (4) range.
- Pulling heavy loads for sustained periods and ascending or descending long grades. Top speed is 24 miles per hour.

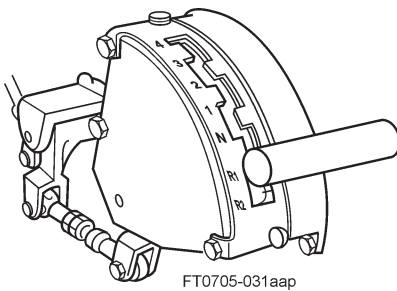


FOURTH GEAR (4) should be used when:

- Setting under normal conditions on firm, smooth, level ground. Top speed is 35 miles per hour.

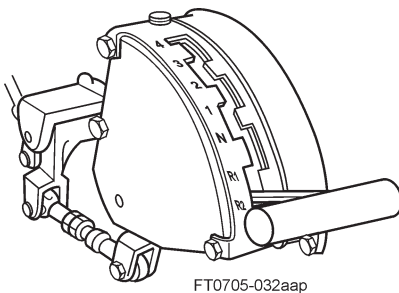
CAUTION

Never attempt to shift into reverse gear range unless vehicle is at standstill and engine is operating at idle rpm.



REVERSE-FIRST GEAR RANGE (R1) should be used when:

- Backing up.
- Making turns with heavy loads or when on soft ground.
- Ascending steep grades backward, for maximum engine power.
- Making short, rearward radius turns.



REVERSE-SECOND GEAR RANGE (R2) should be used when:

- Driving on level, hard-surfaced ground when backward movement for long distances becomes necessary.

END OF WORK PACKAGE

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

DRIVING THE VEHICLE

THIS WORK PACKAGE COVERS:

Preparation for Movement and Moving the Vehicle

INITIAL SETUP:

Maintenance Level

Operator

WARNING

- Brake vehicle to prevent vehicle speed from overrunning engine speed. If vehicle speed overruns engine speed, you will not be able to downshift and may lose control of vehicle.
- Drive carefully, especially if unfamiliar with vehicle. Avoid oversteering and speeding on hard pavement; you could lose control of vehicle.
- Be sure driver's and commander's hatches are locked in either the opened or closed position. To avoid injury to personnel, secure upper and lower rear doors, personnel side doors, and all other covers in closed position before moving.
- Make sure charge canisters, projectiles, fuses, and all other stowed items are securely restrained before moving vehicle.
- Never move vehicle without first receiving a signal from the ammunition team chief that all crewmembers are seated and that stowed items are secured. Always use seatbelts while traveling.
- For the safety of personnel in the area when backing up, position two ground guides who can clearly see each other; one should be able to see the driver and the other should be able to see the area behind the vehicle. If necessary, one on-board guide, using a CVC helmet, can direct the vehicle using AN/VIC-3(V) intercommunication with driver.

WARNING

If you lose a track or break a track shoe, or if vehicle throws a track, extreme caution must be exercised in maintaining control. Immediately release accelerator pedal and let vehicle coast to a stop. Do not attempt braking action, brake pedal, laterals, pivot, or any type of steering controls. Braking causes vehicle to pull to the active (good) track and could result in a rollover. If absolutely necessary, attempt braking action **ONLY** if vehicle is approaching a ravine or a cliff or if you perceive the outcome to be catastrophic, probably resulting in fatalities. When rollover is imminent, all crewmembers should immediately withdraw inside vehicle, tighten seatbelts, and hold on to a secure fixture until vehicle comes to a complete stop.

CAUTION

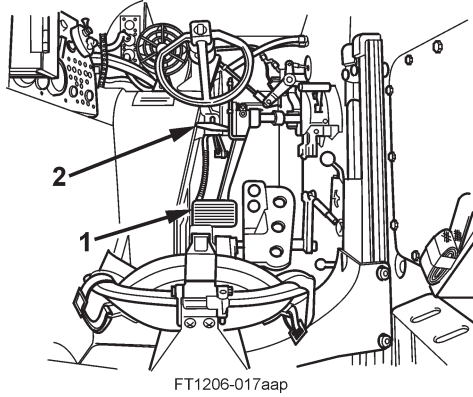
- Do not leave vehicle unattended while engine is running.
- When starting on a hill, depress brake and place transmission in first gear. Increase engine speed and release brake.
- Do not hold vehicle on an incline by using accelerator pedal. Transmission overheating will result.
- Do not coast when descending grades; instead, downshift transmission.
- Observe overhead and side clearances. When turning vehicle, allow ample clearance for corners of vehicle. When making sharp turns, shift to first or second gear.
- If vehicle throws a track, do not use the brake to stop; instead, stop accelerating and coast to a stop.

PREPARATION FOR MOVEMENT

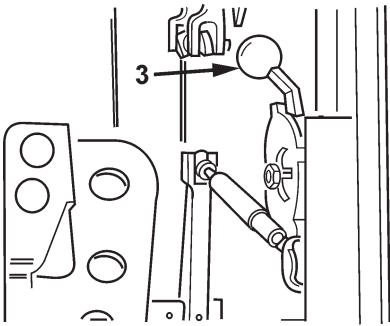
1. Make sure the following doors are closed and secured:
 - Personnel side door (p. 0023 00-4)
 - Left canister side door (p. 0023 00-5)
 - Top (middle, left, and right) doors (pp. 0023 00-5 through 0023 00-7)
 - Left and right rear doors (p. 0023 00-11)
 - APU side and front doors (pp. 0023 00-13 and 0023 00-14)
 - Transmission access doors (p. 0023 00-2)
 - Battery access doors (p. 0023 00-3)
 - Fuel cap access door
 - AFES fire extinguisher box door, vehicles S/N 345 and above (p. 0023 00-18)
2. Make sure driver's hatch door and commander's cupola hatch door are secured in open position (with hold-open latches) or in closed position (pp. 0023 00-14 and 0023 00-17).
3. Check to make sure the following items are secured with restraint straps (and bars, if applicable):
 - Propelling-charge canisters (p. 0026 00-5 through p. 0026 00-12)
 - Fuse boxes (p. 0026 00-5 through p. 0026 00-12)
 - Primer boxes (p. 0026 00-5 through p. 0026 00-12)
 - 0.50-caliber ammunition boxes (p. 0026 00-5 through p. 0026 00-12)
4. Check to make sure all projectiles are locked in place (p. 0027 00-3).
5. Check to make sure all other loose items are stowed/secured.

MOVING THE VEHICLE

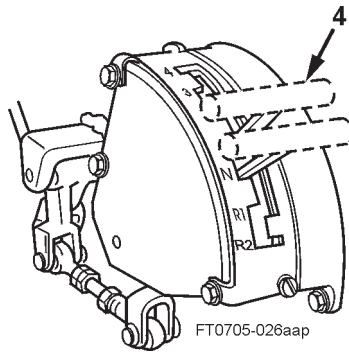
1. Press down on brake pedal (1), and pull out on BRAKE LOCK handle (2).
2. With brake pedal (1) depressed and throttle control lever (3) adjusted to idle position, shift from N (neutral) to 1 (first gear) (4).



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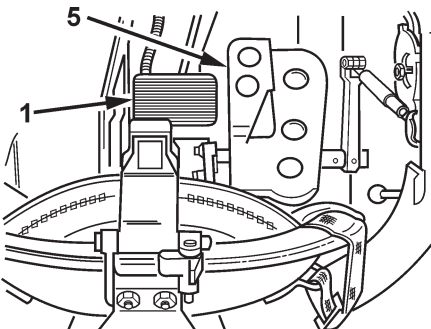


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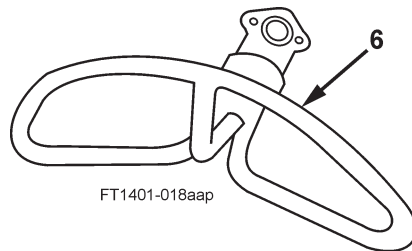


FT0705-026aap

3. Release brake pedal (1) and push accelerator pedal (5) to obtain desired speed. Shift through intermediate ranges into desired speed range (pp. 0012 00-1 through 0012 00-3/4 blank).
4. To turn vehicle, turn steering wheel (6) in desired direction.



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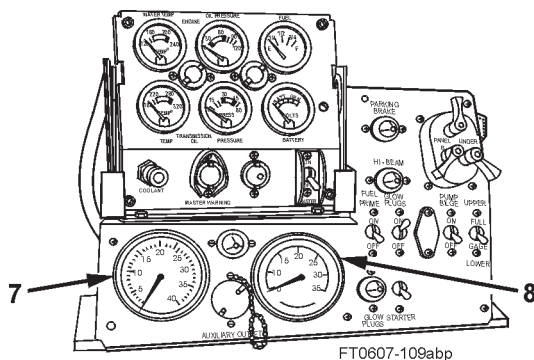
FT1401-018aap

MOVING THE VEHICLE (continued)

CAUTION

When engine speed is less than 1725 rpm, shift to lower range.

5. Frequently check tachometer (7), speedometer (8), and other instrument panel gages. While driving the vehicle, check for unusual engine noises and vibration, and proper operation of steering and brakes.



END OF WORK PACKAGE

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

DRIVING OVER ROUGH, SOFT, OR HILLY TERRAIN

INITIAL SETUP:

Maintenance Level

Operator

WARNING

- **To avoid possible injury and vehicle damage, approach obstacle head-on.**
 - **Warn crewmembers to brace themselves.**
 - **Hatches, doors, and stowed items must be secured before proceeding over obstacle.**
1. Crossing a Ditch, Hole, or Trench. Apply brake and shift to first gear. When vehicle reaches bottom and starts to climb, depress accelerator to attain power needed to climb free of obstacle.
 2. Driving over Barrier (21 inches maximum vertical height). As vehicle approaches barrier, release accelerator, apply brake, and shift to first gear. Apply full power when starting over barrier. Release accelerator pedal upon reaching crest and permit vehicle to settle over it. Balance vehicle forward of the crest to begin descent. When front of tracks touch ground, add power and move on.
 3. Starting Vehicle on an Upgrade. To avoid rolling backward when vehicle is headed uphill, apply power before releasing brake.

CAUTION

- **Do not use engine as a braking source for a long period of time. Transmission overheating will result.**
 - **Using service brakes too long will burn them out. Release and apply brakes occasionally.**
4. Descending Steep Grades. Shift transmission into first gear and apply brake as necessary to slow vehicle.

CAUTION

Making sharp turns in first gear may cause a track to be thrown.

5. Driving in Loose Sand, Dirt, or Rocks. Shift into first gear and make series of short, gradual turns. This action will allow debris to be expelled from track.

END OF WORK PACKAGE

OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

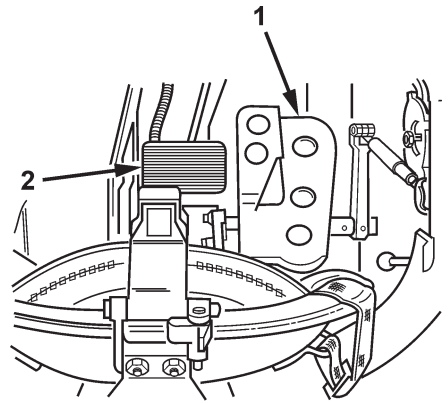
STOPPING THE VEHICLE

INITIAL SETUP:
Maintenance Level
Operator

1. Release accelerator pedal (1) and slowly depress brake pedal (2) until vehicle stops.

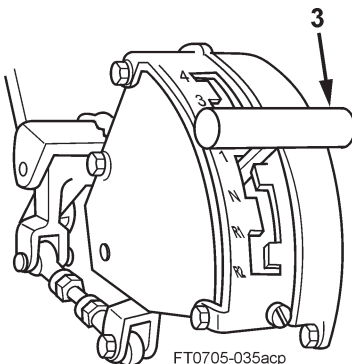
NOTE

Before applying the service brake while on steep slopes (greater than 20 percent), adjust the driver's seat so you can apply maximum leverage to the brake.

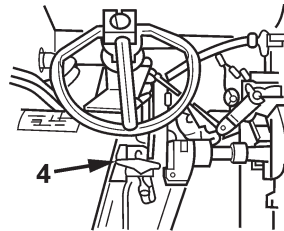


FT0312-030abp

2. With brake pedal (2) depressed, shift transmission selector lever (3) into N (neutral) and pull parking BRAKE LOCK handle (4) out and down. Release brake pedal (2). If stopping on a steep slope, press on brake pedal (2) after pulling BRAKE LOCK handle (4) out and down.



FT0705-035acp

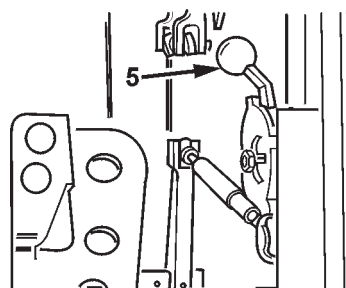


FT1201-002aap

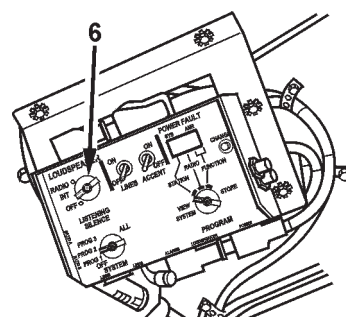
CAUTION

Failure to perform steps 3 and 4 before shutting down engine may result in engine damage.

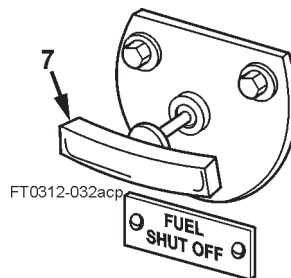
3. Set throttle control lever (5) to run engine at 1000–1200 revolutions per minute on tachometer. Run engine at this speed for three to five minutes or until coolant temperature measures 185°F (85°C) or less.
4. Set throttle control lever (5) forward to return engine to normal idle (550–600 rpm). Idle one to three minutes before stopping engine.
5. Turn communications switch (6) to OFF.
6. Turn off all light switches and accessory switches in driver's compartment and crew/cargo compartment.
7. Pull out FUEL SHUT OFF handle (7) to stop engine.



FT0312-029agp



FT9130-008aap

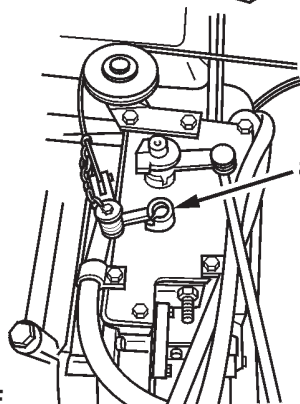


FT0312-032acp

WARNING

If engine does not stop when FUEL SHUT OFF handle is pulled, follow step 8. Failure to comply with this step may result in injury to personnel.

8. If engine does not stop when FUEL SHUT OFF handle (7) is pulled, open engine intake grille and turn lever (8) on engine. Hold lever (8) until engine stops.
9. Turn MASTER switch to OFF.
10. Do after-operation PMCS (WP 0045 00-1 through WP 0045 00-14).



FT0312-031aap

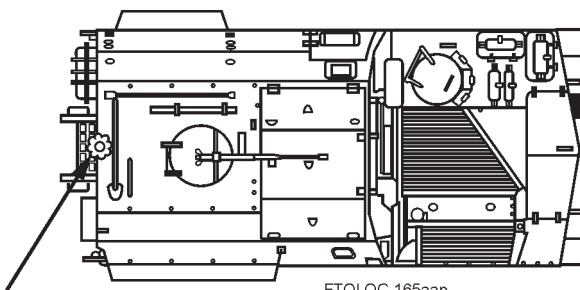
END OF WORK PACKAGE

BACKING WITH ONE ON-BOARD GUIDE

1. Open left and right rear doors (pp. 0023 00-8 through 0023 00-10).
2. Driver and guide will connect CVC helmet cables to control box receptacles and switch on intercommunications equipment. Guide must use control box just inside vehicle rear doorway..
3. Driver and guide will establish intercommunications via communications equipment.

WARNING

- **For the safety of personnel in the area, driver must stop vehicle if communications are interrupted during backing operations.**
 - **To avoid damage to left and right rear doors and deployed rear folding platform, and injury to personnel in the area, on-board guide must always consider rear clearance of opened doors and deployed platform when instructing driver.**
4. From rear doorway, guide will check vehicle path. Guide will verbally instruct driver in backing vehicle.
 5. Driver will back vehicle slowly and according to instructions.
 6. Guide and driver will continue in this manner until backing operations are complete.
 7. After vehicle is properly positioned, turn off intercommunications equipment and remove and stow CVC helmets.



ON-BOARD GUIDE

FTOLOC-165aap

END OF WORK PACKAGE

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

TOWING OPERATIONS

THIS WORK PACKAGE COVERS:

Towing Precautions, Removal, Installation, Towing, and Towing Vehicle to Start Engine

INITIAL SETUP:

Maintenance Level

Operator

Personnel Required

Two

Tools/Test Equipment

Handle, socket wrench (Item 21, WP 0067 00)
Pliers (Item 37, WP 0067 00)
Socket, Socket Wrench (Item 42, WP 0067 00)
Socket, Socket Wrench (Item 44, WP 0067 00)
Socket, Socket Wrench (Item 45, WP 0067 00)

References

TM 9-4910-496-10

NOTE

- The M992A2 is authorized to tow only one vehicle at a time and only when the other vehicle is disabled, or when towing to start engine.
- In an emergency you can tow a vehicle for a short distance (not more than 1/4 mile) without disconnecting universal joints. Put transmission selector lever in N (neutral) before starting towing operation. Do not tow disabled vehicle over 10 miles per hour. Be careful not to accidentally shift into gear.
- The M992A2 is authorized to carry either a 10-foot or a 15-foot tow cable. The 15-foot tow cable is to be used only with M109A6 vehicles.

TOWING PRECAUTIONS

The following precautions should be followed to ensure safety to personnel and to prevent damage to equipment:

- Vehicle engines will be shut off and brakes applied while tow cables are being connected or disconnected.
- There must be an observer to assist driver when rigging vehicle and during towing operations.

Tow Cable, 10-foot

1. Remove two screws, lockwashers, and clamps securing tow cable to hull to remove tow cable from vehicle.
2. Install tow cable on vehicle. Secure with two clamps, screws, and new lockwashers.

Tow Cable, 15-foot**WARNING**

The 15-foot tow cable is very heavy. Two persons are required when removing/installing tow cable from/on stowage mounts.

REMOVAL

1. Open APU front door.
2. Remove screw, washer, and tow cable strap from upper stowage mount.
3. Pull tow cable away from six tow cable supports and set on engine grille.
4. Remove screw, washer, tow cable strap, and tow cable from lower stowage mount.
5. Close APU front door.

INSTALLATION

1. Open APU front door.
2. Place one end of tow cable in lower stowage mount and secure with tow cable strap, washer, and screw.
3. Position tow cable in six tow cable supports.
4. Place other end of tow cable in upper stowage mount and secure with tow cable strap, washer, and screw.
5. Close APU front door.

TOWING**WARNING**

When tow bars or cables are used, a second vehicle is required when descending a grade of 20 degrees or more, or if road conditions require additional power. Do not exceed 10 miles per hour.

CAUTION

- **When universal joints are disconnected, you cannot steer or brake. Use tow bar only.**
 - **Stow universal joints and flanges where they will remain clean and free of dirt. Failure to do so may result in damage to equipment.**
1. Follow steps a through l to disconnect universal joints.

WARNING

- **Never disconnect final drives on a disabled vehicle without first chocking the track and/or hooking up a tow bar to the recovery vehicle.**
- **Never disconnect the final drives on an incline or leave a disabled vehicle on an incline with final drives disconnected. Hook up a tow bar to the disabled vehicle and, using a recovery vehicle, move the disabled vehicle to firm level ground (chock blocks alone may not prevent a vehicle from moving).**

TOWING (continued)

WARNING

When hooking or unhooking tow bar or tow cable from a disabled vehicle, chock tracks of disabled vehicle before hooking or unhooking tow bar or tow cable. If towed vehicle is not chocked it may move, causing injury or death to personnel and/or damage to equipment.

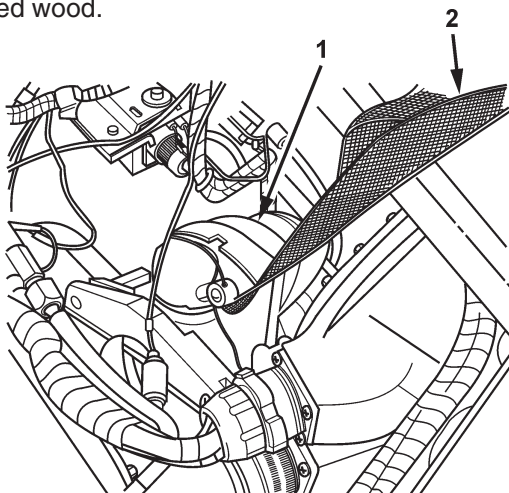
CAUTION

- When removing right-side universal joint, be careful not to damage fiberglass fuel tank.
- When removing universal joints, be sure to use strap to secure universal joint to avoid damaging fire wire.
- When removing left-side universal joint, be sure to disconnect lead 503 to avoid damaging lead.

NOTE

Use chock blocks made of hard wood or other suitable materials. DO NOT use decaying or rotted wood.

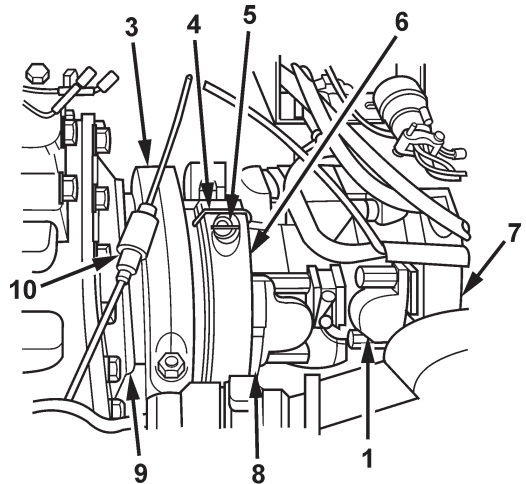
- Place chock blocks between two sets of roadwheels on each track or under the front and rear of both tracks. Open right and left transmission doors.
- Run an equipment tiedown strap (2) through left-side universal joint (1). To prevent universal joint (1) from falling, have an assistant hold strap (2) taut.



FT1801-211aap

TOWING (continued)

- c. Cut lockwire (4) and remove two quick-disconnect screws (5) from each of two coupling sets (6).
- d. Remove two coupling sets (6) from two universal joint adapters (8).
- e. Pry both final drive flanges (3) away from universal joint (1). Move flanges (3) toward final drive housing (9).

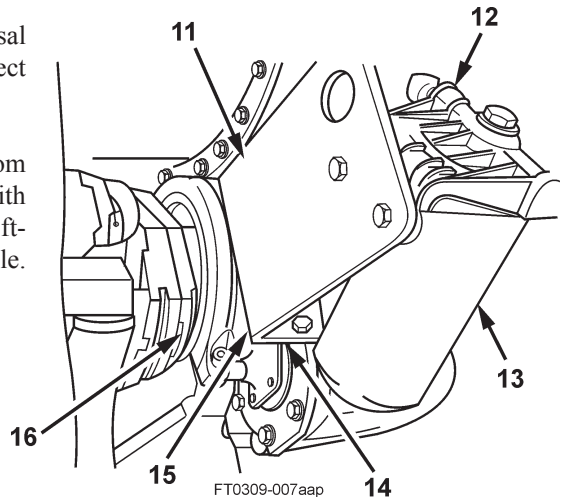


FT1801-212aap

WARNING

Universal joints are heavy. Keep hands out from underneath universal joints when they are disconnected. Failure to do so may result in injury to personnel.

- f. Before removing left-side universal joint (1) from vehicle, disconnect lead 503 (10).
- g. Pry universal joint (1) loose from transmission flange (7) and, with the aid of an assistant, remove left-side universal joint (1) from vehicle.



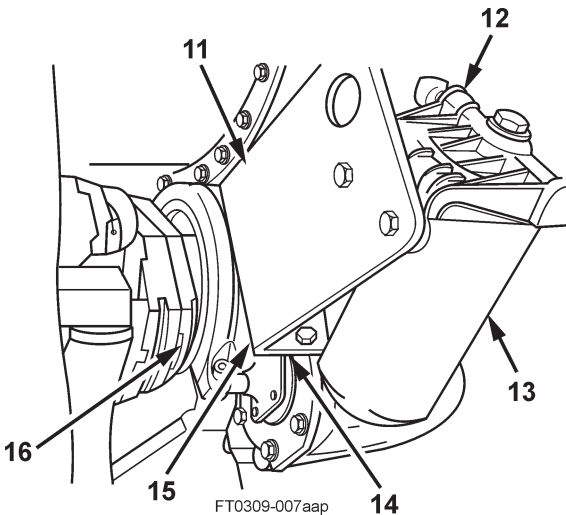
FT0309-007aap

- h. Disconnect fuel-line quick disconnect (12) from fuel filter (13). Remove front bolt (14) and rear bolt (15) from fuel filter bracket (11) (lifting point for powerpack). Leave center bolt in place for pivot.

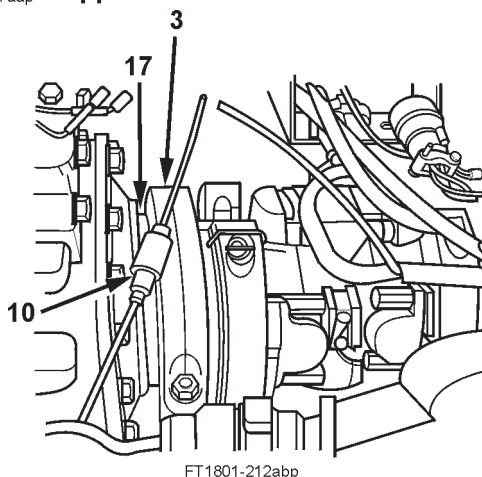
WARNING

Universal joints are heavy. Keep hands out from underneath universal joints when they are disconnected. Failure to do so may result in injury to personnel.

- i. Rotate bracket (11) back far enough to get proper clearance and, with the aid of an assistant, remove right-side universal joint (16) from vehicle.
- j. Remove final drive flange (3) from final drive shaft (17) for both universal joints.



- k. Rotate bracket (11) back into position and install front and rear bolts (14 and 15) on bracket (11).
- l. Connect fuel-line quick disconnect (12) to fuel filter (13) and lead 503 (10).

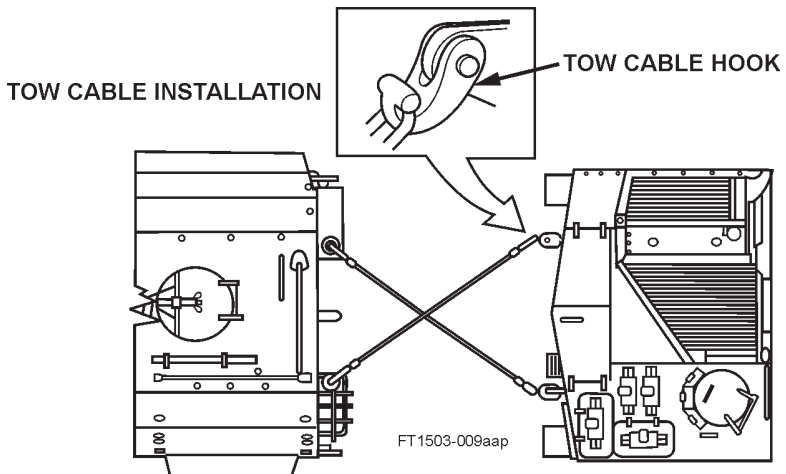
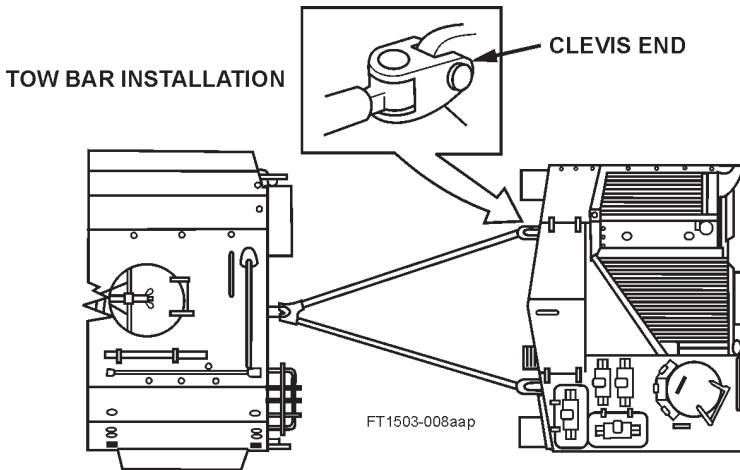


TOWING (continued)

NOTE

**Check fluid level in final drive after installing universal joints.
You can lose fluid with final drive flange off.**

2. Install tow bar or tow cable (refer to TM 9-4910-496-10).



3. Shift transmission in disabled vehicle into N (neutral).

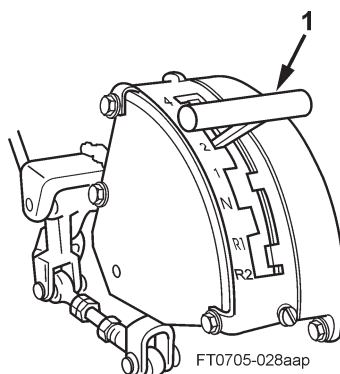
CAUTION

To avoid collision when towing, be sure to steer in a wide arc when turning.

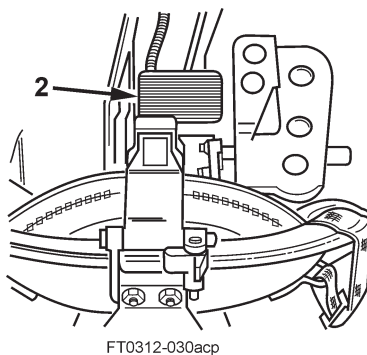
TOWING VEHICLE TO START ENGINE

CAUTION

When an M992A2 is towing to start an M109-family vehicle, M109 cab should be turned 180 degrees to keep tube from striking M992A2.



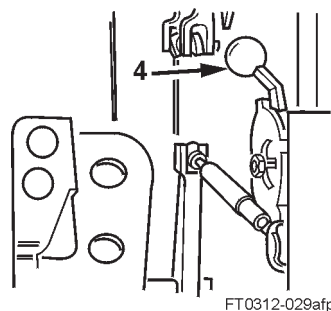
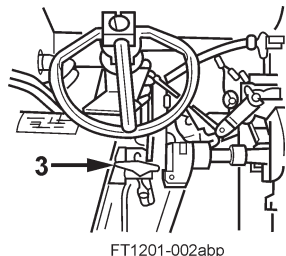
1. Connect tow bar or tow cables (refer to TM 9-4910-496-10).
2. Shift transmission selector lever (1) into second gear.
3. Depress brake pedal (2) and release parking BRAKE LOCK handle (3).



CAUTION

Never depress accelerator pedal on towed vehicle.

4. Tow vehicle in straight line forward. Do not exceed 10 miles per hour.
5. After engine in M109-family vehicle starts, shift to N (neutral) and adjust throttle control lever (4) to run engine at a fast idle (approximately 1000 rpm).
6. Once vehicles come to a stop, disconnect tow bar or tow cables (refer to TM 9-4910-496-10).



END OF WORK PACKAGE

OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

OPERATING THE BILGE PUMP

INITIAL SETUP:

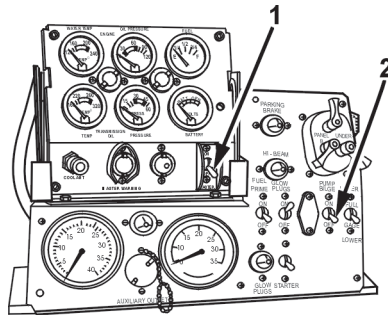
Maintenance Level

Operator

CAUTION

Do not operate bilge pump for more than 1 minute if dry, or more than 15 minutes if wet, without starting engine.

To drain water out of engine compartment, turn MASTER switch (1) and BILGE PUMP switch (2) to ON.



FT0607-089adp

END OF WORK PACKAGE

OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

COMMANDER'S SEAT

THIS WORK PACKAGE COVERS:

Deployment, Adjustment, and Stowing

INITIAL SETUP:

Maintenance Level

Operator

Personnel Required

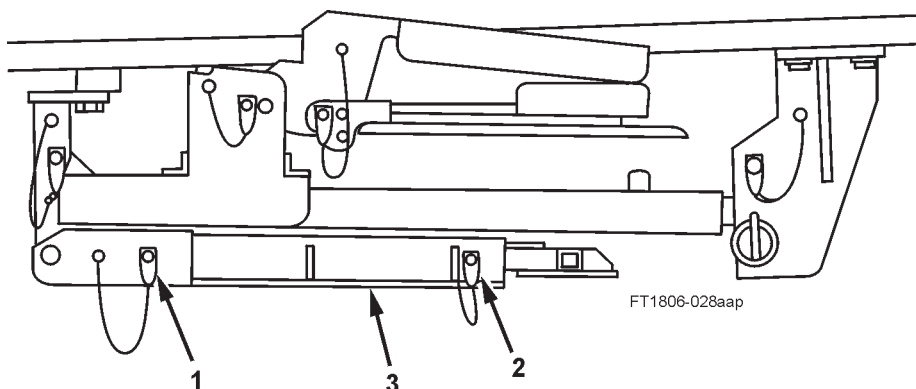
Two

DEPLOYMENT

1. Make sure quick-release pin (2) is installed in footrest (3).

WARNING

- Always support footrest before you remove quick-release pin. Failure to do this will allow footrest to swing freely, which could cause serious injury.
- Before deploying footrest, make sure quick-release pin is securely positioned through holes in footrest tubes. If pin is not properly inserted, footrest will telescope when lowered and may cause injury.



2. Support footrest (3) and remove quick-release pin (1) from footrest (3). Slowly lower footrest (3) and allow it to hang freely.

DEPLOYMENT (continued)

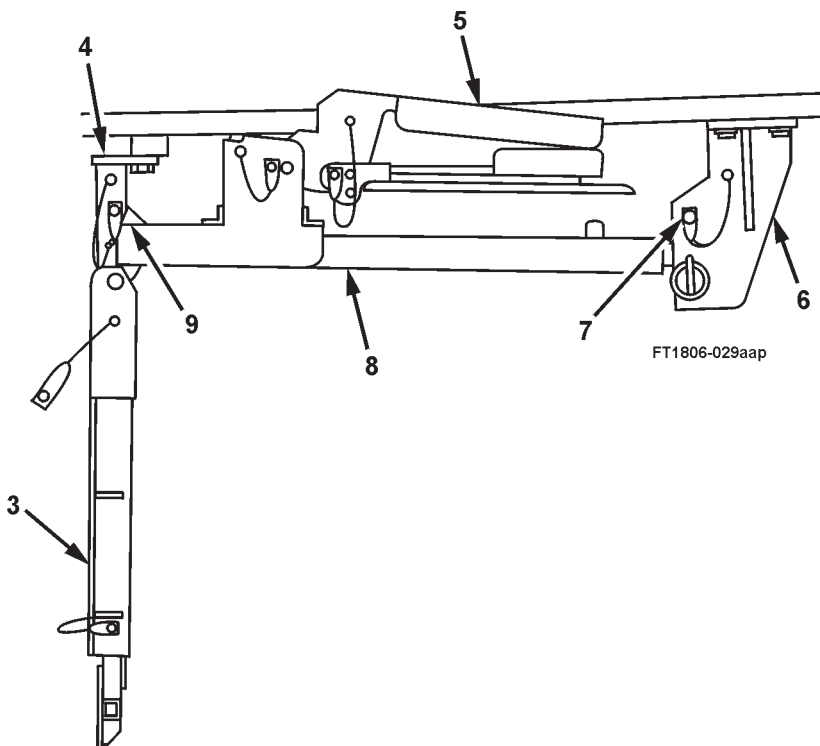
WARNING

Commander's seat assembly is very heavy. It must be adequately supported before quick-release pin is removed. Failure to do so may result in serious injury. Deployment of commander's seat shall always be a two-person operation.

NOTE

An assistant is needed to help support seat assembly and prevent footrest from swinging freely.

3. While supporting seat post (8) and footrest (3), remove quick-release pin (9) from support bracket (4) and then remove pin (7) from bracket (6). Slowly lower seat assembly (5). Reinsert pin (7) into seat-stowage hole and reinsert quick-release pin (9) into support bracket (4).



COMMANDER'S SEAT (continued)

001900

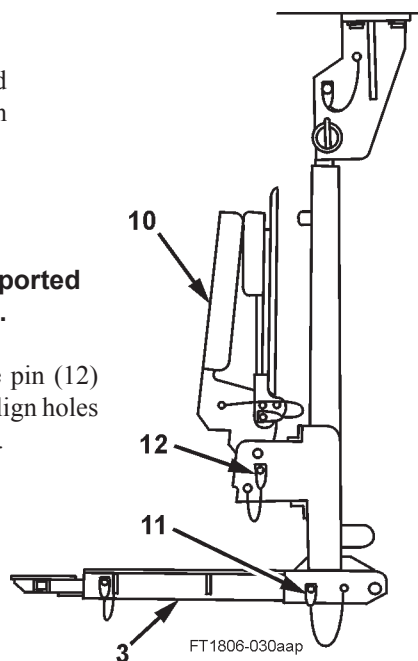
DEPLOYMENT (continued)

- Pivot footrest (3) forward and up. Align forward holes and insert quick-release pin (11) in footrest (3).

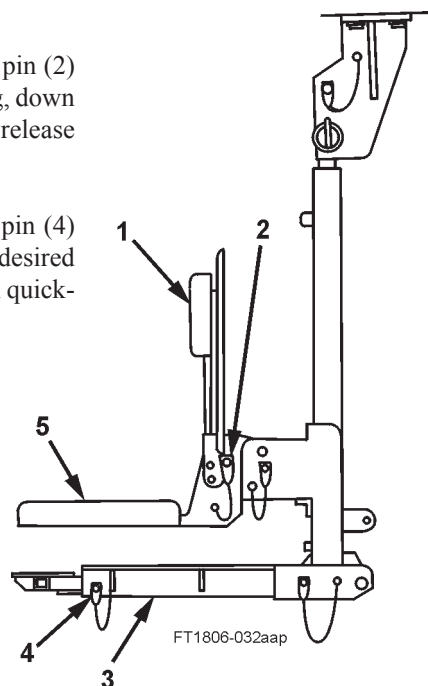
WARNING

To avoid injury, seat must be supported before removing quick-release pin.

- Support seat (10) and remove quick-release pin (12) from seat (10). Pivot seat (10) downward. Align holes and insert quick-release pin (12) in seat (10).

**ADJUSTMENT**

- Backrest Adjustment.** Remove quick-release pin (2) from seat (5). Rotate backrest (1) up for sitting, down for standing. Align pinholes and insert quick-release pin (2) in backrest (1).
- Footrest Adjustment.** Remove quick-release pin (4) from footrest (3). Slide footrest (3) in or out to desired position. Align holes in footrest (3) and install quick-release pin (4) in footrest (3).



ADJUSTMENT (continued)

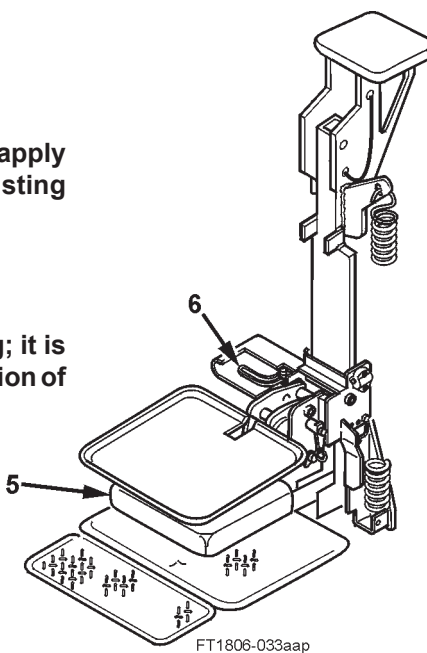
WARNING

To avoid injury, sit on seat to apply downward pressure before adjusting height-adjusting handle.

CAUTION

Do not use handle guard for lifting; it is meant to prevent accidental actuation of the handle.

3. Seat Height Adjustment. Apply downward pressure to seat (5) and pull adjusting handle (6) forward. Increase or decrease pressure on handle (6) to lower or raise seat (5). When desired height is achieved, release handle (6) and slowly release pressure until seat (5) locks into position.

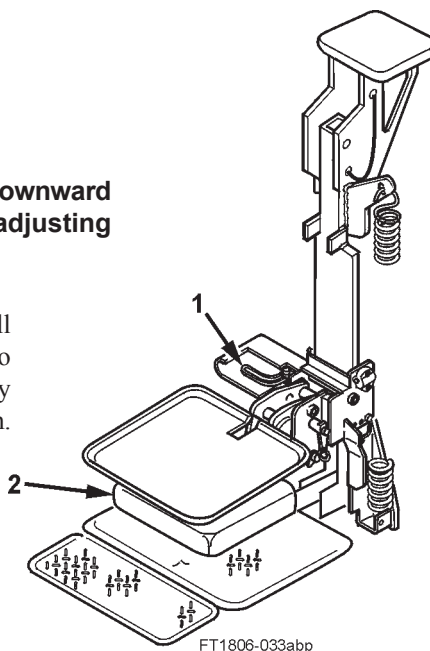


STOWING

WARNING

To avoid injury, sit on seat to apply downward pressure before adjusting height-adjusting handle.

1. Apply downward pressure to seat (2) and pull adjusting handle (1) forward. Press seat (2) to its lowest point. Release handle (1) and slowly release pressure until seat (2) locks into position.



COMMANDER'S SEAT (continued)

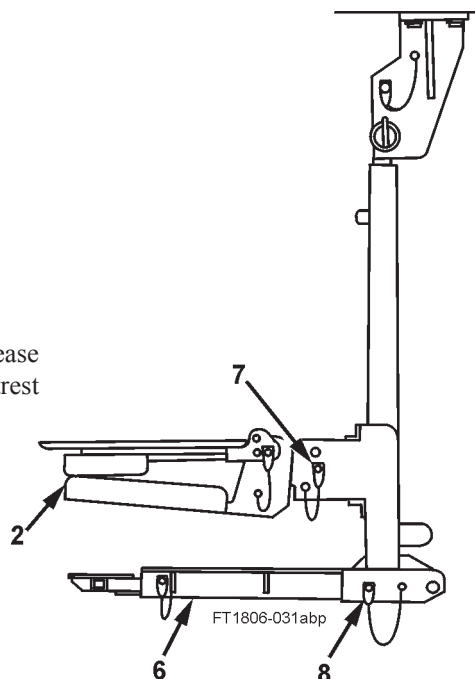
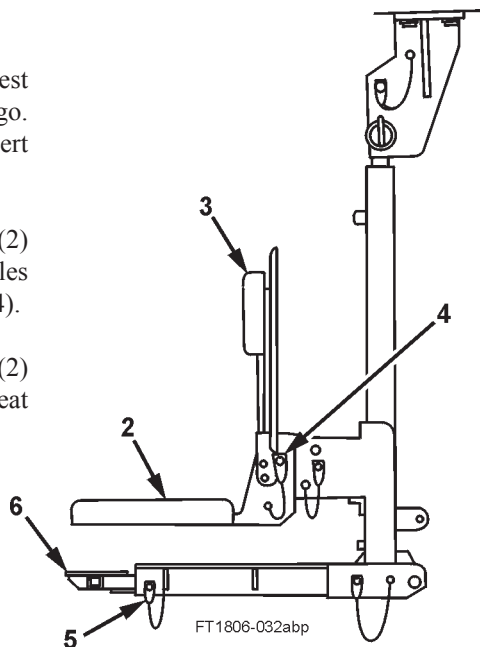
001900

STOWING (continued)

2. Remove quick-release pin (5) from footrest (6). Push footrest (6) in as far as it will go. Align pinholes in footrest (6) and insert quick-release pin (5).
3. Remove quick-release pin (4) from seat (2) and pivot backrest (3) down. Align pinholes in seat (2) and insert quick-release pin (4).
4. Remove quick-release pin (7) from seat (2) and pivot seat (2) up. Align pinholes in seat (2) and install quick-release pin (7).

WARNING

- **Before lowering footrest, make sure quick-release pin is securely inserted through holes in footrest tubes. If pin is not properly inserted, footrest will telescope when lowered and may cause injury.**
 - **Always support footrest before you remove quick-release pin. Failure to do this will allow footrest to swing freely, which could cause serious injury.**
5. Support footrest (6) and remove quick-release pin (8) from footrest (6). Slowly lower footrest (6) and allow it to hang freely.



STOWING (continued)

WARNING

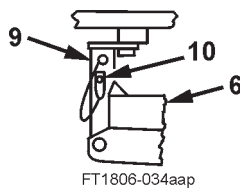
To avoid injury, use two people to lift seat assembly for stowage.

CAUTION

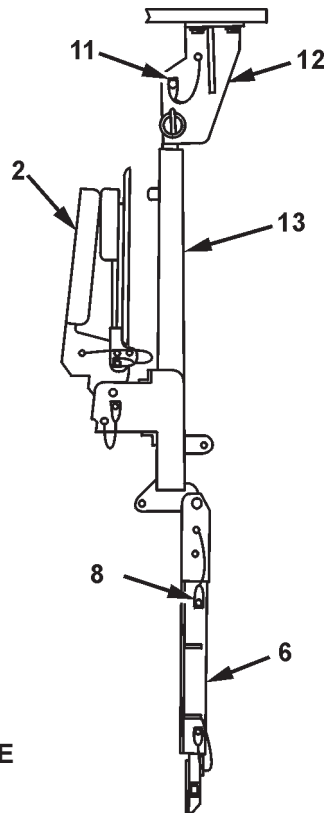
If commander's cupola periscope is to remain installed, you must rotate cupola so that periscope is 90 degrees left of forward before you raise seat assembly. Failure to do this may result in destruction of periscope. If periscope is removed, cupola may remain forward when seat is stowed.

NOTE

Have an assistant help lift and support seat and prevent footrest from swinging.



6. Remove two quick-release pins (11 and 10) from bracket (12) and support bracket (9). Pivot seat (2) forward and upward until holes in seat post (13) align, and insert quick-release pin (10) in support bracket (9). Install quick-release pin (11) in bracket (12).
7. Pivot footrest (6) toward rear and up. Align pinholes in footrest (6) and install quick-release pin (8) in footrest (6).



END OF WORK PACKAGE

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

ROTATING COMMANDER'S CUPOLA

INITIAL SETUP:

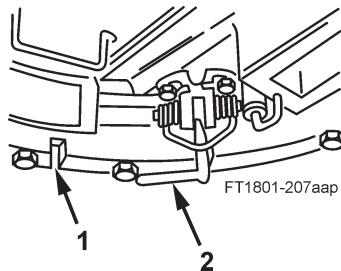
Maintenance Level

Operator

CAUTION

Never attempt to rotate commander's cupola while commander's seat is stowed. Such an attempt will damage seat-height adjusting handle.

1. Deploy commander's seat (WP 0019 00-1).
2. Pull out on latch handle (2). Rotate cupola to desired position.
3. Release latch handle (2) into one of 12 notches (1) around cupola circumference.



END OF WORK PACKAGE

OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

CREW SEATS

THIS WORK PACKAGE COVERS:

Operation of Left Front Seat and Right Front Double Seat

INITIAL SETUP:

Maintenance Level

Operator

Personnel Required

Two

WARNING

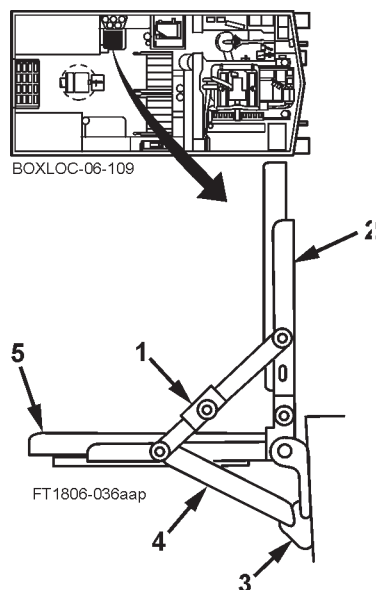
Seats are heavy. Support seats before pulling quick-release pins. Hinged seats, backrests, and support brackets may swing down, causing personal injury.

NOTE

To allow for maximum work space, stow all seats prior to working in vehicle. Stow seats in reverse order of deployment.

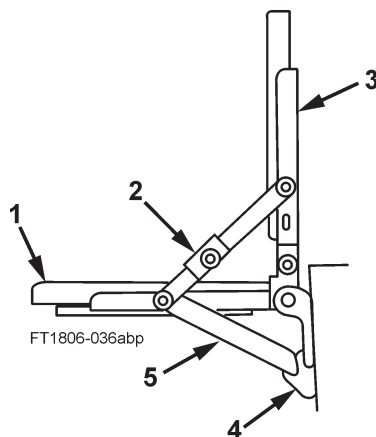
LEFT FRONT SEAT

1. Grasp seat backrest (2) and seat (5) and rotate seat backrest (2) and seat (5) up and back. Pivot bracket (4) into slot (3).
2. Raise seat backrest (2) until support joint (1) is locked.



RIGHT FRONT DOUBLE SEAT

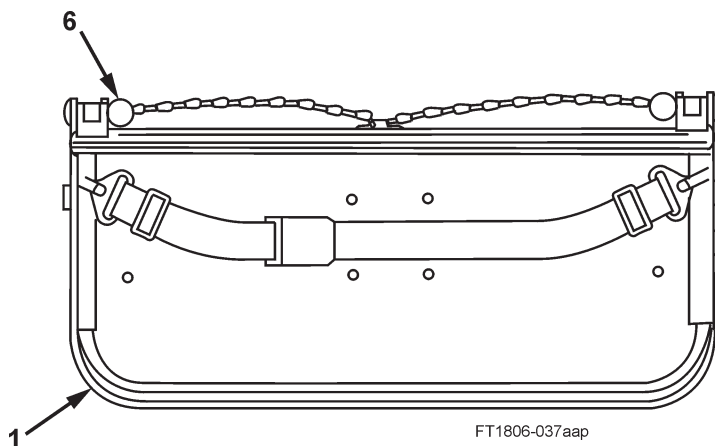
1. Pull up on seat backrest (3). As seat backrest (3) passes horizontal, seat (1) will pivot upward.
2. As seat backrest (3) and seat (1) reach full deployment, pivot bracket (5) into slots (4).
3. Before releasing seat backrest (3), make sure support joint (2) is locked.



WARNING

Seat is heavy and difficult to maneuver alone. To avoid injury, get an assistant to help you before proceeding.

4. To remove seat, remove two quick-release pins (6) securing seat (1) to right-hand sponson.



END OF WORK PACKAGE

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

OPERATING THE AUXILIARY POWER UNIT (APU)

THIS WORK PACKAGE COVERS:

Starting, Shutting Down, Electrical Support of Another Vehicle, Charging Low Batteries with the APU, and Charging Dead Batteries with the APU

INITIAL SETUP:

Maintenance Level

Operator

References

TM 9-6140-200-14

STARTING

WARNING

High-intensity noise, hearing protection required. Hearing can be **PERMANENTLY DAMAGED** if a person is exposed to constant high noise levels of 85 decibels or greater.

WARNING

During operation of main engine or auxiliary power unit, decibel levels exceed safe levels for human hearing. Wear approved hearing protection devices when working in high noise level areas. Failure to do so could result in injury to personnel.

WARNING

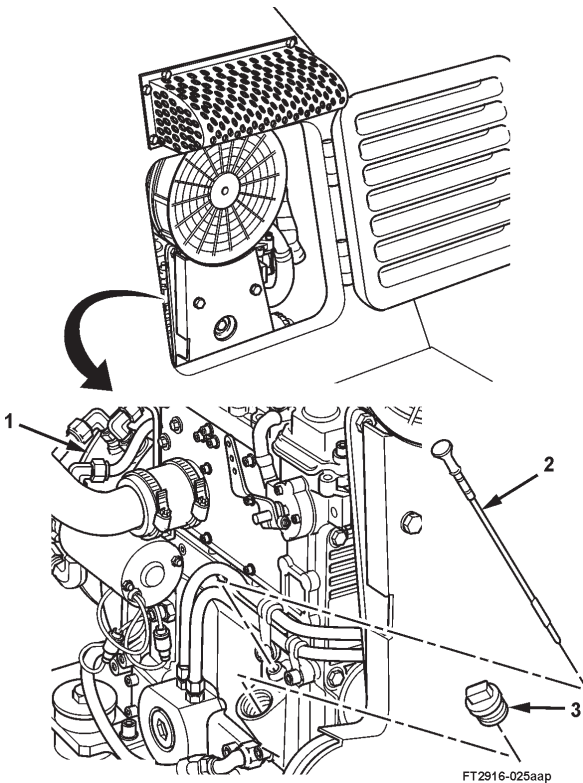
Personnel within nine yards (8 meters) of the vehicle must wear approved single hearing protection when the main engine or auxiliary power unit is running. Failure to do so could result in injury to personnel.

CAUTION

To avoid damaging radio components, ensure all radio switches are turned **OFF** before starting the APU.

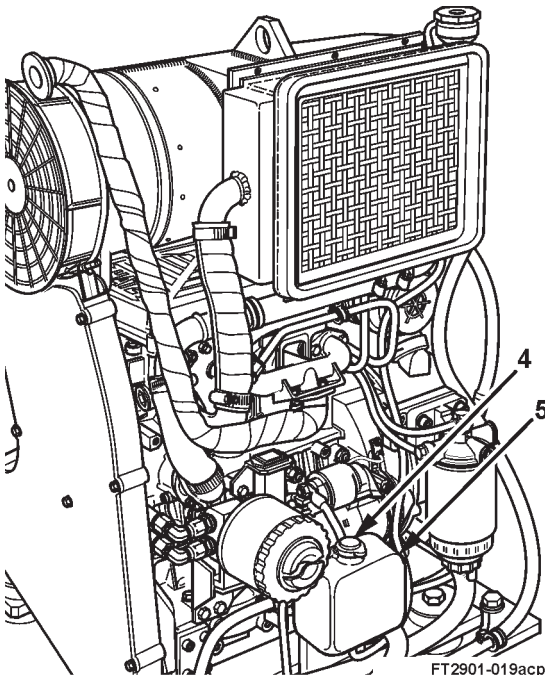
STARTING (continued)

1. Open the APU front compartment door and check the APU engine oil level.
2. Remove the dipstick (2) from the APU engine (1) and check oil level is at the MAX mark. To add oil, remove oil filler cap (3) from APU engine (1). Fill APU engine (1) crankcase with lubricating oil (PARA) MIL-PRF-2104, 4.3 qts. (4.1 L). Check for signs of fluid leakage.



STARTING (continued)

3. Install the oil filler cap (3) on the APU engine (1). Remove the dipstick (2) from the APU engine (1) and check oil level is up to the MAX mark on the dipstick.
4. Open the APU side compartment door and check the APU cooling system level at the over-flow reservoir (5).
5. If the coolant level in the over-flow reservoir (5) is lower than 1/3 full, remove coolant filler cap (4) and fill with antifreeze, MIL-PRF-2106, to 2/3 full in tank. Check APU cooling system for any signs of leaks. If leaks are present, notify Unit maintenance.
6. Install the coolant filler cap (4) on the over-flow reservoir (5).
7. Place the vehicle MASTER switch in the ON position.

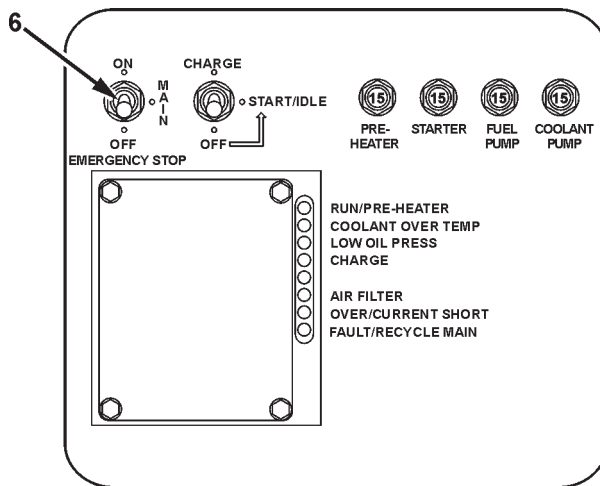


STARTING (continued)

NOTE

Ensure the CHARGE/START-IDLE/OFF switch is in the OFF position.

8. Place the APU control box MAIN POWER switch (6) in the ON position. All control box LEDs should light for a few seconds indicating APU control box MAIN POWER switch (6) is in the ON position. All control box LEDs should light for a few seconds indicating the APU control box performing a self-diagnostic mode. If LEDs do not light, notify Unit maintenance.

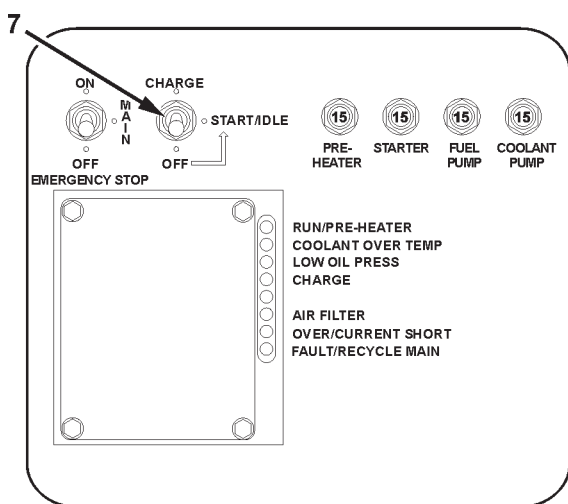


NOTE

The APU control box has an automated start sequence that turns on heater element for a set period of time depending on the electrical load and ambient temperature. The control box then engages the starter for up to 20 seconds or until a tachometer sensor signals the APU control box that the APU engine has started. If engine has not started within the 20 second period, the control box has a lockout feature that prevents engine cranking for approximately one minute to prevent damage to the starter. If the engine fails to start after three attempts, the APU control box will default to a main switch recycle mode indicated by a LED lighting at the FAULT/RECYCLE MAIN position.

STARTING (continued)

9. Place the CHARGE/START-IDLE/OFF switch (momentary ON switch) (7) in the START-IDLE position.
10. After start-up, allow the APU engine to settle down to a smooth idle for a minimum of one minute.



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11. Check APU engine for any fluid leaks. If leaks are present, stop the APU engine and repair or notify Unit maintenance.

CAUTION

If the APU control box indicates a low oil pressure or engine overheat fault after start or during APU operation, stop the APU engine immediately. Place the MAIN POWER switch in the OFF position to stop the APU engine. Notify Unit maintenance if these problems occur.

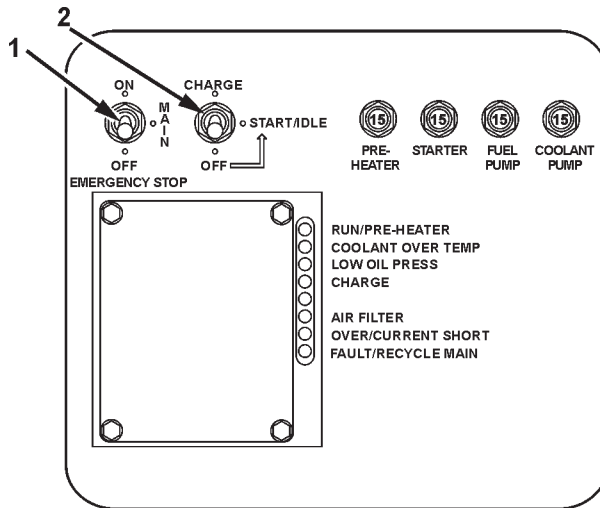
When operating the APU at high altitudes and/or high temperatures, continuous heavy-load demands by the electrical system may cause the APU engine to overheat. In these extreme conditions, place the APU control box CHARGE/START-IDLE/OFF switch in the IDLE position and continue to run the APU without load for several minutes before operating generator again.

STARTING (continued)

12. While operating the APU, check the APU control box for low oil pressure, engine over heat, and air restriction malfunctions. Perform troubleshooting task or Notify Unit maintenance if faults occur.

SHUTTING DOWN

1. Place the CHARGE/START-IDLE/OFF switch (2) in the START-IDLE position and allow the engine to idle for one to two minutes. Then place the CHARGE/START-IDLE/OFF switch (2) in the OFF position.
2. Place the APU control box MAIN POWER switch (1) to the OFF position.
3. Place the vehicle MASTER switch to the OFF position.

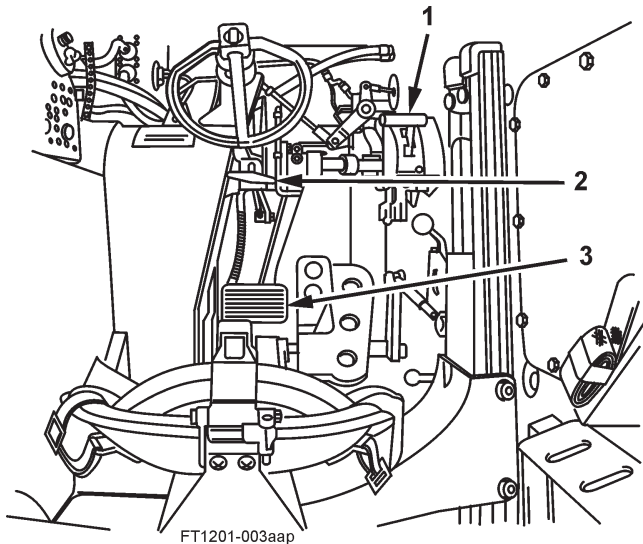


FT0608-007aep

ELECTRICAL SUPPORT OF ANOTHER VEHICLE

Under normal conditions, the APU generator can supply enough electrical power to the vehicle's electrical system and that of another vehicle that possesses a compatible electrical system. When your vehicle's electrical system operates under load, the generator may occasionally switch off. This is only a temporary situation, and the generator will automatically switch on when electrical power decreases.

1. Park your vehicle close enough to the supported vehicle so the slave cable can be interconnected at the slave receptacle connectors of both vehicles.
2. With the brake pedal (3) depressed, place the transmission shift selector lever (1) in N (neutral) and set parking BRAKE LOCK handle (2).

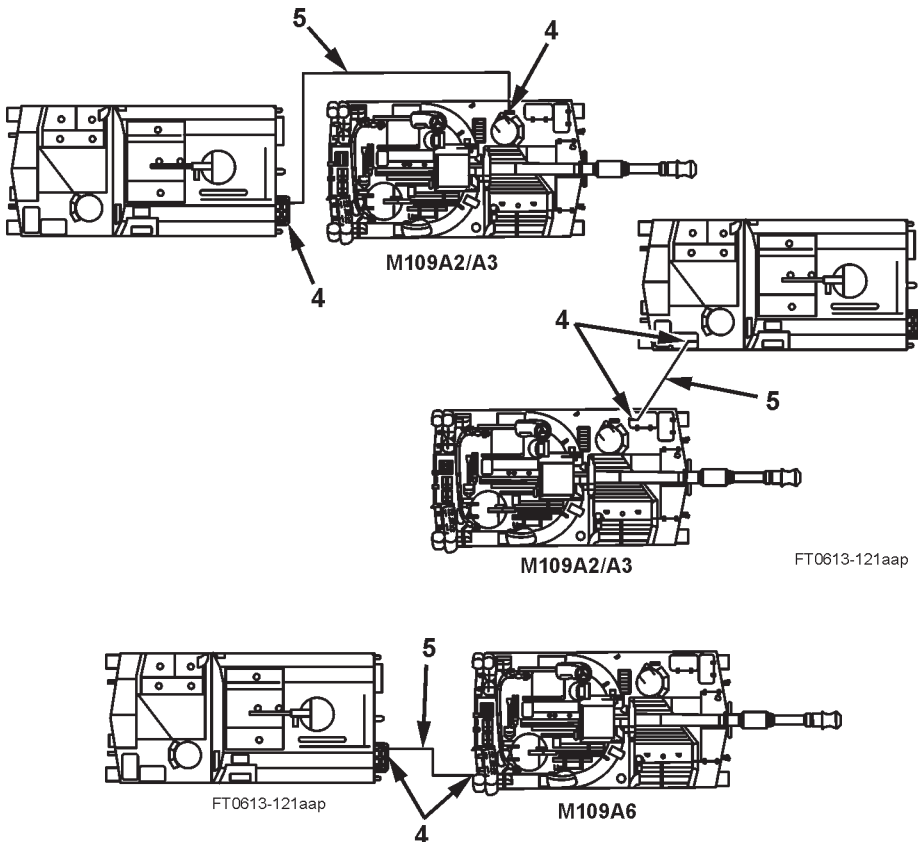


ELECTRICAL SUPPORT OF ANOTHER VEHICLE (continued)

WARNING

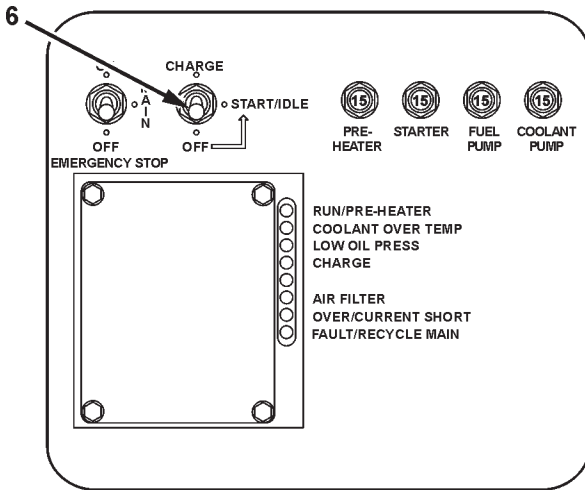
Turn **MASTER** switch and all other electrical switches in both vehicles to **OFF** to avoid personal injury or vehicle damage.

3. Shut down main engine in both vehicles (p. 0015 00-1). Turn MASTER switches to OFF in both vehicles.
4. Attach slave cable (5) to slave receptacle connectors (4) on both vehicles. Use adapter (p. 0067 00-4, Item 1), if necessary.



ELECTRICAL SUPPORT OF ANOTHER VEHICLE (continued)

5. Turn your vehicle's MASTER switch to ON and start the APU (p. 0022 00-1).
6. Allow the APU to warm up for a minimum of three minutes, then place the CHARGE/START-IDLE/OFF switch (6) to CHARGE.



FT0608-007ahp

7. Turn on MASTER switch in supported vehicle to make power available to it.

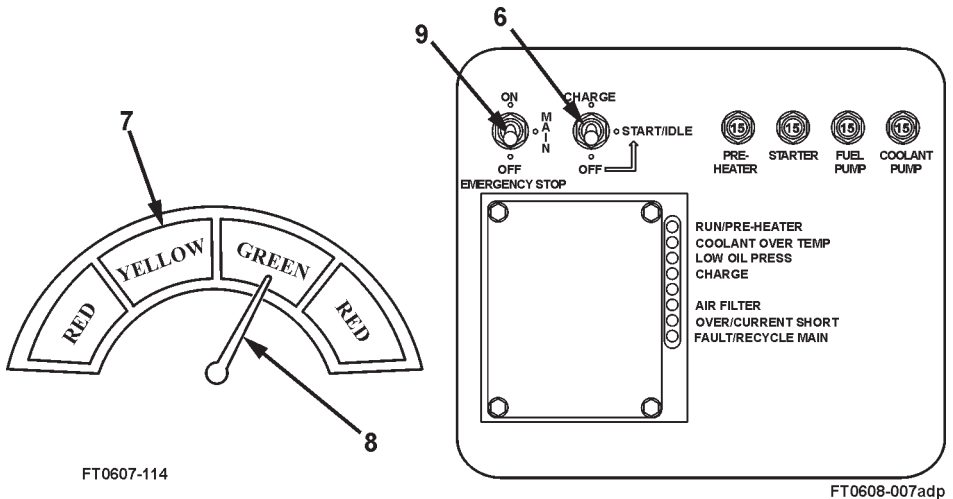
NOTE

Check BATTERY gage in each vehicle at least once per hour.

ELECTRICAL SUPPORT OF ANOTHER VEHICLE (continued)

8. If charge indicator needle (8) drops below halfway in yellow range (7) in either vehicle, place the CHARGE/START-IDLE/OFF switch (6) to OFF and start both main engines. While trying to start disabled vehicle's main engine, do not rev functional vehicle's main engine. Allow engines to run until both charge indicator needles are in normal range. If needles indicate low charge, continue to run the APU until needles are halfway in yellow range, then repeat this step.

9. To stop this operation, turn CHARGE/START-IDLE/OFF switch (6) to START-IDLE, allow the APU engine to idle for one to two minutes, then place the MAIN POWER switch (9) to OFF.



WARNING

To avoid injury, turn MASTER switches to OFF in both vehicles before disconnecting slave cable.

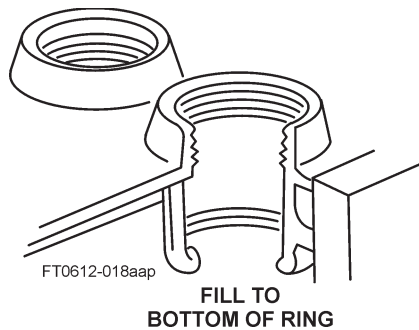
10. Turn MASTER switch to OFF in both vehicles.

11. Disconnect and stow slave cable.

CHARGING LOW BATTERIES WITH THE APU**NOTE**

This procedure applies only to vehicles with low-charge batteries. If no gages or lights function on a vehicle when its MASTER switch is on, batteries are dead. To charge dead batteries, refer to Charging Dead Batteries with the APU (p. 0022 00-16).

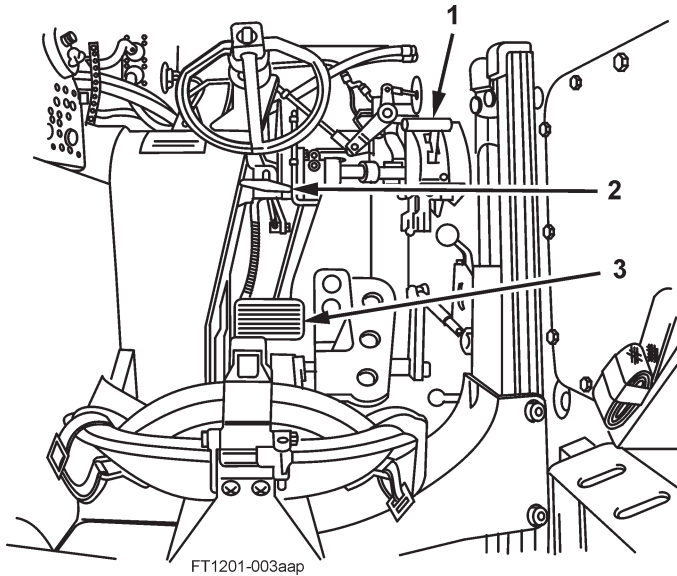
1. Before trying to charge batteries, do the following:
 - a. Check batteries for broken cases or cables, severe corrosion, and other damage. Notify Unit maintenance if batteries are damaged.
 - b. Check electrolyte level (refer to TM 9-6140-200-14). Add distilled water as necessary.



2. Park your vehicle close enough to supported vehicle so that slave cable can be interconnected at slave receptacles of both vehicles.

CHARGING LOW BATTERIES WITH THE APU (continued)

3. With brake pedal (3) depressed, place shift lever (1) in N (neutral) and set parking BRAKE LOCK handle (2).

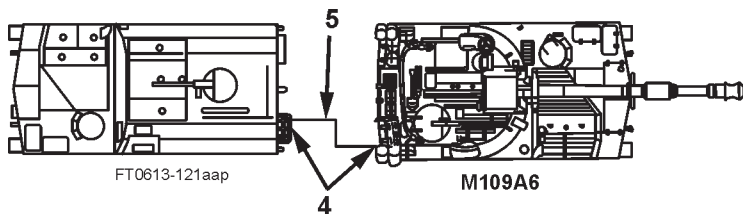
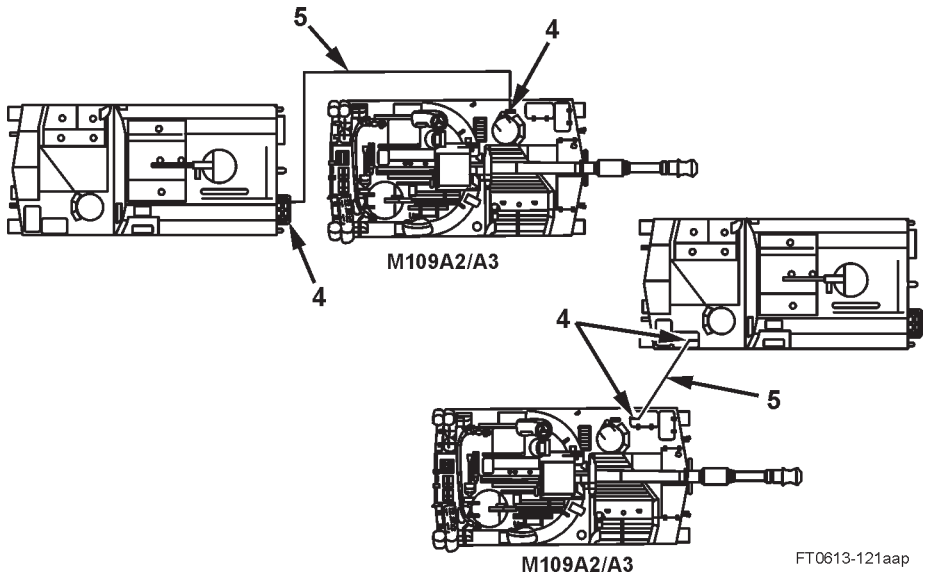
**WARNING**

To avoid personal injury and vehicle damage, turn off MASTER switch and all other electrical switches in both vehicles.

4. Shut down vehicle main engine (p. 0015 00-1). Turn MASTER switch to OFF in both vehicles.

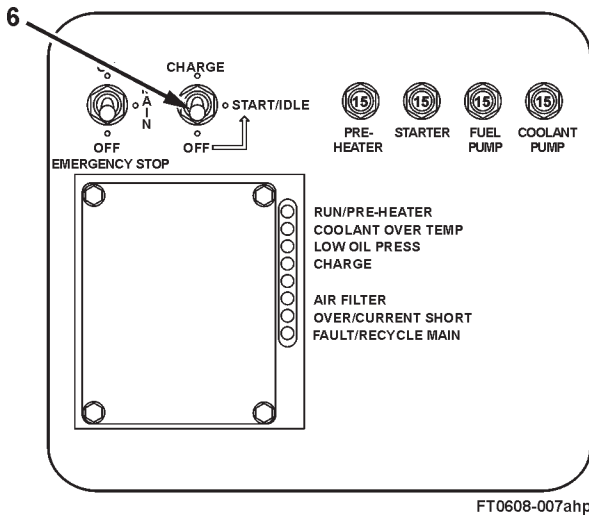
CHARGING LOW BATTERIES WITH THE APU (continued)

5. Attach slave cable (5) to slave receptacle (4) on both vehicles.
6. Turn your vehicle's MASTER switch to ON and start the APU (p. 0022 00-1).



CHARGING LOW BATTERIES WITH THE APU (continued)

7. Allow the APU to warm up for three minutes, then turn CHARGE/START-IDLE/OFF switch (6) to CHARGE.
8. Turn MASTER switch to ON in supported vehicle to charge batteries.



CAUTION

Starting your own vehicle or slave starting another vehicle with APU GEN switch set to ON while the APU is running can cause damage to APU starter/generator. When starting your vehicle or slave starting another vehicle, make sure APU GEN switch is set to OFF. Slave starting another vehicle with the functioning vehicle's main engine on and being revved can cause damage to its charging system. To prevent this, have main engine at idle (600 rpm) or turned off.

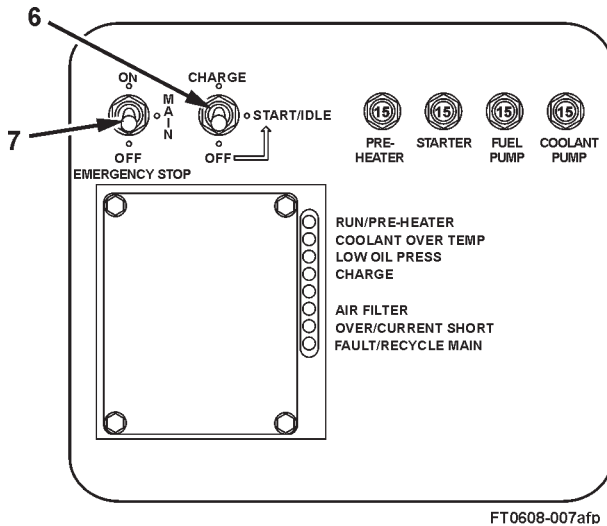
NOTE

You may start your vehicle's main engine to increase power generation. Make sure the CHARGE/START-IDLE/OFF switch is set to OFF before you start main engine. Once main engine is started, reset CHARGE/START-IDLE/OFF switch to CHARGE.

9. Continue charging batteries until charge indicator in supported vehicle reads well into normal range.

CHARGING LOW BATTERIES WITH THE APU (continued)

- Place the CHARGE/START-IDLE/OFF switch (6) to START-IDLE, and allow the APU engine to idle for one to two minutes, then place the MAIN POWER switch (7) to OFF to shut down the APU.



WARNING

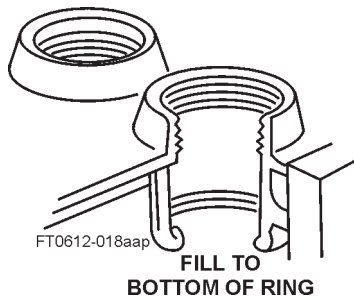
To avoid injury, turn MASTER switches in both vehicles to OFF before disconnecting slave cable.

- Turn MASTER switch to OFF in each vehicle.
- Disconnect and stow slave cable.

CHARGING DEAD BATTERIES WITH THE APU**NOTE**

This procedure applies only to vehicles with dead batteries. If any lights or gages function when a vehicle's MASTER switch is on, batteries are low, not dead. To charge low batteries, see page 0022 00-11.

1. Before trying to charge batteries, do the following:
 - a. Check batteries for broken cases or cables, severe corrosion, and other damage. If batteries are damaged, notify Unit maintenance.
 - b. Check electrolyte level (refer to TM 9-6140-200-14). Add distilled water as necessary.

**WARNING**

Make sure that vehicles do not touch during this operation. Shorting through vehicles could cause serious injury to personnel and/or equipment damage.

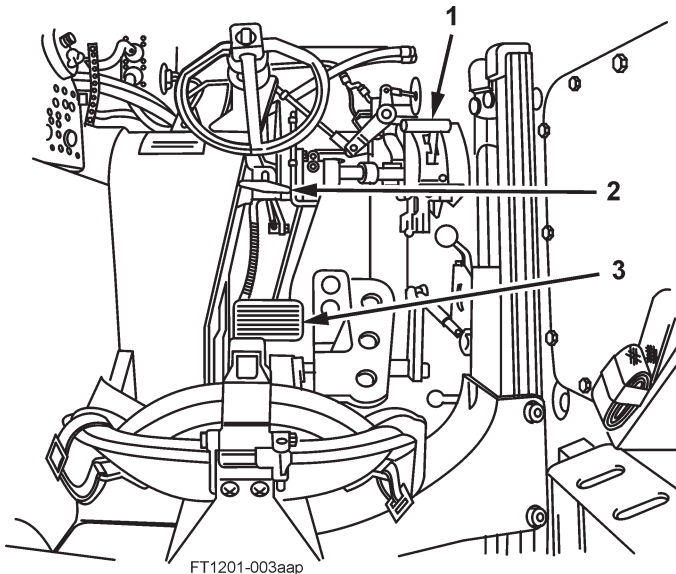
2. Park your vehicle close enough to supported vehicle so that slave cable can be interconnected at slave receptacle of each vehicle.

CHARGING DEAD BATTERIES WITH THE APU (continued)

NOTE

Before applying the service brake while on steep slopes (greater than 20 percent), adjust the driver's seat so you can apply maximum leverage to the brake.

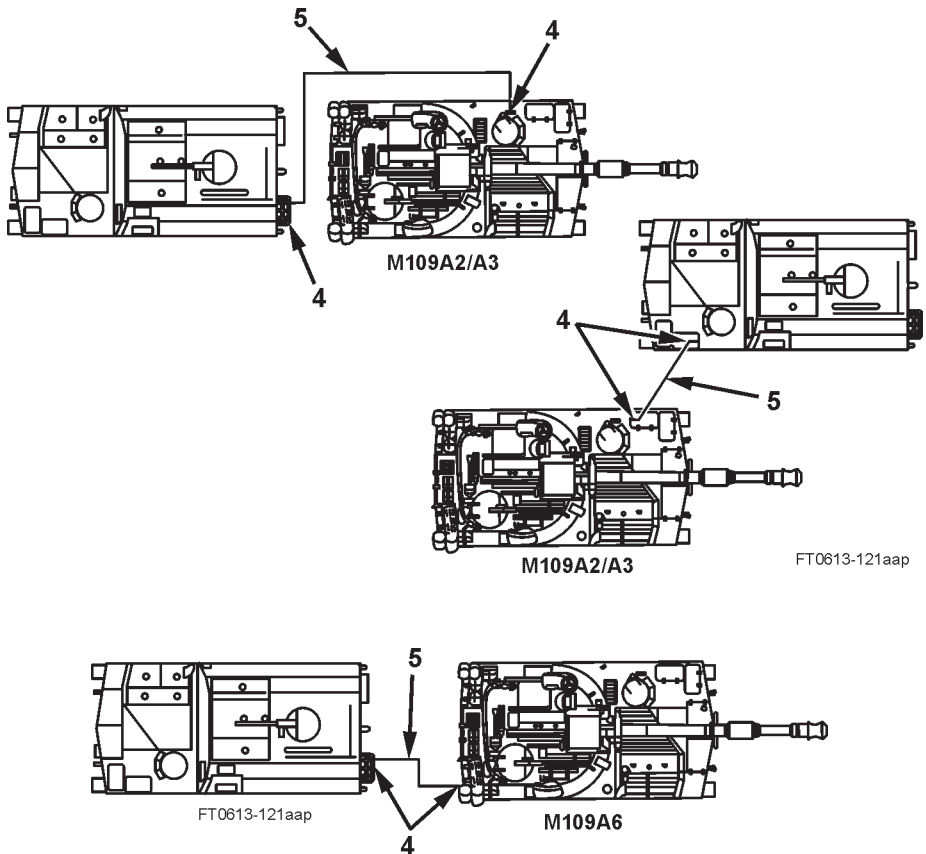
3. With brake pedal (3) depressed, place transmission selector lever (1) in N (neutral) and set parking BRAKE LOCK handle (2). If stopping on a steep slope, apply brake pedal (3) again after setting parking BRAKE LOCK handle.

