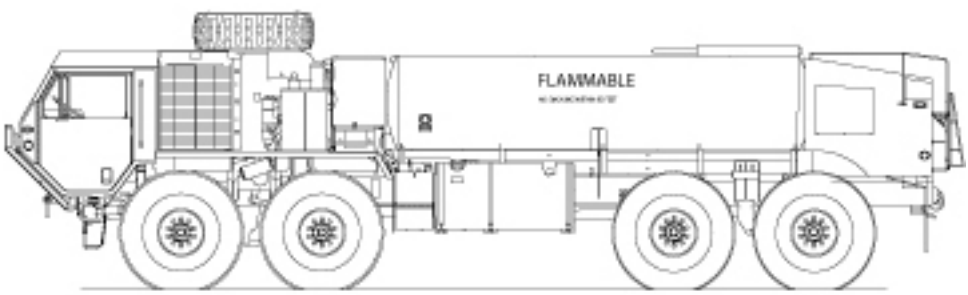
TM 9-2320-339-10

TECHNICAL MANUAL
OPERATOR'S MANUAL
FOR

TRUCK, TANK, 8X8
M978A4 W/WINCH
NSN 2320-01-534-1103

M978A4 W/O WINCH
NSN 2320-01-534-1117



Distribution Statement A - Approved for public release; distribution is unlimited.

HEADQUARTERS, DEPARTMENT OF THE ARMY
15 OCTOBER 2008

WARNING SUMMARY

GENERAL SAFETY CAUTION/WARNING SUMMARY

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

Table 1. Warning Icons Used In This Manual.

WARNING ICON	DESCRIPTION
	AIR PRESSURE - human hand blocking air gun shows the need to reduce air pressure before use, or debris may injure user and/or damage equipment.
	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 shows that the material will cause burns or irritation to human skin or tissue.
	CRYOGENIC - hand in block of ice shows that the material is extremely cold and can injure human skin and tissue.

Table 1. Warning Icons Used In This Manual. - Continued

WARNING ICON	DESCRIPTION
	ELECTRICAL - electrical wire to arm with electricity symbol running through human body shows that shock hazard is present.
	EXPLOSION - rapidly expanding symbol shows that the material may explode if subjected to high temperatures, sources of ignition, or high pressure.
	EXTREMELY COLD SURFACE - hand touching object with ice formed on both shows that surface is extremely cold and can damage human tissue.
	EYE PROTECTION - person with goggles shows that the material will injure the eyes.
	FIRE - flame shows that material may ignite and cause burns.

Table 1. Warning Icons Used In This Manual. - Continued

WARNING ICON	DESCRIPTION
	FIRE EXTINGUISHER - shows that material may ignite and a fire extinguisher should be within easy reach.
	HEAVY OBJECT - human figure stooping over heavy object shows physical injury potential for improper lifting technique, and/or aid of assistant(s) and/or lifting device (as required).
	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 - moving heavy object pinning human figure against stationary object shows that heavy, moving parts/objects present a danger to life or limb.

Table 1. Warning Icons Used In This Manual.

WARNING ICON	DESCRIPTION
	HEAVY PARTS - heavy object on human figure shows that heavy parts present a danger to life or limb.
	HOT AREA - hand over object radiating heats shows that part is hot and can burn.
	MOVING PARTS - hand with fingers caught between gears shows that the moving parts of the equipment present a danger to life or limb.
	PRESSURE/TENSION HAZARD - human body being impacted by rotating projectile shows that equipment is under pressure or tension presenting a danger to life or limb if pressure or tension is not carefully released.
	PROJECTILE HAZARD - human body with object passing through it shows that a projectile hazard exists.

Table 1. Warning Icons Used In This Manual.

WARNING ICON	DESCRIPTION
	RADIATION - three circular wedges show that the material emits radioactive energy and can injure human tissue.
	ROLLOVER HAZARD - vehicle indicating direction of human figure shows that vehicle may roll over if conditions are not avoided, presenting a danger to life or limb.
	RUN OVER HAZARD - vehicle running over human body shows hazard.
	SHARP OBJECT - pointed object in hand shows that a sharp object presents a danger to life or limb.
	SKIN IRRITATION - hand radiating shows that material can cause skin irritation.

Table 1. Warning Icons Used In This Manual.

WARNING ICON	DESCRIPTION
	SLICK FLOOR - wavy line on floor with legs prone shows that slick floor presents a danger of falling.
	STEAM HAZARD - human engulfed in steam cloud shows steam hazard exists that could injure/burn human tissue.
	TIRE BLOWOUT - tire with hole shows that an over or under inflated tire may rupture, presenting a danger to life or limb.
	VAPOR - human figure in a cloud shows that material vapors present a danger to life or health.
	WARNING/CAUTION - triangle with exclamation point within shows that a WARNING or CAUTION is present that indicates a potential hazard, which may cause injury or death to personnel (warning), or damage to equipment (caution).

Table 1. Warning Icons Used In This Manual.

WARNING ICON	DESCRIPTION
	WIRE CABLE/ROPE - human hand with frayed wire cable/rope running across shows injury to unprotected (bare) hands may result.

FOR INFORMATION ON FIRST AID:

Reference FM 4-25.11. (WP 0157)

WARNING



MODIFICATION HAZARD

- Unauthorized modifications to, alterations to, or installations on this equipment are prohibited and are in violation of AR 750-10.
- Failure to comply may result in injury or death to personnel or damage to equipment.

WARNING



HIGH-PRESSURE HYDRAULIC SYSTEM

- Hydraulic systems can cause serious injuries if high-pressure lines or equipment fails.
- Never work on hydraulic systems or equipment unless there is another person nearby who is familiar with the operation and hazards of the equipment and can give first aid.
- Never disconnect any hydraulic hose or part while the engine is running. Allow several minutes to elapse after shutting off engine, to

allow pressure to relieve itself, before attempting to remove hoses. Failure to comply may result in injury to personnel.

- The HEMTT vehicles contain hydraulic systems operating at oil pressures up to 3,000 psi (20,685 kPa) and 3,200 psi (22,064 kPa). Never disconnect any hydraulic line or fitting without first dropping the pressure to zero. Failure to comply may result in serious injury or death to personnel.

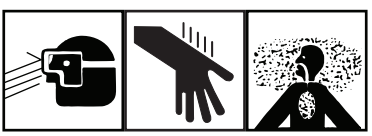
WARNING



ELECTRICAL SYSTEM

- Remove all jewelry, such as rings, ID tags, bracelets, etc. If jewelry or tools contact electrical circuits, a direct short may result. Failure to comply may result in serious injury or death to personnel.
- Do not smoke, use open flame, make sparks or other ignition sources around batteries. A battery giving off gas could explode. Failure to comply may result in serious injury or death to personnel.
- Be careful when working on or with electrical equipment. Do not be misled by the term “low voltage”. Voltages as low as 50 volts can cause death. For artificial respiration, refer to FM 4-25.11.
- When working inside the vehicle with power off, be sure to ground every capacitor likely to hold a dangerous voltage potential.
- Never work on electronic equipment unless there is another person nearby who is familiar with the operation and hazards of the equipment.

WARNING



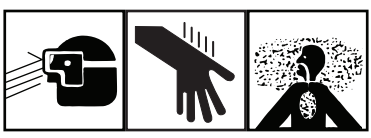
SOLVENT CLEANING COMPOUND

- Solvent cleaning compound MIL-PRF-680 Type II and III may be irritating to the eyes and skin. Use protective gloves and goggles. Use in a well-ventilated area. Use respirator as needed. Accidental ingestion can cause irritation of digestive tract and respiratory tract,

may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid of skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If symptoms persist, seek medical attention. Keep away from open flames and other sources of ignition. Failure to follow this warning may result in injury or death to personnel.

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

WARNING



POLYURETHANE COATING (CARC)

- Eye and hearing protection must be worn at all times when using power tools for grinding, cutting, sawing, and drilling. Failure to do so may result in injury to personnel. Chemical Agent Resistant Coating (CARC) paint contains isocyanate which is highly irritating to skin and respiratory system. High concentrations of isocyanate can produce symptoms of itching and reddening of skin, a burning sensation in the throat and nose, and watering of the eyes. In extreme concentrations, isocyanate can cause cough, shortness of breath, pain during respiration, increased sputum production, and chest tightness. First aid for ingestion: do not induce vomiting. Seek immediate medical

attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If symptoms persist, seek medical attention.

- The following precautions must be taken whenever using CARC paint:
- Protective equipment (gloves, goggles, ventilation mask) must be worn when using CARC paint.
- NEVER cut CARC-coated materials without high-efficiency, air-purifying respirators in use.
- DO NOT grind or sand painted equipment without high-efficiency, air-purifying respirators in use.
- BE AWARE of CARC paint exposure symptoms; symptoms can occur a few days after initial exposure. Seek medical help immediately if symptoms are detected.
- Use only in well-ventilated area. Check with local environmental office for methods and locations approved for painting in accordance with local and state environmental regulations.
- Always use air line respirators when using CARC paint unless air sampling shows exposure to be below standards. Use chemical cartridge respirator if air sampling is below standards.

WARNING



ADHESIVE

- Adhesive, solvents and sealing compounds can burn easily and are harmful causing immediate bonding on contact with eyes, skin, or clothing and gives off harmful vapors.
- If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.
- If adhesive gets in your eyes, try to keep them open; flush them with water for 15 minutes and get immediate medical attention.
- Wear protective goggles and use in a well-ventilated area.

- Keep away from open fire and use in well-ventilated area to avoid injury or death.

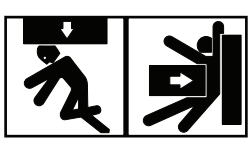
WARNING



FLAMMABLE LIQUID AND COMBUSTIBLE VAPOR

- Gasoline, fuel oil, lubricating oil, grease, paint, paint thinner, cleaning solvents, and other combustible liquids present a serious fire hazard.
- Combustible liquids must ALWAYS be stored in their approved containers and designated compartments or deck storage locations.
- Ensure exhaust and ventilation fans are operating while using cleaning solvents or paint products.
- Never store or charge batteries in a confined space without ventilation or near electrical equipment.
- Fuel is very flammable and can explode easily.
- To avoid serious injury or death, keep fuel away from open fire and keep fire extinguisher within easy reach when working with fuel.
- Do not work on fuel system when engine is hot. Fuel can be ignited by hot engine.
- When working with fuel, post signs that read NO SMOKING WITHIN 50 FEET OF VEHICLE.
- Starting fluid is toxic and flammable. Do not store in cab and do not breathe fumes. Do not puncture or burn containers. Dispose of container following manufacturer's recommendations on the container.

WARNING

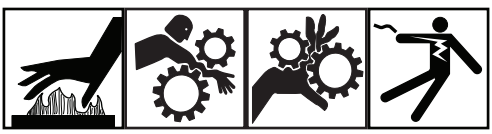


LIFTING OPERATIONS This section is applicable to all lifting operations regardless of lifting equipment (crane, LHS, etc.) used.

- All personnel must stand clear during lifting operations. A swinging or shifting load may cause injury or death to personnel.

- Never crawl under equipment when performing maintenance unless equipment is securely blocked. Failure to comply may cause injury or death to personnel.
- Keep clear of equipment when it is being raised or lowered. Failure to comply may cause injury or death to personnel.
- Do not work on any item supported only by lift jacks or hoist. Always use blocks or proper stands to support the item prior to any work. Failure to comply may result in injury or death to personnel.
- Do not lift a load greater than the rated load capacity of the crane or materiel handling equipment. Failure to comply may result in injury or death to personnel or damage to equipment.
- Do not allow heavy components to swing while hanging by lifting device. Failure to comply may cause injury or death to personnel.
- Any part or component that weighs between 50 lbs (23 kg) and 75 lbs (34 kg) must be removed with the aid of an assistant. Any part or component that weighs over 75 lbs (34 kg) must be removed with the aid of an assistant and a lifting device. Failure to comply may cause injury or death to personnel.
- Ensure all chains, hooks, and slings are in good condition and are of correct capacity. Ensure hooks are positioned correctly. Failure to comply may result in injury or death to personnel.

WARNING



MOVING MACHINERY

- Use extreme care when operating or working near moving machinery including running engine, rotating shafts, and other moving parts. Failure to comply may result in injury or death to personnel.
- Use extreme care when measuring voltage while engine is running around rotating fan blade and hot engine parts. Failure to comply may result in injury or death to personnel.

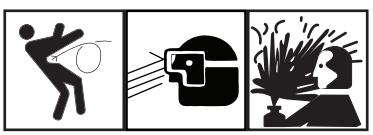
WARNING



TANKER OPERATION

- Equipment operation is allowable with minor leakages (Class I) or (Class II). Consideration must be given to the field capacity in the item/system being checked/inspected. When in doubt notify supervisor. When operating with Class I or II leaks, continue to check fluid levels as required in the PMCS.
- or (Class III) leaks should be repaired per applicable procedure.
- All winching performed in this procedure must be with engine at low idle. Failure to comply may result in damage to equipment.
- Use care when removing nozzles. Failure to comply may result in damage to equipment.

WARNING



PARTS UNDER PRESSURE

- Wear safety goggles and use caution when removing or installing springs, snap rings, retaining rings, and other parts under spring tension. These parts can act as projectiles. Failure to comply may result in injury or death to personnel.
- The radiator is very hot and pressurized during vehicle operation. Let radiator cool before removing cap. Failure to do so can result in serious burns.
- During pressure tests, ensure air pressure is drained to 0 psi (0 kPa) before taking off any components. If pressure is not released, plates or line could blow off and harm personnel. Do not drain air from tank with any part of body in air spray path. Skin embolisms and/or debris in eyes can occur from released pressure.
- High air pressure may be released from valve stem when valve core is removed. Stay clear of valve stem after core is removed. Ensure all personnel wear suitable eye protection. Failure to comply may result in injury to personnel.

- Stand clear of trajectory area during deflation or personal injury or death may result.
- Lock-ring is under tension. If lock-ring breaks loose it could cause injury to personnel. Keep hands and fingers away from lock-ring when removing.
- Never adjust relief valve so that personnel must stand on strongback to operate latch.
- If there is any residual pressure in tank when relief valve is open, personnel may lose their balance and fall. Failure to comply may result in injury or death to personnel.
- Use extreme care when removing or installing spring retainers. Spring retainers are under tension and can act as projectiles when released suddenly. Ensure proper eye protection is worn to prevent injury to personnel.
- Use extreme care when removing or installing springs. Springs are under tension and can act as projectiles when released. Ensure proper eye protection is worn to prevent injury to personnel. Eye protection is required during all grinding operations. Failure to comply may result in serious injury to personnel.
- Failure to relieve tank pressure may result in sudden, unexpected loss of pressure. Failure to comply may result in personal injury or death.
- Do not remove the radiator cap when the engine is hot, as steam and hot coolant can escape. Failure to comply may result in personal injury or death.

WARNING



HEAVY PARTS

Any part or component that weigh over 50 lbs (23 kg) must be removed with the aid of an assistant and a lifting device. Failure to comply may result in personal injury or death.

WARNING



CRANE SYSTEM

- Always refer to the range diagram BEFORE making any lift. It is extremely important that the crane is properly leveled to prevent overstressing.
- Do not operate crane unless outriggers are set up. Always chock front wheels when using outriggers. Failure to comply may result in injury or death to personnel.
- When using crane on any vehicle, park vehicle clear of all overhead powerlines. If operating crane under power lines, do not allow vehicle to contact high-voltage connections. Failure to comply will result in death to personnel.
- Do not stand under crane. Failure to comply may result in injury or death to personnel.
- Refuse to work with worn, frayed, or damaged wire rope. Always wear heavy gloves when handling winch cables; never let cable run through hands. Frayed cables can cut. Never operate winch with less than five wraps of cable on winch drum. Failure to comply may result in injury or death to personnel.
- When using crane on any vehicle, park vehicle clear of all overhead power lines. Do not operate crane near overhead power lines. Failure to comply may result in injury or death to personnel.
- Boom has a 370 degree rotation and is mechanically stopped at five degrees on either side of the left outrigger beam. Swing operations must be slowed no later than 15 degrees prior to contacting the stop.
- Keep boom clear of electrical powerlines and other obstacles. Do not operate crane near overhead powerlines. Failure to comply will result in death to personnel.
- Avoid quick, jerking, winch operation. Keep other personnel well away from vehicles involved in winching operations. A snapped cable or shifting load can cause serious injury or death.
- If possible, keep one hand away from equipment to reduce the hazard of current flowing through vital organs of the body.
- Keep fingers clear of top of lift-hook. Failure to comply could result in personnel injury.

WARNING



CARBON MONOXIDE (EXHAUST GAS) CAN CAUSE DEATH

- Carbon monoxide does not have color or smell and can cause death.
- Breathing air with carbon monoxide produces symptoms of headache, dizziness, loss of muscular control, a sleepy feeling and coma. Brain damage or death can result from heavy exposure.
- Carbon monoxide is in exhaust fumes of fuel-burning heaters and internal combustion engines.
- Carbon monoxide can become dangerously concentrated under conditions of no ventilation.
- Precautions must be followed to ensure crew safety when the personnel heater or engine of any vehicle is operated for any purpose. Failure to comply may result in injury or death to personnel.
- DO NOT operate vehicle engine in a closed place unless the place has proper ventilation. Failure to comply may result in injury or death to personnel.
- DO NOT drive any vehicle with inspection plates, cover plates, or engine compartment covers removed unless necessary for maintenance purposes. Failure to comply may result in injury or death to personnel.
- BE ALERT at all times during vehicle operation for exhaust odors and exposure symptoms. If either odor or exposure symptoms are present, IMMEDIATELY VENTILATE personnel compartments. If symptoms continue, remove affected crew to fresh air and keep warm. DO NOT PERMIT PHYSICAL EXERCISE. If necessary, give artificial respiration and get immediate medical attention. For artificial respiration, refer to FM 4-25.11 . Failure to comply may result in injury or death to personnel.
- BE AWARE that the gas particulate filter unit or the field protection mask for nuclear-biological-chemical protection WILL NOT offer safety from carbon monoxide poisoning.

WARNING



EXTREME HEAT

If required to remain inside the vehicle during extreme heat, occupants should follow the water intake, work/rest cycle, and other heat stress preventive medicine measures contained in FM 21-10, Field Hygiene and Sanitation.

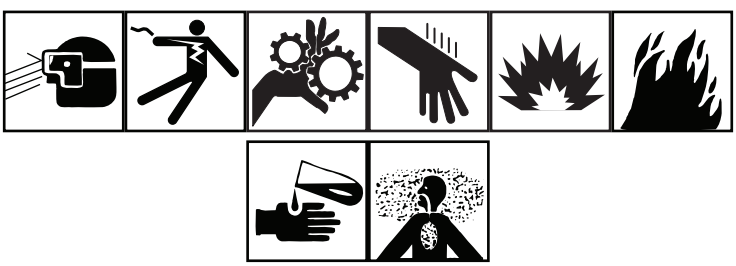
WARNING



CABLES

- Always wear heavy gloves when handling winch cables; never let cable run through hands. Frayed cables can cut. Failure to comply may result in injury or death to personnel.
- Never operate winch with less than five wraps of cable on winch drum. Frayed cables can cut. Failure to comply may result in injury or death to personnel.

WARNING



LEAD-ACID BATTERIES

- Wear proper eye protection when working around batteries. Failure to comply may result in injury or death to personnel.
- Use extreme care not to short out battery terminals. Remove all jewelry such as rings, ID tags, bracelets, etc. prior to working on or

around vehicle. Jewelry and tools can catch on equipment, contact positive electrical circuits, and cause a direct short, severe burns, or electrical shock. Failure to comply may result in injury or death to personnel.

- Batteries produce explosive gases. Do not smoke or use open flame near batteries. Do not allow hot, sparking, or glowing objects near batteries. If batteries are giving off gases, presence of a heat, flame, or spark may cause fire and/or explosion. Failure to comply may result in injury or death to personnel.
- Battery electrolyte is harmful to skin, and eyes. Avoid battery electrolyte contact with skin, eyes, or clothing. If battery electrolyte spills, take immediate action to stop burning effects:

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WARNING



NBC

- 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 3-11.4) is used, and prescribed safety measures and decontamination procedures (FM 3-11.5) are followed.
- The local unit SOP is responsible for final disposal of contaminated air filters. Failure to comply may cause severe injury or death to personnel.

WARNING



TIRE OPERATION

- Operating a vehicle with a tire in an overinflated or underinflated condition, or with a questionable defect, may lead to premature tire failure. Ensure tire has proper tire pressure. Failure to comply may result in injury or death to personnel.

- When inflating tires mounted on the vehicle, all personnel must remain out of trajectory of the side ring and lock-ring as shown by the areas indicated. Failure to follow proper procedures may result in serious injury or death to personnel.
- Cracked, broken, bent or otherwise damaged rim components shall not be reworked, welded, brazed, or otherwise heated or damage or personal injury or death may result.
- No heat shall be applied to a multi-piece wheel or wheel component or damage or injury or death may result.
- Failure to place wheel/tire assembly in safety cage prior to initial inflation could result in serious injury or death to personnel.
- When a wheel/tire is in a restraining device, do not rest or lean any part of body or equipment on or against the restraining device, or injury or death could result.
- While changing tires or while performing tire maintenance, stay out of the trajectory path. Failure to comply may result in injury or death to personnel.
- Always use an inflation hose with an in-line gauge and a clip-on chuck when inflating tires. The gauge and valve must be mounted a minimum of 10 feet (3.10 m) away from air chuck.
- High air pressure may be released from valve stem when valve core is removed. Stay clear of valve stem after core is removed. Ensure all personnel wear suitable eye protection. Failure to comply may result in injury to personnel.
- Tire is heavy. Brace tire to ensure tire will not fall over on you or on others.

WARNING



VEHICLE OPERATION

- Speed limits posted on curves reflect speeds that are considered safe for automobiles. Heavy trucks with a high center of gravity can roll over at these speed limits. Use caution and reduce your speed below the posted limit before entering a curve. Failure to comply may result in vehicle crash and injury to personnel.

- Use caution and reduce your speed below the posted limit before entering a curve. Failure to comply may result in vehicle crash and injury to personnel.
- Always use seatbelts when operating vehicle. Failure to use seatbelt can result in serious injury or death in case of accident.
- Operation at speeds over 15 mph (24 kph) on paved roads can be achieved when the operator determines that the vehicle being towed and the terrain allow safe operation.
- Under no condition can speeds over 35 mph (55 kph) on paved road and 15 mph (24 kph) off-road be allowed. Loss of control can cause serious injury or death. Excessive speed can cause damage to vehicle being towed.

WARNING



BRAKES

- Ensure all personnel are clear from front of truck before performing brake stall check. Be ready to apply service brake. Operator must remain in cab while performing this check. Failure to comply could result in personnel injury.
- Never use parking brake for normal braking or wheels will lock up causing severe skid. Skidding vehicle may result in serious personal injury or death.
- Engine must be shut OFF and parking brake set before performing PMCS walkaround. Failure to comply may result in injury or death to personnel.

WARNING



BURNS

The exhaust pipe and muffler can become very hot during vehicle operation. Be careful not to touch these parts with bare hands, or allow

body to come in contact with exhaust pipe or muffler. Exhaust system parts can become hot enough to cause serious burns.

WARNING



HEARING PROTECTION

- Excessive noise levels are present any time the heavy-duty winch or crane is operating.
- Wear single hearing protection (earplugs or equivalent) while working around equipment while it is running. Failure to do so could result in damage to your hearing.
- Seek medical aid should you suspect a hearing problem.

WARNING



COMPRESSED AIR

- Brake shoes may be coated with dust. Breathing this dust may be harmful to your health.
- Do not use compressed air to clean brake shoes. Wear a filter mask approved for use against brake dust. Failure to comply may result in injury or death to personnel.
- Compressed air used for cleaning purposes will not exceed 30 psi (207 kPa).
- Use only with effective chip guarding and personal protective equipment, goggles, shield, and gloves.

LIST OF EFFECTIVE PAGES/WORK PACKAGES

NOTE:
Zero in the "Change No." column indicates an original page or work package.

Date of issue for the original manual is:

Original 15 October 2008

TOTAL NUMBER OF PAGES FOR FRONT AND REAR MATTER IS 76 AND TOTAL NUMBER OF WORK PACKAGES IS 160, CONSISTING OF THE FOLLOWING.

Page/WP No.	Change No.	Page/WP No.	Change No.
Front Cover	0	WP 0023 (2 pages)	0
Warning Summary	0	WP 0024 (2 pages)	0
i-xliv	0	WP 0025 (2 pages)	0
Chp 1 - General Information,		WP 0026 (4 pages)	0
Equipment Description and		WP 0027 (2 pages)	0
Theory of Operation	0	WP 0028 (4 pages)	0
WP 0001 (10 pages)	0	WP 0029 (4 pages)	0
WP 0002 (8 pages)	0	WP 0030 (2 pages)	0
WP 0003 (2 pages)	0	WP 0031 (4 pages)	0
WP 0004 (6 pages)	0	WP 0032 (4 pages)	0
WP 0005 (4 pages)	0	WP 0033 (4 pages)	0
WP 0006 (10 pages)	0	WP 0034 (2 pages)	0
WP 0007 (2 pages)	0	WP 0035 (6 pages)	0
WP 0008 (2 pages)	0	WP 0036 (8 pages)	0
WP 0009 (4 pages)	0	WP 0037 (4 pages)	0
WP 0010 (2 pages)	0	WP 0038 (2 pages)	0
WP 0011 (2 pages)	0	WP 0039 (6 pages)	0
WP 0012 (8 pages)	0	WP 0040 (18 pages)	0
WP 0013 (8 pages)	0	WP 0041 (10 pages)	0
WP 0014 (2 pages)	0	WP 0042 (4 pages)	0
WP 0015 (2 pages)	0	WP 0043 (8 pages)	0
WP 0016 (2 pages)	0	WP 0044 (2 pages)	0
Chp 2 - Operator Instructions	0	WP 0045 (2 pages)	0
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WP 0018 (4 pages)	0	WP 0047 (4 pages)	0
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WP 0020 (16 pages)	0	WP 0049 (2 pages)	0
WP 0021 (6 pages)	0	WP 0050 (4 pages)	0
WP 0022 (2 pages)	0	WP 0051 (6 pages)	0

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WP 0052 (2 pages)	0	WP 0096 (2 pages)	0
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WP 0056 (2 pages)	0	WP 0100 (4 pages)	0
WP 0057 (4 pages)	0	WP 0101 (2 pages)	0
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HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON D.C., 15 OCTOBER 2008

TECHNICAL MANUAL

OPERATOR'S MANUAL
TRUCK, TANK, 8X8
M978A4, W/WINCH
NSN 2320-01-534-1103
M978A4, W/O WINCH, 8X8
NSN 2320-01-534-1117

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Distribution A - Approved for public release; distribution is unlimited.

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HOW TO USE THIS MANUAL

USABLE ON CODE (UOC) INFORMATION

Usable On Code (UOC) - the user should be aware that the M978A4 Tanker HEMTT series vehicle (with self-recovery winch installed) UOC is “LH3”. Dependent on the format used for printing this manual, the user may or may not see instructions printed in this manual stating what information is applicable to which model HEMTT series vehicle by UOC.

USABLE ON CODE (UOC) INFORMATION

Usable On Code (UOC) - the user should be aware that the M978A4 Tanker HEMTT series vehicle (without self-recovery winch installed) UOC is “LH4”. Dependent on the format used for printing this manual, the user may or may not see instructions printed in this manual stating what information is applicable to which model HEMTT series vehicle by UOC.

WARNINGS, CAUTIONS, AND NOTES

Read all WARNINGS, CAUTIONS, AND NOTES before performing any procedure.

Warnings, cautions, notes, subject headings, and other essential information are printed in **BOLD** type, making them easier for the user to see.

GENERAL INFORMATION

This manual is designed to help operate and maintain the Heavy Expanded Mobility Tactical Truck (HEMTT). Listed below are some features included in this manual to help locate and use the required information:

- Chapter 1 of this manual includes HEMTT series vehicle general information, theory of operation, differences between models, etc.
- Chapter 2 of this manual provides operating procedures and operator Preventive Maintenance Checks and Services (PMCS) for both the HEMTT series vehicle, and its accompanying operating systems.
- Chapter 3 of this manual provides operator troubleshooting procedures for both the HEMTT series vehicle, and its accompanying operating systems.

In addition to text, there are illustrations showing:

1. Components, controls, and indicators.
2. How to take a component off, and put it back on.
3. Cleaning and inspection criteria are also listed when necessary.

CHAPTER 1

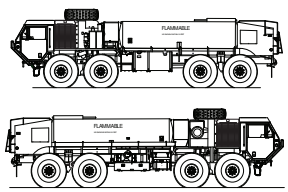
GENERAL INFORMATION, EQUIPMENT DESCRIPTION AND THEORY OF OPERATION

OPERATOR MAINTENANCE
INTRODUCTION

SCOPE

This manual is used for operation and operator-performed maintenance of HEMTT series vehicles which consist of a number of different models all built on similar chassis, but specially equipped to perform different missions.

Table 1. Overview.

M978A4 TANKER	DESCRIPTION
 *Figure 1.*	Tanker vehicle with 66,000 lbs (29 964 kg) GVWR and 109,000 lbs (49 486 kg) GCWR. Tanker module has a 2500 gal (9 463 L) capacity and two fuel resupply stations.

MAINTENANCE FORMS AND RECORDS

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 750-8 The Army Maintenance Management System (TAMMS) Users Manual. (WP 0157)

EQUIPMENT IMPROVEMENT REPORT AND MAINTENANCE DIGEST (EIR MD) AND QUALITY DEFICIENCY REPORTING (QDR).

The quarterly TB 43-0001-62 (series) Equipment Improvement Report and Maintenance Digest (WP 0157) contains valuable field information on equipment covered in this manual. Information in the TB 43-0001-62 (series) Equipment Improvement Report and Maintenance Digest (WP 0157) is compiled from some of the Equipment Improvement Reports (EIR) that have been prepared on vehicles covered in this manual. Many of these articles result from comments, suggestions, and improvement recommendations that were submitted to the EIR program. TB 43-0001-62 (series) Equipment Improvement Report and Maintenance Digest (WP 0157) contains information on equipment improvements, minor alterations, proposed Modification Work Orders (MWOs), warranties (if applicable), actions taken on some of the DA Form 2028's (WP 0157) (Recommended Changes to

Publications), and advance information on proposed changes that may affect this manual. Refer to the TB 43-0001-62 (series) Equipment Improvement Report and Maintenance Digest (WP 0157) periodically for the most current and authoritative information on the equipment. The information will help to do a better job and will advise of the latest changes to this manual. Also refer to DA PAM 25-30, (WP 0157) Consolidated Index of Army Publications and Blank Forms at http://www.army.mil/usapa/2530.html, and reference section (WP 0157) of this manual. If you have a change recommendation to this manual, submit a DA Form 2028's (WP 0157) (Recommended Changes to Publications) via e-mail to: ROCK-TACOM-TECH-PUBS@conus.army.mil.

You can help improve this publication. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Submit your DA Form 2028 (WP 0157) (Recommended Changes to Equipment Technical Publications) through the Internet, on the Army Electronic Product Support (AEPS) website. The Internet address is https:// aeps.ria.army.mil. The DA Form 2028 (WP 0157) is located under the Public Applications section in the AEPS Public Home Page. Fill out the form and click on SUBMIT. Using this form on the AEPS will enable us to respond quicker to your comments and better manage the DA Form 2028 program. You may also mail, fax or e-mail your letter or DA Form 2028 (WP 0157) direct to: TACOM Life Cycle Management Command, ATTN: AMSTA-LC-LMPP / TECH PUBS, TACOM–RI, 1 Rock Island Arsenal, Rock Island, IL 61299-7630. The e-mail address is ROCK-TACOM-TECH-PUBS@conus.army.mil. The fax number is DSN 793-0726 or Commercial (309) 782-0726.

HAND RECEIPT (HR) INFORMATION

The is a companion document to this manual which consists of preprinted hand receipts (DA Form 2062) (WP 0157) that list end item related equipment (COEI, BII, (WP 0158) and AAL (WP 0159)) which must be accounted for. As an aid to property accountability, additional Hand Receipt (-HR) Manuals may be requisitioned from the following source in accordance with procedures in DA PAM 25-30, (WP 0157) Consolidated Index of Army Publications and Blank Forms; Commander US Army Distribution Operation Facility, 1655 Woodson Road, St Louis, MO 63114-6181.

CORROSION PREVENTION AND CONTROL

Corrosion prevention and control (CPC) of Army material is a continuing concern. It is important that any corrosion problems be reported so they can be corrected and improvements can be made to prevent problems in the future. While corrosion is typically associated with the 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 (WP 0157). The use of key words, such as “corrosion”, “rust”, “deterioration”, and “cracking” will ensure that the information is identified as a CPC problem.

DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

Procedures for the destruction of Army materiel to prevent enemy use are contained in TM 750-244-6 (WP 0157).

PREPARATION FOR STORAGE OR SHIPMENT

See information on preparing the HEMTT series vehicle for storage or shipment.

WARRANTY INFORMATION

The HEMTT series vehicles are warranted by Oshkosh Truck Corporation for 12 months or 12,000 miles (19 308 km), whichever comes first. The warranty starts on the date found in block 23 of DA Form 2408-9 (WP 0157) in the vehicle logbook. Report all defects in material or workmanship to the supervisor, who will take appropriate action through the field level maintenance shop.

NOMENCLATURE CROSS-REFERENCE LIST

Table 2. Common Nomenclature.

COMMON NAME	OFFICIAL NOMENCLATURE
Brake Pedal	Service Brake Pedal
Cable/Hoist Cable	Wire Rope
Cold Start System	Ether Quick-Start System
Electrical Control Box	Junction Box
Engine Coolant	Antifreeze, Ethylene Glycol Mixture
Glad Hand	Quick Disconnect Coupling
High Idle Switch	Engine Speed Control Switch
Jake Brake, Jacobs® Brake	Engine Retarder, Engine Brake
Manual Controls	Directional Control Valves
O-Ring	Preformed Packing
Snap Ring	Retaining Ring

LIST OF ABBREVIATIONS

Table 3. Common Abbreviations.

ABBREVIATION	OFFICIAL NOMENCLATURE
AAL	Additional Authorization List
AMDF	Army Master Data File
amp	Ampere
BAP	Bridge Adapter Pallet
bar	Barometric Pressure
BII	Basic Issue Items
BL	Bottom Load
BOI	Basis of Issue
C	Celsius
CAGEC	Commercial And Government Entity/Code
CARC	Chemical Agent Resistant Coating
CBR	Chemical, Biological, Radiological
CBT	Common Bridge Transporter
CCA	Cold Cranking Amperes
CHU	Container Handling Unit
CID	Cubic Inch Displacement
CKT	Circuit
cm	Centimeter
COEI	Components of End Item
CPC	Corrosion Prevention Control

Table 3. Common Abbreviations. - Continued

ABBREVIATION	OFFICIAL NOMENCLATURE
CROP	Container Roll-In/Out Platform
CTA	Common Table of Allowance
DA	Department of the Army
dia.	Diameter
DS	Direct Support
EIR	Equipment Improvement Recommendations
F	Fahrenheit
FHTV	Family of Heavy Tactical Vehicles
FLA	Front Lift Adapter
fl. oz.	Fluid Ounce
FR	Flatrack
FRS	Forward Repair System
ft.	Foot
GAA	Grease, Automotive, and Artillery
gal	Gallon
GCWR	Gross Combination Weight Rating
GMT	Guided Missile Transport
GPFU	Gas Particulate Filter Unit
gpm	Gallons Per Minute
GS	General Support
GVWR	Gross Vehicle Weight Rating

Table 3. Common Abbreviations. - Continued

ABBREVIATION	OFFICIAL NOMENCLATURE
HDI	Hexamethylene Diisocyanate
HEMTT	Heavy Expanded Mobility Tactical Truck
hp	Horsepower
HVAC	Heating, Ventilation, and Air Conditioning
IBC	Improved Boat Cradle
I.D.	Inside Diameter
in.	Inch
ISO	International Standards Organization
JTA	Joint Table of Allowances
kg	Kilogram
km	Kilometer
Kmh or km/h	Kilometer per Hour
kPa	Kilopascals
kw	Kilowatt
L	Liter
lbs	Pound
lb-ft	Pound-Foot
lb-in	Pound-Inch
LCD	Liquid Crystal Display
LED	Light Emitting Diode
LH	Left-Hand

Table 3. Common Abbreviations. - Continued

ABBREVIATION	OFFICIAL NOMENCLATURE
LHS	Load Handling System
M	Meter
MAC	Maintenance Allocation Chart
mi	Mile
ml	Milliliter
MLC	Military Load Class
mm	Millimeter
Mph	Miles Per Hour
MTOE	Modified Tables of Organization and Equipment
NBC	Nuclear, Biological, Chemical
NIIN	National Item Identification Number
Nm	Newton Meter
NOC	Not Usable-On Code
NSN	National Stock Number
O.D.	Outside Diameter
OEA	Oil, Engine, Arctic
OE/HDO	Oil, Engine/Hydraulic Oil
O/R	Outrigger
OTC	Oshkosh Truck Corporation
Oz	Ounce
PLS	Palletized Load System

Table 3. Common Abbreviations. - Continued

ABBREVIATION	OFFICIAL NOMENCLATURE
PMCS	Preventive Maintenance Checks and Services
psi	Pounds per Square Inch
pt.	Pint
PTO	Power Take-Off
qt.	Quart
Qty. Recm.	Quantity Recommended
Qty. Rqr.	Quantity Required
RCU	Remote Control Unit
RFI	Radio-Frequency Interference
RH	Right-Hand
rpm	Revolutions Per Minute
RPSTL	Repair Parts and Special Tools List
SAE	Society of Automotive Engineers
SMR	Source, Maintenance, and Recoverability
SRA	Specialized Repair Activity
SRW	Self-Recovery Winch
TAMMS	The Army Maintenance Management System
TDA	Tables of Distribution and Allowance
TM	Technical Manual
TMDE	Test, Measuring, and Diagnostic Equipment
TOE	Tables of Organization and Equipment

Table 3. Common Abbreviations. - Continued

ABBREVIATION	OFFICIAL NOMENCLATURE
u/m	Unit of Measure
UOC	Usable-On Code
Vdc	Volts Direct Current
XHD	Extra Heavy-Duty

SAFETY, CARE, AND HANDLING

Significant hazards and safety recommendations are listed in the table below.

Table 4. Significant Hazard And Safety Recommendations.

HAZARD	SAFETY RECOMMENDATION OR PRECAUTION	OPERATING CONDITION
Low air pressure for brakes.	Do not drive vehicle while low air pressure warning buzzer is sounding or red light is on.	Abnormal
Fire with M978 tanker.	No smoking, flames, or sparks within 50 ft. (15 m). Disconnect batteries for all electrical work.	Normal
Fuel spills with M978 tanker.	Test tank automatic shutoff before bottom loading per procedure in instructions. do not bypass deadman controls.	Abnormal
Connecting towing devices.	Do not go between vehicles until vehicles are stopped and brakes are set.	Normal

Table 4. Significant Hazard And Safety Recommendations. - Continued

HAZARD	SAFETY RECOMMENDATION OR PRECAUTION	OPERATING CONDITION
Refueling vehicle.	Shut off engine and no smoking when filling tank.	Normal

NOTE

Category of hazards as to whether or not they may be expected under normal or abnormal operating conditions.

METRIC SYSTEM

The equipment described herein contains metric components and requires metric, common, and special tools. Therefore, metric units and English units will be used throughout this publication. An English-to-metric conversion table is included as the last page of this manual inside the back cover.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
WARRANTY PROGRAM

GENERAL

This work package provides implementation instructions for the warranty on the HEMTT. It contains instructions for obtaining services and/or supplies covered under warranty. This work package also describes methods of processing warranty claims. For additional warranty information on the HEMTT or any U.S. Army Tank-Automotive and Armaments Command (TACOM) equipment, contact your local Warranty Control Office/Officer (WARCO) or TACOM Logistics Assistance Representative (LAR). If your WARCO or TACOM LAR is not available or if additional information is required, contact TACOM.

EXPLANATION OF TERMS

Abuse

The improper use, maintenance, repair or handling of warranted items that may cause the warranty of those items to become void (for example, not following service intervals, using the vehicle for other than what is intended).

Acceptance

The execution of the acceptance block and signing of DD Form 250 (WP 0157), by the authorized Government representative, unless end items are placed in storage in which case acceptance shall mean date of shipment from storage facility as reflected on DD Form 1149 (WP 0157) or DD Form 1348-1. (WP 0157)

Acceptance Date

The date an item of equipment is accepted into the Army's inventory by the execution of the acceptance block and signing of a DD Form 250 (WP 0157) or approved acceptance document, by an authorized representative of the Government.

Contractor

The supplier of equipment who enters into an agreement directly with the Government to furnish supplies.

Correction

The elimination of a defect.

Defect

Any condition or characteristic in any supplies furnished by the contractor that does not otherwise function or threatens not to function as intended.

Failure

A part, component, or end item that fails to perform its intended use.

Manufacturer's Recall

Safety Recall An item is recalled to repair or replace a defective part or assembly which may affect safety.

Service Recall An item is recalled to repair or replace a defective part(s) or assembly which does not affect the safe use of this item.

Owning Unit

The Army Unit authorized to operate, maintain, and use the equipment.

Reimbursement

A written provision in this warranty in which the Using/Support Unit may make the necessary repairs, with or without prior approval from the contractor, and the Government will be reimbursed for the repair parts and labor costs.

Repair

A maintenance action required to restore an item to serviceable condition without affecting the warranty.

Supplies

The end item and all assemblies/parts furnished by the contractor.

Supporting Repair Facility

The repair activity authorized to accomplish warrantable repairs at the appropriate level of maintenance identified in the Maintenance Allocation Chart.

WARCO

Serves as the intermediary between the troops owning the equipment and the local dealer, contractor or manufacturer. All warranty claim actions will be processed through the WARCO.

Warranty

A written agreement between a contractor and the Government which outlines the rights and obligations of both parties for defective supplies.

Warranty Claim

Action started by the equipment user for authorized warranty repair reimbursement.

Warranty Expiration Date

The date the warranty is no longer valid. This date will be 13 months from the contractor shipment date. This warranty period covers the basic 12 months plus on additional month for shipping time.

Warranty Period

Time during which the warranty is in effect; normally measured as the maximum number of years, months, days, miles, or hours used.

Warranty Start Date

The day shipment is put into effect (Contractor Shipment Date).

COVERAGE-SPECIFIC

This work package applies to:

Table 1. Vehicle Information

Noun	Model	NSN	Cage
Truck, Cargo	M985A4 (with winch)	2320-01-543-1860	45152

NOTE

The item is manufactured by Oshkosh Truck Corporation (OTC), under contract #W56HZV-07-C-0248. Inquiries to OTC can be made by calling (920) 235-9151.

Table 2. Vehicle Information

Noun	Model	NSN	Cage
Truck, Cargo	M985A4	2320-01-543-1877	45152

Table 2. Vehicle Information - Continued

Noun	Model (without winch)	NSN	Cage
NOTE The item is manufactured by Oshkosh Truck Corporation (OTC), under contract #W56HZV-07-C-0248. Inquiries to OTC can be made by calling (920) 235-9151.			

The contractor warrants the supplies are free from defects in design, material, and workmanship for a period of thirteen (13) months from warranty start date.

If a Safety recall defect occurs during the vehicle warranty period, the contractor agrees to extend the terms of the warranty to the time required to make necessary safety defect corrections. Also, if the contractor or his supplier(s) provide a greater warranty for the supplies furnished, the contractor will provide the greater warranty to the Government.

If a defect/failure is caused by or falls within any of the following categories, it is not considered warrantable and a claim should not be initiated:

1. Misuse or negligence
2. Accidents
3. Improper operation
4. Improper storage
5. Improper transport
6. Improper or insufficient maintenance
7. Improper alterations or repairs
8. Defect/failure discovered or occurring after warranty expiration date.
9. Fair wear and tear items (brake shoes, pads, armatures, brushes, etc.).

In addition to the 13 month warranty, the vehicles will be warranted for a total service life of 10 years including extended periods in a corrosion hazard military environment. During this 10 year service life, there will be no damage caused by corrosion requiring repair or replacement of parts. No actions beyond normal washing or replacement of accident-damaged paint shall be necessary to maintain the corrosive protection in place.

This 13 month warranty is extended up to nine (9) months from date of acceptance if the vehicle is put into government storage before use. In this case, the warranty starts when the vehicle is either taken out of storage or until nine (9) months from the warranty start date shown on the warranty data plate, whichever occurs first. Refer to preparation for storage.

CONTRACTOR RESPONSIBILITIES

When the owning unit has directed the contractor to correct the supplies, the contractor will furnish all material required to correct the defective supplies. Repairs and parts shall be initiated/provided within ten (10) working days after receipt of written claim notification. Furthermore, the contractor will provide a copy of the work order to owning unit upon completion of repair.

When the contractor receives written notification requiring contractor repair, they will have the option:

1. Correct the supplies in the field.
2. Return the vehicle or parts to the contractor's designated facility for correction.

When the contractor corrects the supplies, all labor involved shall be borne by the contractor. Additionally, the contractor shall arrange and bear all transportation costs of the supplies to its facility and return to user.

The contractor, within five (5) working days of receiving such notice, shall notify the warranty claimant by telephone as to the method of correction, date(s) work is to be performed and by whom.

GOVERNMENT RESPONSIBILITIES

The Major Subordinate Command for the HEMTT is the U.S. Army Tank-Automotive and Armaments Command (TACOM), Warren, MI 48397-5000. TACOM is responsible for managing and implementing the warranty.

TACOM will:

Insure the contractor performs in accordance to the terms of the contract.

Equipment owning unit will:

1. Identify defects/failures and verify the defects/failures are warrantable.
2. Submit warranty claims, using DA Form 2407 (WP 0157) or DA Form 2407-1 (WP 0157) to your local Warranty Coordinator.
3. Tag and retain (IAW DA PAM 750-8 and this work package) (WP 0157) parts, pieces of parts and/or assemblies removed at the owning unit level and as a result of a warrantable defect/failure and/or correction.

Supporting repair facility will:

1. Identify defects/failures as warrantable (if owning unit has not already identified them). Verify defects/failures are warrantable.
2. Review, process, and submit valid warranty claims to the local WARCO if the DA Form 2407 (WP 0157) is complete and correctly filled out.
3. Reject invalid warranty claims or request additional information for incomplete and incorrect claims.

4. Coordinate with the owning unit and decide which option for repair is desired to correct the warrantable defect/failure.
5. Depending on which repair option was chosen (Government or contract repair) provide labor/parts required to accomplish the warrantable repairs.
6. Tag and retain (IAW DA PAM 750-8 and this work package) (WP 0157) all parts, pieces, or parts and/or assemblies removed as a result of warrantable defect/failure and/or correction.

Local WARCO will:

1. Verify, review, process, and if valid and complete, submit claims (reimbursable and/or disputes) to the contractor.
2. Reject claims that are not valid, and send them back to the local Unit with a short explanation of why the claim is rejected.
3. Request additional information for incomplete claims.
4. Provide warranty claim acknowledgment closeout and/or parts/assemblies disposition instructions to the local Unit.
5. Insure the contractor performs in accordance to the terms of the contract.
6. Verify, administer and process warranty claims.
7. Act as a liaison between owning unit, the contractor, supporting repair facility and TACOM.
8. Notify the owning units of all warranty claim acknowledgments/close-outs, information and/or instructions received from TACOM or the contractor.
9. Act as a liaison between local dealers and the Army.
10. Enter all open and closed WCAs into the Army Electronics Product Support (AEPS), Electronic Deficiency Reporting System.
11. The information/data provided on the DA Form 2407 (WP 0157) are placed into the AEPS Deficiency Reporting System (DRS) at the installation WARCO office to facilitate MSC management and tracking of warranties.

