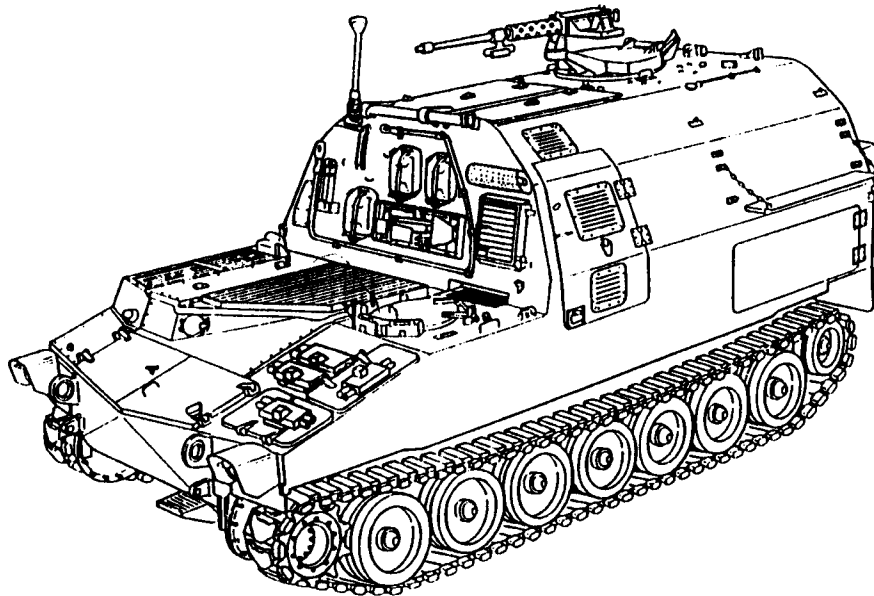


TM 9-2350-293-10

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: This manual supersedes TM 9-2350-293-10 dated November 1994, including all changes.

HEADQUARTERS
DEPARTMENT OF THE ARMY
DECEMBER 2001

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 prone 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.



RADIATION: Three circular wedges show that the material emits radioactive energy and can injure human tissue.



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 auxiliary engine is operated for any purpose.

- DO NOT operate personnel heater 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 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:

- 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

Remove or disconnect batteries or turn off master battery disconnect switch 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

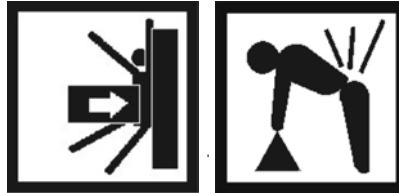
Requirements for Water Intake and Work/Rest Cycles

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.

WARNING

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.

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

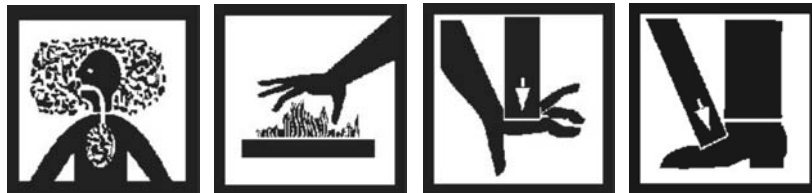
Do not place flammable materials or explosives on or near personnel heater. To prevent injury to personnel and damage to equipment, do not block or restrict heater vent.

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.

AUTOMATIC FIRE EXTINGUISHING SYSTEM (AFES) HAZARDS

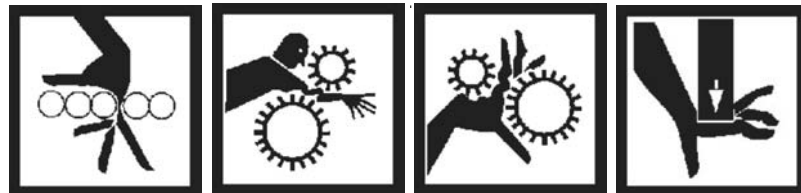
WARNING



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 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.

CONVEYOR HAZARDS

WARNING



WARNING SUMMARY (continued)

CONVEYOR HAZARDS (continued)

Be careful when deploying, operating, and stowing conveyor. Failure to observe the following precautions may result in severe injury to personnel:

- Keep hands and body parts clear of moving parts of conveyor.
- Keep fingers clear of section hinges when deploying conveyor.
- Make sure footing is firm and deployment area is free of obstructions. Be prepared to stand to one side and move quickly after conveyor begins to move.
- Be prepared to move quickly; conveyor deploys rapidly. Make sure door is positioned properly to control deployment speed.
- Have an assistant hold conveyor in stowed position while safety strap is removed or installed.
- Be careful to keep conveyor from swinging left or right.
- Do not operate conveyor with chain guards removed.
- Make sure conveyor slings are properly attached.
- Do not drop or throw projectiles onto conveyor. Promptly remove projectiles and propelling charges from conveyor.
- Attach ground strap to truck or stockpile.

WARNING

When operating with upper rear door open, always engage mechanical safety lock before beginning conveyor operations. This will prevent upper rear door from dropping if hydraulic system fails.

PROJECTILE RACK ASSEMBLY HAZARDS

WARNING



WARNING SUMMARY (continued)

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.

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

Always attach grounding cable to howitzer, truck, or stockpile before unloading ammunition. Failure to do this may result in explosion of ammunition.

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

Upper rear door is very heavy. Keep feet and hands clear of doorway when opening or closing door.

WARNING SUMMARY (continued)

WARNING

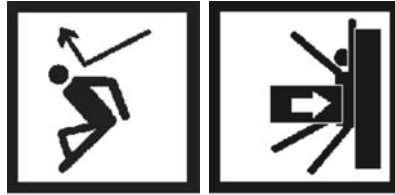
Track is very heavy. Keep hands and feet from beneath track while it is being lifted.

WARNING

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

UPPER REAR DOOR HAZARDS

WARNING



Upper rear door is very heavy. Three persons (one inside the vehicle and two outside the vehicle) are required to open or close it manually. Injury may result from attempting this procedure alone.

WARNING

Stand clear when opening or closing upper rear door (ballistic shield). If you open or close this door from outside the vehicle (using bottom switch), keep head and shoulders out of door travel path.

WARNING

Make sure travel path of upper rear door is clear of personnel before opening or closing door. Call out "CLEAR" when opening or closing door to prevent personnel from stepping in front of door.

WARNING

During normal operations, the mechanical safety lock should be used when positioning the door. The lock supports the door if the hydraulic safety mechanism fails.

WARNING SUMMARY (continued)

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

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 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

Personnel within nine yards (8 m) 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 SUMMARY (continued)

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.

SOLVENT P-D-680 HAZARDS

WARNING



Drycleaning solvent (P-D-680) is TOXIC and flammable. Wear protective goggles and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes; and do not breathe vapors. Keep away from heat or flame. Never smoke when using drycleaning solvent. Failure to follow this warning may result in injury or death to personnel.

WARNING

If personnel become dizzy while using drycleaning solvent, 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

When P-D-680 drycleaning solvent is used, notify the local medical authority (preventive medicine) and environmental coordinator concerning medical surveillance, respiratory protection, and disposal requirements.

WARNING SUMMARY (continued)

CHEMICAL AGENT RESISTANT COATING (CARC) HAZARD

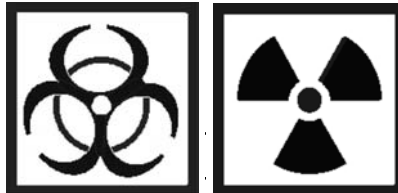
WARNING



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. This is a known carcinogen if inhaled or swallowed. Damaged or unusable filters are classified as hazardous waste.

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.

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LIST OF EFFECTIVE PAGES/WORK PACKAGES

Date of issue for original pages / work packages is:

Original .. 0 .. 17 December 2001

**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 - 0079 00	0
Index 1 - Index 24	0

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TM 9-2350-293-10

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 17 DECEMBER 2001

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: This manual supersedes TM 9-2350-293-10 dated November 1994, including all changes.

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TM 9-2350-293-10

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 0074 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.

END OF WORK PACKAGE

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TM 9-2350-293-10

GENERAL INFORMATION



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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.

HAND RECEIPT (HR) MANUAL

This manual has a companion document with a TM (technical manual) number followed by "-HR" (hand receipt). TM 9-2350-293-10-HR 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.

CORROSION PREVENTION AND CONTROL (CPC)

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

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 of 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 SHIPMENT

Refer to Work Package (WP) 0069 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
LRB	left rear bottom (canister stowage area)
LRT	left rear top (canister stowage area)
m	meter
M	monthly
max.	maximum
MCS	Master Control Station
MDS	manual discharge system
mi	mile
mm	millimeter
MOM	momentary
mph	miles per hour
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)

QTYquantity
 QTY. RECM.quantity recommended
 QTY. RQR.....quantity required
 R.H.right hand
 RLroll
 rpmrevolutions per minute
 RRBright rear bottom (canister stowage area)
 RRMright rear middle (canister stowage area)
 RRTright rear top (canister stowage area)
 RSIremote status indicator
 Ssemiannually
 SCEAstandard control electronic amplifier
 S/Nserial number
 STE/ICEsimplified test equipment/internal combustion engine
 T/Atest and alarm
 TAMMSThe Army Maintenance Management System
 3Dthree dimensional
 TMtechnical manual
 TOETable of Organization and Equipment
 TUtube
 U/Munit of measure
 V dc Volt, direct current
 VFPventilated face piece
 VFPSventilated face piece system
 W/with
 W/Owithout
 WPWork Package

END OF WORK PACKAGE

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TM 9-2350-293-10

CHAPTER 1
DESCRIPTION AND THEORY OF OPERATION



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**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 field 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:

- Ammunition handling equipment (AHE) that includes a hydraulically operated conveyor assembly, two projectile rack assemblies, canister stowage components, and related components.
- A diesel-powered auxiliary power unit (APU) used to drive the hydraulic 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 Chapter 5.

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 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 (see Chapter 5).

Features (continued)

- Nuclear, biological, or 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 shown on pages 0002 00-2 through 0002 00-6.

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.

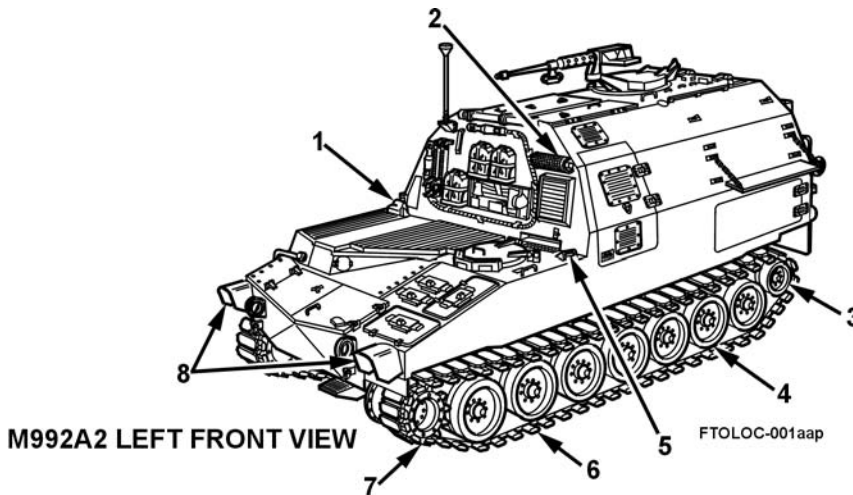
ROADWHEELS (4): Seven sets per side provide support and guide the track.

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.



LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (continued)

UPPER REAR DOOR (BALLISTIC SHIELD) (1): Provides ballistic protection to personnel and materiel in crew compartment during vehicle operation.

COMMANDER'S CUPOLA (2): Provides access to machine gun mount; rotates manually 360 degrees (6400 mils).

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

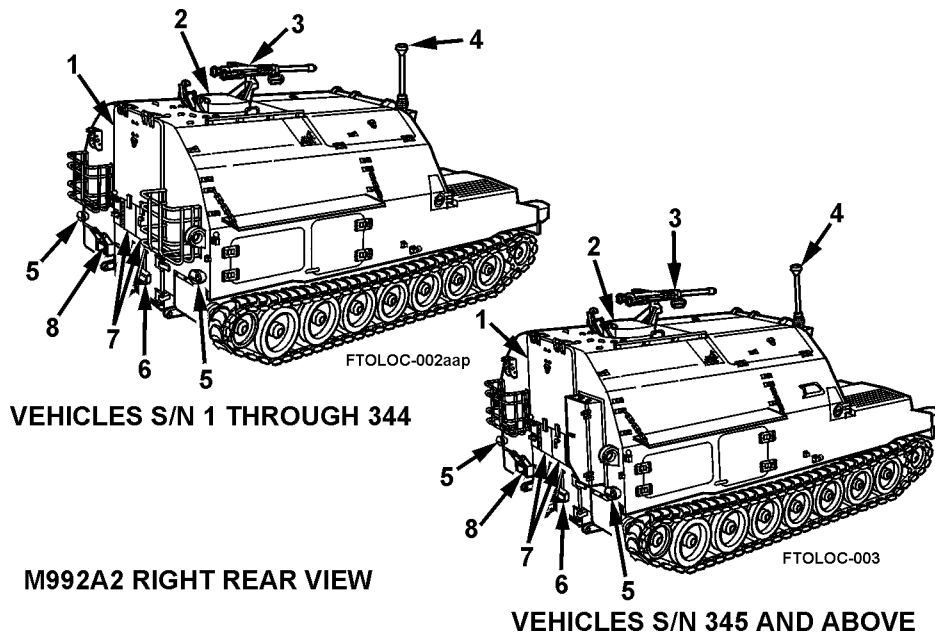
AN/PSN-11 (PLGR) (4): Satellite Signals Navigation Set Antenna, in conjunction with Global Positioning System (GPS) unit, provides highly accurate, continuous, all-weather, three-dimensional (3D) position, velocity, and time.

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.

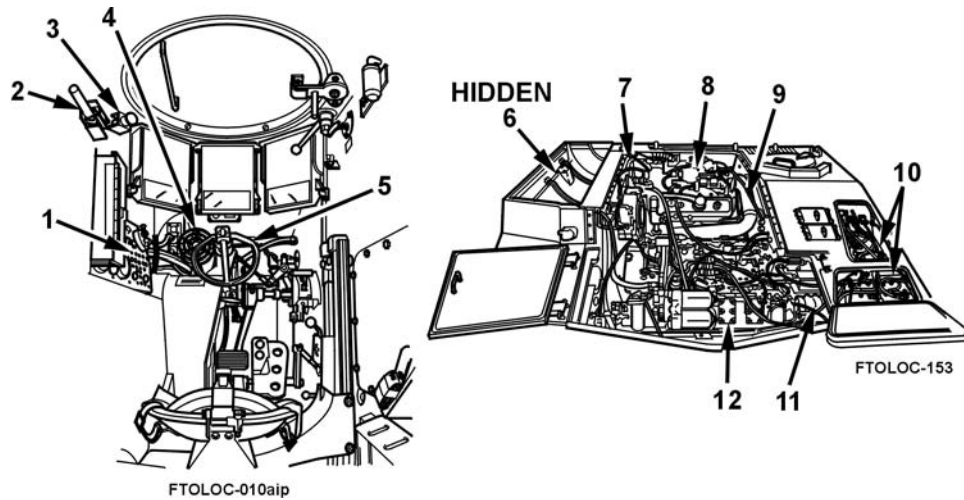
DOG DOORS (7): Two dog doors allow operation of conveyor while upper rear door is closed.

REAR NATO SLAVE RECEPTACLE (8): Used to connect the M992A2 electrical system with that of another vehicle to provide power access.



LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (continued)

M992A2 Engine, Transmission, and Driver's Compartments



DRIVER'S CONTROLS AND INDICATORS (1): Contained entirely in the driver's compartment, they allow driver to operate and monitor vehicle systems.

LANYARD CABLE PULL HANDLE (2): Allows driver to manually discharge one engine compartment fire extinguisher bottle without leaving the vehicle.

FORWARD NATO SLAVE RECEPTACLE (3): Used to provide power access and connect the M992A2 electrical system with that of another vehicle for slave-starting operations.

DRIVER'S COOLING FAN (4): Fan helps cool driver during operations in hot weather.

DRIVER'S STEERING CONTROLS (5): Allow driver to control vehicle direction.

UPPER AND LOWER FUEL TANKS (6) (upper tank shown): Store fuel to power the main engine and the APU.

COOLING FANS AND RADIATOR (7): Provide cooling to main engine.

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

MAIN ENGINE EXHAUST SYSTEM (9): Expels exhaust gases from main engine.

BATTERIES (10): Four 12-volt lead-acid batteries connect to provide 24-volt vehicle electrical system.

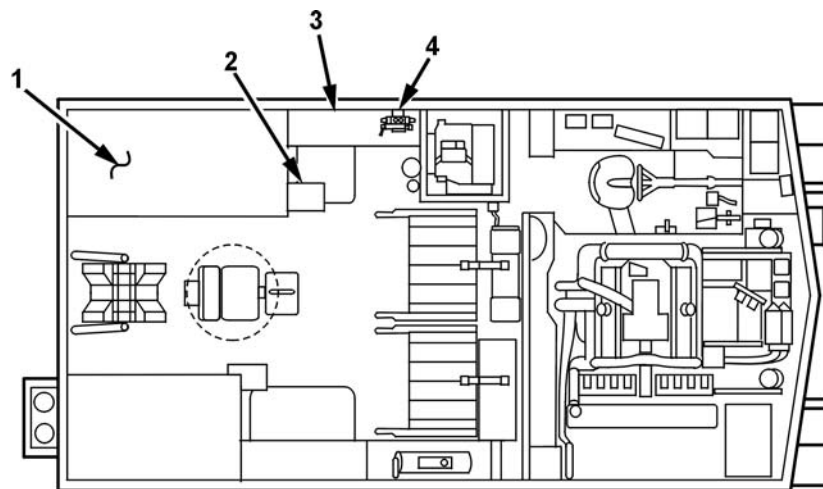
LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (continued)

M992A2 Engine, Transmission, and Driver's Compartments (continued)

FINAL DRIVE ASSEMBLIES (11): Transfer direct drive from transmission to drive sprockets.

TRANSMISSION (12): XTG-411-4 transmission contains cross-drive torque converter and provides four speeds forward and two reverse.

M992A2 Crew and Cargo Compartment



FTOLOC-006aap

LEFT REAR CHARGE CANISTER STOWAGE SHELVES (1): Provide stowage for M13A2 canisters, PA37A1 canisters, fuses, 0.50-caliber ammunition, primer, and three copperhead rounds.

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

LEFT FRONT CHARGE CANISTER STOWAGE AREA (3): Provides stowage for M13A2 canisters.

HYDRAULIC CONTROL PANEL (4): Contains controls and gages for operation of hydraulic system.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (continued)

M992A2 Crew and Cargo Compartment (continued)

PROJECTILE RACK ASSEMBLIES (5): Two projectile rack assemblies, each containing five removable and interlocking rack sections, provide stowage capacity for 90 155-millimeter projectiles. Boxes above the rack assemblies provide stowage for M3A1 canisters and M119A1 canisters.

HYDRAULIC RESERVOIR (6): Contains hydraulic fluid to operate conveyor and upper rear door.

PERSONNEL HEATER (7): Provides heat in crew compartment.

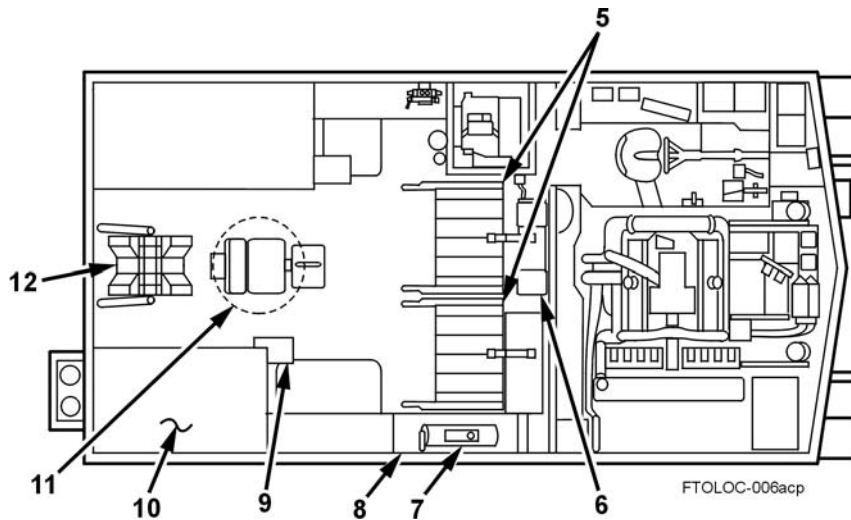
RIGHT FRONT CHARGE CANISTER STOWAGE SHELVES (8): Provide stowage for M13A2 canisters, PA37A1 canisters, and 0.50-caliber ammunition.

AN/PSN-11 MOUNT ASSEMBLY (9): Provides stowage for AN/PSN-11 (precision lightweight GPS receiver, or PLGR).

RIGHT REAR CHARGE CANISTER STOWAGE SHELVES (10): Provide stowage for M13A2 canisters and PA37A1 canisters.

COMMANDER'S SEAT (11): Provides seating for the commander.

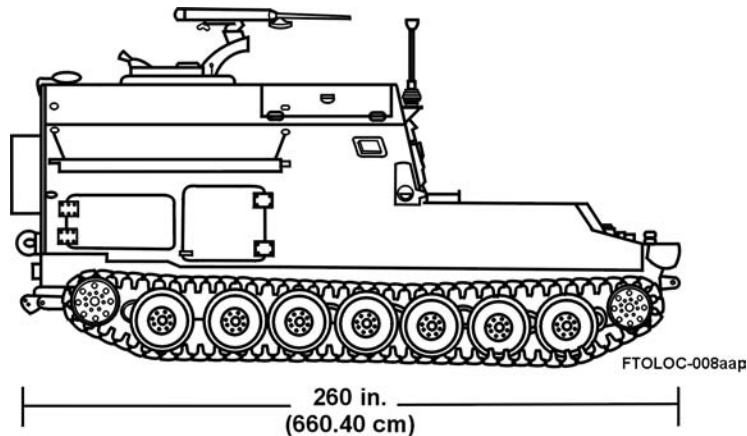
CONVEYOR (12): Used to load or unload ammunition. Conveyor can be operated hydraulically or manually.



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
APU crankcase (Onan Model DJEAM)	3 1/2 qt (3.31 L)
APU crankcase (Hatz Model 2 G 40)	2.65 qt (2.5 L)
APU chaincase	1 qt (0.95 L)
Hydraulic reservoir	18 1/2 gal. (70.03 L) dry 13 gal. (49.26 L) refill
Final drive	2 qt (1.89 L)
Fan gear case	0.43 qt (0.41 L)



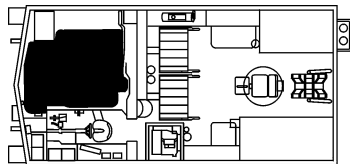
Performance

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)

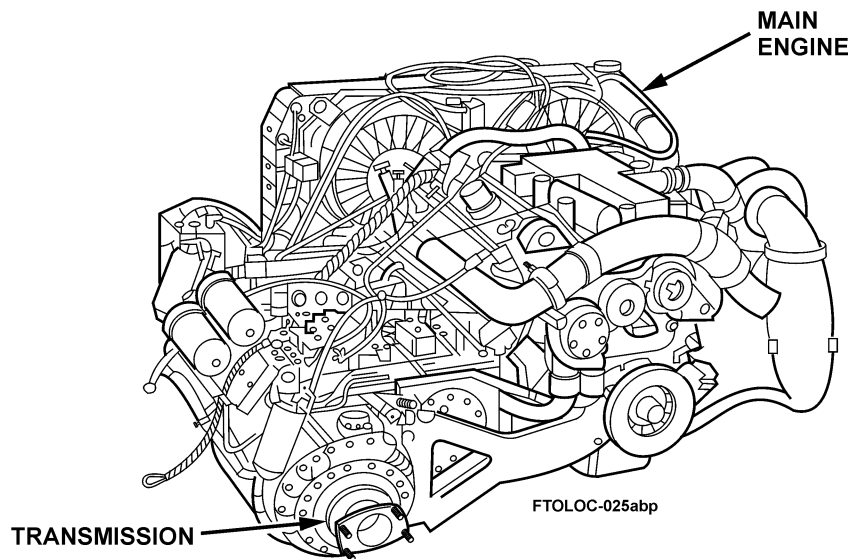
END OF WORK PACKAGE

**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 revolutions per minute 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.

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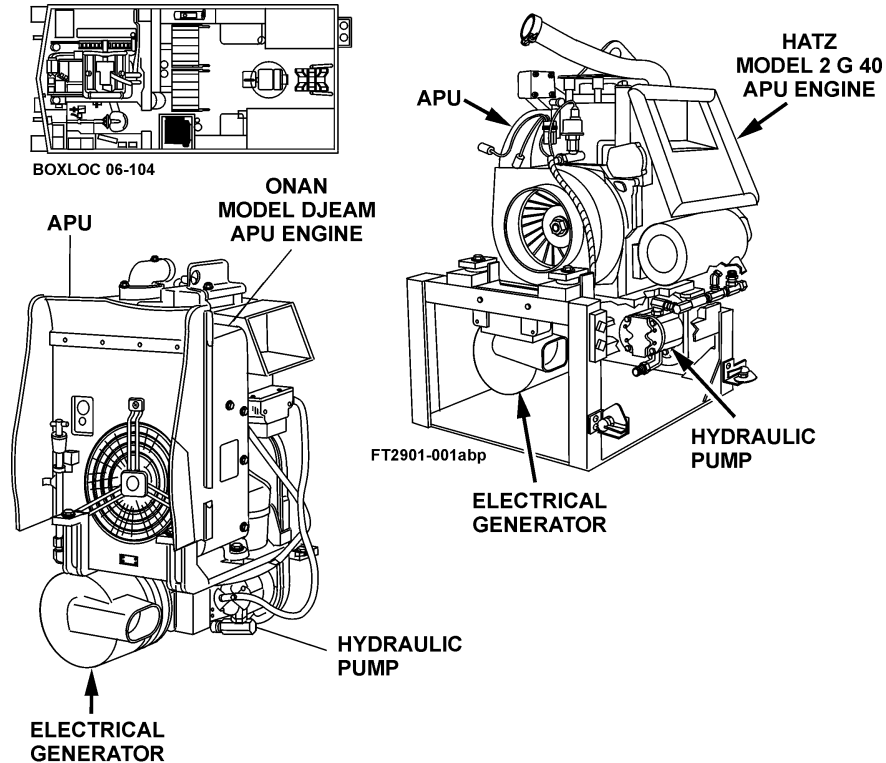
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**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

THEORY OF OPERATION: AUXILIARY POWER UNIT (APU)



FT2901-002

APU: The APU uses an independent engine to drive (via a chain-and-sprocket arrangement) an electrical generator and hydraulic pump.

ONAN MODEL DJEAM APU ENGINE: The Onan APU engine is a 2-cylinder, 4-cycle, 11.5-horsepower diesel engine. Ignition, fuel supply switch, and engine indicators are located on the APU control box in the cargo compartment.

HATZ MODEL 2 G 40 APU ENGINE: The Hatz APU engine is a 2-cylinder, 4-cycle, 13.5-horsepower diesel engine. Ignition, fuel supply switch, and engine indicators are located on the APU control box in the cargo compartment.

ELECTRICAL GENERATOR: The generator supplies enough power to run its own electrical system and that of a supported vehicle, via slave receptacles and cable. This slave power may be used to charge dead batteries of a disabled vehicle or to operate the supported vehicle's electrical system.

HYDRAULIC PUMP: The rotary-gear-type hydraulic pump supplies hydraulic fluid to all hydraulic circuits whenever the APU is functioning.

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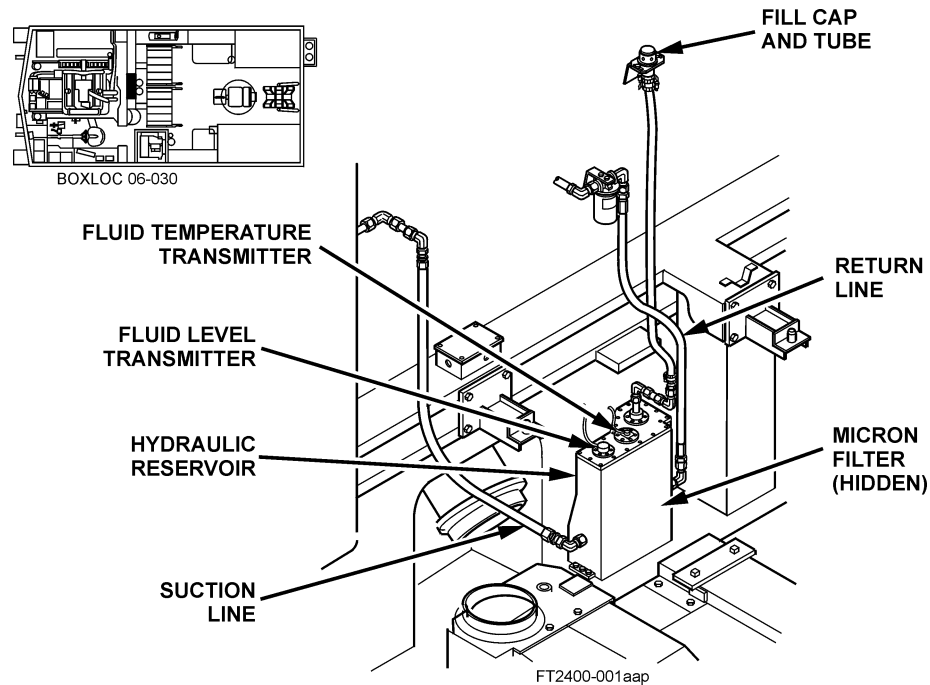
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**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

THEORY OF OPERATION: HYDRAULIC RESERVOIR



HYDRAULIC RESERVOIR: Holds hydraulic system fluid. Reservoir capacity is 13 gallons (49.26 L).

SUCTION LINE: Passes fluid to the hydraulic pump. A strainer at the inlet of the line prevents contaminants from entering the hydraulic circuits.

RETURN LINE: Passes exhausted hydraulic fluid back to the reservoir. An in-line, 10-micron filter removes particles from the returning fluid.

FILL CAP AND TUBE: Permit ease of hydraulic fluid refill. A strainer is housed within the tube to prevent entry of contaminants.

FLUID LEVEL TRANSMITTER: Monitors the level of hydraulic fluid in the reservoir. The transmitter emits an electronic signal to a level gage on the hydraulic control panel.

FLUID TEMPERATURE TRANSMITTER: Monitors the temperature of hydraulic fluid in the reservoir. The transmitter emits an electronic signal to a temperature gage on the hydraulic control panel.

MICRON FILTER (HIDDEN): Filters hydraulic fluid returning to the reservoir.

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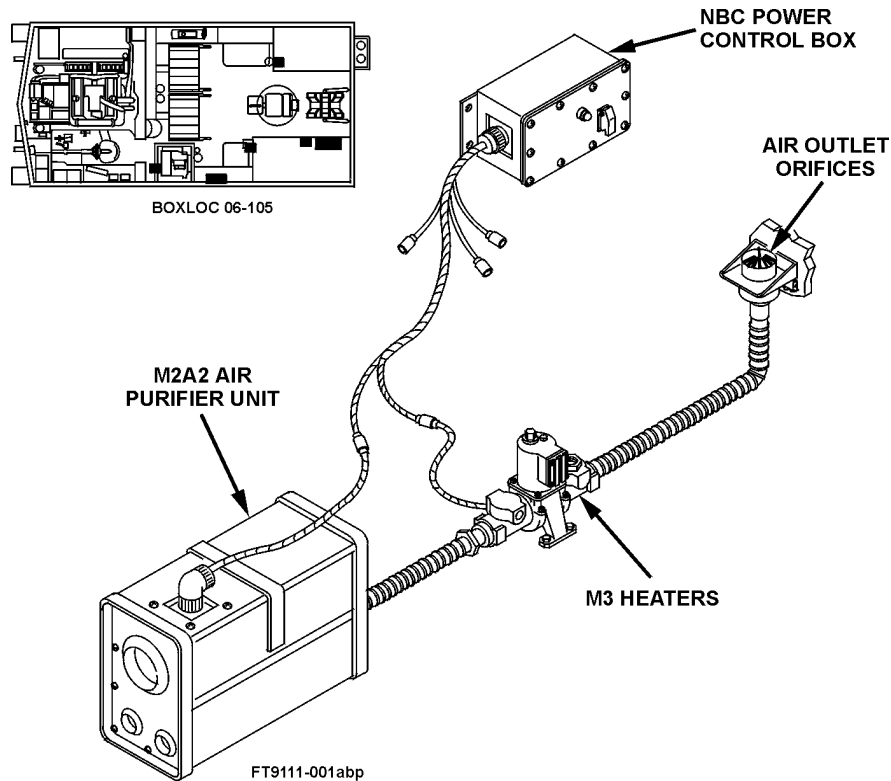
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**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

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 ORIFICES: Provide 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: Warm 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).

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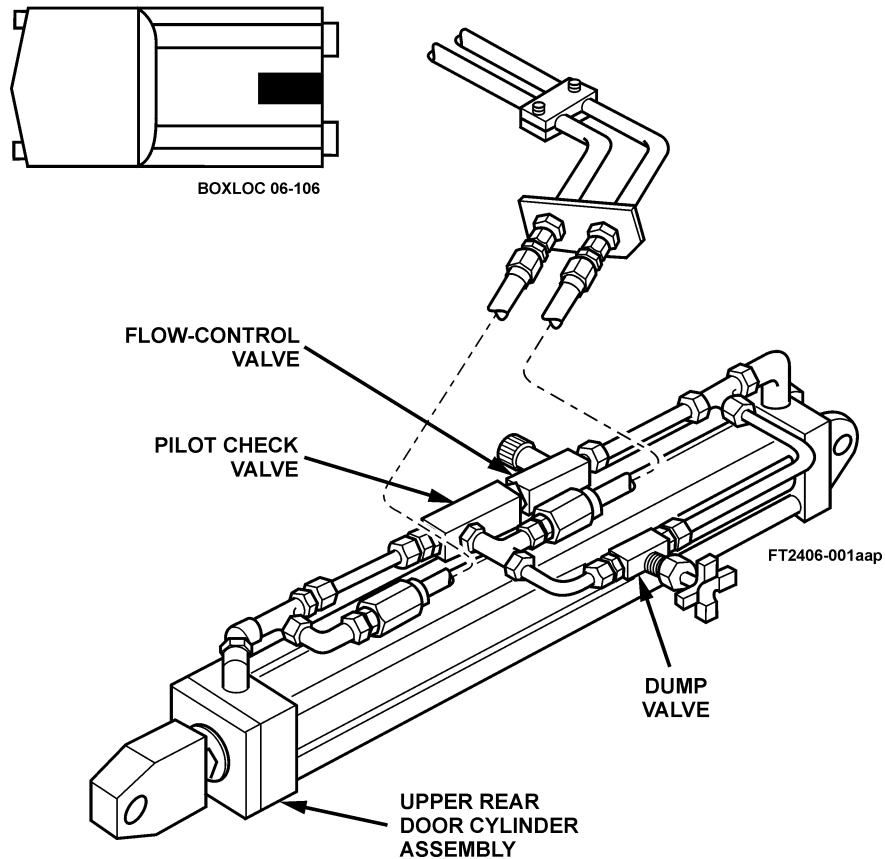
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OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

THEORY OF OPERATION: HYDRAULIC ACTUATORS AND RELATED COMPONENTS



UPPER REAR DOOR CYLINDER ASSEMBLY: Opens and closes the upper rear door (ballistic shield) hydraulically.

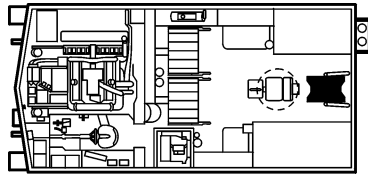
FLOW-CONTROL VALVE: An adjustable valve that enables smooth closing of the upper rear door (ballistic shield). This valve is preset at the factory and should not require adjustment.

PILOT CHECK VALVE: Prevents dangerous door drop if hydraulic line ruptures.

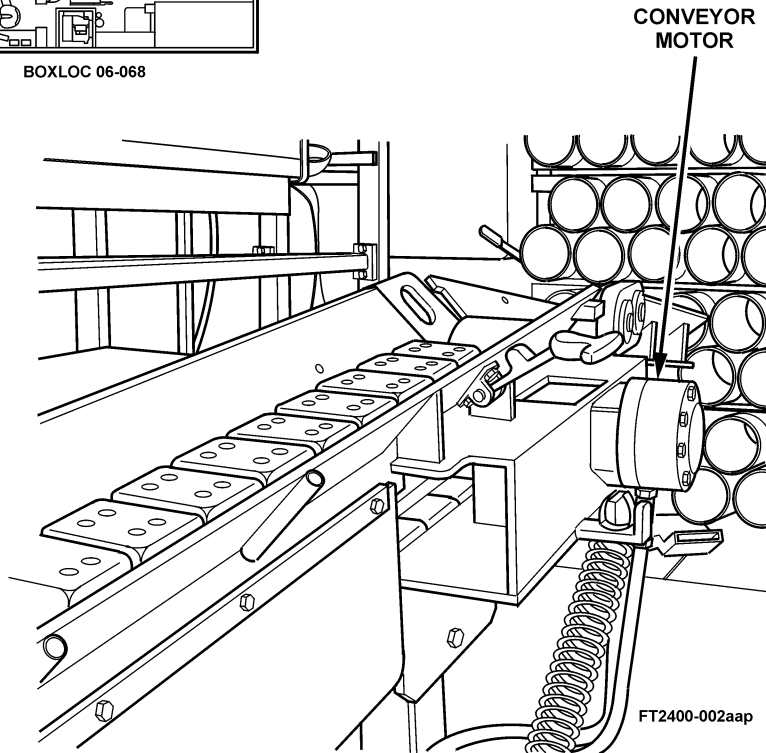
DUMP VALVE: Enables the operator to close the door if hydraulic power is lost. This is accomplished by opening the dump valve and then shifting ballistic shield directional control valve, located on the hydraulic control panel, to the down position.

THEORY OF OPERATION: HYDRAULIC ACTUATORS AND RELATED COMPONENTS (continued)

0007 00



BOXLOC 06-068



CONVEYOR MOTOR

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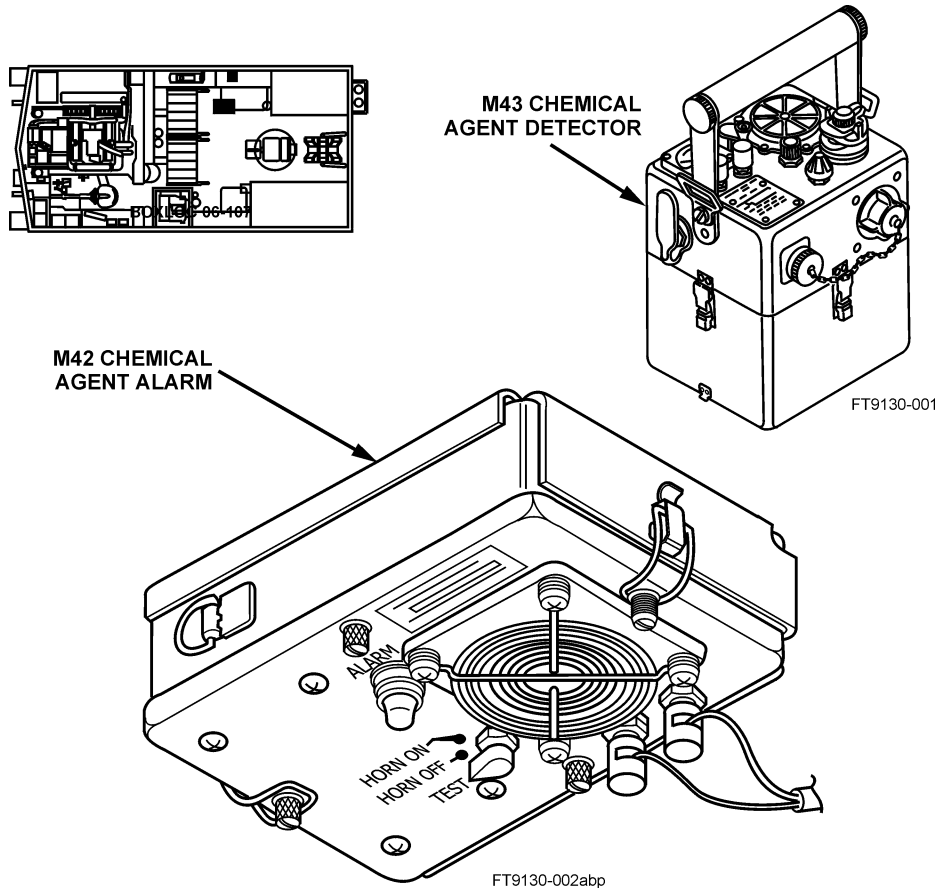
CONVEYOR MOTOR: Drives the conveyor sprocket and chain. The motor is hydraulically operated and operation is reversible. Rotational direction of the motor is determined by the conveyor directional control valve (p. 0010 00-13). Rotational speed of the motor is controlled by the setting of a flow-control valve (p. 0010 00-9).

END OF WORK PACKAGE

OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

**THEORY OF OPERATION: CHEMICAL AGENT DETECTION AND
ALARM SYSTEM THEORY OF OPERATION**

0008 00



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.

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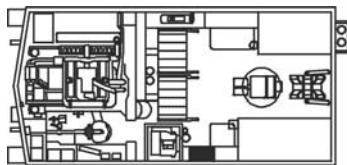
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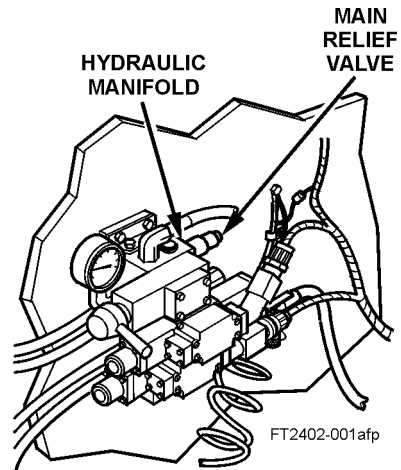
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**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

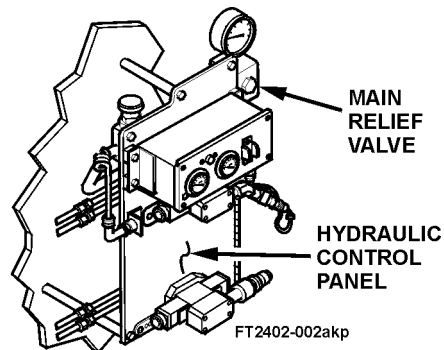
THEORY OF OPERATION: HYDRAULIC CONTROL PANEL



BOXLOC 06-108



VEHICLES S/N 821 AND ABOVE



VEHICLES S/N 1 THROUGH 820

HYDRAULIC CONTROL PANEL/HYDRAULIC MANIFOLD: Controls hydraulic system functions and allows monitoring of hydraulic system pressure.

MAIN RELIEF VALVE: Limits hydraulic system pressure. Normal maximum pressure setting is 1550 psi (10,686.75 kPa). System pressure over 1550 psi is relieved through the valve to the reservoir.

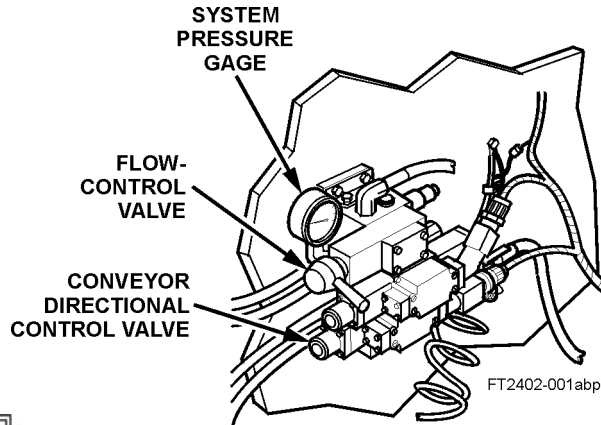
THEORY OF OPERATION: HYDRAULIC CONTROL PANEL (continued)

000900

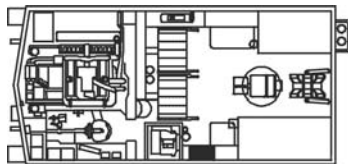
SYSTEM PRESSURE GAGE: Monitors hydraulic system pressure.

FLOW-CONTROL VALVE: Regulates flow of hydraulic fluid. Valve can be adjusted manually to achieve desired conveyor speed.

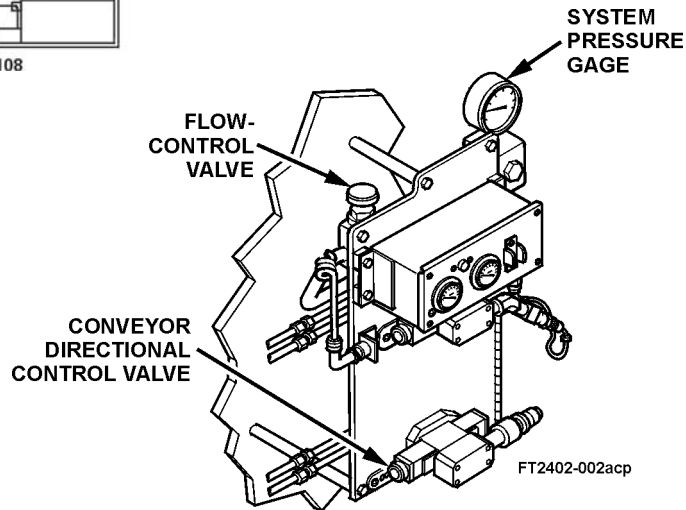
CONVEYOR DIRECTIONAL CONTROL VALVE: Controls direction of fluid flow to the conveyor motor. Positioning of an internal spool determines the direction of conveyor motor rotation. The valve may be electrically powered by the conveyor switch or manually operated by pressing the buttons at either side of the valve.



VEHICLES S/N 821 AND ABOVE



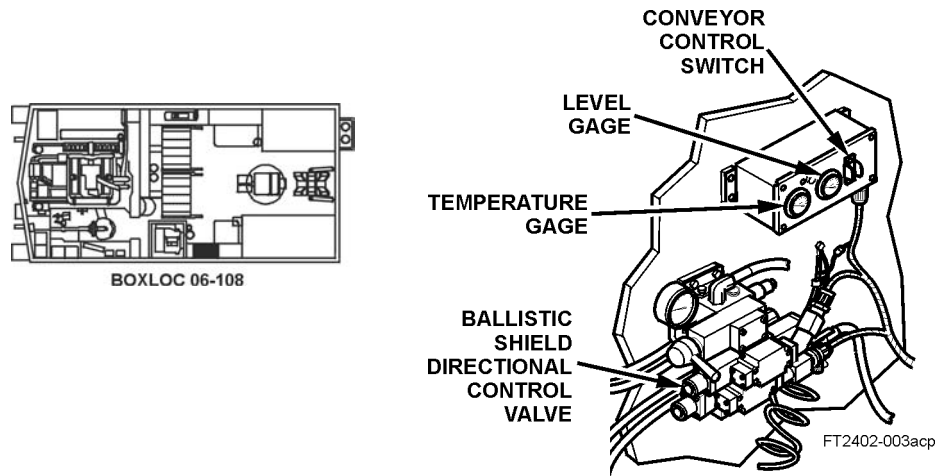
BOXLOC 06-108



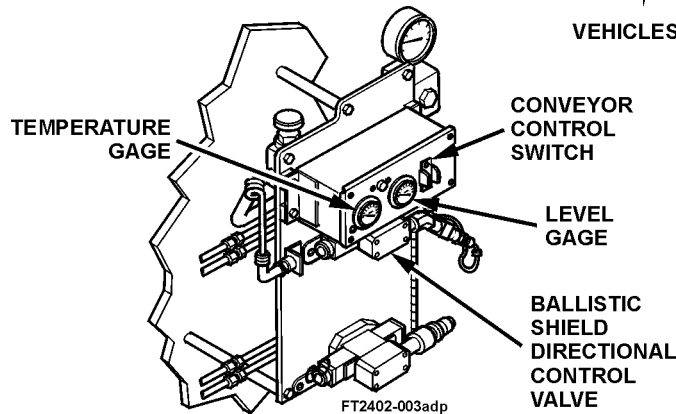
VEHICLES S/N 1 THROUGH 820

THEORY OF OPERATION: HYDRAULIC CONTROL PANEL (continued)

0009 00



VEHICLES S/N 821 AND ABOVE



VEHICLES S/N 1 THROUGH 820

BALLISTIC SHIELD DIRECTIONAL CONTROL VALVE: Controls direction of fluid flow to the upper rear door cylinder. Positioning of an internal spool determines direction of cylinder rod movement. The valve may be electrically powered by either of the upper rear door switches or may be manually operated by pressing the buttons at either side of the valve.

TEMPERATURE GAGE: Displays the temperature of hydraulic system fluid monitored by the fluid temperature transmitter.

LEVEL GAGE: Displays level of hydraulic system fluid in the hydraulic reservoir as monitored by the fluid level transmitter.

CONVEYOR CONTROL SWITCH: Controls electrical activation of the conveyor directional control valve.

END OF WORK PACKAGE
0009 00-3/4 blank

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TM 9-2350-293-10

CHAPTER 2
OPERATOR INSTRUCTIONS



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OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

**DESCRIPTION AND USE OF OPERATOR CONTROLS
AND INDICATORS**

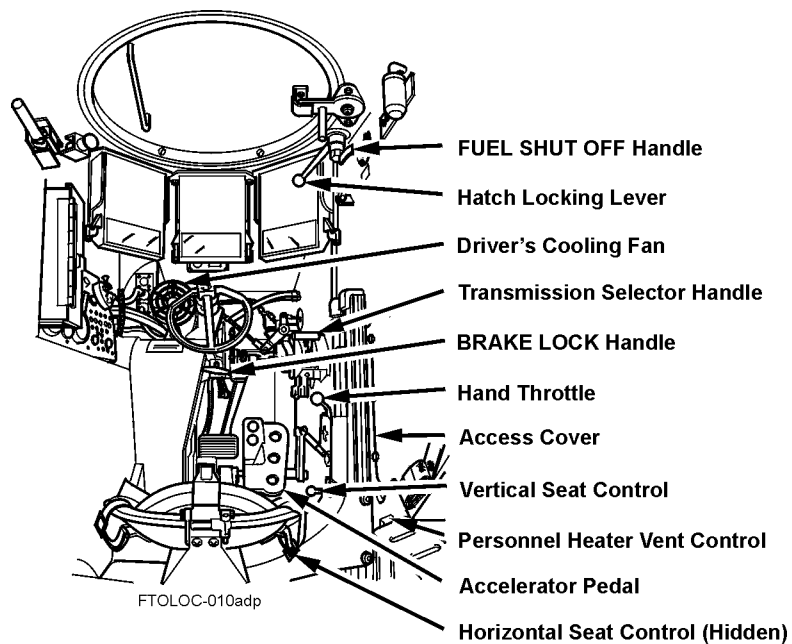
THIS WORK PACKAGE COVERS:

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 0011 00 through 0044 00.



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

0010 00

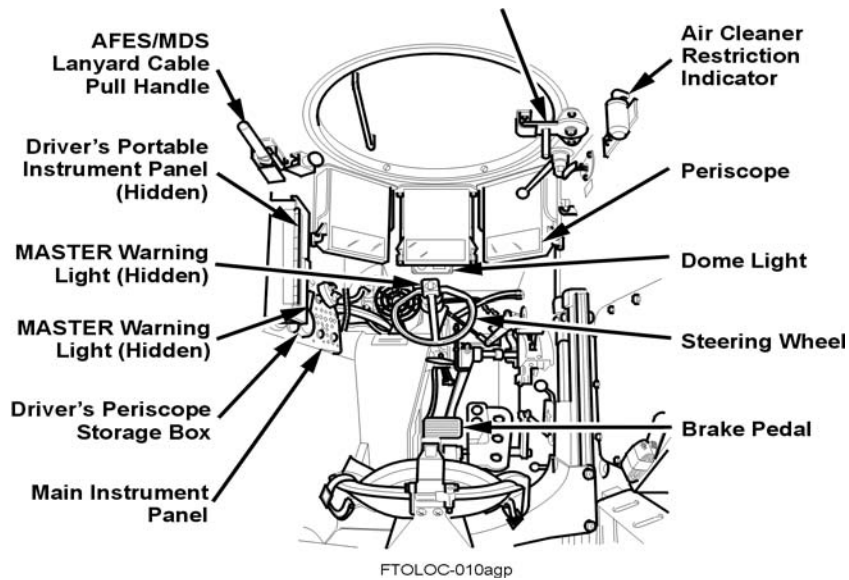
DRIVER'S CONTROLS AND INDICATORS (continued)

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.



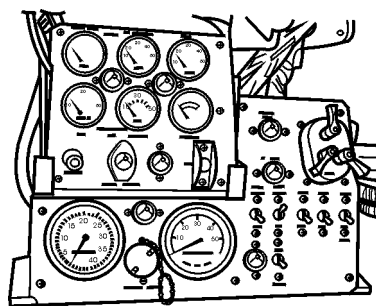
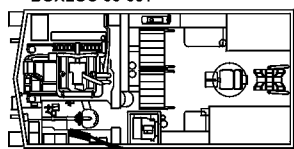
DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS (continued)

0010 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 06-031

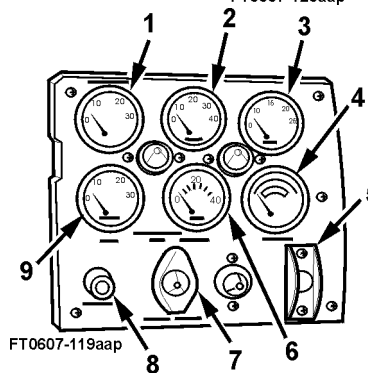


FT0607-120aap

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.



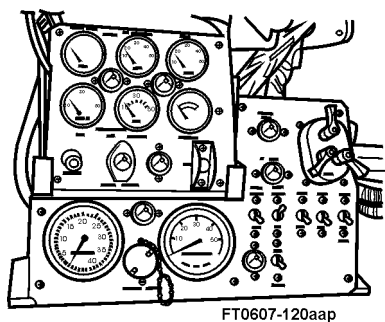
FT0607-119aap

DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS (continued)

0010 00

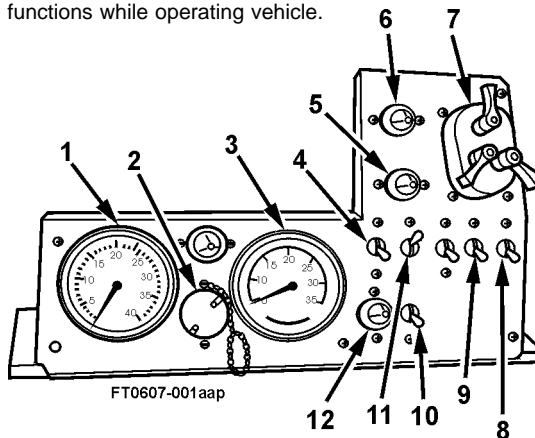
DRIVER'S CONTROLS AND INDICATORS (continued)

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

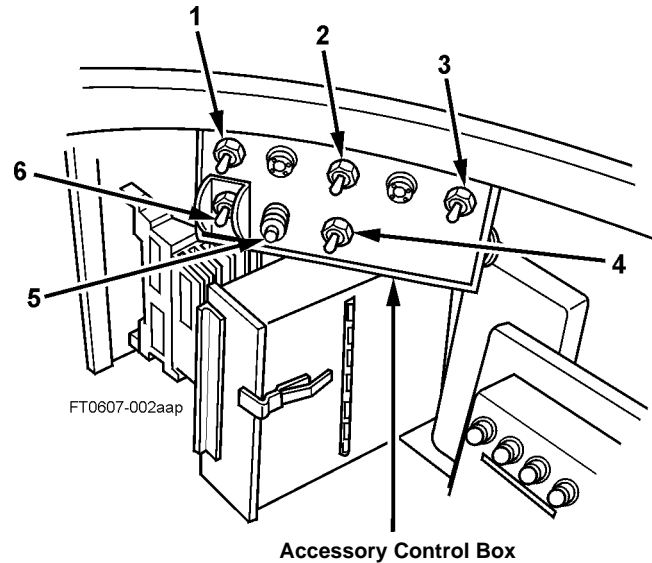
Allows driver to monitor engine functions while operating vehicle.



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

0010 00

DRIVER'S CONTROLS AND INDICATORS (continued)



The accessory control box controls heat and ventilation of the crew compartment and reset for 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.

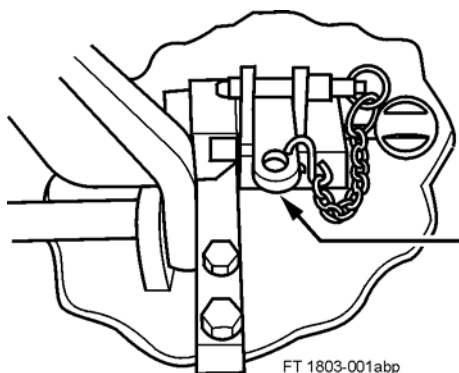
The HEATER CONTROL switch (6) starts and runs the heater.

For operating instructions for the personnel heater, see page 0033 00-2.

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

0010 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.

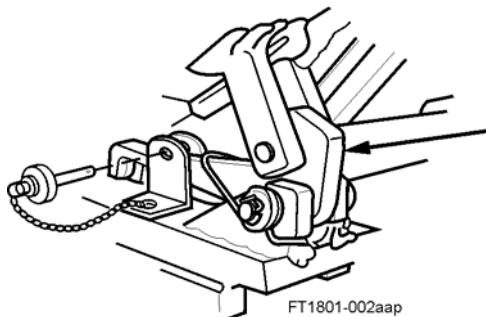
Spring-loaded lockpin automatically engages when door is fully raised.

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.

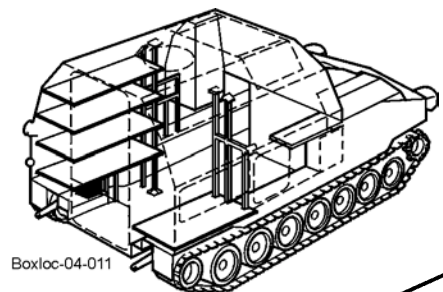
To release latch, remove quick-release pin from horizontal position and stow in forward hole, then push latch handle to release latch.

DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS (continued)

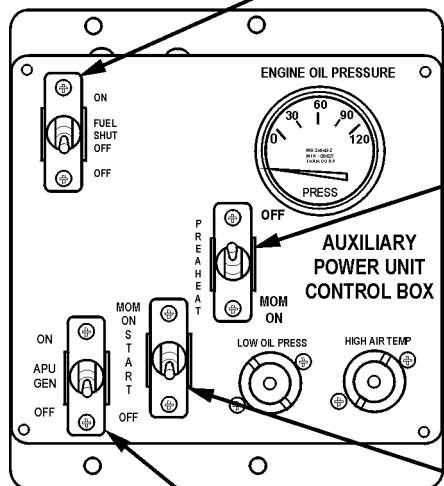
0010 00

CREW CONTROLS AND INDICATORS (continued)

Auxiliary Power Unit (APU) Control Box



Boxloc-04-011



FT0608-054aap

APU GEN Switch

This two-position toggle switch turns APU generator on and off.

Switch must be set to OFF when starting the APU.

FUEL SHUT OFF Switch

This two-position toggle switch controls electrical power to the APU fuel solenoid and APU fuel pumps.

When the toggle switch and vehicle MASTER switch are turned to ON, fuel is supplied for operation of the APU. When the switch is positioned to OFF, fuel supply is shut off.

The switch should always be turned to OFF when the APU is shut down.

PREHEAT Switch

Positioning this switch lever to MOM ON turns on the preheating units in the APU combustion chamber and supplies power to the START switch.

When the switch lever is released, the switch returns to OFF, the preheating units turn off, and electrical continuity to the START switch is broken.

START Switch

With the PREHEAT switch held to ON, positioning the START switch to MOM ON will supply electrical power to APU starting components.

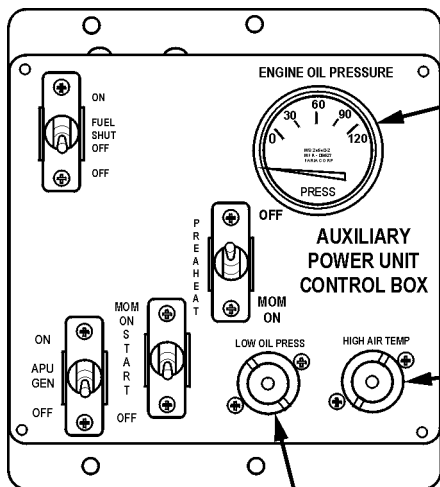
When the switch lever is released, the switch returns to OFF and electrical continuity to APU starting components is broken.

DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS (continued)

0010 00

CREW CONTROLS AND INDICATORS (continued)

Auxiliary Power Unit (APU) Control Box (continued)



FT0608-054abp

ENGINE OIL PRESSURE Gage

Monitors APU engine oil pressure in pounds per square inch (psi). The gage is graduated in 10 psi increments from 0 to 60 psi (Onan DJEAM) or 0 to 120 psi (Hatz 2 G 40). Normal operating pressure is over 25 psi for both Onan DJEAM and Hatz 2 G 40.

HIGH AIR TEMP Lamp

This red lamp lights when the APU overheats.

LOW OIL PRESS Lamp

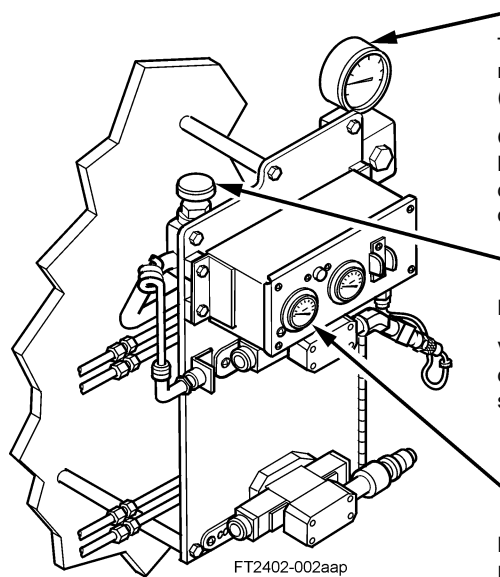
This red lamp lights when a low oil pressure condition exists in the APU lubricating system.

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

0010 00

CREW CONTROLS AND INDICATORS (continued)

Hydraulic Control Panel



Hydraulic Pressure Gage

The gage measures pressure generated by the main hydraulic pump in pounds per square inch (psi), from 0 to 3000 psi.

Gage should measure 100 to 300 psi with hydraulic pump operating conveyor, upper rear door down, and hydraulic fluid at normal operating temperature.

Flow-Control Valve

Meters flow of hydraulic fluid to conveyor.

Valve can be manually adjusted to increase or decrease flow and, therefore, the operating speed of conveyor.

**HYDRAULIC RESERVOIR
TEMPERATURE Gage**

Monitors temperature of hydraulic fluid in the reservoir. Temperature is measured in degrees Fahrenheit.

Gage is graduated in 20°F increments from 120°F to 240°F.

Hydraulic fluid temperature should not exceed 160°F.

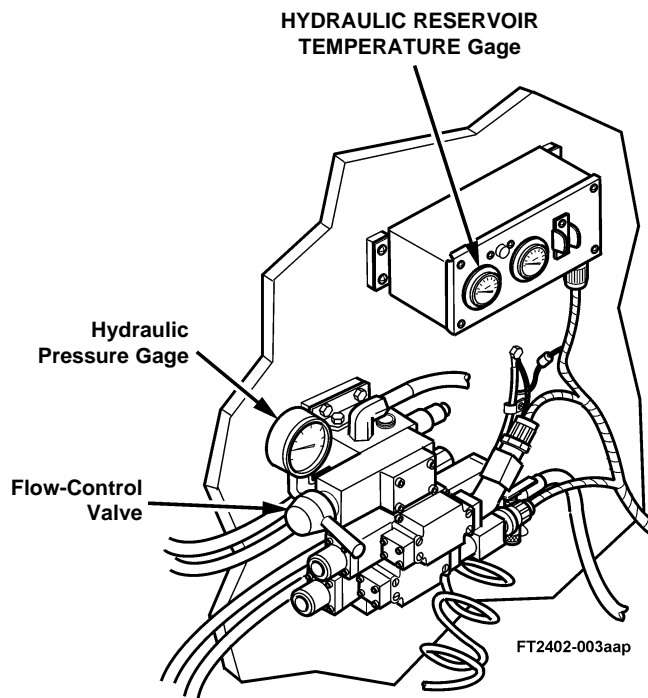
VEHICLES S/N 1 THROUGH 820

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

0010 00

CREW CONTROLS AND INDICATORS (continued)

Hydraulic Control Panel (continued)



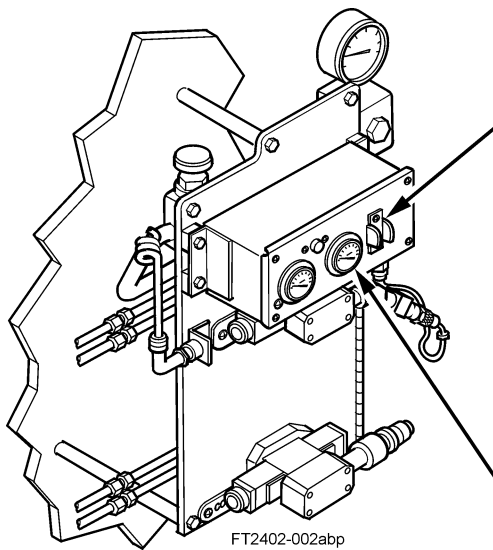
VEHICLES S/N 821 AND ABOVE

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

0010 00

CREW CONTROLS AND INDICATORS (continued)

Hydraulic Control Panel (continued)



VEHICLES S/N 1 THROUGH 820

CONVEYOR Switch

Electrically controls operation of conveyor directional control valve.

The three-position switch is positioned down (IN) to load cargo. Upward positioning of switch (OUT) is used to unload cargo. Switch in center position stops conveyor.

HYDRAULIC RESERVOIR LEVEL Gage

Monitors hydraulic reservoir fluid level.

Gage is graduated from empty (E) to full (F) in 1/4-tank increments.

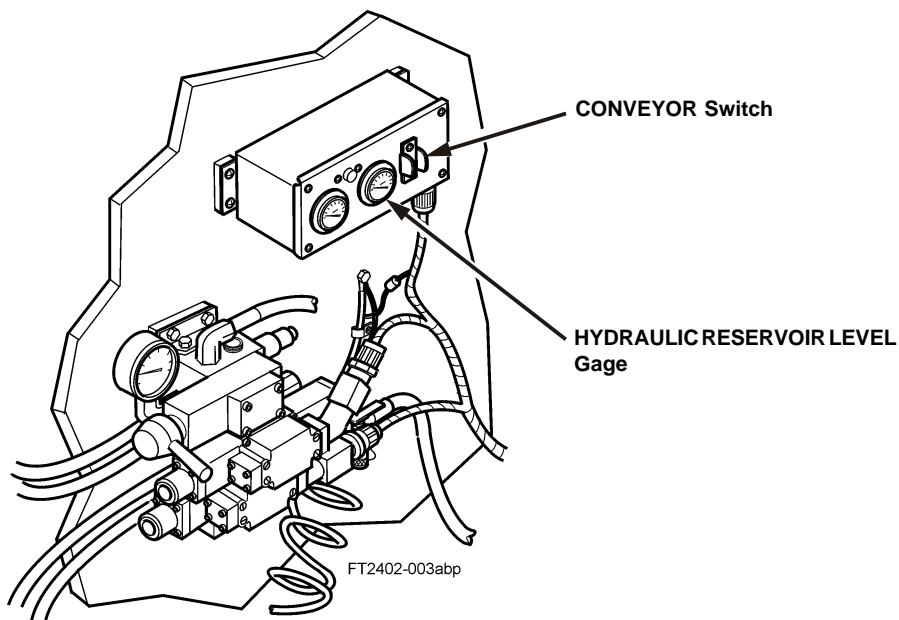
Fluid should not measure less than 3/4.

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

0010 00

CREW CONTROLS AND INDICATORS (continued)

Hydraulic Control Panel (continued)



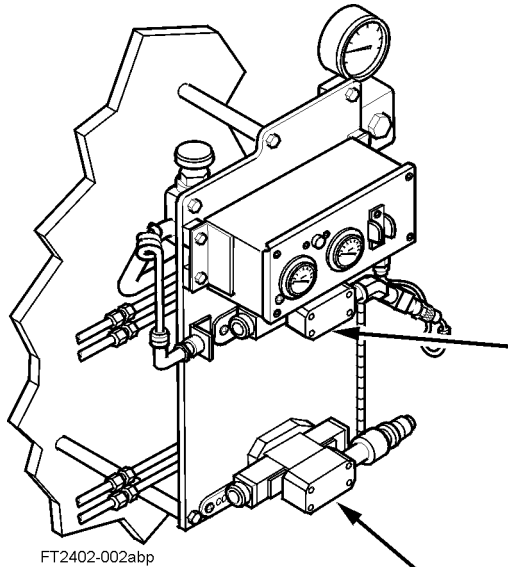
VEHICLES S/N 821 AND ABOVE

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

0010 00

CREW CONTROLS AND INDICATORS (continued)

Hydraulic Control Panel (continued)



VEHICLES S/N 1 THROUGH 820

**BALLISTIC SHIELD Directional
Control Valve**

Directs flow of hydraulic fluid to upper rear door (ballistic shield) actuator.

The valve may be electrically controlled by top or bottom upper rear door switch or manually operated at valve.

For manual operation, press right-hand button to close upper rear door and press left-hand button to open door.

**CONVEYOR Directional
Control Valve**

Directs flow of hydraulic fluid to the conveyor motor.

The valve may be electrically controlled by the conveyor switch or manually operated at the valve.

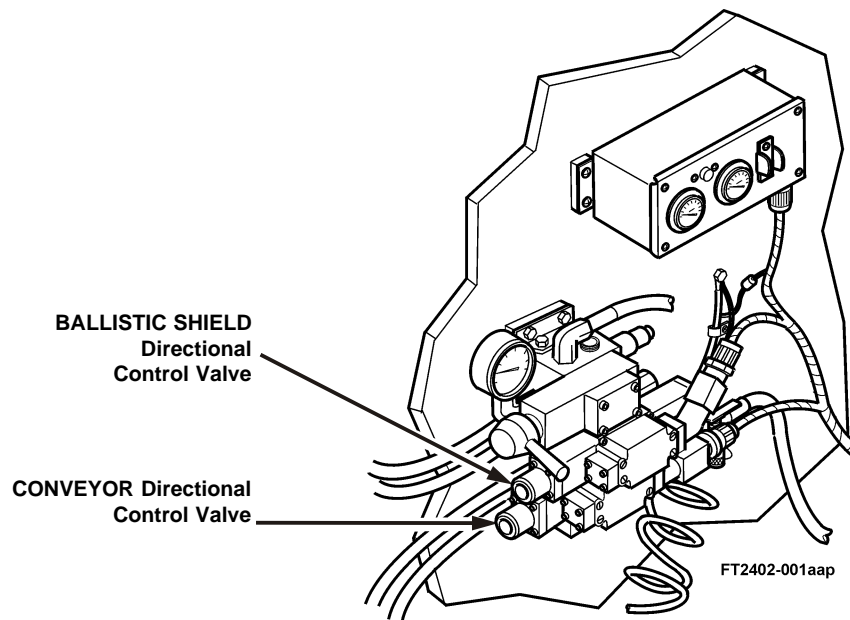
For manual operation, press the right-hand button to move the conveyor chain out; press the left-hand button to move the conveyor chain in.

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

0010 00

CREW CONTROLS AND INDICATORS (continued)

Hydraulic Control Panel (continued)



VEHICLES S/N 821 AND ABOVE

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

0010 00

CREW CONTROLS AND INDICATORS (continued)

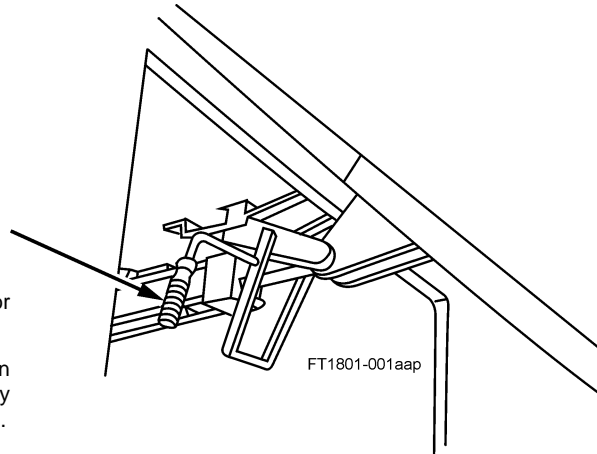
Upper Rear Door (Ballistic Shield)

**Upper Rear Door
Mechanical Lock**

Mechanically secures upper rear door in open position.

The mechanical lock holds door open in 45-degree or 90-degree position by wedging between door and roof plate.

When door opens, lock latches automatically.

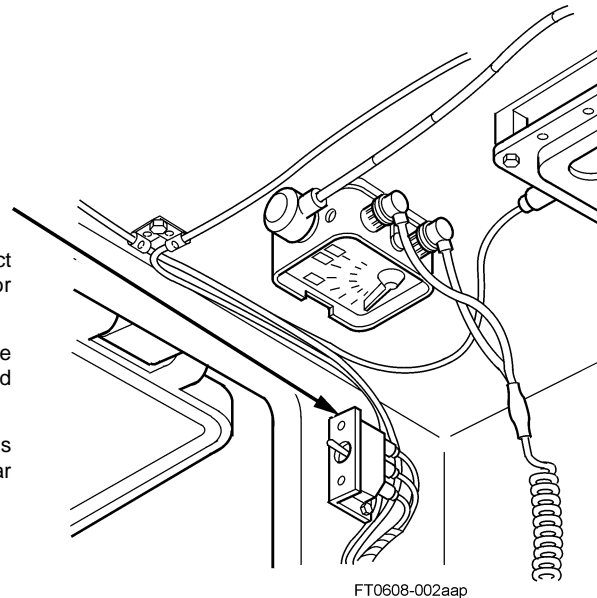


**Upper Rear Door
Switch-Top**

This three-position, momentary-contact switch controls electrical power for movement of the upper rear door.

When switch is positioned to UP, the door opens. When switch is positioned to DOWN, the door closes.

When switch lever is released, it returns to center (off) position and upper rear door movement stops.



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

0010 00

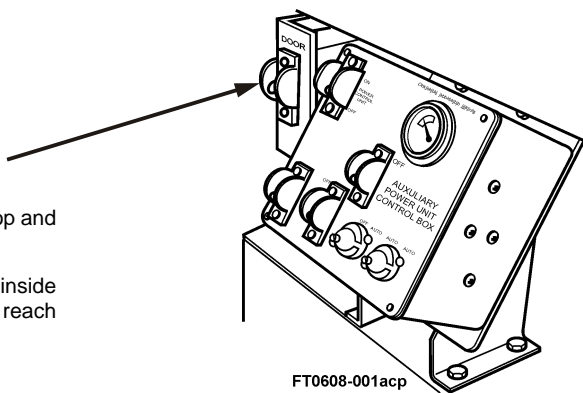
CREW CONTROLS AND INDICATORS (continued)

Upper Rear Door (Ballistic Shield) (continued)

**Upper Rear Door
Switch–Bottom**

This switch is identical to switch at top and is operated the same way.

The bottom switch is positioned just inside left side of lower rear door, well within reach of personnel outside vehicle.

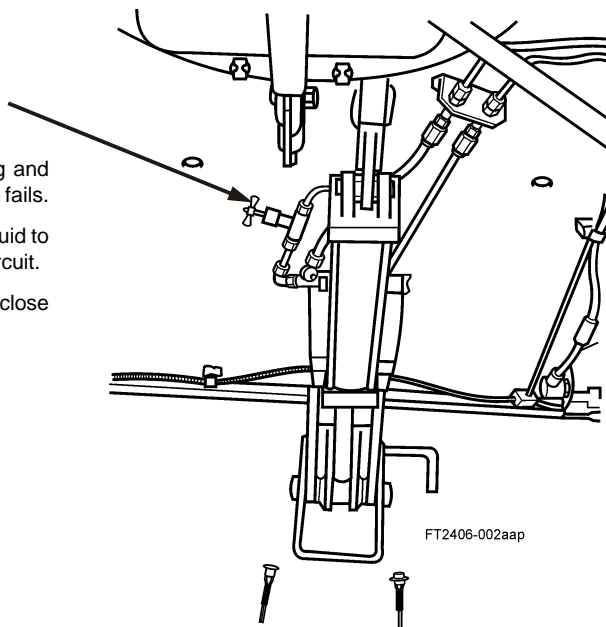


**Upper Rear Door
Dump Valve**

The valve is used to permit opening and closing of the door if hydraulic system fails.

Opening the valve allows hydraulic fluid to bypass flow-restrictive devices in circuit.

The valve should be used to open or close door manually only in emergencies.



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

0010 00

CREW CONTROLS AND INDICATORS (continued)

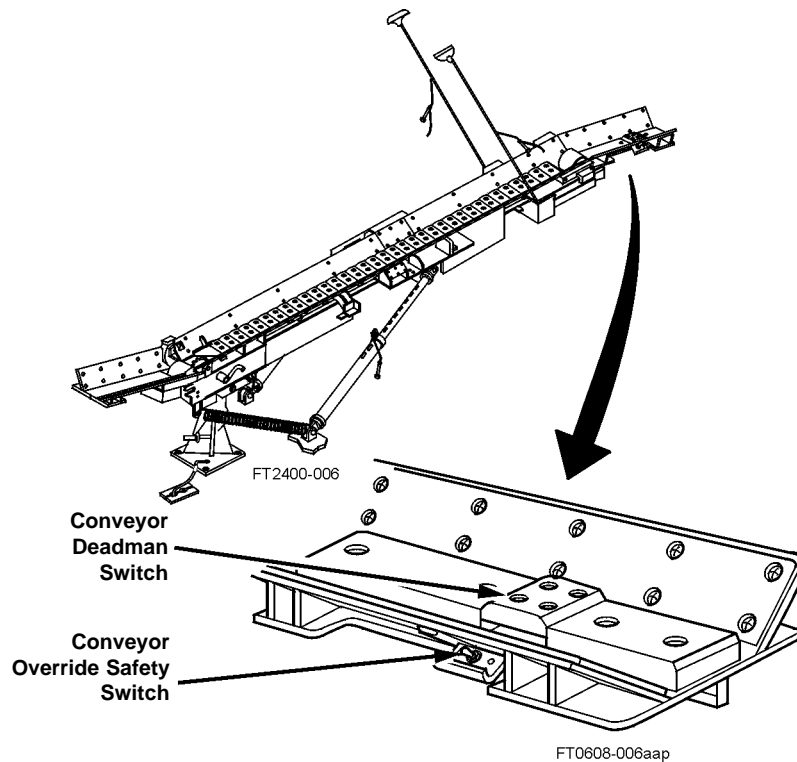
Conveyor

Conveyor Override Safety Switch

This two-position toggle switch is used to turn off conveyor from outside end of conveyor. It does this by breaking electrical continuity through the conveyor circuit, overriding main CONVEYOR switch on hydraulic control panel. The safety switch should be turned off each time conveyor is stowed.

Turning override safety switch to OFF shuts down conveyor. With safety switch turned to ON and main CONVEYOR switch positioned to either IN or OUT, conveyor will operate in selected direction.

This switch is only one safety device used to prevent pile-up of ammunition on conveyor. The main CONVEYOR switch and the deadman switch (p. 0030 00-11) should be used for normal operation.



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

0010 00

CREW CONTROLS AND INDICATORS (continued)

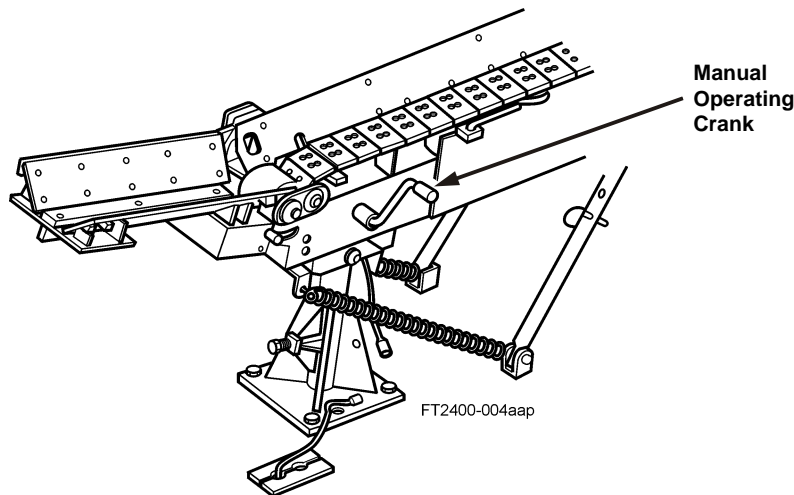
Conveyor (continued)

Manual Operating Crank

The crank is used to operate the conveyor when related hydraulic components fail.