**WARNING**

To avoid personal injury and vehicle damage, turn off MASTER switch and all other electrical switches in both vehicles.

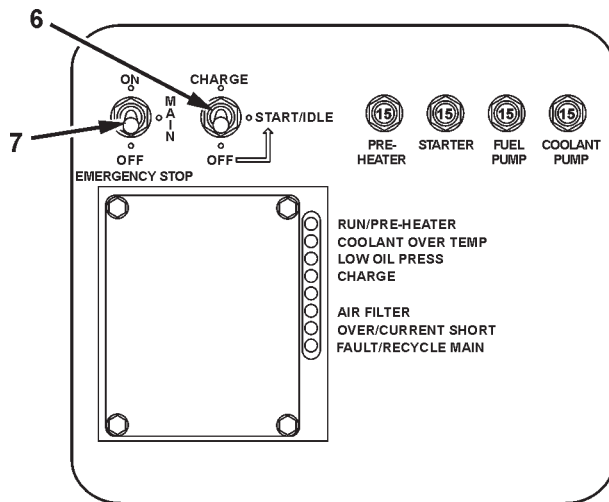
CHARGING DEAD BATTERIES WITH THE APU (continued)

4. Shut down vehicle main engine (p. 0015 00-1). Turn MASTER switch to OFF in both vehicles.
5. Attach slave cable (5) to slave receptacle connector (4) on both vehicles.



CHARGING DEAD BATTERIES WITH THE APU (continued)

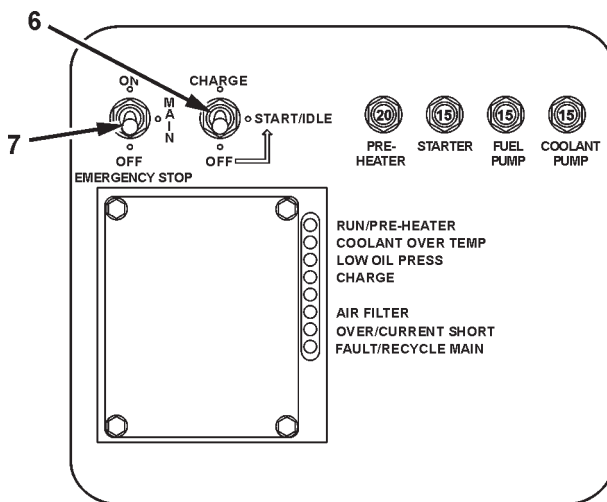
6. Turn your vehicle's MASTER switch to ON and start the APU (p. 0022 00-1).
7. Allow the APU to warm up for a minimum of three minutes, then turn CHARGE/START-IDLE/OFF switch (6) to CHARGE.
8. Turn MASTER switch in supported vehicle to ON.
9. After five minutes of charging, turn CHARGE/START-IDLE/OFF switch (6) to START-IDLE and allow the APU engine to idle for one to two minutes.
10. Place the MAIN POWER switch (7) to OFF position.
11. Turn your vehicle MASTER switch to OFF.
12. If gages or lights do not function in supported vehicle, return to step 6. If an additional five minutes of charging does not charge battery sufficiently for gage and light functioning, notify Unit maintenance.



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CHARGING DEAD BATTERIES WITH THE APU (continued)

13. If batteries in supported vehicle activate gages or lights unaided by the APU, charge battery as follows:
 - a. Turn MASTER switch to ON in your vehicle.
 - b. Start the APU (p. 0022 00-1).
 - c. Place the CHARGE/START-IDLE/OFF switch (6) to CHARGE..
 - d. Turn MASTER switch to ON in supported vehicle. Batteries will charge.
 - e. Continue to charge batteries until charge indicator in supported vehicle reads well into normal range.



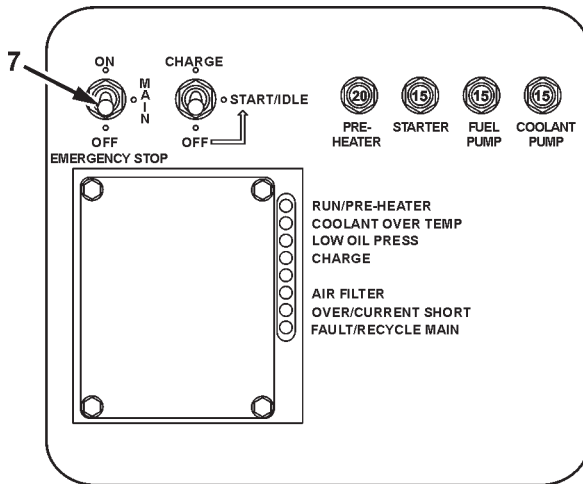
FT0608-007afp

CAUTION

- Do not attempt to start disabled vehicle with power from APU starter/generator. Doing this can cause damage to APU starter/generator. The APU is for recharging purposes during slaving procedures only.
- Be sure the CHARGE/START-IDLE/OFF switch is OFF before turning the MAIN POWER switch to OFF.

CHARGING DEAD BATTERIES WITH THE APU (continued)

14. Turn CHARGE/START-IDLE/OFF switch (6) to START-IDLE, allow the APU engine to idle for one to two minutes, then place the MAIN POWER switch (7) to OFF.



FT0608-007aip

WARNING

To avoid injury, turn off MASTER switches in both vehicles before disconnecting slave cable.

15. Turn MASTER switch to OFF in each vehicle.
16. Disconnect and stow slave cable.

END OF WORK PACKAGE

OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

OPERATING DOORS

THIS WORK PACKAGE COVERS:

Air Intake Grille, Transmission Access Doors, Battery Access Doors, Personnel Side Door, Left Canister Side Door, Top Middle Door, Top Side Doors (Left and Right), Rear Doors, APU Side Door, APU Front Door, Driver's Hatch Door, Commander's Cupola, and AFES Fire Extinguisher Box Door (Vehicles S/N 345 and above)

INITIAL SETUP:

Maintenance Level

Operator

Personnel Required

One to Three

WARNING

- To avoid injury, doors that must be open when loading or unloading ammunition should be secured when opened.
- To avoid damage or injury, close and secure all doors before moving vehicle.
- Keep hands, feet, and head clear of door when opening or closing any door. Use lifting rings for hand grasps when possible.

AIR INTAKE GRILLE

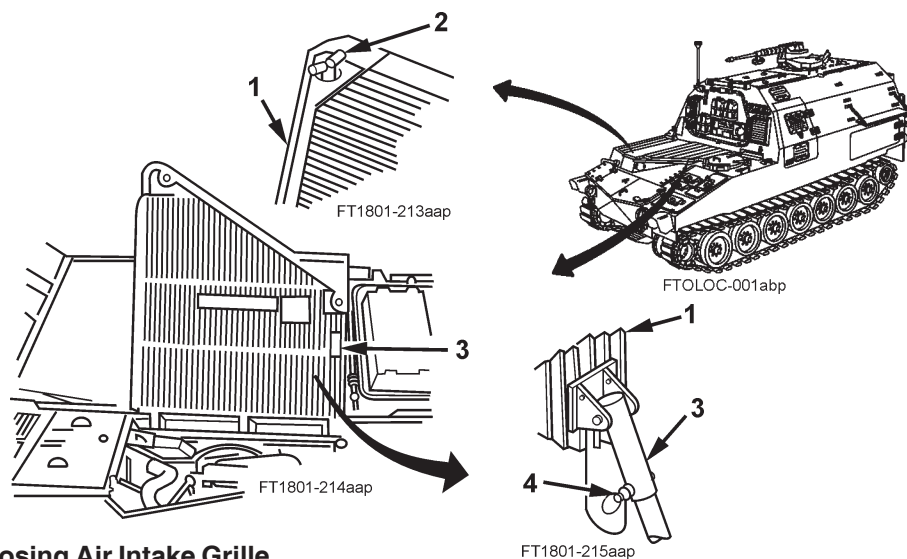
Opening Air Intake Grille

WARNING

Make sure quick-release pin is properly installed to secure latch in locked position. Failure to do so will cause severe injury to personnel.

AIR INTAKE GRILLE (continued)

Unscrew two handles (2) to release air intake grille (1). With the aid of an assistant, raise intake grille (1) and secure with quick-release pin (4) in intake grille support (3).



Closing Air Intake Grille

Remove quick-release pin (4) from intake grille support (3) and, with the aid of an assistant, close air intake grille (1). Screw in two handles (2) to secure air intake grille (1).

TRANSMISSION ACCESS DOORS

Opening Transmission Access Doors

WARNING

Transmission access doors are very heavy. Keep hands clear when opening or closing doors.

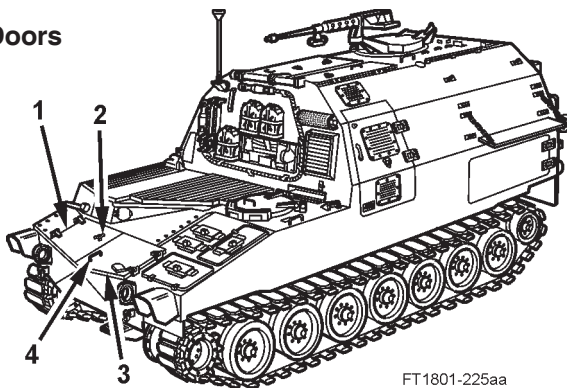
NOTE

Right transmission access door must be opened before left transmission access door.

1. Unscrew handle (2) and, with the aid of an assistant, open right transmission access door (1).
2. Grasp handle (4) and, with the aid of an assistant, open left transmission access door (3).

TRANSMISSION ACCESS DOORS (continued)**Closing Transmission Access Doors****NOTE**

Left transmission access door must be closed before right transmission access door.



FT1801-225aa

1. Grasp handle (4) and, with the aid of an assistant, close left transmission access door (3).
2. With the aid of an assistant, close right transmission access door (1). Screw in handle (2) to secure right transmission access door (1).

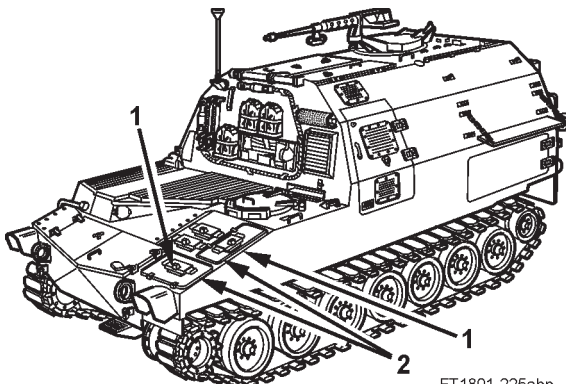
BATTERY ACCESS DOORS**Opening Battery Access Doors****WARNING**

Battery access doors are very heavy. Keep hands clear when opening or closing doors.

Unscrew handle (1) on each of two battery access doors (2) and, with the aid of an assistant, open doors (2)

Closing Battery Access Doors

With the aid of an assistant, close each of two doors (2) and screw in each of two handles (1).



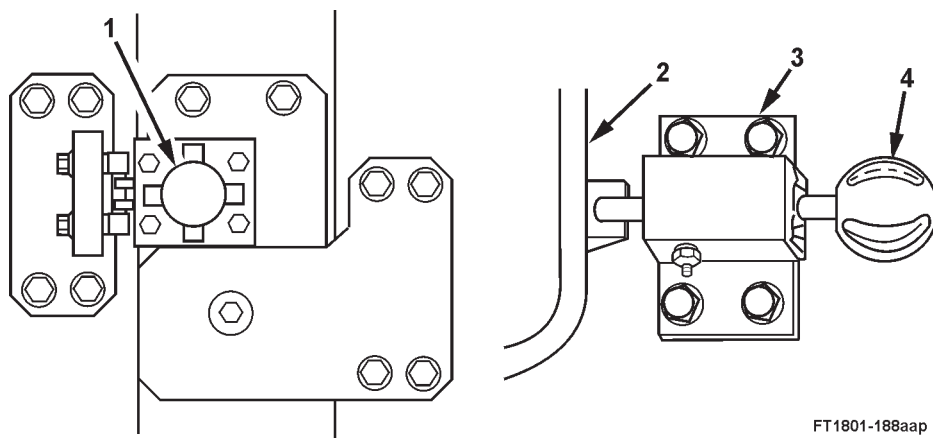
FT1801-225abp

PERSONNEL SIDE DOOR

NOTE

Latch handle is on inside of door only.

1. To open door (2), turn latch handle (1) counterclockwise to unlock, then clockwise to unlatch. Swing door (2) open.
2. Secure door (2) open with hold-open latch (3).



FT1801-188aap

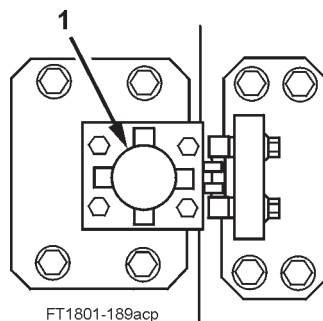
3. To close door (2), release hold-open latch (3) by pulling knob (4). Push door (2) closed. Make sure door (2) latches securely.

LEFT CANISTER SIDE DOOR

NOTE

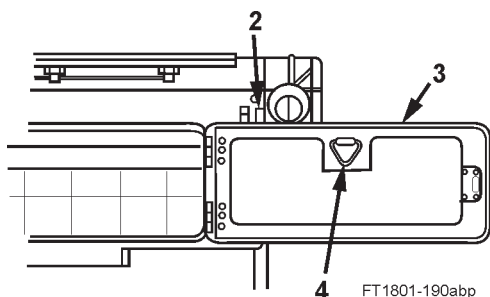
- Latch handle is on inside of door only.
- Right canister side door must be opened by Unit maintenance.

1. Turn latch handle (1) counterclockwise to unlock, then clockwise to unlatch door (3). Swing door (3) open.
2. Secure door (3) open with hold-open latch (2).

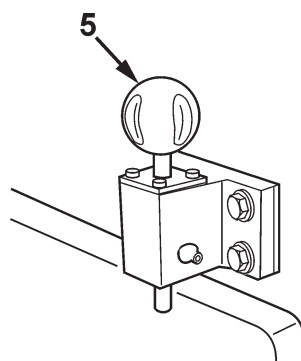


FT1801-189acp

3. To close door (3), release hold-open latch (2) by pulling knob (5) up. Push door (3) closed or use ring (4) to pull door (3) closed. Make sure door (3) latches securely.



FT1801-190abp



FT1801-191aap

TOP MIDDLE DOOR

WARNING

Top middle door is very heavy. To prevent injury you need two assistants on top of vehicle.

CAUTION

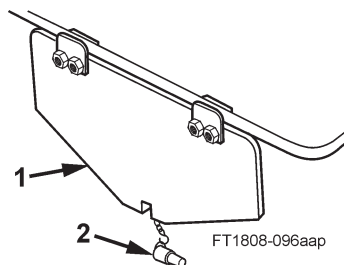
Before closing top middle door, latch must be completely flipped over to rear to prevent damage to handle and latch.

TOP MIDDLE DOOR (continued)

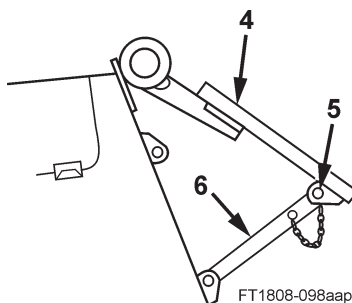
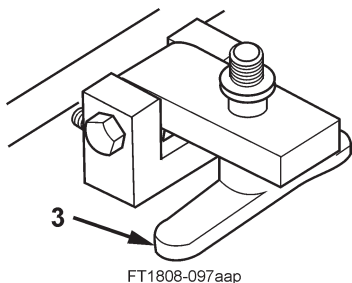
NOTE

- You may have to reposition machine gun before opening or closing door.
- Latch is on inside of door only.

1. Remove quick-disconnect pin (2) on left projectile rack assembly. Fold down two access doors (1) on left and right projectile rack assemblies.



2. To open top middle door (4), turn latch handle (3) counterclockwise to disengage latches. With the help of two assistants, raise door (4).
3. Release support (6) from stowage location by pulling quick-release pin (5). Secure door (4) with support (6) and quick-release pin (5).



NOTE

If top right or top left door has been opened, close it before closing top middle door.

4. To close door (4) remove quick-release pin (5) and support (6). With the help of two assistants, close door (4). Make sure door (4) latches securely.
5. Stow support (6) and secure with quick-release pin (5).

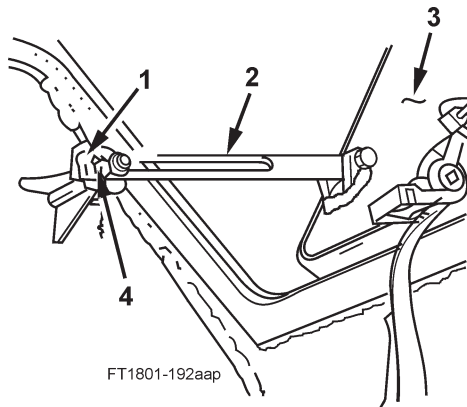
TOP SIDE DOORS (LEFT AND RIGHT)

NOTE

- The following procedures apply to left and right top side doors.
 - Top middle door must be opened before side doors can be opened.
 - You may need assistance to operate top side doors.
1. Open top middle door (p. 0023 00-5).
 2. Open top side door (3).
 3. Align holes in block (1) and sliding bar (2), and insert quick-release pin (4) through sliding bar (2) into block (1).

WARNING

To prevent injury, support door when removing quick-release pin.



4. To close door (3):
 - a. Support door (3) and remove quick-release pin (4) from sliding bar (2) and block (1).
 - b. Lower door (3).
 - c. Close top middle door, if necessary (p. 0023 00-5).

REAR DOORS

Opening Doors

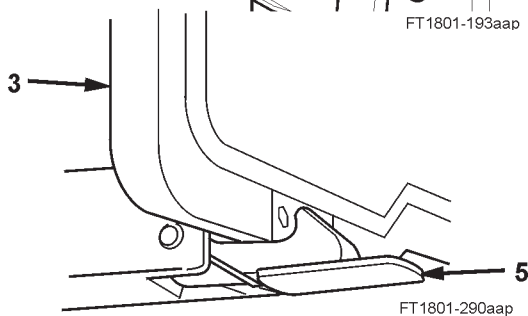
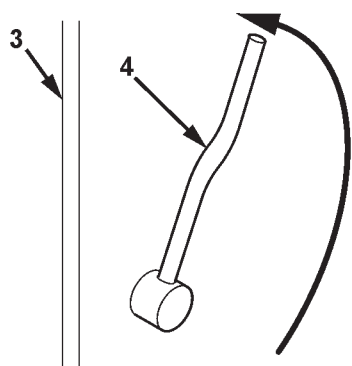
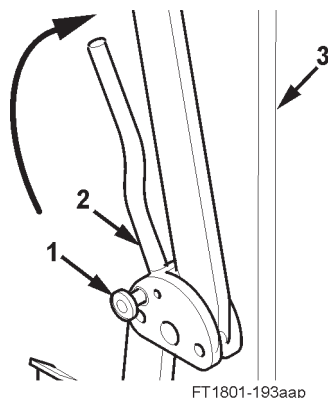
WARNING

Make sure travel path of right and left rear doors is clear of personnel before opening or closing doors. Call out “CLEAR” when opening or closing doors to prevent personnel from stepping in front of doors.

NOTE

- The door-latch mechanism has a plunger that serves as a security lock. When engaged, the plunger prevents movement of inner or outer latch handles. Before the door may be opened from inside or outside, the plunger knob, located on inside of right door, must be pulled.
- Before opening left rear door, right rear door must be open and secured by hold-open latch.

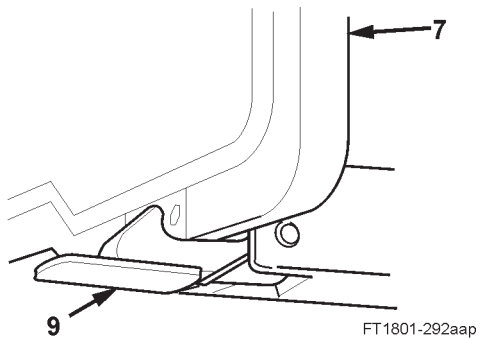
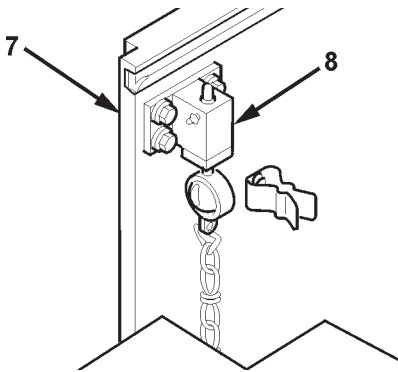
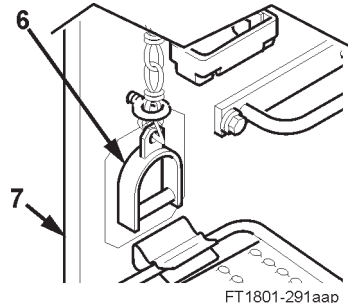
1. From inside vehicle, pull plunger knob (1).
2. Lift inner latch handle (2) or outer latch handle (4).
3. Open and secure right door (3) with hold-open latch (5).



REAR DOORS (continued)

Opening Doors (continued)

4. From inside vehicle, pull down on D-ring handle (6) of lanyard assembly (8) on left rear door (7).
5. Open and secure left rear door (7) with hold-open latch (9).



WARNING

Before deploying rear door step, ensure that left rear door is secured by hold-open latch.

REAR DOORS (continued)

Opening Doors (continued)

- Remove rear door step (11) from spring tension clip (10) and rotate down into the deployed position.

WARNING

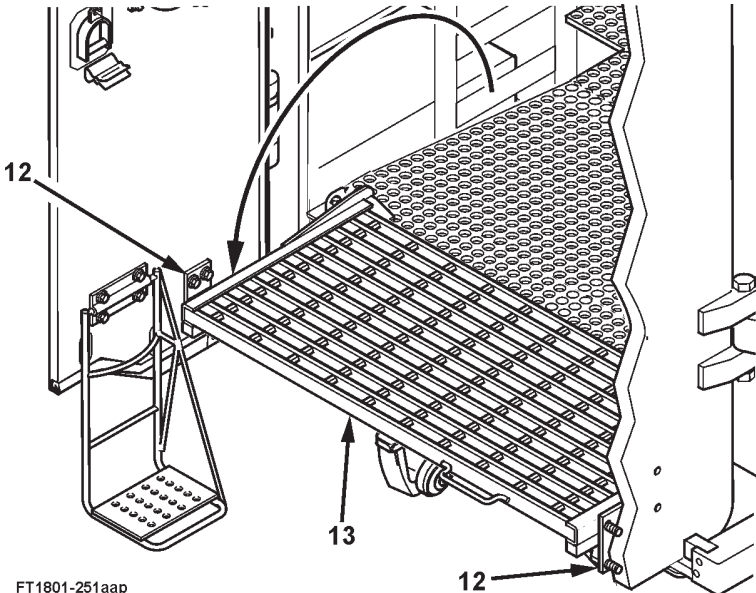
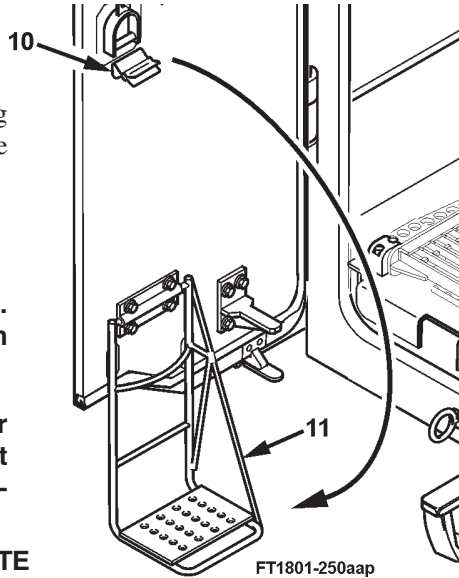
Folding rear platform is heavy. Keep hands and feet clear when platform is deployed.

Before deploying folding rear platform, ensure that left and right rear doors are secured by hold-open latches.

NOTE

Deploying folding rear platform is a two person task, one inside vehicle and one outside.

- From inside vehicle, lift folding rear platform (13) and, with the help of an assistant outside vehicle, rotate platform until it rests on two support brackets (12).



REAR DOORS (continued)

Closing Doors

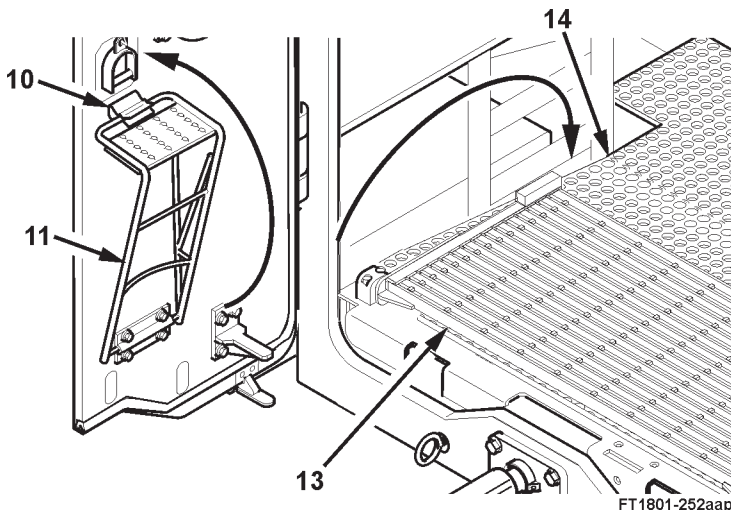
WARNING

Folding rear platform is heavy. Keep hands and feet clear when platform is stowed.

NOTE

Stowing folding rear platform is a two person task, one inside vehicle and one outside.

1. From outside vehicle, lift folding rear platform (13) and, with the help of an assistant inside vehicle, rotate platform until it rests on crew compartment floor (14).
2. Rotate rear door step (11) upward and secure in spring tension clip (10).



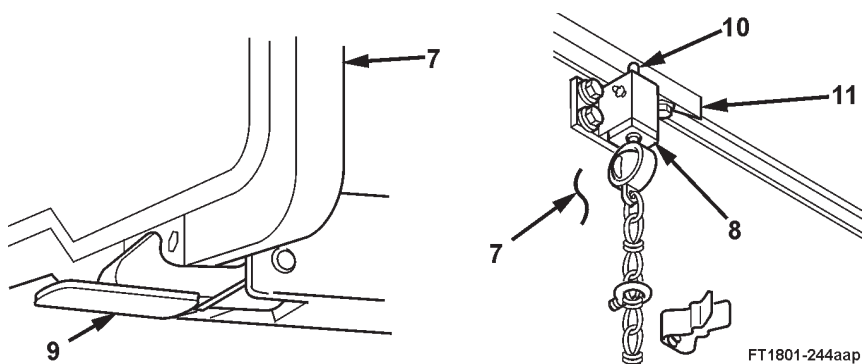
REAR DOORS (continued)

Closing Doors (continued)

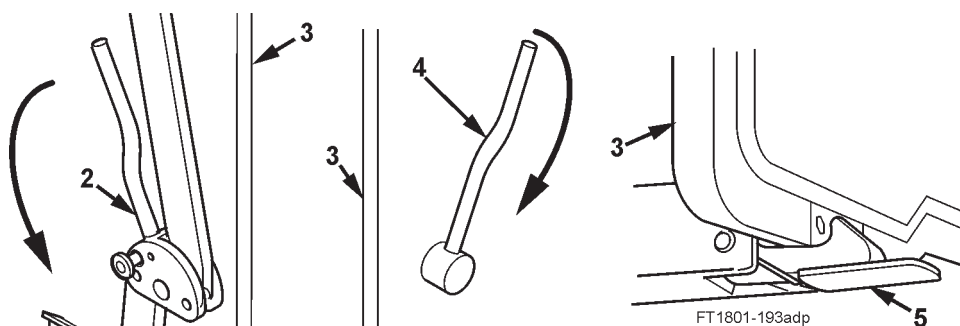
NOTE

Before closing right rear door, left rear door must be closed and secured by latch of lanyard assembly.

3. Release left rear door (7) from hold-open latch (9).



4. Close left rear door (7), ensuring that latch (10) of lanyard assembly (8) engages upper rear door striker (11).
5. Release right rear door (3) from hold-open latch (5).
6. Close right rear door (3) and secure with inner latch handle (2) or outer latch handle (4).

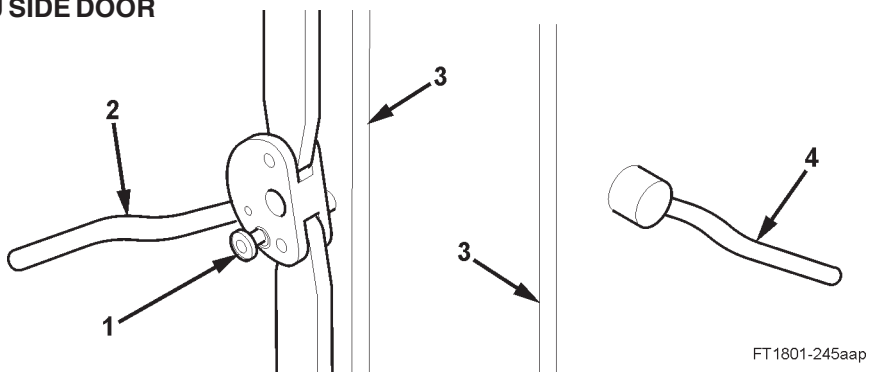


REAR DOORS (continued)

Locking Rear Doors

With right rear door (3) latched, push plunger knob (1) to lock inner and outer latch handles (2 and 4).

APU SIDE DOOR



WARNING

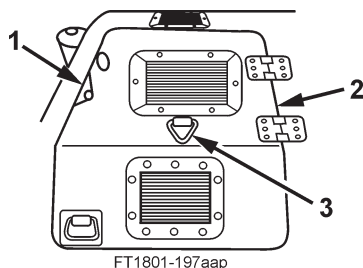
APU side door is very heavy. Keep hands clear when opening or closing door.

1. To open APU side door (2), turn latch handle (1) counterclockwise. Grasp "D" ring (3) and pull door (2) open.

CAUTION

To avoid damage to latching mechanism, make sure latch handle is in unlatched position before closing door.

2. Close door (2) and secure by turning latch handle (1) clockwise to stop.

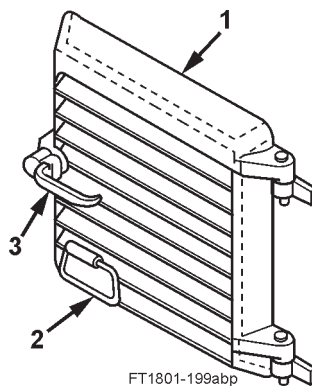


OPERATING DOORS (continued)

0023 00

APU FRONT DOOR

1. To open APU front door (1), turn latch handle (3) counterclockwise. Grasp "D" ring (2) and pull door (1) open.
2. To close door (1), push door (1) closed. Turn latch handle (3) clockwise to stop.



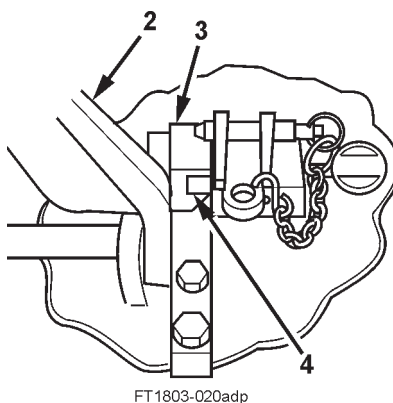
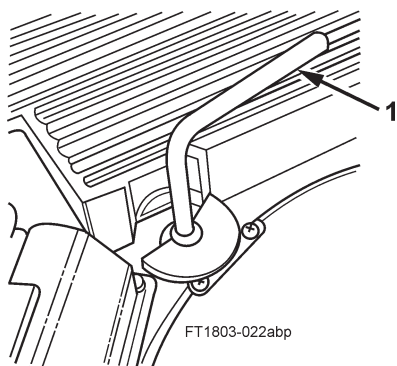
DRIVER'S HATCH DOOR

NOTE

Driver's hatch door can be opened or closed from outside of vehicle unless security latch is fastened from inside.

Opening Driver's Hatch Door

1. Turn lever (1) clockwise.
2. Open hatch door (2) until hatch anchor (3) catches in hold-open latch pin (4).



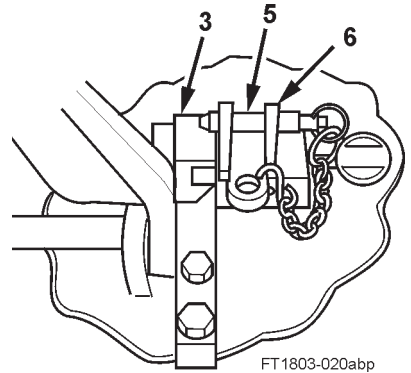
DRIVER'S HATCH DOOR (continued)

WARNING

Make sure quick-release pin is properly installed to secure latch in locked position. Failure to do so will cause severe injury to personnel.

3. Remove quick-release pin (5) from stowed position, and insert pin (5) through horizontal strike bracket (6) until pin (5) is over hatch anchor (3).

Closing Driver's Hatch Door

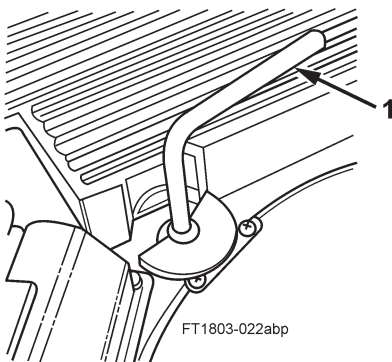


FT1803-020abp

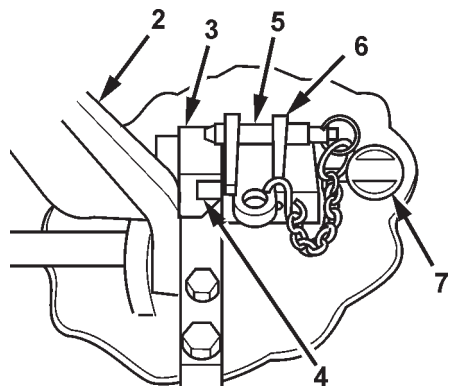
CAUTION

To avoid damaging security latch, check to make sure it is positioned out of doorway before closing hatch door.

1. Remove pin (5) from horizontal strike bracket (6), and install in stowed position.
2. Pull hold-open latch knob (7) to release hatch anchor (3) from hold-open latch pin (4).
3. Close hatch door (2) and secure by turning lever (1) counterclockwise.



FT1803-022abp



FT1803-020aep

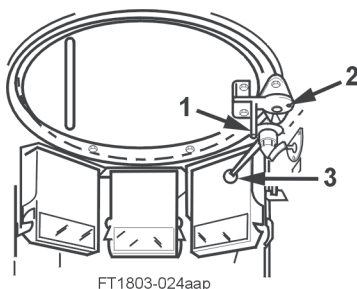
DRIVER'S HATCH DOOR (continued)**Securing Driver's Hatch Door Against Outside Entry**

1. Secure door latching handle (3).
2. Push security latch handle (1) forward to stop.

CAUTION

When releasing security latch, make sure you move handle far enough for spring-loaded detent ball to engage. Failure to do this can result in damage to security latch.

3. To release security latch, pull handle (1) to rear until spring-loaded detent ball (2) engages.



FT1803-024aap

COMMANDER'S CUPOLA

NOTE

Door may be operated only from inside vehicle.

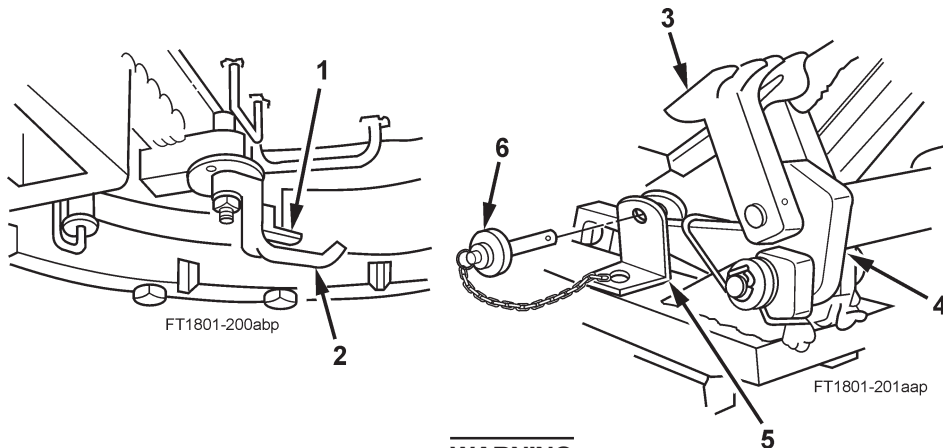
Opening Commander's Cupola Hatch Door

1. Deploy commander's seat (p. 0019 00-1).

CAUTION

When opening commander's cupola hatch door, make sure you move latch handle until spring-loaded pin engages. Failure to do this may result in damage to security latch.

2. Press handle-release latch (1) and turn latch handle (2) clockwise.
3. Push commander's cupola hatch door (3) open until hold-open latch (4) engages.

**WARNING**

Make sure quick-release pin is properly installed to secure latch in locked position. Failure to do this will result in severe injury to personnel.

4. Remove quick-release pin (6) from stowage and insert pin (6) through bracket (5) to secure latch (4) in locked position.

COMMANDER'S CUPOLA (continued)

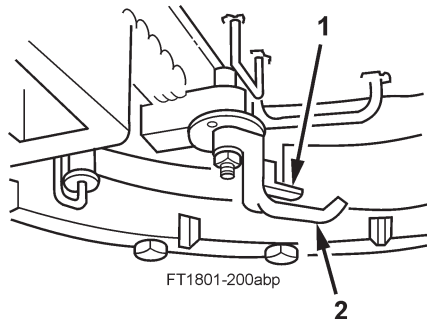
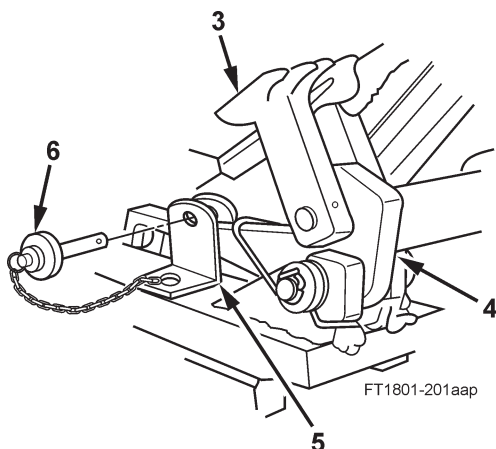
Closing Commander's Cupola Hatch Door

1. Remove quick-release pin (6) from bracket (5) and stow.

CAUTION

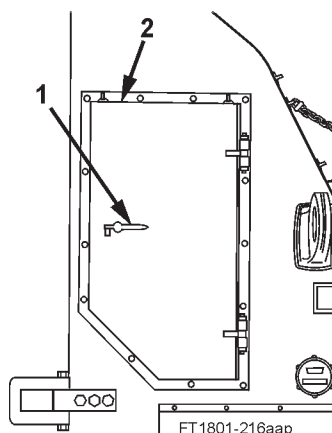
**Check to make sure latch handle is latched in open position.
Failure to do this may result in damage to latch.**

2. Release latch (4) and pull hatch door (3) closed.
3. Press handle-release latch (1) and turn latch handle (2) counterclockwise.



**AFES FIRE EXTINGUISHER BOX DOOR
(VEHICLES S/N 345 AND ABOVE)**

1. To open, turn handle (1) counterclockwise and pull door (2) open.
2. To close, shut door (2) and secure by turning handle (1) clockwise.



END OF WORK PACKAGE

OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

OPERATING MAIN ENGINE AIR CLEANER SYSTEM

THIS WORK PACKAGE COVERS:

Summer Position, Winter Position, Intermediate Temperatures, and Air Cleaner Restriction Indicator

INITIAL SETUP:**Maintenance Level**

Operator

SUMMER POSITION**NOTE**

Right projectile rack assembly must be moved before locking handles may be positioned.

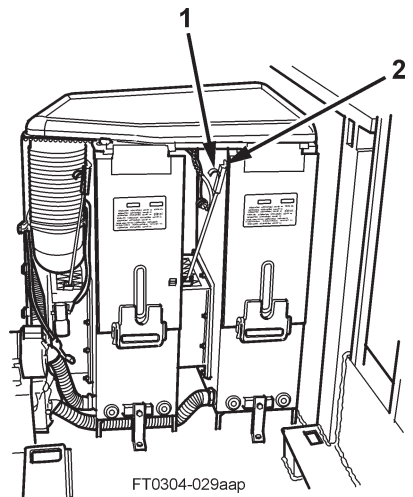
In temperatures over 40°F (4.4°C), leave locking handles (1) in holders.

WINTER POSITION

In temperatures below 25°F (-3.9°C), raise locking handles (1) and fasten them on hooks (2).

INTERMEDIATE TEMPERATURES

When operating in temperatures from 25°F to 40°F (4.4°C to -3.9°C), position as follows:



1. Start engine with locking handles (1) in winter position.
2. When engine reaches operating temperature, place locking handles (1) in summer position.

AIR CLEANER RESTRICTION INDICATOR

An air cleaner restriction indicator is located in driver's compartment just above engine access cover. During normal operation, a yellow sleeve in the indicator will indicate the amount of restriction. When yellow sleeve reaches the red band on indicator, air cleaner elements should be serviced (p. 0052 00-1). A reset button on bottom of indicator will retract the yellow sleeve. If the restriction has not been removed, the yellow sleeve will reach into red band on indicator the next time engine is operated.

END OF WORK PACKAGE

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

AMMUNITION HANDLING EQUIPMENT

THIS WORK PACKAGE COVERS:

Loading Ammunition and Unloading Ammunition

INITIAL SETUP:

Maintenance Level

Operator

LOADING AMMUNITION

1. Open rear doors, deploy rear door step and folding rear platform (p. 0023 00-8).
2. Stow projectiles in projectile rack assemblies and vertical stowage assembly (p. 0027 00-3).
3. Load and restrain propelling-charge canisters in appropriate stowage areas, if necessary (p. 0026 00-14).
4. Place fuse boxes, 0.50-caliber ammunition boxes, and primer boxes in appropriate locations (p. 0026 00-5). Secure boxes with straps.
5. After ammunition-loading operation is completed, stow folding rear platform and rear door step, and close rear doors (p. 0023 00-11).

UNLOADING AMMUNITION

1. Open rear doors, deploy rear door step and folding rear platform (p. 0023 00-8).
2. Unload projectile rack assemblies and vertical stowage assembly (p. 0027 00-4).
3. Unload propelling-charge canisters from stowage areas (p. 0026 00-16).
4. Remove restraint straps, fuse boxes, 0.50-caliber ammunition boxes, and primer boxes from vehicle (p. 0026 00-5).
5. After ammunition unloading operation is completed, stow folding rear platform and rear door step, and close rear doors (p. 0023 00-11).

END OF WORK PACKAGE

OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

PROPELLING-CHARGE STOWAGE AREAS

THIS WORK PACKAGE COVERS:

Stowage Locations, Loading Propelling-Charge Canisters, and Unloading Propelling-Charge Canisters

INITIAL SETUP:

Maintenance Level

Operator

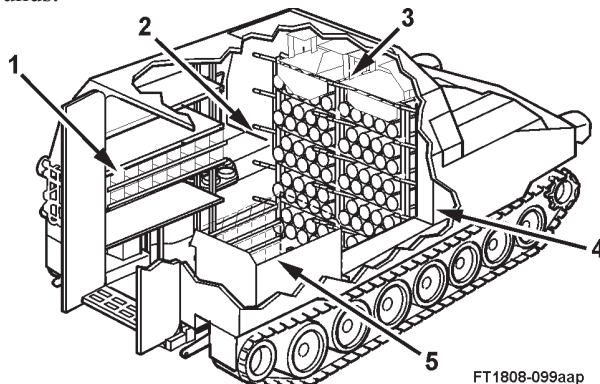
STOWAGE LOCATIONS

WARNING

Handle explosive ammunition and components containing explosives with extreme care. DO NOT DROP, DRAG, THROW, OR STRIKE ammunition or related components. Explosive elements in primers and fuses are sensitive to shock.

The M992A2 canister storage areas are designed to carry a maximum of 73 Modular Artillery Charge System (MACS) propelling charge square canisters for the M109A6 howitzer. If not carrying a MACS load, a maximum of 80 conventional (non-MACS) propelling charge canisters (square and round) can be carried. A restraint system, using straps and channel restraint bar assemblies has been designed for canister storage areas to secure canisters during transit. The ratcheting straps should be checked and tightened as often as possible.

To take advantage of available space, an exact arrangement of canisters is specified. The basic areas for canister stowage are in left rear shelf/honeycomb area (1), on left front sponson (below APU compartment) (2), above projectile rack assemblies (3), on right front sponson (below personnel heater) (4), and in right rear shelf/honeycomb area (5). These areas also provide stowage for fuse boxes, 0.50-caliber ammunition boxes, primer boxes, and copperhead rounds.



FT1808-099aap

PROPELLING-CHARGE STOWAGE AREAS (continued)

0026 00

STOWAGE LOCATIONS (continued)

The following charts show stowage locations and quantities for propelling charge canisters, fuse boxes, 0.50-caliber ammunition boxes, primer boxes, and copperhead rounds when using MACS or non-MACS canisters.

MACS CANISTERS

| CANISTER | R.H. FRONT SPONSON | R.H. REAR COMPARTMENT | L.H. REAR COMPARTMENT | ABOVE RIGHT PROJECTILE RACK | ABOVE LEFT PROJECTILE RACK | TOTAL QTY | |
|--|--------------------|-----------------------|-----------------------|-----------------------------|----------------------------|-----------|----|
| PA161 | 4* | 1 | 3 | 3 | 2 | 13 | |
| PA103A2 | | 34 | 26 | | | 60 | |
| *Four PA161 canisters or six MK19 grenade boxes are stowed in this location. | | | | | | TOTAL: | 73 |

NON-MACS (CONVENTIONAL) CANISTERS

| CANISTER | R.H. FRONT SPONSON | R.H. REAR COMPARTMENT | L.H. REAR COMPARTMENT | ABOVE RIGHT PROJECTILE RACK | ABOVE LEFT PROJECTILE RACK | TOTAL QTY | |
|--|--------------------|-----------------------|-----------------------|-----------------------------|----------------------------|-----------|----|
| PA91/PA96/PA99/PA103 | | 32 | 24 | | | 56 | |
| M14A2 | | | | 5 | | 5 | |
| M13A2 | 5* | 4 | 8 | | 2 | 19 | |
| *Five M13A2 canisters or six MK19 grenade boxes are stowed in this location. | | | | | | TOTAL: | 80 |

PROPELLING-CHARGE STOWAGE AREAS (continued)

0026 00

STOWAGE LOCATIONS (continued)

MACS

Fuse Boxes

| L.H. REAR COMPARTMENT | L.H. FRONT SPONSON | TOTAL QTY |
|-----------------------|--------------------|-----------|
| 3 | 8 | 11 |

0.50-CAL.

| |
|-----------------------------|
| L.H. REAR COMPARTMENT |
| 1 |
| ABOVE RIGHT PROJECTILE RACK |
| 2 |

PRIMER

| |
|-----------------------|
| L.H. REAR COMPARTMENT |
| 1 |
| R.H. REAR COMPARTMENT |
| 2 |

COPPERHEAD ROUNDS

| |
|-----------------------|
| L.H. REAR COMPARTMENT |
| 3 |

PROPELLING-CHARGE STOWAGE AREAS (continued)

0026 00

STOWAGE LOCATIONS (continued)

NON-MACS (conventional)

Fuse Boxes

| L.H. REAR COMPARTMENT | L.H. FRONT SPONSON | TOTAL QTY |
|-----------------------|--------------------|-----------|
| 3 | 8 | 11 |

0.50-CAL.

| |
|-----------------------|
| L.H. REAR COMPARTMENT |
| 1 |
| R.H. REAR COMPARTMENT |
| 2 |

PRIMER

| |
|-----------------------|
| L.H. REAR COMPARTMENT |
| 1 |
| R.H. REAR COMPARTMENT |
| 2 |

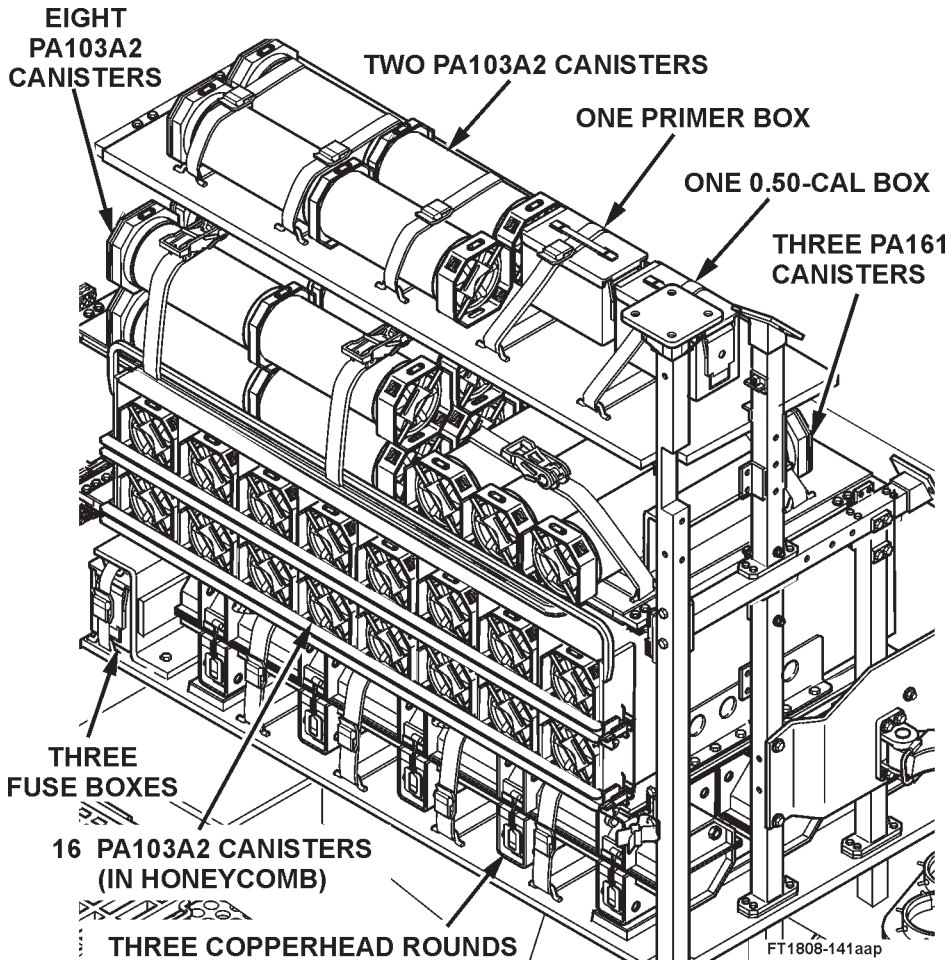
COPPERHEAD ROUNDS

| |
|-----------------------|
| L.H. REAR COMPARTMENT |
| 3 |

STOWAGE LOCATIONS (continued)

MACS

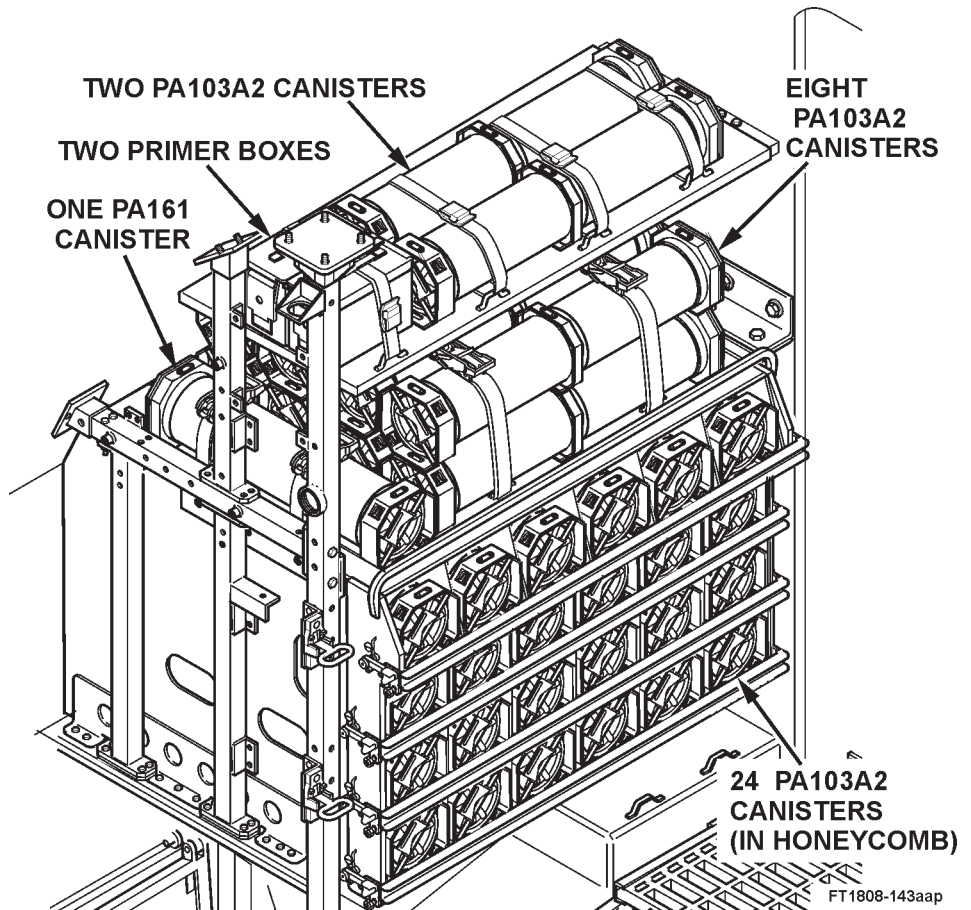
Left Rear Shelf Area



STOWAGE LOCATIONS (continued)

MACS (continued)

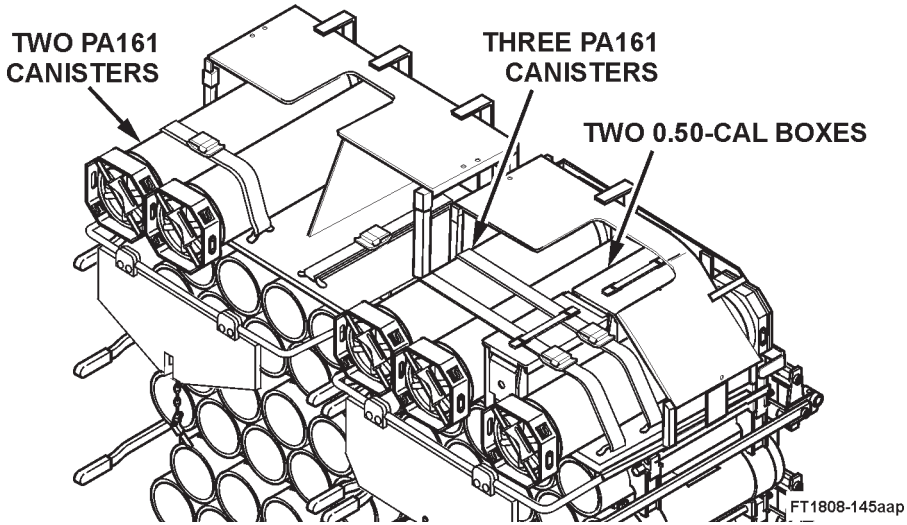
Right Rear Shelf Area



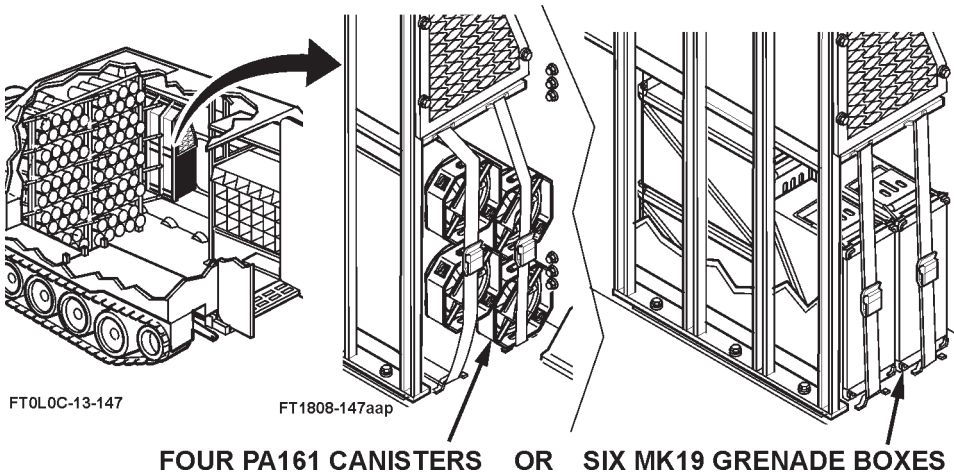
STOWAGE LOCATIONS (continued)

MACS (continued)

Projectile Racks



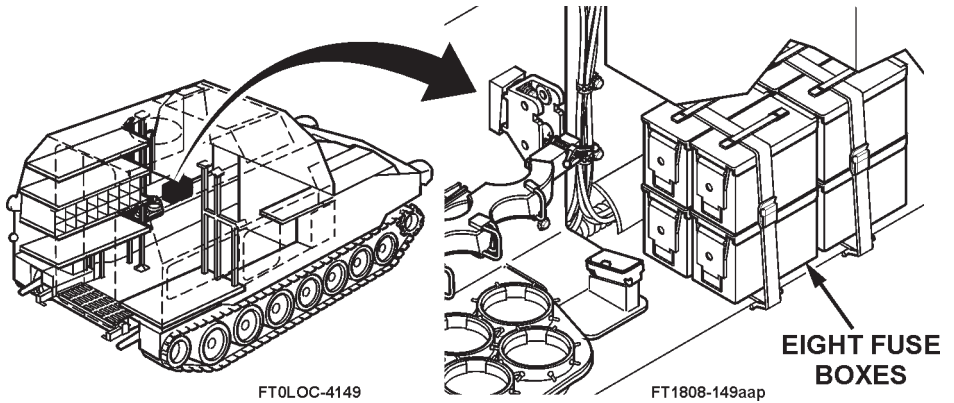
Right Front Sponson



STOWAGE LOCATIONS (continued)

MACS (continued)

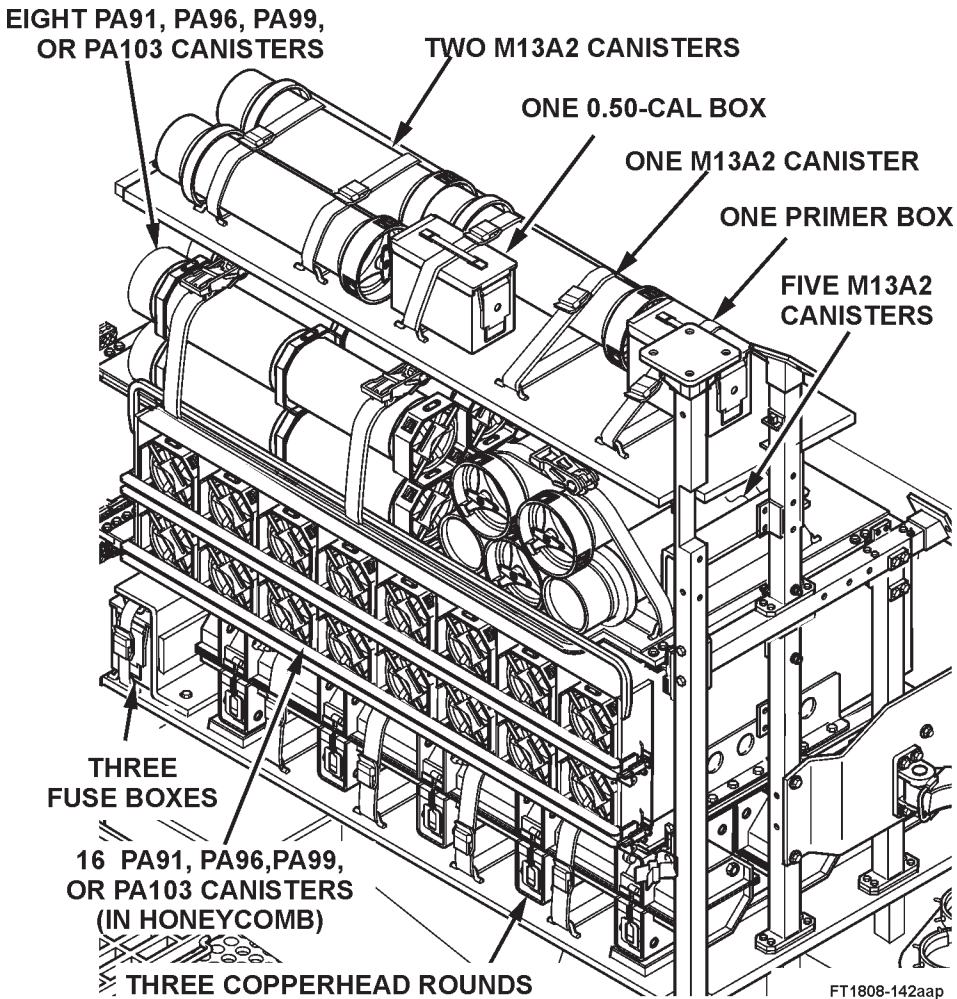
Left Front Sponson



STOWAGE LOCATIONS (continued)

NON-MACS (conventional)

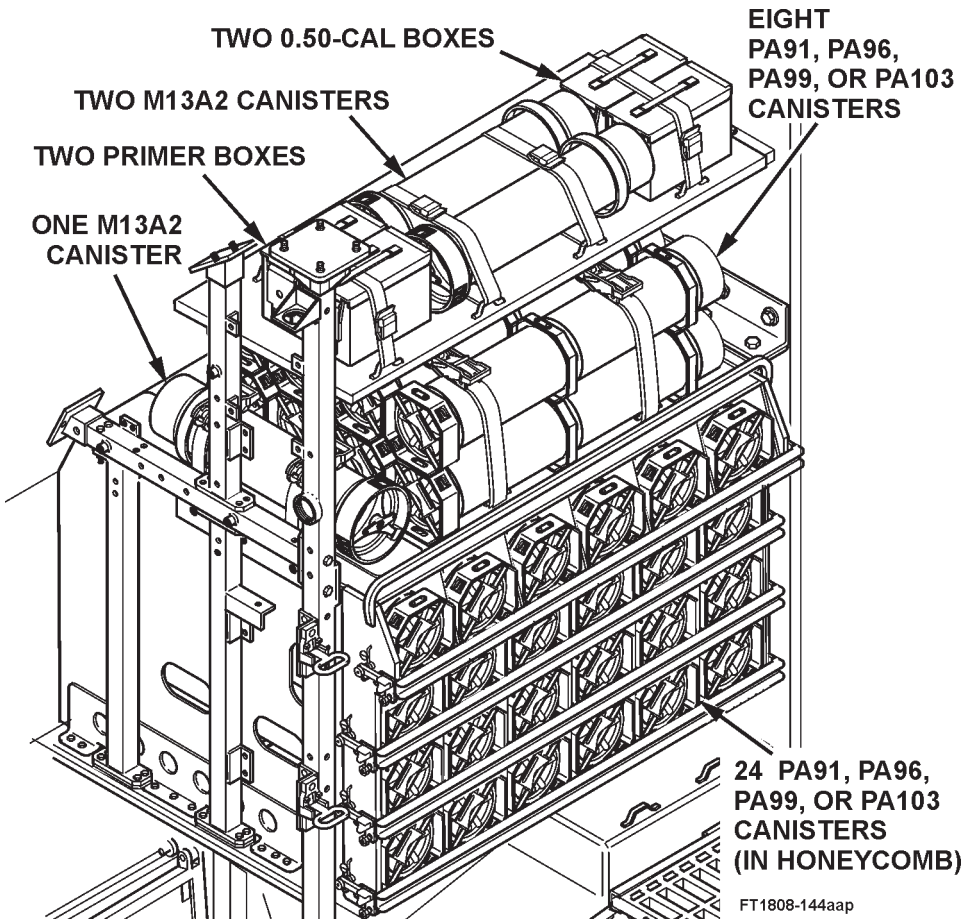
Left Rear Shelf Area



STOWAGE LOCATIONS (continued)

NON-MACS (conventional) (continued)

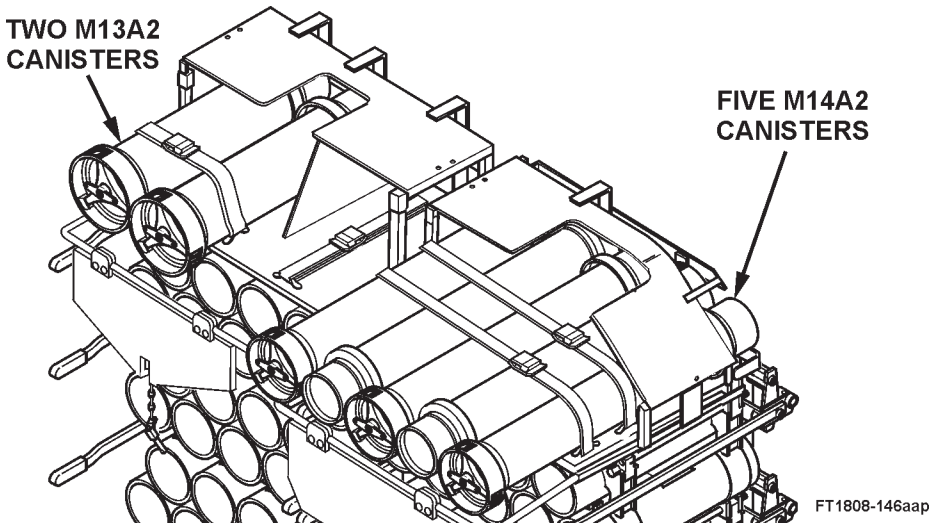
Right Rear Shelf Area



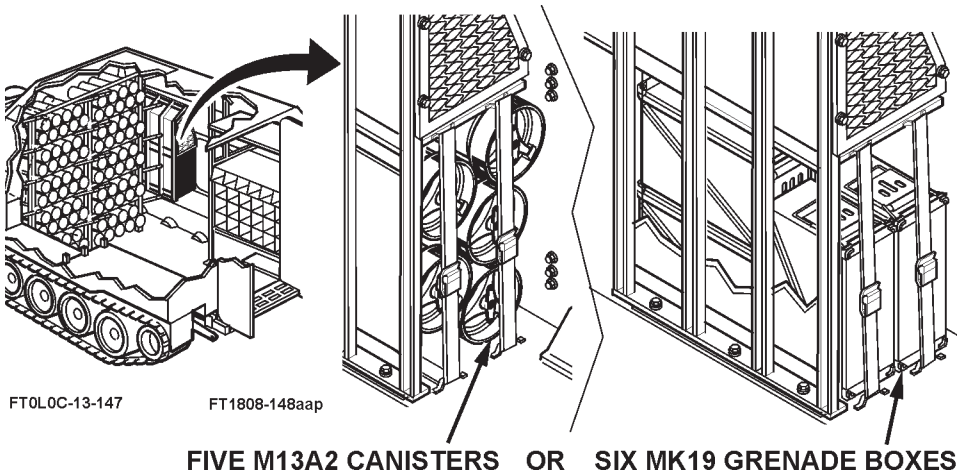
STOWAGE LOCATIONS (continued)

NON-MACS (conventional) (continued)

Projectile Racks



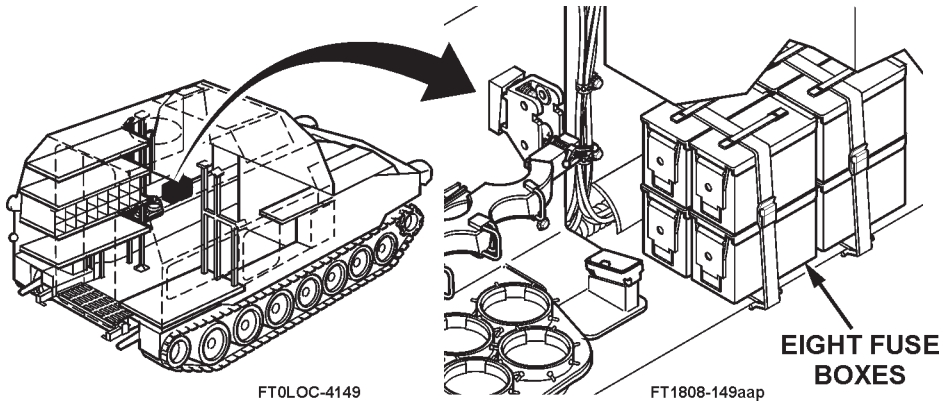
Right Front Sponson



STOWAGE LOCATIONS (continued)

NON-MACS (conventional) (continued)

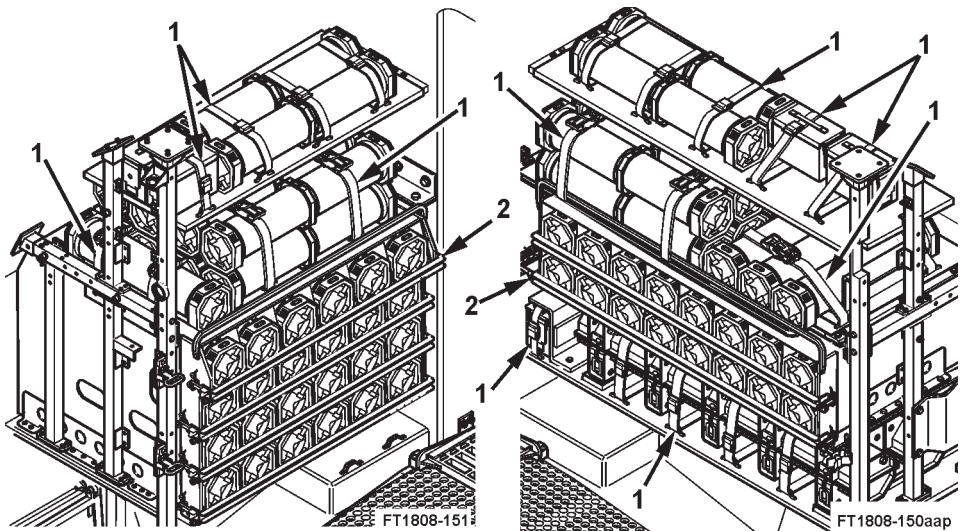
Left Front Sponson



STOWAGE LOCATIONS (continued)**Restraint System**

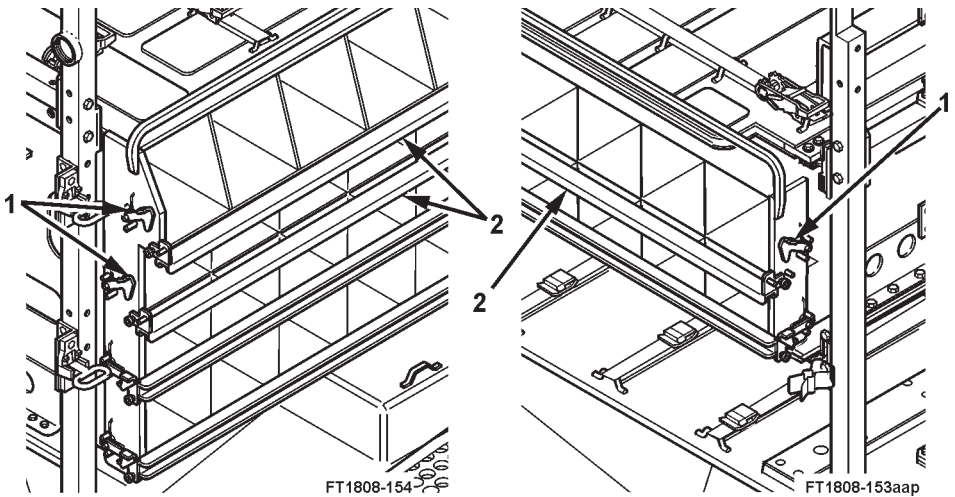
Restraint straps (1) on canister shelves secure canisters at each shelf. These straps pass over canisters and must be loosened or removed before canisters can be loaded or unloaded. In some cases these straps do not have to be loosened to remove charges from canisters.

Channel restraint bar assemblies (2) on right and left honeycomb assemblies secure canisters for transit. These bars must be unlatched and rotated down when canisters are loaded or unloaded in honeycombs. They must also be unlatched and rotated down when charges are removed from canisters.

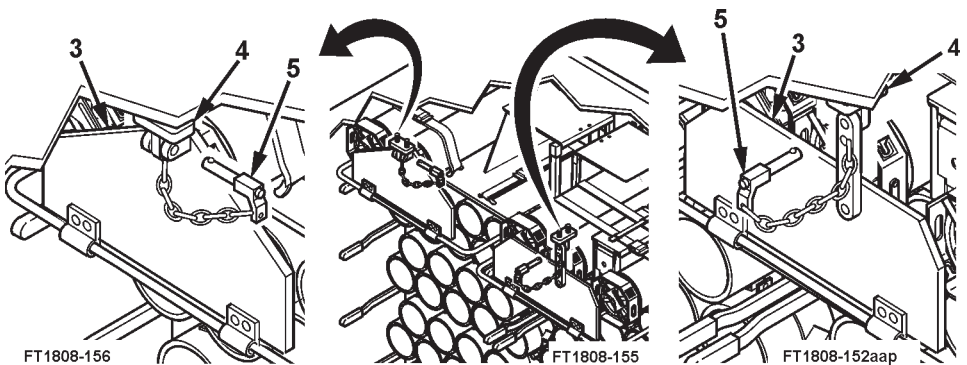


LOADING PROPELLING-CHARGE CANISTERS

1. Open rear doors, deploy rear door step and folding rear platform (p. 0023 00-8).
2. Load propelling-charge canisters via rear door opening.
3. Unlock latch (1) and rotate channel restraint bar (2) down for each row of honeycomb to be loaded. Place propelling-charge canisters in specified stowage areas (p. 0026 00-2).

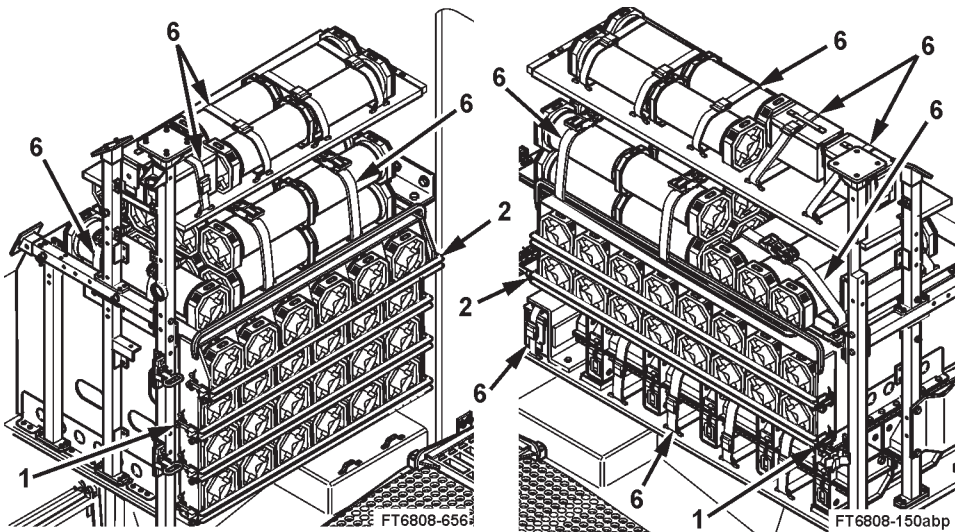


4. When loading canisters into stowage areas above projectile rack assemblies, push canisters fully toward front of vehicle. Pivot two guard plates (3) upward and secure to two brackets (4) with two quick-release pins (5).



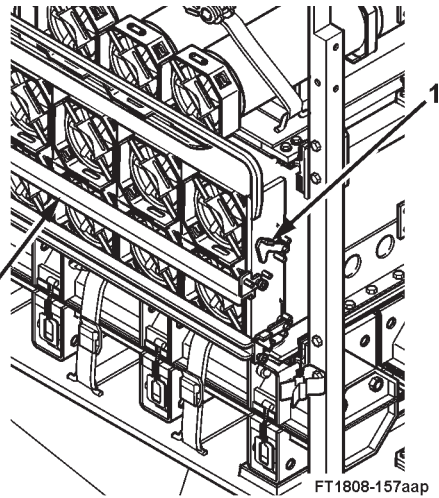
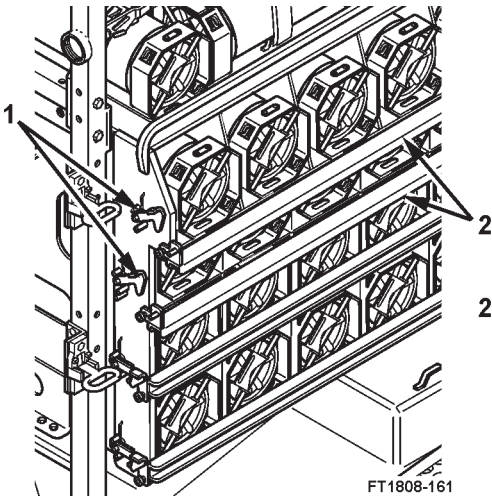
LOADING PROPELLING-CHARGE CANISTERS (continued)

5. When each row of honeycomb is fully loaded, rotate channel restraint bar (2) up and ensure bar latch (1) locks bar (2) into position.
6. Canisters which are not stowed in honeycombs are secured with restraint straps (6). Ensure all restraint straps (6) are tightened properly.
7. Stow folding rear platform and rear door step, and close rear doors (p. 0023 00-11).

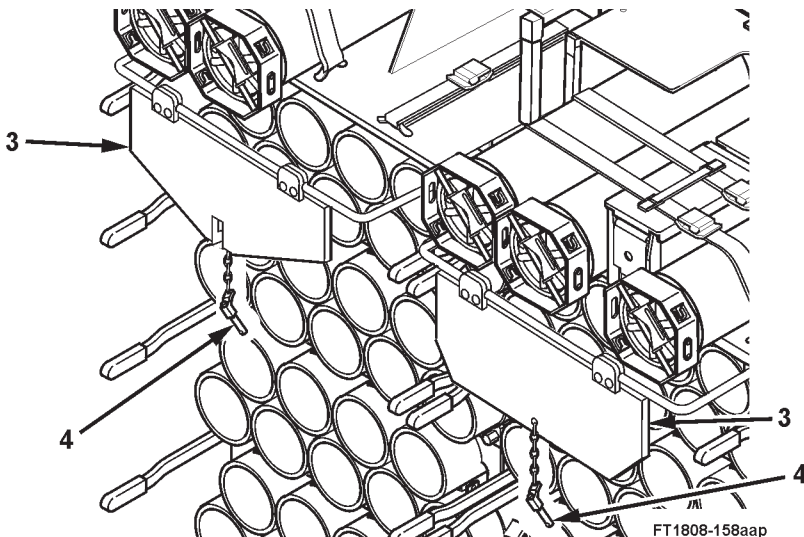


UNLOADING PROPELLING-CHARGE CANISTERS

1. Open rear doors, deploy rear door step and folding rear platform (p. 0023 00-8).
2. Unlock latch (1) and rotate channel restraint bar (2) down for each row of honeycomb to be unloaded.

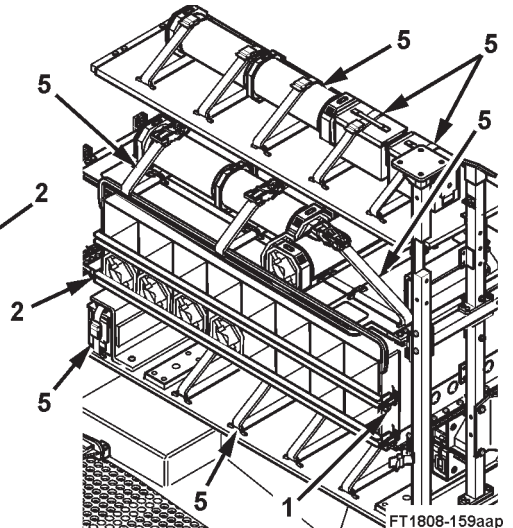
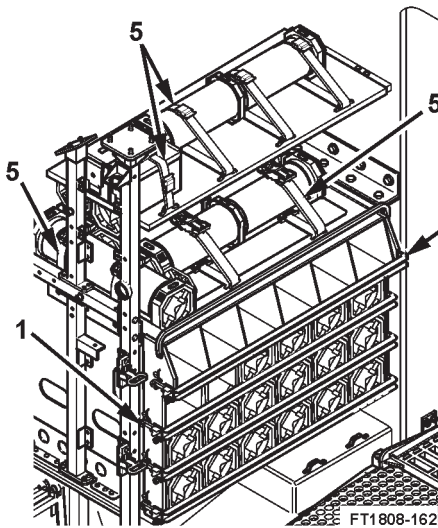


3. Remove two quick-release pins (4) and pivot two guard plates (3) down when unloading propelling-charge canisters stowed above projectile racks.



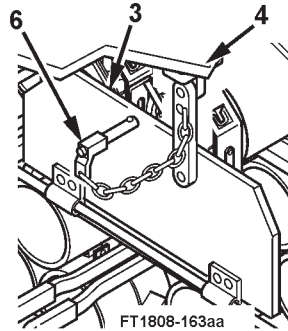
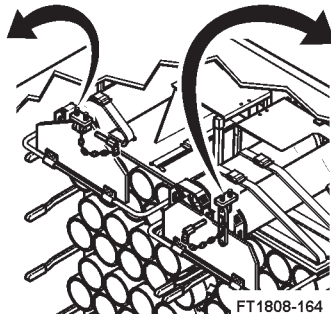
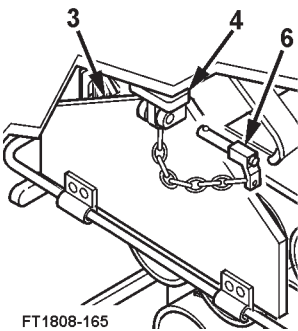
UNLOADING PROPELLING-CHARGE CANISTERS (continued)

4. Loosen restraint straps (5) for all canisters not stowed in honeycombs.
5. Remove canisters from stowed locations as required and unload from vehicle through rear doors.
6. Tighten restraint straps (5) as required for all canisters remaining in vehicle.
7. Rotate all channel restraint bars (2) up and ensure bar latch (1) locks bar (2) into position.