Alterations/Modifications

Alterations/modifications shall not be applied unless authorized by TACOM.

WARRANTY DATA PLATE

All vehicles will have a warranty data plate. The contractor is required to mount his data plate within clear view of the operator.

When the vehicle is received, the owning unit should locate the warranty data plate and check the warranty start date with date shown on the applicable DD Form 250 (WP 0157) or DD Form 1149. (WP 0157) If these dates differ, disregard the data plate. The date shown on the DD Form 250 (WP 0157) or DD Form 1149. (WP 0157) is the date to be used as a warranty start date.

CLAIM PROCEDURES

The procedures for reporting warranty claims are found in DA PAM 750-8 (WP 0157) and this work package. Responsibilities of the MACOM are found in AR 700-139. (WP 0157) All Warranty Claim Actions are processed on DA Form 2407 (WP 0157) and DA Form 2407-1. (WP 0157) It is very important to fill in the blocks on the forms as accurately as possible.

The contractor shall be notified in writing within 30 days, utilizing DA Form 2407 (WP 0157) by the local Warranty Control Office/Officer (WARCO) following the discovery of a defect in supplies which requires contractor repair and/or replacement parts. This shall constitute formal notification of a warranty claim, and initiate the time period for contractor responsibilities and action under the warranty. This notification shall include, but not be limited to furnishing of the equipment serial number, operating hours, part number or NSN of the defective part and circumstances surrounding the defect(s). At this time, the contractor will further be informed whether the owning unit has elected:

1. To correct the defect themselves.
2. To direct the contractor to correct the defect.

Upon completion of contractor repair, forward completed warranty claims (Information Only) electronically to AEPS (Army Electronic Product Support) http://aeps.ria.army.mil.

The contractor shall reimburse the government for the cost of labor and/or replacement parts involved in the government correction of the defect. The government's Maintenance Allocation Chart (MAC) determines the times. Additionally, the cost of replacement parts obtained through the Government's supply channels will be determined by the amount identified in the contractor's current commercial dealer net price or Army Master Data File (AMDF) price, whichever is less. Furthermore, the owning unit may direct the contractor to provide the replacement parts that prove to be defective within the warranty period, without costs to the government, directly to their location or F.O.B., U.S. Port of Embarkation for OCONUS. The contractor shall furnish replacement parts within 10 working days after receipt of written claim notification. DO NOT submit warranty claims for reimbursement where repair labor costs and replacement parts costs combined do not exceed $150.00 for any one failure.

Identification Of Failed Items. Failed warranty items shall be tagged/identified to prevent improper repair or use. Documents that describe the use of DA Form 2402 Maintenance Tag (WP 0157) and DA Form 2407 Maintenance Request (WP 0157) shall be referenced. Items requiring special handling, storage, or shipment during the processing of claims shall be identified.

Disposition. The repair activity shall retain defective supplies for thirty (30) days following receipt of acknowledgment of warranty claim from WARCO or contractor. If receipt of acknowledgment is not received, inquiries should be made to your local WARCO. If receipt of acknowledgment is received but no instructions are forthcoming within thirty (30) days of receipt, supplies may be disposed.

Invalid Warranty Claims. When supplies are inspected by the contractor and found to be non-warrantable due to abuse or improper maintenance, or the supplies are found to be serviceable, the repair activity submitting the claim will be required to make reimbursement for contractor services. All failed items returned for warranty claim action will be monitored by the WARCO. Additionally, regarding contractor repair, the local WARCO must stipulate at the time of request for services that either no non-warranty work be done or be prepared to pay for such work.

REIMBURSEMENT FOR ARMY REPAIR

In the event that the repair activity should receive any reimbursement from the contractor, the monies must be forwarded to the following address: Defense Accounting Office, DAOTACOM, ATTN: DFAS-IN/EM-BED, TACOM, Warren, Michigan 48397-5000.

CLAIM DENIAL/DISPUTES

All denials or disputes will be handled by TACOM.

REPORTING

Reporting or recording action on a failed item shall be specified in DA PAM 750-8. (WP 0157) Contractor or repair activity unique forms shall not be used.

STORAGE/SHIPMENT/HANDLING

Storage

See coverage-specific data above (last paragraph) and preparation for storage for further information.

Shipment

See contractor responsibilities data above (second paragraph), claim procedures (third paragraph), and preparation of equipment for transportation/shipment for further information.

Handling

See contractor responsibilities data above (second paragraph), claim procedures (third paragraph), and safety, care, and handling for further information.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES

EQUIPMENT CHARACTERISTICS

The M978A4 tanker is used in refueling missions.

EQUIPMENT CAPABILITIES

1. All models are capable of operating in temperatures from -25 to 120°F (-32 to 49° C) and to -50 to 120°F (-46 to 49°C) with arctic kit installed.
2. All models can ford water up to 48 in. (1 219 mm) deep for 5 minutes without damage or without requiring maintenance before operation can continue.
3. Normal operating range of all models is 300 miles (483 km), based upon 154 gallons (583 L) of fuel and 109,000 lbs (49 486 kg) GCWR, traveling over mixed terrain. Varying loads, prolonged idle, use of power takeoff (PTO), off-road driving, and climatic conditions affect operating range.
4. All models are provided with sufficient tiedown points located so vehicles can be restrained in all directions during air transport in C-130, C-5A, and C-17 type aircraft.
5. All models are also capable of being transported by highway, rail, and sea.

EQUIPMENT FEATURES

1. Caterpillar C15 (on-highway) electronically controlled, in-line six-cylinder, 4-cycle, fuel injected, turbocharged diesel engine.
2. Push button automatic transmission with one reverse speed and five forward speeds.
3. Anti-Lock Braking System (ABS) to all eight wheels which can be disabled by the operator for off-road operation.
4. Operator controlled 4-wheel/8-wheel drive and high and low range transfer case for positive traction in areas of unimproved road surfaces.
5. Power steering system consists of basic manual steering system with hydraulic boost. Mechanical linkage also provides operator control in event of hydraulic oil pressure loss.
6. Fuel system includes one fuel tank, fuel lines, fuel/water separator, fuel pump, secondary filter, fuel pipes, and fuel injectors.
7. Two front and two rear towing eyes.
8. Manual-release-type rear pintle hook which will allow towing of a trailer.
9. Radio frequency interference suppression to permit voice radio communications during all phases of operation.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

VEHICLE COMPONENT LOCATION

Table 1. HEMTT Series Vehicle Common Component Location.

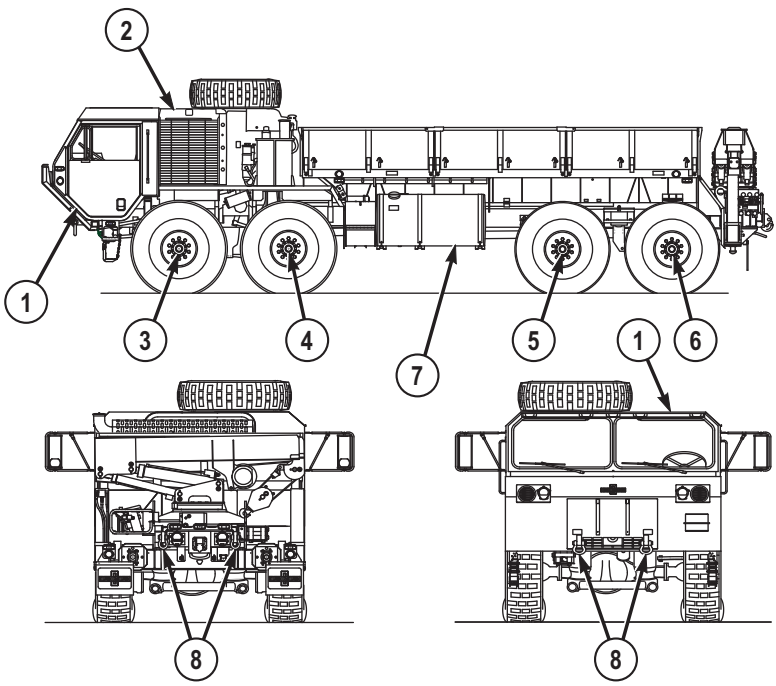


Figure 1.

1	**Personnel Cab.** Provides protection from weather for crew and vehicle controls, gauges, and indicators.
2	**Engine Compartment.** Engine supplies power to move vehicle and operate equipment and accessories.

Table 1. HEMTT Series Vehicle Common Component Location. - Continued

3	**No. 1 Driving Axle.** Controls direction of vehicle when in motion. When needed, transmits power to hubs to turn wheels.
4	**No. 2 Driving Axle.** Controls direction of vehicle when in motion. When needed, transmits power to hubs to turn wheels.
5	**No. 3 Driving Axle.** Supports weight of vehicle, and transmits power to hubs to turn rear wheels.
6	**No. 4 Driving Axle.** Supports weight of vehicle, and transmits power to hubs to turn rear wheels.
7	**Fuel Tank.** Stores fuel used to operate engine. Receives excess fuel not used by engines fuel injection system.
8	**Tow Eyes.** Attachment points for safety chains, towing shackles, and towing.

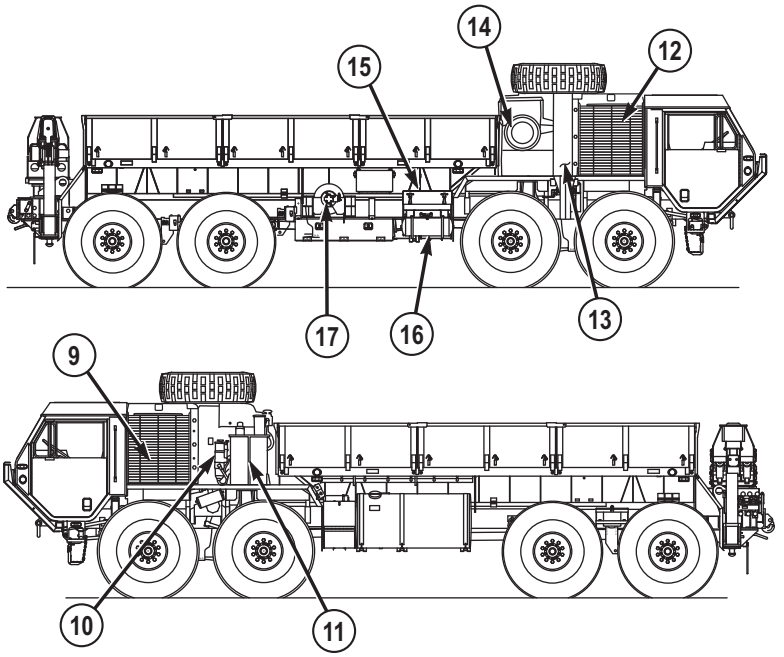


Figure 2.

Table 1. HEMTT Series Vehicle Common Component Location. - Continued

9	**Charge Air Cooler.** Intake of air is used to cool engine inlet air temperature, transmission oil, and hydraulic system fluid.
10	**Fuel/Water Separator.** Acts as primary fuel filter and removes any water from fuel before entering engine. **Ether Canister.** Located next to fuel/water separator, the ether canister contains ether for use as cold weather starting aid.
11	**Hydraulic Reservoir.** Stores, cools, and filters oil used in hydraulic and power steering systems.
12	**Radiator.** Intake of air is used to cool engine coolant and cabin air conditioning system.
13	**Tire Carrier (shown raised).** Used to raise and lower spare tire.
14	**Air Cleaner.** Filters out dust and debris from air entering air induction system.
15	**Battery Box.** Houses and protects four storage batteries.
16	**Air Reservoirs.** Used to store air system air.
17	**Self-Recovery Winch (not used on all vehicles).** Used to help vehicle pull itself free of obstructions.

Table 2. M978A4 Tanker Vehicle Specific Component Location.

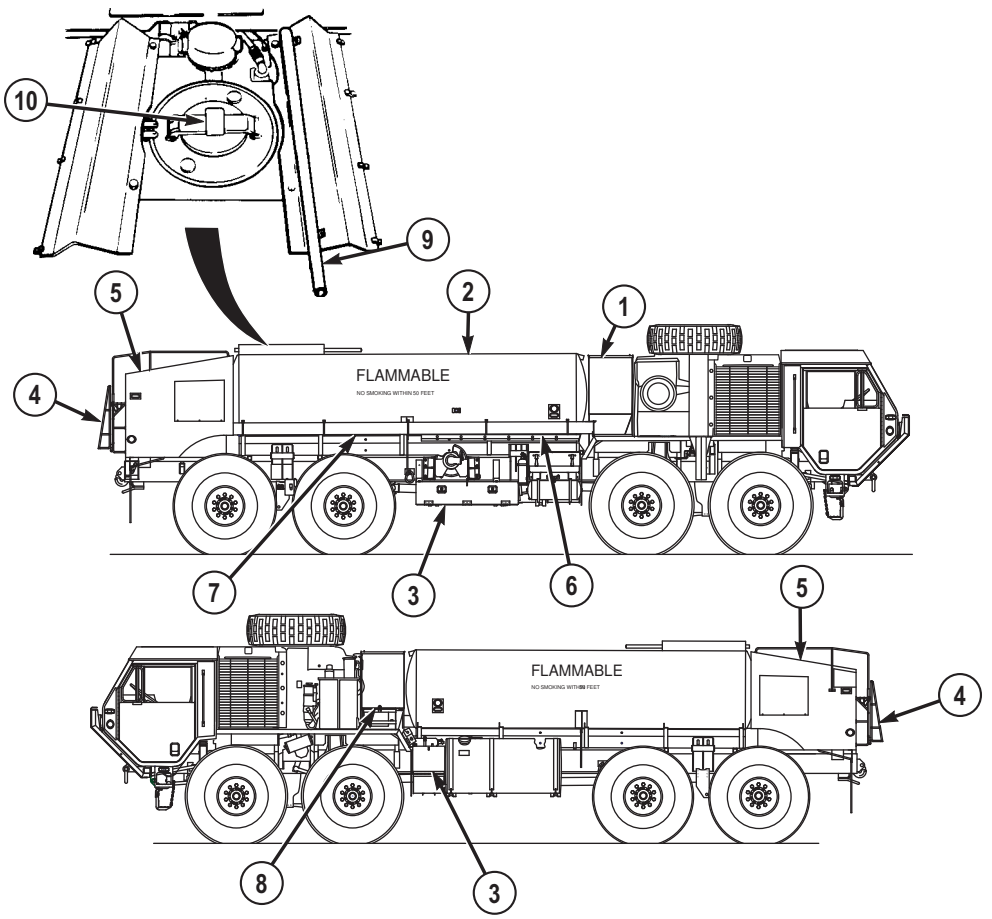


Figure 3.

1	**Stowage Box.** Used to stow fuel cans or fuel hoses.
2	**Tank.** Stores 2500 gallons (9 463 L) of automotive, diesel, or jet fuel.
3	**Stowage Boxes.** Used to stow COEI, BII, (WP 0158)AAL, (WP 0159) and other mission essential items.
4	**Tank Access Ladder (shown in stowed position).** Provides access to top of tank.

Table 2. M978A4 Tanker Vehicle Specific Component Location. - Continued

5	**Pump Module.** Contains fuel servicing controls, indicators, and connections.
6	**Access Ladder.** Used by crew to clean window, check oil, or perform other task requiring access to parts of vehicle out of normal reach.
7	**Stowage Compartment.** Used to stow 3 in. suction hose assembly.
8	**Wheel Chock Stowage Box.** Used to stow wooden wheel chocks.
9	**Manhole Cover.** Used to gain access to tank.
10	**Dipstick Stowage Tube.** Used to stow dipstick.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
DIFFERENCES BETWEEN MODELS

Table 1. Differences Between HEMTT A4 Models.

Equipment	**Model**								
	M977 (Note 1)	**M978 (Note 1)**	**M983 (Note 2)**	**M983 LET (Note 3)**	**M984 (Note 2)**	**M985 (Note 1)**	**M985 GMT (Note 2)**	**M1120 LHS (Note 1)**	**M1977 CBT (Note 1)**
10 ft. (3.05 m) Equipment Body					•				
18 ft. (5.49 m) Cargo Body	•					•	•		
Cargo Cover Kit	•					•	•		
Heavy-Duty Winch				•	•				
Rear Beacon Lights (Note 4)					•				
Work Lights (Note 5)			•	•	•				•
MHC977 Grove Crane	•								

Table 1. Differences Between HEMTT A4 Models. - Continued

Equipment	Model								
	M977 (Note 1)	**M978 (Note 1)**	**M983 (Note 2)**	**M983 LET (Note 3)**	**M984 (Note 2)**	**M985 (Note 1)**	**M985 GMT (Note 2)**	**M1120 LHS (Note 1)**	**M1977 CBT (Note 1)**
MHC985 Grove Crane						•			
MHC984 Grove Crane					•				
8108-2/2C D HIAB Crane (Note 6)							•		
Fifth Wheel			•	•					
3.5 inch (89 mm) Kingpin			•	•					
Semitrailer Spare Tire Carrier			•						
Load Handling System								•	•

Table 2. Notes.

Note:

1. Vehicle can be equipped in either of two configurations: with or without optional self-recovery winch.
2. Vehicle equipped with self-recovery winch.
3. Self-recovery winch not available for this model.
4. All HEMTT series vehicles are authorized to carry portable beacon light as an optional accessory.

Table 2. Notes. - Continued

5. All HEMTT series vehicles are authorized to carry portable work lamp as an optional accessory.
6. See data plate on base of crane loader body unit to determine model number.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
EQUIPMENT DATA

EQUIPMENT DATA

Table 1. Vehicle Operation.

Operating Mode: On and off-road
Operating Temperature w/o Arctic Kit: -25 to 120°F (-32 to 49°C)
Operating Temperature w/Arctic Kit: -50 to 120°F (-46 to 49°C)

Table 2. M978A4 Tanker Vehicle Dimensions.

Width (overall): 96 in. (2 438 mm)
Height (overall): 119 in. (3 022 mm)
Height (reduced for shipping): 102 in. (2 590 mm)
Length Overall: 409 in. (10 389 mm)
Wheelbase: 210 in. (5 334 mm)
Turn Circle (curb to curb): 110 ft. (33.5 m)
Ground Clearance: 24 in. (610 mm)
Center of Gravity: See shipping data plate on inside of driver side door.

Table 3. M978A4 Tanker Vehicle Weight.

Curb Weight: 42,150 lbs (19 136 kg)
Gross Vehicle Weight Rating (GVWR): 66,000 lbs (29 964 kg)
Gross Combination Weight Rating (GCWR): 109,000 lbs (49 486 kg)

Table 4. M978A4 Tanker Vehicle Weight.

Curb Weight: 41,250 lbs (18 728 kg)
Gross Vehicle Weight Rating (GVWR): 66,000 lbs (29 964 kg)
Gross Combination Weight Rating (GCWR): 109,000 lbs (49 486 kg)

Table 5. M978A4 Tanker Vehicle Weight Distribution.

Front Tandem Axles-Curb: 22,100 lbs (10 033 kg)
Front Tandem Axles-Loaded: 32,000 lbs (14 528 kg)
Rear Tandem Axles-Curb: 16,100 lbs (7 309 kg)
Rear Tandem Axles-Loaded (maximum): 32,000 lbs (14 528 kg)

Table 6. M978A4 Tanker Vehicle Weight Distribution.

Front Tandem Axles-Curb: 21,800 lbs (9 860 kg)
Front Tandem Axles-Loaded: 32,000 lbs (14 528 kg)
Rear Tandem Axles-Curb: 15,500 lbs (7 037 kg)
Rear Tandem Axles-Loaded (maximum): 32,000 lbs (14 528 kg)

Table 7. Vehicle Performance.

Cruising Range at GCWR: 300 mi. (483 km)
Maximum Sustained Forward Speed (at 1696 rpm) - 5th Gear: 62 mph (101 km/h)
Maximum Sustained Forward Speed (at 2100 rpm) - 4th Gear: 60 mph (97 km/h)
Maximum Sustained Forward Speed (at 2100 rpm) - 3rd Gear: 39 mph (63 km/h)
Maximum Sustained Forward Speed (at 2100 rpm) - 2nd Gear: 27 mph (43 km/h)
Maximum Sustained Forward Speed (at 2100 rpm) - 1st Gear: 12.7 mph (20 km/h)
Speed on 3% Grade at GCWR: 25 mph (40 km/h)

Table 7. Vehicle Performance. - Continued

Speed on 3% Grade at GVWR: 40 mph (64 km/h)
Speed on 30% Grade at GCWR: 3 mph (5 km/h)
Speed on 30% Grade at GVWR: 5 mph (8 km/h)
Maximum Grade at GCWR: 30 percent
Maximum Grade at GVWR: 60 percent
Maximum Side Slope w/Adequate Traction Surface: 30 percent
Maximum Towed Speed (refer to FM 4-30.31): 15 mph (24 km/h)
Maximum Ford Depth: 48 in. (1 219 mm)
Approach Angle: 32 degrees
Departure Angle: 43 degrees
Limp Home Speed: 10 mph (16 km/h) for up to 30 miles (48 km)

Table 8. Fluid Capacities.

Refer to lubrication instructions in operator's PMCS (WP 0145) for vehicle fluid capacities.

Table 9. Engine.

Make: Caterpillar
Model: C15 (On-Highway)
Type: 4-Stroke, In-line Diesel
Cylinders: 6
Bore: 5.4 in. (137 mm)
Stroke: 6.75 in. (171.5 mm)
Displacement: 927.6 cid (15.2 L)

Table 9. Engine. - Continued

Torque (at 1200 rpm): 1650 lb-ft (2237.4 Nm)
Maximum Brake Horsepower (at 1800 rpm): 515 BHP (384 kW)
Maximum Governed Engine Speed - Loaded: 2050 - 2150 rpm
Maximum Governed Engine Speed - No Load: 2070 - 2170 rpm
Oil Filter Type: Full flow, replaceable element
Oil Filter Quantity: 1

Table 10. Fuel System.

Type: Diesel Injection
Tank Quantity: 1
Air Cleaner Type: Dry element with pre-cleaner
Element Quantity: 1 Primary

Table 11. Electrical System.

Voltage: 24
Alternator (amps): 260
RFI Suppression Ability: Yes
Number of Batteries: 4
Battery Voltage (each): 12 volts
Battery Connection: Series - parallel
Battery Capacity (at 20 hour rate): 900 amp
Battery Reserve Capacity (each, at 80°F/27°C): 180 minutes
Battery Cold Cranking Amps (each, at 80°F/27°C): 575 CCA

Table 11. Electrical System. - Continued

Battery Amp Hours (each, at 20 hour rate): 100 amp

Table 12. Cooling System.

Radiator Working Pressure: 7 psi (48 kPa)

Table 13. Transmission.

Make: Allison
Model: 4500 SP
Type: Automatic
Number of Forward Speeds: 5
Number of Reverse Speeds: 1

Table 14. Transfer Case.

Make: Oshkosh
Model: 55000
Type: Air-operated front tandem disconnect
Ratios: 0.98:1 and 2.66:1

Table 15. Front Tandem Axles.

Front Tandem
Make: Oshkosh/Dana Heavy Axle
Differential Carrier Model Nos.: No. 1 axle: RS480, No. 2 axle: DS480-P
Maximum Steering Angle: 28 degrees

Table 16. Rear Tandem Axles.

Make: Dana Heavy Axle
Differential Carrier Model Nos.: No. 3 axle: DS480-P, No. 4 axle: RS480

Table 17. Brake System.

Actuation: Air with integrated Automatic Braking System (ABS)
Number of Brake Chambers: 8
Pressure Range: 60 - 120 psi (4.14 - 8.27 bar)

Table 18. Wheels.

Type: Two-piece bolt together wheel
Quantity: 8
Spare Quantity: 1
Rim Size: 20 x 10
Stud Quantity Per Wheel: 10

Table 19. Tires.

Type: Radial without tube
Quantity: 8
Spare Quantity: 1
Tread Type: Radial traction, non-directional
Size: 16.00R x 20 in.
Load Range: M

Table 20. Steering System.

Type: Dual gear with integrated hydraulic power assist

Table 21. Towing Eyes.

Quantity: 4 (2 front, 2 rear)
Maximum Load Capacity Each: 60,000 lbs (27 240 kg)

Table 22. Pintle Hook.

Type: Manual Release
Maximum Load Capacity - Pulling: 30,000 lbs (13 620 kg) in off-road application
Maximum Load Capacity - Vertical: 1,700 lbs (771 kg)

Table 23. Cab.

Windshield: Tinted, two-piece, safety glass
Personnel Capacity: 2
Air Conditioning

Table 24. Self-Recovery Winch.

Make: DP Manufacturing
Model: 20K-HEMTT
Wire Rope Diameter: 9/16 in. (14.3 mm)
Wire Rope Length: 200 ft. (61 m)
Line Pull - 1st Layer (Five Wraps Minimum): 20,000 lbs (9 080 kg)
Line Pull - 2nd Layer: 18,173 lbs (8 251 kg)
Line Pull - 3rd Layer: 16,663 lbs (7 565 kg)
Line Pull - 4th Layer: 15,361 lbs (6 974 kg)
Line Pull - 5th Layer: 14,254 lbs (6 471 kg)

Table 25. Auxiliary Equipment.

Arctic Engine Heater Kit
Chemical Alarm
Decontamination Unit
Gas Particulate Filter Unit
Machine Gun Ring with Gunner's platform and Gunner's restraint system
Radio Installation Kit
Rifle Mounting Kit
C4ISR Electronic Suite
Armor with Gunner's Protection Kit (GPK)
Note: Vehicle may or may not be equipped with any of these items depending on mission, climate, or other factors.

Table 26. M978A4 Tanker Vehicle Load Classification.

UNLOADED (TONS)	FULL LOAD (TONS)	WITH TRAILER LOADED (TONS)
15	25	N/A

TIRE PRESSURES

Table 27. Tire Pressures.

TIRE	HIGHWAY	CROSS-COUNTRY (DRY)	CROSS-COUNTRY (WET)	SANDY TERRAIN
Front Tire Pressure				
STANDARD (XZL) TIRE	60 psi (414 kPa)	35 psi (241 kPa)	20 psi (138 kPa)	20 psi (138 kPa)

Table 27. Tire Pressures. - Continued

TIRE	HIGHWAY	CROSS-COUNTRY (DRY)	CROSS-COUNTRY (WET)	SANDY TERRAIN
SAND TIRE	60 psi (414 kPa)	NA	NA	25 psi (172 kPa)
Rear Tire Pressure				
STANDARD (XZL) TIRE	60 psi (414 kPa)	35 psi (241 kPa)	20 psi (138 kPa)	20 psi (138 kPa)
SAND TIRE	70 psi (483 kPa)	NA	NA	30 psi (207 kPa)
Spare Tire Pressure				
STANDARD (XZL) TIRE	100 psi (690 kPa)	100 psi (690 kPa)	100 psi (690 kPa)	100 psi (690 kPa)
SAND TIRE	100 psi (690 kPa)	NA	NA	100 psi (690 kPa)

OPERATING SPEEDS

Table 28. Operating Speeds.

	HIGHWAY	CROSS- COUNTRY (DRY)	CROSS- COUNTRY (WET)	SANDY TERRAIN
STANDARD (XZL) TIRE (maximum Speed)	62 mph (100 km/h)	40 mph (64 km/h)	20 mph (32 km/h)	20 mph (32 km/h)
SAND TIRE (maximum Speed)	62 mph (100 km/h)	NA	NA	20 mph (32 km/h)

END OF WORK PACKAGE

OPERATOR MAINTENANCE
SELF-RECOVERY WINCH

SELF-RECOVERY WINCH

The self-recovery winch (1), where used, is mounted on the passenger side chassis frame rail between the second and third axles.

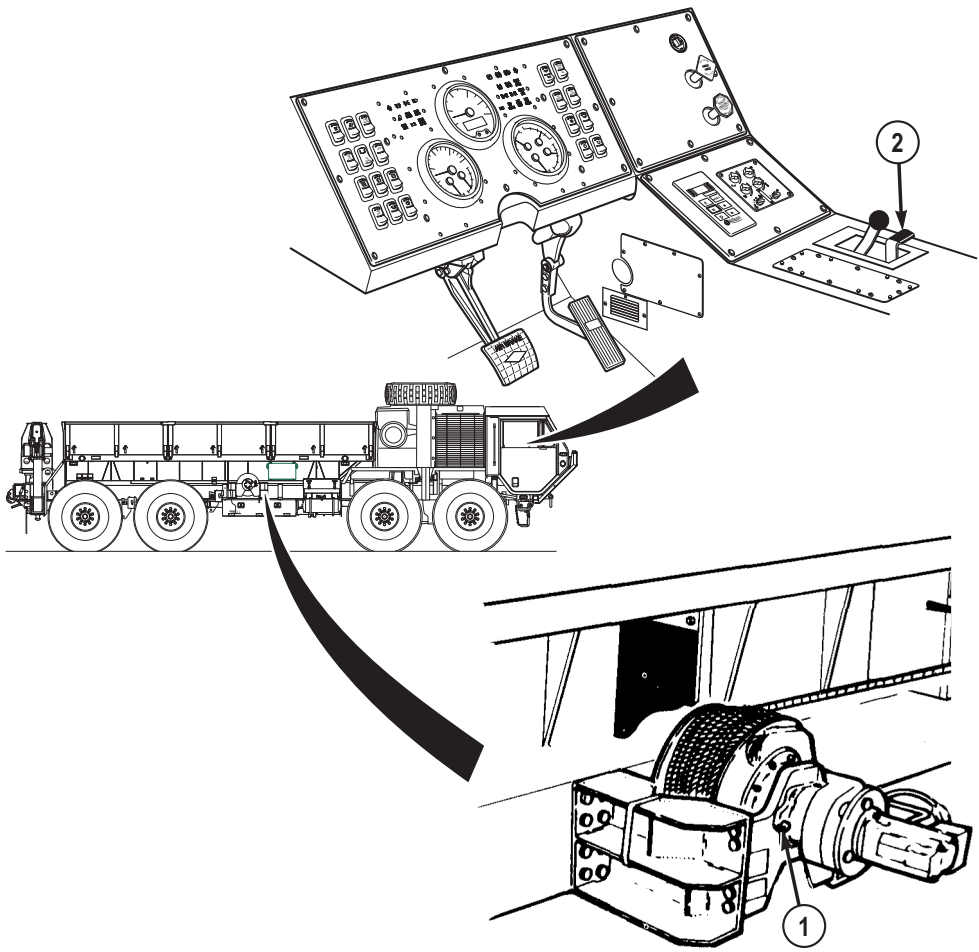


Figure 1.

The self-recovery winch (1) is powered by a reversible hydraulic motor which drives the winch drum through a planetary gearbox.

It is equipped with an automatic brake that is applied whenever the cab control lever (2) is in center position.

NOTE

The M984A4 wrecker equipped with a self-recovery winch does not employ an operator controlled, two-position hydraulic selector valve to activate the reversible winch motor.

All vehicles (except the M984A4 wrecker) equipped with a self-recovery winch (1) have an operator controlled, two-position hydraulic selector valve (WP 0025) to activate the reversible winch motor.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
ELECTRICAL SYSTEM

ELECTRICAL SYSTEM

NOTE

- Wiring harnesses are used to carry current to operate equipment and accessories.
- The electrical system is a 24 VDC system.

Four 12 VDC storage batteries (1) are connected in series-parallel with the negative terminal grounded.

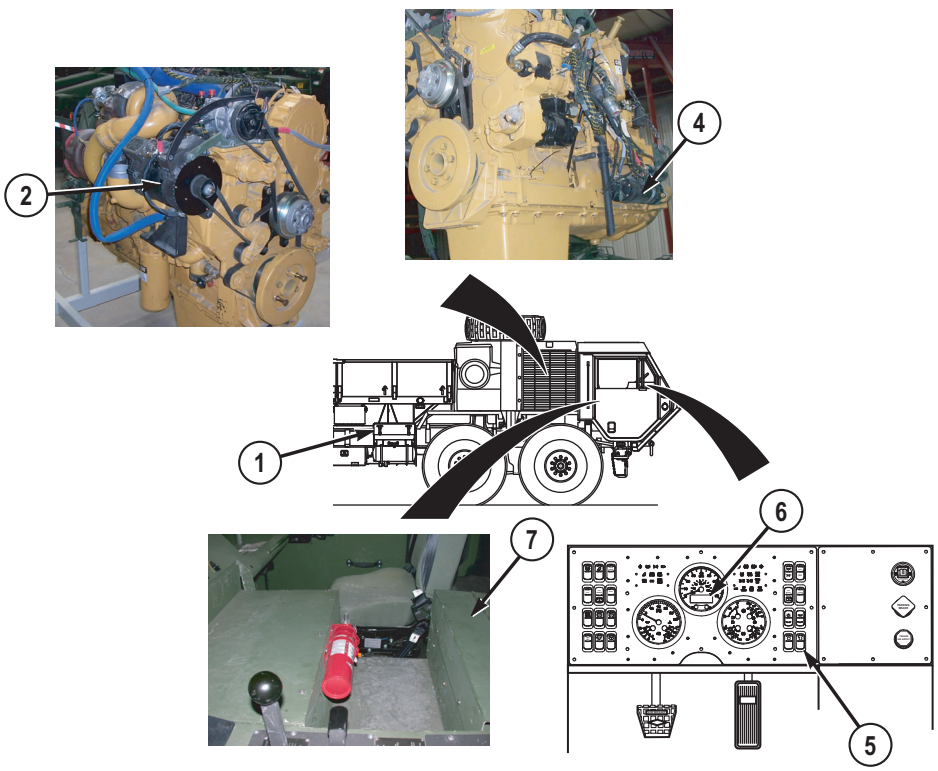


Figure 1.

A belt-driven 24 VDC alternator (2) having a capacity of 260 amps maintains the charge on the batteries.

The voltage regulator (3) is mounted on the belt-driven 24 VDC alternator (2) and maintains a 24-volt level for battery charging.

The heavy-duty starting motor (4) operates directly from the 24 VDC source through the engine start switch (5).

NOTE

The battery readout is located in the top right corner of the instrument panel liquid crystal display (LCD).

The battery readout (6) shows the state of charge of the batteries and alternator voltage output.

The vehicle electrical circuits are protected against overloads by automatic reset circuit breakers (7) located below the cab engine access panel along the aft bulkhead between the operator and crew seats.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
AIR SYSTEM

AIR SYSTEM

NOTE

The call out number for the air reservoirs below matches the actual air reservoir number.

The air system consists of five air reservoirs (1, 2, 3, 4, and 5) and an engine-driven air compressor (6).

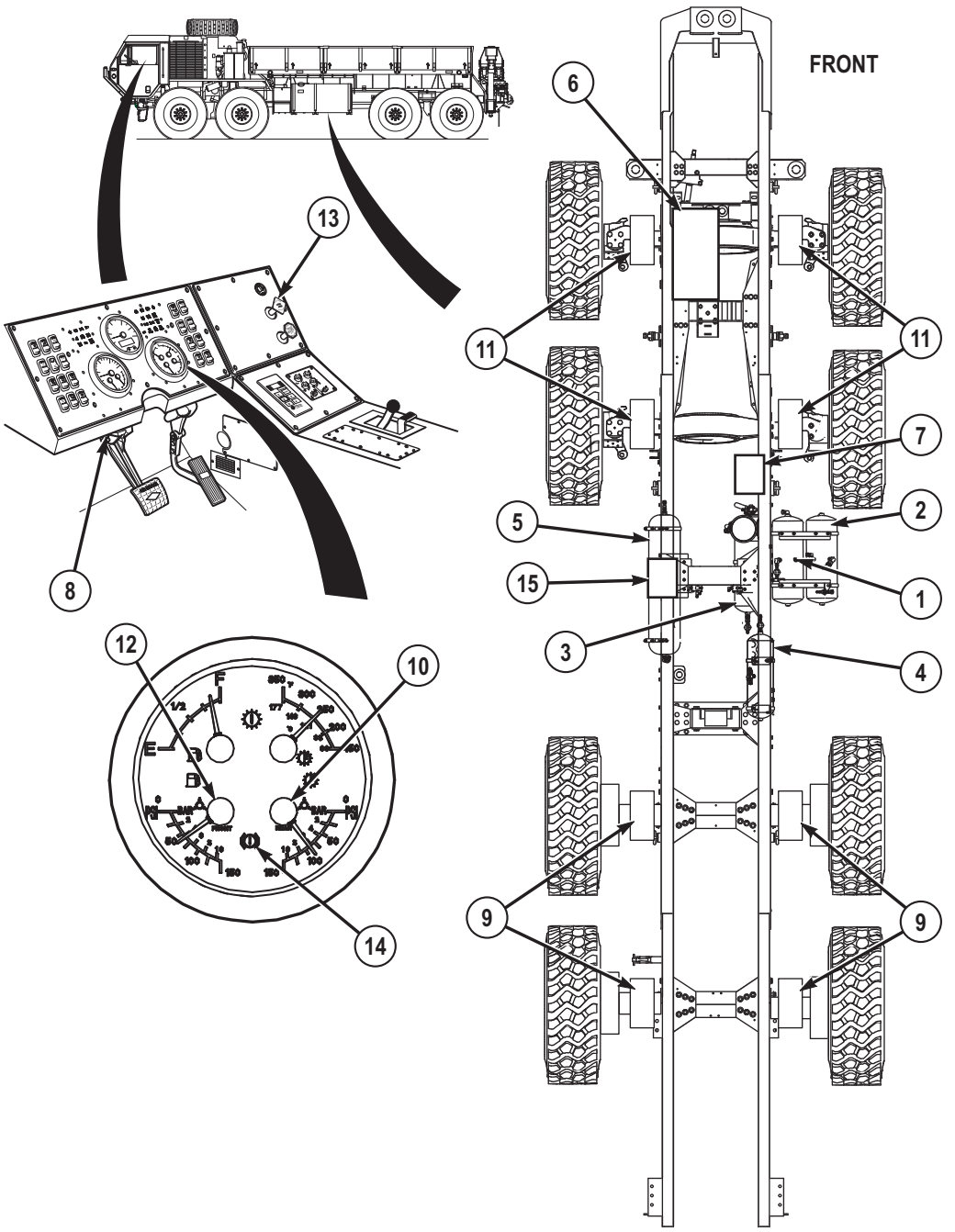


Figure 1.

NOTE

- The air system includes the necessary valves and air lines to control the vehicle's air-operated parts.
- On the M983A4 LET tractor vehicle, air from reservoir is controlled by the winch tensioner and winch declutch manual valves, which in turn operate the heavy-duty winch kickout and cable hold down systems.

Pressurized air from the air compressor (6) is passed through the air dryer (7) to the reservoir (1) - also called the “wet tank.” The air dryer (7) removes dirt and moisture from the pressurized air.

Once air pressure in reservoir (1) rises above 65 to 75 psi (4.5 to 5.2 bar), a valve opens and allows reservoirs (2, 3, 4, and 5) to be pressurized up to 133 psi (9.2 bar).

Air from reservoir (4 and 5) goes to the brake treadle valve (8). This air controls the rear axle service parking brakes (9). Air pressure for reservoirs (4 and 5) is displayed by REAR air pressure gauge (10).

Air from reservoir (2 and 3) goes to the brake treadle valve (8). This air controls the front axle service brakes (11). Air pressure for reservoirs (2 and 3) is displayed by FRONT air pressure gauge (12).

The PARKING BRAKE valve (13) controls air from reservoirs (4 and 5) and applies or releases the rear axle service parking brakes (9).

Reservoirs (2 and 3 or 4 and 5) are interconnected so that if one reservoir fails, air is supplied to release the rear axle service parking brakes (9) from whichever reservoir is functioning.

A buzzer will sound and the brake system failure (low air) indicator (14) will illuminate if air pressure falls below 65 to 75 psi (4.5 to 5.2 bars).

NOTE

- There is a SPNSN LOW AIR indicator that warns when the suspension system is low with air and it will not dump.
- A SPNSN LOW AIR indicator will illuminate if one or more zones of air springs are deflated.

Specific to the M984A4, the front brake actuator valve (15) is used to apply the front axle service brakes when using heavy-duty winch.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
MAIN HYDRAULIC SYSTEM

MAIN HYDRAULIC SYSTEM

The main hydraulic system consists of a power take-off (PTO) driven hydraulic pump (1) and a fluid reservoir (2) shared with the power steering hydraulic system.

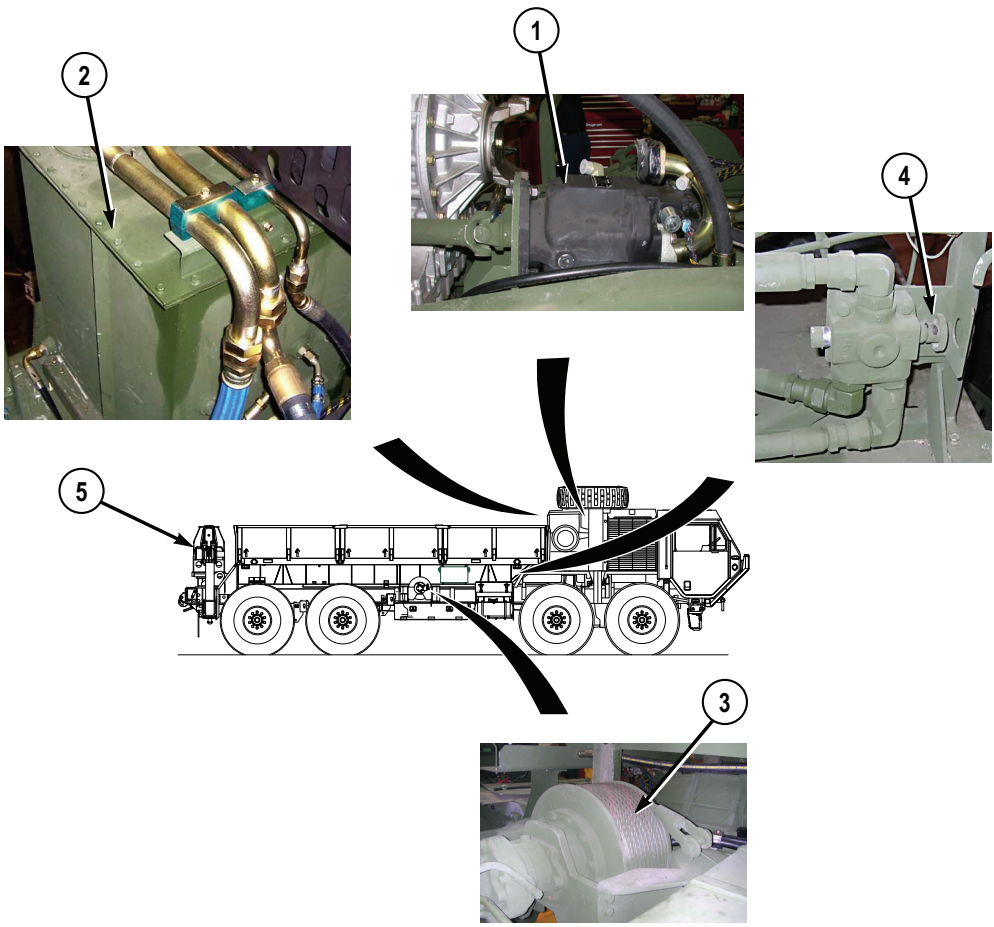


Figure 1.

NOTE

- The M983A4 LET is not equipped with a self-recovery winch, but is equipped with a manually-operated hydraulic selector valve to supply hydraulic power to the heavy-duty winch.
- The M984A4 is equipped with a self-recovery winch, but does not have a manually-operated hydraulic selector valve.

Any vehicle (see notes above) may also be equipped with a self-recovery winch (3) and a manually operated hydraulic selector valve (4).

The main hydraulic system includes the material handling cranes (5) on the M977A4 (shown), M985A4, and M985A4 GMT as well as the main fuel pump on the M978A4, and load handling system on both the M1120A4 LHS and M1977A4 CBT.

FLUID SYSTEM

Pump (1) mounted on the rear of engine provides the fluid power to operate the power steering (2).

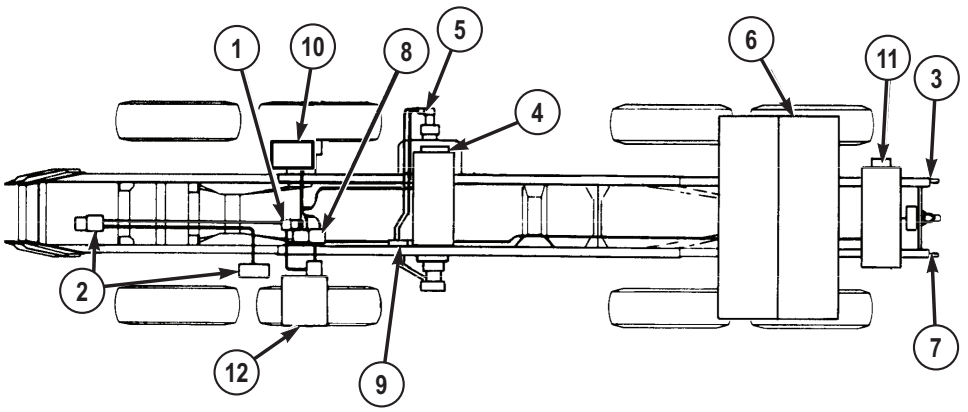


Figure 2.

Fluid power for operating the self-recovery winch (3) and crane (4) is provided by a hydraulic pump (5) driven by the power take-off (PTO) mounted on the transmission.

A manually-operated selector valve (6) is used to activate either the self-recovery winch (3), crane (4), fuel tanker dispensing components (M978 only), or load handling system (LHS) on M1120 LHS and M1977 CBT.

Operation on the crane (4) is controlled from the control panel (7) at the rear of the vehicle.

Both hydraulic pumps (1 and 5) share the same reservoir (8).

END OF WORK PACKAGE

OPERATOR MAINTENANCE
STEERING SYSTEM

POWER STEERING HYDRAULIC SYSTEM

Power is supplied to the main steering gear by an engine-driven pump (1).

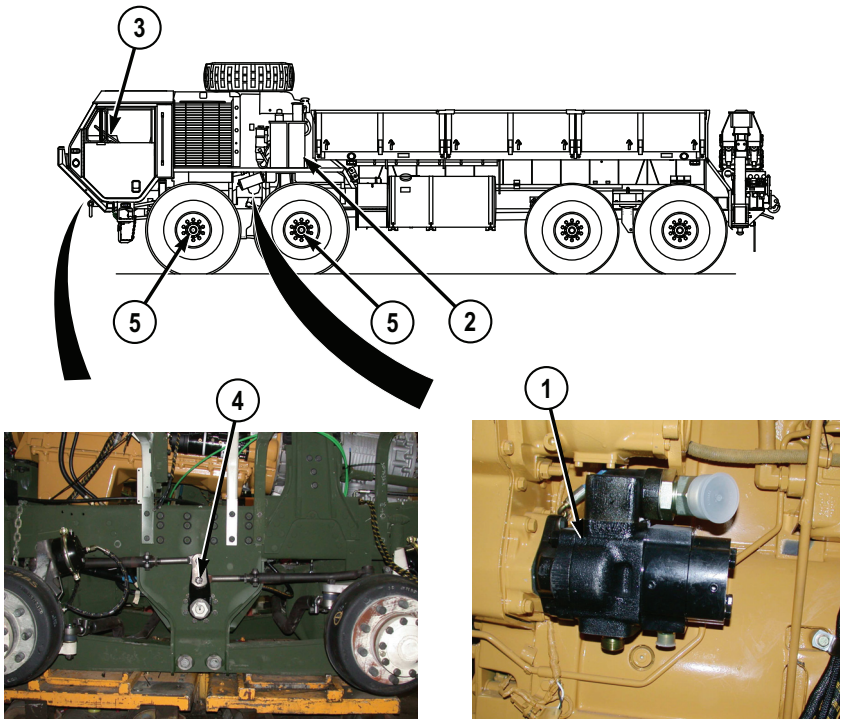


Figure 1.