When needed, crank handle is removed from its stowage location at base of left rear canister compartment and is inserted into hole opposite hydraulic motor.

Turning handle clockwise moves conveyor chain out. Turning handle counterclockwise moves conveyor chain in.



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

0010 00

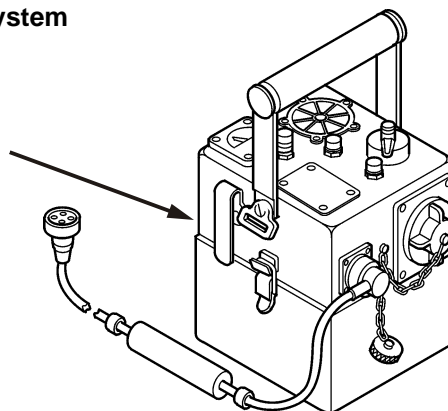
CREW CONTROLS AND INDICATORS (continued)

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.

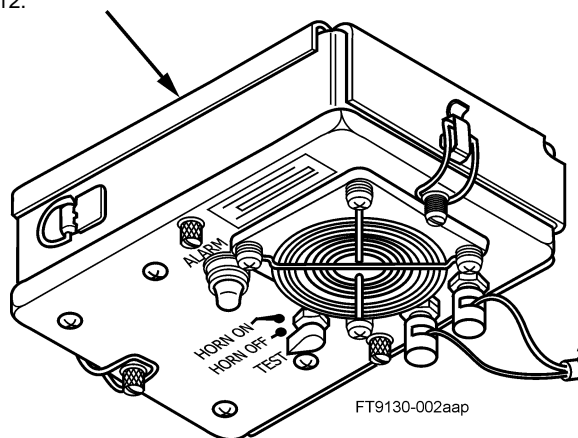


FT9130-003aap

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)

0010 00

CREW CONTROLS AND INDICATORS (continued)

Ventilated Face Piece System (VFPS)

**Air Purifier Control Box
Power Indicator Lamp**

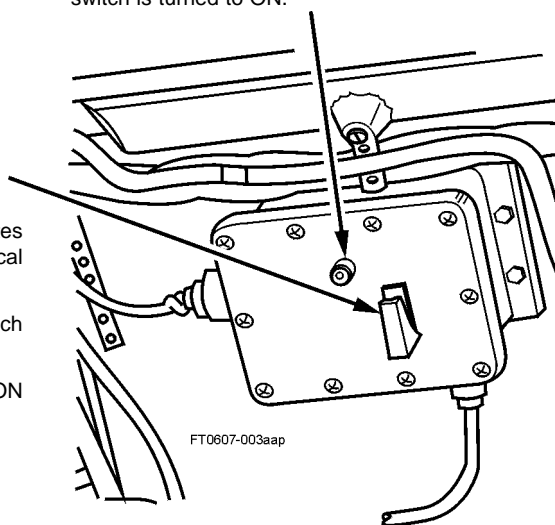
This blue-green lamp lights when on/off switch is turned to ON.

**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
Indicator Lamp**

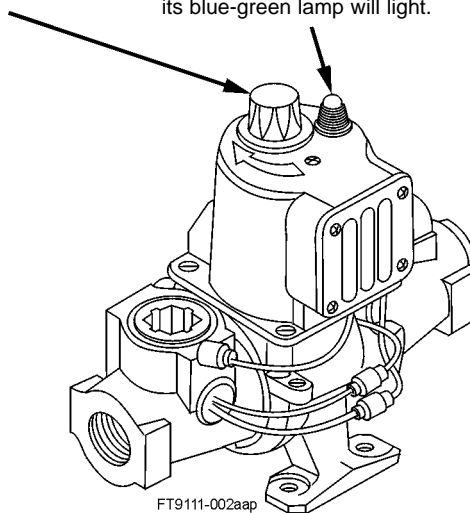
When a heater is turned on, its blue-green lamp will light.

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.



DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS (continued)

0010 00

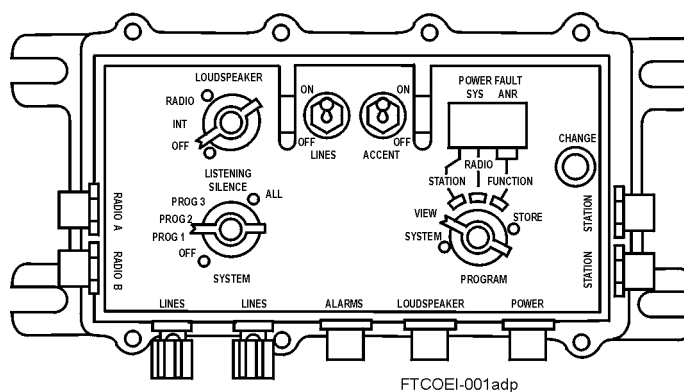
CREW CONTROLS AND INDICATORS (continued)

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.

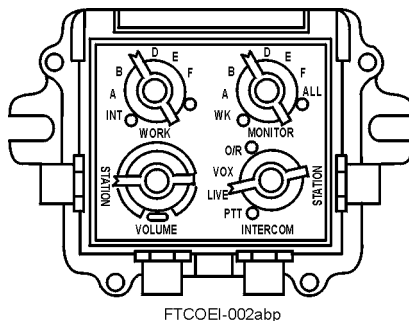
Refer to TM 11-5830-263-10 for a detailed description of this unit.



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)

0010 00

CREW CONTROLS AND INDICATORS (continued)

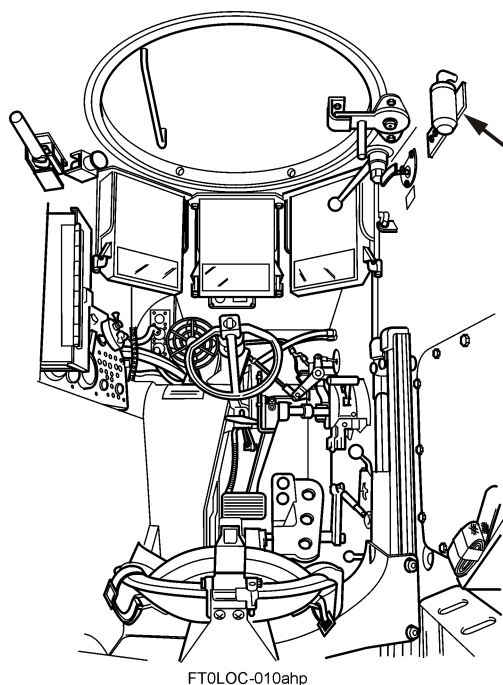
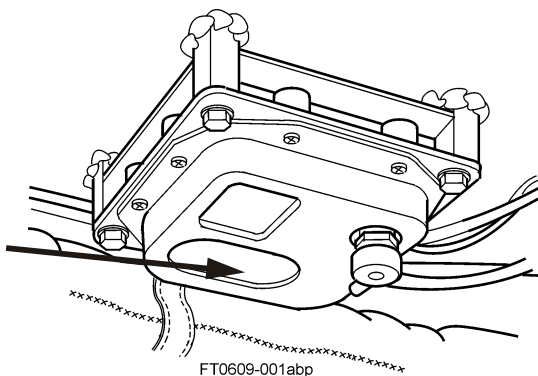
Miscellaneous Controls and Indicators

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.



Air Cleaner Restriction Indicator

Indicates a restricted or blocked filter.

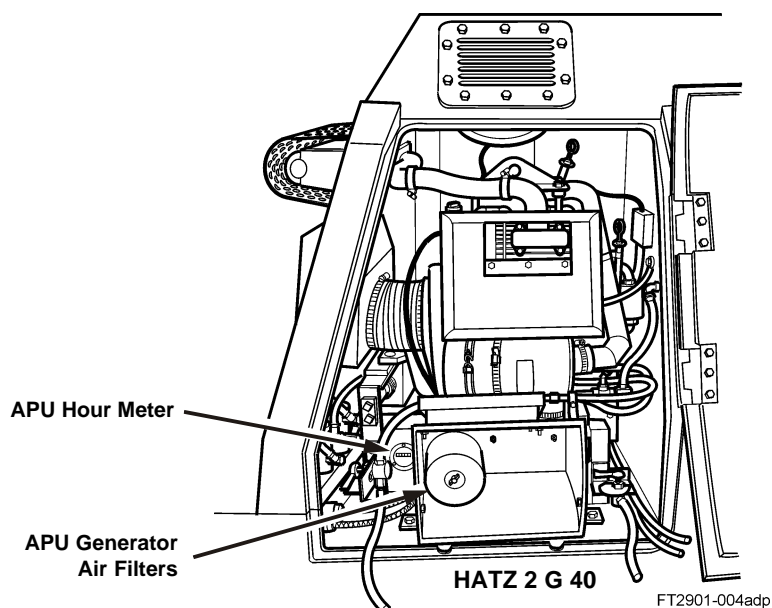
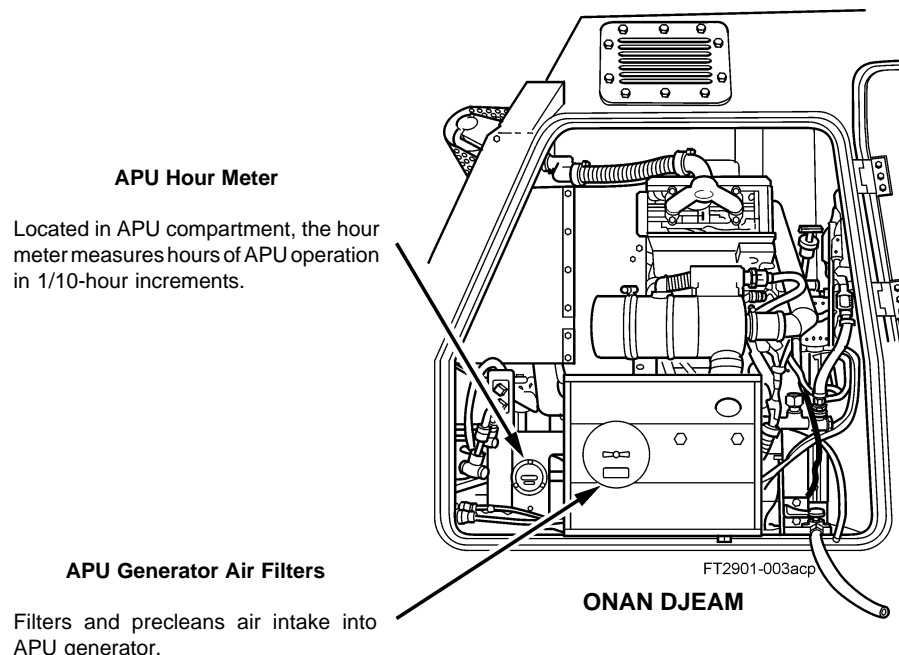
Signal window displays a yellow sleeve that indicates amount of restriction in air cleaner. When sleeve climbs into red zone, air cleaner filter is restricted and requires service.

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

0010 00

CREW CONTROLS AND INDICATORS (continued)

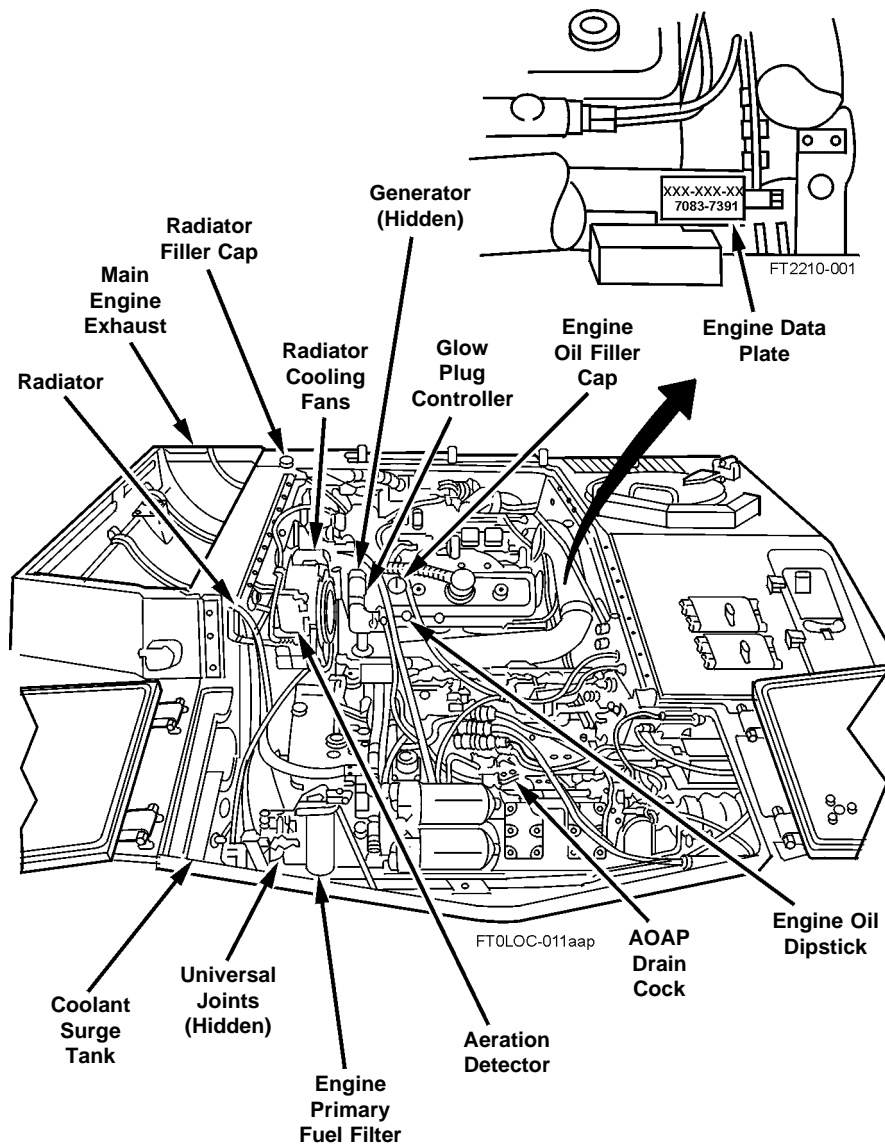
Miscellaneous Controls and Indicators (continued)



DESCRIPTION AND USE OF OPERATOR CONTROLS
AND INDICATORS (continued)

0010 00

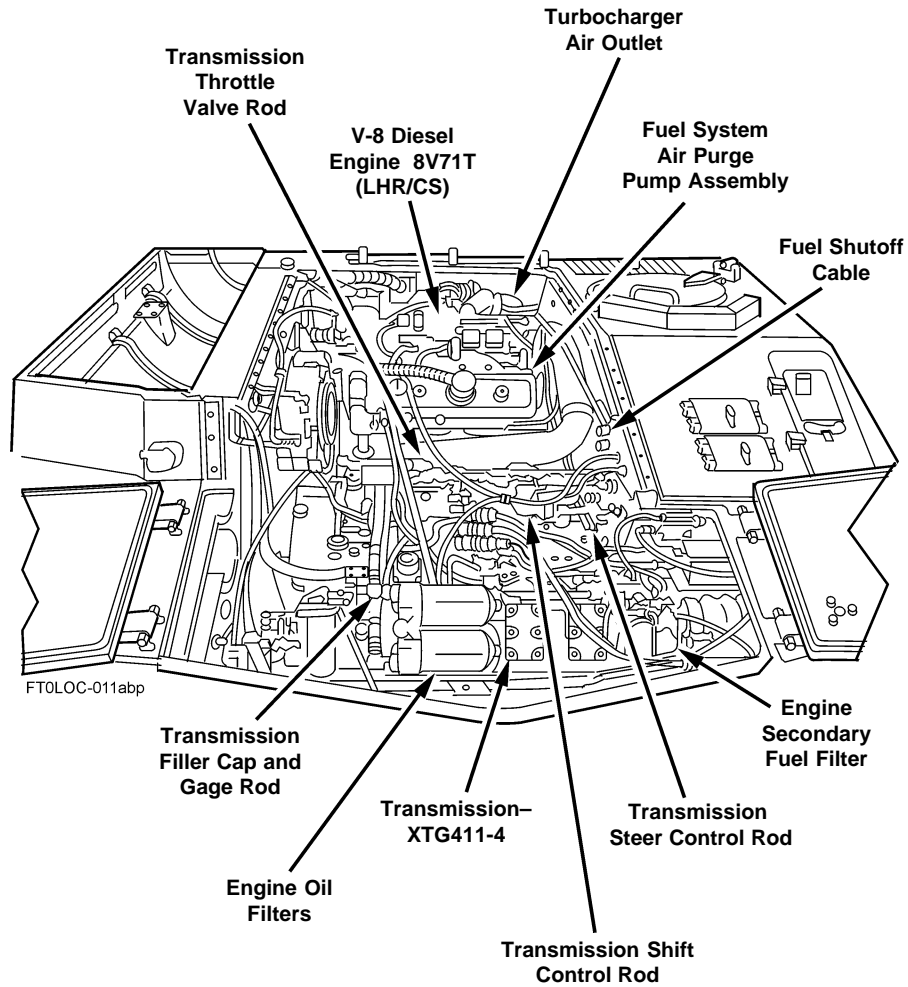
POWERPACK



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

0010 00

POWERPACK (continued)



END OF WORK PACKAGE

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**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) 0048 00 through 0051 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; rather, 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 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 or auxiliary power unit (APU), 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 m) of the vehicle must wear approved single hearing protection when the main engine or APU 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 revolutions per minute for three to five minutes or until coolant temperature measures 185°F 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

0011 00-2

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

STARTING MAIN ENGINE

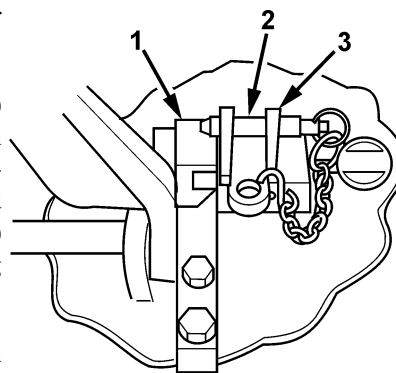
INITIAL SETUP:
Maintenance Level
Operator

WARNING

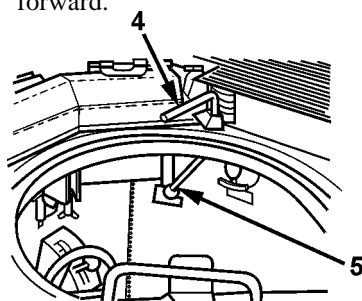
Whenever vehicle is operated with hatch door opened, hatch door must be locked.

1. Make sure driver's hatch door will lock in opened and closed positions. Lock driver's hatch door in desired position.

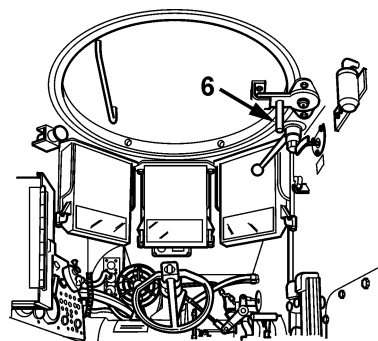
- Lock opened. Engage hold-open lock (1) with latching pin positioned over flat portion of hatch cover locking tab. Remove quick-release pin (2) from stowage position, and insert pin (2) through horizontal bracket (3) and over flat portion of hatch door locking tab.
- Lock closed. With hatch door closed, turn locking handle (5) to the rear to lock external hatch door latch (4).
- Security lock. To prevent entry from outside, push security latch handle (6) forward.



FT1803-020aap



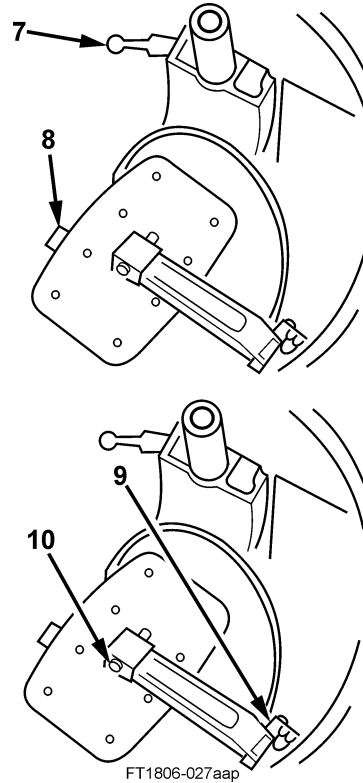
FT1803-021aap



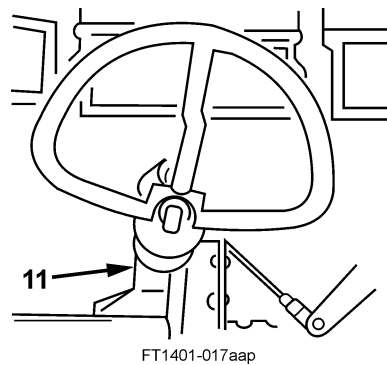
FT1803-023

2. Adjust driver's seat as necessary.

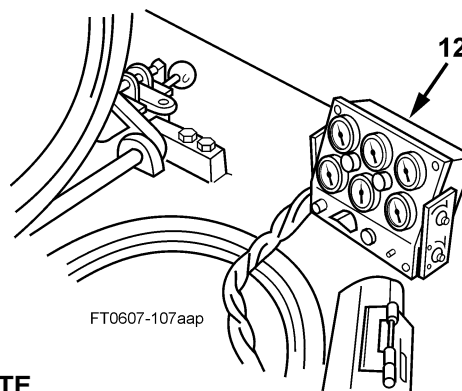
- Adjusting up and down. Hold seat down and pull up on adjusting lever (7). With lever raised, lift or press seat to obtain correct height. Release adjusting lever to lock in position.
- Adjusting forward and backward. Pull up on adjusting tab (8) and move seat forward or backward. Release adjusting 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.

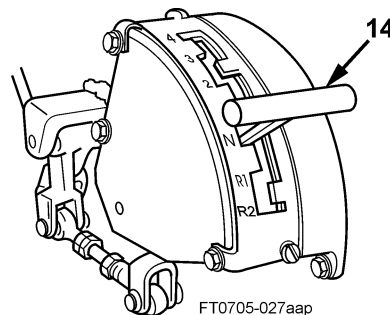
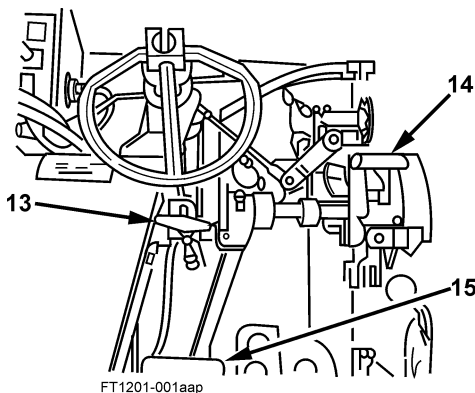


4. If driving in raised position, clip portable instrument panel (12) into bracket (on top of hull just left of driver's hatch door).



NOTE

- Use the following procedure for starting engine in normal-temperature climates (+40°F, or 4.4°C). Refer to cold-weather starting procedures (p. 0037 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.



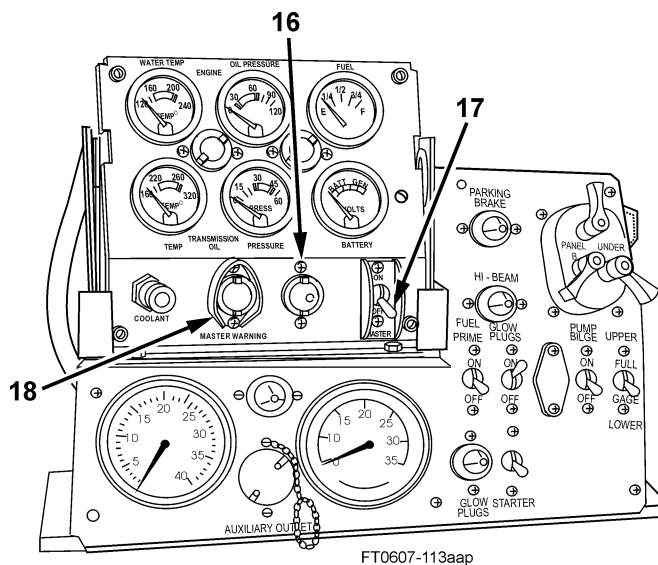
CAUTION

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.



NOTE

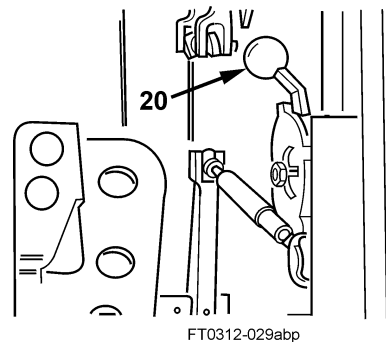
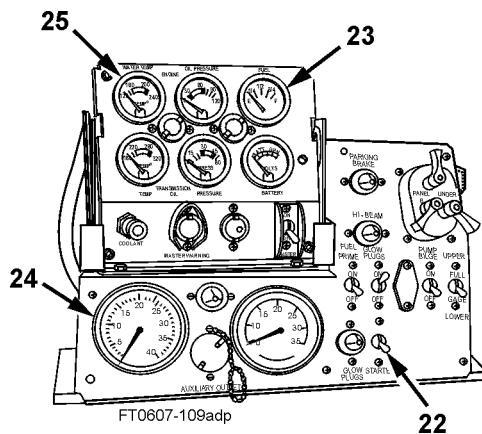
An electrical relay prevents driver from operating starter continuously for more than 30 seconds. If tactical situation dictates, commander can use combat starter override switch (p. 0044 00-8) to allow continuous cranking of starter for more than 30 seconds.

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

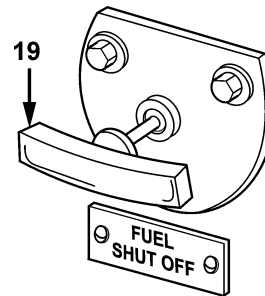
NOTE

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 within 15 seconds of start, immediately pull FUEL SHUT OFF handle (19) to stop engine and notify Unit maintenance.



FT0312-029abp



FT0312-032abp

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.
16. Perform portable instrument panel checkout procedure (p. 0013 00-1) during engine warmup.

END OF WORK PACKAGE

OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

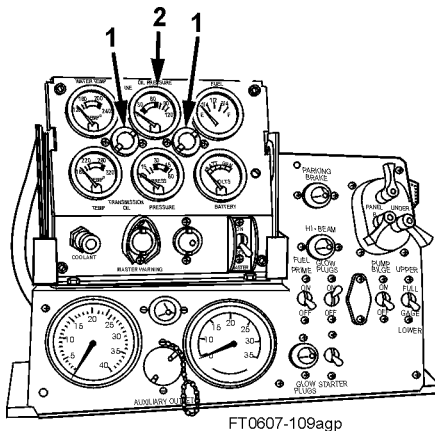
PORTABLE INSTRUMENT PANEL CHECKOUT PROCEDURE

INITIAL SETUP:**Maintenance Level**

Operator

Frequently check the portable instrument panel gages and indicators on this page and pages 0013 00-2 and 0013 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 at 1000 rpm and between 50 and 70 psi at 2100 rpm. Maximum allowable pressure is 70 psi.

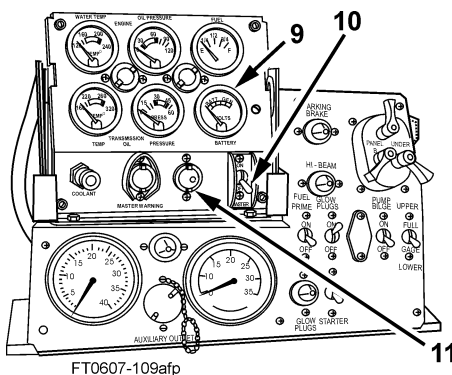
**PORTABLE INSTRUMENT PANEL CHECKOUT
PROCEDURE (continued)**

0013 00

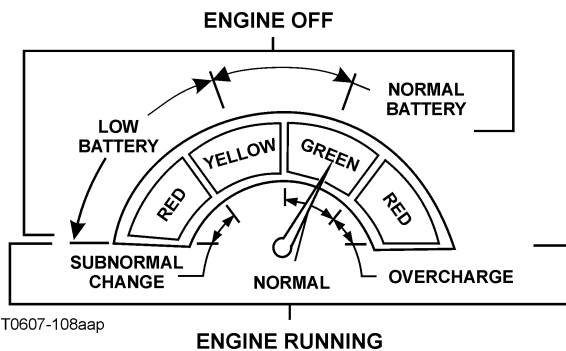
10. BATTERY gage (9) needle should be in GREEN (normal) range.

CAUTION

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



FT0607-109afp



FT0607-108aap

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

0013 00-3/4 blank

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**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

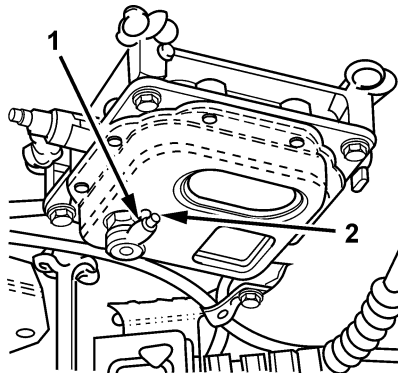
INITIAL SETUP:

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.



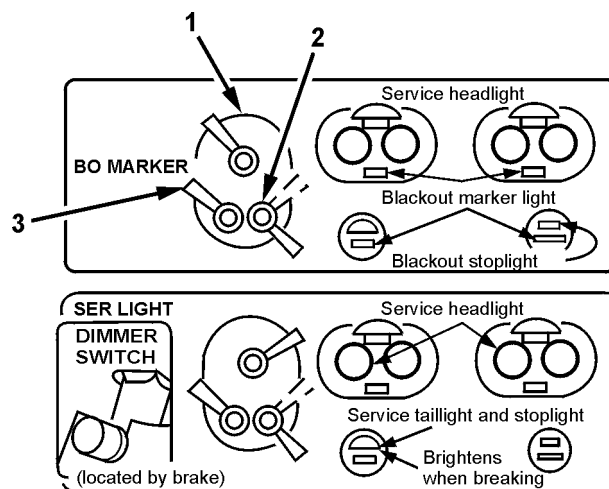
FT0609-024aap

OPERATION OF DRIVING LIGHTS AND DOME LIGHTS (continued) 0014 00

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

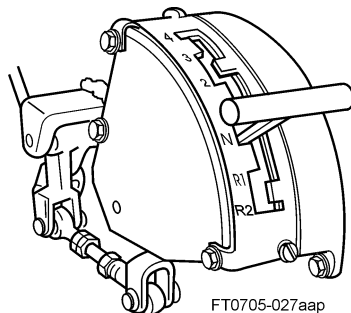
INITIAL SETUP:
Maintenance Level
Operator

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.

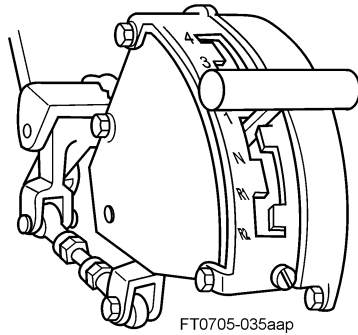
CAUTION

- **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.**



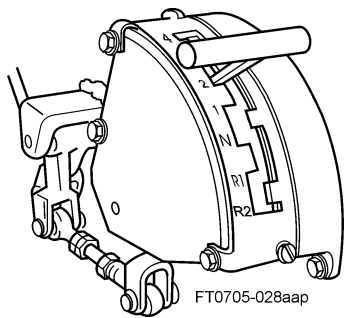
NEUTRAL (N) should be used when:

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



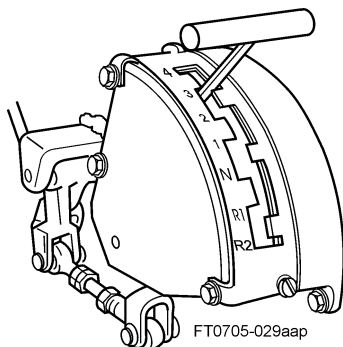
FIRST GEAR (1) should be used when:

- 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.



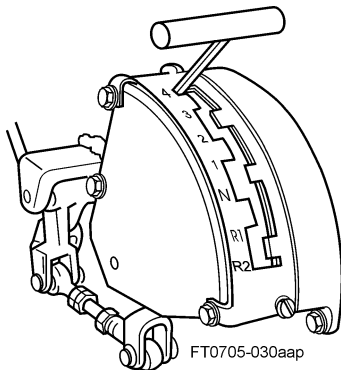
SECOND GEAR (2) should be used when:

- 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.

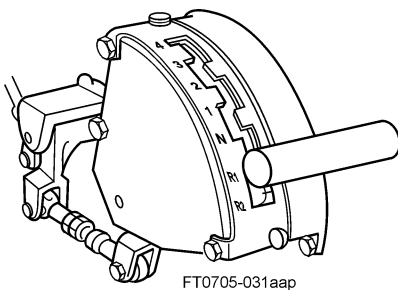


FOURTH GEAR (4) should be used when:

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

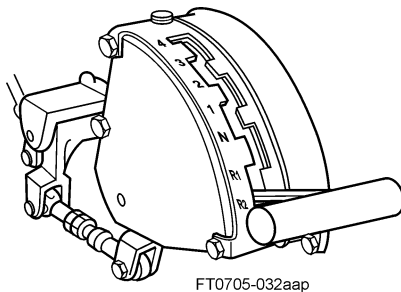
CAUTION

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

0015 00-3/4 blank

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**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

Before moving the M992A2, check to see that all systems and cargo compartments are secured for travel. The steps that follow present specific items to be checked before moving.

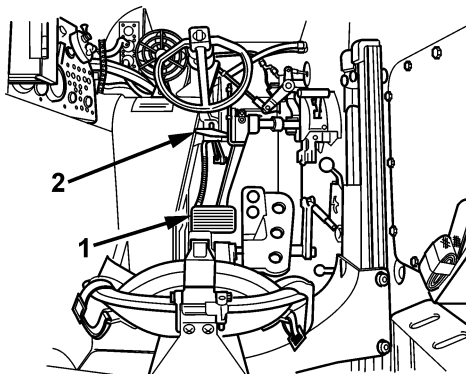
1. Make sure conveyor is properly stowed and secured (p. 0030 00-14).

PREPARATION FOR MOVEMENT (continued)

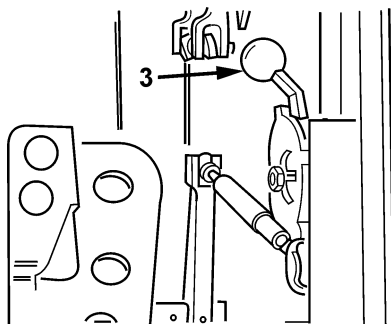
2. Make sure the following doors are closed and secured:
 - Personnel side door (p. 0027 00-4)
 - Canister side doors (p. 0027 00-5)
 - Top (middle, left, and right) doors (pp. 0027 00-5 through 0027 00-7)
 - Upper rear door (p. 0027 00-9) and dog doors (p. 0027 00-12)
 - Lower rear door (p. 0027 00-8)
 - APU side and front doors (pp. 0027 00-13 and 0027 00-14)
 - Transmission access doors (p. 0027 00-2)
 - Battery access doors (p. 0027 00-3)
 - Fuel cap access door
 - AFES fire extinguisher box door, vehicles S/N 345 and above
3. 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. 0027 00-14 and 0027 00-16).
4. Check to make sure the following items are secured with restraint straps (and bars, if applicable):
 - Propelling-charge canisters (p. 0031 00-9)
 - Fuse boxes
 - Primer boxes
 - 0.50-caliber ammunition boxes
5. Check to make sure all projectiles are locked in place (p. 0032 00-3).
6. Check to make sure all other loose items are stowed/secured.

MOVING THE VEHICLE

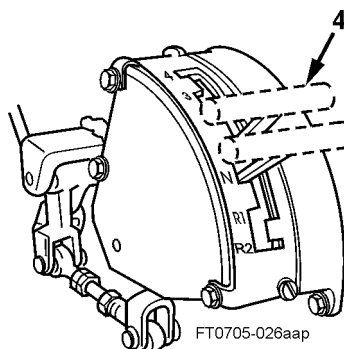
1. Press down on brake pedal (1), and pull out on BRAKE LOCK handle (2).
2. With brake pedal (1) depressed and throttle control lever (3) adjusted to idle position, shift from N (neutral) to 1 (first gear) (4).



FT1206-017aap

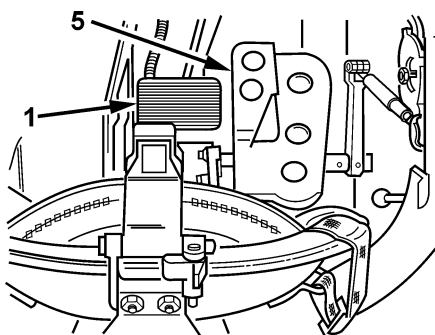


FT0312-029aap

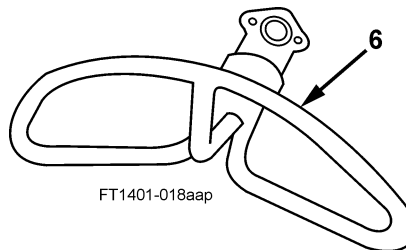


FT0705-026aap

3. Release brake pedal (1) and push accelerator pedal (5) to obtain desired speed. Shift through intermediate ranges into desired speed range (pp. 0015 00-1 through 0015 00-3/4 blank).
4. To turn vehicle, turn steering wheel (6) in desired direction.



FT0312-030aap



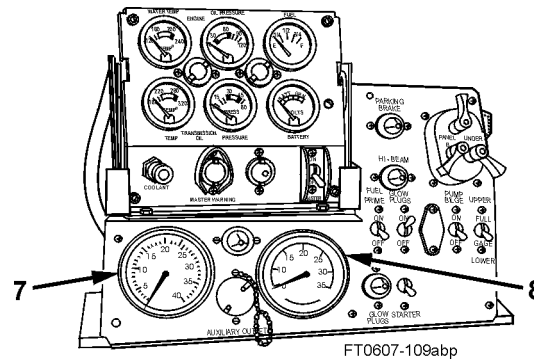
FT1401-018aap

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

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**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.

TM 9-2350-293-10

DRIVING OVER ROUGH, SOFT, OR HILLY TERRAIN (continued) 0017 00

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

0017 00-2

OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

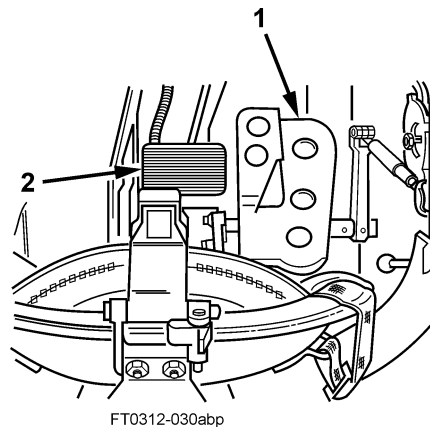
STOPPING THE VEHICLE

INITIAL SETUP:
Maintenance Level
Operator

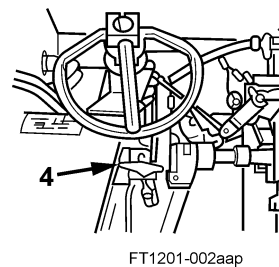
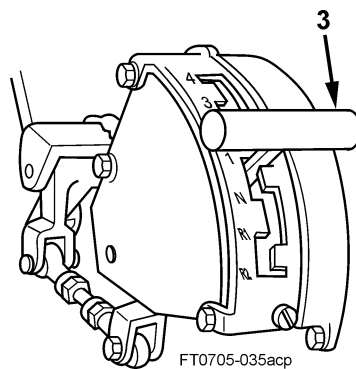
1. Release accelerator pedal (1) and slowly depress brake pedal (2) until vehicle stops.

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.



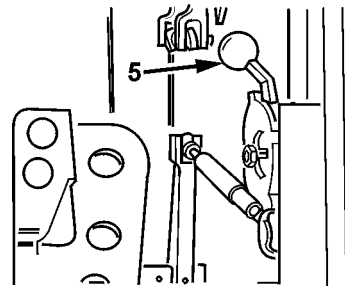
2. With brake pedal (2) depressed, shift transmission selector lever (3) into neutral and pull parking BRAKE LOCK handle (4) out and down. Release brake pedal (2). If stopping on a steep slope, press on brake pedal (2) after pulling BRAKE LOCK handle (4) out and down.



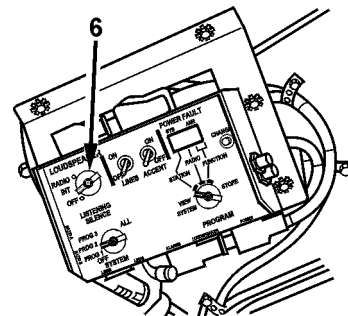
CAUTION

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

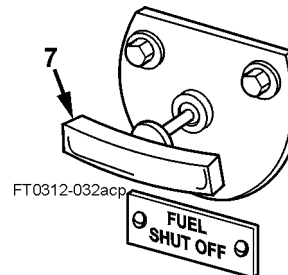
3. Set throttle control lever (5) to run engine at 1000–1200 revolutions per minute on tachometer. Run engine at this speed for three to five minutes or until coolant temperature measures 185°F or less.
4. Set throttle control lever (5) forward to return engine to normal idle (550–600 rpm). Idle one 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

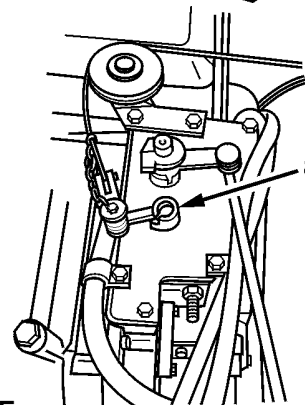


FT0312-032acp

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 0050 00-1 through WP 0050 00-10).



FT0312-031aap

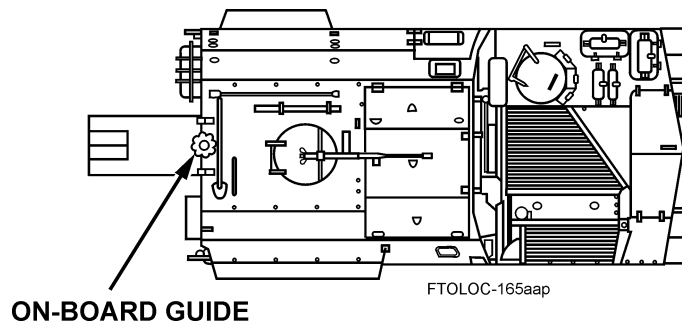
END OF WORK PACKAGE

BACKING WITH ONE ON-BOARD GUIDE

1. Open lower and upper rear doors (pp. 0027 00-8 and 0027 00-9).
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 upper rear door and injury to personnel in the area, on-board guide must always consider rear clearance of opened door 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 24, WP 0075 00)

Pliers (Item 44, WP 0075 00)

Socket, Socket Wrench (Item 51, WP 0075 00)

Socket, Socket Wrench (Item 53, WP 0075 00)

Socket, Socket Wrench (Item 54, WP 0075 00)

References

TM9-4910-496-10

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.

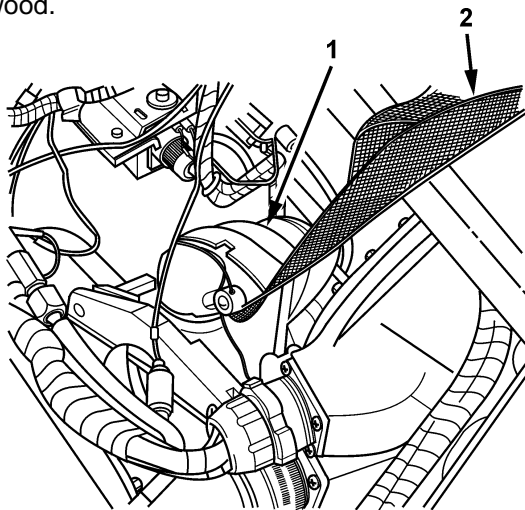
CAUTION

- 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.

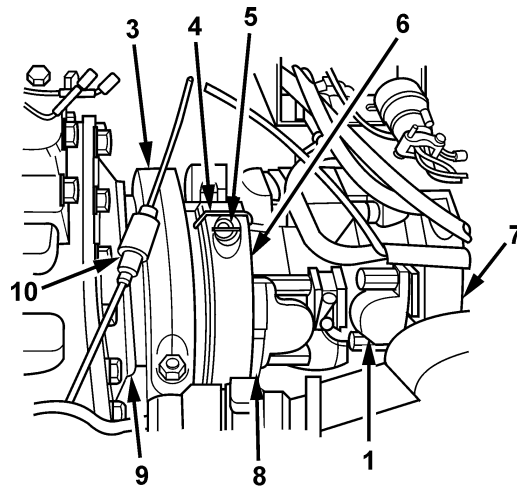
- a. Place chock blocks between two sets of roadwheels on each track or under the front and rear of both tracks. Open right and left transmission doors.
- b. Run an equipment tiedown strap (2) through left-side universal joint (1). To prevent universal joint (1) from falling, have an assistant hold strap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

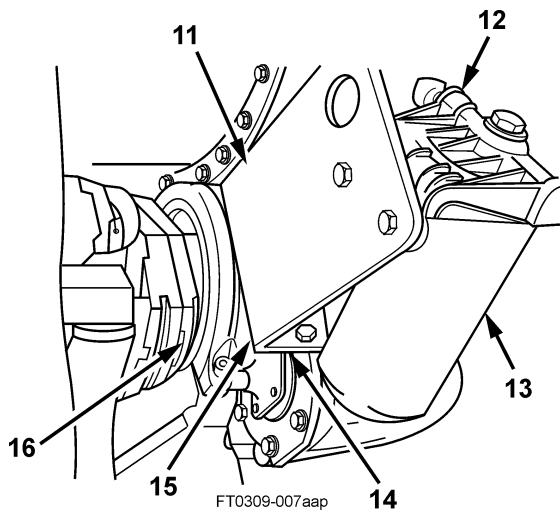


FT1801-212aap

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.
- 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.



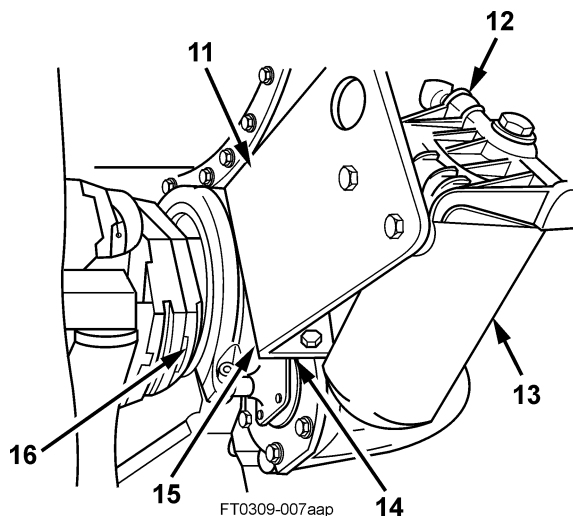
FT0309-007aap

TOWING (continued)

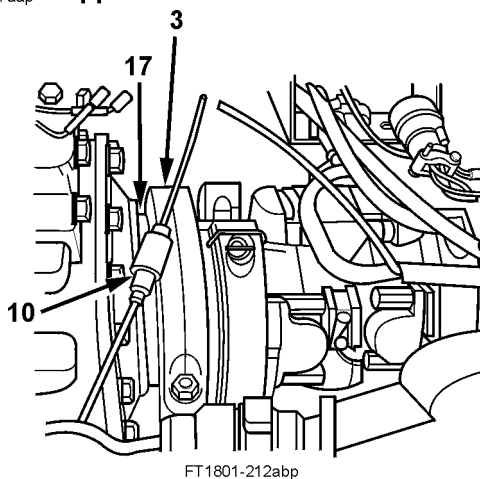
WARNING

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).

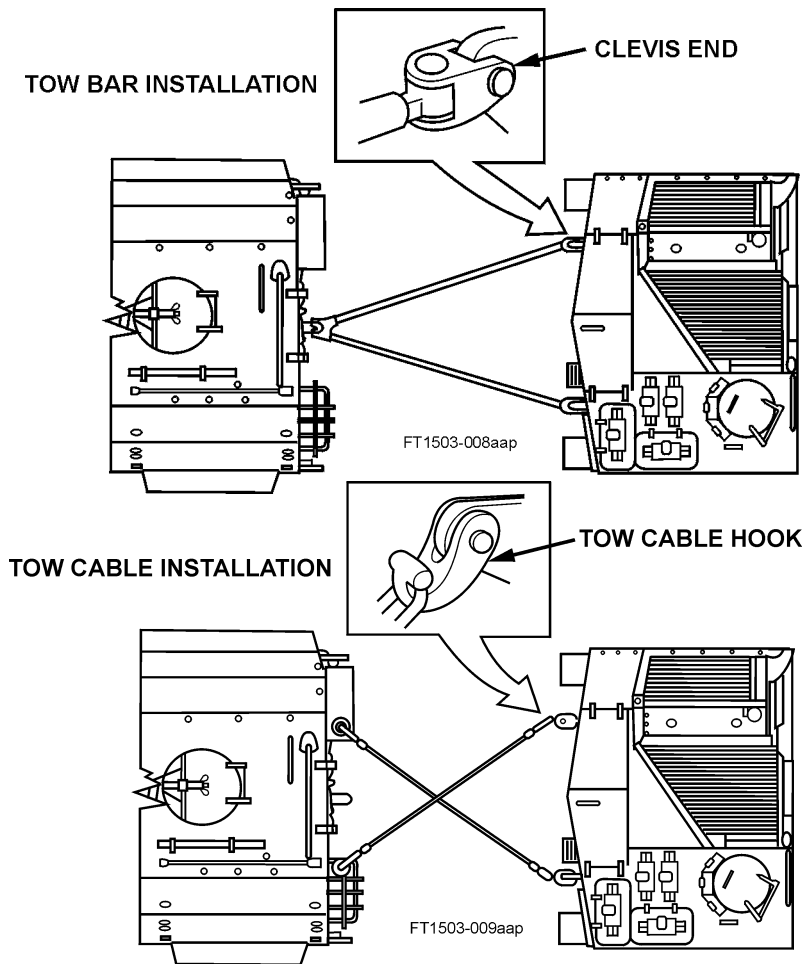


TOWING (continued)

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

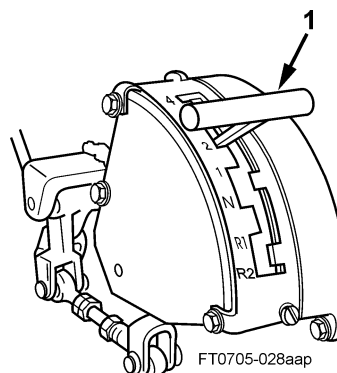
To avoid collision when towing, be sure to steer in a wide arc when turning.

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.

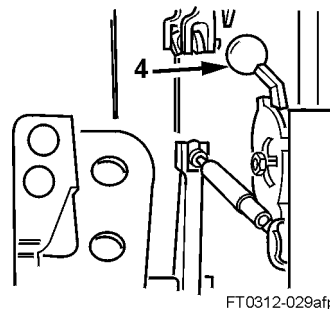
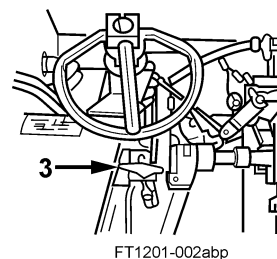
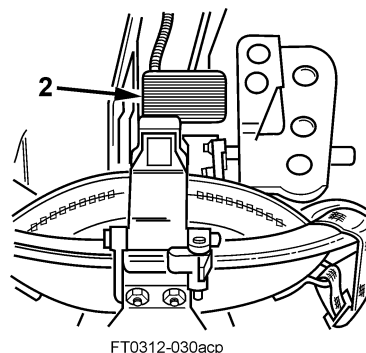
1. Connect tow bar or tow cables (refer to TM 9-4910-496-10).
2. Shift transmission selector lever (1) into second gear.
3. Depress brake pedal (2) and release parking BRAKE LOCK handle (3).



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

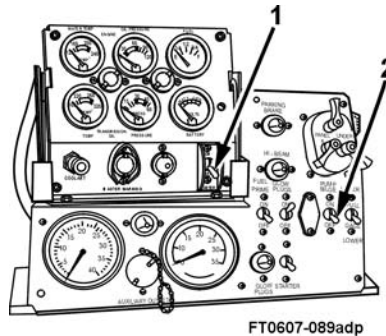
OPERATING THE BILGE PUMP

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.



END OF WORK PACKAGE

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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

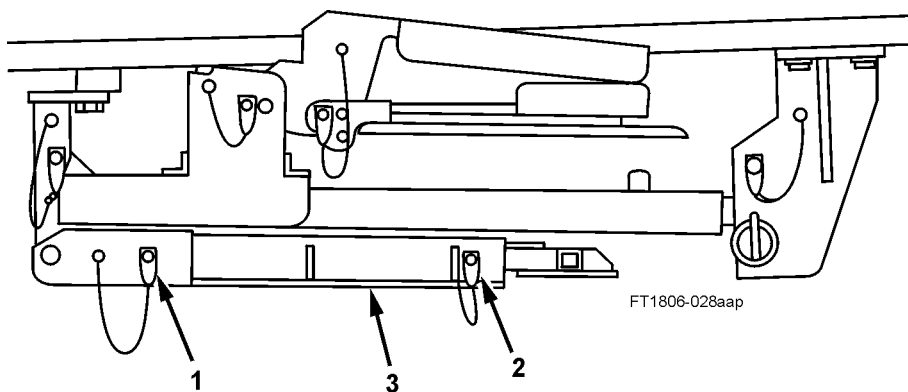
Two

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)

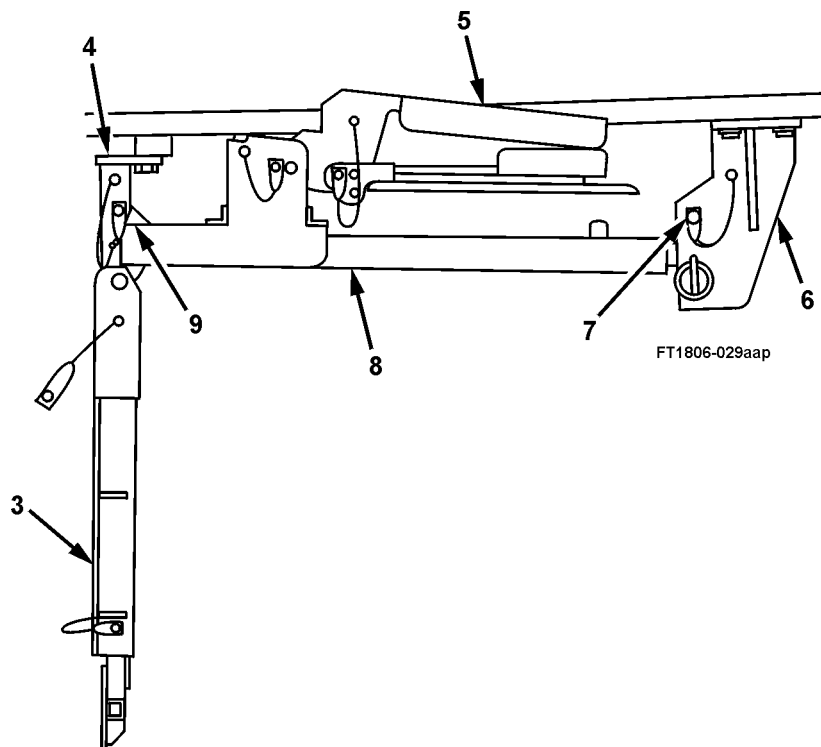
WARNING

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).



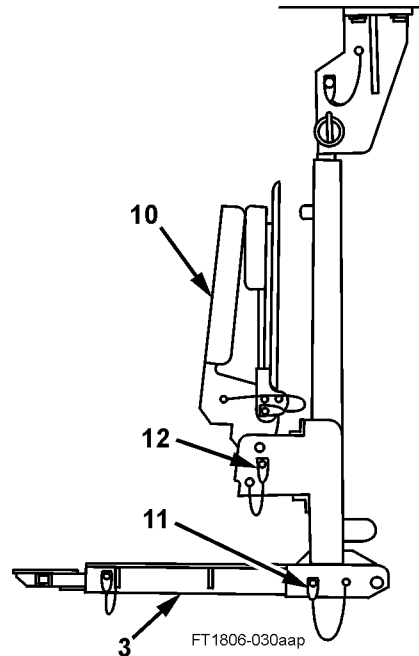
DEPLOYMENT (continued)

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

WARNING

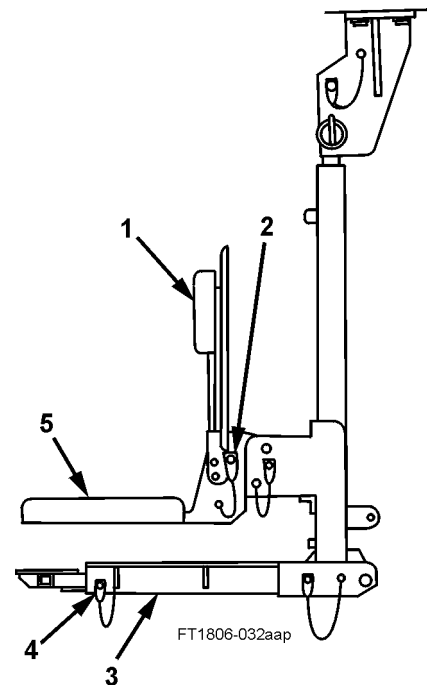
To avoid injury, seat must be supported before removing quick-release pin.

5. 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

1. 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).
2. 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)

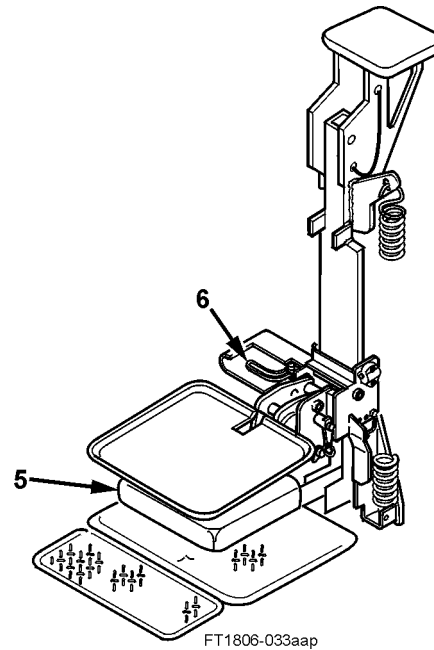
WARNING

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.

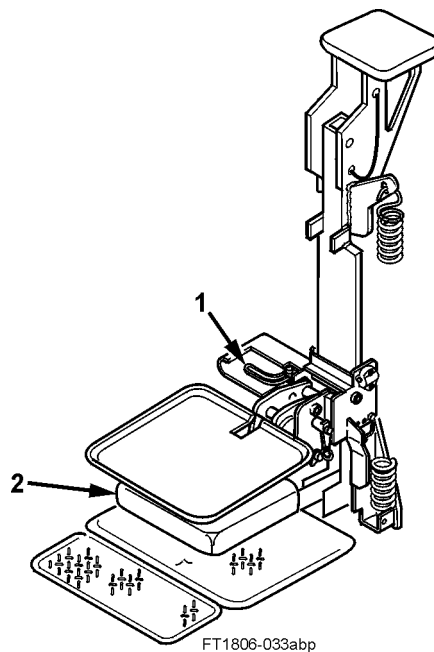


STOWING

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.

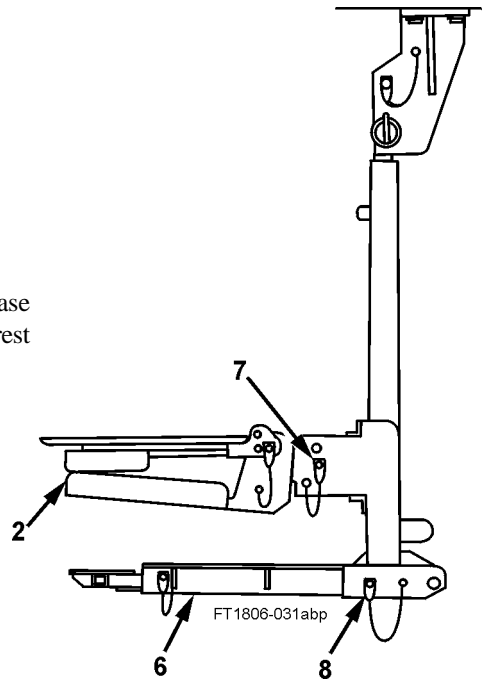
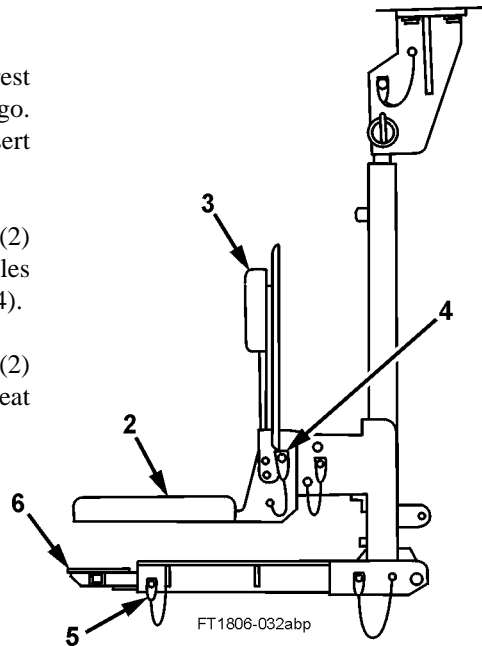


STOWING (continued)

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

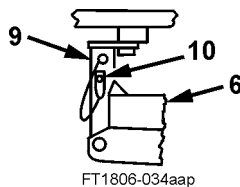
To avoid injury, use two people to lift seat assembly for stowage.

CAUTION

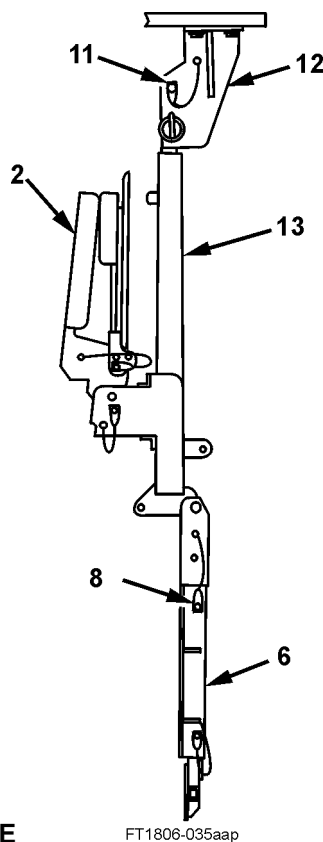
If commander's cupola periscope is to remain installed, you must rotate cupola so that periscope is 90 degrees left of forward before you raise seat assembly. Failure to do this may result in destruction of periscope. If periscope is removed, cupola may remain forward when seat is stowed.

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

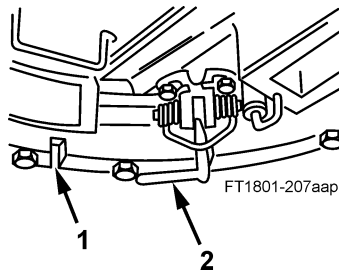
ROTATING COMMANDER'S CUPOLA

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 0022 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

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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

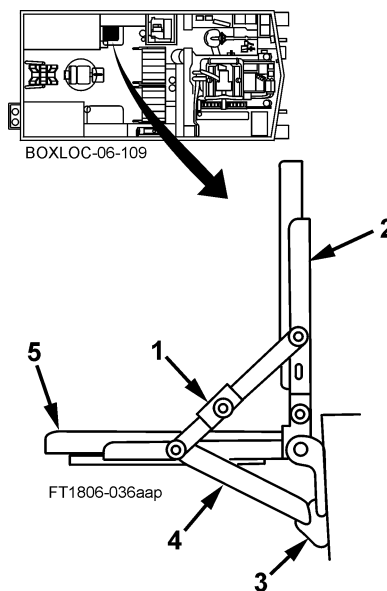
Seats are heavy. Support seats before pulling quick-release pins. Hinged seats, backrests, and support brackets may swing down, causing personal injury.

NOTE

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

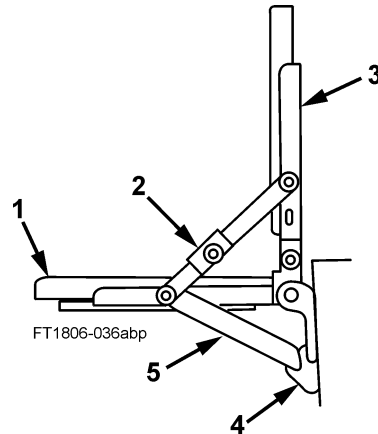
LEFT FRONT SEAT

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

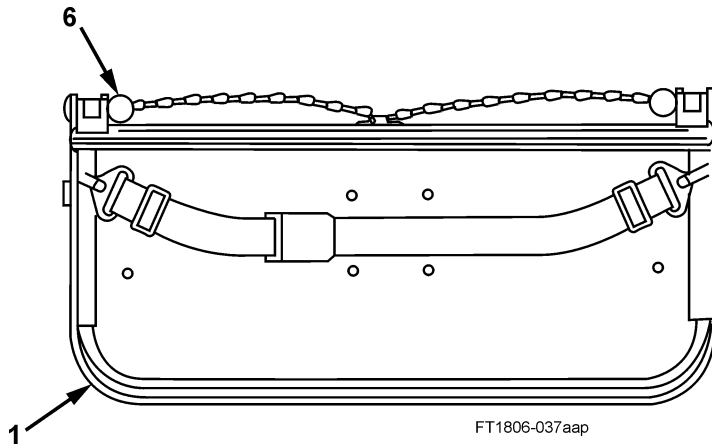
1. Pull up on seat backrest (3). As seat backrest (3) passes horizontal, seat (1) will pivot upward.
2. As seat backrest (3) and seat (1) reach full deployment, pivot bracket (5) into slots (4).
3. Before releasing seat backrest (3), make sure support joint (2) is locked.



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, and Charging Low Batteries with the APU

INITIAL SETUP:**Maintenance Level**

Operator

References

TM 9-6140-200-14

STARTING**CAUTION**

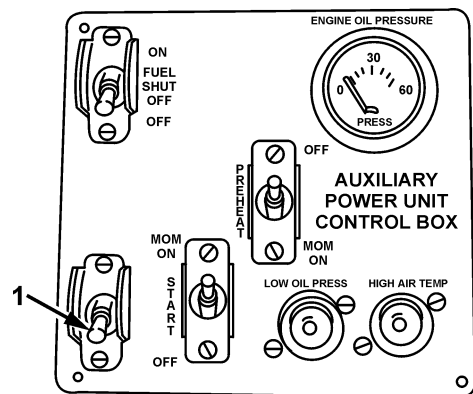
To avoid damaging radio components, turn off all radio switches before starting the APU.

1. Open APU front door and check APU engine oil level. Add oil to bring level to full (F) mark on dipstick. Add or drain as necessary.
2. Turn off all electrical and radio switches.
3. Turn vehicle MASTER switch to ON.

NOTE

The APU will not start if APU GEN switch is set to ON.

4. Make sure APU GEN switch (1) is set to OFF.



FT0608-007aip

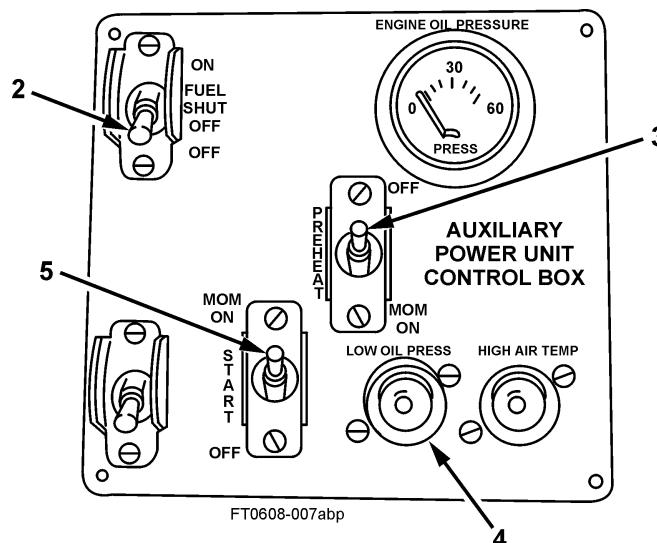
STARTING (continued)

5. Turn FUEL SHUT OFF switch (2) to ON. The LOW OIL PRESS lamp (4) will light until APU engine starts.
6. Turn PREHEAT switch (3) to MOM ON. Hold switch to MOM ON for 20 seconds if outside air temperature is above 55°F (12.8°C). Hold switch to MOM ON for one minute if outside air temperature is between 0°F and 55°F (-17.8°C and 12.8°C). If air temperature is below 0°F (-17.8°F), refer to page 0036 00-1.

NOTE

If APU engine does not start within one minute, release START switch but continue to hold PREHEAT switch to ON for another 20 seconds (in temperatures above 55°F, 12.8°C) or one minute (in temperatures below 55°F, 12.8°C). After allotted time, hold START switch to MOM ON again. If engine still does not start, troubleshoot APU engine (p. 0047 00-10).

7. While holding PREHEAT switch (3) to MOM ON, move START switch (5) to MOM ON. Hold both switches (3 and 5) on for about 2 to 5 seconds, then release. APU engine should start.



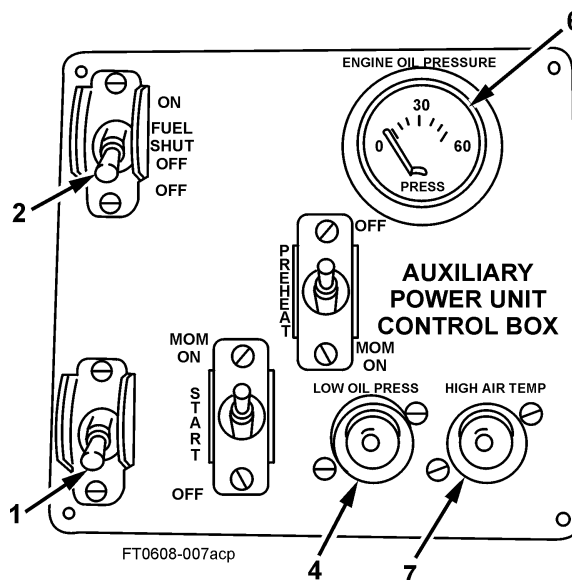
STARTING (continued)

CAUTION

- To avoid damaging the APU engine, if LOW OIL PRESS lamp remains lit after engine starts, or if it lights during APU operation, turn FUEL SHUT OFF switch to OFF to stop the APU. Notify Unit maintenance if this problem occurs.
 - When operating the APU at high altitudes and/or high temperatures, continuous heavy-load demands by the electrical and hydraulic systems may cause APU engine to overheat. In these extreme conditions, the APU GEN switch should be turned to OFF and hydraulic components should be shut down periodically. Continue to run the APU without load for several minutes before again operating generator and hydraulic components.
 - If HIGH AIR TEMP lamp lights during operation, turn FUEL SHUT OFF switch to OFF. Allow the APU to cool before restarting. Notify Unit maintenance if lamp lights often.
8. While the APU is operating, check LOW OIL PRESS lamp (4), HIGH AIR TEMP lamp (7), and ENGINE OIL PRESSURE gage (6) for APU malfunctions. ENGINE OIL PRESSURE gage (6) should indicate 25-35 psi.

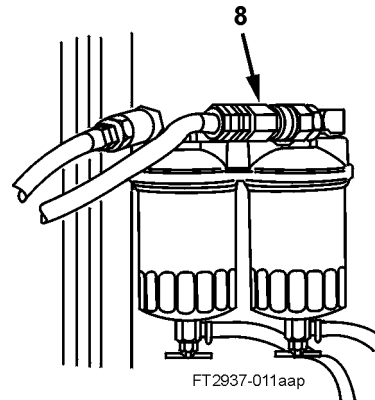
SHUTTING DOWN

1. Turn APU GEN switch (1) to OFF.
2. Turn FUEL SHUT OFF switch (2) to OFF.
3. Turn vehicle MASTER switch to OFF.



SHUTTING DOWN (continued)

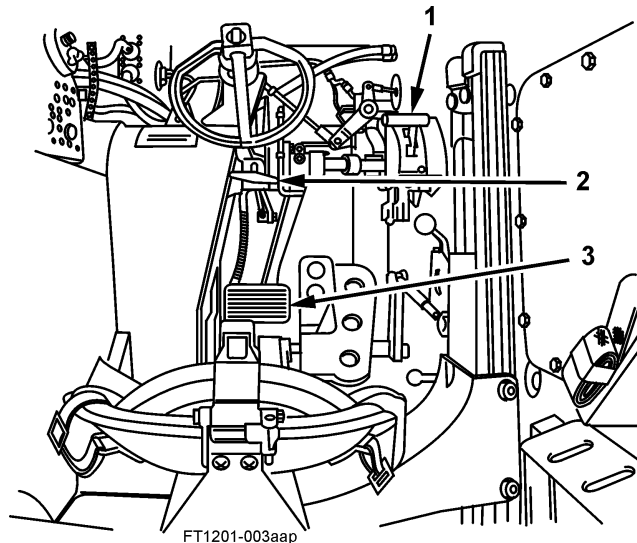
4. If the APU continues to run with MASTER switch set to OFF, open APU side door and disconnect fuel line (8) to APU fuel filters. Notify Unit maintenance.



ELECTRICAL SUPPORT OF ANOTHER VEHICLE

Under normal conditions, the APU generator can supply enough electrical power to operate its own electrical system and that of another vehicle that possesses a compatible electrical system. There are limitations to the generator's output, however. When your vehicle's hydraulic system operates under load, the generator may occasionally switch off. This is only a temporary situation, and the generator will automatically switch on when hydraulic pressure 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. If your M992A2 is to support a self-propelled howitzer (M109A2, M109A3, or M109A6) during conveyor operation, position your vehicle back-to-back with the howitzer and deploy the conveyor (p. 0030 00-1).
2. With the brake pedal (3) depressed, place the transmission shift selector lever (1) in N (neutral) and set parking BRAKE LOCK handle (2).

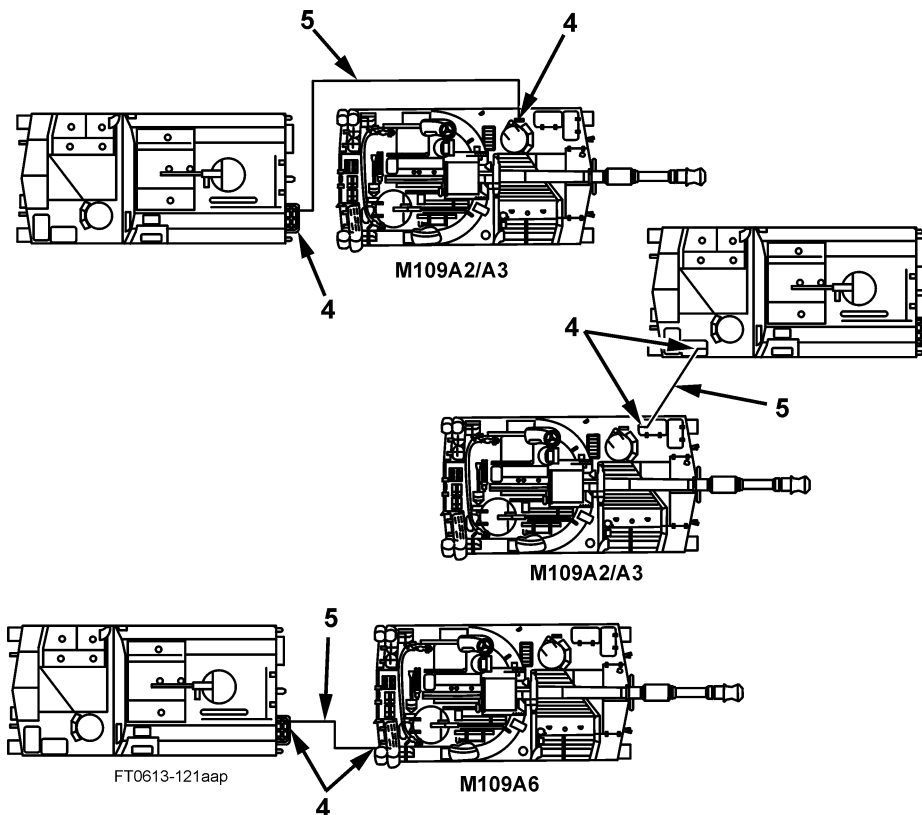


ELECTRICAL SUPPORT OF ANOTHER VEHICLE (continued)

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. 0018 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 (Item 1, p. 0075 00-4), if necessary.



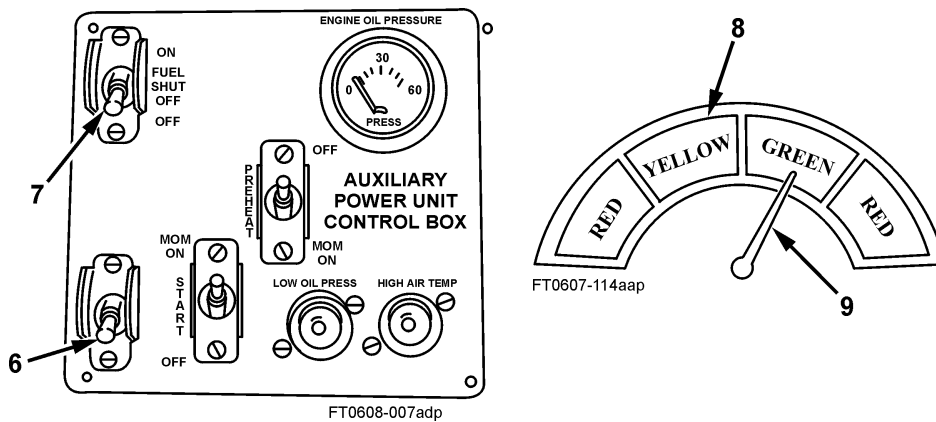
ELECTRICAL SUPPORT OF ANOTHER VEHICLE (continued)

5. Turn your vehicle's MASTER switch to ON and start the APU (p. 0025 00-1).
6. Allow the APU to warm up for three minutes, then turn APU GEN switch (6) to ON.
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.

8. If charge indicator needle (9) drops below halfway in yellow range (8) in either vehicle, turn APU GEN 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 APU GEN switch (6) to OFF and turn APU FUEL SHUT OFF switch (7) to OFF.

WARNING

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

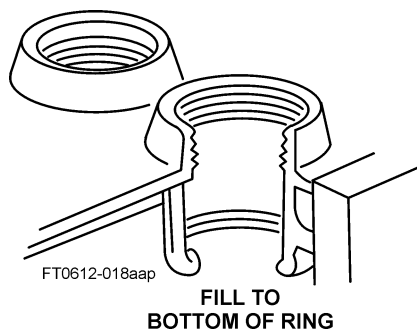
10. Turn MASTER switch to OFF in both vehicles.
11. Disconnect and stow slave cable.

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. 0025 00-11).

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.

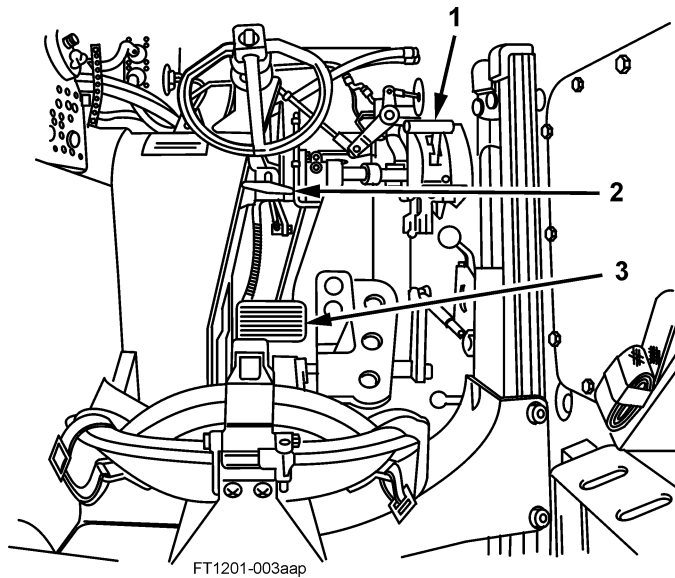
CHARGING LOW BATTERIES WITH THE APU (continued)

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

WARNING

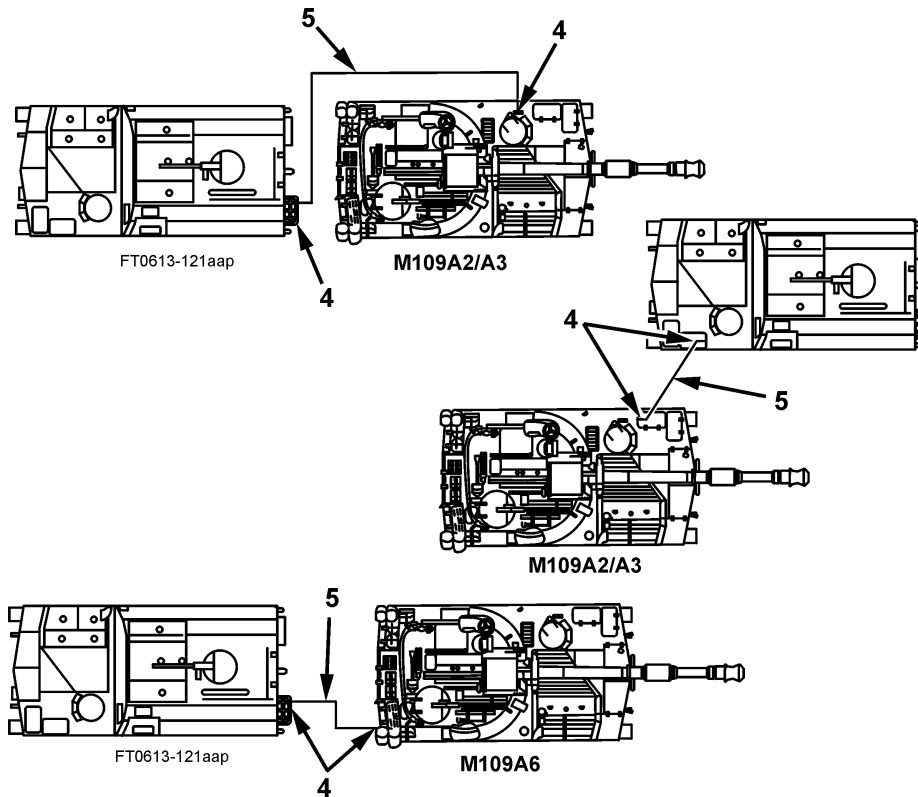
To avoid personal injury and vehicle damage, turn off MASTER switch and all other electrical switches in both vehicles.