UNLOADING PROPELLING-CHARGE CANISTERS (continued)

8. Pivot two guard plates (3) upward and secure to two brackets (6) with two quick-release pins (4).
9. Stow folding rear platform and rear door step, and close rear doors (p. 0023 00-11).



END OF WORK PACKAGE

OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

**PROJECTILE RACK/VERTICAL PROJECTILE
STOWAGE ASSEMBLY OPERATION**

THIS WORK PACKAGE COVERS:

Projectile Rack Description, Vertical Projectile Stowage Assembly Description, Loading and Stowing Projectiles in Projectile Rack, Loading and Stowing Projectiles in Vertical Projectile Stowage Assembly, Unloading Projectiles from Projectile Rack, Unloading Projectiles from Vertical Projectile Stowage Assembly, and Moving Projectile Rack Assemblies

INITIAL SETUP:

Maintenance Level

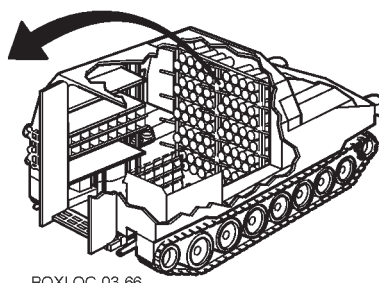
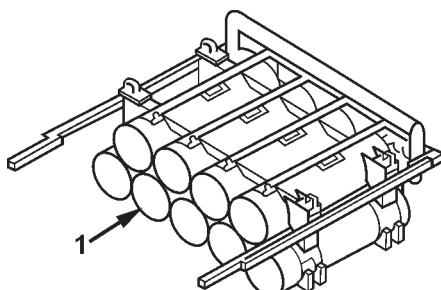
Operator

Personnel Required

Two

PROJECTILE RACK DESCRIPTION

The two projectile rack assemblies in the M992A2 carry a total of 90 projectiles. The right rack assembly and the left rack assembly are each arranged in two sets of five rack sections (1). The rack assemblies are mounted against the front wall of cargo compartment and are removable.



**PROJECTILE RACK/VERTICAL PROJECTILE STOWAGE
ASSEMBLY OPERATION (continued)**

0027 00

PROJECTILE RACK DESCRIPTION (continued)

Each rack section has four interlocking blocks (2) that project from its top corners. Four interlocking blocks (3) at the base of each rack section slip over the legs of the rack section below. Once in place, rack sections are pinned together with rods (5). Each rack assembly is secured to front wall by brackets (6). Rack assemblies are also secured at top.

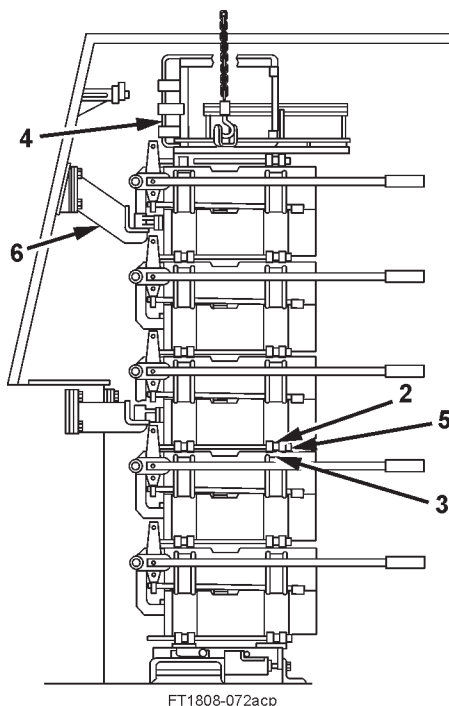
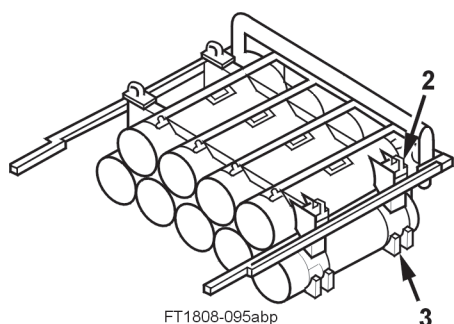
A stowage box (4) attaches to top rack section on each rack assembly.

WARNING

Handle projectiles carefully. Contact between projectiles and fire extinguisher could cause extinguisher to discharge, resulting in personal injury or damage to vehicle.

NOTE

Right front double seat must be stowed (under APU compartment) before stowing or removing projectiles from tubes in right lower corner.

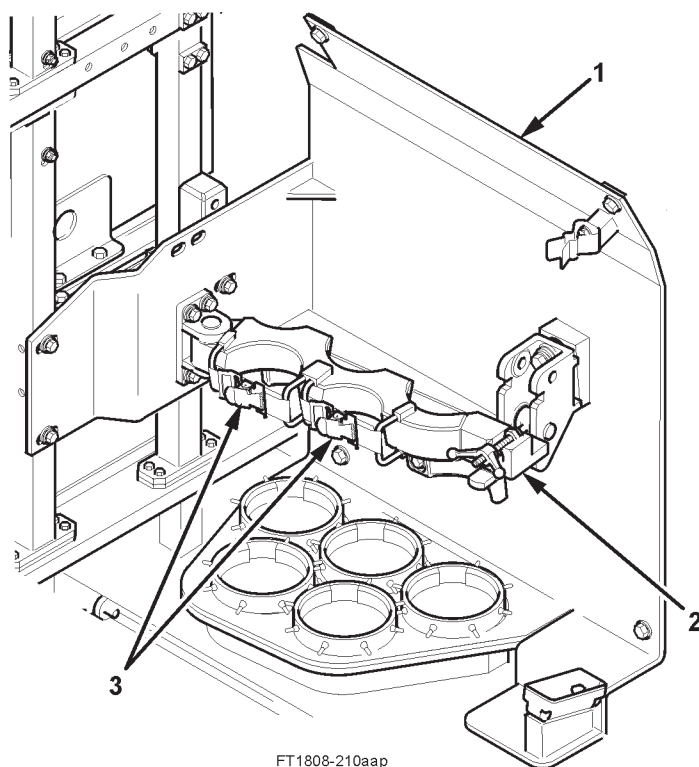


**PROJECTILE RACK/VERTICAL PROJECTILE STOWAGE
ASSEMBLY OPERATION (continued)**

0027 00

VERTICAL PROJECTILE STOWAGE ASSEMBLY DESCRIPTION

The vertical projectile storage assembly (1) is located in the cargo compartment on the left sponson (behind single crew seat). The vertical projectile storage assembly enables the M992A2 to carry an additional five projectiles. The projectiles are secured in place by either a locking arm (2) or a webbing strap (3). The vertical projectile storage assembly also provides stowage for one M16A2 rifle.



FT1808-210aap

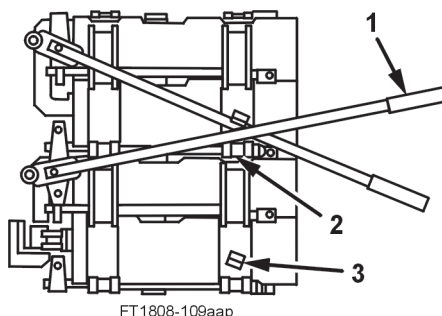
LOADING AND STOWING PROJECTILES IN PROJECTILE RACK

1. Unlock rack section to be loaded by releasing both handles (1) from locking clips (3).

NOTE

If necessary, install extension handle over projectile rack handle to obtain additional leverage.

2. Secure handles in unlocked position by pushing them upward and locking them with locking clips (2) on rack section above. Handles of top rack section can be retained by locking clips on stowage boxes.

**WARNING**

To avoid injury to back, hands, and feet, use caution and proper lifting techniques when manually handling projectiles.

CAUTION

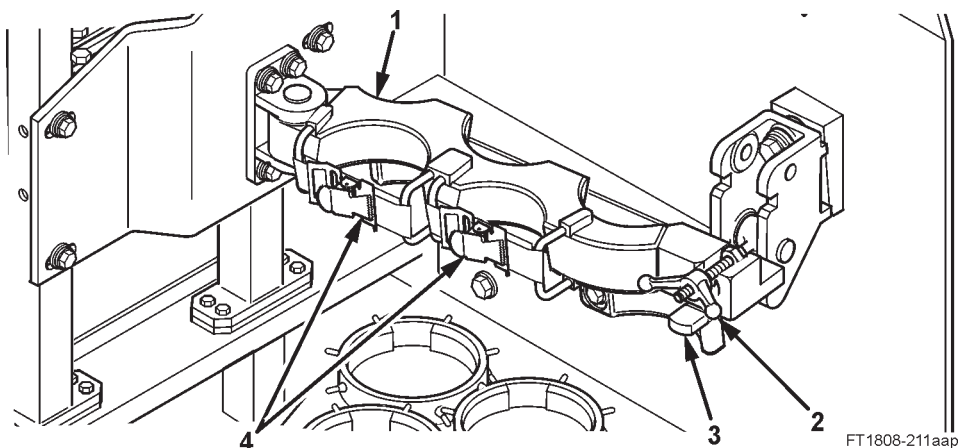
Do not force projectiles into tubes. If projectile will not slide into tube, check to make sure handles are retained upward. Damage to locking pad could result if projectile is forced into tube with locking handles down.

3. Load each projectile into an unlocked rack section tube.
4. As each rack section is filled, lock projectiles in it by pushing rack handles out and down. Position both rack handles into locking clips.
5. After all projectiles have been loaded and locked into place, pull on each projectile. If any projectile can be pulled out, remove it, relocate it in another tube, or unload it. Lock rack section and notify Unit maintenance.

LOADING AND STOWING PROJECTILES IN VERTICAL PROJECTILE STOWAGE ASSEMBLY**NOTE**

Projectiles must be removed from two outer locations of vehicle projectile stowage assembly to allow access to three inner locations.

1. If loading and stowing projectile in one of the two outer locations, loosen the appropriate webbing strap (4).
2. If loading and stowing projectile in one of the three inner locations, hold locking tab (3) down, loosen lock assembly (2), and pivot locking arm (1) to the open position.
3. Load projectile into the appropriate location of the vertical projectile stowage assembly.
4. If loading and stowing projectile in one of the three inner locations, pivot locking arm (1) to the closed position, hold locking tab (3) down, and tighten lock assembly (2) to secure locking arm (1) and projectile.
5. If loading and stowing projectile in one of the two outer locations, tighten the appropriate webbing strap (4) to secure projectile.



UNLOADING PROJECTILES FROM PROJECTILE RACK**NOTE**

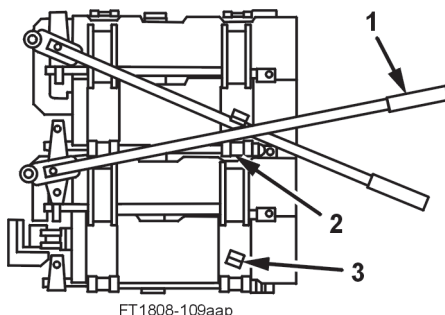
Before beginning to unload projectiles from rack sections, vehicle must be on level ground.

1. Unlock rack section to be unloaded by releasing both handles (1) from locking clips (3).

NOTE

If necessary, install extension handle over projectile rack handles to obtain additional leverage.

2. Secure handles (1) in unlocked position by pushing them upward and locking them with locking clips (2) on rack section above. Handles on top rack sections can be retained by locking clip on stowage boxes.

**NOTE**

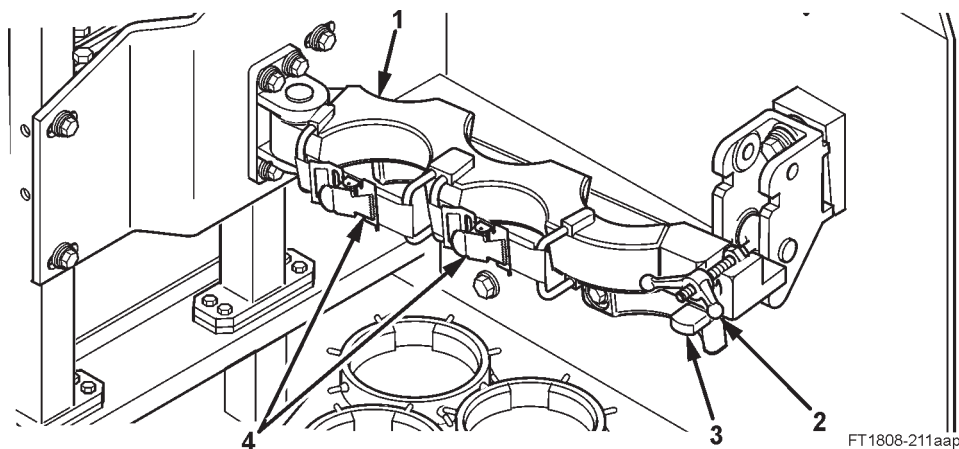
If any projectile sticks, refer to troubleshooting section (p. 0042 00-17).

3. Remove projectiles (one at a time) from unlocked rack section and unload projectiles from vehicle.
4. As each rack section is unloaded, lock rack section by pushing handles out and down. Position both rack handles into locking clips.
5. Repeat steps 1 through 4 to unload additional projectiles.

UNLOADING PROJECTILES FROM VERTICAL PROJECTILE STORAGE ASSEMBLY**NOTE**

Projectiles must be removed from two outer locations of vertical projectile storage assembly to allow access to three inner locations.

1. If unloading projectile from one of the two outer locations, loosen the appropriate webbing strap (4).
2. If unloading projectile from one of the three inner locations, hold locking tab (3) down, loosen lock assembly (2), and pivot locking arm (1) to the open position.
3. Unload projectile from the appropriate location of the vertical projectile storage assembly.
4. If unloading projectile from one of the three inner locations, pivot locking arm (1) to the closed position, hold locking tab (3) down, and tighten lock assembly (2) to secure locking arm (1) and any remaining projectiles.
5. If unloading projectile in one of the two outer locations, tighten the appropriate webbing strap (4).



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MOVING PROJECTILE RACK ASSEMBLIES**WARNING**

- **Before moving rack assemblies, park vehicle on level ground. If vehicle is not level, racks may tip, causing injury to personnel or damage to vehicle.**
- **If both rack assemblies are to be moved, move right rack assembly first. After left rack assembly is moved, leave hoisting hook attached; this support is necessary because the rack assemblies tend to tip forward when both rack assemblies are moved back.**
- **This operation requires two persons - one on top of vehicle and one inside crew compartment.**
- **Handle projectiles carefully. Contact between projectiles and fire extinguisher could cause extinguisher to discharge, causing personal injury or damage to the vehicle.**

NOTE

For some preventive maintenance checks and services, it will be necessary to gain access to area between projectile rack assemblies and front wall.

1. Remove all projectiles from rack assembly to be moved. Also, remove stowed items from stowage box at top of rack assembly. If moving right projectile rack assembly, stow right front double seat (p. 0021 00-2).
2. Open top middle door and top side doors (left and right) (pp. 0023 00-5 and 0023 00-7).

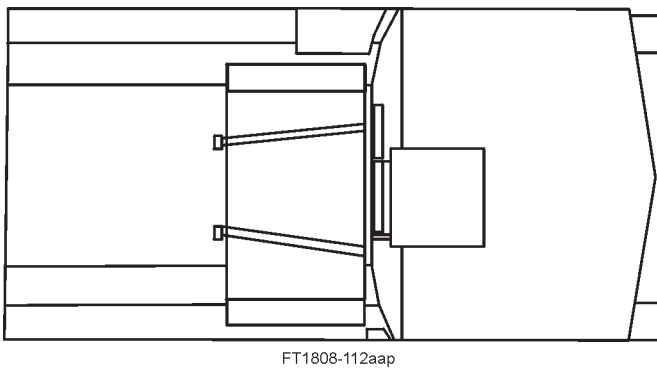
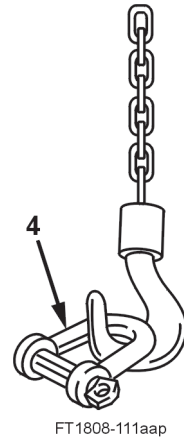
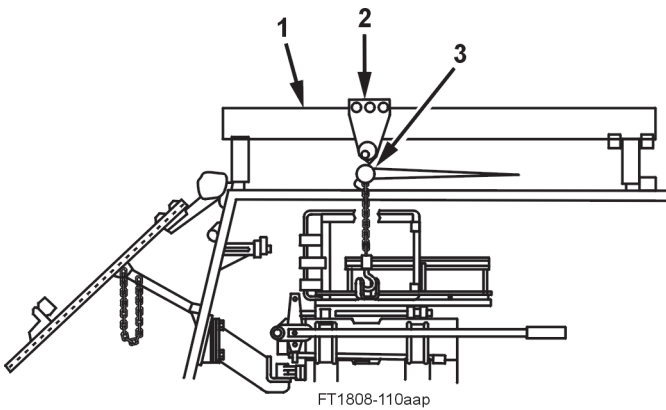
MOVING PROJECTILE RACK ASSEMBLIES (continued)

3. Remove and assemble (if not stowed assembled) beam (1), trolley assembly (2), hoist (3) and shackle (4) from stowage locations.

NOTE

Position beam at a slight angle outboard.

4. Position beam (1) and trolley assembly (2) above rack assembly to be moved.
5. If right rack assembly is to be moved, remove right front double seat (p. 0021 00-2).



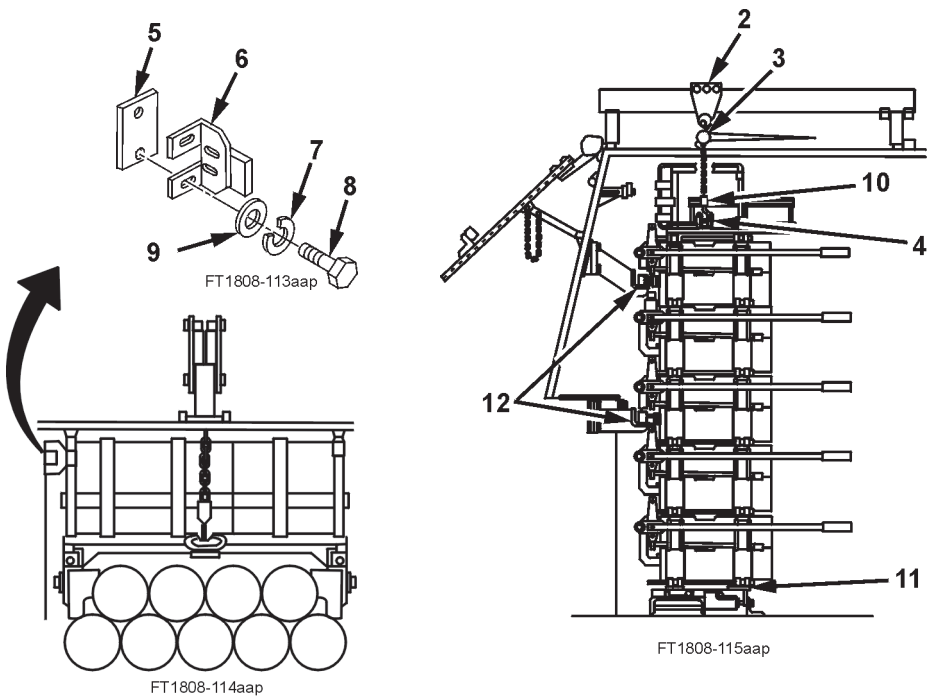
MOVING PROJECTILE RACK ASSEMBLIES (continued)

6. If left rack assembly is to be moved, remove two screws (8), lockwashers (7), and flat washers (9) from angle (6). Remove angle (6) and spacer (5).
7. Attach hoist (3) to trolley assembly (2).
8. Attach shackle (4) to lifting rod (10).

NOTE

Snap hook back to the front.

9. Lower hook of hoist (3) and secure it around shackle (4). Pull free end of chain to take up slack.



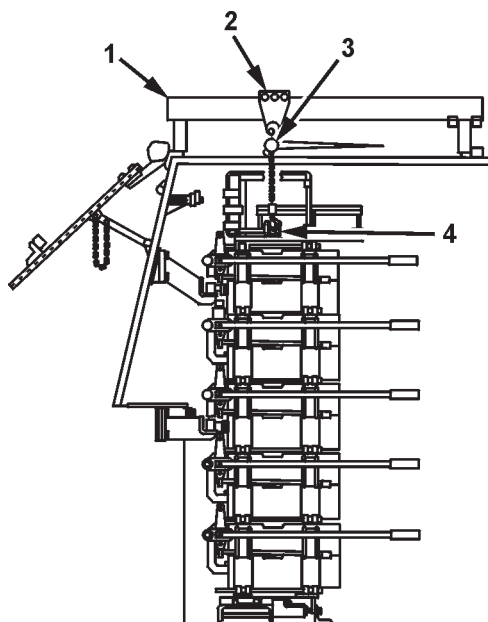
10. Using 7/8-inch socket, 5-inch extension, and hinged socket wrench handle, remove bottom connecting rods (11) securing projectile rack assembly to floor.
11. Use hoist (3) to lift rack assembly until rack-mounting socket clears rack-restraint pins (12).

MOVING PROJECTILE RACK ASSEMBLIES (continued)

WARNING

Before moving rack assembly toward rear of vehicle, make sure floor will provide a level resting place. If floor is not level rack may tip, causing injury or damage.

12. Pull rack assembly toward rear of vehicle until there is room for personnel to move between rack assemblies and front wall.
13. Using hoist (3), lower rack assembly until it rests on floor.
14. If only one rack assembly is to be moved, leave hook of hoist (3) attached for added support. If right rack assembly has been moved and left rack assembly must also be moved, relocate lifting fixture (hoist, beam, and trolley assembly) to left side of roof. Repeat steps 7 through 12 for left rack assembly.



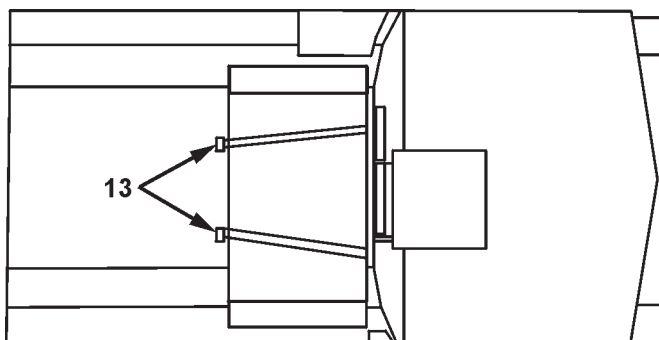
FT1808-115adp

MOVING PROJECTILE RACK ASSEMBLIES (continued)

WARNING

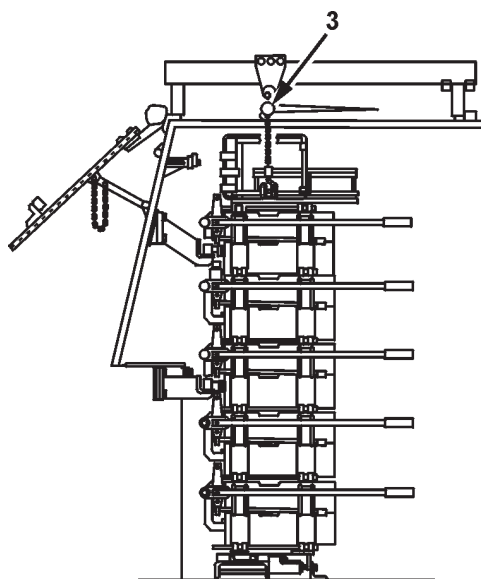
When installing both rack assemblies, install left rack assembly first. The left rack assembly tends to tip forward, which may cause severe injury to personnel.

15. Position hoist (3), beam (1), and trolley assembly (2) over rack assembly to be moved, engaging block (14) and pin (13) with beam support legs.



FT1808-112abp

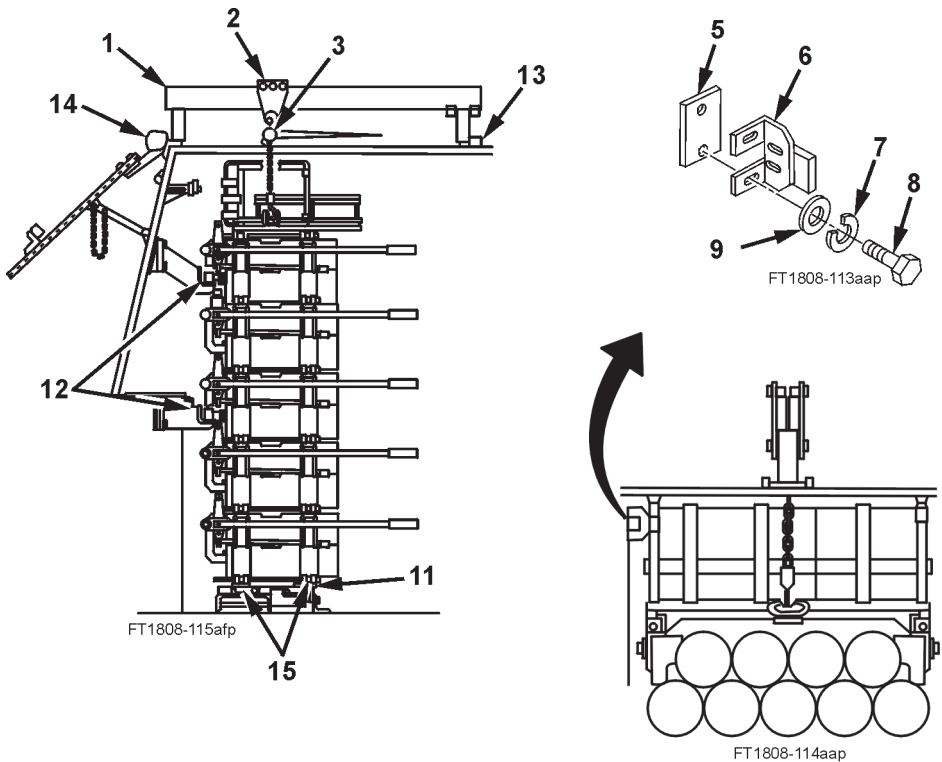
16. Use hoist (3) and trolley assembly (2) to position rack assembly onto rack-restraint pins (12) and floor pins (15). Secure rack assembly to floor by installing bottom connecting rods (11).
17. Repeat steps 15 and 16 for right rack assembly, if necessary.



FT1808-115aep

MOVING PROJECTILE RACK ASSEMBLIES (continued)

18. If left rack assembly is installed, secure its upper portion with angle (6), spacer (5), and two washers (9), lockwashers (7), and screws (8).
19. Remove hook of hoist (3) and beam (1) and stow beam (1), trolley assembly (2), and hoist (3).
20. Remove and stow shackle (4).
21. If right projectile rack assembly was moved, install right front double seat (p. 0021 00-2).
22. Close top side doors (left and right) and middle door (pp. 0023 00-5 and 0023 00-7).



END OF WORK PACKAGE

OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

OPERATING AUXILIARY EQUIPMENT

THIS WORK PACKAGE COVERS:

Driver's Cooling Fan, Personnel Heater, Ventilation Blower, Communication Equipment, Periscopes, Lights, Portable Fire Extinguisher CO₂, 0.50-Caliber Machine Gun, Chemical Agent Detection and Alarm System, Ventilated Face Piece System (VFPS), and Mounted Water Ration Heater (MWRH)

INITIAL SETUP:

Maintenance Level

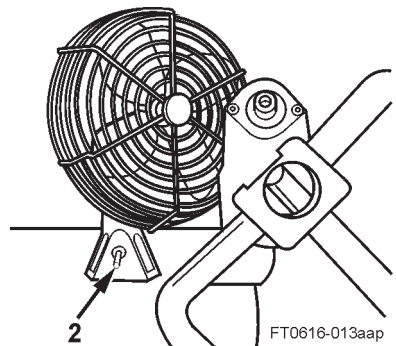
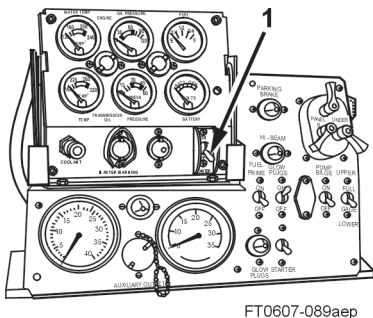
Operator

References

TM 3-6665-225-12
TM 10-7310-241-12&P
TM 11-5825-291-13
TM 11-5830-263-10

OPERATING DRIVER'S COOLING FAN

1. Turn MASTER switch (1) to ON.
2. Set driver's cooling fan switch (2) to HI or LOW.
3. Once adequate ventilation has been obtained, set driver's cooling fan switch (2) to OFF.



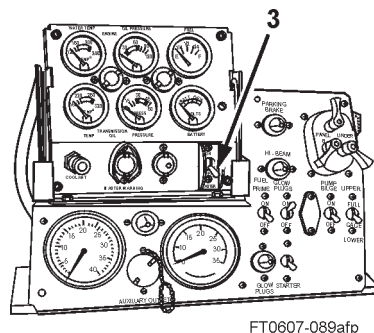
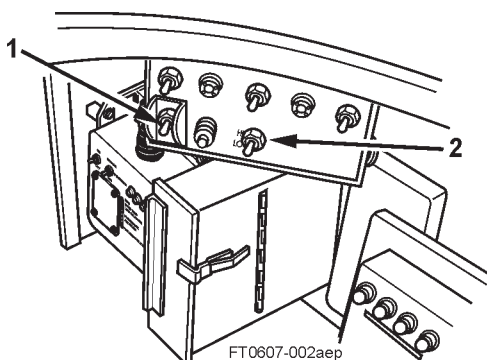
OPERATING PERSONNEL HEATER

WARNING

- Do not place flammable materials or explosives on or near personnel heater. To prevent injury to personnel and damage to equipment, do not block or restrict heater vent.
- Carbon monoxide is a colorless, odorless, deadly, poisonous gas that, when breathed, deprives the body of oxygen and causes suffocation. Breathing carbon monoxide produces headache, dizziness, loss of muscle control, drowsiness, and coma. Permanent brain damage or death can result from exposure. Do not operate heater or engine of vehicle in an enclosed area unless area is adequately ventilated.
- Do not use vehicle MASTER switch to shut down heater, as fuel vapors may accumulate in ventilating air circuit.

Starting Hupp Heater

1. Turn vehicle MASTER switch (3) to ON.
2. Move HEAT SELECT switch (2) to LOW.
3. Hold HEAT CONTROL switch (1) at START.
4. If heater does not start within four minutes, move HEAT CONTROL switch (1) to OFF for 15 minutes. The start attempt may be continued for an additional four minutes.
5. Once heater has started, set HEAT CONTROL switch (1) to RUN.
6. If heater does not start after a second try, again move HEAT CONTROL switch (1) to OFF and notify Unit maintenance.



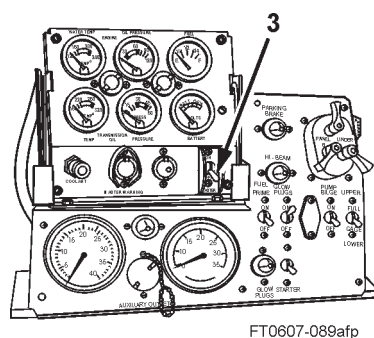
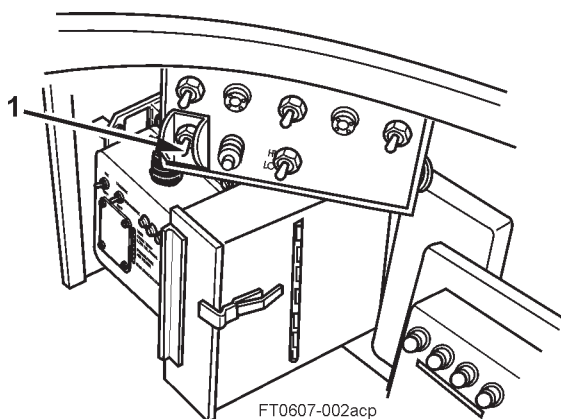
OPERATING PERSONNEL HEATER (continued)

Starting Global Heater

NOTE

The heater has its own self-diagnostic check once the HEAT CONTROL switch is put in the start position.

1. Turn vehicle MASTER switch (3) to ON.
2. Move HEAT CONTROL switch (1) momentarily to START for at least four seconds.
3. Move HEAT CONTROL switch (1) to RUN.
4. Heater will go through a series of self-diagnostics before entering the run mode. If the heater detects a fault, it will automatically shut down; if that happens, notify Unit maintenance.



OPERATING PERSONNEL HEATER (continued)

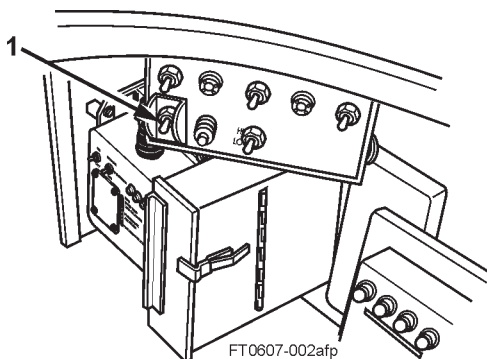
Any time heater is started, it should be operated for at least five minutes to clear heater of all excess fuel introduced during starting. After heater starts, it may be operated at either HIGH or LOW heat by positioning of HEAT SELECT switch (2).

CAUTION

If proper shutdown procedures are not followed, heater may be damaged by reverse burning.

Shutting Down Hupp Heater

To stop heater operation, move HEAT CONTROL switch (1) to OFF. Blower will continue to operate for about three minutes to allow system to cool.

**NOTE**

If blower continues to operate or otherwise malfunctions, notify Unit maintenance.

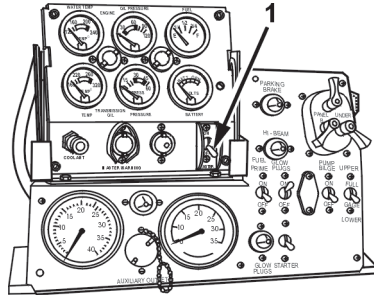
Shutting Down Global Heater**NOTE**

If HEAT CONTROL switch is in the off position at any time for more than two seconds or if an unsafe operating condition or faulty component is detected, the heater will automatically enter the purge mode and will shut down after four minutes.

1. Move HEAT CONTROL switch (1) to OFF.
2. Heater will enter purge mode and after four minutes it will automatically shut down.

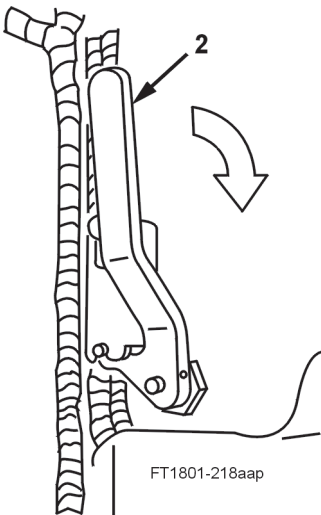
OPERATING VENTILATION BLOWER

1. Turn MASTER switch (1) to ON.

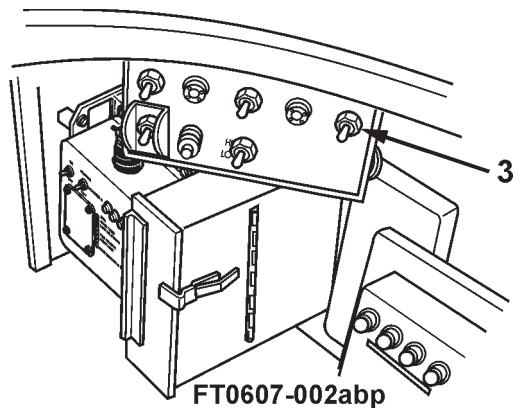


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2. To pull in fresh air, pull down air duct control handle (2) in driver's compartment. Turn VENTILATOR BLOWER switch (3) to INTAKE.
3. To clear out smoke, pull down on air duct control handle (2) and turn VENTILATOR BLOWER switch (3) to EXHAUST.
4. If automatic fire extinguisher system activates, ventilator blower turns to exhaust mode and vent door automatically opens.



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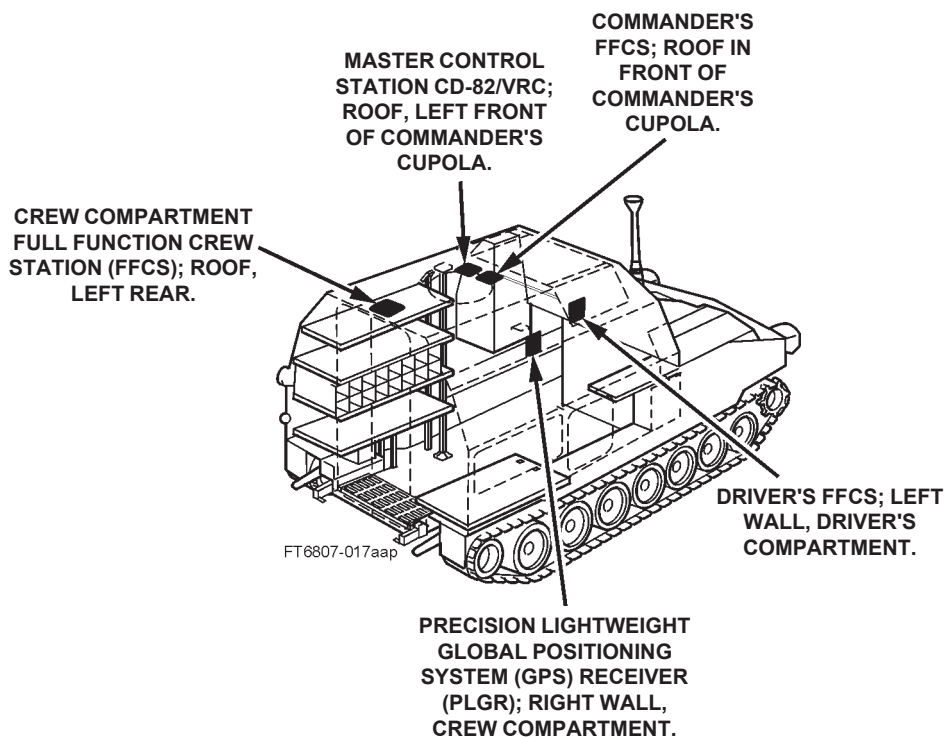


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OPERATING COMMUNICATION EQUIPMENT

Refer to TM 11-5830-263-10 for operation and maintenance of intercommunication system AN/VIC-3(V). Use of system for intercom only is given on the following pages.

Refer to TM 11-5825-291-13 for operation and maintenance of satellite signals navigation set AN/PSN-11 (PLGR).



OPERATING COMMUNICATION EQUIPMENT (continued)

Operating the CD-82/VRC

The CD-82/VRC is the Master Control Station (MCS) for the intercommunication system, AN/VIC-3(V). Both driver's MASTER switch and the CD-82/VRC must be turned on for the CD-82/VRC to work.

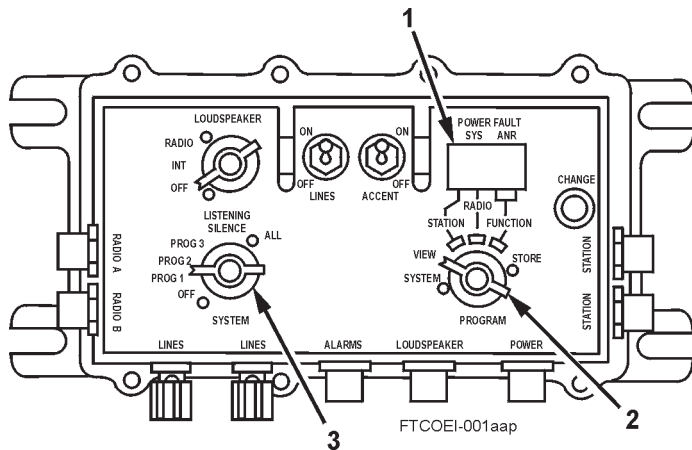
CAUTION

Before starting vehicle engine, make certain SYSTEM switch is set to OFF. Otherwise, the CD-82/VRC could be damaged.

NOTE

For demonstrating VIS operational procedures, PROG 1 is utilized as an example. Procedures outlined for PROG 1 below also apply to PROG 2, PROG 3, Listening Silence, and ALL program modes except that the display will change accordingly.

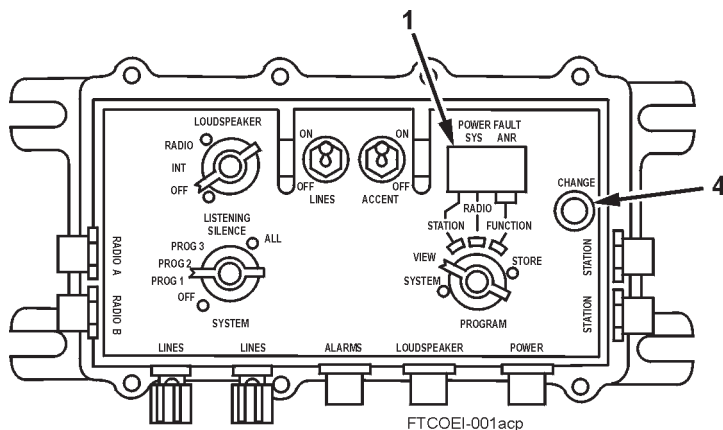
1. With vehicle power on, set PROGRAM switch (2) to SYSTEM, and set SYSTEM switch (3) to PROG 1.
2. While the system is initializing, the display (1) will read:
3. Programming information is transmitted to the radio interfaces and FFCs.



OPERATING COMMUNICATION EQUIPMENT (continued)

Operating the CD-82/VRC (continued)

4. The Built-In Test (BIT) starts; the display (1) will read: **t e s t**. The BIT, in addition to checking the system configuration for system and Active Noise Reduction (ANR) power, performs three functions in the following order:
 - a. Power-On Poll, where each crew station (FFCS), as well as radios A through F, are polled to determine their status (connected or disconnected/defective); in other words, the MCS is seeing what's out there.
 - b. EEPROM Test, where the MCS tests the read/write capability of its memory by storing and retrieving test data from the EEPROM RAM. If the MCS cannot store radio access data in its program memory, error messages "err1," "err2," or "err3" are displayed. These error messages cannot be cleared from the display (1) by pressing the CHANGE switch (4).
 - c. Configuration Test, where the MCS compares the connect status of the crew stations and any radios that have been programmed into memory via the system configuration procedures with the connect status as determined by the Power-On Poll.

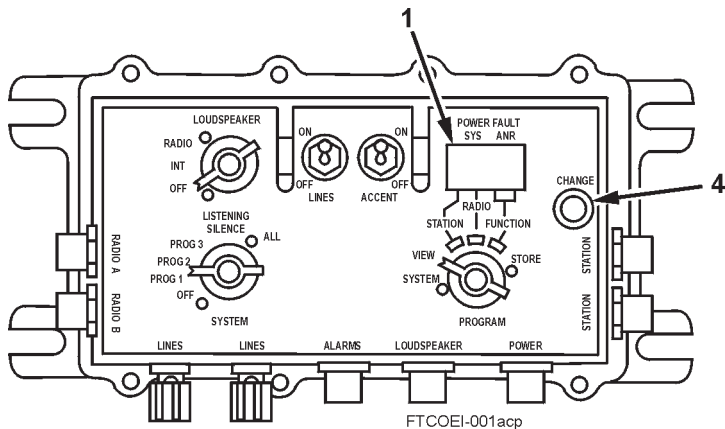


5. If there are no configuration discrepancies or errors, the display (1) will read: **p a s s**. This will be immediately followed by the system mode: **P 1 □ □**.
6. If there are configuration discrepancies or errors, the display (1) will read: **f a i l**. This will be followed by error codes which determine the crew stations or radio interfaces that are unconnected (or faulty).

OPERATING COMMUNICATION EQUIPMENT (continued)

Operating the CD-82/VRC (continued)

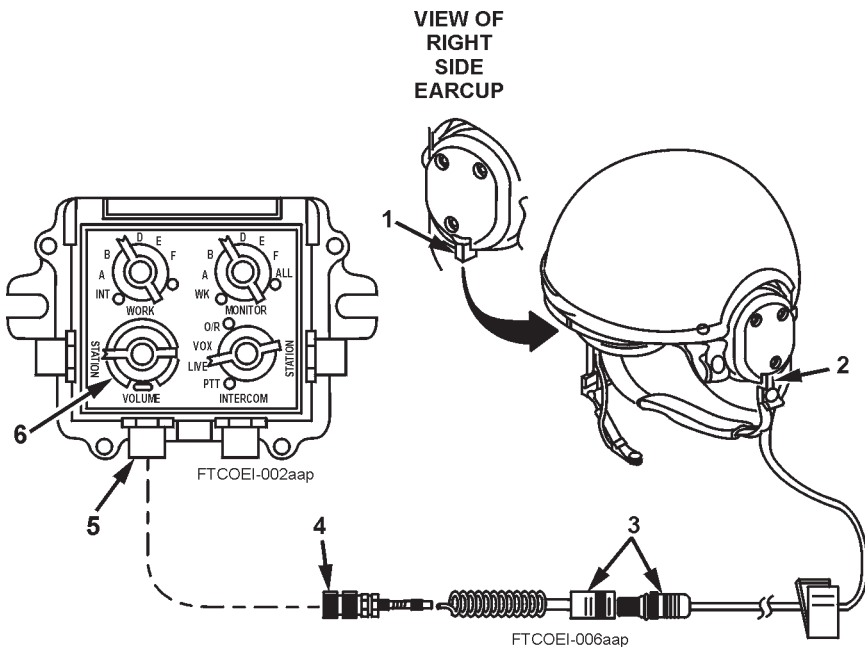
7. The display (1) will continue to show any configuration discrepancies and/or errors unless the user presses the CHANGE switch (4), which will clear the error message but not the fault.
8. After the display (1) shows **p a s s** followed by **P 1**, the system is ready for normal communications operation.
9. Crew members may now establish communication within their programmed capabilities.
10. The procedure for system modes PROG 2, PROG 3, LISTENING SILENCE, and ALL modes is the same as steps 1 through 8, except the display of the mode will change accordingly.



OPERATING COMMUNICATION EQUIPMENT (continued)

Positions of Combat Vehicular Crewman (CVC) Helmet for AN/VIC-3(V)

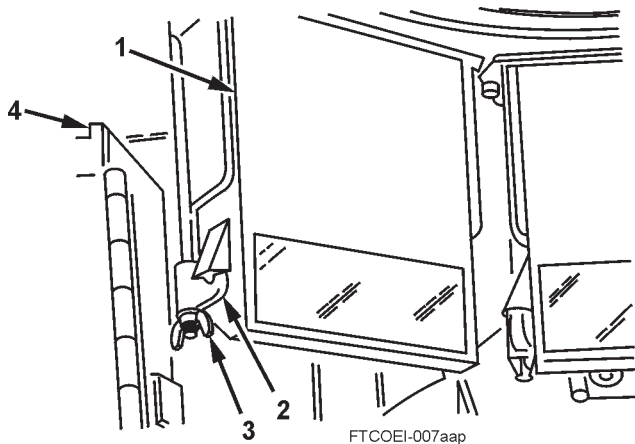
1. Connect CVC helmet cable connector (4) to FFCS receptacle (5).
2. Check to see that bail-out connectors (3) are snapped in place. During operation, adjust VOLUME knob (6) to lowest level to minimize outside noise while maintaining proper reception.
3. The push-to-talk (PTT) switch (2) is used when transmitting on intercom channel (fixed position) or radio (momentary position). Center position is used to listen to intercom and/or radio.
4. The ANR switch (1) is used to reduce vehicle noise heard by the crewman (rear position).



PERISCOPES

Removing M45 Periscopes

1. Remove periscope (1) by loosening two wingnuts (3) to release two lock supports (2).
2. Remove periscope (1) from supports on driver's hatch.
3. If necessary, stow periscope (1) in box (4) on left side of driver's compartment.



Installing M45 Periscopes

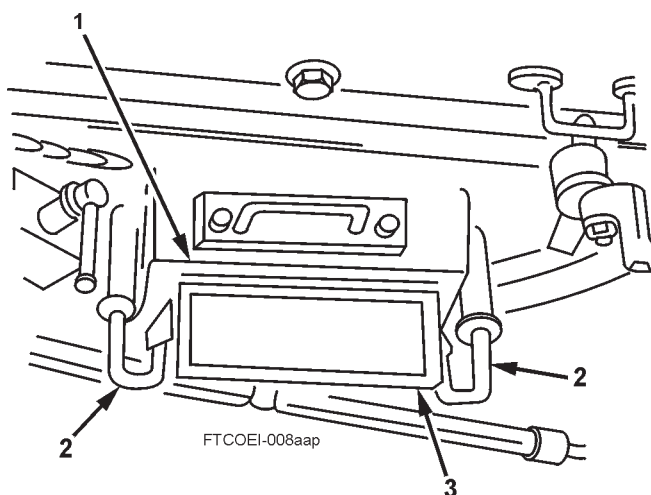
1. If stowed, remove periscope (1) from box (4) in driver's compartment.
2. Slide periscope (1) into supports on driver's hatch.
3. Install two lock supports (2) on periscope (1), and secure with two wingnuts (3).

PERISCOPES (continued)**Removing M27 Periscopes**

1. To remove periscope (3), pull and turn two retainers (2) on cupola (1).
2. Remove periscope (3) from cupola (1).

Installing M27 Periscopes

1. Slide periscope (3) into cupola (1).
2. Secure periscope (3) in cupola (1) with two retainers (2).

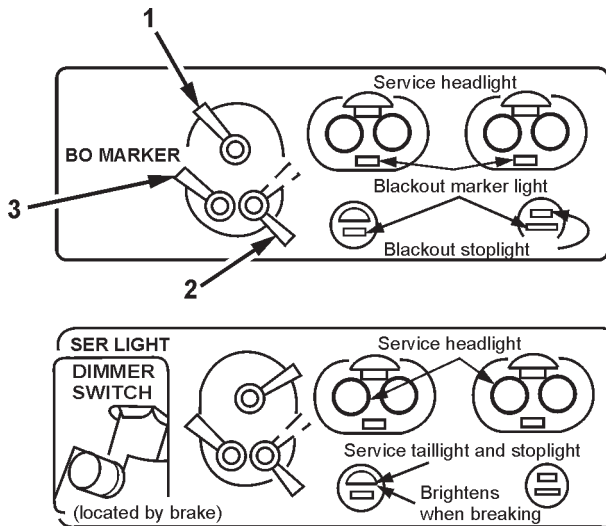


OPERATING THE LIGHTS

Driving Lights and Light Switch Assembly

The following panels show which lights are turned on by different positions of main light switch (1).

1. Main light switch (1).
2. Instrument panel light switch (3).
3. Safety switch (2). Push up to unlock main light switch (1). Release after main light switch (1) is in position.



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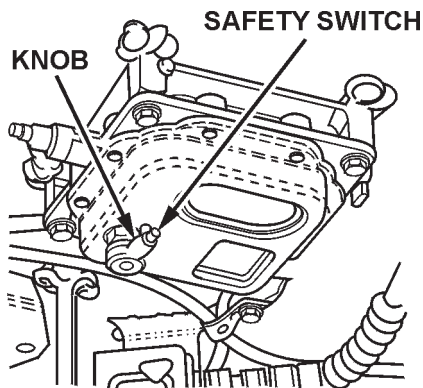
OPERATING THE LIGHTS (continued)

NOTE

Dome lights may be operated only if MASTER switch is on.

Dome Lights

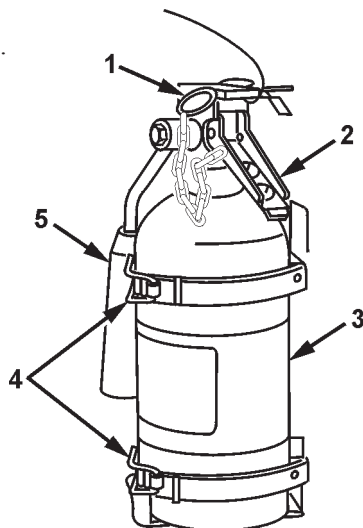
1. Blue-green light on – turn knob fully clockwise.
2. White light on – press safety switch and turn knob counterclockwise past stop.
3. Both lights off – position switch in center.



FT0609-024abp

PORTABLE FIRE EXTINGUISHER CO₂ OPERATIONWARNING

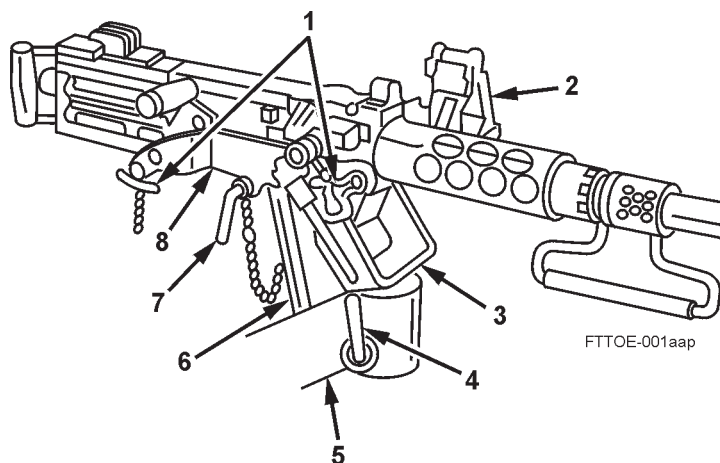
- For driver's/crew compartment fires, perform EMERGENCY PROCEDURES (p. 0039 00-1).
 - Remain CALM. Avoid breathing CO₂. It may quickly cause rapid breathing, loss of consciousness, and suffocation. Quickly exit vehicle if situation permits. If unable to exit, ventilate to remove the extinguisher gas. The driver is at the greatest risk. Ventilate the vehicle before reentry. Failure to follow this emergency procedure can result in serious injury or death to personnel.
 - Fire extinguisher CO₂ can cause severe burns. Do not touch the cone when using fire extinguisher or discharge directly on skin.
 - Handle fire extinguisher carefully. Do not bang or drop cylinder.
1. Pull two latches (4) to release fire extinguisher (3). Remove fire extinguisher (3).
 2. Break safety wire and remove ring pin (1).
 3. Aim discharge nozzle (5) at base of flames.
 4. Squeeze trigger (2) to operate and direct the discharge at fire until extinguished.
 5. After extinguishing flames, operate ventilation blower (p. 0028 00-5) to clear vehicle.



FTOBII-001aap

INSTALLING AND REMOVING 0.50-CALIBER MACHINE GUN**Installation**

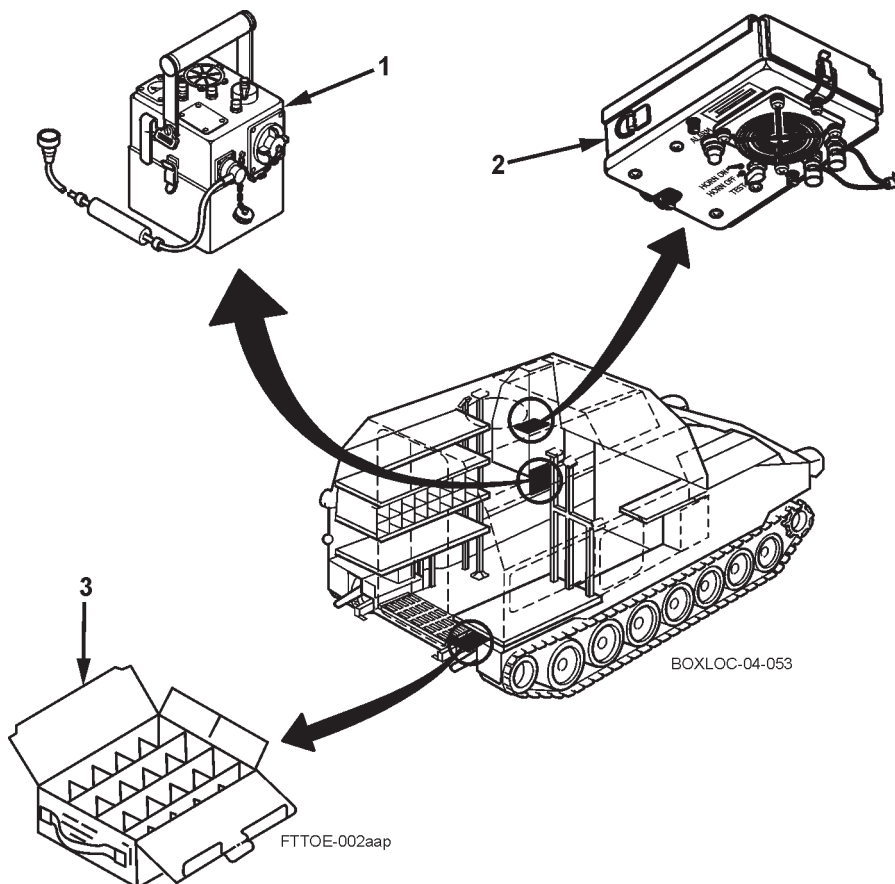
1. Pull down lock handle (4) to install pintle (3) and cradle (8) in pintle support (5).
2. Hold travel lock (6) with travel-lock pin (7).
3. Install machine gun in cradle (8) and hold with front and rear locking pins (1). Install ammunition tray (2).

**Removal**

1. Remove ammunition tray (2). Pull front and rear locking pins (1) and remove machine gun from cradle (8).
2. Remove travel-lock pin (7) to release travel lock (6).
3. Pull lock handle (4) and remove pintle (3) and cradle (8) from pintle support (5).

CHEMICAL AGENT DETECTION AND ALARM SYSTEM

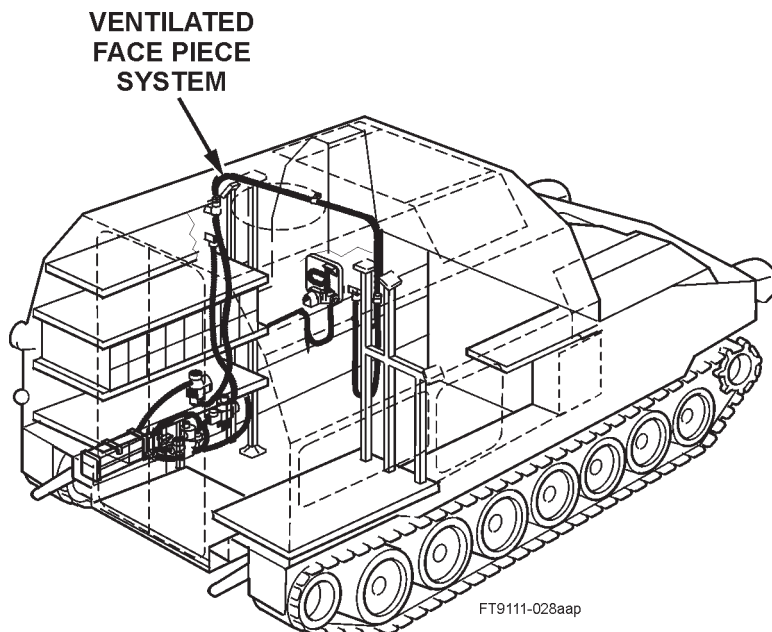
An M43 detector unit (1), an M42 alarm unit (2), and an M229 refill kit (3) provide advance warning of chemical agents in the air.



VENTILATED FACE PIECE SYSTEM (VFPS)

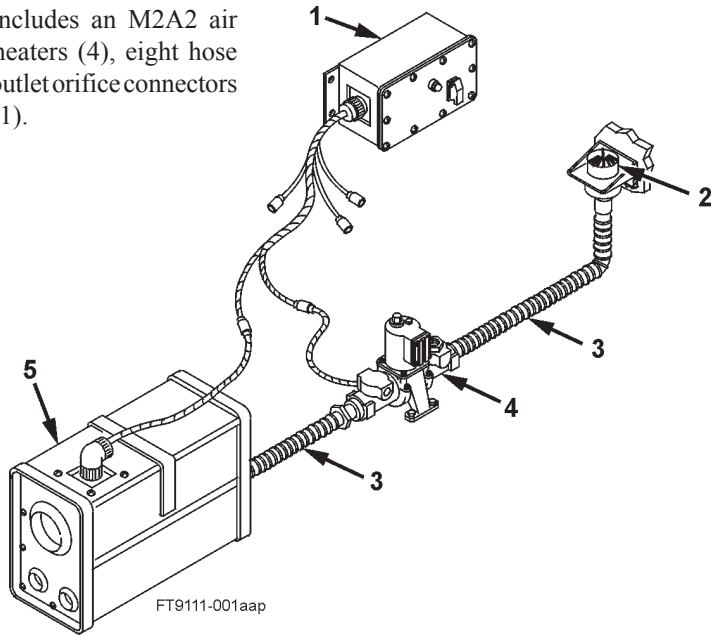
WARNING

- M2A2 air purifier unit filters must be kept dry. Filters that have been wet will not provide protection from NBC contaminants.
- If temperature is less than 40°F (4.4°C) outside, there is danger of lung damage from inhaling cold air. DO NOT connect hose to your mask canister until M2A2 air purifier unit has been operating for at least 15 minutes with heater turned on.
- Do not try to change filters yourself. If they are contaminated, special safety precautions must be taken.
- After suspected NBC exposure, all air filter media shall be handled only by personnel wearing full NBC protective equipment.
- BE AWARE: Neither the gas particulate filter unit nor the field protection mask for the nuclear-biological-chemical protection will protect you from carbon monoxide poisoning.



VENTILATED FACE PIECE SYSTEM (VFPS) (continued)

The M992A2 VFPS includes an M2A2 air purifier (5), four M3 heaters (4), eight hose assemblies (3), four air outlet orifice connectors (2), and a control box (1).

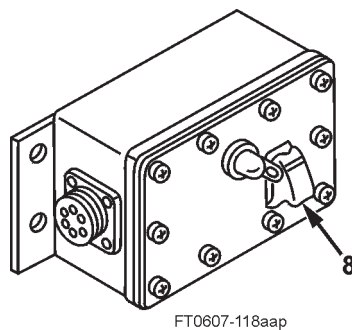
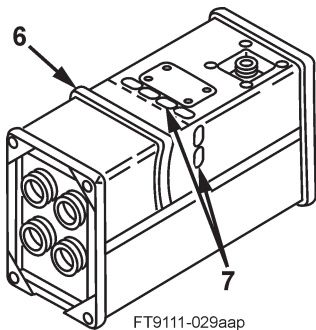


Starting and Operating

NOTE

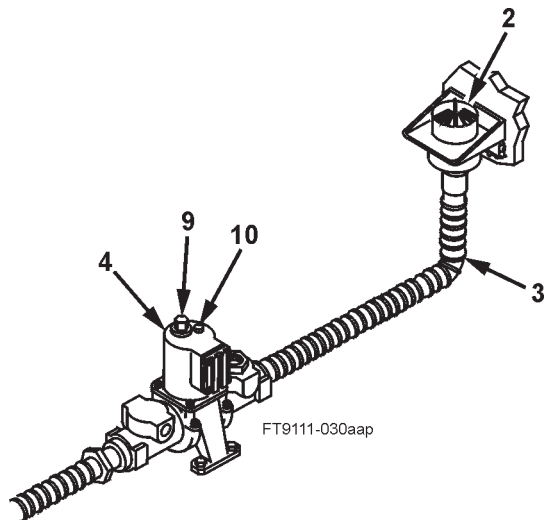
MASTER switch must be set to ON to operate VFPS.

1. Put on and adjust face piece.
2. Position spring clip (6) up to open two air purifier inlet holes (7).
3. Turn vehicle MASTER switch to ON, and turn VFPS control box switch (8) to ON.



VENTILATED FACE PIECE SYSTEM (VFPS) (continued)**Starting and Operating (continued)**

4. During cold-weather operations (outside temperatures below 40°F [4.4°C]), turn on your individual M3 heater (4) and rotate knob (9) clockwise to increase air temperature. Green light (10) should illuminate when knob is rotated. Allow air to warm for 15 minutes before attaching hose to canister on face piece.
5. Disconnect hose assembly (3) from air outlet orifice connector (2), and connect hose assembly (3) to canister on face piece.

**Stopping and Stowing**

1. Turn off M3 heater (4), if applicable.
2. Turn VFPS control box switch (8) and vehicle MASTER switch to OFF.
3. Disconnect hose assembly (3) from canister on face piece, and connect hose assembly (3) to air outlet orifice (2).
4. Remove and stow face piece.
5. Move spring clip (6) down to cover two air purifier inlet holes (7).

VENTILATED FACE PIECE SYSTEM (VFPS) (continued)**Maintenance****WARNING**

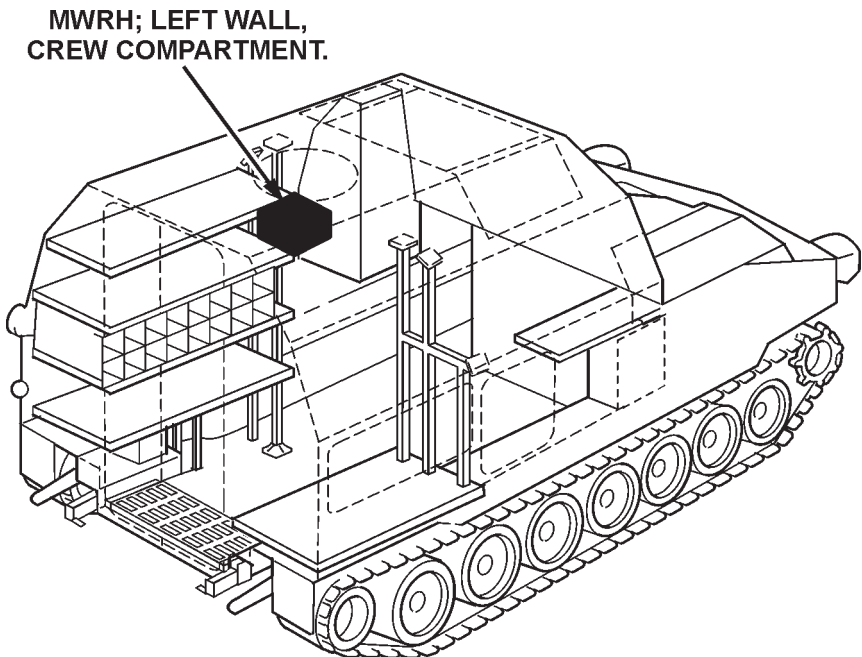
- **If NBC exposure is suspected, all air filter media should be handled by personnel wearing protective equipment. Consult your unit NBC officer or NBC NCO for appropriate handling or disposal instructions.**
 - **Crewmembers are not authorized to change contaminated filters. Changing contaminated filters can result in severe injury or death to personnel.**
1. Notify Unit maintenance to change M2A2 gas filter and/or M13 particulate filter when one or more of the following conditions are observed:
 - Physical damage
 - Water immersion
 - Low airflow to face pieces
 - 5,000-mile vehicle overhaul (peacetime operation)
 - 10,000 hours of vehicle operation (no chemical agents used—wartime operation)
 - 1,500 hours (approximately five months) of vehicle operation (chemical agents used—wartime operation)
 - After each CK (cyanogen chloride—a blood agent) attack
 - At beginning of combat conditions and when use of CK is expected
 2. Notify Unit maintenance to replace spring clip if:
 - Clip is missing or damaged
 - Rubber gasket is missing or does not seal properly

OPERATING MOUNTED WATER RATION HEATER (MWRH)

NOTE

Fill the MWRH only when it is removed from mounting bracket and set low enough that fill lines can be seen.

Refer to TM 10-7310-241-12&P for operation and maintenance of MWRH.



FT 9111-031aap

END OF WORK PACKAGE

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

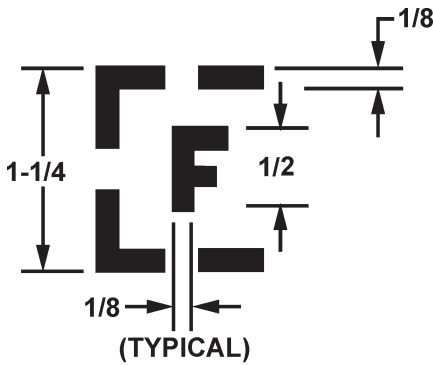
STENCIL MARKINGS

INITIAL SETUP:

Maintenance Level

Operator

Apply stencils to clean, painted surfaces only. Use black or green enamel, specification QPL TT-E-489-38. When possible, position stencil so it is covered by the item named when the item is stowed in its proper place. Stencil dimensions are shown below; stencil locations are shown on pages 0029 00-1 through 0029 00-3/4 blank.

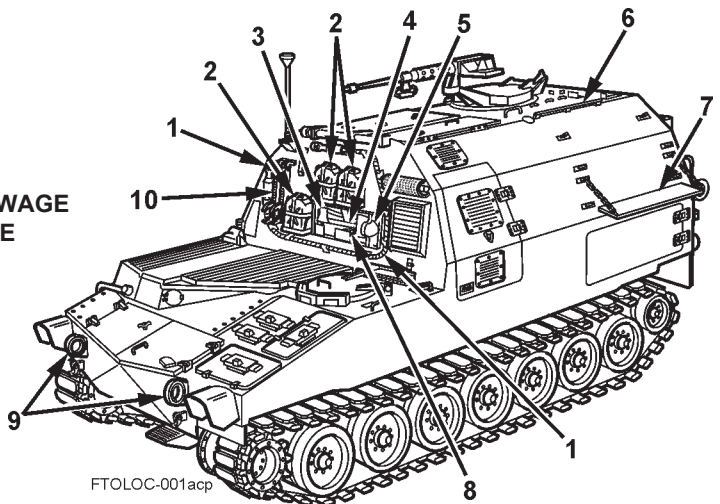


FTOLOC-166aap

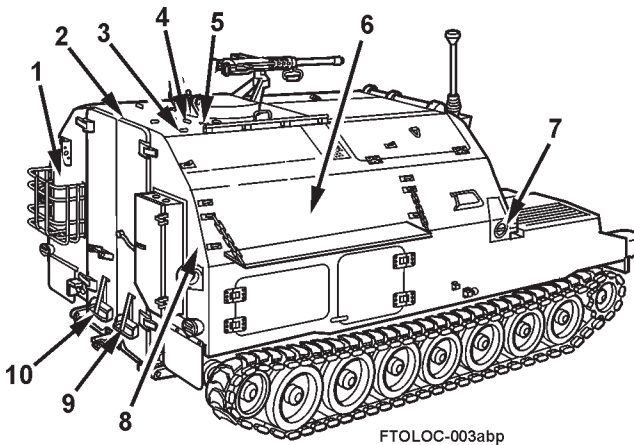
NOTE

These are the dimensions for the letters and borders of most stencils. Dimensions are in inches.

- 1. TOW CABLE
- 2. WATER CAN
- 3. AXE
- 4. MATTOCK
- 5. SHOVEL
- 6. LIFTING BEAM
- 7. DUFFLE BAG STORAGE
- 8. MATTOCK HANDLE
- 9. LIFT HERE
- 10. TRACK FIXTURE



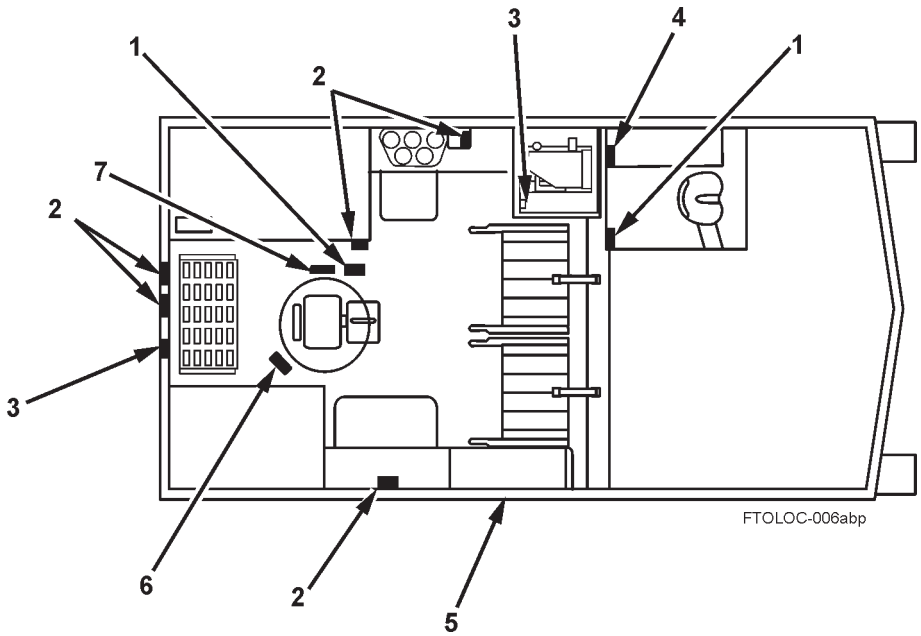
FTOLOC-001acp



FTOLOC-003abp

1. BEDROLL (S/N 1-344 L/H and R/H sides; S/N 345 and above L/H side only)
2. SHOVEL
3. PICK
4. 0.50-CALIBER BARREL
5. CROWBAR
6. DUFFLE BAG STOWAGE
7. DIESEL FUEL
8. LIFT HERE (note: appears above bracket on both sides of vehicle)
9. WATER CAN
10. DECONTAMINATION APPARATUS

STENCIL MARKINGS (continued)



- 1. FLASHLIGHT
- 2. RIFLE M16A2
- 3. FIRE EXTINGUISHER
- 4. M45 PERISCOPE
- 5. SUITS
- 6. BINOCULAR
- 7. PHONE

END OF WORK PACKAGE

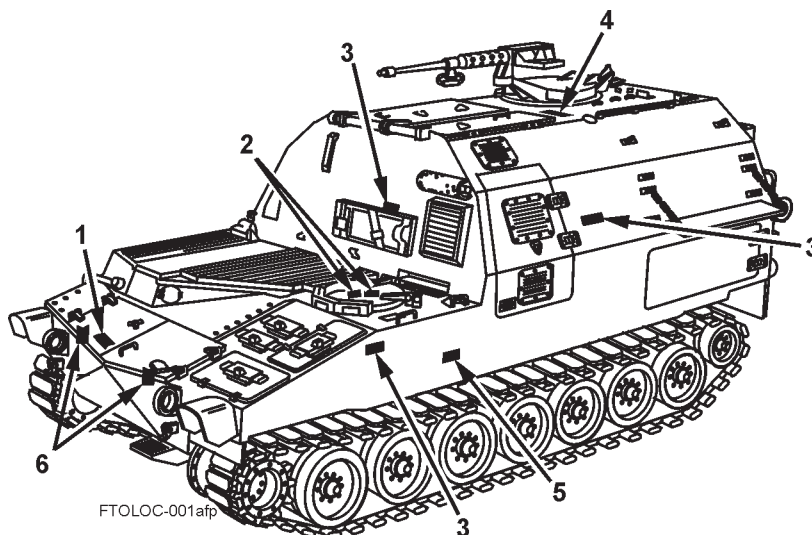
OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

NAME PLATES AND DECALS

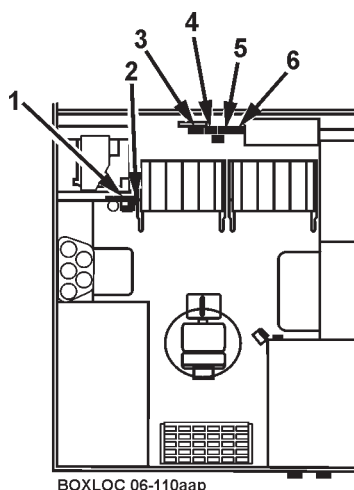
INITIAL SETUP:

Maintenance Level

Operator

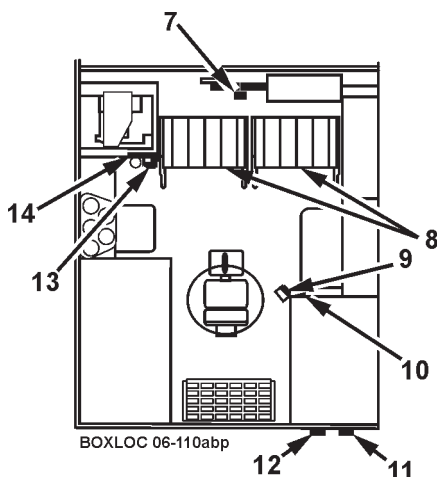


| KEY | ITEM/LOCATION | DESCRIPTION |
|-----|---|--|
| 1 | Main engine oil filter change instruction on oil filter | Cautions against use of bypass-type filter elements |
| 2 | Engine overheating cautions in driver's compartment | Do's and Don'ts to prevent engine overheating conditions |
| 3 | High-intensity noise caution plates in driver's compartment and crew compartment | Warning to wear hearing protection when vehicle is operating |
| 4 | Communications equipment shutoff caution on ceiling forward of commander's cupola | Caution to turn off communication equipment before starting or stopping engine |
| 5 | Identification plate in driver's compartment | Identification of model and specification information |
| 6 | Main engine fuel filter change instruction on fuel filter | Filter-draining instructions |



BOXLOC 06-110aap

| KEY | ITEM/LOCATION | DESCRIPTION |
|-----|---|--|
| 1 | Personnel heater warning decal on APU compartment wall in crew compartment | Warns against placing flammables or explosives on or near heater |
| 2 | Crew AFES No. 3 cylinder warning decal on APU compartment wall in crew compartment | Warns against removing locking pin during bottle installation and not removing pin after manual discharge cable has been connected |
| 3 | Crew AFES No. 1 cylinder warning decal on forward crew bulkhead behind left projectile rack assembly | Warns against removing locking pin |
| 4 | Engine AFES No. 1 cylinder warning decal on forward crew bulkhead behind left projectile rack assembly | Warns against removing locking pin |
| 5 | Crew AFES No. 4 cylinder warning decal on forward crew bulkhead behind left projectile rack assembly | Warns against removing locking pin during bottle installation and not removing pin after manual discharge cable has been connected |
| 6 | Engine AFES No. 2 cylinder warning decal on bracket on forward crew bulkhead behind left projectile rack assembly | Warns against removing locking pin during bottle installation and not removing pin after manual discharge cable has been connected |



| KEY | ITEM/LOCATION | DESCRIPTION |
|-----|--|--|
| 7 | Crew compartment Halon 1301 only warning decal on forward crew bulkhead behind left projectile rack | Warns to install only bottles marked Halon 1301 for crew compartment and not to install bottles marked HFC-227ea |
| 8 | Warning decal on stowage boxes | Warns against potential injury from improperly lifting canisters |
| 9 | Crew compartment Halon 1301 only warning decal on Global Positioning System (GPS) mounting bracket | Warns to install only bottles marked Halon 1301 for crew compartment and not to install bottles marked HFC-227ea |
| 10 | Crew AFES No. 2 cylinder warning decal on right rear canister compartment | Warns against removing locking pin |
| 11 | Crew AFES No. 6 cylinder warning decal on rear wall in fire extinguisher box assembly (vehicles S/N 345 and above) | Warns against removing locking pin |
| 12 | Crew AFES No. 5 cylinder warning decal on rear wall in fire extinguisher box assembly (vehicles S/N 345 and above) | Warns against removing locking pin |
| 13 | APU power feed through junction box cover | Warns against removing junction box cover without first disconnecting battery cables |
| 14 | Crew compartment Halon 1301 only warning decal on APU compartment wall in crew compartment | Warns to install only bottles marked Halon 1301 for crew compartment and not to install bottles marked HFC-227ea |

END OF WORK PACKAGE

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

OPERATION UNDER UNUSUAL CONDITIONS

INITIAL SETUP:

Maintenance Level

Operator

NOTE

- When operating vehicle in extremes of temperature, humidity, and terrain conditions, special care in lubricating and cleaning must be observed.
- TC 21-306 contains important instructions on driver selection, training, and supervision. TC 21-306 also gives driving instructions for operating your equipment under all conditions.

Vehicle armament maintenance procedures are the same as operating under usual conditions. The only difference is to use lubricating oil for aircraft weapons (LAW) in cleaning and lubricating to ensure proper functioning of your M2 0.50-caliber machine gun.

END OF WORK PACKAGE

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

STARTING MAIN ENGINE IN COLD WEATHER

THIS WORK PACKAGE COVERS:

Prestating Procedure, and Starting the Main Engine

INITIAL SETUP:

Maintenance Level

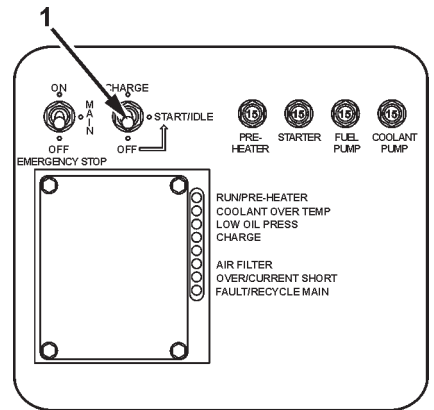
Operator

NOTE

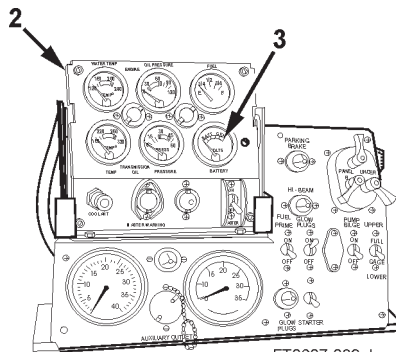
Cold-weather starting procedures are to be used at 0°F (-17.8°C) and below. However, these procedures also apply when vehicle will not start at 40°F (4.4°C). Glow plug switch and starter switch must be activated at the same time.

PRESTARTING PROCEDURE

1. Start the APU (p. 0022 00-1).
2. After the APU has been running for five minutes, place the CHARGE/START-IDLE/OFF switch (1) to the CHARGE position.
3. After the APU has been running for 15 minutes, place the CHARGE/START-IDLE/OFF switch (1) to START-IDLE and check BATTERY indicator (3) on portable instrument panel (2).



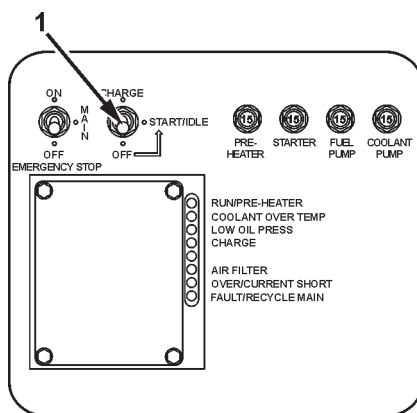
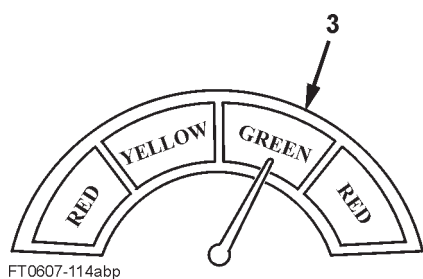
FT0608-007agp



FT0607-089akp

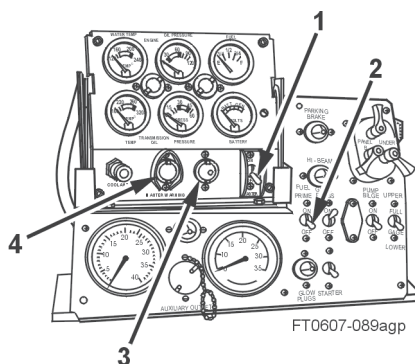
PRESTARTING PROCEDURE (continued)

4. If BATTERY indicator (3) indicates at least mid-yellow, stop the APU and attempt cold-weather main engine start.
5. If BATTERY indicator (3) indicates less than mid-yellow, place the CHARGE/START-IDLE/OFF switch (1) to the CHARGE position and continue charging batteries before starting.
6. Periodically check BATTERY indicator (3) by placing the CHARGE/START-IDLE/OFF switch (1) to START-IDLE. When gage indicates mid-yellow or better, commence cold-weather start.