The fluid reservoir (2) is shared with the main hydraulic system.

The steering wheel (3), which is mechanically linked to the main steering gear, rotates a gear that positions a spool in the main steering gear.

This motion is hydraulically transmitted to a piston in the slave gear causing it to follow the rotation of the main gear.

The main gear pitman arm (4) is mechanically connected to the slave gear pitman arm.

These pitman arms move the steering mechanism on the front axles (5) left or right causing the vehicle to steer left or right.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
POWER TRAIN

POWER TRAIN

The drivetrain control system consists of the engine and transmission systems.

The vehicle drivetrain is enhanced through the use of an engine electrical control system and 4500SP electronic transmission controller.

The engine electrical control and 4500SP transmission systems perform self-diagnostics, engine/transmission system diagnostics, and vehicle performance diagnostics.

Self-diagnostics includes personnel-initiated checks of main electronic components such as solenoids, wiring, sensor, and control modules.

System-diagnostics monitor critical engine and transmission parameters such as oil temperature, oil pressure, coolant temperature, voltage, and gear range attained.

Vehicle performance diagnostic capabilities aid the mechanic in isolating problems outside of the electronic control system.

Operating data is stored in the engine electrical control system and 4500SP electronic transmission controller memory for display at a later time.

Power Train

Power for the vehicle is provided by a diesel engine (1), which is coupled directly to an automatic transmission (2).

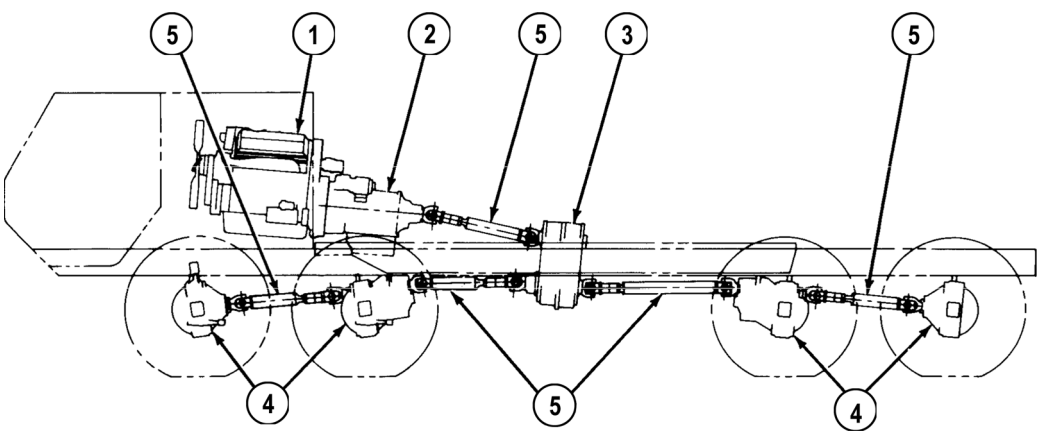


Figure 1.

Power from the transmission is transferred to the transfer case (3) and on to front and rear axles (4) through a series of drive shafts and universal joints (5).

AUTOMATIC TRANSMISSION

HEMTT series vehicles use an Allison HD4000 series transmission model 4500SP.

This hydrokinetic type transmission has an integral-locking torque converter, lock-up clutch, constant mesh planetary gearing, the GEN IV, a speedometer, and control valve module assembly.

The primary components of the GEN IV system are the Transmission Control Module (TCM), transmission range selector in the vehicle cab, a control valve module beneath the transmission gearing section which contains solenoid valves for clutch control, an engine speed sensor, a turbine speed sensor, and an output speed sensor that relays the transmission output speed to the TCM for shifting and control functions.

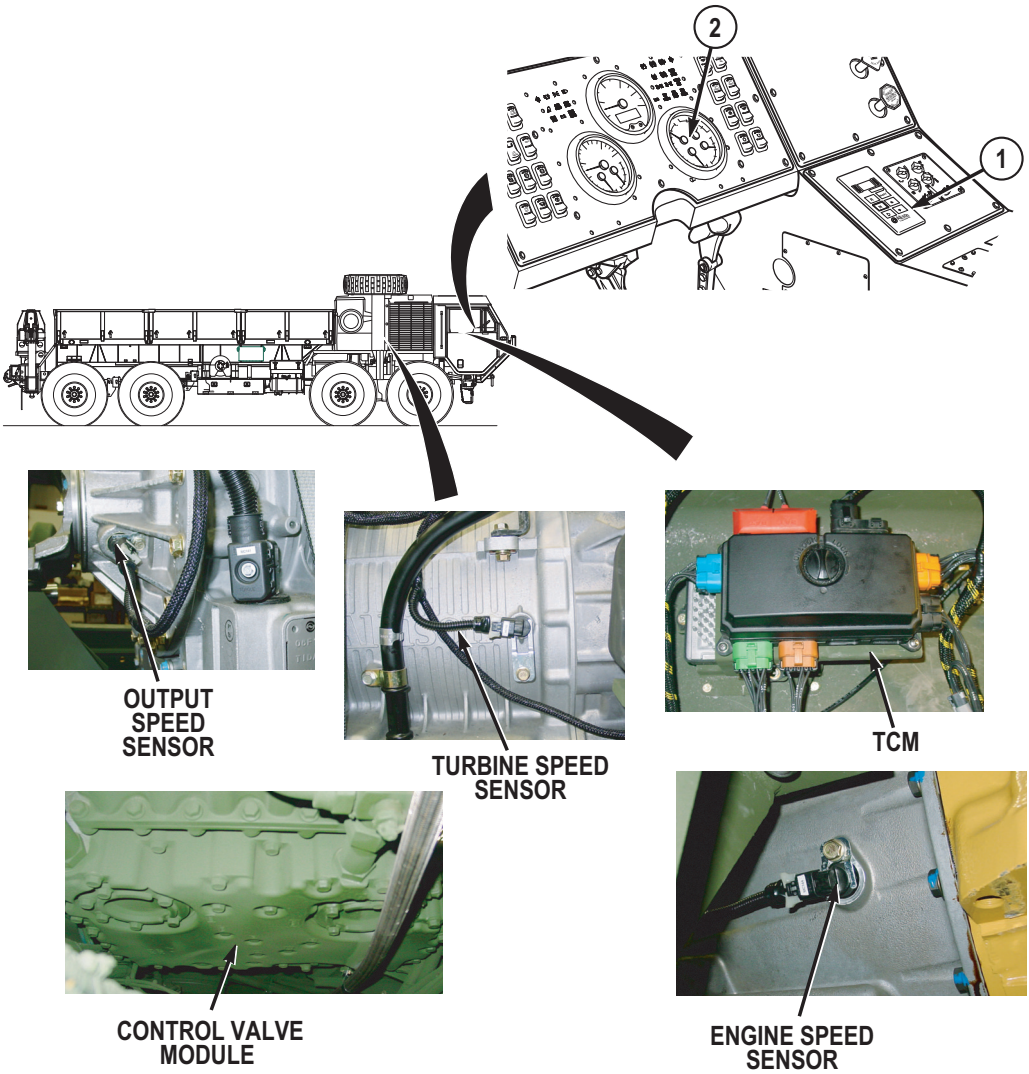


Figure 2.

The TCM also protects the transmission from cold weather startups by inhibiting normal shifting functions until a minimum sump temperature of 20°F (-7°C) is attained.

A check transmission indicator (2) located on the instrument panel alerts the operator, momentarily, every time the system is activated as a lamp check, and when the TCM finds a problem in the system.

If check transmission indicator (2) comes on during vehicle operation, the transmission will continue to operate normally, in most cases. However, in some cases, the TCM will take

action to reduce the possibility of damage to the vehicle or the transmission (refer to limp home/transmission fault (WP 0111) for more information. The transmission should be serviced at the next opportunity.

The transmission range selector (1) allows the operator to select a vehicle drive range.

Operate transmission and transfer case (WP 0047) provides full operating instructions for the transmission.

The TCM contains the microprocessor based electronics and is located in a protected area within the vehicle cab.

The TCM receives information in the form of signals from switches and sensor, processes the information, and sends electrical signals to the appropriate components, which control the operation.

The TCM features diagnostics, which can sense electronic system malfunctions and identify them with a displayed code.

Diagnostic codes can be accessed by two methods: a diagnostic data reader connected to the vehicle at the electronic diagnostic receptacle or through the transmission range selector (1) push buttons.

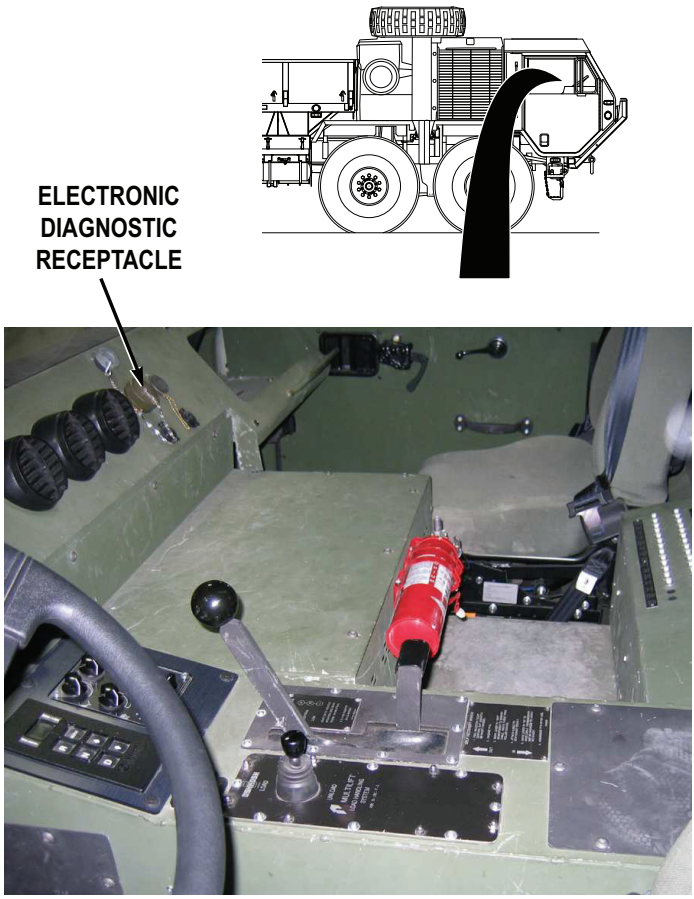


Figure 3.

All lubricating and clutch-applied oil is provided by an engine-driven pump (in the transmission).

The transmission includes an electrically-controlled power take-off (PTO).

The PTO provides power to a hydraulic pump, which powers the vehicle's hydraulic system.

The hydraulic system operates the self-recovery winch, the material handling crane, the heavy-duty recovery winch, and the pumping equipment, depending on how the vehicle is equipped.

TRANSFER CASE

The transfer case (1) connects the drivetrain to the No.1 and No. 2 axles (2) when 8-wheel drive is needed.

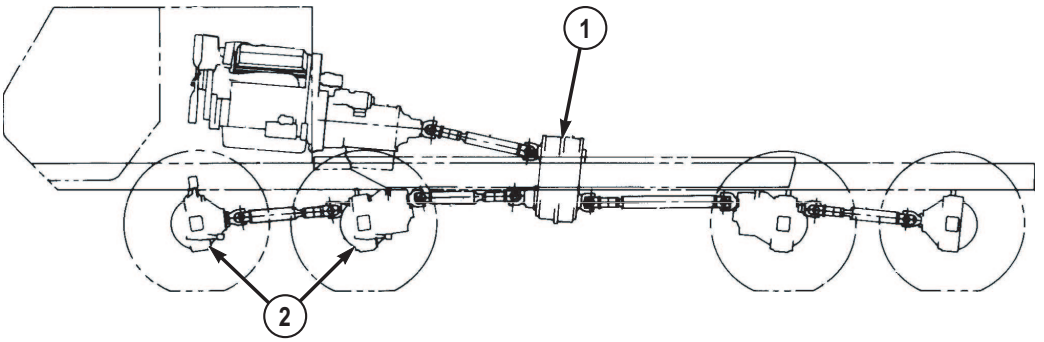


Figure 4.

The transfer case has two gear ratios (high and low) and neutral. The vehicle must be stopped before the transfer case can be shifted between ranges because the gears are not synchronized.

Engagement of the transfer case in low range will automatically engage the drivetrain to the front axles.

TANDEM AXLES AND SUSPENSION

Front and rear axles (1) are single reduction, full floating axle shaft type.

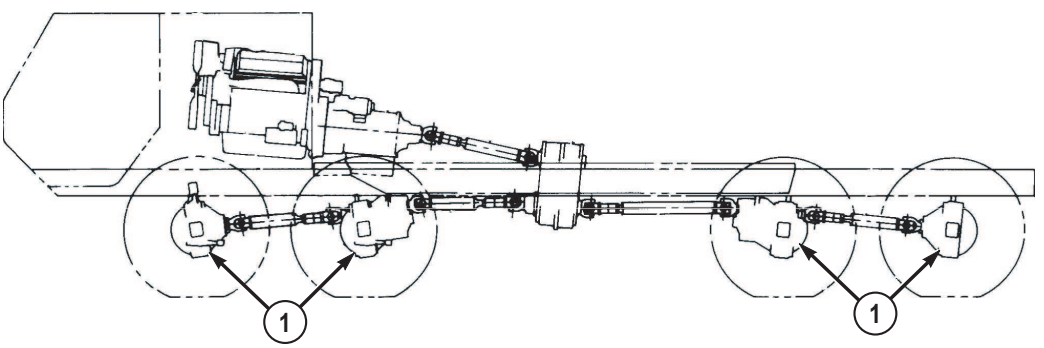


Figure 5.

The front two axles provide vehicle steering

The rear two axles are non-steering.

Both front and rear axles are equipped with wheel differentials and inter-axle differentials.

The inter-axle differential have driver-controlled lockouts for positive drive to all axles in low range.

The rear axles are equipped with permanently engaged controller traction differentials.

The front and rear suspensions are air spring, transverse beam type.

PROPELLER SHAFTS AND UNIVERSAL JOINTS

The propeller shafts and universal joints (1) transmit engine power to the axles.

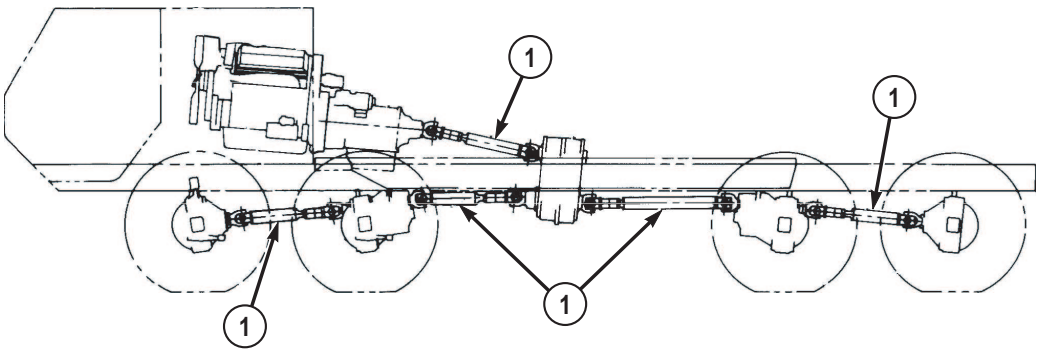


Figure 6.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
ENGINE SYSTEMS

ENGINE

NOTE

The Caterpillar C15 (on-highway) engine and is controlled electronically.

The primary components of electronic control system are electronic unit injector (EUI), electronic control module (ECM), and engine sensors.

The ECM (1) contains:

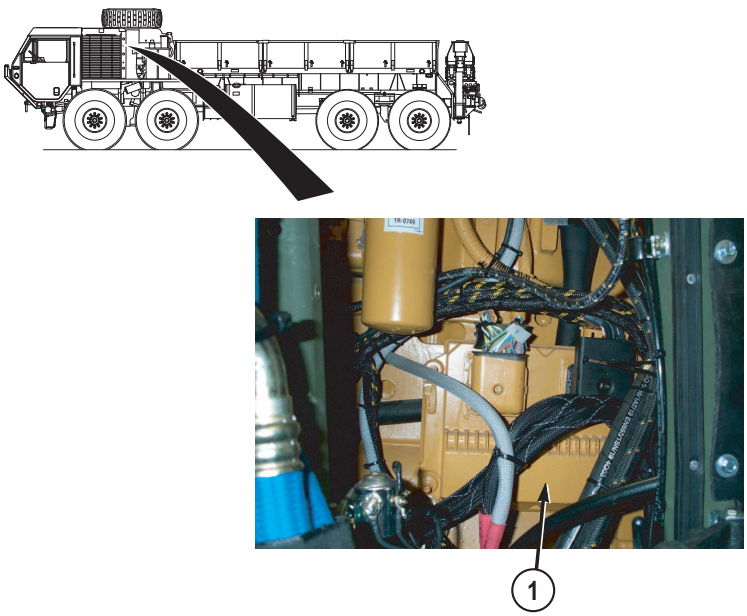


Figure 1.

1. A microprocessor that continuously monitors and analyzes the engine and accompanying systems with electronic sensors during engine operation.
2. A programmable read only memory (PROM) provides basic engine control function instructions.
3. An electronically erasable, programmable, read only memory (EEPROM) stores engine calibration values.

4. A backup EEPROM and microprocessor monitors and analyzes engine operation should the main microprocessor fail and a throttle position sensor (2) input, which is activated by the accelerator pedal.

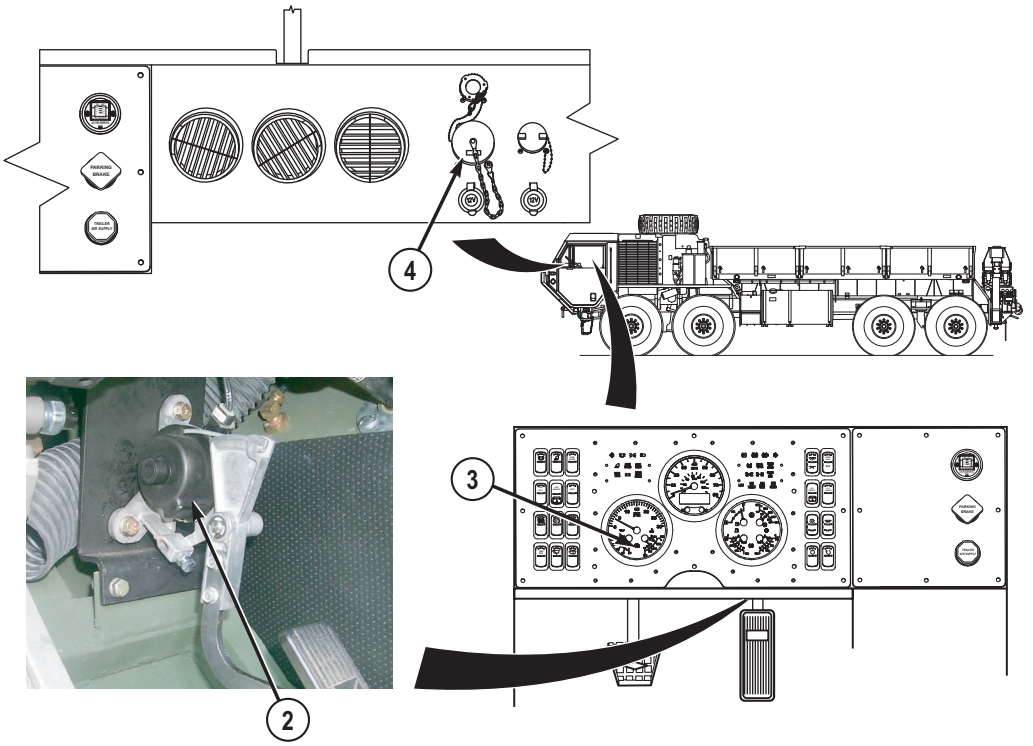


Figure 2.

The EUI allows precise metering and injection timing.

The engine sensors monitor key parts of the engine for performance and environmental variables.

The ECM (1) features diagnostics which can sense electronic system malfunctions and identify them by displaying a code.

A check engine indicator (3) on instrument panel will illuminate when a noncritical fault occurs, but the vehicle can still be operated.

Diagnostic codes can be accessed by a PC based software program or a diagnostic data reader connected to the vehicle at the electronic diagnostic receptacle (4).

AIR INTAKE SYSTEM

The air intake system consists of a dry type air cleaner (1), turbocharger (2), engine blower (3), and an aftercooler (4).

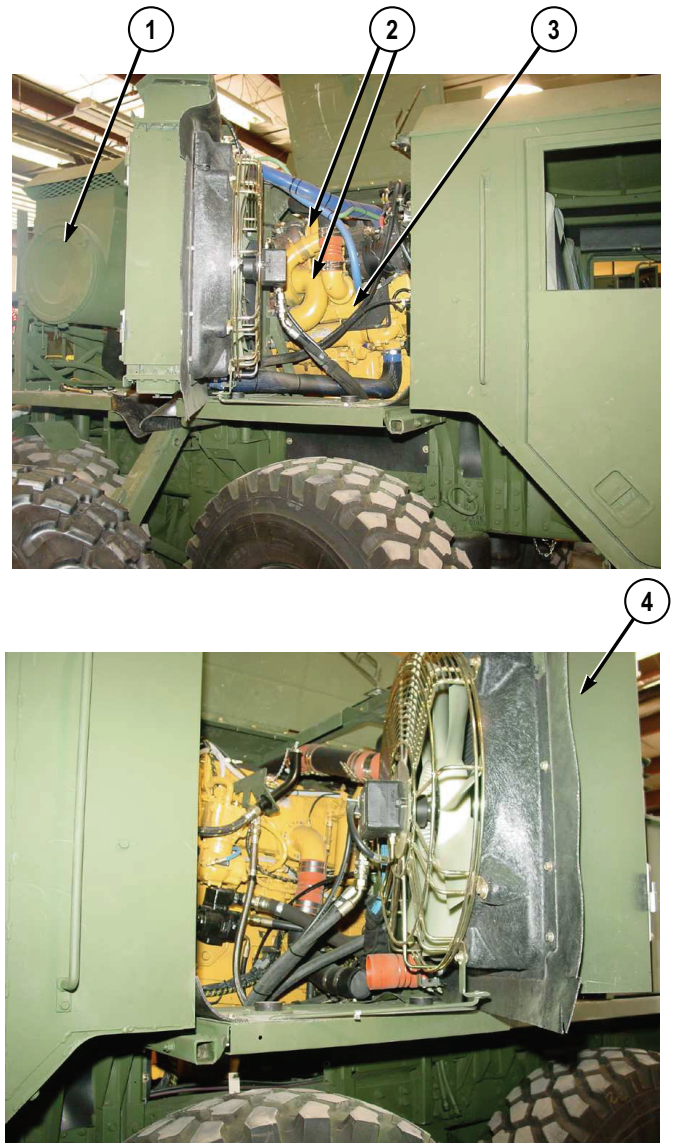


Figure 3.

Engine exhaust gases flow through the turbocharger (2) driving a turbine wheel.

A compressor wheel on the opposite end of the turbine wheel shaft rotates and draws in fresh air through the air cleaner (1), compresses the air, and delivers it to the engine blower (3).

Air from the engine blower (3) flows through the aftercooler (4) which cools the air before it is delivered to the engine cylinders.

FUEL SYSTEM

NOTE

The fuel circuit is a conventional design for electronic unit injector diesel engines.

The fuel transfer pump (1) draws fuel from fuel tank (2).

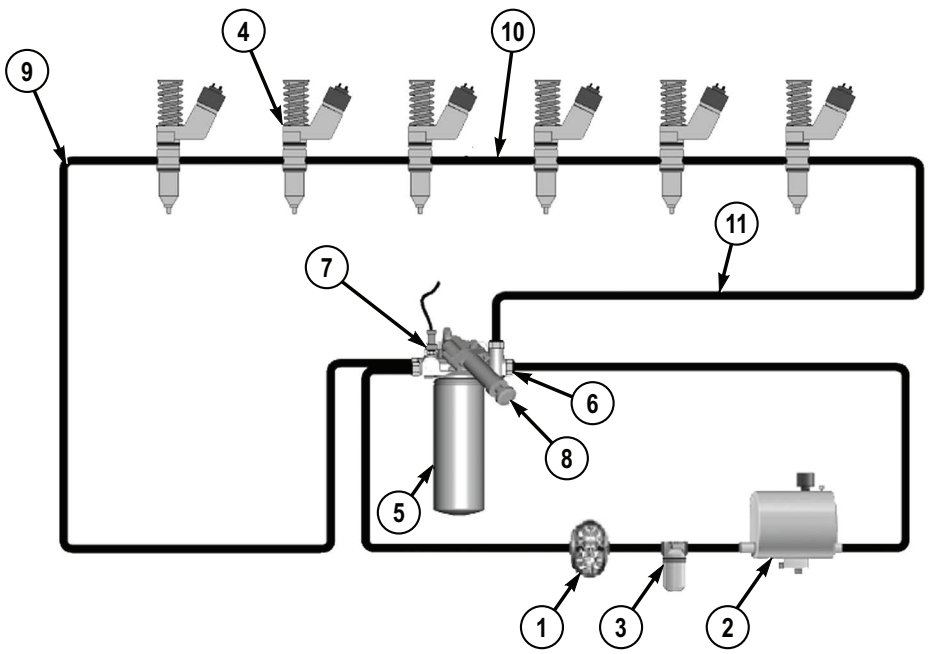


Figure 4.

The fuel passes through primary filter/water separator (3).

The fuel passes into the fuel transfer pump (1) and the fuel is then pressurized.

The fuel transfer pump (1) incorporates a check valve in order to permit a fuel flow around the gears for hand priming.

The fuel transfer pump (1) also incorporates a relief valve in order to protect the system from extreme pressure.

NOTE

The excess fuel flow also purges the air from the fuel system.

The excess fuel flow that is provided by the transfer pump (1) is used in order to cool the electronic unit injectors (4).

The fuel from the transfer pump (1) flows through two micron fuel filters (5) at fuel filter base (6).

Fuel temperature sensor (7) is mounted in the fuel filter base (6).

NOTE

- The engine control module (ECM) uses the sensor to monitor the temperature of the fuel that is entering the engine.
- The information is used by the ECM to calculate a fuel correction factor during engine operation.

Fuel priming pump (8) is positioned on the fuel filter base (6) in order to prime the system when air has been introduced into the fuel system.

NOTE

The fuel enters the cylinder head at the front of the engine.

The fuel leaves the fuel filter base (6) and flows through fuel supply line (9) to the cylinder head.

Fuel is delivered to electronic unit injectors (4) through fuel manifold (10) that is drilled into the cylinder head during the manufacturing process.

NOTE

Excess fuel exits the cylinder head at the rear.

The fuel returns to the fuel filter base (6) through fuel return line (11) to the pressure regulating valve that maintains a sufficient amount of back pressure in the system in order to fill the electron unit injectors (4).

NOTE

After the fuel passes through the pressure regulating valve, the fuel returns to the fuel tank.

The fuel flows continuously from the fuel supply through the electronic unit injectors (4) in the head and back of the tank.

COOLING SYSTEM

Air is pulled through the air cleaner, and into the air inlet (1) by the low pressure turbocharger (2).

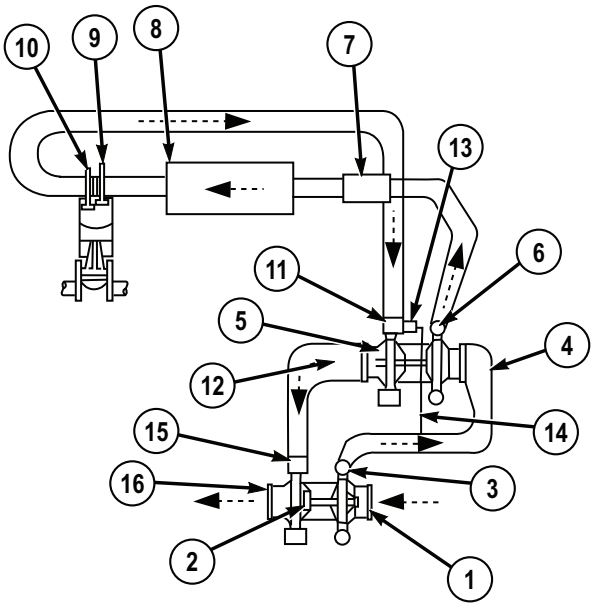


Figure 5.

NOTE

Pressurizing the inlet air causes the air to heat up.

The low pressure turbocharger (2) compresses the air.

NOTE

- The high pressure turbocharger is used to compress the air to a higher pressure.
- This increase in pressure continues to cause the inlet air's temperature to increase.

Pressurized air exits the low pressure turbocharger (2) through an outlet (3) and the air is forced into the inlet (4) of high pressure turbocharger (5).

NOTE

- The precooler uses engine coolant to cool the air.
- Without the precooler, the inlet air would be too hot in order to be cooled sufficiently by the aftercooler

As the air is compressed, the air is forced through the high pressure turbocharger's outlet (6) and into the precooler (7).

NOTE

- The inlet air is cooled further by transferring heat to the ambient air.
- The combustion efficiency increases as the temperature of the inlet air decreases.
- Combustion efficiency helps to provide increased fuel efficiency and increased horsepower output.
- The aftercooler core is a separate cooler core that is mounted in front of the engine radiator.
- The engine fan and the ram effect of the forward motion of the vehicle causes ambient air to move across the core.

The pressurized inlet air is cooled by the precooler (7) prior to being sent to the aftercooler (8).

Inlet air is forced from the aftercooler (7) into the engine's intake manifold.

NOTE

- The airflow from the intake manifold into the cylinders and out of the cylinders is controlled by engine's valve mechanisms.
- The inlet valves open when the piston moves downward on the inlet stroke.
- When the inlet valves open, cooled, compressed air from the intake manifold is pulled into the cylinder.
- The inlet valves close when the piston begins to move upward on the compression stroke.
- The air in the cylinder is compressed by the piston.
- As the air is compressed by the piston, the temperature of the air in the cylinder is heated.
- Fuel is injected into the cylinder when the piston is near the top of the compression stroke.
- Combustion begins when the fuel mixes with the hot, pressurized air.
- The force of the combustion pushes the piston downward on the power stroke.
- The exhaust valves are opened as the piston travels upward to the top of the cylinder.
- The exhaust gases are pushed through the exhaust port into the exhaust manifold.
- After the piston completes the exhaust stroke, the exhaust valves close and the cycle begins again.

Each cylinder has two inlet valves (9) and two exhaust valves (10) that are mounted in the cylinder head.

Exhaust gases from the exhaust manifold flow into the high pressure turbocharger's exhaust inlet (11).

NOTE

- The hot gases that are expelled from the engine are used to turn the turbine wheel of the turbocharger.
- The turbine wheel drives the compressor wheel that is used in order to compress the inlet air that enters the inlet side of the turbocharger.

The exhaust gas exits from the high pressure turbocharger through the high pressure turbocharger's exhaust outlet (12).

NOTE

The wastegate also prevents excessive boost of the engine during acceleration.

Wastegate (13) is used by the high pressure turbocharger (5) to prevent an overspeed condition of the turbocharger turbine wheel during engine acceleration.

The wastegate (13) is controlled by the boost pressure that is felt in the air hose assembly that connects the inlet side of the two turbochargers.

NOTE

- As the diaphragm reacts to high boost pressure, a valve is activated.
- The valve allows exhaust gas to bypass the high pressure turbocharger's turbine, which effectively controls the speed of the turbine.

Wastegate pressure line (14) provides the air pressure to the wastegate's diaphragm.

NOTE

- The exhaust gases drive the turbocharger's turbine.
- This energy is used in order to compress the inlet air in the same manner as the high pressure turbocharger.

The exhaust gases then enter the exhaust inlet (15) for the low pressure turbocharger (2).

The exhaust gases then exit the low pressure turbocharger (2) through the exhaust outlet (16) into the vehicle's exhaust system.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
CAB

CAB

The cab (1) contains all of the driving controls and gauges, operating controls for some of the mounted equipment, and adjustable seats for a crew of two. For explanation of cab controls, refer to vehicle controls and indicators.

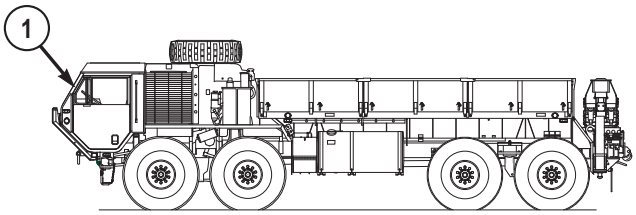


Figure 1.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
WHEELS AND TIRES

WHEELS AND TIRES

There are four front and four rear steel disc, 20.00 x 10.00 wheels (1) with 16.00 R20, tubeless, radial traction, non-directional tires.

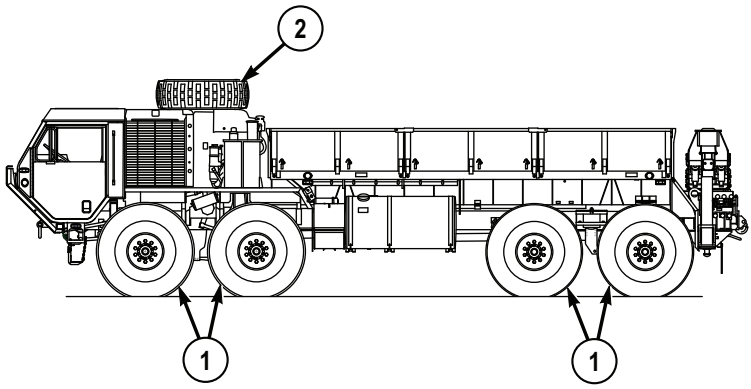


Figure 1.

One spare tire (2) is mounted on top of vehicle.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
TANKER MODULE

The tanker may be loaded through the manhole (1) in the top or by using the loading valve (2) in the bottom of the tank.

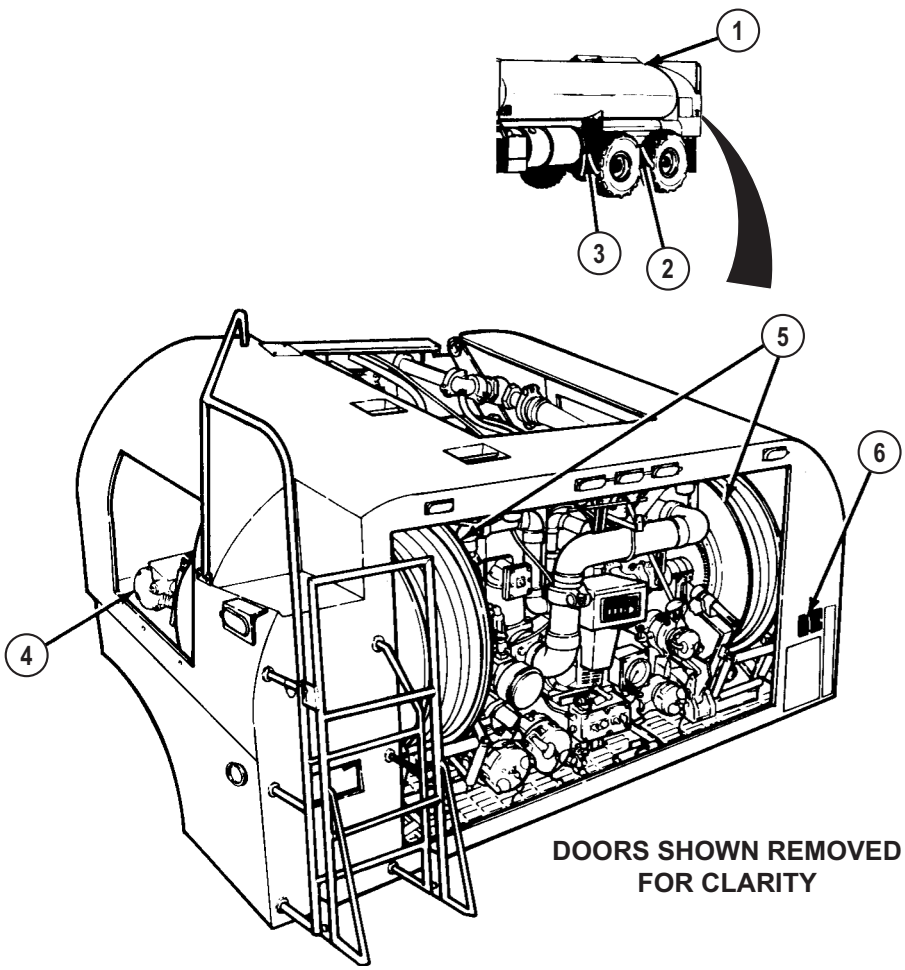


Figure 1.

A hydraulic motor driven pump (3) is used to deliver fuel during all fueling operations.

An electric motor driven pump (4) serves as a backup pumping unit in case the tanker loses hydraulic power.

Fuel delivery hoses are stored on retracting reels (5) located on each side of the fueling station.

Two reel-mounted static grounding cables (6) are provided for grounding whatever is being fueled or defueled.

An emergency shutoff valve and a hand-actuated deadman control are included for maximum safety.

Hand-operated valves attached to the delivery hoses control fuel flow during refueling.

END OF WORK PACKAGE

CHAPTER 2

OPERATOR INSTRUCTIONS

OPERATOR MAINTENANCE
CAB-MOUNTED FOOT CONTROLS

CONTROLS AND INDICATORS INTRODUCTION

This section displays the location and describes the use of cab-mounted foot controls which are used in the operation of HEMTT series vehicles. Controls and indicators described in this section are the same for all vehicles, except where otherwise indicated.

LOCATION AND USE OF CONTROLS AND INDICATORS

Know the location and proper use of every control and indicator before operating HEMTT series vehicles. Separate illustrations with keys are provided for learning about cab-mounted foot controls.

Table 1. Cab-Mounted Foot Controls.

Key	Control/ Indicator	Function

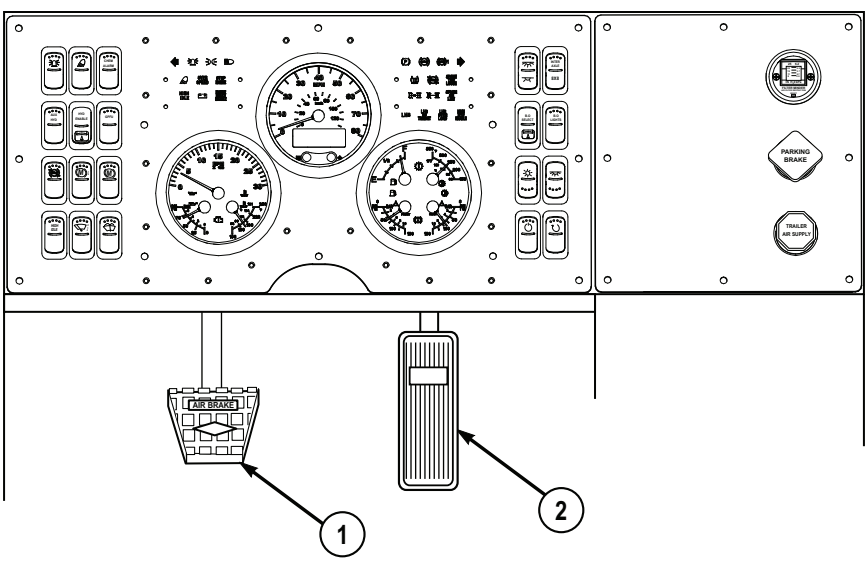


Figure 1.

Table 1. Cab-Mounted Foot Controls. - Continued

Key	Control/ Indicator	Function
1	Service Brake Pedal	Applies service brakes. If vehicle is properly coupled to a trailer, trailer service brakes will also operate when vehicle service brakes are applied.
2	Throttle Pedal	Controls vehicle speed.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
CAB-MOUNTED HAND CONTROLS

CONTROLS AND INDICATORS INTRODUCTION

This section displays the location and describes the use of cab-mounted hand controls which are used in the operation of HEMTT series vehicles. Controls and indicators described in this section are the same for all vehicles, except where otherwise indicated.

LOCATION AND USE OF CONTROLS AND INDICATORS

Know the location and proper use of every control and indicator before operating HEMTT series vehicles. Separate illustrations with keys are provided for learning about cab-mounted hand controls.

Table 1. Cab-Mounted Hand Controls.

Key	Control/ Indicator	Function

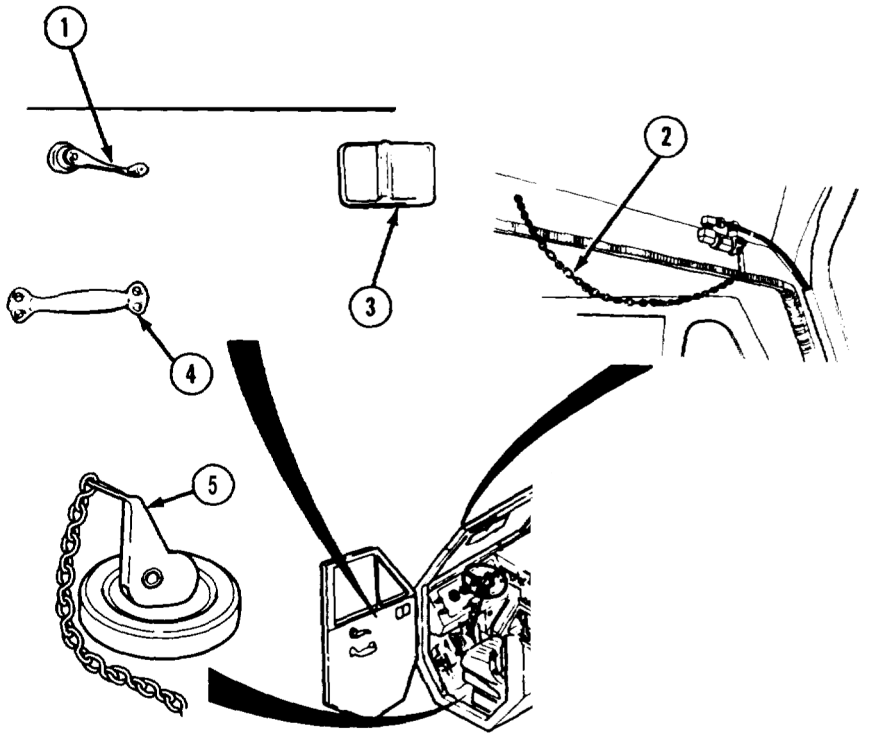


Figure 1.

1	Cab Door Window Glass Regulator (one on each door)	Rotate driver side regulator counterclockwise to lower left window glass, clockwise to raise left window glass. Rotate passenger side regulator clockwise to lower right window glass, counterclockwise to raise right window glass.
2	Air Horn Chain	Pull chain to sound air horn. Release chain to silence air horn.
3	Cab Door Inside Handle	Pull to open cab door from inside of cab.

Table 1. Cab-Mounted Hand Controls. - Continued

Key	Control/ Indicator	Function
	(one on each door)	
4	Cab Door Handle (one on each door)	Pull to close cab door from inside of cab.
5	Drain Plug (one under both operator seat and crew seat)	Pull up on lever to remove drain plug and drain liquid from floor of cab.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
STEERING COLUMN MOUNTED CONTROLS

CONTROLS AND INDICATORS INTRODUCTION

This section displays the location and describes the use of steering column mounted controls which are used in the operation of HEMTT series vehicles. Controls and indicators described in this section are the same for all vehicles, except where otherwise indicated.

LOCATION AND USE OF CONTROLS AND INDICATORS

Know the location and proper use of every control and indicator before operating HEMTT series vehicles. Separate illustrations with keys are provided for learning about steering column mounted controls.

Table 1. Steering Column Mounted Controls.

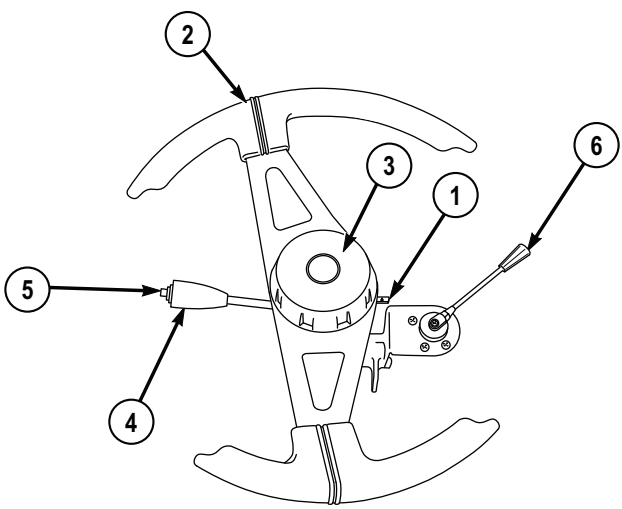
Key	Control/ Indicator	Function
		
1	Emergency Flasher Control	To turn on emergency flashers, push in red tab. Pull red tab out to turn emergency flashers off.

Figure 1.

Table 1. Steering Column Mounted Controls. - Continued

Key	Control/ Indicator	Function
2	Steering Wheel	Controls direction of vehicle.
3	Horn Button	Sounds electric horn when pressed. Release to silence horn.
4	Turn Signal Lever	Push up to signal right turn. Pull down to signal left turn. When turn is complete, return lever to center position.
5	Headlight Dimmer Button	Push in button to switch headlights between high and low beam. The high beam indicator on the instrument panel will illuminate (blue) when high beams are activated, and go out when low beams are selected. (WP 0020)
6	Trailer Handbrake Control Lever	Used to test the trailer brakes. Pull control lever down to apply trailer brakes. Push control lever up to release trailer brakes.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
INSTRUMENT PANEL CONTROLS AND INDICATORS

CONTROLS AND INDICATORS INTRODUCTION

This section displays the location and describes the use of instrument panel controls and indicators which are used in the operation of HEMTT series vehicles. Controls and indicators described in this section are the same for all vehicles, except where otherwise indicated.

LOCATION AND USE OF CONTROLS AND INDICATORS

Know the location and proper use of every control and indicator before operating HEMTT series vehicles. Separate illustrations with keys are provided for learning about instrument panel controls and indicators.

Table 1. Instrument Panel Controls and Indicators.

Key	Control/ Indicator	Function

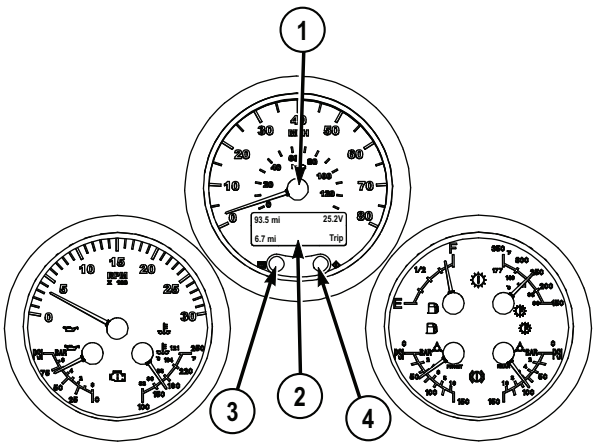


Figure 1.