4. Shut down vehicle main engine (p. 0018 00-1). Turn MASTER switch to OFF in both vehicles.

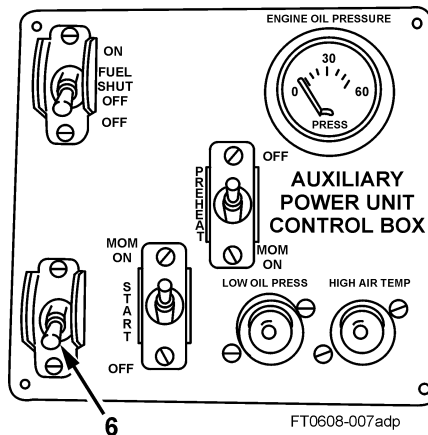


CHARGING LOW BATTERIES WITH THE APU (continued)

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. 0025 00-1).



7. Allow the APU to warm up for three minutes, then turn APU GEN switch (6) to ON.
8. Turn MASTER switch to ON in supported vehicle to charge batteries.



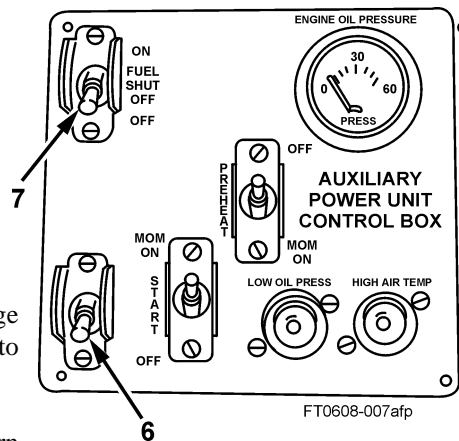
CHARGING LOW BATTERIES WITH THE APU (continued)

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 APU GEN switch is set to OFF before you start main engine. Once main engine is started, reset APU GEN switch to ON.



9. Continue charging batteries until charge indicator in supported vehicle reads well into normal range.
10. Turn APU GEN switch (6) to OFF, and turn FUEL SHUT OFF 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.

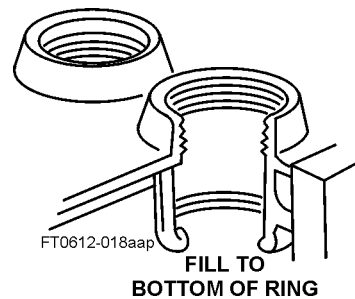
11. Turn MASTER switch to OFF in each vehicle.
12. Disconnect and stow slave cable.

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 0025 00-8.

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.

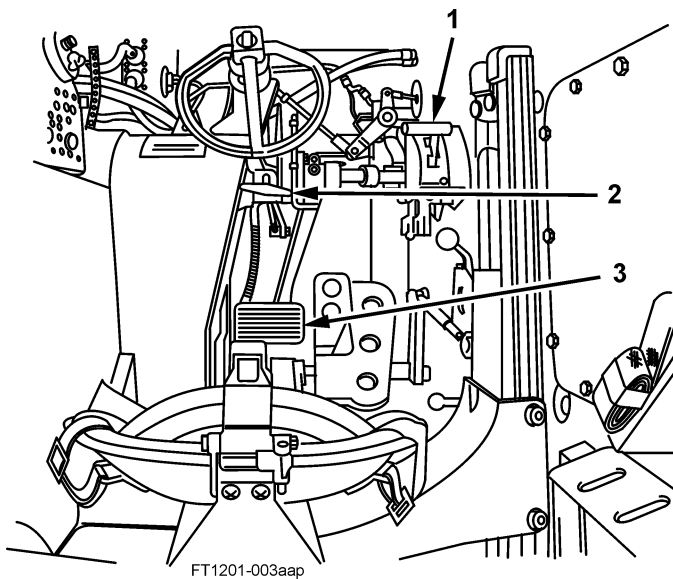
2. Park your vehicle close enough to supported vehicle so that slave cable can be interconnected at slave receptacle of each vehicle.

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 (2).



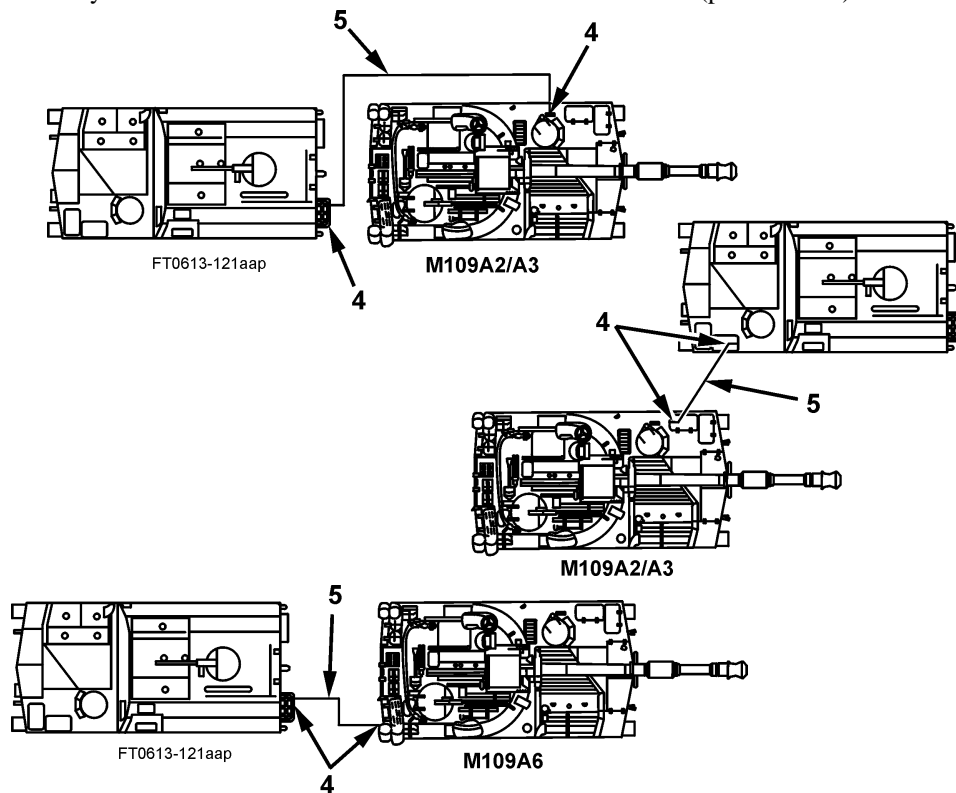
WARNING

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

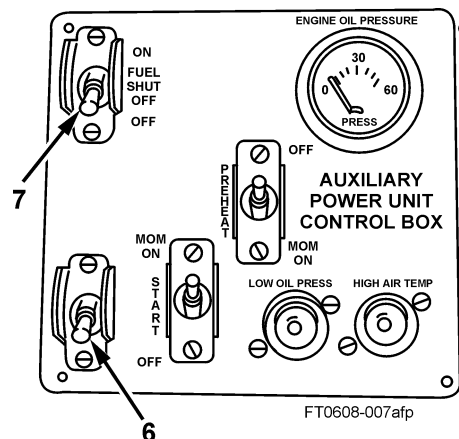
4. Shut down vehicle main engine (p. 0018 00-1). Turn MASTER switch to OFF in both vehicles.

CHARGING DEAD BATTERIES WITH THE APU (continued)

5. Attach slave cable (5) to slave receptacle connector (4) on both vehicles.
6. Turn your vehicle's MASTER switch to ON and start the APU (p. 0025 00-1).



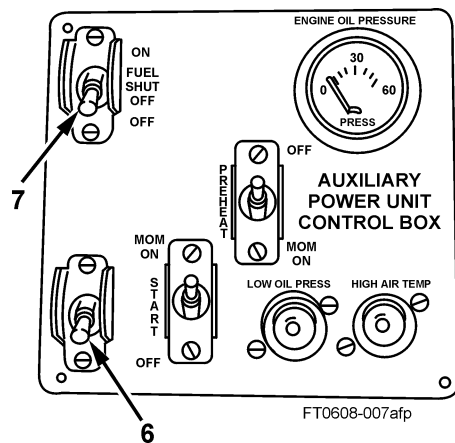
7. Allow the APU to warm up for three minutes, then turn APU GEN switch (6) to ON.
8. Turn MASTER switch in supported vehicle to ON.
9. After five minutes of charging, turn FUEL SHUT OFF switch (7) to OFF to shut down the APU.
10. Turn your vehicle MASTER switch to OFF.



CHARGING DEAD BATTERIES WITH THE APU (continued)

11. 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.
12. 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. 0025 00-1).
- c. Turn APU GEN switch (6) to ON.
- 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.



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 APU GEN switch is off before turning APU FUEL SHUT OFF switch to OFF.

13. Turn FUEL SHUT OFF switch (7) to OFF.

WARNING

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

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

END OF WORK PACKAGE

OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

HYDRAULIC PUMP OPERATION

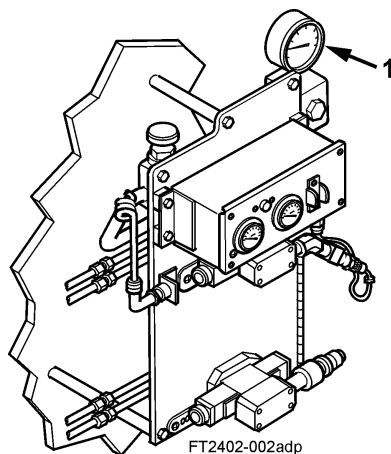
INITIAL SETUP:
Maintenance Level
Operator

OPERATING THE HYDRAULIC PUMP

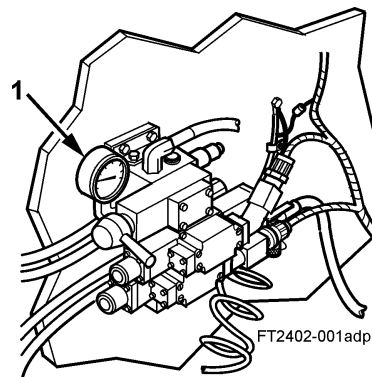
NOTE

The M992A2 uses a hydraulic pump to provide power for operation of conveyor and upper rear door (ballistic shield). The hydraulic pump is driven by the APU and should be used during normal operation.

1. Start the APU (p. 0025 00-1).
2. Check pressure gage (1) on hydraulic control panel/hydraulic manifold. With pump operating but no hydraulic actuators operating, pressure gage should indicate between 100 and 300 psi.
3. Operate hydraulic system as necessary.
4. To turn off hydraulic pump, shut down the APU (p. 0025 00-4).



VEHICLES S/N 1 THROUGH 820



VEHICLES S/N 821 AND ABOVE

END OF WORK PACKAGE

0026 00-1/2 blank

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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, Canister Side Doors, Top Middle Door, Top Side Doors (Left and Right), Lower Rear Door, Upper Rear Door, Dog Doors, APU Side Door, APU Front Door, Driver's Hatch Door, Commander's Cupola, and AFES Fire Extinguisher Box Door

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.
- Stand clear when opening or closing upper rear door (ballistic shield). If you open or close this door from outside vehicle (using bottom switch), keep head and shoulders out of door's travel path.

AIR INTAKE GRILLE

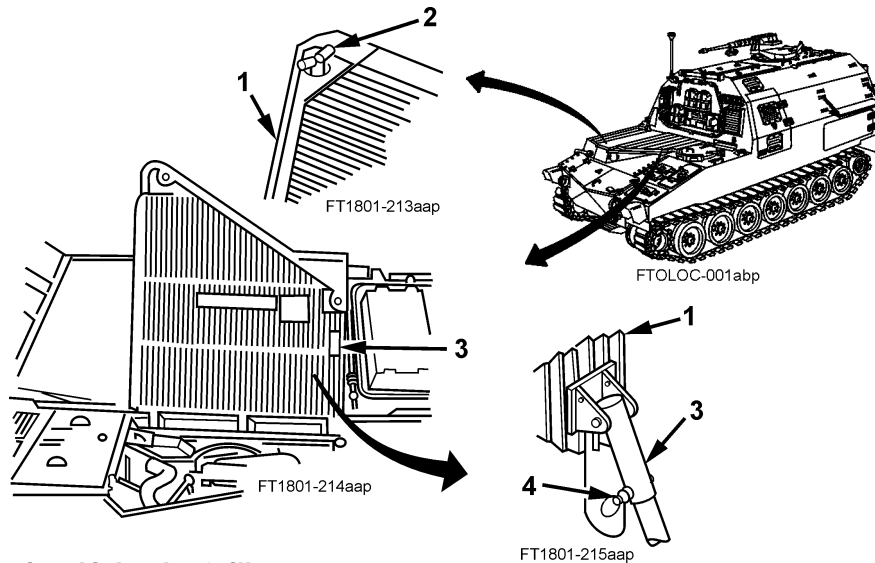
Opening Air Intake Grille

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.

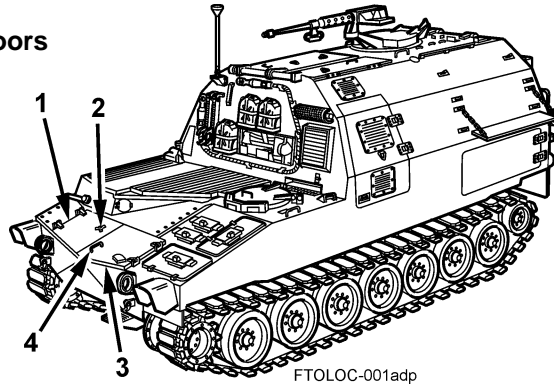
1. Unscrew handle (2) and, with the aid of an assistant, open right transmission access door (1).
2. Grasp handle (4) and, with the aid of an assistant, open left transmission access door (3).

TRANSMISSION ACCESS DOORS (continued)

Closing Transmission Access Doors

NOTE

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



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

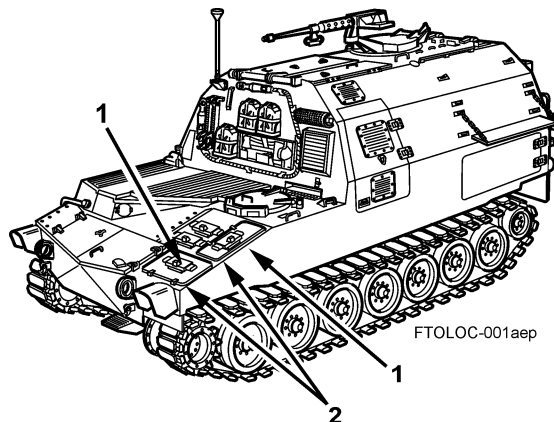
WARNING

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).

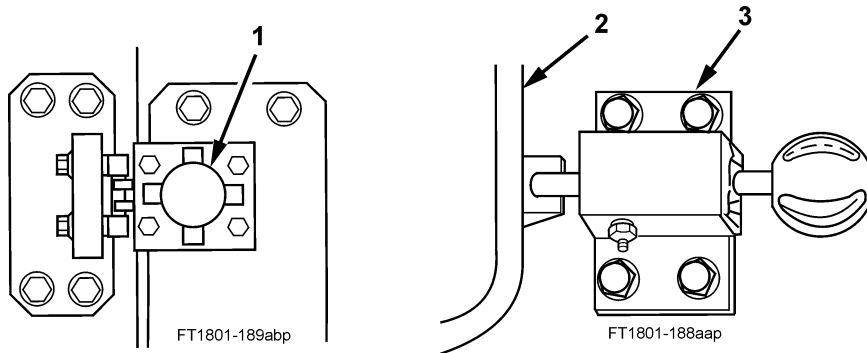


PERSONNEL SIDE DOOR

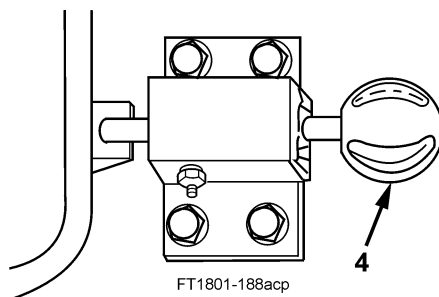
NOTE

Latch handle is on outside 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).



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

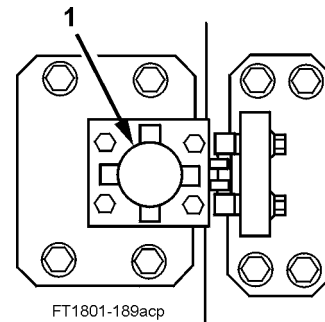


CANISTER SIDE DOORS

NOTE

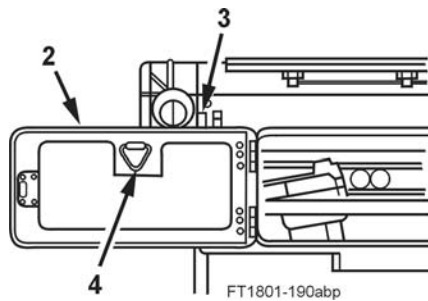
Latch handles are on inside of doors only.

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

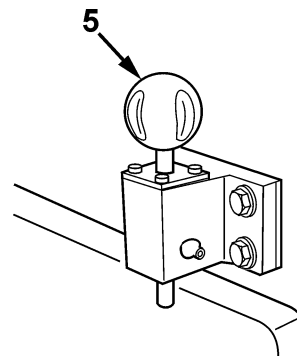


FT1801-189acp

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



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FT1801-191aap

TOP MIDDLE DOOR

WARNING

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

CAUTION

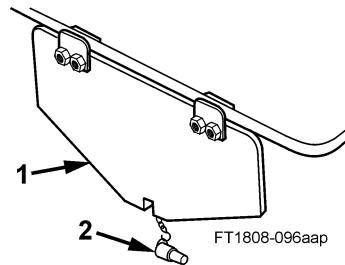
Before closing top middle door, latch must be completely flipped over to rear to prevent damage to handle and latch.

TOP MIDDLE DOOR (continued)

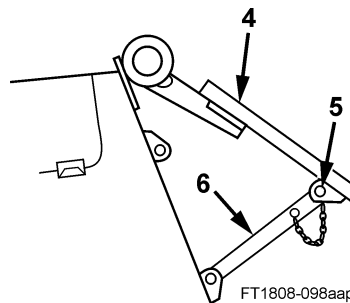
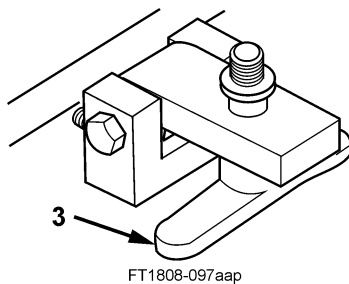
NOTE

- 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)

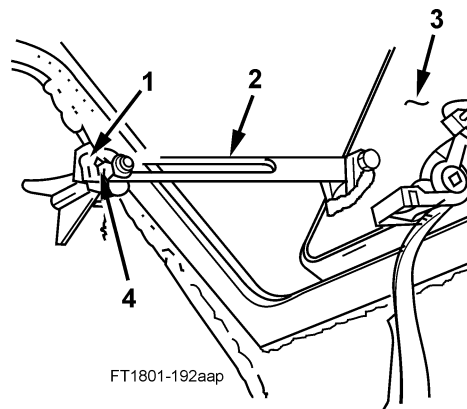
NOTE

- 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. 0027 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. 0027 00-5).

LOWER REAR DOOR

Opening Door from Inside or Outside Vehicle

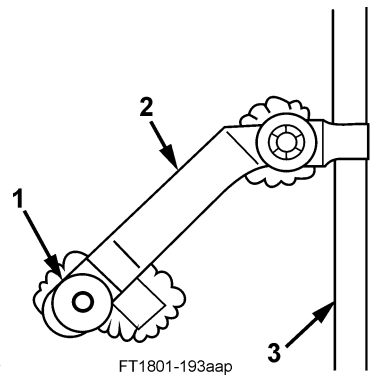
WARNING

Lower rear door locks dog doors in place. When lower rear door is open, dog doors may swing and injure personnel.

NOTE

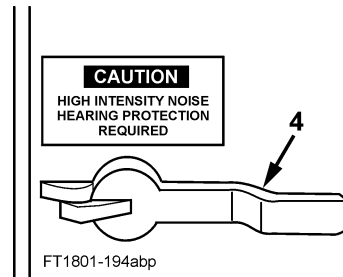
The door-latch mechanism has a plunger that serves as a security lock. When engaged, the plunger prevents movement of inner or outer latch handles. Before the door may be opened from inside or outside, the plunger knob, located on inside of door, must be pulled.

1. From inside vehicle, pull plunger knob (1).
2. Lift inner latch handle (2) or outer latch handle (4).
3. Open and secure lower rear door (3) with hold-open latch (5).
4. Open and secure dog doors (p. 0027 00-12).



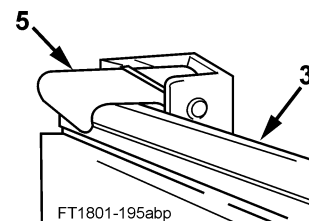
Closing Door

1. Close dog doors (p. 0027 00-13).
2. Release door (3) from hold-open latch (5).
3. Close door (3) and secure with inner latch handle (2) or outer latch handle (4).



Locking Door

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



UPPER REAR DOOR

WARNING

- Make sure travel path of upper rear door is clear of personnel before opening or closing door. Call out "CLEAR" when opening or closing door to prevent personnel from stepping in front of door.
- When opening door from outside using lower switch, be aware of head and shoulder clearance. Serious injury may result if door strikes you.
- Upper rear door is very heavy. Keep feet and hands clear of doorway when opening or closing door.
- During normal operation, mechanical safety lock should be used when positioning door. Lock supports door if hydraulic safety mechanisms fail.
- If conveyor is not to be deployed, make sure conveyor stowage strap is secure (p. 0030 00-14) and cables are removed from conveyor before opening upper rear door. As door rises above 90 degrees with cable connected, outboard section of conveyor "jumps" from deployed position. Serious injury could result.

NOTE

Before opening or closing upper rear door, lower rear door must be open and secured.

Opening Door

1. Open lower rear door (p. 0027 00-8).
2. Activate hydraulic pump (p. 0026 00-1).

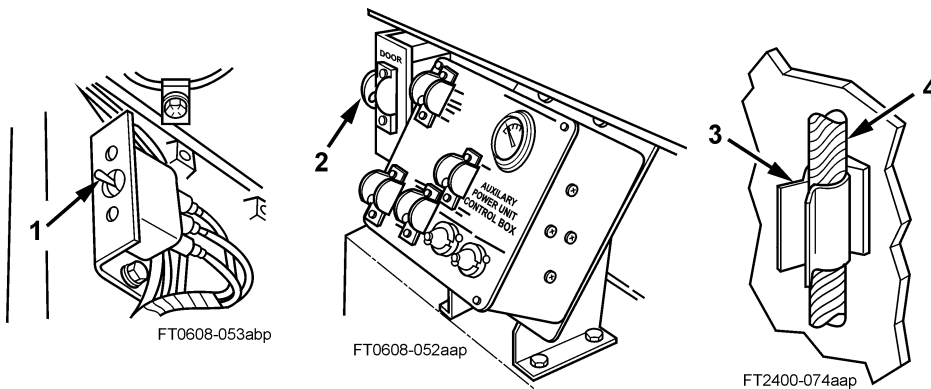
UPPER REAR DOOR (continued)

Opening Door (continued)

CAUTION

Make sure conveyor cables are released from clips on upper rear door before fully opening upper rear door. Failure to do this can result in damage to conveyor cables.

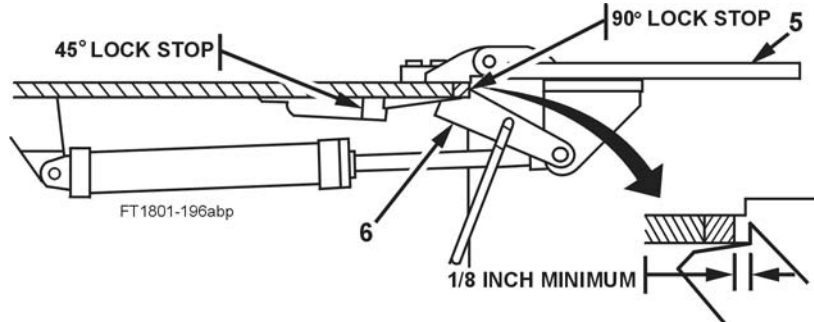
3. Move either upper or lower door switch lever (1 or 2) to UP.
4. When upper rear door (5) has opened approximately three to four feet, release two conveyor cables (4) from clip (3).
5. Release door switch lever (1 or 2) when door (5) reaches correct height.



NOTE

Mechanical safety lock will automatically engage at door elevations of 45 and 90 degrees.

6. Make sure mechanical safety lock (6) has engaged, and raise door (5) so approximately 1/8 inch exists between safety lock (6) and either lock stop.



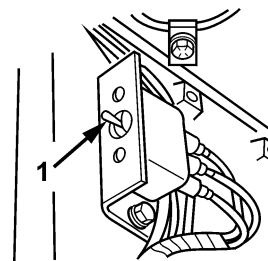
UPPER REAR DOOR (continued)

Closing Door

CAUTION

To avoid damage to doors, lower rear door must be open before closing upper rear door.

1. Activate hydraulic pump (p. 0026 00-1).
2. Move either upper or lower door switch lever (1 or 2) to UP, if necessary, to obtain a clearance of at least 1/2 inch between mechanical safety lock (5) and lock stop (6).

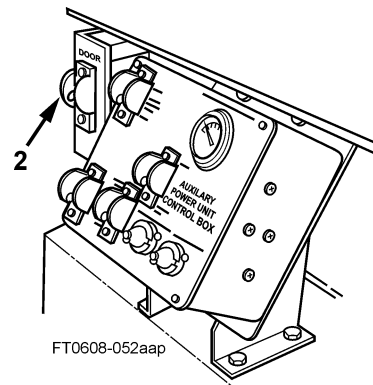


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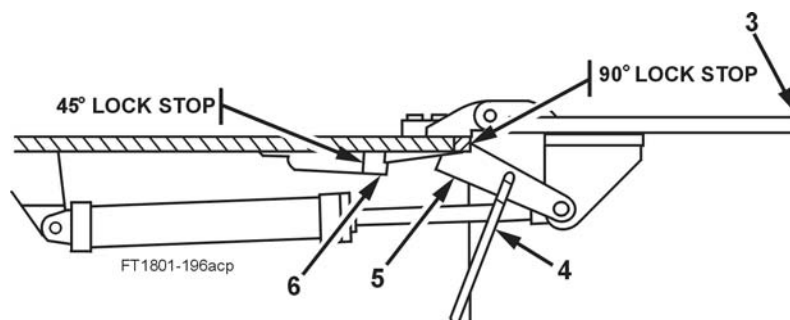
WARNING

Keep head, hands, and feet clear when closing upper rear door. Door is very heavy and can cause severe injury to personnel.

3. Pull downward on mechanical safety lock handle (4) and move either door switch lever (1 or 2) to DOWN. If closing upper rear door (3) completely, continue to hold down mechanical safety lock handle (4) until mechanical safety lock (5) clears 45-degree lock stop (6).



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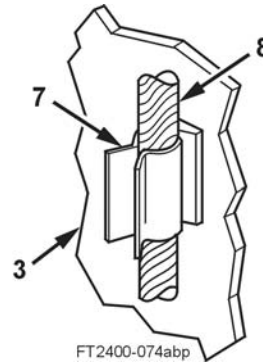
UPPER REAR DOOR (continued)

Closing Door (continued)

- Secure conveyor cables (8) in clips (7) when door (3) is three to four feet above fully closed position.

CAUTION

To avoid damage to doors, lower rear door must be open before closing upper rear door.



- Close lower rear door (p. 0027 00-8).

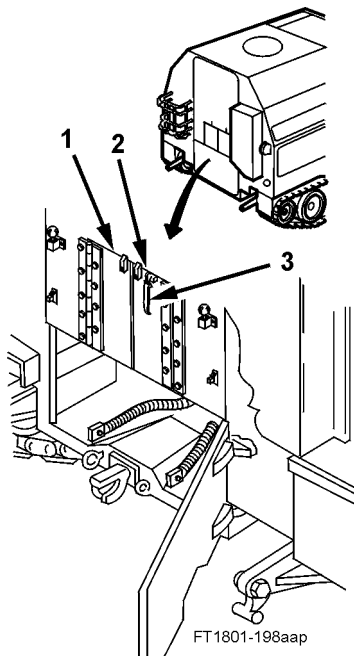
NOTE

- If hydraulic power fails, refer to 0044 00-5 for upper rear door emergency operating procedures.
- If electrical power fails, refer to page 0044 00-7 for upper rear door emergency operating procedures.

DOG DOORS

Opening Doors

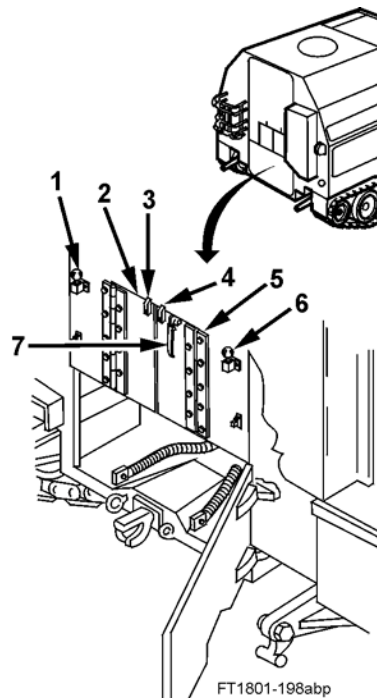
- Open lower rear door (p. 0027 00-8).
- Turn door handle (3) clockwise to release latch handle on right dog door (2).
- Open right dog door (2).
- Open left dog door (1).



DOG DOORS(continued)

Closing Doors

1. Pull up left latch (1) to clear left dog door strike (3) and close left dog door (2).
2. Pull up right latch (6) to clear right dog door strike (4) and close right dog door (5).



CAUTION

Dog doors do not have latches to secure them closed. They are secured by lower door flange. Do not operate vehicle without making sure dog doors are secured. Dog doors could be damaged by swinging open while vehicle is moving.

3. Turn handle (7) on right dog door counter - clockwise to secure doors.
4. Close lower rear door (p. 0027 00-8).

APU SIDE DOOR

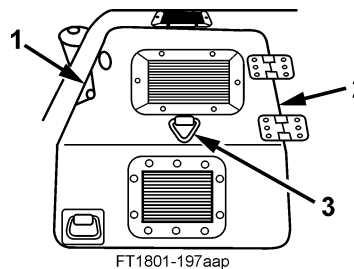
WARNING

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

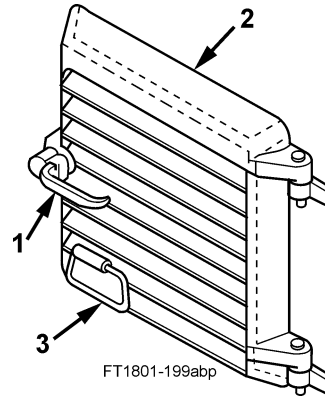
To avoid damage to latching mechanism, make sure latch handle is in unlatched position before closing door.



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

APU FRONT DOOR

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



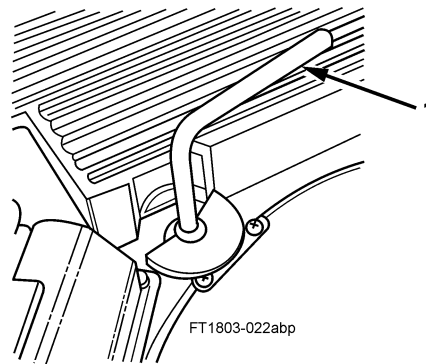
DRIVER'S HATCH DOOR

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

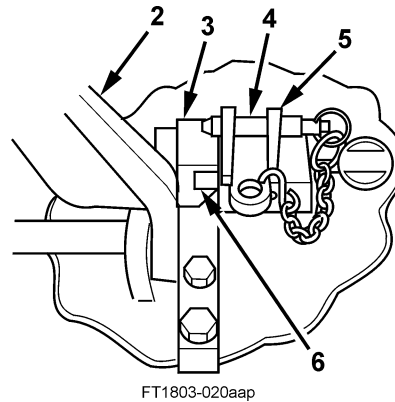
1. Turn lever (1) clockwise.
2. Open hatch door (2) until hatch anchor (3) catches in hold-open hatch pin (6).



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 (4) from stowage position, and insert pin (4) through horizontal strike bracket (5) until pin (4) is over hatch anchor (3).



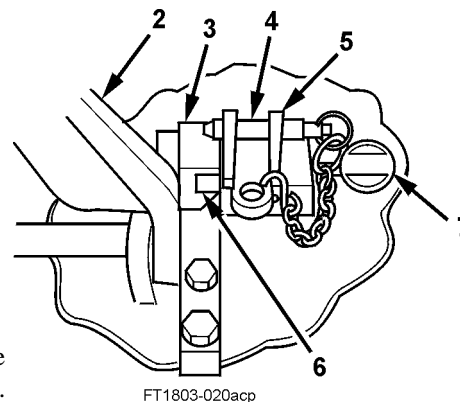
DRIVER'S HATCH DOOR (continued)

Closing Driver's Hatch Door

CAUTION

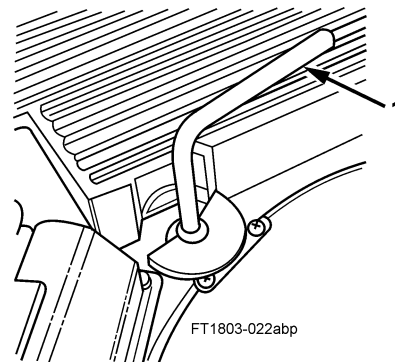
To avoid damaging security latch, check to make sure it is positioned out of doorway before closing hatch door.

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



Securing Driver's Hatch Door Against Outside Entry

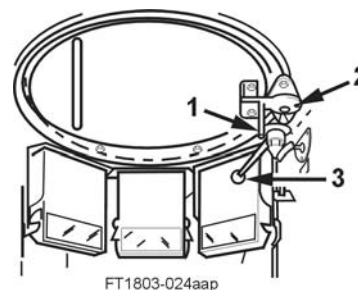
1. Secure door latching handle (3).
2. Push security latch handle (1) forward to stop.



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.



COMMANDER'S CUPOLA

NOTE

Door may be operated only from inside vehicle.

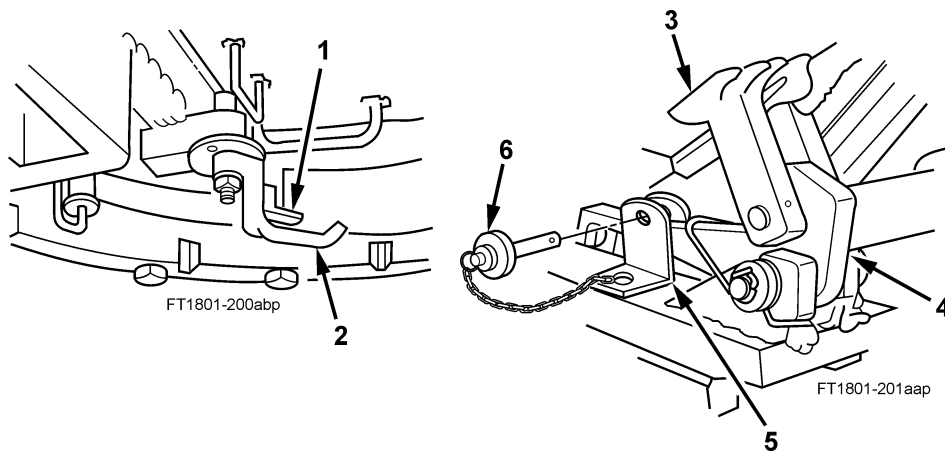
Opening Commander's Cupola Hatch Door

1. Deploy commander's seat (p. 0022 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)

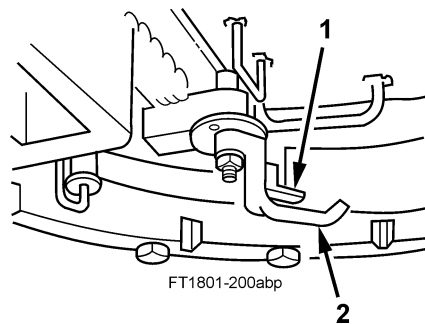
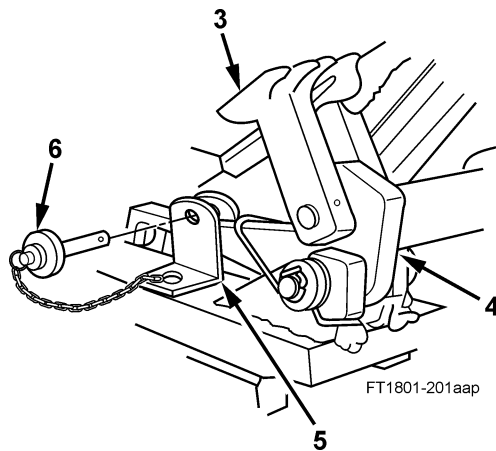
Closing Commander's Cupola Hatch Door

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

CAUTION

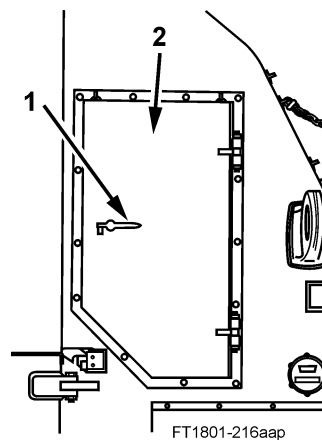
Check to make sure latch handle is latched in open position. Failure to do this may result in damage to latch.

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

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



END OF WORK PACKAGE

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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.

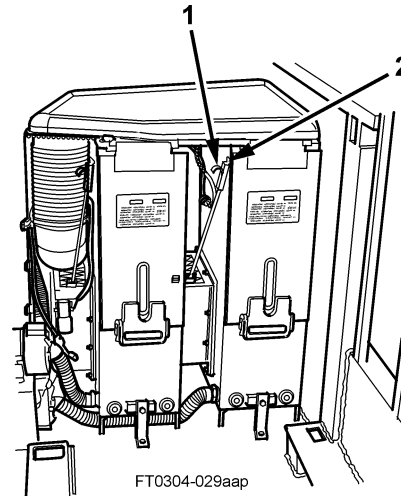
In temperatures over 40°F (4.4°C), leave locking handles (1) in holders.

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.

OPERATING MAIN ENGINE AIR CLEANER SYSTEM (continued) 0028 00

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. 0057 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. Deploy conveyor (p. 0030 00-1).
2. Close upper rear door (p. 0027 00-11).
3. Install shroud (p. 0030 00-7), if necessary.
4. Operate conveyor to load projectiles into M992A2 (p. 0030 00-8).
5. Transfer and stow projectiles from conveyor to projectile rack assemblies (p. 0032 00-3).
6. Load and restrain propelling-charge canisters in appropriate stowage areas (p. 0031 00-1).
7. Place fuse boxes, 0.50-caliber ammunition boxes, and primer boxes in appropriate locations (p. 0031 00-1). Secure boxes with straps.
8. After ammunition-loading operation is completed, stow conveyor (p. 0030 00-14).

UNLOADING AMMUNITION

1. Deploy conveyor (p. 0030 00-1).

CAUTION

Dog doors must be opened and upper rear door must be closed before backing up to an M109A6. Failure to do so may result in damage to upper rear door.

2. Lower upper rear door (p. 0027 00-11).
3. Operate conveyor to unload projectiles from the M992A2 (p. 0030 00-11).
4. Unload projectile rack assemblies (p. 0032 00-3).
5. Unload propelling-charge canisters from stowage areas (p. 0031 00-11).
6. Remove restraint straps (p. 0031 00-11), fuse boxes, 0.50-caliber ammunition boxes, and primer boxes from vehicle.
7. After ammunition unloading operation is completed, stow conveyor (p. 0030 00-14).

END OF WORK PACKAGE

OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

OPERATING THE CONVEYOR

THIS WORK PACKAGE COVERS:

Deploying the Conveyor, Installing Rear Door Shroud, Loading Cargo into M992A2, Unloading Cargo from M992A2, and Conveyor Shutdown and Stowage

INITIAL SETUP:

Maintenance Level

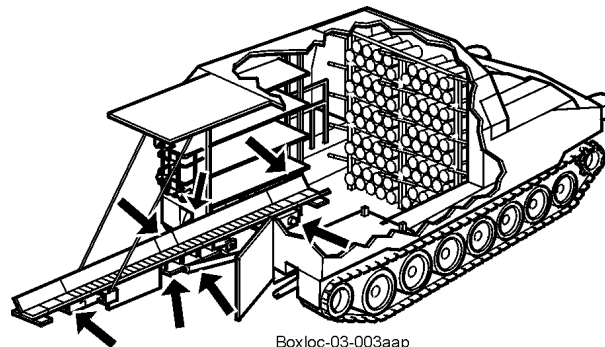
Operator

Personnel Required

Two

WARNING

Personnel should be aware of areas of the conveyor that can move suddenly during deployment. Keeping hands and body parts clear of the areas indicated on the illustration can help prevent serious injury.



DEPLOYING THE CONVEYOR

1. Open lower rear door (p. 0027 00-8).
2. Activate hydraulic pump (p. 0026 00-1).
3. Open and secure dog doors (p. 0027 00-12).

DEPLOYING THE CONVEYOR (continued)

WARNING

Make sure travel path of upper rear door is clear of personnel before opening door. Call out "CLEAR" when opening or closing door to prevent personnel from stepping in front of door.

4. Open upper rear door (ballistic shield) to 45-degree position (p. 0027 00-9). Make sure locking device is engaged.
5. Remove two slings (3) from hook (2) on hydraulic actuator base (1).

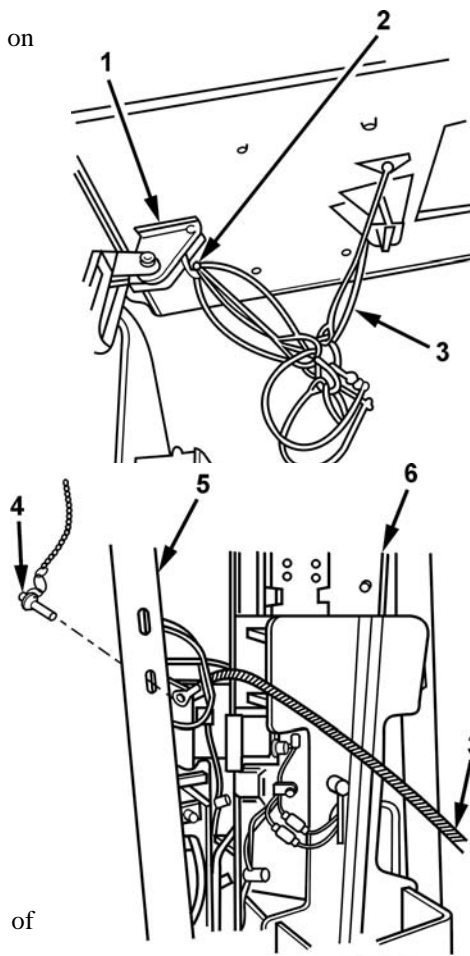
WARNING

- **Make sure you attach slings to conveyor properly, or conveyor may drop.**
- **Have an assistant hold conveyor in stowed position as you release stowage strap. This will prevent conveyor from slipping from stowed position, which could cause serious injury to personnel.**
- **Keep all parts of your body clear of conveyor hinges.**

NOTE

If conveyor needs to be deployed parallel to the ground, use short legs of two slings. If conveyor needs to be lower, use long legs of two slings.

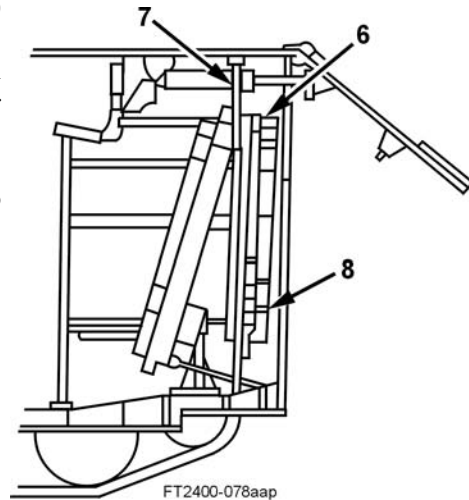
6. Connect two slings (3) to both sides of conveyor (6).
7. Remove two quick-release pins (4) from two conveyor support struts (5).



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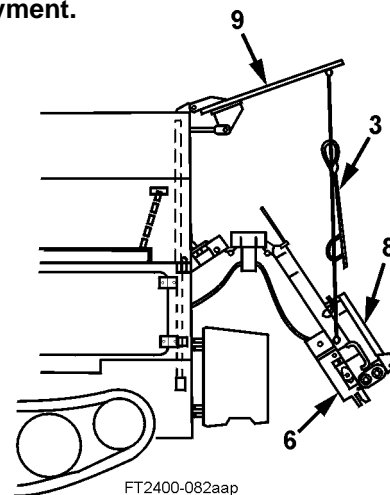
DEPLOYING THE CONVEYOR (continued)

8. Have an assistant restrain conveyor (6) in stowed position by supporting it at rear dead-end section (8). Make sure two slings (3) are properly attached to conveyor (6), then release conveyor (6) from stowage strap (7).



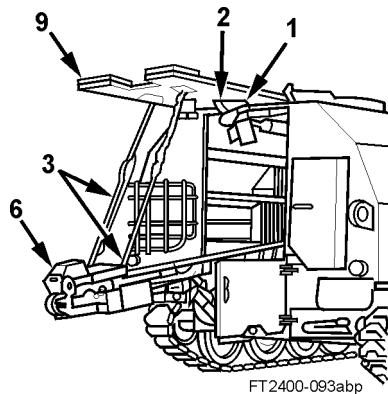
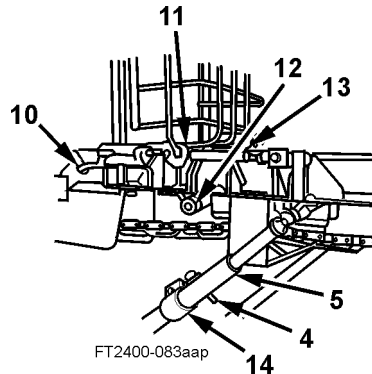
WARNING

- Make sure footing is firm and deployment area is free of obstructions. When deploying conveyor, be prepared to stand to one side and move quickly after conveyor begins to move; it moves rapidly.
 - Keep fingers clear of section hinges when deploying conveyor.
 - Keep hands away from drive section handles until handles are clear of support struts.
 - Conveyor may swing left or right when being deployed. Be careful to avoid swinging conveyor.
 - Make sure door is positioned at 120 degrees from closed position. This will help control speed of deployment.
9. Open upper rear door (9) to take slack out of two slings (3) (p. 0027 00-9). Raise upper rear door (9) slightly higher until conveyor (6) comes free from vehicle.
 10. Have assistant pull on rear dead-end section (8) until conveyor (6) extends fully.



DEPLOYING THE CONVEYOR (continued)

11. To stabilize two conveyor center hinges (12), pull forward on red handle (10) and place loop (13) over hook (11). Push back on handle (10) to lock handle (10) in place.
12. Position upper rear door (9) so conveyor (6) reaches desired height.
13. Install two quick-release pins (4) in two conveyor support struts (5). Tighten two friction clamps (14).
14. Lower upper rear door (9), and remove two slings (3) from both sides of conveyor (6) and stow in hook (2) on hydraulic actuator base (1).



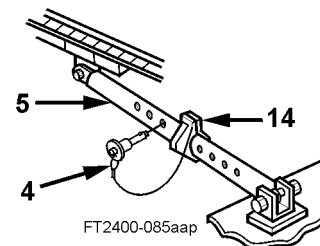
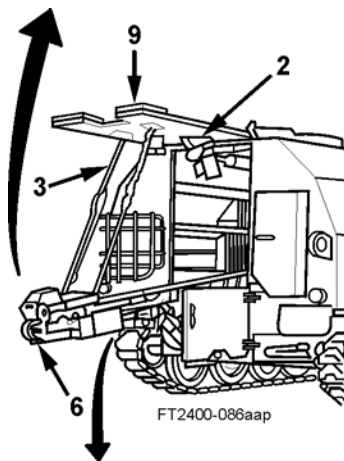
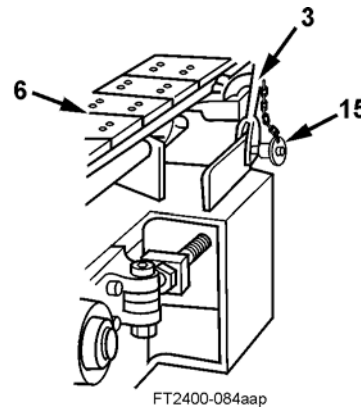
WARNING

Slings are not intended to support conveyor under normal operating conditions. ONLY if conveyor support strut is missing or fails may slings be used to support conveyor during operation. When operating in this mode, avoid sudden movement of conveyor. Periodically inspect slings and attaching hardware for damage. Notify Unit maintenance immediately upon mission completion if sling damage exists.

15. If conveyor (6) must be raised higher than long legs of two slings (3) allow:
 - a. Make sure the two conveyor support struts (5) are locked in position.

DEPLOYING THE CONVEYOR (continued)

- b. Position upper rear door (9) at 45 degrees from closed position (p. 0027 00-9).
- c. Lower upper rear door (9) until tension on two slings (3) is relieved.
- d. Remove quick-release pin (15) from left sling (3) and disconnect long leg of sling (3) from left side of conveyor (6).
- e. Connect short leg of left sling (3) to left side of conveyor (6) with quick-release pin (15).
- f. Repeat steps d and e for right side of conveyor (6).
- g. Raise upper rear door (9) to take slack out of two slings (3).
- h. Remove two quick-release pins (4) from two conveyor support struts (5).
- i. Loosen two friction clamps (14) on two conveyor support struts (5).
- j. Raise upper rear door (9) until conveyor (6) is in required position.
- k. Install two quick-release pins (4) in two conveyor support struts (5).
- l. Tighten two friction clamps (14) on two conveyor support struts (5).
- m. Lower upper rear door (9) and remove two slings (3) from both sides of conveyor (6) and stow in hook (2).



DEPLOYING THE CONVEYOR (continued)

WARNING

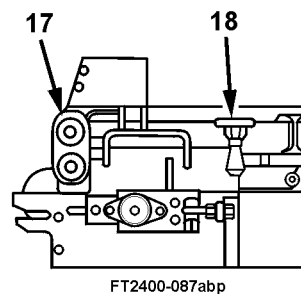
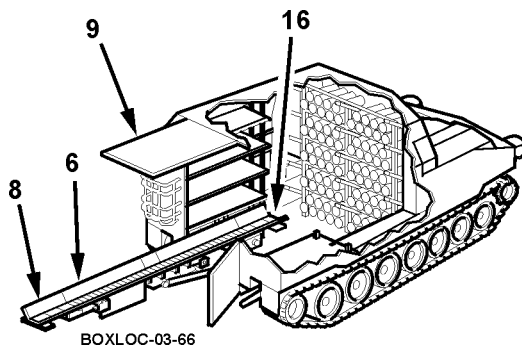
When operating with upper rear door open, always engage mechanical safety lock before beginning conveyor operations. This will prevent upper rear door from dropping if hydraulic system fails.

16. If operating with upper rear door (9) open, lower or raise upper rear door (9) to either 45 degrees or 90 degrees from closed position. This will engage mechanical safety lock. Raise door slightly until lock and lock stop are about 1/8 inch apart.
17. Release rubber end-section latch (18) at each end of conveyor (6). Flip out forward and rear dead-end sections (16 and 8).

NOTE

Each conveyor end section can be positioned at one of two angles (relative to angle of conveyor), using flipper plates under each end section.

18. Adjust forward or rear dead-end section (16 or 8) as necessary, using flipper plates (17).



INSTALLING REAR DOOR SHROUD

NOTE

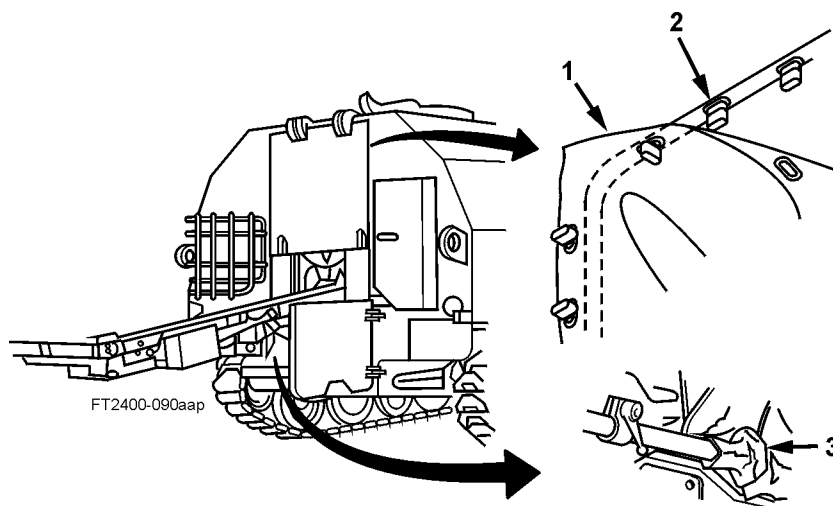
- When operating in bad weather or blackout conditions, have upper rear door (ballistic shield) closed with small door secured open and door shroud in place.
- When positioning door shroud, observe stencil markings on shroud. Make sure side marked IN faces inside of vehicle.

1. Deploy conveyor (p. 0030 00-1).
2. Close upper rear door (p. 0027 00-11).
3. Position and secure door shroud (1) over doorway using fasteners (2).
4. Fasten shroud flaps around conveyor, conveyor supports, and upper rear door cylinder with pressure-sensitive hook-and-pile tape (3).

CAUTION

Always remove and stow door shroud before stowing conveyor to avoid damaging door shroud.

5. Before stowing conveyor, remove and stow door shroud (1).



LOADING CARGO INTO M992A2

WARNING

- **Keep hands clear of moving conveyor chain at all times.**
- **Do not operate conveyor with chain guards removed.**
- **When transporting powder charges on conveyor, always attach grounding cable to supported howitzer. This prevents buildup of static electricity, reducing chance of igniting a propelling charge.**
- **Do not drop or throw projectiles or propelling charges onto conveyor.**
- **Promptly remove projectiles and propelling charges from howitzer end of conveyor. Keep end section under observation. Turn off conveyor if projectiles or propelling charges begin to pile up.**
- **Slings are not intended to support conveyor under normal operating conditions. ONLY if conveyor support strut is missing or fails may slings be used to support conveyor during operation. When operating in this mode, avoid sudden movement of conveyor. Periodically inspect slings and attaching hardware for damage. Notify Unit maintenance immediately upon mission completion if sling damage exists.**

CAUTION

- **Never activate conveyor switches or directional control valve with conveyor stowed. Serious damage to conveyor may result.**
- **When positioning vehicle for conveyor operation, never allow weight of conveyor to be supported by slings only. Damage to slings and/or conveyor could result. Conveyor should be supported by left and right conveyor support struts when positioning vehicle.**
- **To avoid damage to conveyor, always stow conveyor before driving vehicle.**

LOADING CARGO INTO M992A2 (continued)

1. Deploy conveyor (p. 0030 00-1).
2. Position conveyor as necessary to provide access to loading from ammunition supply vehicles.

WARNING

For the safety of personnel in the area, always use ground guide(s) when backing the M992A2 into position.

CAUTION

When conveyor is supported by slings, do not raise upper rear door and overtension cables. Slings may break, allowing conveyor to fall.

NOTE

Backing instructions are on page 0019 00-1.

3. Back vehicle to ammunition stockpile. If ammunition is to be transferred from truck bed, back truck to the M992A2 if possible.

LOADING CARGO INTO M992A2 (continued)

WARNING

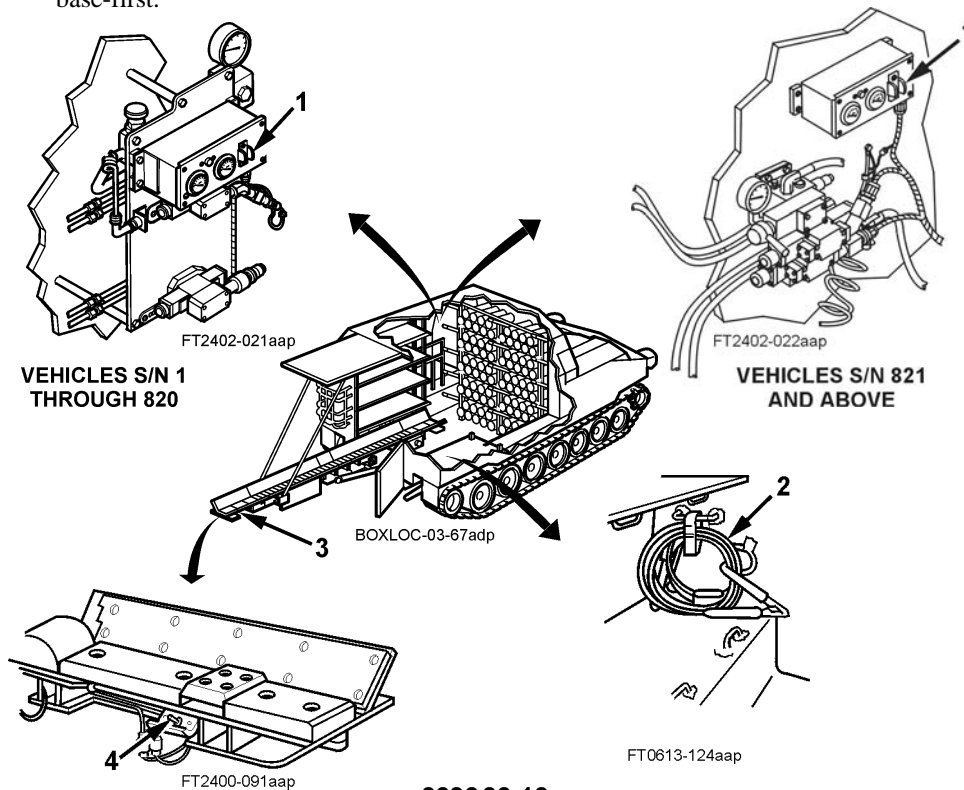
Attach ground cable to truck or stockpile. Failure to ground the M992A2 properly may result in explosion.

4. Attach ground cable (2) to truck or stockpile.
5. Turn override safety switch (4) to ON.
6. Position CONVEYOR switch (1) to IN.

CAUTION

Loader must not place ammunition onto conveyor at faster rate than it can be removed at inboard end.

7. Place ammunition onto rear end section (3). Projectiles should be placed onto conveyor base-first.



LOADING CARGO INTO M992A2 (continued)

8. Push ammunition onto conveyor chain. Conveyor will move ammunition to forward end section.
9. When ammunition reaches forward end section, it must be removed promptly and stowed in designated areas (p. 0032 00-3).

UNLOADING CARGO FROM M992A2

1. Deploy conveyor (p. 0030 00-1).

WARNING

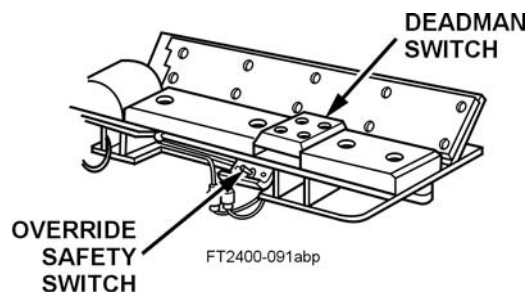
- **For safety of personnel in the area, always use ground guide(s) when backing M992A2 into position.**
 - **To avoid damage to upper rear door and injury to personnel, ground guide must always consider rear clearance of opened door when instructing driver.**
2. Back vehicle to receiving area. If cargo is to be unloaded to a supported howitzer, open howitzer rear personnel door and back vehicle until conveyor reaches doorway. Close upper rear door with dog doors open (p. 0027 00-11).

NOTE

- Yellow nylon strips on conveyor are for use with the M109A6 howitzer. Back the M992A2 toward the M109A6 until yellow nylon strips are even with bulkhead of the M109A6.
- A deadman switch on rear end section of conveyor will automatically shut off conveyor, preventing a possibly dangerous pile-up of ammunition.
- Make sure conveyor override safety switch is within easy reach of howitzer crew. This is necessary to provide the howitzer crew with the capability to prevent ammunition pile-up.
- An override safety switch on rear end section of conveyor allows the crew to shut off conveyor in an emergency situation.
- It is the responsibility of the ammunition team chief to inform the howitzer crew of these features.

UNLOADING CARGO FROM M992A2 (continued)

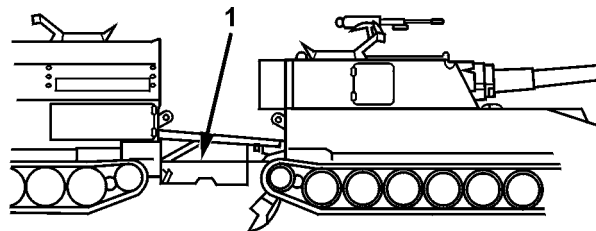
3. Maneuver vehicle and conveyor, as necessary, to position rear end section to comfortable unloading location for howitzer crew.



WARNING

Always attach grounding cable to howitzer, truck, or stockpile before unloading ammunition. Failure to do this may result in explosion of ammunition.

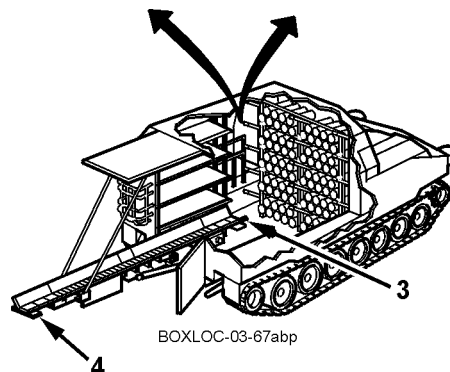
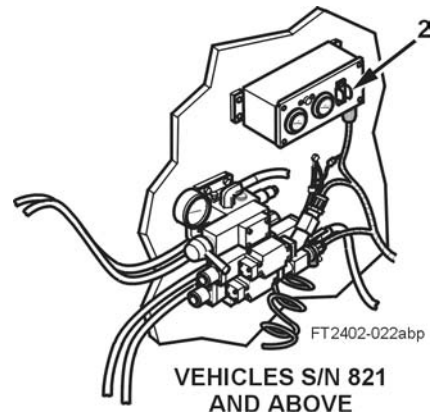
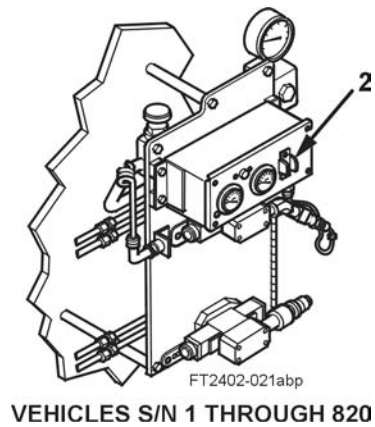
4. Attach grounding cable (1) to howitzer, truck, or stockpile.



FT0613-125aap

UNLOADING CARGO FROM M992A2 (continued)

5. Activate hydraulic pump (p. 0026 00-1). Move CONVEYOR switch (2) to OUT.
6. Remove a projectile from rack section (p. 0032 00-4) and slide projectile over forward end section (3) onto conveyor chain.
7. Place proper propelling charge (called for by howitzer crew) onto conveyor chain behind projectile.
8. Howitzer personnel will remove projectiles and charges from rear end section (4).
9. Repeat steps 6, 7, and 8 to unload additional ammunition, as required.



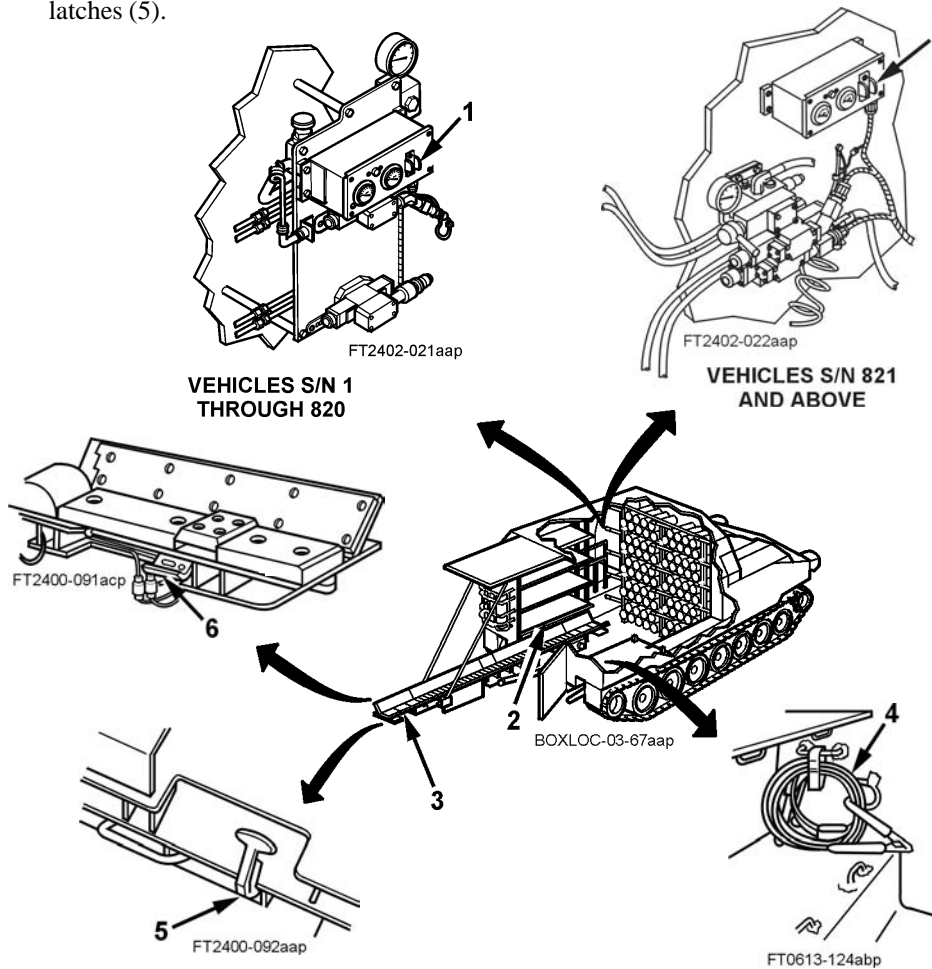
CONVEYOR SHUTDOWN AND STOWAGE

1. Push CONVEYOR switch (1) to middle OFF position.
2. Push conveyor override safety switch (6) to OFF.

CAUTION

If rear door shroud and conveyor shroud have been installed, they must be removed and stowed before conveyor is stowed.

3. Stow forward and rear end sections (2 and 3), and secure end sections (2 and 3) with rubber latches (5).



4. Remove ground cable (4) from howitzer, truck, or stockpile. Stow ground cable in space provided in your vehicle.

CONVEYOR SHUTDOWN AND STOWAGE (continued)

5. If upper rear door (9) was closed with dog doors open, open upper rear door (9) to 45 degrees from closed position (p. 0027 00-9). If upper rear door (9) was open, lower door to 45 degrees from closed position.

NOTE

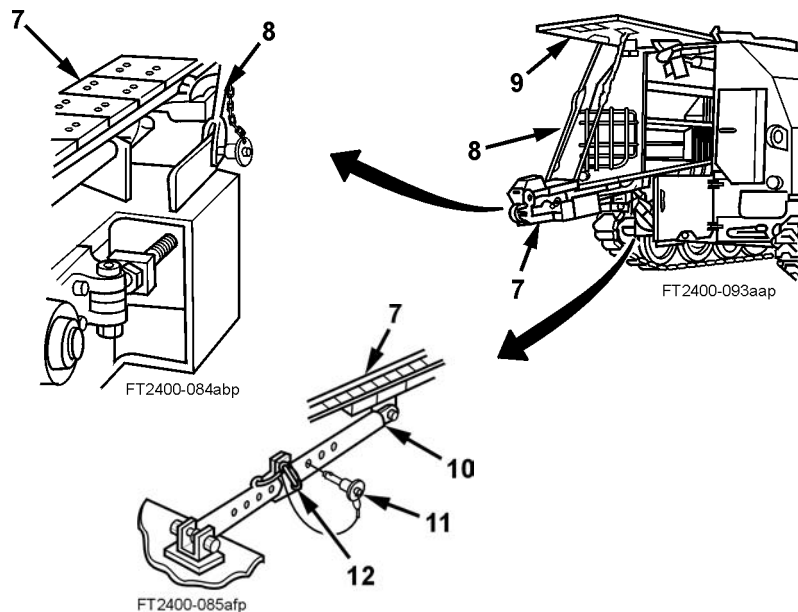
Steps 6 through 11 apply only if conveyor was positioned above horizontal.

6. Connect short legs of two slings (8) to conveyor (7).

WARNING

To avoid damage to conveyor components and serious injury to personnel, be sure slings are free of obstructions when raising upper rear door.

7. Raise upper rear door (9) until two slings (8) are under tension and two conveyor support struts (10) move, freeing two quick-release pins (11). Remove two quick-release pins (11) from two conveyor support struts (10), and loosen two friction handles (12).



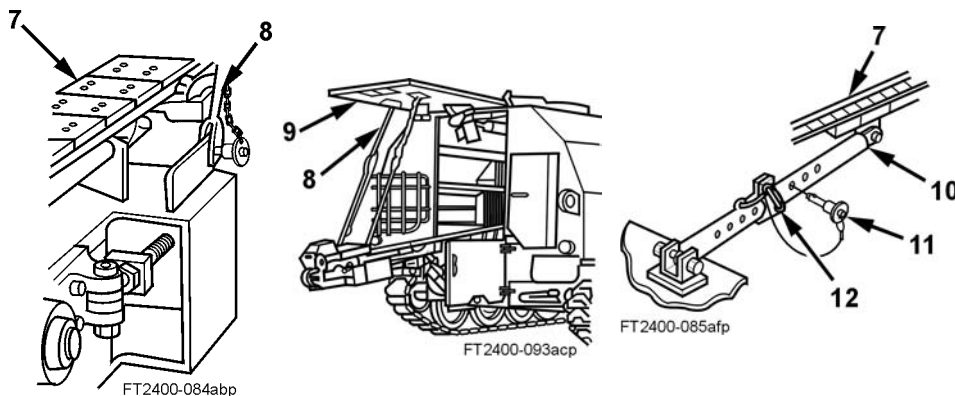
CONVEYOR SHUTDOWN AND STOWAGE (continued)

8. Position upper rear door (9) 45 degrees from closed position.
9. Install two quick-release pins (11) in two conveyor support struts (10), and tighten two friction handles (12).
10. Disconnect short legs of two slings (8) from right side of conveyor (7).
11. Connect long legs of two slings (8) from right side of conveyor (7).
12. Raise upper rear door (9) just enough to take slack out of two slings (8).
13. Remove two quick-release pins (11) from two conveyor support struts (10). Loosen two friction handles (12).

WARNING

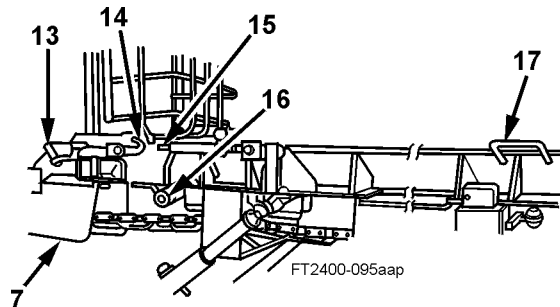
- **Before unlocking center hinges, operate upper rear door to raise conveyor above horizontal. This will ensure that conveyor clears the ground and operator's feet during conveyor stowing.**
- **NEVER unlock center hinges unless slings are attached. If center hinges are unlocked when slings are not attached, conveyor could collapse, causing damage or serious injury.**
- **Make sure travel path of upper rear door is clear of personnel before opening door. Call out "CLEAR" when opening or closing door to prevent personnel from stepping in front of door.**

14. Operate upper rear door (9) to raise conveyor (7) to horizontal (p. 0027 00-9).

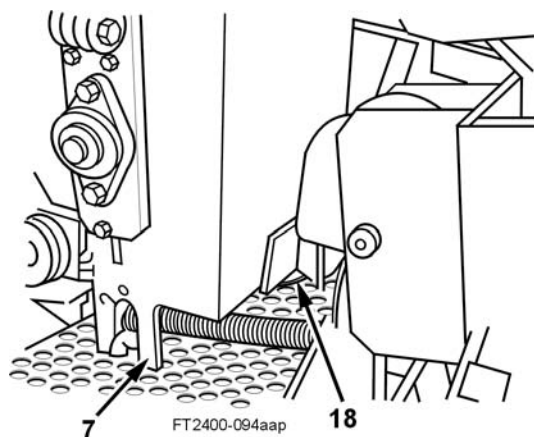


CONVEYOR SHUTDOWN AND STOWAGE (continued)

15. To unlock hinges (16) at conveyor's center section, pull out on red handles (13) on each side of conveyor (7). Remove loops (15) from hooks (14) and push down on red handles (13).
16. To fold conveyor into vehicle:
 - a. Position door (9) at maximum height (120 degrees from closed position) (p. 0027 00-9).
 - b. Push down firmly on conveyor handles (17).
 - c. Push forward and up quickly and firmly.

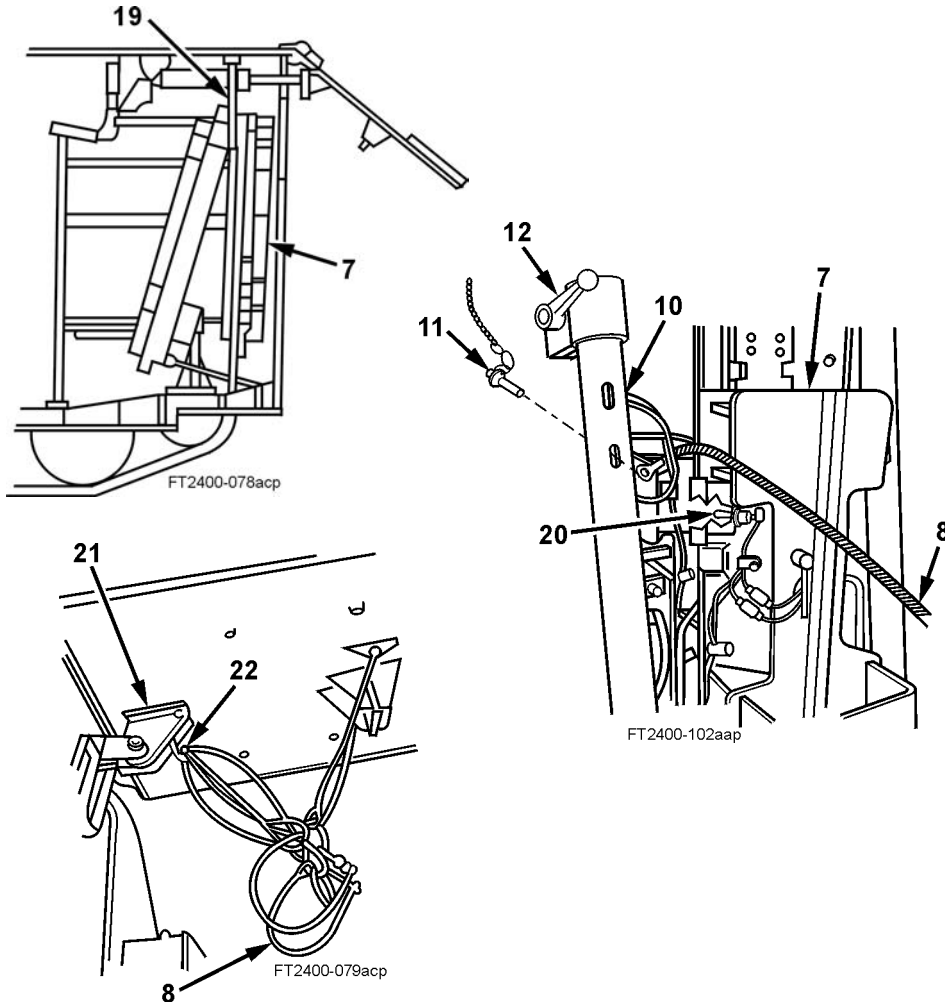


- d. After conveyor (7) is folded inside vehicle, position conveyor end over bracket (18), and lower upper rear door (p. 0027 00-11) to secure conveyor (7) on bracket (18).



CONVEYOR SHUTDOWN AND STOWAGE (continued)

17. With assistant supporting conveyor (7), secure conveyor (7) with stowage strap (19). Tighten strap (19).
18. Install two quick-release pins (11) in two conveyor support struts (10), and tighten two friction handles (12).
19. Disconnect two slings (8) from conveyor (7) and install in hook (22) on hydraulic actuator base (21).
20. Double-check to make sure conveyor safety switch (20) is turned to OFF.



CONVEYOR SHUTDOWN AND STOWAGE (continued)

WARNING

To avoid damage to conveyor components and serious injury to personnel during upper rear door operation, secure conveyor with strap after placing it on bracket.

21. Close upper rear door (p. 0027 00-11).
22. Close dog doors (p. 0027 00-13).
23. Shut down hydraulic pump (p. 0026 00-1).
24. Close lower rear door (p. 0027 00-8).

END OF WORK PACKAGE

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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

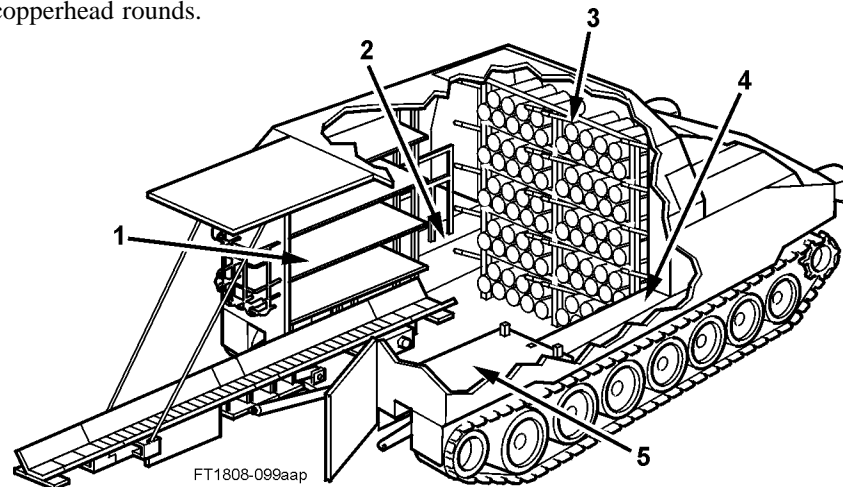
STOWAGE LOCATIONS

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 96 propelling charges in round or square containers for the M109A6 howitzer. A restraint system, using straps and bars, 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 area (1), on left canister compartment shelf (2), above projectile rack assemblies (3), in right front shelf area (4), and in right rear shelf area (5). These areas also provide stowage for fuse boxes, 0.50-caliber ammunition, primer, and copperhead rounds.



0031 00-1

TM9-2350-293-10

PROPELLING-CHARGE STOWAGE AREAS (continued)

0031 00

STOWAGE LOCATIONS (continued)

The following charts show stowage locations and quantities for charges, fuses, 0.50-caliber ammunition, primer, and copperhead rounds when using round or square containers.