STARTING THE MAIN ENGINE

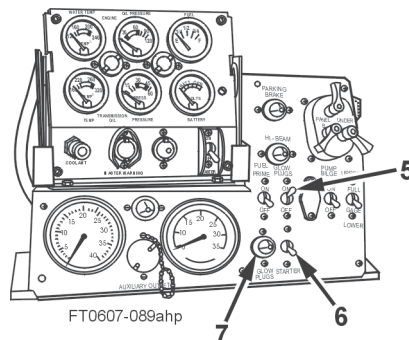
1. Remove and roll up tarpaulins. Secure tarpaulins with webbing assemblies.
2. Charge batteries (p. 0022 00-10).
3. Press down on service brake pedal, pull out and down on brake lock handle, then release handle to set brake.
4. Shift into N (neutral).
5. Set MASTER switch (1) to ON. Indicator lamp (3) and MASTER WARNING lamp (4) will light.
6. Set FUEL PRIME switch (2) to ON for 45 seconds and release.



STARTING THE MAIN ENGINE (continued)

NOTE

- When STARTER switch is engaged, GLOW PLUG lamp will stop flashing and stay on for one minute after release of STARTER switch.
- If STARTER switch is not engaged within one minute after GLOW PLUG lamp starts to flash, glow plugs and GLOW PLUG lamp will turn off.



- If GLOW PLUG lamp does not turn off after engine starts, notify the section chief and Unit maintenance.

7. For all starts using glow plug system, put engine throttle in full throttle position. Momentarily turn on GLOW PLUG switch (5). GLOW PLUG indicator lamp (7) will turn on. After 35 seconds, when GLOW PLUG indicator lamp (7) flashes on /off, engage STARTER switch (6). Hold STARTER switch (6) on for two or three seconds, but no more than five seconds. Do not move engine throttle. Engine should start and increase in speed. When engine speed (rpm) reaches 1500-1800 rpm, reduce throttle and hold engine speed to 1200-1500 rpm. If engine does not start after first attempt, turn on GLOW PLUG switch (5) and repeat starting procedure. If engine does not start after four attempts of starter engagement, discontinue starting procedure and notify Unit maintenance.

CAUTION

**Manual override procedure should be used in emergencies only.
Frequent manual overrides will damage glow plug system.**

8. If engine does not start, a manual override procedure may be used, as determined by the section chief. This procedure is as follows: Hold GLOW PLUG switch (5) at ON. After 35 seconds engage STARTER switch (6); when engine starts, continue to hold GLOW PLUG switch (5) on until engine speed reaches 1500 rpm and then release GLOW PLUG switch (5). If engine does not start after four attempts of starter engagement, or GLOW PLUG indicator lamp (7) does not turn on, discontinue starting procedure and notify Unit maintenance.

STARTING THE MAIN ENGINE (continued)

9. With brakes still locked, set throttle to run engine at 1200 rpm and shift transmission to fourth gear. When ENGINE COOLANT TEMPERATURE gage indicates 120°F to 140°F, shift into N (neutral) and idle engine. (If transmission temperature approaches 300°F during warm-up, immediately shift to N (neutral) until temperature approaches normal range.)
10. During warm-up, refer to portable instrument panel checkout procedure (p. 0010 00-1).

END OF WORK PACKAGE

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

SLAVE STARTING DISABLED VEHICLE USING MAIN ENGINE

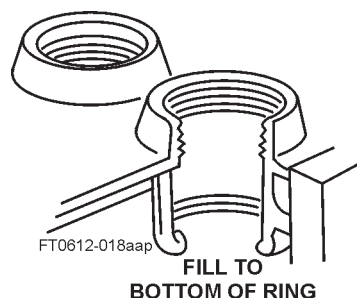
INITIAL SETUP:

Maintenance Level

Operator

Before trying to slave start a disabled vehicle, take these preliminary actions:

- Check batteries for damage. Notify Unit maintenance if batteries are damaged.
- Check battery electrolyte level (TM 9-6140-200-14). Add distilled water as necessary.



WARNING

- **When slave starting vehicle, do not stand in front or back of disabled vehicle. Vehicle may lurch and cause serious injury or death.**
- **Do not park M992A2 in front of disabled vehicle. Injury to personnel or damage to vehicles could occur if vehicle rolls forward.**
- **Do not allow vehicles to touch. Allow enough space between them to permit working room. Shorted circuits could allow electricity to flow through vehicles, causing injury to personnel and/or damage to equipment.**

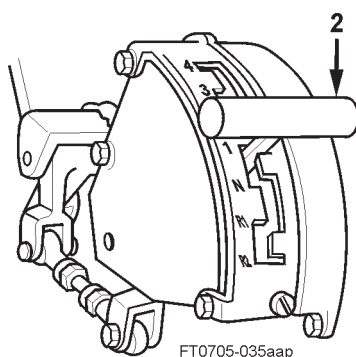
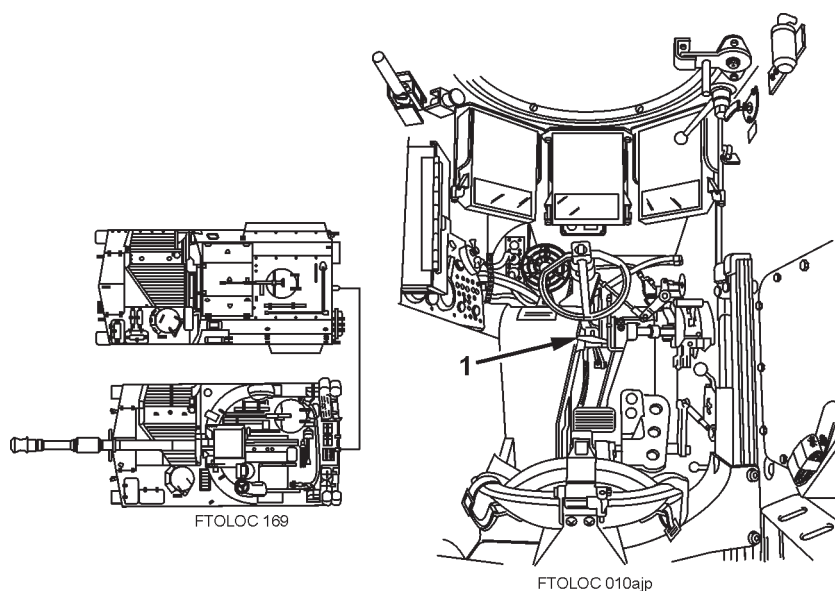
NOTE

- Use front slave receptacle to slave start vehicle whenever possible. Use rear slave receptacle only when front slave receptacle is not accessible.
- If required, refer to specific technical manual of vehicle being slaved to FAASV.
- Before applying the service brake while on steep slopes (greater than 20 percent), adjust the driver's seat so you can apply maximum leverage to the brake.

**SLAVE STARTING DISABLED VEHICLE
USING MAIN ENGINE (continued)**

0033 00

1. Set parking brake (1) on both vehicles (p. 0009 00-3).



2. Place shift lever (2) of each vehicle in N (neutral) position.
3. Turn MASTER switch to ON in disabled vehicle and check to see if there is enough power to activate gages and interior lights. If not, refer to Charging Dead Batteries with the APU (p. 0022 00-15).

**SLAVE STARTING DISABLED VEHICLE
USING MAIN ENGINE (continued)**

0033 00

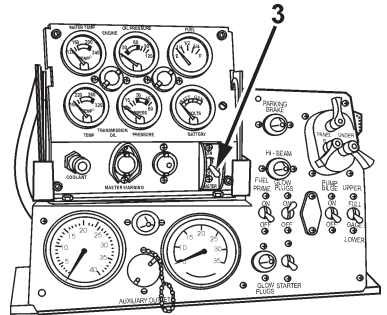
WARNING

To avoid personal injury and vehicle damage, turn MASTER switch and other electrical switches to OFF.

4. Turn MASTER switch (3) in each vehicle to OFF.

NOTE

It is not necessary to stop M992A2 main engine. It will continue to run with MASTER switch OFF.



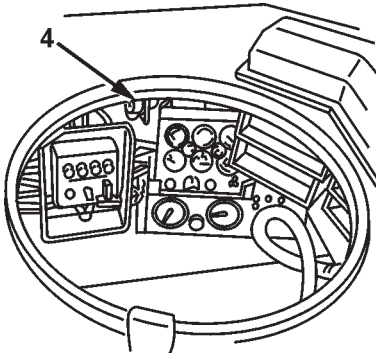
FT0607-089aip

5. Turn off all electrical switches in disabled vehicle.

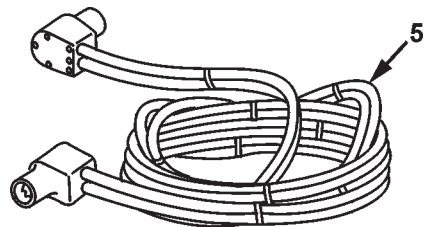
NOTE

Only use slave receptacle connector in driver's compartment of M992A2 for this procedure.

6. Attach slave cable (5) securely to slave receptacle connector (4) at each vehicle.



FT0613-123aap



FT0B11-002aap

7. Turn MASTER switch to ON in operational M992A2. Start engine and set engine speed to 600 rpm.
8. Turn MASTER switch to ON in disabled vehicle.
9. Allow batteries in disabled vehicle to charge for five minutes before trying to start vehicle.
10. Try to start disabled vehicle. If it would not start, notify Unit maintenance.

**SLAVE STARTING DISABLED VEHICLE
USING MAIN ENGINE (continued)**

0033 00

WARNING

To prevent injury, make sure that MASTER switch is turned to OFF in both vehicles before disconnecting slave cable.

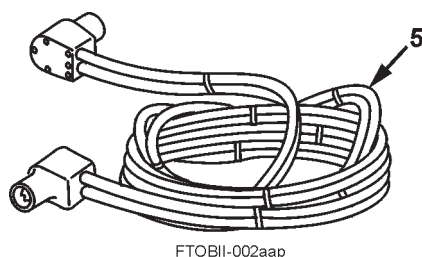
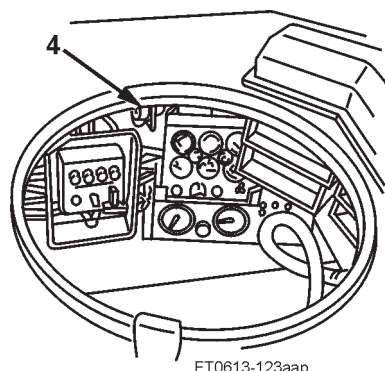
CAUTION

To avoid damaging the charging system of the functioning vehicle, do not rev its engine above 600 rpm while slave starting another vehicle.

NOTE

It is not necessary to turn MASTER switch in both vehicles to OFF if both vehicles are M992A2s. If slave starting any other vehicle, refer to that vehicle's operator's manual for slave starting.

11. After engine in disabled vehicle is running smoothly, turn MASTER switch in both vehicles to OFF.
12. Disconnect slave cable (5) from slave receptacle connector (4) at each vehicle.
13. Turn MASTER switch in both vehicles to OFF.



NOTE

After disconnecting slave cable, run both engines at 1100 rpm to stabilize generators and charge batteries.

END OF WORK PACKAGE

OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

DRIVING OVER UNUSUAL TERRAIN

INITIAL SETUP:
Maintenance Level
Operator

MUD

- Use first gear. Move steadily to avoid becoming stuck.
- If vehicle becomes stuck, do not dig deeper by attempting to drive out. Arrange for towing.
- If freezing temperatures are expected, park vehicle on solid ground to prevent tracks from freezing in mud.

SNOW

- Drive carefully.
- When ascending grades, steer as straight as possible. Avoid sharp turns.
- It may be possible for vehicle to ride on heavily crusted snow with only occasional breakthrough. To climb back onto crust, shift into first gear and accelerate slowly to obtain forward movement without slippage.

ICE

- Drive slowly and cautiously to avoid skidding. If vehicle skids, slow down and proceed with caution. Do not spin tracks.
- Avoid grades and sharp turns, if possible.
- When ascending grades, steer as straight as possible.

SAND

- Avoid spinning tracks.
- Drive slowly to move vehicle steadily.
- Do not make sharp turns in first gear. Instead, make wide sweeping turns in second or third gear.

DUST

WARNING

If NBC exposure is suspected, all air filter media should be handled by personnel wearing NBC protective equipment. Consult your unit NBC officer or NBC NCO for appropriate handling or disposal instructions.

- Frequently check air cleaner restriction indicator (p. 0024 00-02). Clean air filters if necessary.

END OF WORK PACKAGE

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

OPERATING IN EXTREME HEAT

THIS WORK PACKAGE COVERS:

Driving in Hot Weather and Parking in Hot Weather

INITIAL SETUP:

Maintenance Level

Operator

DRIVING IN HOT WEATHER

- Keep ventilating system on during operation.
- Operate driver's cooling fan (p. 0033 00-01).
- Check temperature gages and warning lights often.
- Vehicle may overheat during long, hard towing operations in high gear or when driving at high speeds. Stop to cool vehicle whenever practical.

WARNING

If NBC exposure is suspected, all air filter media should be handled by personnel wearing NBC protective equipment. Consult your unit NBC officer or NBC NCO for appropriate handling or disposal instructions.

- Frequently inspect air cleaner restriction indicator (p. 0028 00-2). Clean air filters if necessary.
- Inspect oil coolers often. Clean dust, insects, and other debris from oil coolers by brushing off screens or flushing with low-pressure water.

PARKING IN HOT WEATHER

- Do not park vehicle in sun for long periods of time.
- Lubricate weapons more often than in moderate weather because oil evaporates.

END OF WORK PACKAGE

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

OPERATING IN HUMID OR SALTY CLIMATES

INITIAL SETUP:
Maintenance Level
Operator

When operating in humid or salty climates, you must protect your vehicle against rust and fungus.

1. Check vehicle often for rust and fungus. Clean and lubricate areas where either is evident. Pay particular attention to:
 - Non-metallic hoses, canvas, woven straps.
 - Vision devices (periscopes, lenses).
 - Recesses and low areas where moisture may collect.
2. Wherever paint is chipped, touch-up paint is required immediately to prevent rusting.
3. Lubricate weapons more often.

END OF WORK PACKAGE

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

OPERATING IN DUSTY OR SANDY ENVIRONMENTS

INITIAL SETUP:
Maintenance Level
Operator

Observe the following precautions:

- Park vehicle under shelter. If shelter is not available, cover vehicle with tarpaulins.
- Keep all weapons lubricated and covered when not in use.
- Before firing machine gun, remove lubricants from bolt assembly, receiver, trigger, feed tray, cover assembly, barrel, and other moving parts.

END OF WORK PACKAGE

OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

FORDING OPERATIONS

THIS WORK PACKAGE COVERS:

Fording and After Fording Operations

INITIAL SETUP:

Maintenance Level

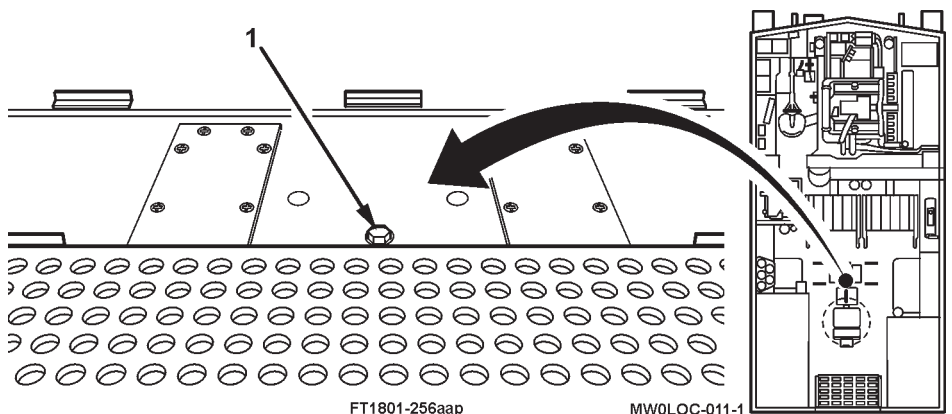
Operator

FORDING

CAUTION

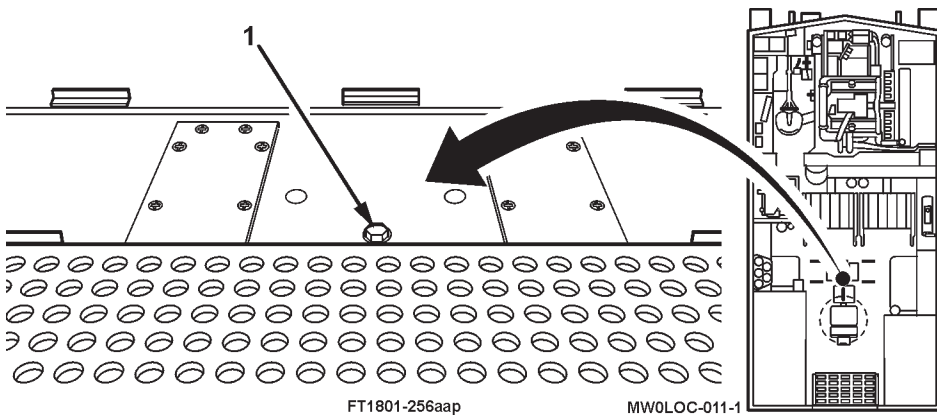
Normal fording (without extra equipment) is allowable to a depth up to 42 inches (107 cm). Make sure hull access plates are installed prior to fording operations. Check for soft mud or sandy bottoms. Reduce 42-inch (107 cm) fording depth by estimated amount of vehicle sinkage.

1. Make sure all hull access plates and 15 drain plug assemblies are installed on bottom of hull.
2. Close drain valve (1).
3. To prevent vehicle from stalling while fording, make sure engine is warm.
4. Enter water slowly.
5. Turn BILGE PUMP switch to ON.
6. When fording is completed, perform after-fording operations.



AFTER-FORDING OPERATIONS

1. Open drain valve (1) and 15 drain plug assemblies on bottom of hull.
2. Check engine and transmission oil for presence of water. If oil color has changed or water is detected, notify Unit maintenance.
3. When bilge pump is discharging only air, turn BILGE PUMP switch to OFF.
4. Run engine to blow out and evaporate water in and on engine.
5. Perform lubrication procedures (WP 0078 00) immediately. Pay special attention to water contamination of roadwheel hubs and idler wheel hubs after fording.



END OF WORK PACKAGE

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

EMERGENCY PROCEDURES

THIS WORK PACKAGE COVERS:

Portable Fire Extinguisher CO₂, Ventilated Face Piece System (VFPS), and
Combat Starter Override Switch

INITIAL SETUP:

Maintenance Level

Operator

Personnel Required

Three

PORTABLE FIRE EXTINGUISHER CO₂

WARNING

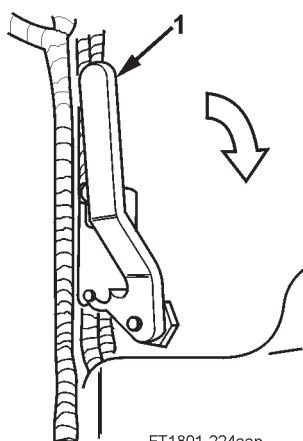
- **Remain CALM. Avoid breathing CO₂. It may quickly cause rapid breathing, loss of consciousness, and suffocation. Quickly exit vehicle if situation permits. If unable to exit, ventilate to remove the extinguisher gas. The driver is at the greatest risk. Ventilate the vehicle before reentry. Failure to follow this emergency procedure can result in serious injury or death to personnel.**
 - **Fire extinguisher CO₂ can cause severe burns. Do not touch the cone when using fire extinguisher or discharge directly on skin.**
 - **Handle fire extinguisher carefully. Do not bang or drop cylinder.**
1. Immediately notify other crew members, particularly the driver, of fire detection and intent to use the portable fire extinguisher CO₂.

PORTABLE FIRE EXTINGUISHER CO₂ (continued)

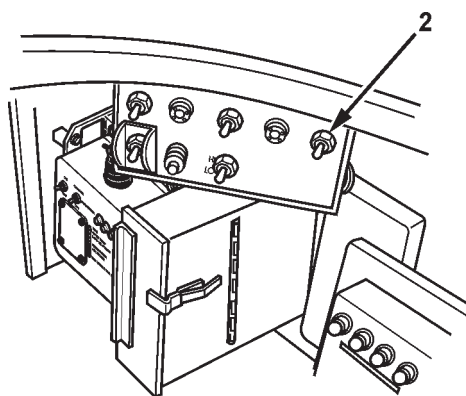
NOTE

If vent door will not open or blower motor does not operate in ventilation mode, the driver should open driver's hatch and other crew members should open the remaining hatches and doors.

2. The driver must immediately pull down on air duct control handle (1) to open the vent door and turn VENTILATOR BLOWER switch (2) to EXHAUST.



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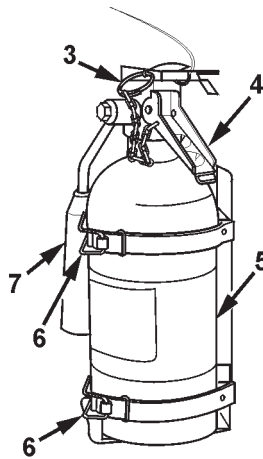
FT0607-002adp

WARNING

- **Remain CALM. Avoid breathing CO₂.** It may quickly cause rapid breathing, loss of consciousness, and suffocation. Quickly exit vehicle if situation permits. If unable to exit, ventilate to remove the extinguisher gas. The driver is at the greatest risk. Ventilate the vehicle before reentry. Failure to follow this emergency procedure can result in serious injury or death to personnel.
- **Fire extinguisher CO₂ can cause severe burns. Do not touch the cone when using fire extinguisher or discharge directly on skin.**
- **Handle fire extinguisher carefully. Do not bang or drop cylinder.**

PORTABLE FIRE EXTINGUISHER CO₂ (continued)

3. Pull latch (6) to release fire extinguisher (5). Remove fire extinguisher (5).
4. Break safety wire and remove ring pin (3).
5. Aim discharge nozzle (7) at base of flames.
6. Squeeze trigger (4) to operate and direct the discharge at the fire until extinguished.
7. After discharging fire extinguisher, crew members, if able, will exit the vehicle to prevent overexposure to CO₂. Ventilate the vehicle prior to reentry.
8. If unable to exit, continue ventilation of the vehicle to clear all smoke, fire fumes, and CO₂.



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VENTILATED FACE PIECE SYSTEM (VFPS)

If VFPS system fails, use individual face mask protection.

TM9-2350-372-10

CHAPTER 3
TROUBLESHOOTING PROCEDURES

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

INTRODUCTION

The Symptom Index (WP0041) is intended to assist you in locating the correct troubleshooting procedure quickly.

The troubleshooting procedures (WP0042) list common malfunctions you may find during operation or maintenance of an M992A2 or its components. You should perform tests/inspections and corrective actions in the order listed.

This manual cannot list all malfunctions that may occur, nor can it list all tests, inspections, and corrective actions. If a malfunction is not listed or is not corrected by the corrective action listed, notify your supervisor.

NOTE

Before you use the troubleshooting procedures, be sure you have performed all applicable operating checks presented in WP 0044 00 through WP 0046 00.

END OF WORK PACKAGE

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

TROUBLESHOOTING SYMPTOM INDEX

INITIAL SETUP:

Maintenance Level

Operator

The Symptom Index is intended to assist you in locating the correct troubleshooting procedure quickly.

The troubleshooting procedures (WP 0042 00) list common malfunctions you may find during operation or maintenance of an M992A2 or its components. You should perform tests/inspections and corrective actions in the order listed. This manual cannot list all malfunctions that may occur, nor can it list all tests, inspections, and corrective actions. If a malfunction is not listed or is not corrected by the corrective action listed, notify your supervisor.

Before you use the troubleshooting procedures, be sure you have performed all applicable operating checks presented in Preventive Maintenance Checks and Services (PMCS) - Before and During (WP 0044 00).

SYMPTOM INDEX

**Troubleshooting
Procedure:
Page**

MAIN ENGINE

- | | |
|---|------------|
| 1. Engine fails to crank, or cranks slowly, when starter switch is activated. | 0042 00-01 |
| 2. Engine cranks but fails to start. | 0042 00-02 |
| 3. Engine loses power. | 0042 00-03 |
| 4. Engine lacks acceleration. | 0042 00-03 |
| 5. Engine overheats (coolant warning lamp is lit). | 0042 00-04 |
| 6. Engine has low or no oil pressure. | 0042 00-05 |

TRANSMISSION

- | | |
|--|------------|
| 7. Transmission does not drive in any range. | 0042 00-05 |
|--|------------|

STEERING

- | | |
|-----------------------------------|------------|
| 8. Vehicle is difficult to steer. | 0042 00-05 |
|-----------------------------------|------------|

SYMPTOM INDEX (continued)

0041 00

| | Troubleshooting Procedure: Page |
|--|--|
| BATTERIES/GENERATING SYSTEM | |
| 9. Battery gage indicates low or no voltage. | 0042 00-06 |
| 10. Batteries do not stay charged. | 0042 00-06 |
| 11. Batteries will not charge. | 0042 00-07 |
| 12. MASTER switch lamp does not light. | 0042 00-07 |
| 13. No power to vehicle from front NATO slave receptacle connection. Disabled vehicle has power when operating. | 0042 00-07 |
| TRACKS AND SUSPENSION | |
| 14. Vehicle pulls to one side with steering wheel centered. | 0042 00-08 |
| 15. Vehicle throws tracks. | 0042 00-08 |
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| 16. Heater smokes, bangs upon starting, or doesn't start. | 0042 00-09 |
| 17. Heat output is too low. | 0042 00-09 |
| 18. Exhaust outlet loads up with soot and/or carbon. | 0042 00-09 |
| BILGE PUMP | |
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| AUXILIARY POWER UNIT (APU) ENGINE | |
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| 21. APU engine starts, then stalls or runs roughly. | 0042 00-11 |
| 22. APU engine is difficult to start. | 0042 00-13 |
| 23. APU engine starts, but fails to keep running. | 0042 00-14 |
| 24. APU engine overheats (as indicated by APU control box). | 0042 00-14 |
| 25. APU engine has low oil pressure (indicated by LED at LOW OIL PRESS position). | 0042 00-14 |
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| 27. APU engine has excessive black smoke. | 0042 00-15 |
| 28. APU engine has excessive white smoke. | 0042 00-15 |
| 29. APU engine air intake restricted (indicated by LED at AIR FILTER position). | 0042 00-16 |
| 30. APU engine knocks. | 0042 00-16 |
| 31. APU engine has low power or misfires. | 0042 00-17 |

| | Troubleshooting Procedure: Page |
|--|--|
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| 32. Projectile does not go into tube. | 0042 00-17 |
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| HONEYCOMB STOWAGE RACKS (2 X 8, 4 X 6) | |
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| 37. Heat does not reach ventilated face piece, but airflow is normal. | 0042 00-19 |
| 38. Precleaner does not operate when switch is on. | 0042 00-20 |
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| AUTOMATIC FIRE EXTINGUISHING SYSTEM (AFES) | |
| 40. Lamp does not light during lamp test or fails during operation. | 0042 00-20 |
| 41. Fault lamp lights. | 0042 00-20 |
| 42. Crew AFES test and alarm (T/A) panel fire detection LEDs light but no fire. | 0042 00-21 |
| 43. AFES or component is damaged or fails during operation. | 0042 00-21 |
| 44. Extinguisher bottles are empty or damaged or have low pressure. | 0042 00-21 |
| 45. Bottle discharges when vehicle sits idle or when vehicle is in motion. | 0042 00-21 |
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| MOUNTED WATER RATION HEATER (MWRH) | |
| 47. The MWRH does not operate. | 0042 00-22 |
| PRECISION LIGHTWEIGHT GPS RECEIVER (PLGR) | |
| 48. The PLGR does not operate. | 0042 00-22 |

END OF WORK PACKAGE

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

TROUBLESHOOTING PROCEDURES

THIS WORK PACKAGE COVERS:

Main Engine, Transmission, Steering, Batteries/Generating System, Tracks and Suspension, Personnel Heater, Bilge Pump, Auxiliary Power Unit (APU) Engine, Projectile Racks, Honeycomb Stowage Racks (2 x 8, 4 X 6), Ventilated Face Piece System (VFPS), Right Rear Door, Automatic Fire Extinguishing System (AFES), Driver's Cooling Fan, Mounted Water Ration Heater (MWRH), and Precision Lightweight GPS Receiver (PLGR)

INITIAL SETUP:

Maintenance Level

Operator

NOTE

- For corrective actions of malfunctions not listed in this table, notify Unit maintenance.
- Wherever the word "lubricate" appears, see lubrication instructions (WP 0070 00 and WP 0071 00).
- Malfunctions, tests or inspections, and corrective actions are listed/indented according to the heading at the top of each page.

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

MAIN ENGINE

1. ENGINE FAILS TO CRANK, OR CRANKS SLOWLY, WHEN STARTER SWITCH IS ACTIVATED.

Step 1. Check to see if MASTER switch is set to ON.

If not on, move switch to ON.

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

MAIN ENGINE (continued)

Step 2. Check to see if transmission lever is in neutral (N).

If not in N, place lever in N.

Step 3. Check to see if battery cables are loose, broken, or corroded.

If loose, broken, or corroded, notify Unit maintenance.

Step 4. Check to see if BATTERY gage reads in normal range.

If indicator gage reads low, notify Unit maintenance.

2. ENGINE CRANKS BUT FAILS TO START.

Step 1. Check to see if FUEL gage indicates empty (E).

If no fuel, fill tank.

Step 2. Check to see if FUEL SHUT OFF control handle is pulled out.

If pulled out, push handle in completely.

Step 3. Check for disconnected fuel shutoff cable in engine compartment.

If cable is disconnected, connect.

Step 4. Check for blocked fuel lines and hoses.

Disconnect and straighten kinked or pinched tubes and hoses. If lines or hoses are broken, notify Unit maintenance.

Step 5. Check for water or other contaminants in fuel filters.

Drain fuel filter (p. 0034 00-1). If fuel is contaminated or clogged, notify Unit maintenance.

MALFUNCTION**TEST OR INSPECTION****CORRECTIVE ACTION****MAIN ENGINE (continued)**

Step 6. Prime fuel lines.

Hold fuel prime switch at ON for one minute. Then use normal start procedures (p. 0009 00-1). If condition persists, notify Unit maintenance.

3. ENGINE LOSES POWER.

Check to see if water is in fuel.

Drain fuel filters (p. 0048 00-1). If fuel is contraminated or clogged, notify Unit maintenance.

4. ENGINE LACKS ACCELERATION.

Step 1. Check for fuel leaks.

If there are leaks, tighten lines and filters.

Step 2. Check to make sure fuel return and fuel supply quick-disconnect couplings are locked.

If couplings are not locked, lock.

WARNING

If NBC exposure is suspected, all air filter media should be handled by personnel wearing protective equipment. Consult your unit NBC officer or NBC NCO for appropriate handling or disposal instructions.

Step 3. Check to see if air cleaner filters are restricted. Check for red sleeve on restriction indicator.

If restricted, clean air filters (p. 0052 00-1). Reset restriction indicator.

Step 4. Check to see if accelerator pedal is bent or binding.

If bent or binding, notify Unit maintenance.

MALFUNCTION**TEST OR INSPECTION****CORRECTIVE ACTION****MAIN ENGINE (continued)**

Step 5. Check accelerator linkage for binding or damage.

If binding or damaged, notify Unit maintenance.

If incorrect fuel is suspected, notify Unit maintenance.

5. ENGINE OVERHEATS (COOLANT WARNING LAMP IS LIT).

WARNING

NEVER remove radiator cap on an overheated engine until engine has cooled.

Step 1. Check to see if engine coolant is low and if any leaks are visible.

If low, fill (p. 0047 00-1).

If leaks are visible, notify Unit maintenance.

Step 2. Check to see if engine oil level is low.

If low, fill (p. 0070 00-14).

Step 3. Check radiator cap for tight fit.

If cap is loose, tighten cap.

Step 4. Check to see if cooling fan is operating properly.

If fan is not operating properly, notify Unit maintenance.

Step 5. Check to see if radiator/grille is clogged.

If clogged, unclog radiator/grille.

Step 6. Check to see if engine has been left idling for long periods at low rpm.

Shut down engine (p. 0015 00-1). If temperature does not drop after a period of three to five minutes, notify Unit maintenance.

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

MAIN ENGINE (continued)

6. ENGINE HAS LOW OR NO OIL PRESSURE.

Step 1. Check to see if oil level is low.

If low, fill engine crankcase (p. 0070 00-10).

Step 2. Check engine compartment for evidence of oil leaks.

If leaks are evident, notify Unit maintenance.

TRANSMISSION

7. TRANSMISSION DOES NOT DRIVE IN ANY RANGE.

Step 1. Check for bent, broken, damaged, or missing transmission selector lever linkage.

If linkage is bent, broken, damaged, or missing, notify Unit maintenance.

Step 2. Check oil level.

If low, fill transmission (p. 0070 00-3).

Step 3. Check for disconnected or broken universal joints.

If disconnected, broken, or missing hardware, notify Unit maintenance.

STEERING

8. VEHICLE IS DIFFICULT TO STEER.

Step 1. Check steering linkage for binding or foreign material.

If binding is caused by foreign material, remove foreign material.

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

STEERING (continued)

Step 2. Check for broken, bent, or missing linkage components.

If linkage components are bent, broken, or missing, notify Unit maintenance.

Step 3. Check condition of steering linkage bushing in driver's compartment bulkhead for signs of damage or deterioration.

If bushing is damaged or deteriorated, notify Unit maintenance.

BATTERIES/GENERATING SYSTEM

9. BATTERY GAGE INDICATES LOW OR NO VOLTAGE.

Step 1. Check to see if battery cables are loose, damaged, or corroded.

If loose, damaged, or corroded, notify Unit maintenance.

Step 2. Check BATTERY gage on instrument panel, when vehicle is running, to see if indicator reads in green range.

If indicator does not read in green range, charge batteries (p. 0022 00-10).
If condition persists, notify Unit maintenance.

10. BATTERIES DO NOT STAY CHARGED.

Step 1. Check for excessive use of electrical systems when engine is not running.

Make sure all electrical accessories are OFF when not in use.

Step 2. Check BATTERY gage on instrument panel, when MASTER switch is set to ON, to see if indicator reads in green range.

If indicator does not read in green range, charge batteries (p. 0022 00-10).

MALFUNCTION**TEST OR INSPECTION****CORRECTIVE ACTION****BATTERIES/GENERATING SYSTEM (continued)****11. BATTERIES WILL NOT CHARGE.**

Step 1. With main engine or the APU running, check BATTERY gage on instrument panel to see if indicator reads in green range.

If indicator does not read in green range, go to Step 2.

Step 2. If using the APU, ensure APU control box has not detected a system fault.

If a fault has been detected, notify Unit maintenance.

12. MASTER SWITCH LAMP DOES NOT LIGHT.

Step 1. Check to see if MASTER switch is set to ON.

If not, turn switch to ON.

Step 2. Check to see if bulb is burned out.

If burned out, replace bulb.

Step 3. Check for damaged electrical leads.

If damaged electrical leads are found, notify Unit maintenance.

13. NO POWER TO VEHICLE FROM FRONT NATO SLAVE RECEPTACLE CONNECTION. DISABLED VEHICLE HAS POWER WHEN OPERATING.

Step 1. Check for loose battery connections.

Step 2. Tight battery connections if loose. Notify Unit maintenance if condition continues.

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

TRACKS AND SUSPENSION

14. VEHICLE PULLS TO ONE SIDE WITH STEERING WHEEL CENTERED.

Step 1. Check for mud or dirt buildup on tracks.

If buildup is excessive, clean tracks.

Step 2. Check track tension.

If necessary, adjust tension (p. 0053 00-1).

If condition persists, notify Unit maintenance.

15. VEHICLE THROWS TRACKS.

NOTE

High-speed turns will throw tracks.

Step 1. Check tension adjustment.

If necessary, adjust tension (p. 0053 00-1).

If condition persists, notify Unit maintenance.

Step 2. Look for excessively loose or worn track or end connectors.

If loose or worn, adjust or replace track (p. 0053 00-2).

Step 3. Check drive sprockets for excessive wear or cracked or missing teeth.

If drive sprockets are damaged, notify Unit maintenance.

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

PERSONNEL HEATER

16. HEATER SMOKES, BANGS UPON STARTING, OR DOESN'T START.

Check to see if you are starting heater correctly.

See starting procedures (p. 0028 00-2).
If condition persists, notify Unit maintenance.

17. HEAT OUTPUT IS TOO LOW.

Check to see if HEAT CONTROL switch is set at HI.

If not, place switch at HI.
If condition persists, notify Unit maintenance.

18. EXHAUST OUTLET LOADS UP WITH SOOT AND/OR CARBON.

Check to see if exhaust outlet is restricted.

If restricted, clean exhaust outlet.
If condition persists, notify Unit maintenance.

BILGE PUMP

19. BILGE PUMP DOES NOT OPERATE.

Step 1. Check to see if MASTER switch is set to ON.

If not, turn MASTER switch to ON.

Step 2. Check to see if outlet is restricted.

If outlet is restricted, clean outlet.
If condition persists, notify Unit maintenance.

MALFUNCTION**TEST OR INSPECTION****CORRECTIVE ACTION****AUXILIARY POWER UNIT (APU) ENGINE****20. APU ENGINE DOES NOT CRANK.**

Step 1. Check if vehicle MAIN POWER switch is set to the OFF position.

Place vehicle MAIN switch in the ON position.

Step 2. Check for low battery charge indicated on the BATTERY gage.

If battery gage reads below low yellow range, charge batteries (p. 0022 00-10).
If condition continues, notify Unit maintenance.

NOTE

The CHARGE/START-IDLE/OFF switch must be in the OFF position before the APU control box MAIN POWER switch is turned ON.

Step 3. Check if the APU control box MAIN POWER switch in the OFF position..

Place the APU control box MAIN POWER switch in the ON position.

Step 4. Check the APU control box CHARGE/START-IDLE/OFF switch is in the START-IDLE or CHARGE position.

Place the CHARGE/START-IDLE/OFF in the OFF position.

Step 5. Check if APU control box fails to activate when switched ON.

When switched ON, the APU control box will perform a polarity check (indicated by all LEDs lighting then going off) of the APU system. If the polarity is incorrect the APU control box will not turn on. Notify Unit maintenance.

MALFUNCTION**TEST OR INSPECTION****CORRECTIVE ACTION****AUXILIARY POWER UNIT (APU) ENGINE (continued)**

- Step 6. Check if the starter circuit breaker has tripped.

Make sure the APU control box MAIN and CHARGE/START-IDLE/OFF switches are in the OFF position.

Depress the starter circuit breaker to reset.

Attempt to restart APU (p. 0022 00-1). If the start circuit breaker trips repeatedly, notify Unit maintenance.

- Step 7. Check if APU control box indicates an overheat fault.

If APU control box displays an overheat fault, proceed to Malfunction 24 (p. 0042 00-14).

- Step 8. Check if there are any broken, loose, or damaged electrical connections.

Ensure all APU electrical connections are tight and secure. Notify Unit maintenance if any wiring harnesses are broken or damaged.

21. APU ENGINE STARTS, THEN STALLS OR RUNS ROUGHLY.

- Step 1. Check if the APU control box has detected a low oil pressure fault.

If the APU control box displays a low oil pressure condition, proceed to Malfunction 25 (p. 0042 00-14).

- Step 2. Check if the APU control box has detected an engine overheat fault.

If the APU control box displays a coolant over temp fault, proceed to Malfunction 25 (p. 0042 00-14).

- Step 3. Check if the APU control box has detected an air intake restriction fault.

If the APU control box displays an air intake restriction fault, proceed to Malfunction 29 (p. 0042 00-16).

MALFUNCTION**TEST OR INSPECTION****CORRECTIVE ACTION****AUXILIARY POWER UNIT (APU) ENGINE (continued)**

Step 4. Check if the vehicle fuel gage indicates low or no fuel.

WARNING

Diesel fuel is very flammable and can explode easily. Do not perform fuel system task near open flame or any spark (ignition source).

Refuel fuel tanks.

Step 5. Check if fuel lines show signs of leaks, cracks, or looseness.

Tighten all fuel lines, hoses, and connections securely. If cracked or broken, notify Unit maintenance.

Step 6. Check if APU engine fuel filter is contaminated or clogged.

Drain fuel filter (p. 0034 00-1). If fuel is contaminated or clogged, notify Unit maintenance.

Step 7. Check if APU engine knocks during operation.

If engine knocks, notify Unit maintenance.

NOTE

Perform Step 8 if operating in cold climate conditions.

Step 8. APU engine is difficult or does not start in cold weather. Check for proper grade of fuel for cold weather conditions.

Notify Unit maintenance. Drain fuel tanks and refill.

MALFUNCTION**TEST OR INSPECTION****CORRECTIVE ACTION****AUXILIARY POWER UNIT (APU) ENGINE (continued)**

22. APU ENGINE IS DIFFICULT TO START.

Step 1. Check if the APU control box has detected an engine overheat fault.

If the APU control box displays an overheat fault, proceed to Malfunction 24 (p.0042 00-14).

Step 2. Check if the APU control box has detected an air intake restriction fault.

If the APU control box displays an AIR FILTER restriction condition, proceed to Malfunction 29 (p.0042 00-16).

Step 3. Check if the vehicle fuel gage indicates low or no fuel.

Refuel tanks.

WARNING

Diesel fuel is very flammable and can explode easily. Do not perform fuel system task near open flame or any spark (ignition source).

Step 4. Check if fuel lines show signs of leaks, cracks, or looseness.

Tighten all fuel lines, hoses, and connections securely. If cracked or broken, notify Unit maintenance.

Step 5. Check if APU engine fuel filter shows signs of contamination and clogs.

Drain fuel filter (p. 0054 00-1). If fuel is contaminated or clogged, notify Unit maintenance.

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

AUXILIARY POWER UNIT (APU) ENGINE (continued)

23. APU ENGINE STARTS, BUT FAILS TO KEEP RUNNING

Perform malfunction 21 (p.0042 00-11).

If condition continues, notify Unit maintenance.

24. APU ENGINE OVERHEATS (as indicated by APU control box).

Step 1. Check if the APU control box displays an AIR FILTER restriction condition.

Perform malfunction 29 (p.0042 00-16).

Step 2. Check if the APU engine radiator is low or empty.

If the level in the expansion tank is below 1/3 full, start APU engine (p. 0022 00-1), and add coolant till over-flow reservoir is 2/3 full.

Step 3. Check for evidence of leaks from the APU engine cooling system.

Tighten loose hose clamps, notify Unit maintenance if condition continues

Step 4. Check if fan drive belt (serpentine) broken or missing.

If broken or missing, notify Unit maintenance.

Step 5. Check if APU engine crankcase if filled to the proper oil level.

Fill APU engine crankcase to the proper oil level.

25. APU ENGINE HAS LOW OIL PRESSURE (indicated by LED at LOW OIL PRESS position).

Check if APU engine crankcase is filled to the proper oil level.

Fill APU engine crankcase to the proper oil level.

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

AUXILIARY POWER UNIT (APU) ENGINE (continued)

26. APU ENGINE OIL CONSUMPTION EXCESSIVE.

Step 1. Check if APU engine oil dipstick, fill plug, and oil drain plug are present and secure.

Tighten if loose. Notify Unit maintenance if missing.

Step 2. Check for loose, cracked, or broken oil filter and oil lines.

Tighten if loose. Notify Unit maintenance if oil filter or oil lines are cracked or broken.

Step 3. Check if APU engine is smoking excessively.

Determine if the smoke is a result of coolant in the combustion chamber of the APU engine. Remove the dipstick and check for evidence of coolant in oil. If coolant is present, notify Unit maintenance.

Step 4. Check if APU engine shows signs of leaks, cracks, or breaks.

If leaking, cracked, or broken, notify Unit maintenance.

27. APU ENGINE HAS EXCESSIVE BLACK SMOKE.

Step 1. Check APU engine fuel filter for signs of fuel contamination and clogs.

Drain APU engine fuel filter. If fuel is contaminated or clogged notify Unit maintenance.

Step 2. Remove dipstick and check APU oil level.

If oil level is constantly low or if APU engine shows signs of oil leakage, notify Unit maintenance.

MALFUNCTION**TEST OR INSPECTION****CORRECTIVE ACTION****AUXILIARY POWER UNIT (APU) ENGINE (continued)**

28. APU ENGINE HAS EXCESSIVE WHITE SMOKE.

Step 1. Check APU engine coolant is at the proper fluid level.

Fill the APU engine radiator to proper fluid level.

Step 2. Check APU engine cooling system for leaks.

Tighten loose hose clamps. If radiator, hoses, and lines are damaged, notify Unit maintenance..

29. APU ENGINE AIR INTAKE RESTRICTED (indicated by LED at AIR FILTER position).

Step 1. Open APU access door. Check for any debris and obstructions in the APU access door grille, air duct, and APU engine air intake.

Clear any debris or obstructions.

Step 2. Remove APU engine air filter (p. 0054 00-2). Check for any debris and obstructions.

Clear any debris or obstructions from air filter and housing. Use compressed air clean air filter. If air filter is clogged or damaged, notify Unit maintenance.

Step 3. Start APU engine (p. 0022 00-1). Check if APU control box indicates an air intake restriction.

If condition continues, notify Unit maintenance.

30. APU ENGINE KNOCKS

Step 1. Check if the proper fuel is being used.

If improper fuel is being used, notify Unit maintenance.

Step 2. Check if APU engine fuel filter shows signs of contamination and clogs.

Drain fuel filter (p. 0054 00-1). If fuel is contaminated or clogged, notify Unit maintenance.

MALFUNCTION**TEST OR INSPECTION****CORRECTIVE ACTION****AUXILIARY POWER UNIT (APU) ENGINE (continued)****NOTE**

An assistant will help you with this task.

Step 3. Start APU engine (p. 0022 00-1). Direct assistant to observe the APU engine operation. Check for the source of the knocking external to the APU engine.

Tighten all loose hoses, lines, and fittings. If any APU engine components are loose, notify Unit maintenance.

31. APU ENGINE HAS LOW POWER OR MISFIRES.

Step 1. Check APU engine air intake for obstructions.

Perform Malfunction 29 (p. 0042 00-16).

Step 2. Check if APU engine fuel filter shows signs of contamination and clogs.

Drain fuel filter (p. 0054 00-1). If fuel is contaminated or clogged, notify Unit maintenance.

PROJECTILE RACKS**32. PROJECTILE DOES NOT GO INTO TUBE.**

Step 1. Check inner diameter of tube for obstruction or damage.

Remove obstruction if possible. Notify Unit maintenance if tube is damaged.

Step 2. Check locking shoe for locked position.

Open locking handles. If condition persists, notify Unit maintenance.

33. PROJECTILE IS NOT HELD IMMOBILE IN TUBE.

Step 1. Check to see that handles are in locked position.

If not, place handles in locked position.

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

PROJECTILE RACKS (continued)

Step 2. Check for defective lock.

If damaged, notify Unit maintenance.

34. PROJECTILE WILL NOT COME OUT OF TUBE.

Check to see that rack section is unlocked and handles are positioned up (released).

If not, unlock rack section.

If rack section is unlocked, remove projectile by pulling on nose plug with cargo hook.

If projectile cannot be removed, notify Unit maintenance.

HONEYCOMB STOWAGE RACKS (2 X 8, 4 X 6)

35. CHARGE DOES NOT GO IN OR RELEASE FROM STOWAGE COMPARTMENT.

Step 1. Check stowage compartment for obstructions and damage.

Clear obstructions. Notify Unit maintenance if stowage compartment is damaged.

Step 2. Check restraint bar and locking latch operation. Raise and lower restraint bar. Ensure locking latch properly engages restraint bar.

If restraint bar and/or locking latch are not engaging or are damaged, notify Unit maintenance.

VENTILATED FACE PIECE SYSTEM (VFPS)

36. AIRFLOW TO VENTILATED FACE PIECE IS LACKING OR REDUCED.

Step 1. Check to see if vehicle MASTER switch is set to ON.

If not, turn MASTER switch to ON.

MALFUNCTION**TEST OR INSPECTION****CORRECTIVE ACTION****VENTILATED FACE PIECE SYSTEM (VFPS) (continued)**

Step 2. Make sure BATTERY-GENERATOR indicator gage reads in green range.

If BATTERY-GENERATOR indicator gage reads below green range, charge battery by running main engine or the APU. After BATTERY-GENERATOR indicator gage reads well into green range, turn off engine. Notify Unit maintenance if indicator gage does not remain in green range.

Step 3. Check to see that VFPS control box switch is set to ON.

If not, turn switch to ON.

Step 4. Check hoses and connectors for damage or kinks.

Remove any kinks if possible. Report any damage to Unit maintenance.

Step 5. Check to see that spring clip is removed from inlet holes.

If not, remove spring clip.

Step 6. Check to see that air intake is unobstructed.

If intake is unobstructed, notify Unit maintenance about clogged filters.

Step 7. Listen for fan operation.

If fan is not operating, notify Unit maintenance.

37. HEAT DOES NOT REACH VENTILATED FACE PIECE, BUT AIRFLOW IS NORMAL.

Step 1. Check rotary switch on each of four heaters. Make sure rotary switch is turned fully clockwise on each.

Turn on rotary switch. Power lamp should light.

Step 2. Inspect outlet hose(s) and check for airflow.

If hose(s) is damaged or if airflow is restricted, notify Unit maintenance.

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

VENTILATED FACE PIECE SYSTEM (VFPS) (continued)

Step 3. Wait a few minutes after completing Step 2, then check periodically for warm airflow. Air should warm within 15 minutes.

If air does not warm, notify Unit maintenance

38. PRECLEANER DOES NOT OPERATE WHEN SWITCH IS ON.

Check to see if vehicle MASTER switch is set to ON.

If not, set vehicle MASTER switch to ON. If condition persists, notify Unit maintenance.

RIGHT REAR DOOR

39. RIGHT REAR DOOR DOES NOT CLOSE AND LATCH PROPERLY.

Check rear door latch for obstructions.

Clear obstruction away from latch. Lubricate rear door latch (p. 0071 00-12). Notify Unit maintenance if condition continues.

AUTOMATIC FIRE EXTINGUISHING SYSTEM (AFES)

40. LAMP DOES NOT LIGHT DURING LAMP TEST OR FAILS DURING OPERATION.

Replace lamp (p. 0055 00-1). Run lamp test (pp. 0064 00-1).

If new lamp or light-emitting diode (LED) does not light during test, notify Unit maintenance.

41. FAULT LAMP LIGHTS.

Record the indication of test and alarm (T/A) panel LEDs. Notify Unit maintenance of the LED indication.

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

AUTOMATIC FIRE EXTINGUISHING SYSTEM (AFES) (continued)

42. CREW AFES TEST AND ALARM (T/A) PANEL FIRE DETECTION LED LIGHT BUT NO FIRE.

Cover window "eye" of the indicated Optical Fire Sensing Assembly (OFSA) to exclude light, and repeat test with "eye" covered. If LED lights, notify Unit maintenance.

43. AFES OR COMPONENT IS DAMAGED OR FAILS DURING OPERATION.

Notify Unit maintenance.

44. EXTINGUISHER BOTTLES ARE EMPTY OR DAMAGED OR HAVE LOW PRESSURE.

Notify Unit maintenance.

45. BOTTLE DISCHARGES WHEN VEHICLE SITS IDLE OR WHEN VEHICLE IS IN MOTION.

Notify Unit maintenance.

DRIVER'S COOLING FAN

46. FAN DOES NOT OPERATE.

Step 1. Check to see if vehicle MASTER switch is set to ON.

If not, set vehicle MASTER switch to ON.

If MASTER switch is set to ON, go to Step 2.

Step 2. Check to see if fan switch is set to ON.

If not, set fan switch to ON.

If fan still does not operate, notify Unit maintenance.

MALFUNCTION**TEST OR INSPECTION****CORRECTIVE ACTION****MOUNTED WATER RATION HEATER (MWRH)**

47. THE MWRH DOES NOT OPERATE.

Step 1. Check to see if vehicle MASTER switch is set to ON.

If not, set vehicle MASTER switch to ON. If MASTER switch is set to ON, go to Step 2.

Step 2. Check to see if 90-degree connector is securely plugged into the MWRH.

If not, install 90-degree connector securely into the MWRH. If secure, go to Step 3.

Step 3. Check to see if control switch on the MWRH is set to LO or HI.

If not, move control switch to proper setting. If the MWRH still does not operate, notify Unit maintenance.

PRECISION LIGHTWEIGHT GPS RECEIVER (PLGR)

48. The PLGR does not operate

Step 1. Check to see if vehicle MASTER switch is set to ON.

If not, set vehicle MASTER switch to ON.

If MASTER switch is set to ON, go to Step 2.

Step 2. Check to see if power cable is plugged into back of PLGR unit.

If not, plug in power cable.

If cable is plugged in, go to Step 3.

Step 3. Check to see if power button on the PLGR is on.

If not, turn on.

If the PLGR still does not operate, notify Unit maintenance.

END OF WORK PACKAGE

TM9-2350-372-10

CHAPTER 4

MAINTENANCE INSTRUCTIONS

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

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

THIS WORK PACKAGE COVERS:

General, PMCS Procedures, and PMCS Table Headings

INITIAL SETUP:

Maintenance Level

Operator

GENERAL

The purpose of performing Preventive Maintenance Checks and Services (PMCS) is to discover and correct any defects before serious damage or failure occurs. Performing the PMCS as outlined on this and the following pages will help you keep a well-maintained and properly functioning vehicle. Always perform the PMCS in the same sequence each time; by doing so, you will develop habits that will help you to spot trouble quickly.

WARNING

Unusable Chemical Agent Resistant Coating (CARC) mixtures are considered hazardous waste and require disposal in accordance with Federal, state, Department of Defense, Department of the Army, and local installation hazardous waste regulations. Consult the installation environmental office for proper disposal guidance. Mixed CARC is extremely flammable. Use only in well-ventilated areas and keep away from open flames, heat, sparks, and other ignition sources.

Painting at the operator level is limited to touch-up/spot painting. Chemical CARC paint that has been opened must be used within eight hours or it will deteriorate beyond use. Mix only what is needed for immediate use. Refer to TM 43-0139.

PMCS PROCEDURES

Lubrication Instructions

For Operator/Crew lubrication instructions, refer to Work Packages 0070 00 and 0071 00 "Lubrication Instructions."

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) INTRODUCTION (continued)

0043 00

PMCS PROCEDURES (continued)**Checks and Services Intervals**

In Table 2-1, Preventive Maintenance Checks and Services for M992A2, the PMCS procedures are grouped according to Before operation, During operation, After operation, and Weekly and Monthly checks and services. These are divided into the following Work Packages: 0044 00, Before and During Operation; 0045 00, After Operation; and 0046 00, Weekly and Monthly Checks and Services.

- *Before you operate.* Always keep in mind the CAUTIONs and WARNINGs. Perform your Before PMCS before the vehicle leaves its containment area or performs its intended mission.
- *While you operate.* Always keep in mind the CAUTIONs and WARNINGs. Perform your During PMCS when the vehicle is being used on its intended mission.
- *After you operate.* Be sure to perform your After PMCS after the vehicle has been taken out of its mission mode or returned to its containment area.

Perform Weekly as well as Before operations PMCS if:

- You are the assigned operator and have not operated the vehicle since the last weekly PMCS.
- You are operating the vehicle for the first time.

Performing PMCS

While you perform PMCS, have tools with you and keep an eye out for the following:

- *Loose bolts.* A loose bolt can be difficult to spot without using a wrench. However, you can often identify a loose bolt by observing loose or chipped paint around the bolt head and bare metal or rust at its base. Tighten loose bolts and spot-paint as required.
- *Damaged welds.* Damaged welds may be detected by observing rust or chipped paint where cracks occur.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) INTRODUCTION (continued)

0043 00

PMCS PROCEDURES (continued)

- *Frayed electrical wires and loose connectors.* Check electrical wiring for cracks due to aging and exposed wires that could cause an electrical short. Tighten loose clamps and connectors.
- *Frayed brake cables and loose linkages.* Check brake cables for signs of excessive wear near their middles. Make sure throttle and steering linkages are properly secured.
- *Corrosion.* Check for signs of deterioration, rust, unusual cracking, softening, swelling, or breaking.

Leakage Definitions

Leakage definitions for operator/crew PMCS shall be classified as follows:

- Class I Seepage of fluid (as indicated by wetness or discoloration) not great enough to form drops.
- Class II Leakage of fluid great enough to form drops but not enough to cause drops to drip from item being checked/inspected.
- Class III Leakage of fluid great enough to form drops that fall from the item being checked/inspected.

CAUTION

- **Equipment operation is allowable with minor leakages (Class I or Class II). Of course, you must consider the fluid capacity in the item/system being checked/inspected. When in doubt, notify your supervisor. When operating with Class I or Class II leaks, continue to check fluid levels as required in your PMCS.**
- **Class III leaks should be reported to your supervisor or Unit maintenance.**

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) INTRODUCTION (continued)

0043 00

PMCS PROCEDURES (continued)**Damage Definitions**

Damage definitions are as follows:

- *Blowby*. Powder marking beyond a sealing surface.
- *Burr*. A raised portion, restricting the entrance of a part, component, or assembly.
- *Crack*. A narrow break or separation in material.
- *Gouge*. A groove or cavity in a sealing surface that cannot be repaired.
- *Nick*. An indentation caused by an object(s) striking the material.

Troubleshooting

If your equipment does not perform as required, refer to Chapter 3. Report any malfunctions or failures on DA Form 2404/DA Form 5988E, or refer to DA Pam 738-750.

Maintenance

If an assembly must be removed and/or disassembled in order to perform PMCS, refer to the maintenance procedures (WPs 0043 00 through 0061 00).

CAUTION

Improper use of high-pressure water hose or steam cleaner can damage seals and electrical components, resulting in equipment failure. Use high-pressure water only on suspension system.

Cleaning

Suspension components may be cleaned with high-pressure water or steam cleaners. Do not use high-pressure water hose or steam cleaner in the driver's or crew compartment.

Reporting New Faults

Any faults found but not covered in PMCS should be reported on DA Form 2404/DA Form/5988E.

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

0043 00

PMCS TABLE HEADINGS

Your PMCS table lists the inspections and care of your equipment required to keep it in good operating condition. Explanations of the column headings are as follows:

- **ITEM NO.** The item number column of your PMCS table is to be used for reference. When completing DA Form 2404DA/Form 5988E, include the item number for the check/service indicating a fault. Item numbers also appear in the order that you must do checks and services for the intervals listed.
- **INTERVAL.** This column of your PMCS table tells you when to do a certain check or service.
- **ITEM TO CHECK/SERVICE.** This column of your PMCS table provides the location and the item to be checked or serviced.
- **CREWMEMBER, PROCEDURE.** This column of your PMCS table tells you how to do the required checks and services and which crewmember(s) is responsible for each check or service. Carefully follow these instructions. If you do not have the tools, or if the procedure tells you to, have Unit maintenance do the work.
- **EQUIPMENT NOT READY/AVAILABLE IF.** This column tells you when and why your equipment cannot be used.

END OF WORK PACKAGE

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION

| ITEM NO. | INTERVAL | ITEM TO CHECK/ SERVICE | <u>CREWMEMBER</u> PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|--|---|--|
| 1 | Before | Vehicle Exterior | <p><u>DRIVER</u></p> <p>Walk around vehicle. Check for any obvious leaks, missing items, or damage to equipment. Have operator perform a road test for at least 5 miles (8 km), within a designated route.</p> | Any Class III leak found. Vehicle has damage or is missing items that would prevent operation. |
| 2 | Before | Subfloor Drain and Hull Plugs Drain and | <p><u>DRIVER</u></p> <p style="text-align: center;"><u>CAUTION</u></p> <p>Do not ford if any drain plugs are missing.</p> <p>Check all drain plugs and hull plugs for installation.</p> | |
| 3 | Before | External Fire Extinguisher Handle | <p><u>DRIVER</u></p> <p style="text-align: center;"><u>WARNING</u></p> <p>Any automatic fire extinguishing system (AFES) component in need of maintenance or repair is prone to accidental discharge. Accidental discharge could lead to frostbite or other injury. Small parts or tools become dangerous projectiles when propelled by extinguishant discharging at 750 psi (5171 kPa).</p> | |

TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

0044 00

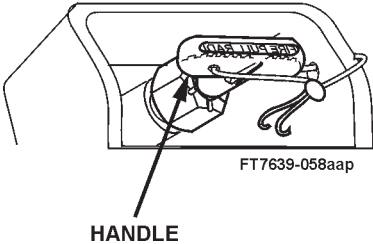
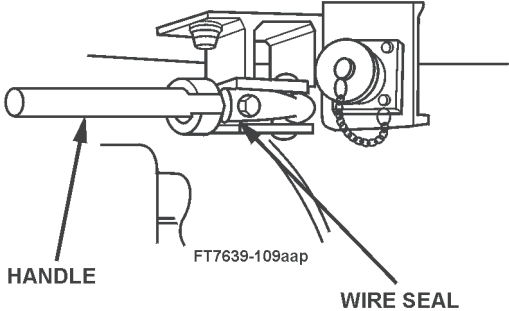
| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|--|---|---|
| 3 | Before | External Fire Extinguisher Handle (continued) | <p>Check to make sure handle is properly seated and laced with double-strand wire.</p>  | Wire seal is broken or missing or handle is pulled. |
| 4 | Before | Driver's Compartment Manual Fire Extinguisher Handle | <p>DRIVER</p> <p>Check to make sure handle is properly seated and laced with single-strand wire.</p>  | Wire seal is broken or extinguisher handle is pulled. |

TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

0044 00

| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|---------------------------------|---|--|
| 5 | Before | Cooling System and Cooling Fans | <p><u>DRIVER</u></p> <p>a. Check radiator coolant level. Fluid should be at top of filler neck.</p> <p>b. Check for leaks and serviceability of hoses, filler cap, and gasket.</p> <p>c. Check cooling fans.</p> | <p>b. Class III leak exists.</p> <p>c. Either cooling fan is missing, fin(s) is broken or cracked.</p> |
| 6 | Before | Portable Extinguisher Bottle | <p><u>COMMANDER</u></p> <p>Check the two portable fire extinguisher bottles in crew compartment to determine if they are properly sealed and mounted securely.</p> | <p>One or more fire extinguishers is missing or damaged or seal is broken or missing.</p> |

FT7639-111aap

FT7639-110aap

TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

0044 00

| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | <u>CREWMEMBER PROCEDURE</u> | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|--|---|---|
| 7 | Before | Automatic Fire Extinguishing System (AFES) Ventilation System | <p><u>COMMANDER</u></p> <p>Check to make sure ventilation blower fan operates and ventilation door opens properly.</p> | Fan does not operate or door does not open properly. |
| 8 | Before | Engine AFES | <p><u>DRIVER/COMMANDER</u></p> <p>Perform the following checks at engine test and alarm (T/A) panel. If indications below do not occur, troubleshoot engine AFES.</p> <p>a. AFES MAINT/AFES POWER ON switch must be in horizontal AFES POWER ON position.</p> <p>b. Turn MASTER switch to ON. POWER ON lamp on engine T/A panel should light.</p> <p>NOTE</p> <p>Positions of lamps and SYSTEM TEST/LAMP TEST switch are the same for engine and crew T/A panels.</p> | <p>a. AFES MAINT/AFES POWER ON switch in vertical AFES MAINT position.</p> <p>b. POWER ON lamp not lit.</p> |

TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

0044 00

| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|-----------------------|---|--|
| | | | <div> <p>The diagram shows the control panel with four indicator lamps at the top: POWER ON, PASS TEST, FAULT, and FIRE ALARM. Below the lamps are four extinguisher mode buttons: F/W, T/A, AUTO, and MANUAL. At the bottom are three warning indicators: CAUTION, LAMP TEST, and WARNING. A 'SYSTEM TEST' button is located between the extinguisher buttons and the warning indicators. Arrows point from labels to the 'POWER ON' lamp, the 'CAUTION' indicator, and the 'SYSTEM TEST' button.</p> </div> <p style="text-align: center;">NOTE</p> <p>The engine AFES automatically goes through the Built-In Test Equipment (BITE) test cycle.</p> <p>c. Observe PASS TEST lamp. It lights 4-6 seconds upon successful completion of BITE test.</p> <p>d. Observe that FAULT lamp does not light.</p> <div> <p>This diagram is identical to the one above but highlights the 'PASS TEST' and 'FAULT' lamps with arrows and labels.</p> </div> | <p>c. PASS TEST lamp does not light.</p> <p>d. FAULT lamp is lit and one or more LEDs are lit.</p> |

TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

0044 00

| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|-------------------------|---|---|
| 8 | Before | Engine AFES (continued) | <p>e. Check AUTO and MANUAL extinguisher LEDs. LEDs should not be lit.</p> <div style="text-align: center;"> <p>FT7639-019abp</p> </div> <p>f. Position SYSTEM TEST/LAMP TEST switch to LAMP TEST. All engine T/A panel lamps should light and LEDs should light. In vehicles S/N 345 and above, remote status indicator (RSI) lamp should light.</p> | <p>e. FAULT lamp is lit and one or more LEDs are lit.</p> <p>f. Any AFES lamp/LED does not light.</p> |

TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

0044 00

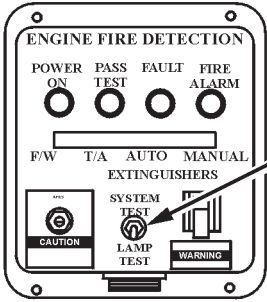
| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|------------------------|---|---|
| | | | <p style="text-align: center;">NOTE</p> <p>Positions of lamps and SYSTEM TEST/LAMP TEST switch are the same for engine and crew T/A panels.</p> <div style="text-align: center;">  <p style="text-align: center;">FT7639-019acp</p> </div> | |
| 9 | Before | Driver's Seat Assembly | <p>DRIVER</p> <p>Move driver's seat to several positions by operating driver's seat adjusting lever. When lever is released, plunger should seat into support and hold seat securely in position. Inspect adjusting lever, specifically the area that controls movement of the plunger.</p> | Any indication that seat does not stay securely locked into position. Adjusting lever is broken or unserviceable. |

TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

0044 00

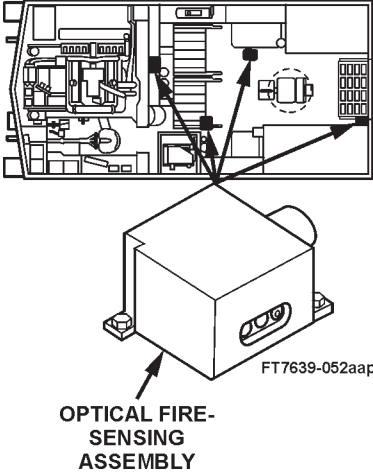
| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | <u>CREWMEMBER PROCEDURE</u> | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|-----------------------|---|--|
| 10 | Before | Crew AFES | <p><u>CREWMEMBER</u></p> <p>Clean eyes of four Optical Fire-Sensing Assemblies (OFSAs) with lens paper (Item 40, WP 0069 00).</p>  <p>OPTICAL FIRE-SENSING ASSEMBLY</p> | |
| 11 | Before | Crew AFES | <p><u>COMMANDER</u></p> <p>Perform the following checks at crew T/A panel. If indications below do not occur, troubleshoot crew AFES (WP 0041 00).</p> <p>a. AFES MAINT/AFES POWER ON switch must be in horizontal AFES POWER ON position.</p> | <p>a. AFES MAINT/AFES POWER ON switch in vertical AFES MAINT position.</p> |

TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

0044 00

| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|--|----------|-----------------------|---|---|
| | | | <p>b. Make sure driver has turned MASTER switch to ON. POWER ON lamp on crew T/A panel should light.</p> <p style="text-align: center;">NOTE</p> <p>The crew AFES automatically goes through the BITE test cycle.</p> <p>c. Observe the PASS TEST lamp. It will light 4-6 seconds upon successful completion of BITE test.</p> <p>d. Observe that FAULT lamp does not light.</p> | <p>b. POWER ON lamp not lit.</p> <p>c. PASS TEST lamp does not light.</p> <p>d. FAULT lamp is lit and one or more LEDs are lit.</p> |
| <p>The diagram shows a rectangular control panel with four indicator lamps at the top: POWER ON, PASS TEST, FAULT, and FIRE ALARM. Below these are four buttons labeled F/W, T/A, AUTO, and MANUAL. At the bottom are three sections: CAUTION (with a power symbol), SYSTEM TEST LAMP TEST (with a lamp symbol), and WARNING (with a warning symbol). Arrows point from text labels to the POWER ON LAMP, PASS TEST LAMP, FAULT LAMP, and AFES MAINT/AFES POWER ON SWITCH (the CAUTION button).</p> <p>FT7639-019adp</p> | | | | |

TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

0044 00

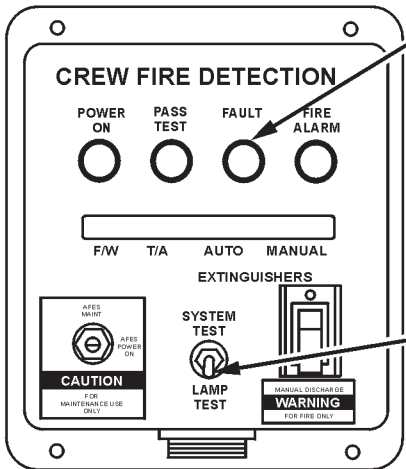
| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|-----------------------|---|---|
| 11 | Before | Crew AFES (continued) | <p>e. Check LEDs of extinguishers Nos. 1 through 4 (vehicles S/N 1 through 344) or Nos. 1 through 6 (vehicles S/N 345 and above). When any LED is lit, crew extinguisher bottle in crew compartment is faulty.</p> <p>f. Position SYSTEM TEST/LAMP TEST switch to LAMP TEST. All crew T/A panel lamps and LEDs should light.</p> <p style="text-align: center;">NOTE</p> <p>Positions of lamps and SYSTEM TEST/LAMP TEST switch are the same for engine and crew T/A panels.</p> <div style="text-align: center;">  <p>Diagram of the Crew Fire Detection panel. It features four indicator lamps at the top: POWER ON, PASS TEST, FAULT, and FIRE ALARM. Below these is a selector switch with positions F/W, T/A, AUTO, and MANUAL. At the bottom, there is a SYSTEM TEST/LAMP TEST switch and a fire extinguisher icon. Labels with arrows point to the FAULT lamp and the SYSTEM TEST/LAMP TEST switch.</p> </div> <p>FT7639-019agp</p> | <p>e. FAULT lamp is lit and one or more LEDs are lit.</p> <p>f. Any AFES lamp/LED does not light.</p> |

TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

0044 00

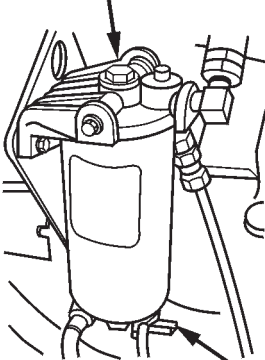
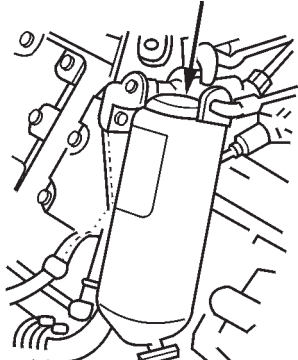
| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|--|--|-----------------------------------|
| 12 | Before | Primary and Secondary | <p><u>DRIVER</u></p> <p>Open bottom drain cocks and drain water until clear fuel flows</p> | Any Class III leak found. |
| | | <p>PRIMARY FUEL FILTER</p>  <p>FT0309-005aap</p> | <p>SECONDARY FUEL FILTER</p>  <p>FT0309-006</p> | |

TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

0044 00

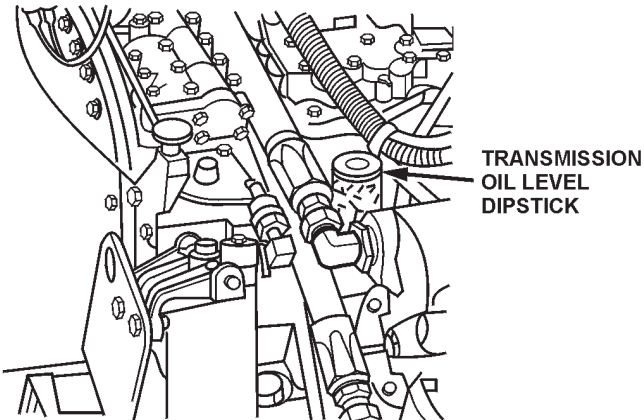
| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|------------------------|--|-----------------------------------|
| 13 | Before | Transmission Oil Level | <p>DRIVER</p> <p>Check oil level; it should be within the OPERATING RANGE stamped on dipstick. Add lubricating oil as required. Refer to transmission oil level check (WP 0071 00). Fuel Filters from filters. Close drain cocks.</p> <p>CAUTION</p>  <p>TRANSMISSION OIL LEVEL DIPSTICK</p> <p>FT0721-019aap Must use SAE J300 (MIL-PRF-2104) while under warranty.</p> <p>NOTE</p> <p>New transmissions are delivered with preservative</p> | |

TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

0044 00

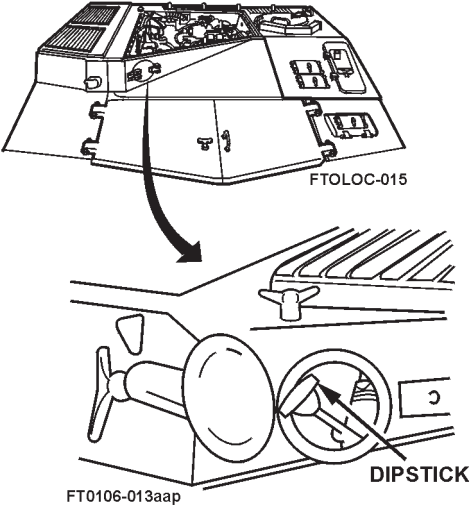
| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|---------------|---|-----------------------|---|---|
| PE-10-1 10 | Until first scheduled oil change, maintain proper oil level by adding oil. Oil Level | Engine Oil | <p>DRIVER</p> <p>NOTE</p> <p>Make engine oil level check with vehicle on level ground</p>  <p>The diagram consists of two parts. The top part, labeled FTOLOC-015, shows a top-down view of the engine compartment with various components and the oil filler cap. A curved arrow points from the oil filler cap area down to the second part of the diagram. The second part, labeled FT0106-013aap, shows a side view of the driver's seat and footwell area. A dipstick is shown inserted into the floor pan, with an arrow pointing to it and the label DIPSTICK.</p> | <p>Oil level will take approximately 20 minutes to stabilize in engine crankcase. After 20 minutes, check oil level; it should be within the L - F range stamped on dipstick. Add lubricating oil</p> |

TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

0044 00

| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|-----------------------------|-----------------------|---|-----------------------------------|
| 15 | Before 006000 Plus required | Glow Plug System | <p>DRIVER</p> <p>NOTE</p> <p>A functional check of glow plug system must be performed whenever operation in ambient temperatures below 50°F (10°C) is anticipated and after any maintenance is performed on glow plug system.</p> <ol style="list-style-type: none"> Turn MASTER switch to ON. Position GLOW PLUG switch to ON, then release. If temperature is 50°F (10°C) or above, GLOW PLUG lamp will light for one second, then go off. If temperature is below 50°F (10°C), GLOW PLUG lamp will light for 35 seconds, flash on and off for a minute, and then go off. | |

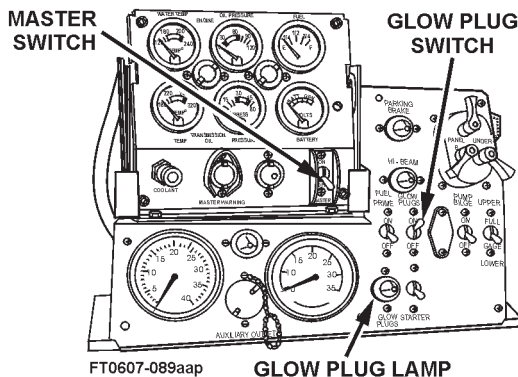


TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

0044 00

| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|--------------------------|---|--|
| 16 | Before | Accelerator Pedal | <p align="center"><u>DRIVER</u></p> Check for missing or unserviceable accelerator pedal return spring. Press down on accelerator pedal; check to make sure pedal returns to normal idle position. | Return spring is missing or unserviceable or accelerator pedal does not return to idle position after being depressed. |
| 17 | Before | 0.50-Cal. M2 Machine Gun | <p align="center"><u>COMMANDER</u></p> Mount weapon and perform PMCS IAW TM 9-1005-213-10. | Machine gun cannot be securely mounted. |
| 18 | Before | Intercom System | <p align="center"><u>COMMANDER</u></p> Check all controls and indicators for proper operation and PMCS IAW TM 11-5830-263-10. | Communication is not possible between commander and driver. |
| 19 | Before | PLGR | <p align="center"><u>COMMANDER</u></p> Check all controls, indicators, and assemblies for proper operation and PMCS IAW TM 11-5825-291-13. | |
| 20 | Before | Parking Brake | <p align="center"><u>DRIVER</u></p> Check parking brake operation (p. 0009 00-3). | Parking brake binds or does not hold the vehicle on a slope. |

TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

0044 00

| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|-----------------------|--|--|
| 21 | Before | Instruments and Gages | <p><u>DRIVER</u></p> <p>NOTE</p> <p>Vehicle may take longer than usual to warm up, depending on local climate.</p> <p>a. Turn on fuel prime switch for one minute. Start vehicle (p. 0009 00-1); follow "starting main engine" procedures. Run engine at fast idle (1000 rpm).</p> <p>b. ENGINE WATER TEMP gage reads 160° to 185°F (71° to 85°C) normal, 230°F (110°C) maximum.</p> <p>c. ENGINE OIL PRESSURE gage reads 30–509 psi (207–345 kPa) at fast idle.</p> <p>d. TRANSMISSION OIL TEMP gage reads 220° to 240°F (104–116°C) normal, 300°F (149°C) maximum.</p> | <p>a. Engine will not start.</p> <p>b. ENGINE WATER TEMP gage is inoperative or exceeds 230°F (100°C) maximum.</p> <p>c. ENGINE OIL PRESSURE gage is inoperative or does not read within limits.</p> <p>d. TRANSMISSION OIL TEMP gage is inoperative or exceeds 300°F (149°C) maximum.</p> |

TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

0044 00

| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|-----------------------------------|--|---|
| 21 | Before | Instruments and Gages (continued) | <p>e. TRANSMISSION OIL PRESSURE gage reads 10–45 psi (69–310 kPa) at fast idle.</p> <p>f. BATTERY gage is in green zone (charging).</p> <div style="text-align: center;"> </div> <p>g. TACHOMETER—Run engine at low (normal) idle. Should operate without excessive fluctuation or unusual noises, at idle speed of 550 to 650 rpm.</p> | <p>e. TRANSMISSION OIL PRESSURE gage is inoperative or does not read within limits.</p> <p>f. Gage is inoperative or does not read in green zone.</p> |

TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

0044 00

| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|-----------------------------------|--|------------------------------------|
| 21 | Before | Instruments and Gages (continued) | <p>h. Low COOLANT level warning lamp-press to test for proper operation.</p> <p>i. FUEL gage indicates full (F). track adjuster cylinder assembly until correct tension is obtained.</p> | h. Lamp is missing or inoperative. |

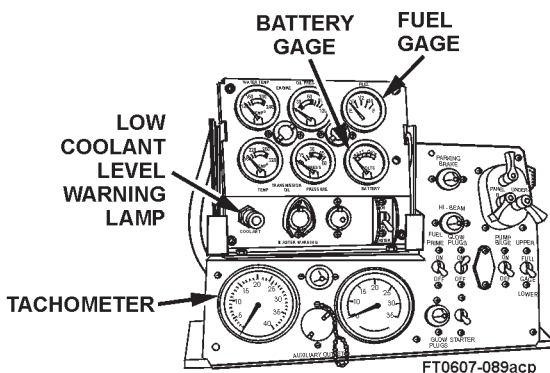


TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

0044 00

| ITEM NO. | INTERVAL | ITEM TO CHECK/ SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|---------------------------|---|-----------------------------------|
| 22 | Before | APU Control Box LEDs | <p>a. RUN PRE-HEATER-flashes during the engine pre-heat period.</p> <p>b. COOLANT OVER TEMP-lights when the APU engine temperature exceeds 221°F (105°C).</p> <p>c. LOW OIL PRESSURE-lights when the APU engine oil pressure drops below 17 psi (117 kPa).</p> <p>d. APU COOLANT PUMP-lights when generator cooling pump loses power.</p> <p>e. AIR FILTER-lights when the air filter pressure exceeds 20 inches of water.</p> <p>f. CHARGE lights when the generator current draw exceeds 400 amps.</p> <p>g. FAULT/RECYCLE MAIN-lights when engine speed exceeds 3300 rpm, or engine fails to start after three attempts.</p> | |

TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

0044 00

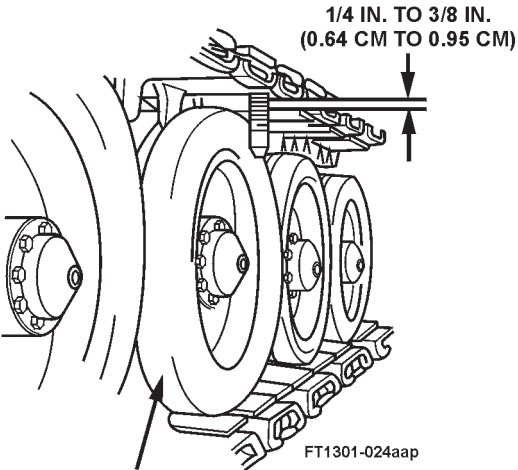
| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|-----------------------|---|-----------------------------------|
| 23 | Before | Track Tension | <p><u>CREWMEMBER</u></p> <p>a. Move vehicle back and forth several times on level ground. Coast to a stop without braking. Place transmission in N (neutral). Turn off engine. Measure distance between top of third roadwheel from sprocket and track. The distance should be between 1/4 inch (0.64 cm) and 3/8 inch (0.95 cm). If not, adjust track tension.</p> <p><u>CAUTION</u></p> <p>When increasing track tension, do not let track adjuster cylinder assembly extend beyond 3 1/2 inches (8.89 cm).</p>  <p>FT1301-024aap</p> | |

TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

0044 00

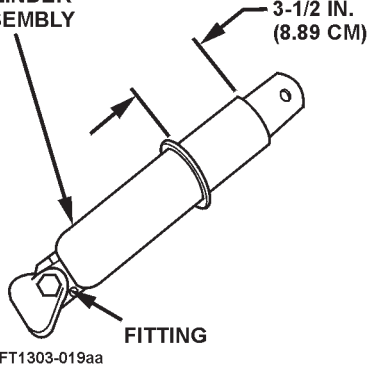
| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|---------------------------|--|-----------------------------------|
| 23 | Before | Track Tension (continued) | <p>TRACK ADJUSTER CYLINDER ASSEMBLY</p>  <p>b. To increase track tension, pump grease into clean fitting on track adjuster cylinder assembly until correct tension is obtained.</p> <p><u>WARNING</u></p> <p>Lubricant is under high pressure. Loosen bleeder plug slowly to avoid injury to personnel.</p> | |

TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

0044 00

| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|---------------------------|---|-----------------------------------|
| 23 | Before | Track Tension (continued) | <p style="text-align: center;">NOTE</p> <p>When measurement has reached 3-1/2 inches (8.89 cm), track adjuster cylinder assembly has reached its maximum limit. Remove one track shoe and readjust track tension.</p> <p style="text-align: center;">NOTE</p> <p>If track sag cannot be taken up, decrease track tension; remove track shoe and adjust.</p> <p>c. To decrease track tension, open bleeder plug on track adjuster cylinder assembly and reduce pressure until tension is released.</p> <p>d. Tighten bleeder plug and wipe away excess grease.</p> | |

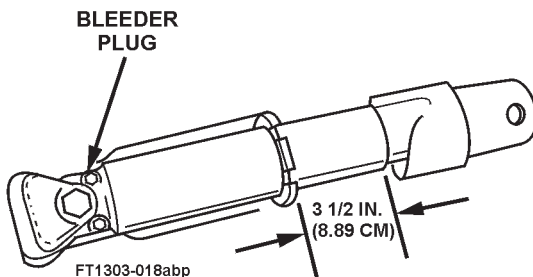


TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

0044 00

| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | <u>CREWMEMBER PROCEDURE</u> | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|-----------------------|---|--|
| 24 | During | Brake | <p style="text-align: center;"><u>WARNING</u></p> <p>Area must be clear of personnel before operating vehicle.</p> <p>Check brake operation.</p> | Locks up or binds; inoperative or intermittent, defective, or out of adjustment. |
| 25 | During | Steering | <p><u>DRIVER</u></p> <p>Check response to determine proper function.</p> | Steering locks up or binds. |
| 26 | During | Powerpack | <p><u>DRIVER</u></p> <p>Check for unusual noises or vibrations.</p> <p style="text-align: center;">NOTE</p> <p>Make sure drain valve is in the CLOSED position.</p> | Performance or function inadequate; unusual noises or vibrations; inoperative. |

TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

0044 00

| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|-----------------------|---|-----------------------------------|
| 27 | During | Auxiliary Power Unit | <p>CREWMEMBER</p> <p>a. Open APU front compartment door and check APU engine oil level. Remove dipstick from APU and check oil level reading. Oil level must be to the FULL mark on the dipstick. If needed, remove oil filler cap from APU engine and add lubricating oil (Item 39, WP 0069 00). Reinstall filler cap and recheck APU engine oil level.</p> | |

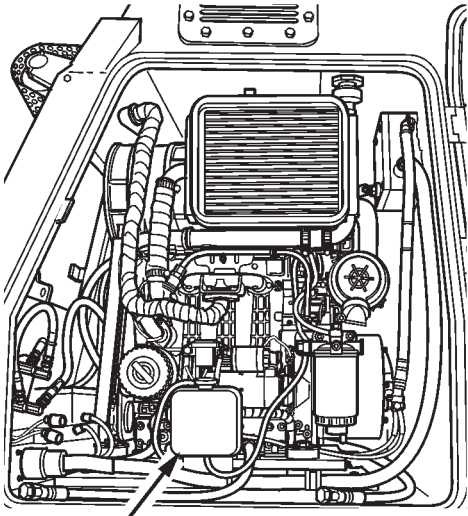
APU ENGINE OIL LEVEL DIPSTICK

APU ENGINE OIL FILL CAP

FT2916-053aap

TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

0044 00

| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/ AVAILABLE IF: |
|----------|----------|----------------------------------|---|------------------------------------|
| 27 | During | Auxiliary Power Unit (continued) |  <p>OVER-FLOW RESERVOIR</p> <p>FT2916-052aap</p> <p>b. Open APU side compartment door and check APU engine coolant level in over-flow reservoir. If coolant level is lower than 1/3 full, add antifreeze (Item 2, WP 0069 00) until 2/3 full in over-flow reservoir.</p> | |

END OF WORK PACKAGE

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

TABLE 2-1. PMCS FOR M992A2: AFTER OPERATION

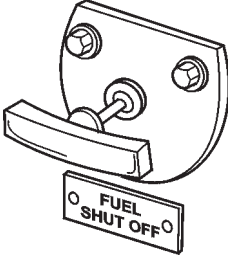
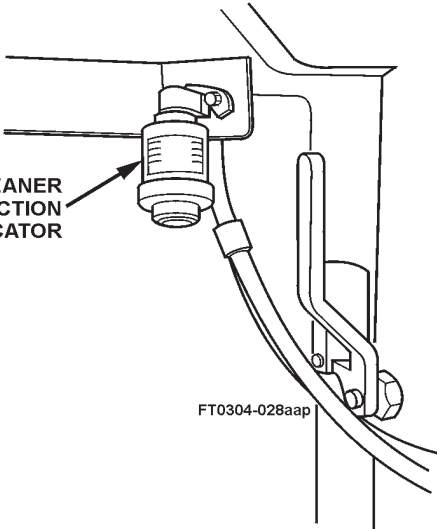
| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|-------------------------|--|---|
| 28 | After | FUEL SHUT OFF Cable | <p><u>DRIVER</u></p> <p>Check for proper operation.</p>  <p align="center">FT0312-028aap</p> | FUEL SHUT OFF cable is broken or unserviceable. |
| 29 | After | Air Cleaner Restriction | <p><u>DRIVER</u></p> <p>Check air cleaner restriction indicator. If indicator is in red range, clean and service air cleaner filters as needed (p. 0052 00-1).</p>  <p align="right">FT0304-028aap</p> | Air cleaner restriction indicator cracked or unserviceable. |

TABLE 2-1. PMCS FOR M992A2: AFTER OPERATION (continued) 0045 00

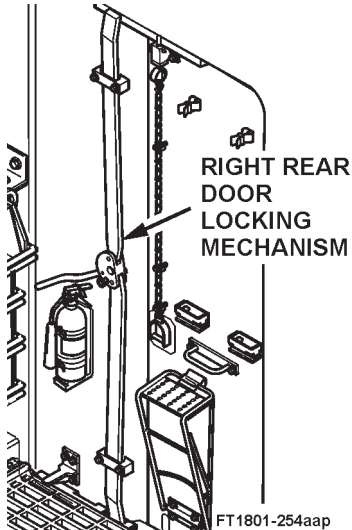
| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | <u>CREWMEMBER PROCEDURE</u> | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|-----------------------|---|---|
| 30 | After | Right Rear Door | <p><u>CREWMEMBER</u></p> <p>Open rear door (p. 0023 00-8). Operate handle several times to make sure there is no free play and lock does not close without actuating it. If lock closes or there is excessive free play in handle, notify Unit maintenance. Operate door locking latch of right and left rear doors several times and check that there is no free play, looseness, or binding. If locking latch has free play, is loose, or binds, notify Unit maintenance.</p>  | Door does not close and latch properly. |

TABLE 2-1. PMCS FOR M992A2: AFTER OPERATION (continued) 0045 00

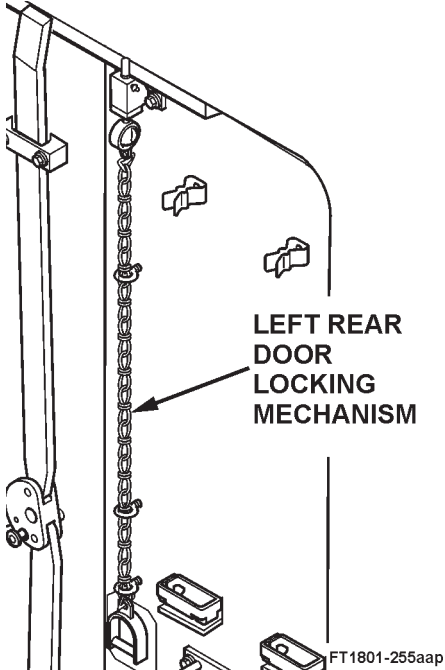
| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|-----------------------|--|---|
| 31 | After | Left Rear Door | <p>Operate door locking latch of left rear door several times and check that there is no free play, looseness, or binding. If locking latch has free play, is loose, or binds, notify Unit maintenance.</p>  | Door does not close and latch properly. |

TABLE 2-1. PMCS FOR M992A2: AFTER OPERATION (continued) 0045 00

| ITEM NO. | INTERVAL | ITEM TO CHECK/ SERVICE | <u>CREWMEMBER PROCEDURE</u> | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|--|--|---|
| 32 | After | 0.50-Cal. M2 Machine Gun | <p><u>COMMANDER</u></p> <p><u>WARNING</u></p> <p>Check to see that machine gun is clear of ammunition and barrel is free of obstructions.</p> <p>a. Disassemble, clean, and lightly lubricate machine gun. Perform PMCS IAW TM 9-1005-213-10.</p> <p><u>CAUTION</u></p> <p>Never pull back bolt assembly with the safety on "S." The safety assembly will be damaged.</p> <p>b. Reassemble machine gun and check for ease of operation.</p> | |
| 33 | After | Auxiliary Power Unit (APU) Crankcase Oil Level | <p><u>DRIVER</u></p> <p>Open APU front compartment door and check APU engine oil level. Add oil to bring level up to max (F) mark on dipstick. Add or drain as needed.</p> | |
| 34 | After | APU Coolant Level | <p><u>DRIVER</u></p> <p>Open APU side compartment door. Check that level in over-flow reservoir is above 1/3 full. Add coolant until over-flow reservoir is 2/3 full, if necessary.</p> | |

TABLE 2-1. PMCS FOR M992A2: AFTER OPERATION (continued) 0045 00

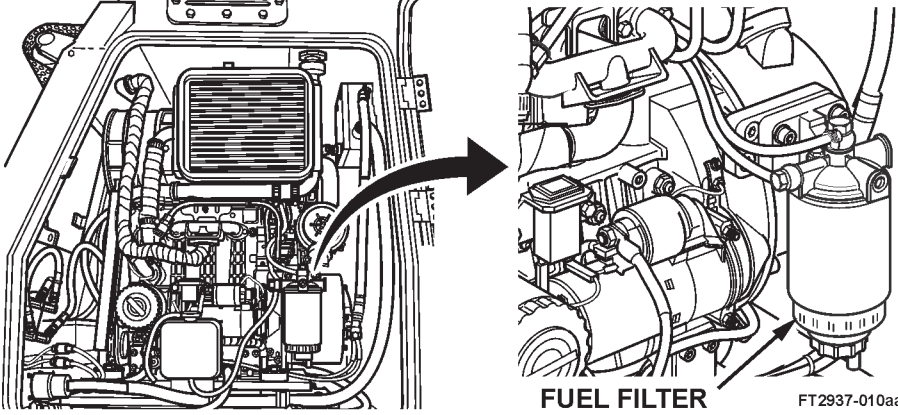
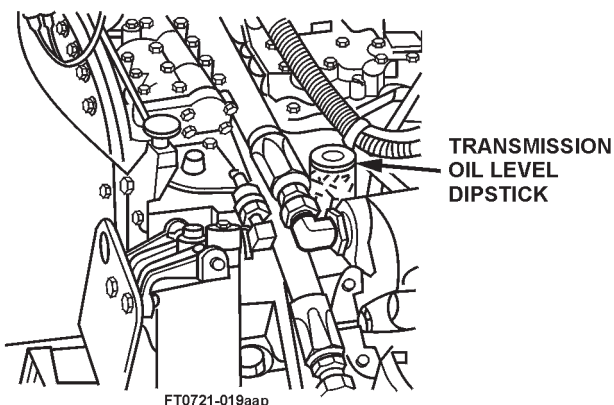
| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|--|----------|-----------------------|---|-----------------------------------|
| 35 | After | APU Fuel Filters | <p><u>DRIVER</u></p> <p>Drain fuel filter until contaminants are removed. Inspect fuel lines and hoses for damage, leaks, and loose connections.</p> | Any leak is found. |
| <div style="display: flex; justify-content: space-around; align-items: center;">  <div style="text-align: right;"> <p>FUEL FILTER</p> <p>FT2937-010aap</p> </div> </div> | | | | |

TABLE 2-1. PMCS FOR M992A2: AFTER OPERATION (continued) 0045 00

| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|--|--|--|
| 36 | After | APU Engine Air Ducts | <p><u>DRIVER</u></p> <p>Check to see that air passages are free of dirt and debris. Inspect for clogging in louvers in front and side doors. Open front of APU and inspect fan for dirt, debris, or damage.</p> | |
| 37 | After | Final Drive U-Joints and Quick Disconnects | <p><u>DRIVER</u></p> <p>a. Inspect left and right final drive U-joints for presence and security of lacing wire on quick-disconnect bolts.</p> <p>b. Check final drives for oil leaks.</p> | <p>a. Any U-joint quick-disconnect bolt is loose, missing, or not laced.</p> <p>b. Class III leak found.</p> |
| 38 | After | Transmission Oil Level | <p><u>DRIVER</u></p> <p>Check oil level; level should be within the OPERATING RANGE stamped on dipstick. Add oil (p. 0071 00-18) as required.</p> | |



FT0721-019aap

TABLE 2-1. PMCS FOR MODEL M992A2 (continued)

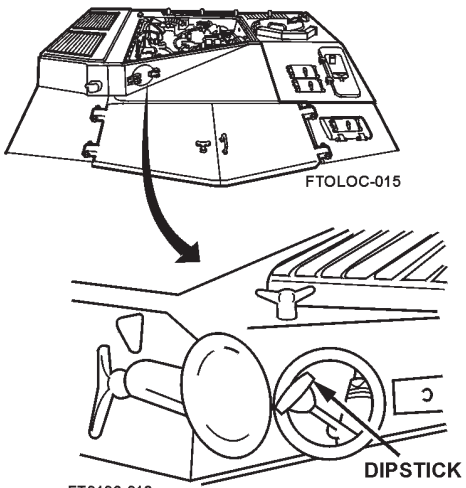
| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|-----------------------|--|-----------------------------------|
| 39 | After | Engine Oil Level | <p style="text-align: center;">NOTE</p> <p>New transmissions are delivered with preservative PE-10-1. Until first scheduled oil change, maintain proper oil level by adding OE/HDO or OEA.</p> <p>DRIVER</p> <p style="text-align: center;">NOTE</p> <p>Make engine oil level check with vehicle on level ground if possible. Oil level will take approximately 20 minutes to stabilize in engine crankcase. After 20 minutes, check oil level; refer to main engine crankcase oil level (p. 0070 00-10). Oil level should be within the L - F range stamped on dipstick.</p>  <p>The diagram consists of two parts. The top part, labeled FTOLOC-015, shows a top-down view of the engine compartment with various components and a dipstick. The bottom part, labeled FT0106-013aap, shows a side view of the driver's seat and steering wheel. An arrow points from the dipstick in the engine compartment to the dipstick location on the driver's seat.</p> | |

TABLE 2-1. PMCS FOR M992A2: AFTER OPERATION (continued) 0045 00

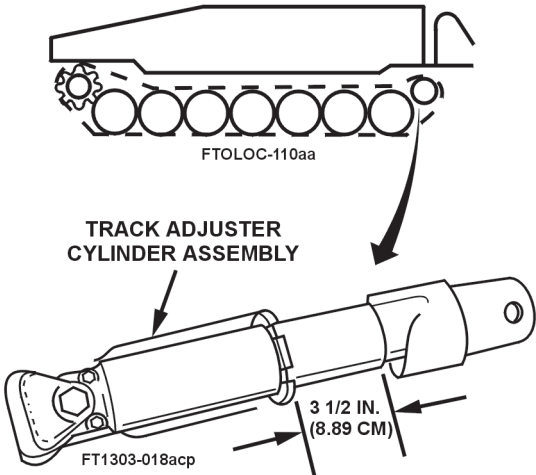
| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | <u>CREWMEMBER PROCEDURE</u> | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|---------------------------|--|--|
| 40 | After | Track Adjuster Assemblies | <p><u>CREWMEMBER</u></p> <p>Check for bent or broken track adjuster cylinder assemblies.</p> <p>Track adjusters have reached their maximum extended limit at 3-1/2 inches (8.89 cm).</p>  | Either track ad- adjuster cylinder assembly is bent, broken, or beyond maximum limits. |
| 41 | After | Track Tension | <p><u>CREWMEMBER</u></p> <p>Perform same check as on p. 0053 00-11.</p> | |

TABLE 2-1. PMCS FOR M992A2: AFTER OPERATION (continued) 0045 00

| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|-----------------------|--|---|
| 42 | After | Sprocket Wheels | <p><u>DRIVER/CREWMEMBER</u></p> <p>a. Check sprocket wheels for cracked, broken, or missing teeth, loose or missing sprocket cap screws and self-locking nuts, and loose or missing sprocket hub to final drive self-locking bolts.</p> | <p>a. Any sprocket wheel tooth is cracked, broken, or missing. Any sprocket cap screws or self-locking nuts are missing or broken. Any sprocket hub to final drive self-locking nuts or self-locking bolts are missing or broken.</p> |

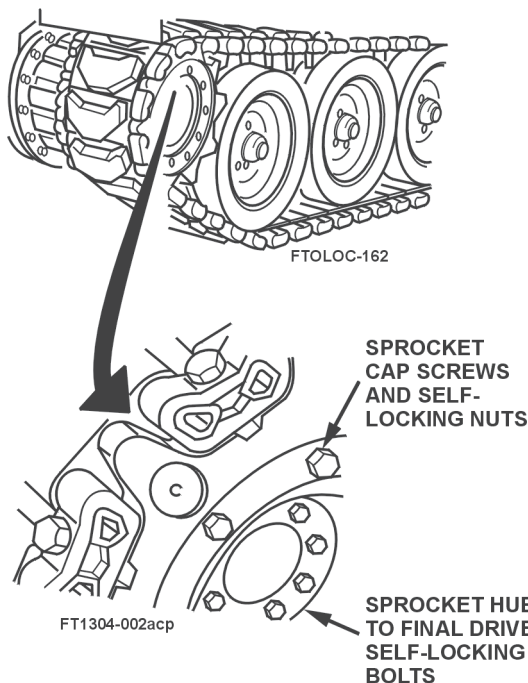


TABLE 2-1. PMCS FOR M992A2: AFTER OPERATION (continued) 0045 00

| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|--|----------|--------------------------------|---|---|
| 42 | After | Sprocket Wheels (continued) | <p style="text-align: center;">NOTE</p> <ul style="list-style-type: none"> • Only two sprocket wheel teeth have wear indicators. • Sprocket wheel teeth wear faster on the inside. A tooth may be excessively worn, but still not show wear into wear mark. <p>b. Check sprocket wheel teeth for excessive wear. Using a ruler, measure from inside edge of tooth into wear area. Then measure edge distance from edge of tooth to wear indicator. If the first measurement is equal to or greater than the second, sprocket wheel wear is excessive. Notify Unit maintenance.</p> | b. One or more sprocket wheel teeth worn into edge of wear indicator, or one or more sprocket wheel teeth showing excessive wear. |
| <p style="text-align: center;">FT1303-020aap</p> | | | | |

TABLE 2-1. PMCS FOR M992A2: AFTER OPERATION (continued) 0045 00

| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | <u>CREWMEMBER PROCEDURE</u> | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|-----------------------------|--|---|
| 43 | After | Roadwheels and Idler Wheels | <p><u>DRIVER/CREWMEMBER</u></p> <p>a. Check to make sure mounting nuts are secure.</p> <p>b. Check for loss of rubber, pitting, shrinking, and separation of rubber from metal.</p> <p>c. Check for elongation of mounting holes.</p> <p style="text-align: center;">NOTE</p> <p>Relief valves are located on back of roadwheel and idler hubs and should be checked for slippage.</p> <p>d. Check roadwheel hub for grease seepage.</p> | <p>a. Two or more idler wheel mounting nuts missing. Three or more roadwheel mounting nuts on same hub missing.</p> <p>b. Any missing, bent, warped, or cracked roadwheel or idler wheel.</p> <p>Separation of 1 inch (2.54 cm) of rubber from surface around 3/4 of roadwheel and/or chunking that causes metal-to-metal contact between roadwheel and track.</p> <p>c. Mounting holes are elongated on any wheel.</p> |

TABLE 2-1. PMCS FOR M992A2: AFTER OPERATION (continued) 0045 00

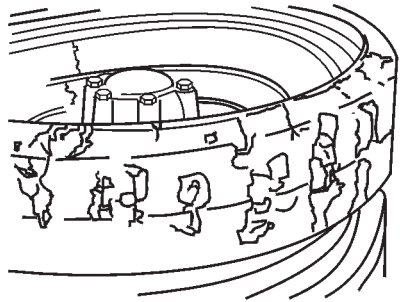
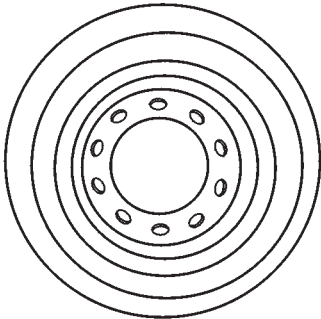
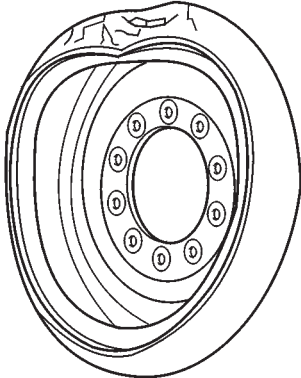

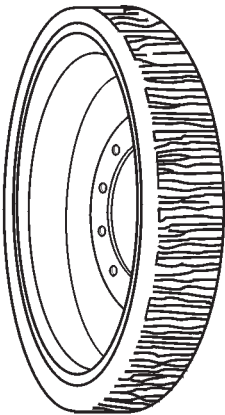
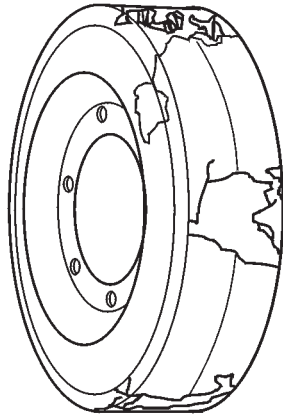
| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|---|----------------------|-----------------------------------|
| | |  | | |
| | | CHUNKING OF RUBBER | | |
| | |  | | |
| | | ELONGATED MOUNTING HOLES | | |
| | |  | | |
| | | BENT, CRACKED ROADWHEEL | | |
| | |  | | |
| | | SEPARATION OF RUBBER | | |
| | |  | | |
| | | CRACKED RUBBER ON SURFACE | | |
| | |  | | |
| | | SEVERE CHUNKING OF RUBBER | | |
| | | FT1301-025aap | | |

TABLE 2-1. PMCS FOR M992A2: AFTER OPERATION (continued) 0045 00

| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|--------------------------------|---|---|
| 44 | After | Wheel Hubs and Shock Absorbers | <p><u>DRIVER/CREWMEMBER</u></p> <p><u>WARNING</u></p> <p>Check all hubs carefully. Hubs may be hot. Failure to heed this warning may result in injury to personnel.</p> <p>a. Check for overheated wheel hubs. After operation, touch all hubs cautiously for noticeable temperature difference between components. An overheated hub indicates a malfunction, inadequate lubrication, or damaged bearing.</p> <p>NOTE</p> <p>If shock absorber is operating properly, it should be warmer than the hull area around it.</p> <p>b. Check lower end of shock absorber cautiously, and check for temperature difference between hull area and shock absorber. If overheating occurs, notify Unit maintenance.</p> <p>c. Turn shock absorber from side to side. If shock absorber moves, absorber moves upper end is damaged. Notify Unit maintenance.</p> | <p>a. Wheel hub is overheating.</p> <p>b. Shock absorber broken or missing.</p> <p>c. Shock absorber moves from side to side.</p> |

TABLE 2-1. PMCS FOR M992A2: AFTER OPERATION (continued) 0045 00

| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | <u>CREWMEMBER PROCEDURE</u> | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|--------------------------|--|---|
| 45 | After | Track Shoes and Bushings | <p><u>DRIVER/COMMANDER</u></p> <p>NOTE</p> <p>Worn bushings are very difficult to locate. They will cause track pin to appear off-center. A track shoe with a worn bushing may have protruding track pin and unusual gaps between two adjacent shoes.</p> <p>a. Check track shoes for damaged track pins and any unusual or uneven gaps between adjacent track shoes, indicating worn bushings.</p> <p>b. Check track shoe for damage, including cracked or broken shoe body; bent, broken, or missing center guides; and chunked or missing roadwheel pad rubber. Report damaged track to Unit maintenance. Replace worn or missing track shoe pads and nuts (p. 0053 00-12).</p> | <p>a. Any track shoe with worn bushing. Any bushing deemed un-serviceable. Any track shoe bent, cracked, or broken. Any track pin bent, broken, or missing.</p> <p>b. Any track shoe body bent, broken, or cracked. Any track pin broken, bent, or missing.</p> |

TABLE 2-1. PMCS FOR M992A2: AFTER OPERATION (continued) 0045 00

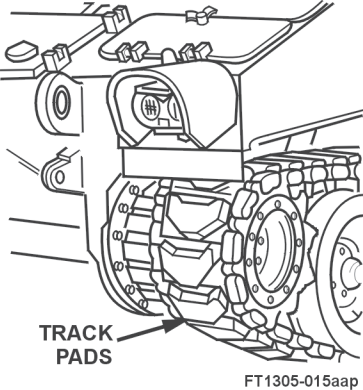
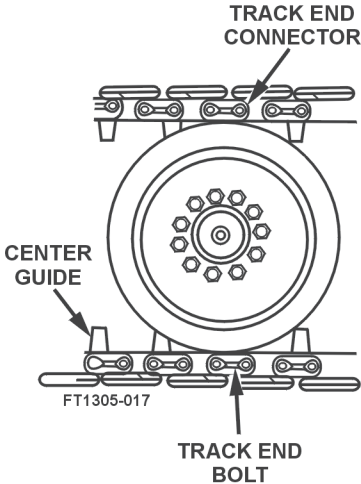
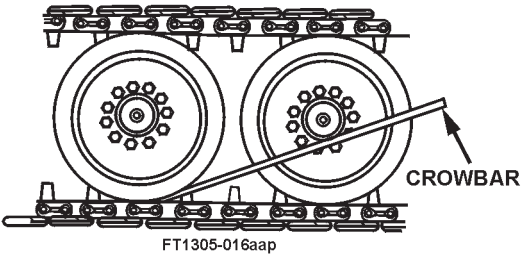
| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|--|----------|--|---|---|
| 46 | After | Track End Connectors and Center Guides | <p>DRIVER/COMMANDER</p> <p>Check for loose, missing, or worn track end connectors and bolts, track center guides, track pads, and track shoes.</p> | Any missing or cracked track end connectors, missing center guides, or missing bolts. |
| <div style="display: flex; justify-content: space-around; align-items: flex-end;">   </div> <p>The left diagram shows track pads (FT1305-015aap) installed on the track system. The right diagram shows a track end connector, a center guide (FT1305-017), and a track end bolt.</p> | | | | |

TABLE 2-1. PMCS FOR M992A2: AFTER OPERATION (continued) 0045 00

| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | <u>CREWMEMBER PROCEDURE</u> | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|----------------------------------|---|---|
| 47 | After | Torsion Bars and Road-wheel Arms | <p>DRIVER</p> <p>Check for bent, broken, or missing roadwheel arms and torsion bars. With crowbar, try to lift each roadwheel. If any roadwheel comes up easily, you have a broken or missing torsion bar. Report any broken or missing torsion bars to Unit maintenance.</p>  | Torsion bar or roadwheel arm is bent, broken, or missing. |

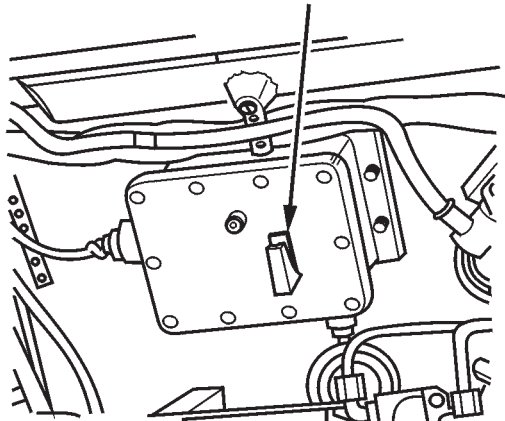
END OF WORK PACKAGE

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

TABLE 2-1. PMCS FOR M992A2: WEEKLY AND MONTHLY CHECKS AND SERVICES (continued)

| ITEM NO. | INTERVAL | ITEM TO CHECK/ SERVICE | <u>CREWMEMBER PROCEDURE</u> | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|------------------------------|---|-----------------------------------|
| 48 | Weekly | Chemical Agent Detector Unit | <p><u>DRIVER/CREWMEMBER</u></p> <p style="text-align: center;"><u>WARNING</u></p> <p>NBC-contaminated filters must be handled using adequate precautions and must be disposed of by trained personnel.</p> <p>Service detector unit IAW TM 3-6665-225-12. Replace reservoir fluid and change air filter only as needed. Perform PMCS IAW TM 3-6665-225-12.</p> | |

**TABLE 2-1. PMCS FOR M992A2:
WEEKLY AND MONTHLY CHECKS AND SERVICES (continued) 0046 00**

| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|--|--|-----------------------------------|
| 49 | Weekly | Nuclear, Biological, or Chemical (NBC) System Air Purifier | <p>a. Remove air inlet cover. With MASTER switch turned to ON, turn VFPS (NBC) power switch to ON. Check motor for smooth operation. Check air outlets for airflow. Inspect filter assembly for dents, cracks, secure mounting, and missing parts.</p> <p style="text-align: center;">VFPS (NBC) POWER SWITCH</p>  <p style="text-align: center;">FT0607-106aap</p> <p>b. Check operation of NBC heaters. Turn VFPS (NBC) power switch to ON. Turn air heater on and check to see that green light illuminates (p. 0007 00-11).</p> | |

**TABLE 2-1. PMCS FOR M992A2:
WEEKLY AND MONTHLY CHECKS AND SERVICES (continued) 0046 00**

| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|-----------------------|--|-----------------------------------|
| 50 | Weekly | Lights | <p><u>DRIVER/CREWMEMBER</u></p> <p>a. Check driving lights by turning on driving lights switch (p. 0011 00-2). Depress high-beam switch to make sure lights operate properly on high and low beams.</p> <p>b. Check HI BEAM indicator light and MASTER WARNING indicator light.</p> <p style="text-align: center;">NOTE</p> <p>Driver will turn on lights and crewmember will check for operation.</p> <p>c. Check stoplights and taillights to see that they operate properly. Make sure lights brighten during braking.</p> <p>d. Check blackout drive lights:</p> <ul style="list-style-type: none"> • Set main light switch lever to BO DRIVE. <p>e. Check dome lights.</p> | |

**TABLE 2-1. PMCS FOR M992A2:
WEEKLY AND MONTHLY CHECKS AND SERVICES (continued) 0046 00**

| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|-----------------------|--|---|
| 51 | Weekly | Bilge Pump | <p><u>DRIVER</u></p> <p><u>CAUTION</u></p> <ul style="list-style-type: none"> • Do not run bilge pump for more than one minute dry, or more than 15 minutes wet without starting engine. • Do not ford if bilge pump is inoperative or missing. <p>Check operation of bilge pump. If pump is dry, feel air outlet when pump is running.</p> | |
| 52 | Weekly | Batteries | <p><u>DRIVER</u></p> <p><u>WARNING</u></p> <p>Do not smoke, use open flame, make sparks, or create other ignition sources around batteries. If a battery is giving off gas, it can explode and cause injury to personnel.</p> <p>a. Check electrolyte level. Electrolyte level must be about 1/2 inch over top of plates. Some batteries have lips inside, or indicators, to show where the electrolyte level should be. If electrolyte is low, add distilled water to bring electrolyte to proper level.</p> | <p>A battery is missing or un-serviceable or engine will not crank. Any cable or terminal is loose. Any battery is broken or cracked.</p> |

**TABLE 2-1. PMCS FOR M992A2:
WEEKLY AND MONTHLY CHECKS AND SERVICES (continued)**

0046 00

| ITEM NO. | INTERVAL | ITEM TO CHECK/ SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|---------------------------|--|-----------------------------------|
| 52 | Weekly | Batteries (continued) | <p>If water is added or fluid is boiling and the outside temperature drops to near or below the freezing point, run the vehicle engine for 15 minutes to allow the water to mix the electrolyte.</p> <div style="text-align: center;"> <p>BATTERIES</p> <p>CONNECTIONS</p> <p>FT0612-024abp</p> </div> <p>b. Make sure the vent holes on caps are open to permit escape of gases; also make sure caps are screwed on tightly.</p> | |

**TABLE 2-1. PMCS FOR M992A2:
WEEKLY AND MONTHLY CHECKS AND SERVICES (continued) 0046 00**

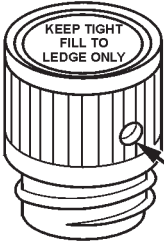
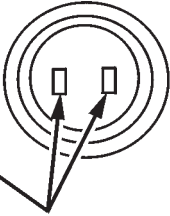
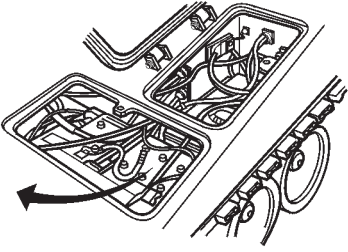
| ITEM NO. | INTERVAL | ITEM TO CHECK/ SERVICE | <u>CREWMEMBER</u> PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|---------------------------|--|---|
| 52 | Weekly | Batteries (continued) | <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  <p>FT0612-023aa</p> </div> <div style="text-align: center;">  <p>VENTS IN CAP</p> </div> <div style="text-align: center;">  <p>FT0612-024aap</p> </div> </div> <p>c. Inspect terminals, posts, clamps, cables, and battery hold-downs and battery boxes for corrosion. If corrosion is present, have Unit maintenance clean and coat all clamps, hold-downs, and battery boxes, except posts and terminals.</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>To reduce battery damage, do not remove batteries from equipment battery boxes, except during scheduled maintenance or during battery replacement. Battery replacement will be performed only by Unit maintenance personnel.</p> <p>d. Make sure a light coat of GAA grease is applied and covers all terminals and posts after clamping down battery. Keep grease from between posts and terminals.</p> | |

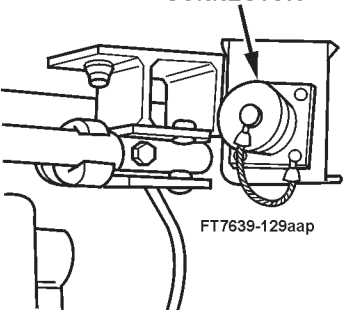
TABLE 2-1. PMCS FOR M992A2:

WEEKLY AND MONTHLY CHECKS AND SERVICES (continued)

0046 00

| ITEM NO. | INTERVAL | ITEM TO CHECK/ SERVICE | <u>CREWMEMBER</u> <u>PROCEDURE</u> | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|--|--|---|
| 52 | Weekly | Batteries (continued) | e. Make sure rubber grommets are in place to keep cables from being cut on the edge of holes. f. Further battery information that pertains to this subject matter can be found in TM 9-6140-200-14. | |
| 53 | Weekly | Front and Rear Slave Cable Receptacle Connectors | <p><u>DRIVER</u></p> Check front and rear slave cable receptacle connectors and caps for damage, burned-out condition, and corrosion (two locations). | |

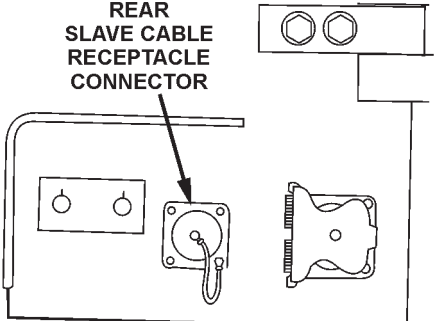
**FRONT
SLAVE CABLE
RECEPTACLE
CONNECTOR**



FT7639-129aap

DRIVER'S COMPARTMENT

**REAR
SLAVE CABLE
RECEPTACLE
CONNECTOR**

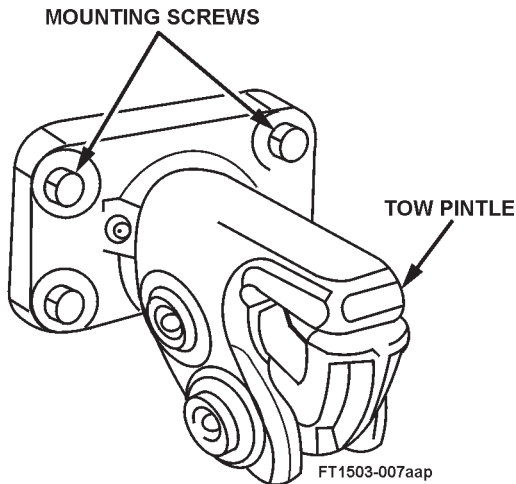


FT0613-120aap

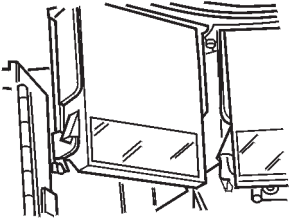
REAR OF VEHICLE

**TABLE 2-1. PMCS FOR M992A2:
WEEKLY AND MONTHLY CHECKS AND SERVICES (continued) 0046 00**

| ITEM NO. | INTERVAL | ITEM TO CHECK/ SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|-----------------------------------|---|--|
| 54 | Weekly | Doors, Hatches, and Latches | Check hatch and door seals for looseness, tears, or deterioration. Make sure hatches and doors lock securely in both open and closed positions. | Driver's or commander's hatch door will not lock, open, and/or close. Rear door will not open or close or is misaligned. Any hatch or door is missing. |
| 55 | Weekly | Tow Pintle | <p><u>DRIVER</u></p> <p>Check tow pintle for proper operation. Pull back spring arm. Make sure pintle opens. Close pintle. Make sure pintle locks close. Inspect pintle for loose mounting screws.</p> | |



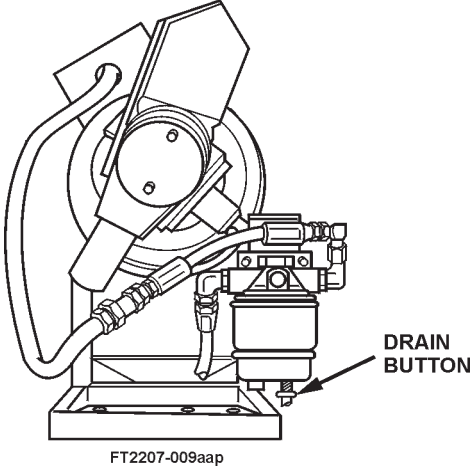
**TABLE 2-1. PMCS FOR M992A2:
WEEKLY AND MONTHLY CHECKS AND SERVICES (continued) 0046 00**

| ITEM NO. | INTERVAL | ITEM TO CHECK/ SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|------------------------|--|--|
| 56 | Weekly | M45 Periscopes | <p><u>DRIVER</u></p> <p><u>CAUTION</u></p> <p>Handle periscopes carefully during removal to avoid damaging frame and glass.</p>  <p>FT1803-019aap</p> <ol style="list-style-type: none"> Remove periscope by loosening two thumbscrews. Check between carrier wall and periscope for dirt or moisture. | <p>b. Any periscope is missing or un-serviceable, or over 50% of vision is obstructed.</p> |
| 57 | Weekly | M27 Periscope | <p><u>COMMANDER</u></p> <p>Check for damage and cleanliness.</p> | <p>Periscope is missing or over 50% of vision is obstructed.</p> |

**TABLE 2-1. PMCS FOR M992A2:
WEEKLY AND MONTHLY CHECKS AND SERVICES (continued) 0046 00**

| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|-----------------------|---|-----------------------------------|
| 58 | Weekly | Personnel Heater | <p style="text-align: center;"><u>WARNING</u></p> <p>If heater operates improperly, fuel may over-flow, causing danger of fire or explosion.</p> <p>Be alert during heater operation for exhaust odors or signs of exposure to carbon monoxide. Carbon monoxide can kill you. If you suspect that carbon monoxide is present, shut off heater and ventilate vehicle.</p> <p>Explosive/flammable materials are a fire hazard. Do not store aerosol cans, solvents, fuel, etc., anywhere inside vehicle. Stow ammunition and powder in authorized stowage racks.</p> <p>a. Start and operate heater (p. 0028 00-2). If heater does not start, notify Unit maintenance.</p> <p>b. Check crew/driver duct outlets for steady warm-air output. If there is no warm-air output, shut off heater (p. 0028 00-3) and notify Unit maintenance.</p> <p>c. Drain fuel filter. (1) Remove right front canister compartment shield (p. 0023 00-1). (2) Place suitable container under filter and push drain button to drain water from filter.</p> | |

**TABLE 2-1. PMCS FOR M992A2:
WEEKLY AND MONTHLY CHECKS AND SERVICES (continued) 0046 00**

| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|---------------------------------|--|---|
| 58 | Weekly | Personnel Heater (continued) | <p>d. Check personnel heater for signs of damage and fuel leaks.</p> <p>e. Check all heater air outlets for obstructions.</p> <p>f. Check all tubes, fuel filter, fuel pump, and hoses for air and fuel leaks by smelling and looking at hull floor under heater area.</p> <div style="text-align: center;">  <p>FT2207-009aap</p> </div> | <p>d. Any fuel leak found.</p> <p>f. Any fuel leak found.</p> |
| 59 | Weekly | APU Sound-proof Panels | <p>NOTE</p> <p>No soundproof panel is required for forward wall.</p> <p>Open APU side door. Make sure soundproof panels are mounted securely.</p> | |

**TABLE 2-1. PMCS FOR M992A2:
WEEKLY AND MONTHLY CHECKS AND SERVICES (continued) 0046 00**

| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|-------------------------------------|---|-----------------------------------|
| 60 | Weekly | APU Engine Air Filter Element | <p><u>DRIVER</u></p> <p><u>WARNING</u></p> <p>If NBC exposure is suspected, all air filter media should be handled by personnel wearing protective equipment. Consult your Unit NBC officer or NBC NCO for appropriate handling or disposal instructions.</p> <p><u>CAUTION</u></p> <p>When assembling filter element unit, make sure edge of cup assembly marked TOP is positioned at top edge of canister.</p> <p>Remove air filter element. Refer to WP 0052 00. Do not operate APU if air filter element is clogged, dirty, damaged, or missing.</p> | |
| 61 | Weekly | Fatigue (Floor) Mats | <p><u>COMMANDER</u></p> <p>Inspect fatigue (floor) mats in crew compartment for tears.</p> | |
| 62 | Monthly | Stowage Areas | <p><u>COMMANDER/ CREWMEMBERS</u></p> <p>Inspect all internal and external stowage boxes, stops, brackets, decals, shelves, nets, and restraints for damage. This is the duty of every crewmember. Notify Unit maintenance if any damage exists.</p> | |

**TABLE 2-1. PMCS FOR M992A2:
WEEKLY AND MONTHLY CHECKS AND SERVICES (continued)**

0046 00

| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|--------------------------|--|--|
| 63 | Monthly | Projectile Rack Sections | <p><u>COMMANDER/</u> <u>CREWMEMBERS</u></p> <p>a. Remove projectile rack from against front wall of crew/cargo compartment (p. 0027 00-5).</p> <p>b. Inspect rack restraints for broken safety wires and loose or missing bolts.</p> <p>c. Check to see that rack interlocking rods are not bent and are securely installed.</p> <p>d. Check to see that setscrew at each locking handle pivot is present and secure. Inspect locking bars for security.</p> | <p>b. Rack section missing. Safety wire broken, loose, or missing bolts.</p> <p>c. Rack interlocking rods bent, cracked, or missing.</p> <p>d. Setscrew for locking handle missing. Locking bar will not lock.</p> |

RACK INTERLOCKING RODS

SETSCREW

BOLTS

SAFETY WIRES

FT1808-094aap

LOCKING BARS

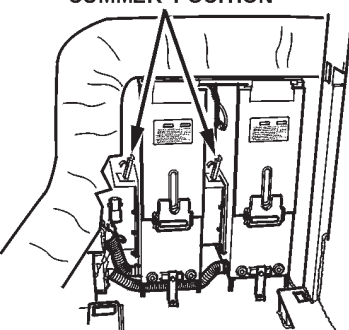
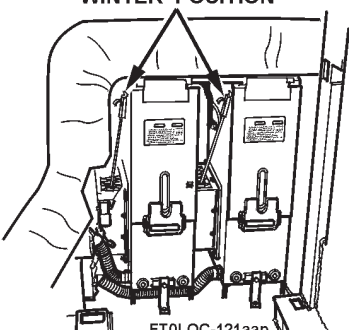
PROJECTILE RACK SECTION

FT1808-095

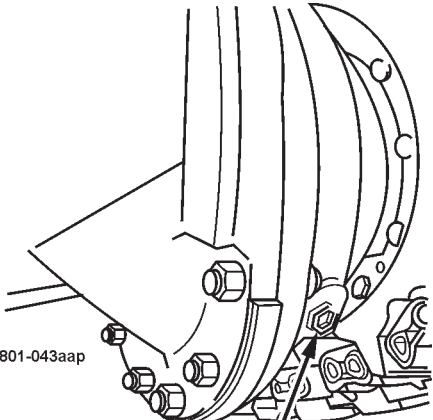
**TABLE 2-1. PMCS FOR M992A2:
WEEKLY AND MONTHLY CHECKS AND SERVICES (continued) 0046 00**

| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|-------------------------------------|--|--|
| 64 | Monthly | Vertical Stowage Assembly | <p><u>COMMANDER/ CREWMEMBERS</u></p> <p>a. Inspect vertical stowage assembly for loose or missing hardware.</p> <p>b. Ensure that rack arm pivots freely and locks in closed position.</p> <p>c. Inspect webbing strap, cushioning pads, and nonmetallic bumpers for tears or deterioration.</p> | <p>b. Rack arm missing or will not lock in closed position.</p> <p>c. Webbing strap torn or missing.</p> |
| 65 | Monthly | Left and Right Honeycomb Assemblies | <p><u>COMMANDER/ CREWMEMBERS</u></p> <p>a. Inspect left and right honeycomb assemblies for loose or missing hardware.</p> <p>b. Ensure that all channel restraint bars pivot freely and lock in closed position.</p> <p>c. Inspect support pads on channel restraint bars and on top of right honeycomb for tears or deterioration.</p> | <p>b. Channel restraint bar missing or will not lock in closed position.</p> |

**TABLE 2-1. PMCS FOR M992A2:
WEEKLY AND MONTHLY CHECKS AND SERVICES (continued) 0046 00**

| ITEM | INTERVAL | ITEM TO CHECK/ | CREWMEMBER | EQUIPMENT NOT READY/AVAILABLE |
|------|----------|--|--|---|
| 66 | Monthly | Engine Air Cleaner | <p><u>DRIVER/COMMANDER</u></p> <p>a. Check air filters (p. 0052 00-1).</p> <p>b. Check to see that access door closes and latches securely. Locking handles must be properly set for summer or winter.</p> <p>c. Blow filters out with low-pressure air. Wash filters with warm water if needed. If washed, allow filters to completely dry before reinstallation.</p> <p>d. Check air filter doors, gaskets, and hoses.</p> <p>e. Set engine air cleaner system for summer or winter position.</p> | <p>b. Air cleaner doors, filter elements, or hoses are missing. Air cleaner doors won't open or close properly. Any hose or filter is torn or has a hole.</p> <p>c. Any evidence of leakage of unfiltered air into intake system.</p> <p>d. Any air filter hose, door, or gasket is missing or damaged.</p> |
| | | <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>SUMMER POSITION</p>  </div> <div style="text-align: center;"> <p>WINTER POSITION</p>  </div> </div> <p style="text-align: right; margin-right: 100px;">FT0LOC-121aap</p> | | |
| 67 | Monthly | Fuel Strainer and Fill Cap | <p><u>DRIVER/COMMANDER</u></p> <p>Service fuel strainer and fill cap.</p> | |

**TABLE 2-1. PMCS FOR M992A2:
WEEKLY AND MONTHLY CHECKS AND SERVICES (continued) 0046 00**

| ITEM NO. | INTERVAL | ITEM TO CHECK/SERVICE | CREWMEMBER PROCEDURE | EQUIPMENT NOT READY/AVAILABLE IF: |
|----------|----------|-------------------------|--|-----------------------------------|
| 68 | Monthly | Final Drive Level Check | <p><u>DRIVER/COMMANDER</u></p> <p>Remove level-check plug. Oil should be level with bottom of opening. If not, add OE/HDO until oil flows from level-check plug opening. Clean and reinstall plug.</p>  <p>FT0801-043aap</p> <p>LEVEL-CHECK PLUG</p> | Any Class III leak exists. |
| 69 | Monthly | Rear Door Step | <p><u>COMMANDER/ CREWMEMBERS</u></p> <p>Inspect rear door step for loose or missing hardware. Ensure that rear door step rotates freely and locks in stowed position.</p> | |
| 70 | Monthly | Folding Rear Platform | <p><u>COMMANDER/ CREWMEMBERS</u></p> <p>Inspect folding rear platform and two support brackets for loose or missing hardware. Ensure that folding rear platform rotates freely.</p> | |

END OF WORK PACKAGE

OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

ENGINE COOLING SYSTEM MAINTENANCE

THIS WORK PACKAGE COVERS:

Adding Coolant, Faulty Cooling System, Draining Coolant, and Coolant Temperature Ranges

INITIAL SETUP:

Maintenance Level

Operator/Crew

ADDING COOLANT

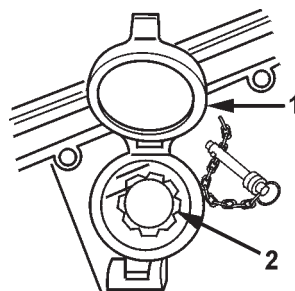
WARNING

Steam can cause serious burns. NEVER remove radiator cap on an overheated engine until engine has cooled.

NOTE

Overheating is caused by a faulty cooling system or low coolant level. Proper maintenance of cooling system will help prevent overheating.

1. Park vehicle on level ground. Lower rpm below cruising speed on an overheated engine until temperature drops below 185°F (85°C). If temperature continues to rise, shut down completely and allow 10 minutes for engine to cool before adding coolant.
2. Open radiator cap access cover (1). Place a rag over radiator cap (2), then slowly loosen cap (2) to relieve steam and pressure. When steam subsides, remove cap (2).
3. Start engine and idle. Add coolant to top of filler neck and replace cap (2).
4. Run engine for one minute longer to eliminate any air locks; recheck coolant level and add coolant if necessary.



FT1801-220aap

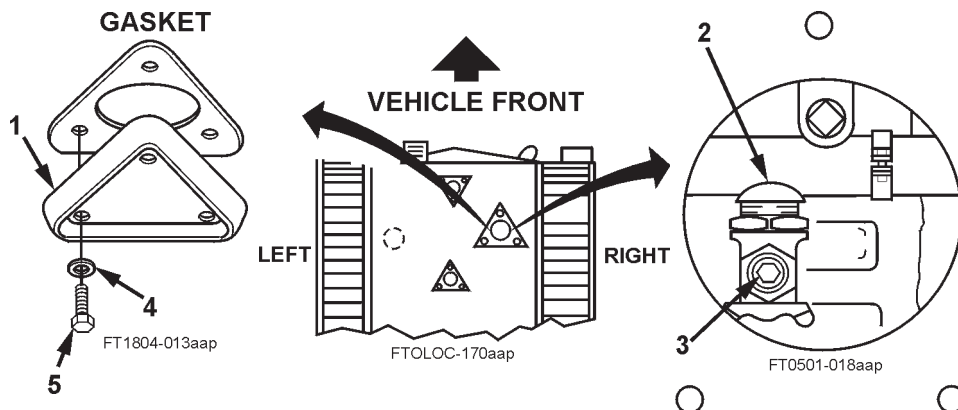
FAULTY COOLING SYSTEM

If radiator is clogged or dirty, notify Unit maintenance.

DRAINING COOLANT

1. Monitor engine temperature on ENGINE WATER TEMP gage, and allow engine to cool to below 185°F (85°C).
2. Place vehicle on an incline, nose down, to facilitate coolant draining.
3. Remove three screws (5) and washers (4) and access cover (1) from bottom of vehicle.
4. Using a 9/16-inch socket head screw key, remove coolant drain plug (3) from radiator. Drain coolant into suitable container.
5. Slowly open valve (2).
6. Slowly remove radiator cap from radiator.
7. Close valve (2), replace plug (3) in radiator, and refill radiator with coolant.
8. Place vehicle on level ground and recheck coolant level.
9. Install access cover (1) on bottom of vehicle using three screws (5) and washers (4).

COOLANT TEMPERATURE RANGES



- 65°F to -40°F (-54°C to -40°C) Antifreeze (Item 2, p. 0069 00-2)
- 40°F to +80°F (-40°C to +27°C) Antifreeze (Item 3 or 4, p. 0069 00-2)
- Above +80°F (Above +27°C) Corrosion resistant coating (22-1/2 oz per vehicle) (Item 16, p. 0069 00-3)

END OF WORK PACKAGE

OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

SERVICING OF FUEL SYSTEM

INITIAL SETUP:
Maintenance Level
Operator/Crew

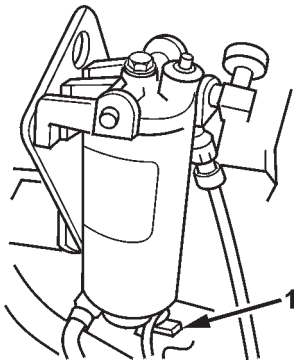
WARNING

Diesel fuel is FLAMMABLE. DO NOT smoke in vicinity while performing servicing operations.

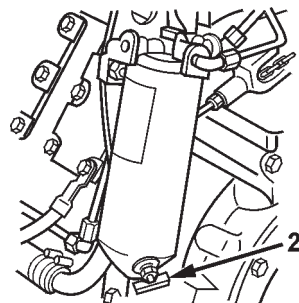
1. Open two drain cocks (1 and 2) on primary and secondary fuel filters to remove water and dirt. Place container under drain cocks.
2. When clear fuel is visible, close two drain cocks.

NOTE

- After primary and secondary fuel filters have been drained, purge air from fuel system by turning on FUEL PRIME switch for one minute prior to starting engine.
- Fuel tanks hold 135 gallons of fuel. Before draining, provide enough container capacity to hold fuel to be drained.

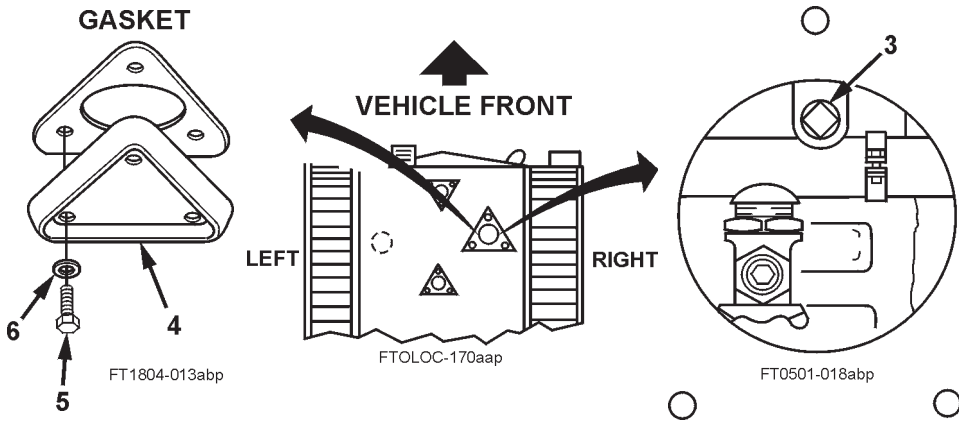


FT0309-008aap



FT0309-009aap

3. When necessary, remove water and dirt from fuel tanks as follows:
 - a. Remove three screws (5) and washers (6) and access cover (4) from bottom of vehicle.
 - b. Using adjustable wrench, remove fuel tank plug (3) from fuel tank drain.
 - c. When clear fuel is visible, replace fuel tank plug (3) in fuel tank drain.
 - d. Install access cover (4) on bottom of vehicle using three screws (5) and washers (6).



NOTE

After operation, keep fuel tanks full to minimize condensation.

END OF WORK PACKAGE

OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

REFUELING

INITIAL SETUP:
Maintenance Level
Operator/Crew

WARNING

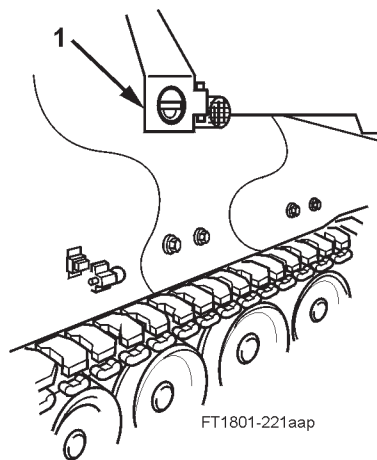
Diesel fuel is FLAMMABLE. DO NOT smoke within 50 feet of vehicle while refueling.

1. Shut off engine.
2. Open fuel cap access door (1).
3. Clean any debris from compartment and around fuel cap prior to removing fuel cap.
4. Remove fuel cap slowly. Make sure fuel strainer is properly placed in mouth of filler neck.

NOTE

Do not lay fuel hose across vehicle.

5. Fill to a level six inches below top of filler neck.
6. Replace fuel cap and close access door (1).



END OF WORK PACKAGE

OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

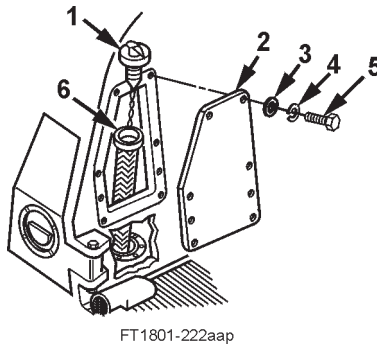
FUEL FILL STRAINER AND FILL CAP MAINTENANCE

INITIAL SETUP:

Maintenance Level

Operator/Crew

1. Using hinged socket wrench handle and 9/16-inch socket, remove eight screws (5), lockwashers (4), and washers (3) and access cover (2) from hull.
2. Unscrew fill cap (1) from fuel fill strainer (6).
3. Make sure fill cap (1) is securely chained to strainer (6). If chain is damaged, notify Unit maintenance.



WARNING

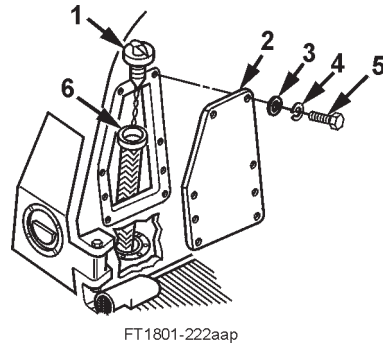
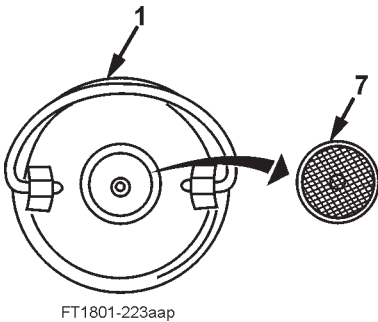
Diesel fuel is flammable. Do not perform this procedure near fire, flame, or sparks. Injury or death to personnel could result.

4. Pull strainer (6) from access opening.
5. Check strainer (6) for rips, excessive clogging, or other unserviceable conditions. If strainer (6) is unserviceable, notify Unit maintenance.

WARNING

Solvent cleaning compound is an environmentally compliant product and is low in toxicity. However, it may be irritating to the eyes and skin due to its base stock. The use of protective gloves and goggles is required. Use the solvent cleaning compound in well-ventilated areas and keep away from open flames and other sources of ignition.

6. Remove breather cap (7) from fill cap (1). Clean breather cap (7) with solvent cleaning compound (Item 9, p. 0069 00-2).
7. Apply thin coating of grease (Item 25, p. 0069 00-4) to mating surfaces of breather cap (7) and fill cap (1). Install breather cap (7) in fill cap (1).
8. Install strainer (6) in access opening. Install fill cap (1) on strainer (6).

**NOTE**

Notify Unit maintenance if lockwashers are unserviceable.

9. Using hinged socket wrench handle and 9/16-inch socket, install access cover (2) on hull with eight screws (5), lockwashers (4), and washers (3).

END OF WORK PACKAGE

OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

SERVICING OF BATTERIES

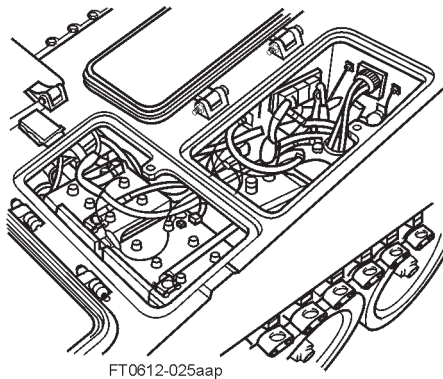
THIS WORK PACKAGE COVERS:

Loose Connections, Electrolyte Level, Corrosion, and Unserviceable Batteries

INITIAL SETUP:

Maintenance Level

Operator/Crew



WARNING

Lead-acid batteries can explode. Do not smoke, have open flames, or make sparks around a battery, especially if the caps are off. If a battery is gassing, it can explode and cause injury to personnel.

LOOSE CONNECTIONS

1. Connectors should be tight and all the way down on battery posts (refer to TM 9-6140-200-14).
2. Battery hold-downs should be tight, but not so tight as to damage battery case.
3. If bolt threads are corroded so as to prevent a tight hold, notify Unit maintenance for replacement.
4. If cables or terminals are loose or broken, notify Unit maintenance.

ELECTROLYTE LEVEL

1. Clean off battery caps before removing. Do not allow dirt or foreign matter to get into battery cells.
2. To allow gases to escape from cells, keep vent holes in battery caps clean.
3. Electrolyte level must not drop below top of battery plates. If this condition exists, fill with distilled water to cover plates.

CORROSION**WARNING**

Battery corrosion is an acid and will eat holes in your clothing or burn your skin. Wash any acid off skin immediately.

1. Corrosion tends to build up on battery posts, terminals, and cables and may damage cables and terminals. If corrosion is found, notify Unit maintenance.

NOTE

Make sure battery caps are tight and no cracks are visible in battery case.

2. Clean top of battery with a damp cloth and wipe dry.

UNSERVICEABLE BATTERIES**CAUTION**

Complete discharge of batteries will lessen battery life and, in freezing weather, will burst battery case. Avoid running batteries down.

If batteries fail, notify Unit maintenance (refer to TM 9-6140-200-14).

END OF WORK PACKAGE

OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

AIR CLEANER MAINTENANCE

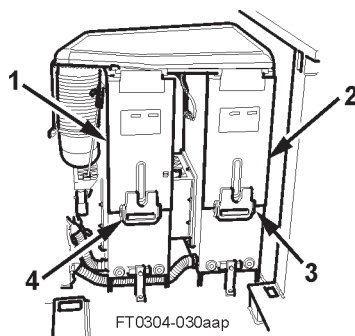
INITIAL SETUP:
Maintenance Level
Operator/Crew

WARNING

If NBC exposure is suspected, all air filter media will be handled by personnel wearing full NBC protective equipment. Consult your unit NBC officer or NBC NCO for appropriate handling or disposal instructions.

Depending on conditions, air cleaner must be removed periodically for cleaning. Loss in engine power, an overheating engine, or excessive black exhaust may indicate need for more frequent cleaning. If yellow sleeve of air cleaner restriction indicator has climbed into red zone, air cleaner is restricted and air filters must be checked.

1. Park vehicle on level ground.
2. Shut off engine (p. 0015 00-1).
3. Remove all projectiles from right projectile rack assembly (p. 0027 00-4).
4. Remove canisters from stowage box on top of right projectile rack assembly.
5. Move right projectile rack assembly toward rear of vehicle (p. 0027 00-5).
6. Remove right access door (2) by pulling down locking latch (3) and lifting door.



CAUTION

Do not pull up left door too far as this will cause binding and damage to door when removing.

7. Remove left access door (1) by pulling down locking latch (4), pulling door up slightly, and sliding door to right.

AIR CLEANER MAINTENANCE (continued)

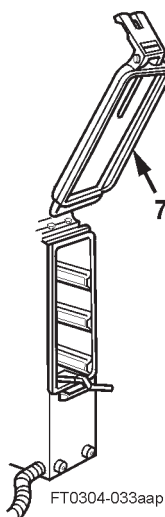
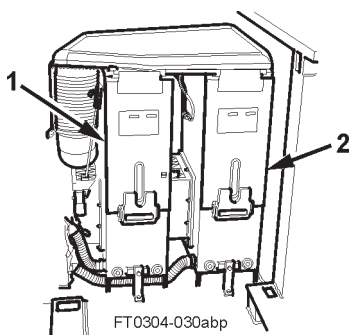
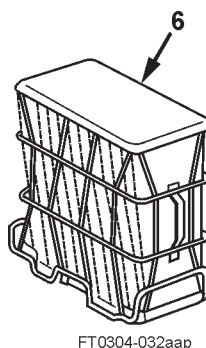
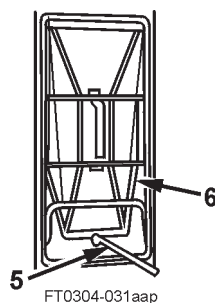
0052 00

8. Pull down locking handles (5). Push two air filters (6) in, lift, and pull out from air cleaner box.

WARNING

Compressed air used for cleaning purposes should not exceed 30 psi (206.8 kPa). Use compressed air only with effective chip-guarding and personal protective equipment (e.g., goggles/shield, gloves). Failure to do this may result in injury to personnel.

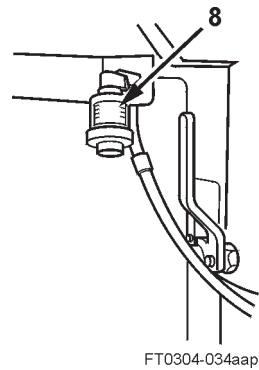
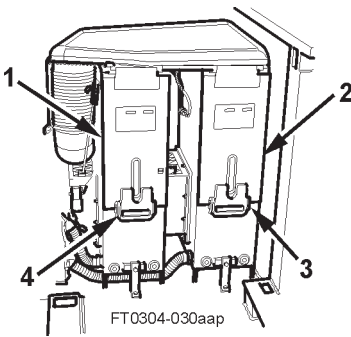
9. Clean air filters (6) with compressed air. (Emergency clean by rapping bottom or sides of air filter against flat surface. Do not strike open edge or sealing edge.)
10. Clean air filter compartments with damp rags (Item 43, p. 0069 00-6).
11. Clean air duct into air filter box with damp rags (Item 43, p. 0069 00-6) as far as possible.
12. Check seal (7) on right and left access doors (2 and 1) for damage or unservicable condition. If seal is damaged or in unservicable condition, notify Unit maintenance.
13. Replace air filters (6); align with outlet gaskets to assure proper sealing, and secure locking handles (5).



AIR CLEANER MAINTENANCE (continued)

005200

14. Slide right and left access doors (2 and 1) on air cleaner. Secure doors by pulling locking latches (4 and 3) down and then up.
15. Reset air cleaner restriction indicator (8) by pushing up on reset button (located on bottom of cylinder).
16. Start engine (p. 0009 00-1). If yellow sleeve in indicator (8) climbs into red zone, notify Unit maintenance.
17. Install right projectile rack assembly (p. 0027 00-9).



END OF WORK PACKAGE

OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

TRACK MAINTENANCE

THIS WORK PACKAGE COVERS:

Checking Track Tension, Increasing Track Tension, Decreasing Track Tension, Disconnecting Track, Installing Track, Connecting Track, Removing Track Shoe, Removing Track Shoe from Stowage, Stowing Track Shoe, Installing Track Shoe, Removing Track Shoe Pads, and Installing Track Shoe Pads

INITIAL SETUP:

Maintenance Level

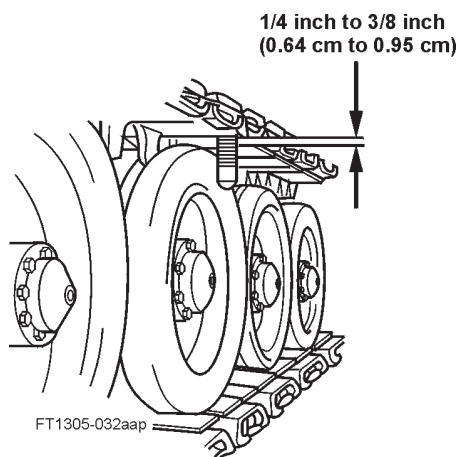
Operator/Crew

Personnel Required

Two

CHECKING TRACK TENSION

1. Move vehicle forward and backward several times on level ground, stopping without applying brakes.
2. Measure distance from top of third roadwheel (third from drive sprocket) to track. If distance is more than 3/8 inch (0.95 cm) or less than 1/4 inch (0.64 cm), track tension needs adjustment.

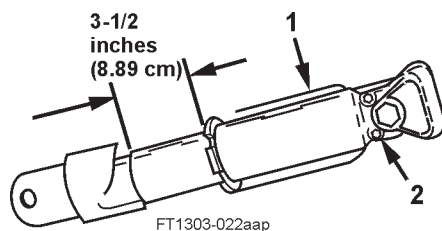


INCREASING TRACK TENSION

Pump grease into clean fitting (2) on track adjuster (1) until correct tension is obtained.

CAUTION

When increasing track tension, do not let track adjuster extend beyond 3-1/2 inches (8.89 cm) or adjuster will bind in extended position and will require force to collapse.



NOTE

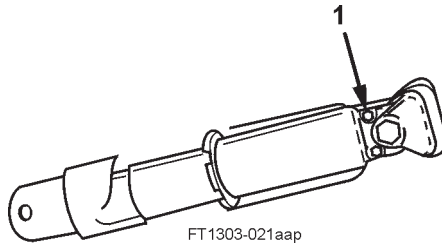
If track sag cannot be taken up, decrease track tension, remove track shoe, and adjust.

DECREASING TRACK TENSION

WARNING

Lubricant is under high pressure. Loosen bleed plug slowly to avoid injury to personnel.

Open bleed plug (1) on track adjuster and reduce pressure until tension is adjusted. Tighten plug (1) and wipe away excess grease.

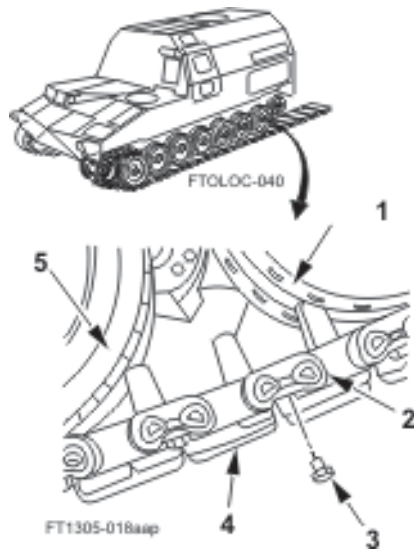


DISCONNECTING TRACK

NOTE

At least two people are required to disconnect and connect track.

1. Position track disconnection point midway between No. 7 roadwheel (5) and idler wheel (1).
2. Shut off vehicle engine (p. 0015 00-1), and block track with logs or rocks. Do not set parking brake.
3. Decrease track tension.
4. Using 3/4-inch drive socket wrench and 1-1/8 inch socket, remove two bolts (3) from two end connectors (2) on track shoe (4).

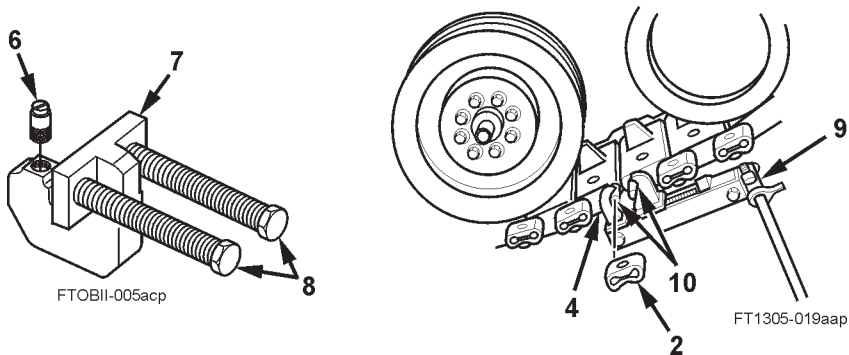


DISCONNECTING TRACK (continued)

5. Install straight pin (6) in end connector puller (7). Install end connector puller (7) through bolt hole in end connector (2). Puller must rest flat against end connector (2), and straight pin (6) must engage bolt hole on both sides of end connector (2) so bolts of end connector puller (7) engage track link pins (10). Tighten or loosen straight pin (6) until end connector puller (7) is properly adjusted.

CAUTION

- **Tighten bolts on end connector puller evenly, so end connector is pulled evenly off track link pins. Failure to do this can result in damage to puller and track link pins.**
- **When tapping end connector puller with hammer, strike bolts squarely to avoid mushrooming the heads of bolts and damaging puller.**



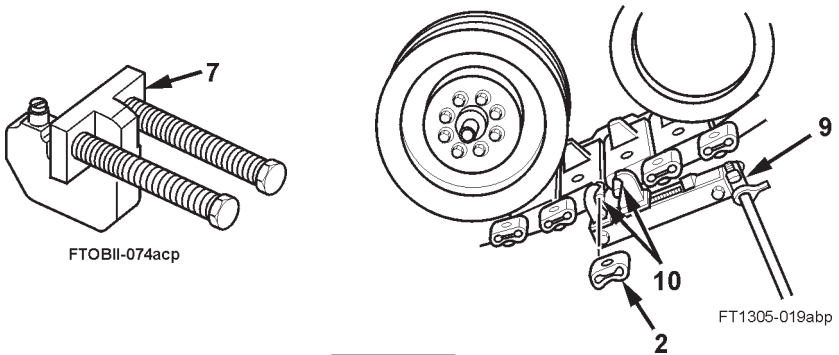
NOTE

To help loosen end connectors, tap bolts of end connector puller with hammer while moving or removing end connector.

6. Using end connector puller (7), 3/4-inch drive, socket wrench, and 1-1/2 inch socket, move end connector (2) about 1 inch away from track shoe (4). If bolts on end connector puller (7) bind, tap end connector puller bolts (8) with hammer.
7. Install track connecting fixture (9) on two track link pins (10).

DISCONNECTING TRACK (continued)

8. Using end connector puller (7), remove end connector (2) from two track link pins (10). If end connector (2) becomes cocked during removal, remove end connector puller (7) and tap end connector (2) with hammer until end connector (2) is straight on track link pins (10). Reinstall end connector puller (7), and continue to remove end connector (2).
9. Repeat steps 5 through 8 on end connector (2) on inside of track.



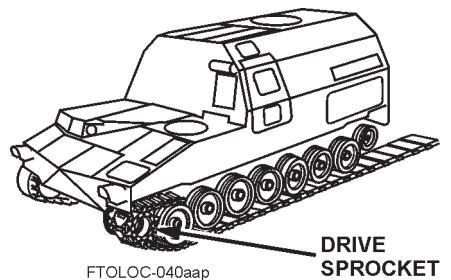
WARNING

Release tension on track connecting fixtures evenly. Track is under tension and can move suddenly, causing severe injury to personnel.

10. Remove two track connecting fixtures (9) from four track link pins (10).

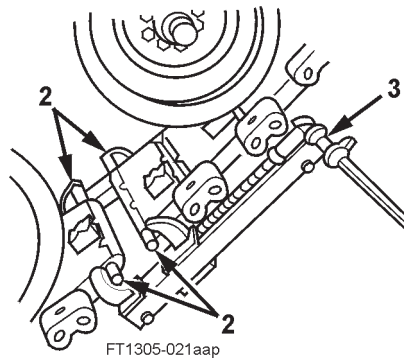
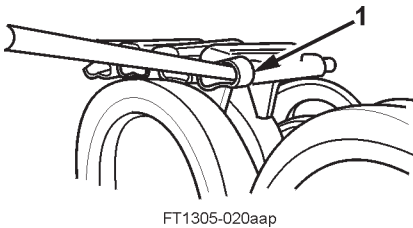
INSTALLING TRACK

1. Lay out track (80 shoes per side) in front of vehicle in straight line directly ahead of, and touching, first roadwheel.
2. Start engine (p. 0009 00-1), and slowly drive onto track to point where enough track shoes to cover drive sprocket extend past center line of first roadwheel.
3. Stop engine (p. 0015 00-1); leave parking brake off.



INSTALLING TRACK (continued)

4. Block opposite track with blocks.
5. Place an end connector (1) on end of track. Using crowbar, lift end of track over drive sprocket until end connectors (1) mesh with drive sprocket.
6. Start engine (p. 0009 00-1); remove blocks from track. Place shift lever in R1. Move vehicle back slowly, allowing track to rest on roadwheels and lifting up on end of track to prevent it from getting caught between roadwheels.
7. Stop engine when two track connecting fixtures (3) can be connected to two track link pins (2) on both sides of track. Connect track.



CONNECTING TRACK

WARNING

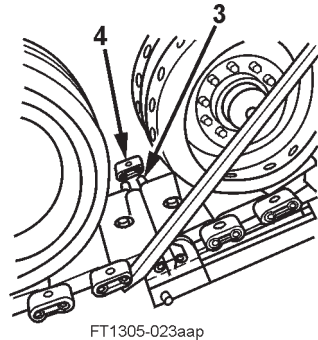
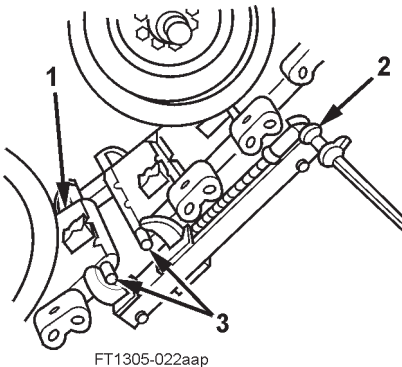
Track is very heavy. Keep hands and feet from beneath track while it is being lifted.

1. Using crowbar, lift track end (1) until it is close enough to other end of track that two track connecting fixtures (2) can be installed.
2. Install two track connecting fixtures (2) on track, and tighten until one end connector (4) will fit over two track link pins (3). If necessary, reposition track connecting fixtures (2) (one at a time) as shown.

NOTE

Track can be maneuvered by lifting with crowbar or pushing against inside of track to bow it out.

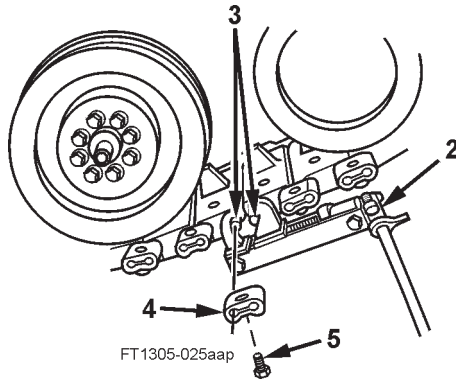
3. Maneuver track until end connector (4) can be installed over two track link pins (3) on inside of track. Tap end connector (4) with hammer to install over two track link pins (3).



4. Install one end connector (4) on two track link pins (3) on outside of track.
5. Remove two track connecting fixtures (2) and logs or rocks from track.
6. Tap two end connectors (4) with hammer to seat end connectors (4) against track.

CONNECTING TRACK (continued)

7. Install two bolts (5) in two end connectors (4).
8. Adjust track tension (pp. 0053 00-1 and 0053 00-2).
9. Mark replaced end connectors (4).
10. Drive vehicle at a speed not to exceed 10 miles per hour for a short distance, alternating right and left steers.
11. Stop vehicle and visually inspect for any end connectors that may have shifted. If any end connectors have shifted, reposition. Tighten any bolts (5) that have been repositioned. Notify Unit maintenance to torque bolts between 380 and 420 lb-ft (518 and 570 N•m) wet at earliest opportunity.



NOTE

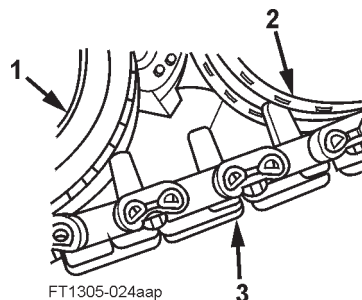
- Notify Unit maintenance to retorque end connector bolts after 50 miles.
- If track is new, remove one track shoe after 50 miles.

REMOVING TRACK SHOE

NOTE

- At least two persons are required to replace a track shoe.
- If available, use penetrating oil on bolts on track shoe.

1. Position track shoe (3) to be removed midway between No. 7 roadwheel (1) and idler wheel (2).
2. Shut off vehicle engine (p. 0015 00-1), and block track with blocks. Do not set parking brake.

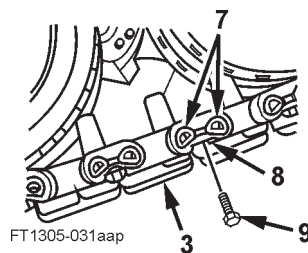
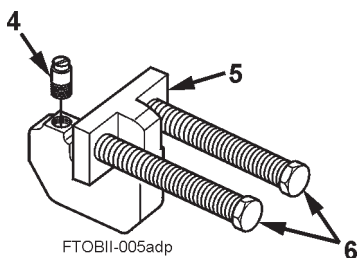


REMOVING TRACK SHOE (continued)

WARNING

Lubricant is under high pressure. Loosen bleed plug slowly to avoid injury to personnel.