1	Speedometer	Displays vehicle speed in miles per hour (MPH) and kilometer per hour (kmh).

Table 1. Instrument Panel Controls and Indicators. - Continued

Key	Control/ Indicator	Function
2	Liquid Crystal Display (LCD)	Displays performance and diagnostic information.
3	Mode (M) Button	Cycles and selects displays on the LCD.
4	Trip (T) Button	Cycles and selects displays on the LCD.

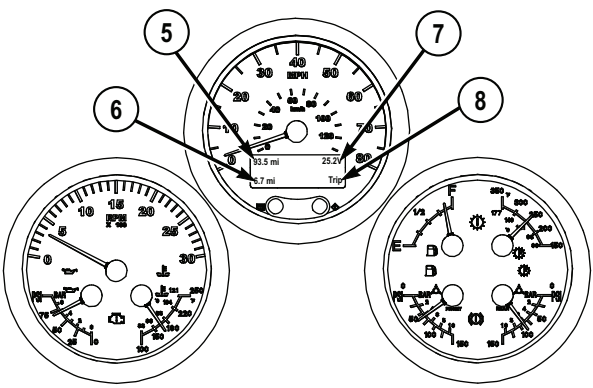


Figure 2.

5	Odometer	Displays total vehicle miles since production.
6	Trip / Hrs Display	Displays either of two drive mode displays (trip display shown): 1) Trip - distance vehicle was driven since trip display was reset. 2) Hrs - total vehicle operating hours.

Table 1. Instrument Panel Controls and Indicators. - Continued

Key	Control/ Indicator	Function
		Trip display can be reset to “0.0” by pressing and holding (T) button for two or more seconds while in “Trip” display. Vehicle operating hours (Hrs display) cannot be reset.
7	Battery Voltage	Displays battery output in volts (V).
8	Drive Mode Display	Operator may choose between either drive mode display option by momentarily pressing and releasing (T) button. Displays “Trip” or “Hrs” dependent on drive mode selected.

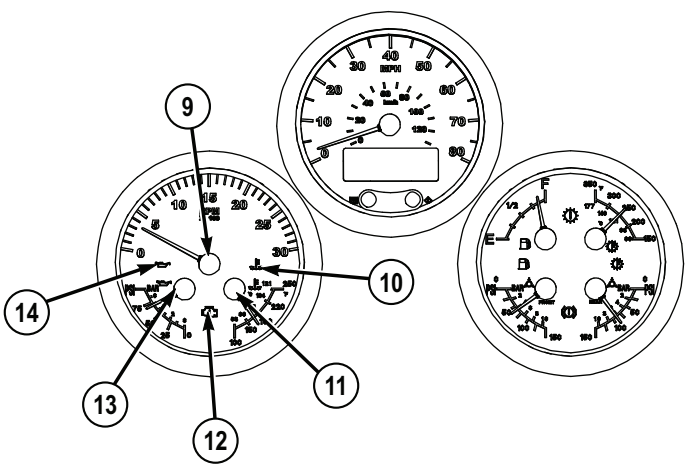


Figure 3.

9	Tachometer	Displays engine speed in revolutions per minute (RPM x 100).
10	High Engine Coolant Temperature Indicator	Illuminates (red) when the engine monitoring system logs a high coolant temperature fault code and will also cause the check engine indicator (12) to illuminate.

Table 1. Instrument Panel Controls and Indicators. - Continued

Key	Control/ Indicator	Function
11	Engine Coolant Temperature Gauge	Displays engine coolant temperature in degrees Fahrenheit (°F) and Celsius (°C).
12	Check Engine Indicator	Illuminates (amber) when the engine monitoring system logs an engine fault code.
13	Engine Oil Pressure Gauge	Displays engine oil pressure in pounds per square inch (psi) and bar.
14	Low Engine Oil Pressure Indicator	Illuminates (red) when the engine monitoring system logs a low oil pressure fault code and will also cause the check engine indicator (12) to illuminate.

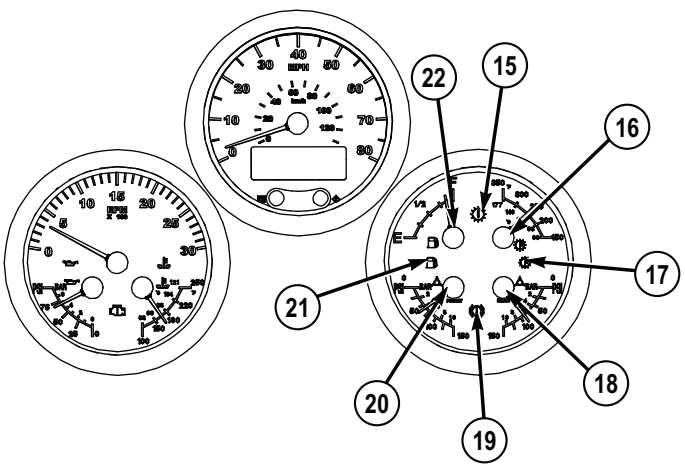


Figure 4.

15	Check Transmission Indicator	Illuminates (amber) when the transmission monitoring system indicates a problem.

Table 1. Instrument Panel Controls and Indicators. - Continued

Key	Control/ Indicator	Function
16	Transmission Oil Temperature Gauge	Displays transmission oil temperature in degrees Fahrenheit (°F) and Celsius (°C).
17	High Transmission Temperature Indicator	Illuminates (red) when transmission pump temperature is above 482°F (250°C) or torque converter temperature is above 350°F (177°C).
18	REAR Air Pressure Gauge	Displays rear air system pressure in pounds per square inch (psi) and bar.
19	Brake System Failure (LOW AIR) Indicator	Illuminates (red) when either FRONT or REAR Air Pressure Gauge falls below 70 psi (5 bar), or the brake system controller indicates a problem. A buzzer will sound until indicator goes out.
20	FRONT Air Pressure Gauge	Displays front air system pressure in pounds per square inch (psi) and bar.
21	Low Fuel Indicator	Illuminates (amber) when fuel quantity falls below 1/8 of a full tank.

Table 1. Instrument Panel Controls and Indicators. - Continued

Key	Control/ Indicator	Function
22	Fuel Gauge	Displays fuel remaining in tank.

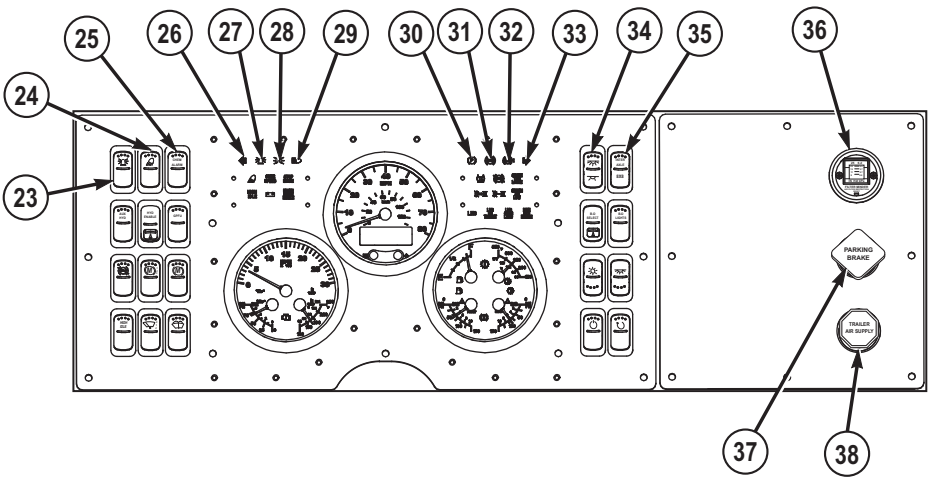


Figure 5.

23	Beacon Light Switch	Turns beacon lights on/off. Switch only active on M984A4 wrecker.
24	Work Light Switch	Turns work lights on/off. Switch only active on M983A4, M983A4 LET, M984A4, and M1977A4 Models.
25	CHEM ALARM Switch	Turns M-8 chemical alarm on/off. Switch only active if M-8 chemical alarm option installed.
26	Left Turn Indicator	Flashes (green) when left turn signal or emergency flasher control is activated.
27	Beacon Light Indicator	Illuminates (green) when Beacon Light Switch is set to on position (active on M984A4 Only).

Table 1. Instrument Panel Controls and Indicators. - Continued

Key	Control/ Indicator	Function
28	Clearance Light Indicator	Illuminates (green) when Master Lighting Switch is set to on position.
29	High Beam Indicator	Illuminates (blue) when headlight high beams are activated.
30	PARKING BRAKE Indicator	Illuminates (red) when PARKING BRAKE Control is applied (pulled out).
31	Vehicle ABS Indicator	Illuminates (amber) when vehicle anti-lock braking system (ABS) experiences a failure.
32	Trailer ABS Indicator	Illuminates (amber) when trailer anti-lock braking system (ABS) experiences a failure.
33	Right Turn Indicator	Flashes (green) when right turn signal or emergency flasher control is activated.
34	Dimmer Switch (Two-Position Momentary)	Adjusts brightness of backlighting for instrument panel switches and gauges, transmission range selector, an HVAC panel. Each upward/downward momentary depression of the switch will increase/decrease panel light intensity by 5%. Depressing the dimmer switch upward for 3+ seconds will increase panel light intensity to 100%. Depressing the dimmer switch downward for 3+ seconds will decrease panel light intensity to 10%.
35	Traction Control Switch (Three-Position)	The Traction Control Switch is a three-position switch:

Table 1. Instrument Panel Controls and Indicators. - Continued

Key	Control/ Indicator	Function
		INTER AXLE - locks inter-axle differentials in front and rear tandems. Center (middle) - off. Vehicle is in normal drive mode. 8x8 - engages transfer case drive to front axles.
36	Air Filter Restriction Indicator	Displays condition of air cleaner filter. Shows (red) when filter becomes clogged. VACUUM INCHES H^2O window displays degree of restriction. Push yellow button on bottom of gauge to reset.
37	PARKING BRAKE Control	Applies (pull out) and releases (push in) vehicle parking brakes. Automatically applies parking brake when air pressure drops below 30 psi (2.1 bar).
38	TRAILER AIR SUPPLY Control	Supplies air to (push in) and shuts off (pull out) air to trailer brake system. When TRAILER AIR SUPPLY control is applied (pushed in), vehicle PARKING BRAKE Control acti-

Table 1. Instrument Panel Controls and Indicators. - Continued

Key	Control/ Indicator	Function
		vates/deactivates the trailer parking brakes in concert with the vehicle parking brakes.

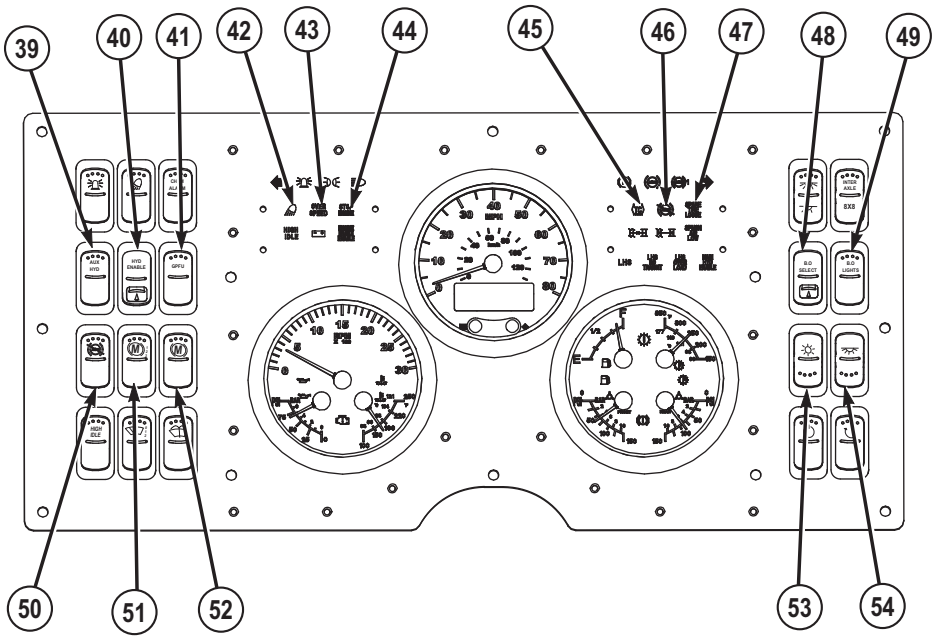


Figure 6.

39	AUX HYD Switch	Not in use at this time.
40	HYD ENABLE Switch	Turns main hydraulic power on/off.
41	GPFU	Turns gas particle filter unit (GPFU) on/off.
42	Work Light Indicator	Illuminates (green) when Work Light Switch is set to on position.

Table 1. Instrument Panel Controls and Indicators. - Continued

Key	Control/ Indicator	Function
43	OVER SPEED Indicator	Illuminates (red) when engine speed exceeds 2,450 RPM.
44	STOP ENGINE Indicator	Illuminates (red) when engine oil pressure, manifold air temperature, and/or engine coolant temperature/fluid level is outside safe operating limits.
45	Automatic Traction Control Indicator (ATC)	Flashes (amber) when traction control system is automatically activated during vehicle operation. Illuminates steady (amber) when traction control is experiencing a fault and/or ABS Disable Switch (50) is set to on position.
46	ABS Disabled Indicator	Illuminates (amber) when anti-lock disable switch is set to on position.
47	SPARE TIRE LOOSE Indicator	Illuminates (amber) when spare tire carrier is unlatched.
48	B.O. SELECT Switch	Setting the blackout service select switch to on position disables the master lighting switch (all functions including brake lights, turn signals, and emergency flashers), work light switch, beacon light switch, dome light switch, electric horn, and reverse alarm.
49	B.O. LIGHTS Switch (Three-Position)	The blackout lights switch is a three-position switch: DOWN - off.

Table 1. Instrument Panel Controls and Indicators. - Continued

Key	Control/ Indicator	Function
		CENTER (middle) - Blackout markers located in the composite lights illuminate.
		UP - Blackout markers and blackout driving light illuminate.
		Blackout stop lights illuminate when Service Brake Pedal is applied.
50	Anti-Lock Brake System (ABS) Disable Switch	Disables vehicle anti-lock brake system. The automatic traction control (ATC) indicator (45) will also illuminate steady (amber) when ABS is disabled.
51	Engine Brake High/Medium/ Low Switch (Three-Position)	The engine brake high/medium/low switch becomes active when the engine brake ON/OFF Switch is set to on position. The amount of engine braking provided is dependant on the position of the engine brake high/medium/low switch:
		(1) - High position (full up) provides maximum engine braking.
		(2) - Medium position (center) provides less engine braking.
		(3) - Low position (full down) provides least amount of engine braking.
52	Engine Brake On/Off Switch	Turns the engine retarder on/off which provides engine braking to the vehicle. The amount of engine braking provided is dependant on the position of the Engine Brake High/Medium/ Low Switch.

Table 1. Instrument Panel Controls and Indicators. - Continued

Key	Control/ Indicator	Function
53	Master Lighting Switch (Three-Position)	The Master Lighting Switch is a three-position switch: DOWN - off CENTER (middle) - clearance lights and parking lights illuminate. UP - clearance lights, parking lights, and headlights illuminate.

Table 1. Instrument Panel Controls and Indicators. - Continued

Key	Control/ Indicator	Function
54	Dome Light Switch	Turns dome light in cab overhead on/off.

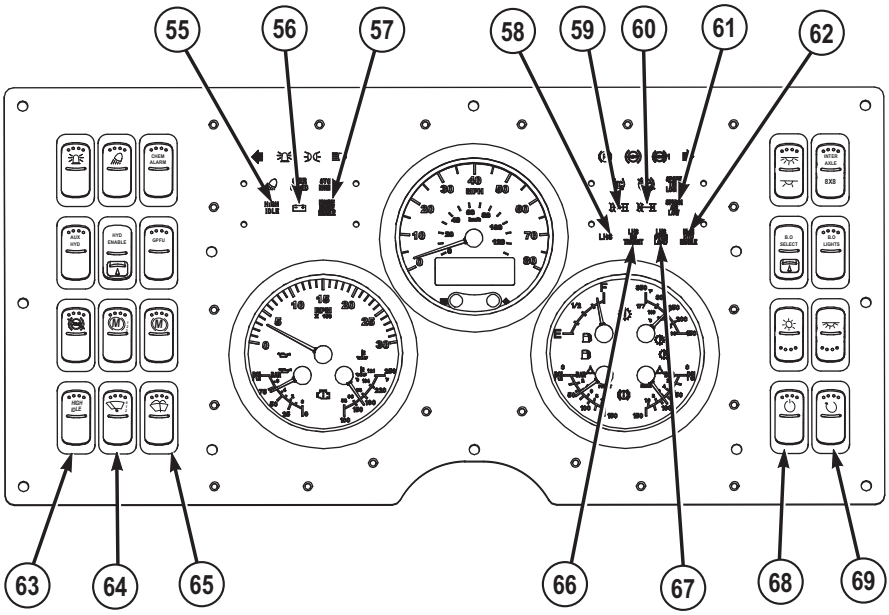


Figure 7.

55	HIGH IDLE Indicator	Illuminates (green) when HIGH IDLE Switch is set to on position.
56	Charging System Indicator	Illuminates (amber) when alternator indicates a charging system problem.
57	ENGINE BRAKE ENABLE Indicator	Illuminates (green) when Engine Brake On/Off Switch is set to on position.

Table 1. Instrument Panel Controls and Indicators. - Continued

Key	Control/ Indicator	Function
58	LHS Indicator	Illuminates (green) when vehicle load handling system (LHS) is activated (active on M1120A4 only).
59	8X8 Indicator	Illuminates (green) when Traction Control Switch (Three-Position) is set to 8x8 position and/or TRANSFER CASE shift lever is positioned to “LO”.
60	Inter-Axle Indicator	Illuminates (green) when Traction Control Switch (Three-Position) is set to INTER AXLE position.
61	SPNSN AIR LOW Indicator	Illuminates (amber) when suspension system air is low.
62	MAIN HYD ENABLE	Illuminates (green) when HYD ENABLE Switch is set to on position.
63	HIGH IDLE Switch	Turns engine high idle on/off.
64	Windshield Wiper Switch (Three-Position)	The Windshield Wiper Switch is a three-position switch:
		DOWN - off.
		CENTER (middle) - low speed.
		UP - high speed.

Table 1. Instrument Panel Controls and Indicators. - Continued

Key	Control/ Indicator	Function
65	Windshield Washer Switch (Two-Position Momentary)	With windshield wipers at desired speed, press and hold Windshield Washer Switch to clean windshield. Release switch to stop fluid flow.
66	LHS NO TRANSIT Indicator	Illuminates (amber) when hook arm assembly is not in the completely stowed position. The vehicle is not to be driven except in the immediate loading and unloading area when LHS NO TRANSIT indicator is illuminated (active on M1120A4 only).
67	LHS OVER LOAD Indicator	Illuminates (amber) when vehicle Load Handling System (LHS) detects an overload condition (active on M1120A4 only).
68	Ignition Switch	This switch provides electrical power to the cab and must be positioned on to energize the engine start switch.
69	Engine Start Switch (Two-Position Momentary)	Push switch until engine starts, then release.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
HEATER COMPARTMENT CONTROLS AND INDICATORS

CONTROLS AND INDICATORS INTRODUCTION

This section displays the location and describes the use of heater compartment controls and indicators which are used in the operation of HEMTT series vehicles. Controls and indicators described in this section are the same for all vehicles, except where otherwise indicated.

LOCATION AND USE OF CONTROLS AND INDICATORS

Know the location and proper use of every control and indicator before operating HEMTT series vehicles. Separate illustrations with keys are provided for learning about heater compartment controls and indicators.

Table 1. Heater Compartment Controls and Indicators.

Key	Control/ Indicator	Function

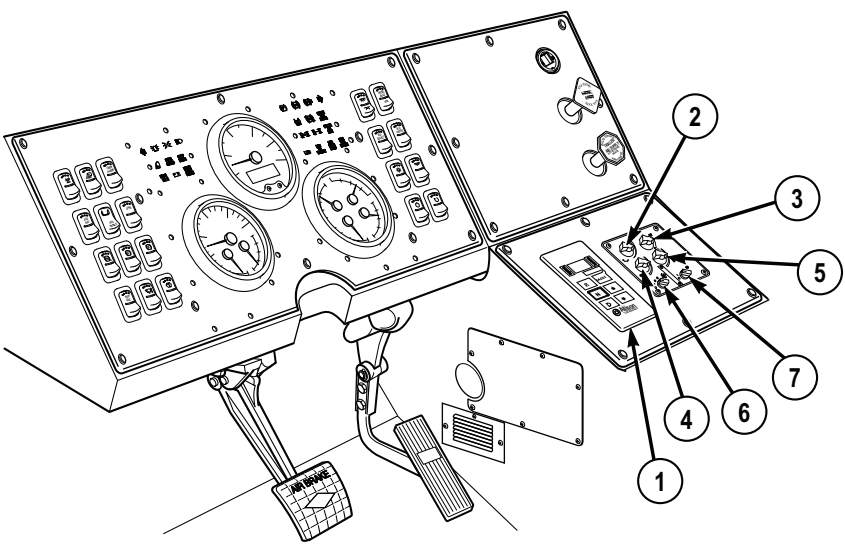


Figure 1.

Table 1. Heater Compartment Controls and Indicators. - Continued

Key	Control/ Indicator	Function
1	Transmission Range Selector	R (reverse) - Used to back up vehicle.
		N (neutral) - Used when starting vehicle, parking vehicle, or if vehicle controls are left unattended while engine is running.
		D (drive) - Used for all normal driving conditions. When vehicle is in motion, transmission will upshift/downshift automatically.
		UP ARROW (increase) - Once the D (drive) is pressed, pressing the (increase) button allows the operator to override the automatic function of the transmission and shift to a higher gear range. Pressing the D (drive) button returns the transmission to its automatic function.
		DOWN ARROW (decrease) - Once the D (drive) is pressed, pressing the (decrease) button allows the operator to override the automatic function of the transmission and shift to a lower gear range. Pressing the D (drive) button returns the transmission to its automatic function.
		MODE - Used for maintenance/troubleshooting procedures.
2	Cabin Floor Vent Control	Regulates amount of airflow directed to the floor vents. This is a rheostat-type control. Turning control CW gradually lessens airflow until it stops. Turning control CCW gradually increases airflow to the cabin floor until the vents are completely open.

Table 1. Heater Compartment Controls and Indicators. - Continued

Key	Control/ Indicator	Function
3	Cabin Air Directional Control	Directs airflow within the cabin between the midsection and defroster vents. This is a rheostat-type control with the midpoint position equally distributing airflow between the midsection and defroster vents.
4	Vent Control	Regulates amount of outside air allowed through the cabin fresh air vents. This is a rheostat-type control with full CCW completely closing, and full CW completely opening the cabin fresh air vents.
5	Heater Temperature Control	Regulates temperature level of the cabin heater. This is a rheostat-type control with full CCW the lowest (coolest) setting and full CW the highest (hottest) setting.
6	Fan Control	Regulates fan output:
		Off - Turn control to the full left position.
		Low - One position to the right of off.
		Medium - Two positions to the right of off.
		High - Turn control to the full right position.
7	Air Conditioning Control	Off - Full left position.

Table 1. Heater Compartment Controls and Indicators. - Continued

Key	Control/ Indicator	Function
		On - Full right position.



Figure 2.

8	EPLRS Power Outlet	Supplies electrical power to enhanced position location reporting system (EPLRS).

Table 1. Heater Compartment Controls and Indicators. - Continued

Key	Control/ Indicator	Function
9	SINCGARS Power Outlet	Supplies electrical power to Single Channel Ground and Airborne Radio System (SINCGARS).

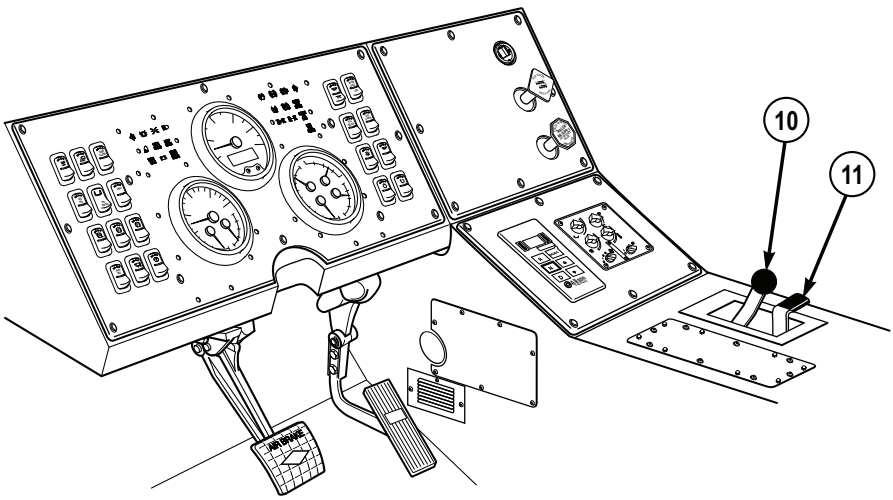


Figure 3.

10	TRANSFER CASE Shift Lever	Used to select high (HI) or low (LO) range. Center position is neutral (NEUT).
11	Self-Recovery Winch (SRW) Lever	Used to pay out (push lever forward) and take up (pull lever aft) winch cable. Lever will return to neutral (center) position when released. Lever not included in vehicles without SRW.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
CENTER DASH PANEL CONTROLS

CONTROLS AND INDICATORS INTRODUCTION

This section displays the location and describes the use of dash panel controls which are used in the operation of HEMTT series vehicles. Controls and indicators described in this section are the same for all vehicles, except where otherwise indicated.

LOCATION AND USE OF CONTROLS AND INDICATORS

Know the location and proper use of every control and indicator before operating HEMTT series vehicles. Separate illustrations with keys are provided for learning about dash panel controls.

Table 1. Center Dash Panel Controls.

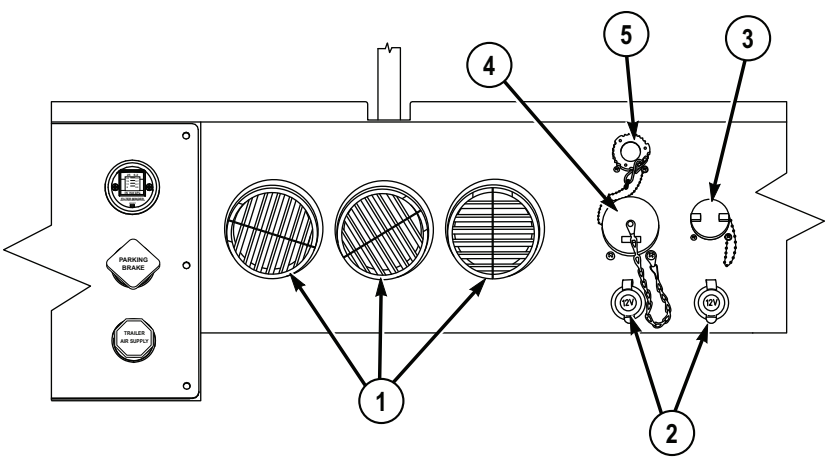
Key	Control/ Indicator	Function
		

Figure 1.

1	Operator/Crew Air Vents	Rotate to direct air as desired.
2	12 Volt Receptacle (Two)	Supplies 12V electrical power to cab.

Table 1. Center Dash Panel Controls. - Continued

Key	Control/ Indicator	Function
3	24 Volt Receptacle	Supplies 24V electrical power to cab.
4	STE/ICE Receptacle	Receptacle for connecting simplified test equipment/internal combustion engine (STE/ICE).
5	Electronic Diagnostic Receptacle	Used to connect diagnostic equipment for troubleshooting vehicle systems.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATOR AND CREW FOUR-POINT SEATBELT/AIR-RIDE SEAT ADJUSTMENT CONTROLS

CONTROLS AND INDICATORS INTRODUCTION

This section displays the location and describes the use of operator and crew four-point seatbelt/air-ride seat adjustment controls which are used in the operation of HEMTT series vehicles. Controls and indicators described in this section are the same for all vehicles, except where otherwise indicated.

LOCATION AND USE OF CONTROLS AND INDICATORS

Know the location and proper use of every control and indicator before operating HEMTT series vehicles. Separate illustrations with keys are provided for learning about operator and crew four-point seatbelt/air-ride seat adjustment controls.

Table 1. Operator and Crew Four-Point Seatbelt/Air-Ride Seat Adjustment Controls.

Key	Control/ Indicator	Function

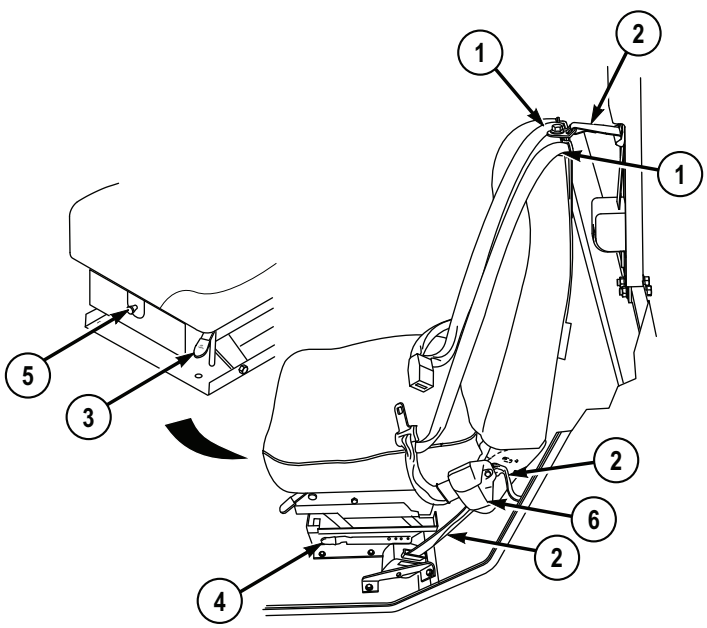


Figure 1.

Table 1. Operator and Crew Four-Point Seatbelt/Air-Ride Seat Adjustment Controls. - Continued

Key	Control/ Indicator	Function
1	Seatbelt	Secures personnel to seat.
2	Seat Connector Straps	Secures seat to cab frame.
3	Height Adjustment Control	Used to adjust seat height.
4	Forward/Backward Adjustment Control	Used to move seat forward or backward on slides.
5	Ride Adjustment Control	Used to adjust seat tension and ride firmness.
6	Retractor	Locks seatbelt in event of accident, stows belt when not in use.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
24V BATTERY DISCONNECT SWITCH

CONTROLS AND INDICATORS INTRODUCTION

This section displays the location and describes the use of 24V Battery Disconnect Switch which is used in the operation of HEMTT series vehicles. Controls and indicators described in this section are the same for all vehicles, except where otherwise indicated.

LOCATION AND USE OF CONTROLS AND INDICATORS

Know the location and proper use of every control and indicator before operating HEMTT series vehicles. Separate illustrations with keys are provided for learning about 24V Battery Disconnect Switch.

Table 1. 24V Battery Disconnect Switch.

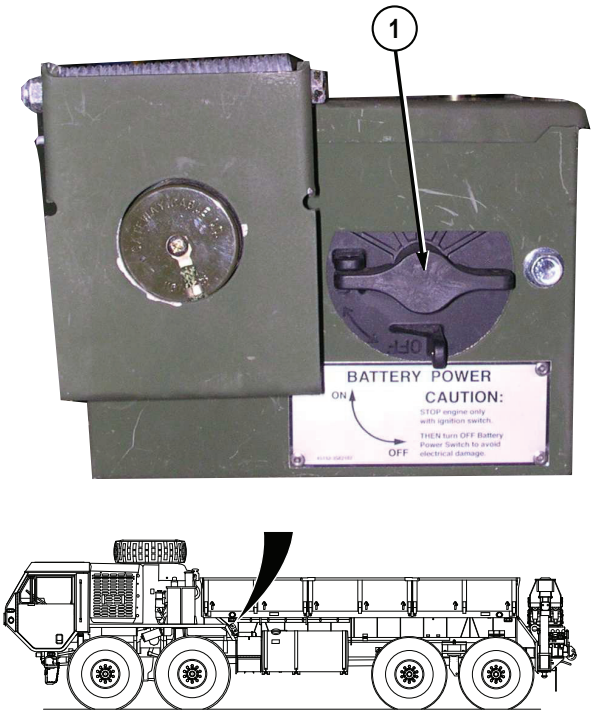
Key	Control/ Indicator	Function
		
1	24V BATTERY DISCONNECT Switch	When in the ON position, power is available to control modules and electrical system. When in OFF position, battery does not run down due to control module load.

Figure 1.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
HYDRAULIC SELECTOR VALVE CONTROL

CONTROLS AND INDICATORS INTRODUCTION

This section displays the location and describes the use of Hydraulic Selector Valve Control which are used in the operation of HEMTT series vehicles. Controls and indicators described in this section are the same for all vehicles, except where otherwise indicated.

LOCATION AND USE OF CONTROLS AND INDICATORS

Know the location and proper use of every control and indicator before operating HEMTT series vehicles. Separate illustrations with keys are provided for learning about Hydraulic Selector Valve Control.

Table 1. Hydraulic Selector Valve Control.

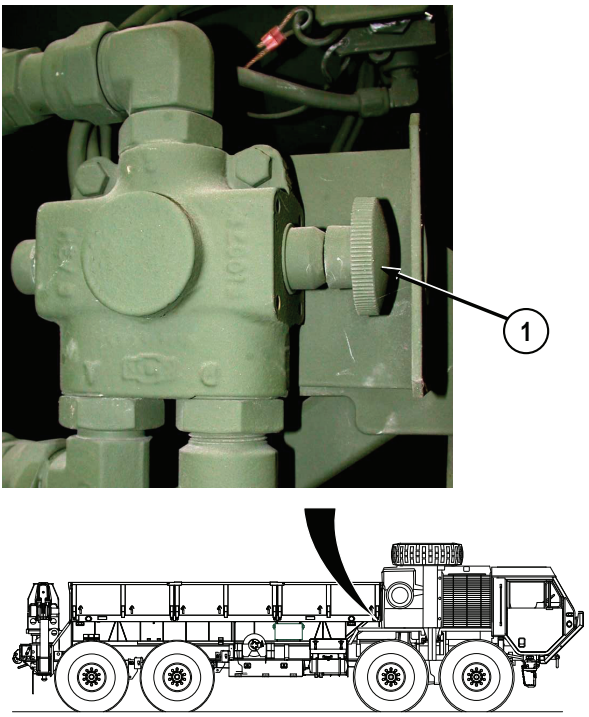
Key	Control/ Indicator	Function
		
1	Hydraulic Selector Valve Control	Diverts main hydraulic power to/from Self-Recovery Winch: Self-Recovery Winch operation - PULL OUT. All other operations - PUSH IN (shown).

Figure 1.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
TIRE CARRIER PUMP CONTROLS

CONTROLS AND INDICATORS INTRODUCTION

This section displays the location and describes the use of tire carrier pump controls which are used in the operation of HEMTT series vehicles. Controls and indicators described in this section are the same for all vehicles, except where otherwise indicated.

LOCATION AND USE OF CONTROLS AND INDICATORS

Know the location and proper use of every control and indicator before operating HEMTT series vehicles. Separate illustrations with keys are provided for learning about tire carrier pump controls.

Table 1. Tire Carrier Pump Controls.

Key	Control/ Indicator	Function

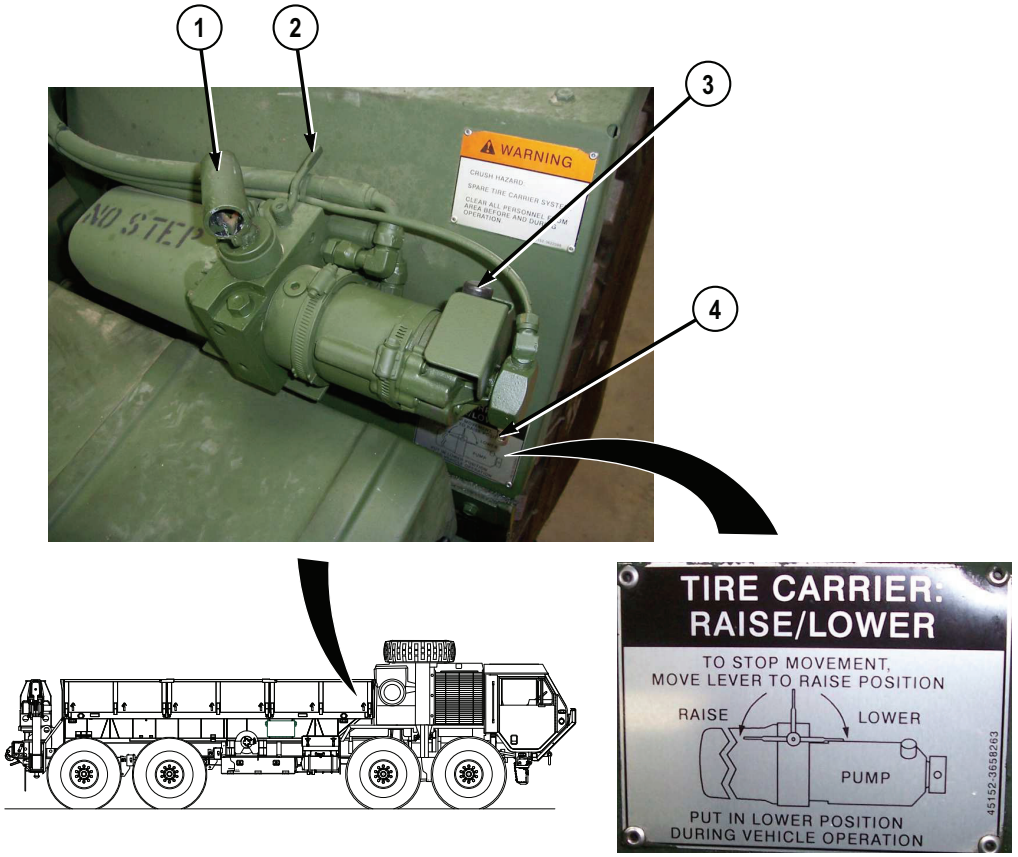


Figure 1.

1	Hand Pump Receptacle	Receiver for handle which is used in conjunction with directional control lever (2) to manually raise and lower tire carrier.
2	Directional Control Lever	Controls tire carrier direction of movement:
		Outboard - LOWER

Table 1. Tire Carrier Pump Controls. - Continued

Key	Control/ Indicator	Function
		Inboard - RAISE
3	Power Control (momentary)	Push in to move tire carrier in direction selected via directional control lever (2). Release to stop movement.
4	Auxiliary Air Fitting	Accepts outside air source to pneumatically power tire carrier during lowering and raising operations.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
SUSPENSION DUMP VALVE CONTROL

CONTROLS AND INDICATORS INTRODUCTION

This section displays the location and describes the use of Suspension Dump Valve Control which is used in the operation of HEMTT series vehicles. Controls and indicators described in this section are the same for all vehicles, except where otherwise indicated.

LOCATION AND USE OF CONTROLS AND INDICATORS

Know the location and proper use of every control and indicator before operating HEMTT series vehicles. Separate illustrations with keys are provided for learning about Suspension Dump Valve Control.

Table 1. Suspension Dump Valve Control.

Key	Control/ Indicator	Function

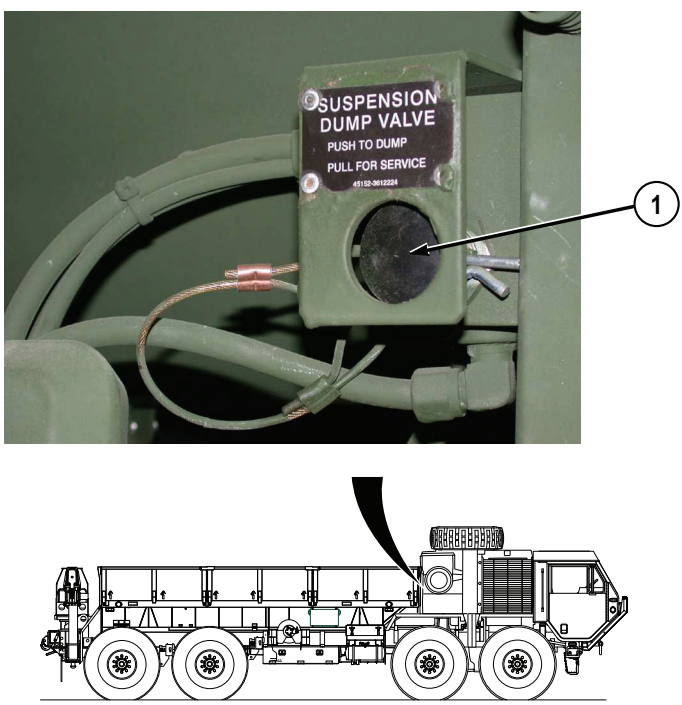


Figure 1.

Table 1. Suspension Dump Valve Control. - Continued

Key	Control/ Indicator	Function
1	Suspension Dump Valve Control	Inflates/deflates vehicle air suspension system: DUMP (deflate) - Push in. SERVICE (inflate) - Pull out.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
TANKER MODULE CONTROLS - FAR RIGHT AND FAR LEFT

CONTROLS AND INDICATORS INTRODUCTION

This section displays the location and describes the use of tanker module controls - far right and far left which are used in the operation of HEMTT series vehicles. Controls and indicators described in this section are the same for all vehicles, except where otherwise indicated.

LOCATION AND USE OF CONTROLS AND INDICATORS

Know the location and proper use of every control and indicator before operating HEMTT series vehicles. Separate illustrations with keys are provided for learning about tanker module controls - far right and far left.

Table 1. Tanker Module Controls - Far Right and Far Left.

Key	Control/ Indicator	Function

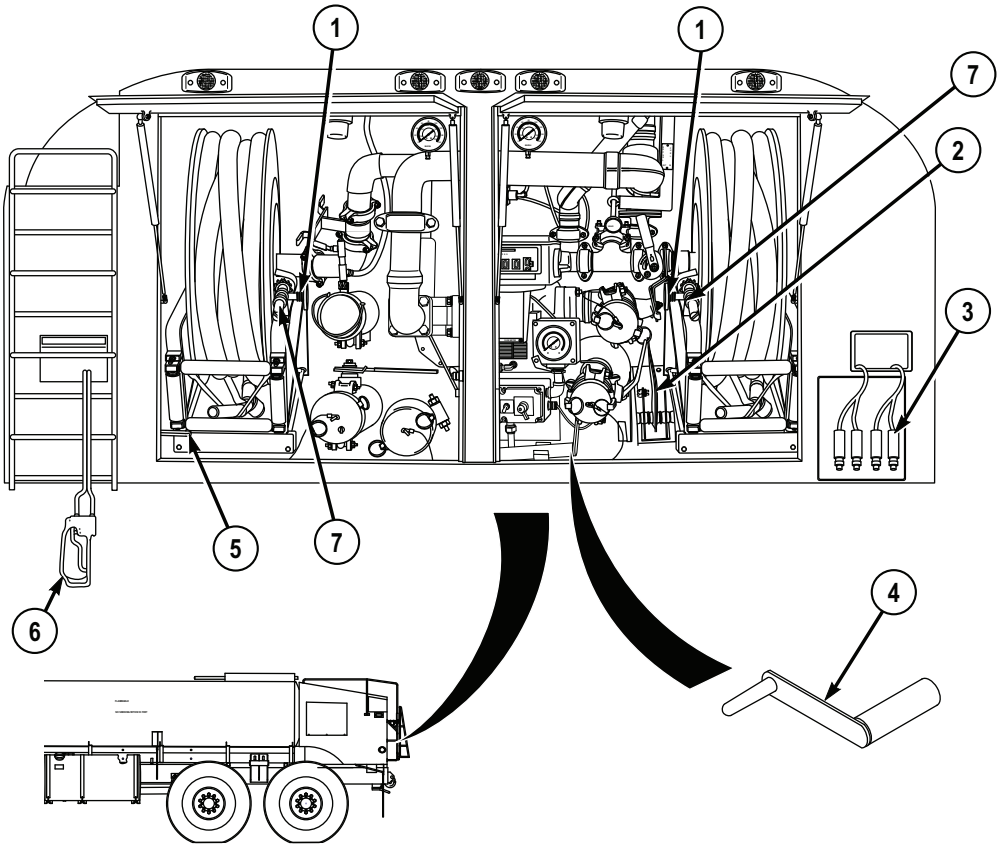


Figure 1.

1	Hose Reel Tension Knob	Secures reel in position to keep servicing hose from unwinding.
2	MC MANUAL CONTROL EM VALVE Lever	Opens and closes valve (V1) which allows fuel flow out of tank. Valve is pulled back to open in all operations except top load or bottom load.

Table 1. Tanker Module Controls - Far Right and Far Left. - Continued

Key	Control/ Indicator	Function
3	SR1 STATIC REEL/SR2 STATIC REEL	Prevents buildup of static electricity during operation. One cable is connected to vehicle being fueled or de-fueled. Other cable is connected to grounding ring or stake.
4	Hand Crank Handle	Connects to hand crank and allows operator to rewind servicing hose onto reel.
5	Pump Engagement Lever	Engages main pump when lever is pushed forward. Disengages pump when lever is pulled back. Allows use of remote hydraulics when latch is lifted and lever is pulled full back.
6	Hand Actuated Valve (HAV) Control	Starts fuel flow when handle is depressed. Stops fuel flow when handle is released.
7	Hand Crank Shaft	Works in conjunction with hose reel tension knob and hand crank handle to rewind servicing hose onto reel.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
TANKER MODULE CONTROLS - CENTER

CONTROLS AND INDICATORS INTRODUCTION

This section displays the location and describes the use of tanker module controls - center which are used in the operation of HEMTT series vehicles. Controls and indicators described in this section are the same for all vehicles, except where otherwise indicated.

LOCATION AND USE OF CONTROLS AND INDICATORS

Know the location and proper use of every control and indicator before operating HEMTT series vehicles. Separate illustrations with keys are provided for learning about tanker module controls - center.

Table 1. Tanker Module Controls - Center.

Key	Control/ Indicator	Function

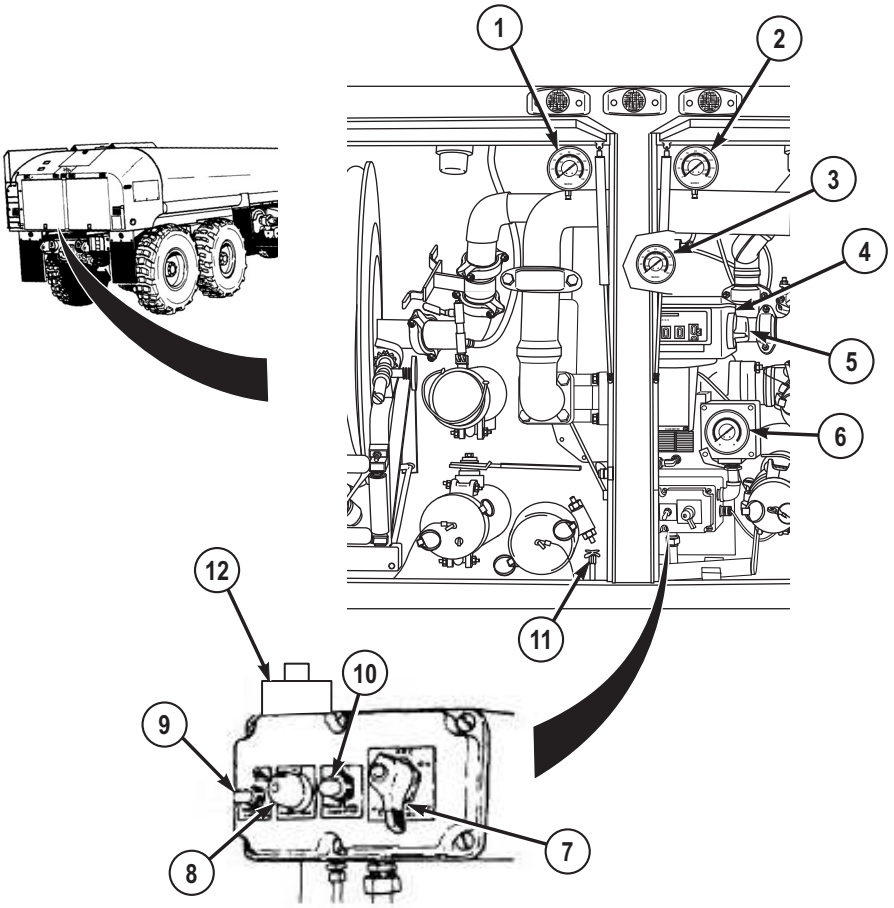


Figure 1.