ROUND CHARGES (CONTAINERS M14A2, M13A1, PA37A1, AND PA68)

SIZE CHARGE		R.H. FRONT COMPARTMENT	R.H. REAR COMPARTMENT	L.H. FRONT COMPARTMENT	L.H. REAR COMPARTMENT	ABOVE RIGHT RACK	ABOVE LEFT RACK	ON THE CANISTER COMPARTMENT SHELF	TOTAL QTY
155 mm	M13A1					11			11
	M14A2	5	5		19			9	38
	M119A2		2		15		2		19
	M203		28						28
TOTAL:									96

SQUARE CHARGES (CONTAINERS PA94, PA95, PA99, AND PA91)

SIZE CHARGE		R.H. FRONT COMPARTMENT	R.H. REAR COMPARTMENT	L.H. FRONT COMPARTMENT	L.H. REAR COMPARTMENT	ABOVE RIGHT RACK	ABOVE LEFT RACK	ON THE CANISTER COMPARTMENT SHELF	TOTAL QTY
155 mm	M13A1					10			10
	M14A2	5			12			9	26
	M119A2		6		22		2		30
	M203		30						30
TOTAL:									96

0031 00-2

PROPELLING-CHARGE STOWAGE AREAS (continued)

0031 00

STOWAGE LOCATIONS (continued)

Fuse Boxes

L.H. REAR COMPARTMENT	ON THE SPONSON	TOTAL QTY
3	8	11

NOTE

When stowing square charges, two additional fuse boxes can be stored behind left projectile rack assembly, for a total quantity of 13.

0.50-CAL.

L.H. REAR COMPARTMENT
3

PRIMER

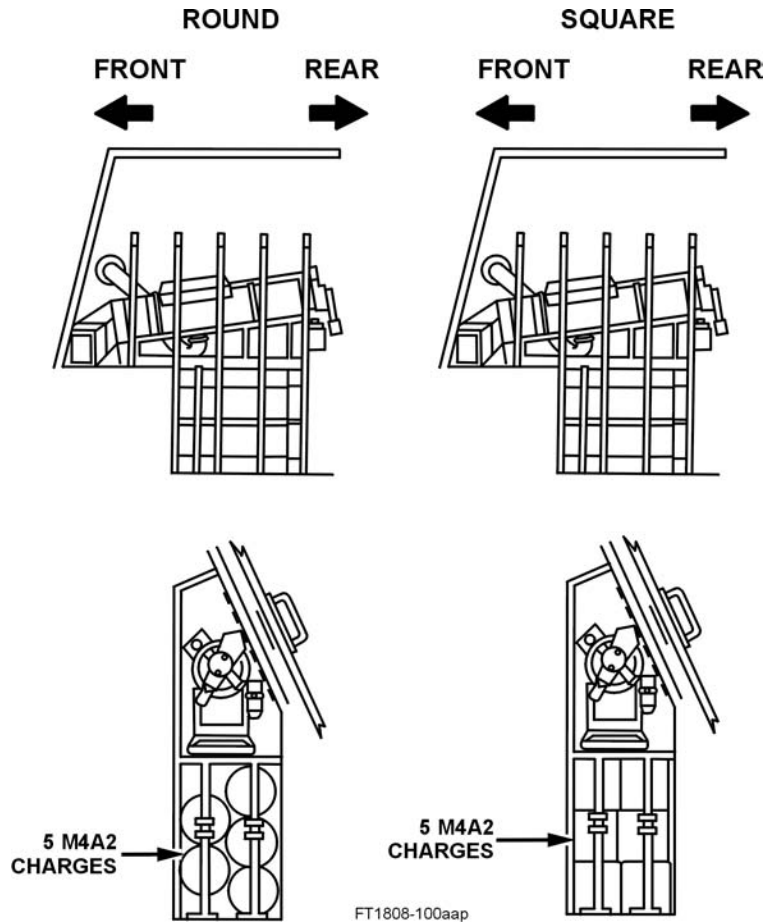
L.H. REAR COMPARTMENT
3

COPPERHEAD ROUNDS

L.H. REAR COMPARTMENT
3

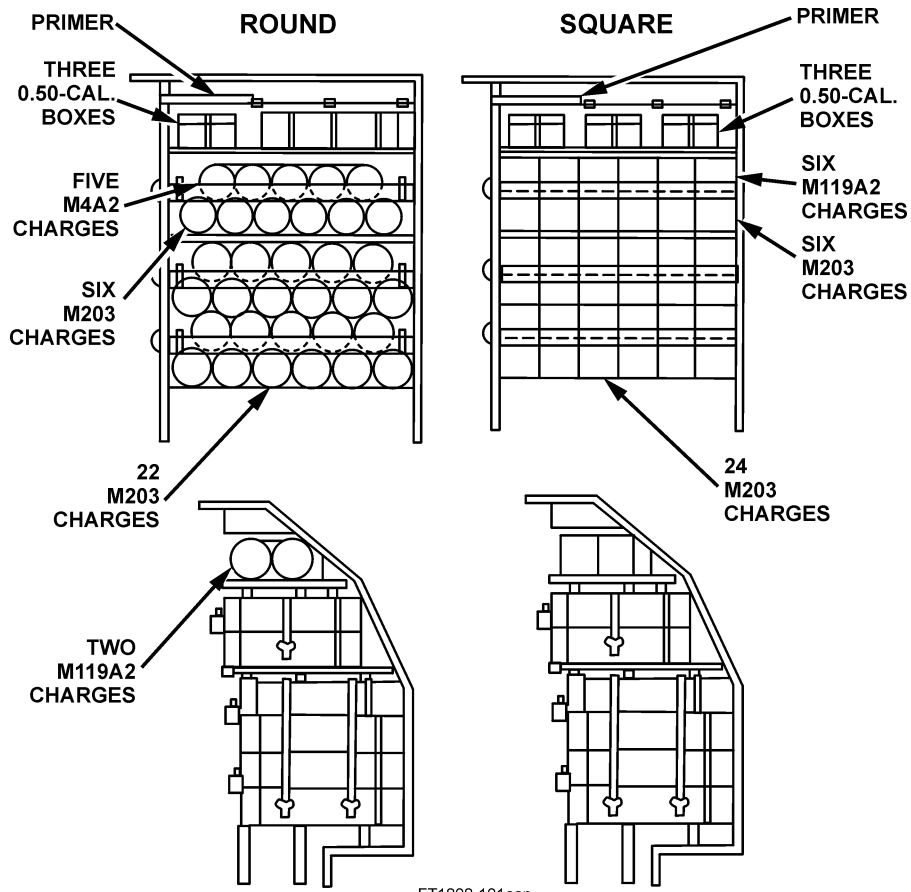
STOWAGE LOCATIONS (continued)

Right Front Compartment



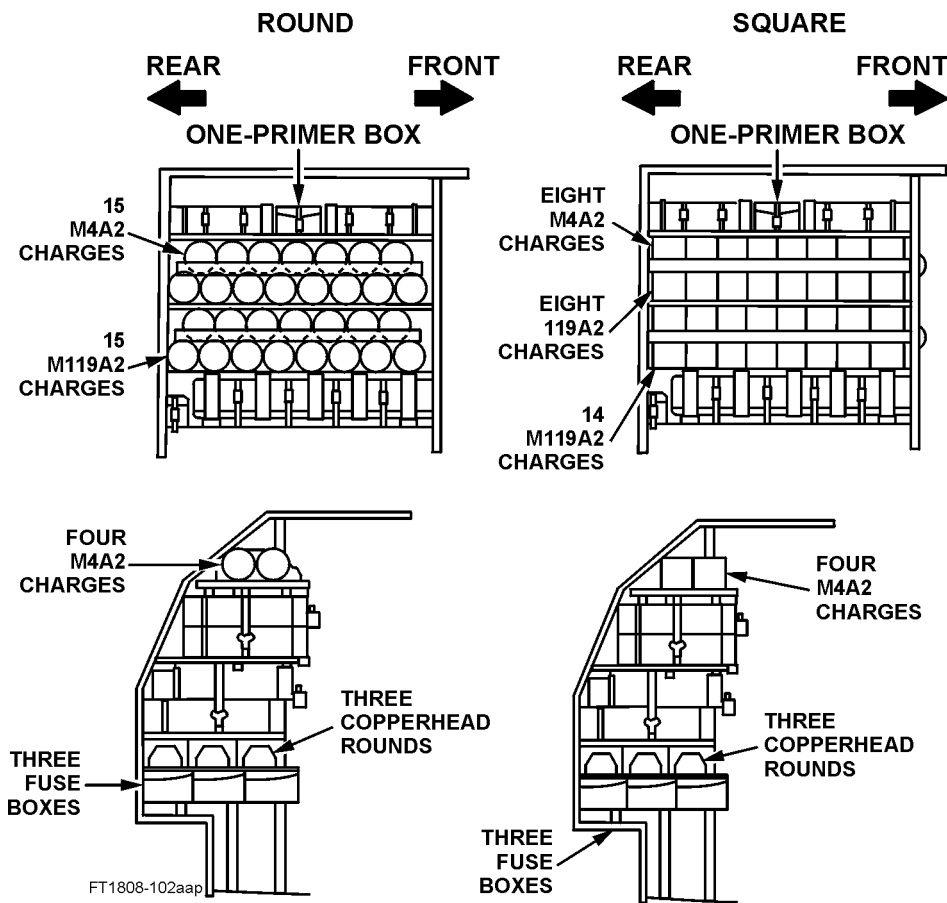
STOWAGE LOCATIONS (continued)

Right Rear Shelf Area



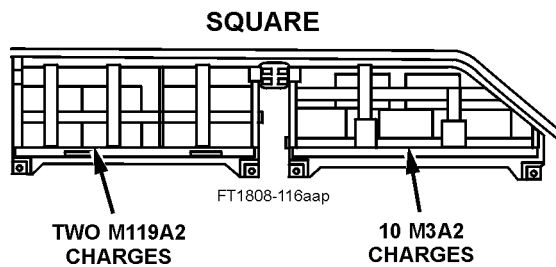
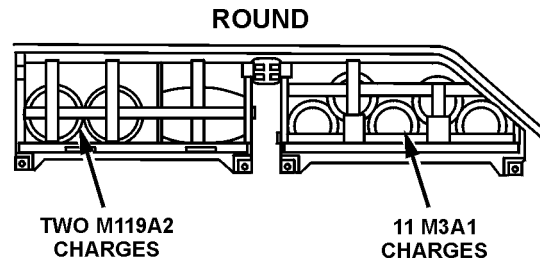
STOWAGE LOCATIONS (continued)

Left Rear Shelf Area

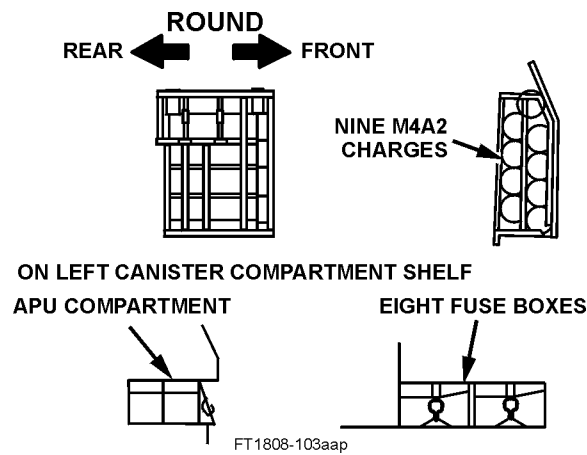


STOWAGE LOCATIONS (continued)

Above Projectile Racks

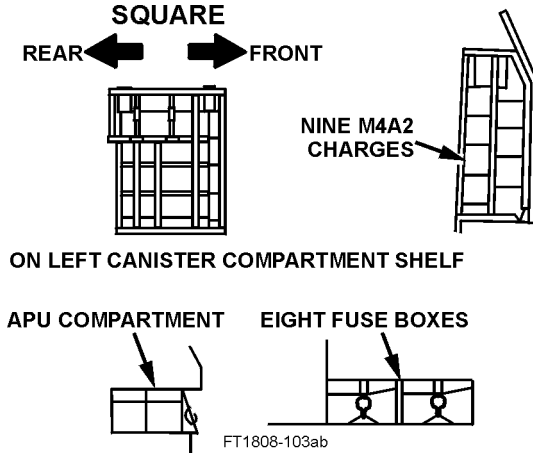


On the Sponson



STOWAGE LOCATIONS (continued)

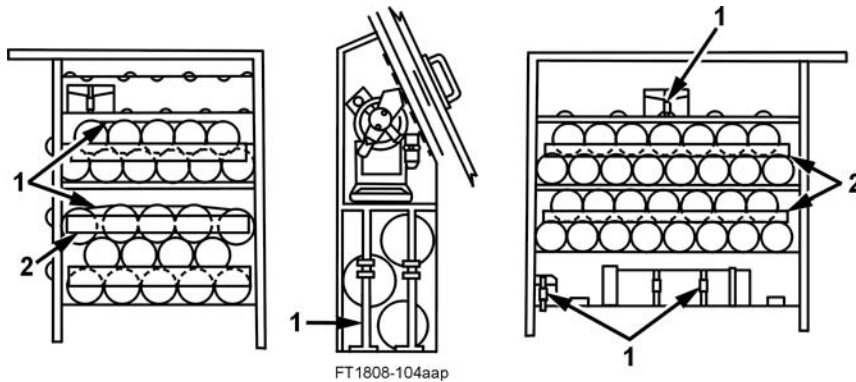
On the Sponson (continued)



Restraint System

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 most cases these straps do not have to be moved to remove charges from canisters.

Restraint bars (2) on right and left rear canister stowage shelves secure canisters for transit. These bars must be removed when canisters are loaded or unloaded. They must also be removed when charges are taken from canisters.

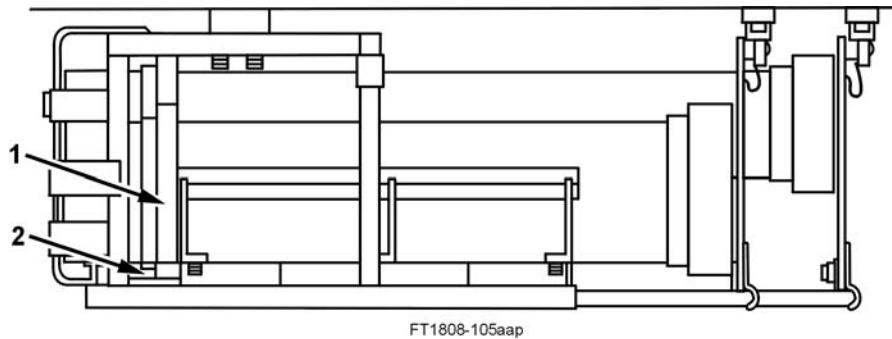


LOADING PROPELLING-CHARGE CANISTERS

1. Open canister side doors (p. 0027 00-5) and/or deploy conveyor (p. 0030 00-1).
2. Load propelling-charge canisters via conveyor (p. 0030 00-8) or canister compartment side doors.

CAUTION

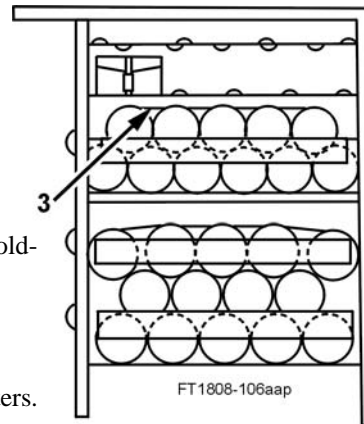
- **M203 canisters should not be stowed on top layer of right rear top shelf. Six canisters can be stowed on bottom layer on this shelf, with restraint bar in front.**
 - **M203 canisters should not be stowed in left rear top shelf at all, to avoid interference with rear door controls.**
3. Place propelling-charge canisters in specified stowage areas (p. 0031 00-2). When loading canisters into stowage boxes above projectile rack assemblies, push canisters fully toward front of vehicle so that flange of canisters (2) drops into slots (1) at bottom of box. This will lock canisters into place.



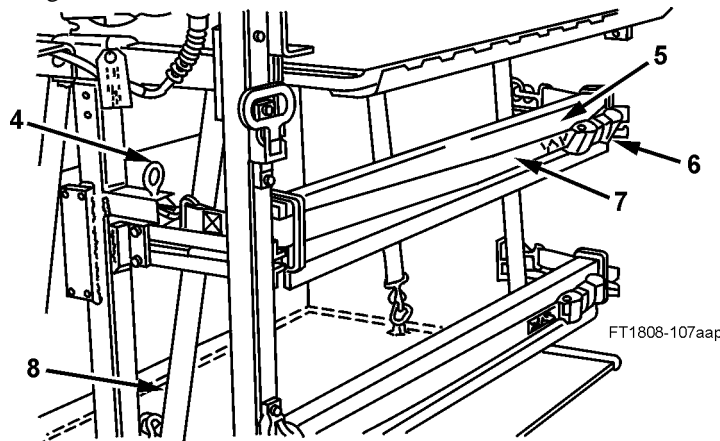
LOADING PROPELLING-CHARGE CANISTERS (continued)

NOTE

- When long canisters are stowed on same shelf with short canisters, long canisters should be placed on bottom row with short canisters strapped tightly on top. The restraint bar should be placed in front of long canisters.
- To ensure canisters are secured properly with ratcheting strap, canisters should be stacked in pyramid style so that fewer canisters are on the top layer than the bottom.

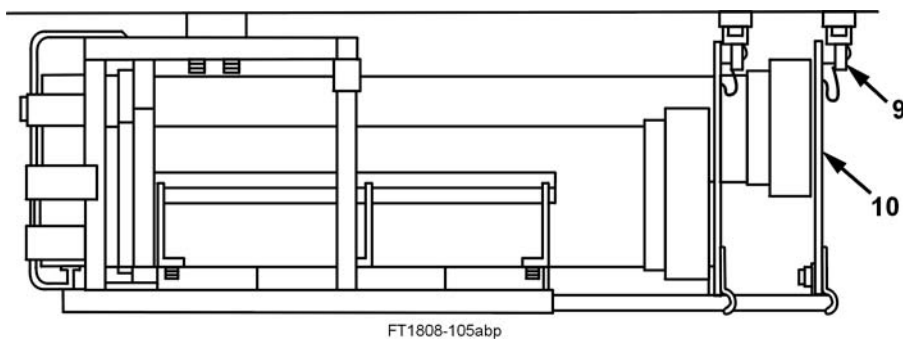


4. Remove straps from hold-open hooks and tighten hold-down straps (3) at each canister stowage area.
5. Secure each restraint bar (5) as follows:
 - a. Slide restraint bar (5) into position against canisters.
 - b. Make sure restraint strap (7) is hooked to eyehook (4) at each end.
 - c. Tighten restraint strap (7) securely by pulling free end (6).
 - d. Secure straps (8) on canister compartment shelf and right front areas.



LOADING PROPELLING-CHARGE CANISTERS (continued)

6. Pivot two guard plates (10) upward. Secure two guard plates (10) with two quick-release pins (9).



UNLOADING PROPELLING-CHARGE CANISTERS

NOTE

Canisters may be unloaded by hand through canister side door. They may also be unloaded using conveyor (p. 0030 00-1).

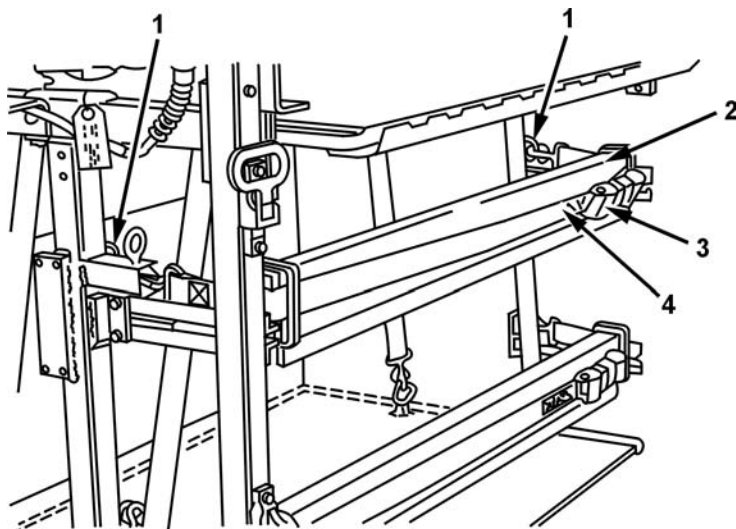
1. Open canister side doors (p. 0027 00-5) and/or deploy conveyor (p. 0030 00-1).

UNLOADING PROPELLING-CHARGE CANISTERS (continued)

NOTE

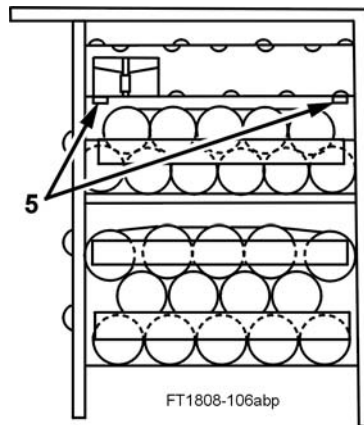
If necessary, bar and strap may be removed by unhooking strap from eyehooks and pulling bar from channels.

2. Loosen restraint straps (4) and bars (2) from stowage areas as follows:
 - a. Loosen strap (4) by depressing lever (3) and pulling strap (4).
 - b. Make sure strap (4) is hooked to eyehook (1) at each end.
 - c. Slide bar (2) out and allow it to suspend from strap (4).



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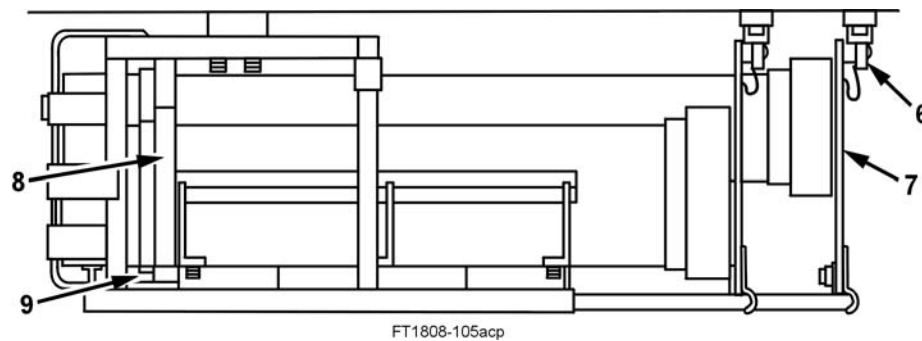
3. Loosen and lay aside all hold-down straps. Straps in left and right rear compartments may be retained by hold-open hooks (5).



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UNLOADING PROPELLING-CHARGE CANISTERS (continued)

4. Remove quick-release pin (6) from front guard plate (7).



5. Remove canisters from left and right rear compartments, sponson, above projectile rack assemblies, and right front shelf area. Canisters may be unloaded via conveyor (p. 0030 00-11) or canister compartment side doors. Canisters stowed above projectile rack assemblies are locked in place by flange of canister (9) fitting into a slot (8) in bottom of box. To remove canisters, tip outer end of canister downward, freeing flange from slot.

END OF WORK PACKAGE

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OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

PROJECTILE RACK OPERATION

THIS WORK PACKAGE COVERS:

Projectile Rack Description, Loading and Stowing Projectiles, Unloading Projectiles, and Moving Projectile Rack Assemblies

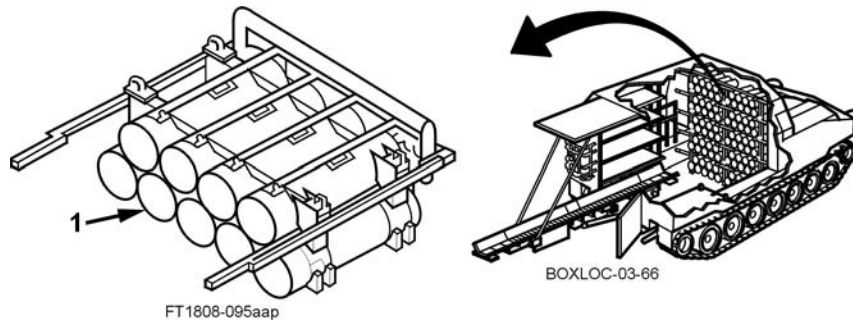
INITIAL SETUP:

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.



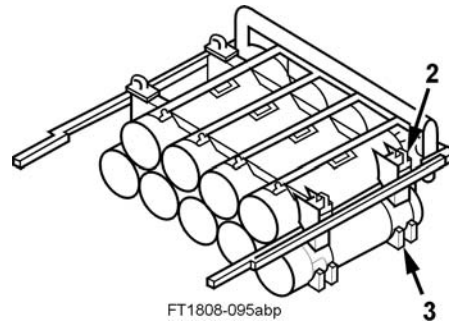
PROJECTILE RACK DESCRIPTION (continued)

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 (4). Each rack assembly is secured to front wall by brackets (5). Rack assemblies are also secured at top.

A stowage box (6) attaches to top rack section on each rack assembly.

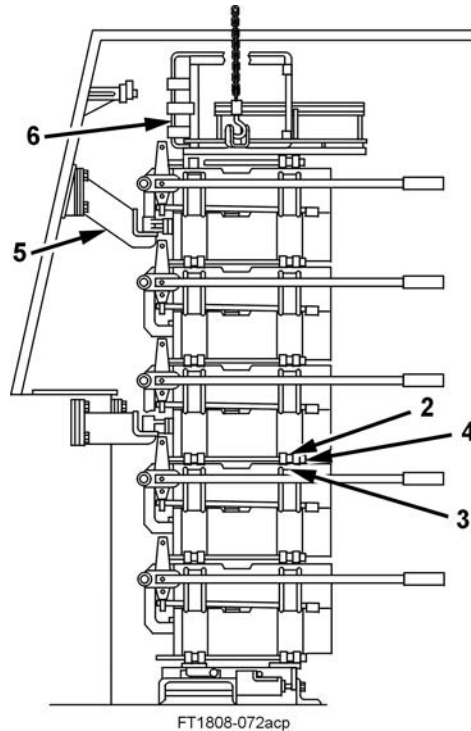
WARNING

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.



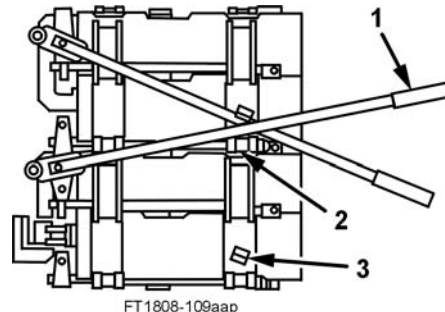
LOADING AND STOWING PROJECTILES

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.
3. Use conveyor (p. 0030 00-8) to move each projectile to rack section tube.



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.

4. Load each projectile into an unlocked rack section tube.
5. As each rack section is filled, lock projectiles in it by pushing rack handles out and down. Position both rack handles into locking clips.
6. 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.

UNLOADING PROJECTILES

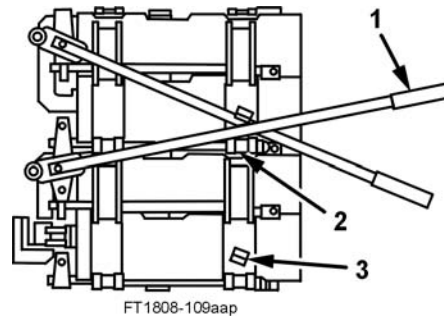
NOTE

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

1. Deploy conveyor (p. 0030 00-1).
2. 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.



3. 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. 0047 00-15).

4. Remove projectiles (one at a time) from unlocked rack section. Use conveyor to move projectiles from vehicle.
5. As each rack section is unloaded, lock rack section by pushing handles out and down. Position both rack handles into locking clips.
6. Repeat steps 2 through 5 to unload additional projectiles.

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. 0024 00-2).
2. Open top middle door and left and right top side doors (pp. 0027 00-6 and 0027 00-7).

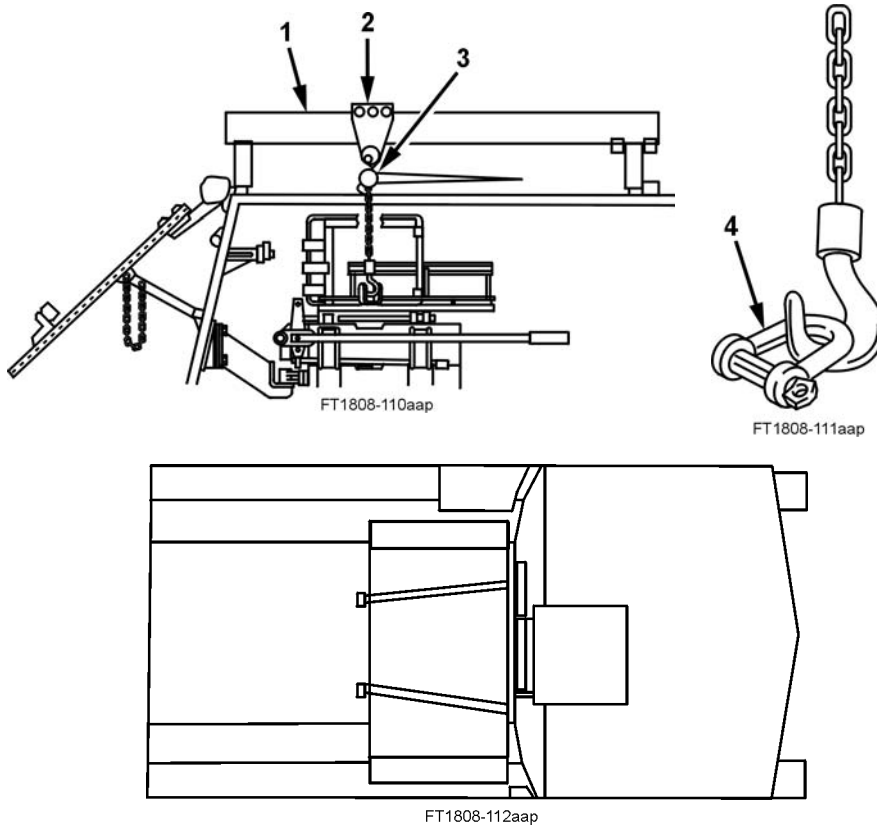
MOVING PROJECTILE RACK ASSEMBLIES (continued)

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. 0024 00-2).

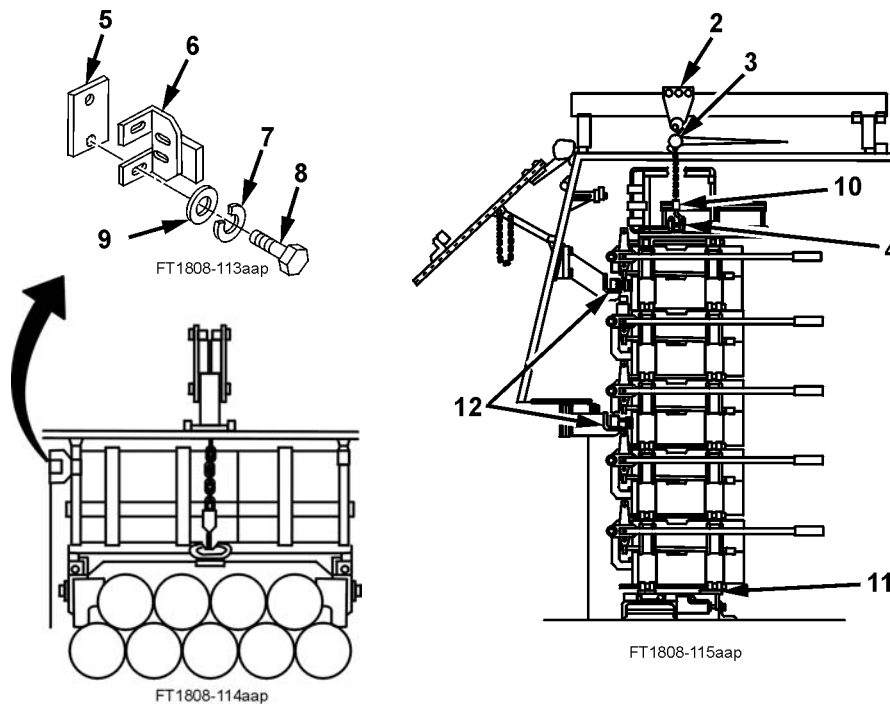
MOVING PROJECTILE RACK ASSEMBLIES (continued)

6. If left rack assembly is to be moved, remove two screws (8), lockwashers (7), and 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

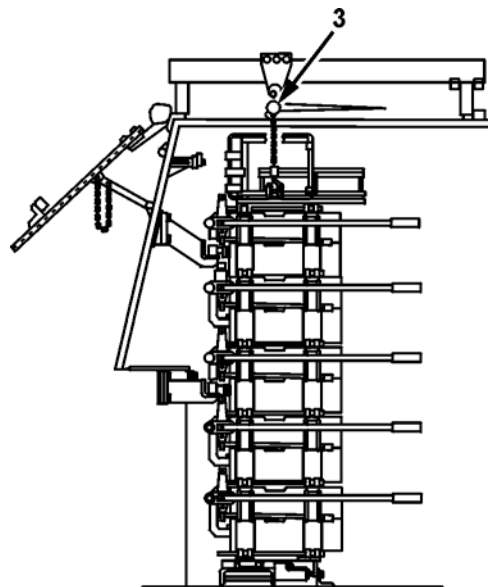
Before moving rack assembly toward rear of vehicle, make sure floor will provide a level resting place. If floor is not level rack may tip, causing injury or damage.

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.

CAUTION

Watch clearance on hydraulic lines when moving left projectile rack assembly.

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.



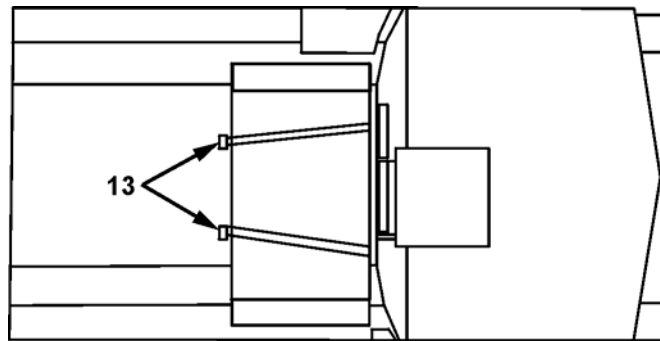
FT1808-115aep

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.

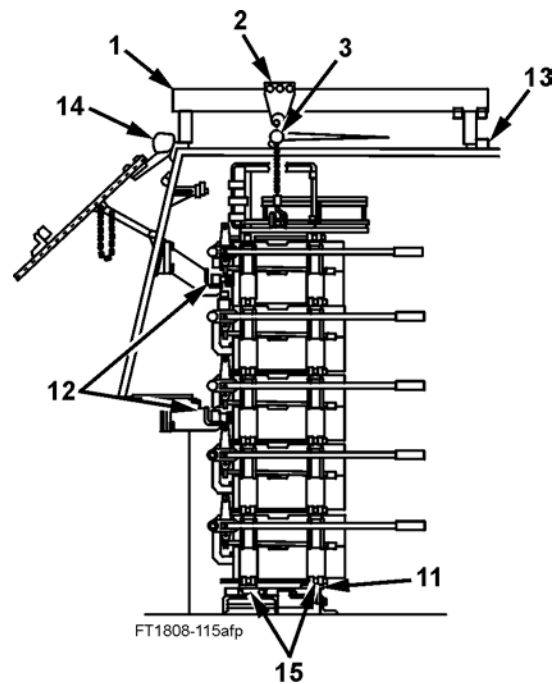
15. Position hoist (3), beam (1), and trolley assembly (2) over rack assembly to be moved, engaging block (14) and pin (13) with beam support legs.



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).

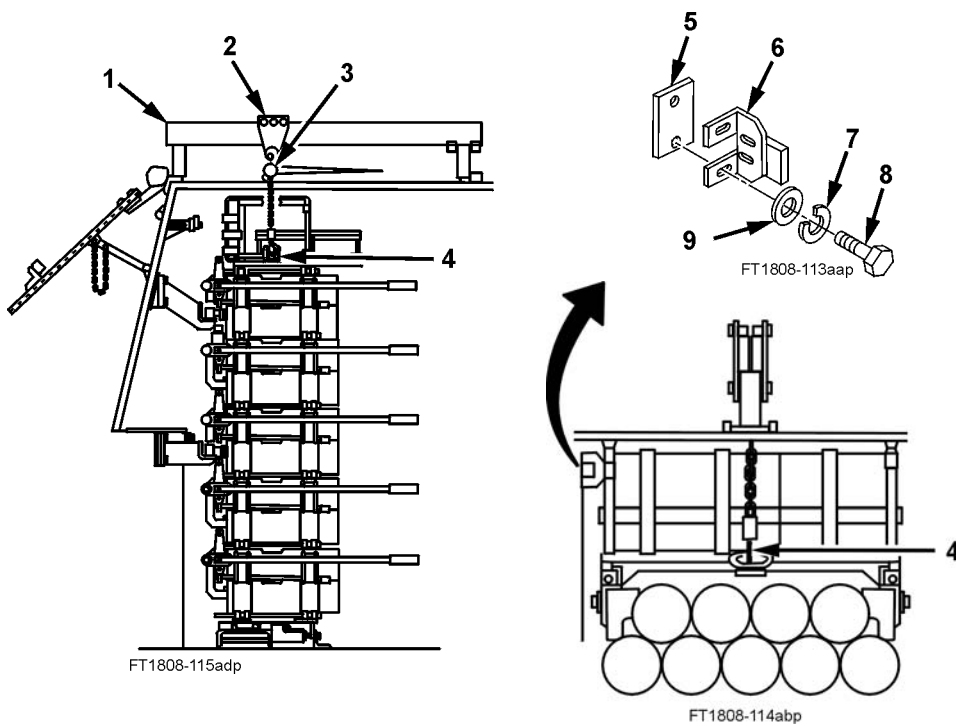
17. Repeat steps 14 and 15 for right rack assembly, if necessary.



FT1808-115afp

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. 0024 00-2).
22. Close top middle door and left and right top side doors (pp. 0027 00-6 and 0027 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

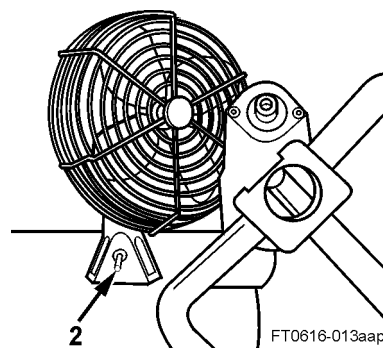
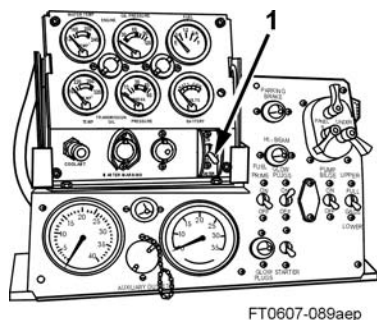
Operator

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.



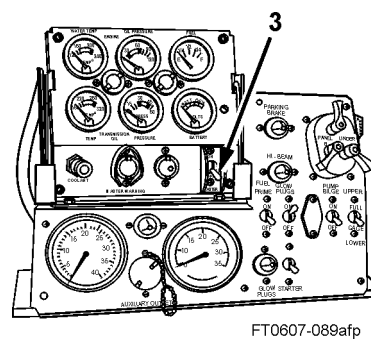
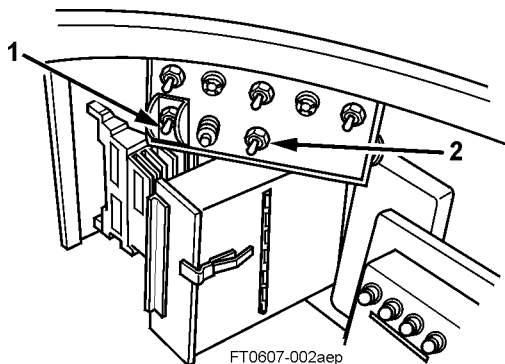
OPERATING PERSONNEL HEATER

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.

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 4 minutes, move HEAT CONTROL switch (1) to OFF for 15 minutes. The start attempt may be continued for an additional 4 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.



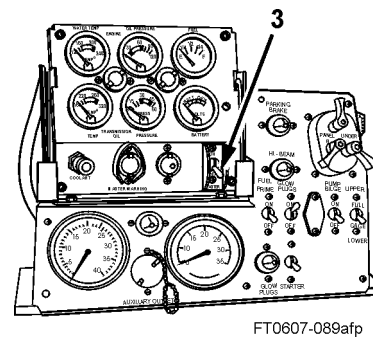
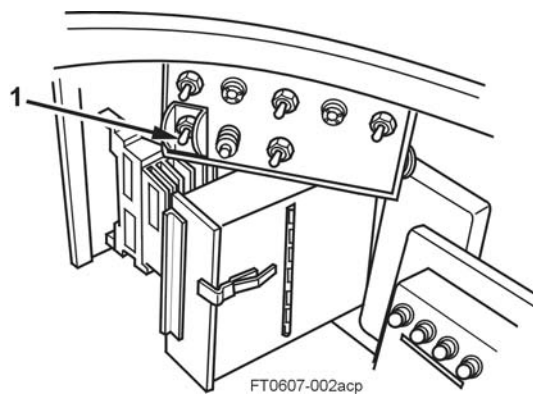
OPERATING PERSONNEL HEATER (continued)

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 5 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

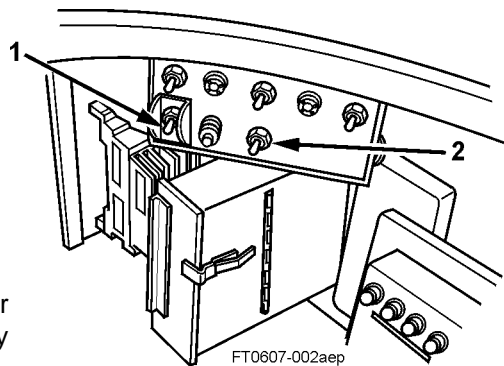
If proper shutdown procedures are not followed, heater may be damaged by reverse burning.

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

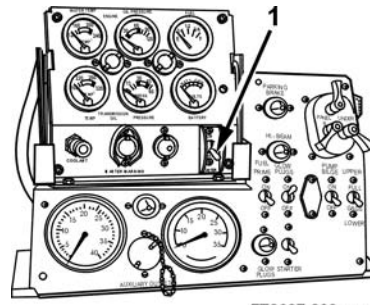
NOTE

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.

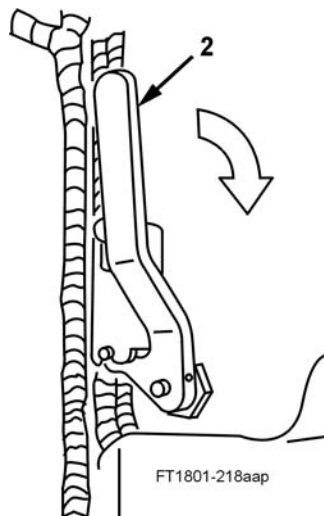
OPERATING VENTILATION BLOWER

1. Turn MASTER switch (1) to ON.

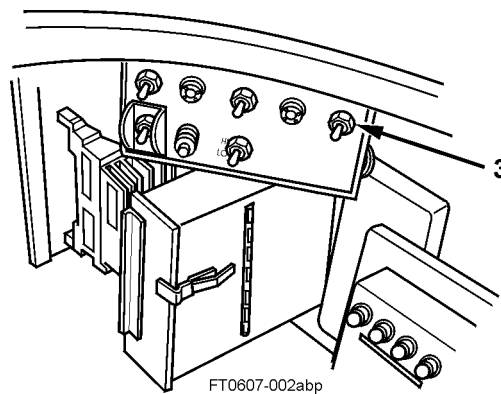


FT0607-089aep

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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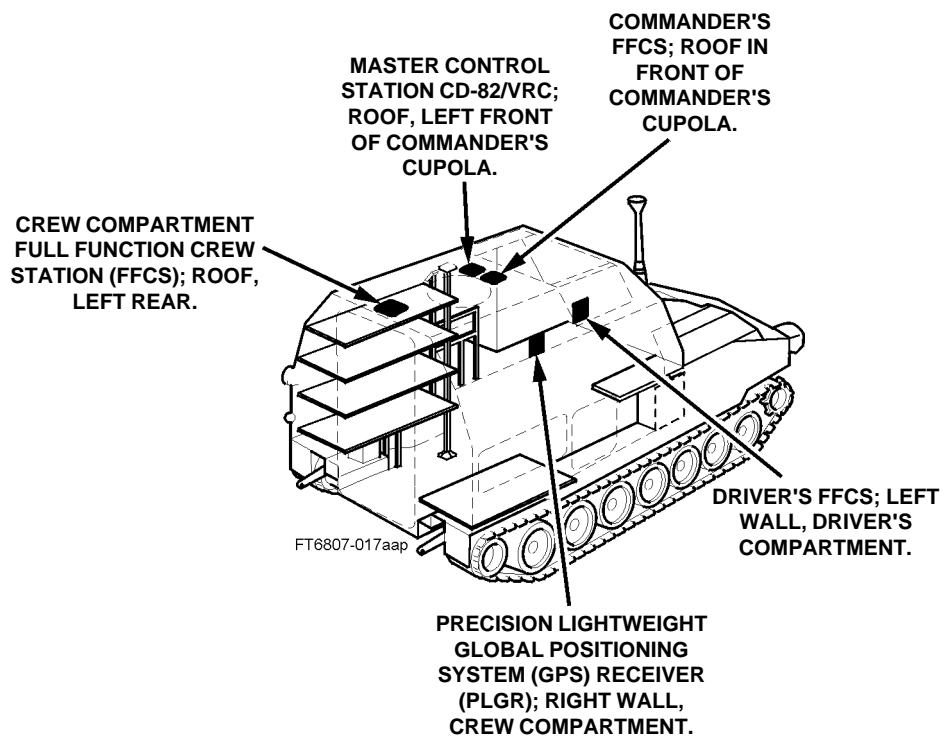


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OPERATING COMMUNICATION EQUIPMENT

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.

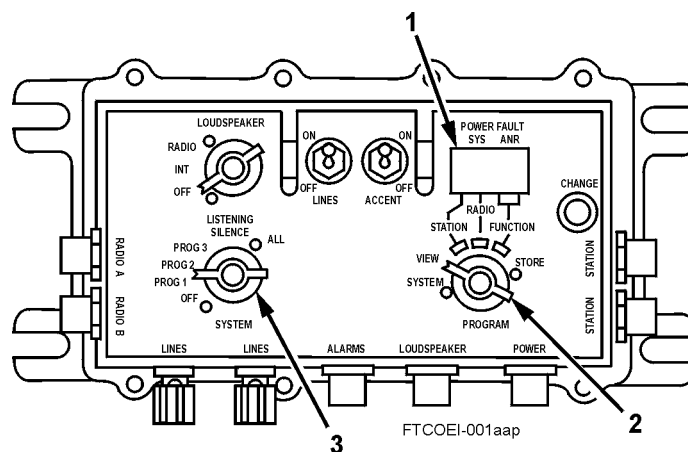
CAUTION

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

NOTE

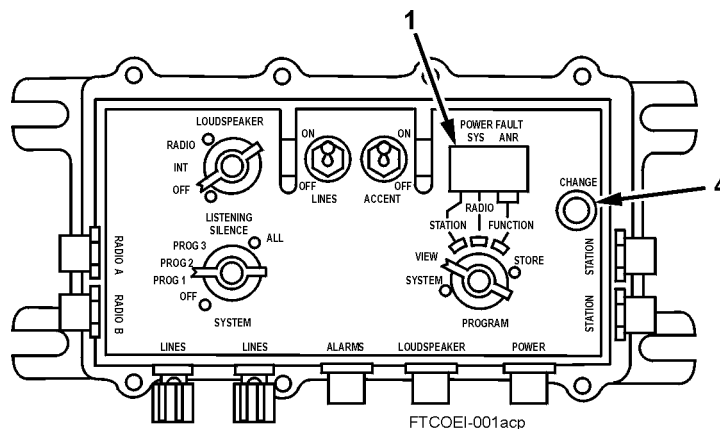
For demonstrating VIS operational procedures, PROG 1 is utilized as an example. Procedures outlined for PROG 1 below also apply to PROG 2, PROG 3, Listening Silence, and ALL program modes except that the display will change accordingly.

1. With vehicle power on, set PROGRAM switch (2) to SYSTEM, and set SYSTEM switch (3) to PROG 1.
2. The display (1) will show  while the system is initializing.
3. Programming information is transmitted to the radio interfaces and FFCSS.



Operating the CD-82/VRC (continued)

4. The Built-In Test (BIT) starts; the display (1) will show **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.

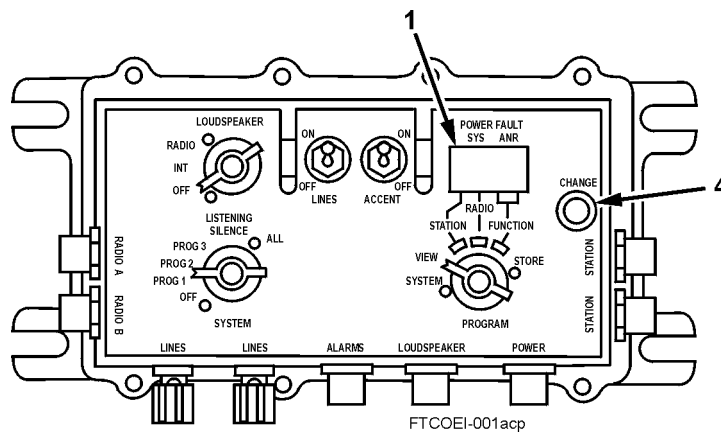


5. If there are no configuration discrepancies or errors, the display (1) shows **p a s s** followed immediately by the system mode **P 1**.
6. If there are configuration discrepancies or errors, the display (1) will show **f a i l** followed by error codes which determine the crew stations or radio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

OPERATING COMMUNICATION EQUIPMENT (continued)

Operating the CD-82/VRC (continued)

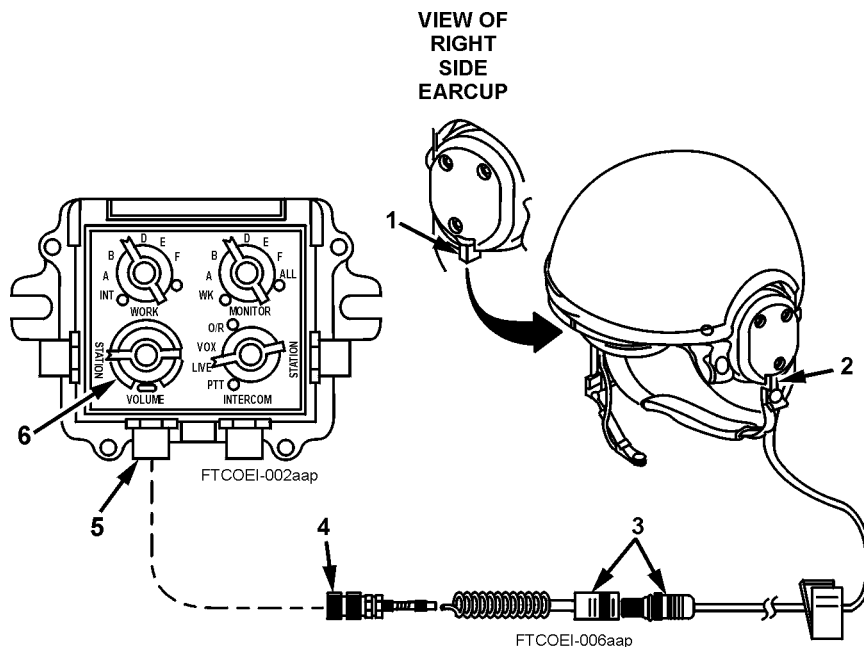
7. The display (1) will continue to show any configuration discrepancies and/or errors unless the user presses the CHANGE switch (4), which will clear the error message but not the fault.
8. After the display (1) shows **p a s s** followed by **P 1**, the system is ready for normal communications operation.
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)

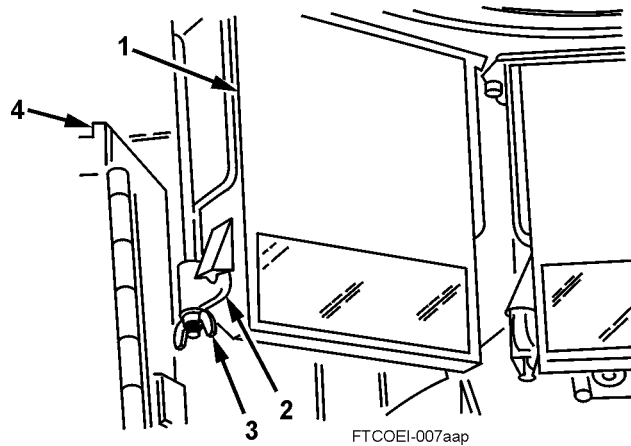
1. Connect CVC helmet cable connector (4) to FFCS receptacle (5).
2. Check to see that bail-out connectors (3) are snapped in place. During operation, adjust VOLUME knob (6) to lowest level to minimize outside noise while maintaining proper reception.
3. The push-to-talk (PTT) switch (2) is used when 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).

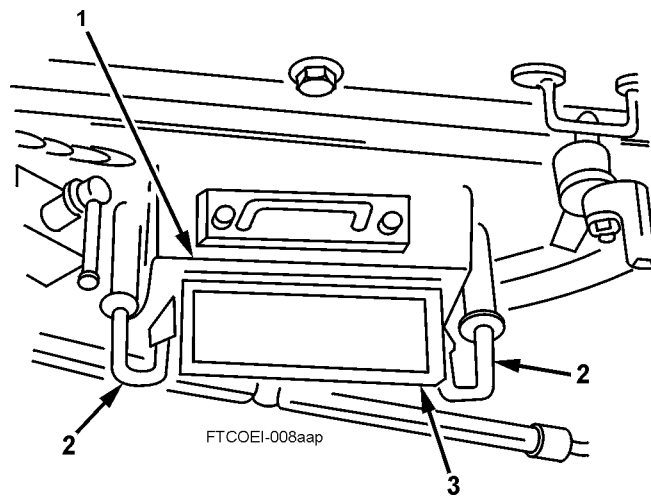
PERISCOPES (continued)

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).

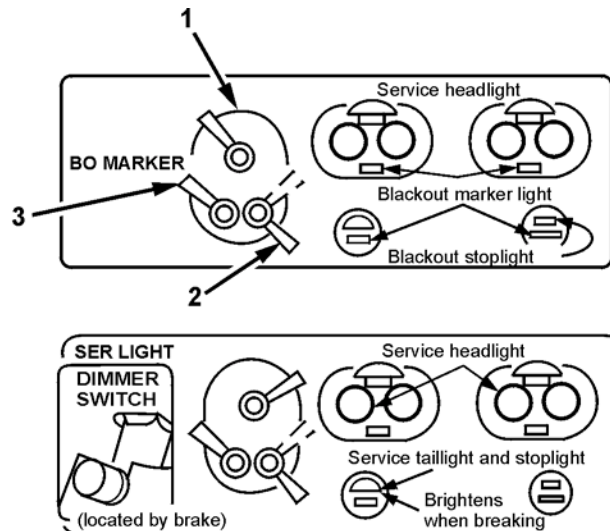


OPERATING THE LIGHTS

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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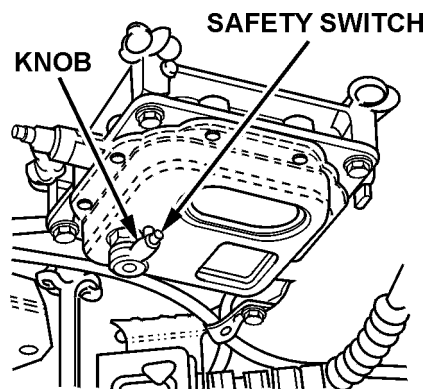
OPERATING THE LIGHTS (continued)

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.



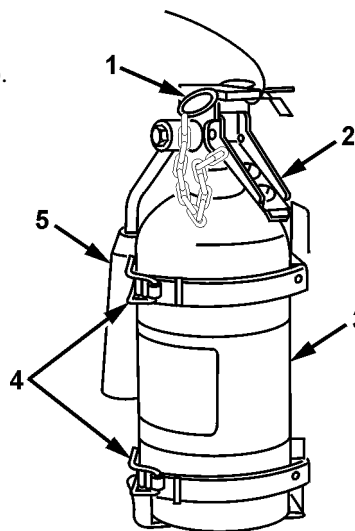
FT0609-024abp

PORTABLE FIRE EXTINGUISHER CO₂ OPERATION

WARNING

- For driver's/crew compartment fires, perform **EMERGENCY PROCEDURES** (p. 0044 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.

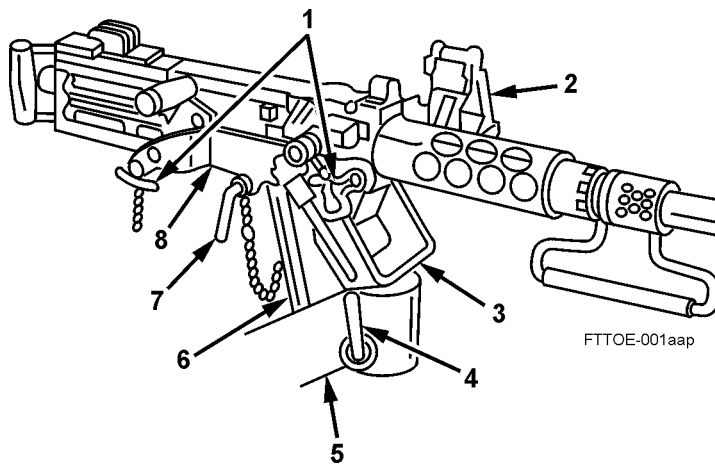
1. Pull two latches (4) to release fire extinguisher (3). Remove fire extinguisher (3).
2. Break safety wire and remove ring pin (1).
3. Aim discharge nozzle (5) at base of flames.
4. Squeeze trigger (2) to operate and direct the discharge at fire until extinguished.
5. After extinguishing flames, operate ventilation blower (p. 0033 00-5) to clear vehicle.



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).

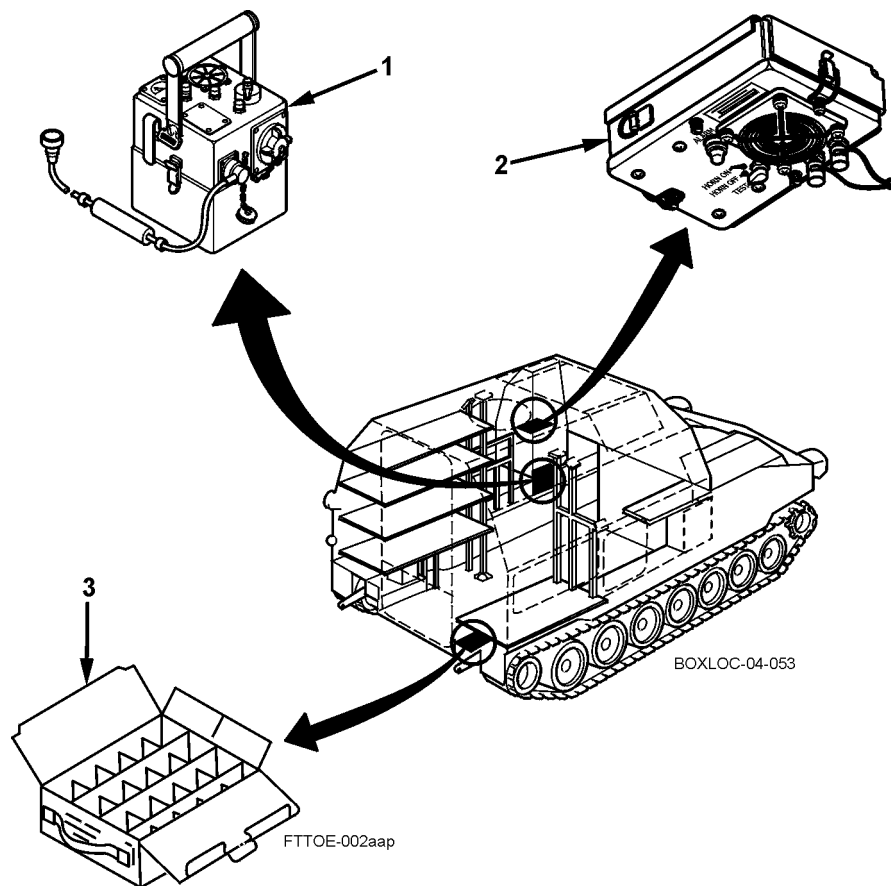


Removal

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.

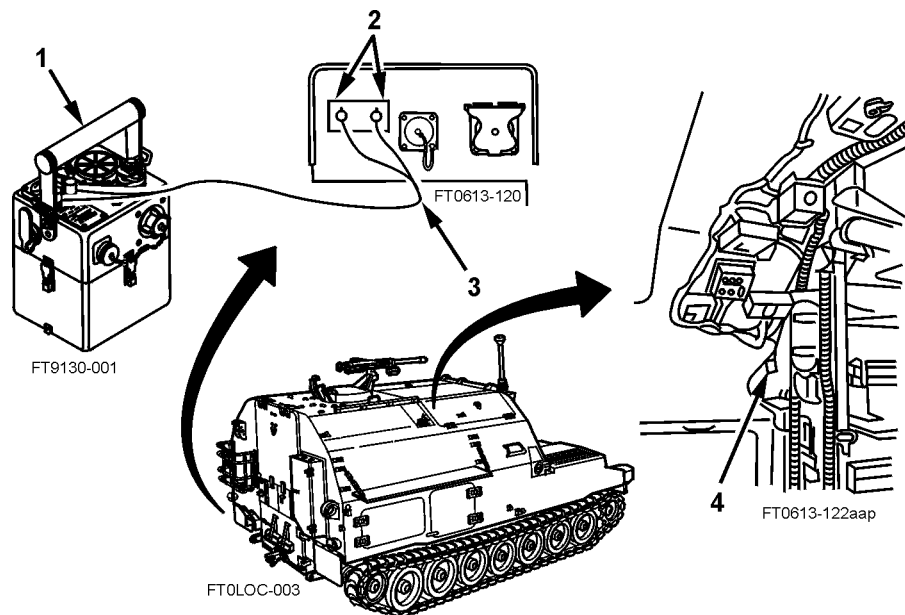


CHEMICAL AGENT DETECTION AND ALARM SYSTEM (continued)

Operation and Maintenance

For general operating and maintenance instructions, refer to TM 3-6665-225-12. When used with the M992A2, the instructions that follow also apply.

When vehicle is parked, connect M43 detector unit (1) to vehicle hook-ups (2) via telephone cable (3). M43 detector unit (1) must then be operated by its own power supply.



WARNING

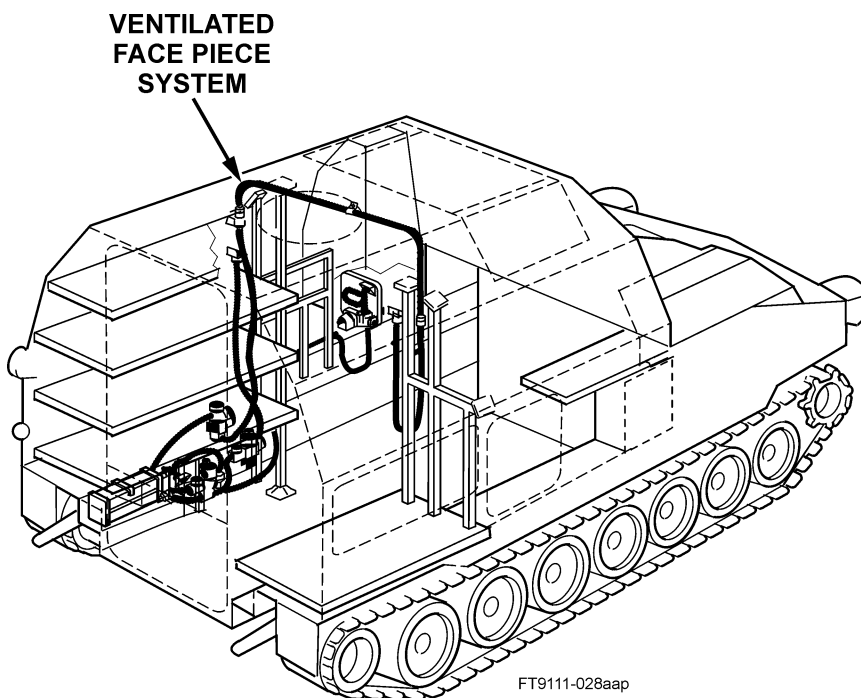
During periods of continuous operation, M43 detector unit fluid reservoir and air filter must be changed every 12 hours. When operating less than 12 hours per day, reservoir and filter must be changed daily. See TM 3-6665-225-12 for complete instructions. Failure to do this will greatly reduce effectiveness of the system.

M43 detector unit (1) may also be used inside cargo compartment during transit, but its effectiveness will be greatly reduced. Power for M43 detector unit (1) operation will come from the vehicle electrical system. To operate M43 detector unit (1) using vehicle power, connect electrical wiring harness (4) to M43 detector unit (1), and turn vehicle MASTER switch to ON.

VENTILATED FACE PIECE SYSTEM (VFPS)

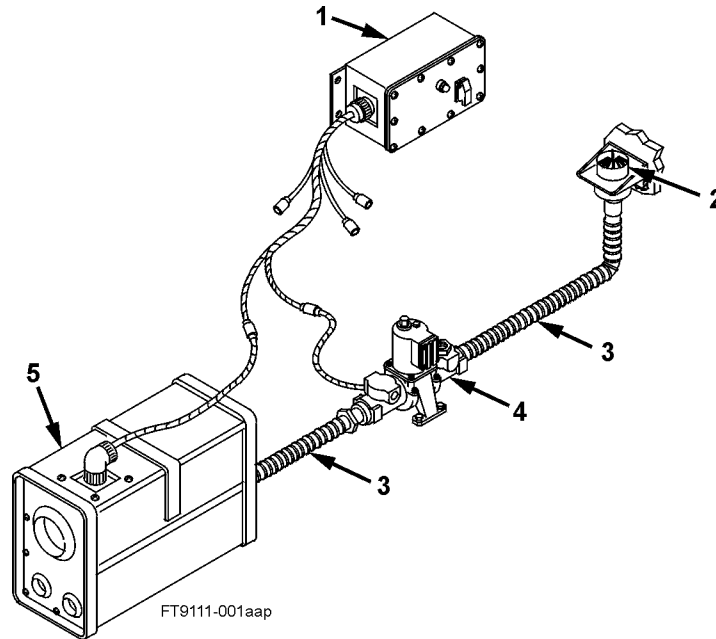
WARNING

- 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.



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).

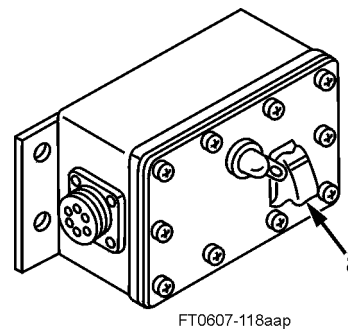
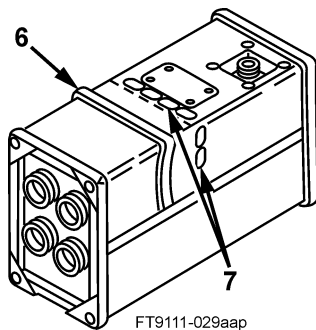


Starting and Operating

NOTE

MASTER switch must be set to ON to operate VFPS.

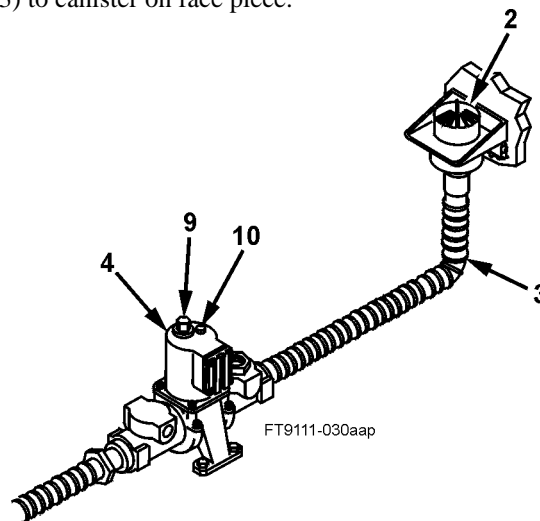
1. Put on and adjust face piece.
2. Position spring clip (6) up to open two air purifier inlet holes (7).
3. Turn vehicle MASTER switch to ON, and turn VFPS control box switch (8) to ON.



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

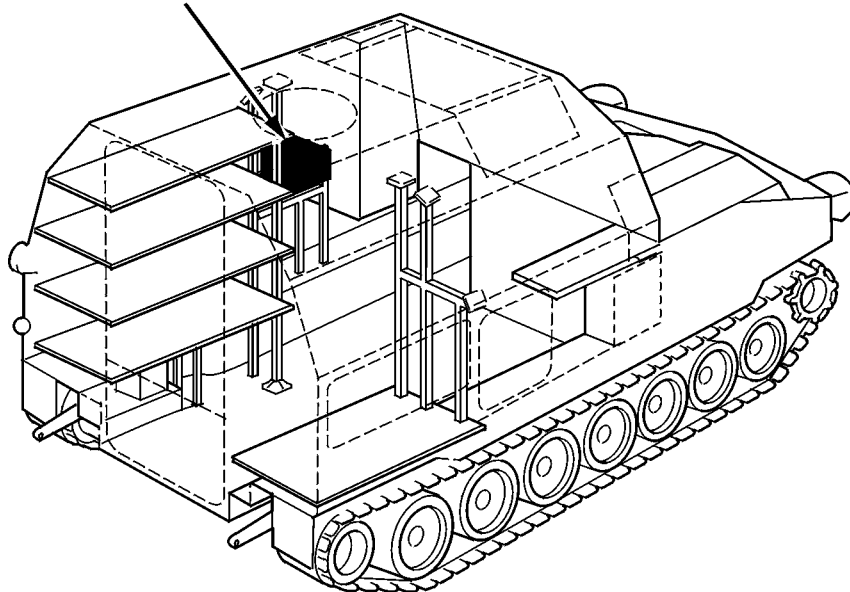
OPERATING MOUNTED WATER RATION HEATER (MWRH)

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.

MWRH; LEFT WALL,
CREW COMPARTMENT.



FT 9111-031aap

END OF WORK PACKAGE

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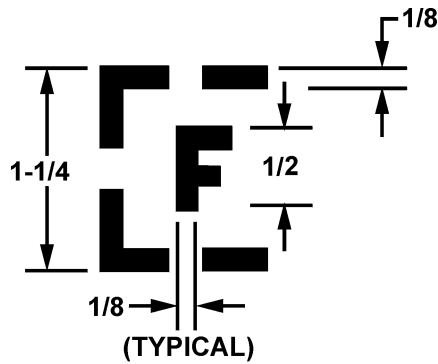
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**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

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 0034 00-1 through 0034 00-5/6 blank.

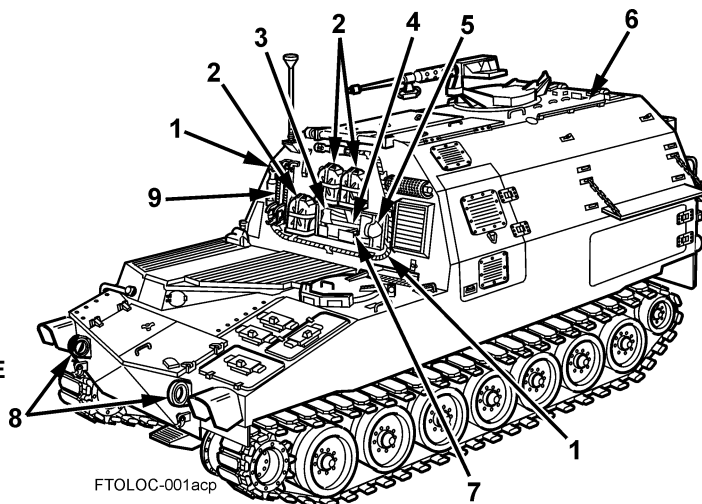


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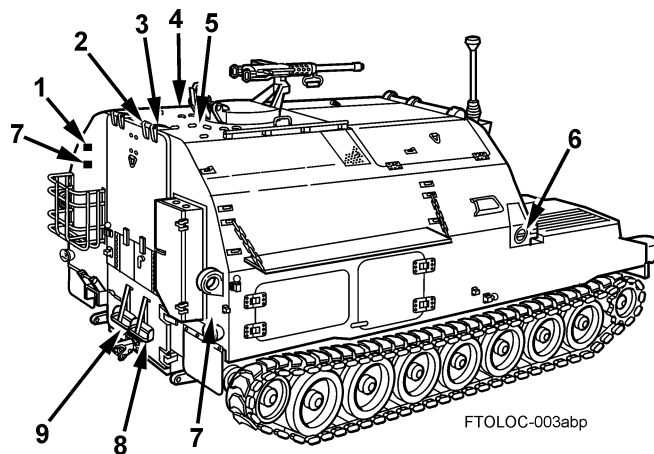
NOTE

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

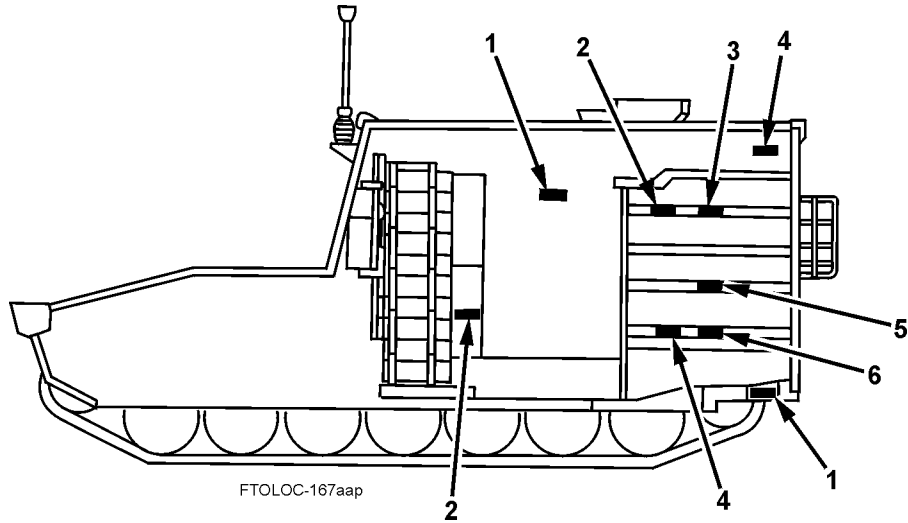
1. TOW CABLE
2. WATER CAN
3. AXE
4. MATTOCK
5. SHOVEL
6. LIFTING BEAM
7. MATTOCK HANDLE
8. LIFT HERE
9. TRACK FIXTURE



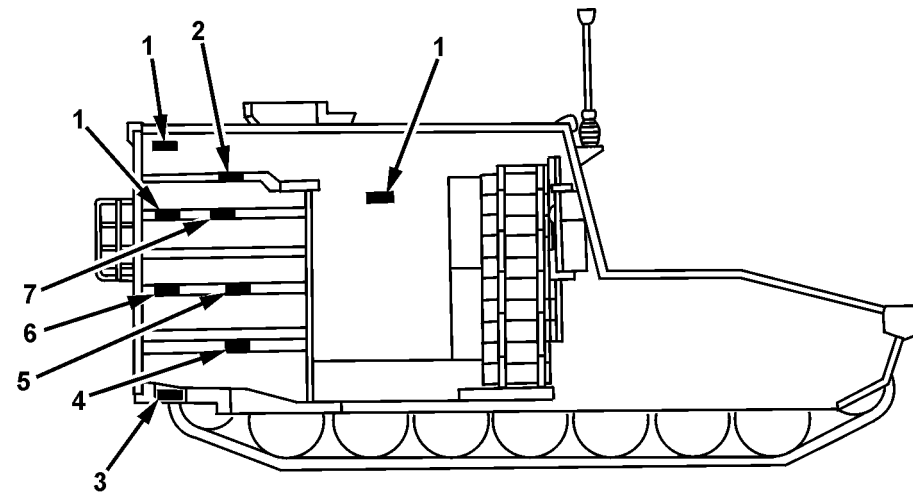
FTOLOC-001acp



- 1. BEDROLL
- 2. SHOVEL
- 3. PICK
- 4. CROWBAR
- 5. 0.50-CALIBER BARREL
- 6. DIESEL FUEL
- 7. LIFT HERE (note: appears above bracket on both sides of vehicle)
- 8. WATER CAN
- 9. DECONTAMINATION APPARATUS



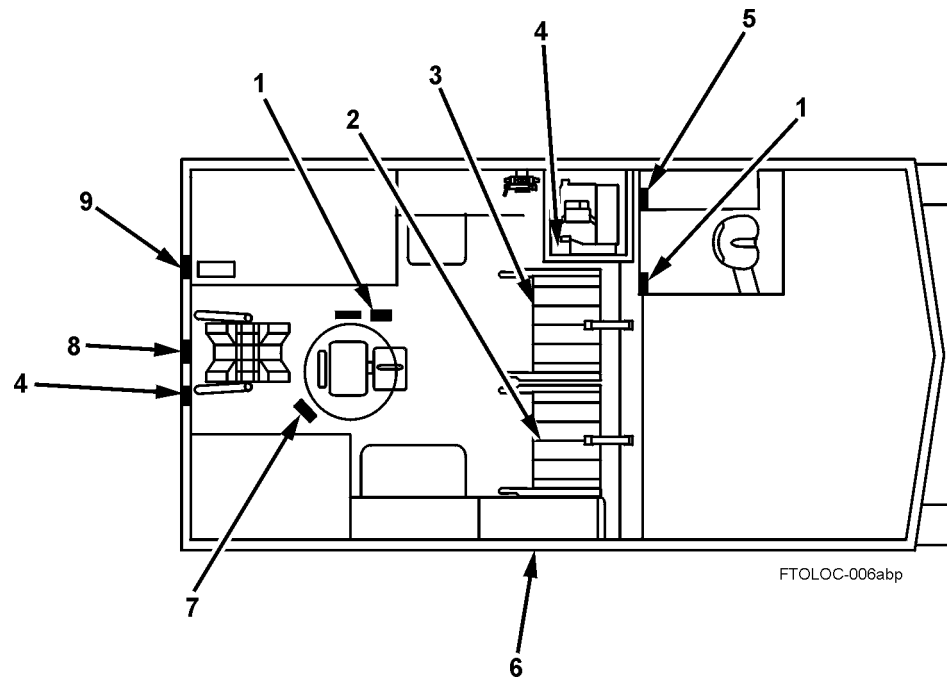
1. RIFLE M16A2
2. M13A2 POWDER CAN 155 MM
3. RRT (right rear top)
4. PA37A1/POWDER CAN 155 MM
5. RRM (right rear middle)
6. RRB (right rear bottom)



FTOLOC-168aap

- 1. M13A2 POWDER CAN 155 MM
- 2. FUSES
- 3. CRANK HANDLE
- 4. COPPERHEAD CONTAINERS 155 MM
- 5. LRB (left rear bottom)
- 6. PA 37A1 POWDER CAN 155 MM
- 7. LRT (left rear top)

STENCIL MARKINGS (continued)



- 1. FLASHLIGHT
- 2. M14A2 POWDER CAN 155 MM
- 3. PA37A1 POWDER CAN 155 MM
- 4. FIRE EXTINGUISHER
- 5. M45 PERISCOPE
- 6. SUITS
- 7. BINOCULARS
- 8. RIFLE M16A2
- 9. UP-DOWN (top and bottom switches)

END OF WORK PACKAGE

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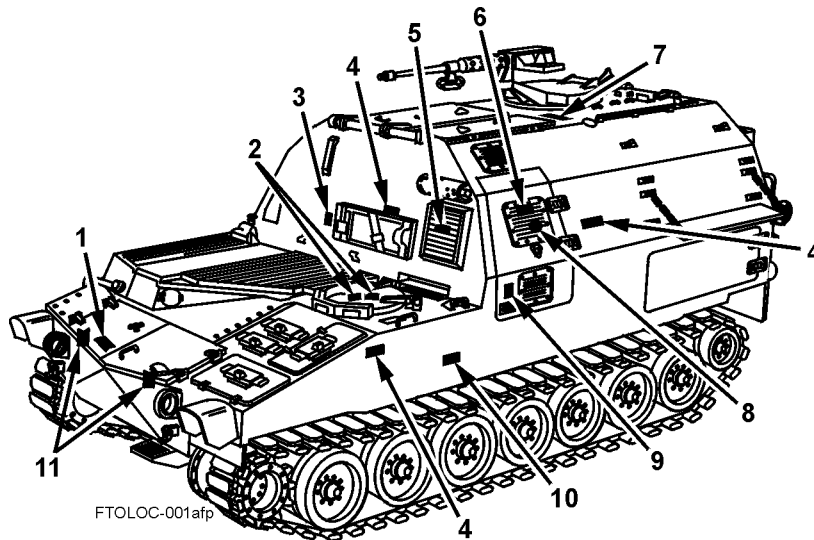
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**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

NAME PLATES AND DECALS

INITIAL SETUP:
Maintenance Level
Operator

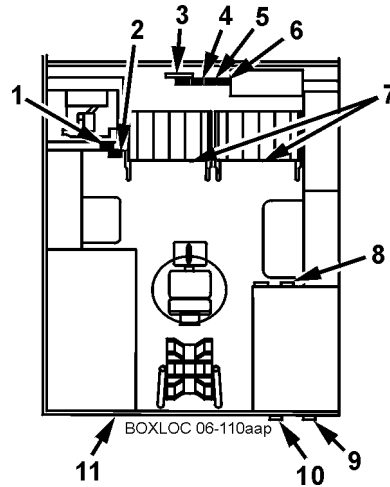


KEY	ITEM/LOCATION	DESCRIPTION
1	Main engine oil filter change instruction on oil filter	Cautions against use of bypass-type filter elements
2	Engine overheating cautions in driver's compartment	Do's and Don'ts to prevent engine overheating conditions
3	Hydraulic oil filter at front wall of crew compartment	Instructions for frequency and method of changing filter
4	High-intensity noise caution plates in driver's compartment and crew compartment	Warning to wear hearing protection when vehicle is operating
5	APU engine crankcase oil fill/level in APU compartment	Instructions for filling and checking oil level
6	APU emergency fuel shutoff in the APU	Instructions for shutting off fuel to the APU
7	Communications equipment shutoff caution on ceiling forward of commander's cupola	Caution to turn off communication equipment before starting or stopping engine
8	APU oil filter at inboard side of APU engine	Instructions for frequency and method of changing filter
9	Chaincase oil drain/fill instruction in APU compartment	Instructions and precautions for servicing APU chaincase
10	Identification plate in driver's compartment	Identification of model and specification information
11	Main engine fuel filter change instruction on fuel filter	Filter-draining instructions

TM 9-2350-293-10

NAME PLATES AND DECALS (continued)

0035 00



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 rear wall behind left projectile rack assembly	Warns against removing locking pin
4	Engine AFES No. 1 cylinder warning decal on rear wall behind left projectile rack assembly	Warns against removing locking pin
5	Crew AFES No. 4 cylinder warning decal on rear wall 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 rear wall behind left projectile rack assembly	Warns against removing locking pin during bottle installation and not removing pin after manual discharge cable has been connected
7	Warning decal on stowage boxes	Warns against potential injury from improperly lifting canisters
8	Crew AFES No. 2 cylinder warning decal on right rear canister compartment	Warns against removing locking pin
9	Crew AFES No. 6 cylinder warning decal on rear wall in fire extinguisher box assembly	Warns against removing locking pin
10	Crew AFES No. 5 cylinder warning decal on rear wall in fire extinguisher box assembly	Warns against removing locking pin
11	Dog door warning decal on rear crew compartment wall	Warns against operating upper rear door without latching dog doors

END OF WORK PACKAGE

0035 00-2

**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.
- FM 21-17 contains important instructions on driver selection, training, and supervision. FM 21-17 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

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**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

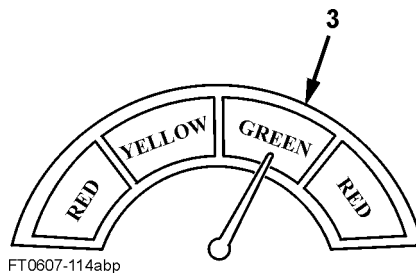
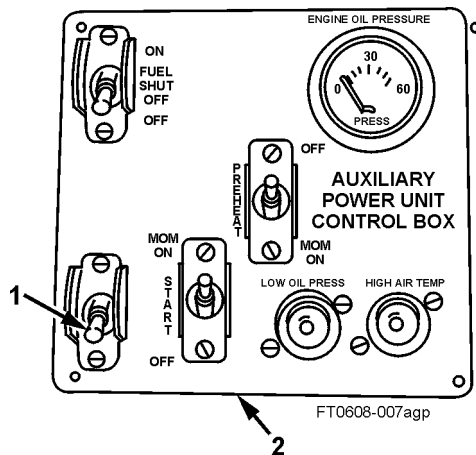
Operator

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.