3. Decrease track tension (p. 0053 00-2).
4. Using 3/4-inch drive socket wrench and 1-1/8 inch socket, remove two bolts (9) from two end connectors (8) on track shoe (3).
5. Install straight pin (4) in end connector puller (5). Install end connector puller (5) through bolt hole in end connector (8). Puller must rest flat on end connector (8), and straight pin (4) must engage bolt hole on both sides of end connector (8) so end connector puller bolts (6) engage track link pins (7). Tighten or loosen straight pin (4) until end connector puller (5) is properly adjusted.

**CAUTION**

- **Tighten bolts on end connector puller evenly, so end connector is pulled evenly off track link pins. Failure to do this can lead to damage to puller and track link pins.**
- **When tapping end connector puller with hammer, strike bolts squarely to avoid mushrooming the heads of bolts and damaging puller.**

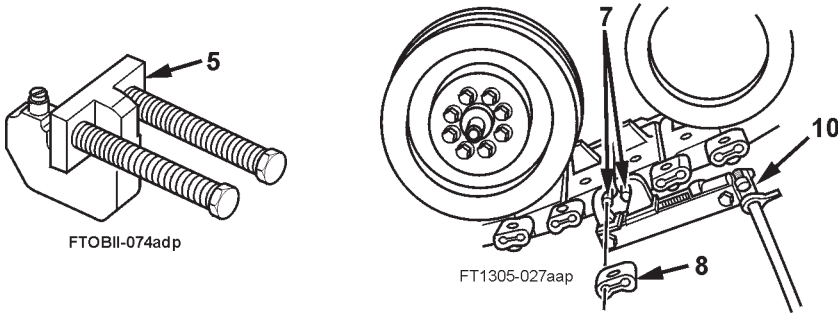
NOTE

To help loosen end connectors, tap bolts of end connector puller with hammer while moving or removing end connector.

6. Using end connector puller (5), 3/4-inch drive socket wrench, and 1-1/2 inch socket, move end connector (8) about 1 inch away from track shoe (3). If bolts on end connector puller (5) bind, tap end connector puller bolts (6) with hammer.

REMOVING TRACK SHOE (continued)

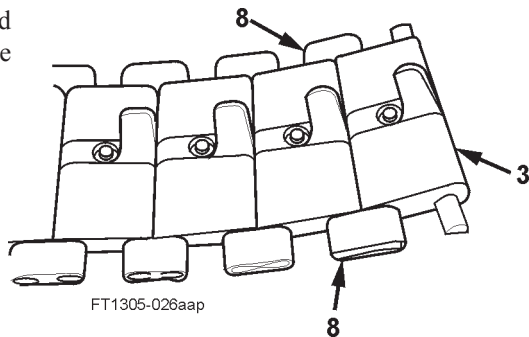
7. Install track connecting fixture (10) on two track link pins (7).
8. Using end connector puller (5), 3/4-inch socket wrench, and 1-1/2 inch socket, remove end connector (8) from two track link pins (7). If end connectors (8) become cocked during removal, remove end connector puller (5) and tap end connector (8) with hammer until end connector (8) is straight on track link pins (7). Install end connector puller (5), and continue to remove end connector (8).
9. Repeat steps 5 through 8 on end connector (8) on inside of track.



WARNING

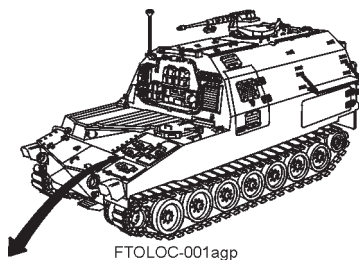
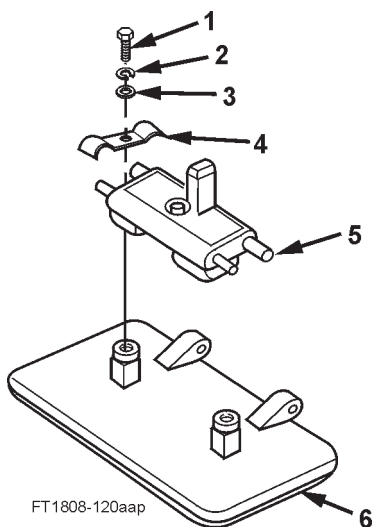
Release tension on track connecting fixtures evenly. Track is under tension and can move suddenly, causing severe injury to personnel.

10. Remove two track connecting fixtures (10) from ends of track.
11. Repeat steps 4, 5, 6, and 8 on two end connectors (8) securing track shoe (3) to track.
12. Remove track shoe (3) from track.



REMOVING TRACK SHOE FROM STOWAGE

Remove two screws (1), lockwashers (2), washers (3), and retaining straps (4) and track shoe (5) from battery access door (6).



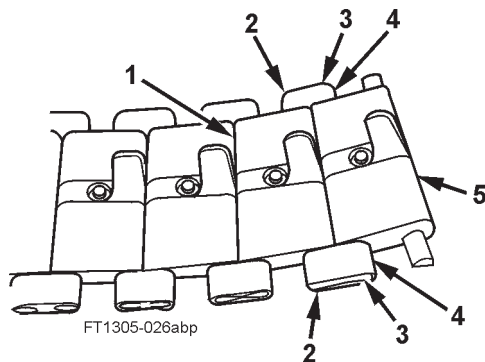
FTOLOC-001agp

STOWING TRACK SHOE

Install track shoe (5) on battery access door (6) with two retaining straps (4), washers (3), lockwashers (2), and screws (1).

INSTALLING TRACK SHOE

1. Install end connector (4) on track link pin (2) on track end (1).
2. Position new track shoe (5) on track end (1).
3. Lift end of new track shoe (5) until track link pin (3) will fit into end connector (4). Tap end connector (4) with hammer until it seats against new track shoe (5).
4. Install end connector (4) on two track link pins (2 and 3) on opposite side of track end (1) and track shoe (5). Tap end connector (4) with hammer until it seats against track shoe (5).



FT1305-026abp

INSTALLING TRACK SHOE (continued)

WARNING

Track is very heavy. Keep hands and feet from beneath track while it is being lifted.

NOTE

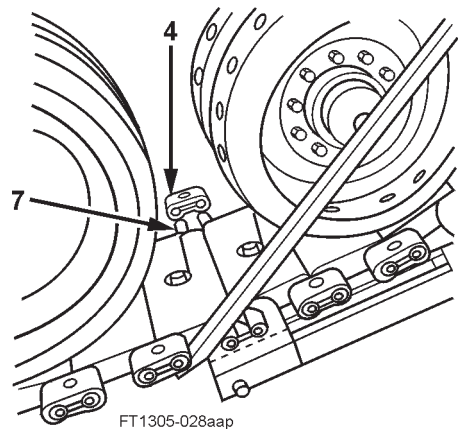
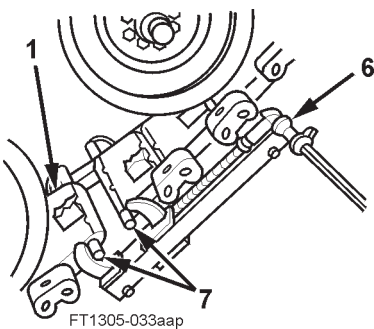
An assistant is needed to lift track end.

5. Using crowbar, lift track end (1) until it is close enough to other end of track so that two track connecting fixtures (6) can be installed.
6. Install two track connecting fixtures (6) on track, and tighten until one end connector (4) will fit over two track link pins (7). If necessary, reposition track connecting fixtures (6) (one at a time) as shown.

NOTE

Track can be maneuvered by lifting with crowbar or pushing against inside of track to bow it out.

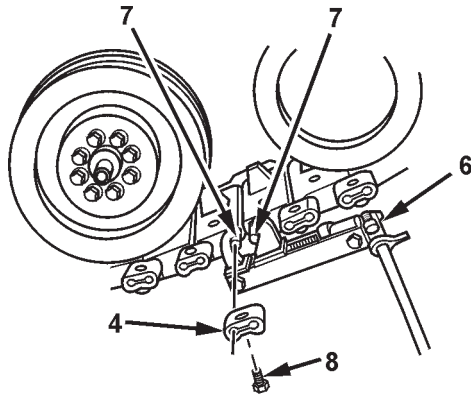
7. Maneuver track until end connector (4) can be installed over two track link pins (7) on inside of track. Tap end connector (4) with hammer to install over two track link pins (7).



8. Install one end connector (4) on two track link pins (7) on outside of track.
9. Remove two track connecting fixtures (6) and logs or rocks from track.

INSTALLING TRACK SHOE (continued)

10. Tap two end connectors (4) with hammer to seat end connectors (4) against track.
11. Install four bolts (8) in four end connectors (4).
12. Adjust track tension (pp. 0053 00-1 and 0053 00-2).
13. Mark replaced end connectors (4).
14. Drive vehicle at a speed not to exceed 10 miles per hour for a short distance, alternating right and left steers.



FT1305-025acp

15. Stop vehicle and visually inspect for any end connectors that may have shifted. If any end connectors have shifted, reposition. Tighten any bolts (8) that have been repositioned. Notify Unit maintenance to torque bolts between 380 and 420 lb-ft (515 and 570 N•m) wet at earliest opportunity.

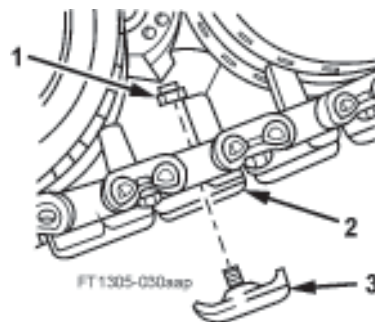
REMOVING TRACK SHOE PADS

Using breaker bar and 15/16-inch socket, remove nut (1) and track shoe pad (3) from track shoe (2).

INSTALLING TRACK SHOE PADS

NOTE

When installing track shoe pads, avoid creating a “hill and valley” profile. Isolated high points will wear quickly. Adjacent pads should be the same height. Do not install pads in an irregular profile; shuffle pads to maintain a smooth profile.



1. Install track shoe pad (3) and nut (1) on track shoe (2). Tighten nut (3) using breaker bar and 15/16-inch socket.
2. Notify Unit maintenance to torque nut (1) between 110 and 150 lb-ft (149 and 202 N•m) at earliest opportunity.

END OF WORK PACKAGE

OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

AUXILIARY POWER UNIT (APU) MAINTENANCE

THIS WORK PACKAGE COVERS:

Draining Fuel Filters and Servicing APU Air Cleaner

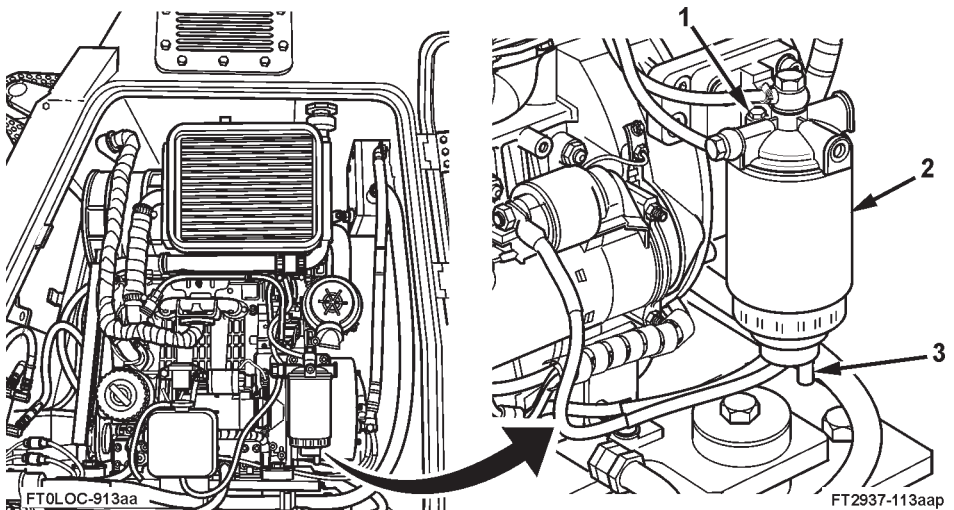
INITIAL SETUP:

Maintenance Level

Operator

DRAINING FUEL FILTERS

1. Open APU side compartment door. Locate APU fuel filter (2) near inside right wall of APU compartment.
2. Hold a glass or other small container beneath drain-plug valve (3) of fuel filter (2).
3. Open drain valve (3) and allow contaminants to drain from filter. If contaminants drain slowly from fuel filter (2), open vent plug (1) on fuel filter head.
4. Close drain valve (3) and vent plug (1).
5. Inspect fuel from fuel filter (2) for signs of water or other contaminants. Report excessive amounts to Unit maintenance.
6. Close and secure APU side compartment door.

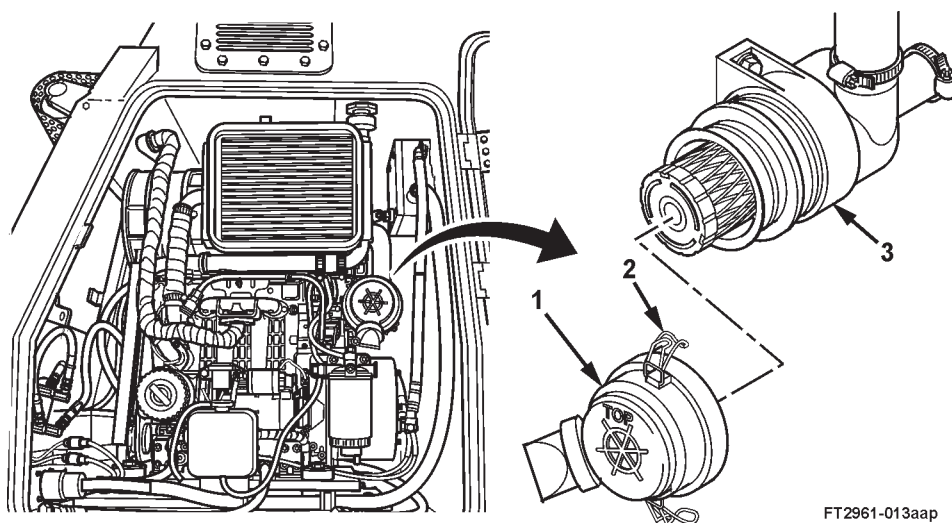


SERVICING APU AIR CLEANER

1. Open APU side compartment door.
2. Release two air filter housing clamps (2) and remove dust cap assembly (1) from air filter housing (3).

WARNING

If NBC exposure is suspected, all air filter media should be handled by personnel wearing protective equipment. Consult your unit NBC officer or NBC NCO for appropriate handling or disposal instructions.



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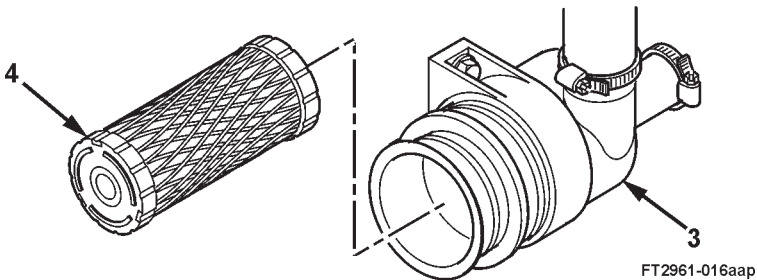
SERVICING APU AIR CLEANER (continued)

3. Remove air filter element (4) from air filter housing (3).
4. If air filter element (4) is torn or contaminated, notify Unit maintenance.

WARNING

Compressed air used for cleaning purposes should not exceed 30 psi (206.8 kPa). Use only with effective chip-guarding and personal protective equipment (e.g., goggles/shield, gloves). Failure to do this can result in injury to personnel.

5. If dirty or clogged, clean filter element (4) with low-pressure compressed air directed to inside of air filter element (4).
6. Wipe inside of air filter housing (3) with clean, damp rag. Inspect outside of hoses for holes and tears.
7. Install air filter element (4) in air filter housing (3).

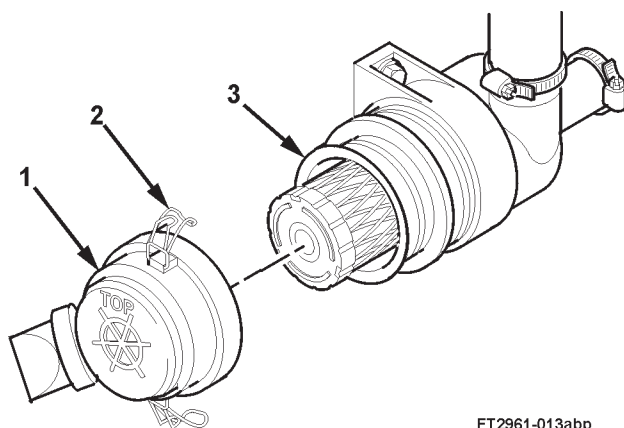


SERVICING APU AIR CLEANER (continued)

NOTE

When installing cap, make sure outer edge of cap marked TOP is located at top of air cleaner.

8. Install dust cap assembly (1) on air filter housing (3) and secure with two air filter housing clamps (2).



FT2961-013abp

END OF WORK PACKAGE

OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

AUTOMATIC FIRE EXTINGUISHER SYSTEM (AFES) MAINTENANCE

THIS WORK PACKAGE COVERS:

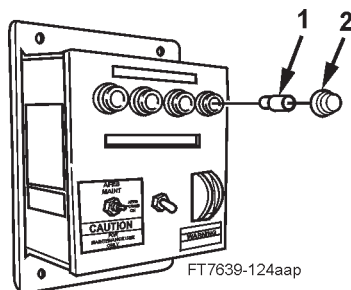
Test and Alarm (T/A) Panel or Remote Status Indicator (RSI) Lamp
Replacement and Optical Fire Sensing Assembly Maintenance

INITIAL SETUP:**Maintenance Level**

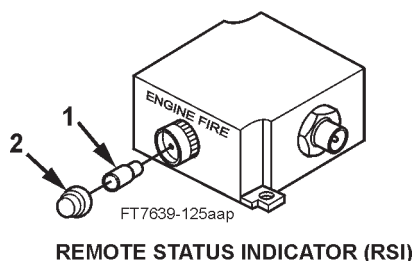
Operator

TEST AND ALARM (T/A) PANEL OR REMOTE STATUS INDICATOR (RSI) LAMP REPLACEMENT

1. Remove lens cover (2) from lamp (1) to be replaced.
2. Remove and discard burned-out lamp (1).
3. Install new lamp (1) (Item 27, p. 0067 00-9).
4. Install lens cover (2).



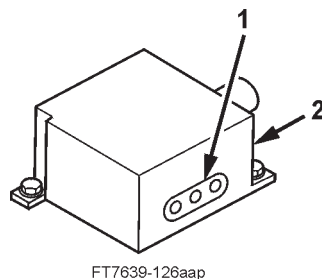
TEST AND ALARM (T/A) PANEL



REMOTE STATUS INDICATOR (RSI)

OPTICAL FIRE SENSING ASSEMBLY MAINTENANCE

Use lens paper (Item 40, p. 0069 00-6) to gently clean lenses (1) on all Optical Fire Sensing Assemblies (OFSAs)(2).



END OF WORK PACKAGE

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

DECAL MAINTENANCE

THIS WORK PACKAGE COVERS:

Decal Replacement

INITIAL SETUP:

Maintenance Level

Operator

DECAL REPLACEMENT

WARNING

Solvent cleaning compound is an environmentally compliant product and is low in toxicity. However, it may be irritating to the eyes and skin due to its base stock. The use of protective gloves and goggles is required. Use the solvent cleaning compound in well-ventilated areas and keep away from open flames and other sources of ignition.

1. Lift up one corner of old decal. Slowly peel decal from surface. If decal rips or tears, use a rag and solvent cleaning compound to help loosen sticky substance or adhesive backing. Scrub decal from surface. Dry surface using a rag (Item 43, p. 0069 00-6). Discard decal.

NOTE

Surface area must be clean and dry before attaching new decal.

2. Remove protective backing from new decal. Position decal on surface. Using a dry rag, press decal into position starting from its center. Press outward to remove any air bubbles.

END OF WORK PACKAGE

OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

TIEDOWN WEBBING MAINTENANCE

INITIAL SETUP:

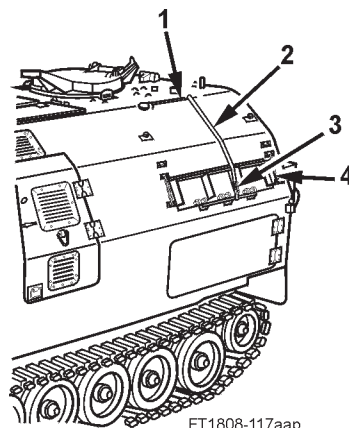
Maintenance Level

Operator

WARNING

Duffle bag shelves are heavy. To avoid serious injury, stand clear of shelf when it is being deployed.

1. Release buckle clamp (3), allowing duffle bag shelf (4) to deploy. Pull tiedown (2) from around upper bar (1) at top of hull.
2. Turn in tiedown (2) and any unserviceable hardware.
3. Install replacement tiedown (2) with buckle clamp (3) facing upward, so that running end of tiedown (2) enters buckle from lower side.
4. Insert tiedown (2) gradually around upper bar (1) at top of hull. Raise shelf (4) to stowed position. Install tiedown (2) around box on shelf (4). Insert end of tiedown (2) through buckle clamp (3) and pull until tight.



END OF WORK PACKAGE

OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

RESTRAINING STRAP MAINTENANCE

INITIAL SETUP:

Maintenance Level

Operator

NOTE

The following procedure refers to restraining straps for lower and upper shelves.

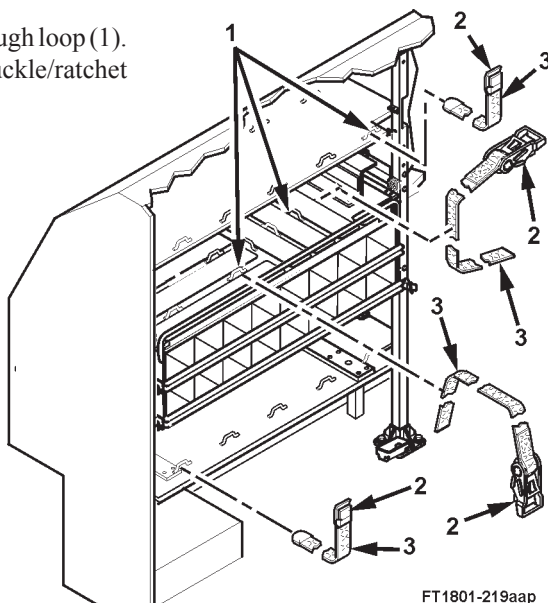
There are two types of restraining straps; straps with buckles and straps with ratchets. This procedure covers both types.

1. Release buckle/ratchet (2) and pull strap (3) out of welded loop (1).
2. Turn in strap (3) and any unserviceable hardware.

NOTE

Install replacement strap with running end on top.

3. Insert new strap (3) gradually through loop (1). Insert end of strap (3) through buckle/ratchet (2) and pull/ratchet until tight.



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END OF WORK PACKAGE

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

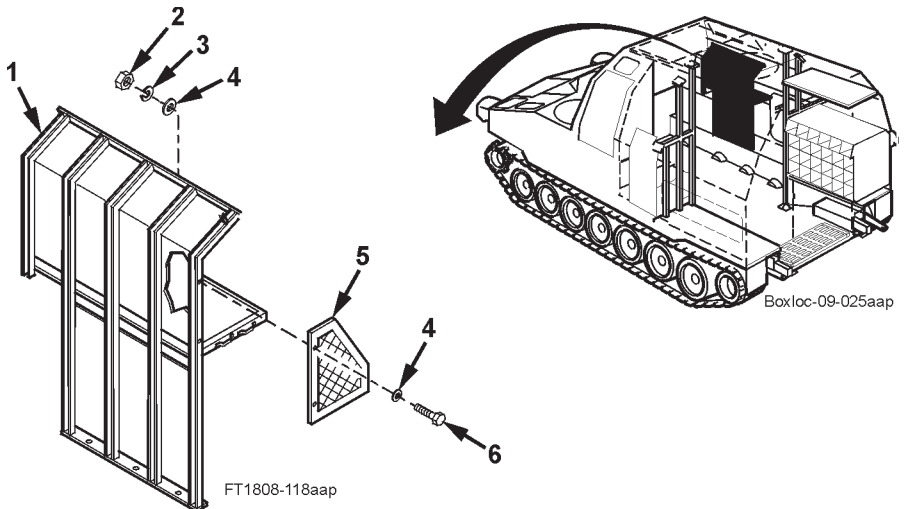
RIGHT FRONT CANISTER COMPARTMENT SHIELD REPLACEMENT

INITIAL SETUP:

Maintenance Level

Operator

1. To remove right front canister compartment shield:
 - a. Remove two screws (6), four washers (4), and two lockwashers (3) and nuts (2) from shelf assembly (1).
 - b. Remove shield (5) from shelf assembly (1).
2. To install right front canister compartment shield:
 - a. Position shield (5) on shelf assembly (1).
 - b. Install two screws (6), four washers (4), and two new lockwashers (3) and nuts (2) to secure shield (5) to shelf assembly (1).



END OF WORK PACKAGE

0059 00-1/2 blank

OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

MOUNTED WATER RATION HEATER (MWRH) MAINTENANCE

THIS WORK PACKAGE COVERS:

Removing the MWRH and Installing the MWRH

INITIAL SETUP:

Maintenance Level

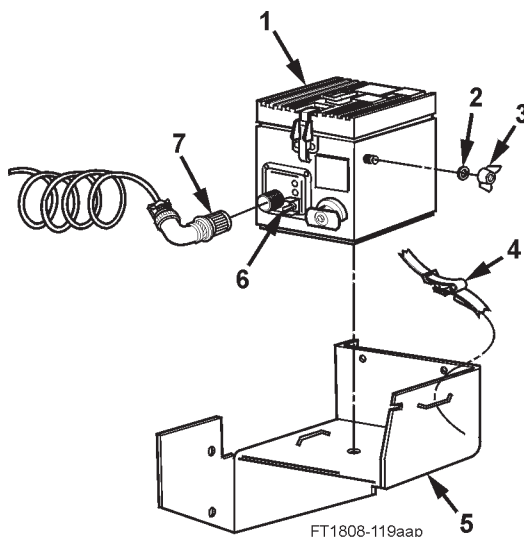
Operator

REMOVING THE MWRH

CAUTION

Before removing the MWRH, make sure vehicle MASTER switch is in OFF position.

1. Make sure MWRH control switch (6) is in OFF position. Disconnect 90-degree connector (7) from the MWRH (1).
2. Disconnect mounting strap (4) from the MWRH (1).
3. Remove three wingnuts (3) and washers (2) from the MWRH (1).
4. Remove the MWRH (1) from mounting bracket (5).



**MOUNTED WATER RATION HEATER (MWRH)
MAINTENANCE (continued)**

0060 00

INSTALLING THE MWRH**CAUTION**

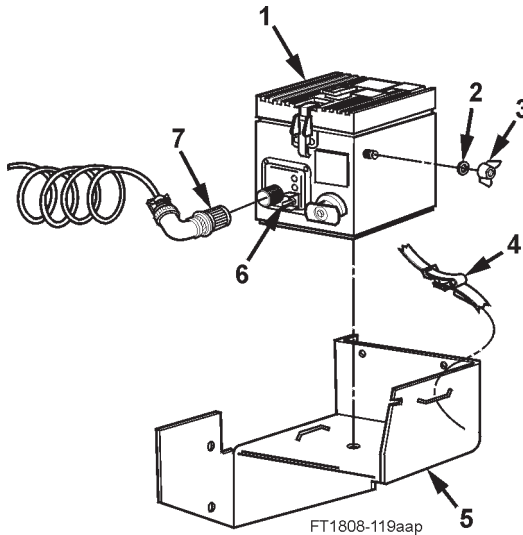
Before installing the MWRH, make sure vehicle MASTER switch is in OFF position.

1. Place the MWRH (1) in mounting bracket (5) with controls facing user.
2. Secure the MWRH (1) to mounting bracket (5) using three washers (2) and wingnuts (3).
3. Connect mounting strap (4) and adjust until snug against the MWRH (1).

NOTE

Route power cable over MWRH mounting bracket before connecting to the MWRH.

4. Make sure MWRH control switch (6) is in OFF position. Connect 90-degree connector (7) to the MWRH (1).

**END OF WORK PACKAGE**

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

PREPARATION OF EQUIPMENT FOR SHIPMENT

THIS WORK PACKAGE COVERS:

Removal of Preservatives Prior to Shipment, Loading, Blocking, Blocks, End Cleats, Track Inside Cleats, Side Cleats, Track Blocks, Hold-Down Rods, and Transportation

INITIAL SETUP:

Maintenance Level

Operator

When shipping the M992A2, the officer in charge of preparing the shipment will be responsible for furnishing the materiel in serviceable condition, properly cleaned, processed, packaged, and packed. Transport the M992A2 in accordance with TM 55-2350-267-14.

REMOVAL OF PRESERVATIVES PRIOR TO SHIPMENT

Personnel removing vehicle from storage for shipment must not remove preservatives other than to make sure the materiel is complete and serviceable. If preservatives have been removed, they must be restored to the prescribed level of preservation prior to shipment.

LOADING

When truck loading or rail loading the vehicle, the machine gun mount and the precision lightweight global positioning system receiver (PLGR) antenna must be removed.

CAUTION

Height and width of vehicle, when prepared for rail transportation, must not exceed limitations prescribed for particular railway lines. Whenever possible, local transportation officers must be consulted about limitations of particular railroad lines to be used for movement in order to avoid delays, dangerous conditions, or damage to equipment.

When vehicle is shipped by rail, every precaution must be taken to see that it is properly loaded and blocked and securely fastened to flatcar floor.

Inspect flatcar prior to loading. Make sure flatcar is in suitable condition to carry loads safely.

PREPARATION OF EQUIPMENT FOR SHIPMENT (continued)

0061 00

LOADING (continued)

Prepare flatcar for loading by removing debris, previous blocking, nails, and other obstructions. Inspect flatcar for loose or broken floor planks. If found unsatisfactory, reject flatcar for use.

If suitable hoisting equipment, permanent loading ramps, and handling equipment are not available for loading or unloading materiel, improvised runways, ramps, and spanning platforms can be constructed.

Loading must be governed by the capacity and length of flatcars available at the time of shipment, as well as requirements of bills of lading and shipping instructions.

Position vehicle as far from brake wheel end of flatcar as space permits. Provide minimum clearance of four inches below and six inches above, behind, and to each side of flatcar brake wheel.

BLOCKING

All blocking instructions specified herein are minimum requirements and are in accordance with the Association of American Railroads Pamphlet, Section No. 6 (Rules Governing the Loading of Department of Defense Materiel on Open-Top Cars). Additional blocking may be added at the discretion of the officer in charge.

BLOCKS

Construct four chock blocks: two to fit the angle between the tracks and car deck at the front of the vehicle, and two to fit the angle between the tracks and car deck at the rear of the vehicle. Using lumber 1-5/8 inches thick, make chock blocks 12 inches wide and a minimum of 18 inches high. Nail the pieces together with 20-penny nails. Place one chock block against the front of each track and against the rear of each track. Toenail chock blocks to car floor with 40-penny nails.

END CLEATS

Place one end cleat (2 x 4 x 12 in., eight required) against end of chock block and secure to car deck with 30-penny nails. Place upper cleat on top of lower cleat and secure to lower cleat with 30-penny nails.

PREPARATION OF EQUIPMENT FOR SHIPMENT (continued)

0061 00

TRACK INSIDE CLEATS

Place track inside cleats (6 x 6 in., 14 ft. long, two required) along inside of left and right tracks. Nail to car floor with 30-penny nails, one about every 12 inches.

SIDE CLEATS

Locate one cleat (2 x 3 x 10 in., eight required) against inside and outside of each chock block. Secure each to car deck with 20-penny nails.

TRACK BLOCKS

Cut blocks (24 required) to conform with shape of roadwheels. Install blocks between inside and outside roadwheels on tracks. Place wedges under each block to ensure snug fit against roadwheel, if necessary. Nail 2 x 4 inch-cleat (as long as required) across tops of track blocks to prevent track blocks from sliding out of position.

HOLD-DOWN RODS

Thread both ends of hold-down rod (1 ¼ in. diameter, as long as required). Insert one end of hold-down rod through lifting eye on front of vehicle. Bend rod and insert other end through stake pocket on opposite side of flatcar. Repeat operation with second rod and lifting eye on front of vehicle, and with two rods on rear of vehicle.

TRANSPORTATION

When transporting the M992A2 by any means other than railroad flatcar, transport in accordance with TM 55-2350-267-14.

END OF WORK PACKAGE

TM9-2350-372-10

CHAPTER 5

AUTOMATIC FIRE EXTINGUISHING SYSTEM (AFES)

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

AFES EQUIPMENT DESCRIPTION

THIS WORK PACKAGE COVERS:

Characteristics, Capabilities, and Features

INITIAL SETUP:

Maintenance Level

Operator

NOTE

A videotape explanation of the AFES system is also available. Refer to tape number 709876/TVT 5-34, Fire Extinguishing Systems for the M992A2 Field Artillery Ammunition Support Vehicle.

CHARACTERISTICS

The Automatic Fire Extinguishing System (AFES) is an automatic electrical system that, when activated, provides fire-extinguishing capability for the engine and crew compartments. It consists of Test and Alarm (T/A) panels, Optical Fire Sensing Assemblies (OFSAs), and associated equipment.

Automatic electrical operation will sense and discharge an agent to extinguish hydrocarbon fires. The crew system provides an automatic electrical second-shot capability, should the fire continue burning or a second fire occur.

Manual electrical operation must be activated by the crew to discharge the fire extinguishing agent. The crew system second-shot manual electrical activation is available if the fire continues to burn. That system must be manually activated by a crew member.

These systems will not activate unless the crew and engine T/A panel AFES MAINT/AFES POWER ON switches are in the horizontal AFES POWER ON normal operational position.

CAPABILITIES**AFES Engine Compartment:**

- An automatic electrical function allows detection and discharge of an agent to extinguish hydrocarbon fires.
- A manual discharge backup to the electrical function that enables the operator to electrically discharge an agent into the engine compartment when the automatic system does not function and a fire is detected.

AFES Crew Compartment:

- An automatic electrical function allows detection and discharge of an agent to extinguish hydrocarbon fires. There is a second-shot discharge capability (for use after 5 seconds if another fire ignites) that discharges a second set of fire extinguishers.
- A manual electrical discharge function enables the crew to electrically discharge an agent into the crew or engine compartment when the automatic electrical function fails to work and a fire is detected.
- A manual electrical discharge capability allows for a second-shot capability (after 5 seconds if another fire ignites) that discharges a second set of fire extinguishers.
- During automatic or manual discharge, the ventilation door opens automatically and the ventilator turns on eight to ten seconds after activation.

FEATURES**Controls and Indicators for Engine AFES*****Green POWER ON Lamp***

Lamp lights when AFES is powered on.

POWER ON lamp remains lit for 2-4 hours after vehicle MASTER switch is turned off.

Green PASS TEST Lamp

Lamp lights for 4-6 seconds following a successful Built-In Test Equipment (BITE) test.

Amber FAULT Lamp

Lamp flickers at start of system test. Lamp lights when BITE detects a fault and stays lit until fault is corrected.

Controls and Indicators for Engine AFES (continued)

Red FIRE ALARM Lamp

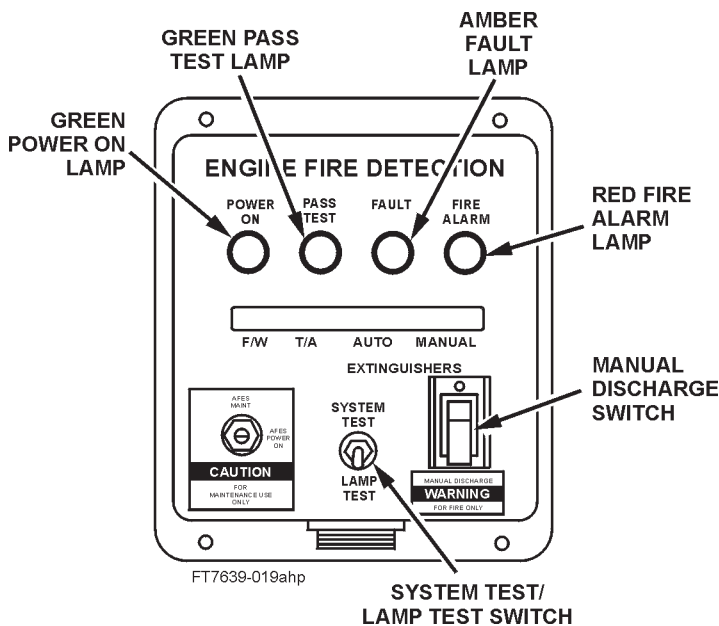
Lamp flashes for engine overheat or small fires; use portable fire extinguisher. Lamp lights steadily for large fires; AFES fire extinguisher discharges automatically or by manual discharge switch.

MANUAL DISCHARGE Switch

Guarded, two-position, momentary-on toggle switch for manual electrical discharge of one fire extinguisher.

SYSTEM TEST/LAMP TEST Switch

Three-position, momentary-on, center-off switch. In SYSTEM TEST position, switch initiates BITE sequence; in LAMP TEST position, tests condition of lamps, fault isolating LEDs, and RSI lamp.



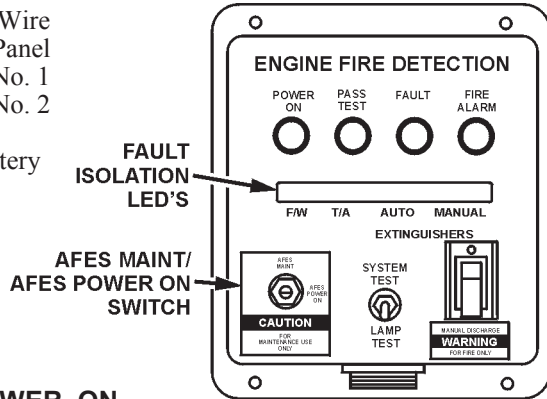
Controls and Indicators for Engine AFES (continued)

Fault Isolation LEDs

If FAULT lamp lights during BITE, fault isolating LEDs will also light to indicate which component(s) is non-operational and requires fault correction. The four LEDs are:

- F/W Fire Wire
- T/A Test and Alarm Panel
- AUTO Fire extinguisher No. 1
- MANUAL Fire extinguisher No. 2

LEDs will not light if vehicle battery power is low.



FT7639-019ajp

CAUTION

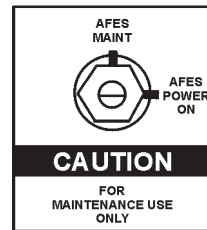
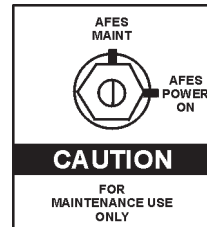
AFES MAINT/AFES POWER ON switch is to be used by authorized Unit and Direct Support maintenance personnel only.

AFES MAINT/AFES POWER ON Switch

Two-position, screwdriver-activated, rotary switch.

Vertical position (AFES MAINT). Power off, AFES de-energized. Maintenance can be safely performed. Locking pins must be installed in fire extinguisher No. 2 valve actuator guard to prevent accidental discharge. Check No. 1 extinguisher pin.

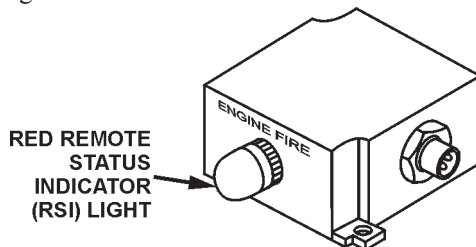
Horizontal position (AFES POWER ON): Power on. Normal operational position. AFES extinguishers capable of automatic discharge. Locking pins must be removed from engine fire extinguisher No. 2 valve actuator guard.



FT7639-148abp

Red Remote Status Indicator (RSI) Light

Light flashes in crew compartment during an engine overheat or small fire; light illuminates steadily during a large engine fire. Normally, light is not lit.



FT7639-149acp

Controls and Indicators for Crew AFES

Green POWER ON Lamp

Lamp lights when AFES is powered on.

POWER ON lamp remains lit for 2-4 hours after vehicle MASTER switch is turned off.

Green PASS TEST Lamp

Lamp lights for 4-6 seconds following a successful BITE test.

Amber FAULT Lamp

Lamp flickers at start of system test. Lamp lights when BITE detects a fault and stays lit until fault is corrected.

Red FIRE ALARM Lamp

Lamp flashes for engine overheat or small fires; use portable fire extinguisher. Lamp lights steadily for large fires; AFES fire extinguisher discharges automatically or by manual discharge switch.

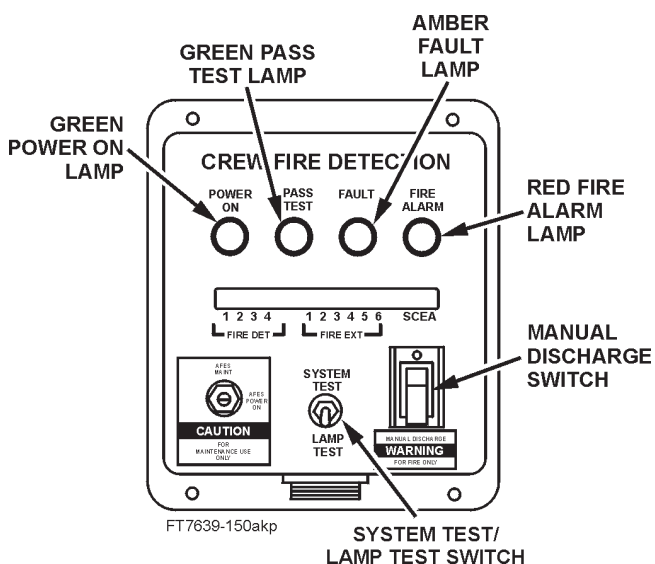
MANUAL DISCHARGE Switch

Guarded, two-position, momentary-on toggle switch manually and electrically discharges three extinguishers. After five seconds a second set of three extinguishers can also be discharged.

SYSTEM TEST/LAMP TEST Switch

Three-position, momentary-on, center-off switch.

In SYSTEM TEST position, switch initiates BITE sequence; in LAMP TEST position, tests condition of lamps, fault isolating LEDs, and RSI lamp.



Controls and Indicators for Crew AFES (continued)

Vehicles 1 Through 344

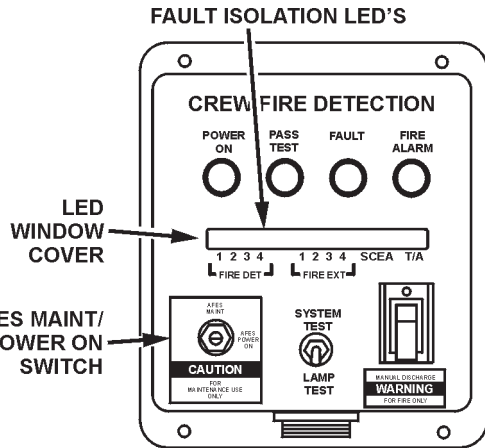
Fault Isolation LEDs:

If FAULT lamp lights during BITE, fault isolating LEDs will also light to indicate which component(s) is non-operational and requires fault correction. The ten LEDs are:

- FIRE 1 OFSA No. 1
- DET 2 OFSA No. 2
- 3 OFSA No. 3
- 4 OFSA No. 4

- FIRE 1 Extinguisher No. 1
- EXT 2 Extinguisher No. 2
- 3 Extinguisher No. 3
- 4 Extinguisher No. 4

- SCEA Standard Control
Electronic Amplifier
- T/A Test and Alarm Panel



LEDs will not light if battery is low.

AFES MAINT/AFES POWER ON Switch: Vehicles 1 Through 344

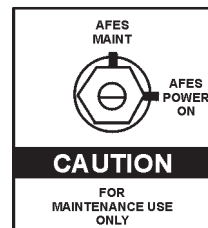
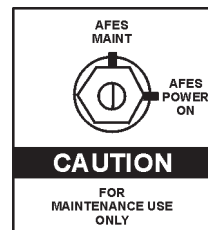
CAUTION

AFES MAINT/AFES POWER ON switch is to be used by authorized Unit and Direct Support maintenance personnel only.

Two position, screwdriver-activated rotary switch.

Vertical position (AFES MAINT): Power off. AFES de-energized. Maintenance can be safely performed. Locking pins must be installed on crew fire extinguishers No. 3 and No. 4 valve actuator guards to prevent accidental discharge. Check other extinguisher pins.

Horizontal position (AFES POWER ON): Power on. Normal operational position. AFES extinguishers capable of automatic discharge. Locking pins must be removed from crew fire extinguishers No. 3 and No. 4.



Controls and Indicators for Crew AFES (continued)

Vehicles 345 and Above

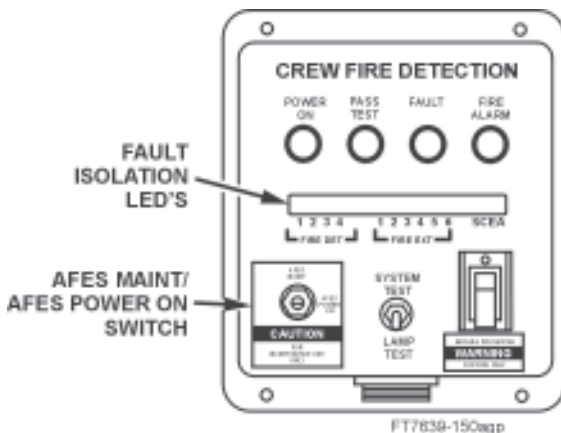
Fault Isolation LEDs:

If FAULT lamp lights during BITE, fault isolating LEDs will also light to indicate which component(s) is non-operational and requires fault correction. The 11 LEDs are:

- 1 OFSA No. 1
- FIRE 2 OFSA No. 2
- DET 3 OFSA No. 3
- 4 OFSA No. 4

- 1 Extinguisher No. 1
- 2 Extinguisher No. 2
- FIRE 3 Extinguisher No. 3
- EXT 4 Extinguisher No. 4
- 5 Extinguisher No. 5
- 6 Extinguisher No. 6

SCEA Standard Control
Electronic Amplifier



LEDs will not light if battery is low.

AFES MAINT/AFES POWER ON Switch: Vehicles 345 and Above

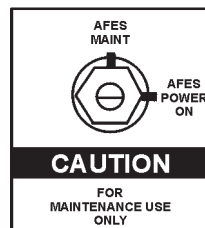
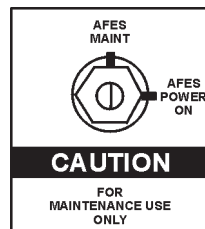
CAUTION

AFES MAINT/AFES POWER ON switch is to be used by authorized Unit and Direct Support maintenance personnel only.

Two-position, screwdriver-activated rotary switch.

Vertical position (AFES MAINT): Power off. AFES de-energized. Maintenance can be safely performed. Locking pins must be installed on crew fire extinguishers No. 3 and No. 4 valve actuator guards to prevent accidental discharge. Check other extinguisher pins.

Horizontal position (AFES POWER ON): Power on. Normal operational position. AFES extinguishers capable of automatic discharge. Locking pins must be removed from crew fire extinguishers No. 3 and No. 4.



END OF WORK PACKAGE

OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

AFES COMPONENT LOCATION

THIS WORK PACKAGE COVERS:

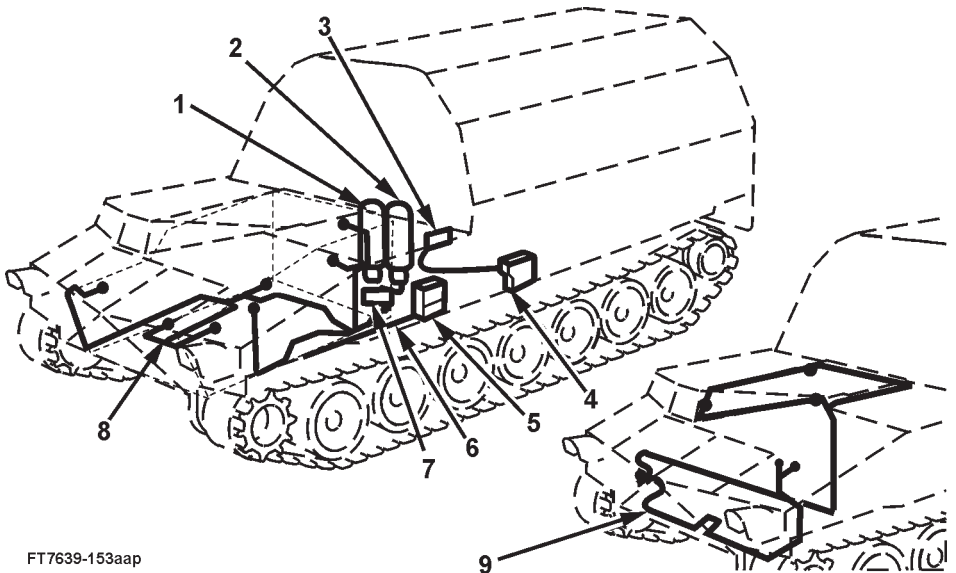
Engine AFES Components, Crew AFES Components, and Automatic Fire Extinguishing System/Manual Discharge System (AFES/MDS) Components

INITIAL SETUP:

Maintenance Level

Operator

ENGINE AFES COMPONENTS



FT7639-153aap

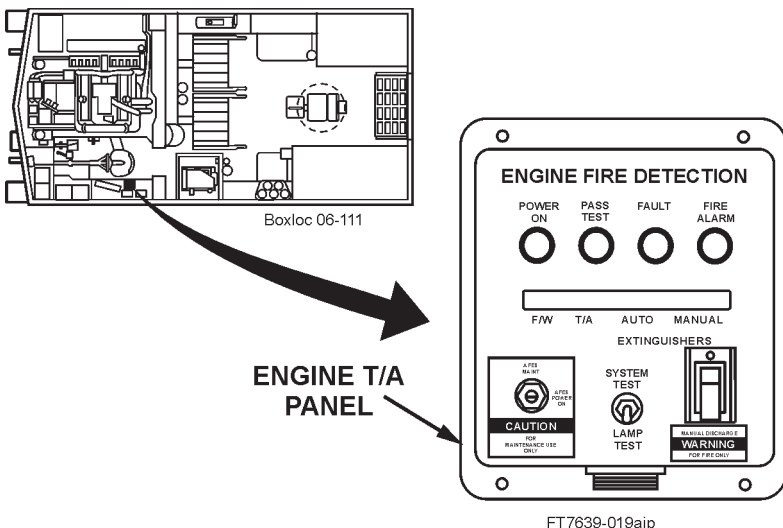
1. Engine Fire Extinguisher No. 2
2. Engine Fire Extinguisher No. 1
3. Lanyard Cable Pull Handle (Exterior)
4. Actuator Assembly
5. Engine Test and Alarm (T/A) Panel
6. Fire Extinguisher Wiring Harness W4
7. Lanyard Cable Pull Handle (Driver's Compartment)
8. Fire Suppression Distribution System
9. Thermal Detection System

ENGINE AFES COMPONENTS (continued)

The engine AFES activates automatically when the thermal detection system detects engine fires. Engine AFES components are described on pages 0063 00-2 through 0063 00-4.

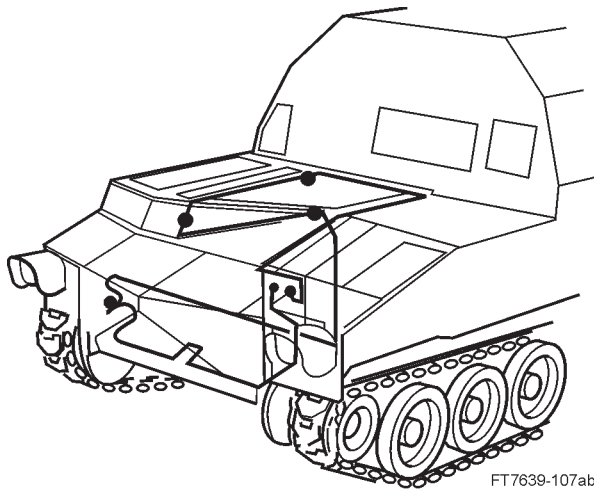
Engine T/A Panel

- The T/A panel provides status lights and switches and contains the electronic circuitry necessary to automatically monitor the engine AFES..
- The T/A panel monitors the thermal sensing element (fire wire) and activates one of the engine fire extinguishers when an engine fire is detected.
- When an engine fire is detected, the red FIRE ALARM indicator on the T/A panel and the red ENGINE FIRE indicator on the Remote Status Indicator (RSI) in the crew compartment light.
- The T/A panel is also equipped with a red-guarded, two-position MANUAL DISCHARGE toggle switch that allows the driver to discharge the two engine fire extinguishers.
- The engine AFES contains Built-In Test Equipment (BITE) that automatically monitors the status of AFES components.
- BITE permits the driver to check the status of AFES components for normal operation.



ENGINE AFES COMPONENTS (continued)**Thermal Detection System**

- The thermal detection system consists of fire-sensing elements and couplings looped throughout the engine compartment.
- The fire-sensing elements detect engine overheat conditions and fires.
- When the system detects an engine overheat condition, the engine T/A panel FIRE ALARM lamp and the RSI ENGINE FIRE lamp flash.
- When the system detects an engine fire, both indicator lamps light and the system automatically activates the engine automatic fire extinguisher.



FT7639-107abp

AFES COMPONENT LOCATION (continued)

0063 00

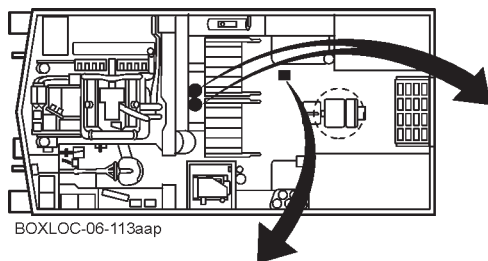
ENGINE AFES COMPONENTS (continued)

Remote Status Indicator (RSI)

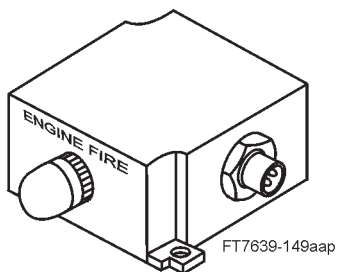
- The RSI is a red light that warns personnel in the crew compartment of engine overheating and fires.
- The RSI ENGINE FIRE warning light and the red FIRE ALARM lamp on the engine T/A panel light at the same time.

Fire Extinguishers

- There are two fire extinguishers, located inside the crew compartment, used to extinguish fire inside the engine compartment. The fire extinguishers weigh 11 pounds (4.99 kg) each and consist of a steel cylinder filled with HFC-227ea equipped with a quick-release valve assembly. One fire extinguisher interfaces with the thermal detection system through the engine compartment T/A panel. It activates automatically when the thermal detection system senses an engine fire. The second fire extinguisher is dedicated to the AFES manual discharge system (AFES/MDS). It is activated by pulling one of the lanyard cable pull handles located on the outside of the vehicle near the driver's hatch and in the driver's compartment.

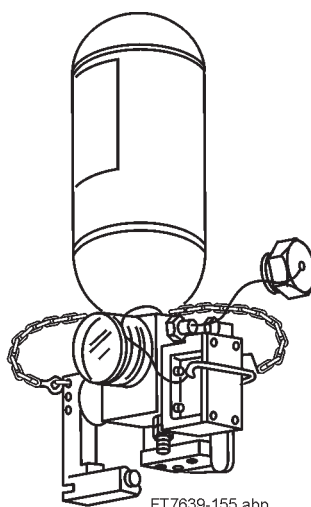


BOXLOC-06-113aap



FT7639-149aap

REMOTE STATUS INDICATOR (RSI)



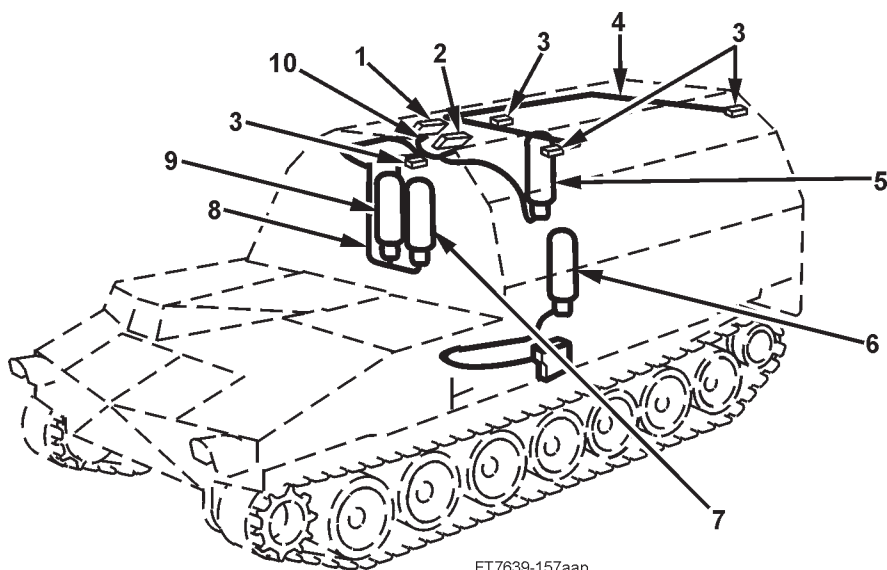
FT 7639-155 abp

11-LB FIRE EXTINGUISHER (TWO)

CREW AFES COMPONENTS

The crew AFES activates automatically when one of four OFSAs detects hydrocarbon fuel fires. Crew AFES components are described on pages 0063 00-7 through 0063 00-12.

Vehicles S/N 1 Through 344



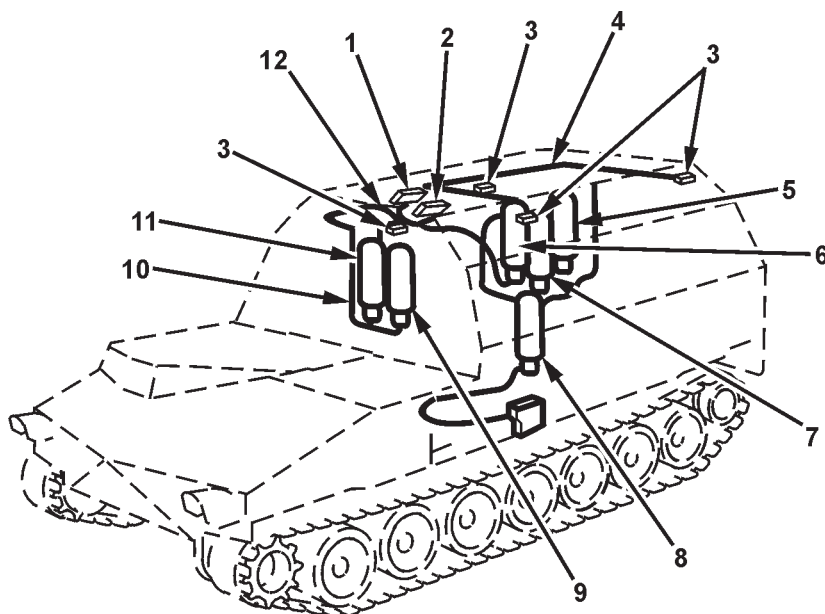
FT7639-157aap

1. Crew T/A Panel
2. Standard Control Electronic Amplifier (SCEA)
3. Optical Fire Sensing Assembly (OFSAs)
4. OFSA Cable Assembly W1
5. Crew Fire Extinguisher No. 2
6. Crew Fire Extinguisher No. 3*
7. Crew Fire Extinguisher No. 1
8. Crew Fire Extinguisher Cable Assembly W3
9. Crew Fire Extinguisher 4*
10. SCEA Cable Assembly W2

* Activated either by crew AFES or by AFES/MDS

CREW AFES COMPONENTS (continued)

Vehicles S/N 345 and Above



FT7639-158aap

1. Crew T/A Panel
2. SCEA
3. OFSA
4. OFSA Cable Assembly W1
5. Crew Fire Extinguisher No. 6
6. Crew Fire Extinguisher No. 2
7. Crew Fire Extinguisher No. 5
8. Crew Fire Extinguisher No. 3*
9. Crew Fire Extinguisher 1
10. Crew Fire Extinguisher Cable Assembly W3
11. Crew Fire Extinguisher No. 4*
12. SCEA Cable Assembly W2

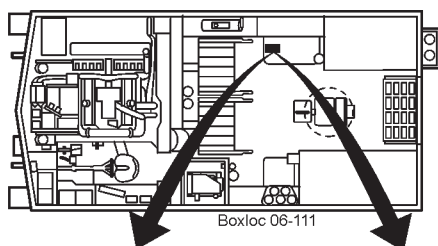
* Activated either by crew AFES or by AFES/MDS

The crew AFES activates automatically when one of four OFSAs detects hydrocarbon fuel fires.

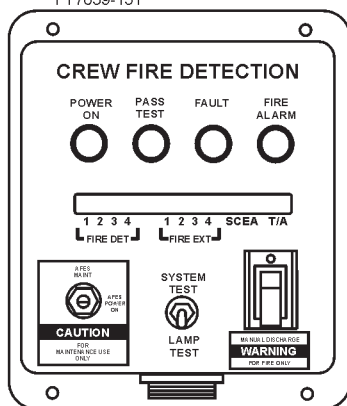
CREW AFES COMPONENTS (continued)

Crew T/A Panel

- The T/A panel provides status lamps and switches and contains the electronic circuitry necessary to monitor the crew AFES.
- The T/A panel interfaces with the SCEA and the OFSA.
- The crew AFES has BITE, which automatically monitors the status of components and allows crew members to test the components for normal operation.
- A red-guarded, two-position MANUAL DISCHARGE toggle switch permits the crew to manually discharge crew compartment fire extinguishers.

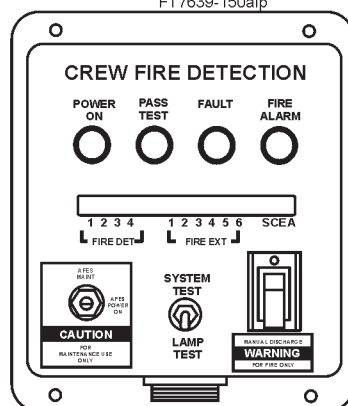


FT7639-151



**CREW T/A PANEL
VEHICLES S/N 1 THROUGH 344**

FT7639-150alp



**CREW T/A PANEL
VEHICLES S/N 345 AND ABOVE**

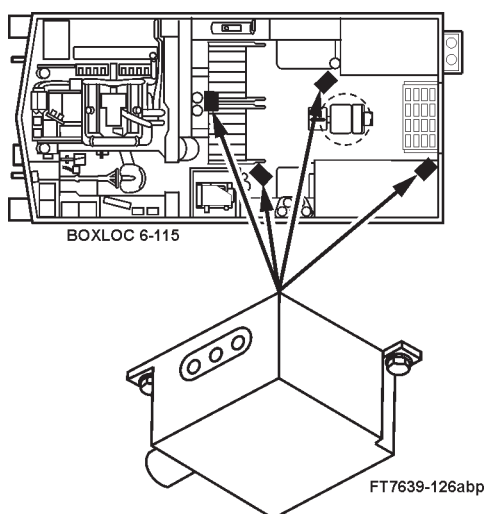
CREW AFES COMPONENTS (continued)

CAUTION

Do not use high-pressure water when cleaning AFES components. Moisture will contaminate electrical connections, which will result in failure of the system.

OFSA

- OFSA consists of four sensor units located in the crew compartment, each using three infrared (IR) wave bands designed to detect hydrocarbon fuel fires.
- OFSA does not detect sunlight, electrical discharges, lamps, flashes, fragmentation, or radiation from warheads or other battlefield activity.
- OFSA units are housed in individual shock-resistant aluminum casings mounted on brackets.
- OFSA units have BITE, which internally tests each unit for normal operation. BITE indicates a fault in the OFSA by lighting an LED on the T/A panel.
- The four OFSA units provide complete coverage of the crew compartment.

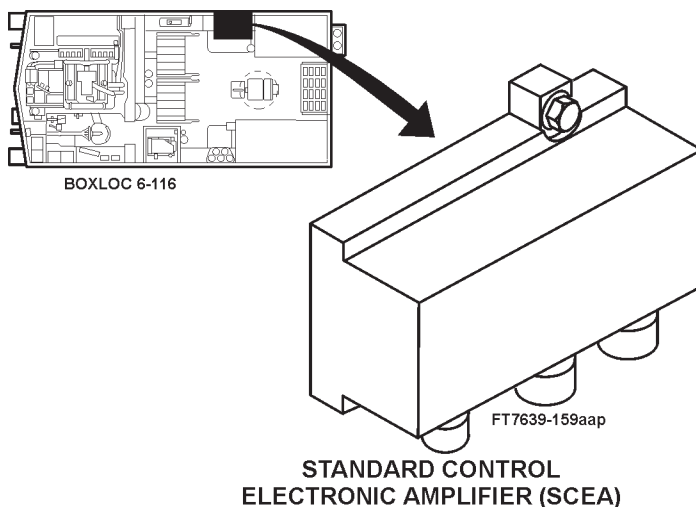


**OPTICAL FIRE SENSING
ASSEMBLY (OFSA)**

CREW AFES COMPONENTS (continued)

SCEA

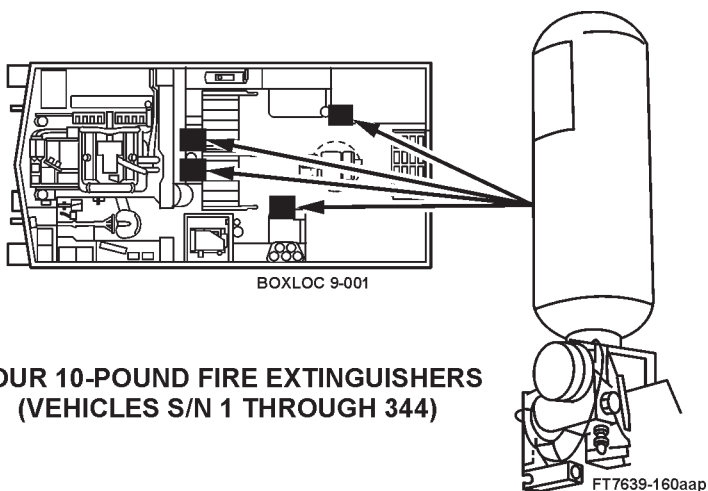
- Processes input signals from OFSA units when hydrocarbon fuel fire is detected.
- If the fire is large, the SCEA lights the FIRE ALARM lamp on the crew compartment T/A panel and activates the three fire extinguishers.
- If a large fire continues, or a second large fire occurs, the SCEA activates the remaining crew compartment fire extinguishers.
- If the OFSA detects a small fuel fire, the SCEA signals the T/A panel and the FIRE ALARM lamp on the T/A panel flickers. The crew uses a portable fire extinguisher or activates the MANUAL DISCHARGE switch on the T/A panel to put out the small fire.
- The SCEA contains BITE, which internally tests the unit for normal operation.
- An LED on the T/A panel lights to indicate a fault in the SCEA unit.



CREW AFES COMPONENTS (continued)

Fire Extinguishers (Vehicles S/N 1 Through 344)

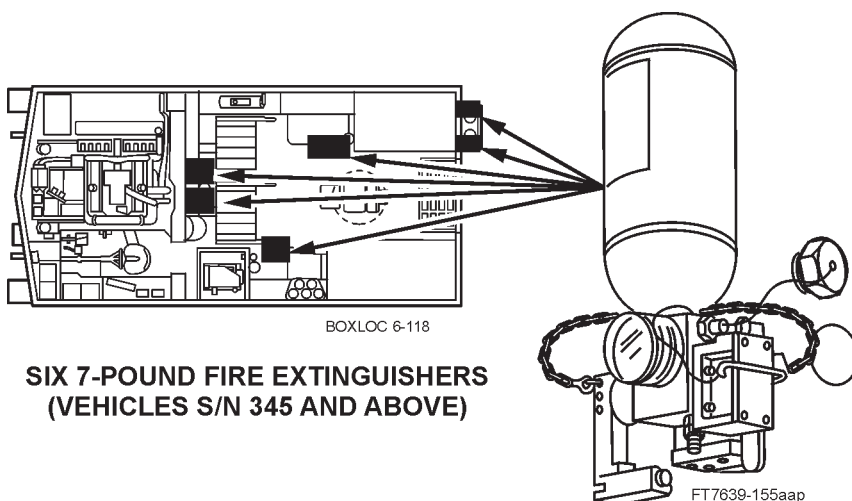
- The crew AFES has four 10-pound automatic fire extinguishers.
- The fire extinguishers consist of steel cylinders filled with Halon 1301 and are equipped with a quick-release valve assembly.
- The cylinders contain Halon fire suppressant pressurized with dry nitrogen for use on hydrocarbon fuel fires only.
- Crew AFES fire extinguishers discharge automatically when the SCEA receives an electrical pulse from an OFSA unit, or manually when a crewmember operates the MANUAL DISCHARGE switch on the crew T/A panel.
- When the crew AFES activates, the ventilator blower automatically turns to the exhaust mode eight to ten seconds after extinguisher discharge, and the ventilation door opens automatically.



**FOUR 10-POUND FIRE EXTINGUISHERS
(VEHICLES S/N 1 THROUGH 344)**

CREW AFES COMPONENTS (continued)**Fire Extinguishers (Vehicles S/N 345 and Above)**

- The crew AFES has six 7-pound automatic fire extinguishers.
- The fire extinguishers consist of steel cylinders filled with Halon 1301 and are equipped with a quick-release valve assembly.
- The cylinders contain Halon fire suppressant pressurized with dry nitrogen for use on hydrocarbon fuel fires only.
- Crew AFES fire extinguishers discharge automatically when the SCEA receives an electrical pulse from an OFSA unit, or manually when a crewmember operates the MANUAL DISCHARGE switch on the crew T/A panel.
- When the crew AFES activates, the ventilator blower automatically turns to the exhaust mode eight to ten seconds after extinguisher discharge, and the ventilation door opens automatically.
- Two crew and one engine compartment AFES fire extinguishers may be discharged from outside the vehicle by pulling the lanyard cable pull handle located near the driver's hatch or the pull handle located in the driver's compartment.

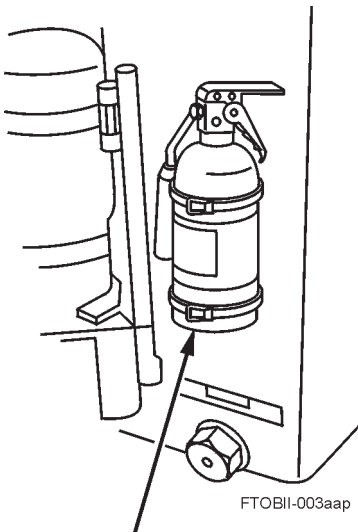


**SIX 7-POUND FIRE EXTINGUISHERS
(VEHICLES S/N 345 AND ABOVE)**

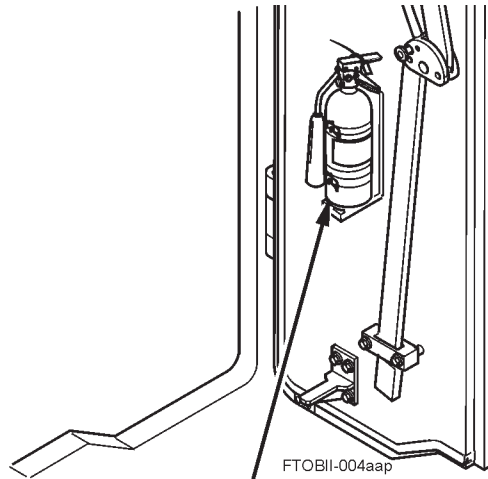
CREW AFES COMPONENTS (continued)

Portable Fire Extinguishers

- Two portable fire extinguishers are also located in the crew compartment and are separate from the AFES. One portable fire extinguisher is located on the right rear door, and the second is located on the left side of the crew compartment on the APU wall. These portable fire extinguishers may be used as needed on fuel and electrical fires.

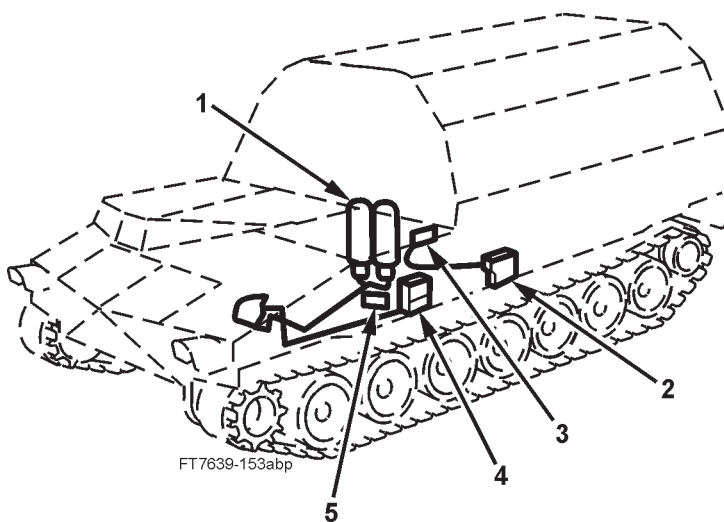


**PORTABLE FIRE EXTINGUISHER
ON APU WALL**



**PORTABLE FIRE EXTINGUISHER
ON RIGHT REAR DOOR**

AFES/MDS COMPONENTS



1. Engine Fire Ext. No. 2
2. Actuator Assembly
3. Lanyard Cable Pull Handle (Exterior)
4. Engine T/A Panel
5. Lanyard Cable Pull Handle (Driver's Compartment)

AFES/MDS COMPONENTS (continued)

WARNING

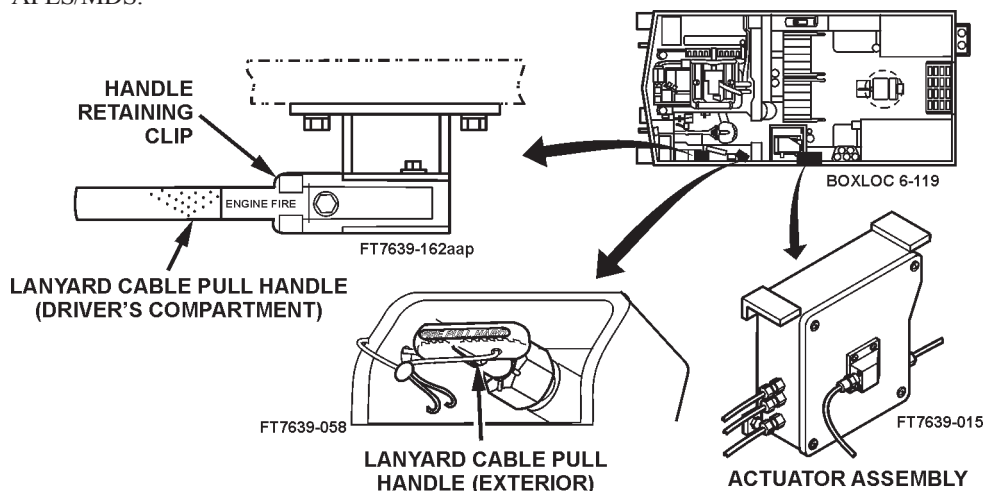
If handle retaining clip has velcro attached, remove velcro. Handle secured with velcro could hinder ability to quickly activate AFES/MDS. Failure to follow this warning may result in severe injury or death to personnel and destruction of equipment.

The AFES/MDS allows the crew to manually activate one engine and two crew compartment fire extinguishers. The AFES/MDS components are described below.

ACTUATOR ASSEMBLY: The assembly controls and protects the mechanical cabling connecting the fire extinguishers to two lanyard cable pull handles. It is equipped with an electric sensor that opens the ventilation door when the exterior lanyard cable pull handle is pulled.

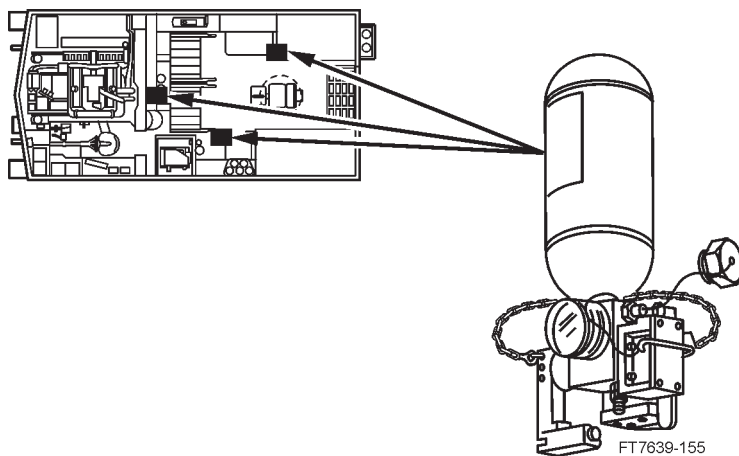
LANYARD CABLE PULL HANDLE (EXTERIOR): Located outside the vehicle near the driver's hatch, the handle mechanically activates one engine and two crew compartment fire extinguishers. A crew member must exert a 25-pound pull to break the sealed safety wire on the handle and must pull the handle out as far as possible to discharge the extinguishers. The safety wire prevents unauthorized/accidental discharge of the AFES/MDS.

LANYARD CABLE PULL HANDLE (DRIVER'S COMPARTMENT): Located on the left wall in the driver's compartment, the handle mechanically activates one engine compartment fire extinguisher. A crew member must pull forward on the handle to break the sealed safety wire and discharge the extinguisher. This prevents unauthorized/accidental discharge of the AFES/MDS.



AFES/MDS COMPONENTS (continued)**Fire Extinguishers**

- The AFES/MDS has three fire extinguishers. The one for engine fires can be activated only by using either lanyard cable pull handle. The other two AFES/MDS fire extinguishers, located in the crew compartment, can be activated automatically by the SCEA or by activating the MANUAL DISCHARGE switch.
- All fire extinguishers will not activate at the same time when a crew member pulls either lanyard cable pull handle. Handle must be pulled to fullest extension to discharge extinguishers.
- The fire extinguishers consist of steel cylinders filled with Halon 1301 (crew compartment) or HFC-227ea (engine compartment) and are equipped with a quick-release valve assembly.
- The cylinders contain a fire suppressant pressurized with dry nitrogen for use on hydrocarbon fuel fires only.

**END OF WORK PACKAGE**

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

AFES OPERATIONAL CHECKS

THIS WORK PACKAGE COVERS:

Automatic Built-In Test Equipment (BITE) Test Cycle, Engine AFES Indicators Power-On Operation, and Crew AFES Indicators Power-On Operation

INITIAL SETUP:

Maintenance Level

Operator

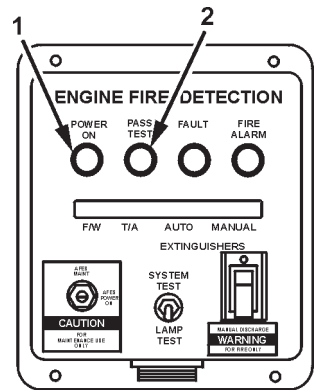
This Work Package describes, locates, and illustrates the controls and instruments of the M992A2 AFES. The location and function of all controls must be learned before operating the vehicle.

NOTE

Operational checkout is the same for engine and crew.

AUTOMATIC BUILT-IN TEST EQUIPMENT (BITE) TEST CYCLE

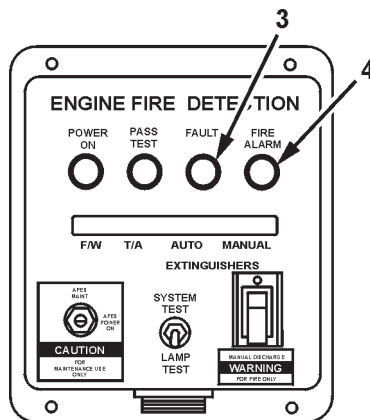
| Key | Control or Indicator | Function |
|-----|--|---|
| 1 | Turn MASTER switch to ON. POWER ON Lamp | Lamp is lit. |
| 2 | PASS TEST Lamp | Lights for 4 to 6 seconds after successful BITE test. |



FT7639-019akp

AUTOMATIC BUILT-IN TEST EQUIPMENT (BITE) TEST CYCLE (continued)

| Key | Control or Indicator | Function |
|-----|----------------------|--|
| 3 | FAULT Lamp | Lamp is lit: Perform Lamp/LED test. Replace Lamp/LED. Perform system test. FAULT lamp or LED remains lit: Notify Unit maintenance. |
| 4 | FIRE ALARM Lamp | Lamp flickers: Small engine fire or engine overheat exists. Investigate and use portable fire extinguisher, if required. Lamp is lit: Large engine fire exists. Automatic discharge should occur. Lamp will go out when fire is out. If lamp stays lit, evacuate vehicle and notify Unit maintenance. |



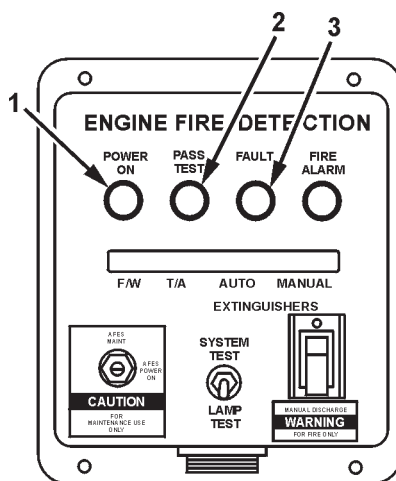
FT7639-019alp

ENGINE AFES INDICATORS POWER-ON OPERATION

WARNING

The engine AFES detects and indicates fire automatically, but the system may not automatically extinguish all fires. The driver should continually monitor the engine test and alarm (T/A) panel during vehicle operation, watching for the following indications, and should be prepared to take emergency action. Failure to comply may result in injury or death and damage to equipment.