1	Discharge Line Pressure Gauge (DLPG)	Indicates pressure of fuel in servicing hose during operation.

Table 1. Tanker Module Controls - Center. - Continued

Key	Control/ Indicator	Function
2	Venturi-Nozzle Pressure Gauge (VNPG)	Indicates pressure of fuel at fuel servicing nozzle during operation.
3	Differential Pressure Gauge (DPG)	Indicates whether filter-separator is clean or dirty by measuring pressure drop as fuel flows through separator.
4	Flowmeter (FM)	Registers amount of fuel dispensed or taken in.
5	Flowmeter Reset Knob	Resets flowmeter to zero when turned.
6	LIQUID TANK LEVEL Gauge	Indicates fuel level in tank when TANK LEVEL INDICATOR switch is in ON position.
7	AUXILIARY PUMP CONTROL (APC)/ APS AUXILIARY PUMP Switch	Turns electrically powered auxiliary pump ON/OFF.
8	HIGH IDLE (HI) Button	Spring loaded switch will accelerate engine to high idle.
9	THROTTLE CONTROL (TC) Switch	Turns high idle circuit ON/OFF.

Table 1. Tanker Module Controls - Center. - Continued

Key	Control/ Indicator	Function
10	TANK LEVEL INDICATOR (TLI) Switch	Turns fuel level gauge circuit ON/OFF.
11	V15 DRAIN VALVE	Drains any water or other contaminants from filter separator.
12	SAMPLING PROBE Shut-off Valve	Allows fuel flow from probe when taking fuel samples.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
TANKER MODULE CONTROLS - NEAR RIGHT

CONTROLS AND INDICATORS INTRODUCTION

This section displays the location and describes the use of tanker module controls - near right which are used in the operation of HEMTT series vehicles. Controls and indicators described in this section are the same for all vehicles, except where otherwise indicated.

LOCATION AND USE OF CONTROLS AND INDICATORS

Know the location and proper use of every control and indicator before operating HEMTT series vehicles. Separate illustrations with keys are provided for learning about tanker module controls - near right.

Table 1. Tanker Module Controls - Near Right.

Key	Control/ Indicator	Function

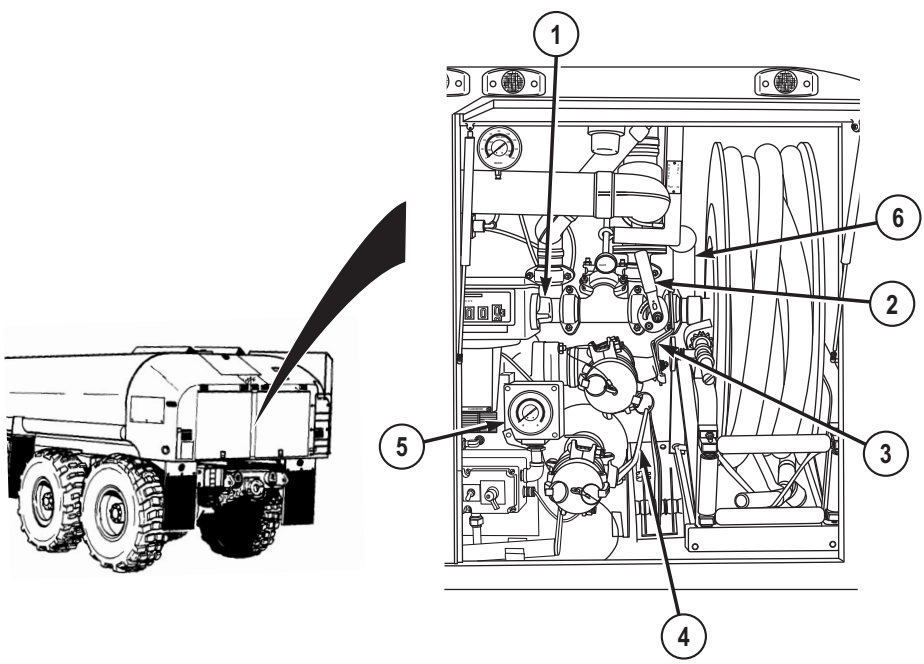


Figure 1.

Table 1. Tanker Module Controls - Near Right. - Continued

Key	Control/ Indicator	Function
1	Flowmeter Reset Knob	Resets flowmeter to zero when turned.
2	V6 FUEL/DEFUEL VALVE	Controls fuel flow through flowmeter during fueling or diverts fuel to eductor (ED) during defueling.
3	V11 FLOW VALVE (REG)	Controls rate of fuel flow though bulk unload connector. Varies rate of flow from 50 to 300 gpm. Each notch in control equals approximately 25 gpm.
4	V18 BULK DELIVERY VALVE	Controls fuel flow though bulk delivery connector.
5	Tank Fuel Level Gauge	Indicates fuel level in tank when TANK LEVEL INDICATOR switch is in ON position.
6	V8 REEL VALVE (H2)	Controls fuel flow to servicing hose (H2) on reel at passenger side of vehicle.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
TANKER MODULE CONTROLS - NEAR LEFT

CONTROLS AND INDICATORS INTRODUCTION

This section displays the location and describes the use of tanker module controls - near left which are used in the operation of HEMTT series vehicles. Controls and indicators described in this section are the same for all vehicles, except where otherwise indicated.

LOCATION AND USE OF CONTROLS AND INDICATORS

Know the location and proper use of every control and indicator before operating HEMTT series vehicles. Separate illustrations with keys are provided for learning about tanker module controls - near left.

Table 1. Tanker Module Controls - Near Left.

Key	Control/ Indicator	Function

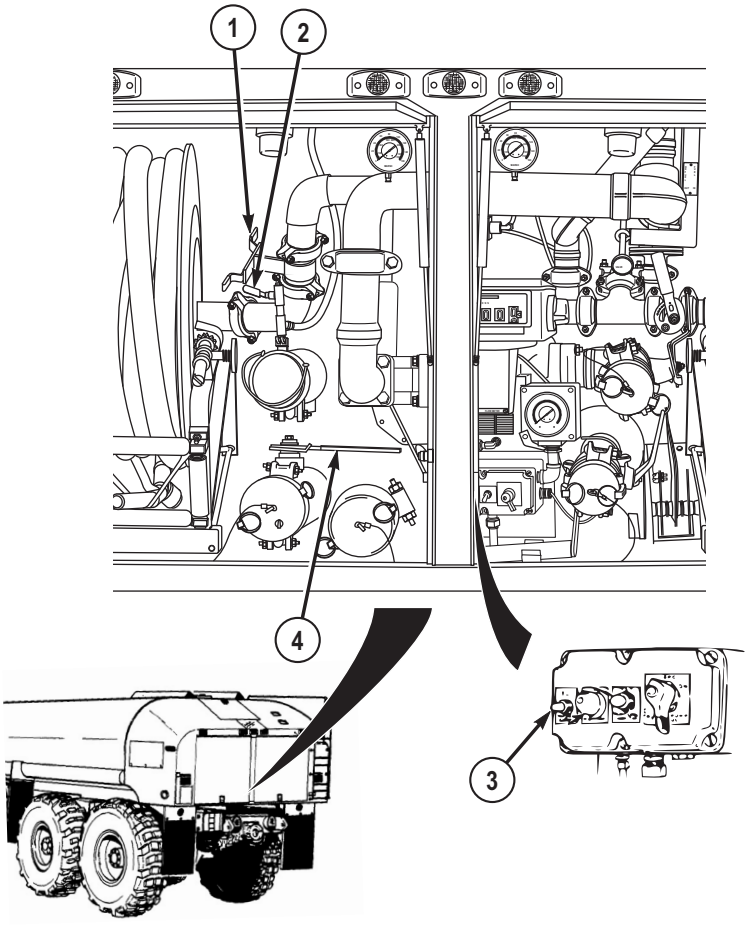


Figure 1.

1	V7 REEL VALVE (H1)	Controls fuel to servicing hose (H1) on reel at driver side of vehicle.

Table 1. Tanker Module Controls - Near Left. - Continued

Key	Control/ Indicator	Function
2	V12 B/L PRE-CHECK VALVE	Valve is used during bulk loading operations to be sure bottom load valve (V10) will close when tank is full.
3	THROTTLE CONTROL Switch (TC)	Turns high idle circuit on/off.
4	V17 GRAVITY VALVE	Controls fuel flow to tanker during gravity unloading. Controls fuel operation using tanker pump.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
TANKER MODULE CONTROLS - DRIVER SIDE OF VEHICLE

CONTROLS AND INDICATORS INTRODUCTION

This section displays the location and describes the use of Tanker module controls - driver side of vehicle which are used in the operation of HEMTT series vehicles. Controls and indicators described in this section are the same for all vehicles, except where otherwise indicated.

LOCATION AND USE OF CONTROLS AND INDICATORS

Know the location and proper use of every control and indicator before operating HEMTT series vehicles. Separate illustrations with keys are provided for learning about tanker module controls - driver side of vehicle.

Table 1. Tanker Module Controls - Driver Side of Vehicle.

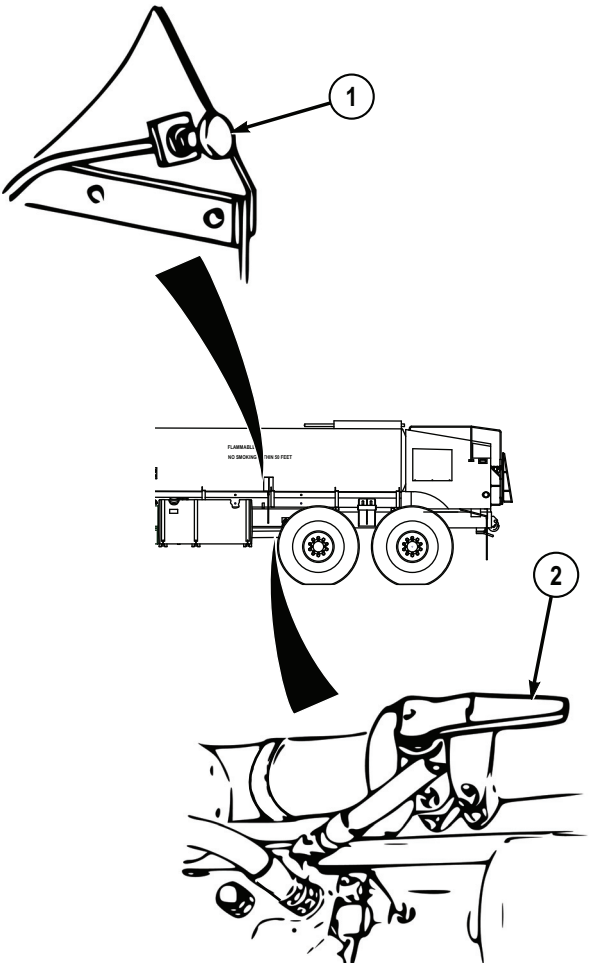
Key	Control/ Indicator	Function
		
		Figure 1.
1	Emergency Fuel Shutoff (Manual Emergency Control)	When pulled, valve (V1) closes, stopping fuel flow from tank. Valve (V1) can only be reopened by using the MC MANUAL CONTROL EM VALVE (WP 0028) lever at the rear of vehicle.

Table 1. Tanker Module Controls - Driver Side of Vehicle. - Continued

Key	Control/ Indicator	Function
2	V3 SUCTION LINE VALVE	Diverts fuel from main pump to auxiliary pump. Valve is located inside driver side frame in front of No. 3 axle. Shown in open position.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
RIFLE STOWAGE MOUNT

CONTROLS AND INDICATORS INTRODUCTION

This section displays the location and describes the use of Rifle Stowage Mounts which are used in the operation of HEMTT series vehicles. Controls and indicators described in this section are the same for all vehicles, except where otherwise indicated.

LOCATION AND USE OF CONTROLS AND INDICATORS

Know the location and proper use of every control and indicator before operating HEMTT series vehicles. Separate illustrations with keys are provided for learning about Rifle Stowage Mount.

Table 1. Rifle Stowage Mount.

Key	Control/ Indicator	Function

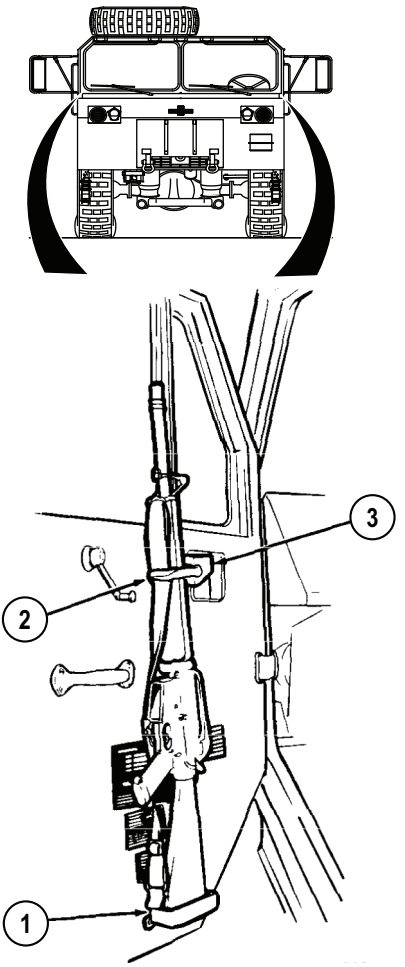


Figure 1.

1	Lower Rifle Mount	Holds butt of rifle.

Table 1. Rifle Stowage Mount. - Continued

Key	Control/ Indicator	Function
2	Rifle Mount Handle	Secures heat guard of rifle against top rifle mount.
3	Top Rifle Mount	Holds heat guard of rifle.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATE WINDSHIELD WIPERS/WASHER

INITIAL SETUP:

Not Applicable

OPERATE WINDSHIELD WIPERS

NOTE

24V battery disconnect switch must be positioned to ON (WP 0075) to operate windshield wipers.

1. Ensure ignition switch (1) is set to on position.

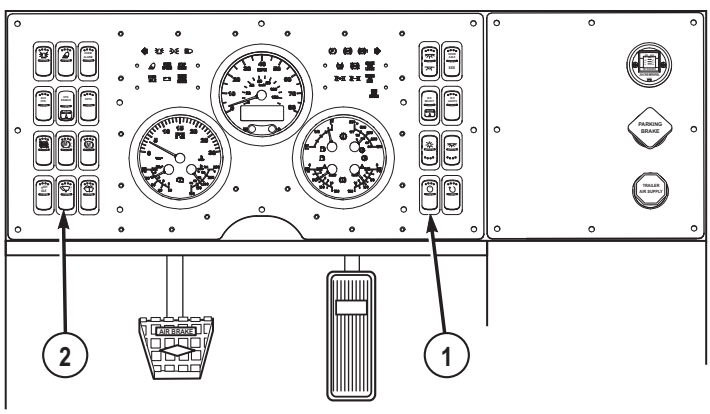


Figure 1.

2. Press three-position windshield wiper switch (2) up one position for low speed, or up two positions for high speed as desired.
3. Press three-position windshield wiper switch (2) all the way down to stop wipers.

OPERATE WINDSHIELD WASHER

NOTE

24V battery disconnect switch must be positioned to ON (WP 0075) to operate windshield wipers.

1. Set ignition switch (1) to on position.

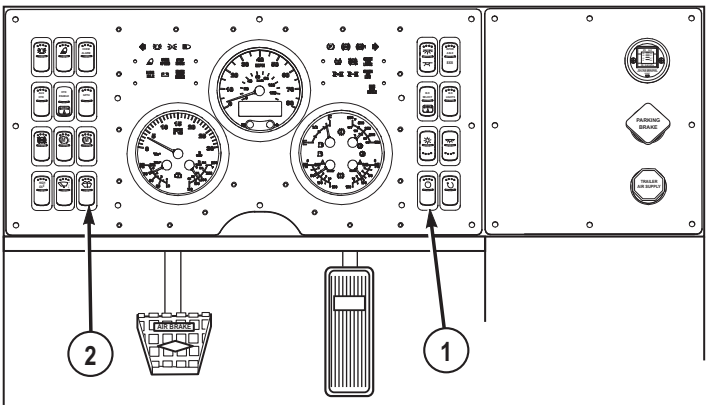


Figure 2.

2. Push in and hold windshield washer switch (2) to spray cleaning fluid on windshield.
3. Release windshield washer switch (2) to stop spray.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATE CAB TEMPERATURE CONTROLS

INITIAL SETUP:

Not Applicable

OPERATE PERSONNEL HEATER

NOTE

- If heater does not blow hot air, ensure heater valves are open.
- Air temperature is controlled by position of temperature control switch.
- Turn temperature control switch CW to increase temperature.
- Turn temperature control switch CCW to decrease temperature.

1. Position temperature control switch (1) to desired setting.

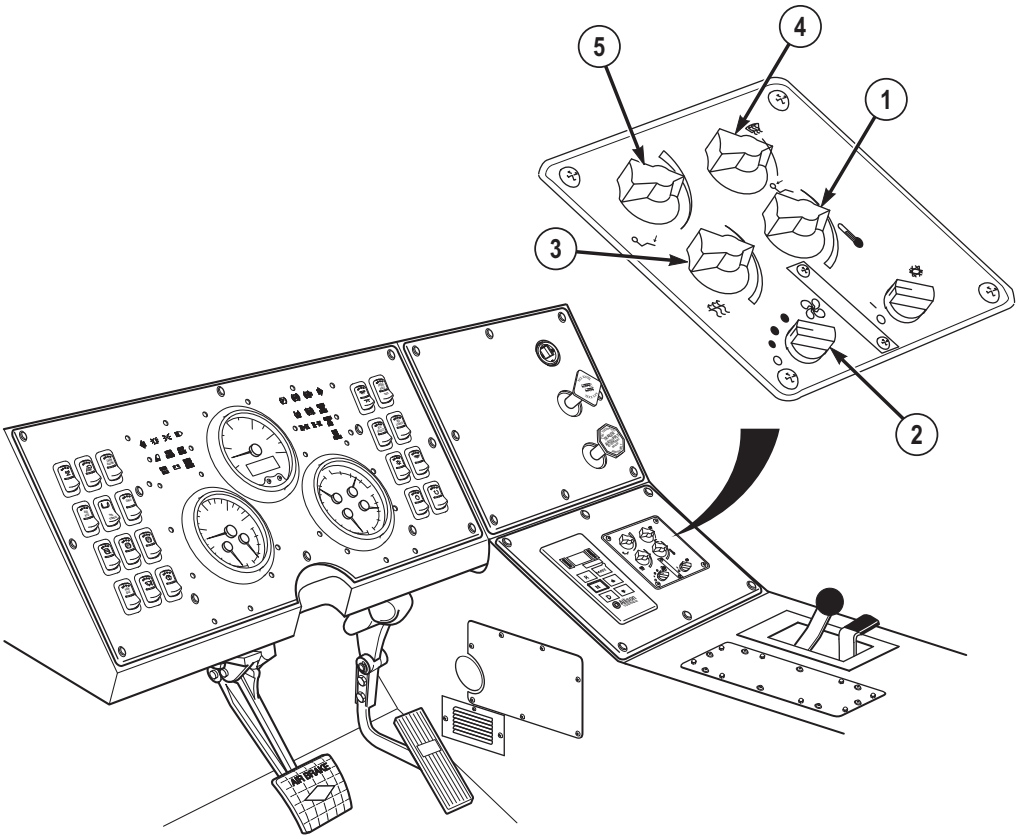


Figure 1.

2. Set fan switch (2) to desired position:
   Off - full CCW.
   Low - one position CW from off.
   Medium - two positions CW from off.
   High - full CW.
3. Position vent control switch (3) as desired to control outside airflow for cab ventilation. Full CCW shuts outside air ventilation off.
4. Position mid-level/defrost vent control switch (4) as desired to control airflow direction:
   a. Turning the mid-level/defrost vent control switch (4) full CCW position turns maximum airflow to defrost vent, and shuts off all airflow to mid-level vents.
   b. Turning the mid-level/defrost vent control switch (4) CW causes a relative distribution of airflow between defrost and mid-level vents.

c. Turning the mid-level/defrost vent control switch (4) full CW turns maximum airflow to mid-level vents and shuts off all airflow to defrost vents.

5. Position floor vent control switch (5) as desired to control airflow to the floor vents:
   a. Turning the floor vent control switch (5) full CCW directs maximum airflow to floor vents.
   b. Turning the floor vent control switch (5) CCW causes a relative decrease in airflow.
   c. Turning the floor vent control switch (5) full CW shuts airflow to foot vents off.
6. When personnel heater is no longer required:
   a. Position temperature control switch (1) to desired setting.
   b. Set FAN switch (2) to OFF (full CCW).
   c. Adjust vent switches (3, 4, and 5) as desired.

OPERATE WINDSHIELD DEFROST

NOTE

If windshield defrost does not blow hot air, ensure heater valves are open.

1. Turn mid-level/defrost vent control switch (4) to full CCW position.

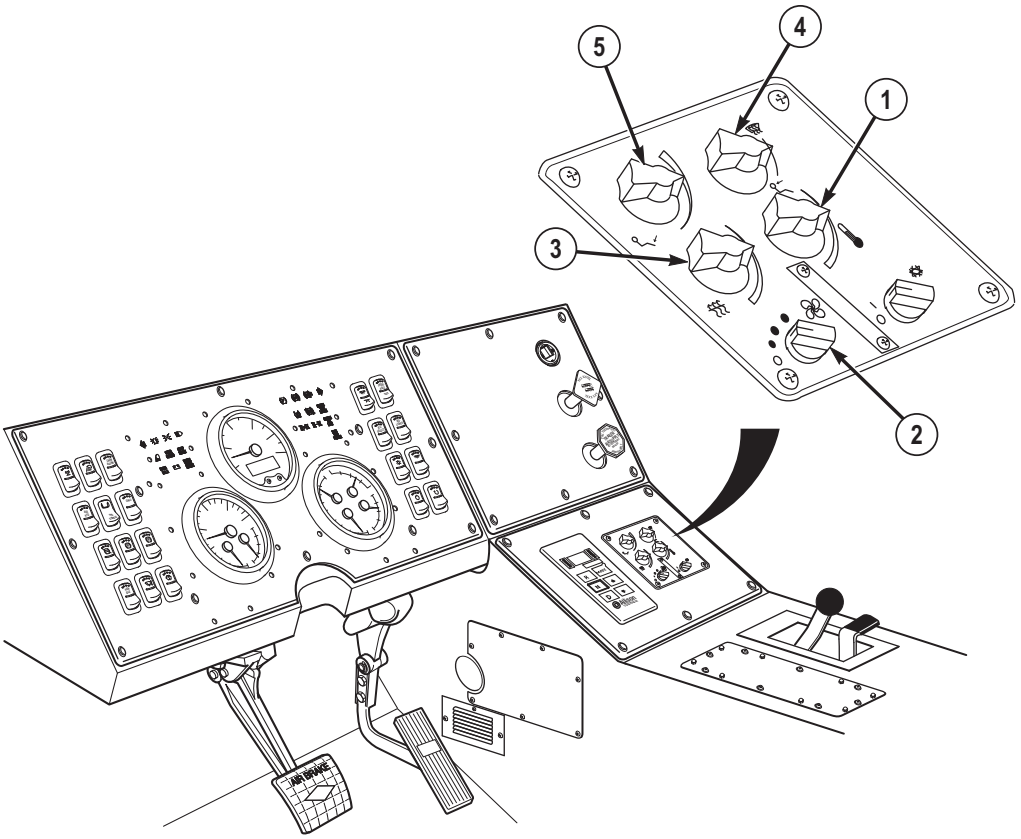


Figure 2.

2. Position temperature control switch (1) to desired setting.
3. Set fan switch (2) to desired setting:
   a. Off - full CCW.
   b. Low - one position CW from off.
   c. Medium - two positions CW from off.
   d. High - full CW.
4. When windshield defrost is no longer required:
   a. Position mid-level/defrost vent control switch (4) to desired setting.
   b. Position temperature control switch (1) to desired setting.
   c. Set FAN switch (2) to off.

OPERATE AIR CONDITIONER

NOTE

- Close heater valves to improve the efficiency of cabin air conditioning.
- Closing the heater valves disables cabin heat.

1. Set air conditioning control switch (6) to on (full CW).

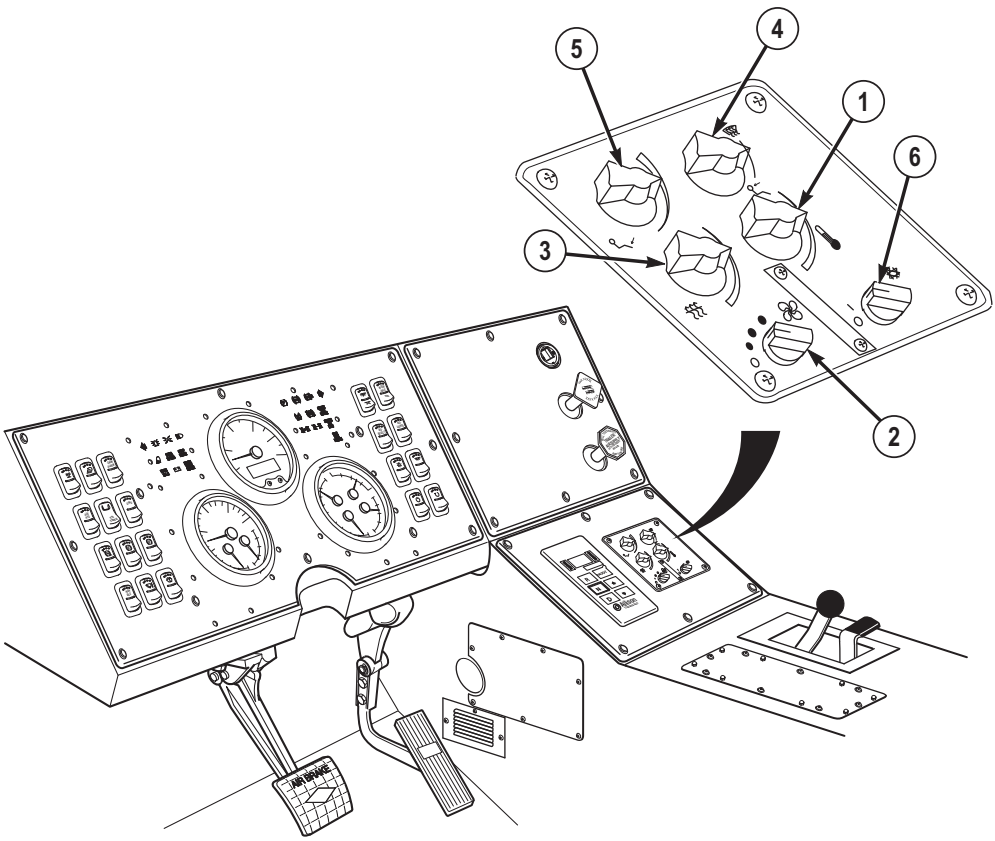


Figure 3.

2. Set fan switch (2) to desired setting:
   a. Off - full CCW.
   b. Low - one position CW from off.
   c. Medium - two positions CW from off.

d. High - full CW.

3. Position vent control switch (3) as desired to control outside airflow for cab ventilation. Full CCW shuts outside air ventilation off.
4. Position mid-level/defrost vent control switch (4) as desired to control airflow direction:
   a. Turning the mid-level/defrost vent control switch (4) full CCW position turns maximum airflow to defrost vent, and shuts off all airflow to mid-level vents.
   b. Turning the mid-level/defrost vent control switch (4) CW causes a relative distribution of airflow between defrost and mid-level vents.
   c. Turning the mid-level/defrost vent control switch (4) full CW turns maximum airflow to mid-level vents and shuts off all airflow to defrost vents.
5. Position floor vent control switch (5) as desired to control airflow to the floor vents:
   a. Turning the floor vent control switch (5) full CCW directs maximum airflow to floor vents.
   b. Turning the floor vent control switch (5) CW causes a relative decrease in airflow.
   c. Turning the floor vent control switch (5) full CW shuts airflow to foot vents off.
6. When air conditioner is no longer required:
   a. Set air conditioning control switch (6) to off (full CCW).
   b. Position temperature control switch (1) to desired setting.
   c. Set FAN switch (2) to OFF (full CCW).
   d. Adjust vent switches (3, 4, and 5) as desired.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATE FIRE EXTINGUISHER

INITIAL SETUP:

Not Applicable

REMOVE FIRE EXTINGUISHER FROM CAB

NOTE

Fire extinguisher is located on rear of heater compartment between driver and passenger seats.

1. Pull up top clamp (1) and disengage from top hook (2).

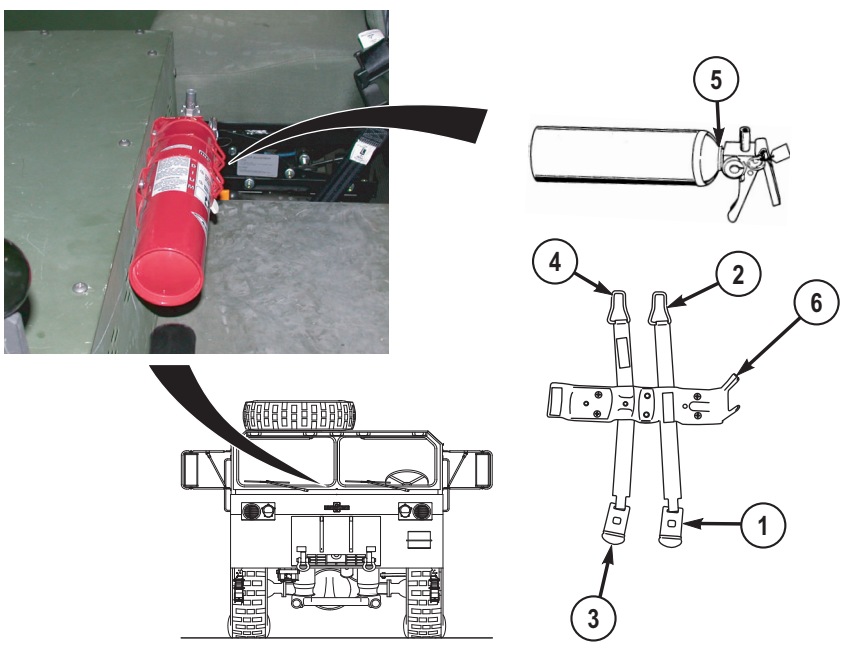


Figure 1.

2. Pull up bottom clamp (3) and disengage from bottom hook (4).
3. Remove fire extinguisher (5) from bracket (6).

REMOVE FIRE EXTINGUISHER FROM DRIVER SIDE TOOL BOX

NOTE

Fire extinguisher is located on driver side just between No. 2 axle wheel and fuel tank, on top of tool box.

1. Pull up clamp (1) and unhook from strap (2).

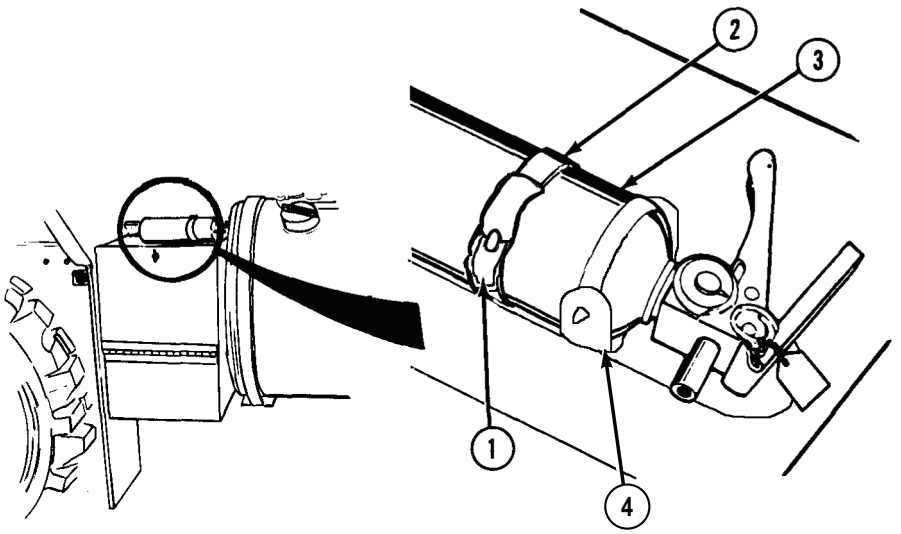


Figure 2.

2. Remove fire extinguisher (3) from bracket (4).

REMOVE FIRE EXTINGUISHER FROM BATTERY BOX

NOTE

Fire extinguisher is located on passenger side, affixed on rear side of the shelf where the battery box is mounted.

1. Pull up clamp (1) and unhook strap (2).

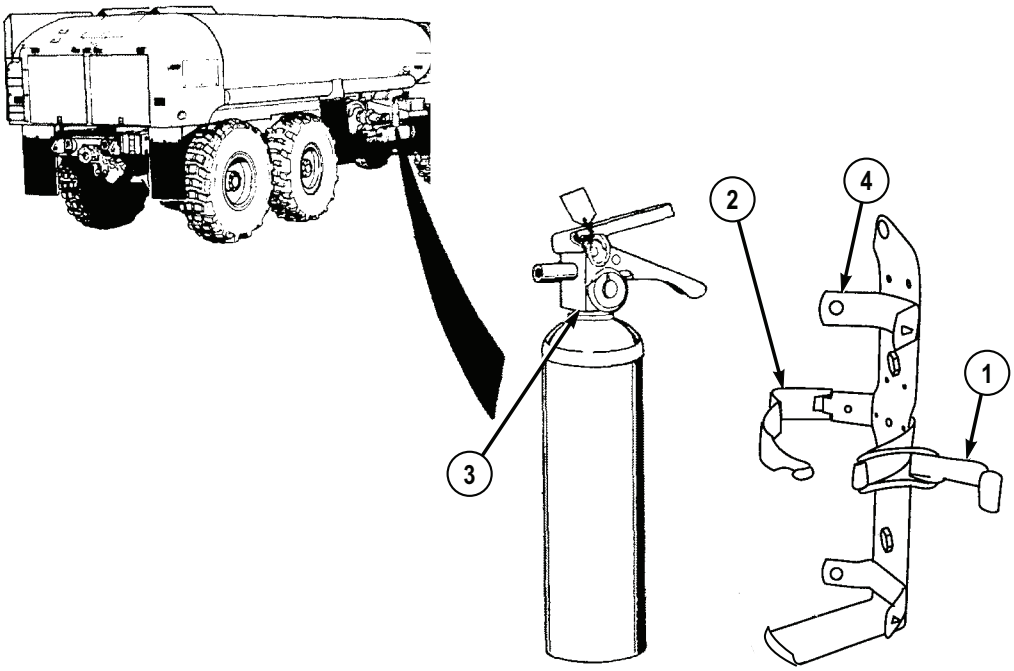


Figure 3.

2. Remove fire extinguisher (3) from bracket (4).

EXTINGUISH FIRE

NOTE

- Fire extinguisher is a dry chemical type. Refer to MSDS for specific extinguisher warnings and cautions for use.
- Remember the word “PASS” to operate fire extinguisher:

.

1. Hold fire extinguisher (1) upright and pull safety pin (2) to break plastic tie (3).

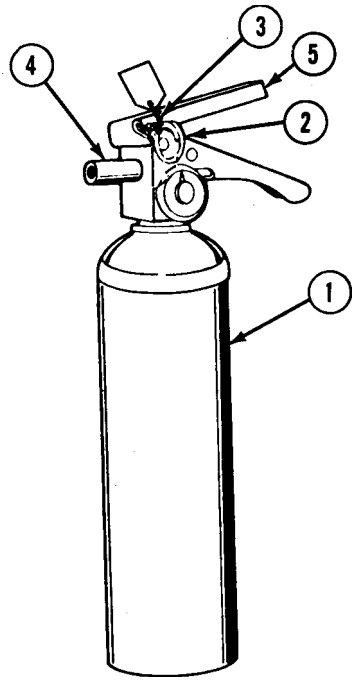


Figure 4.

2. Point nozzle (4) at base of fire.
3. Press down on stop lever (5) and spray discharge in a side-to-side motion at base of fire.
4. Let go of stop lever (5) when fire is out.
5. Notify field level maintenance to replace fire extinguisher.

INSTALL FIRE EXTINGUISHER IN CAB

1. Put neck of fire extinguisher (1) on bracket (2).

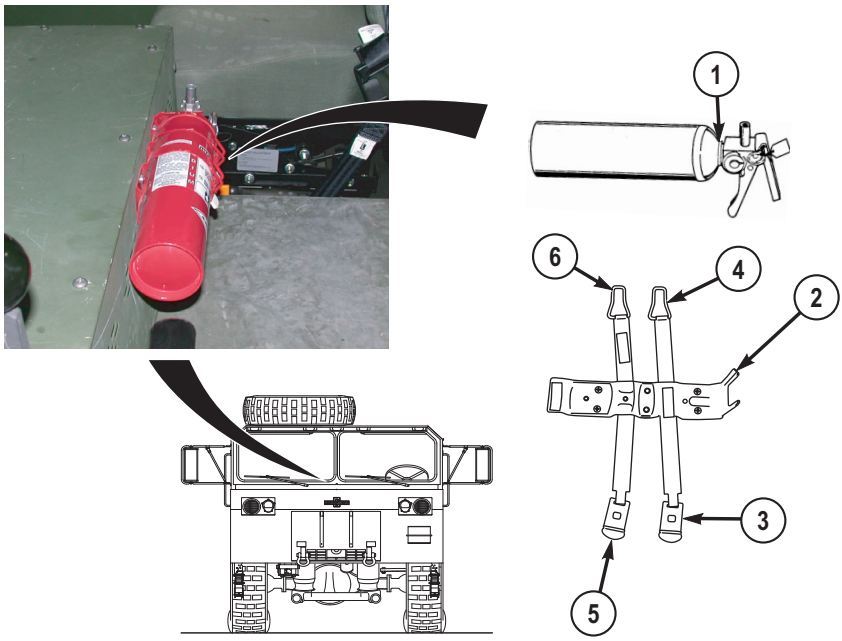


Figure 5.

2. Hook top clamp (3) on top hook (4) and push top clamp (3) down, tightening strap.
3. Hook bottom clamp (5) on bottom hook (6) and push bottom clamp (5) down, tightening strap.

INSTALL FIRE EXTINGUISHER ON DRIVER SIDE TOOL BOX

NOTE

Fire extinguisher is located on driver side just between No. 3 axle wheel and fuel tank, on top of stowage box.

1. Place fire extinguisher (1) on bracket (2).

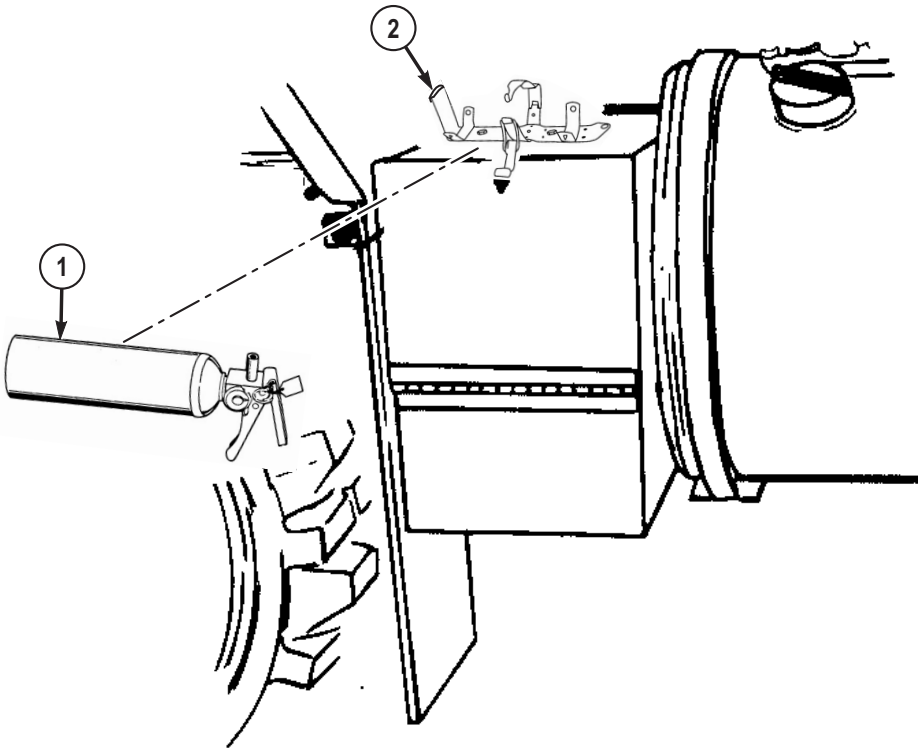


Figure 6.

2. Hook strap (3) onto clamp (4).

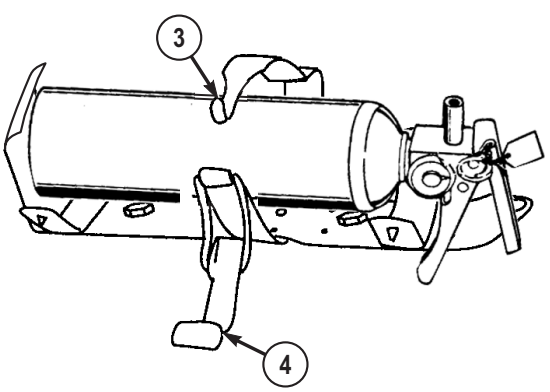


Figure 7.

3. Push clamp (4) down, securing strap (3).

INSTALL FIRE EXTINGUISHER ON BATTERY BOX

1. Place fire extinguisher (1) on bracket (2).

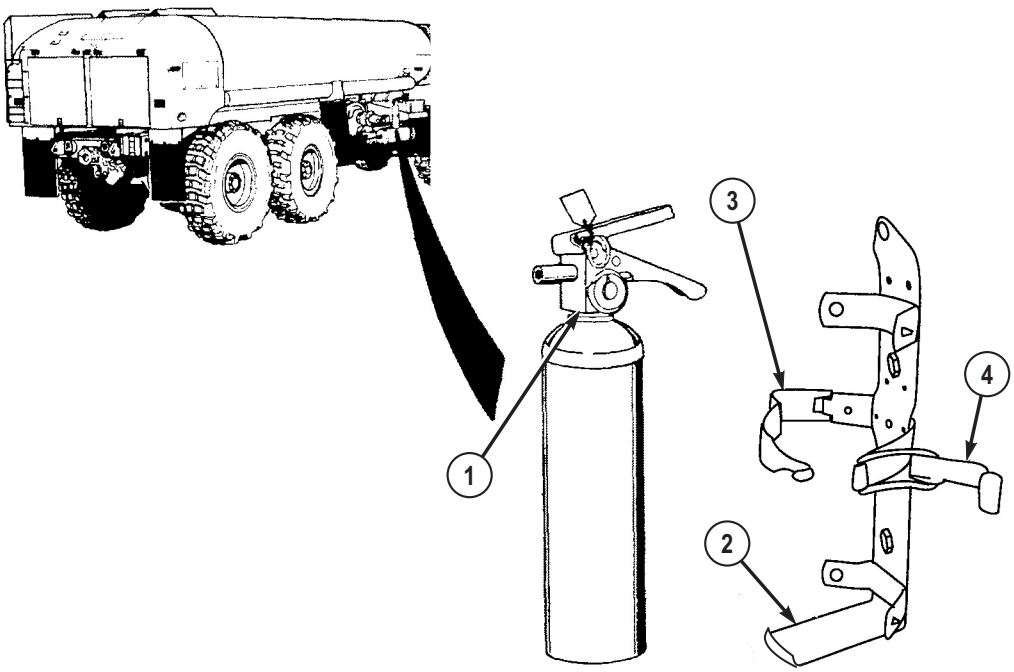


Figure 8.

2. Hook strap (3) onto clamp (4).
3. Push clamp (4) down, securing strap (3).

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATE ACCESS LADDER

INITIAL SETUP:

Not Applicable

INSTALL ACCESS LADDER

1. Unhook spring (1) from stowage rod (2).

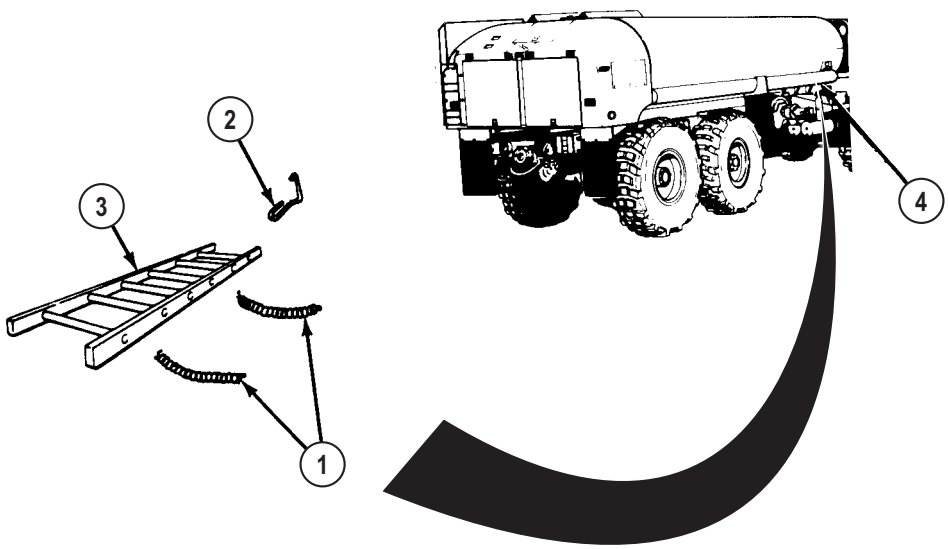


Figure 1.

2. Remove access ladder (3) from over battery box (4).

NOTE

Front skid plate has two sets of mounting holes centered on both driver side and passenger side windshield.

3. Install access ladder (3) hooks (5) in front (driver or passenger side) skid plate mounting holes (6), driver side charge air cooler mounting holes (8), or passenger side radiator grill mounting holes (7), as required.