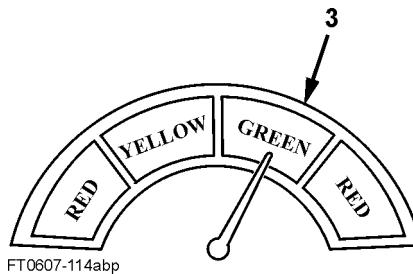
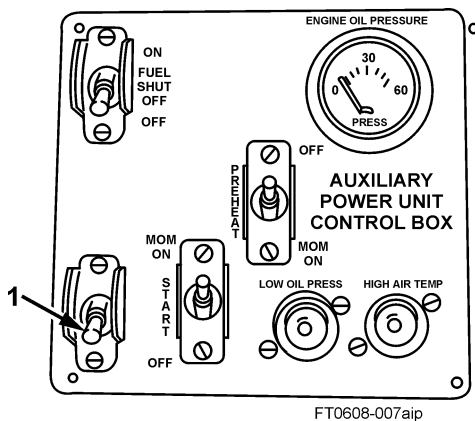
PRESTARTING PROCEDURE

1. Start the APU (p. 0025 00).
2. After the APU has been running for 3 minutes, turn APU GEN switch (1) to ON.
3. After the APU has been running for 15 minutes, turn APU GEN switch (1) to OFF and check BATTERY indicator (3) on portable instrument panel (2).



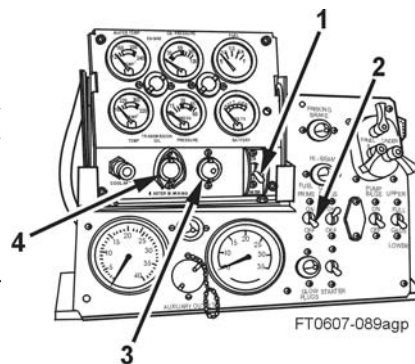
PRESTARTING PROCEDURE (continued)

4. If BATTERY indicator (3) indicates at least mid-yellow, turn APU GEN switch (1) to ON and attempt cold-weather main engine start.
5. If BATTERY indicator (3) indicates less than mid-yellow, turn APU GEN switch (1) to ON and continue charging batteries before starting.
6. Periodically check BATTERY indicator (3) by turning APU GEN switch (1) to OFF. When gage indicates mid-yellow or better, commence cold-weather start.



STARTING THE MAIN ENGINE

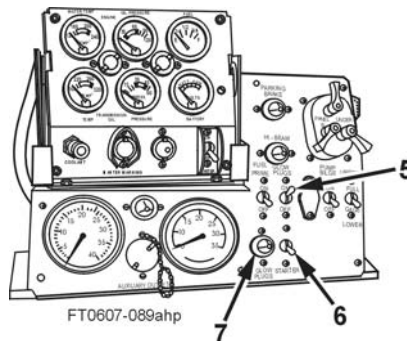
1. Remove and roll up tarpaulins. Secure tarpaulins with webbing assemblies.
2. Charge batteries (p. 0025 00-7).
3. Press down on service brake pedal, pull out and down on brake lock handle, then release handle to set brake.
4. Shift into N (neutral).
5. Set MASTER switch (1) to ON. Indicator lamp (3) 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.



TM 9-2350-293-10

STARTING MAIN ENGINE IN COLD WEATHER (continued)

0037 00

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. 0013 00-1).

END OF WORK PACKAGE

0037 00-4



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

SLAVE STARTING DISABLED VEHICLE USING MAIN ENGINE

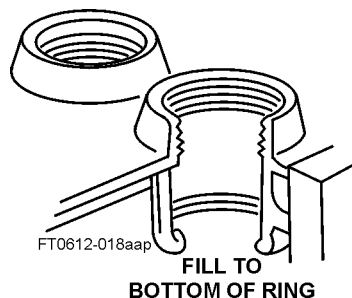
INITIAL SETUP:

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

- **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.**

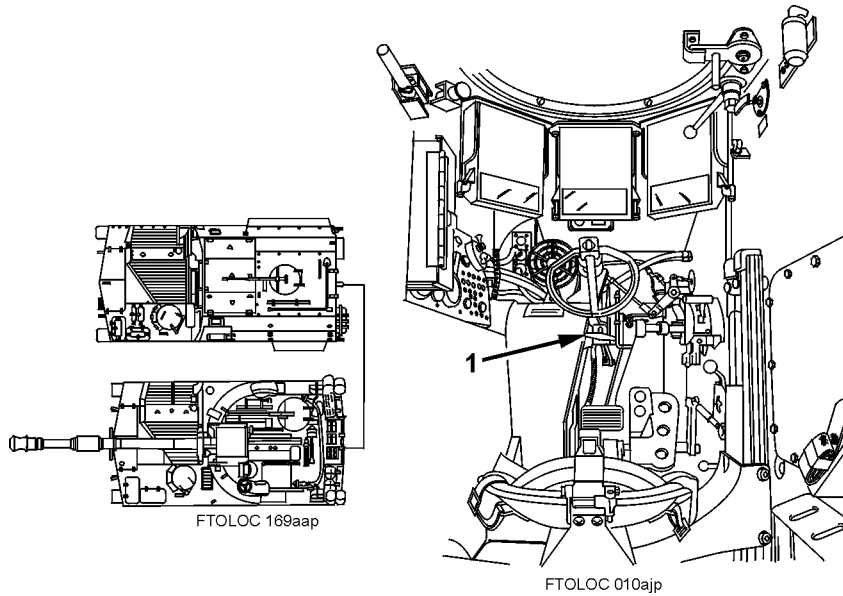
NOTE

- Use only front slave receptacle to slave start vehicle.
- 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.

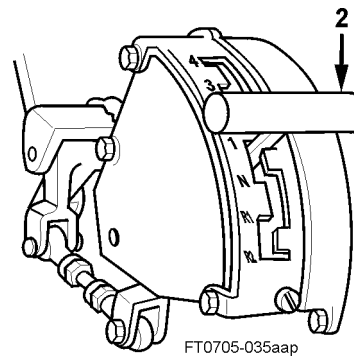
**SLAVE STARTING DISABLED VEHICLE
USING MAIN ENGINE (continued)**

0038 00

1. Set parking brake (1) on both vehicles (p. 0012 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. 0025 00-11).



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

0038 00

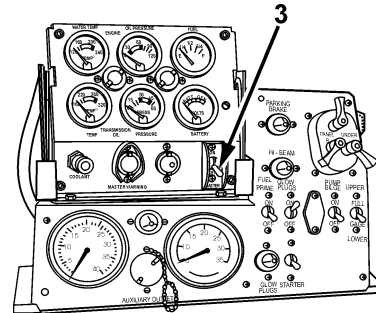
WARNING

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.



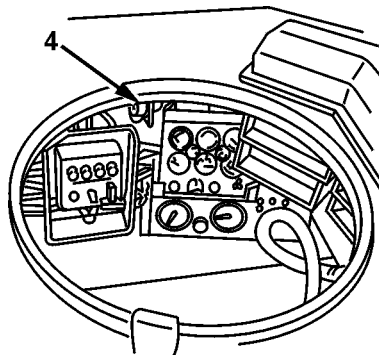
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5. Turn off all electrical switches in disabled vehicle.

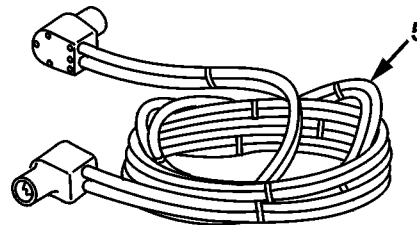
NOTE

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.



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7. Turn MASTER switch to ON in operational M992A2. 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 will not start, notify Unit maintenance.

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

0038 00

WARNING

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

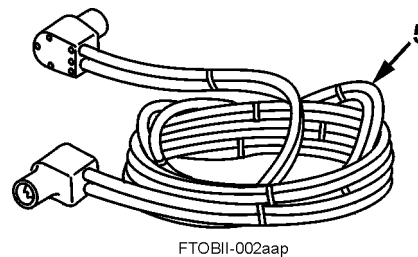
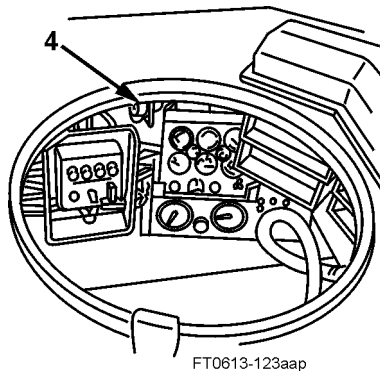
CAUTION

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 ON.



NOTE

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

END OF WORK PACKAGE

0038 00-4

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. 0028 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

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**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:
 - Hydraulic tank components.
 - 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

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**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

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OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

FORDING OPERATIONS

THIS WORK PACKAGE COVERS:

Fording and After Fording Operations

INITIAL SETUP:

Maintenance Level

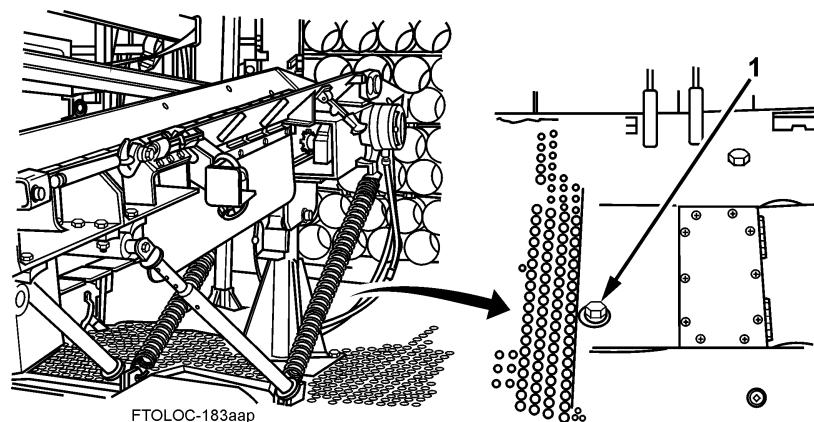
Operator

FORDING

CAUTION

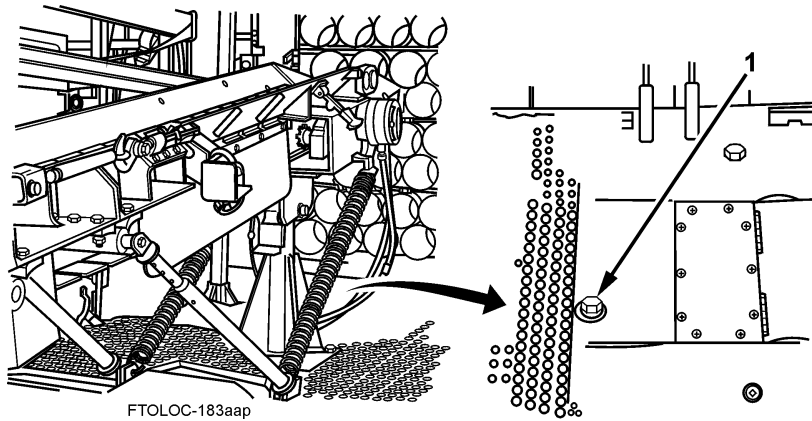
Normal fording (without extra equipment) is allowable to a depth up to 42 inches. Make sure hull access plates are installed prior to fording operations. Check for soft mud or sandy bottoms. Reduce 42-inch fording depth by estimated amount of vehicle sinkage.

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, Conveyor, Upper Rear Door, Ventilated Face Piece System (VFPS), and Combat Starter Override Switch

INITIAL SETUP:

Maintenance Level

Operator

Personnel Required

Three

PORTABLE FIRE EXTINGUISHER CO₂

WARNING

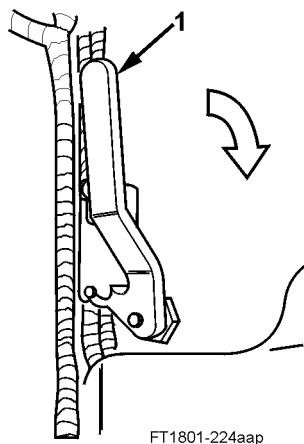
- **Remain CALM. Avoid breathing CO₂. It may quickly cause rapid breathing, loss of consciousness, and suffocation. Quickly exit vehicle if situation permits. If unable to exit, ventilate to remove the extinguisher gas. The driver is at the greatest risk. Ventilate the vehicle before reentry. Failure 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)

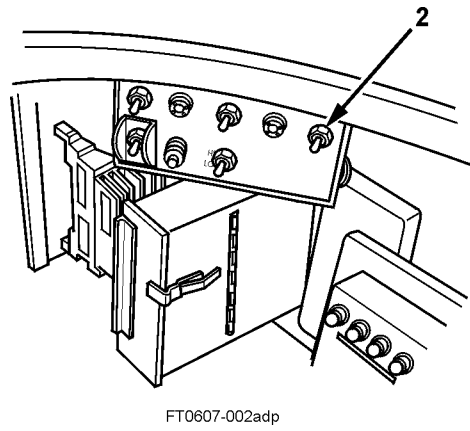
NOTE

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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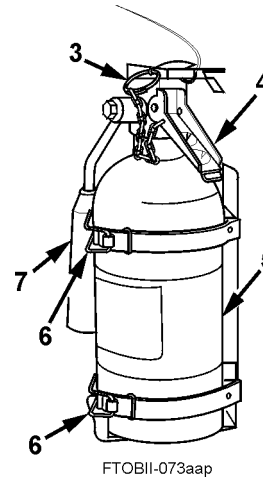
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WARNING

- **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.

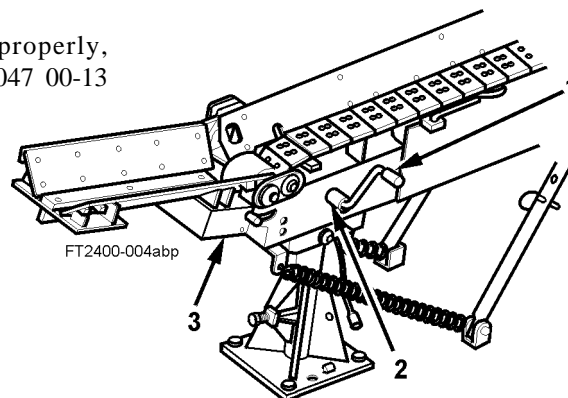


CONVEYOR

Hydraulic Failure

If conveyor motor or hydraulic system fails, conveyor may be operated according to the procedures below. Report conveyor motor or hydraulic system failure to Unit maintenance.

1. Check for broken chain. If chain is broken, repair (p. 0061 00-2) and retry conveyor operation hydraulically.
2. If chain is not broken, insert manual hand crank (1) into socket (2) at inboard end of conveyor (3).
3. Turn crank (1) clockwise to move chain out, counterclockwise to move chain in.
4. If chain does not move properly, troubleshoot conveyor (pp. 0047 00-13 and 0047 00-14).



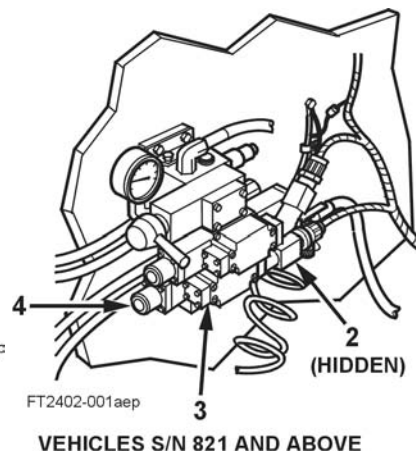
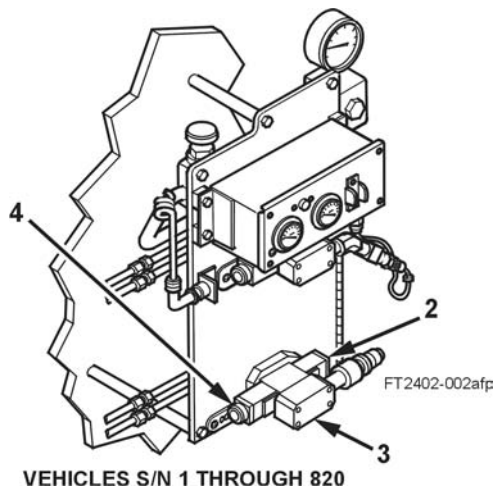
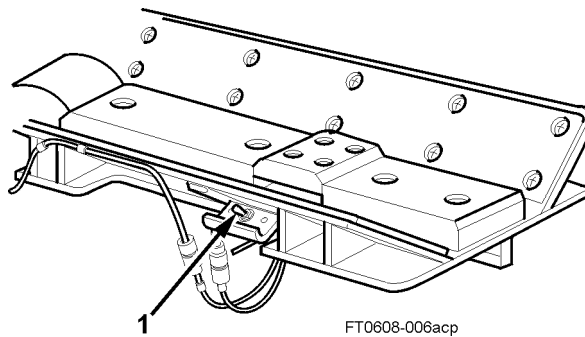
0044 00-3

CONVEYOR (continued)

Electrical Failure

If conveyor electrical switching fails but hydraulic power is available, conveyor may be hydraulically operated according to the procedures below. Report electrical failure to Unit maintenance.

1. Check to make sure conveyor override safety switch (1) is set to ON.
2. To move conveyor chain out, firmly press button (2) on right-hand side of directional control valve (3).
3. To move conveyor chain in, firmly press button (4) on left-hand side of directional control valve (3).



UPPER REAR DOOR

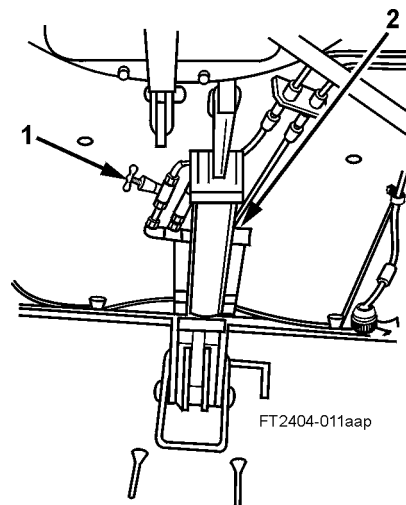
Hydraulic Failure

If hydraulic system fails, upper rear door may be opened manually according to the following procedures. Report cylinder or hydraulic system failure to Unit maintenance.

WARNING

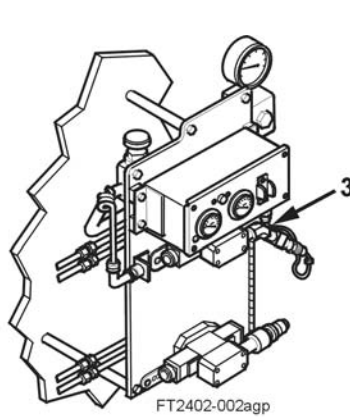
- **Upper rear door is very heavy. Three persons (one inside the vehicle and two outside the vehicle) are required to open or close it manually. Injury may result from attempting this procedure alone.**
- **Keep hands and feet clear of door frame. Failure to do so may result in injury.**
- **Open dump valve only when operating upper rear door manually. ALWAYS CLOSE DUMP VALVE AFTER COMPLETING OPENING PROCEDURE. Failure to do this will result in door dropping very quickly during normal operation.**

1. To open upper rear door:
 - a. Turn MASTER switch to ON.
 - b. Open dump valve (1) on hydraulic actuator (2).

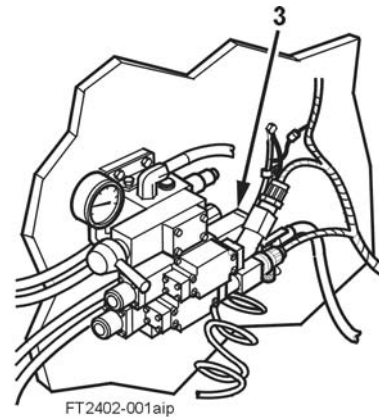


UPPER REAR DOOR (continued)

- c. Have an assistant hold upper rear DOOR switch in UP position. If electrical power is not available, have assistant firmly press button (3) on right side of BALLISTIC SHIELD directional control valve.



VEHICLES S/N 1 THROUGH 820



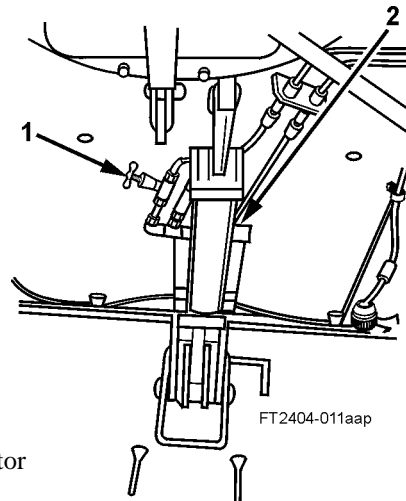
VEHICLES S/N 821 AND ABOVE

- d. With an assistant, pull open upper rear door until safety lock engages at 45-degree position from closed.
- e. Close dump valve (1) on hydraulic actuator (2).

WARNING

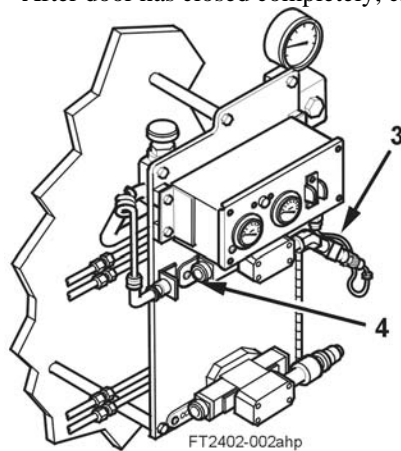
- When safety handle is released in this procedure, door may drop rapidly. Two persons should support the weight of the door throughout this procedure to make sure door lowers slowly.
- Keep hands and feet clear of doorway.

2. To close upper rear door:
 - a. Turn MASTER switch to ON.
 - b. Open dump valve (1) on hydraulic actuator (2).

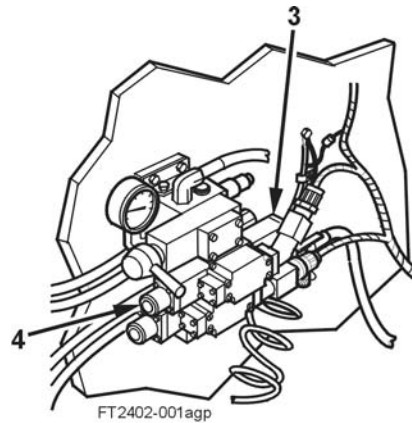


UPPER REAR DOOR (continued)

- c. While holding door, release safety lock by pivoting down and toward rear.
- d. While supporting door, have an assistant hold upper rear DOOR switch in DOWN position. Allow door to close slowly. If electrical power is not available, have assistant firmly press button (4) on left side of BALLISTIC SHIELD directional control valve.
- e. After door has closed completely, close dump valve (1) on hydraulic actuator (2).



VEHICLES S/N 1 THROUGH 820

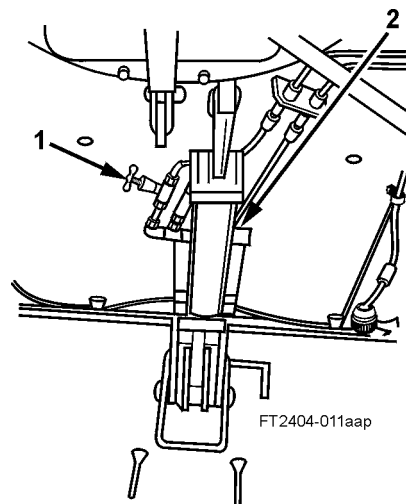


VEHICLES S/N 821 AND ABOVE

Electrical Failure

If upper rear door electrical switching fails but hydraulic power is available, upper rear door may be hydraulically positioned according to the procedure below. Report electrical system failure to Unit maintenance.

1. Activate hydraulic pump.
2. To close door, firmly press button (3) on right side of BALLISTIC SHIELD directional control valve.
3. To open door, release safety lock and have an assistant firmly press button (4) on left side of BALLISTIC SHIELD directional control valve.



VENTILATED FACE PIECE SYSTEM (VFPS)

If VFPS system fails, use individual face mask protection.

COMBAT STARTER OVERRIDE SWITCH

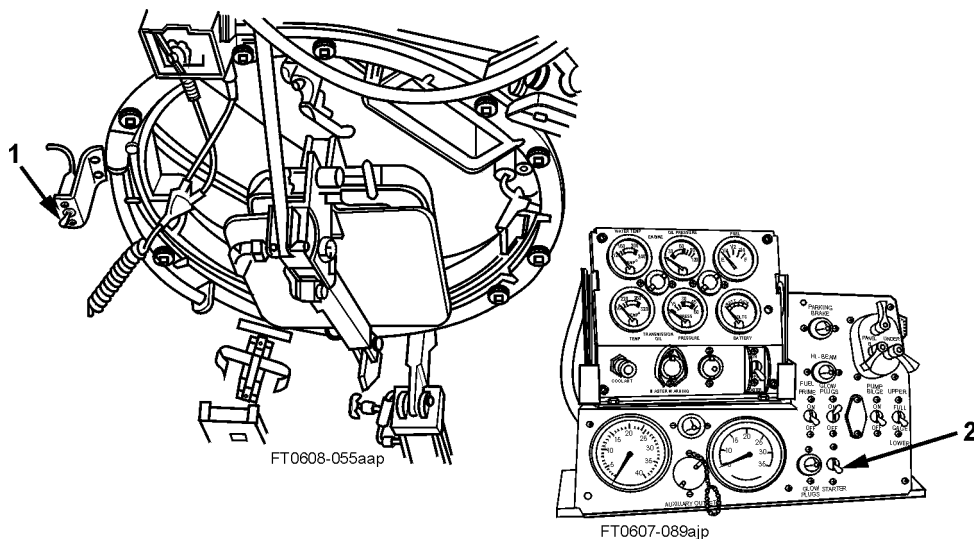
CAUTION

Do not operate starter continuously for over 30 seconds. If engine does not start, allow one-minute cool-off period before attempting to engage starter. Failure to comply may result in damage to the starter. Notify Unit maintenance if engine fails to start after fourth try.

NOTE

The combat starter override switch overrides the starter protection relay that prevents continuous cranking of the starter motor for more than 30 seconds. Report the failure of the engine to start after 30 seconds of cranking to Unit maintenance.

While the driver continues to hold the STARTER switch (2) to START, push and hold the combat starter override switch (1) until the vehicle engine starts.



END OF WORK PACKAGE



TM 9-2350-293-10

CHAPTER 3
TROUBLESHOOTING PROCEDURES



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OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

INTRODUCTION

The Symptom Index (WP0046) is intended to assist you in locating the correct troubleshooting procedure quickly.

The troubleshooting procedures (WP0047) 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 0049 00 through WP 0051 00.

END OF WORK PACKAGE

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**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.

SYMPTOM INDEX	Troubleshooting Procedure: Page
MAIN ENGINE	
1. Engine fails to crank, or cranks slowly, when starter switch is activated.	0047 00-02
2. Engine cranks but fails to start.	0047 00-02
3. Engine loses power.	0047 00-03
4. Engine lacks acceleration.	0047 00-03
5. Engine overheats (coolant warning lamp is lit).	0047 00-04
6. Engine has low or no oil pressure.	0047 00-05
TRANSMISSION	
7. Transmission does not drive in any range.	0047 00-05
STEERING	
8. Vehicle is difficult to steer.	0047 00-06
BATTERIES/GENERATING SYSTEM	
9. Batteries will not crank engine.	0047 00-06
10. Batteries do not stay charged.	0047 00-07
11. Batteries will not charge.	0047 00-07
12. MASTER switch lamp does not light.	0047 00-07
TRACKS AND SUSPENSION	
13. Vehicle pulls to one side with steering wheel centered.	0047 00-08
14. Vehicle throws tracks.	0047 00-08

SYMPTOM INDEX (continued)

0046 00

	Troubleshooting Procedure: Page
PERSONNEL HEATER	
15. Heater smokes, bangs upon starting, or doesn't start.	0047 00-09
16. Heat output is too low.	0047 00-09
17. Exhaust outlet loads up with soot and/or carbon.	0047 00-09
BILGE PUMP	
18. Bilge pump does not operate.	0047 00-09
AUXILIARY POWER UNIT (APU) ENGINE	
19. APU engine does not start.	0047 00-10
20. APU engine starts, then stalls or runs roughly.	0047 00-11
21. APU engine is difficult to start.	0047 00-11
22. APU engine is hard to start in cold weather.	0047 00-11
23. APU engine overheats.	0047 00-12
24. APU engine misfires.	0047 00-12
25. APU engine lacks power.	0047 00-12
HYDRAULIC SYSTEM	
26. No response to any control.	0047 00-13
27. Slow operation.	0047 00-13
CONVEYOR	
28. Conveyor chain will not move.	0047 00-13
29. Conveyor chain moves slowly or erratically.	0047 00-14
PROJECTILE RACKS	
30. Projectile does not go into tube.	0047 00-15
31. Projectile is not held immobile in tube.	0047 00-15
32. Projectile will not come out of tube.	0047 00-15
VENTILATED FACE PIECE SYSTEM (VFPS)	
33. Airflow to ventilated face piece is lacking or reduced.	0047 00-16
34. Heat does not reach ventilated face piece, but airflow is normal.	0047 00-17
35. Precleaner does not operate when switch is on.	0047 00-17
UPPER REAR DOOR (BALLISTIC SHIELD)	
36. Upper rear door does not operate when switch is engaged.	0047 00-17
37. Upper rear door cylinder operation is slow or erratic.	0047 00-18
38. Upper rear door drifts closed.	0047 00-18

SYMPTOM INDEX (continued)

0046 00

	Troubleshooting Procedure: Page
AUTOMATIC FIRE EXTINGUISHING SYSTEM (AFES)	
39. Lamp does not light during lamp test or fails during operation.	0047 00-18
40. Fault lamp lights.	0047 00-18
41. Crew AFES test and alarm (T/A) panel fire detection LEDs light but no fire.	0047 00-18
42. AFES or component is damaged or fails during operation.	0047 00-19
43. Extinguisher bottles are empty or damaged or have low pressure.	0047 00-19
44. Bottle discharges when vehicle sits idle or when vehicle is in motion.	0047 00-19
DRIVER'S COOLING FAN	
45. Fan does not operate.	0047 00-19
MOUNTED WATER RATION HEATER (MWRH)	
46. The MWRH does not operate.	0047 00-19
PRECISION LIGHTWEIGHT GPS RECEIVER (PLGR)	
47. The PLGR does not operate.	0047 00-20

END OF WORK PACKAGE

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**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, Hydraulic System, Conveyor, Projectile Racks, Ventilated Face Piece System (VFPS), Upper Rear Door (Ballistic Shield), 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 (p. 0078 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.

TROUBLESHOOTING PROCEDURES (continued)

**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-GENERATOR indicator 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.
Open drain cocks on fuel filters, and drain until clear fuel appears (p. 0053 00-1).

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

Step 6. Prime fuel lines.

Hold fuel prime switch at ON for one minute. Then use normal start procedures (p. 0012 00-1). If condition persists, notify Unit maintenance.

3. ENGINE LOSES POWER.

Check to see if water is in fuel.

If water is in fuel, drain fuel filters (p. 0053 00-1). If condition persists, 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. 0057 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. 0052 00-1).

If leaks are visible, notify Unit maintenance.

Step 2. Check to see if engine oil level is low.

If low, fill (p. 0078 00-11).

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. 0018 00-1). If temperature does not drop after a period of three to five minutes, notify Unit maintenance.

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

6. ENGINE HAS LOW OR NO OIL PRESSURE.

Step 1. Check to see if oil level is low.

If low, fill engine (p. 0078 00-11).

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. 0078 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. BATTERIES WILL NOT CRANK ENGINE.

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-GENERATOR 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. 0025 00-7).
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-GENERATOR 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. 0025 00-7).

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

11. BATTERIES WILL NOT CHARGE.

Step 1. With main engine or the APU running, check BATTERY-GENERATOR 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, press reset button on APU voltage regulator.

If problem persists, go to step 3.

Step 3. If using the APU, make sure hydraulic pressure is between 100 and 300 psi.

If not, adjust pressure. If problem persists, 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.

TRACKS AND SUSPENSION

13. 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.

**MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION**

TRACKS AND SUSPENSION (continued)

Step 2. Check track tension.

If necessary, adjust tension (p. 0058 00-1).
If condition persists, notify Unit maintenance.

14. VEHICLE THROWS TRACKS.

NOTE

High-speed turns will throw tracks.

Step 1. Check tension adjustment.

If necessary, adjust tension (p. 0058 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 (WP 0058 00).

Step 3. Check drive sprockets for excessive wear or cracked or missing teeth (p. 0050 00-8).

If drive sprockets are damaged, notify Unit maintenance.

PERSONNEL HEATER

15. HEATER SMOKES, BANGS UPON STARTING, OR DOESN'T START.

Check to see if you are starting heater correctly.

See starting procedures (p. 0033 00-2).
If condition persists, notify Unit maintenance.

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

16. 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.

17. 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

18. 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.

AUXILIARY POWER UNIT (APU) ENGINE

19. APU ENGINE DOES NOT START.

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

If not, turn MASTER switch to ON.

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

AUXILIARY POWER UNIT (APU) ENGINE (continued)

Step 2. Check for low battery charge indicated on BATTERY-GENERATOR indicator gage (indicator gage should read at least in low yellow range).

If indicator gage reads below low yellow range, notify Unit maintenance.

Step 3. Check to see if APU GEN switch on AUXILIARY POWER UNIT CONTROL BOX is set to OFF.

If not, turn APU GEN switch to OFF.

Step 4. Check battery connections.

If battery connections are loose, broken, or corroded, notify Unit maintenance.

Step 5. Check air intake for restriction.

Remove any restrictions, or clean air filters (p. 0057 00-1).

Step 6. Check fuel level.

If fuel level is low, refuel vehicle (WP 0054 00).

Step 7. Press APU GEN RESET switch.

If condition persists, notify Unit maintenance.

20. APU ENGINE STARTS, THEN STALLS OR RUNS ROUGHLY.

Step 1. Check for water in fuel filters.

Drain fuel filters (p. 0062 00-1).

Step 2. Check air intake filter for restrictions.

Remove restrictions or clean filters (p. 0062 00-4).

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

Step 3. Check fuel level.

If low, fill fuel tanks (WP 0054 00).

Step 4. Activate reset switch on APU voltage regulator.

If condition persists, notify Unit maintenance.

21. APU ENGINE IS DIFFICULT TO START.

Check for water in fuel filters.

Drain fuel filters (p. 0062 00-1).

If condition persists, notify Unit maintenance.

22. APU ENGINE IS HARD TO START IN COLD WEATHER.

Check to see if plenum door in APU compartment is open.

If not, open plenum door.

If condition persists, notify Unit maintenance.

23. APU ENGINE OVERHEATS.

Step 1. Check air intake passage for obstruction.

Remove obstruction.

Step 2. Check crankcase oil level (p. 0078 00-16 or p. 0078 00-20).

If low, fill (p. 0078 00-16 or p. 0078 00-20).

If condition persists, notify Unit maintenance.

24. APU ENGINE MISFIRES.

Step 1. Check air intake filter.

Clean or replace filter element (p. 0062 00-2).

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

AUXILIARY POWER UNIT (APU) ENGINE (continued)

Step 2. Check for contaminants in fuel filters.

Drain fuel filters (p. 0062 00-1).

If condition persists, notify Unit maintenance.

25. APU ENGINE LACKS POWER.

Step 1. Check air intake passage for obstruction.

Remove obstruction.

Step 2. Check for contaminants in fuel filters.

Drain fuel filters (0062 00-1)

If condition persists, notify Unit maintenance.

HYDRAULIC SYSTEM

26. NO RESPONSE TO ANY CONTROL.

Step 1. Check hydraulic fluid level (p. 0078 00-22).

If low, fill reservoir (p. 0078 00-22).

27. SLOW OPERATION.

Step 1. Check hydraulic reservoir temperature.

If greater than 160°F, turn off hydraulic system and allow fluid to cool. If fluid overheats repeatedly, notify Unit maintenance.

Step 2. Check hydraulic fluid level (p. 0078 00-22).

Refill reservoir as necessary (p. 0078 00-22).

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

Step 3. Conveyor operation only: Check flow-control valve settings (WP 0059 00).

Adjust valve as necessary (WP 0059 00).

If condition persists, notify Unit maintenance.

CONVEYOR

28. CONVEYOR CHAIN WILL NOT MOVE.

Step 1. Check to see if conveyor override safety switch is set to ON.

If not, turn switch to ON.

Step 2. Check to make sure conveyor deadman switch is not stuck in the closed position.

If deadman switch is stuck, free switch. If deadman switch cannot be freed, notify Unit maintenance.

Step 3. Check flow-control valve setting (WP 0059 00).

Turn flow-control valve counterclockwise slowly until chain speed is satisfactory.

Step 4. Check to see that conveyor chain is not jammed, broken, or off a drive sprocket.

Remove obstruction and place chain around sprocket(s) or repair chain (p. 0061 00-2).

Step 5. Check chain tension.

If necessary, adjust chain tension (p. 0061 00-4).

Step 6. Check hydraulic control panel pressure gage for reading of between 100 and 300 psi.

If pressure is not within range, notify Unit maintenance.

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

CONVEYOR (continued)

29. CONVEYOR CHAIN MOVES SLOWLY OR ERRATICALLY.

Step 1. Check chain tension.

Adjust chain tension (p. 0061 00-4).

Step 2. Check chain alignment.

Reposition chain on sprockets (p. 0061 00-4).

Step 3. Check flow-control valve setting.

Turn flow-control valve knob counterclockwise slowly until chain speed is satisfactory.

Step 4. Check main hydraulic pressure gage for reading of 100 to 300 psi.

If pressure is not within range, notify Unit maintenance.

PROJECTILE RACKS

30. 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.

31. 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

Step 2. Check for defective lock.

If damaged, notify Unit maintenance.

32. 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.

VENTILATED FACE PIECE SYSTEM (VFPS)

33. 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.

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 (p. 0012 00-1) or the APU (p. 0025 00-7). 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.

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

VENTILATED FACE PIECE SYSTEM (VFPS) (continued)

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.

34. 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.

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.

35. 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.

**MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION**

UPPER REAR DOOR (BALLISTIC SHIELD)

36. UPPER REAR DOOR DOES NOT OPERATE WHEN SWITCH IS ENGAGED.

Step 1. Check flow-control valve setting.

Turn valve fully counterclockwise and attempt operation. Refer to WP 0060 00 for adjustment procedure.

Step 2. Check to see that hydraulic pressure is between 100 and 300 psi.

If pressure is not within range, notify Unit maintenance

Step 3. Check to see that dump valve is closed.

If dump valve is open, close dump valve.

Step 4. Operate BALLISTIC SHIELD directional control valve manually.

If valve can be operated manually, notify Unit maintenance of electrical failure.
If valve is not manually operable, notify Unit maintenance of hydraulic failure.

37. UPPER REAR DOOR CYLINDER OPERATION IS SLOW OR ERRATIC.

Check flow-control valve setting on upper rear door cylinder.

Adjust flow-control valve (WP 0060 00).
If condition persists, notify Unit maintenance.

38. UPPER REAR DOOR DRIFTS CLOSED.

Check to make sure upper rear door dump valve is closed.

If dump valve is closed, notify Unit maintenance.

**MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION**

AUTOMATIC FIRE EXTINGUISHING SYSTEM (AFES)

39. LAMP DOES NOT LIGHT DURING LAMP TEST OR FAILS DURING OPERATION.

Replace lamp (WP 0063 00). Run lamp test (pp. 0049 00-4 through 0049 00-7).

If new lamp or light-emitting diode (LED) does not light during test, notify Unit maintenance.

40. FAULT LAMP LIGHTS.

Record the indication of test and alarm (T/A) panel LEDs. Notify Unit maintenance of the LED indication.

41. CREW AFES TEST AND ALARM (T/A) PANEL FIRE DETECTION LED'S 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.

42. AFES OR COMPONENT IS DAMAGED OR FAILS DURING OPERATION.

Notify Unit maintenance.

43. EXTINGUISHER BOTTLES ARE EMPTY OR DAMAGED OR HAVE LOW PRESSURE.

Notify Unit maintenance.

44. BOTTLE DISCHARGES WHEN VEHICLE SITS IDLE OR WHEN VEHICLE IS IN MOTION.

Notify Unit maintenance.

**MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION**

DRIVER'S COOLING FAN

45. 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.

MOUNTED WATER RATION HEATER (MWRH)

46. 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.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

PRECISION LIGHTWEIGHT GPS RECEIVER (PLGR)

47. 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



TM9-2350-293-10

CHAPTER 4

MAINTENANCE INSTRUCTIONS



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**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. 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 0078 00 and 0079 00, "Lubrication Instructions."

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) INTRODUCTION (continued)

0048 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: 0049 00, Before and During; 0050 00, After; and 0051 00, Weekly and Monthly.

- *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)**

0048 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)**

0048 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, 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 0052 through 0068).

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.

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

0048 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 2404, 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

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

TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER 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.</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><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><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 Halon discharging at 750 psi (5171 kPa).</p>	

TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

0049 00

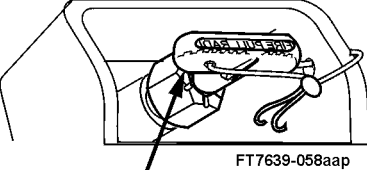
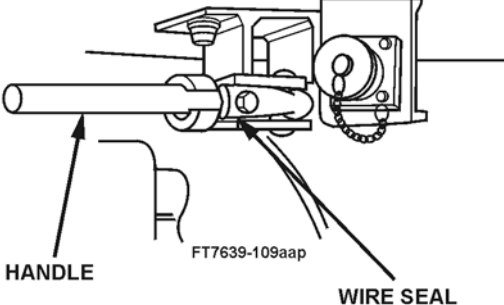
ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
3	Before	External Fire Extinguisher Handle pulled. (continued)	<p>Check to make sure handle is properly seated and laced with double-strand wire.</p>  <p>FT7639-058aap</p> <p>HANDLE</p>	Wire seal is broken or missing or handle is
4	Before	Driver's Compartment Manual Fire Extinguisher Handle	<p>Check to make sure handle is properly seated and laced with single-strand wire.</p> <p>DRIVER</p>  <p>FT7639-109aap</p> <p>HANDLE</p> <p>WIRE SEAL</p>	Wire seal is broken or extinguisher handle is pulled.

TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

004900

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
5	Before	Cooling System and Cooling Fans	<p>DRIVER</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>COMMANDER</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>

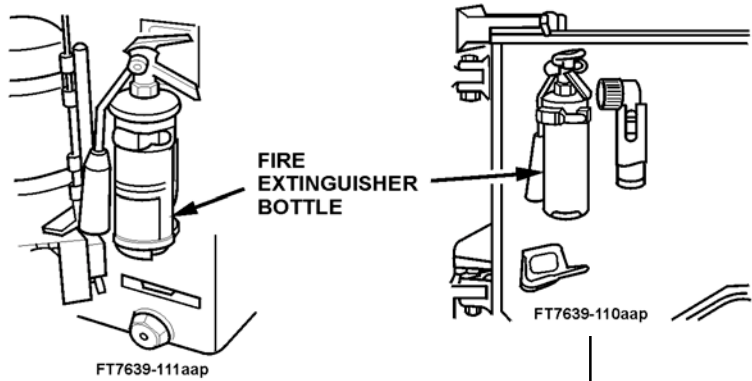


TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

0049 00

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	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)

004900

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
			<div> <p>Diagram of engine fire detection panel FT7639-019aap. Labels point to POWER ON LAMP, AFES MAINT/AFES POWER ON SWITCH, and SYSTEM TEST/LAMP TEST SWITCH.</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>Diagram of engine fire detection panel FT7639-019abp. Labels point to PASS TEST LAMP and FAULT LAMP.</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)

004900

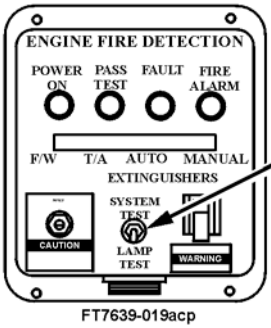
ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
9	Before	Driver's Seat Assembly	<p>Positions of lamps and SYSTEM TEST/LAMP TEST switch are the same for engine and crew T/A panels.</p>  <p>The diagram shows a rectangular panel titled "ENGINE FIRE DETECTION". It contains four indicator lamps labeled "POWER ON", "PASS TEST", "FAULT", and "FIRE ALARM". Below these are four selector switches labeled "F/W", "T/A", "AUTO", and "MANUAL" under the heading "EXTINGUISHERS". At the bottom, there are three buttons: "CAUTION" (with a bell icon), "SYSTEM TEST LAMP TEST" (with a bell icon), and "WARNING" (with a bell icon). An arrow points from the text "SYSTEM TEST/LAMP TEST SWITCH" to the "SYSTEM TEST LAMP TEST" button. The part number "FT7639-019acp" is printed at the bottom of the panel.</p> <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)

004900

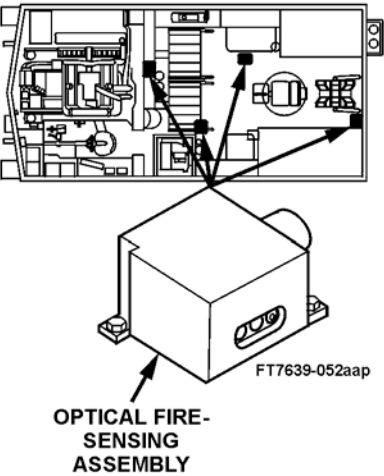
ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
10	Before	Crew AFES	<p>CREWMEMBER</p> <p>Clean eyes of four Optical Fire-Sensing Assemblies (OFSAs) with lens paper (Item 40, WP 0077 00).</p>  <p>The diagram consists of two parts. The upper part is a top-down view of the crew compartment, showing the layout of the seats and various equipment. Four arrows point from the text 'Clean eyes of four Optical Fire-Sensing Assemblies' to four specific locations within the compartment. The lower part is a detailed perspective view of a rectangular box labeled 'OPTICAL FIRE-SENSING ASSEMBLY' with the part number 'FT7639-052aap' below it. An arrow points from the text 'OPTICAL FIRE-SENSING ASSEMBLY' to this detailed view.</p>	
11	Before	Crew AFES	<p>COMMANDER</p> <p>Perform the following checks at crew T/A panel. If indications below do not occur, troubleshoot crew AFES (p. 0047 00-18).</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)

0049 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 control panel with the following components labeled:</p> <ul style="list-style-type: none"> POWER ON LAMP: Points to the 'POWER ON' indicator light. PASS TEST LAMP: Points to the 'PASS TEST' indicator light. FAULT LAMP: Points to the 'FAULT' indicator light. AFES MAINT/AFES POWER ON SWITCH: Points to the 'CAUTION' switch. <p>Other labels on the panel include: ENGINE FIRE DETECTION, FIRE ALARM, F/W, T/A, AUTO, MANUAL, EXTINGUISHERS, SYSTEM TEST LAMP TEST, and WARNING.</p> <p>FT7639-019adp</p>				

TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

004900

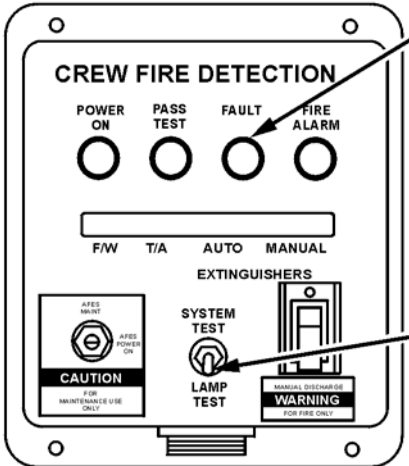
ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
11	Before	Crew AFES (continued)	<p>e. Check LEDs of extinguishers Nos. 1 through 4 (vehicles S/N 1 through 344) or Nos. 1 through 6 (vehicles S/N 345 and above). When any LED is lit, crew extinguisher bottle 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>FT7639-019agp</p> </div>	<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)

0049 00

ITEM NO.	INTERVAL	LOCATION	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
		ITEM TO CHECK/SERVICE		
12	Before	Primary and Secondary Fuel Filters	<p><u>DRIVER</u></p> <p>Open bottom drain cocks and drain water until clear fuel flows from filters. Close drain cocks.</p>	Any Class III leak found.
13	Before	Transmission Oil Level	<p><u>DRIVER</u></p> <p>Check oil level; it should be within the OPERATING RANGE stamped on dipstick. Add oil as required.</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>Powertrain assemblies must use OE/HDO-15W-40 (MIL-L-2104) while under warranty.</p>	

TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

0049 00

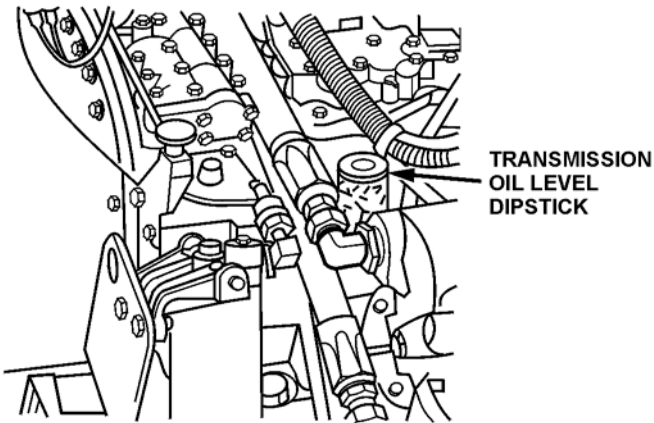
ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
13	Before	Transmission Oil Level (continued)	<p>NOTE</p> <p>New transmissions are delivered with preservative PE-10-1. Until first scheduled oil change, maintain proper oil level by adding OE/HDO or OEA.</p>	
				
14	Before	Engine Oil Level	<p><u>DRIVER</u></p> <p>NOTE</p> <p>Make engine oil level check with vehicle on level ground if possible.</p>	

TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

0049 00

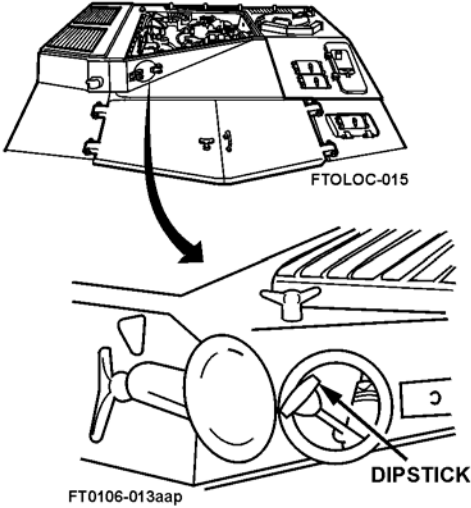
ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
			<p>Oil level will take approximately 20 minutes to stabilize in engine crankcase. After 20 minutes, check oil level; it should be within the L - F range stamped on dipstick. Add oil as required.</p>  <p>The diagram consists of two parts. The top part, labeled FTOLOC-015, shows the engine compartment of the vehicle with the hood open. The bottom part, labeled FT0106-013aap, shows the driver's side of the cockpit. An arrow points from the engine compartment down to the dipstick location in the cockpit. The dipstick is labeled 'DIPSTICK'.</p>	

TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

004900

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
16	Before	Accelerator Pedal	<p><u>DRIVER</u></p> <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.</p>	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><u>COMMANDER</u></p> <p>Mount weapon and perform PMCS IAW TM 9-1005-213-10.</p>	Machine gun cannot be securely mounted.
18	Before	Intercom System	<p><u>COMMANDER</u></p> <p>Check all controls and indicators for proper operation and PMCS IAW TM 11-5830-263-10.</p>	Communication is not possible between commander and driver.
19	Before	PLGR	<p><u>COMMANDER</u></p> <p>Check all controls, indicators, and assemblies for proper operation and PMCS IAW TM 11-5825-291-13.</p>	
20	Before	Parking Brake	<p><u>DRIVER</u></p> <p>Check parking brake operation (p. 0012 00-3).</p>	Parking brake does not hold.

TM9-2350-293-10

TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

0049 00

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
21	Before	APU Chain Tensioner Adjustment Screw	<p>DRIVER</p> <p>Check APU chain tensioner adjustment screw for oil leakage. Notify Unit maintenance if any leakage exists.</p>	Any Class III leak exists.
22	Before	Instruments and Gages	<p>DRIVER</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. 0012 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 normal, 230°F maximum.</p> <p>c. ENGINE OIL PRESSURE gage reads 30–50 psi at fast idle.</p>	<p>a. Engine will not start.</p> <p>b. ENGINE WATER TEMP gage is inoperative or exceeds 230°F maximum.</p> <p>c. ENGINE OIL PRESSURE gage is inoperative or does not read within limits.</p>

TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

0049 00

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
			<p>d. TRANSMISSION OIL TEMP gage reads 220° to 240°F normal, 300°F maximum.</p> <p>e. TRANSMISSION OIL PRESSURE gage reads 10–45 psi at fast idle.</p> <div style="text-align: center;"> </div> <p>f. BATTERY gage is in green zone (charging).</p> <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>d. TRANSMISSION OIL TEMP gage is inoperative or exceeds 300°F maximum.</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)

0049 00

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
22	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).</p>	h. Lamp is missing or inoperative.
23	Before	Track Tension	<p>CREWMEMBER</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>	a. Track tension will not adjust.

TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

004900

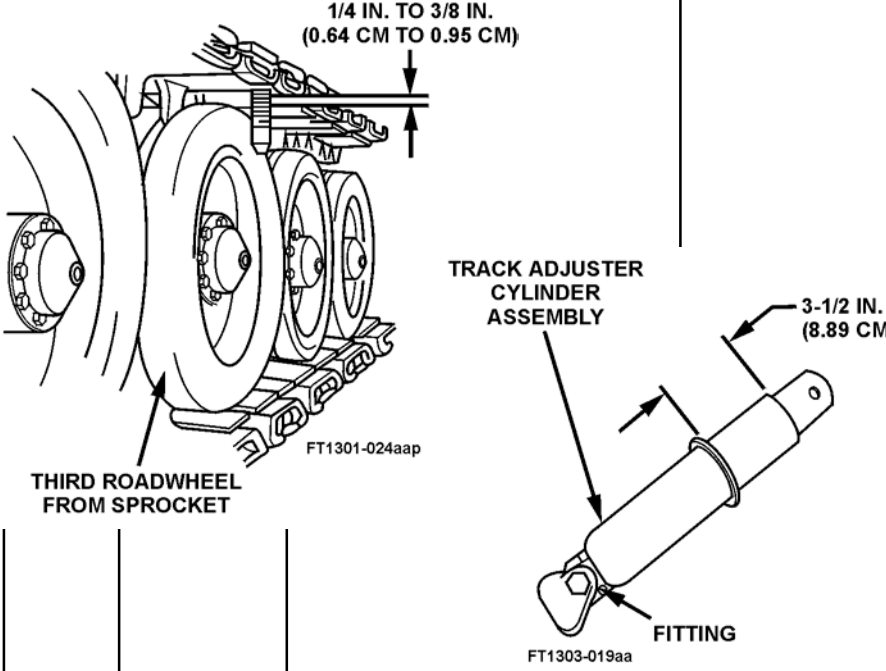
ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
			<p style="text-align: center;">CAUTION</p> <p>When increasing track tension, do not let track adjuster cylinder assembly extend beyond 3-1/2 inches (8.89 cm).</p> <p>To increase track tension, pump grease (GAA) into clean fitting on track adjuster cylinder assembly until correct tension is obtained.</p> 	

TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

0049 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;"><u>WARNING</u></p> <p>Lubricant is under high pressure. Loosen bleeder plug slowly to avoid injury to personnel.</p> <p style="text-align: center;">NOTE</p> <ul style="list-style-type: none"> • 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. • If track sag cannot be taken up, decrease track tension; remove track shoe and adjust. <p>To decrease track tension, open bleeder plug on track adjuster cylinder assembly and reduce pressure until tension is released.</p> <p>b. Tighten bleeder plug and wipe away excess grease.</p>	

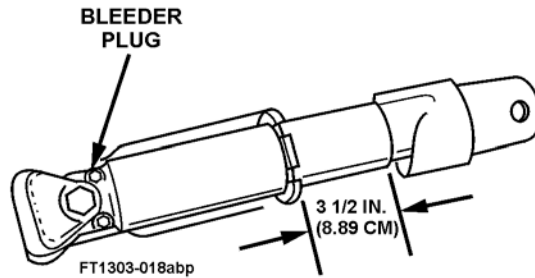


TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

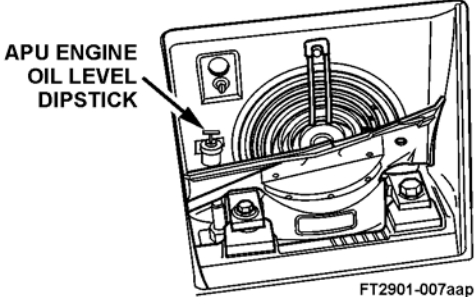
0049 00

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	<u>CREWMEMBER PROCEDURE</u>	EQUIPMENT NOT READY/AVAILABLE IF:
24	During	Brakes	<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)

0049 00

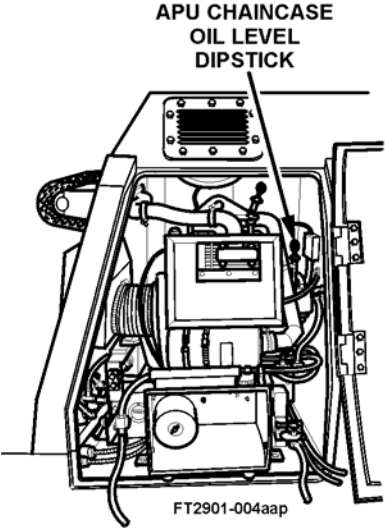
ITEM NO.	INTERVAL	LOCATION	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
		ITEM TO CHECK/SERVICE		
27	During	Auxiliary Power Unit (APU)	<p>CREWMEMBER</p> <p>Open APU front and side doors, and check APU engine oil and chaincase oil levels. Add oil (pp. 0078 00-13 through 0078 00-22) to bring level up to full (F) mark on dipstick. Add or drain as needed. Start the APU (p. 0025 00-1). Check for operation of unit.</p>	



APU ENGINE OIL LEVEL DIPSTICK

FT2901-007aap

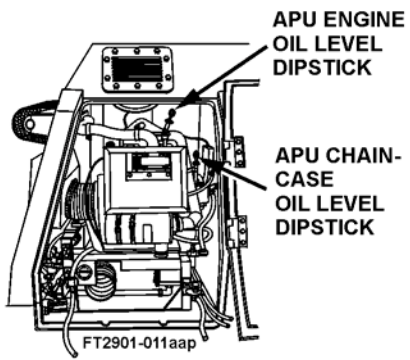
ONANDJEM



APU CHAINCASE OIL LEVEL DIPSTICK

FT2901-004aap

ONANDJEM



APU ENGINE OIL LEVEL DIPSTICK

APU CHAINCASE OIL LEVEL DIPSTICK

FT2901-011aap

HATZ 2 G 40

TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

004900

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
28	During	Hydraulic Gages/Lines	<p><u>CREWMEMBER</u></p> <p>a. Apply system pressure by activating APU unit.</p> <p>b. Check gages for normal indications when operating hydraulic system:</p> <ul style="list-style-type: none"> • Hydraulic pressure gage should read 100 to 300 psi with pump operating but no hydraulic actuators operating. Discontinue using APU if hydraulic pressure gage reads below 100 or over 300 psi. • Hydraulic reservoir temperature gage should not exceed 160°F during hydraulic system operation. Discontinue using APU if hydraulic reservoir temperature gage is inoperative or exceeds 160° F. • Hydraulic reservoir level gage should read in the green range. Discontinue using APU if hydraulic reservoir level gage does not read in green range. 	

TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

004900

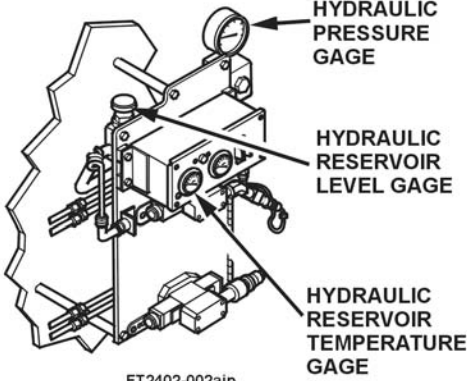
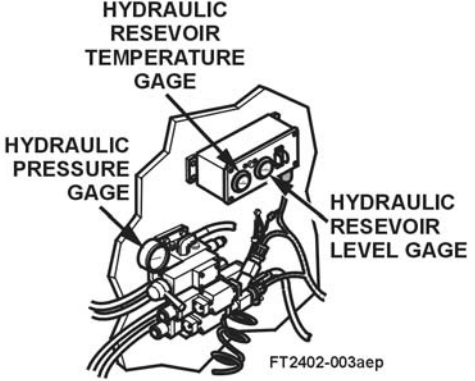
ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
28	During	Hydraulic Gages/Lines (continued)	c. Check all hydraulic lines, hoses, and connections for any leaks.	c. Any Class III leaks are found.
 <p>HYDRAULIC PRESSURE GAGE</p> <p>HYDRAULIC RESERVOIR LEVEL GAGE</p> <p>HYDRAULIC RESERVOIR TEMPERATURE GAGE</p> <p>FT2402-002ajp</p>				
<p>VEHICLES S/N 1 THROUGH 820</p>				
 <p>HYDRAULIC RESEVOIR TEMPERATURE GAGE</p> <p>HYDRAULIC PRESSURE GAGE</p> <p>HYDRAULIC RESEVOIR LEVEL GAGE</p> <p>FT2402-003aep</p>				
<p>VEHICLES S/N 821 AND ABOVE</p>				

TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

004900

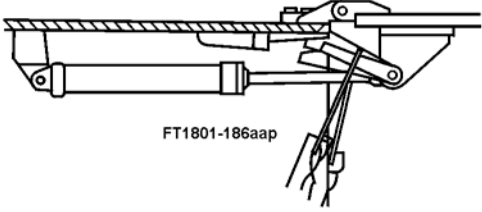
ITEM NO.	INTERVAL	LOCATION	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
		ITEM TO CHECK/SERVICE		
29	During	Upper Rear Door (Ballistic Shield) Mechanical Lock	<p>CREWMEMBER</p> <p>Check operation of upper rear door. Make sure mechanical locking device properly engages at 45-degree and 90-degree positions.</p>  <p>FT1801-186aap</p>	
30	During	Conveyor	<p>CREWMEMBER</p> <p><u>WARNING</u></p> <ul style="list-style-type: none"> • Make sure footing is firm and deployment area is free of obstructions. When deploying conveyor, be prepared to stand to one side and move quickly after conveyor begins to move. • Keep fingers clear of section hinges when deploying conveyor. 	

TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

004900

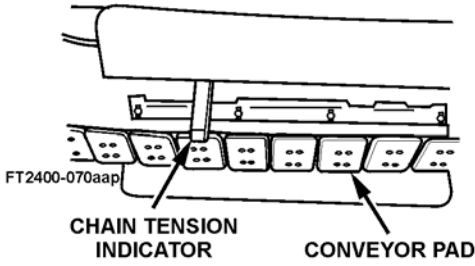
ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
30	During	Conveyor (continued)	<p>• Make sure door is positioned at 120 degrees from closed. This will help control speed of deployment. Failure to heed this warning may result in severe injury to personnel.</p> <p>NOTE</p> <p>Check conveyor chain tension prior to starting motor.</p> <p>a. Deploy conveyor (p. 0030 00-1).</p> <p>b. Check conveyor chain tension (p. 0061 00-4). Tension is correct when tops of plastic and steel conveyor pads are vertically aligned with chain tension indicator. If conveyor pads hang no lower than bottom of indicator, no adjustment is necessary.</p> 	

TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

0049 00

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
30	During	Conveyor (continued)	<p>c. Listen for unusual noises made by conveyor motor. If motor grinds, shut down conveyor hydraulic circuit and operate manually.</p> <p>d. Check alignment of conveyor chain. Chain should be over sprocket wheel at either end of conveyor and should be centered with rollers.</p>	

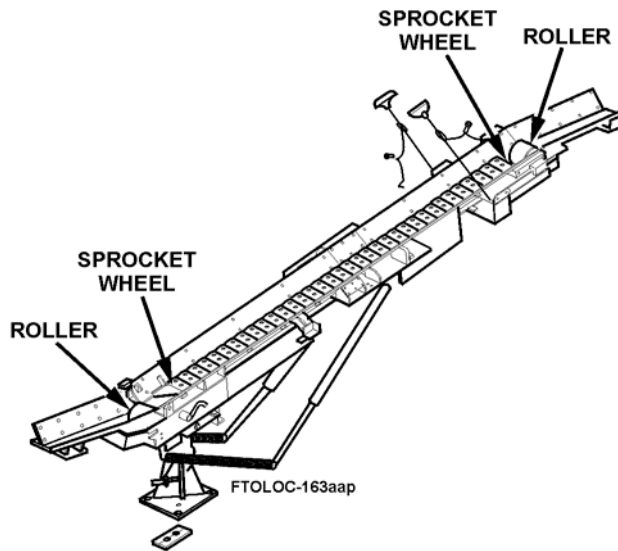
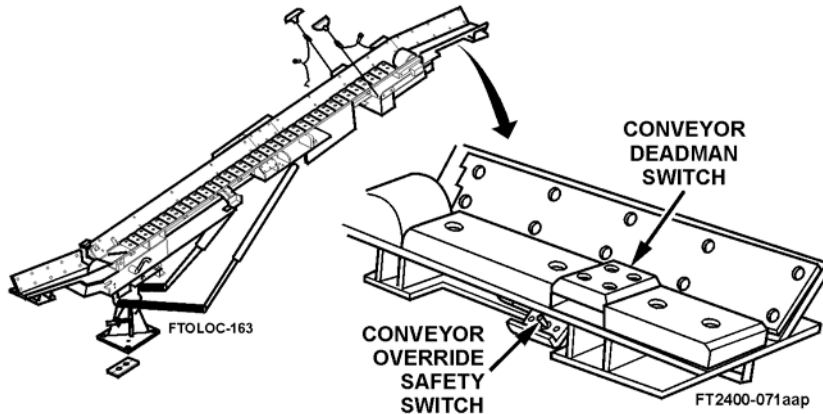


TABLE 2-1. PMCS FOR M992A2: BEFORE AND DURING OPERATION (continued)

0049 00

ITEM	INTERVAL	ITEM TO CHECK/	CREWMEMBER	EQUIPMENT NOT READY/AVAILABLE
30	During	Conveyor (continued)	<p>e. Check operation of conveyor deadman switch and conveyor override safety switch.</p> <ul style="list-style-type: none"> • With conveyor operating, press down on bracket covering deadman switch. Conveyor should stop. Release pressure on bracket covering deadman switch. Conveyor should restart. • Turn safety switch to OFF. Conveyor should stop. Turn safety switch to ON. Conveyor should restart. • Discontinue using conveyor if deadman switch does not operate properly. 	



END OF WORK PACKAGE

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

TABLE 2-1. PMCS FOR M992A2: AFTER OPERATION

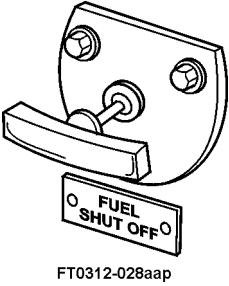
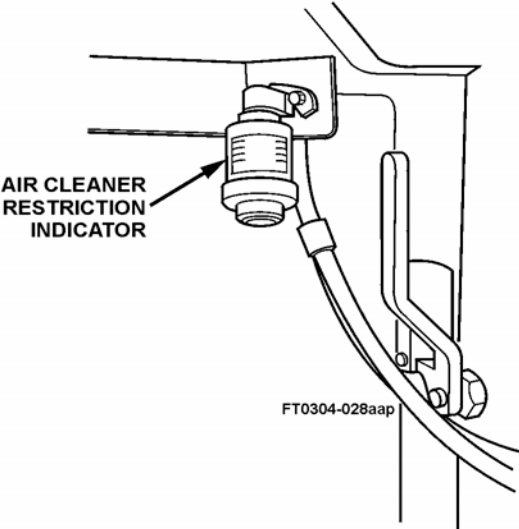
ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
31	After	FUEL SHUT OFF Cable	<p><u>DRIVER</u></p> <p>Check for proper operation.</p>  <p>FT0312-028aap</p>	FUEL SHUT OFF cable is broken or unserviceable.
32	After	Restriction	<p><u>DRIVER</u></p> <p>Check air cleaner restriction indicator. If indicator is in red range, clean and service air cleaner filters as needed (p. 0057 00-1).</p>  <p>FT0304-028aap</p>	Air cleaner restriction indicator cracked or unserviceable.

TABLE 2-1. PMCS FOR M992A2: AFTER OPERATION (continued) 0050 00

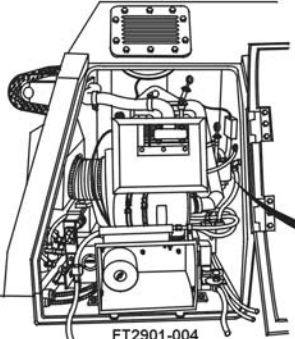
ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	<u>CREWMEMBER PROCEDURE</u>	EQUIPMENT NOT READY/AVAILABLE IF:
33	After	Upper Rear Door Dump Valve	<p><u>CREWMEMBER</u></p> <p>Check upper rear door dump valve to make sure that it is closed (turned fully clockwise).</p> <div style="text-align: center;"> <p>UPPER REAR DOOR DUMP VALVE</p> <p>FT2406-040aap</p> </div>	
34	After	Lower Rear Door	<p><u>CREWMEMBER</u></p> <p>Open lower rear door (p. 0027 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.</p>	

TABLE 2-1. PMCS FOR M992A2: AFTER OPERATION (continued) 0050 00

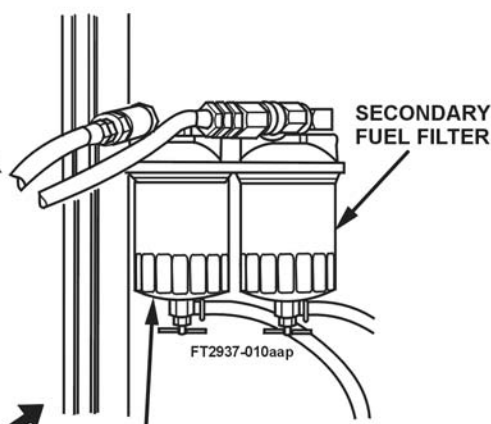
ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
35	After	0.50-Cal. M2 Machine Gun	<p><u>COMMANDER</u></p> <p><u>WARNING</u></p> <p>Check to see that machine gun is clear of ammunition and barrel is free of obstructions.</p> <p>a. Disassemble, clean, and 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>	
36	After	Auxiliary Power Unit (APU) Oil Level	<p><u>DRIVER</u></p> <p>Open APU front door and check APU engine oil level. Add oil to bring level up to full (F) mark on dipstick. Add or drain as needed.</p>	

TABLE 2-1. PMCS FOR M992A2: AFTER OPERATION (continued) 0050 00

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
37	After	APU Fuel Filters	<p>DRIVER</p> <p>Turn MASTER switch and APU FUEL SHUT OFF switch to ON. Drain primary fuel filter first and then secondary fuel filter until contaminants are removed. Turn APU FUEL SHUT OFF switch and MASTER switch to OFF. Inspect fuel lines and hoses for damage, leaks, and loose connections.</p>	Any leak is found.



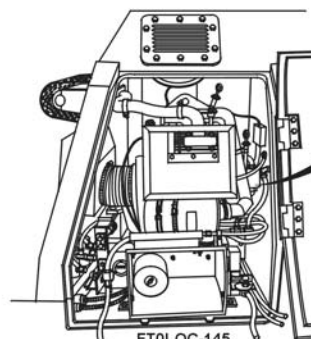
FT2901-004
ONAN DJEAM



SECONDARY FUEL FILTER

FT2937-010aap

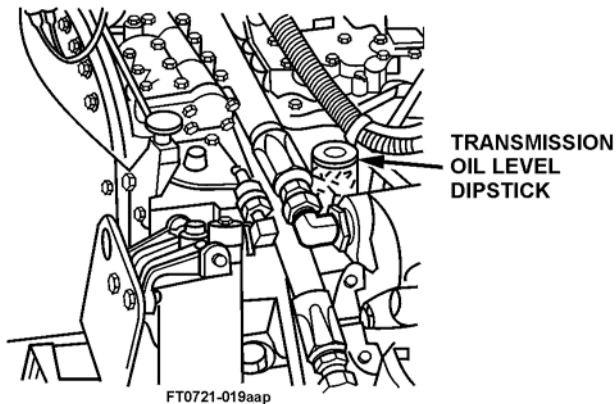
PRIMARY FUEL FILTER



FT0LOC-145
HATZ 2 G 40

TABLE 2-1. PMCS FOR M992A2: AFTER OPERATION (continued) 0050 00

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
38	After	APU Engine Air Passages	<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>	
39	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>
40	After	Transmission Oil Level	<p>Check oil level; level should be within the OPERATING RANGE stamped on dipstick. Add oil (p. 0078 00-3) as required.</p>	



FT0721-019aap

TABLE 2-1. PMCS FOR MODEL M992A2 (continued)

0050 00

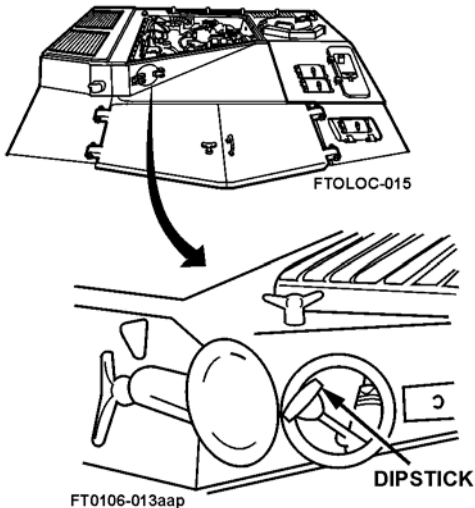
ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
41	After	Engine Oil Level	<p style="text-align: center;">NOTE</p> <p>New transmissions are delivered with preservative PE-10-1. Until first scheduled oil change, maintain proper oil level by adding OE/HDO or 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; it should be within the L - F range stamped on dipstick.</p> <div style="text-align: center;">  <p>FTOLOC-015</p> <p>FT0106-013aap</p> <p>DIPSTICK</p> </div>	

TABLE 2-1. PMCS FOR M992A2: AFTER OPERATION (continued) 0050 00

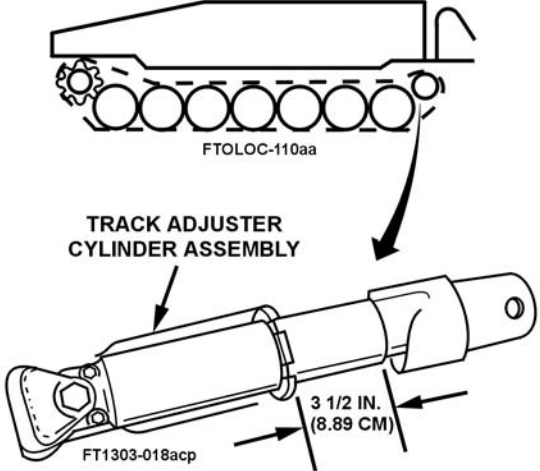
ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
42	After	Track Adjuster Cylinder Assemblies	<p>CREWMEMBER</p> <p>Check for bent or broken track adjuster cylinder assemblies.</p> <p>Track adjusters have reached their maximum extended limit at 3-1/2 inches (8.89 cm).</p> 	Either track adjuster cylinder assembly is bent, broken, or beyond maximum limits.
43	After	Track Tension	Perform same check as on p. 0049 00-18.	