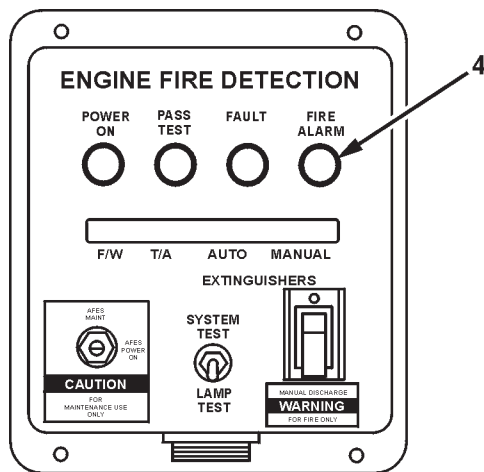
| Key | Control or Indicator | Function |
|-----|----------------------|--|
| 1 | POWER ON Lamp | Lamp is lit: Lamp should remain lit throughout operation. If lamp goes out during operation, troubleshoot AFES (p. 0042 00-20). |
| 2 | PASS TEST Lamp | Lights 4 to 6 seconds after successful completion of BITE test. |
| 3 | FAULT Lamp | Lamp is not lit: No action is required. Lamp is lit (amber): Notify Unit maintenance. |



FT7639-019amp

ENGINE AFES INDICATORS POWER-ON OPERATION (continued)

| Key | Control or Indicator | Function |
|-----|----------------------|--|
| 4 | FIRE ALARM Lamp | <p>Lamp is not lit: No action required.</p> <p>Lamp flickers: Small fire or engine overheat exists. Investigate and use portable fire extinguisher, if required.</p> <p>Lamp is lit (red): Large fire exists in engine compartment. Automatic discharge should occur. Lamp will go out when fire is extinguished. If lamp stays lit, evacuate vehicle and notify Unit maintenance.</p> |

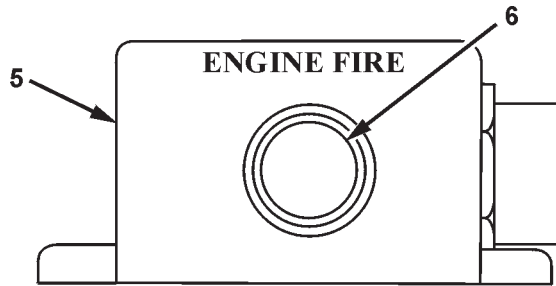


FT7639-019aep

ENGINE AFES INDICATORS POWER-ON OPERATION (continued)

In addition to the indicators on the engine T/A panel, a remote status indicator (RSI) (5) is mounted on the crew compartment ceiling to alert crew to an engine fire. An ENGINE FIRE light (6) also comes on whenever a large engine fire exists. During lamp test on vehicles S/N 1 through 344, this light will not come on. During lamp test on vehicles S/N 345 and above, this light will come on. During normal operation, this light will not come on.

Ventilation blower turns to exhaust mode and ventilation door opens automatically when Halon discharges.



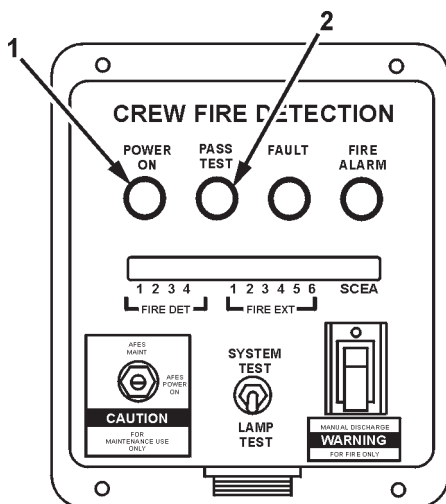
FT7639-163aap

CREW AFES INDICATORS POWER-ON OPERATION

WARNING

The crew AFES detects and indicates fire automatically, but the system may not automatically extinguish all fires. The crew should continually monitor the crew T/A panel and the RSI during vehicle operation, watching for the following indications, and must be prepared to take emergency action. Failure to comply may result in injury or death and damage to equipment.

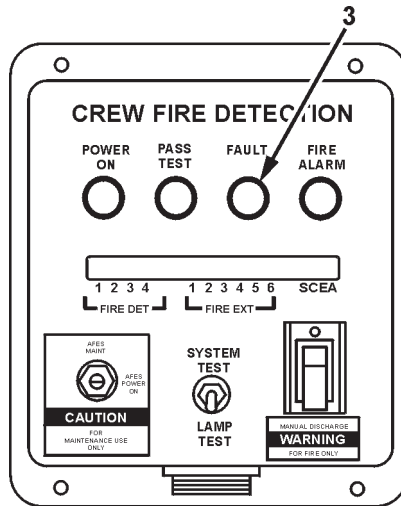
| Key | Control or Indicator | Function |
|-----|----------------------|--|
| 1 | POWER ON Lamp | Lamp is lit: Lamp should remain lit throughout operation. If lamp goes out during operation, troubleshoot AFES (p. 0042 00-20). |
| 2 | PASS TEST Lamp | Lights 4 to 6 seconds after successful completion of BITE test. |



FT 7639-150aap

CREW AFES INDICATORS POWER-ON OPERATION (continued)

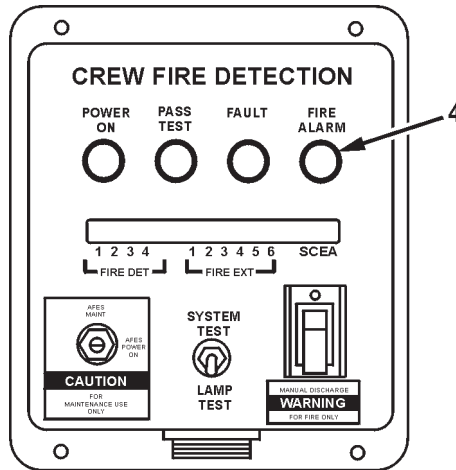
| Key | Control or Indicator | Function |
|-----|----------------------|---|
| 3 | FAULT Lamp | Lamp is not lit: No action required. Lamp is lit (amber): Notify Unit maintenance. |



FT7639-150abp

CREW AFES INDICATORS POWER-ON OPERATION (continued)

| Key | Control or Indicator | Function |
|-----|----------------------|---|
| 4 | FIRE ALARM Lamp | <p>Lamp is not lit: No action required.</p> <p>Lamp flashes (red): Small fire exists in crew compartment. Extinguish fire using portable fire extinguisher.</p> <p>Lamp is lit (red): Large fire exists in crew compartment. Automatic discharge should occur. Evacuate vehicle after discharge. Lamp will go out when fire is out. If lamp stays lit, evacuate vehicle and notify Unit maintenance</p> |



FT 7639-150acp

END OF WORK PACKAGE

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

AFES EMERGENCY PROCEDURES

THIS WORK PACKAGE COVERS:

AFES Manual Discharge–Engine Compartment Fires and AFES Manual Discharge–Crew Compartment Fires

INITIAL SETUP:

Maintenance Level

Operator

AFES MANUAL DISCHARGE–ENGINE COMPARTMENT FIRES

During normal AFES operation, the AFES will discharge an agent to extinguish fires.

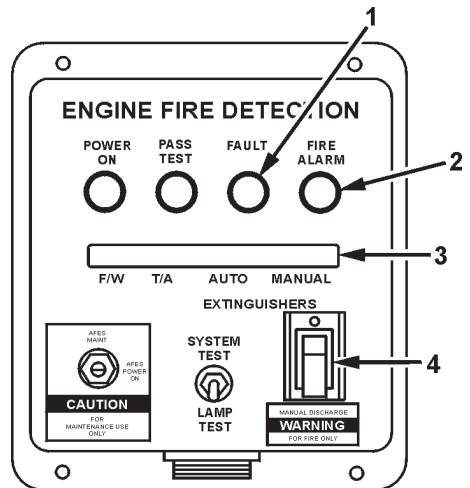
The driver must be alert to manually discharge extinguishers if the automatic system malfunctions.

NOTE

For small fires, use portable fire extinguishers.

Use the following procedures if the automatic feature of the AFES malfunctions:

1. Lift MANUAL DISCHARGE switch guard (4), then press switch up and release. FAULT lamp (1) and AUTO LED (3) will light, signifying extinguisher has discharged. FIRE ALARM lamp (2) will go out when fire is extinguished.



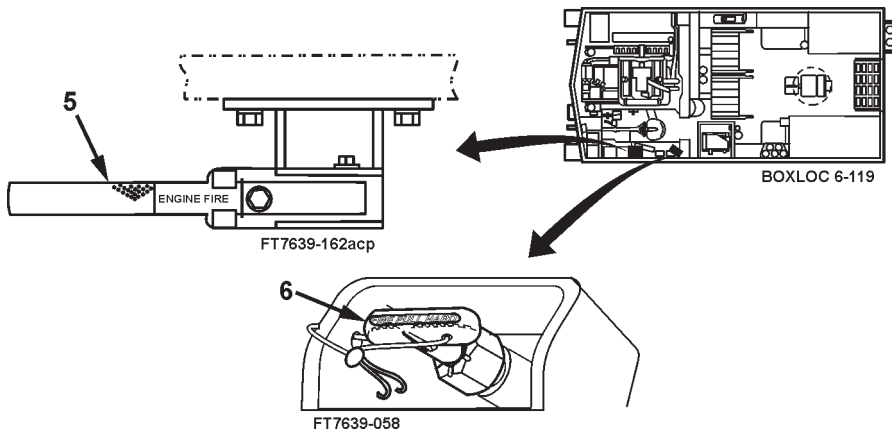
FT7639-019afp

AFES MANUAL DISCHARGE—ENGINE COMPARTMENT FIRES (continued)

WARNING

Not all emergency fire extinguisher bottles will manually discharge at the same time. A second shot will occur five seconds later. Stay away from nozzles to avoid severe injury to personnel.

2. The following procedures must be followed if the fire does not go out:
- Turn vehicle MASTER switch to OFF.
 - Pull FUEL SHUT OFF handle until engine stops.
 - If electrical power is not available or if AFES malfunctions, driver must pull the manual discharge system (MDS) lanyard cable pull handle (5) located on the left side of the driver's compartment, or pull the MDS lanyard cable pull handle (6) located outside the vehicle near the driver's hatch.



AFES MANUAL DISCHARGE—CREW COMPARTMENT FIRES

During normal AFES operation, the automatic system will discharge an agent to extinguish fires.

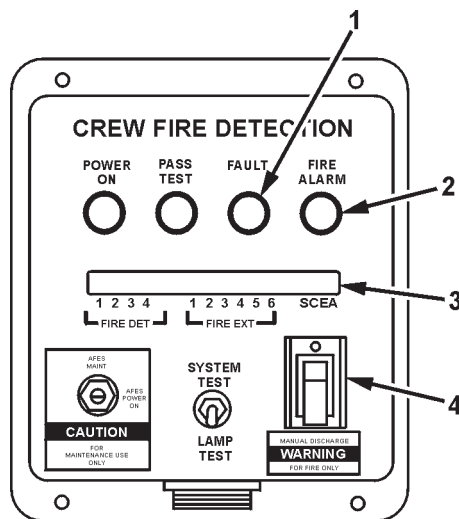
The crew must be alert to manually discharge extinguishers if the automatic system malfunctions.

NOTE

For small fires, use portable fire extinguishers.

Use the following procedures if the automatic feature of the AFES malfunctions:

1. Lift MANUAL DISCHARGE switch guard (4), then press switch up and release. FAULT lamp (1) and FIRE EXT LEDs (3) will light, signifying extinguishers have discharged. If fire is not extinguished after 5 seconds, again press switch up and release to discharge second set of fire extinguishers. FIRE ALARM lamp (2) will go off when fire is extinguished. Vent door automatically opens and ventilation fan turns on.



FT7639-150adp

AFES MANUAL DISCHARGE—CREW COMPARTMENT FIRES (continued)

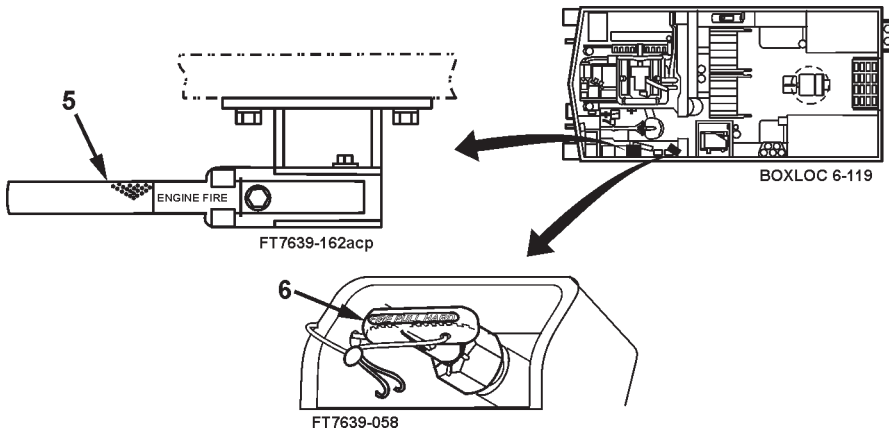
WARNING

Not all emergency fire extinguisher bottles will manually discharge at the same time. A second shot will occur five seconds later. Stay away from nozzles to avoid severe injury to personnel.

NOTE

When pulling lanyard cable pull handle located outside the vehicle near driver's hatch, handle must be pulled all the way as far as it will pull. Otherwise only the engine compartment extinguisher will discharge, and not the crew compartment extinguishers.

2. If electrical power is not available or if AFES malfunctions, driver must pull MDS lanyard cable handle (5), located in the driver's compartment, or pull the MDS lanyard cable pull handle (6) located outside the vehicle near the driver's hatch.



END OF WORK PACKAGE

TM9-2350-372-10

CHAPTER 6
SUPPORTING INFORMATION

OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

REFERENCES

Scope

This Work Package lists all forms, field manuals, technical manuals, regulations, pamphlets, bulletins, miscellaneous publications, and videotapes referenced in this manual, as well as other pertinent publications.

Forms

| | |
|---|----------------|
| Recommended Changes to Publications and Blank Forms | DA Form 2028 |
| Recommended Changes to Equipment Technical Publications | DA Form 2028-2 |
| Equipment Inspection and Maintenance Worksheet | DA Form 2404 |
| Maintenance Request | DA Form 2407 |
| Motor Vehicle Accident Report | SF Form 91 |
| Product Quality Deficiency Report | SF Form 368 |

Field Manuals

| | |
|--|----------|
| NBC Protection | FM 3-4 |
| NBC Decontamination | FM 3-5 |
| First Aid for Soldiers | FM 21-11 |
| Browning Machine Gun, Caliber .50 HB, M2 | FM 23-65 |
| Basic Cold Weather Manual | FM 31-70 |
| Northern Operations | FM 31-71 |

Technical Manuals

| | |
|---|------------------|
| Operator's and Organizational Maintenance Manual: For Alarm, Chemical Agent, Automatic: Portable, Manpack, M8 (NSN 6665- 00-935-6955) Fixed Emplacement, M10 (6665-00-169-1446) for Trucks, Utility: 1/4-Ton, M11 (6665-00-169-1447); for Truck: 3/4-Ton, M12 (6665-00-169-1448); for Truck: 2 1/2-Ton, M13 (6665-00-169-1449); for Full-Track, Armored Personnel Carriers and Recovery Vehicles, M14 (6665-00-169-1450); for Carrier, Command and Reconnaissance, Armored, M15 (6665-00- 169-1451) with Power Supply for Truck, Utility: 1/4-Ton, M16 (6665-00-169-1452); with Power Supply for Truck: 3/4-Ton, M17 (6665-00-169-1453) and with Power Supply for Truck: 2 1/2-Ton, M18 (6665-00-169-1454) | TM 3-6665-225-12 |
|---|------------------|

REFERENCES (continued)

0066 00

Technical Manuals (continued)

- Operator's Manual for Machine Guns, Caliber .50; Browning, M2,
Heavy Barrel Flexible, W/E (NSN 1005-00-322-9715)
(EIC: 4AG) TM 9-1005-213-10
- Operator's Manual for Rifle, 5.56 MM, M16A2 W/E (NSN 1005-
01-128-9936) (EIC: 4GM); Rifle, 5.56 MM, M16A3 (1005-01-
357-5112); Rifle, 5.56 MM, M16A4 (1005-01-383-2872)
(EIC: 4F9); Carbine, 5.56 MM, M4 W/E (1005-01-231-0973)
(EIC: 4FJ); Carbine, 5.56 MM, M4A1 (1005-01-382-0953)
(EIC: 4GC) TM 9-1005-319-10
- Hand Receipt: Carrier, Ammunition, Tracked,
M992A2 TM 9-2350-372-10-HR
- Operator's Manual for Howitzer, Medium, Self-Propelled:
155MM, M109A6 (NSN 2350-01-305-0028) TM 9-2350-314-10
- Operator's Manual: Towbar, Motor Vehicle TM 9-4910-496-10
- Operator's, Unit, Direct Support and General Support
Maintenance Manual for Lead-Acid Storage Batteries TM 9-6140-200-14
- Operator's and Unit Maintenance Manual Including Repair
Parts and Special Tools List for Heater, Water and Ration
(HWR) (NSN 7310-01-387-1305) TM 10-7310-241-12&P
- Operations and Maintenance Manual for Satellite Signals
Navigation Sets AN/PSN-11 (NSN 5825-01-374-6643)
and AN/PSN-11(V)1 (5825-01-395-3513) TM 11-5825-291-13
- Operator's Manual for Vehicular Intercommunication Set,
AN/VIC-3(V) TM 11-5830-263-10
- Destruction of Conventional Ammunition and Improved
Conventional Munitions (ICM) to Prevent Enemy Use TM 43-0002-33
- Painting Instructions for Army Materiel TM 43-0139
- Transportability Guidance: Carrier, Cargo, Full-Tracked: 7-Ton,
Ammunition, M992 (NSN 2350-01-110-4660) Field
Artillery Ammunition Support Vehicle (FAASV) TM 55-2350-267-14
- Procedures for Destruction of Tank-Automotive Equipment
to Prevent Enemy Use TM 750-244-6

REFERENCES (continued)

0066 00

Regulations, Pamphlets, Bulletins

The Army Integrated Publishing and Printing Program AR 25-30
 Prevention of Motor Vehicle Accidents AR 385-55
 Consolidated Index of Army Publications and Blank Forms DA Pam 25-30
 The Army Maintenance Management System (TAMMS) DA Pam 738-750
 Cold Injury TB MED 81
 Occupational and Environmental Health Prevention, Treatment
 and Control of Heat Injury TB MED 507

Miscellaneous Publications

Army Medical Department Expendable/Durable Items CTA 8-100
 Expendable/Durable Items (Except: Medical, Class V, Repair
 Parts and Heraldic Items) CTA 50-970
 Fire Extinguishing Systems for the M992A2 Field Artillery
 Ammunition Support Vehicle (Videotape) Tape No. 709876/TVT 5-34
 Tracked Combat Vehicle Driver Training TC 21-306

END OF WORK PACKAGE

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

COMPONENTS OF END ITEM (COEI) AND BASIC ISSUE ITEMS (BII) LISTS

INTRODUCTION

Scope

This Work Package lists COEI and BII for the M992A2 to help you inventory the items for safe and efficient operation of equipment.

General

The COEI and BII information is divided into the following lists:

Components of End Item (COEI). This listing is for information purposes only and is not authority to requisition replacements. These items are part of the M992A2. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Items of COEI are removed and packaged separately for transportation or shipment only when necessary. Illustrations are furnished to help you find and identify the items.

Basic Issue Items (BII). These essential items are required in order to place the M992A2 in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged, BII must be with the M992A2 during operation and when it is transferred between property accounts. Listing these items is your authority to request/requisition them for replacement based on authorization of the end item by the Table of Organization and Equipment (TOE)/Modification Table of Organization and Equipment (MTOE). Illustrations are furnished to help you find and identify the items.

Explanation of Columns in the COEI List and BII List

Column (1) – ILLUS. NUMBER. Gives you the number of the item illustrated.

Column (2) – NATIONAL STOCK NUMBER. Identifies the stock number of the item to be used for requisitioning purposes.

Column (3) – DESCRIPTION, CAGEC, and PART NUMBER. Identifies the Federal item name (in capital letters) followed by a minimum description when needed. The stowage location of COEI and BII is also located in this column. The last line below the description is the CAGEC (Commercial and Government Entity Code) (in parentheses) and the part number.

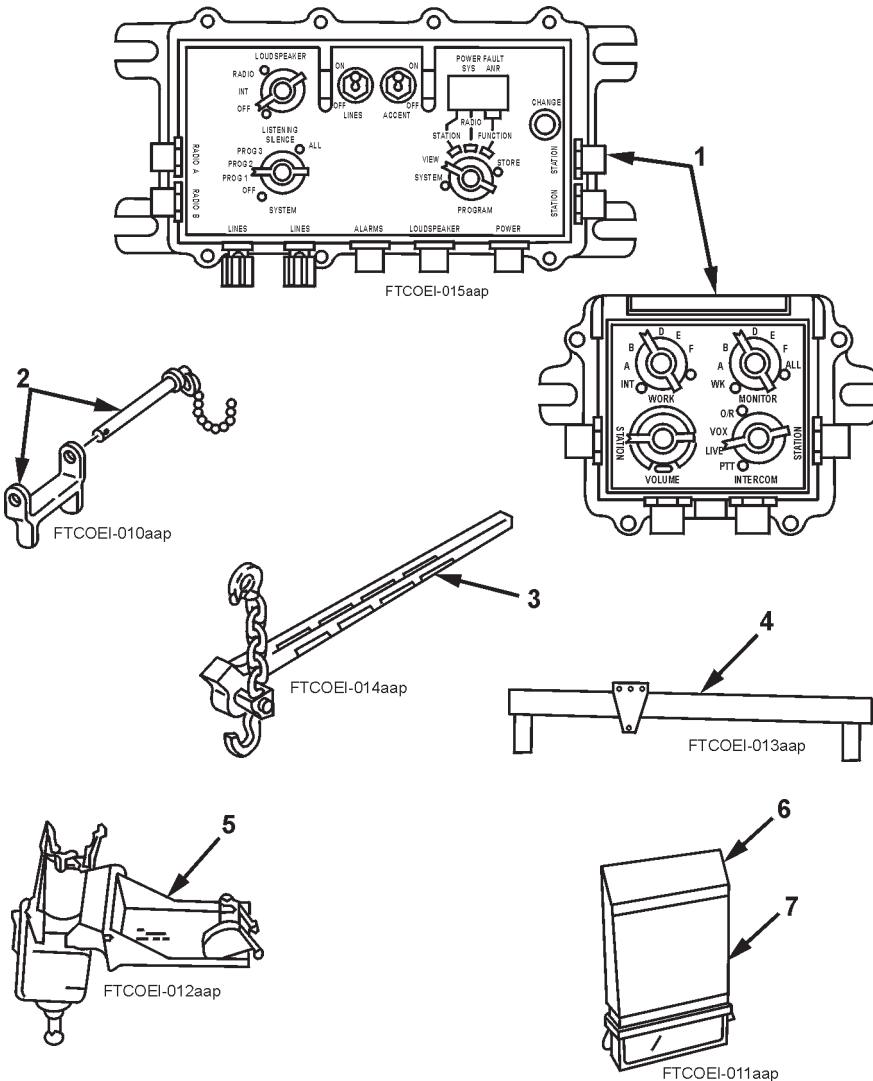
INTRODUCTION (continued)

Explanation of Columns (continued)

Column (4) – U/M [Unit of Measure]. Indicates the physical measurement or count of the item as issued per the national stock number shown in column (2).

Column (5) – QTY. RQR. Indicates the quantity required.

COEI LIST



COEI LIST (continued)

Table 1. Components of End Item List

| (1) ILLUS. NUMBER | (2) NATIONAL STOCK NUMBER | (3) DESCRIPTION, CAGEC, AND PART NUMBER | (4) U/M | (5) QTY. RQR. |
|-------------------------|---------------------------------|--|------------|---------------------|
| 1 | 5830-01-449-2251 | AN/VIC-3(V) INTERCOMMUNICA- TION (at crew positions) (80063) A3210688 | SET | 1 |
| 2 | 1025-01-202-0418 | ARM, ADAPTER ASSEMBLY (machine gun mount) (19200) 12011777 | EA | 1 |
| 3 | 3990-01-179-9141 | BINDER, LOADHOIST (in crew compartment) (79805) 1100020 | EA | 1 |
| 4 | 2590-01-220-0123 | LIFTING FIXTURE (in crew compartment) (19207) 12333570 | EA | 1 |
| 5 | 1005-00-704-6650 | MOUNT, MACHINE GUN, CALIBER 0.50 (on commander's cupola) (19204) 7046650 | EA | 1 |
| 6 | 1240-01-319-8995 | PERISCOPE, ARMORED VEHICLE, M27 (at commander's cupola) (19200) 12357792 | EA | 1 |
| 7 | 6650-01-418-6658 | PERISCOPE, ARMORED VEHICLE, M45 (at driver's hatch) (19207) 12370033 | EA | 3 |

BII LIST

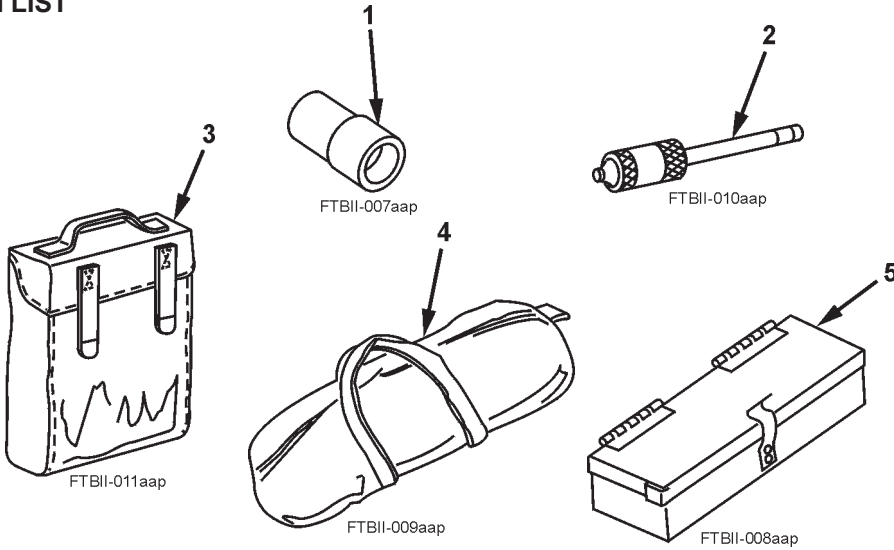


Table 2. Basic Issue Items List

| (1) ILLUS. NUMBER | (2) NATIONAL STOCK NUMBER | (3) DESCRIPTION, CAGEC, AND PART NUMBER | (4) U/M | (5) QTY. RQR. |
|-------------------------|---------------------------------|--|------------|---------------------|
| 1 | 5935-00-322-8959 | ADAPTER, CONNECTOR CABLE (in satchel tool bag) (19207) 11677570 | EA | 2 |
| 2 | 4930-00-204-2550 | ADAPTER, GREASE GUN (on grease gun) (19207) 5349744 | EA | 1 |
| 3 | 2540-00-670-2459 | BAG ASSEMBLY, PAMPHLET (under right-hand rear canister compartment) (19207) 11676920 | EA | 1 |
| 4 | 5140-00-473-6256 | BAG, TOOL, SATCHEL (under right- hand rear canister compartment) (34623) 11655979 | EA | 1 |
| 5 | 2540-00-906-4741 | BOX ASSEMBLY, SPARE BULB (in driver's compartment) (19207) 10870949 | EA | 1 |

BII LIST (continued)

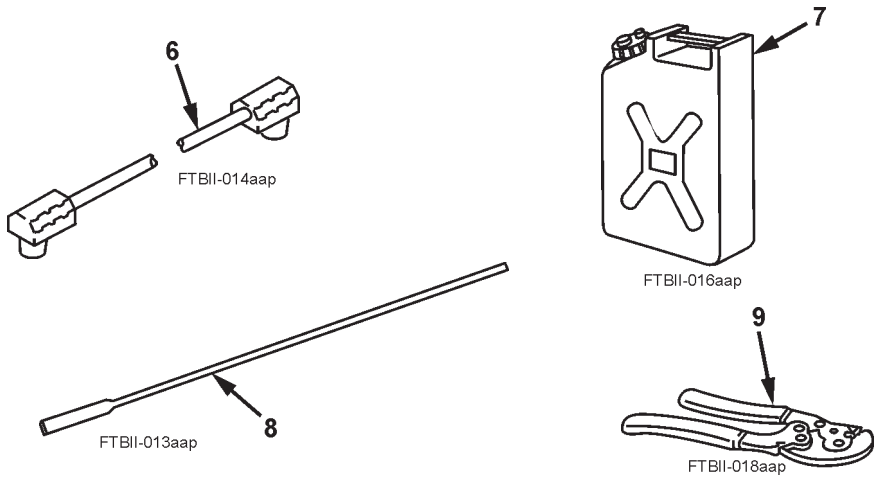


Table 2. Basic Issue Items List (continued)

| (1) ILLUS. NUMBER | (2) NATIONAL STOCK NUMBER | (3) DESCRIPTION, CAGEC, AND PART NUMBER | (4) U/M | (5) QTY. RQR. |
|-------------------------|--------------------------------------|--|------------|---------------------|
| 6 | 6150-01-248-9555 | CABLE ASSEMBLY, POWER (under right-hand rear canister compartment) (19207) 11682336-6 | EA | 1 |
| 7 | 7240-00-089-3827 7240-01-365-5317 | CAN, WATER, MILITARY, 5-GALLON (three on front exterior cargo compartment, one on right rear door) (81349) MIL-C-43613 TYPE-1 (tan) TYPE-2 (green) | EA | 4 |
| 8 | 5120-00-224-1390 | CROWBAR (on top plate of cargo compartment, exterior, left of commander's cupola) (80064) 1833244 | EA | 1 |
| 9 | 5110-00-595-8229 | CUTTER, WIRE ROPE (in satchel tool bag) (19207) 11655981 | EA | 1 |

BII LIST (continued)

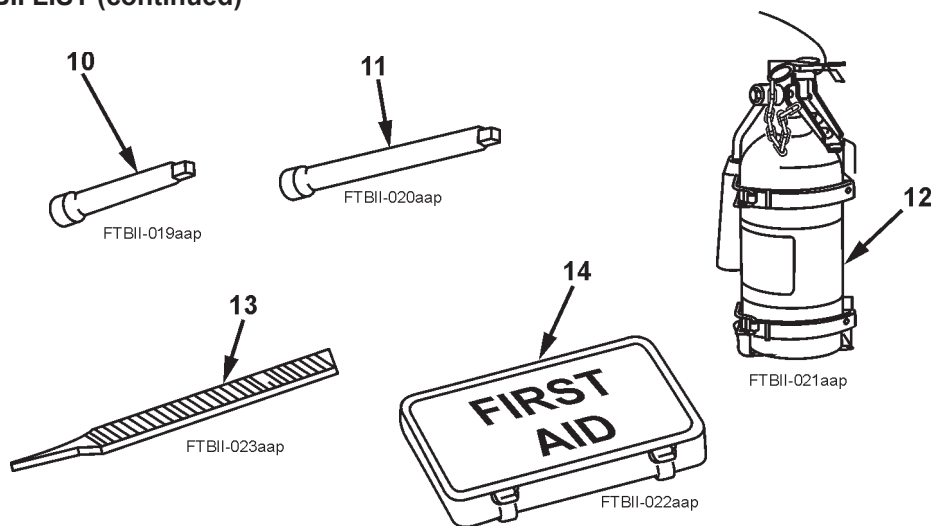


Table 2. Basic Issue Items List (continued)

| (1) ILLUS. NUMBER | (2) NATIONAL STOCK NUMBER | (3) DESCRIPTION, CAGEC, AND PART NUMBER | (4) U/M | (5) QTY. RQR. |
|-------------------------|---------------------------------|--|------------|---------------------|
| 10 | 5120-00-243-7326 | EXTENSION, SOCKET WRENCH, 1/2-INCH DRIVE, 5 INCHES (in satchel tool bag) (95683) 41B306 | EA | 1 |
| 11 | 5120-00-227-8074 | EXTENSION, SOCKET WRENCH, 1/2-INCH DRIVE, 10 INCHES (in satchel tool bag) (19207) 11655788-1 | EA | 1 |
| 12 | 4210-01-388-7854 | EXTINGUISHER, FIRE (CO ₂) (one on interior of right rear door, one on rear APU compartment bulkhead) (58536) A52471-1-S | EA | 2 |
| 13 | 5110-00-156-0059 | FILE, HAND (in satchel tool bag) (19204) 41F1030 | EA | 1 |
| 14 | 6545-00-922-1200 | FIRST AID KIT (in stowage box) (64616) SC C-6545-IL VOL 2 | EA | 1 |

BII LIST (continued)

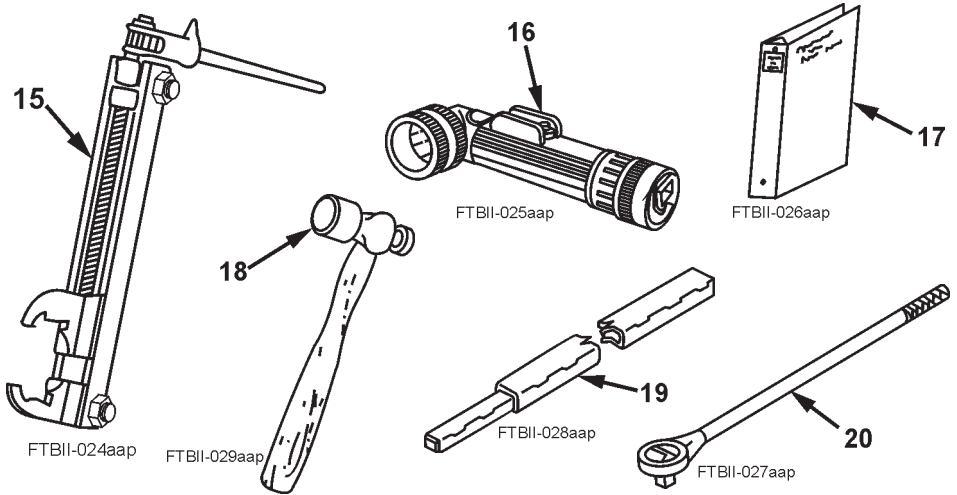


Table 2. Basic Issue Items List (continued)

| (1) ILLUS. NUMBER | (2) NATIONAL STOCK NUMBER | (3) DESCRIPTION, CAGEC, AND PART NUMBER | (4) U/M | (5) QTY. RQR. |
|-------------------------|---------------------------------|--|------------|---------------------|
| 15 | 5120-00-605-3926 | FIXTURE, TRACK (on exterior of front cargo compartment, right of driver's hatch) (19207) 8741739 | EA | 2 |
| 16 | 6230-00-264-8261 | FLASHLIGHT (one at driver's position, one at commander's position) (21108) MX-991/4 | EA | 2 |
| 17 | 7510-01-065-0166 | FOLDER, EQUIPMENT RECORD (in pamphlet bag) (81349) MIL-F-43986 | EA | 1 |
| 18 | 5120-01-355-2052 | HAMMER, HAND (in satchel tool bag) (55719) BPN32A | EA | 1 |
| 19 | 5340-01-199-9941 | HANDLE EXTENSION, PROJECTILE LOCK (under right-hand rear canister compartment) (19207) 12351610 | EA | 1 |
| 20 | 5120-00-249-1076 | HANDLE, SOCKET WRENCH, 3/4-INCH DRIVE (in satchel tool bag) (80064) 1940708 | EA | 1 |

BII LIST (continued)

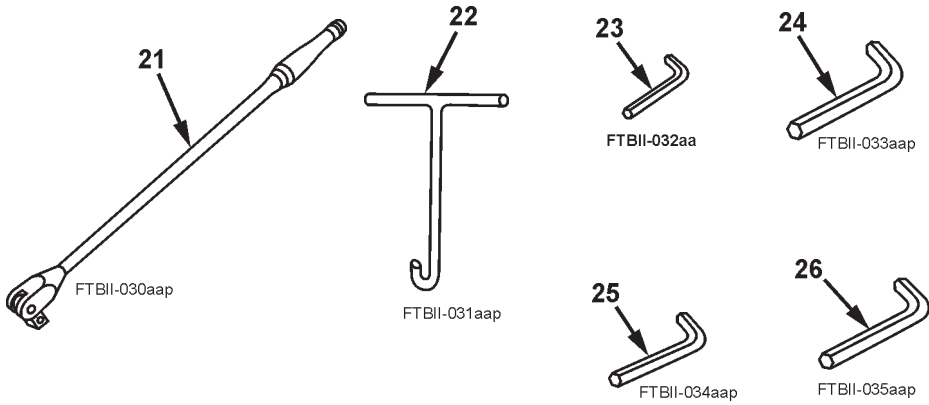


Table 2. Basic Issue Items List (continued)

| (1) ILLUS. NUMBER | (2) NATIONAL STOCK NUMBER | (3) DESCRIPTION, CAGEC, AND PART NUMBER | (4) U/M | (5) QTY. RQR. |
|-------------------------|---------------------------------|---|------------|---------------------|
| 21 | 5120-00-236-7590 | HANDLE, SOCKET WRENCH, HINGED, 1/2-INCH DRIVE (in satchel tool bag) (19207) 11655786-1 | EA | 1 |
| 22 | 5120-01-179-8997 | HOOK, CARTRIDGE REMOVER (in satchel tool bag) (19207) 12333373 | EA | 1 |
| 23 | 5120-00-240-5300 | KEY, SOCKET HEAD SCREW, 3/16-INCH HEX (in satchel tool bag) (94697) A05522-011 | EA | 1 |
| 24 | 5120-00-240-5274 | KEY, SOCKET HEAD SCREW, 5/16-INCH HEX (in satchel tool bag) (55719) AW10 | EA | 1 |
| 25 | 5120-00-198-5390 | KEY, SOCKET HEAD SCREW, 3/8-INCH HEX (in satchel tool bag) (80064) 1940722 | EA | 1 |
| 26 | 5120-00-224-2510 | KEY, SOCKET HEAD SCREW, 5/8-INCH HEX (in satchel tool bag) (74445) 57036 | EA | 1 |

BII LIST (continued)

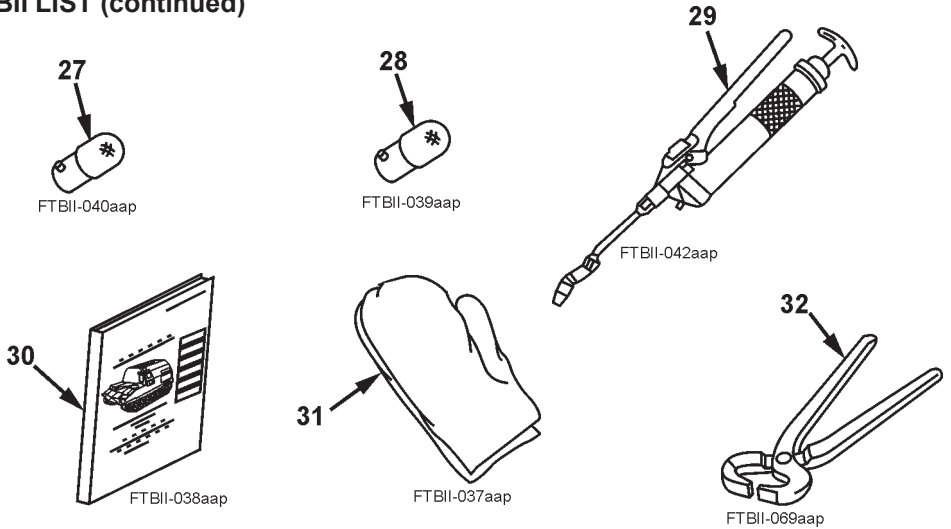


Table 2. Basic Issue Items List (continued)

| (1) ILLUS. | (2) NATIONAL STOCK | (3) DESCRIPTION, | (4) | (5) QTY. |
|---------------|-----------------------|---|-----|-------------|
| 27 | 6240-00-266-9940 | LAMP, INCANDESCENT (in spare lamp box) (96906) MS25231-1829 | EA | 3 |
| 28 | 5980-01-296-2793 | LIGHT-EMITTING DIODE (LED) (in spare lamp box) (19207) 12360890-3 | EA | 2 |
| 29 | 4930-00-766-3545 | LUBRICATION GUN, HAND (in satchel tool bag) (36251) 102758 | EA | 1 |
| 30 | TM 9-2350-372-10 | MANUAL, OPERATOR'S (in pamphlet bag) | EA | 1 |
| 31 | 8415-01-092-0039 | MITTEN, HEAT PROTECTION (in satchel tool bag) (81349) MIL-M-1119 | EA | 2 |
| 32 | 5110-00-221-1499 | NIPPERS, END CUTTING (in satchel tool bag) (05047) B107.11 | EA | 1 |

BII LIST (continued)

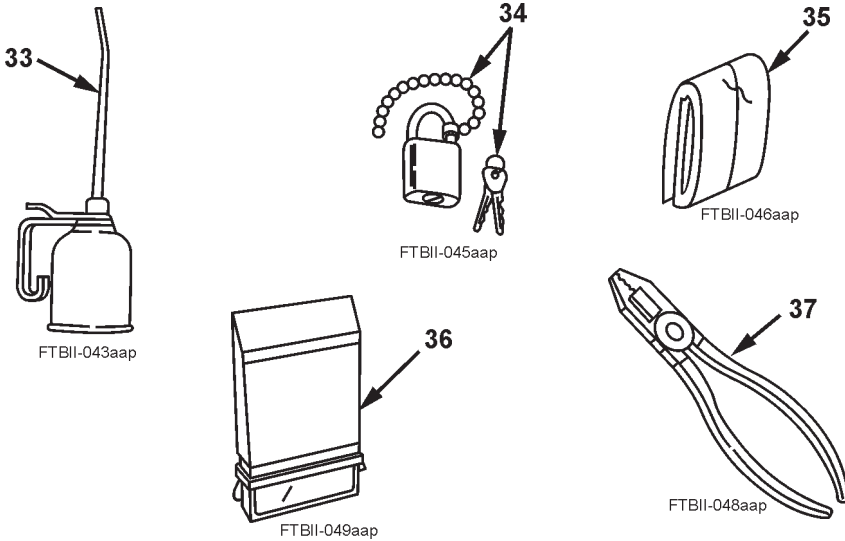


Table 2. Basic Issue Items List (continued)

| (1) ILLUS. NUMBER | (2) NATIONAL STOCK NUMBER | (3) DESCRIPTION, CAGEC, AND PART NUMBER | (4) U/M | (5) QTY. RQR. |
|-------------------------|---------------------------------|--|------------|---------------------|
| 33 | 4930-00-262-8868 | OILER, HAND (in satchel tool bag) (72798) 328 | EA | 1 |
| 34 | 5340-01-269-9345 | PADLOCK SET (in satchel tool bag) (96906) MS 21313-53 | EA | 1 |
| 35 | 8345-00-174-6865 | PANEL MARKER (in satchel tool bag) (64067) 8345-00-174-6865 | EA | 2 |
| 36 | 6650-01-418-6658 | PERISCOPE, ARMORED VEHICLE, M45 (in driver's stowage box) (19207) 12370033 | EA | 1 |
| 37 | 5120-00-239-8251 | PLIERS (in satchel tool bag) (72368) 1950 | EA | 1 |

BII LIST (continued)

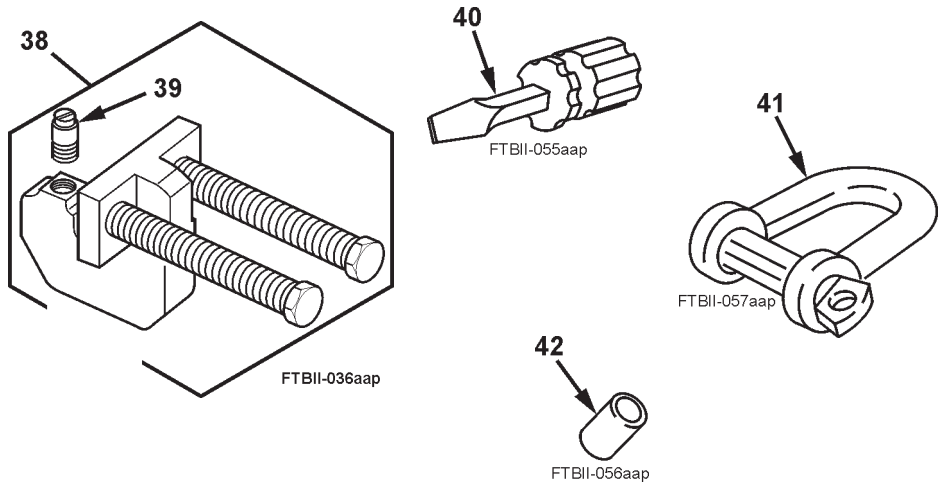


Table 2. Basic Issue Items List (continued)

| (1) ILLUS. NUMBER | (2) NATIONAL STOCK NUMBER | (3) DESCRIPTION, CAGEC, AND PART NUMBER | (4) U/M | (5) QTY. RQR. |
|-------------------------|---------------------------------|--|------------|---------------------|
| 38 | 5180-01-477-8120 | PULLER KIT, UNIVERSAL (in satchel tool bag) (19207) 57K3254, which consists of: | EA | 1 |
| 39 | 5315-01-501-3452 | PIN, SHOULDERED, HEADLESS (on puller) (19207) 12463249 | EA | 1 |
| 40 | 5120-00-596-8502 | SCREWDRIVER, FLAT TIP (in satchel tool bag) (96906) MS15221-2 | EA | 1 |
| 41 | 4030-01-397-7347 | SHACKLE (in satchel tool bag) (19207) 12438986 | EA | 1 |
| 42 | 5120-00-237-0984 | SOCKET, SOCKET WRENCH, 1/2-INCH, 1/2-INCH DRIVE (in satchel tool bag) (95683) 41W3007 | EA | 1 |

BII LIST (continued)

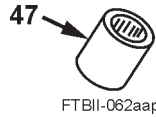
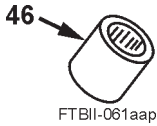
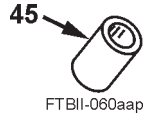
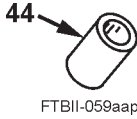


Table 2. Basic Issue Items List (continued)

| (1) ILLUS. NUMBER | (2) NATIONAL STOCK NUMBER | (3) DESCRIPTION, CAGEC, AND PART NUMBER | (4) U/M | (5) QTY. RQR. |
|-------------------------|---------------------------------|---|------------|---------------------|
| 43 | 5120-00-189-7932 | SOCKET, SOCKET WRENCH, 9/16-INCH, 1/2-INCH DRIVE (in satchel tool bag) (05506) ST-1218 | EA | 1 |
| 44 | 5120-00-189-7985 | SOCKET, SOCKET WRENCH, 3/4-INCH, 1/2-INCH DRIVE (in satchel tool bag) (19207) 11677025-4 | EA | 1 |
| 45 | 5120-00-189-7946 | SOCKET, SOCKET WRENCH, 5/8-INCH, 1/2-INCH DRIVE (in satchel tool bag) (05506) ST-1220 | EA | 1 |
| 46 | 5120-00-189-7934 | SOCKET, SOCKET WRENCH, 7/8-INCH, 1/2-INCH DRIVE (in satchel tool bag) (19207) 1167025-5 | EA | 1 |
| 47 | 5120-00-935-7425 | SOCKET, SOCKET WRENCH, 15/16-INCH, 1/2-INCH DRIVE (in satchel tool bag) (30106) A-30 | EA | 1 |

BII LIST (continued)

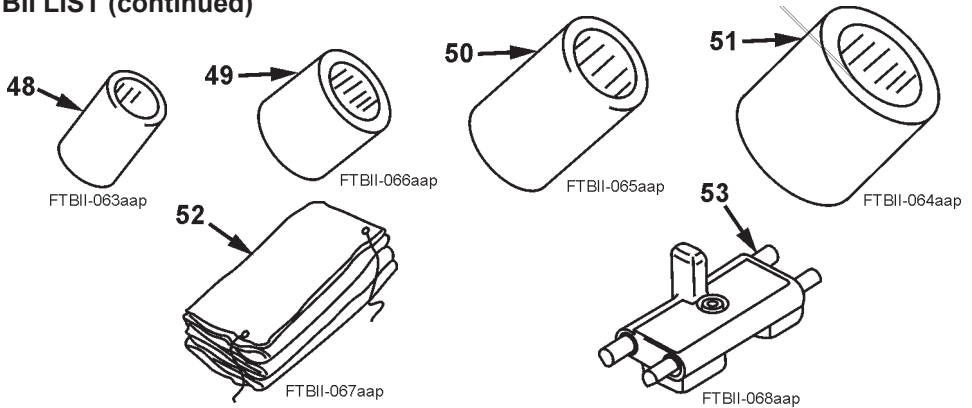


Table 2. Basic Issue Items List (continued)

| (1) ILLUS. NUMBER | (2) NATIONAL STOCK NUMBER | (3) DESCRIPTION, CAGEC, AND PART NUMBER | (4) U/M | (5) QTY. RQR. |
|-------------------------|---------------------------------|---|------------|---------------------|
| 48 | 5120-00-189-7927 | SOCKET, SOCKET WRENCH, 1-INCH, 1/2-INCH DRIVE (in satchel tool bag) (19207) 11677025-7 | EA | 1 |
| 49 | 5120-00-239-0021 | SOCKET, SOCKET WRENCH, 1-1/8 INCH, 3/4-INCH DRIVE (in satchel tool bag) (34871) FAC01027 | EA | 1 |
| 50 | 5120-00-235-5871 | SOCKET, SOCKET WRENCH, 1-1/4 INCH, 3/4-INCH DRIVE (in satchel tool bag) (28265) 3105A | EA | 1 |
| 51 | 5120-00-372-0094 | SOCKET, SOCKET WRENCH, 1-1/2 INCH, 3/4-INCH DRIVE (in satchel tool bag) (26848) 47148 | EA | 1 |
| 52 | 2540-00-653-7589 | TARPAULIN (under right-hand rear canister compartment) (19207) 6537589 | EA | 1 |
| 53 | 2530-01-346-9233 | TRACK SHOE ASSEMBLY, T-154 (exterior left-hand top front hull and battery access doors) (19207) 12268550-1 | EA | 4 |

BII LIST (continued)

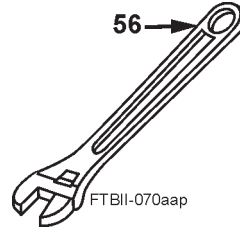
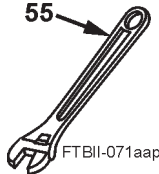
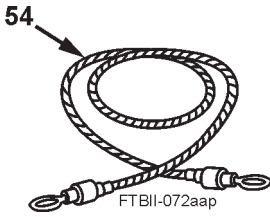


Table 2. Basic Issue Items List (continued)

| (1) ILLUS. NUMBER | (2) NATIONAL STOCK NUMBER | (3) DESCRIPTION, CAGEC, AND PART NUMBER | (4) U/M | (5) QTY. RQR. |
|-------------------------|---------------------------------|--|------------|---------------------|
| 54 | 4010-01-041-9752 | WIROPE ASSEMBLY, SINGLE LEG, 15-FOOT (on exterior surface of front cargo compartment plate) (19207) 7360553-1 | EA | 1 |
| 55 | 5120-00-240-5328 | WRENCH, ADJUSTABLE, 8-INCH (in satchel tool bag) (92878) 11655778-3 | EA | 1 |
| 56 | 5120-00-264-3796 | WRENCH, ADJUSTABLE, 12-INCH (in satchel tool bag) (19207) 11655778-5 | EA | 1 |

END OF WORK PACKAGE

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

ADDITIONAL AUTHORIZATION LIST (AAL)

INTRODUCTION

Scope

This Work Package lists additional items you are authorized for the support of the M992A2.

General

This list identifies items that do not have to accompany the M992A2 and do not have to be turned in with it. These items are all authorized to you by CTA 50-970.

Explanation of Columns in the AAL

Column (1) – NATIONAL STOCK NUMBER. Identifies the stock number of the item to be used for requisitioning purposes.

Column (2) – DESCRIPTION, CAGEC [Commercial and Government Entity Code], AND PART NUMBER. Identifies the Federal item name (in all capital letters) followed by a minimum description when needed. The last line below the description is the CAGEC (in parentheses) and the part number.

Column (3) – U/M [Unit of Measure]. Indicates the physical measurement or count of the item as issued, per the national stock number shown in column (1).

Column (4) – QTY. RECM. Indicates the quantity recommended.

ADDITIONAL AUTHORIZATION LIST (continued)

0068 00

| (1) NATIONAL STOCK NUMBER | (2) DESCRIPTION, CAGEC, AND PART NUMBER | (3) U/M | (4) QTY. RECM. |
|---------------------------------|--|------------|----------------------|
| 4930-00-288-1511 | ADAPTER, GREASE GUN (36251) 120349 | EA | 1 |
| 5895-01-119-9900 | AMPLIFIER, POWER SUPPLY GROUP OG-174 VRC (37695) 706672-801 | EA | 1 |
| 5110-00-293-2336 | AX, SINGLE BIT 6150925 | EA | 1 |
| 5120-00-526-6044 | BAR, PINCH (19204) 5266044 | EA | 1 |
| 6135-00-450-3528 | BATTERY, NONRECHARGEABLE, DRY (81349) BA3517U | EA | 1 |
| 6135-00-930-0030 | BATTERY, NONRECHARGEABLE, DRY (80058) BA3030U | EA | 4 |
| 2540-00-906-4741 | BOX, ACCESSORIES STOWAGE (19207) 10870949 | EA | 1 |
| 5140-00-261-4994 | CARRIER, TOOL (19207) 11655787 | EA | 1 |
| 1290-00-824-7245 | CASE, FUSE SETTER (19200) 8247245 | EA | 1 |
| 6665-01-105-5623 | CHEMICAL AGENT ALARM, M8A1 (81361) C5-15-8800 | EA | 1 |
| 5110-00-236-3272 | CHISEL, COLD, HAND (80244) GGG-C-313 TY4 CL1 | EA | 1 |
| 4230-01-133-4124 | DECONTAMINATION APPARATUS, M13 (81361) E5-51-527 | EA | 1 |

ADDITIONAL AUTHORIZATION LIST (continued)

0068 00

| (1) NATIONAL STOCK NUMBER | (2) DESCRIPTION, CAGEC, AND PART NUMBER | (3) U/M | (4) QTY. RECM. |
|---------------------------------|--|------------|----------------------|
| 6665-01-133-4964 | DETECTOR KIT, M256 | EA | 1 |
| 5120-00-227-8079 | EXTENSION, SOCKET WRENCH, 16-INCH, 3/4-INCH DRIVE (55719) L122 | EA | 1 |
| 5120-00-273-9208 | EXTENSION, SOCKET WRENCH, 3-INCH, 3/4-INCH DRIVE (55719) L32 | EA | 1 |
| 5110-00-241-9160 | FILE, HAND (19204) 41F1572 | EA | 1 |
| 5120-00-900-6097 | HAMMER, HAND (80244) GGG-H-86 TY10 CL1 | EA | 1 |
| 5120-00-288-6574 | HANDLE, MATTOCK PICK (19207) 11677021 | EA | 2 |
| 5120-00-241-3142 | HANDLE, SOCKET WRENCH, T-SLIDING (55719) 510 | EA | 1 |
| 5120-00-249-1071 | HANDLE, SOCKET WRENCH, NUT SPEEDER (58536) A-A-2166 | EA | 1 |
| 5120-00-230-6385 | HANDLE, SOCKET WRENCH, RATCHET (80064) 14U1502 | EA | 1 |
| 5120-00-099-8544 | HANDLE, SOCKET WRENCH, T-SLIDING (34871) FAC01022 | EA | 1 |
| 5110-00-222-0457 | HATCHET, CLAW (80244) GGG-H-131 TYB | EA | 1 |

ADDITIONAL AUTHORIZATION LIST (continued)

0068 00

| (1) NATIONAL STOCK NUMBER | (2) DESCRIPTION, CAGEC, AND PART NUMBER | (3) U/M | (4) QTY. RECM. |
|---------------------------------|---|------------|----------------------|
| 5120-00-224-4659 | KEY, SOCKET HEADSCREW, 1/4-INCH, HEX (80064) 1940720 | EA | 1 |
| 5120-00-240-5292 | KEY, SOCKET HEADSCREW, 1/8-INCH, HEX (55719) AW4 | EA | 1 |
| 5120-00-198-5392 | KEY, SOCKET HEADSCREW, 5/32-INCH, HEX (16786) P848000210 | EA | 1 |
| 5120-00-242-7410 | KEY, SOCKET HEADSCREW, 3/32-INCH, HEX (92674) BA27077-4 | EA | 1 |
| 5120-01-108-1729 | MAINTENANCE KIT, CB EQUIPMENT, M273 (81361) D5-15-8194 | EA | 1 |
| 5120-00-243-2395 | MATTOCK, PICK W/O HANDLE (19207) 11677022 | EA | 1 |
| 7310-01-387-1305 | MOUNTED WATER RATION HEATER (MWRH) (98308) MIL-H-44466 | EA | 1 |
| 5120-00-194-9458 | PICK, DIGGING, RAILROAD W/O HANDLE (58536) A-A-338 | EA | 1 |
| 5315-00-861-1473 | PIN, LOCK (19206) 8767184 | EA | 1 |
| 5120-00-223-7397 | PLIERS, SLIP JOINT, COMB. SLIP JOINT, W/CUTTER (8Z799) PL-8 | EA | 1 |

ADDITIONAL AUTHORIZATION LIST (continued)

0068 00

| (1) NATIONAL STOCK NUMBER | (2) DESCRIPTION, CAGEC, AND PART NUMBER | (3) U/M | (4) QTY. RECM. |
|---------------------------------|---|------------|----------------------|
| 5825-01-374-6643 | PRECISIONLIGHTWEIGHTGLOBAL POSITIONINGSYSTEM(GPS)RECEIVER (PLGR) (80058) AN/PSN-11 | EA | 1 |
| 5120-00-293-0791 | PUNCH,DRIVE PIN (80244) TY8 CLA 5T1SZ5 | EA | 1 |
| 5820-01-079-9260 | RADIOSET (35643) AN/PRC 68 | EA | 1 |
| 4933-00-796-4537 | ROLL ASSEMBLY, TOOL (19207) 7964537 | EA | 1 |
| 5120-00-234-5223 | RULE,STEEL MACHINIST'S (57163) C604R-6 | EA | 1 |
| 5120-00-236-2127 | SCREWDRIVER,FLAT TIP,3-INCH (89905) 133690-10 | EA | 1 |
| 5120-00-278-1283 | SCREWDRIVER,FLAT TIP,6-INCH (19207) 41S1104 | EA | 1 |
| 5120-00-227-7338 | SCREWDRIVER,FLAT TIP,5-INCH (77948) D339 | EA | 1 |
| 5120-00-188-8450 | SHOVEL,HAND,GENERAL PURPOSE, LGHANDLE (80244) TY4 CLB ST1SZ2 | EA | 1 |
| 5120-00-293-3336 | SHOVEL,HAND (19207) 11655784 | EA | 1 |
| 5120-00-189-7931 | SOCKET,SOCKET WRENCH,1-7/16 INCH, 3/4-INCHDRIVE (58536) A-A-1394 | EA | 1 |

ADDITIONAL AUTHORIZATION LIST (continued)

0068 00

| (1) NATIONAL STOCK NUMBER | (2) DESCRIPTION, CAGEC, AND PART NUMBER | (3) U/M | (4) QTY. RECM. |
|---------------------------------|--|------------|----------------------|
| 5120-00-189-7930 | SOCKET, SOCKET WRENCH, 1-3/8 INCH, 3/4-INCH DRIVE (19204) TKEX 3BU | EA | 1 |
| 5120-00-232-5681 | SOCKET, SOCKET WRENCH, 1-5/16 INCH, 3/4-INCH DRIVE (34871) FAC0140 | EA | 1 |
| 5120-00-189-7913 | SOCKET, SOCKET WRENCH, 1-1/16 INCH, 1/2-INCH DRIVE (05506) ST-1234 | EA | 1 |
| 5130-00-221-8007 | SOCKET, SOCKET WRENCH, 9/16-INCH, 1/2-INCH DRIVE (47805) IP180 | EA | 1 |
| 5120-00-189-7924 | SOCKET, SOCKET WRENCH, 7/16-INCH, 1/2-INCH DRIVE, MANUAL (05506) ST-1214 | EA | 1 |
| 5130-00-221-8005 | SOCKET, SOCKET WRENCH, 7/16-INCH, 1/2-INCH DRIVE, POWER (05506) IM140 | EA | 1 |
| 5120-00-189-7911 | SOCKET, SOCKET WRENCH, 3/8-INCH, 1/2-INCH DRIVE (8Z799) ST-812 | EA | 1 |
| 5120-00-189-7914 | SOCKET, SOCKET WRENCH, 1-1/8 INCH, 1/2-INCH DRIVE (05506) ST-1230 | EA | 1 |
| 7310-01-310-5155 | STOVE, MULTIFUEL BURNER (81349) MIL-S-44344 | EA | 1 |

ADDITIONAL AUTHORIZATION LIST (continued)

0068 00

| (1) NATIONAL STOCK NUMBER | (2) DESCRIPTION, CAGEC, AND PART NUMBER | (3) U/M | (4) QTY. RECM. |
|---------------------------------|---|------------|----------------------|
| 5120-00-269-7971 | UNIVERSAL JOINT SOCKET, 1/2-INCH DRIVE (53711) 5166189 | EA | 1 |
| 4010-00-202-2425 | WIRE ROPE ASSEMBLY (10-FOOT) (19207) 7360553 | EA | 1 |
| 5120-00-277-7025 | WRENCH, OPEN END, 15/16 X 1 INCH (19207) 11655789-5 | EA | 1 |
| 5120-00-187-7130 | WRENCH, OPEN END, 13/16 X 7/8 INCH (03914) 26-133 | EA | 1 |
| 5120-00-224-3102 | WRENCH, OPEN END, 5/8 X 3/4 INCH (58536) A-A-1356 | EA | 1 |
| 5120-00-293-2134 | WRENCH, OPEN END, 9/16 X 11/16 INCH (19207) 5323330 | EA | 1 |
| 5120-00-187-7123 | WRENCH, OPEN END, 7/16 X 1/2 INCH (14674) E1416 | EA | 1 |
| 5120-00-277-2307 | WRENCH, OPEN END, 5/16 X 3/8 INCH (95683) 41W1176-10 | EA | 1 |
| 5120-00-264-3777 | WRENCH, SPANNER, ADJUSTABLE FACE PIN (8Z799) 484 | EA | 1 |
| 5120-00-277-9076 | WRENCH, SPANNER, ADJUSTABLE HOOK (19207) 5218469 | EA | 1 |

END OF WORK PACKAGE

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

EXPENDABLE AND DURABLE ITEMS LIST

INTRODUCTION

Scope

This Work Package lists expendable and durable items that you will need to operate and maintain the M992A2. This listing 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), or CTA 8-100, Army Medical Department Expendable/Durable Items.

Explanation of Columns

Column (1) – ITEM NUMBER. This number is assigned to the entry in the list and is referenced in the narrative instructions to identify the item (e.g., "Use cleaning compound, Item 7, WP 0069 00)."

Column (2) – LEVEL. This column identifies the lowest level of maintenance that requires the listed item: C = Operator/Crew.

Column (3) – NATIONAL STOCK NUMBER. This is the national stock number assigned to the item, which you can use to requisition it.

Column (4) – ITEM NAME, DESCRIPTION, CAGEC [Commercial and Government Entity Code], AND PART NUMBER. This column provides the other information you need to identify the item.

Column (5) – U/M [Unit of Measure]. This code shows the physical measurement or count of an item: BE (bale), CN (can), DR (drum), EA (each), GL (gallon), HD (hundred), KT (kit), LB (pound), OZ (ounce), PG (package), PT (pint), QT (quart), RL (roll), and TU (tube).

TM9-2350-372-10

EXPENDABLE AND DURABLE ITEMS LIST

0069 00

| (1) ITEM NUMBER | (2) LEVEL | (3) NATIONAL STOCK NUMBER | (4) ITEM NAME, DESCRIPTION, CAGEC, AND PART NUMBER | (5) U/M |
|-----------------------|--------------|---------------------------------|--|------------|
| 1 | C | 8040-00-262-9025 | ADHESIVE 8-OZ TUBE (81349) MMM-A-1617 | OZ |
| 2 | C | 6850-01-441-3218 | ANTIFREEZE, 1-GAL. CAN (58536) A-A-52624 | GL |
| 3 | C | 6850-01-441-3221 | ANTIFREEZE, 5-GAL. CAN (58536) A-A-52624 | GL |
| 4 | C | 6850-01-441-3248 | ANTIFREEZE, 55-GAL. DRUM (58536) A-A-52624 | DR |
| 5 | C | 9150-01-054-6453 | CLEANER, LUBRICANT AND PRESERVATIVE, 1-PT SPRAY BOTTLE, (81349) MIL-PRF-63460 | PT |
| 6 | C | 6850-00-598-7328 | CLEANING COMPOUND, ENGINE COOLING SYSTEM (81349) MIL-C-10597 | KT |
| 7 | C | 6850-00-227-1887 | CLEANING COMPOUND, OPTICAL LENS, 1-QT BOTTLE (58536) A-A-59199 | QT |
| 8 | C | 6850-00-224-6665 | CLEANING COMPOUND, SOLVENT, 5-GAL. CAN (81349) MIL-PRF-11090 | CN |
| 9 | C | 6850-01-474-2302 | CLEANING COMPOUND, SOLVENT, 5-GAL. CAN, TYPE 1 (81349) MIL-PRF-680 | GL |
| 10 | C | 6850-01-474-2309 | CLEANING COMPOUND SOLVENT, 5-GAL. CONTAINER, TYPE 1 (81349) MIL-PRF-680 | GL |

TM9-2350-372-10

EXPENDABLE AND DURABLE ITEMS LIST (continued)

0069 00

| (1) ITEM NUMBER | (2) LEVEL | (3) NATIONAL STOCK NUMBER | (4) ITEM NAME, DESCRIPTION, CAGEC, AND PART NUMBER | (5) U/M |
|-----------------------|--------------|---------------------------------|--|------------|
| 11 | C | 6850-00-224-6657 | CLEANING COMPOUND, RIFLE BORE, 8-OZ CAN (81349) MIL-PRF-372 | CN |
| 12 | C | 6850-00-224-6663 | CLEANING COMPOUND, RIFLE BORE, 1-GAL. CAN (81349) MIL-PRF-372 | GL |
| 13 | C | 5350-00-221-0872 | CLOTH, ABRASIVE, 50 SHEETS (80204) ANSI B74.18 | PG |
| 14 | C | 5610-00-141-7838 | COATING COMPOUND, NONSLIP, 1-GAL. CAN, CLASS 1 OLIVE DRAB, TYPE 2 (58536) A-A-59166 | CN |
| 15 | C | 8030-00-231-2345 | CORROSION PREVENTIVE COMPOUND, 1-GAL. CAN, CLASS 1, GRADE 1 (81349) MIL-C-16173 | CN |
| 16 | C | 8030-00-065-0957 | CORROSION RESISTANT COAT- ING, CHEMICALLY TREATED, 1-QT BOTTLE (81349) MIL-C-81706 | QT |
| 17 | C | 6850-01-039-3842 | DEICING-DEFROSTING AND ANTI-ICING FLUID, 5-GAL. CAN, TYPE 2 (81349) MIL-A-8243 | CN |
| 18 | C | 6550-01-310-1677 | DISTILLED WATER, REAGENT, 4-GAL. (07TA6) C4350-1A | PG |

TM9-2350-372-10

EXPENDABLE AND DURABLE ITEMS LIST (continued)

0069 00

| (1) ITEM NUMBER | (2) LEVEL | (3) NATIONAL STOCK NUMBER | (4) ITEM NAME, DESCRIPTION, CAGEC, AND PART NUMBER | (5) U/M |
|-----------------------|--------------|---------------------------------|--|------------|
| 19 | C | 8010-00-527-2050 | ENAMEL, GLOSS, BLACK, 1-GAL. CAN (80244) MPI 9-GLOSS | GL |
| 20 | C | 8010-00-527-2053 | ENAMEL GLOSS, BLACK, 1-QT CAN (80244) MPI 9-GLOSS | QT |
| 21 | C | 8010-00-664-7653 | ENAMEL, GLOSS, WHITE, 1-GAL. CAN (81348) TT-E-489 | GL |
| 22 | C | 8010-01-088-0094 | ENAMEL, SEMIGLOSS, OLIVE DRAB, 1-QT CAN (81348) TT-E-485 | QT |
| 23 | C | 8010-00-297-2105 | ENAMEL, SEMIGLOSS, OLIVE DRAB, 1-GAL. CAN (81348) TT-E-485 | GL |
| 24 | C | 9110-00-391-7813 | FUEL, JELLIED ALCOHOL, 2.625-OZ CAN (50616) 4006 | CN |
| 25 | C | 9150-01-197-7693 | GREASE, AUTOMOTIVE AND ARTILLERY (GAA), 14-OZ CARTRIDGE (81349) MIL-PRF-10924 | OZ |
| 26 | C | 9150-01-197-7690 | GREASE, AUTOMOTIVE AND ARTILLERY (GAA), 1.75-LB CAN (81349) MIL-PRF-10924 | LB |
| 27 | C | 9150-01-197-7689 | GREASE, AUTOMOTIVE AND ARTILLERY (GAA), 6.5-LB CAN (81349) MIL-PRF-10924 | LB |

EXPENDABLE AND DURABLE ITEMS LIST (continued)

0069 00

| (1) ITEM NUMBER | (2) LEVEL | (3) NATIONAL STOCK NUMBER | (4) ITEM NAME, DESCRIPTION, CAGEC, AND PART NUMBER | (5) U/M |
|-----------------------|--------------|---------------------------------|--|------------|
| 28 | C | 9150-01-326-5424 | GREASE, MOLYBDENUM DISULFIDE, 14-OZ CARTRIDGE (39428) 1062K97 | OZ |
| 29 | C | 9150-00-189-6727 | LUBRICATING OIL, ENGINE 10W, 1-QT CAN (81349) MIL-PRF-2104 | QT |
| 30 | C | 9150-00-186-6668 | LUBRICATING OIL, ENGINE 10W, 5-GAL. CAN (81349) MIL-PRF-2104 | GL |
| 31 | C | 9150-00-402-4478 | LUBRICATING OIL, ENGINE, 1-QT CAN (81349) MIL-PRF-46167 | QT |
| 32 | C | 9150-00-402-2372 | LUBRICATING OIL, ENGINE, 5-GAL. CAN (81349) MIL-PRF-46167 | CN |
| 33 | C | 9150-00-186-6681 | LUBRICATING OIL, ENGINE 30W, 1-QT CAN (81349) MIL-PRF-2104 | QT |
| 34 | C | 9150-00-188-9858 | LUBRICATING OIL, ENGINE 30W, 5-GAL. CAN (81349) MIL-PRF-2104 | GL |
| 35 | C | 9150-00-231-2361 | LUBRICATING OIL, GENERAL PURPOSE, 1-QT CAN (81349) MIL-PRF-3150 | QT |
| 36 | C | 9150-00-231-6689 | LUBRICATING OIL, GENERAL PURPOSE, 1-QT CAN (81349) MIL-PRF-32033 | QT |

TM9-2350-372-10

EXPENDABLE AND DURABLE ITEMS LIST (continued)

006900

| (1) ITEM NUMBER | (2) LEVEL | (3) NATIONAL STOCK NUMBER | (4) ITEM NAME, DESCRIPTION, CAGEC, AND PART NUMBER | (5) U/M |
|-----------------------|--------------|---------------------------------|--|------------|
| 37 | C | 9150-00-231-2356 | LUBRICATING OIL, GENERAL PURPOSE, 5-GAL. CAN (81349) MIL-PRF-3150 | CN |
| 38 | C | 9150-00-231-9062 | LUBRICATING OIL, GENERAL PURPOSE, 5-GAL. CAN (81349) MIL-PRF-32033 | GL |
| 39 | C | 6640-00-285-4694 | PAPER, LENS, 100 SHEET (81348) NNN-P-40 | HD |
| 40 | C | 9150-00-250-0926 | PETROLATUM, TECHNICAL, 1.75-LB CAN (81348) VV-P-236 | CN |
| 41 | C | 9150-00-250-0933 | PETROLATUM, TECHNICAL, 7.5-LB CAN (81348) VV-P-236 | CN |
| 42 | C | 7920-00-205-1711 | RAG, WIPING, 50-LB BALE (80244) 7920-00-205-1711 | BE |
| 43 | C | 8030-00-551-1059 | SEALING COMPOUND, 3-OZ TUBE (81349) MIL-S-45180 | TU |
| 44 | C | 8030-00-252-3391 | SEALING COMPOUND, 11-OZ TUBE (81349) MIL-S-45180 | TU |
| 45 | C | 8030-00-889-3535 | TAPE, ANTISEIZING, 1/2-INCH WIDE (58536) A-A-58092 | RL |



EXPENDABLE AND DURABLE ITEMS LIST (continued)

0069 00

| (1) ITEM NUMBER | (2) LEVEL | (3) NATIONAL STOCK NUMBER | (4) ITEM NAME, DESCRIPTION, CAGEC, AND PART NUMBER | (5) U/M |
|-----------------------|--------------|---------------------------------|---|------------|
| 46 | C | 8010-00-242-2089 | THINNER, PAINT PRODUCTS, 1-GAL. CAN (58536) A-A-2904 | CN |
| 47 | C | 8010-00-558-7026 | THINNER, PAINT PRODUCTS, 5-GAL. PAIL (58536) A-A-2904 | EA |

END OF WORK PACKAGE

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

LUBRICATION INSTRUCTIONS

NOTE

All operations contained in this appendix are mandatory.

SCOPE

The "Lubrication Instructions" supporting information consists of two work packages: 0070 00 and 0071 00. These work packages list all Operator/Crew lubrication instructions to be performed on the M992A2. Intervals (on condition or hard time) and the related man-hour times are based on normal operation. The man-hour time specified is the time you need to do all services prescribed for a particular interval. Decrease the intervals if your lubricants are contaminated or if you are operating equipment under adverse conditions, including longer than usual operating hours. The intervals may be extended during periods of low activity. If extended, adequate preservation precautions must be taken.

On-condition (OC) intervals shall be determined by the Army Oil Analysis Program (AOAP) laboratory and shall apply unless otherwise notified. Hard-time intervals will apply in the event AOAP support is unavailable.

WARNING

Solvent cleaning compound is an environmentally compliant product and is low in toxicity. However, it may be irritating to the eyes and skin due to its base stock. The use of protective gloves and goggles is required. Use the solvent cleaning compound in well-ventilated areas and keep away from open flames and other sources of ignition.

Clean all fittings and areas around lubrication points with solvent cleaning compound (Item 9, p. 0069 00-2), or equivalent, before lubricating equipment. After lubrication, wipe off excess oil or grease to prevent accumulation of foreign matter.

SCOPE (continued)

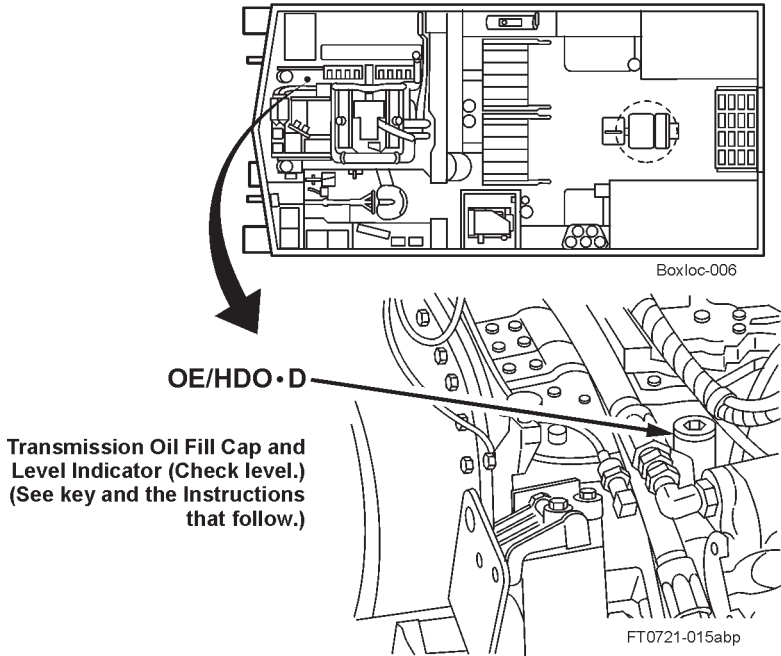
The lubrication services to be performed on the M992A2 are as follows:

1. Transmission Oil Level Check
2. Speedometer Adapter Housing
3. Final Drive Universal Joints
4. Final Drive Breathers
5. Main Engine Crankcase Oil Level
6. Auxiliary Power Unit (APU) Crankcase Oil Level Check
7. Driver's Seat Moving Parts
8. Roadwheel Arms (WP 0071)
9. Idler Wheel Housing
10. Roadwheel and Idler Wheel Hubs
11. Final Drive Level Check
12. Final Drive Drain and Refill
13. Towing Pintle
14. Track Adjuster
15. Door Hold-Open Latches
16. Left Rear Door Lanyard Latch
17. Towing Cable
18. Transmission/Main Engine AOAP Sampler Valves
19. Main Engine Crankcase Drain
20. Oil Can Points

These lubrications services are described on the following pages in the order listed above.

1. TRANSMISSION OIL LEVEL CHECK

LUBRICANT • INTERVAL



| INTERVAL | MAN-HOURS* |
|--------------|------------|
| D | 0.3 |
| A | 0.1 |
| 25 H or 30 D | 0.1 |

* The man-hour time specified is the time you need to do all the services prescribed.

1. TRANSMISSION OIL LEVEL CHECK (continued)

- KEY -

| Lubricants | Capacities | Expected Temperatures | | | Intervals |
|---|--------------------|----------------------------|-----------------------------------|-----------------------------------|--|
| | | Above 15°F (Above -9°C) | +40°F to -10°F (+4°C to -23°C) | +40°F to -65°F (+4°C to -54°C) | |
| OE/HDO (MIL-PRF-2104) LUBRICATING OIL, Internal Combustion Engine, Tactical Service OEA (MIL-PRF- 46167) LU- BRICATING OIL, Internal Combustion Engine, Arctic | | | | | Intervals are as follows: H - Hour D - Day; Daily A - Annually Intervals are based on normal hours of operation and moderate operating conditions. |
| Transmission | 48 qt (45.43 L) | OE/HDO 15W40 | OE/HDO 15W40 | OEA | |

WARNING

While performing engine warm-up, make sure personnel stand well clear of vehicle. Vehicle may move suddenly, causing severe injury or death to personnel.

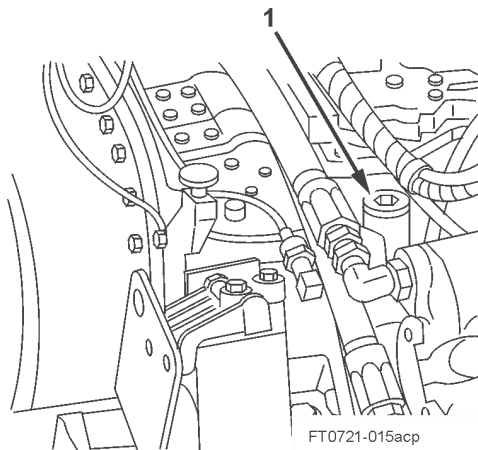
CAUTION

Do not check oil with engine running. Do not overfill.

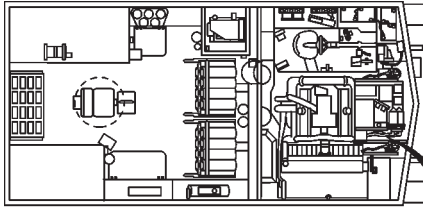
1. TRANSMISSION OIL LEVEL CHECK (continued)**NOTE**

- Make sure vehicle is parked on level ground before checking transmission oil level.
- Transmission and engine contain preservative oil upon receipt. Preservative engine oils PE1 and PE2 are identical to engine oil OE-40, except they contain a preservative additive. PE1 and PE2 will be used in the same manner as the regularly used engine oil OE-40. PE1 and PE2 will also be used in the transmission until the first scheduled 2000-mile or semiannual oil change.

Check oil level before starting engine. Oil level indicator must be within "OPERATING RANGE" stamped on dipstick and filler cap (1). Add or drain oil (see key for required type) as required. Block vehicle tracks. With brakes applied and transmission in fourth gear, run engine at 1600-1900 rpm to warm the transmission oil. When transmission oil temperature gage reads over 180°F (82°C), run engine at 1200-1600 rpm for one to three minutes with transmission in neutral (N). After this period of time, oil temperature should stabilize between 180°F and 220°F (82°C and 104°C). Stop engine, wait three to five minutes, then check oil level.

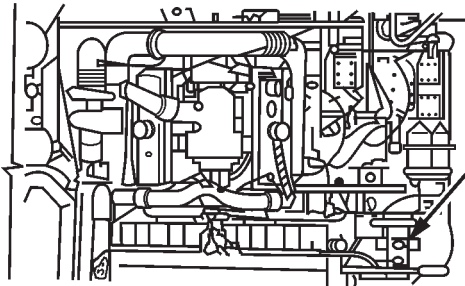


2. SPEEDOMETER ADAPTER HOUSING



BOXLOC-06-129

INTERVAL • LUBRICANT



FTOLOC-185aap

S • GAA

Speedometer Adapter Housing (See key and the instructions that follow.)

| INTERVAL | MAN-HOURS* |
|----------|------------|
| S | 0.1 |

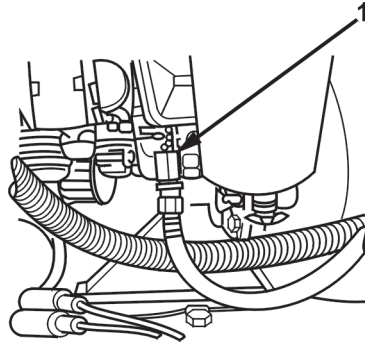
* The man-hour time specified is the time you need to do all the services prescribed.

-KEY-

| Lubricants | Expected Temperatures | | | Intervals |
|---|----------------------------|-----------------------------------|-----------------------------------|--|
| | Above 15°F (Above -9°C) | +40°F to -10°F (+4°C to -23°C) | +40°F to -65°F (+4°C to -54°C) | |
| GAA (MIL-PRF-10924) GREASE, Automotive and Artillery | All Temperatures | | | Intervals are as follows: S - Semiannually Intervals are based on normal hours of operation and moderate operating conditions. |

2. SPEEDOMETER ADAPTER HOUSING (continued)

Use a grease gun to inject GAA at fitting (1) on speedometer adapter housing.

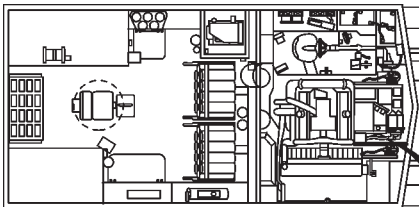


FT4701-009aap

3. FINAL DRIVE UNIVERSAL JOINTS

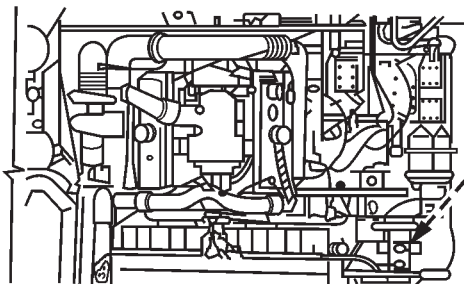
NOTE

Dotted leader line on the illustration indicates that lubrication is required on both sides of the vehicle.