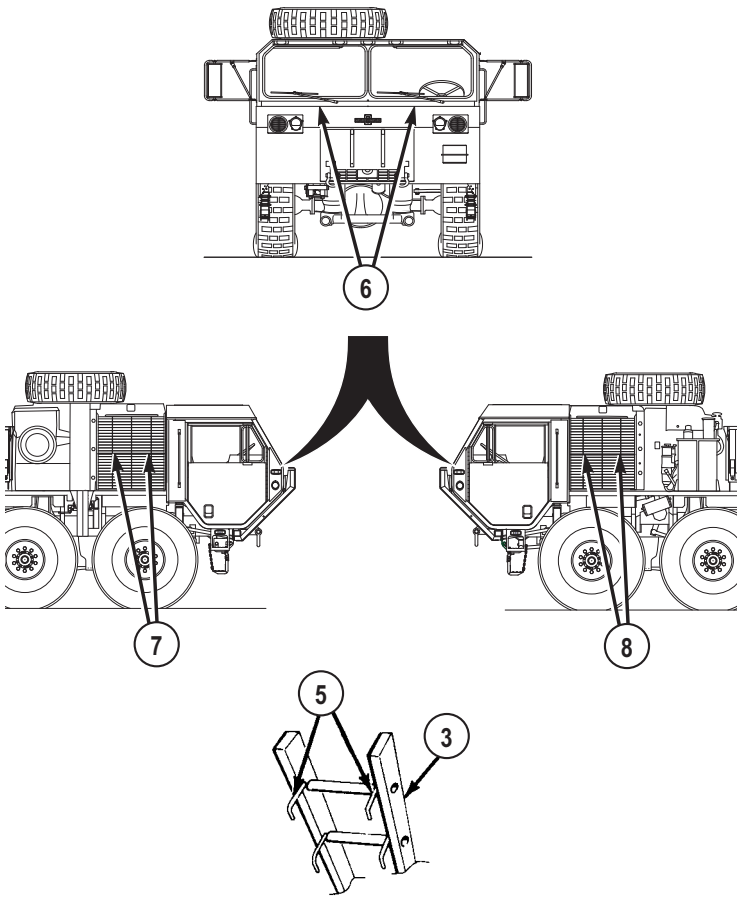


Figure 2.

STOW ACCESS LADDER

1. Secure access ladder (1) above battery box (2).

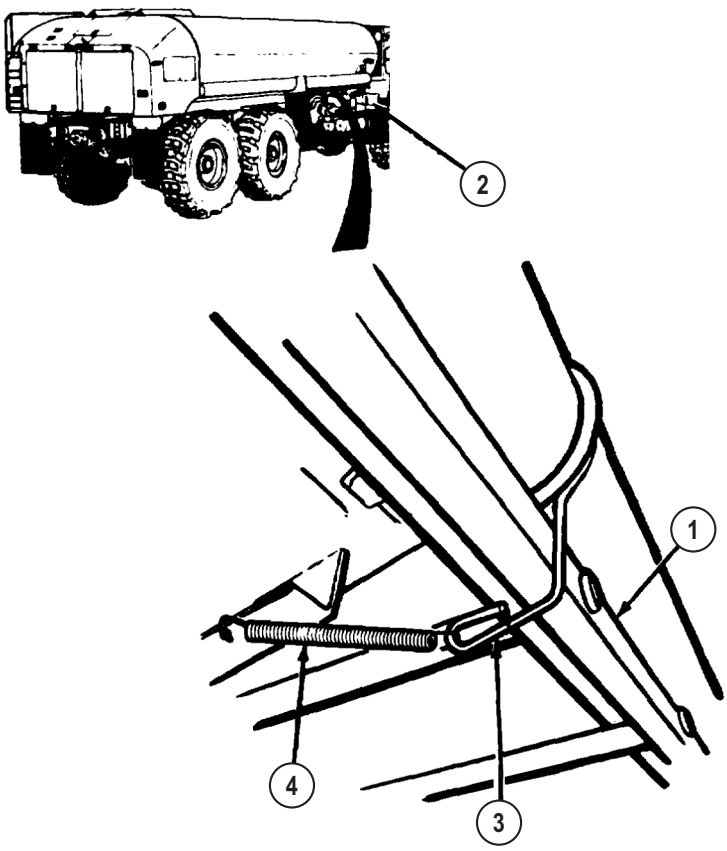


Figure 3.

2. Hook stowage rod (3) around access ladder (1) and attach spring (4).

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATE DRAIN PLUG

INITIAL SETUP:

Not Applicable

REMOVE DRAIN PLUG

NOTE

There are two drain plugs. One located on each side of cab floor, just below operator/crew seats.

1. Pull up on lever (1).

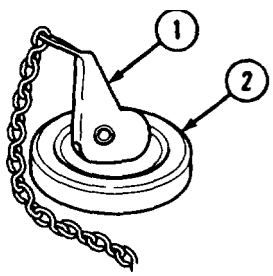


Figure 1.

2. Remove drain plug (2) to drain any liquid from floor of cab.

INSTALL DRAIN PLUG

1. Push drain plug (2) in opening on cab floor.

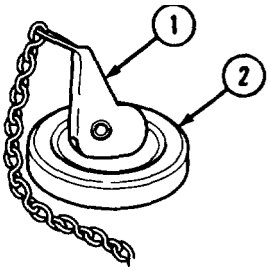


Figure 2.

2. Press down on lever (1) to secure drain plug (2).

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATE AIR SUSPENSION DUMP VALVE

INITIAL SETUP:

Not Applicable

DUMP (DEFLATE) AIR SUSPENSION

CAUTION

- Ensure all tools and equipment are removed from 'pinch points' in suspension as vehicle will lower to suspension stops. Failure to comply may result in damage to equipment.
- Never operate vehicle with suspension dumped (deflated) during normal driving operations. Failure to comply may result in damage to equipment.
- Do not dump (deflate) vehicle air suspension system when spare tire is attached to tire carrier and in contact with the ground. Failure to comply may result in damage to equipment.

NOTE

Refer to operate air suspension ball valves (WP 0042) for further information on ball valve operation.

1. Position all required (air springs to be dumped) ball valves to ON. (WP 0042)

NOTE

Suspension dump valve requires 70 psi (4.8 bar) of air in vehicle rear air system to function. If rear air system has less than 70 psi (4.8 bar) reading on rear air pressure gauge, suspension dump valve will not dump (deflate) the vehicle air suspension system.

2. Ensure rear air pressure gauge (1) reads at least 70 psi (4.8 bar).

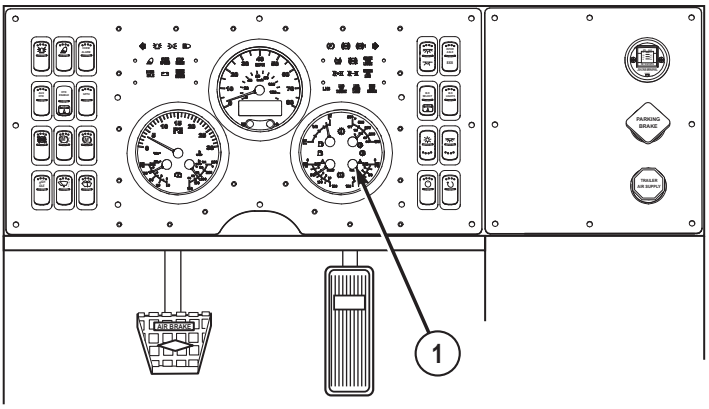


Figure 1.

3. If rear air pressure gauge (1) reads less that 70 psi (4.8 bar), start engine (WP 0043) and allow air system to recharge.

NOTE

- The operator can choose to dump (deflate) one to all four zones of air springs by positioning appropriate ball valves to OFF (on air springs desired to remain inflated) prior to pushing in suspension dump valve button.
- Suspension dump valve will not dump (deflate) any suspension air springs that have ball valves positioned OFF.

4. Remove pin (2) from suspension dump valve, and push suspension dump valve button (3) in.

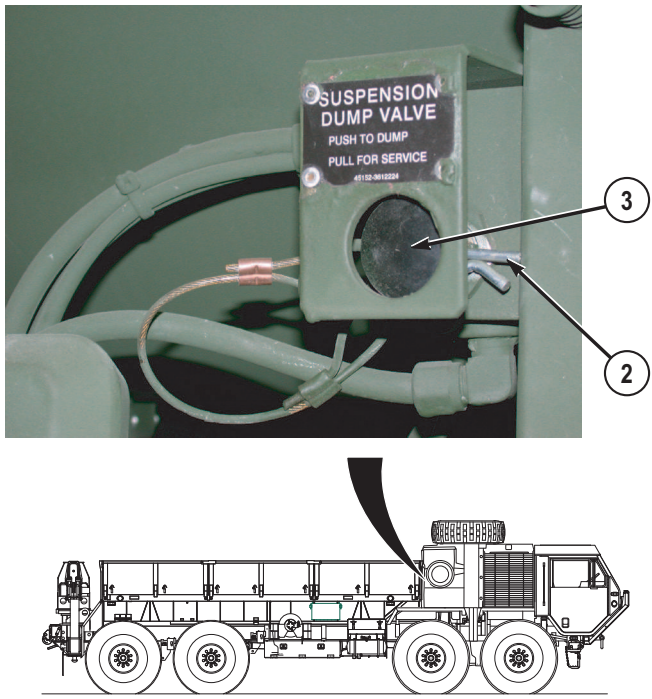


Figure 2.

NOTE

- All air springs with ball valves positioned ON will dump (deflate).
- Suspension dump valve button will remain in PUSH TO DUMP position.

5. (If required) tag suspension dump valve to ensure no personnel service (inflate) air suspension.

SERVICE (INFLATE) AIR SUSPENSION

CAUTION

- Ensure vehicle has adequate overhead clearance prior to servicing (inflating) air suspension bags. Vehicle will raise approximately 4 in. (10 cm) when air springs transition from deflated to fully inflated. Failure to comply may result in damage to equipment.
- Never operate vehicle with suspension dumped (deflated) during normal driving operations. Failure to comply may result in damage to equipment.

NOTE

- If possible, start engine (WP 0043) and idle during air suspension servicing.
- Refer to operate air suspension ball valves (WP 0042) for further information on ball valve operation.

1. Ensure all (air springs to be serviced) ball valves are positioned ON. (WP 0042)

NOTE

Servicing (inflating) a dumped (deflated) suspension system requires approximately 70 psi (4.8 bar) of air from vehicle rear air system. If rear air system has less than 70 psi (4.8 bar) reading on rear air pressure gauge, suspension may not fully inflate.

2. Ensure rear air pressure gauge (1) reads at least 70 psi (4.8 bar).

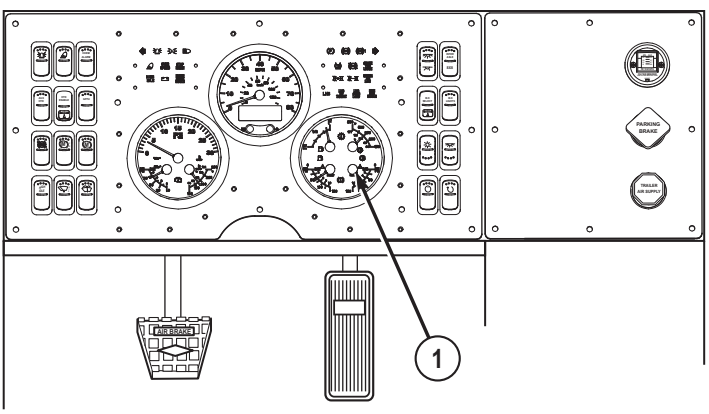


Figure 3.

3. If rear air pressure gauge (1) reads less that 70 psi (4.8 bar), start vehicle and allow air system to recharge.

NOTE

- The operator can choose to service (inflate) one to all four zones of air springs by positioning appropriate ball valves to OFF (on air springs desired to remain deflated) prior to pushing in suspension dump valve button.
- Suspension dump valve will not service (inflate) any suspension air springs that have ball valves positioned OFF.

4. Pull suspension dump valve button (3) out. All air springs with ball valves (1) positioned ON will service (inflate). Insert pin (2) in suspension dump valve to lock suspension dump valve button (3) in OUT FOR SERVICE position.

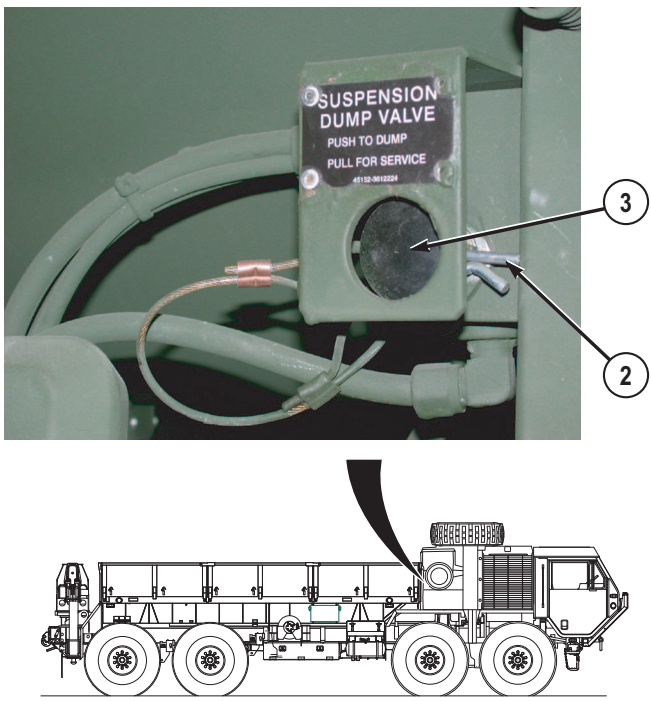


Figure 4.

CAUTION

Vehicle should never be operated with any zone of vehicle air suspension dumped (deflated). Failure to comply may result in damage to equipment.

5. Ensure that SPSN LOW AIR indicator (4) has gone out prior to resuming normal vehicle operation. If SPSN LOW AIR indicator (4) is illuminated, there may be at least one zone of air suspension system that has a ball valve in OFF position:

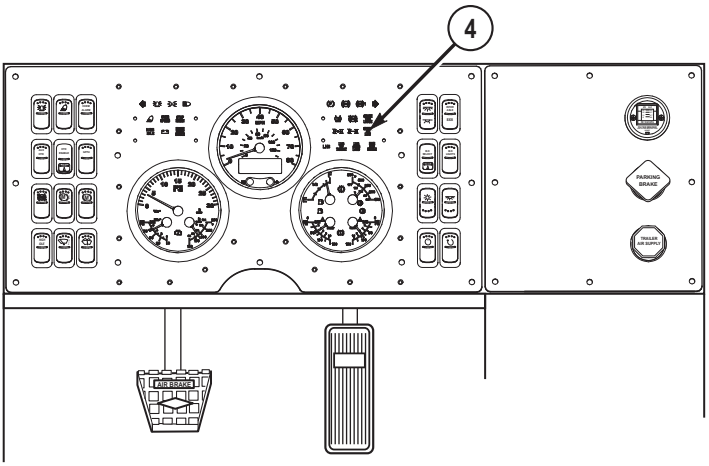


Figure 5.

a. Complete Steps (1) and (2) of this procedure again.

b. If SPSN LOW AIR indicator (4) remains illuminated, notify field level maintenance.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATE TIRE CARRIER

INITIAL SETUP:

Not Applicable

LOWER TIRE CARRIER

CAUTION

- Ensure the passenger side of the vehicle has 6 ft. (1.83 m) of clearance from the battery box forward to accommodate the tire carrier lowering or damage to equipment may occur.
- Do not dump (deflate) vehicle air suspension system (WP 0039) when spare tire is attached to tire carrier and in contact with the ground. Failure to comply may result in damage to equipment.
- Do not add a significant amount of weight to the vehicle when spare tire is attached to tire carrier and in contact with the ground. Failure to comply may result in damage to equipment.

NOTE

- This procedure is a two soldier task.
- Lowering the tire carrier requires approximately 10 psi (1 bar) of air from the vehicle rear air system.

1. Remove access ladder from stowage and connect to passenger side front fender. (WP 0037)
2. Disconnect safety pin (1) from right lock rod (2). Leave safety pin (1) hang from its lanyard (3).

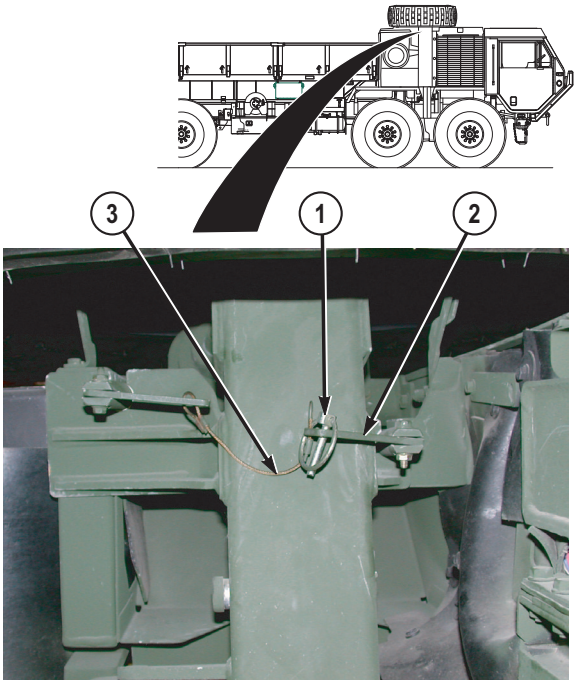


Figure 1.

CAUTION

The tire carrier lock rods are a snag hazard to the movement of the tire carrier and must be properly stowed in stowage brackets prior to lowering the tire carrier. Failure to properly stow tire carrier lock rods prior to lowering operation may result in damage to equipment.

3. Turn left lock rod (4) CCW until enough slack is made to push left lock rod (4) up and into its stowage bracket (5).

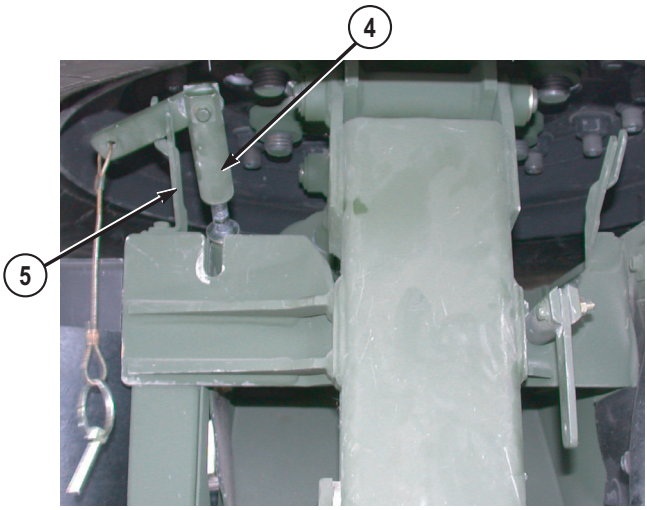


Figure 2.

4. Turn right lock rod (6) CCW until enough slack is made to push right lock rod (6) up and into its stowage bracket (7).

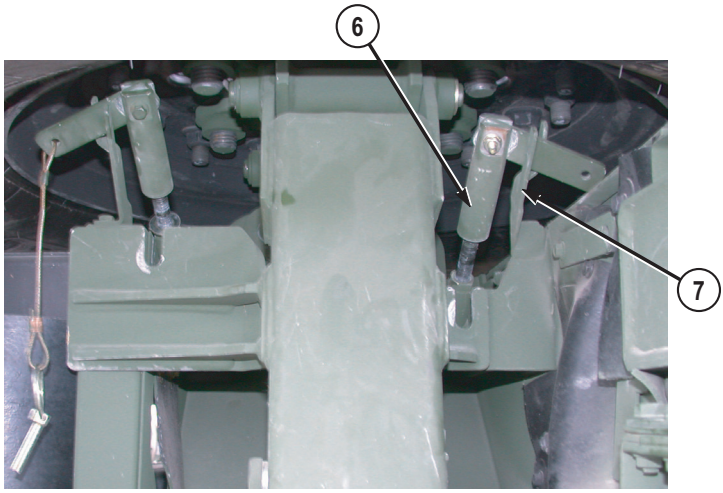


Figure 3.

WARNING



If tire carrier is in any position other than full up and locked (tire carrier latch engaged) or resting on ground, only tire carrier pump operator should be within six feet (1.83 m) of passenger side of vehicle from battery box forward. Failure to comply may result in personnel being struck by tire carrier/spare tire, causing injury or death to personnel.

5. Ensure safety area clear of personnel and equipment. Assistant will stand outside the safety area and ensure no personnel wander into safety area while lowering operation is taking place.

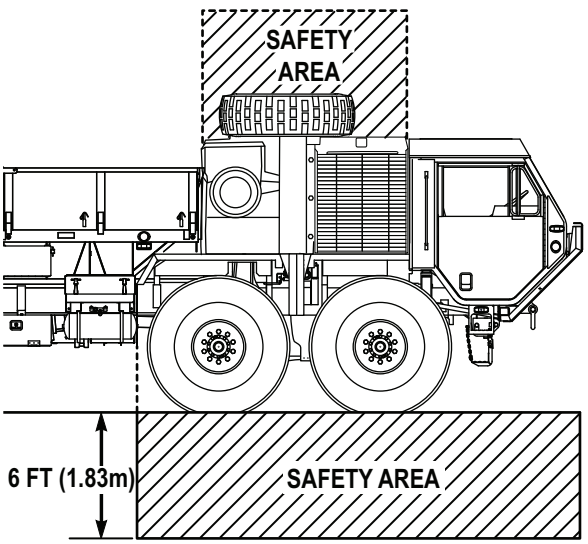


Figure 4.

6. Set directional control lever (8) to LOWER (pointing outboard) position.

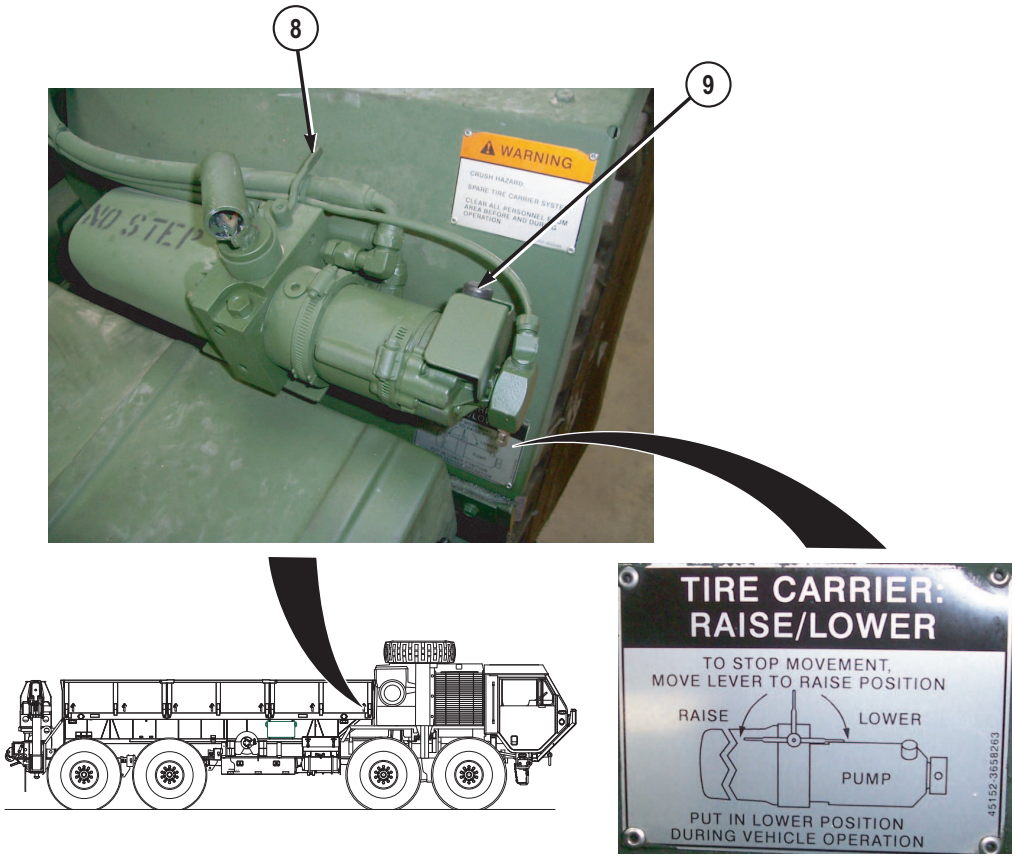


Figure 5.

NOTE

The operator will notice a small amount of oil being expelled with the air from the tire carrier pump each time it cycles, this is a normal condition.

7. Press and hold power control (9). The tire carrier pump cyclic rate will be rapid at first, and then slow noticeably. As cyclic rate slows, the operator should notice the tire carrier begin to move.

CAUTION

Once tire is in contact with the ground, do not press power control with directional control lever in LOWER (pointing outboard) position. This may put undue stress on tire carrier. Failure to comply may result in damage to equipment.

NOTE

The tire carrier can be stopped at any time during lowering operations by releasing the power control and moving the directional control lever to RAISE (pointing inboard) position.

8. Once tire carrier has passed vertical (approximately 6 in. [15.24 cm] of movement), release power control (9) and allow the tire carrier to lower on its own until tire contacts ground.
9. Set directional control lever (8) to RAISE (pointing inboard) position.

RAISE TIRE CARRIER

CAUTION

Ensure the passenger side of the vehicle has 6 ft. (1.83 m) of clearance from the battery box forward to accommodate the tire carrier raising or damage to equipment may occur.

NOTE

- This procedure is a two soldier task.
- Raising the tire carrier requires approximately 70 psi (5 bar) of air from the vehicle rear air system. If possible, the operator should start engine (WP 0043) and let idle during raise operation to ensure adequate supply of air.

1. If vehicle is not idling, set ignition switch (1) to on position , and check the following:

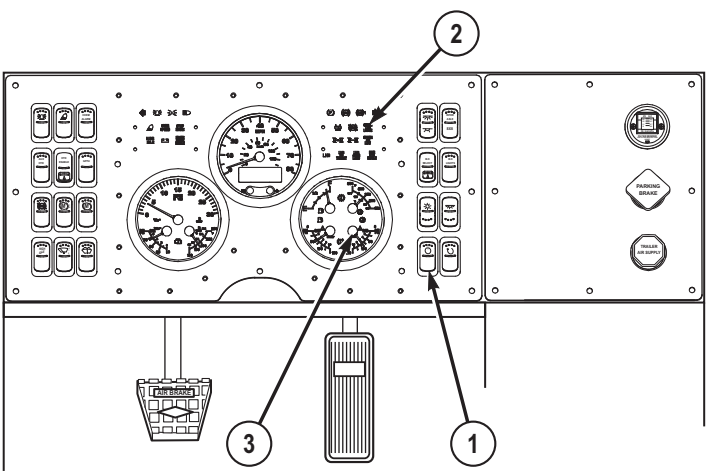


Figure 6.

a. SPARE TIRE LOOSE indicator (2) illuminated.

b. Rear air pressure gauge (3) reads at least 70 psi (5 bar). If less than 70 psi (5 bar), the operator has the following options:

(1) Start engine (WP 0043) and allow rear air system to recharge.

(2) Raise tire carrier using outside air source. (WP 0092)

(3) Raise tire carrier using hand pump. (WP 0091)

2. Ensure spare tire is securely fastened to the tire carrier.

CAUTION

Ensure the passenger side top engine access cover is closed and secured prior to raising the tire carrier with spare tire installed. If access cover is braced open, spare tire will contact it and cause damage to the cover as well as prevent the tire carrier from locking in full up position.

NOTE

If passenger side top engine access cover is open and laying flat, the tire (in the full up position) will not allow the access cover to be closed.

3. Ensure passenger side top engine access cover is secured closed.

CAUTION

The tire carrier lock rods are a snag hazard to the movement of the tire carrier and must be properly stowed in stowage brackets prior to lowering the tire carrier. Failure to properly stow tire carrier lock rods prior to lowering operation may result in damage to equipment.

4. Ensure left lock rod (4) is properly stowed in stowage bracket (5).

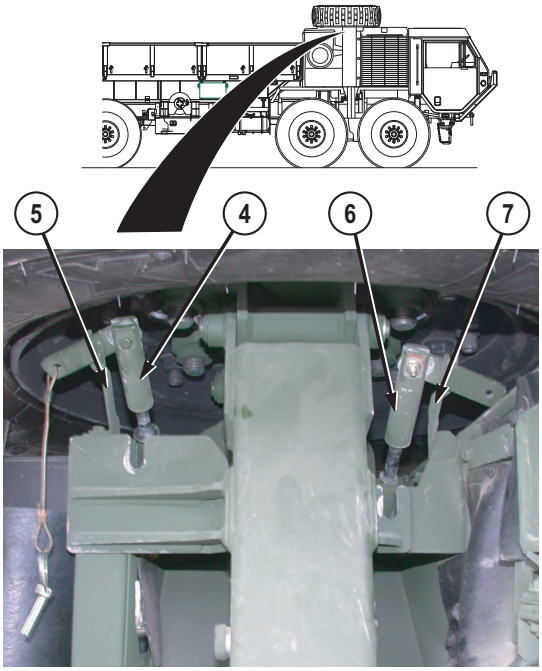


Figure 7.

5. Ensure right lock rod (6) is properly stowed in stowage bracket (7).

WARNING



If tire carrier is in any position other than full up and locked (tire carrier latch engaged) or resting on ground, only tire carrier pump operator should be within six feet (1.83 m) of passenger side of vehicle from battery box forward. Failure to comply may result in personnel being struck by tire carrier/spare tire, causing injury or death to personnel.

6. Ensure safety area is clear of personnel and equipment. Assistant will stand outside the safety area and ensure no personnel wander into safety area while raising operation is taking place.

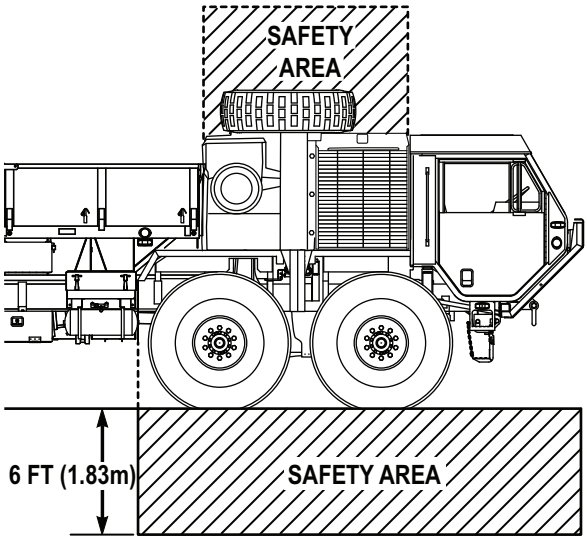


Figure 8.

7. Set directional control lever (8) to RAISE (pointing inboard) position.

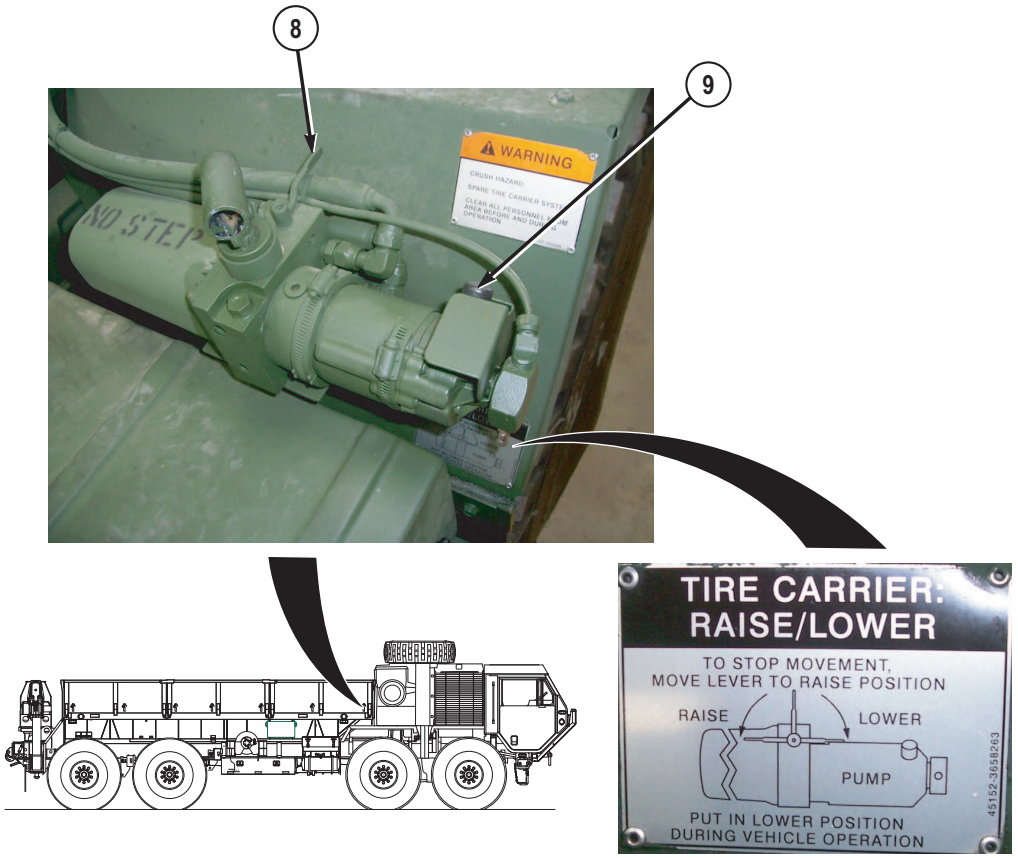


Figure 9.

NOTE

- The operator will notice a small amount of oil being expelled with the air from the tire carrier pump each time it cycles, this is a normal condition.
- When the power control is pressed, the tire carrier pump cyclic rate will be rapid at first, and then slow noticeably. As cyclic rate slows, the operator should notice the tire carrier begin to move.

8. Press and hold power control (9).

NOTE

- The tire carrier can be stopped at any time during raising operations by releasing power control.

- As the tire carrier is raised, the tire carrier pump will begin to cycle at an increased rate.

9. Continue to raise tire carrier until it is in the full up position. The operator will notice a significant slow down in the tire carrier pump cyclic rate. Release power control (9).

WARNING



Always maintain a distance of six feet (1.83 m) until confirmation that tire carrier latch is engaged. Failure to comply may result in personnel being struck by tire carrier/spare tire causing severe injury or death to personnel.

10. Maintaining a safe distance of 6 ft. (1.83 m), the assistant will check the tire carrier latch (10), ensuring it has fully engaged the tire carrier arm bar (11).

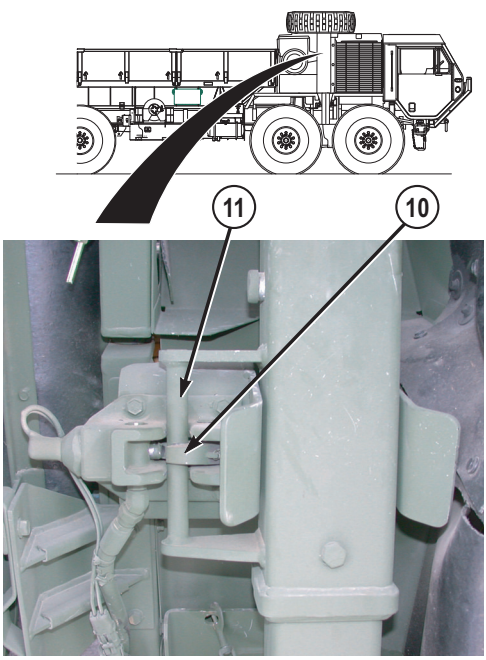


Figure 10.

11. With the assistant maintaining the safety area, the operator will proceed to the driver side cabin and check to ensure the SPARE TIRE LOOSE indicator (2) has gone out.

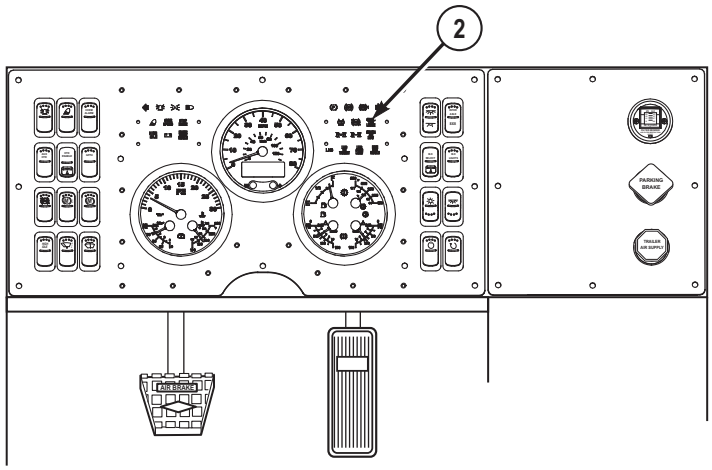


Figure 11.

NOTE

- If tire carrier latch is fully engaged, and SPARE TIRE LOOSE indicator light has gone out, skip to Step (15).
- If tire carrier latch fails to fully engage tire carrier bar, or SPARE TIRE LOOSE indicator fails to go out, perform Steps (12) through (14).

12. Set directional control lever (8) to LOWER (pointing outboard) position.

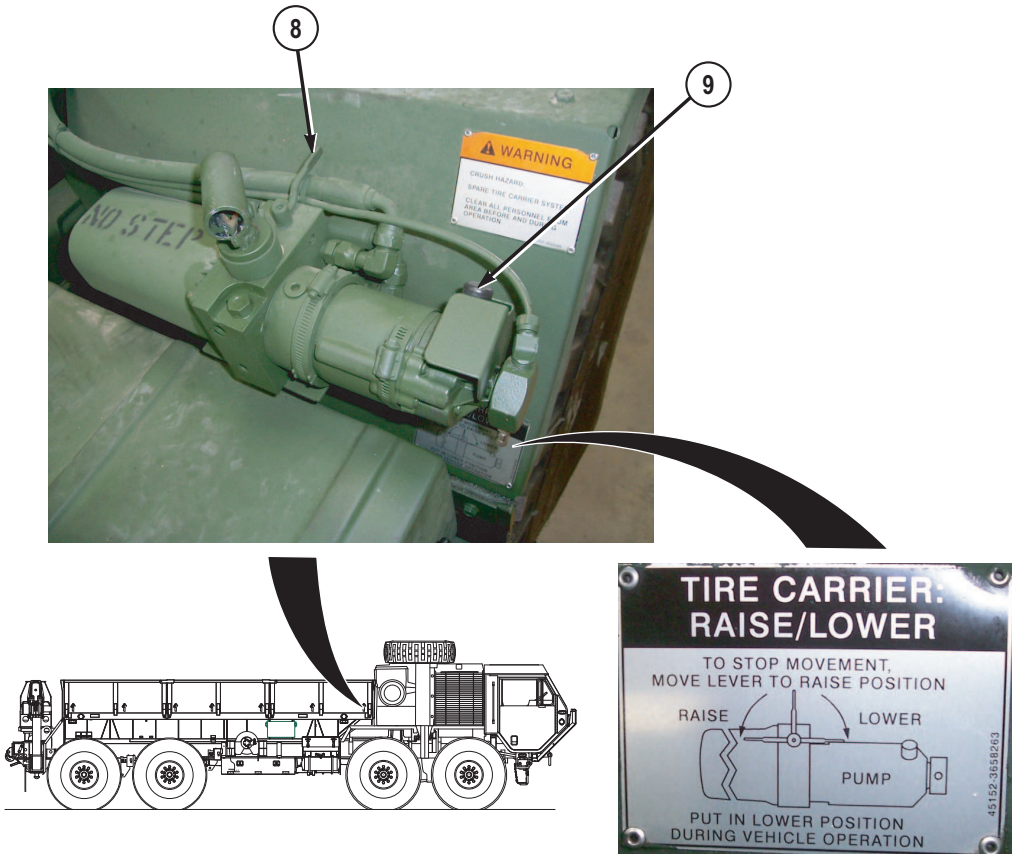


Figure 12.

13. Press power control (9) until tire carrier lowers approximately 1 ft. (30 cm).
14. Repeat Steps (7) through (11).

NOTE

If tire carrier latch is fully engaged, and SPARE TIRE LOOSE indicator light has gone out, complete Steps (15) through (20).

15. Remove right lock rod (6) from stowage bracket (7) and pull down to end of groove (12) until it stops. Turn right lock rod (6) CW until it is hand tight, with jointed end (13) across tire carrier arm (14).

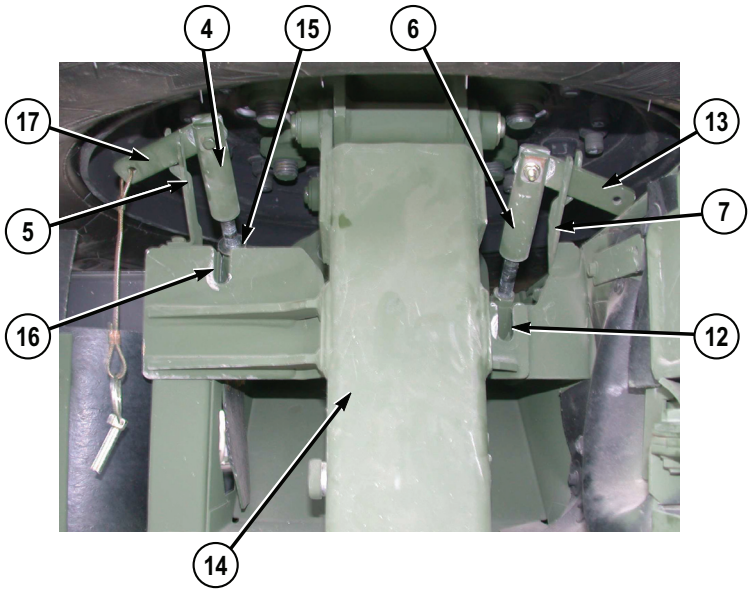


Figure 13.

16. Remove left lock rod (4) from stowage bracket (5), locate washer (15) and pull towards left lock rod (4) until it stops. Pull both left lock rod (4) and washer (15) down to end of groove (16). Turn left lock rod (4) CW until it is hand tight, with jointed end (17) pointed towards tire carrier arm (14).
17. Insert safety pin (18) through hole located on right lock rod jointed end (13).

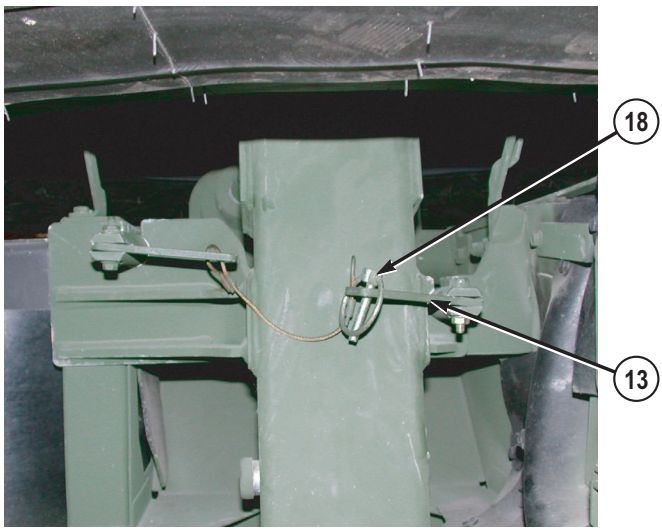


Figure 14.

NOTE

Tire carrier directional control lever should always be in LOWER position for vehicle operation.

18. Set directional control lever (8) to LOWER (pointing outboard) position.

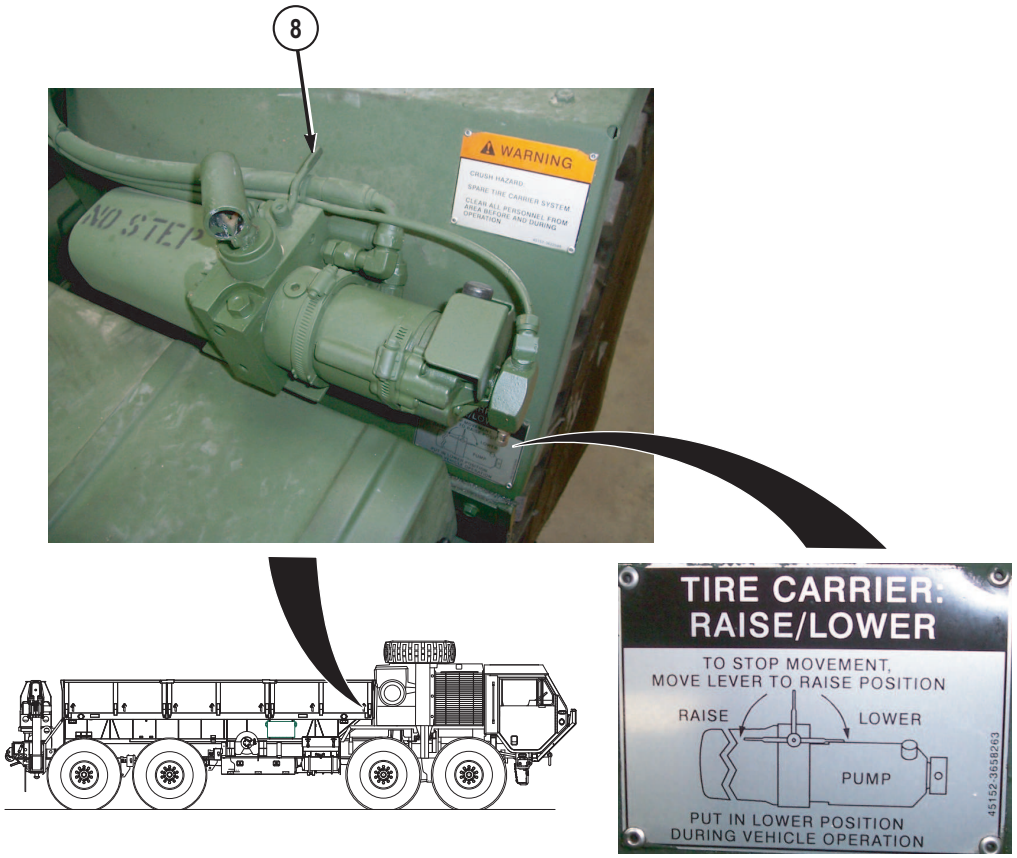


Figure 15.

19. Shut off engine (WP 0056) or set ignition switch (1) to off position (as applicable).

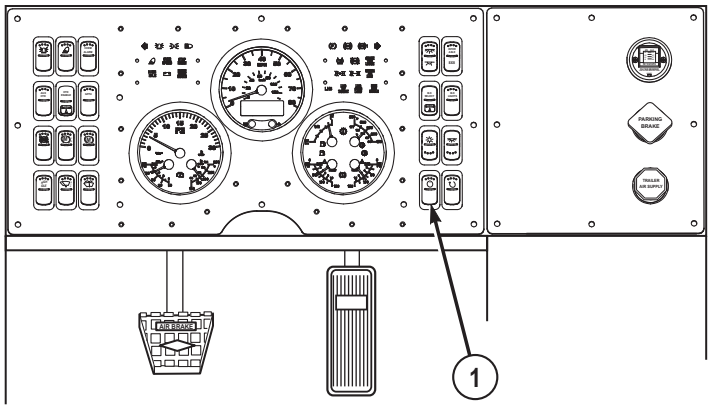


Figure 16.

20. Stow access ladder. (WP 0037)

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATE INSTRUMENT PANEL

INITIAL SETUP:

Not Applicable

GENERAL

Instrument panel on HEMTT A4 series vehicle incorporates electronic gauges, indicator lights, and liquid crystal display LCD to communicate information to operator. LCD has multiple modes and functions.

LCD can display odometer reading as well as testing gauges and indicator lights. LCD can also be set to display measured units in English or Metric.