TABLE 2-1. PMCS FOR M992A2: AFTER OPERATION (continued) 0050 00

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
44	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>

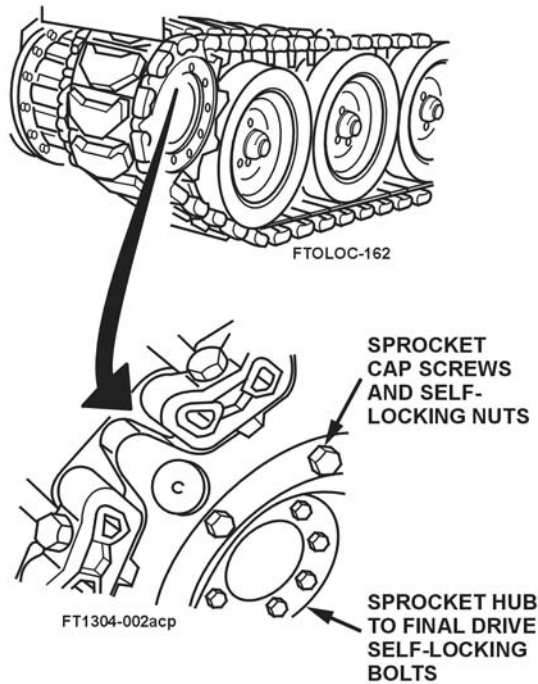


TABLE 2-1. PMCS FOR M992A2: AFTER OPERATION (continued) 0050 00

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
44	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>	<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>

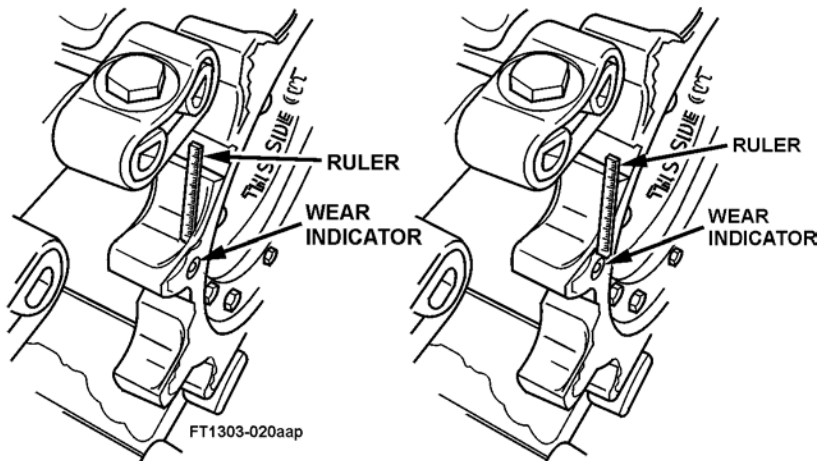
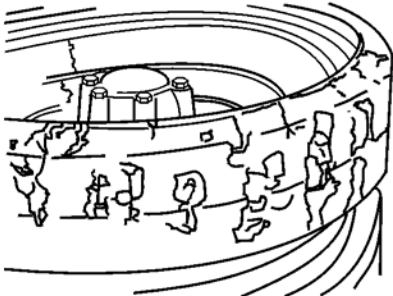
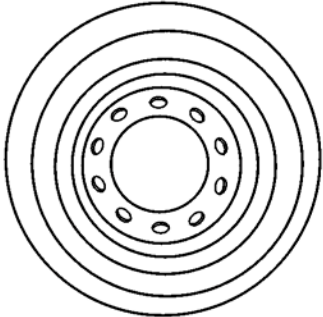
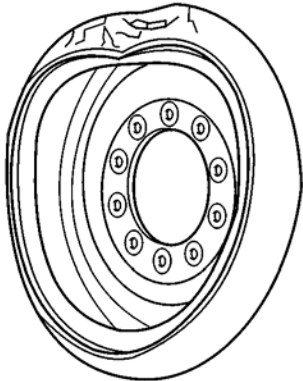

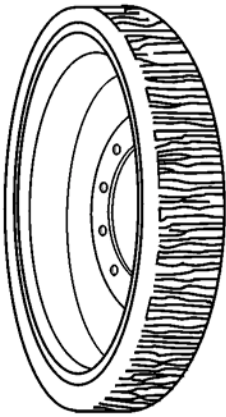
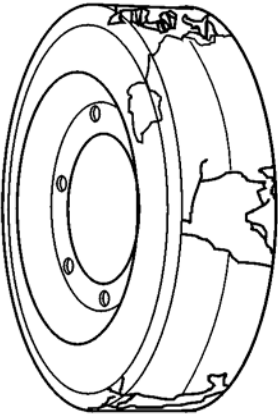


TABLE 2-1. PMCS FOR M992A2: AFTER OPERATION (continued) 0050 00

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
45	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 road-wheel mounting nuts on same hub missing.</p> <p>b. Any missing, bent, warped, or cracked roadwheel or idler wheel. 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 road-wheel and track.</p> <p>c. Mounting holes are elongated on any wheel.</p>

TABLE 2-1. PMCS FOR M992A2: AFTER OPERATION (continued) 0050 00

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
			 <p>CHUNKING OF RUBBER</p>	 <p>ELONGATED MOUNTING HOLES</p>
			 <p>BENT, CRACKED ROADWHEEL</p>	 <p>SEPARATION OF RUBBER</p>
			 <p>CRACKED RUBBER ON SURFACE</p>	 <p>SEVERE CHUNKING OF RUBBER</p>

FT1301-025aap

TABLE 2-1. PMCS FOR M992A2: AFTER OPERATION (continued) 0050 00

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
46	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, 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) 0050 00

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
47	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. 0058 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) 0050 00

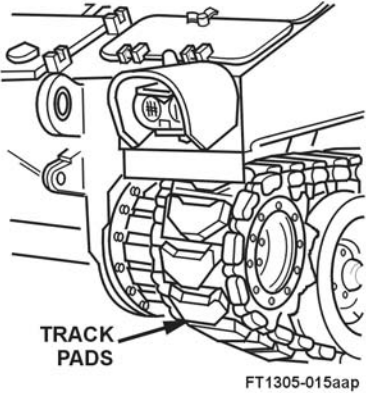
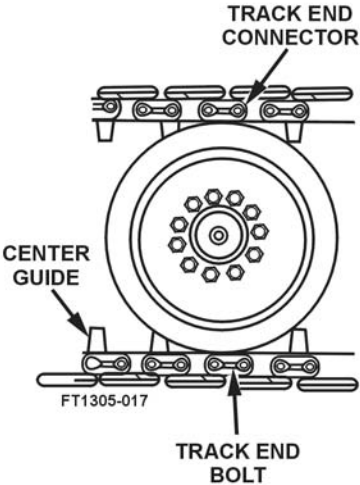
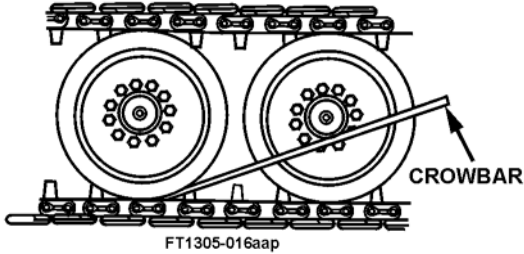
ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
48	After	Track End Connectors and Center Guides	<p><u>DRIVER/COMMANDER</u></p> <p>Check for loose, missing, or worn track end connectors and bolts, track center guides, track pads, and track shoes.</p> <p><u>DRIVER</u></p>	Any missing or cracked track end connectors, missing center guides, or missing bolts.
<div style="display: flex; justify-content: space-around; align-items: center;">   </div>				

TABLE 2-1. PMCS FOR M992A2: AFTER OPERATION (continued) 0050 00

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
49	After	Torsion Bars and Roadwheel Arms	<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

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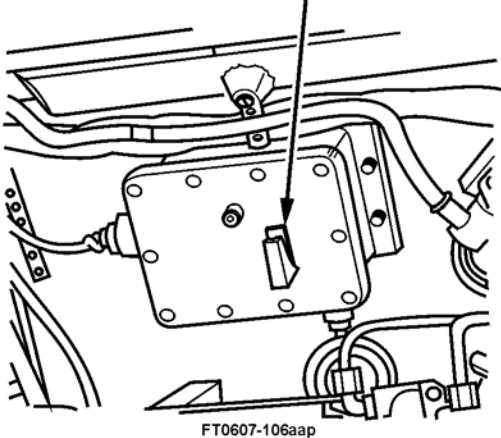
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**OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2**

TABLE 2-1. PMCS FOR M992A2: WEEKLY AND MONTHLY CHECKS AND SERVICES (continued)

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
50	Weekly	Hydraulic Fluid Level	With MASTER switch turned on, check hydraulic fluid level gage to make sure needle is on F. If necessary, add hydraulic oil (p. 0078 00-22) through remote fill cap to bring level up to F mark.	
<p style="text-align: center;"> VEHICLES S/N THROUGH 820 VEHICLES S/N 821 AND ABOVE </p>				
51	Weekly	Chemical Agent Detector Unit	<p><u>DRIVER/CREWMEMBER</u></p> <p><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) 0051 00**

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
52	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. 0030 00-21).</p>	

**TABLE 2-1. PMCS FOR M992A2:
WEEKLY AND MONTHLY CHECKS AND SERVICES (continued) 0051 00**

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
53	Weekly	Lights	<p><u>DRIVER/CREWMEMBER</u></p> <p>a. Check driving lights by turning on driving lights switch (p. 0033 00-13). 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>	

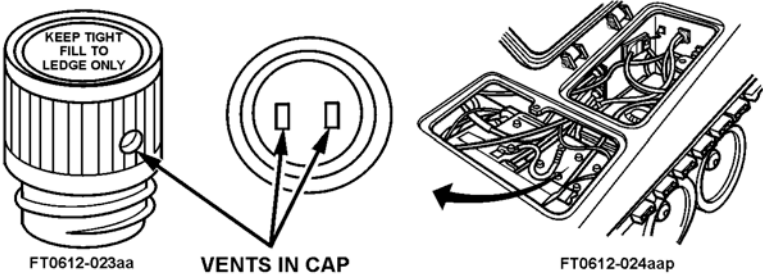
**TABLE 2-1. PMCS FOR M992A2:
WEEKLY AND MONTHLY CHECKS AND SERVICES (continued) 0051 00**

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
54	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>	
55	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. If water is added or fluid</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>

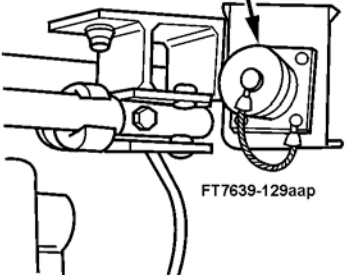
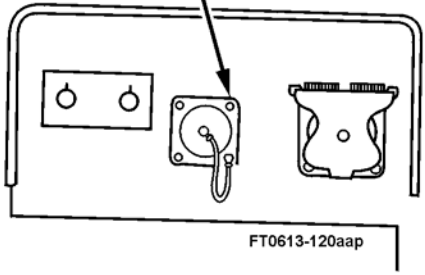
**TABLE 2-1. PMCS FOR M992A2:
WEEKLY AND MONTHLY CHECKS AND SERVICES (continued) 0051 00**

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
			<p>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>The diagram shows a top-down view of a battery compartment. Two arrows labeled 'BATTERIES' point to the battery units. Another arrow labeled 'CONNECTIONS' points to the electrical wiring. Below the diagram is the reference code '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) 0051 00**

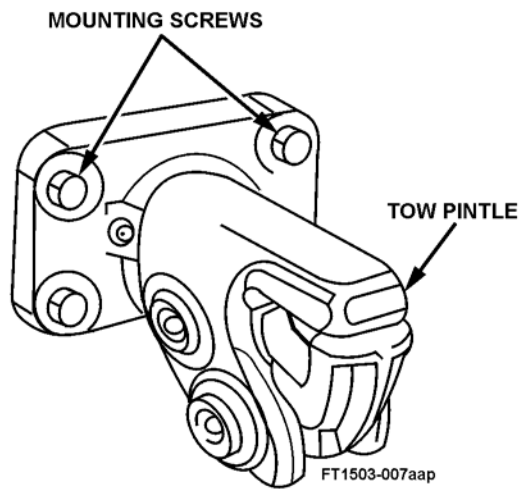
ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
55	Weekly	Batteries (continued)	<p>c. Inspect terminals, posts, clamps, cables, and battery hold-downs and battery boxes for corrosion. If corrosion is present, have Unit maintenance clean and coat all clamps, hold-downs, and battery boxes, except posts and terminals.</p> <p style="text-align: center;">CAUTION</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) 0051 00**

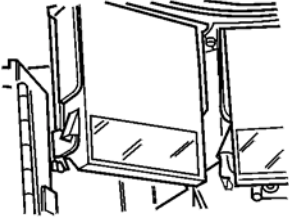
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
56	Weekly	Front and Rear Slave Cable Receptacle Connectors	<p>e. Make sure rubber grommets are in place to keep cables from being cut on the edge of holes.</p> <p>f. Further battery information that pertains to this subject matter can be found in TM 9-6140-200-14.</p> <p><u>DRIVER</u></p> <p>Check front and rear slave cable receptacle connectors and caps for damage, burned-out condition, and corrosion (two locations).</p>	
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>FRONT SLAVE CABLE RECEPTACLE CONNECTOR</p>  <p>FT7639-129aap</p> <p>DRIVER'S COMPARTMENT</p> </div> <div style="text-align: center;"> <p>REAR SLAVE CABLE RECEPTACLE CONNECTOR</p>  <p>FT0613-120aap</p> <p>REAR OF VEHICLE</p> </div> </div>				

**TABLE 2-1. PMCS FOR M992A2:
WEEKLY AND MONTHLY CHECKS AND SERVICES (continued) 0051 00**

ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
57	Weekly	Doors, Hatches, and Latches	<p>Check hatch and door seals for looseness, tears, or deterioration. Make sure hatches and doors lock securely in both open and closed positions.</p> <p><u>DRIVER</u></p>	<p>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.</p>
58	Weekly	Tow Pintle	<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>	



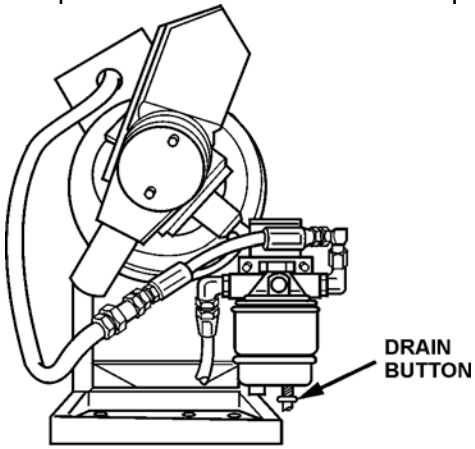
**TABLE 2-1. PMCS FOR M992A2:
WEEKLY AND MONTHLY CHECKS AND SERVICES (continued) 0051 00**

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
59	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> <p>a. Remove periscope by loosening two thumbscrews.</p> <p>b. Check between carrier wall and periscope for dirt or moisture.</p>	<p>b. Any periscope is missing or unserviceable, or over 50% of vision is obstructed.</p>
60	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) 0051 00**

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
61	Weekly	Personnel Heater	<p style="text-align: center;"><u>WARNING</u></p> <ul style="list-style-type: none"> • If heater operates improperly, fuel may overflow, causing danger of fire or explosion. • 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. • 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>a. Start and operate heater (p. 0033 00-2 or 0033 00-3). 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. 0033 00-3 or 0033 00-4) and notify Unit maintenance.</p>	

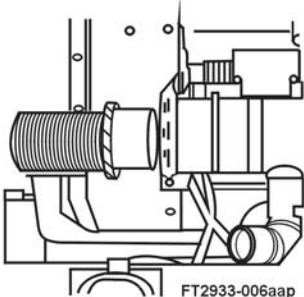
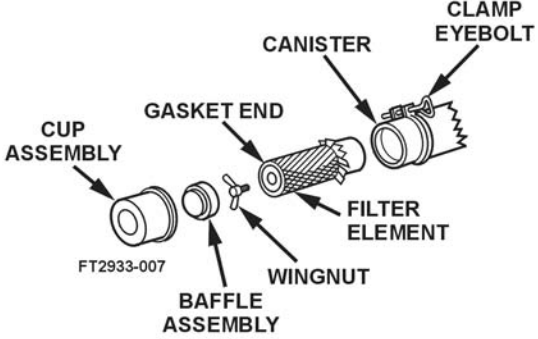
**TABLE 2-1. PMCS FOR M992A2:
WEEKLY AND MONTHLY CHECKS AND SERVICES (continued) 0051 00**

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
			<p>c. Drain fuel filter.</p> <p>(1) Remove right front canister compartment shield (p. 0067 00-1).</p> <p>(2) Place suitable container under filter and push drain button to drain water from filter.</p>  <p>FT2207-009aap</p>	
			<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>	<p>d. Any fuel leak found.</p> <p>f. Any fuel leak found.</p>

**TABLE 2-1. PMCS FOR M992A2:
WEEKLY AND MONTHLY CHECKS AND SERVICES (continued) 0051 00**

ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	<u>CREWMEMBER PROCEDURE</u>	EQUIPMENT NOT READY/AVAILABLE IF:
62	Weekly	APU Sound-proof Panels	<p style="text-align: center;">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> <p><u>DRIVER</u></p>	
63	Weekly	APU Engine Air Filter Element	<p style="text-align: center;"><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 style="text-align: center;"><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>	

**TABLE 2-1. PMCS FOR M992A2:
WEEKLY AND MONTHLY CHECKS AND SERVICES (continued) 0051 00**

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
			<p>Loosen filter-cap clamp eyebolt. Remove cup assembly. Remove filter wingnut and slide filter element from canister. Hold gasket end of filter element to light source. If light is not visible through element, service the element. Remove rubber baffle assembly from inside of cover. Empty dust from cover and wipe inside of cover with a clean damp cloth. Install baffle assembly in cup assembly. Reassemble filter element unit. Do not operate if filter element is clogged, dirty, or missing.</p>	
				

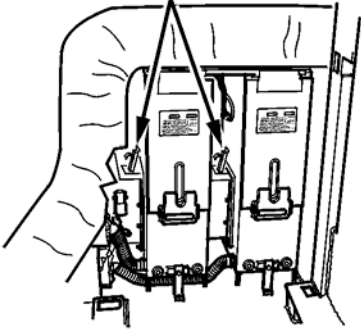
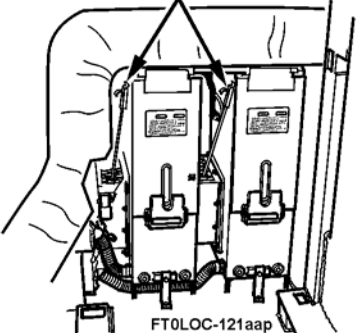
**TABLE 2-1. PMCS FOR M992A2:
WEEKLY AND MONTHLY CHECKS AND SERVICES (continued) 0051 00**

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
64	Weekly	APU Generator Air Filter	<p>Remove filter assembly wingnut, washer, and weather hood. Empty dust from weather hood and wipe inside of cover with clean damp rag. If filter assembly precleaner and element are clogged or dirty, service precleaner and filter element (p. 0062 00-4). Reassemble filter assembly. Do not operate if filter element is clogged, dirty, or missing.</p> <div style="text-align: center;"> <p>FT2933-008aap</p> </div>	
65	Weekly	Fatigue (Floor) Mats	<p>COMMANDER</p> <p>Inspect fatigue (floor) mats in crew compartment for tears.</p>	

**TABLE 2-1. PMCS FOR M992A2:
WEEKLY AND MONTHLY CHECKS AND SERVICES (continued) 0051 00**

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
66	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>	
67	Monthly	Projectile Rack Sections	<p><u>COMMANDER/ CREWMEMBERS</u></p> <p>Remove projectile rack sections from against front wall of crew/cargo compartment (p. 0032 00-5). Inspect rack restraints for broken safety wires and loose or missing bolts. Check to see that rack interlocking rods are not bent and are securely installed. Check to see that setscrew at each locking handle pivot is present and secure. Inspect locking bars for security.</p>	<p>Rack section missing. Safety wire broken, loose, or missing bolts. Rack interlocking rods bent, cracked, or missing. Setscrew for locking handle missing. Locking bar will not lock.</p>

**TABLE 2-1. PMCS FOR M992A2:
WEEKLY AND MONTHLY CHECKS AND SERVICES (continued) 0051 00**

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
68	Monthly	Engine Air Cleaner	<p><u>DRIVER/COMMANDER</u></p> <p>a. Check air filters (p. 0057 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 will not 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; align-items: flex-end;"> <div style="text-align: center;"> <p>SUMMER POSITION</p>  </div> <div style="text-align: center;"> <p>WINTER POSITION</p>  <p>FT0LOC-121aap</p> </div> </div>				

**TABLE 2-1. PMCS FOR M992A2:
WEEKLY AND MONTHLY CHECKS AND SERVICES (continued) 0051 00**

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
69	Monthly	Fuel Strainer and Fill Cap	<p><u>DRIVER/COMMANDER</u></p> <p>Service fuel strainer and fill cap (p. 0057 00-1).</p>	
70	Monthly	Final Drive Level Check	<p>Remove level-check plug. Oil should be level with bottom of opening. If not, add OE/HDO (refer to p. 0079 00-5) until oil flows from level-check plug opening. Clean and reinstall plug.</p> <div style="text-align: center;"> <p>FT0801-043aap</p> <p>LEVEL-CHECK PLUG</p> </div>	Any Class III leak exists.

END OF WORK PACKAGE

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OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

ENGINE COOLING SYSTEM MAINTENANCE

THIS WORK PACKAGE COVERS:

Adding Coolant, Faulty Cooling System, and Draining Coolant

INITIAL SETUP:**Maintenance Level**

Operator/Crew

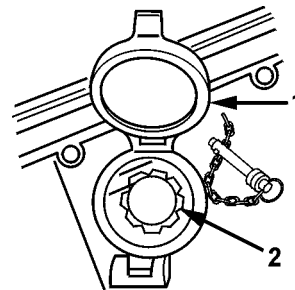
ADDING COOLANT**WARNING**

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. 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.



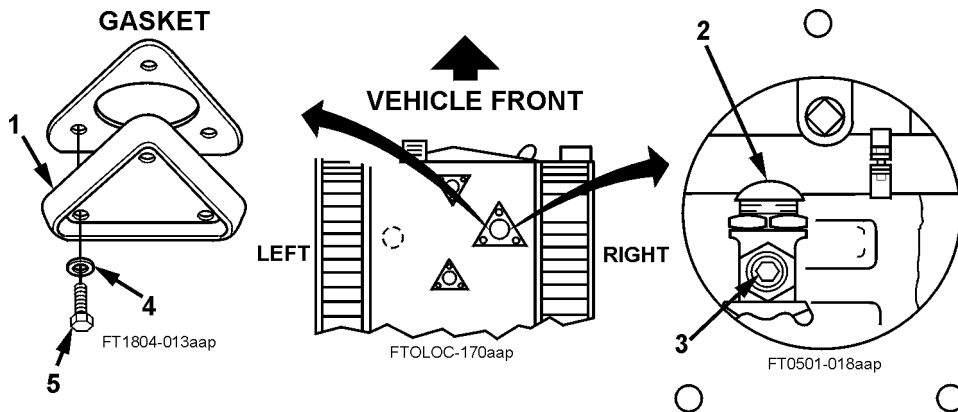
FT1801-220aap

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.
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 Arctic-type antifreeze (Item 2, p. 0077 00-2)
- 40°F to +80°F Antifreeze (Item 3 or 4, p. 0077 00-2)
- Above +80°F Corrosion resistant coating (22-1/2 oz per vehicle) (Item 14, p. 0077 00-5)

END OF WORK PACKAGE

OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

SERVICING OF FUEL SYSTEM

INITIAL SETUP:
Maintenance Level
Operator/Crew

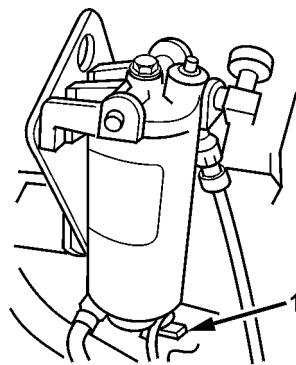
WARNING

Diesel fuel is FLAMMABLE. DO NOT smoke in vicinity while performing servicing operations.

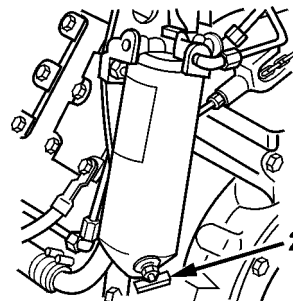
1. Open two drain cocks (1 and 2) on primary and secondary fuel filters to remove water and dirt. Place container under drain cocks.
2. When clear fuel is visible, close two drain cocks.

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

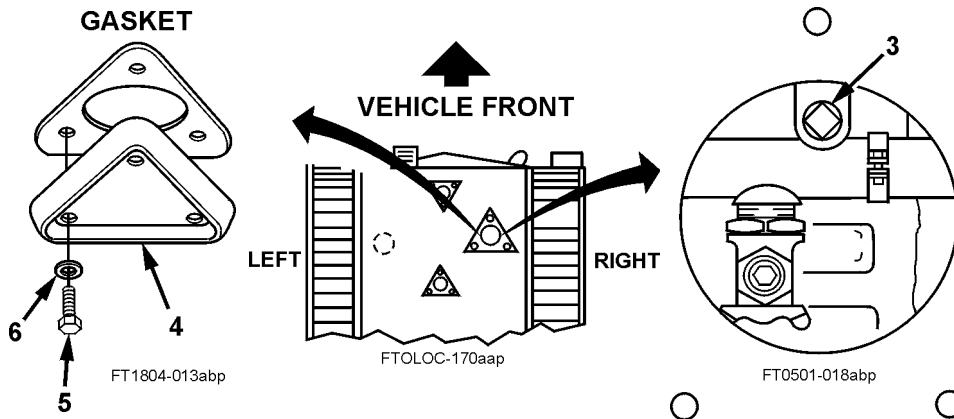


FT0309-009aap

SERVICING OF FUEL SYSTEM (continued)

0053 00

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

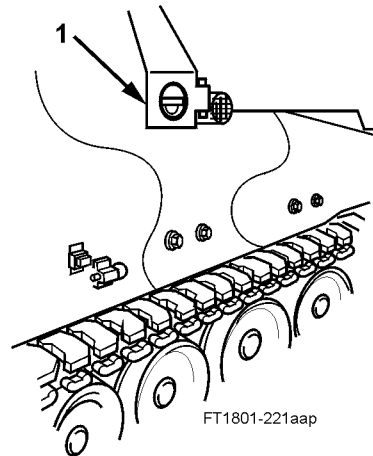
Diesel fuel is FLAMMABLE. DO NOT smoke within 50 feet of vehicle while refueling.

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

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OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

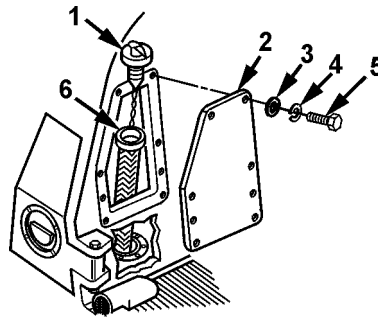
FUEL FILL STRAINER AND FILL CAP MAINTENANCE

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.



FT1801-222aap

WARNING

Diesel fuel is flammable. Do not perform this procedure near fire, flame, or sparks. Injury or death to personnel could result.

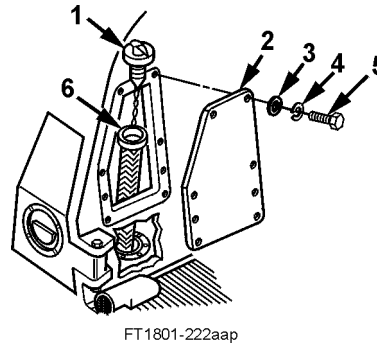
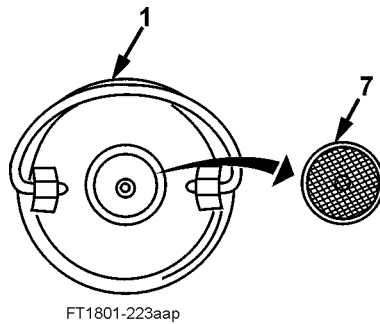
4. Pull strainer (6) from access opening.
5. Check strainer (6) for rips, excessive clogging, or other unserviceable conditions. If strainer (6) is unserviceable, notify Unit maintenance.

FUEL FILL STRAINER AND FILL CAP MAINTENANCE (continued) 0055 00

WARNING

Drycleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat.

6. Remove breather cap (7) from fill cap (1). Clean breather cap (7) with drycleaning solvent (Item 17, p. 0077 00-3).
7. Apply thin coating of grease (Item 24, p. 0077 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

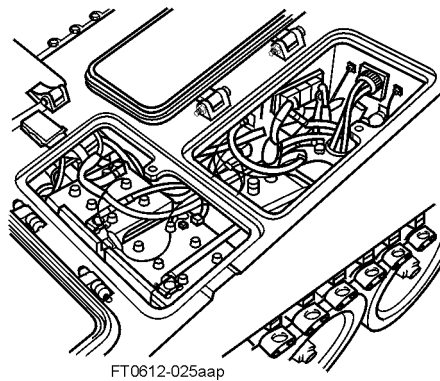
THIS WORK PACKAGE COVERS:

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

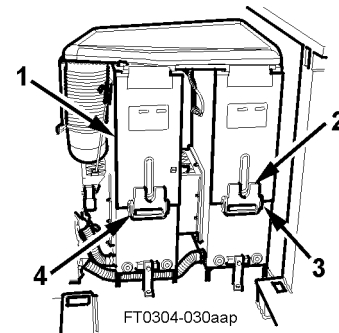
INITIAL SETUP:
Maintenance Level
Operator/Crew

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. 0018 00-1).
3. Remove all projectiles from right projectile rack assembly (p. 0032 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. 0032 00-5).
6. Remove right access door (3) by pulling down locking latch (2) and lifting door.



CAUTION

Do not pull up left door too far as this will cause binding and damage to door when removing.

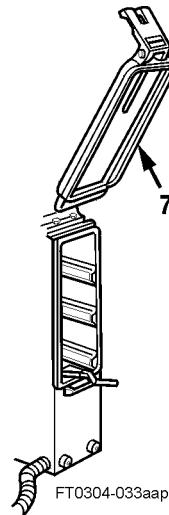
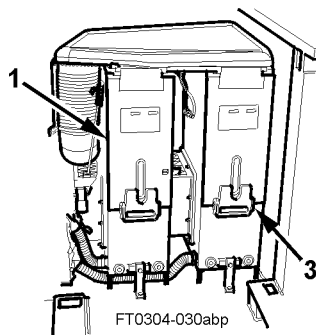
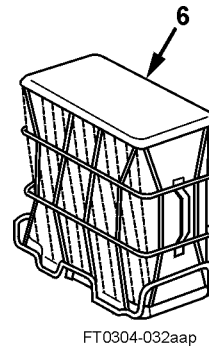
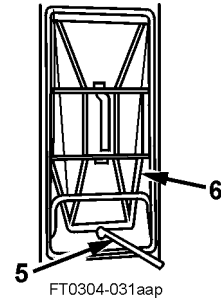
7. Remove left access door (1) by pulling down locking latch (4), pulling door up slightly, and sliding door to right.

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.

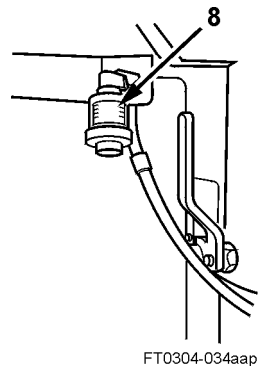
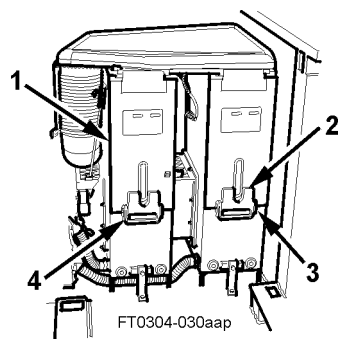
9. Clean air filters (6) with compressed air. (Emergency clean by rapping bottom or sides of air filter against flat surface. Do not strike open edge or sealing edge.)
10. Clean air filter compartments with damp rags (Item 43, p. 0077 00-6).
11. Clean air duct into air filter box with damp rags (Item 43, p. 0077 00-6) as far as possible.
12. Check seal (7) on right and left access doors (3 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)

0057 00

14. Slide right and left access doors (3 and 1) on air cleaner. Secure doors by pulling locking latches (4 and 2) 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. 0012 00-1). If yellow sleeve in indicator (8) climbs into red zone, notify Unit maintenance.
17. Install right projectile rack assembly (p. 0032 00-9).



END OF WORK PACKAGE

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OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

TRACK MAINTENANCE

THIS WORK PACK 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

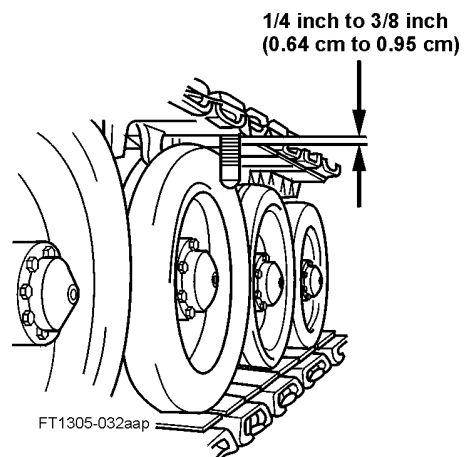
INITIAL SETUP:

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.

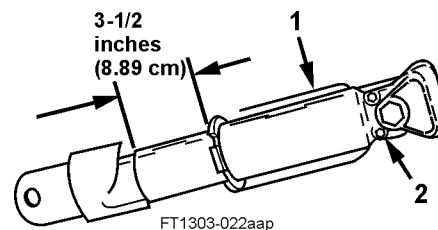


INCREASING TRACK TENSION

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.



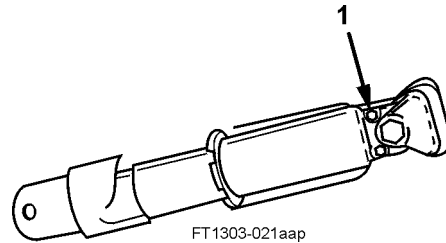
NOTE

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.**



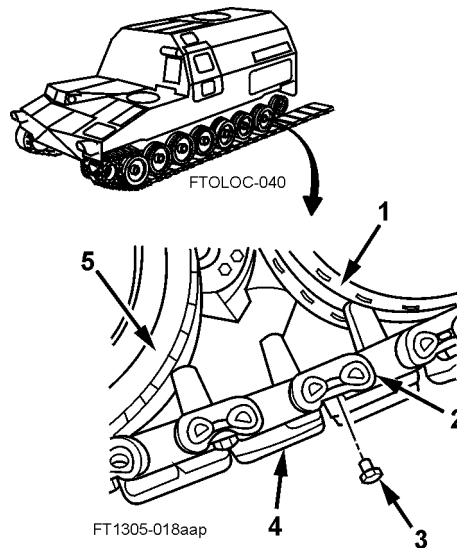
Open bleed plug (1) on track adjuster and reduce pressure until tension is adjusted. Tighten plug (1) and wipe away excess grease.

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. 0018 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).

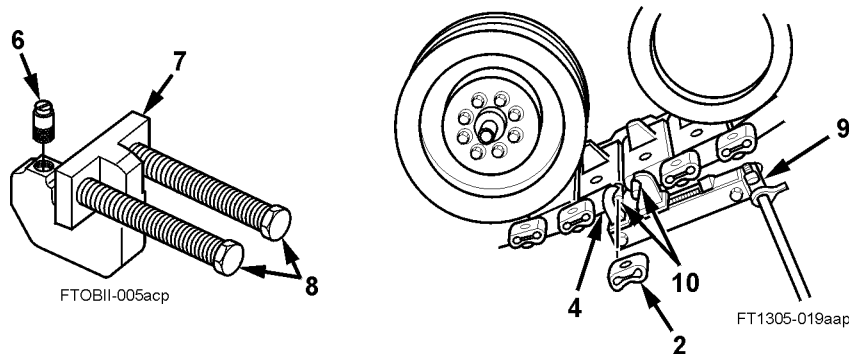


DISCONNECTING TRACK (continued)

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.**



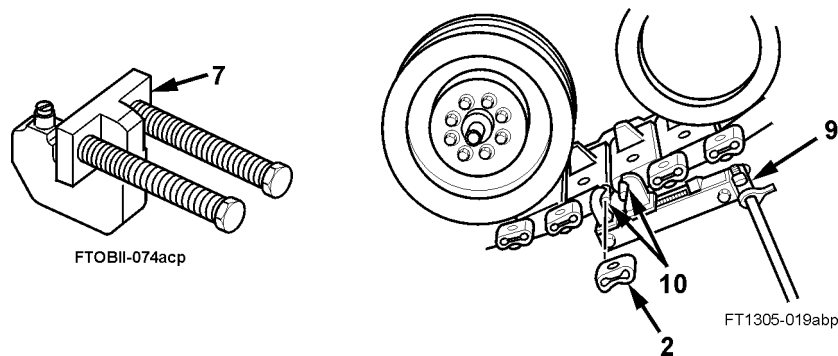
NOTE

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.



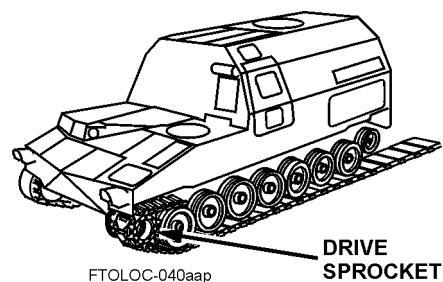
WARNING

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).

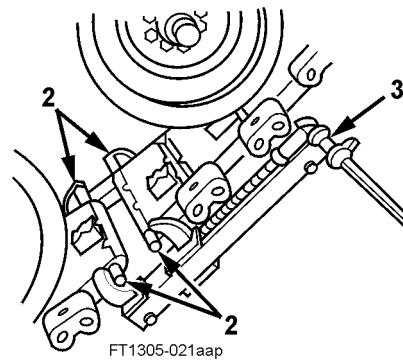
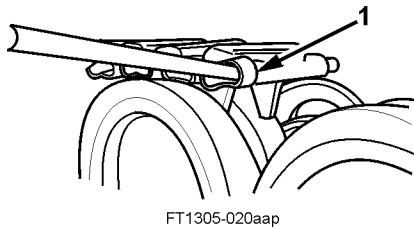
INSTALLING TRACK

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. 0012 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. 0018 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. 0012 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

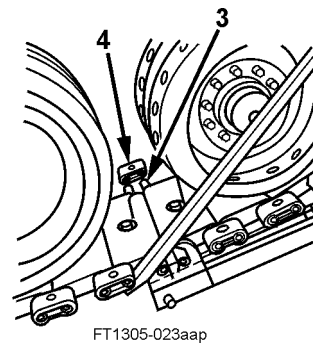
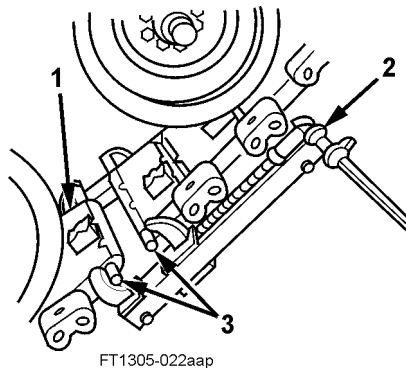
Track is very heavy. Keep hands and feet from beneath track while it is being lifted.

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.

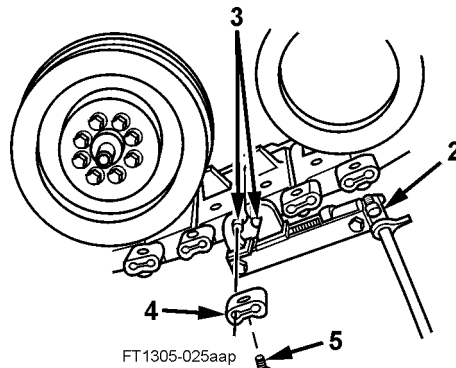
3. Maneuver track until end connector (4) can be installed over two track link pins (3) on inside of track. Tap end connector (4) with hammer to install over two track link pins (3).



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. 0058 00-1 and 0058 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

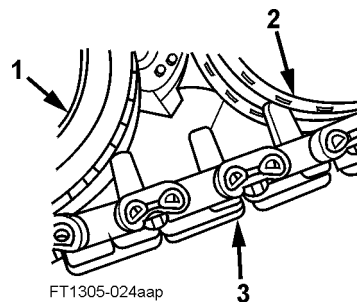
- Notify Unit maintenance to retorque end connector bolts after 50 miles.
- If track is new, remove one track shoe after 50 miles.

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. 0018 00-1), and block track with blocks. Do not set parking brake.

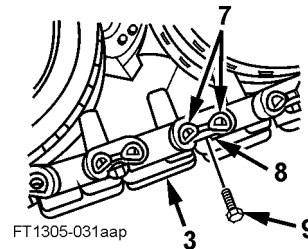
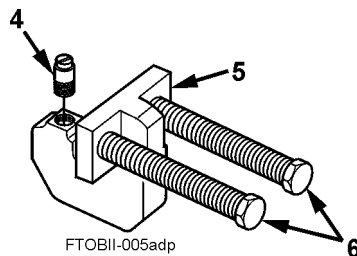


REMOVING TRACK SHOE (continued)

WARNING

Lubricant is under high pressure. Loosen bleed plug slowly to avoid injury to personnel.

3. Decrease track tension (p. 0058 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.**

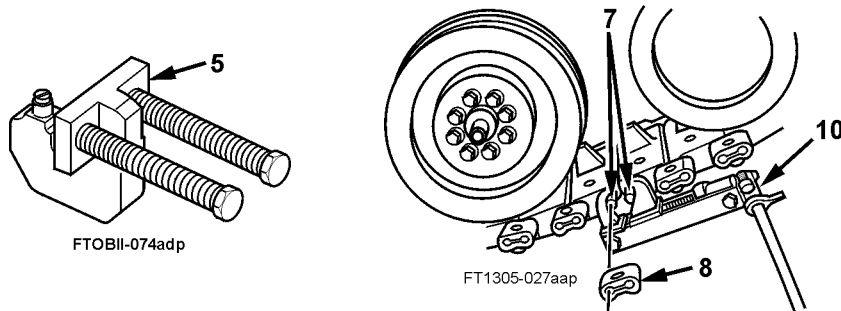
NOTE

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)

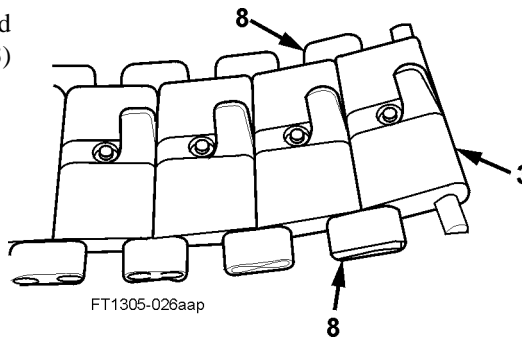
7. Install track connecting fixture (10) on two track link pins (7).
8. Using end connector puller (5), 3/4-inch socket wrench, and 1-1/2 inch socket, remove end connector (8) from two track link pins (7). If end connectors (8) become cocked during removal, remove end connector puller (5) and tap end 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

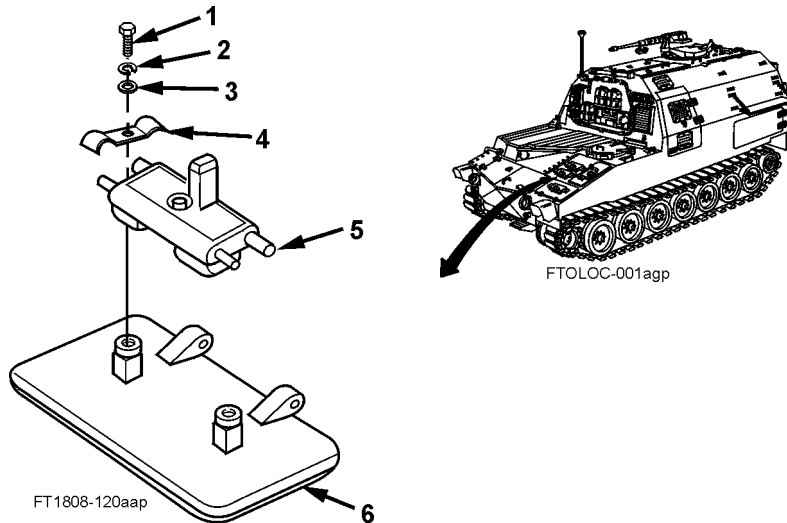
Release tension on track connecting fixtures evenly. Track is under tension and can move suddenly, causing severe injury to personnel.

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).

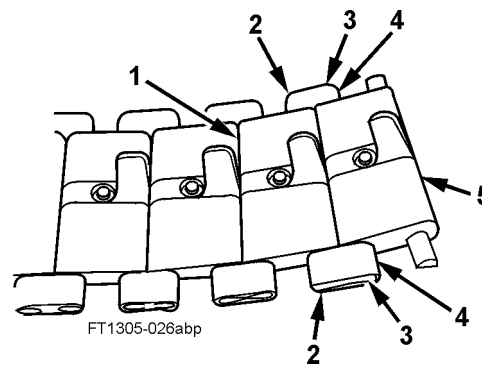


STOWING TRACK SHOE

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).



INSTALLING TRACK SHOE (continued)

WARNING

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

NOTE

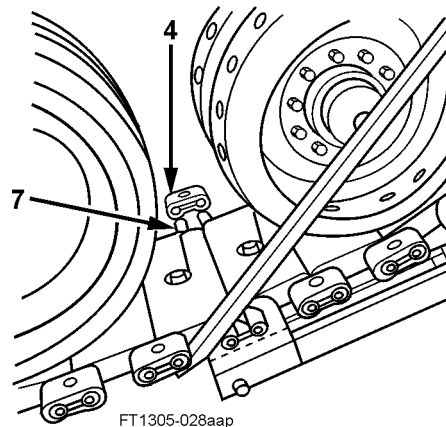
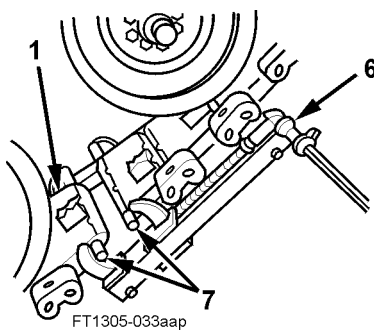
An assistant is needed to lift track end.

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.

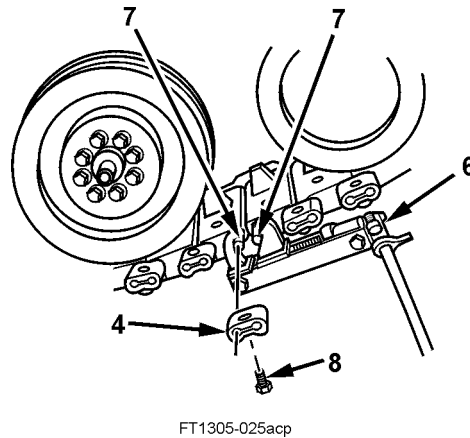
7. Maneuver track until end connector (4) can be installed over two track link pins (7) on inside of track. Tap end connector (4) with hammer to install over two track link pins (7).



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. 0058 00-1 and 0058 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.
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.



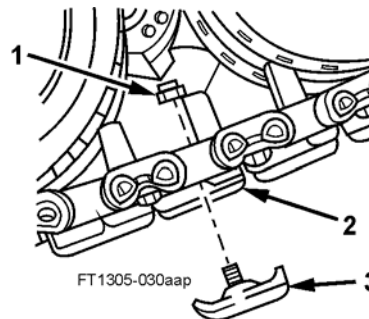
REMOVING TRACK SHOE PADS

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

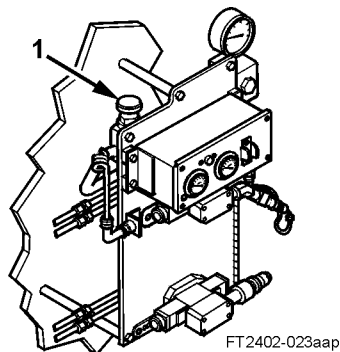
OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

CONVEYOR SPEED ADJUSTMENT

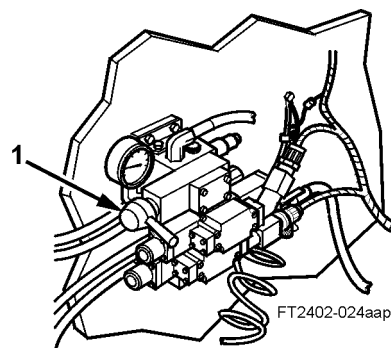
INITIAL SETUP:
Maintenance Level
Operator/Crew

NOTE

- Flow-control valve on hydraulic control panel regulates operating speed of the conveyor. Flow-control valve is manually adjustable.
 - Do not let pressure rise to above 800 psi, or APU generator will not operate.
1. To increase speed of conveyor, turn flow-control valve (1) counterclockwise.
 2. To decrease speed of conveyor, turn flow-control valve (1) clockwise.



VEHICLES S/N 1 THROUGH 820



VEHICLES S/N 821 AND ABOVE

END OF WORK PACKAGE

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OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

UPPER REAR DOOR FLOW-CONTROL VALVE ADJUSTMENT

INITIAL SETUP:
Maintenance Level
Operator/Crew

WARNING

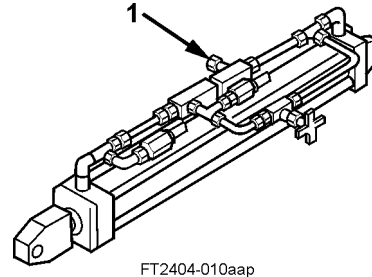
**Never operate upper rear door until door travel area is clear of personnel.
Door may strike personnel, causing severe injury.**

NOTE

The upper rear door is most prone to erratic operation during the first three seconds of closing. The flow-control valve is designed to smooth door closing.

To adjust:

1. Activate hydraulic system (p. 0026 00-1).
2. Open upper rear door (p. 0027 00-9).
3. Turn flow-control valve (1) counterclockwise until fully open.
4. While closing door (p. 0027 00-11), slowly turn flow-control valve (1) clockwise until door closes smoothly.
5. Open door (p. 0027 00-9) and repeat step 4. Continue to operate and adjust flow-control valve (1) until door operates smoothly for entire closing cycle.



END OF WORK PACKAGE

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OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

CONVEYOR CHAIN MAINTENANCE

THIS WORK PACKAGE COVERS:

Conveyor Chain Pad Replacement, Chain Repair, and Chain Tension Adjustment

INITIAL SETUP:

Maintenance Level

Operator/Crew

WARNING

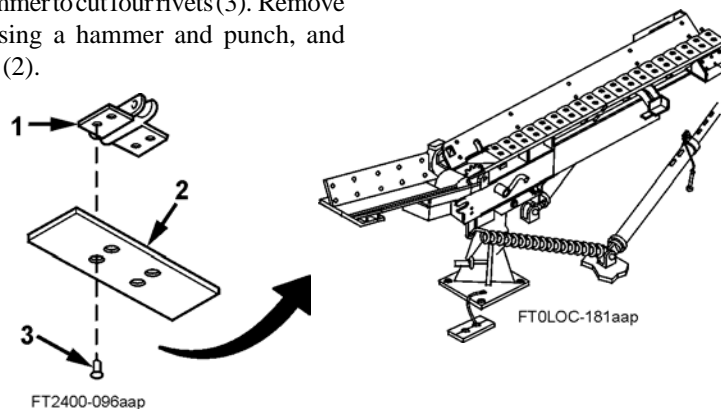
Keep hands clear of conveyor hinges during maintenance procedures.

CONVEYOR CHAIN PAD REPLACEMENT

NOTE

- Replace chain pad(s) when pad is bent or when metal that could damage projectile bands is exposed.
- It is not necessary to remove chain link(s) to replace damaged conveyor pad(s).

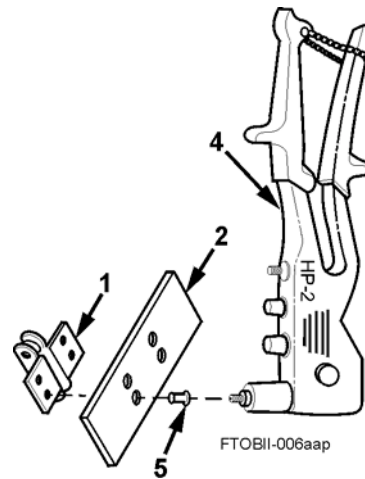
1. Turn off hydraulic system.
2. Use conveyor manual crank to move damaged pad (2) to bottom side of conveyor.
3. Insert chisel between pad (2) and plate (1). Tap with hammer to cut four rivets (3). Remove rivets (3) using a hammer and punch, and remove pad (2).



CONVEYOR CHAIN PAD REPLACEMENT (continued)

4. Using four new rivet and nail assemblies (5) and rivet gun (4), install new pad(s) (2) as follows:

- a. Spread rivet gun (4) handles.
- b. Insert rivet and nail assemblies (5) into rivet gun (4) as shown, pointed end first.
- c. Place rivet end of nail through hole of pad (2) and plate (1).
- d. While holding pad (2) against plate (1) with rivet and nail assembly (5) and rivet gun (4), repeatedly squeeze rivet gun handles together until rivet pops from nail.
- e. Spread rivet gun (4) handles and remove nail.
- f. Repeat steps a through e for each pad hole until all replacement pads are installed.



CHAIN REPAIR

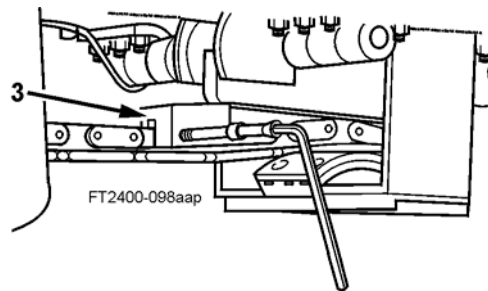
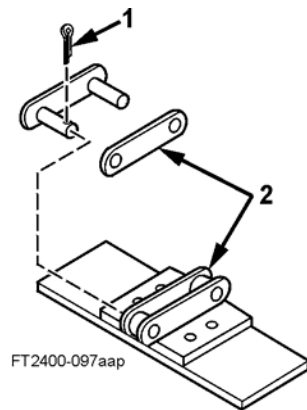
NOTE

It is not necessary to break conveyor chain to replace damaged conveyor pad.

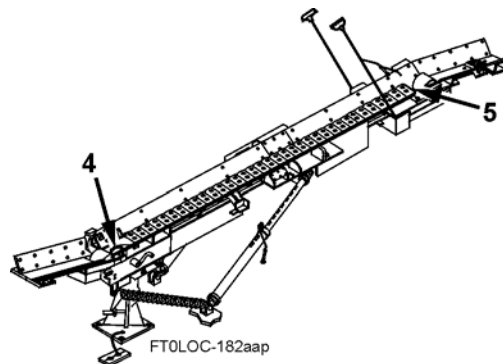
1. Turn off hydraulic system.
2. Use conveyor manual crank to move damaged portion of chain to bottom side of conveyor.

CHAIN REPAIR (continued)

3. Relieve chain tension.
4. Remove any damaged link (2) by removing two cotter pins (1) or by using chain breaker (3).



5. Make sure chain is properly meshed with drive sprocket (4) and idler sprocket (5).
6. Reconnect chain using chain link provided in chain repair kit. Secure link with two cotter pins provided.
7. Adjust chain tension.

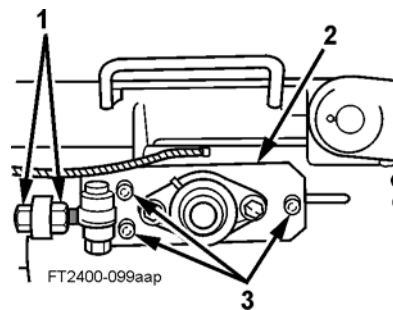


CHAIN TENSION ADJUSTMENT

CAUTION

Screws are secured by nuts located internally. Nuts must be held in position while screws are loosened. If this precaution is not taken, damage to equipment may result.

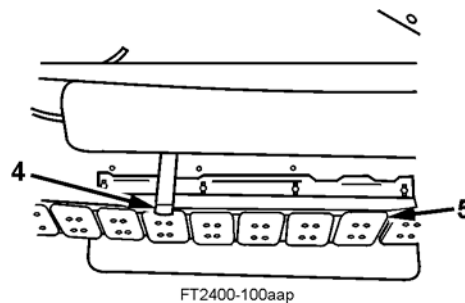
1. Loosen each of two takeup plates (2) on both sides of conveyor by loosening three screws (3) on each plate.
2. Loosen or tighten rod-end adjusting nuts (1) on both sides to move takeup plates (2) forward or backward.



CAUTION

Adjust tension evenly on both sides of sprocket.

3. Adjust tension so that conveyor chain pads (5) hang evenly with bottom of chain-tension indicator (4). If conveyor chain pads (5) hang no lower than bottom of indicator (4) or no higher than scribed line on indicator (4), no adjustment is necessary.
4. Secure two takeup plates (2) by tightening three screws (3) on each takeup plate (2).



5. Activate hydraulic system and operate conveyor in both directions to check for proper operation.

END OF WORK PACKAGE

OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

AUXILIARY POWER UNIT (APU) MAINTENANCE

THIS WORK PACKAGE COVERS:

Draining Fuel Filters, Servicing APU Air Cleaner, and Servicing APU Air Filter

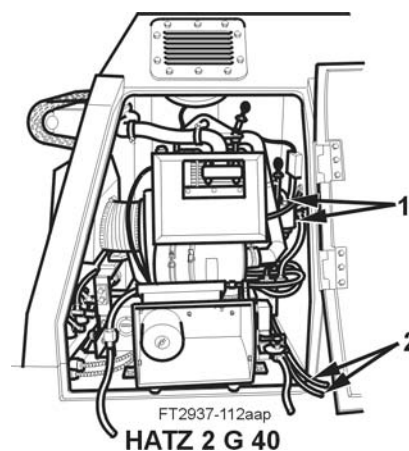
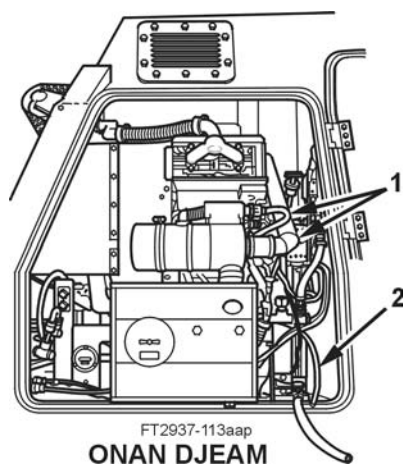
INITIAL SETUP:

Maintenance Level

Operator

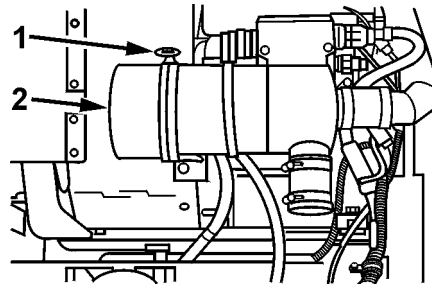
DRAINING FUEL FILTERS

1. Open APU side door. Locate two APU fuel filters (1) at inside rear wall of APU compartment.
2. Hold a glass or other small container beneath drain-hose end (2) of each filter (1).
3. Open each drain cock, starting with filter at rear, and allow contaminants to drain from filters.
4. Close drain cocks.
5. Inspect fuel from each filter (1) for signs of water or other contaminants. Report excessive amounts to Unit maintenance.
6. Close and secure APU side door.



SERVICING APU AIR CLEANER

1. Open APU compartment side door.
2. Loosen air filter housing clamp (1) to remove dust cap assembly (2).

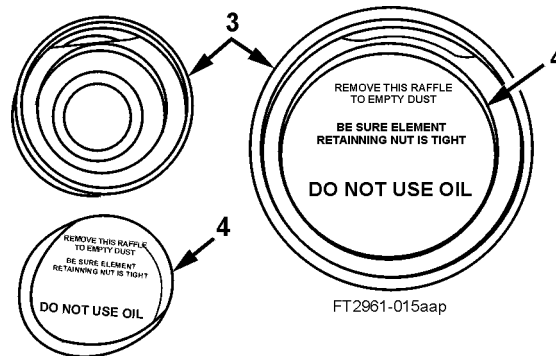


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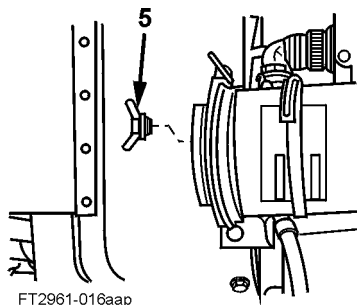
WARNING

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.

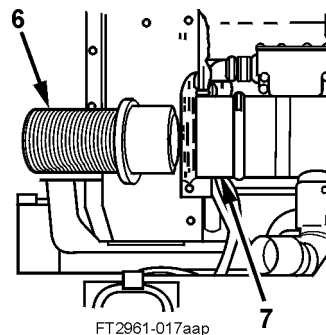
3. Remove baffle (4) from dust cap (3).
4. Empty dust cap (3).
5. Reinstall baffle (4).
6. Remove wingnut (5) from air filter housing (7).
7. Remove filter element (6) from air filter housing (7).
8. If filter element (6) is torn, notify Unit maintenance.



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FT2961-016aap



FT2961-017aap

SERVICING APU AIR CLEANER (continued)

WARNING

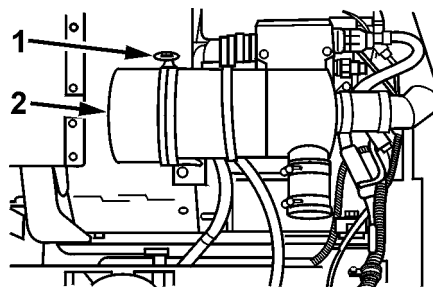
Compressed air used for cleaning purposes should not exceed 30 psi (206.8 kPa). Use only with effective chip-guarding and personal protective equipment (e.g., goggles/shield, gloves). Failure to do this can result in injury to personnel.

9. If dirty or clogged, clean filter element (6) with low-pressure compressed air directed to inside of filter element (6).
10. Wipe inside of air filter housing (7) with clean, damp rag (Item 43, p. 0077 00-6). Inspect outside of hoses for holes and tears.
11. Place filter element (6) in air filter housing (7).
12. Install wingnut (5) in air filter housing (7).

NOTE

When installing cap, make sure outer edge of cap marked TOP is located at top of air cleaner.

13. Install dust cap assembly (2) and secure air filter housing clamp (1).



FT2961-013aap

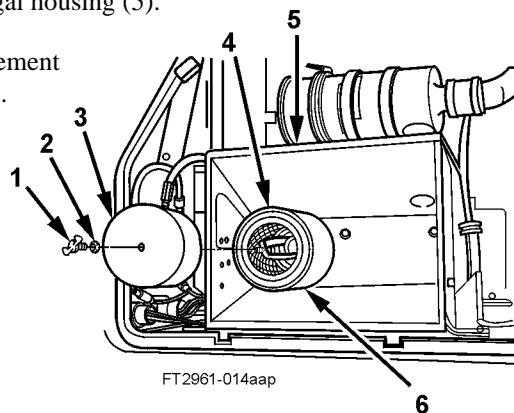
SERVICING APU AIR FILTER

1. Open APU compartment side door.
2. Remove wingnut (1) and washer (2) from weather hood (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 and disposal instructions.

3. Remove weather hood (3) from filter element (4) centrifugal housing (5).
4. Empty dirt and debris from weather hood (3).
5. Remove filter element (4) from centrifugal housing (5).
6. Remove precleaner (6) from filter element (4).
7. If dirty or clogged, clean precleaner (6) and filter element (4) with clean rag (Item 43, p. 0077 00-6) in solution of water and cleaning compound (Item 8, p. 0077 00-2).
8. Wipe inside of weather hood (3) with clean, damp rag (Item 43, p. 0077 00-6).
9. Install precleaner (6) on filter element (4).
10. Install filter element (4) in centrifugal housing (5).
11. Install weather hood (3) on filter element (4) with washer (2) and wingnut (1).



END OF WORK PACKAGE

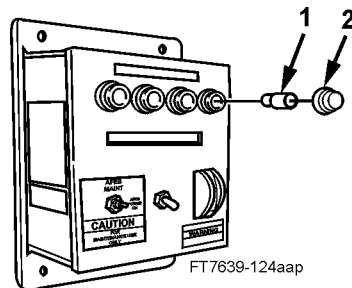
OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

AUTOMATIC FIRE EXTINGUISHER SYSTEM (AFES) MAINTENANCE

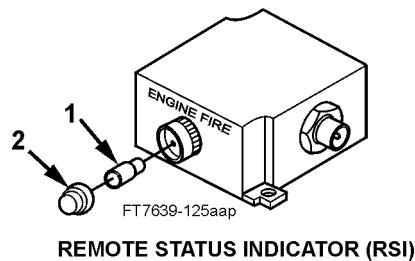
INITIAL SETUP:
Maintenance Level
 Operator

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 31, p. 0075 00-9).
4. Install lens cover (2).

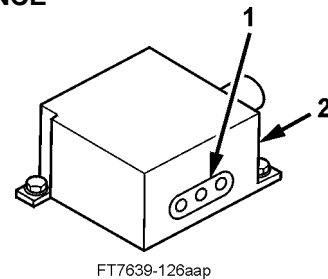


TEST AND ALARM (T/A) PANEL



OPTICAL FIRE SENSING ASSEMBLY MAINTENANCE

Use lens paper (Item 40, p. 0077 00-6) to gently clean lenses (1) on all Optical Fire Sensing Assemblies (OFSAs) (2).



END OF WORK PACKAGE

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

DECAL MAINTENANCE

INITIAL SETUP:
Maintenance Level
Operator

DECAL REPLACEMENT

WARNING

Drycleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat.

1. Lift up one corner of old decal. Slowly peel decal from surface. If decal rips or tears, use a rag and drycleaning solvent to help loosen sticky substance or adhesive backing. Scrub decal from surface. Dry surface using a rag (Item 43, p. 0077 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

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OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

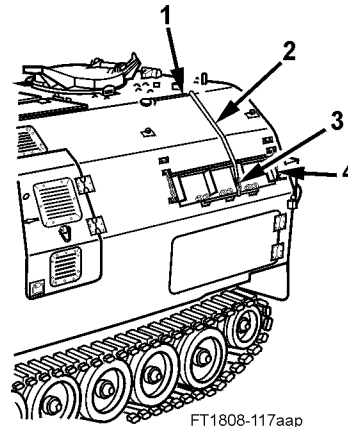
TIEDOWN WEBBING MAINTENANCE

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

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OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

RESTRAINING STRAP MAINTENANCE

INITIAL SETUP:
Maintenance Level
Operator

NOTE

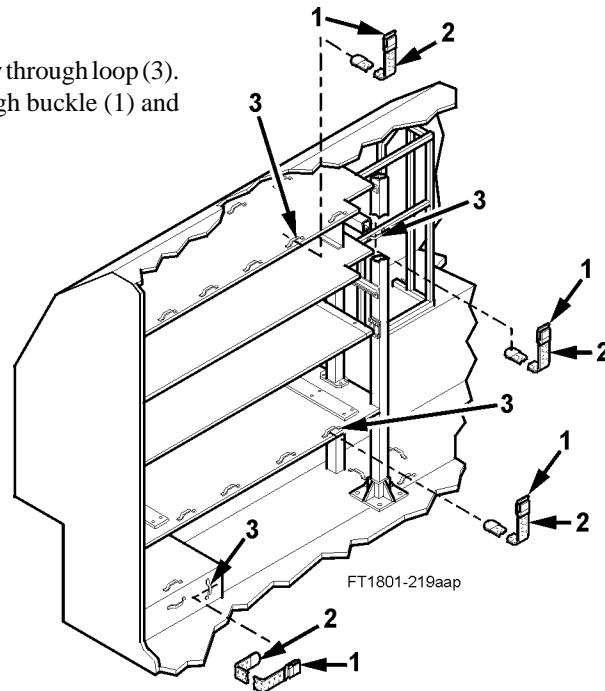
The following procedure refers to restraining straps for lower and top shelves, conveyor crank, and canister compartment.

1. Release buckle (1) and pull strap (2) out of welded loop (3).
2. Turn in strap (2) and any unserviceable hardware.

NOTE

Install replacement strap with running end on top.

3. Insert new strap (2) gradually through loop (3). Insert end of strap (2) through buckle (1) and pull until tight.



END OF WORK PACKAGE

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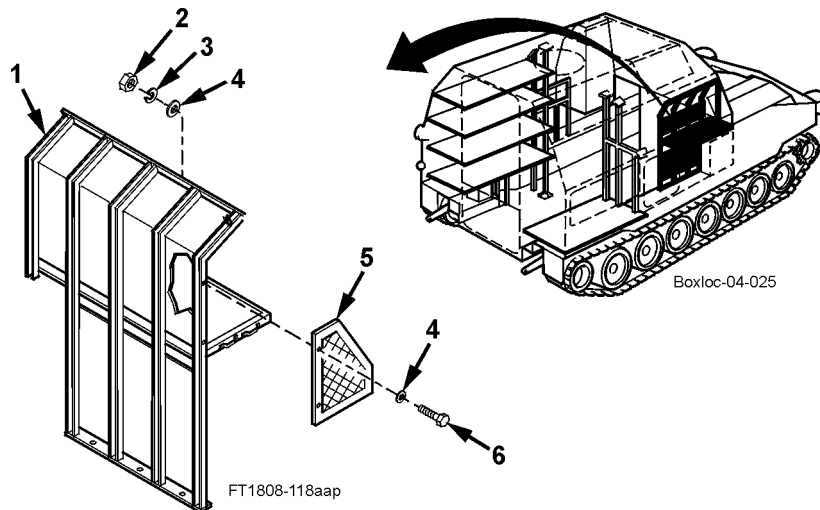
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OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

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

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OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

MOUNTED WATER RATION HEATER (MWRH) MAINTENANCE

THIS WORK PACKAGE COVERS:

Removing the MWRH and Installing the MWRH

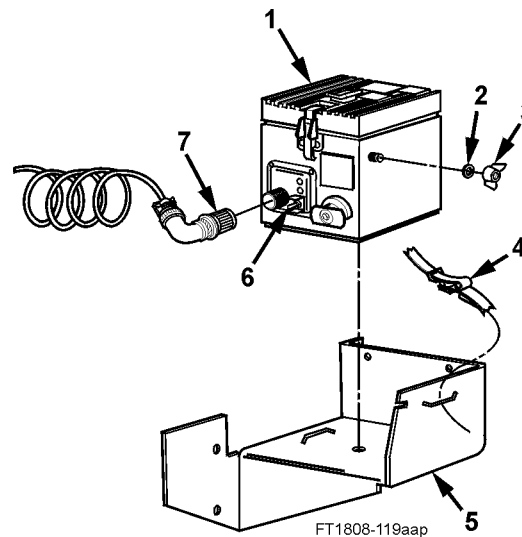
INITIAL SETUP:**Maintenance Level**

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).



INSTALLING THE MWRH

CAUTION

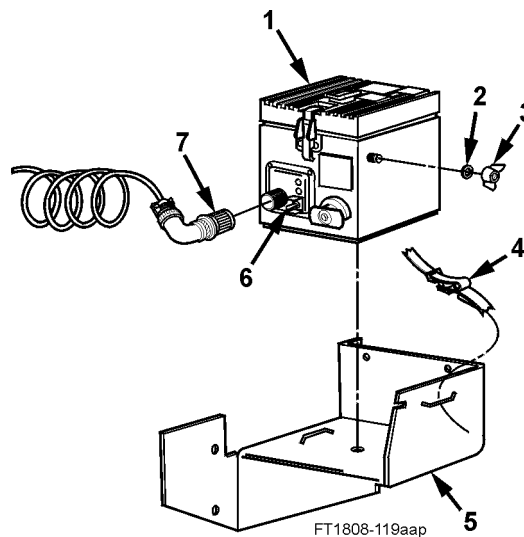
Before installing the MWRH, make sure vehicle MASTER switch is in OFF position.

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)

0069 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.

ENDCLEATS

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)

0069 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

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TM 9-2350-293-10

CHAPTER 5

AUTOMATIC FIRE EXTINGUISHING SYSTEM (AFES)



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**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.

AFES EQUIPMENT DESCRIPTION (continued)

0070 00

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 10 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 overhear or small fires; use portable fire extinguisher. Lamp lights steadily for large fires; AFES fire extinguisher discharges automatically or by manual discharge switch.

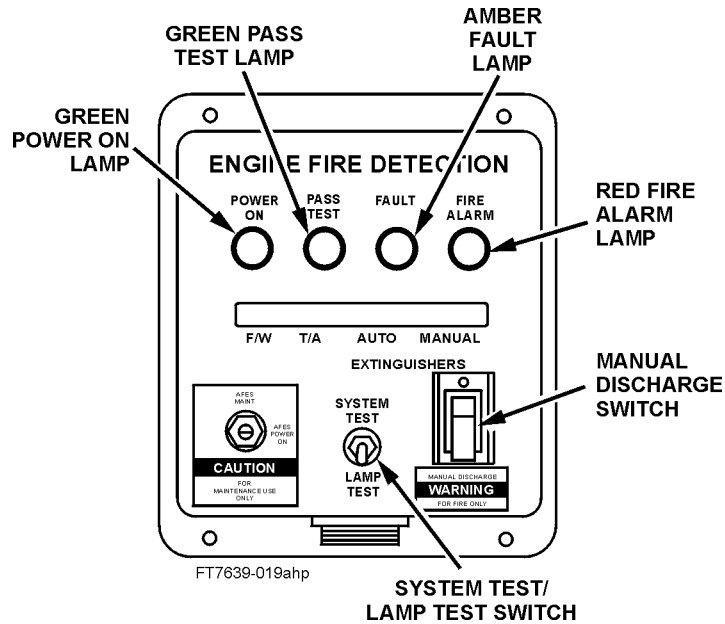
MANUAL DISCHARGE Switch

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.



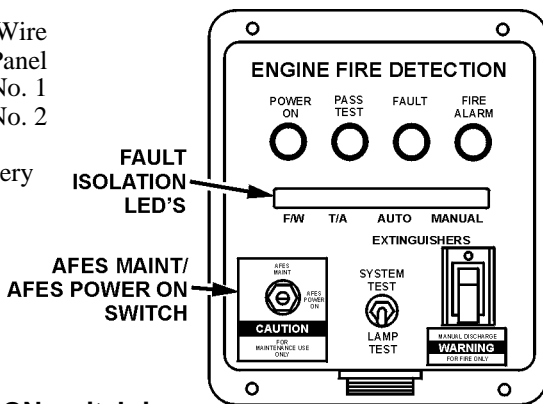
Controls and Indicators for Engine AFES (continued)

Fault Isolation LEDs

If FAULT lamp lights during BITE, fault isolating LEDs will also light to indicate which component(s) is nonoperational 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

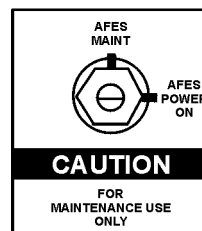
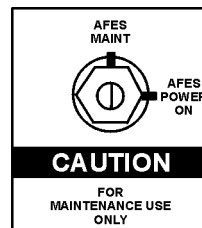
AFES MAINT/AFES POWER ON switch is to be used by authorized Unit and Direct Support maintenance personnel only.

AFES MAINT/AFES POWER ON Switch

Two-position, screwdriver-activated, rotary switch.

Vertical position (AFES MAINT): Power off, AFES deenergized. 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.

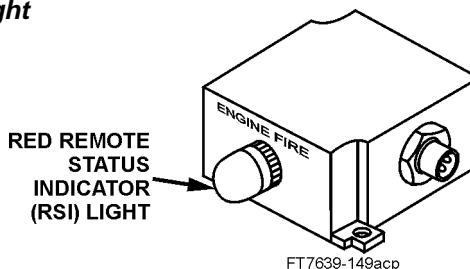
Horizontal position (AFES POWER ON): Power on. Normal operational position. AFES extinguishers capable of automatic discharge. Locking pins must be removed from engine fire extinguisher No. 2 valve actuator guard.



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 overhear or small fires; use portable fire extinguisher. Lamp lights steadily for large fires; AFES fire extinguisher discharges automatically or by manual discharge switch.

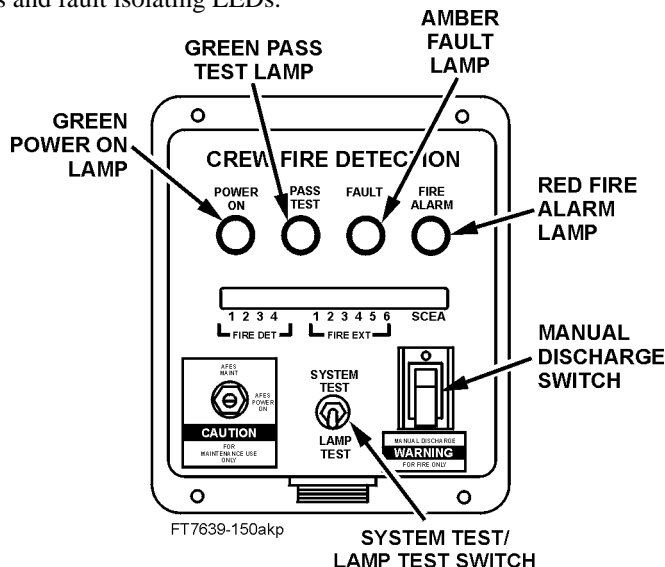
MANUAL DISCHARGE Switch

Guarded, two-position, momentary-on toggle switch manually and electrically discharges three extinguishers. After 5 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 and fault isolating LEDs.



Controls and Indicators for Crew AFES (continued)

Vehicles 1 Through 344

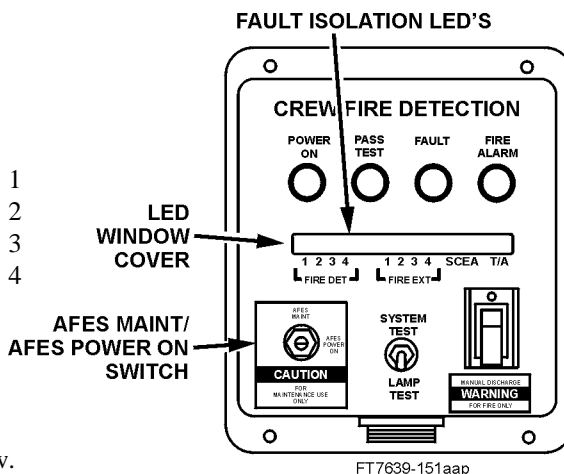
Fault Isolation LEDs:

If the FAULT lamp lights during BITE, fault isolating LEDs will also light to indicate which component(s) is nonoperational 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

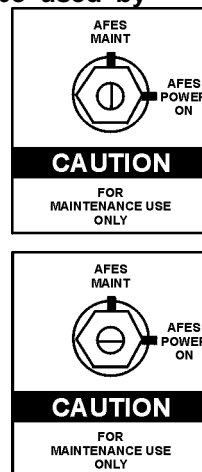
CAUTION

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 deenergized. 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)

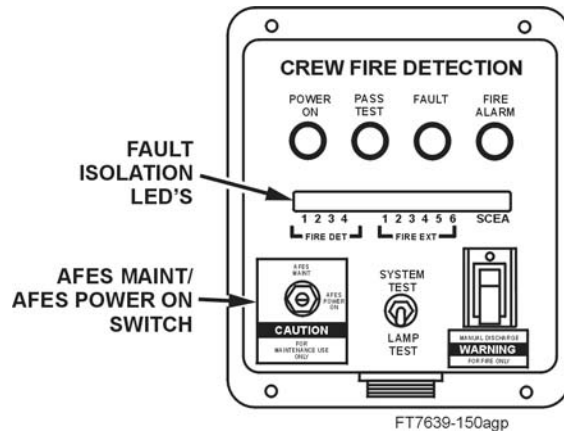
Vehicles 345 and Above

Fault Isolation LEDs:

If the FAULT lamp lights during BITE, fault isolating LEDs will also light to indicate which component (s) is nonoperational 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

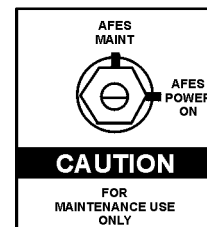
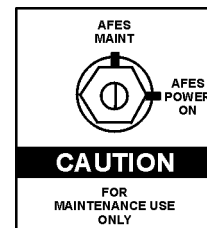
CAUTION

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

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OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

AFES COMPONENT LOCATION

THIS WORK PACKAGE COVERS:

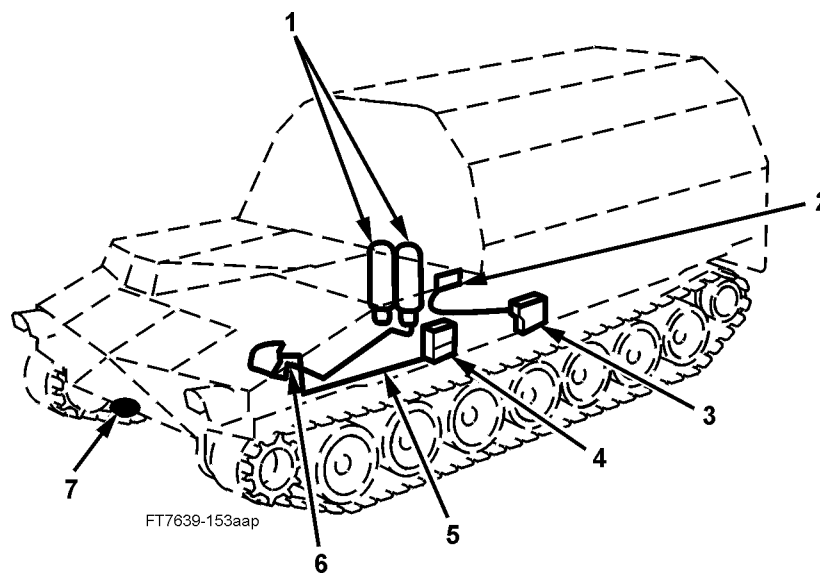
Engine AFES Components, Crew AFES Components, and Automatic Fire Extinguishing System Manual Discharge System (AFES/MDS) Components

INITIAL SETUP:

Maintenance Level

Operator

ENGINE AFES COMPONENTS



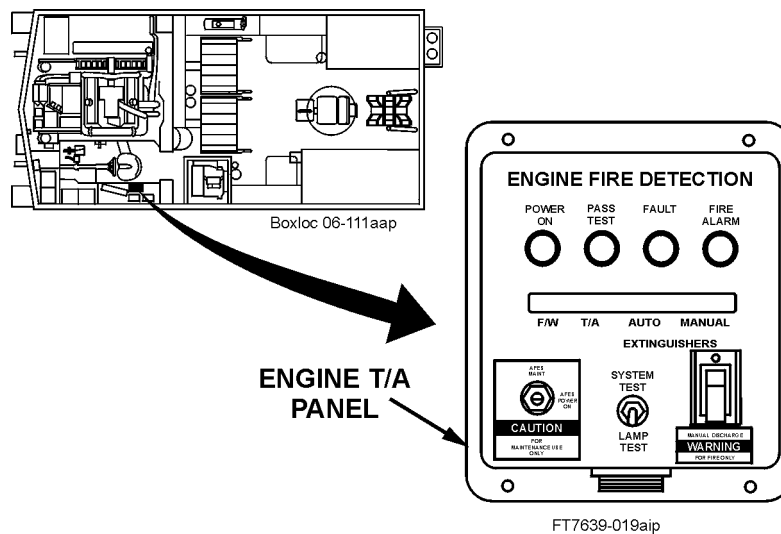
1. Engine Fire Extinguisher No. 1
2. Lanyard Cable Pull Handle (Exterior)
3. Actuator Assembly
4. Engine Test and Alarm (T/A) Panel
5. Fire Extinguisher Wiring Harness W4
6. Halon Distribution System
7. Thermal Detection System

ENGINE AFES COMPONENTS (continued)

The engine AFES activates automatically when the thermal detection system detects engine fires. Engine AFES components are described on pages 0071 00-2 through 0071 00-4.