BOXLOC-06-129

INTERVAL • LUBRICANT



FTOLOC-185abp

S • GAA

Final Drive Universal Joints (Lubricate two fittings on each side of vehicle.) (See key and the instructions that follow.)

3. FINAL DRIVE UNIVERSAL JOINTS (continued)

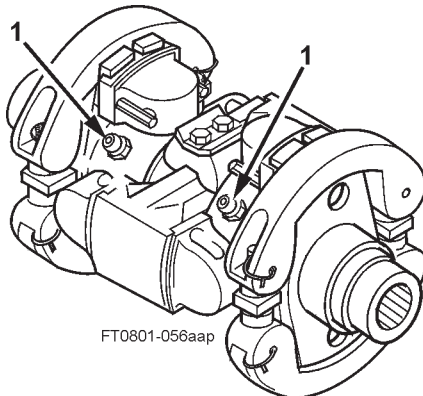
| INTERVAL | MAN-HOURS* |
|----------|------------|
| S | 0.3 |

* The man-hour time specified is the time you need to do all the services prescribed.

- KEY -

| Lubricants | Expected Temperatures | | | Intervals |
|---|----------------------------|-----------------------------------|-----------------------------------|--|
| | Above 15°F (Above -9°C) | +40°F to -10°F (+4°C to -23°C) | +40°F to -65°F (+4°C to -54°C) | |
| GAA (MIL-PRF-10924) GREASE, Automotive and Artillery | All Temperatures | | | Intervals are as follows: S - Semiannually Intervals are based on normal hours of operation and moderate operating conditions. |

Lubricate two fittings (1) on each side of vehicle with GAA. Rotate universal joints to reach fittings.

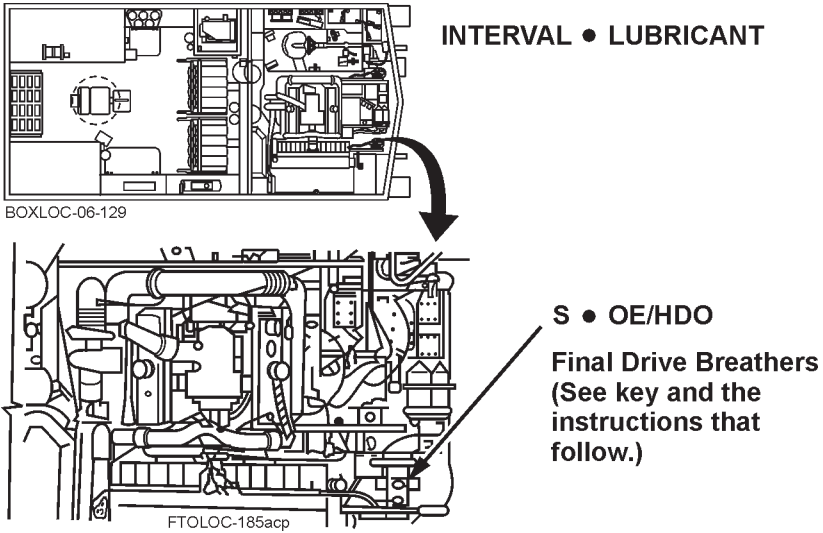


UNIVERSAL JOINT
REMOVED FOR CLARITY

4. FINAL DRIVE BREATHERS

NOTE

Dotted leader line on the illustration indicates that lubrication is required on both sides of the vehicle.



| INTERVAL | MAN-HOURS* |
|----------|------------|
| S | 0.4 |

* The man-hour time specified is the time you need to do all the services prescribed.

-KEY-

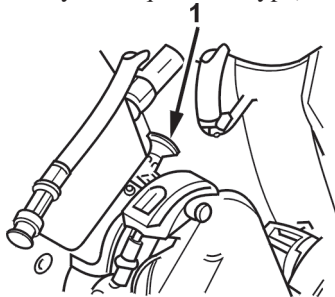
| Lubricants | Expected Temperatures | | | Intervals |
|---|----------------------------|-----------------------------------|-----------------------------------|--|
| | Above 15°F (Above -9°C) | +40°F to -10°F (+4°C to -23°C) | +40°F to -65°F (+4°C to -54°C) | |
| OE/HDO (MIL-PRF-2104) LUBRICATING OIL, Internal Combustion Engine, Tactical Service | | | | Intervals are as follows: S - Semiannually Intervals are based on normal hours of operation and moderate operating conditions. |
| OEA (MIL-PRF-46167) LUBRICATING OIL, Internal Combustion Engine, Artic | OE/HDO 15W40 | OE/HDO 15W40 | OEA | |

4. FINAL DRIVE BREATHERS (continued)

WARNING

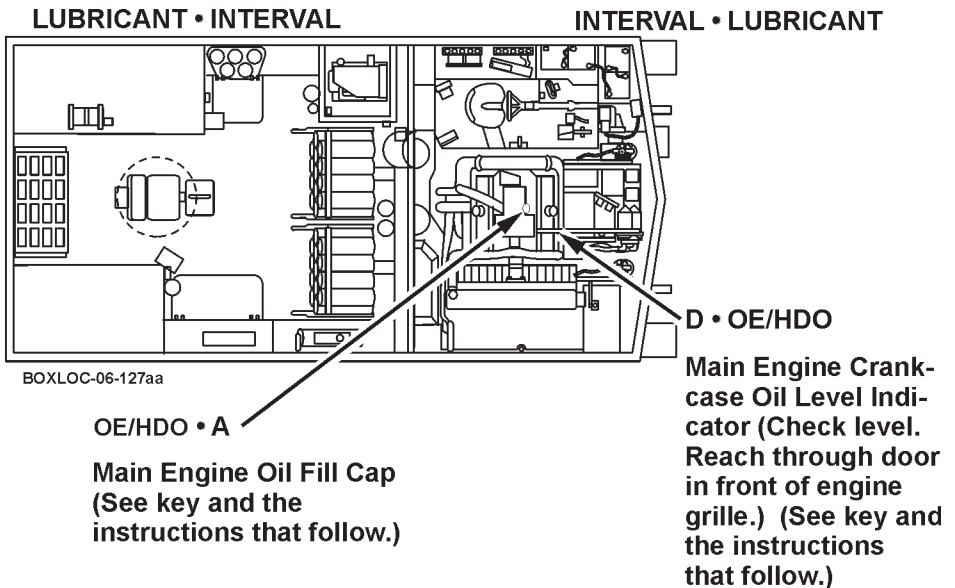
Solvent cleaning compound is an environmentally compliant product and is low in toxicity. However, it may be irritating to the eyes and skin due to its base stock. The use of protective gloves and goggles is required. Use the solvent cleaning compound in well-ventilated areas and keep away from open flames and other sources of ignition.

Remove both breathers (1). Clean with solvent cleaning compound (Item 9, p. 0069 00-2). Dry, dip in oil, and install (see key for required oil type).



FT0801-047aap

5. MAIN ENGINE CRANKCASE OIL LEVEL



5. MAIN ENGINE CRANKCASE OIL LEVEL (continued)

| INTERVAL | MAN-HOURS* |
|----------|------------|
| D | 0.2 |
| A | 0.1 |

*The man-hour time is the time you need to do all the services prescribed.

-KEY-

| Lubricants | Capacities | Expected Temperatures | | | Intervals |
|---|--------------------|----------------------------|-----------------------------------|-----------------------------------|--|
| | | Above 15°F (Above -9°C) | +40°F to -10°F (+4°C to -23°C) | +40°F to -65°F (+4°C to -54°C) | |
| OE/HDO (MIL-PRF-2104) LUBRICATING OIL, Internal Combustion Engine, Tactical Service OEA (MIL-PRF- 46167) LU- BRICATING OIL, Internal Combustion Engine, Arctic | | | | | Intervals are as follows: H - Hour D - Day; Daily A - Annually Intervals are based on normal hours of operation and moderate operating conditions. |
| Engine Crankcase | 27 qt (25.55 L) | OE/HDO 15W40 | OE/HDO 15W40 | OEA | |

WARNING

While performing engine warm-up, make sure personnel stand well clear of vehicle. Vehicle may move suddenly, causing severe injury or death to personnel.

CAUTION

Do not check oil when engine is running. Do not overfill.

5. MAIN ENGINE CRANKCASE OIL LEVEL (continued)

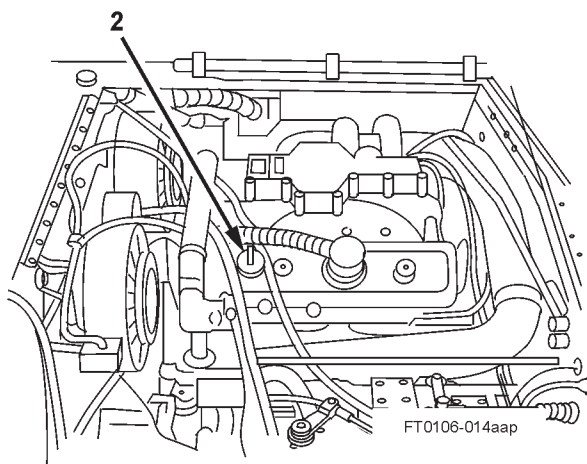
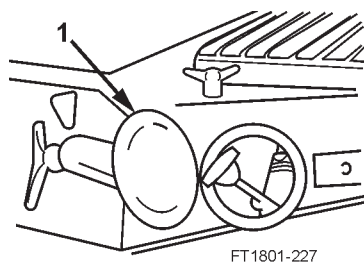
NOTE

- Make sure vehicle is parked on level ground before checking main engine crankcase oil level.
- Transmission and engine contain preservative oil upon receipt. Preservative engine oils PE1 and PE2 are identical to engine oil OE-40, except they contain a preservative additive. PE1 and PE2 will be used in the same manner as the regularly used engine oil OE-40. PE1 and PE2 will also be used in the transmission until the first scheduled 2000-mile or semiannual oil change.

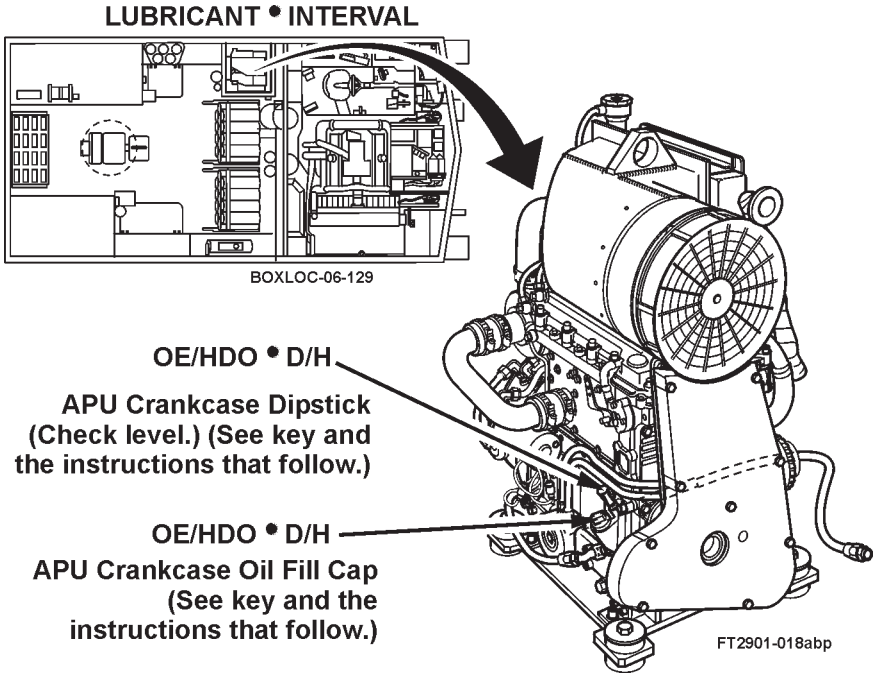
Before starting engine, open oil level access door (1) and check to ensure that oil level is at least to, or above, the low (L) mark on the dipstick. If not, add oil to bring level to above L mark on dipstick (see key for required oil type). Check for hydrostatic lock. Start engine. Warm up engine to normal operating temperature. Stop engine and wait three to five minutes. Check oil level again. If oil is within OPERATING RANGE (between L and the full (F) mark on the dipstick), do not add oil. If oil level is below the L mark, add oil to within upper limits of OPERATING RANGE on dipstick (see key for required oil type). Main engine oil fill cap (2) is in engine compartment.

NOTE

After an overnight stand, oil level may be from 3/4 to 1 inch above F mark on the dipstick. This is not abnormal. However, if oil level is more than 1 inch above the F mark have engine checked for internal coolant or fuel oil leaks.



6. AUXILIARY POWER UNIT (APU) CRANKCASE OIL LEVEL CHECK



| INTERVAL | MAN-HOURS* |
|----------|------------|
| D or 15H | 0.1 |

*The man-hour time is the time you need to do all the services prescribed.

6. APU CRANKCASE OIL LEVEL CHECK (continued)

-KEY-

| Lubricants | Capacities | Expected Temperatures | | | Intervals |
|---|-------------------|----------------------------|-----------------------------------|-----------------------------------|---|
| | | Above 15°F (Above -9°C) | +40°F to -10°F (+4°C to -23°C) | +40°F to -65°F (+4°C to -54°C) | |
| OE/HDO (MIL-PRF-2104) LUBRICATING OIL, Internal Combustion Engine, Tactical Service OEA (MIL-PRF- 46167) LU- BRICATING OIL, Internal Combustion Engine, Arctic | | | | | Intervals are as follows: D - Day; Daily H - Hours Intervals are based on normal hours of operation and moderate operating conditions. |
| APU Crankcase | 4.5 qt (4.1 L) | OE/HDO 15W40 | OE/HDO 15W40 | OEA | Daily or every 15 hours of APU operation |

CAUTION

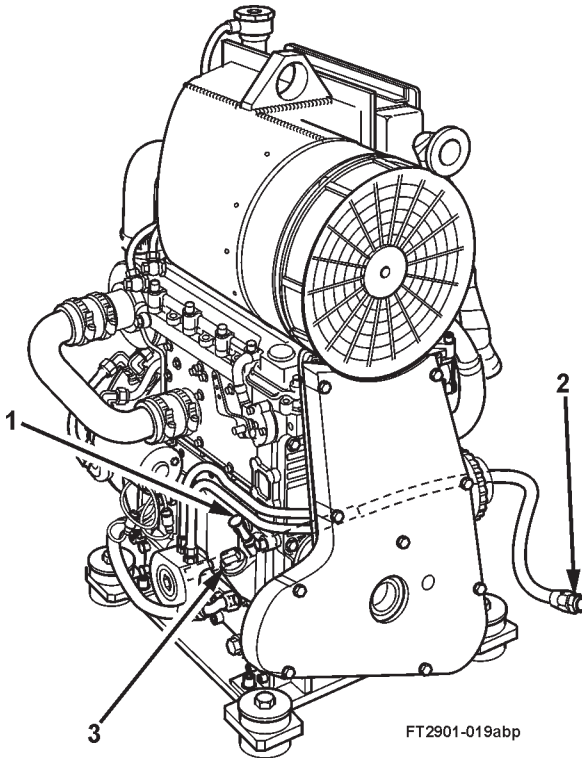
Do not check oil when engine is running. Do not overfill.

NOTE

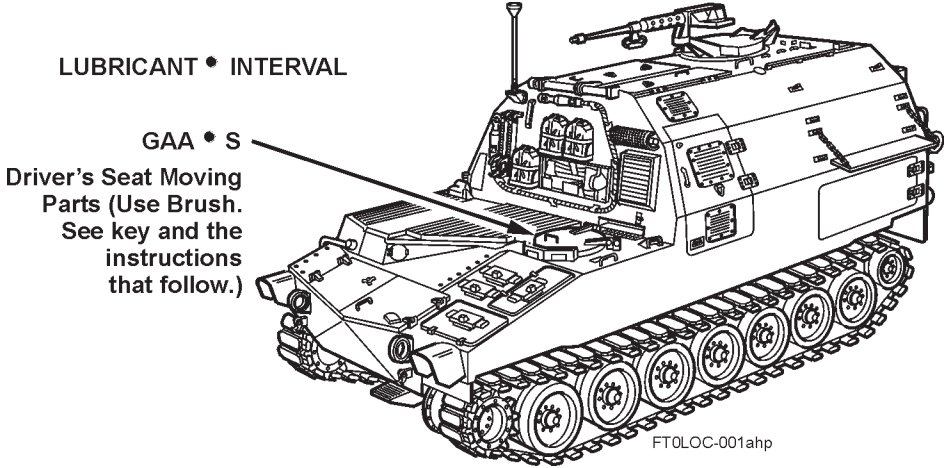
Make sure vehicle is parked on level ground before checking APU crankcase oil level.

6. APU CRANKCASE OIL LEVEL CHECK (continued)

1. Open front APU compartment door.
2. Remove oil level dipstick (1) and wipe with clean rag. Reinsert dipstick (1) and remove it again. Observe oil level indicated on dipstick (1).
3. If oil level reads below max mark, remove APU crankcase oil fill cap (3) and add oil until level rises to max mark (see key for required oil type).
4. Install APU crankcase oil fill cap (3) and dipstick (1).
5. Remove drain plug (2) and drain oil if needed.
6. After 250 hours of APU operation, drain APU crankcase oil and replace oil filter. Notify Unit maintenance.



7. DRIVER'S SEAT MOVING PARTS



| INTERVAL | MAN-HOURS* |
|----------|------------|
| S | 0.1 |

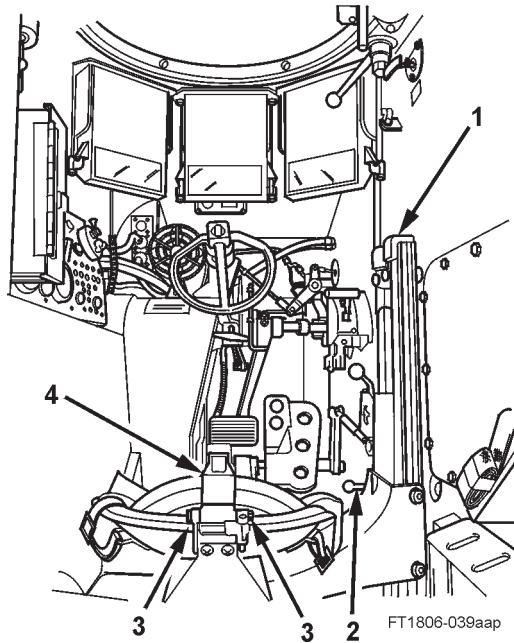
*The man-hour time is the time you need to do all the services prescribed.

-KEY-

| Lubricants | Expected Temperatures | | | Intervals |
|---|----------------------------|-----------------------------------|-----------------------------------|--|
| | Above 15°F (Above -9°C) | +40°F to -10°F (+4°C to -23°C) | +40°F to -65°F (+4°C to -54°C) | |
| GAA (MIL-PRF-10924) GREASE, Automotive and Artillery | All Temperatures | | | Intervals are as follows: S - Semiannually Intervals are based on normal hours of operation and moderate operating conditions. |

7. DRIVER'S SEAT MOVING PARTS (continued)

Brush GAA on vertical shaft (1) and horizontal shaft (3), pivot points of seat-adjusting lever (2), and backrest post (4).

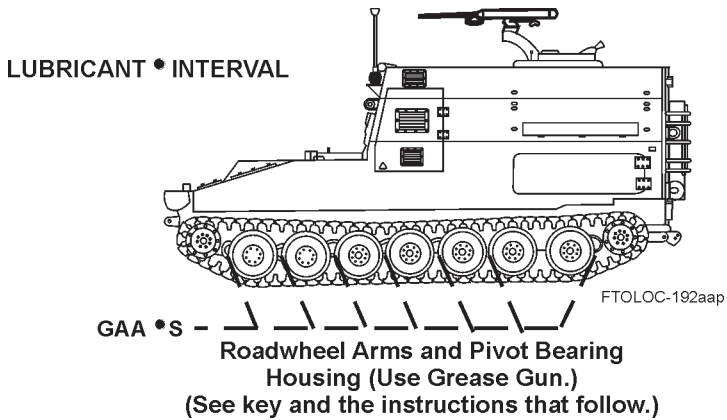


END OF WORK PACKAGE

8. ROADWHEEL ARMS

NOTE

Dotted leader lines on the illustration indicate that lubrication is required on both sides of the vehicle.



| INTERVAL | MAN-HOURS* |
|----------|------------|
| S | 0.8 |

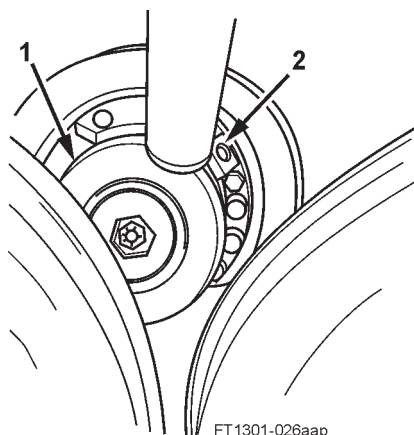
*The man-hour time is the time you need to do all the services prescribed.

-KEY-

| Lubricants | Expected Temperatures | | | Intervals |
|---|----------------------------|-----------------------------------|-----------------------------------|--|
| | Above 15°F (Above -9°C) | +40°F to -10°F (+4°C to -23°C) | +40°F to -65°F (+4°C to -54°C) | |
| GAA (MIL-PRF-10924) GREASE, Automotive and Artillery | All Temperatures | | | Intervals are as follows: S - Semiannually Intervals are based on normal hours of operation and moderate operating conditions. |

8. ROADWHEEL ARMS (continued)

Use a grease gun to inject GAA into the 14 roadwheel arm and pivot bearing housing grease fittings (2) until grease begins to seep from relief valve (1).

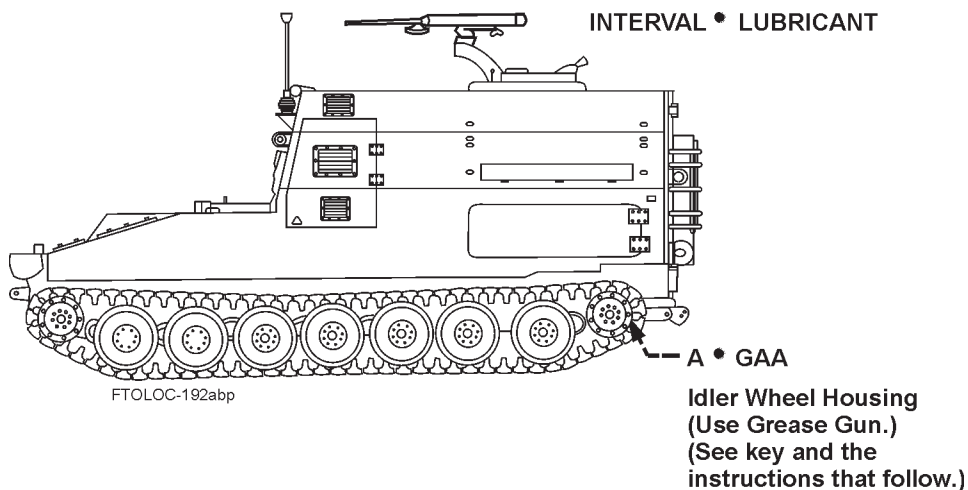


FT1301-026aap

9. IDLER WHEEL HOUSING

NOTE

Dotted leader lines on the illustration indicate that lubrication is required on both sides of the vehicle.



FTOLOC-192abp

9. IDLER WHEEL HOUSING (continued)

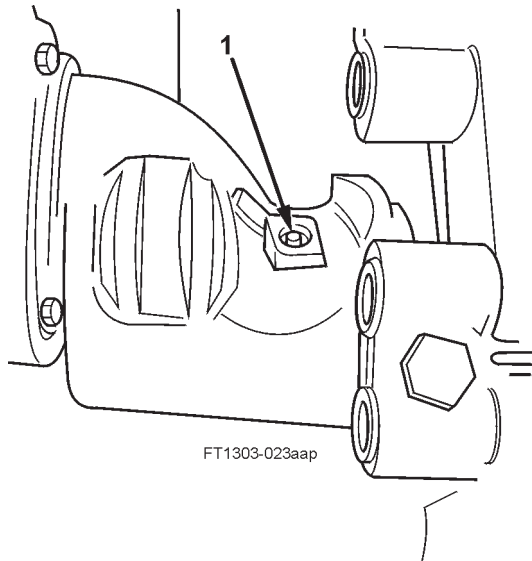
| INTERVAL | MAN-HOURS* |
|----------|------------|
| A | 0.9 |

*The man-hour time is the time you need to do all the services prescribed.

-KEY-

| Lubricants | Expected Temperatures | | | Intervals |
|---|----------------------------|-----------------------------------|-----------------------------------|--|
| | Above 15°F (Above -9°C) | +40°F to -10°F (+4°C to -23°C) | +40°F to -65°F (+4°C to -54°C) | |
| GAA (MIL-PRF-10924) GREASE, Automotive and Artillery | All Temperatures | | | Intervals are as follows: A - Annually Intervals are based on normal hours of operation and moderate operating conditions. |

Use a grease gun to inject GAA into the two idler wheel housing grease fittings (1) until grease begins to seep from around fittings (1).



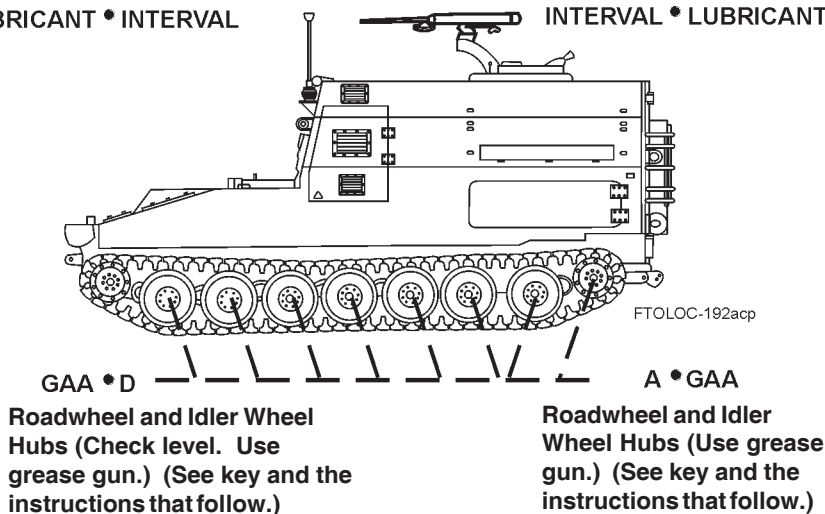
10. ROADWHEEL AND IDLER WHEEL HUBS

NOTE

Dotted leader lines on the illustration indicate that lubrication is required on both sides of the vehicle.

LUBRICANT * INTERVAL

INTERVAL * LUBRICANT



| INTERVAL | MAN-HOURS* |
|----------|------------|
| D | 1.0 |
| A | 1.9 |

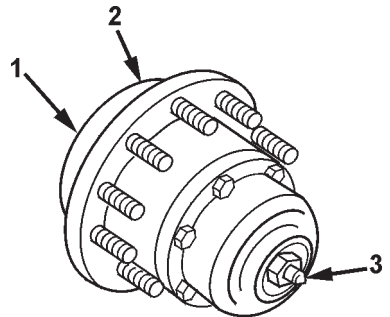
*The man-hour time is the time you need to do all the services prescribed.

-KEY-

| Lubricants | Expected Temperatures | | | Intervals |
|--|-----------------------------|-----------------------------------|-----------------------------------|---|
| | Above 15° F (Above -9°C) | +40°F to -10°F (+4°C to -23°C) | +40°F to -65°F (+4°C to -54°C) | |
| GAA (MIL-PRF-10924) GREASE, Automotive and Artillery | All Temperatures | | | Intervals are as follows: D - Daily A - Annually Intervals are based on normal hours of operation and moderate operating conditions. |

10. ROADWHEEL AND IDLER WHEEL HUBS (continued)

Check roadwheel and idler wheel hubs (1) daily after operation for overheating or Class III leaks. Make sure lubricant is at proper level by using grease gun to inject GAA into 16 grease fittings (3) on roadwheel and idler wheel hubs (1) until grease seeps from relief valves (2). Annually, use a grease gun to inject GAA into grease fittings (3) until clean grease seeps from relief valves (2).

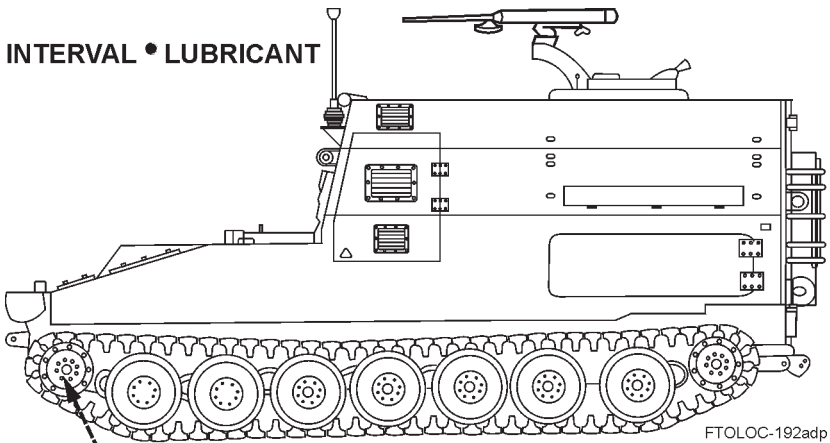


FT1301-027aap

11. FINAL DRIVE LEVEL CHECK

NOTE

Dotted leader lines on the illustration indicate that lubrication is required on both sides of the vehicle.



INTERVAL • LUBRICANT

M • OE/HDO

**Final Drive Level and Fill Plug
(Check level.) (See key and
the instructions that follow.)**

11. FINAL DRIVE LEVEL CHECK (continued)

| INTERVAL | MAN-HOURS* |
|----------|------------|
| M | 0.2 |

* The man-hour time is the time you need to do all the services prescribed.

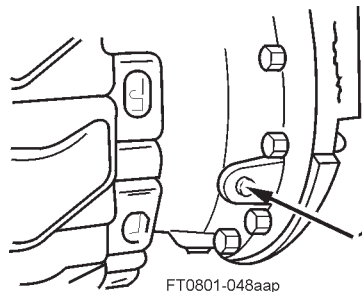
-KEY-

| Lubricants | Capacities | Expected Temperatures | | | Intervals |
|---|-----------------|----------------------------|-----------------------------------|-----------------------------------|---|
| | | Above 15°F (Above -9°C) | +40°F to -10°F (+4°C to -23°C) | +40°F to -65°F (+4°C to -54°C) | |
| OE/HDO (MIL-PRF-2104) LUBRICATING OIL, Internal Combustion Engine, Tactical Service OEA (MIL-PRF- 46167) LUB- RICATING OIL, Internal Combustion Engine, Arctic | | | | | Intervals are as follows: M - Monthly Intervals are based on normal hours of operation and moderate operating conditions. |
| Final Drive | 2 qt (1.8 L) | OE/HDO 15W40 | OE/HDO 15W40 | OEA | |

NOTE

Make sure vehicle is parked on level ground before checking final drive oil level.

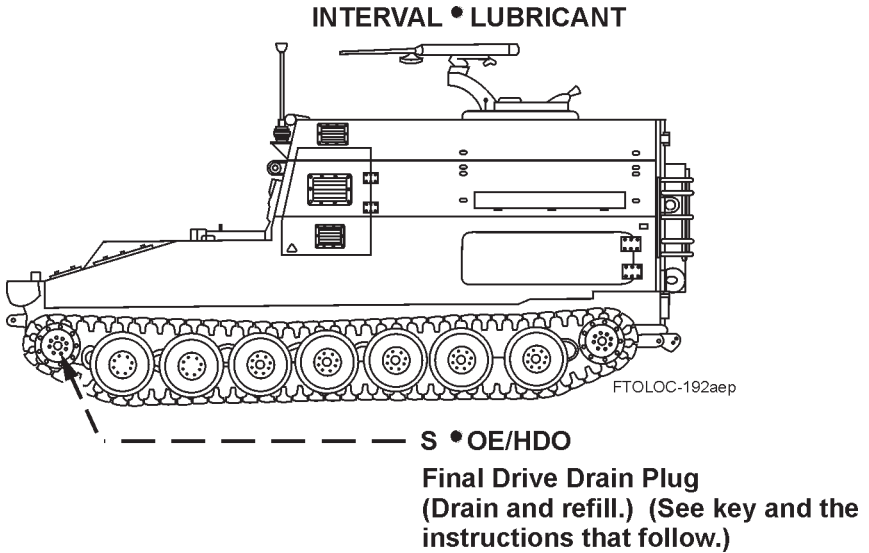
Remove both level-check plugs (1). Oil should be level with bottom of opening. If not, add oil until it flows from the plug opening (see key for required oil type). Clean and install level-check plugs (1).



12. FINAL DRIVE DRAIN AND REFILL

NOTE

Dotted leader lines on the illustration indicate that lubrication is required on both sides of the vehicle.



| INTERVAL | MAN-HOURS* |
|----------|------------|
| S | 0.3 |

* The man-hour time is the time you need to do all the services prescribed.

12. FINAL DRIVE DRAIN AND REFILL (continued)

-KEY-

| Lubricants | Capacities | Expected Temperatures | | | Intervals |
|---|-----------------|----------------------------|-----------------------------------|-----------------------------------|--|
| | | Above 15°F (Above -9°C) | +40°F to -10°F (+4°C to -23°C) | +40°F to -65°F (+4°C to -54°C) | |
| OE/HDO (MIL-PRF-2104) LUBRICATING OIL, Internal Combustion Engine, Tactical Service OEA (MIL-PRF- 46167) LUB- RICATING OIL, Internal Combustion Engine, Arctic | | | | | Intervals are as follows: S - Semiannually Intervals are based on normal hours of operation and moderate operating conditions. |
| Final Drive | 2 qt (1.8 L) | OE/HDO 15W40 | OE/HDO 15W40 | OEA | |

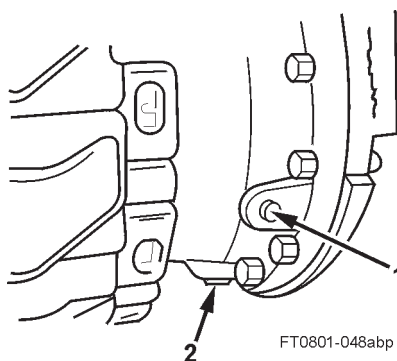
NOTE

Make sure vehicle is parked on level ground before checking final drive oil level.

NOTE

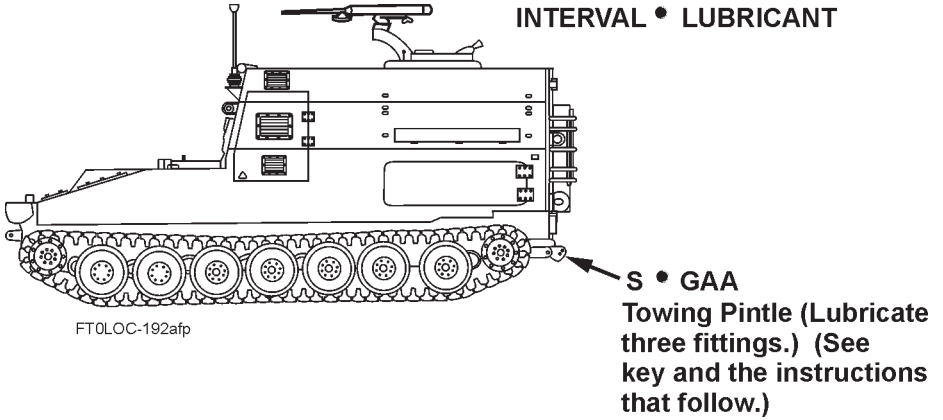
Notify Unit maintenance if you find pieces of metal stuck to the magnetic drain plugs.

After operation, remove both level-check plugs (1) and both drain plugs (2). Clean and install drain plugs (2). Add oil at level-check plug opening (see key for required oil type). Clean and install level-check plugs (1).



FT0801-048abp

13. TOWING PINTLE



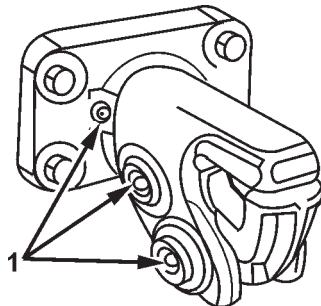
| INTERVAL | MAN-HOURS* |
|----------|------------|
| S | 0.3 |

*The man-hour time is the time you need to do all the services prescribed.

-KEY-

| Lubricants | Expected Temperatures | | | Intervals |
|---|----------------------------|-----------------------------------|-----------------------------------|--|
| | Above 15°F (Above -9°C) | +40°F to -10°F (+4°C to -23°C) | +40°F to -65°F (+4°C to -54°C) | |
| GAA (MIL-PRF-10924) GREASE, Automotive and Artillery | All Temperatures | | | Intervals are as follows: S - Semiannually Intervals are based on normal hours of operation and moderate operating conditions. |

Lubricate three fittings (1) with GAA.



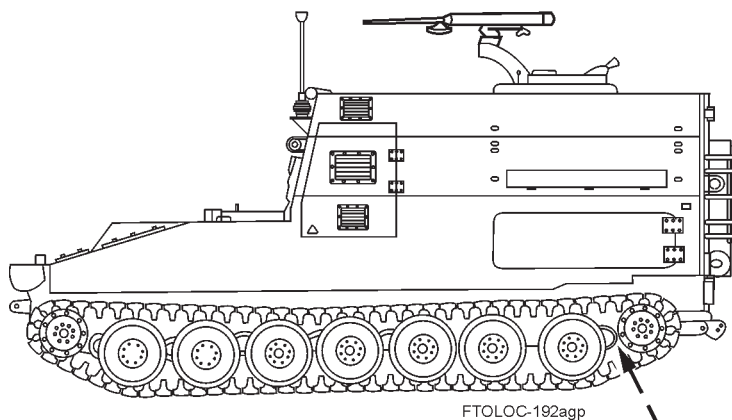
FT1503-007abp

14. TRACK ADJUSTER

NOTE

Dotted leader lines on the illustration indicate that lubrication is required on both sides of the vehicle.

LUBRICANT • INTERVAL



GAA • M

Track Adjuster (See key and the instructions that follow.)

| INTERVAL | MAN-HOURS* |
|----------|------------|
| M | 0.8 |

* The man-hour time is the time you need to do all the services prescribed.

14. TRACK ADJUSTER (continued)

-KEY-

| Lubricants | Expected Temperatures | | | Intervals |
|---|----------------------------|-----------------------------------|-----------------------------------|---|
| | Above 15°F (Above -9°C) | +40°F to -10°F (+4°C to -23°C) | +40°F to -65°F (+4°C to -54°C) | |
| GAA (MIL-PRF-10924) GREASE, Automotive and Artillery | All Temperatures | | | Intervals are as follows: M - Monthly Intervals are based on normal hours of operation and moderate operating conditions. |

WARNING

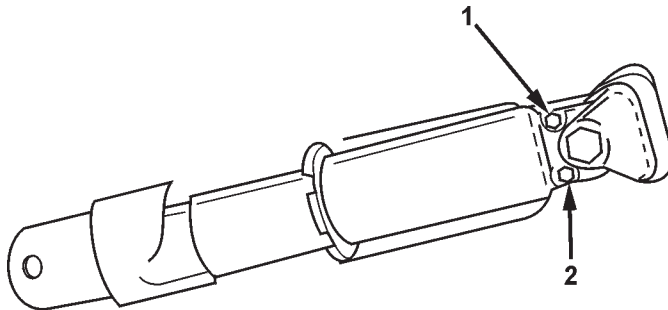
Lubricant is under high pressure. Loosen bleed plug slowly to avoid injury.

CAUTION

When increasing track tension, do not let adjuster extend beyond 3-1/2 inches. Adjuster will bind in extended position and will require force to collapse.

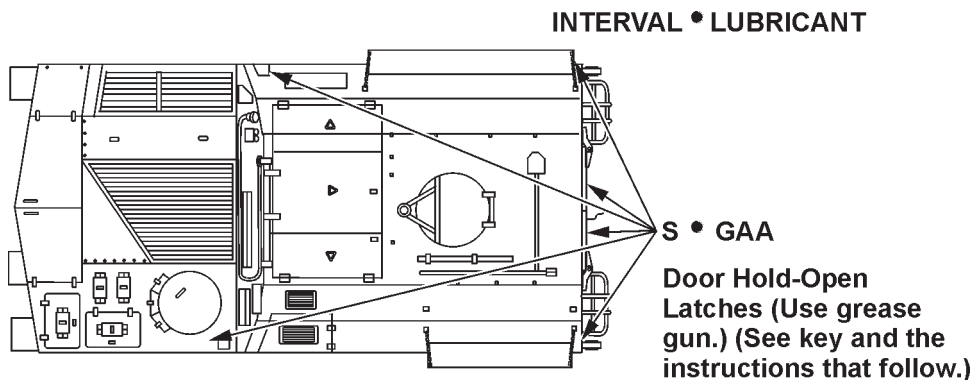
Check track adjuster. Pump GAA into fitting (2) to increase tension.

Slowly open pressure bleed plug (1) to decrease track tension.



FT1303-021abp

15. DOOR HOLD-OPEN LATCHES



FT0LOC-104abp

| INTERVAL | MAN-HOURS* |
|----------|------------|
| S | 0.3 |

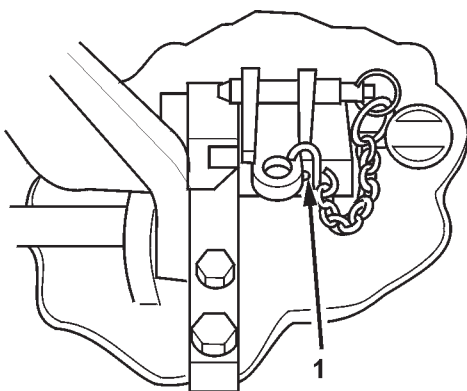
* The man-hour time is the time you need to do all the services prescribed.

-KEY-

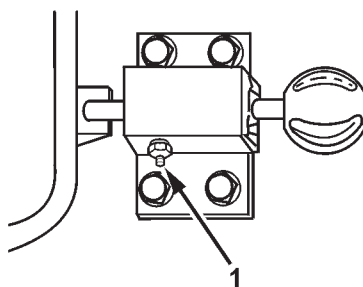
| Lubricants | Expected Temperatures | | | Intervals |
|--|----------------------------|-----------------------------------|-----------------------------------|--|
| | Above 15°F (Above -9°C) | +40°F to -10°F (+4°C to -23°C) | +40°F to -65°F (+4°C to -54°C) | |
| GAA (MIL-PRF-10924) GREASE, Automotive and Artillery | All Temperatures | | | Intervals are as follows: S - Semiannually Intervals are based on normal hours of operation and moderate operating conditions. |

15. DOOR HOLD-OPEN LATCHES (continued)

Lubricate one fitting (1) on each hold-open latch with a hand grease gun until grease seeps out around pin. Latches are located at driver's hatch, personnel side door, lanyard on upper left rear door and right canister door.



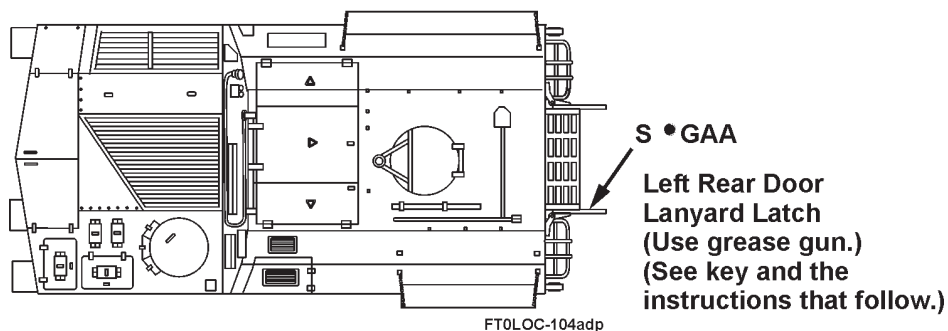
FT1803-020acp



FT1801-188

16. LEFT REAR DOOR LANYARD LATCH

INTERVAL • LUBRICANT



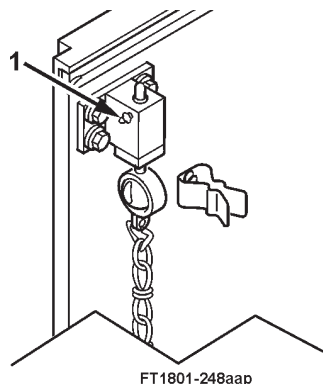
| INTERVAL | MAN-HOURS* |
|----------|------------|
| S | 0.1 |

* The man-hour time is the time you need to do all the services prescribed.

-KEY-

| Lubricants | Expected Temperatures | | | Intervals |
|--|----------------------------|-----------------------------------|-----------------------------------|--|
| | Above 15°F (Above -9°C) | +40°F to -10°F (+4°C to -23°C) | +40°F to -65°F (+4°C to -54°C) | |
| GAA (MIL-PRF-10924) GREASE, Automotive and Artillery | All Temperatures | | | Intervals are as follows: S - Semiannually Intervals are based on normal hours of operation and moderate operating conditions. |

Lubricate fitting (1) on left rear door lanyard latch with a hand grease gun until grease seeps out around pin.

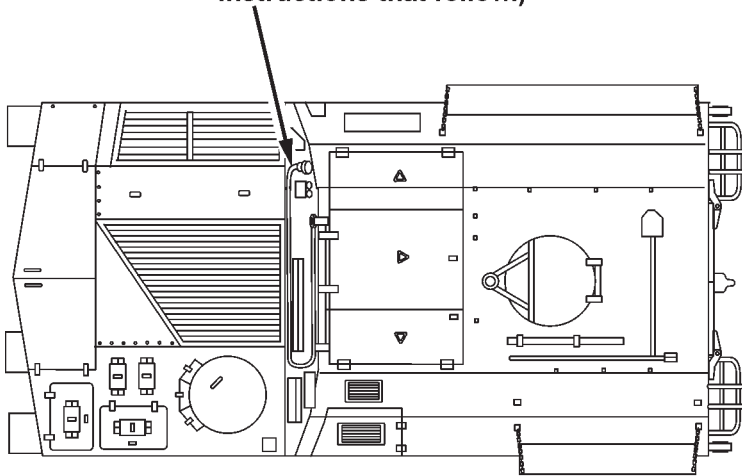


17. TOWING CABLE

LUBRICANT • INTERVAL

CT • S

Towing Cable
(See key and the instructions that follow.)



FT0LOC-104acp

| INTERVAL | MAN-HOURS* |
|----------|------------|
| S | 1.2 |

* The man-hour time is the time you need to do all the services prescribed.

-KEY-

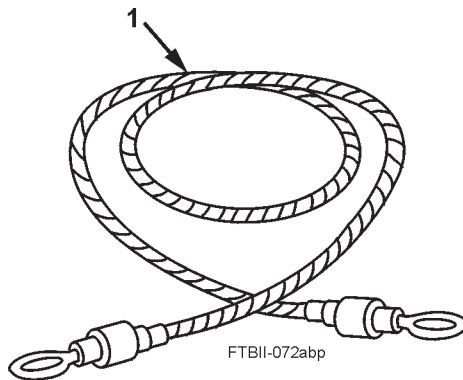
| Lubricants | Expected Temperatures | | | Intervals |
|---|----------------------------|-----------------------------------|-----------------------------------|--|
| | Above 15°F (Above -9°C) | +40°F to -10°F (+4°C to -23°C) | +40°F to -65°F (+4°C to -54°C) | |
| CT (MIL-C-16173) CORROSION PREVENTIVE COMPOUND | All Temperatures | | | Intervals are as follows: S - Semiannually Intervals are based on normal hours of operation and moderate operating conditions. |

17. TOWING CABLE (continued)

WARNING

Solvent cleaning compound is an environmentally compliant product and is low in toxicity. However, it may be irritating to the eyes and skin due to its base stock. The use of protective gloves and goggles is required. Use the solvent cleaning compound in well-ventilated areas and keep away from open flames and other sources of ignition.

Clean towing cable (1) with solvent cleaning compound and coat with corrosion preventive compound.

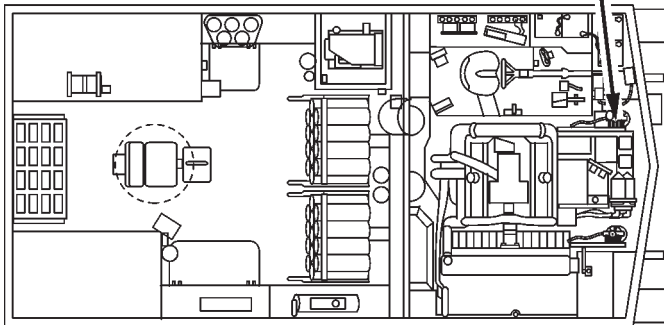


18. TRANSMISSION/MAIN ENGINE AOAP SAMPLER VALVES

INTERVAL • LUBRICANT

OC •

Transmission/Main Engine
AOAP Sampler Valves
(See key and the instructions
that follow.)



BOXLOC-06-126aaP

| INTERVAL | MAN-HOURS* |
|----------|------------|
| OC | 0.5 |

* The man-hour time is the time you need to do all the services prescribed.

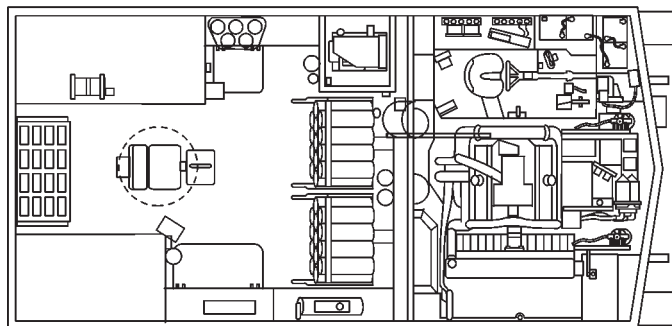
-KEY-

| Intervals |
|---|
| Intervals are as follows: OC - on condition, or every 25 hours of operation or 30 days |
| Intervals are based on normal hours of operation and moderate operating conditions. |

Obtain oil sample from transmission and main engine through AOAP sampler valve after every 25 hours of operation or every 30 days, whichever comes first.

19. MAIN ENGINE CRANKCASE DRAIN

INTERVAL • LUBRICANT



BOXLOC-06-126abp

OC • OE/HDO
Main Engine Crankcase
Drain (See key and the
instructions that follow.)

| INTERVAL | MAN-HOURS* |
|----------|------------|
| OC | 0.5 |

* The man-hour time is the time you need to do all the services prescribed.

-KEY-

| Lubricants | Capacities | Expected Temperatures | | | Intervals |
|---|-------------------|----------------------------|-----------------------------------|-----------------------------------|--|
| | | Above 15°F (Above -9°C) | +40°F to -10°F (+4°C to -23°C) | +40°F to -65°F (+4°C to -54°C) | |
| OE/HDO (MIL-PRF-2104) LUBRICATING OIL, Internal Combustion Engine, Tactical Service | | | | | Intervals are as follows: OC - on condition, or every 25 hours of operation or 30 days Intervals are based on normal hours of operation and moderate operating conditions. |
| OEA (MIL-PRF-46167) LUBRICATING OIL, Internal Combustion Engine, Arctic | | | | | |
| Engine Crankcase | 38 qt (35.9 L) | OE/HDO 15W40 | OE/HDO 15W40 | OEA | |

19. MAIN ENGINE CRANKCASE DRAIN (continued)

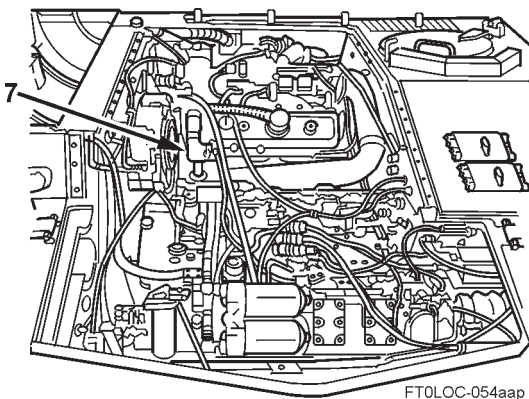
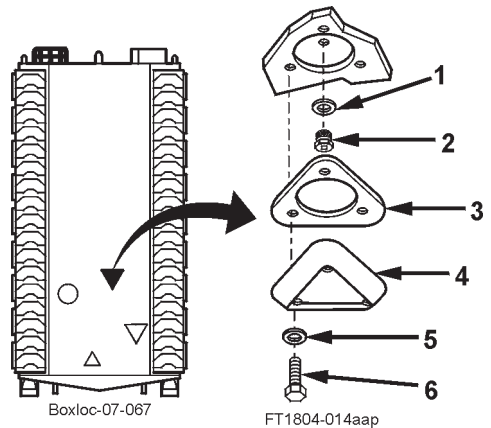
WARNING

Solvent cleaning compound is an environmentally compliant product and is low in toxicity. However, it may be irritating to the eyes and skin due to its base stock. The use of protective gloves and goggles is required. Use the solvent cleaning compound in well-ventilated areas and keep away from open flames and other sources of ignition.

NOTE

- Make sure vehicle is parked on level ground before checking transmission oil level.
- When operating in extremely cold temperatures using OEA, this is a semiannual check.

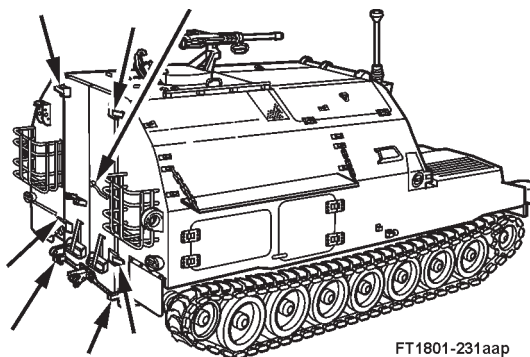
Remove three screws (6) and washers (5), cover plate (4), and gasket (3) from bottom of vehicle, and remove drain plug (2) and packing (1) from engine crankcase. After oil is drained, clean drain plug (2) with solvent cleaning compound. Install drain plug (2) and packing (1), cover plate (4), and gasket (3) on bottom of vehicle with three screws (6) and washers (5). Remove oil fill cap (7) and refill crankcase with oil to L (low) mark on dipstick.



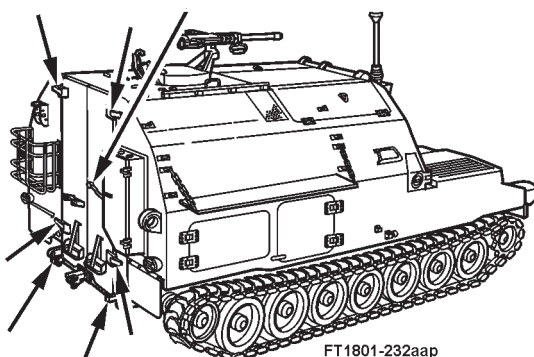
20. OIL CAN POINTS

In the illustrations that follow, oil can points are indicated by arrows. Lubricate the oil can points semiannually with seasonal grade oil OE/HDO (MIL-PRF-2104) or OEA (MIL-PRF-46167). Clean lubrication points and wipe off excess lubricant.

Left and Right Rear Door Hinges and Hold-Open Latches and Right Rear Door Locking Bar Handles (Vehicles S/N 1 through 344)



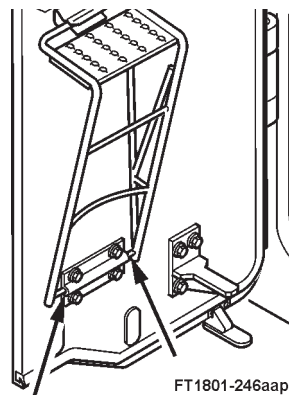
FT1801-231aap



FT1801-232aap

Left and Right Rear Door Hinges and Hold-Open Latches and Right Rear Door Locking Bar Handles (Vehicles S/N 345 and above)

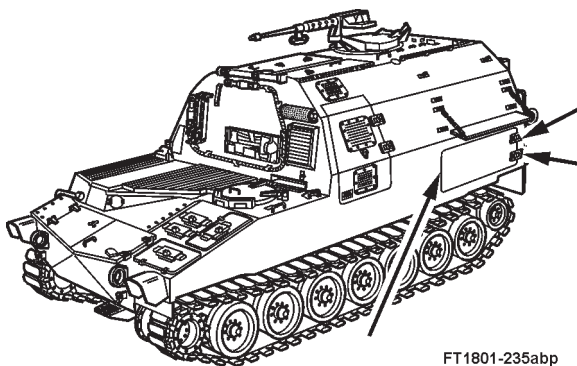
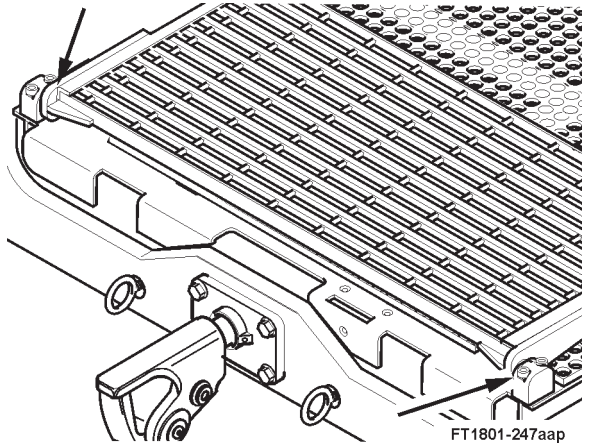
Left Rear Door Step Hinge



FT1801-246aap

20. OIL CAN POINTS (continued)

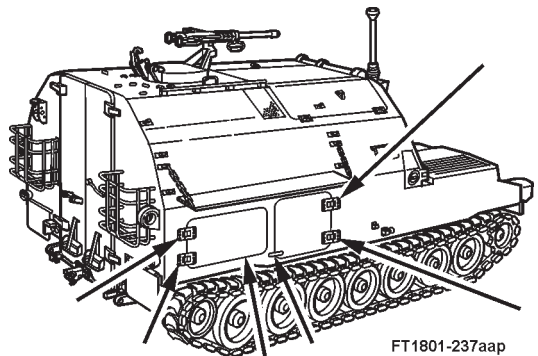
Folding Rear Platform Hinges



Left Side Canister Door Latch (Inside Only) and Hinges

FT1801-235abp

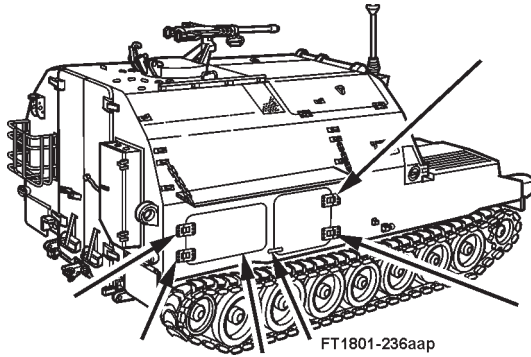
Right Side Personnel and Canister Door Hinges and Personnel Door Latch (Inside Only) (Vehicles S/N through 344)



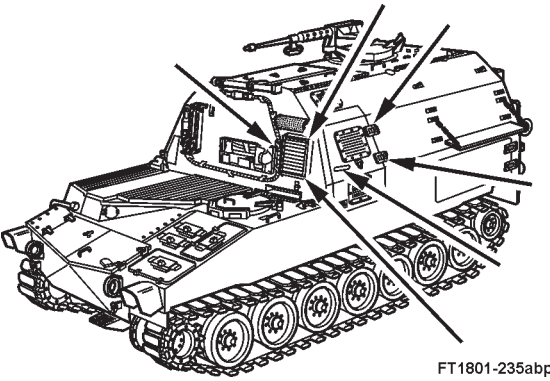
FT1801-237aap

20. OIL CAN POINTS (continued)

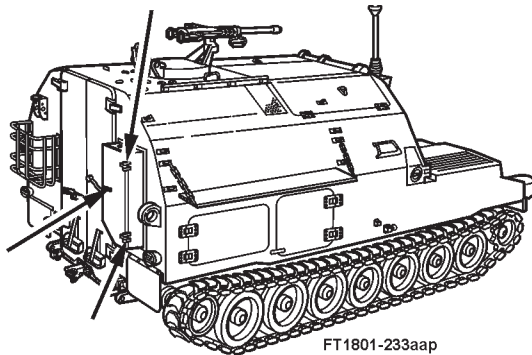
Right Side Personnel and Canister Door Hinges and Personnel Door Latch (Inside Only) (Vehicles S/N 345 and above)



APU Front and Side Door Latches and Hinges

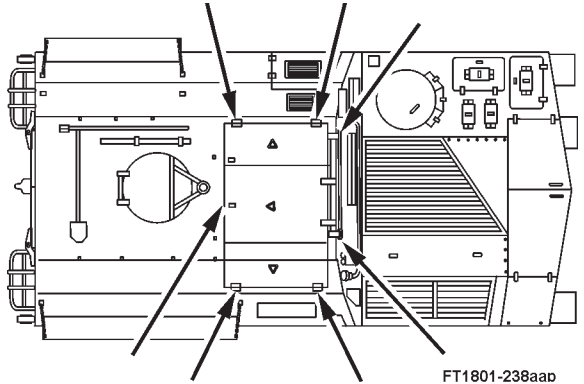


Fire Extinguisher Box Door Latch and Hinges (Vehicles S/N 345 and Above)

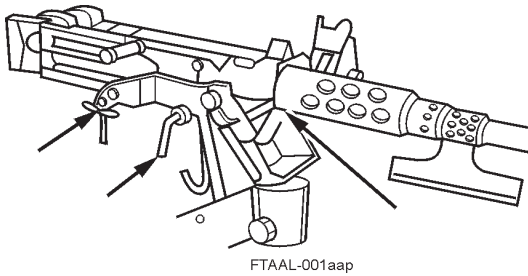


20. OIL CAN POINTS (continued)

Top Middle Door Latch (Inside Only) and Top Door Hinges



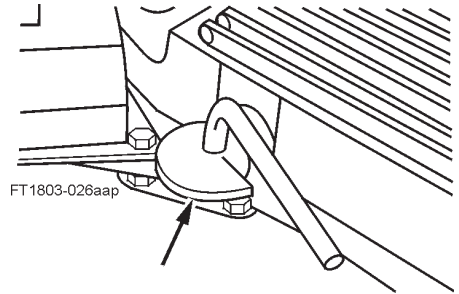
FT1801-238aap



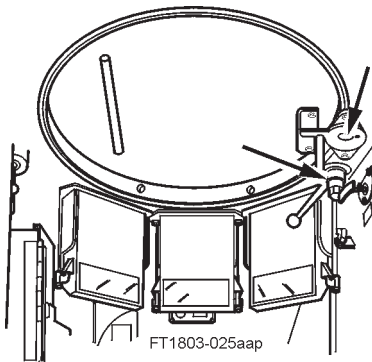
Machine Gun Cradle Locking Pins

FTAAL-001aap

Security Latch for Driver's Hatch Door



FT1803-026aap

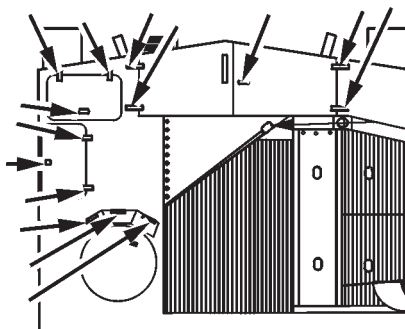


FT1803-025aap

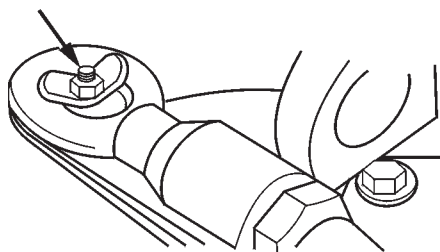
Driver's Hatch Cover Operating Lever and Security Latch

20. OIL CAN POINTS (continued)

Hinges and Latches for Grilles and Covers, and Hatch Pin

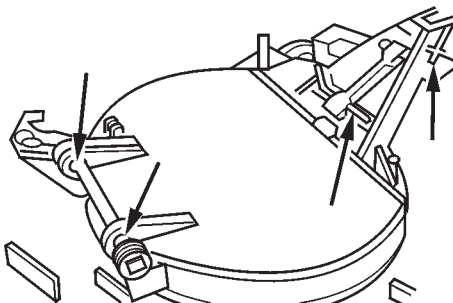


FT1801-239aap



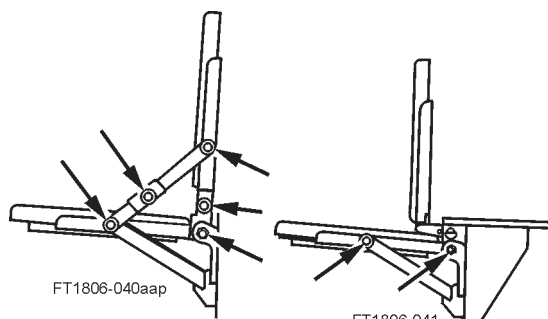
FT1808-134aap

Tow Cable Mounting Brackets



FT1801-240aap

Commander's Cupola Hatch Door Hinge, Periscope Cover Hinge, and Machine Gun Pintle Support



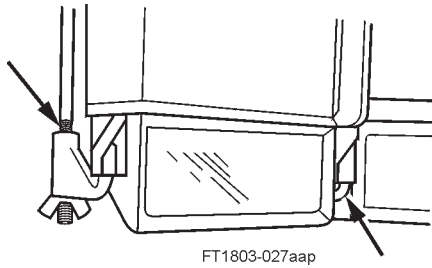
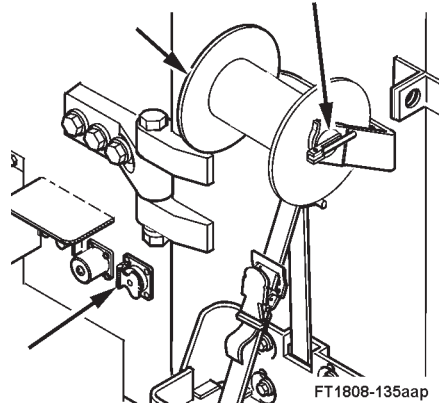
FT1806-040aap

FT1806-041

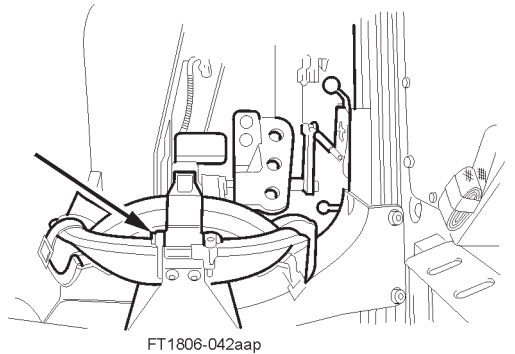
Crew Seat Hinges (NOTE: Not all seats are shown; however, all must be lubricated).

20. OIL CAN POINTS (continued)

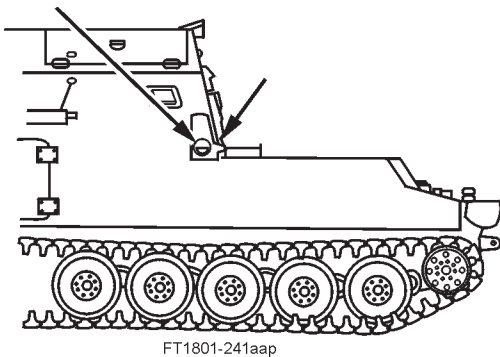
Telephone Cable Reel and intervehicular Cable Receptacle



Driver's Periscope Retaining Latches



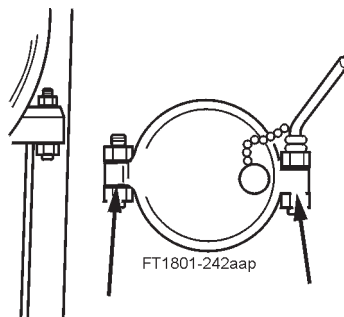
Driver's Seat Moving Parts



Fuel Filler Access Cover and Latch (Inside Only)

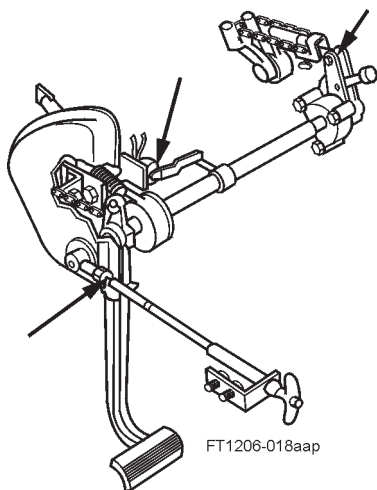
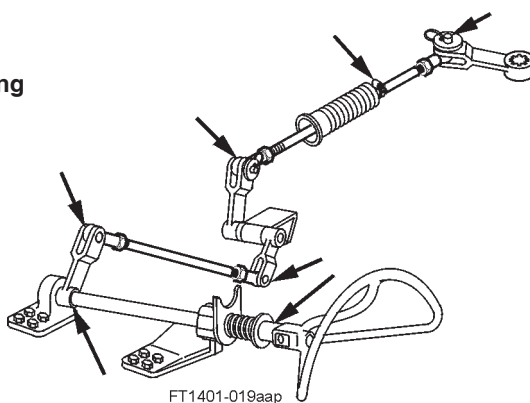
20. OIL CAN POINTS (continued)

Radiator Filler Access Cover



In the illustrations that follow, oil can points are indicated by arrows. Lubricate the oil can points semiannually with a few drops of lubricant and preservative cleaner (MIL-PRF-63460) on rod and bearing; wipe off excess lubricant.

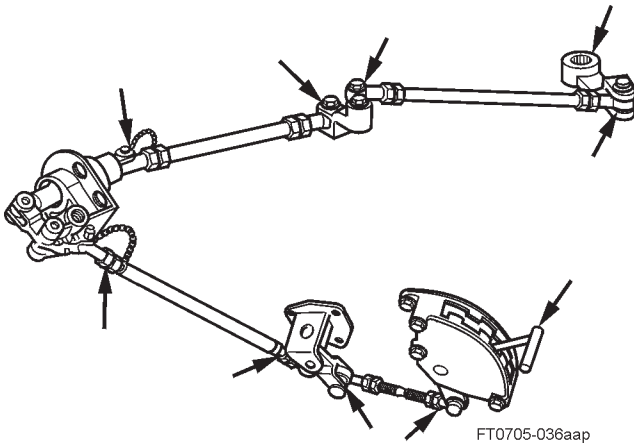
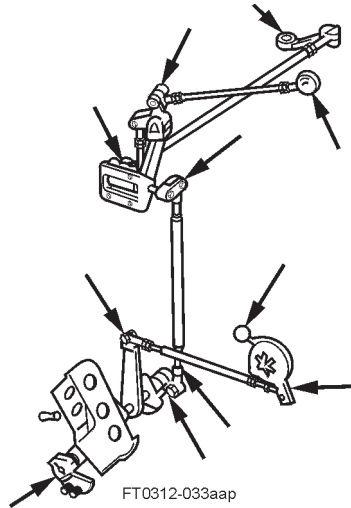
Steering Shaft Bushing and Steering Control Linkage



Brake Control Linkage

20. OIL CAN POINTS (continued)

Accelerator and Throttle Controls

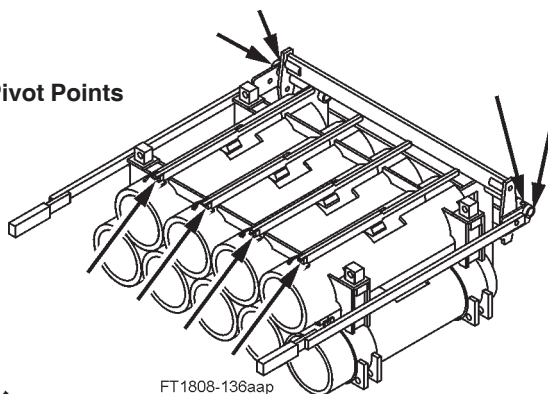


Transmission Shifting Control Linkage

20. OIL CAN POINTS (continued)

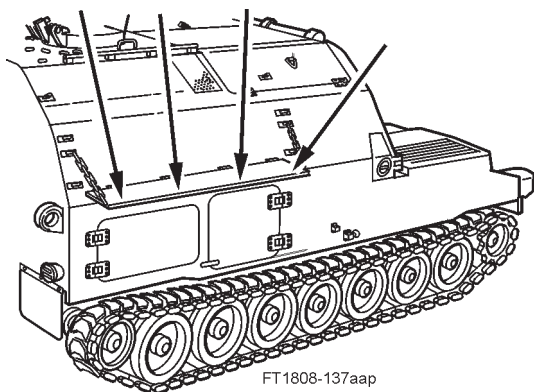
In the illustrations that follow, oil can points are indicated by arrows. Lubricate the oil can points semiannually with seasonal grade oil OE/HDO (MIL-PRF-2104) or OEA (MIL-L-46167). Clean lubrication points and wipe off excess lubricant.

Projectile Rack Pivot Points



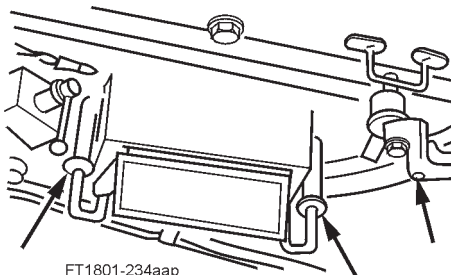
FT1808-136aap

Duffle Bag Shelf Hinges
(Three on Left, Four on Right)



FT1808-137aap

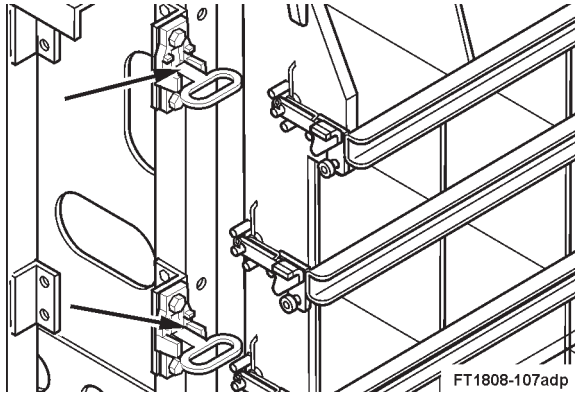
Commander's Cupola Hatch Door
Lock and Periscope Retaining
Latches



FT1801-234aap

20. OIL CAN POINTS (continued)

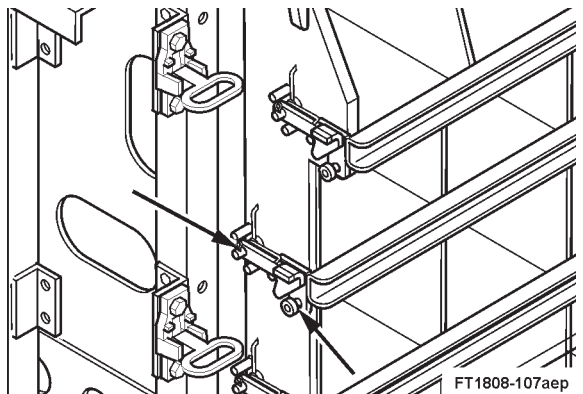
Commander's Footsteps



NOTE

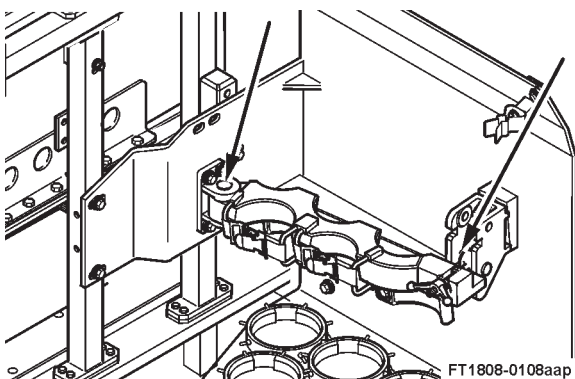
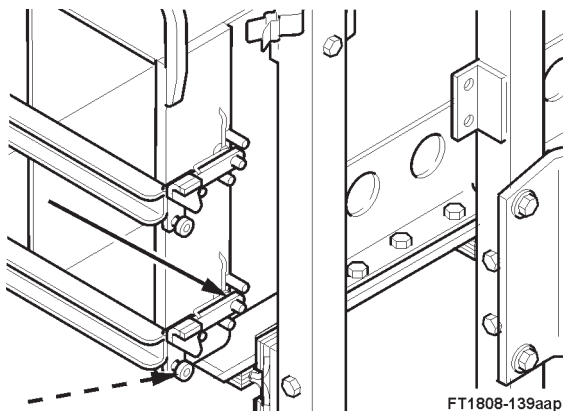
Dotted leader line on the illustration indicates that lubrication is required on both sides of the honeycomb.

4 X 6 Honeycomb Channel Restraint Bar Assemblies (8 locations) and Locking Latches (4 locations)



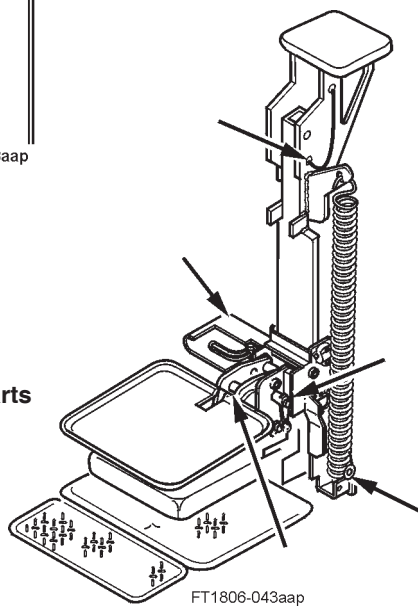
20. OIL CAN POINTS (continued)

2 X 8 Honeycomb Channel Restraint Bar Assemblies (4 locations) and Locking Latches (2 locations)



Vertical Stowage Left Arm Assembly Hinge and Rack Lock Assembly Hinge

Commander's Seat Moving Parts



END OF WORK PACKAGE

**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

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By Order of the Secretary of the Army:

PETER J. SCHOOMAKER
General, United States Army
Chief of Staff

Official:



SANDRA R. RILEY
Administrative Assistant to the
Secretary of the Army

0509702

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PART I - ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

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| PUBLICATION FORM NUMBER TM 9-2350-372-10 | DATE 29 April 2005 | TITLE OPERATOR'S MANUAL M992A2 |
|---|-----------------------|-----------------------------------|

| ITEM | PAGE NO. | PARA-GRAPH | LINE | FIGURE NO. | TABLE | RECOMMENDED CHANGES AND REASON |
|------|--------------|------------|------|------------|-------|---|
| | 0004 00-3 | | | | | Callouts on art are numbered incorrectly. Callouts 3, 4, and 5 should be 6, 7, and 8. |

SAMPLE

** Reference to line numbers within the paragraph or sub paragraph.*

| | | |
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| TYPED NAME, GRADE OR TITLE John Doe SSG | TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION XXX-XXXX | SIGNATURE  |
|--|--|---|

| | | |
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| TO: <i>(Forward direct to addressee listed in publication)</i> | FROM: <i>(Activity and location)</i> <i>(Include Zip Code)</i> <i>(Your Mailing Address)</i> | DATE <i>(Date You Will Fill Out This Form)</i> |
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PART II - REPAIR PARTS AND SPECIAL TOOLS LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

| PUBLICATION NUMBER | | | | DATE | | | TITLE | |
|--------------------|----------|----------|-----------------------|---------------|------------|----------|------------------------------------|---------------------------------|
| PAGE NO. | COLM NO. | LINE NO. | NATIONAL STOCK NUMBER | REFERENCE NO. | FIGURE NO. | ITEM NO. | TOTAL NO. OF MAJOR ITEMS SUPPORTED | RECOMMENDED ACTION |
| 260 | | | 4730-00-273-6772 | | 134 | 4 | 1 | Change from Hex to Socket Plug. |
| 260-1 | | | 4730-00-273-6772 | | | 4 | 1 | Change part Number to 12301694. |

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SAMPLE

| | | |
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|----------------------------|---|-----------|

THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

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

WEIGHTS

1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
 1 Kilogram = 1000 Grams = 2.2 Lb.
 1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
 1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

SQUARE MEASURE

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 = 0.386 Sq. Miles

CUBIC MEASURE

1 Cu. Centimeter = 1000 Cu. Millimeters = 0.06 Cu. Inches
 1 Cu. Meter = 1,000,000 Cu. Centimeters = 35.31 Cu. Feet

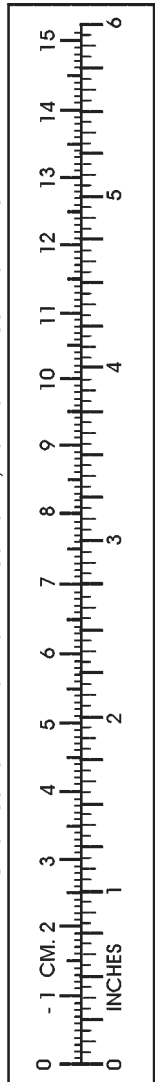
TEMPERATURE

$5/9 (^{\circ}\text{F} - 32) = ^{\circ}\text{C}$
 212° Fahrenheit is equivalent to 100° Celsius
 90° Fahrenheit is equivalent to 32.2° Celsius
 32° Fahrenheit is equivalent to 0° Celsius
 $9/5^{\circ}\text{C} + 32 = ^{\circ}\text{F}$

APPROXIMATE CONVERSION FACTORS

| <u>TO CHANGE</u> | <u>TO</u> | <u>MULTIPLY BY</u> |
|------------------------------|------------------------------|--------------------|
| Inches | Centimeters | 2.540 |
| Feet | Meters | 0.305 |
| Yards | Meters | 0.914 |
| Miles | Kilometers | 1.609 |
| Square Inches | Square Centimeters | 6.451 |
| Square Feet | Square Meters | 0.093 |
| Square Yards | Square Meters | 0.836 |
| Square Miles | Square Kilometers | 2.590 |
| Acres | Square 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 Square Inch | Kilopascals | 6.895 |
| Miles per Gallon | Kilometers per Liter | 0.425 |
| Miles per Hour | Kilometers per Hour | 1.609 |
| Centimeters | Inches | 0.394 |
| Meters | Feet | 3.280 |
| Meters | Yards | 1.094 |
| Kilometers | Miles | 0.621 |
| Square Centimeters | Square Inches | 0.155 |
| Square Meters | Square Feet | 10.764 |
| Square Meters | Square Yards | 1.196 |
| Square Kilometers | Square Miles | 0.386 |
| Square 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 Square Inch | 0.145 |
| Kilometers per Liter | Miles per Gallon | 2.354 |
| Kilometers per Hour | Miles per Hour | 0.621 |

CAUTION-USE SCALE FOR COMPARISON ONLY, NOT FOR MEASURING PARTS.



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