INSTRUMENT PANEL MODES

Sleep Mode: Instrument panel is normally in sleep mode when ignition switch (1) is turned off. No gauges, indicator lights, or LCD screen (2) will operate in this mode.

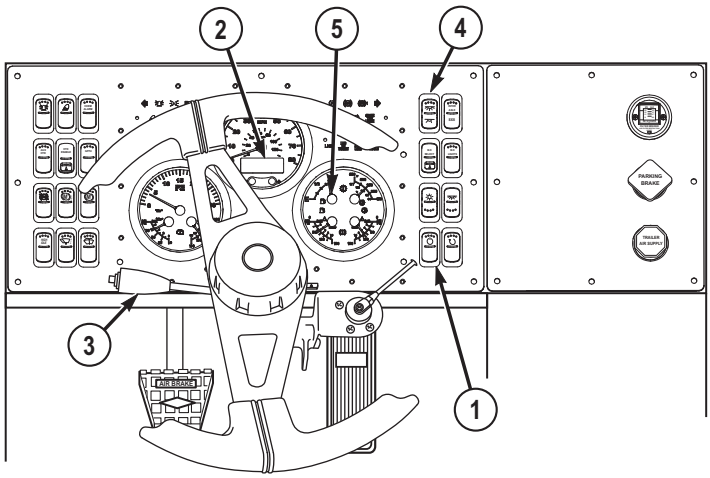


Figure 1.

Limited Mode: If turn signal lever (3) or panel dimmer switch (4) is actuated, instrument panel goes into limited mode. In limited mode, turn signals, odometer on LCD (2), and fuel gauge (5) are active. Remaining gauges will go to zero.

Start-up Mode: Instrument panel enters start-up mode when ignition switch (1) is positioned on. After key-on, an optional gauge start-up self test (SST) may be performed. Operator can enable or disable SST by pressing and holding both M (mode) button (6) and trip T (trip) button (7) while setting ignition switch (1) to on position. A screen will be displayed that allows operator to enable SST (Yes) or disable SST (No).

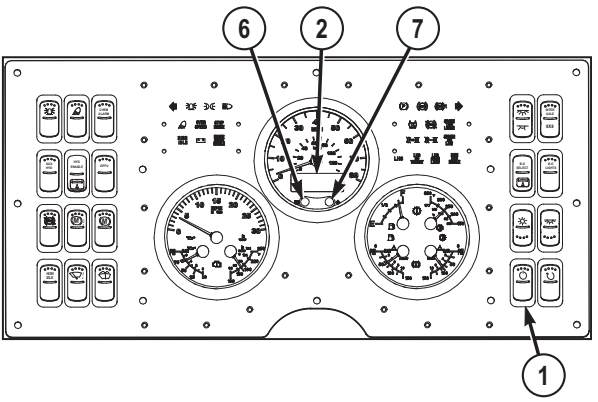


Figure 2.

During start-up mode:

- With SST disabled, gauges will go to zero and move to current status positions. With SST enabled, gauges move upscale, pausing at half scale before going to full scale. Gauges will go to zero before moving to current status positions.
- LCD (2) will display any warning messages and will then display odometer, trip odometer, engine hour meter, and battery voltage readings. LCD (2) will revert to normal drive mode screen. If SST is enabled, LCD (2) will also turn on and off, followed by OSHKOSH logo, and finally, software information before going to normal drive mode screen.
- Warning lights will turn on and off followed by active warning lights (if any) coming back on.
- With SST disabled, there is no alarm at start-up. With SST enabled, a one second alarm will sound at start-up.

Ignition Mode: Instrument panel will be in ignition mode whenever ignition switch (1) is positioned on. Instrument Panel is fully active in this mode.

Diagnostic Mode: From ignition mode with vehicle speed at zero, pressing M button (6) for more that two seconds allows instrument panel to enter diagnostic mode. This mode provides following functions.

- Set units.
- Adjust contrast.
- Instrument diagnostics.

LCD MESSAGE CENTER

NOTE

LCD will display warning as dictated by various control systems on vehicle. Warning will remain on screen until warning is no longer valid or, until operator pushes T (trip) button.

Drive Mode Screen. This is normal display screen when operating vehicle. In drive mode, LCD (1) will display odometer reading, system voltage reading, and either operating hours or trip odometer reading. To toggle back and forth between these two options, operator must press and release M (mode) button (2) in less than two seconds.

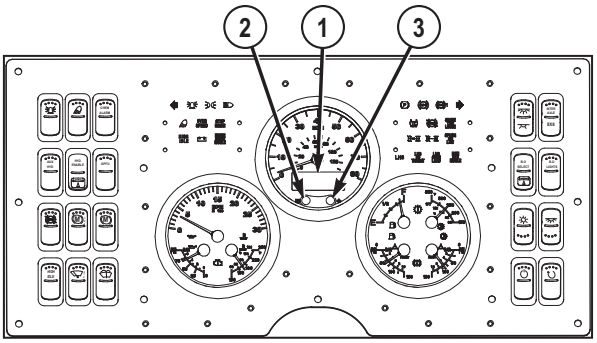


Figure 3.

Settings and diagnostics. Operator can enter settings and diagnostics menu from drive mode screen when engine is running and vehicle speed is zero. To enter settings and diagnostics menu, operator must push M button (2) for more than two seconds. Item highlighted will be item selected when both M button (2) and T button (3) are pressed together. Pressing M button (2) or T button (3) separately will scroll through various selections.

1. **To change measurement units.**
   a. Enter LCD (1) settings and diagnostics screen.

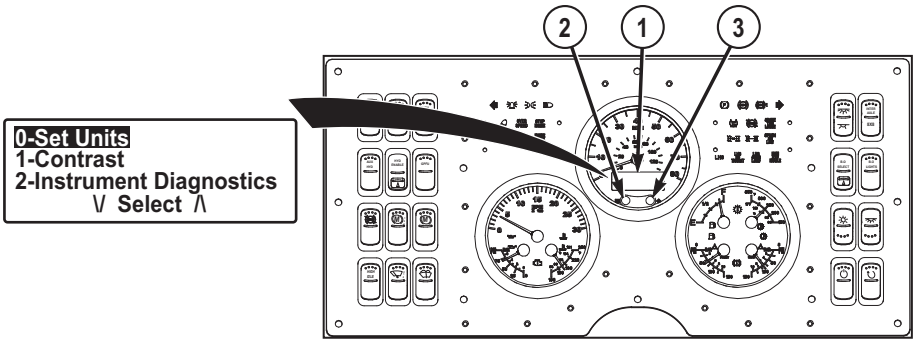


Figure 4.

b. Scroll down using M button (2) or up using T button (3) until '0-Set Units' is selected (shown).

c. Press M button (2) and T button (3) at same time. Current Units screen will appear.

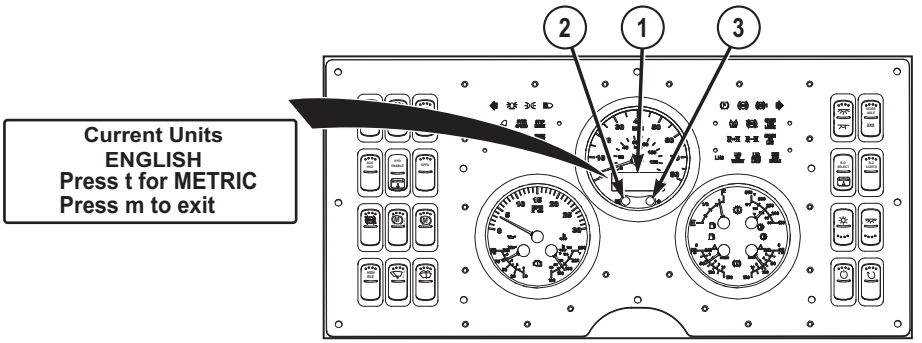


Figure 5.

d. Press T button (3) to change measurement units to English or Metric.

e. Press M button (2) to return LCD (1) to drive mode screen.

2. **To change LCD screen contrast setting.**

a. Enter LCD (1) settings and diagnostics screen.

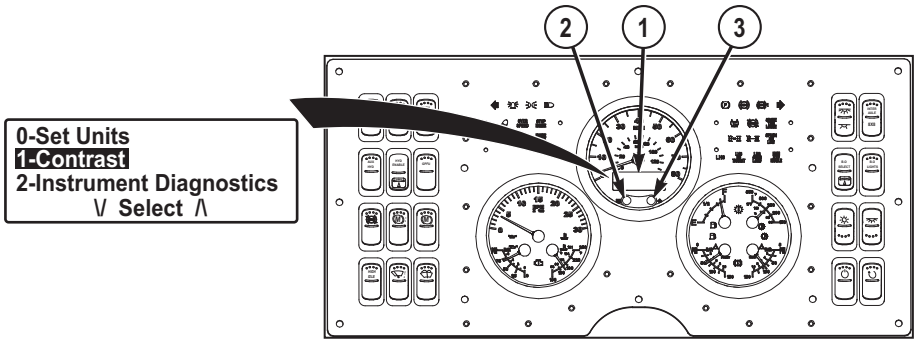


Figure 6.

b. Scroll down using M button (2) or up using T button (3) until '1-Contrast' is selected (shown).

c. Press M button (2) and T button (3) at same time. CONTRAST ADJUST screen will appear.

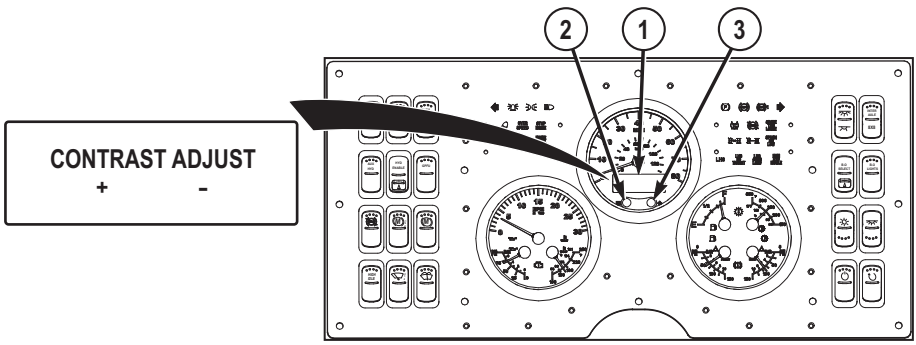


Figure 7.

d. Press M button (2) to increase LCD (1) contrast.

e. Press T button (3) to decrease LCD (1) contrast.

f. LCD (1) will automatically return to drive mode screen.

3. **Instrument Panel Gauges Testing.**

a. Enter LCD (1) settings and diagnostic screen.

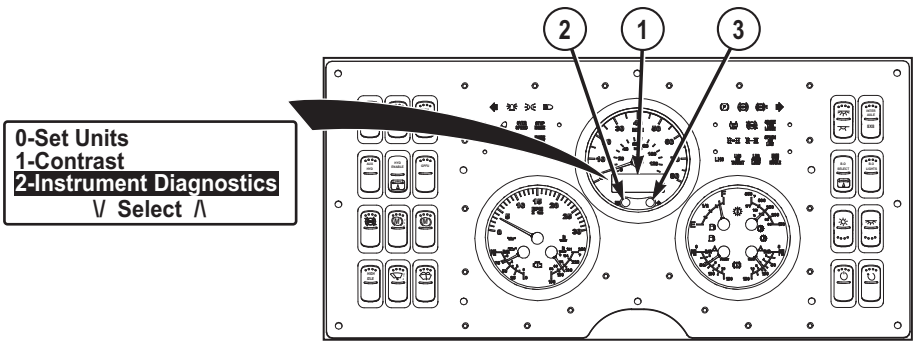


Figure 8.

b. Scroll down using M button (2) or up using T button (3) until '2-Instrument Diagnostics' is selected (shown).

c. Press M button (2) and T button (3) at same time. Instrument diagnostic screen will appear.

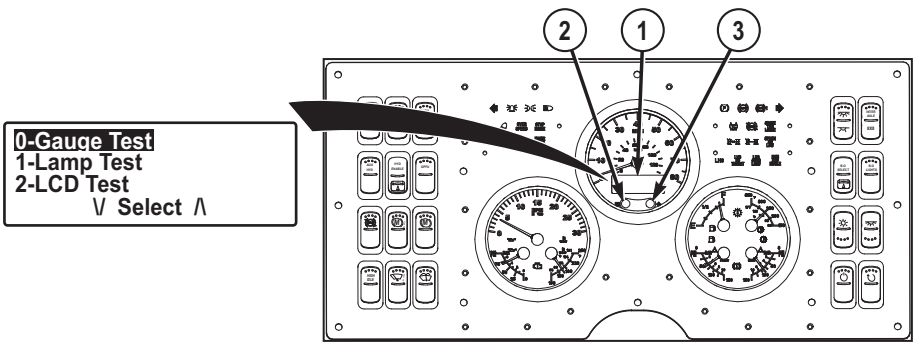


Figure 9.

d. Scroll down using M button (2) or up using T button (3) until '0-Gauge Test' is selected (shown).

e. Press M button (2) and T button (3) together to begin testing gauges (fuel gauge test shown). Each gauge is tested in turn at 0%, 50%, and 100%. LCD (1) displays corresponding percentage.

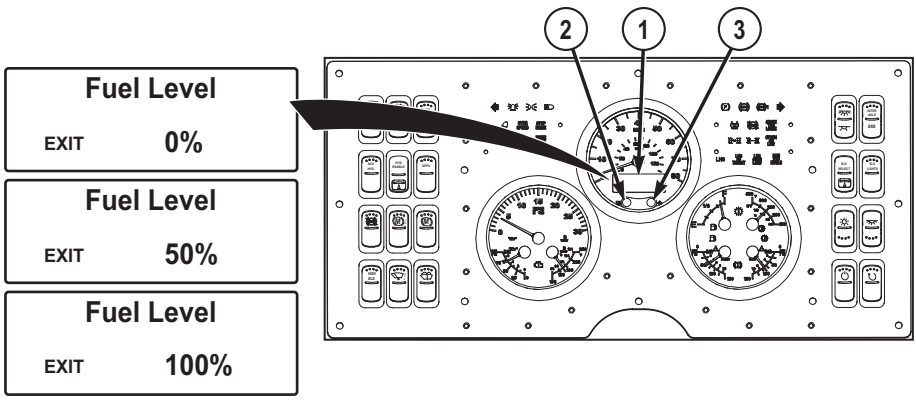


Figure 10.

f. Press M button (2) to end test and return LCD (1) to drive mode screen.

g. Contact field level maintenance to replace gauge/instrument panel if corresponding gauge does not reflect reading on LCD (1).

4. **Instrument Panel Indicator Lamps Testing.**

a. Enter LCD (1) settings and diagnostic screen.

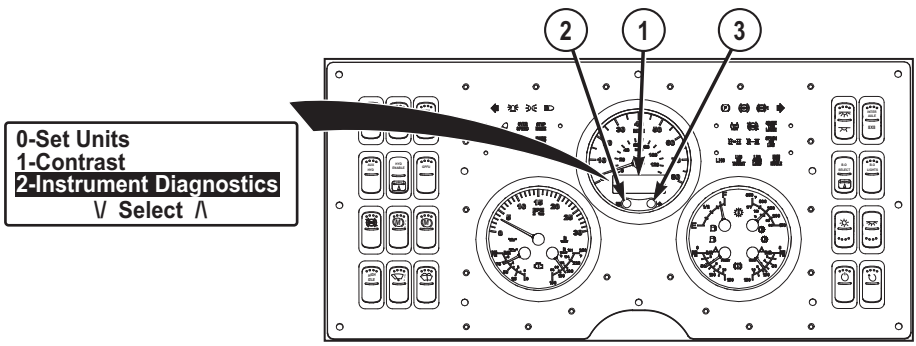


Figure 11.

b. Scroll down using M button (2) or up using T button (3) until '2-Instrument Diagnostics' is selected (shown).

c. Press M button (2) and T button (3) at same time. Instrument diagnostic screen will appear.

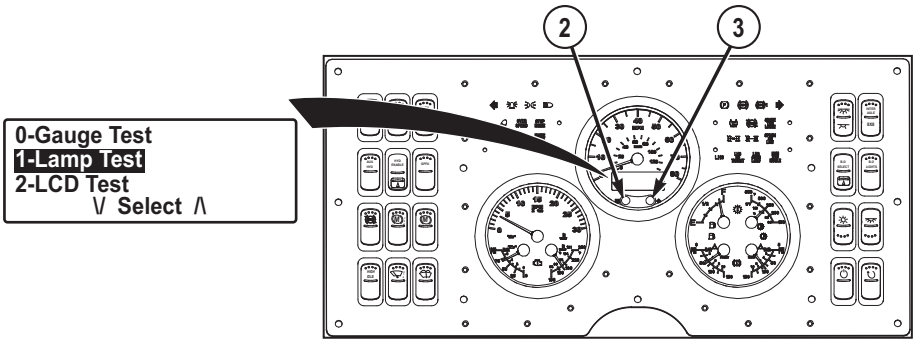


Figure 12.

d. Scroll down using M button (2) or up using T button (3) until '1-Lamp Test' is selected (shown).

e. Press M button (2) and T button (3) together to begin testing warning and indicator lamps. Each warning and indicator lamp on main gauge/instrument panel is turned on and off in turn. LCD (1) displays corresponding warning or indicator lamp under test (high beam indicator test shown).

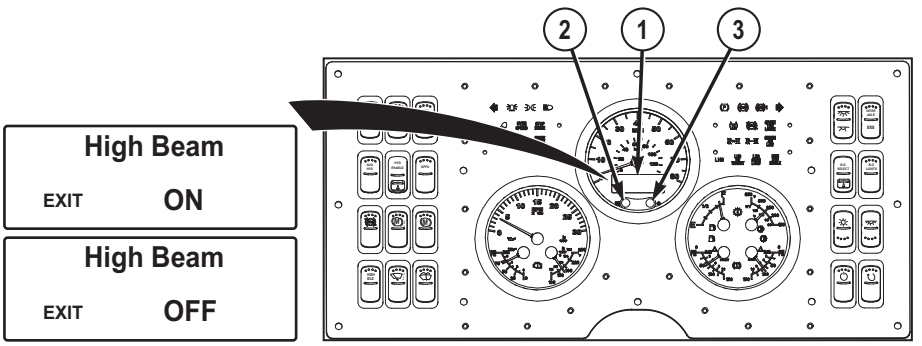


Figure 13.

f. Press M button (2) to end test and return LCD (1) to drive mode screen.

g. Contact field level maintenance to replace main gauge/instrument panel if warning or indicator lamp fails to illuminate as indicated by LCD (1).

NOTE

Instrument panel LCD is used as part of test procedure. If LCD is unreadable during any part of test, it should be considered defective and replaced.

5. **Instrument Panel Liquid Crystal Display (LCD) Testing.**

a. Enter LCD (1) settings and diagnostic screen.

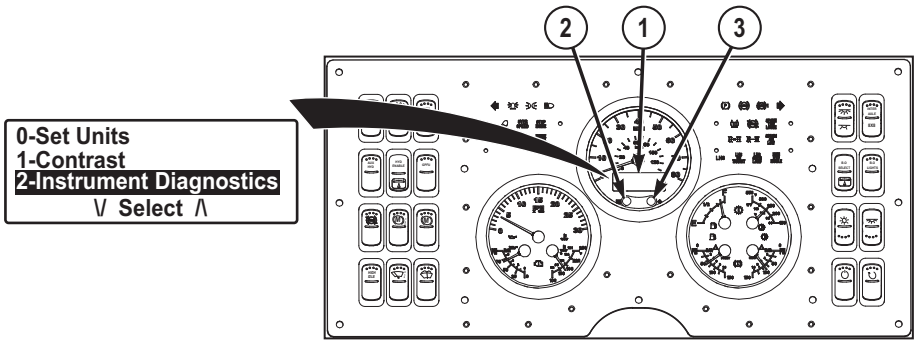


Figure 14.

b. Scroll down using M button (2) or up using T button (3) until '2-Instrument Diagnostics' is selected (shown).

c. Press M button (2) and T button (3) at same time. Instrument diagnostic screen will appear.

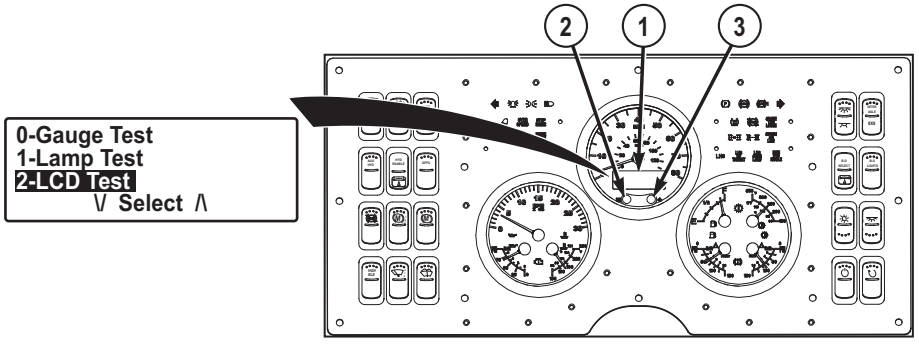


Figure 15.

d. Scroll down using M button (2) or up using T button (3) until '2-LCD Test' is selected (shown).

e. Press M button (2) and T button (3) together to begin testing LCD (1). Display should alternate between normal (shown-top) and negative (shown-bottom) mode three times before returning to drive mode screen.

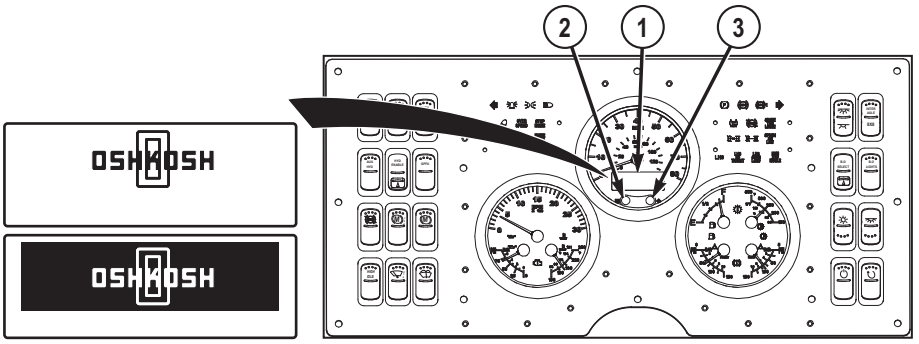


Figure 16.

f. Contact field level maintenance to replace main gauge/instrument panel if LCD (1) fails to illuminate as shown and described in Step (f).

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATE AIR SUSPENSION BALL VALVES

INITIAL SETUP:

Not Applicable

TURN BALL VALVES ON

CAUTION

- Never operate vehicle with suspension dumped (deflated) during normal driving operations. Failure to comply may result in damage to equipment.
- Never operate vehicle with one or more ball valves positioned OFF. Failure to comply may result in damage to equipment.

NOTE

- Vehicle is equipped with four ball valves, one on top of each air spring on No. 1 and No. 4 axles. Each ball valve controls two air springs (zone).
- No. 1 axle driver side ball valve controls both No. 1 and No. 2 axle air springs (zone) for that side of vehicle.
- No. 1 axle passenger side ball valve controls both No. 1 and No. 2 axle air springs (zone) for that side of vehicle.
- No. 4 axle driver side ball valve controls both No. 4 and No. 3 axle air springs (zone) for that side of vehicle.
- No. 4 axle passenger side ball valve controls both No. 4 and No. 3 axle air springs (zone) for that side of vehicle.

1. Position ball valve (1) ON (shown):
   a. Pull lock (2) towards handle (3) and push handle (3) in until parallel with ball valve (1).

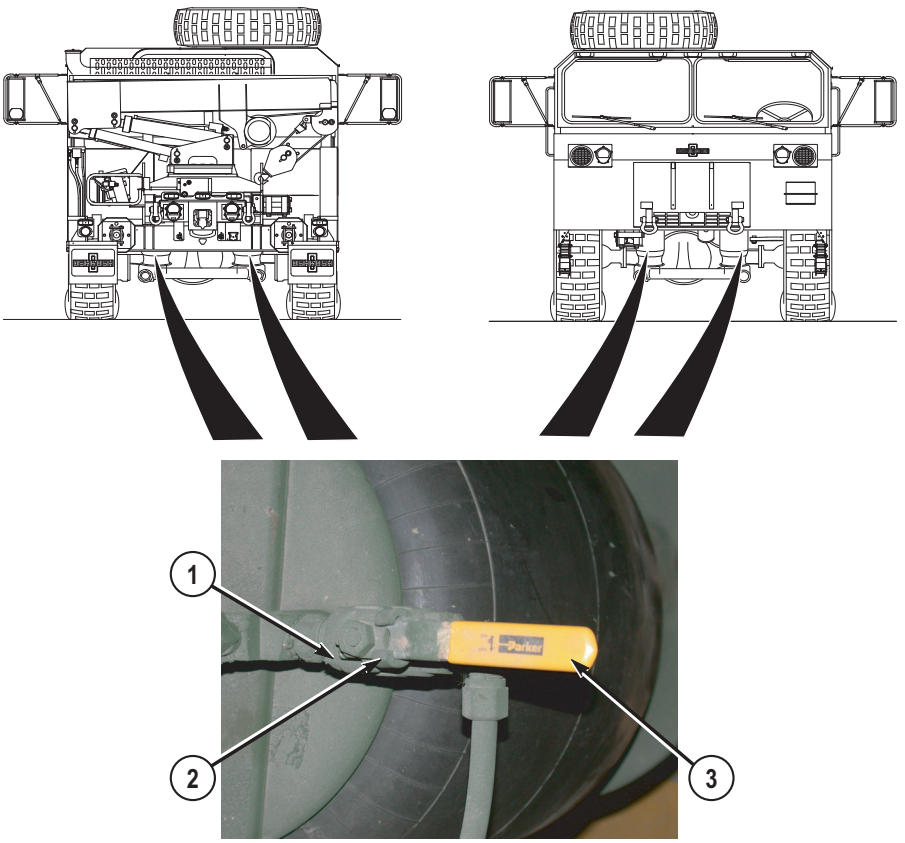


Figure 1.

b. Release lock (2), and gently move handle (3) back and forth until lock is engaged.

NOTE

Refer to operate air suspension dump valve (WP 0039) for more information on air suspension servicing/dumping procedures.

2. Repeat Step (1) as necessary on remaining ball valves (1).

TURN BALL VALVES OFF

CAUTION

- Never operate vehicle with suspension dumped (deflated) during normal driving operations. Failure to comply may result in damage to equipment.

- Never operate vehicle with one or more ball valves positioned OFF. Failure to comply may result in damage to equipment.

NOTE

- Vehicle is equipped with four ball valves, one on top of each air spring on No. 1 and No. 4 axles. Each ball valve controls two air springs (zone).
- No. 1 axle driver side ball valve controls both No. 1 and No. 2 axle air springs (zone) for that side of vehicle.
- No. 1 axle passenger side ball valve controls both No. 1 and No. 2 axle air springs (zone) for that side of vehicle.
- No. 4 axle driver side ball valve controls both No. 4 and No. 3 axle air springs (zone) for that side of vehicle.
- No. 4 axle passenger side ball valve controls both No. 4 and No. 3 axle air springs (zone) for that side of vehicle.

1. Position ball valve (1) OFF (shown):
   a. Pull lock (2) towards handle (3) and push handle (3) until at 90 degree angle with ball valve (1).

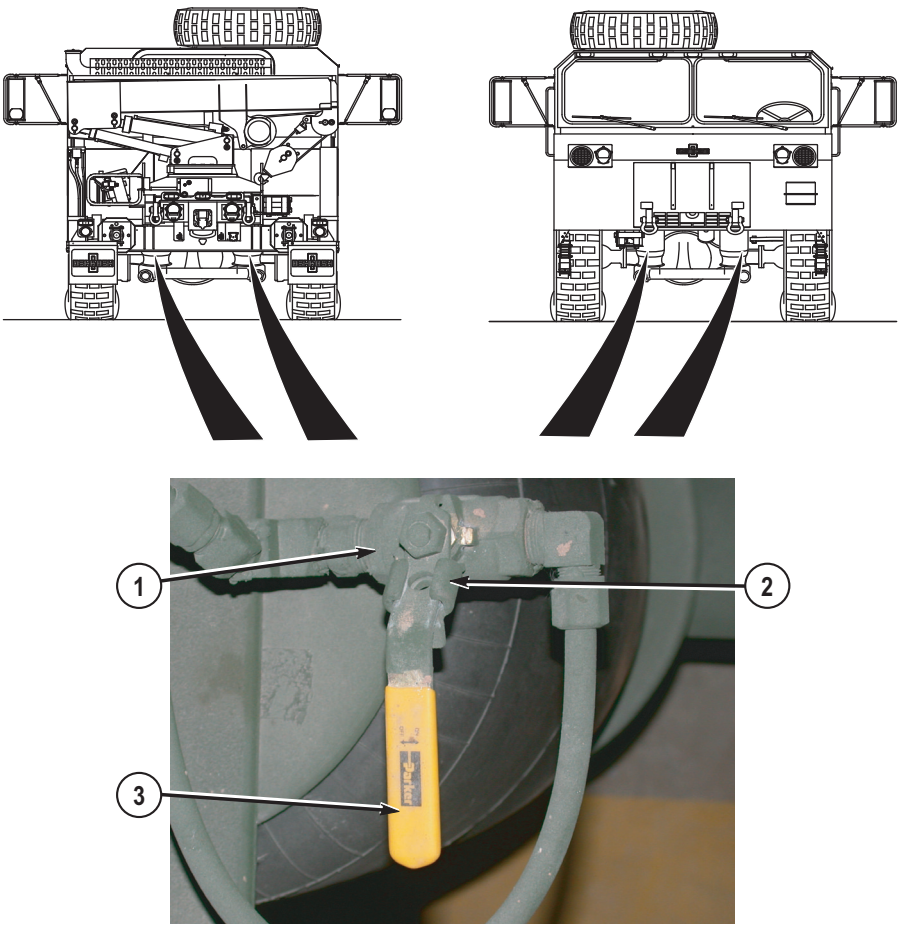


Figure 2.

b. Release lock (2), and gently move handle (3) back and forth until lock is engaged.

NOTE

Refer to operate air suspension dump valve (WP 0039) for more information on air suspension servicing/dumping procedures.

2. Repeat Step (1) as necessary on remaining ball valves (1).

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
START ENGINE

INITIAL SETUP:

Not Applicable

START COLD ENGINE

WARNING



Do not start, crank engine, or move vehicle when anyone is near, working on, or working under vehicle. Failure to comply may result in injury or death to personnel.

WARNING



Keep away from moving engine parts, alternator belts, and pulleys while engine is running. Failure to comply may result in injury or death to personnel.

NOTE

- Ensure that 24V battery disconnect switch is set to ON position (WP 0075) before attempting to start engine.
- Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

1. Pull out PARKING BRAKE control (1).

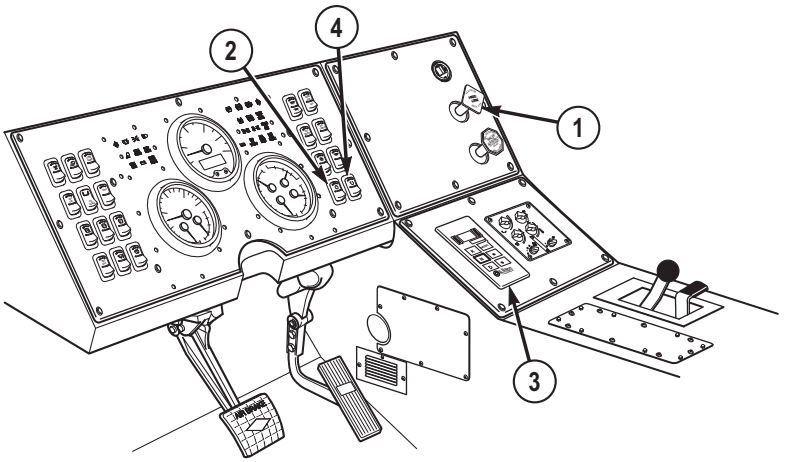


Figure 1.

2. Set ignition switch (2) to ON position.
3. Set transmission range selector (3) to N (neutral).

NOTE

Perform Step (4) up to seven times. If engine does not start after eight attempts, notify field level maintenance.

4. Push engine start switch (4) for no longer than 15 seconds, or until engine starts.

NOTE

- Engine start switch will spring back to off position when released.
- Brake system failure (LOW AIR) indicator may illuminate and buzzer may sound upon engine start.

5. Release engine start switch (4) immediately after engine starts.

CAUTION

- Do not position engine start switch to start position while motor is running. Failure to comply may result in damage to equipment.
- If engine fails to start, repeat Step (4) up to seven times. If engine doesn't start after eight starting attempts, notify field level maintenance.
- If oil pressure gauge does not show engine oil pressure within 10 to 15 seconds after starting engine, immediately shut off engine (WP 0056) and notify field level maintenance. Failure to comply may result in damage to equipment.

6. With engine at idle (625-725 rpm), check that engine oil pressure gauge (5) reads 15-88 psi (1.03-6.07 bar).

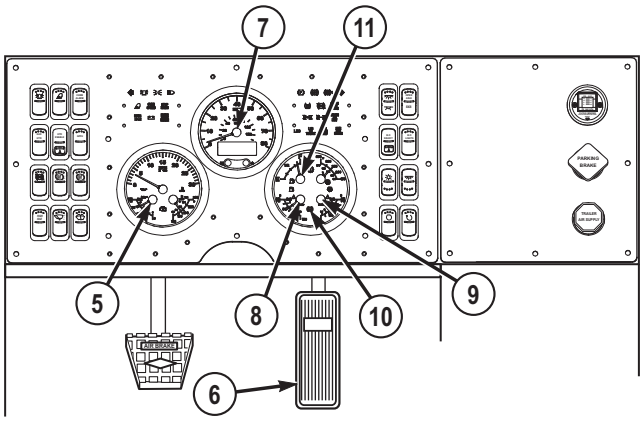


Figure 2.

7. Press throttle pedal (6) until tachometer (7) reads 800-1000 rpm.
8. Run engine at 800-1000 rpm for about 5 minutes.

CAUTION

If FRONT and REAR air pressure gauges do not read 60 to 120 psi (4 to 8 bar) after warm-up, shut off engine (WP 0056) and notify field level maintenance. Failure to comply may result in damage to equipment.

9. Check that FRONT (8) and REAR (9) air pressure gauges read 60 to 120 psi (4 to 8 bar). Brake system failure (LOW AIR) indicator (10) will illuminate and buzzer may sound until both gauges reach 60 to 75 psi (4 to 5 bar).
10. Check that fuel gauge (11) shows enough fuel to complete mission.

NOTE

Engine coolant temperature gauge may not show reading at engine idle.

11. Check that engine coolant temperature gauge (12) does not read over 219°F (104°C).

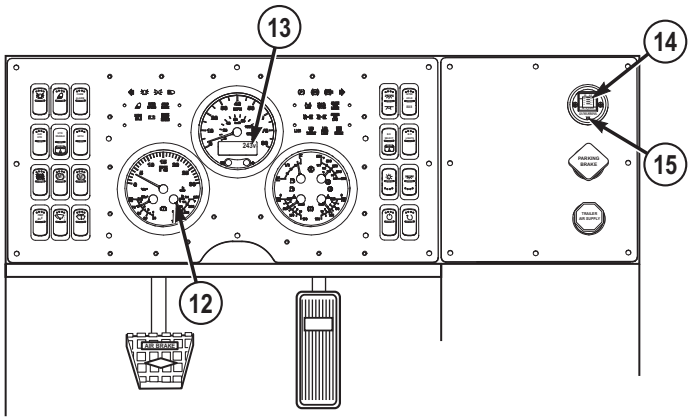


Figure 3.

NOTE

Battery voltage readout is located in the top right corner of the LCD.

12. Check that battery voltage readout (13) reads between 24 and 28 volts.
13. Check that air filter restriction indicator (14) shows yellow.
14. If air filter restriction indicator (14) shows red, press and release RESET button (15).

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. Failure to comply may result in injury or death to personnel.

NOTE

Bouncing or jarring of indicator may put indicator in red zone while air cleaner elements are still good. Turn engine off and press reset button to recheck indicator.

15. If air filter restriction indicator (14) still shows red and/or VACUUM INCHES H2O window shows 18, shut off engine (WP 0056) and clean air filter elements. (WP 0151)

START WARM ENGINE

WARNING



Do not start, crank engine, or move vehicle when anyone is near, working on, or working under vehicle. Failure to comply may result in injury or death to personnel.

WARNING



Keep away from moving engine parts, alternator belts, and pulleys while engine is running. Failure to comply may result in injury or death to personnel.

NOTE

- Ensure that 24V battery disconnect switch is set to ON position (WP 0075) before attempting to start engine.
- Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

1. Pull out PARKING BRAKE control (1).

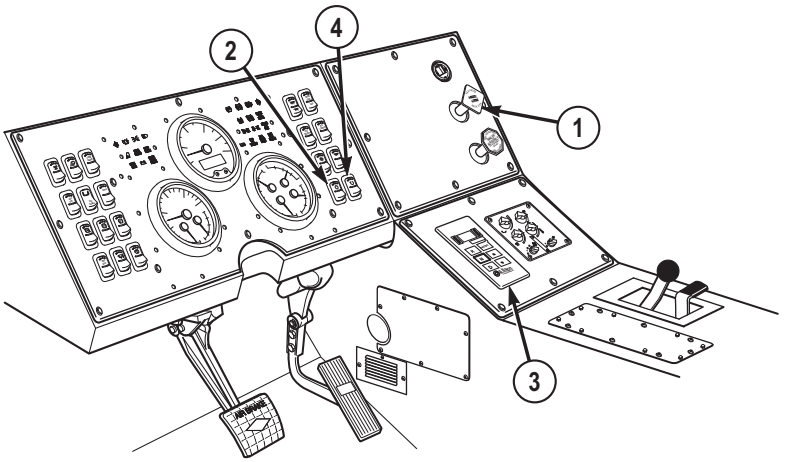


Figure 4.

2. Set ignition switch (2) to ON position.
3. Set transmission range selector (3) to N (neutral).

NOTE

Perform Step (4) up to seven times. If engine does not start after eight attempts, notify field level maintenance.

4. Push engine start switch (4) for no longer than 10 seconds, or until engine starts.

NOTE

- Engine start switch will spring back to off position when released.
- Brake system failure (LOW AIR) indicator may illuminate and buzzer may sound upon engine start.

5. Release engine start switch (4) immediately after engine starts.

CAUTION

If engine oil pressure gauge does not show engine oil pressure within 10 to 15 seconds after starting engine, shut off engine (WP 0056) immediately and notify field level maintenance. Failure to comply may result in damage to equipment.

NOTE

- Minimum engine oil pressure for safe operation (vehicle moving) is 30 psi (2 bar).

- At idle, engine oil pressure can drop as low as 5 psi (0.34 bar), this is a normal condition.

6. Check that engine oil pressure gauge (5) indicates normal operating range of 40 to 70 psi (2.76 to 4.83 bar) at 1800 to 2100 rpm.

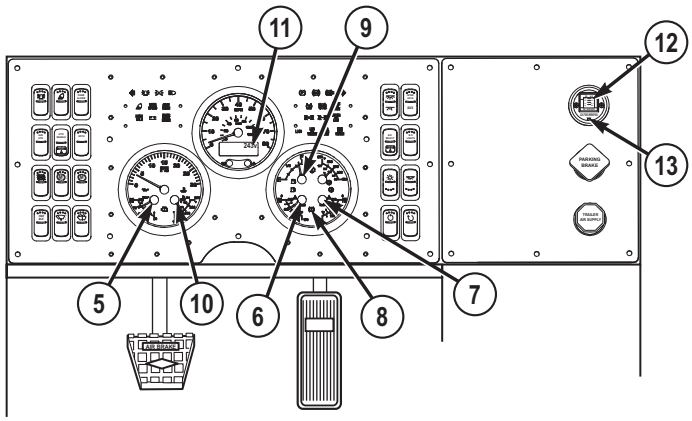


Figure 5.

7. Check that FRONT (6) and REAR (7) air pressure gauges read 60 to 120 psi (4 to 8 bar). Brake system failure (LOW AIR) indicator (8) will illuminate and buzzer may sound until both gauges reach 60 to 75 psi (4 to 5 bar).
8. Check that fuel gauge (9) shows enough fuel to complete mission.

NOTE

Engine coolant temperature gauge may not show reading at engine idle.

9. Check that engine coolant temperature gauge (10) does not read over 219°F (104°C).

NOTE

Battery voltage readout is located in the top right corner of the LCD.

10. Check that battery voltage readout (11) reads between 24 and 28 volts.
11. If air filter restriction indicator (12) shows red, press and release RESET button (13).
12. If air filter restriction indicator (12) still shows red and/or VACUUM INCHES H2O window shows 18, shut off engine (WP 0056) and clean air filter elements. (WP 0151)

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATE PARKING BRAKES

INITIAL SETUP:

Not Applicable

OPERATE PARKING BRAKES

NOTE

- Vehicle is equipped with automatic parking brake valve (square/yellow knob).
- Automatic parking brake valve will apply parking brakes when air pressure is approximately 30 psi (2 bar) or less.

1. Pull out PARKING BRAKE control (1) to apply, parking brake indicator (2) will illuminate.

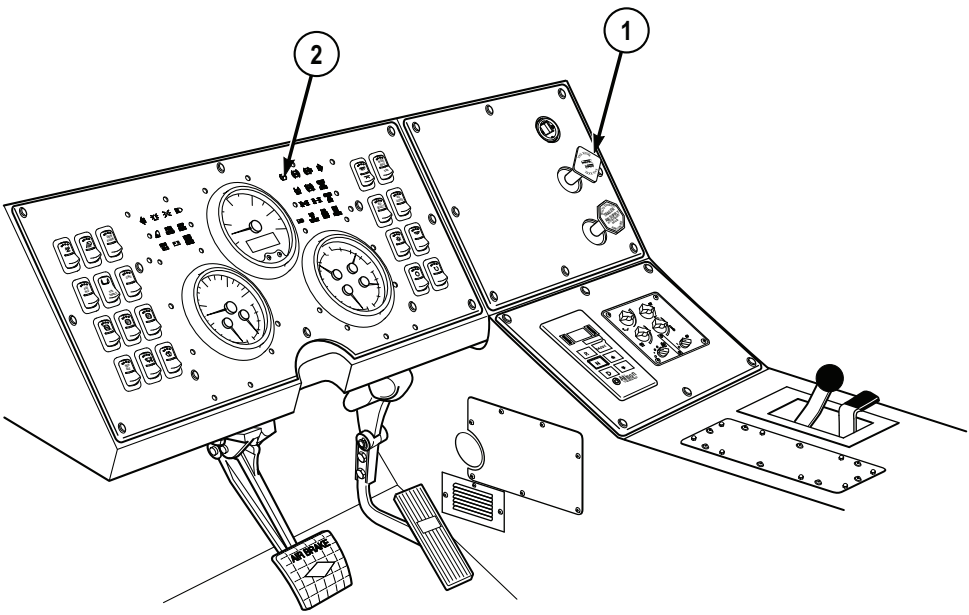


Figure 1.

2. Push in PARKING BRAKE control (1) to release, parking brake indicator (2) will go out.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATE SERVICE BRAKES

INITIAL SETUP:

Not Applicable

OPERATE SERVICE BRAKES

WARNING



Do not press service brake treadle hard three or four times in a row. Air supply will be used up and service brakes will not work until air is built up again. Failure to comply may result in injury or death to personnel.

1. Make sure FRONT (1) and REAR (2) air pressure gauges both read at least 100 psi (7 bar) before operating vehicle.
2. Push down and hold service brake pedal (3) as needed to slow or stop vehicle.

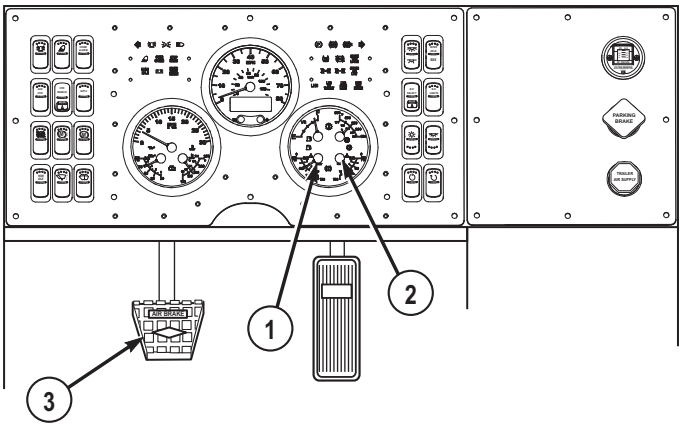


Figure 1.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATE TRAILER BRAKES

INITIAL SETUP:

Not Applicable

OPERATE TRAILER BRAKES

WARNING



Trailer handbrake control is used only when testing trailer brakes. Do not use trailer handbrake control while driving or the trailer may skid and jackknife, causing an accident. Failure to comply may result in injury or death to personnel.

1. Slowly pull trailer handbrake control (1) down to test application of trailer brakes.
2. Push trailer handbrake control (1) up to test release of trailer brakes.

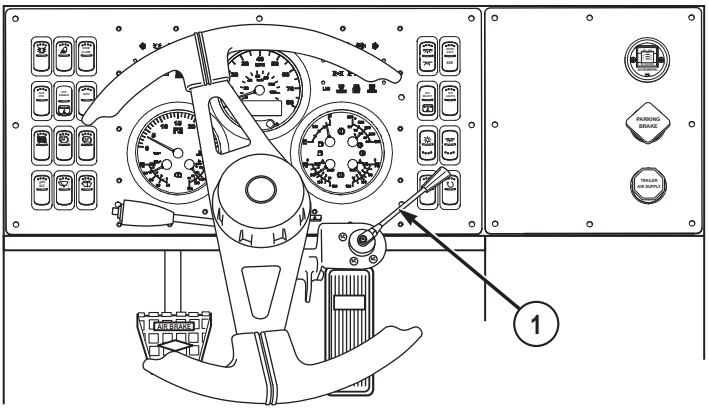


Figure 1.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATE TRANSMISSION AND TRANSFER CASE

INITIAL SETUP:

Not Applicable

OPERATE TRANSMISSION

CAUTION

If transmission range selector flashes current range selection while operating vehicle (shift selection is inhibited), DO NOT shut off engine or attempt to change range selection. Shutting off engine may result in the inability to select a drive range at startup, and diagnostic data may be lost. Move vehicle to safe place and notify field level maintenance as soon as possible (refer to limp home/transmission fault for more information). (WP 0111)

NOTE

- When transmission oil is below 19°F (-7 C), the only gears available are R (reverse), N (Neutral), and 3 (third gear range) when D (drive) is selected. The remaining gears in D (drive) will not be available until transmission oil in sump warms above 19°F (-7 C).
- The transmission range selector has six buttons and digital display window. The six buttons are: R (reverse), N (neutral), D (drive), up arrow, down arrow, and MODE. The transmission has five forward gears.
- The MODE button located on the transmission range selector does not perform any operator function.
- The digital display window on the transmission range selector will display R (reverse), N (neutral), or the number 1 through 5, depending on gear range selected.
- The lowest gear of any gear range is always first gear.
- When transmission is set to D (drive), 5 (fifth gear range) is automatically chosen and displayed in the digital display window.
- When engine brake is activated and vehicle is decelerating, 2 (second gear range) will be displayed in the digital display window.