Engine T/A Panel

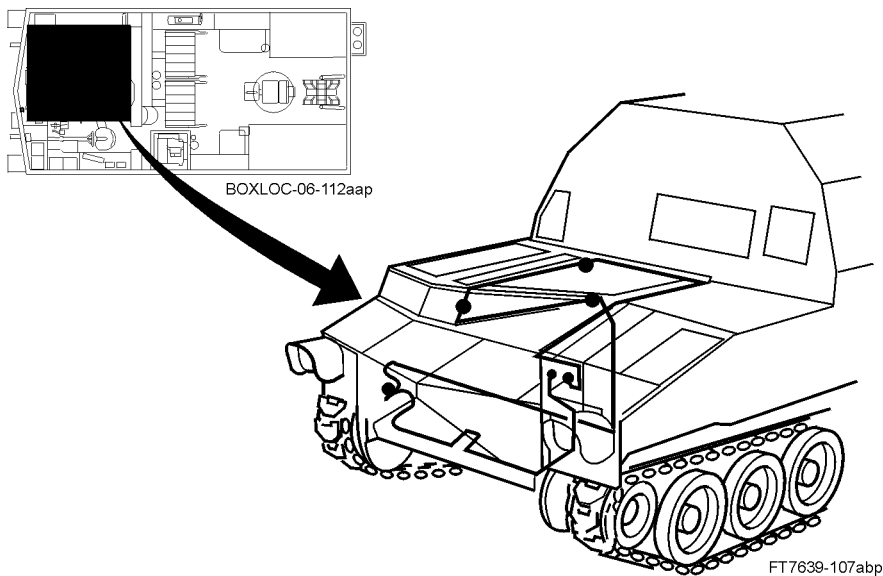
- The T/A panel provides status lights and switches and contains the electronic circuitry necessary to automatically monitor the engine AFES.
- The T/A panel monitors the thermal sensing element (fire wire) and activates one of the engine fire extinguishers when an engine fire is detected.
- When an 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 overheating conditions and fires.
- When the system detects an engine overheating 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.



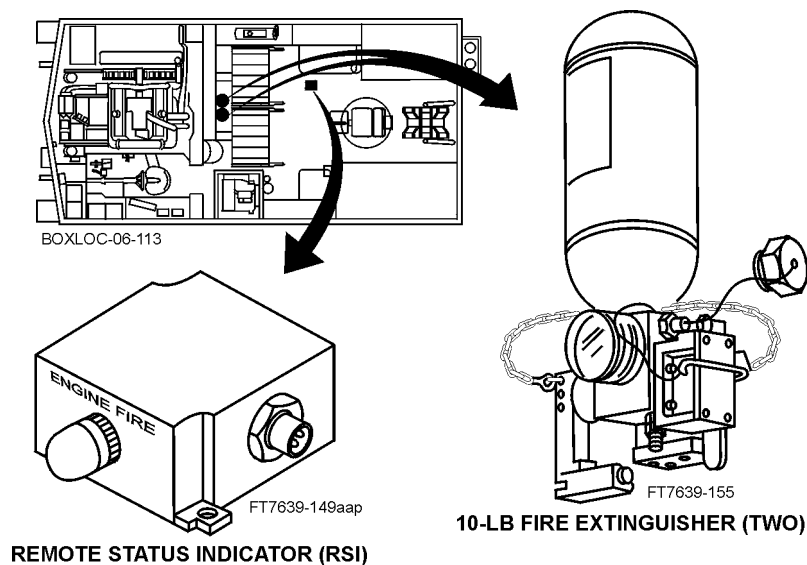
ENGINE AFES COMPONENTS (continued)

Remote Status Indicator (RSI)

- The RSI is a red light that warns personnel in the crew compartment of engine overheat 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

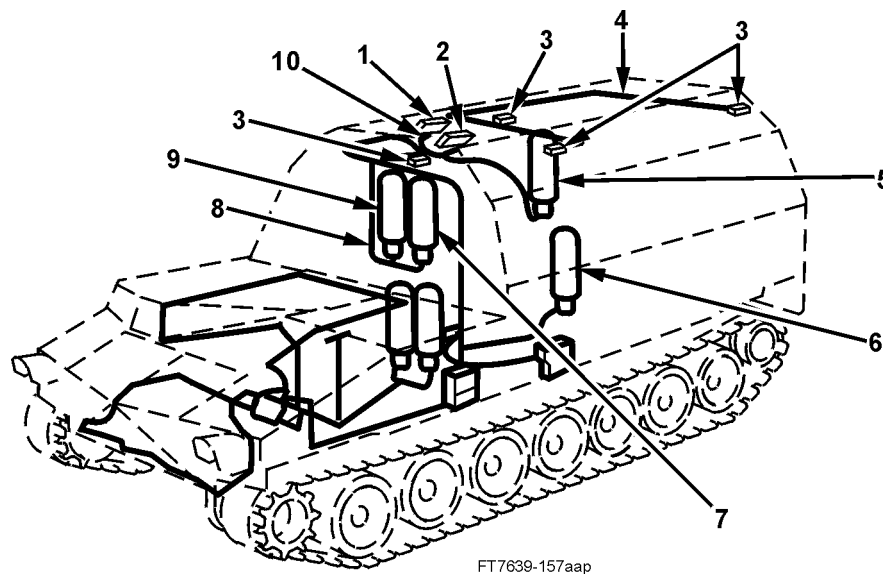
- The fire extinguishers consist of steel cylinders filled with Halon and equipped with a quick-release valve assembly.
- AFES cylinders contain Halon fire suppressant pressurized with dry nitrogen for use on hydrocarbon fuel fires only.
- The engine compartment has two fire extinguishers, each weighing 10 pounds. 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. One is located on the outside of the vehicle near the driver's hatch, and the other is located in the driver's compartment.



CREW AFES COMPONENTS

The crew AFES activates automatically when one of four OFSAs detects hydrocarbon fuel fires. Crew AFES components are described on pages 0071 00-7 through 0071 00-12.

Vehicles S/N 1 Through 344



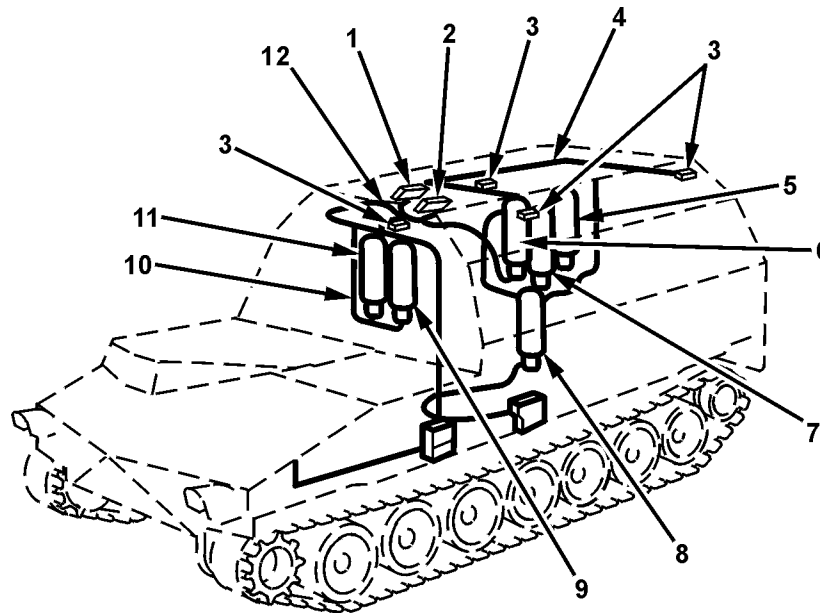
FT7639-157aap

1. Crew T/A Panel
2. Standard Control Electronic Amplifier (SCEA)
3. Optical Fire Sensing Assembly (OFSA)
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

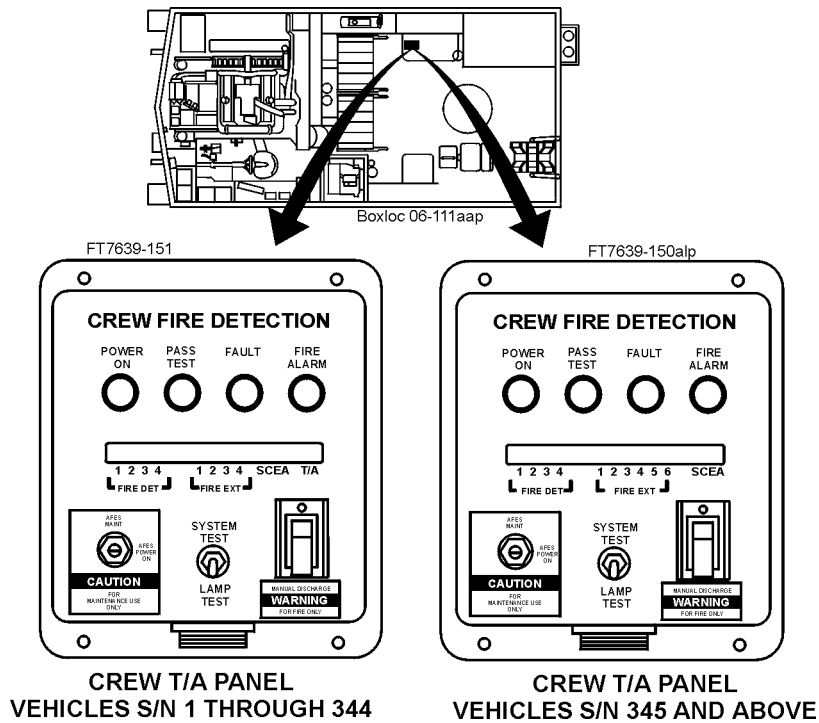
1. Crew T/A Panel
2. SCEA
3. OFSA
4. OFSA Cable Assembly W1
5. Crew Fire Extinguisher No. 6
6. Crew Fire Extinguisher No. 2
7. Crew Fire Extinguisher No. 5
8. Crew Fire Extinguisher No. 3*
9. Crew Fire Extinguisher 1
10. Crew Fire Extinguisher Cable Assembly W3
11. Crew Fire Extinguisher No. 4*
12. SCEA Cable Assembly W2

* Activated either by crew AFES or by AFES/MDS

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.



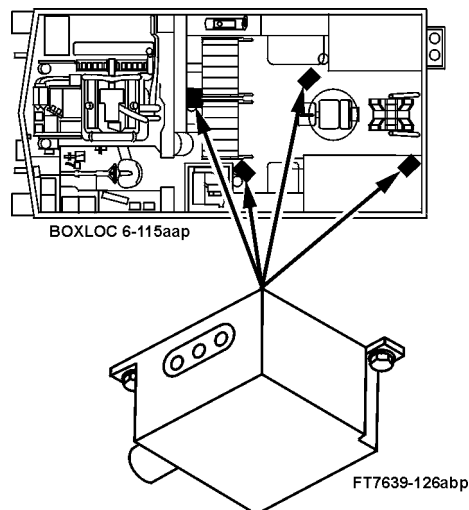
CREW AFES COMPONENTS (continued)

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.

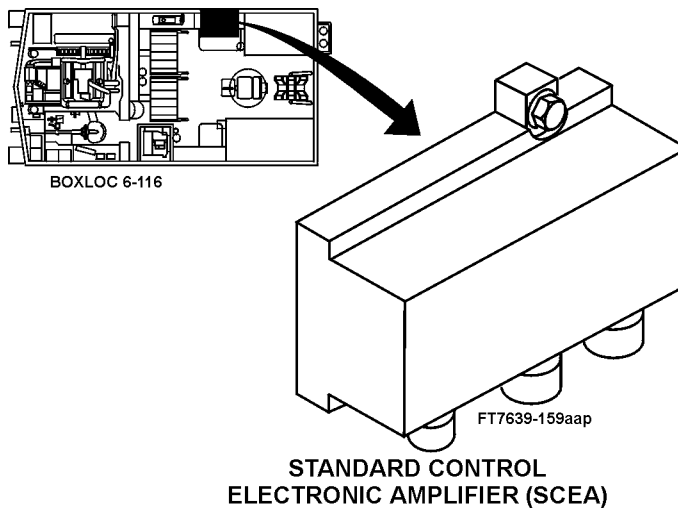


**OPTICAL FIRE SENSING
ASSEMBLY (OFSA)**

CREW AFES COMPONENTS (continued)

SCEA

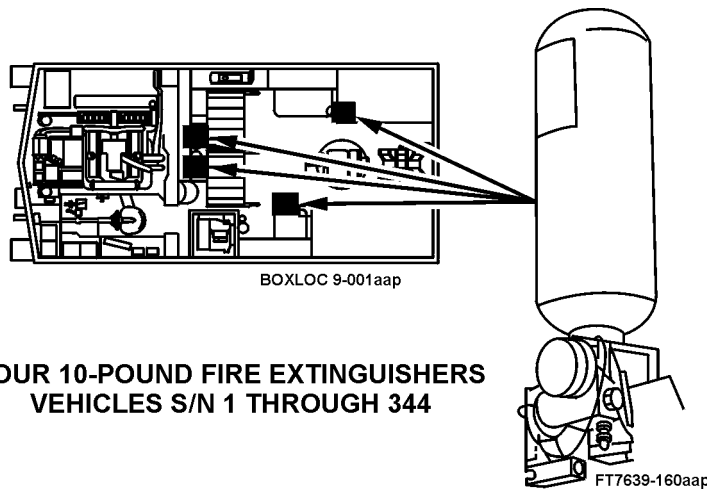
- Processes input signals from OFSA units when hydrocarbon fuel fire is detected.
- If the fire is large, the SCEA lights the FIRE ALARM lamp on the crew compartment T/A panel and activates the three fire extinguishers.
- If a large fire continues, or a second large fire occurs, the SCEA activates the 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 seconds after extinguisher discharge, and the ventilation door opens automatically.

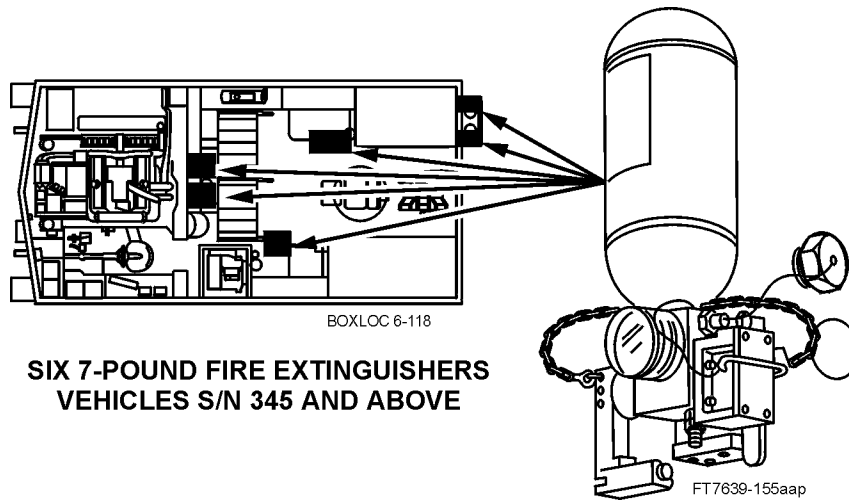


**FOUR 10-POUND FIRE EXTINGUISHERS
VEHICLES S/N 1 THROUGH 344**

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 seconds after extinguisher discharge, and the ventilation door opens automatically.



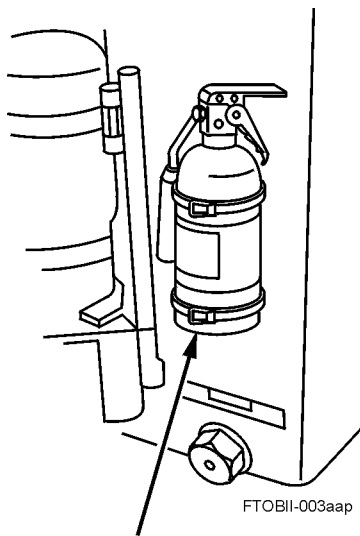
**SIX 7-POUND FIRE EXTINGUISHERS
VEHICLES S/N 345 AND ABOVE**

CREW AFES COMPONENTS (continued)

- 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.

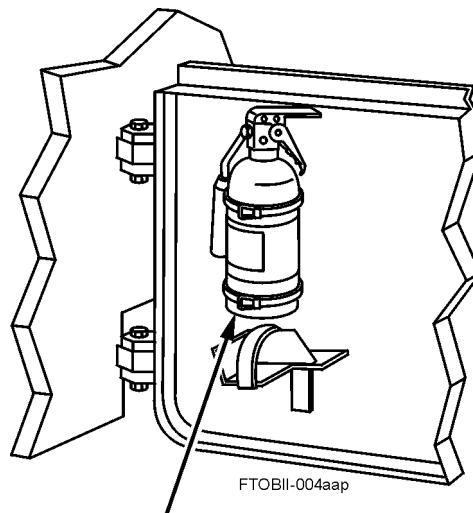
NOTE

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 lower 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.



FTOBII-003aap

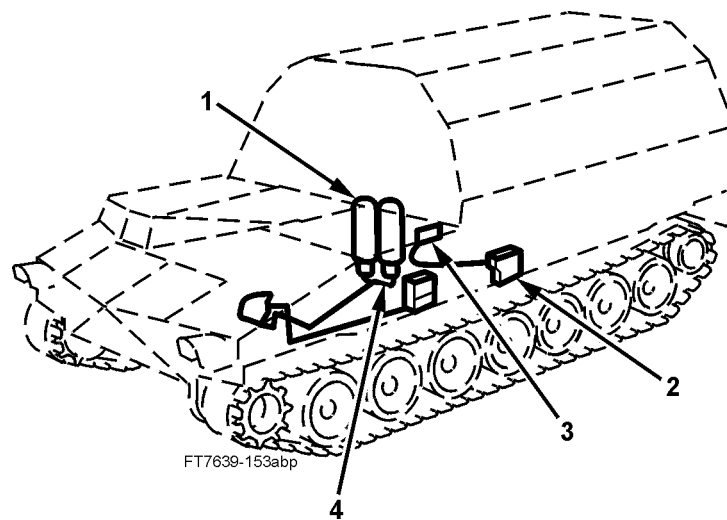
**PORTABLE FIRE EXTINGUISHER
ON APU WALL**



FTOBII-004aap

**PORTABLE FIRE EXTINGUISHER
ON LOWER REAR DOOR**

AFES/MDS COMPONENTS



1. Engine Fire Ext. No. 2
2. Actuator Assembly
3. Lanyard Cable Pull Handle (Exterior)
4. Lanyard Cable Pull Handle (Driver's Compartment)

AFES/MDS COMPONENTS (continued)

WARNING

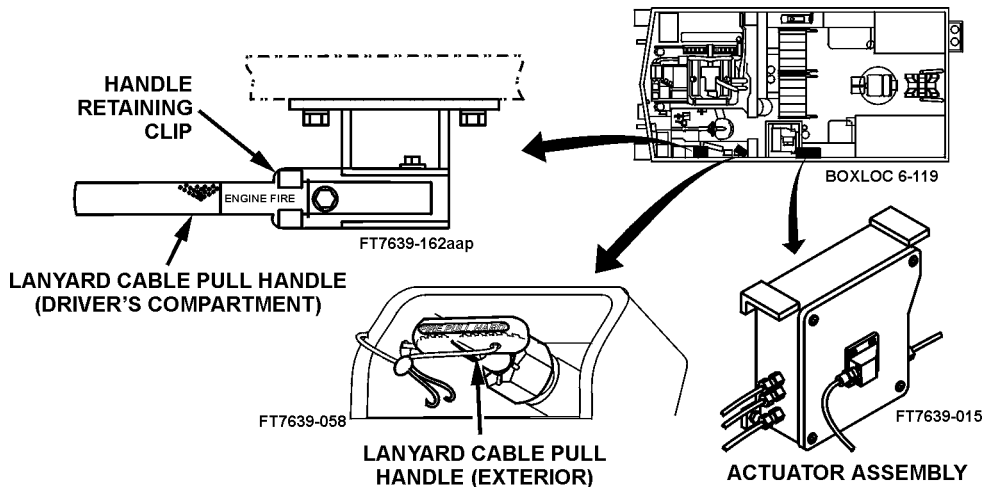
If handle retaining clip has velcro attached, remove velcro. Handle secured with velcro could hinder ability to quickly activate AFES/MDS. Failure to follow this warning may result in severe injury or death to personnel and destruction of equipment.

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.

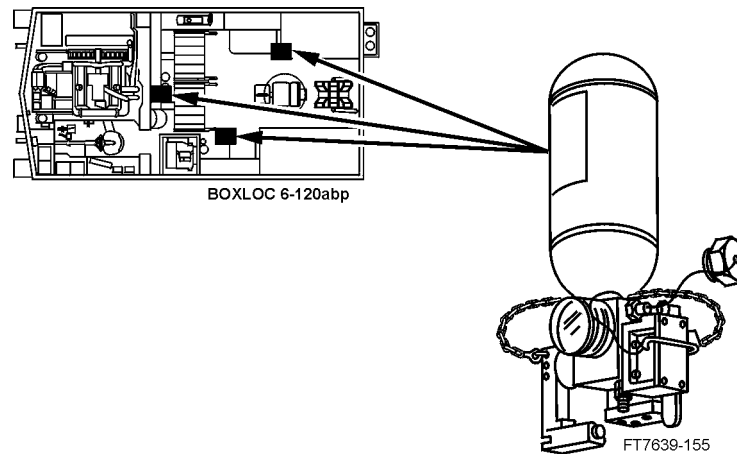
LANYARD CABLE PULL HANDLE (DRIVER'S COMPARTMENT): Located on the left wall in the driver's compartment, the handle mechanically activates one engine compartment fire extinguisher. A crew member must pull forward on the handle to break the sealed safety wire and discharge the extinguisher. This prevents 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 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.



END OF WORK PACKAGE

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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

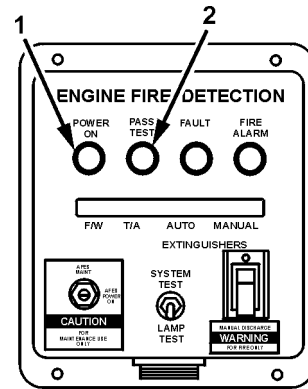
NOTE

Operational checkout is the same for engine and crew.

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.

AUTOMATIC BUILT-IN TEST EQUIPMENT (BITE) TEST CYCLE

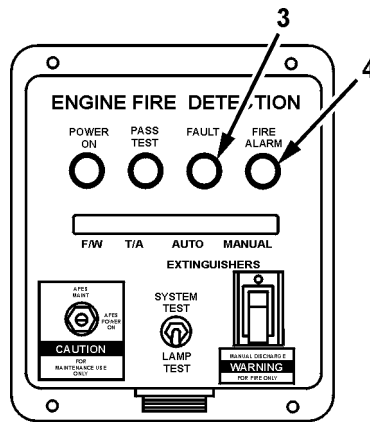
Key	Control or Indicator	Function
1	Turn MASTER switch to ON. POWER ON Lamp	Lamp is lit.
2	PASS TEST Lamp	Lights for 4-6 seconds after successful BITE test.



FT7639-019akp

AUTOMATIC BUILT-IN TEST EQUIPMENT (BITE) TEST CYCLE (continued)

Key	Control or Indicator	Function
3	FAULT Lamp	<p>Lamp is lit:</p> <ul style="list-style-type: none"> Perform Lamp/LED test. Replace Lamp/LED. Perform system test. <p>FAULT lamp or LED remains lit:</p> <ul style="list-style-type: none"> Notify Unit Maintenance.
4	FIRE ALARM Lamp	<p>Lamp flickers:</p> <ul style="list-style-type: none"> Small engine fire or engine overheat exists. Investigate and use portable fire extinguisher, if required. <p>Lamp is lit:</p> <ul style="list-style-type: none"> 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.



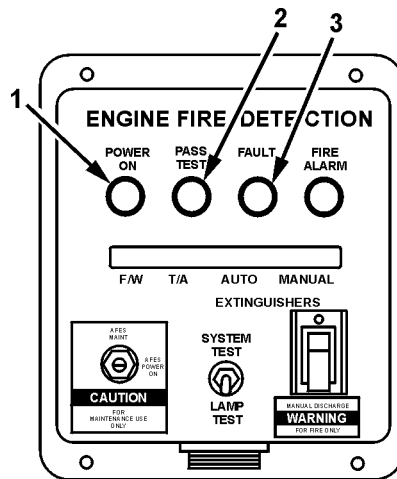
FT7639-019alp

ENGINE AFES INDICATORS POWER-ON OPERATION

NOTE

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.

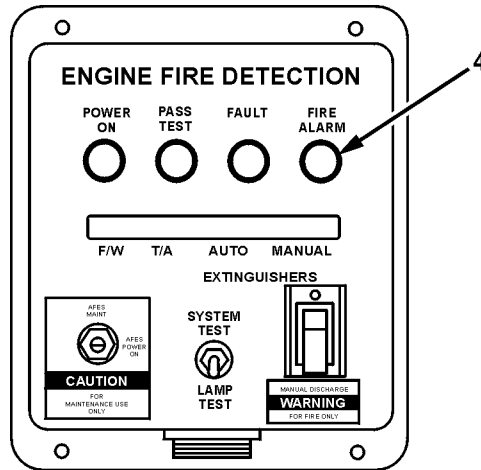
Key	Control or Indicator	Function
1	POWER ON Lamp	Lamp is lit: Lamp should remain lit throughout operation. If lamp goes out during operation, troubleshoot AFES (p. 0047 00-18).
2	PASS TEST Lamp	Lights 4-6 seconds after successful completion of BITE test.
3	FAULT Lamp	Lamp is not lit: No action is required. 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>

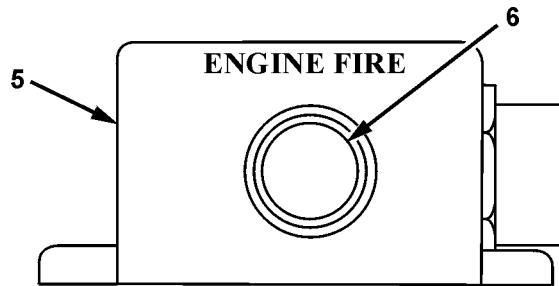


FT7639-019aep

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.



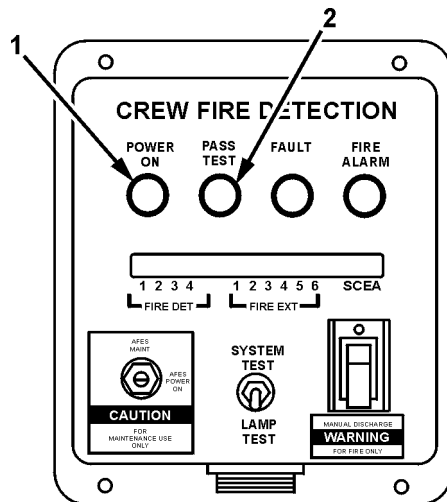
FT7639-163aap

CREW AFES INDICATORS POWER-ON OPERATION

NOTE

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.

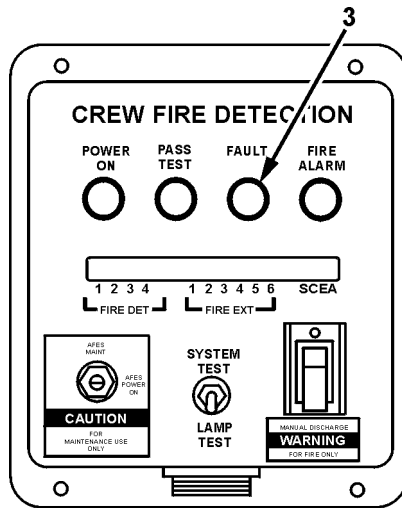
Key	Control or Indicator	Function
1	POWER ON Lamp	Lamp is lit: Lamp should remain lit throughout operation. If lamp goes out during operation, troubleshoot the AFES (p. 0047 00-18).
2	PASS TEST Lamp	Lights for 4-6 seconds after successful BITE test.



FT 7639-150aap

CREW AFES INDICATORS POWER-ON OPERATION (continued)

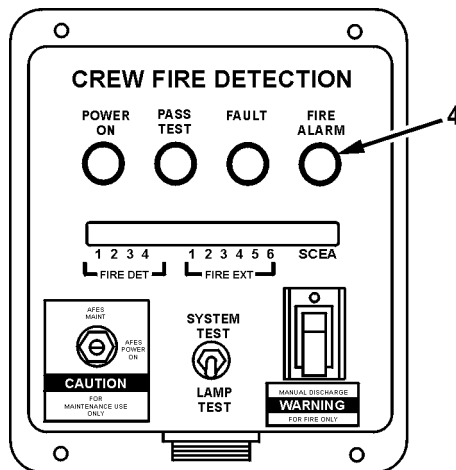
Key	Control or Indicator	Function
3	FAULT Lamp	Lamp is not lit: No action is required. Lamp is lit (amber): Notify Unit maintenance.



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 is 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</p>



FT7639-150acp

END OF WORK PACKAGE

007200-8

**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.

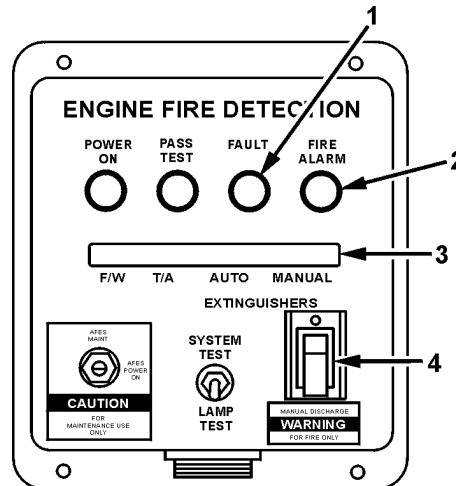
The driver must be alert to manually discharge extinguishers if the automatic system malfunctions.

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

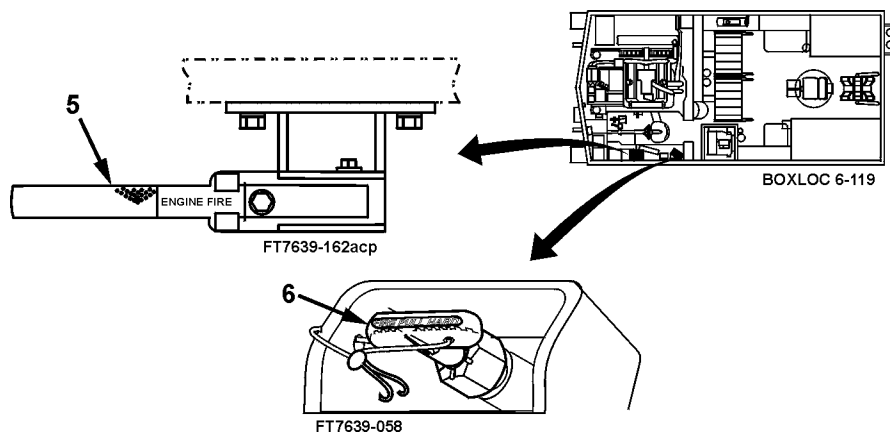
AFES MANUAL DISCHARGE—ENGINE COMPARTMENT FIRES (continued)

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.

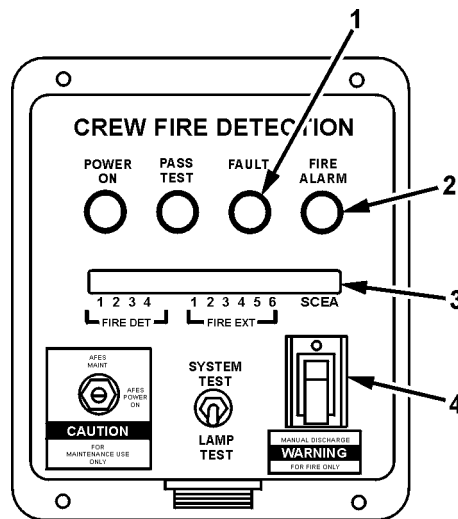
The crew must be alert to manually discharge extinguishers if the automatic system malfunctions.

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.



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AFES MANUAL DISCHARGE—CREW COMPARTMENT FIRES (continued)

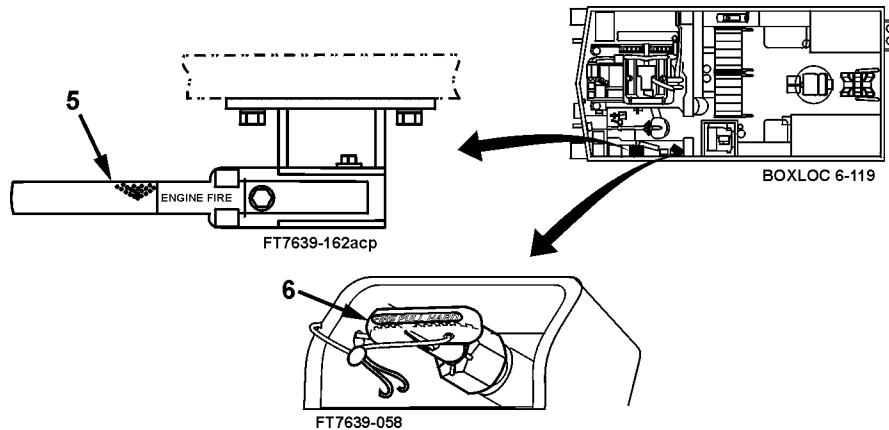
WARNING

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



TM 9-2350-293-10

CHAPTER 6
SUPPORTING INFORMATION



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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
 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
 Driver Selection, Training and Supervision, Track Combat Vehicles FM 21-17
 Manual for the Track Combat Vehicle Driver FM 21-306
 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)

0074 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 9-2350-293-10-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

Regulations, Pamphlets, Bulletins

- The Army 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
- Functional Users Manual for The Army Maintenance
Management System (TAMMS) DA Pam 738-750



REFERENCES (continued)

0074 00

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

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**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.

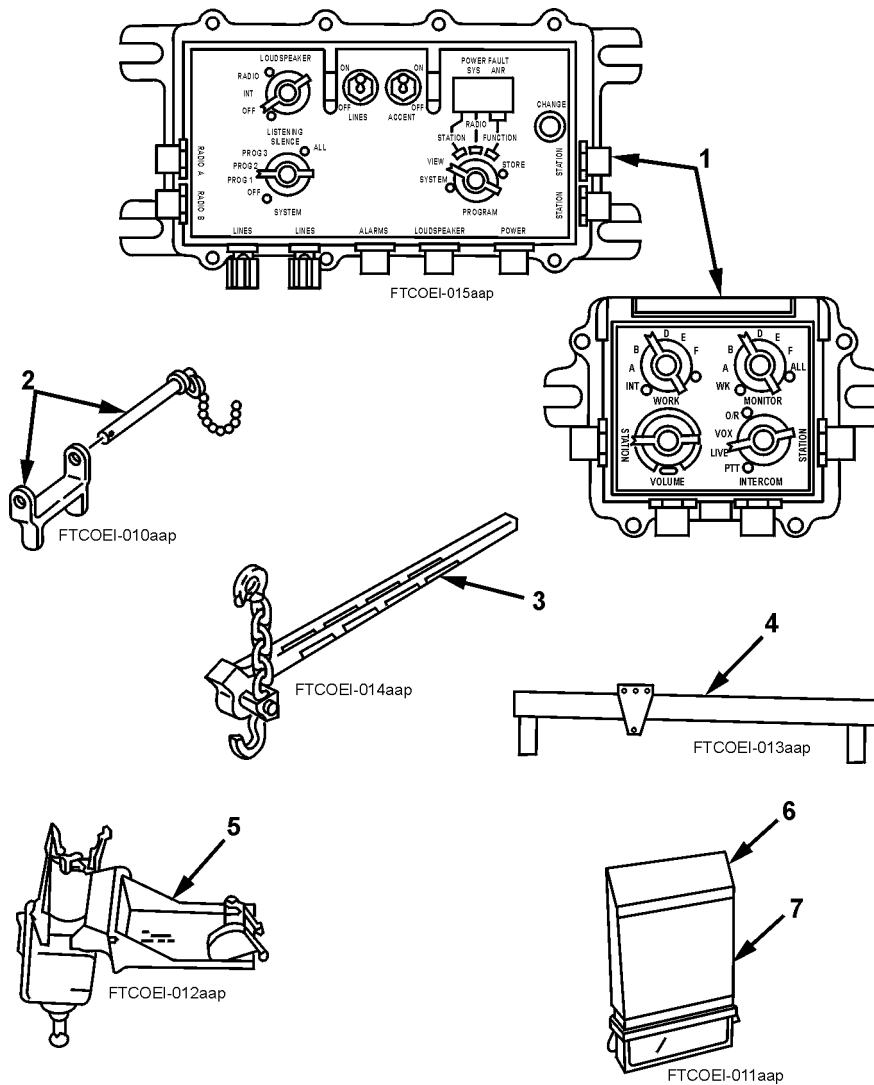
INTRODUCTION (continued)

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, LOAD HOIST (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

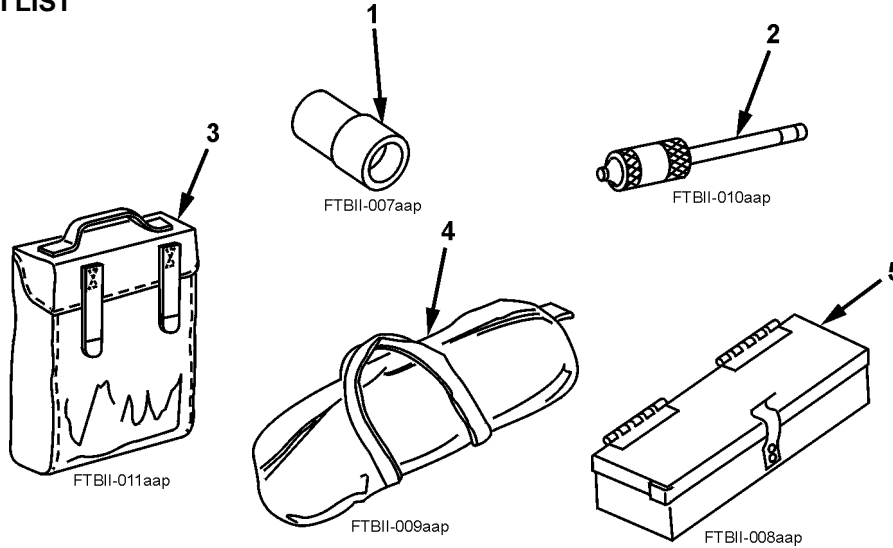


Table 2. Basic Issue Items List

(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)

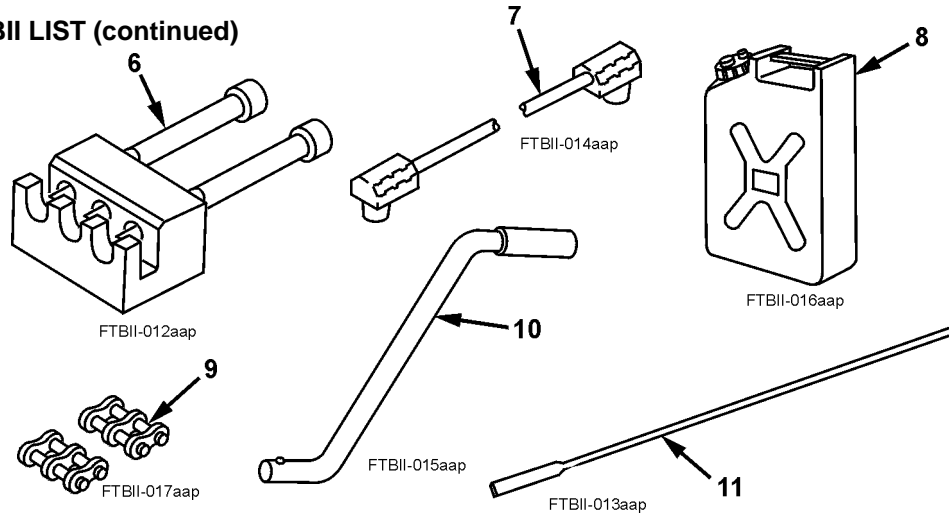


Table 2. Basic Issue Items List (continued)

(1) ILLUS. NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGEC, AND PART NUMBER	(4) U/M	(5) QTY. RQR.
6	5120-01-179-8995	BREAKER, CHAIN (in satchel tool bag) (19207) 12330762	EA	1
7	6150-01-248-9555	CABLE ASSEMBLY, POWER (under right-hand rear canister compartment) (19207) 11682336-6	EA	1
8	7240-00-089-3827 7240-01-365-5317	CAN, WATER, MILITARY, 5-GALLON (three on front exterior cargo compart- ment, one on lower rear door) (81349) MIL-C-43613 TYPE-1 (tan) TYPE-2 (green)	EA	4
9	3020-00-231-8732	CONNECTING LINK ASSEMBLY, COUPLING (in satchel tool bag) (73433) D40-2CL	EA	2
10	5340-01-179-8994	CRANK, HAND (in satchel tool bag) (19207) 12333374	EA	1
11	5120-00-224-1390	CROWBAR (on top plate of cargo compartment, exterior, left of comman- der's cupola) (80064) 1833244	EA	1

BII LIST (continued)

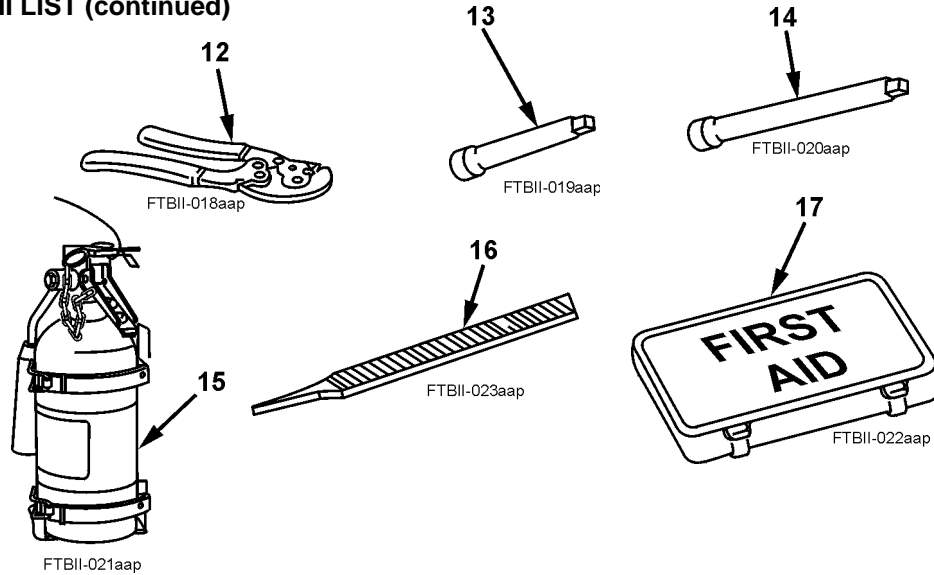


Table 2. Basic Issue Items List (continued)

(1) ILLUS. NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGEC, AND PART NUMBER	(4) U/M	(5) QTY. RQR.
12	5110-00-595-8229	CUTTER, WIRE ROPE (in satchel tool bag) (19207) 11655981	EA	1
13	5120-00-243-7326	EXTENSION, SOCKET WRENCH, 1/2-INCH DRIVE, 5 INCHES (in satchel tool bag) (95683) 41B306	EA	1
14	5120-00-227-8074	EXTENSION, SOCKET WRENCH, 1/2-INCH DRIVE, 10 INCHES (in satchel tool bag) (19207) 11655788-1	EA	1
15	4210-01-388-7854	EXTINGUISHER, FIRE (CO ₂) (one on interior of lower rear door, one on rear APU compartment bulkhead) (58536) A52471-1-S	EA	2
16	5110-00-156-0059	FILE, HAND (in satchel tool bag) (19204) 41F1030	EA	1
17	6545-00-922-1200	FIRST AID KIT (in stowage box) (64616) SC C-6545-IL VOL 2	EA	1

BII LIST (continued)

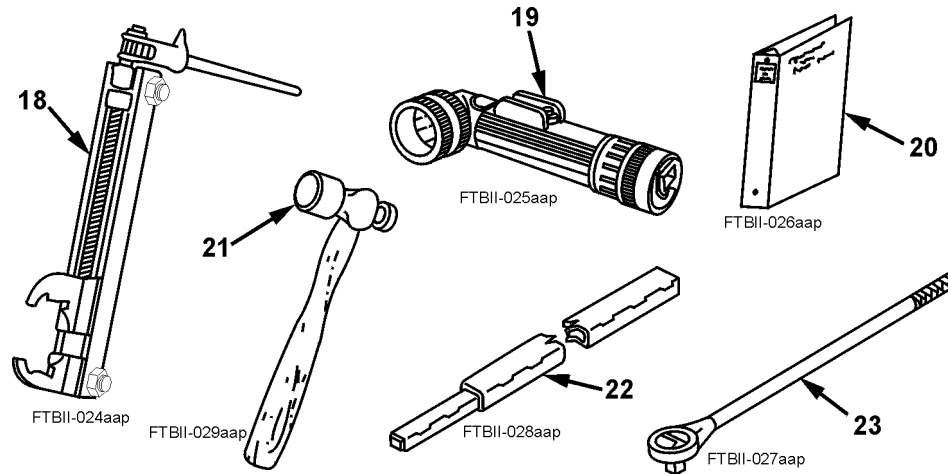


Table 2. Basic Issue Items List (continued)

(1) ILLUS. NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGEC, AND PART NUMBER	(4) U/M	(5) QTY. RQR.
18	5120-00-605-3926	FIXTURE, TRACK (on exterior of front cargo compartment, right of driver's hatch) (19207) 8741739	EA	2
19	6230-00-264-8261	FLASHLIGHT (one at driver's position, one at commander's position) (21108) MX-991/4	EA	2
20	7510-01-065-0166	FOLDER, EQUIPMENT RECORD (in pamphlet bag) (81349) MIL-F-43986	EA	1
21	5120-01-355-2052	HAMMER, HAND (in satchel tool bag) (55719) BPN32A	EA	1
22	5340-01-199-9941	HANDLE EXTENSION, PROJECTILE LOCK (under right-hand rear canister compartment) (19207) 12351610	EA	1
23	5120-00-249-1076	HANDLE, SOCKET WRENCH, 3/4-INCH DRIVE (in satchel tool bag) (80064) 1940708	EA	1

BII LIST (continued)

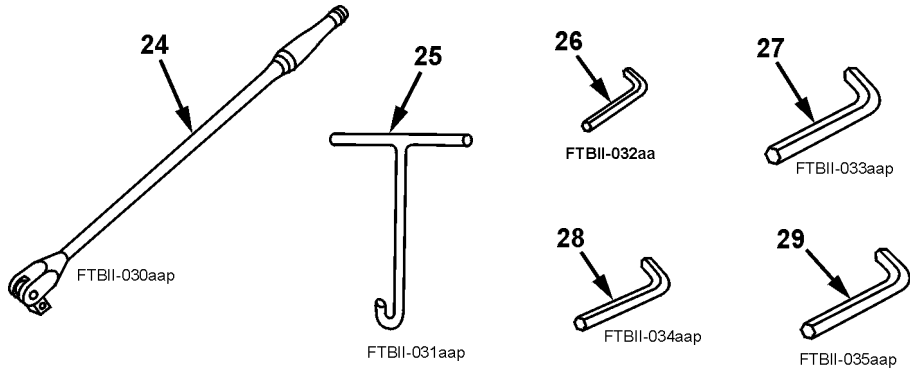


Table 2. Basic Issue Items List (continued)

(1) ILLUS. NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGEC, AND PART NUMBER	(4) U/M	(5) QTY. RQR.
24	5120-00-236-7590	HANDLE, SOCKET WRENCH, HINGED, 1/2-INCH DRIVE (in satchel tool bag) (19207) 11655786-1	EA	1
25	5120-01-179-8997	HOOK, CARTRIDGE REMOVER (in satchel tool bag) (19207) 12333373	EA	1
26	5120-00-240-5300	KEY, SOCKET HEAD SCREW, 3/16-INCH HEX (in satchel tool bag) (94697) A05522-011	EA	1
27	5120-00-240-5274	KEY, SOCKET HEAD SCREW, 5/16-INCH HEX (in satchel tool bag) (55719) AW10	EA	1
28	5120-00-198-5390	KEY, SOCKET HEAD SCREW, 3/8-INCH HEX (in satchel tool bag) (80064) 1940722	EA	1
29	5120-00-224-2510	KEY, SOCKET HEAD SCREW, 5/8-INCH HEX (in satchel tool bag) (74445) 57036	EA	1

BII LIST (continued)

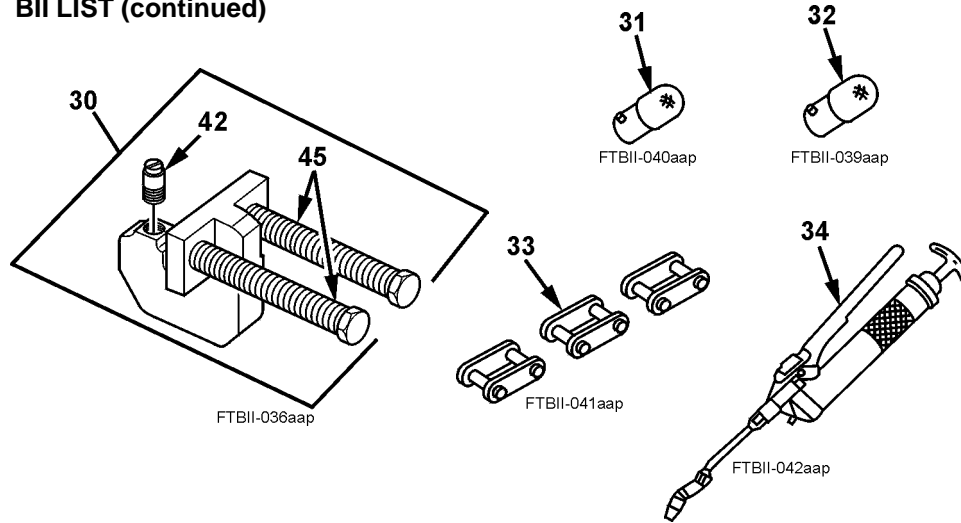


Table 2. Basic Issue Items List (continued)

(1) ILLUS.	(2) NATIONAL STOCK	(3) DESCRIPTION,	(4)	(5) QTY.
30	5180-01-388-7855	KIT, PULLER, CONNECTOR, TRACK (in satchel tool bag) (19207) 57K3156, which consists of: PIN, THREADED (see item 42) PULLER BOLT (see item 45)	EA	1
31	6240-00-266-9940	LAMP, INCANDESCENT (in spare lamp box) (96906) MS25231-1829	EA	3
32	5980-01-296-2793	LIGHT-EMITTING DIODE (LED) (in spare lamp box) (19207)12360890-3	EA	2
33	3020-01-251-7713	LINK, ROLLER CHAIN CONVEYOR (in satchel tool bag) (76474) C2060H	EA	5
34	4930-00-766-3545	LUBRICATION GUN, HAND (in satchel tool bag) (36251) 102758	EA	1

BII LIST (continued)

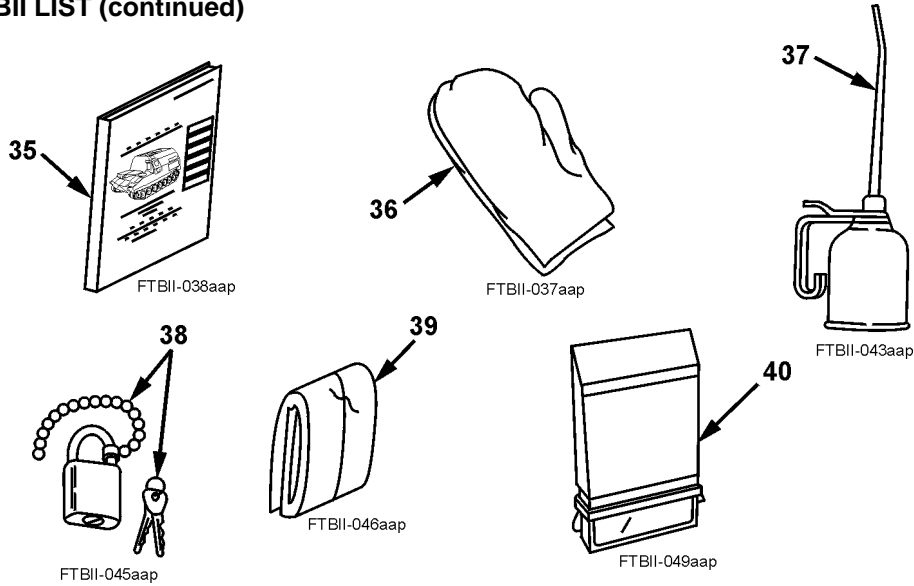


Table 2. Basic Issue Items List (continued)

(1) ILLUS. NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGEC, AND PART NUMBER	(4) U/M	(5) QTY. RQR.
35	TM 9-2350-293-10	MANUAL, OPERATOR'S (in pamphlet bag)	EA	1
36	8415-01-092-0039	MITTEN, HEAT PROTECTION (in satchel tool bag) (81349) MIL-M-11199	EA	2
37	4930-00-262-8868	OILER, HAND (in satchel tool bag) (72798) 328	EA	1
38	5340-01-269-9345	PADLOCK SET (in satchel tool bag) (96906) MS 21313-53	EA	1
39	8345-00-174-6865	PANEL MARKER (in satchel tool bag) (64067) 8345-00-174-6865	EA	2
40	6650-01-418-6658	PERISCOPE, ARMORED VEHICLE, M45 (in driver's stowage box) (19207) 12370033	EA	1

BII LIST (continued)

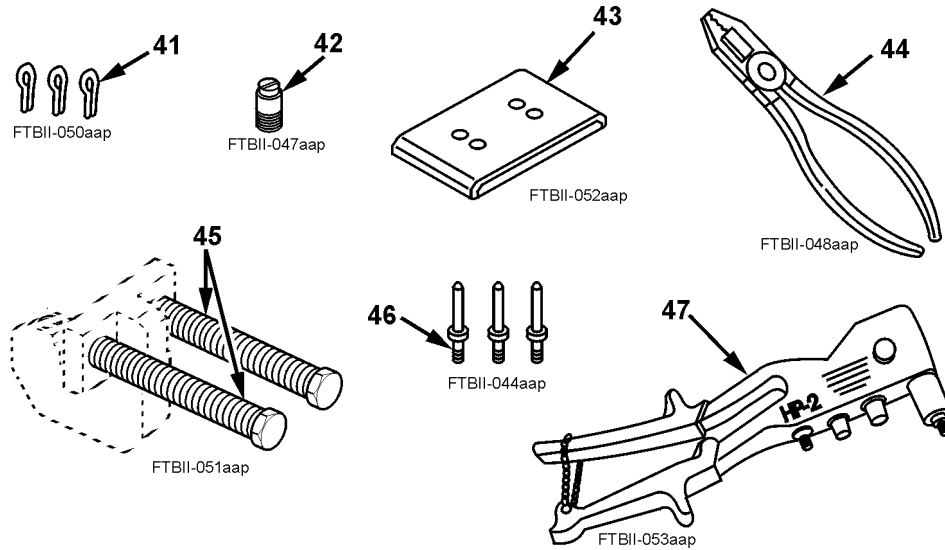


Table 2. Basic Issue Items List (continued)

(1) ILLUS. NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGEC, AND PART NUMBER	(4) U/M	(5) QTY. RQR.
41	5315-00-829-1480	PIN, COTTER (in satchel tool bag) (96906) MS24665-208	EA	5
42	5315-01-412-5332	PIN, THREADED (on puller) (19207) 12438988	EA	1
43	5340-01-158-7062	PLATE, MENDING, CONVEYOR PAD (in satchel tool bag) (19207) 12376413	EA	5
44	5120-00-239-8251	PLIERS (in satchel tool bag) (72368) 1950	EA	1
45	5306-01-388-5186	PULLER BOLT (on puller) (19207) 12447293	EA	2
46	5320-01-193-6934	RIVET, BLIND, 0.188-INCH DIA (in satchel tool bag) (19207) 12351907-1	EA	20
47	5120-01-367-3873	RIVET GUN, PIN (in satchel tool bag) (55719) HP2	EA	1

BII LIST (continued)

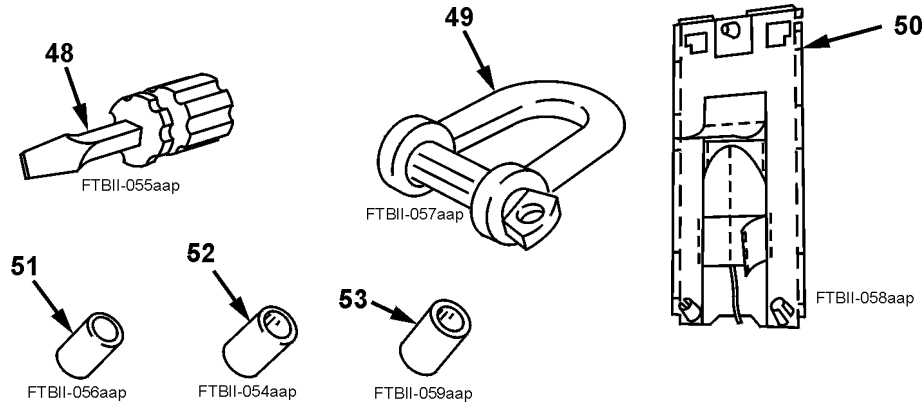


Table 2. Basic Issue Items List (continued)

(1) ILLUS. NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGEC, AND PART NUMBER	(4) U/M	(5) QTY. RQR.
48	5120-00-596-8502	SCREWDRIVER, FLAT TIP (in satchel tool bag) (96906) MS15221-2	EA	1
49	4030-01-397-7347	SHACKLE (in satchel tool bag) (19207) 12438986	EA	1
50	2540-01-381-2587	SHROUD ASSEMBLY, DOOR (under right rear canister racks) (19207) 12447290	EA	1
51	5120-00-237-0984	SOCKET, SOCKET WRENCH, 1/2-INCH, 1/2-INCH DRIVE (in satchel tool bag) (95683) 41W3007	EA	1
52	5120-00-189-7932	SOCKET, SOCKET WRENCH, 9/16-INCH, 1/2-INCH DRIVE (in satchel tool bag) (05506) ST-1218	EA	1
53	5120-00-189-7985	SOCKET, SOCKET WRENCH, 3/4-INCH, 1/2-INCH DRIVE (in satchel tool bag) (19207) 11677025-4	EA	1

BII LIST (continued)

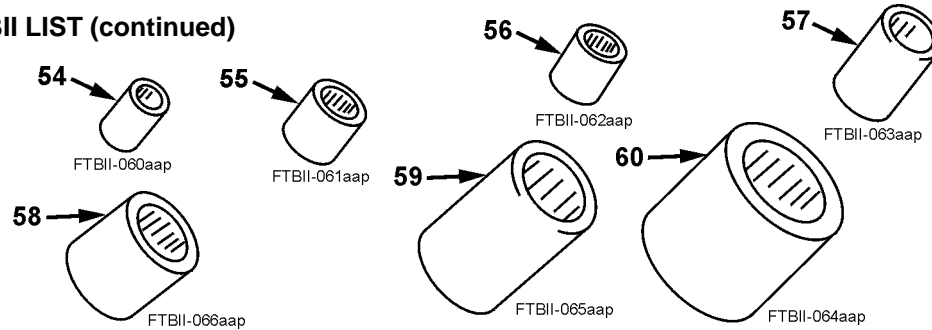


Table 2. Basic Issue Items List (continued)

(1) ILLUS. NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGEC, AND PART NUMBER	(4) U/M	(5) QTY. RQR.
54	5120-00-189-7946	SOCKET, SOCKET WRENCH, 5/8-INCH, 1/2-INCH DRIVE (in satchel tool bag) (05506) ST-1220	EA	1
55	5120-00-189-7934	SOCKET, SOCKET WRENCH, 7/8-INCH, 1/2-INCH DRIVE (in satchel tool bag) (19207) 1167025-5	1	
56	5120-00-935-7425	SOCKET, SOCKET WRENCH, 15/16-INCH, 1/2-INCH DRIVE (in satchel tool bag) (30106) A-30	EA	1
57	5120-00-189-7927	SOCKET, SOCKET WRENCH, 1-INCH, 1/2-INCH DRIVE (in satchel tool bag) (19207) 11677025-7	EA	1
58	5120-00-239-0021	SOCKET, SOCKET WRENCH, 1-1/8 INCH, 3/4-INCH DRIVE (in satchel tool bag) (34871) FAC01027	EA	1
59	5120-00-235-5871	SOCKET, SOCKET WRENCH, 1-1/4 INCH, 3/4-INCH DRIVE (in satchel tool bag) (28265) 3105A	EA	1
60	5120-00-293-0094	SOCKET, SOCKET WRENCH, 1-1/2 INCH, 3/4-INCH DRIVE (in satchel tool bag) (26848) 47148	EA	1

BII LIST (continued)

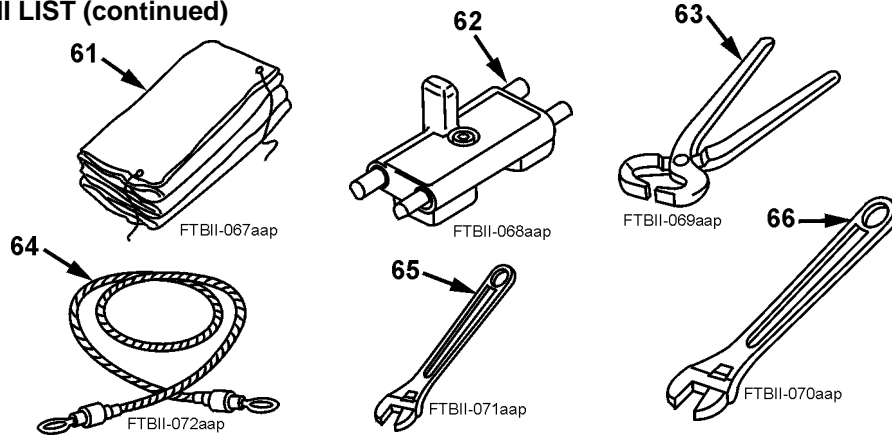


Table 2. Basic Issue Items List (continued)

(1) ILLUS. NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGEC, AND PART NUMBER	(4) U/M	(5) QTY. RQR.
61	2540-00-653-7589	TARPAULIN (under right-hand rear canister compartment) (19207) 6537589	EA	1
62	2530-01-346-9233	TRACK SHOE ASSEMBLY, T-154 (exterior left-hand top front hull and battery access doors) (19207) 12268550-1	EA	4
63	5110-00-221-1499	NIPPERS, END CUTTING (in satchel tool bag) (80204) B107.11M	EA	1
64	4010-01-041-9752	WIRE ROPE ASSEMBLY, SINGLE LEG, 15-FOOT (on exterior surface of front cargo compartment plate) (19207) 7360553-1	EA	1
65	5120-00-240-5328	WRENCH, ADJUSTABLE, 8-INCH (in satchel tool bag) (92878) 11655778-3	EA	1
66	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.

TM 9-2350-293-10

ADDITIONAL AUTHORIZATION LIST (continued)

0076 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

0076 00-2

TM 9-2350-293-10

ADDITIONAL AUTHORIZATION LIST (continued)

0076 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

0076 00-3

TM 9-2350-293-10

ADDITIONAL AUTHORIZATION LIST (continued)

0076 00

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION, CAGEC, AND PART NUMBER	(3) U/M	(4) QTY. RECM.
5120-00-224-4659	KEY, SOCKET HEAD SCREW, 1/4-INCH, HEX (80064) 1940720	EA	1
5120-00-240-5292	KEY, SOCKET HEAD SCREW, 1/8-INCH, HEX (55719) AW4	EA	1
5120-00-198-5392	KEY, SOCKET HEAD SCREW, 5/32-INCH, HEX (16786) P848000210	EA	1
5120-00-242-7410	KEY, SOCKET HEAD SCREW, 3/32-INCH, HEX (92674) BA27077-4	EA	1
5120-01-108-1729	MAINTENANCE KIT, CBR 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

0076 00-4

TM 9-2350-293-10

ADDITIONAL AUTHORIZATION LIST (continued)

0076 00

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION, CAGEC, AND PART NUMBER	(3) U/M	(4) QTY. RECM.
5825-01-374-6643	PRECISION LIGHTWEIGHT GLOBAL POSITIONING SYSTEM (GPS) RECEIVER (PLGR) (80058) AN/PSN-11	EA	1
5120-00-293-0791	PUNCH, DRIVE PIN (80244) TY8 CLA 5T1SZ5	EA	1
5820-01-879-9260	RADIO SET (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, LG HANDLE (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-INCH DRIVE (58536) A-A-1394	EA	1

0076 00-5

TM 9-2350-293-10

ADDITIONAL AUTHORIZATION LIST (continued)

0076 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

0076 00-6

TM 9-2350-293-10

ADDITIONAL AUTHORIZATION LIST (continued)

0076 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

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**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 0077 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).

TM 9-2350-293-10

EXPENDABLE AND DURABLE ITEMS LIST

0077 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	6850-00-224-6657	CLEANING COMPOUND, RIFLE BORE, 8-OZ CAN (81349) MIL-PRF-372	CN
10	C	6850-00-224-6663	CLEANING COMPOUND, RIFLE BORE, 1-GAL. CAN (81349) MIL-PRF-372	GL

0077 00-2

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EXPENDABLE AND DURABLE ITEMS LIST (continued)

0077 00

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION, CAGEC, AND PART NUMBER	(5) U/M
11	C	5350-00-221-0872	CLOTH, ABRASIVE, 50 SHEETS (80204) ANSI B74.18	PG
12	C	5610-00-141-7838	COATING COMPOUND, NONSLIP, 1-GAL. CAN (58536) A-A-59166	CN
13	C	8030-00-231-2345	CORROSION PREVENTIVE COMPOUND, 1-GAL. CAN (81349) MIL-C-16173 GRADE 1	CN
14	C	8030-00-065-0957	CORROSION RESISTANT COAT- ING, CHEMICALLY TREATED, 1-QT BOTTLE (81349) MIL-C-81706	QT
15	C	6850-01-039-3842	DEICING-DEFROSTING AND ANTI-ICING FLUID, 5-GAL. CAN, TYPE 2 (81349) MIL-A-8243	CN
16	C	6550-01-310-1677	DISTILLED WATER, REAGENT, 4-GAL. (07TA6) C4350-1A	PG
17	C	6850-00-281-3061	DRYCLEANING SOLVENT, 4-OZ CAN (58536) A-A-59601	OZ
18	C	6850-00-664-5685	DRYCLEANING SOLVENT, 1-QT CAN (81346) ASTM D 235 TY1	QT
19	C	8010-00-527-2050	ENAMEL GLOSS, BLACK, 1-GAL. CAN (58536) A-A-2962A	GL

0077 00-3

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EXPENDABLE AND DURABLE ITEMS LIST (continued)

0077 00

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION, CAGEC, AND PART NUMBER	(5) U/M
20	C	8010-00-527-2053	ENAMEL GLOSS, BLACK, 1-QT CAN (58536) A-A-2962A	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 (98308) MIL-PRF-10924	LB
27	C	9150-01-197-7689	GREASE, AUTOMOTIVE AND ARTILLERY (GAA), 6.5-LB CAN (98308) MIL-PRF-10924	LB
28	C	9150-01-326-5424	GREASE, MOLYBDENUM DISULFIDE, 14-OZ CARTRIDGE (39428) 1062K57	OZ

0077 00-4

TM 9-2350-293-10

EXPENDABLE AND DURABLE ITEMS LIST (continued)

0077 00

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION, CAGEC, AND PART NUMBER	(5) U/M
29	C	9150-00-935-9808	HYDRAULIC FLUID, PETROLEUM BASE, 1-GAL. CAN (98308) MIL-PRF-6083	GL
30	C	9150-00-189-6727	LUBRICATING OIL, ENGINE 10W, 1-QT CAN (81349) MIL-PRF-2104	QT
31	C	9150-00-186-6668	LUBRICATING OIL, ENGINE 10W, 5-GAL. CAN (81349) MIL-PRF-2104	GL
32	C	9150-00-402-4478	LUBRICATING OIL, ENGINE, 1-QT CAN (81349) MIL-L-46167	QT
33	C	9150-00-402-2372	LUBRICATING OIL, ENGINE, 5-GAL. CAN (81349) MIL-PRF-46167	CN
34	C	9150-00-186-6681	LUBRICATING OIL, ENGINE 30W, 1-QT CAN (81349) MIL-PRF-2104	QT
35	C	9150-00-188-9858	LUBRICATING OIL, ENGINE 30W, 5-GAL. CAN (81349) MIL-PRF-2104	GL
36	C	9150-00-231-2361	LUBRICATING OIL, GENERAL PURPOSE, 1-QT CAN (81349) MIL-PRF-3150	QT
37	C	9150-00-231-6689	LUBRICATING OIL, GENERAL PURPOSE, 1-QT CAN (81348) VV-L-800	QT

0077 00-5

TM 9-2350-293-10

EXPENDABLE AND DURABLE ITEMS LIST (continued)

0077 00

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION, CAGEC, AND PART NUMBER	(5) U/M
38	C	9150-00-231-2356	LUBRICATING OIL, GENERAL PURPOSE, 5-GAL. CAN (81349) MIL-PRF-3150	CN
39	C	9150-00-231-9062	LUBRICATING OIL, GENERAL PURPOSE, 5-GAL. CAN (81348) VV-L-800	GL
40	C	6640-00-285-4694	PAPER, LENS (81348) NNN-P-40	HD
41	C	9150-00-250-0926	PETROLATUM, TECHNICAL, 1.75-LB CAN (81348) VV-P-236	CN
42	C	9150-00-250-0933	PETROLATUM, TECHNICAL, 7.5-LB CAN (81348) VV-P-236	CN
43	C	7920-00-205-1711	RAG, WIPING, 50-LB BALE (81348) DDD-R-30	BE
44	C	8030-00-159-8176	SEALING COMPOUND, 3-OZ TUBE (81349) MIL-S-45180	TU
45	C	8030-00-252-3391	SEALING COMPOUND, 11-OZ TUBE (80064) 1756371	TU
46	C	8030-00-889-3535	TAPE, ANTISEIZING, 1/2-INCH WIDE (58536) AA58092-2-2	RL

0077 00-6

TM 9-2350-293-10

EXPENDABLE AND DURABLE ITEMS LIST (continued)

0077 00

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION, CAGEC, AND PART NUMBER	(5) U/M
47	C	8010-00-242-2089	THINNER, PAINT PRODUCTS, 1-GAL. CAN (58536) A-A-2904	CN
48	C	8010-00-558-7026	THINNER, PAINT PRODUCTS, 5-GAL. PAIL (58536) A-A-2904	EA

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

LUBRICATIONS INSTRUCTIONS

NOTE

All instructions contained in this appendix are mandatory.

SCOPE

The "Lubrication Instructions" supporting information consists of two work packages: 0078 00 and 0079 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

Drycleaning solvent P-D-680 is toxic and flammable. Wear protective goggles and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes; and do not breathe vapors. Keep away from heat or flame. Never smoke when using drycleaning solvent. Failure to follow this warning may result in injury or death to personnel.

Clean all fittings and areas around lubrication points with drycleaning solvent (Item 14, Appendix D), or equivalent, before lubricating equipment. After lubrication, wipe off excess oil or grease to prevent accumulation of foreign matter.

SCOPE (continued)

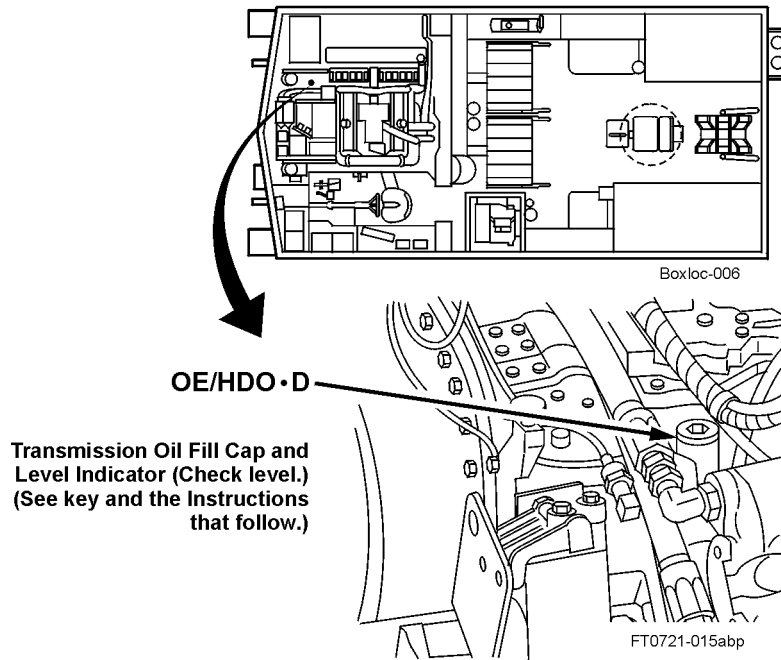
The lubrication services to be performed on the M992A2 are as follows:

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. Onan Model DJEAM Auxiliary Power Unit (APU) Chaincase Oil Level Check
7. Onan Model DJEAM Auxiliary Power Unit (APU) Crankcase Oil Level Check
8. Hatz Model 2 G 40 Auxiliary Power Unit (APU) Chaincase Oil Level Check
9. Hatz Model 2 G 40 Auxiliary Power Unit (APU) Crankcase Oil Level Check
10. Hydraulic Reservoir Level Check
11. Conveyor Drive and Idler Sprocket Bearings
12. Canister Compartment Restraint Bars
13. Driver's Seat Moving Parts
14. Roadwheel Arms
15. Idler Wheel Housing
16. Roadwheel and Idler Wheel Hubs
17. Final Drive Level Check
18. Final Drive Drain and Refill
19. Towing Pintle
20. Track Adjuster
21. Door Hold-Open Latches
22. Towing Cable
23. Transmission/Main Engine AOAP Sampler Valves
24. Main Engine Crankcase Drain
25. 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-L-46167) LUBRICATING 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.

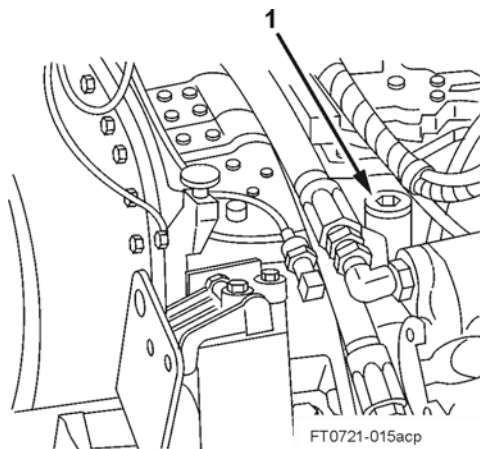
NOTE

- Make sure vehicle is parked on level ground before checking transmission oil level.

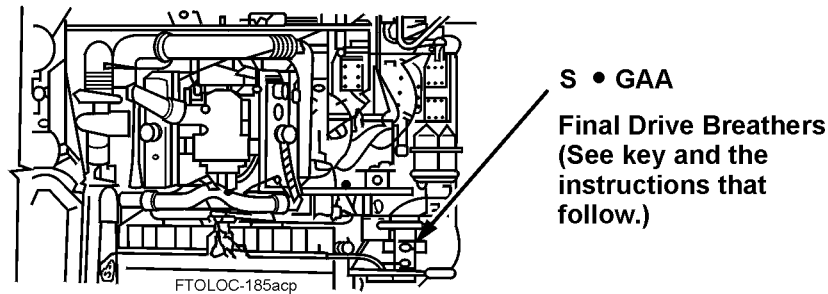
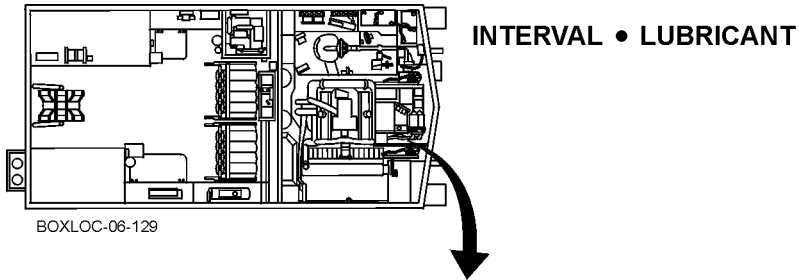
1. TRANSMISSION OIL LEVEL CHECK (continued)

- 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, 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. Stop engine, wait three to five minutes, then check oil level.



2. SPEEDOMETER ADAPTER HOUSING (continued)



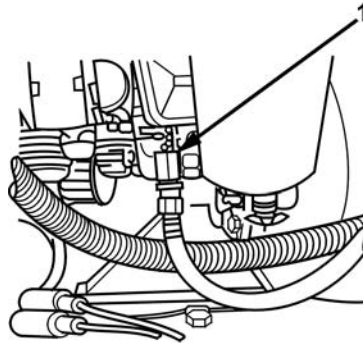
INTERVAL	MAN-HOURS*
S	0.1

* 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)

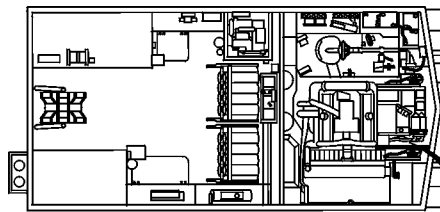


FT4701-009aap

3. FINAL DRIVE UNIVERSAL JOINTS

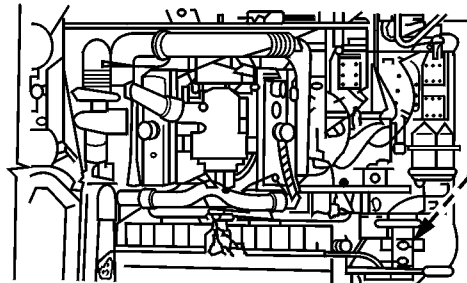
NOTE

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)

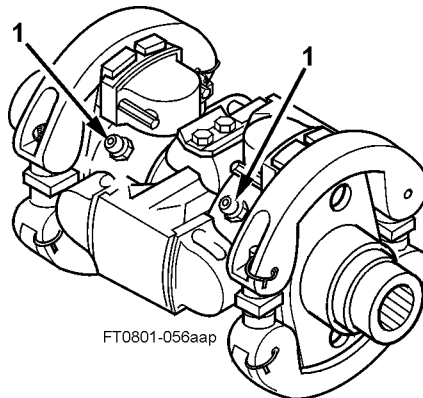
INTERVAL	MAN-HOURS*
S	0.3

* 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.



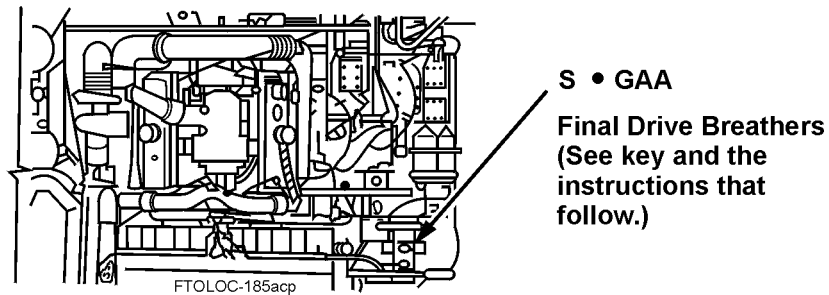
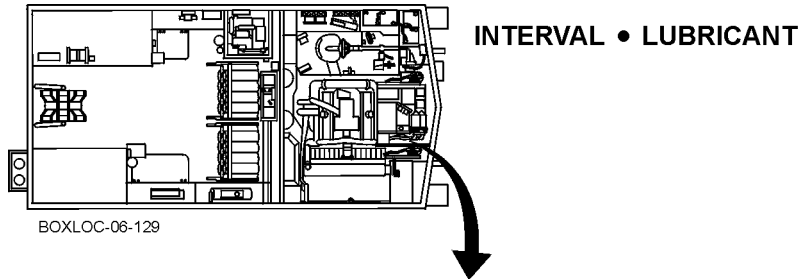
FT0801-056aap

**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-

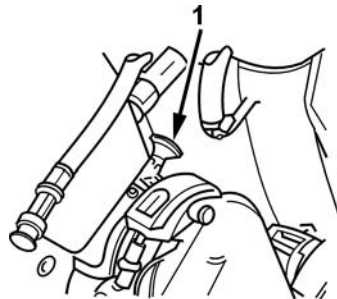
Lubricants	Expected Temperatures			Intervals
	Above 15°F (Above -9°C)	+40°F to -10°F (+4°C to -23°C)	+40°F to -65°F (+4°C to -54°C)	
OE/HDO (MIL-PRF-2104) LUBRICATING OIL, Internal Combustion Engine, Tactical Service	OE/HDO 15W40	OE/HDO 15W40	OEA	Intervals are as follows: S - Semiannually Intervals are based on normal hours of operation and moderate operating conditions.

4. FINAL DRIVE BREATHERS (continued)

WARNING

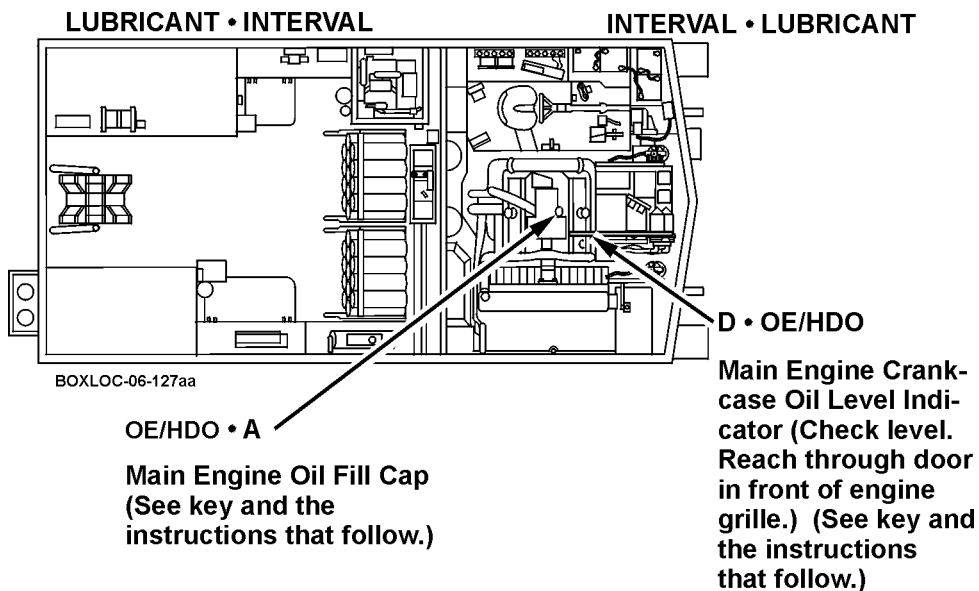
Drycleaning solvent P-D-680 is toxic and flammable. Wear protective goggles and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes; and do not breathe vapors. Keep away from heat or flame. Never smoke when using drycleaning solvent. Failure to follow this warning may result in injury or death to personnel.

Remove both breathers (1). Clean with drycleaning solvent. Dry, dip in oil, and install (see key for required oil type).



FT0801-047aap

5. MAIN ENGINE CRANKCASE OIL LEVEL



BOXLOC-06-127aa

OE/HDO • A
Main Engine Oil Fill Cap
(See key and the instructions that follow.)

D • OE/HDO
Main Engine Crankcase Oil Level Indicator (Check level. Reach through door in front of engine grille.) (See key and the instructions that follow.)

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-L-46167) LUBRICATING 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 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.

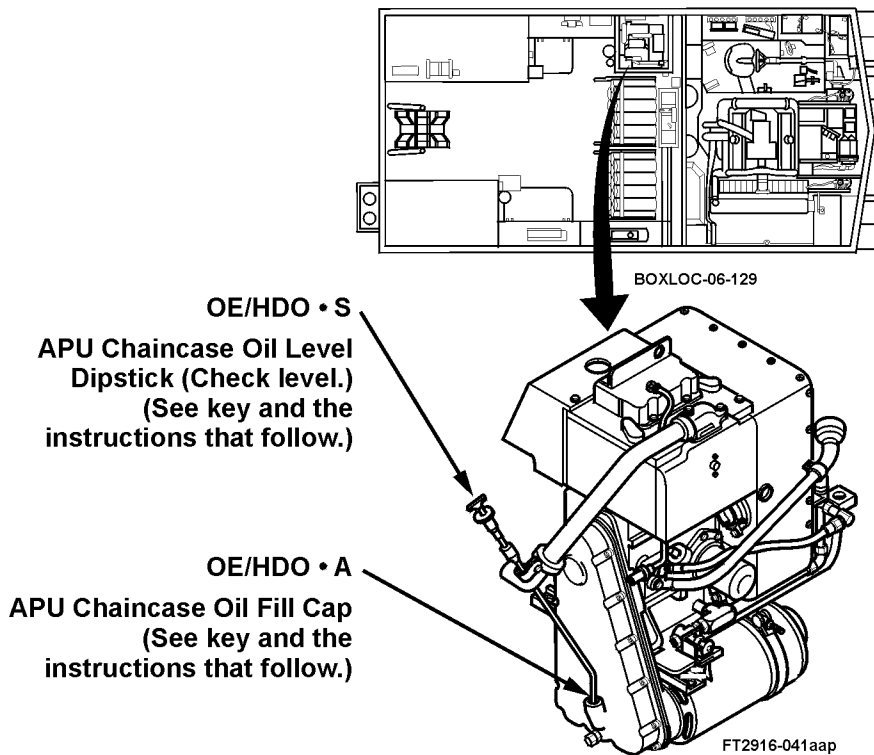
Before starting engine, open oil level access door (1) and check to ensure that oil level is at least to, or above, the low (L) mark on the dipstick. If not, add oil to bring level to above L mark on dipstick (see key for required oil type). Check for hydrostatic lock. Start engine. Warm up engine to 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. ONAN MODEL DJEAM AUXILIARY POWER UNIT (APU)
CHAINCASE OIL LEVEL CHECK**

LUBRICANT • INTERVAL



INTERVAL	MAN-HOURS*
S	0.2
A	0.1

*The man-hour time is the time you need to do all the services prescribed.

**6. ONAN MODEL DJEAM AUXILIARY POWER UNIT (APU)
CHAINCASE 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					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	1 qt (0.98 L)	OE/HDO 15W40	OE/HDO 15W40	OEA	

WARNING

APU chaincase oil is hot after operation. Make sure chaincase oil is cool before checking oil level.

CAUTION

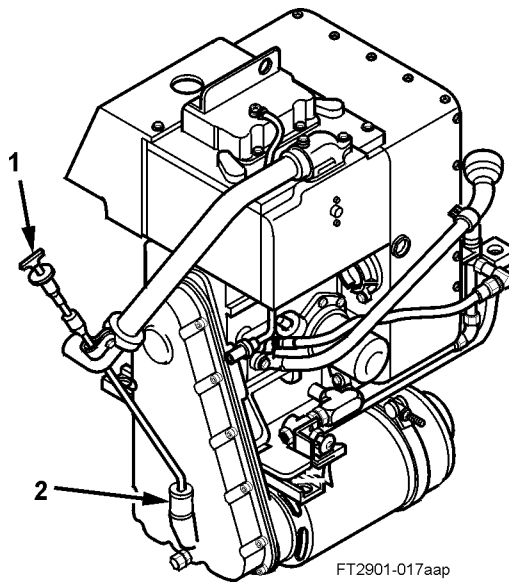
Do not check oil when engine is running. Do not overfill.

NOTE

Make sure vehicle is parked on level ground before checking APU chaincase oil level.

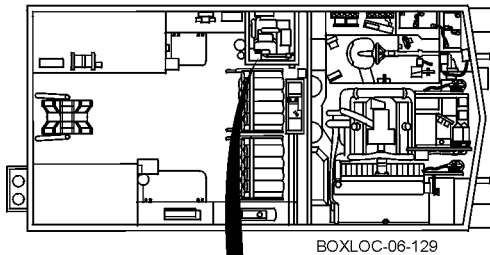
**6. ONAN MODEL DJEAM AUXILIARY POWER UNIT (APU)
CHAINCASE OIL LEVEL CHECK (continued)**

Open side APU access door. Unscrew and remove oil level dipstick (1) and wipe with clean rag. Reinsert dipstick (1) and remove it again. Observe oil level indicated on dipstick (1). If oil level reads below full (F) mark, remove APU chaincase oil fill cap (2) and add oil until level rises to F mark (see key for required oil type). Install APU chaincase oil fill cap (2). Install dipstick (1), screw it down, and hand-tighten.

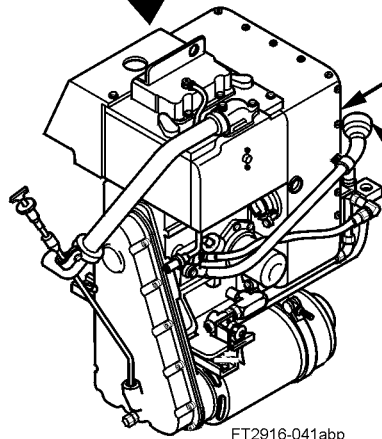


**7. ONAN MODEL DJEAM AUXILIARY POWER UNIT (APU)
CRANKCASE OIL LEVEL CHECK**

INTERVAL • LUBRICANT



BOXLOC-06-129



FT2916-041abp

D • OE/HDO
APU Crankcase Dipstick
(Check level.) (See key and
the instructions that follow.)

A • OE/HDO
APU Crankcase Oil Fill Cap
(See key and the instructions
that follow.)

INTERVAL	MAN-HOURS*
D	0.1
A	0.1

*The man-hour time is the time you need to do all the services prescribed.

**7. ONAN MODEL DJEAM AUXILIARY POWER UNIT (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-L-46167) LUBRICATING 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.
APU Crankcase	3-1/2 qt (3.31L)	OE/HDO 15W40	OE/HDO 15W40	OEA	

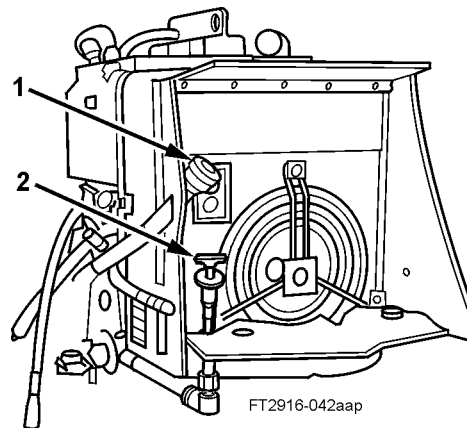
CAUTION

Do not check oil when engine is running. Do not overfill.

NOTE

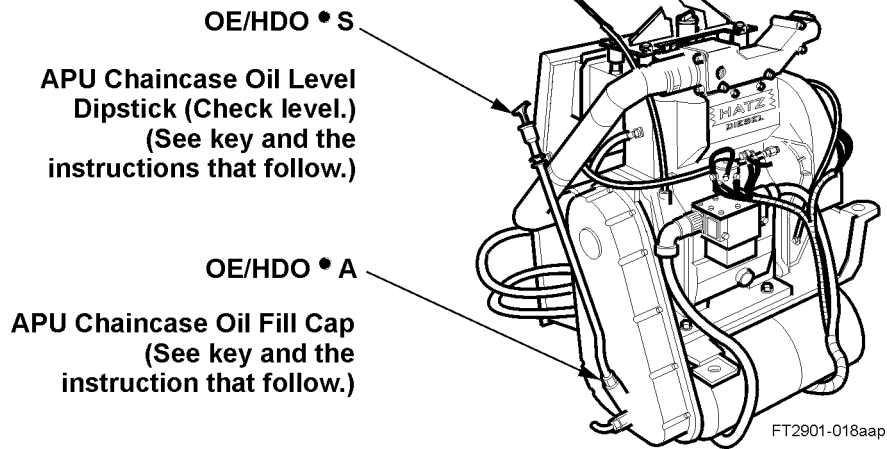
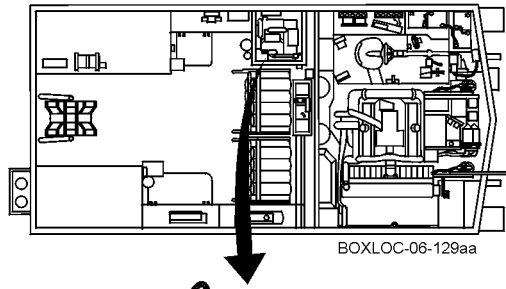
Make sure vehicle is parked on level ground before checking APU chaincase oil level.

Open front APU access door. Unscrew and remove oil level dipstick (2) and wipe with clean rag. Reinsert dipstick (2) and remove it again. Observe oil level indicated on dipstick (2). If oil level reads below full (F) mark, remove APU crankcase oil fill cap (1) and add oil until level rises to F mark (see key for required oil type). Install APU crankcase oil fill cap (1). Install dipstick (2), screw it down, and hand-tighten.



**8. HATZ MODEL 2 G 40 AUXILIARY POWER UNIT (APU)
CHAINCASE OIL LEVEL CHECK**

LUBRICANT • INTERVAL



INTERVAL	MAN-HOURS*
S	0.2
A	0.1

*The man-hour time is the time you need to do all the services prescribed.

**8. HATZ MODEL 2 G 40 AUXILIARY POWER UNIT (APU)
CHAINCASE 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					Intervals are as follows: S - Semiannually A - Annually Intervals are based on normal hours of operation and moderate operating conditions.
APU Chaincase	1 qt (0.98L)	OE/HDO 15W40	OE/HDO 15W40	OEA	

WARNING

APU chaincase oil is hot after operation. Make sure chaincase oil is cool before checking oil level.

CAUTION

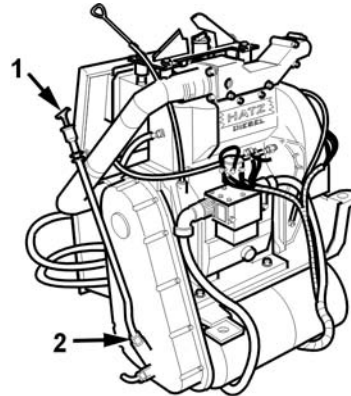
Do not check oil when engine is running. Do not overfill.

NOTE

Make sure vehicle is parked on level ground before checking APU chaincase oil level.

**8. HATZ MODEL 2 G 40 AUXILIARY POWER UNIT (APU)
CHAINCASE OIL LEVEL CHECK (continued)**

Open side APU access door. Unscrew and remove oil level dipstick (1) and wipe with clean rag. Reinsert dipstick (1) and remove it again. Observe oil level indicated on dipstick (1). If oil level reads below full (F) mark, remove APU chaincase oil fill cap (2) and add oil until level rises to F mark (see key for required oil type). Install APU chaincase oil fill cap (2). Install dipstick (1), screw it down, and hand-tighten.

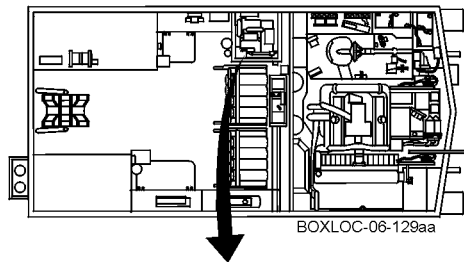


FT2901-019aap

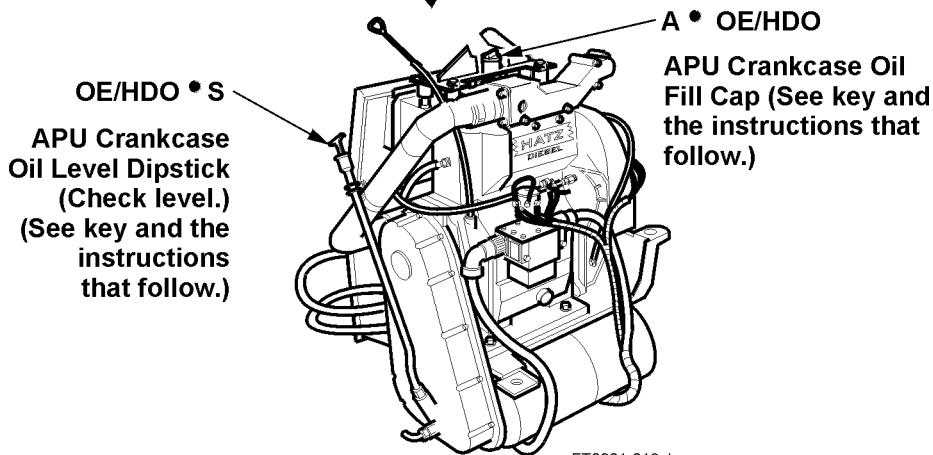
**9. HATZ MODEL 2 G 40 AUXILIARY POWER UNIT (APU)
CRANKCASE OIL LEVEL CHECK**

LUBRICANT • INTERVAL

INTERVAL • LUBRICANT



BOXLOC-06-129aa



FT2901-018abp

LUBRICATIONS INSTRUCTIONS (continued)

0078 00

**9. HATZ MODEL 2 G 40 AUXILIARY POWER UNIT (APU)
CRANKCASE OIL LEVEL CHECK (continued)**

INTERVAL	MAN-HOURS*
D	0.1
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-L-46167) LUBRICATING OIL, Internal Combustion Engine, Arctic					Intervals are as follows: D - Day; Daily A - Annually Intervals are based on normal hours of operation and moderate operating conditions.
APU Crankcase	3-1/2 qt (25.55 L)	OE/HDO 15W40	OE/HDO 15W40	OEA	

CAUTION

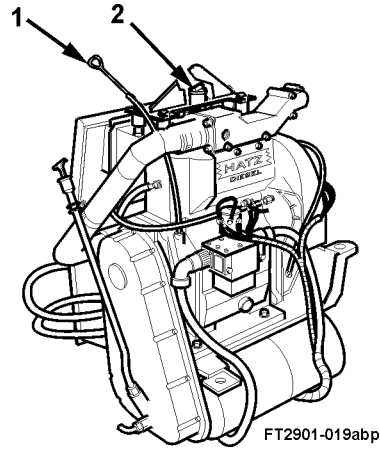
Do not check oil when engine is running. Do not overfill.

NOTE

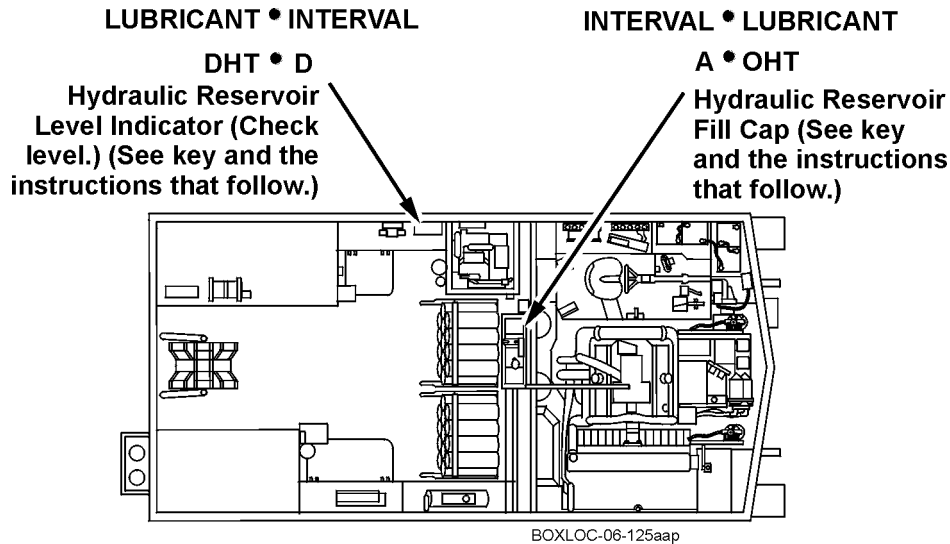
Make sure vehicle is parked on level ground before checking APU chaincase oil level.

**9. HATZ MODEL 2 G 40 AUXILIARY POWER UNIT (APU)
CRANKCASE OIL LEVEL CHECK (continued)**

Open side APU access door. Remove oil level dipstick (1) and wipe with clean rag. Reinsert dipstick (1) and remove it again. Observe oil level indicated on dipstick (1). If oil level reads below full (F) mark, remove APU crankcase oil fill cap (2) and add oil until level rises to F mark (see key for required oil type). Install APU crankcase oil fill cap (2) and dipstick (1).



10. HYDRAULIC RESERVOIR LEVEL CHECK



INTERVAL	MAN-HOURS*
D	0.1
A	0.1

*The man-hour time is the time you need to do all the services prescribed.

10. HYDRAULIC RESERVOIR 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)	
OHT (MIL-PRF-6083) HYDRAULIC FLUID, Petroleum Base, Preservative, Hydraulic Equipment		All Temperatures			Intervals are as follows: D - Day; Daily A - Annually Intervals are based on normal hours of operation and moderate operating conditions.
Hydraulic Reservoir	18-1/2 gal. (69.8 L)				

CAUTION

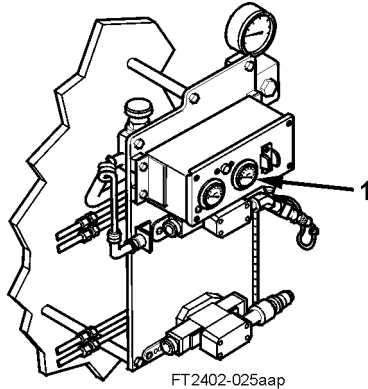
Take necessary precautions to prevent entry of contaminants into hydraulic system.

NOTE

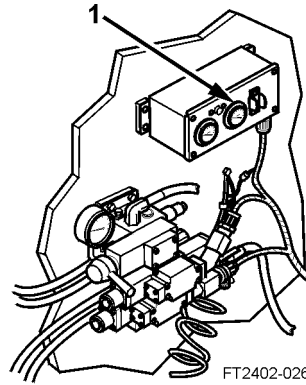
- Make sure vehicle is parked on level ground before checking hydraulic reservoir level.
- An assistant is needed for this procedure.

10. HYDRAULIC RESERVOIR LEVEL CHECK (continued)

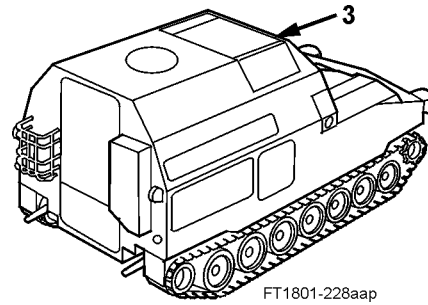
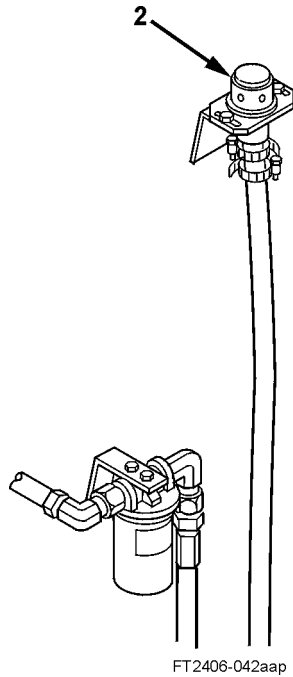
Turn MASTER switch to ON and check fluid level gage (1), located on hydraulic control panel. Gage pointer should read within green range. If fluid level is low, open top middle door (3) and remove hydraulic reservoir fill cap (2). While assistant monitors fluid level on gage, add OHT until fluid level rises to full (F) mark on gage.



VEHICLES S/N 1 THROUGH 820



VEHICLES S/N 821 AND ABOVE

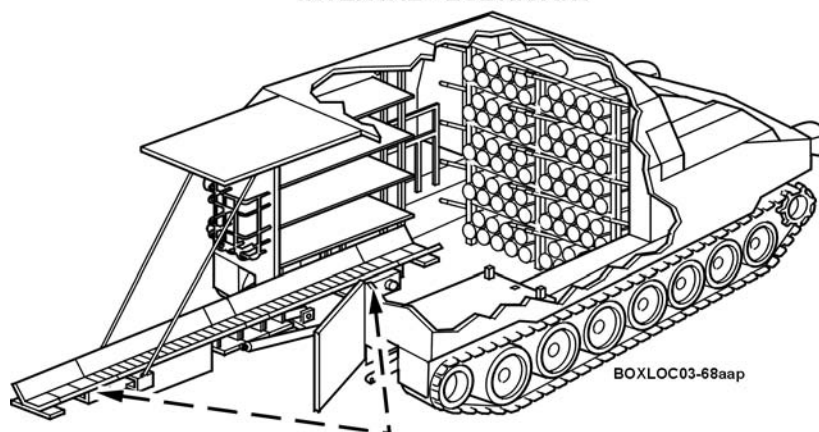


11. CONVEYOR DRIVE AND IDLER SPROCKET BEARINGS

NOTE

Dotted leader lines on the illustration indicate that lubrication is required on both sides of the vehicle.

INTERVAL • LUBRICANT



S • GAA
Conveyor Drive and Idler Sprocket Bearings (Use grease gun.) (See key and the instructions that follow.)

INTERVAL	MAN-HOURS*
S	0.1

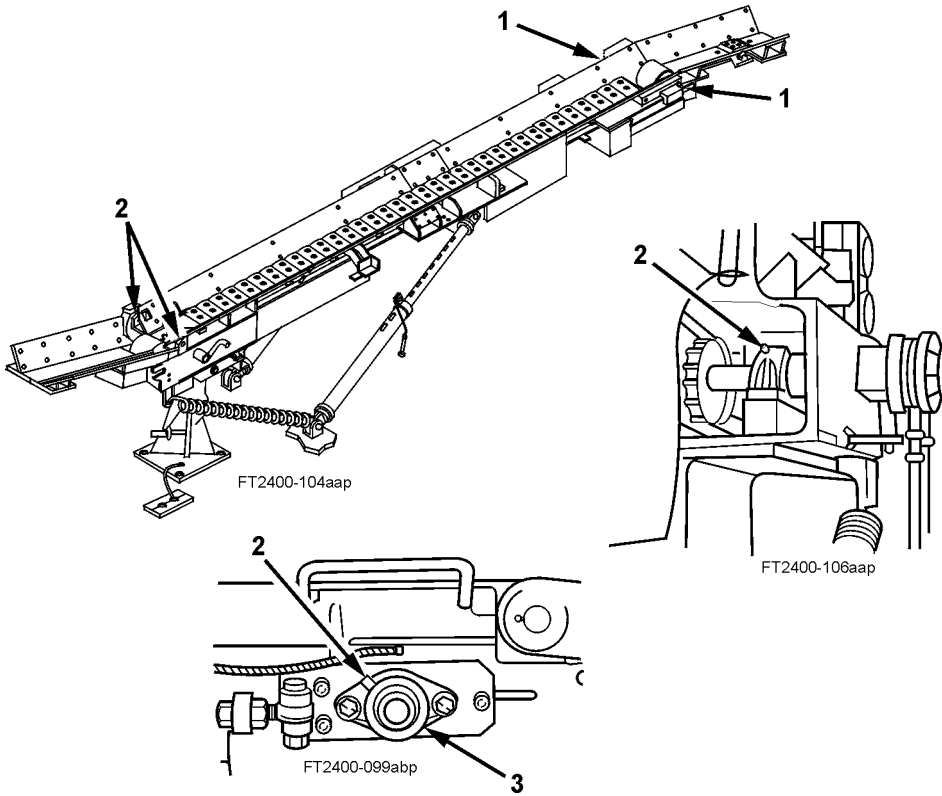
*The man-hour time is the time you need to do all the services prescribed.

11. CONVEYOR DRIVE AND IDLER SPROCKET BEARINGS (continued)

-KEY-

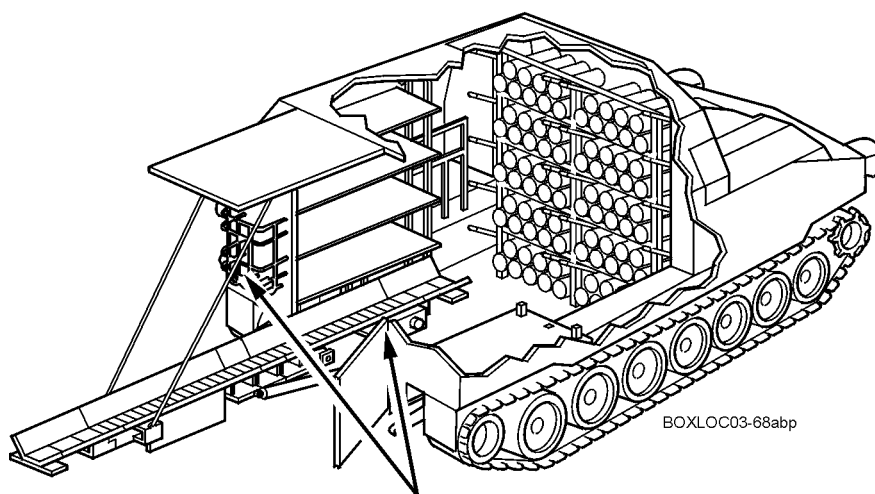
Lubricants	Expected Temperatures			Intervals
	Above 15°F (Above -9°C)	+40°F to -10°F (+4°C to -23°C)	+40°F to -65°F (+4°C to -54°C)	
GAA (MIL-PRF-10924) GREASE, Automotive and Artillery	All Temperatures			Intervals are as follows: S - Semiannually Intervals are based on normal hours of operation and moderate operating conditions.

Use a grease gun to inject GAA into the two idler sprocket grease fittings (1) and into the two driver sprocket grease fittings (2) until grease begins to seep from bearing block (3).



12. CANISTER COMPARTMENT RESTRAINT BARS

INTERVAL • LUBRICANT



S • GAA

Canister Compartment Restraint Bars
(Three Right and Two Left) (Spread
grease on slides.) (See key and the
instructions that follow.)

INTERVAL	MAN-HOURS*
S	0.1

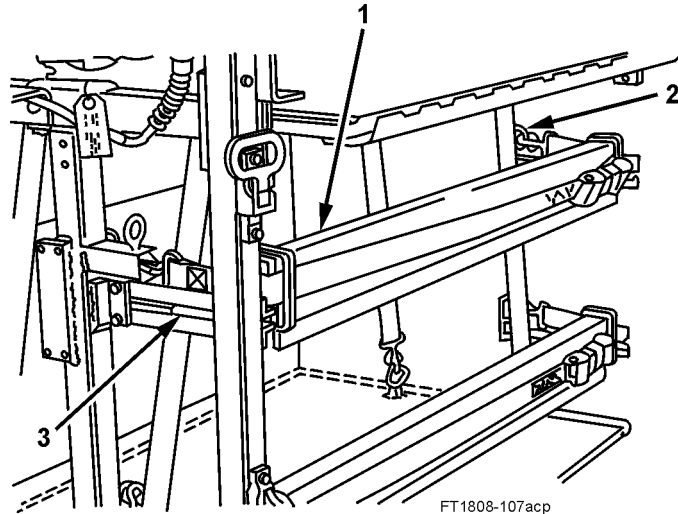
*The man-hour time is the time you need to do all the services prescribed.

-KEY-

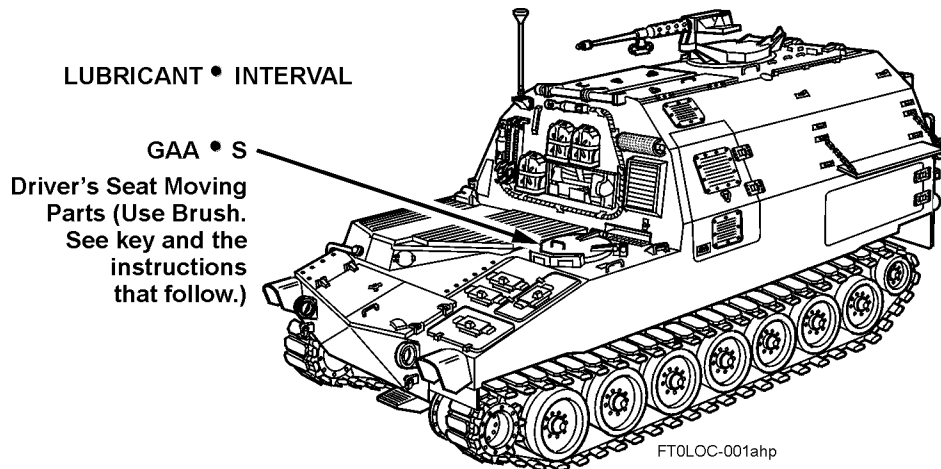
Lubricants	Expected Temperatures			Intervals
	Above 15°F (Above -9°C)	+40°F to -10°F (+4°C to -23°C)	+40°F to -65°F (+4°C to -54°C)	
GAA (MIL-PRF-10924) GREASE, Automotive and Artillery	All Temperatures			Intervals are as follows: S - Semiannually Intervals are based on normal hours of operation and moderate operating conditions.

12. CANISTER COMPARTMENT RESTRAINT BARS (continued)

Unhook restraint bar straps from eyes (2). Remove restraint bars (1) and apply light coat of GAA to sliding portions of bars (3). Install restraint bars (1). Hook restraint bar straps to eyes (2).



13. DRIVER'S SEAT MOVING PARTS



LUBRICATIONS INSTRUCTIONS (continued)

0078 00

13. DRIVER'S SEAT MOVING PARTS (continued)

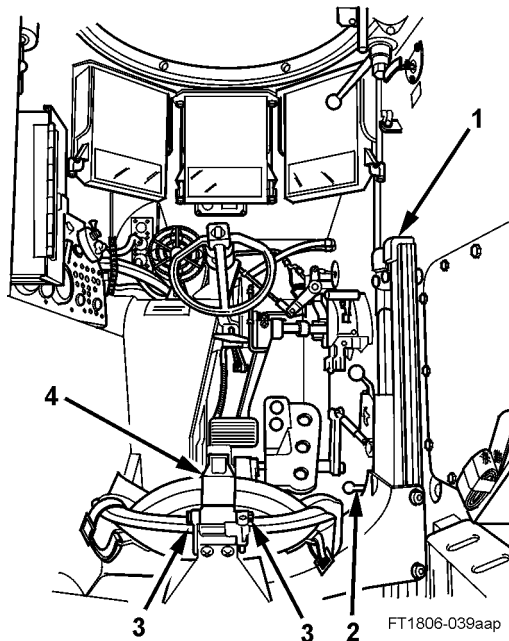
INTERVAL	MAN-HOURS*
S	0.1

*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.

Brush GAA on vertical shaft (1), horizontal shaft (3), pivot points of seat-adjusting lever (2), and backrest post (4).



+

+

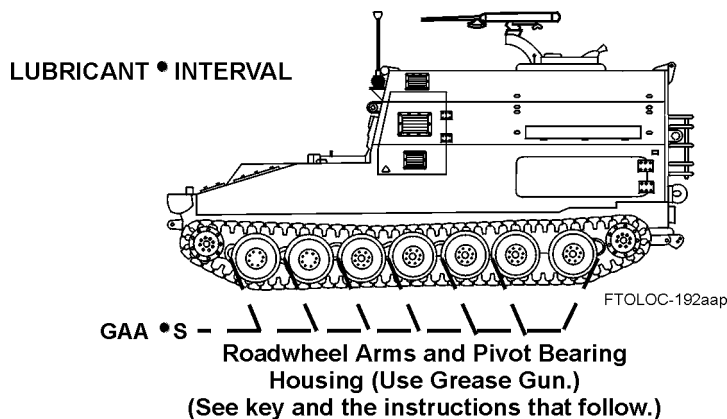
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+

14. ROADWHEEL ARMS

NOTE

- All instructions contained in this appendix are mandatory.
- The "Lubrication Instructions" supporting information consists of two work packages: 0078 00 and 0079 00.
- Dotted leader lines on the illustration indicate that lubrication is required on both sides of the vehicle.



INTERVAL	MAN-HOURS*
S	0.8

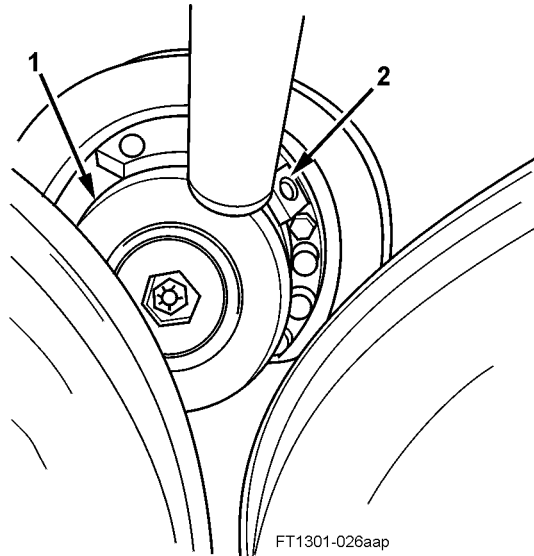
*The man-hour time is the time you need to do all the services prescribed.

-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.

14. ROADWHEEL ARMS (continued)

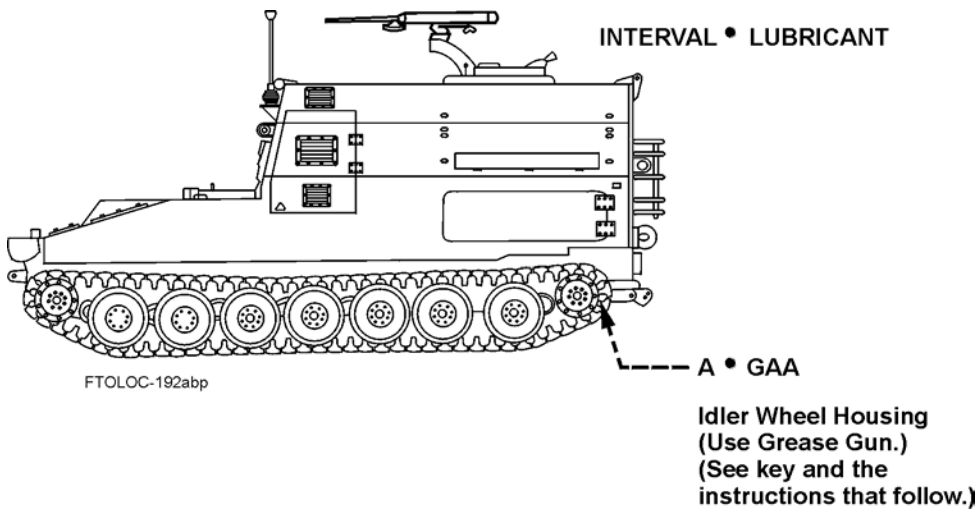
Use a grease gun to inject GAA into the 14 roadwheel arm and pivot bearing housing grease fittings (2) until grease begins to seep from relief valve (1).



15. IDLER WHEEL HOUSING

NOTE

Dotted leader lines on the illustration indicate that lubrication is required on both sides of the vehicle.



15. IDLER WHEEL HOUSING (continued)

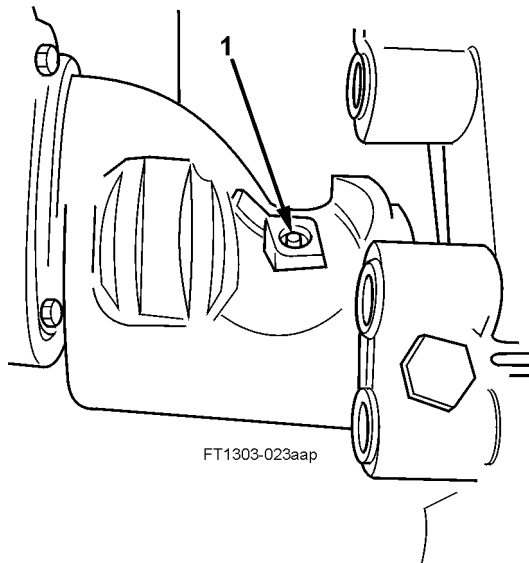
INTERVAL	MAN-HOURS*
A	0.9

*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).



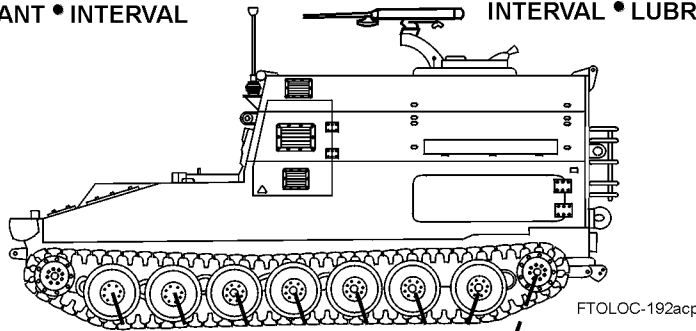
16. ROADWHEEL AND IDLER WHEEL HUBS

NOTE

Dotted leader lines on the illustration indicate that lubrication is required on both sides of the vehicle.

LUBRICANT • INTERVAL

INTERVAL • LUBRICANT



GAA • D

Roadwheel and Idler Wheel Hubs (Check level. Use grease gun.) (See key and the instructions that follow.)

FTOLOC-192acp

A • GAA

Roadwheel and Idler Wheel Hubs (Use grease gun.) (See key and the instructions that follow.)

INTERVAL	MAN-HOURS*
D	1.0
A	1.9

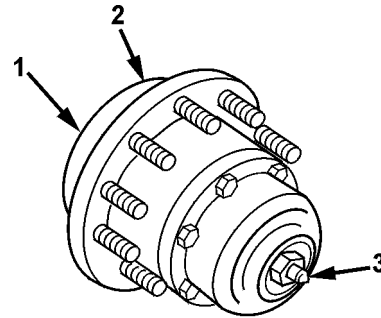
*The man-hour time is the time you need to do all the services prescribed.

-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.

16. ROADWHEEL AND IDLER WHEEL HUBS (continued)

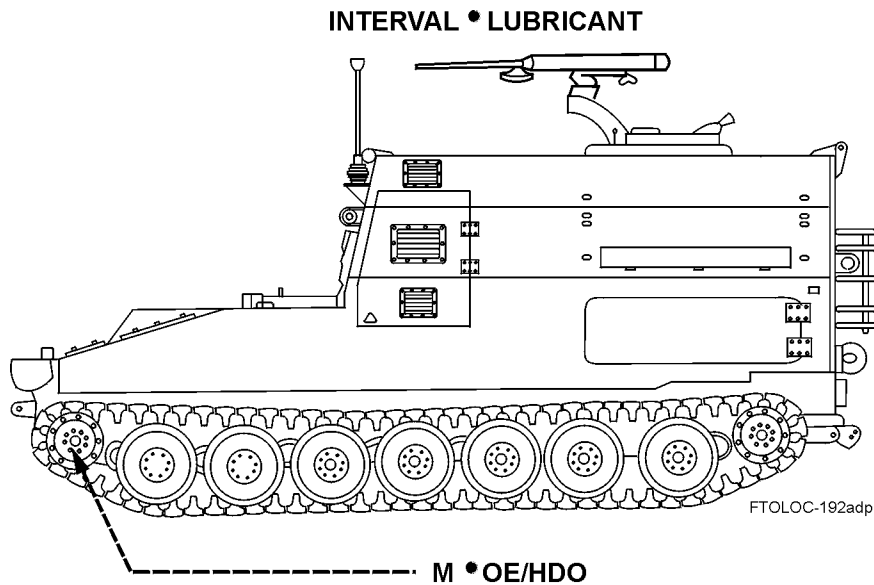
Check roadwheel and idler wheel hubs (1) daily after operation for overheating or Class III leaks. Make sure lubricant is at proper level by using grease gun to inject GAA into 16 grease fittings (3) on roadwheel and idler wheel hubs (1) until grease seeps from relief valves (2). Annually, use a grease gun to inject GAA into grease fittings (3) until clean grease seeps from relief valves (2).



17. FINAL DRIVE LEVEL CHECK

NOTE

Dotted leader lines on the illustration indicate that lubrication is required on both sides of the vehicle.



**Final Drive Level and Fill Plug
(Check level.) (See key and
the instructions that follow.)**

17. 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.

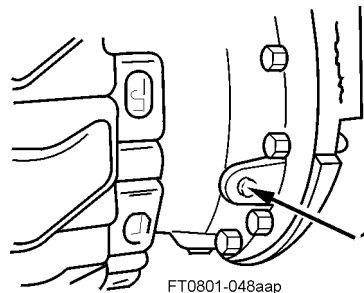
-KEY-

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-L-46167) LUBRICATING OIL, Internal Combustion Engine, Arctic Engine Crankcase	2 qt (1.8 L)	OE/HDO 15W40	OE/HDO 15W40	OEA	Intervals are as follows: M - Monthly Intervals are based on normal hours of operation and moderate operating conditions.

NOTE

Make sure vehicle is parked on level ground before checking final drive oil level.

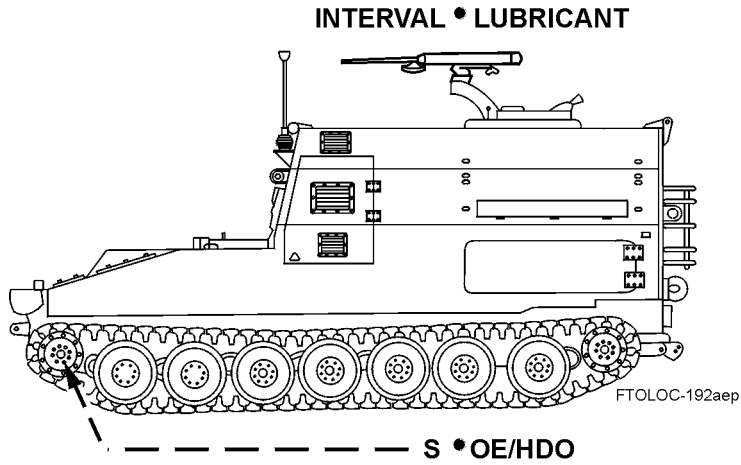
Remove both level-check plugs (1). Oil should be level with bottom of opening. If not, add oil until it flows from the plug opening (see key for required oil type). Clean and install level-check plugs (1).



18. FINAL DRIVE DRAIN AND REFILL

NOTE

Dotted leader lines on the illustration indicate that lubrication is required on both sides of the vehicle.



**Final Drive Drain Plug
(Drain and refill.) (See key and the
instructions that follow.)**

INTERVAL	MAN-HOURS*
S	0.3

* The man-hour time is the time you need to do all the services prescribed.

18. FINAL DRIVE DRAIN AND REFILL (continued)

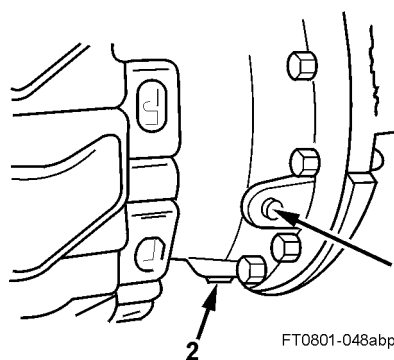
-KEY-

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-L-46167) LUBRICATING OIL, Internal Combustion Engine, Arctic Engine					Intervals are as follows: S - Semiannually Intervals are based on normal hours of operation and moderate operating conditions.
Crankcase	2 qt (1.8 L)	OE/HDO 15W40	OE/HDO 15W40	OEA	

NOTE

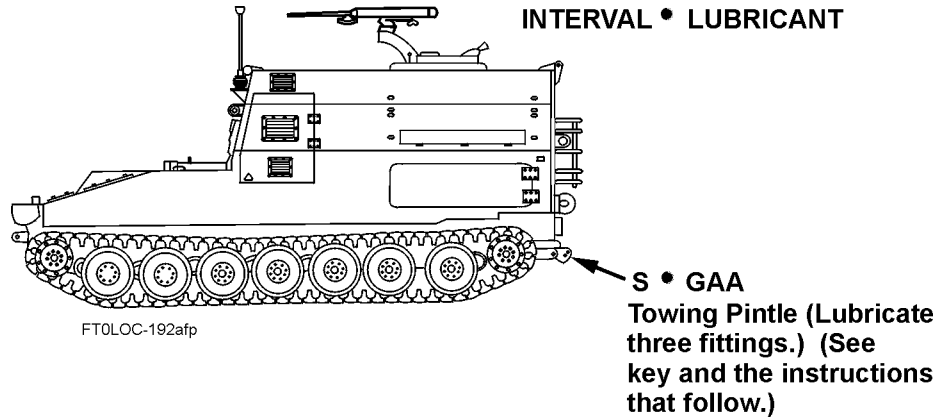
- Make sure vehicle is parked on level ground before checking final drive oil level.
- Notify Unit maintenance if you find pieces of metal stuck to the magnetic drain plugs.

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

19. TOWING PINTLE



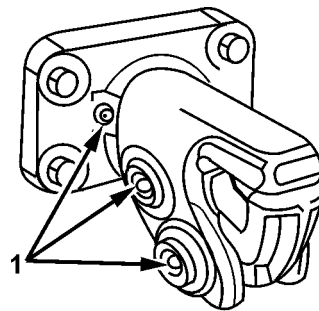
INTERVAL	MAN-HOURS*
S	0.3

*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 operat-

Lubricate three fittings (1) with GAA.

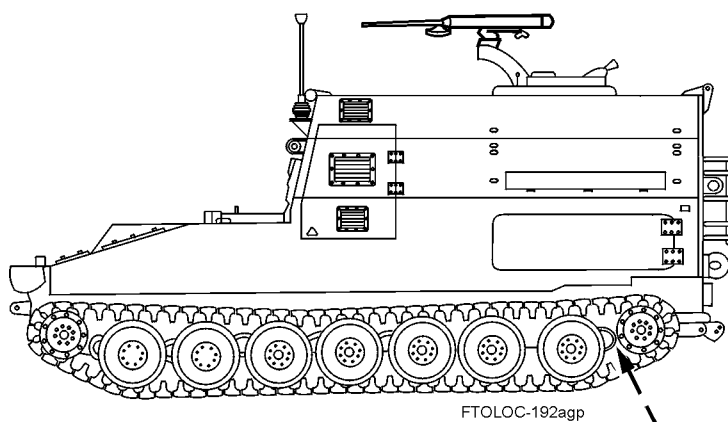


20. TRACK ADJUSTER

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.

20. 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

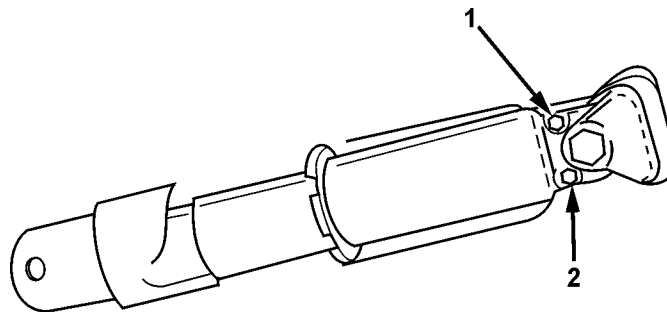
Lubricant is under high pressure. Loosen bleed plug slowly to avoid injury.

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.

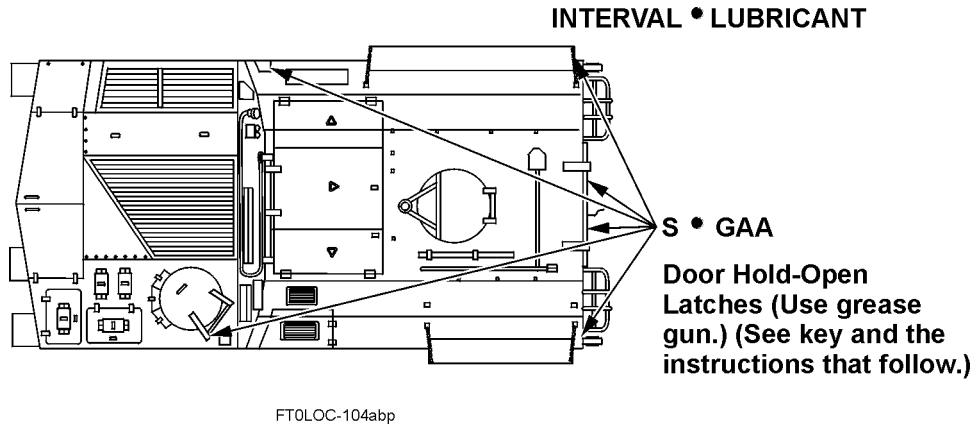
Check track adjuster. Pump GAA into fitting (2) to increase tension.

Slowly open pressure bleed plug (1) to decrease track tension.



FT1303-021abp

21. DOOR HOLD-OPEN LATCHES



INTERVAL	MAN-HOURS*
S	1.2

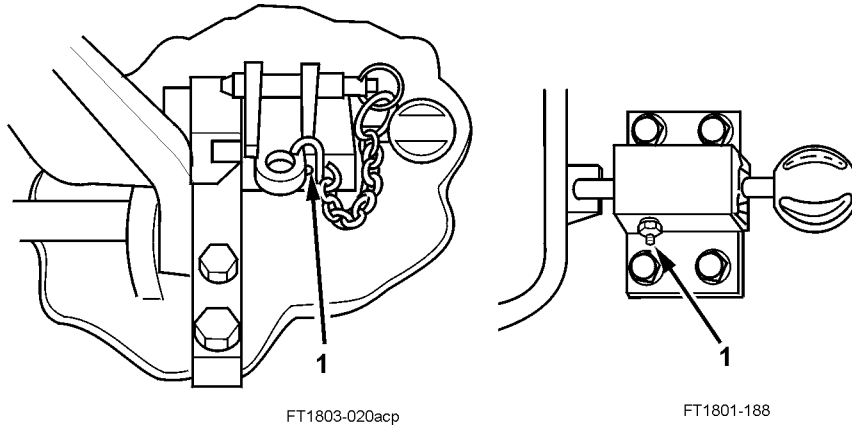
* The man-hour time is the time you need to do all the services prescribed.

-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)	
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.

21. 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, left canister door, right canister door, and dog doors.

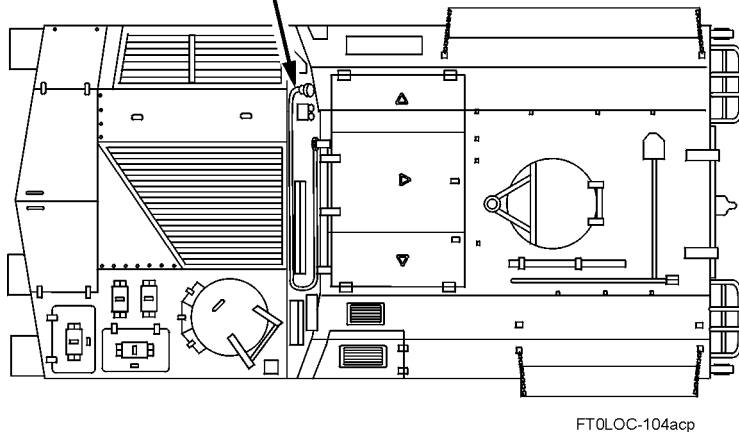


22. TOWING CABLE

LUBRICANT • INTERVAL

CT • S

**Towing Cable
(See key and the
instructions that follow.)**



FT0LOC-104acp

22. TOWING CABLE (continued)

INTERVAL	MAN-HOURS*
S	1.2

* The man-hour time is the time you need to do all the services prescribed.

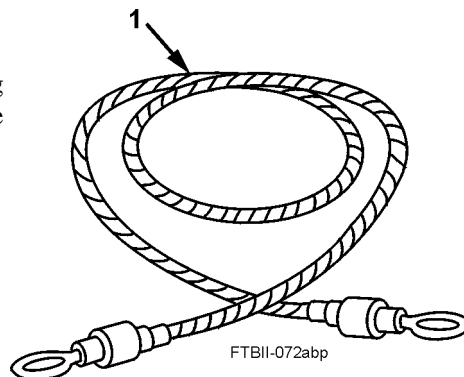
-KEY-

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.

WARNING

Drycleaning solvent P-D-680 is toxic and flammable. Wear protective goggles and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes; and do not breathe vapors. Keep away from heat or flame. Never smoke when using drycleaning solvent. Failure to follow this warning may result in injury or death to personnel.

Clean towing cable (1) with drycleaning solvent and coat with corrosion preventive compound.

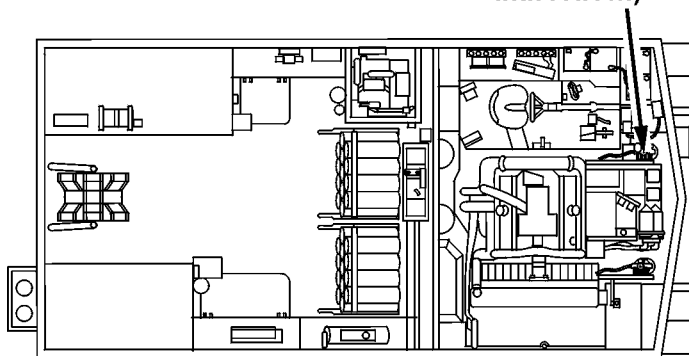


23. TRANSMISSION/MAIN ENGINE AOAP SAMPLER VALVES

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

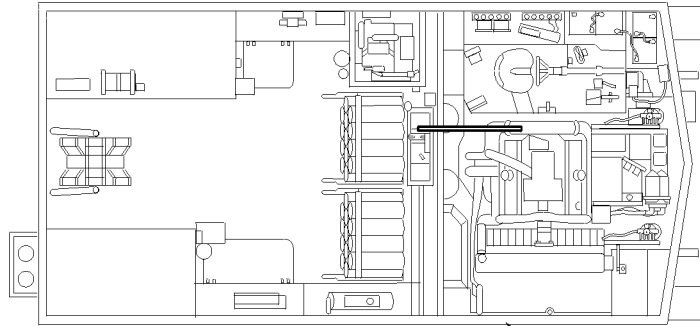
Intervals are as follows:
OC - on condition, or every 25 hours of operation or 30 days

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.

24. 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-L-46167) LUBRICATING OIL, Internal Combustion Engine, Arctic					
Engine Crankcase	38 qt (35.9 L)	OE/HDO 15W40	OE/HDO 15W40	OEA	

24. MAIN ENGINE CRANKCASE DRAIN (continued)

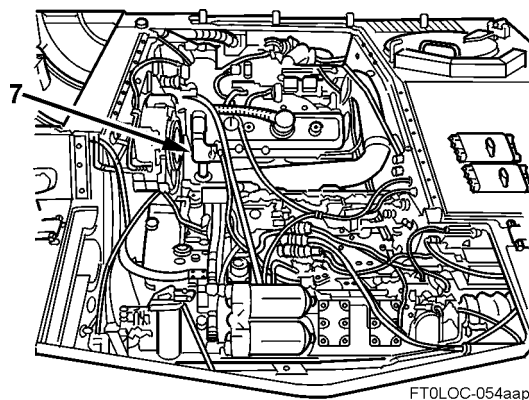
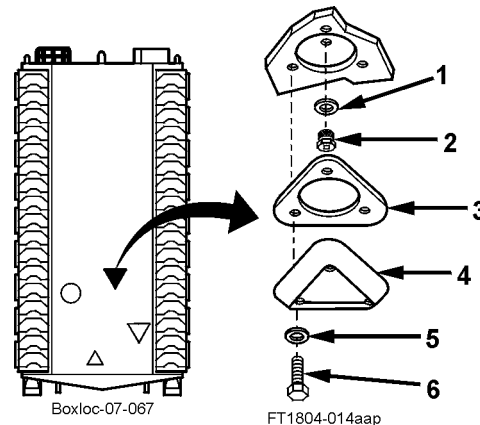
WARNING

Drycleaning solvent P-D-680 is toxic and flammable. Wear protective goggles and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes; and do not breathe vapors. Keep away from heat or flame. Never smoke when using drycleaning solvent. Failure to follow this warning may result in injury or death to personnel.

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.

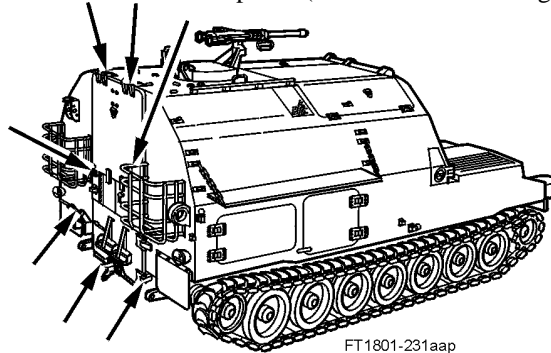
Remove three screws (6) and washers (5), cover plate (4), and gasket (3) from bottom of vehicle, and remove drain plug (2) and packing (1) from engine crankcase. After oil is drained, clean drain plug (2) with drycleaning solvent. Install drain plug (2) and packing (1), cover plate (4), and gasket (3) 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.



25. 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-L-46167). Clean lubrication points and wipe off excess lubricant. Back Door Latch and Hinges, and Intervehicular Cable Receptacle (Vehicles S/N 1 Through

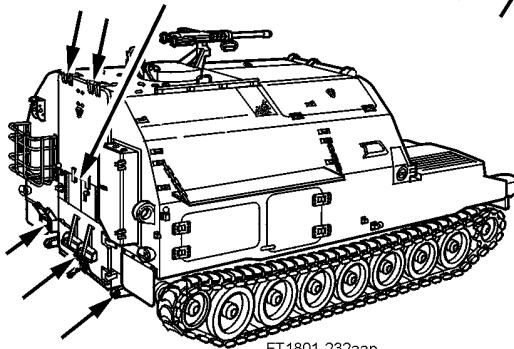
344)
Back Door Latch and Hinges, and
Intervehicular Cable Receptacle



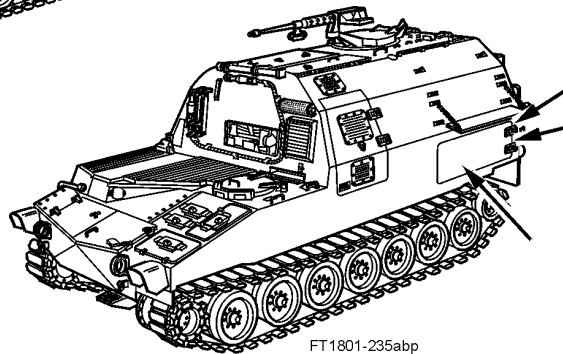
FT1801-231aap

(Vehicles S/N 345 and Above)

Personnel Side Door Latches (Inside
Only) and Hinges

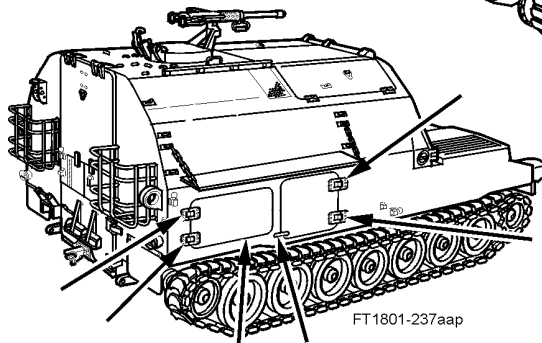


FT1801-232aap



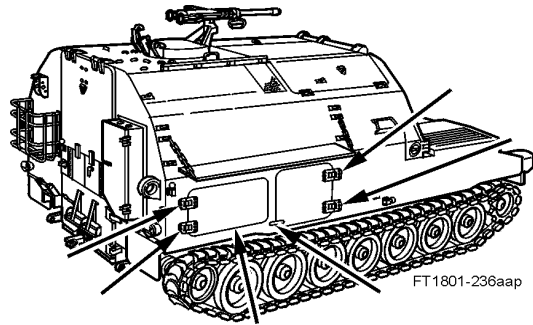
FT1801-235abp

Personnel and Canister Side Door
Latches (Inside Only) and Hinges
(Vehicles S/N 1 Through 344)



FT1801-237aap

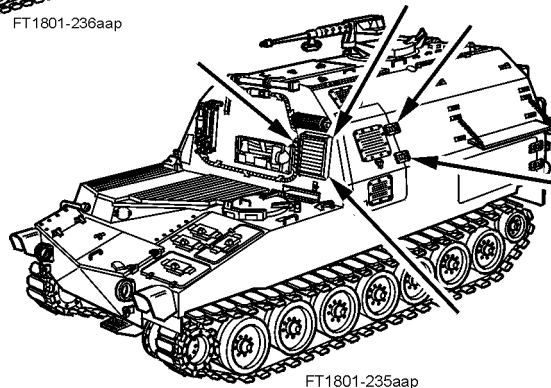
25. OIL CAN POINTS (continued)



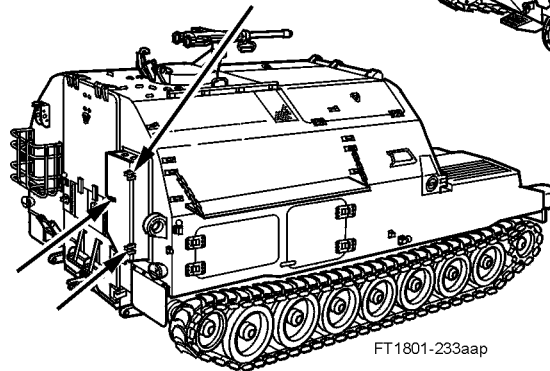
Personnel and Canister Side Door Latches (Inside Only) and Hinges (Vehicles S/N 345 and Above)

FT1801-236aap

APU Front and Side Door Latches and Hinges



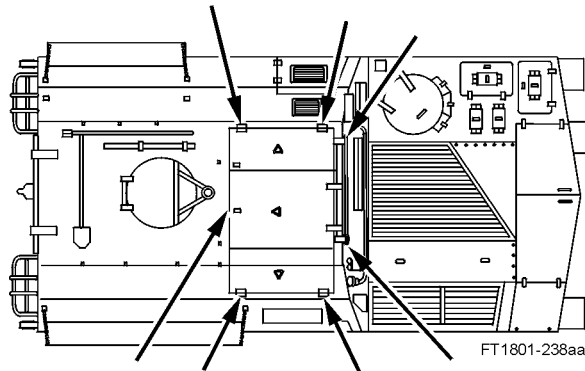
FT1801-235aap



Fire Extinguisher Box Door Latch and Hinges (Vehicles S/N 345 and Above)

FT1801-233aap

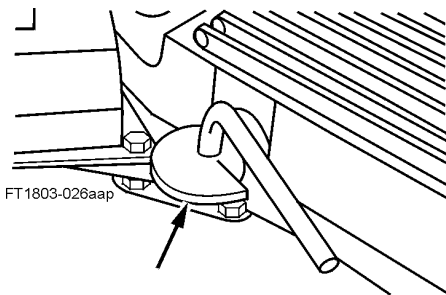
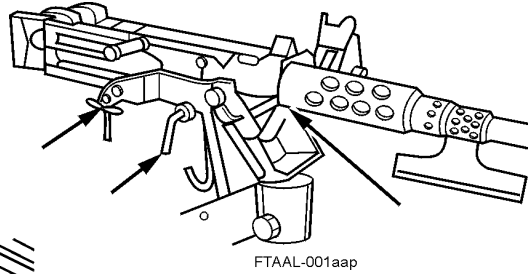
Top Middle Door Latch (Inside Only) and Top Door Hinges



FT1801-238aap

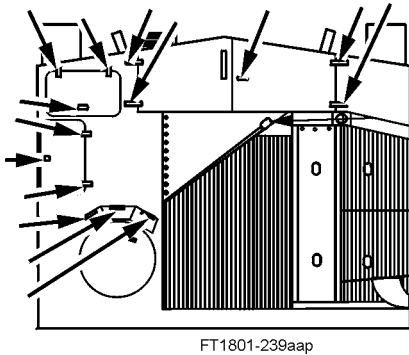
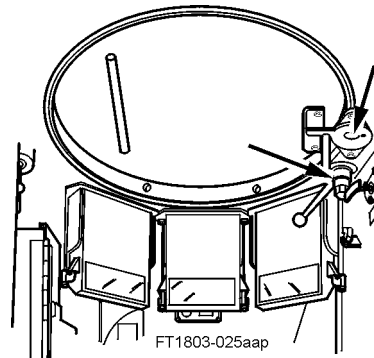
25. OIL CAN POINTS (continued)

Machine Gun Cradle Locking Pins



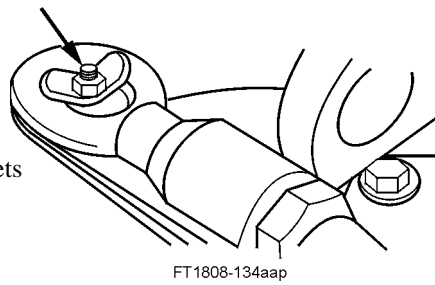
Security Latch for Driver's Hatch Door

Driver's Hatch Cover Operating Lever and Security Latch



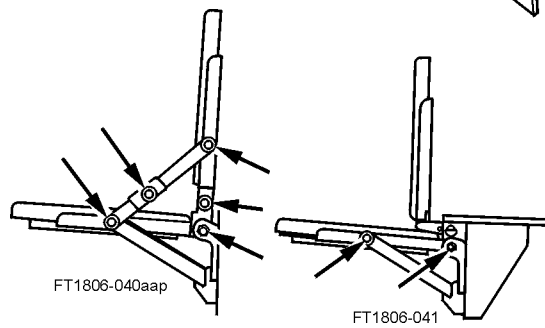
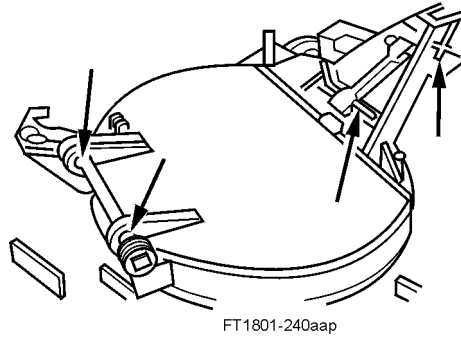
Hinges and Latches for Grilles and Covers, and Hatch Pin

Tow Cable Mounting Brackets



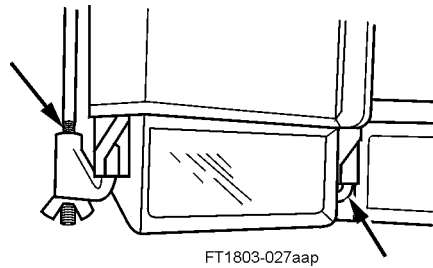
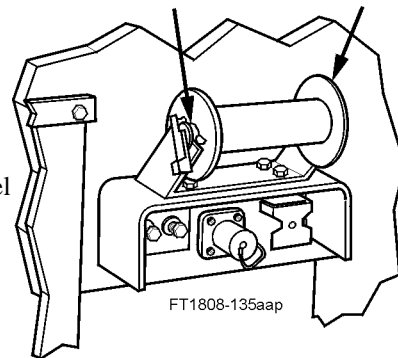
25. OIL CAN POINTS (continued)

Commander's Cupola Hatch Door Hinge,
Periscope Cover Hinge, and Machine Gun
Pintle Support



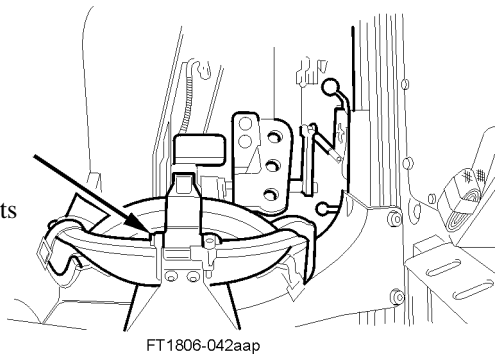
Crew Seat Hinges (NOTE: Not all
seats are shown; however, all must be
lubricated.)

Telephone Cable Reel



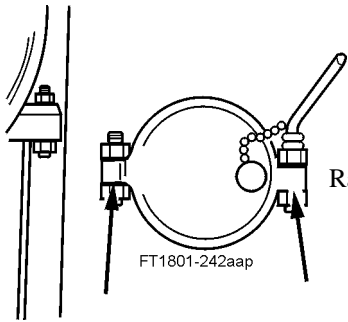
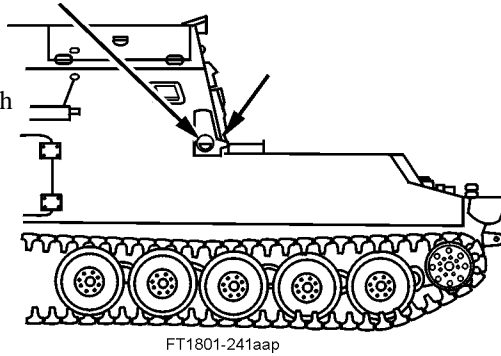
Driver's Periscope Retaining Latches

Driver's Seat Moving Parts



25. OIL CAN POINTS (continued)

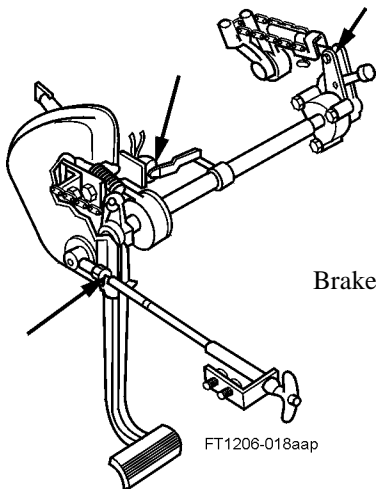
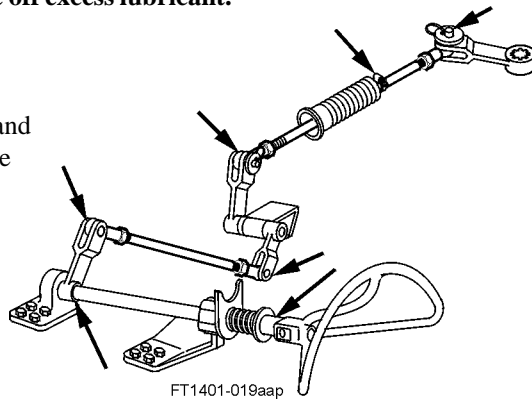
Fuel Filler Access Cover and Latch
(Inside Only)



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.

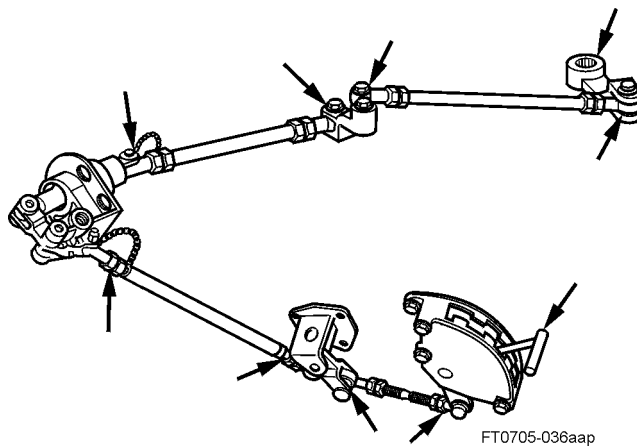
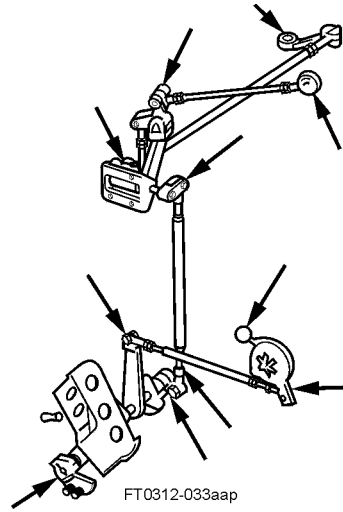
Steering Shaft Bushing and
Steering Control Linkage



Brake Control Linkage

25. OIL CAN POINTS (continued)

Accelerator and Throttle Controls

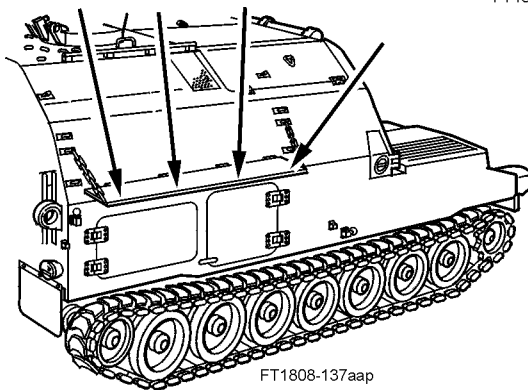
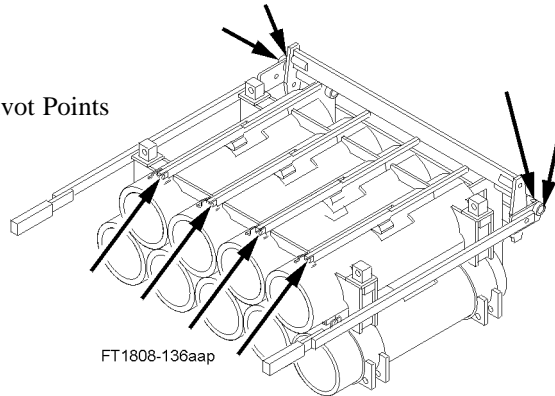


Transmission Shifting Control Linkage

25. OIL CAN POINTS (continued)

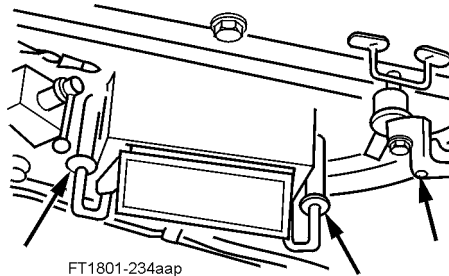
In the illustrations that follow, oil can points are indicated by arrows. Lubricate the oil can points semiannually with seasonal grade oil OE/HDO (MIL-PRF-2104) or OEA (MIL-L-46167). Clean lubrication points and wipe off excess lubricant.

Projectile Rack Pivot Points



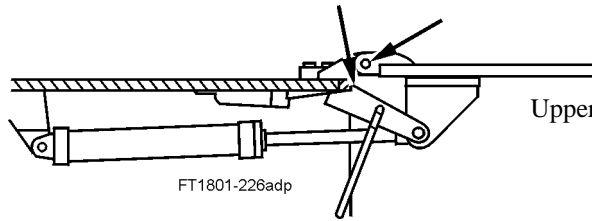
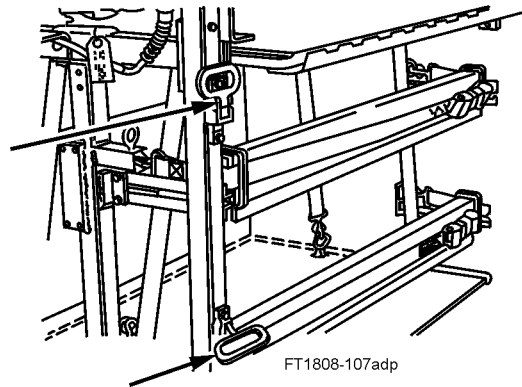
Duffle Bag Shelf Hinges (Three on Left, Four on Right)

Commander's Cupola Hatch Door Lock and Periscope Retaining Latches



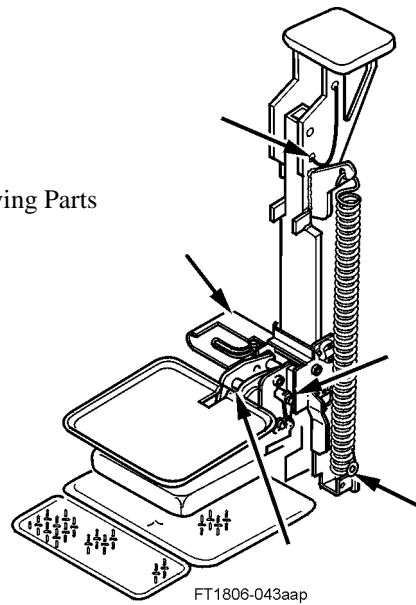
25. OIL CAN POINTS (continued)

Commander's Footsteps



Upper Rear Door Pivot Points

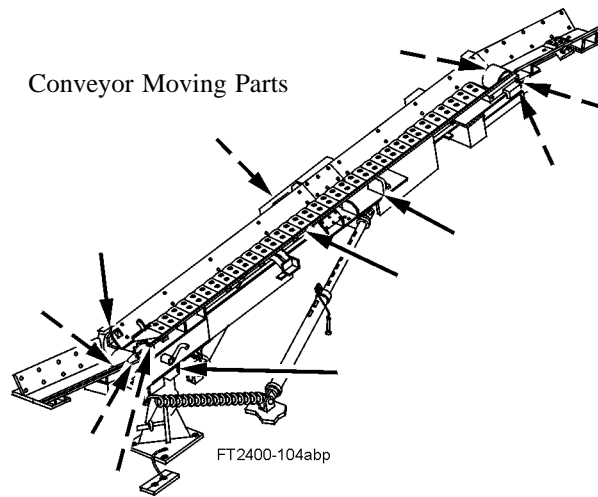
Commander's Seat Moving Parts



25. OIL CAN POINTS (continued)

NOTE

Dotted leader lines on the illustration indicate that lubrication is required on both sides of the equipment.



END OF WORK PACKAGE

OPERATOR'S MANUAL
CARRIER, AMMUNITION, TRACKED, M992A2

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*Administrative Assistant to the
Secretary of the Army*

0130901

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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

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

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

CUBIC MEASURE

1 Cu. Centimeter = 1000 Cu. Millimeters = 0.06 Cu. Inches
 1 Cu. Meter = 1,000,000 Cu. Centimeters = 35.31 Cu. Feet

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
 1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

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



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