1. Press the N (neutral) button (1) for the following:
   a. Start engine. (WP 0043)

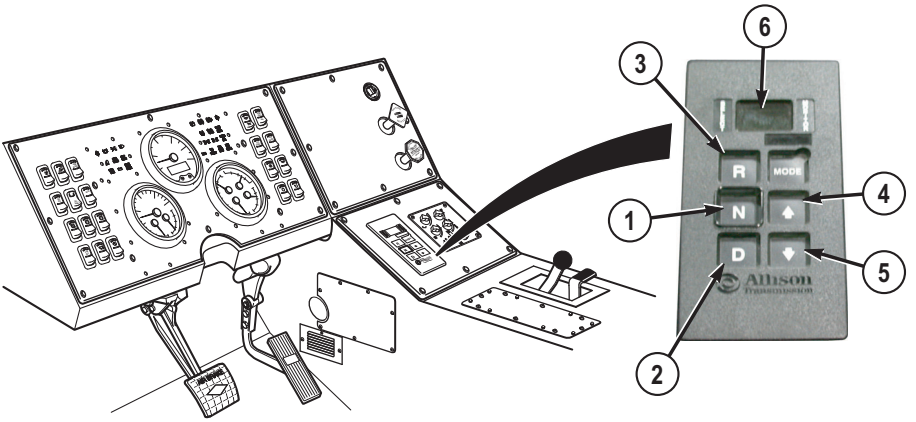


Figure 1.

   b. Park vehicle. (WP 0055)
   c. Perform stationary power takeoff.
   d. Shift transfer case.
   e. Operate auxiliary equipment.
2. Press the D (drive) button (2) or R (reverse) button (3) depending on directional required:
   a. R (Reverse) button (3):
      (1) Drive vehicle in reverse. (WP 0050)
   b. D (Drive) (2):
      (1) Drive in normal conditions.
      (2) Drive vehicle forward (WP 0049) from a stop.

NOTE

When setting a new transmission operating range, the top gear of the desired operating range must be chosen and displayed on the transmission range selector digital display.

3. Complete the following if a lower gear range is required:
   a. Using the up arrow button (4) or down arrow button (5), adjust the digital display window (6) until top gear of desired transmission operating range is displayed:

NOTE

- Use up or down arrow buttons to adjust gear settings as required.
- Once the arrow buttons are used, the transmission will not upshift past the gear range displayed in the transmission range selector digital display, but will downshift normally.
- Press the D (drive) button to return transmission to normal function (using all gears).

(1) 4 (fourth), 3 (third), or 2 (second) gear range to:

(a) Drive vehicle in off-road conditions. (WP 0052)

(b) Drive vehicle in city traffic and on highway. (WP 0051)

(c) Haul a heavy load.

(d) Drive down moderate grades.

(e) Drive in other conditions as needed.

(2) 1 (first gear range) when:

(a) Maximum pulling power is required.

(b) Drive vehicle up/down steep grade. (WP 0053)

(c) Drive vehicle in slippery conditions. (WP 0054)

OPERATE TRANSFER CASE

1. Start engine. (WP 0043)

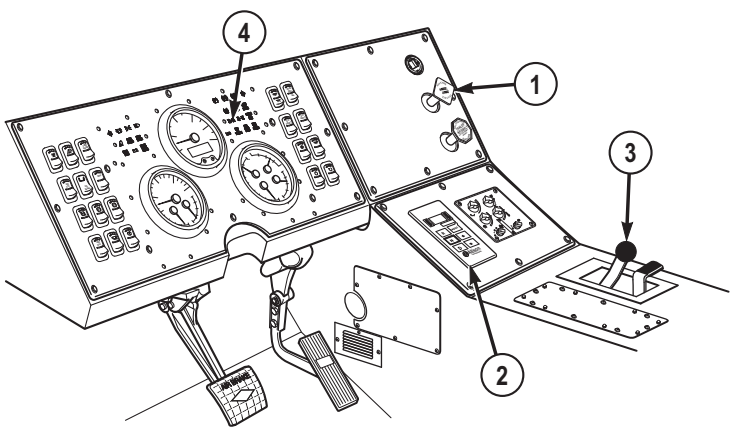


Figure 2.

NOTE

Dashboard parking brake indicator will go out when PARKING BRAKE control is released.

2. Push in PARKING BRAKE control (1).
3. Set transmission range selector (2) to N (neutral).

CAUTION

- Do not force TRANSFER CASE shift lever. Lever may work hard if there is drive line windup. Using excessive force on shift lever may cause damage to shift linkage or change linkage adjustment.
- Do not move TRANSFER CASE shift lever when vehicle is moving, or when transmission is in gear. Severe damage to drive line may result.

4. Select transfer case position.

NOTE

If TRANSFER CASE shift lever is hard to move, set transmission range selector to D, then back to N. If transfer case will not shift, refer to troubleshooting procedures. (WP 0134)

5. Set TRANSFER CASE shift lever (3) to H (HI) for highway driving.

NOTE

Selecting L (LO) position automatically selects 8X8 drive in the vehicle traction control system.

6. Set TRANSFER CASE shift lever (3) to L (LO) for off-road driving, 8X8 indicator (4) will illuminate.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATE ENGINE BRAKE

INITIAL SETUP:

Not Applicable

OPERATE ENGINE BRAKE

WARNING



Do not use engine brake when vehicle is on slippery surface. If engine brake is used incorrectly, vehicle may skid out of control. Failure to comply may result in injury or death to personnel.

NOTE

Service brakes must be used in addition to engine brake for optimum braking capability.

1. Set engine brake high/medium/low switch (1) to low (full down) position.

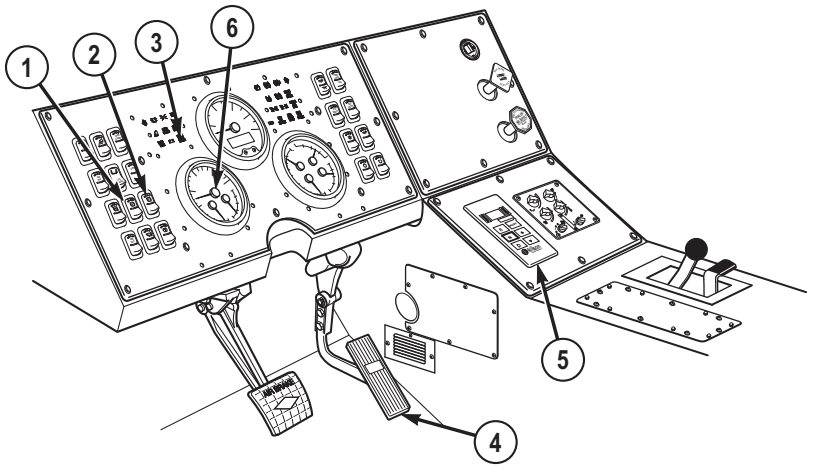


Figure 1.

2. Set engine brake on/off switch (2) to on (up) position, ENGINE BRAKE ENABLE indicator (3) will illuminate.
3. Lift foot off throttle pedal (4). Engine brake will automatically slow vehicle.
4. If too much braking occurs, set transmission range selector (5) to a higher range.
5. If more braking is required, set engine brake high/medium/low switch (1) to medium (center) position, and then high (full up) position (as required).

NOTE

Engine brake operates best when engine speed is between 1650 and 2100 rpm.

6. Check that tachometer (6) reads between 1650 and 2100 rpm whenever engine brake is used.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
DRIVE VEHICLE FORWARD

INITIAL SETUP:

Not Applicable

PREPARE VEHICLE

NOTE

If vehicle has less than 500 miles (805 km), check controls and indicators often during operation and listen for unusual noises or vibrations. Notify field level maintenance of any problems.

1. Remove and stow wheel chocks. (WP 0073)
2. Ensure manhole cover is closed and latched.
3. Ensure pump module doors are closed and latched. (WP 0080)
4. Ensure tank module access ladder is secure in stowed position. (WP 0079)
5. Adjust air-ride seat and mirrors as needed. (WP 0076)
6. Adjust four-point seatbelt as needed. (WP 0077)
7. Ensure air suspension dump valve control is pinned in ‘service’ position. (WP 0027)
8. Ensure all four suspension ball valves are open. (WP 0042)
9. Ensure tire carrier is secure in raised position.
10. Start engine. (WP 0043)
11. Turn on lights as required.

WARNING



Do not press service brake treadle hard three or four times in a row. Air supply will be used up and service brakes will not work until air is built up again. Failure to comply may result in injury or death to personnel.

12. Ensure both (FRONT and REAR) air pressure gauges (1) read at least 100 psi (7 bar) before driving vehicle.

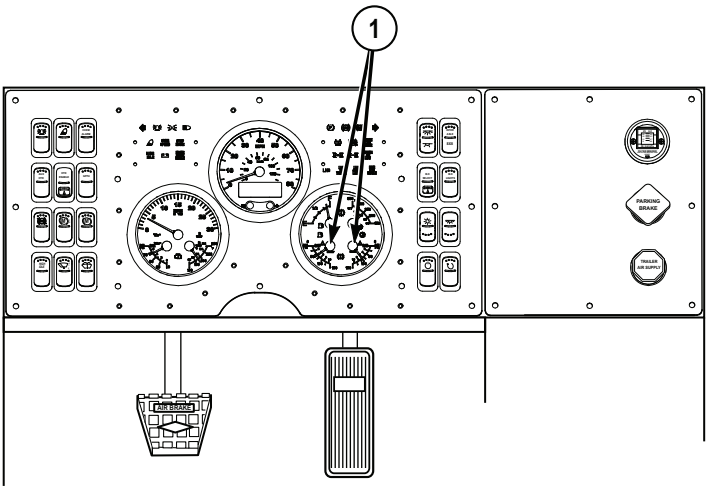


Figure 1.

DRIVE VEHICLE FORWARD

1. Drive vehicle in city traffic and on highway. (WP 0051)
2. Drive vehicle in off-road conditions. (WP 0052)
3. Drive vehicle in slippery conditions. (WP 0054)
4. Drive vehicle up/down steep grade. (WP 0053)

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
DRIVE VEHICLE IN REVERSE

INITIAL SETUP:

Not Applicable

PREPARE VEHICLE

1. Remove and stow wheel chocks.
2. Adjust air-ride seat and mirrors as needed. (WP 0076)
3. Adjust four-point seatbelt as needed. (WP 0077)
4. Start engine. (WP 0043)
5. Turn on lights as required.

DRIVE VEHICLE IN REVERSE

WARNING



Do not press service brake treadle hard three or four times in a row. Air supply will be used up and service brakes will not work until air is built up again. Failure to comply may result in injury or death to personnel.

1. Make sure both (FRONT and REAR) air pressure gauges (1) read at least 100 psi (7 bar) before driving vehicle.

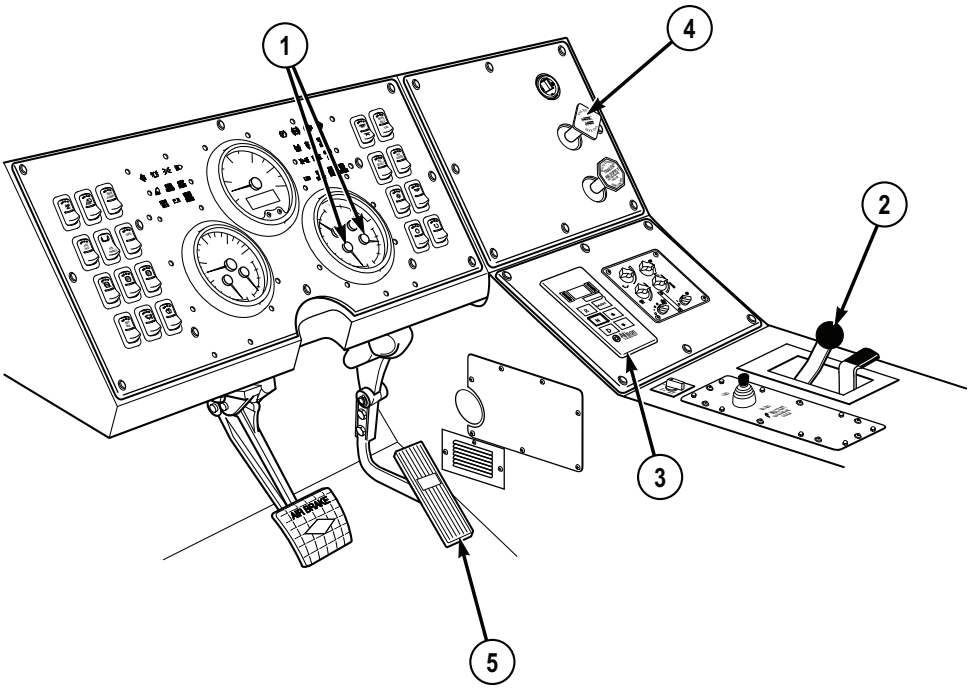


Figure 1.

WARNING

Driver has limited vision to rear. Ground guide is required when driving vehicle in reverse. Failure to comply may result in injury or death to personnel.

CAUTION

Do not move TRANSFER CASE shift lever when vehicle is moving or when transmission is in gear. Severe damage to drive line may result.

2. Set TRANSFER CASE shift lever (2) to HI.

NOTE

Reverse alarm will not sound if blackout lighting is selected.

3. Set transmission range selector (3) to R (reverse).

NOTE

Dashboard parking brake indicator will go out when PARKING BRAKE control is released.

4. Push in PARKING BRAKE control (4).
5. Slowly apply throttle pedal (5).
6. Follow direction from ground guide (as required).

CAUTION

Do not hold steering wheel at full left or full right position for longer than 10 seconds. Oil overheating and pump damage may result.

7. Accelerate, brake, and steer as required.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
DRIVE VEHICLE IN CITY TRAFFIC AND ON HIGHWAY

INITIAL SETUP:

Not Applicable

OPERATE VEHICLE

WARNING



Speed limits posted on curves reflect speeds that are considered safe for automobiles. Heavy vehicles with a high center of gravity can roll over at these speed limits. Use care and reduce your speed below the posted limit prior to entering a curve. Failure to comply may result in injury or death to personnel.

CAUTION

Do not move TRANSFER CASE shift lever when vehicle is moving or when transmission is in gear. Severe damage to drive line will result.

1. Set TRANSFER CASE shift lever (1) to HI.

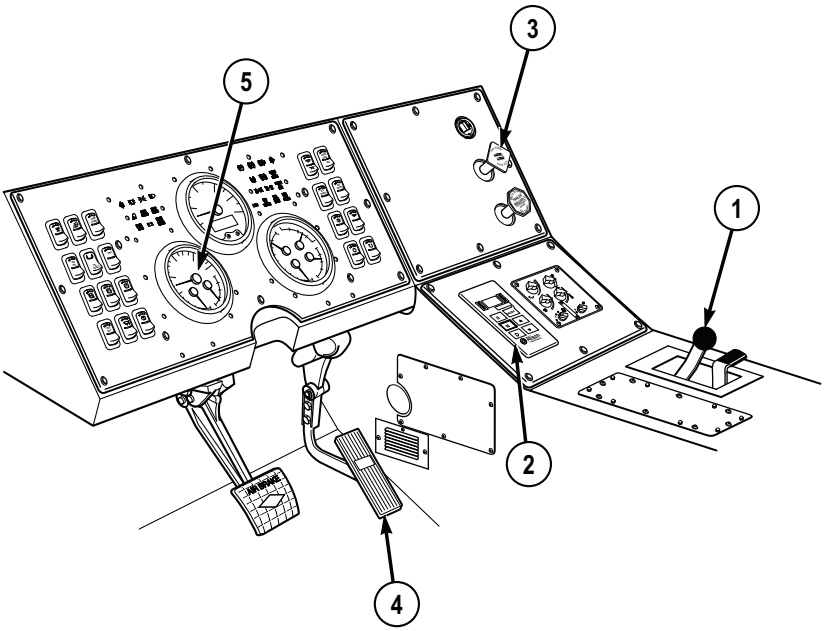


Figure 1.

2. Set transmission range selector (2) to D (drive).

NOTE

Dashboard parking brake indicator will go out when PARKING BRAKE control is released.

3. Push in PARKING BRAKE control (3).

CAUTION

Never let engine exceed maximum no-load governed engine speed (approximately 2170 rpm) or maximum governed engine speed under load (approximately 2150 rpm). If engine is allowed to go over governed engine speeds, serious engine damage may result.

4. Slowly depress throttle pedal (4) until vehicle reaches desired speed. Tachometer (5) should read 1650 to 2100 rpm.

CAUTION

Do not hold steering wheel at full left or full right position for longer than 10 seconds. Power steering oil can overheat and pump can be damaged.

5. Accelerate, brake, and steer as required.

NOTE

Check system gauges often during vehicle operation. If gauges read other than normal, stop engine and troubleshoot problem.

6. Check that fuel gauge (6) shows enough fuel to complete mission.

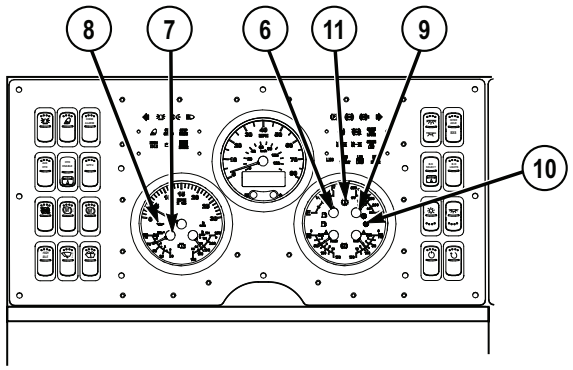


Figure 2.

CAUTION

Minimum safe operating engine oil pressure is 40 psi (2.76 bar) at 1200 rpm. If engine oil pressure gauge reads over 88 psi (6.06 bar) or lower than 40 psi (2.76 bar) at any engine speed of 1200 rpm or higher, shut off engine (WP 0056), and notify field level maintenance.

NOTE

With engine at idle (625-725 rpm), engine oil pressure can go as low as 15 psi (1.03 bar) or as high as 88 psi (6.06 bar).

7. Check that engine oil pressure gauge (7) reads 40 to 88 psi (2.76 to 6.06 bar) between 1200-2100 rpm.
8. If engine oil pressure gauge indicator (8) illuminates (red), this indicates that an engine oil pressure fault code has been logged. Shut off engine (WP 0056), and notify field level maintenance.
9. Check that transmission temperature gauge (9) reads 160 to 220°F (71 to 104°C).
10. If transmission temperature indicator (10) illuminates (red), this indicates that the transmission temperature is above 250°F (121°C), or torque converter temperature is above 350° (177°C); park vehicle (WP 0055) and allow transmission to cool. Notify field level maintenance upon completion of mission.

CAUTION

If transmission range selector flashes current range selection while operating vehicle (shift selection is inhibited), DO NOT SHUT DOWN ENGINE OR FURTHER ATTEMPT TO CHANGE TRANSMISSION RANGE SELECTION. Shutting down engine may result in inability of selecting a drive range at engine startup (vehicle will be unable to move), and diagnostic data will be lost. Move vehicle to safe place for maintenance or perform limp home/transmission fault emergency procedures. (WP 0111)

11. If check transmission indicator (11) illuminates (amber), there is a potential problem with the transmission and/or the transmission may need to be serviced. Check for correct oil level and/or high transmission oil temperature. If indicators are normal, continue mission and notify field level maintenance as soon as possible.
12. Check that engine coolant temperature gauge (12) reads 180 to 200°F (82 to 93°C).

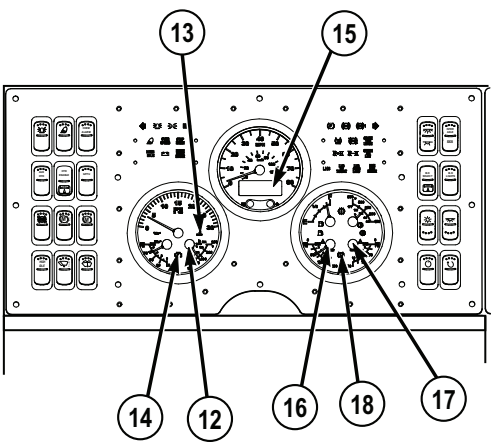


Figure 3.

13. If engine coolant temperature gauge (12) reads over 219°F (104°C), idle engine until water temperature cools. If coolant does not cool, shut off engine (WP 0056) and notify field level maintenance.
14. If high engine coolant temperature indicator (13) illuminates (red), this indicates the engine monitoring system has logged a high engine coolant fault code and will cause the check engine indicator (14) to illuminate (amber). Check engine coolant temperature gauge (12) and allow engine to cool as necessary. Notify field level maintenance as soon as possible.
15. If check engine indicator (14) illuminates (amber), engine must be serviced by field level maintenance as soon as possible.

NOTE

Battery voltage readout is in the top right corner of LCD. (WP 0020)

16. Check that battery voltage readout (15) reads 24 to 28 volts.
17. Check that front air pressure gauge (16) and rear air pressure gauge (17) both read 100 to 130 psi (7 to 9 bar).
18. If low air indicator (18) illuminates (red), perform immediate action for loss of air supply system pressure emergency procedures. (WP 0087)

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
DRIVE VEHICLE IN OFF-ROAD CONDITIONS

INITIAL SETUP:

Not Applicable

DRIVE VEHICLE IN OFF-ROAD CONDITIONS

NOTE

Vehicle Anti-Lock Brake System (ABS) should always be disabled when driving vehicle in off-road conditions.

1. Set ABS disable switch (1) to on position, ABS disabled indicator (2) will illuminate.

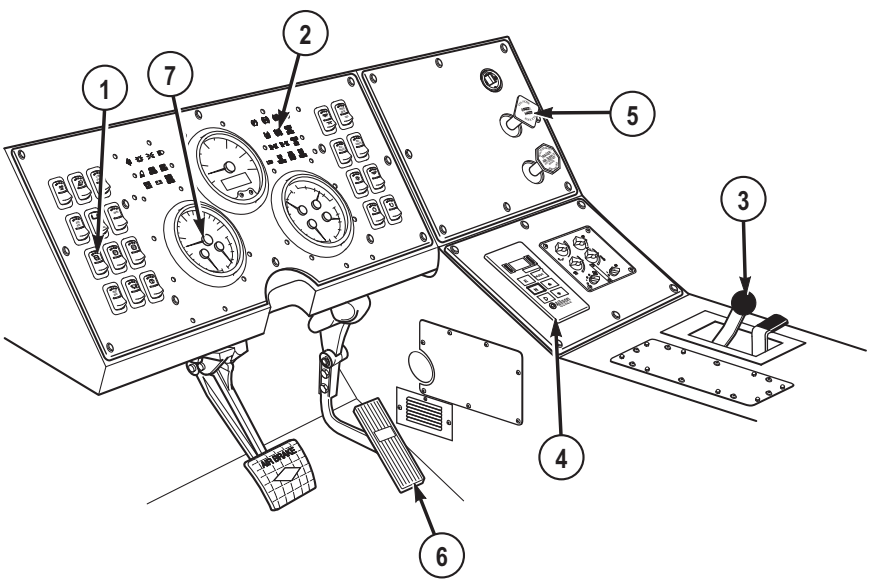


Figure 1.

CAUTION

Do not move TRANSFER CASE shift lever when vehicle is moving or when transmission is in gear. Severe damage to drive line may result.

NOTE

8x8 indicator (WP 0020) will illuminate when TRANSFER CASE shift lever is positioned to L (LO).

2. Set TRANSFER CASE shift lever (3) to L (LO).
3. Set transmission range selector (4) to 2 (2nd gear range) or 1 (1st gear range), (WP 0047) depending on ground condition.

NOTE

Dashboard parking brake indicator will go out when PARKING BRAKE control is released.

4. Push in PARKING BRAKE control (5).

CAUTION

Never let engine exceed maximum no-load governed engine speed (approximately 2170 rpm) or maximum governed engine speed under load (approximately 2150 rpm). If engine is allowed to go over governed engine speeds, serious engine damage may result.

5. Slowly depress throttle pedal (6) until vehicle reaches desired speed. Tachometer (7) should read 1650 to 2100 rpm.

CAUTION

Do not hold steering wheel at full left or full right position for longer than 10 seconds. Power steering oil can overheat and pump can be damaged.

6. Accelerate, brake, and steer as required.

NOTE

When off-road driving is completed, enable vehicle Anti-Lock Brake System (ABS).

7. Set ABS disable switch (1) to off position, ABS disabled indicator (2) will go out.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
DRIVE VEHICLE UP/DOWN STEEP GRADE

INITIAL SETUP:

Not Applicable

DRIVE VEHICLE UP STEEP GRADE

Press and hold throttle pedal (1) all the way down as vehicle moves up grade. Transmission will automatically downshift gears as needed.

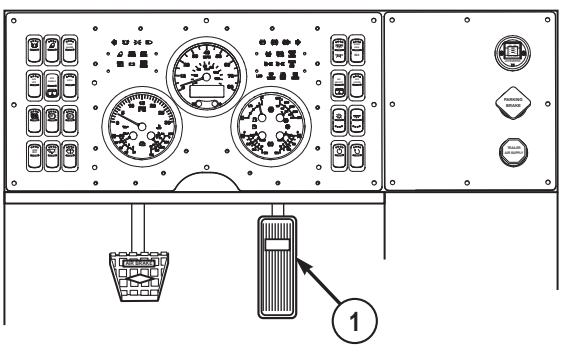


Figure 1.

DRIVE VEHICLE DOWN STEEP GRADE

CAUTION

- Do not allow speed to go above 2100 RPM when driving downhill, or damage to engine can result.
- Engine brake operates best when engine speed is between 1650 and 2100 RPM. Transmission torque converter lockup valve may disengage below 1650 RPM resulting in loss of engine power.

1. Set transmission range selector (1) to lower range as needed to keep engine speed on tachometer (2) between 1650 and 2100 RPM.

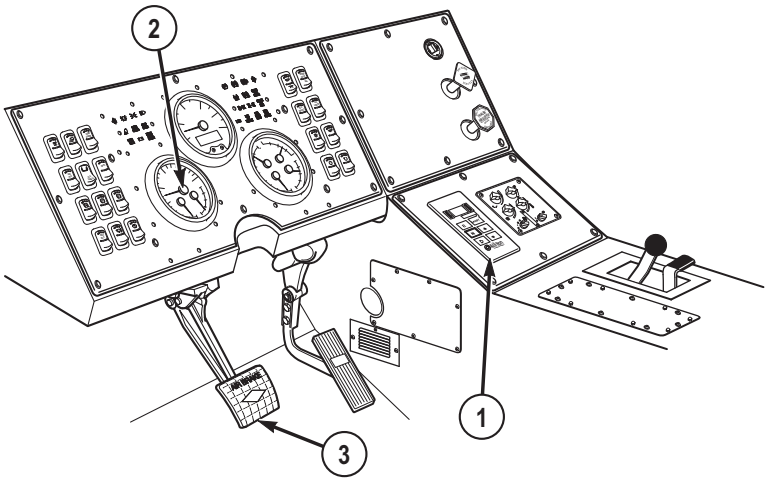


Figure 2.

WARNING



Do not press service brake treadle hard three or four times in a row. Air supply will be used up and service brakes will not work until air is built up again. Failure to comply may result in injury or death to personnel.

2. Use service brake pedal (3) as needed to control vehicle speed.
3. Operate engine brake (WP 0048) as required.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
DRIVE VEHICLE IN SLIPPERY CONDITIONS

INITIAL SETUP:

Not Applicable

OPERATE VEHICLE

CAUTION

Do not move traction control switch while vehicle is moving. Damage to drive line may result.

NOTE

- The traction control switch has three positions:
  .
- After traction control switch is positioned on, let vehicle creep forward several feet to allow shift collars to fully engage.

1. If TRANSFER CASE shift lever (1) is set to LO, 8X8 is automatically engaged and indicator light (4) will illuminate. Set traction control switch (2) to INTER AXLE. Indicator light (3) will come on.

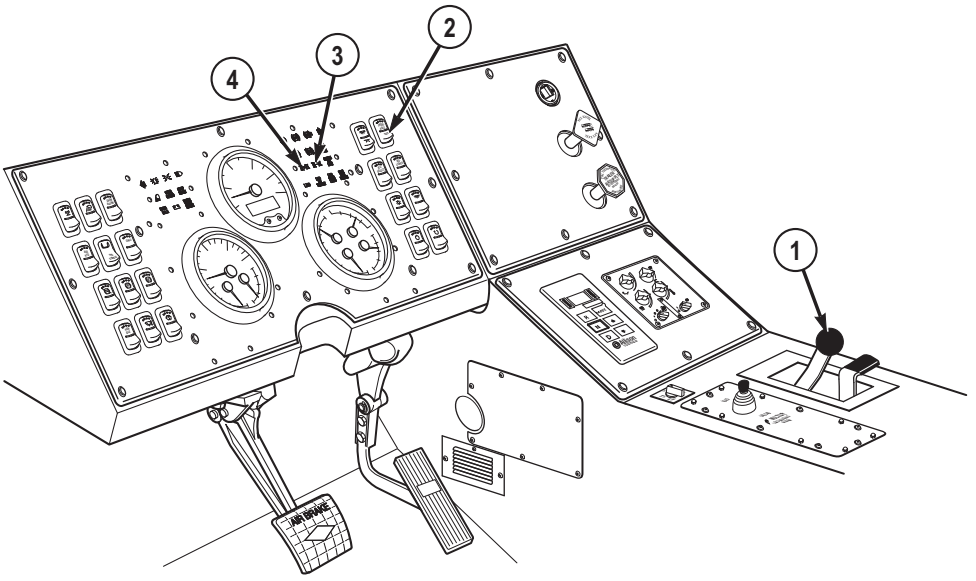


Figure 1.

2. If TRANSFER CASE shift lever (1) is set to HI, set traction control switch (2) to 8X8. Indicator light (4) will come on.

CAUTION

Do not move traction control switch while vehicle is moving. Damage to drive line may result.

NOTE

After traction control switch is positioned off, let vehicle creep forward several feet to allow shift collars to fully disengage.

3. When vehicle gets good traction again, stop vehicle and set traction control switch (2) to off (center) position. Indicator light (3 or 4 as applicable) will go out.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
PARK VEHICLE

INITIAL SETUP:

Not Applicable

OPERATE VEHICLE

1. Lift foot off throttle pedal (1). Let automatic downshifting of transmission slow vehicle.

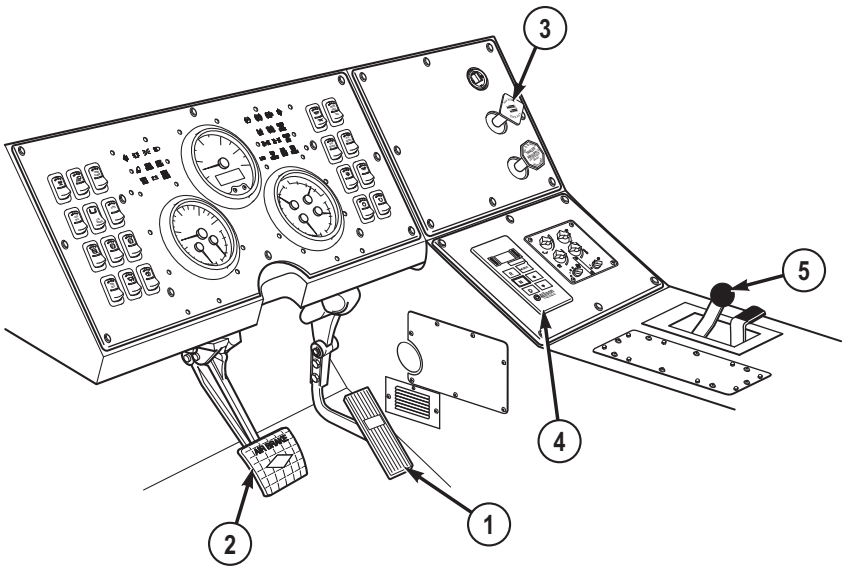


Figure 1.

WARNING

Do not press service brake treadle hard three or four times in a row. Air supply will be used up and service brakes will not work until air is built up again. Failure to comply may result in injury or death to personnel.

2. Push down on service brake pedal (2) until vehicle comes to complete stop.

NOTE

Dashboard parking brake indicator illuminates when PARKING BRAKE control is applied.

3. Pull out PARKING BRAKE control (3).
4. Set transmission range selector (4) to N (neutral).
5. Leave TRANSFER CASE shift lever (5) set to HI or LO.
6. Align front tires in straight-ahead position.
7. Install wheel chocks (WP 0073) as required.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
SHUT OFF ENGINE

INITIAL SETUP:

Not Applicable

SHUT OFF ENGINE

1. Park vehicle. (WP 0055)

CAUTION

Before shutting down engine, run at reduced speed (800 to 1000 rpm) at no-load for three to five minutes to allow turbocharger to slow down and cool off. Turbocharger may be damaged if not allowed to cool off.

2. Push down and hold throttle pedal (1) until tachometer (2) reads 800 to 1000 rpm for three to five minutes.

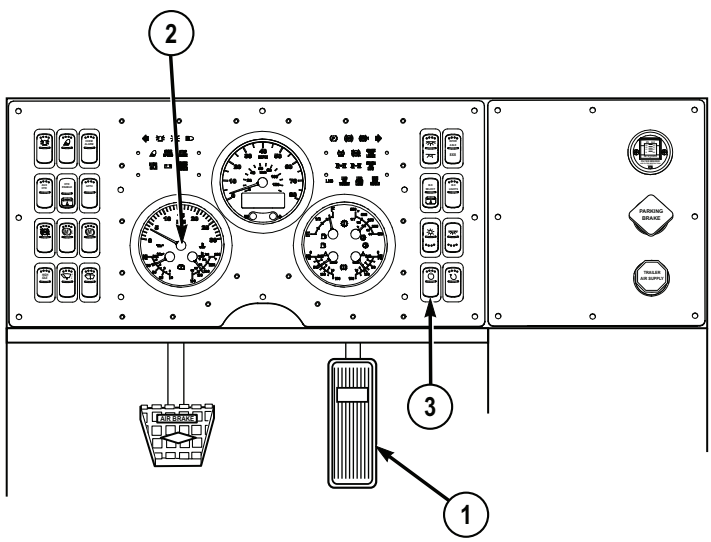


Figure 1.

3. Lift foot off throttle pedal (1).

CAUTION

Failure to place light switches in OFF position when vehicle is not in use may cause battery and/or vehicle damage.

4. Turn off lights as required.
5. Set ignition switch (3) to off (down) position.
6. Turn 24V battery disconnect switch (4) to OFF position. (WP 0075)

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATE RIFLE STOWAGE MOUNT

INITIAL SETUP:

Not Applicable

STOW RIFLE IN STOWAGE MOUNT

1. Position butt (1) of M-16 rifle (2) in lower mount (3) with trigger guard (4) toward rear of vehicle.

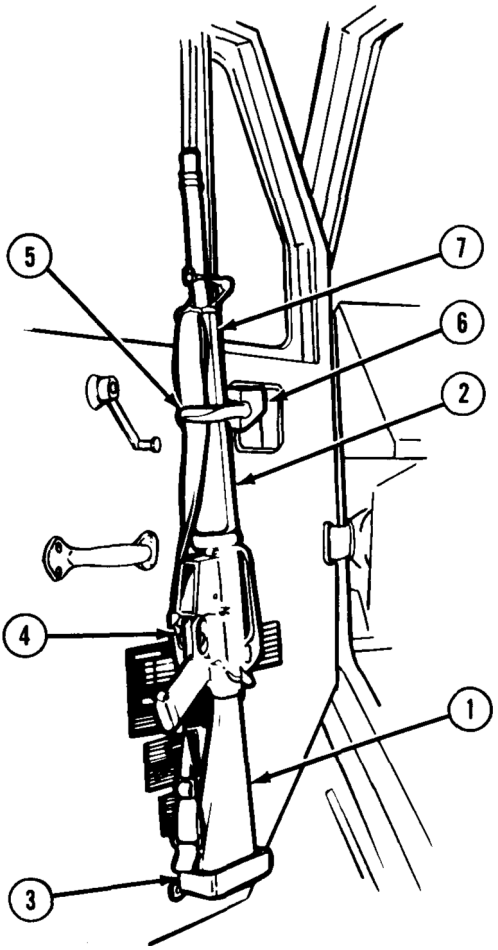


Figure 1.

2. Pull handle (5) of top mount (6) toward middle of cab.
3. Place heat guard (7) of M-16 rifle (2) in top mount (6).
4. Push handle (5) across heat guard (7).
5. Check that M-16 rifle (2) is held tightly.

REMOVE RIFLE FROM STOWAGE MOUNT

1. Pull handle (1) of top mount (2) down and toward middle of cab.

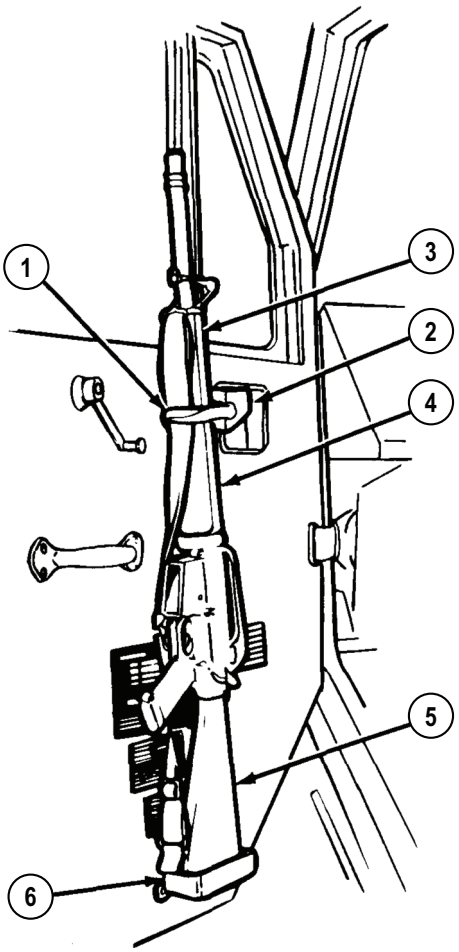


Figure 2.

2. Remove heat guard (3) of M-16 rifle (4) from top mount (2).
3. Remove butt (5) of M-16 rifle (4) from lower mount (6).

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
CONNECT/DISCONNECT AUXILIARY HYDRAULIC EQUIPMENT

INITIAL SETUP:

Not Applicable

CONNECT AUXILIARY HYDRAULIC EQUIPMENT

1. Position vehicle for auxiliary hydraulic connection.
2. Shut off engine (WP 0056).
3. Set HYD ENABLE switch (1) to off position. MAIN HYD ENABLE indicator (2) will go out.

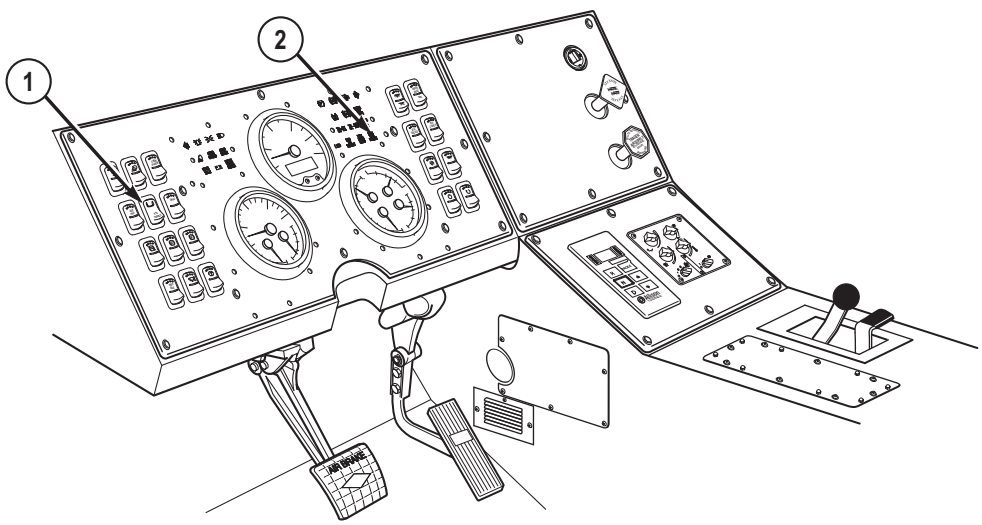


Figure 1.

CAUTION

Do not move SELECTOR VALVE while PTO is engaged or vehicle hydraulic equipment may be damaged.

4. Push in hydraulic selector valve control for tanker pump operation.

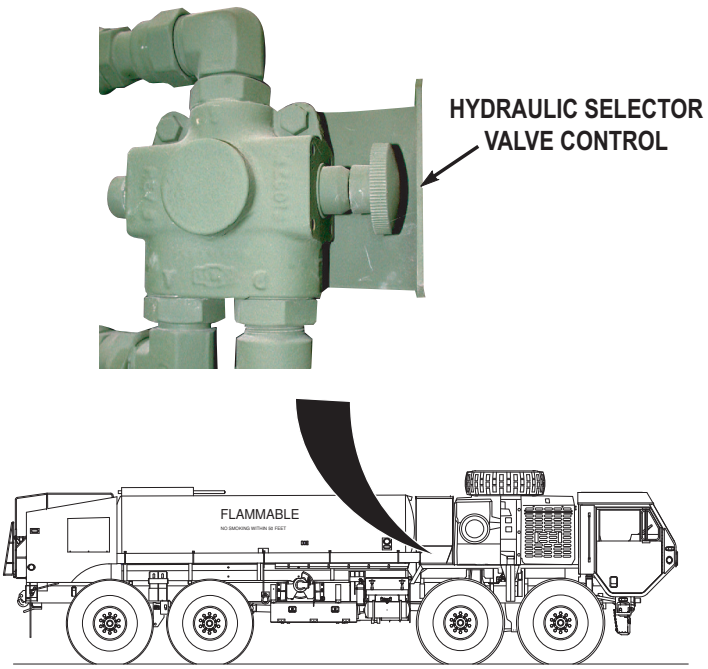


Figure 2.

5. Set HYD ENABLE switch (1) to on position. MAIN HYD ENABLE indicator (2) will illuminate.

WARNING

Stand clear to avoid injury when operating pump module rear doors. When each door is about halfway open, gas pistons push doors open quickly and with much force. Failure to comply may result in injury or death to personnel.

6. Open driver side pump module rear door (3).

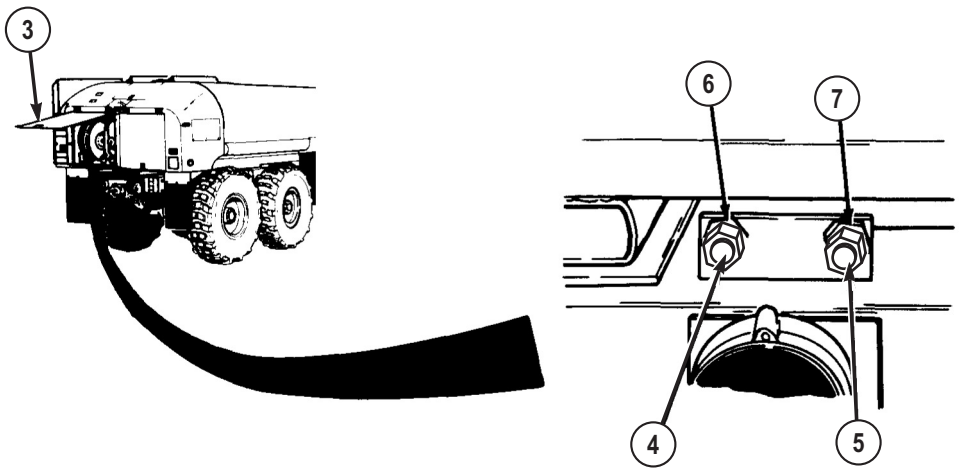


Figure 3.

NOTE

Small amount of hydraulic fluid may leak out when caps are removed.

7. Remove return line cap (4) and supply line cap (5).
8. Connect hydraulic lines from auxiliary hydraulic equipment to return fitting (6) and supply fitting (7).
9. Start engine (WP 0043).
10. Lift latch (8) and pull pump engagement lever (9) completely back.

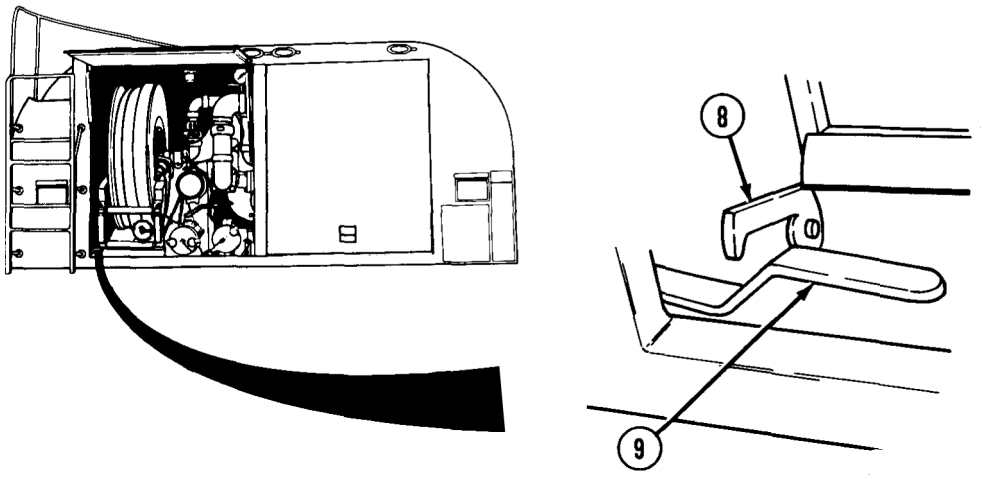


Figure 4.

11. Continue operation of auxiliary hydraulic equipment.

DISCONNECT AUXILIARY HYDRAULIC EQUIPMENT

1. Shutdown auxiliary hydraulic equipment.
2. Lift latch (1) and push pump engagement lever (2) to off (center position).

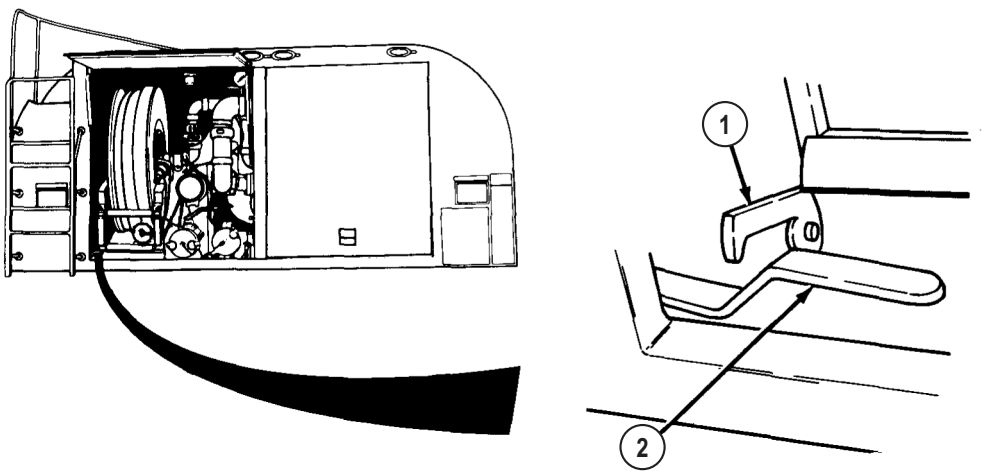


Figure 5.

3. Shut off engine (WP 0056).

4. Disconnect hydraulic lines from auxiliary hydraulic equipment from return fitting (5) and supply fitting (6).

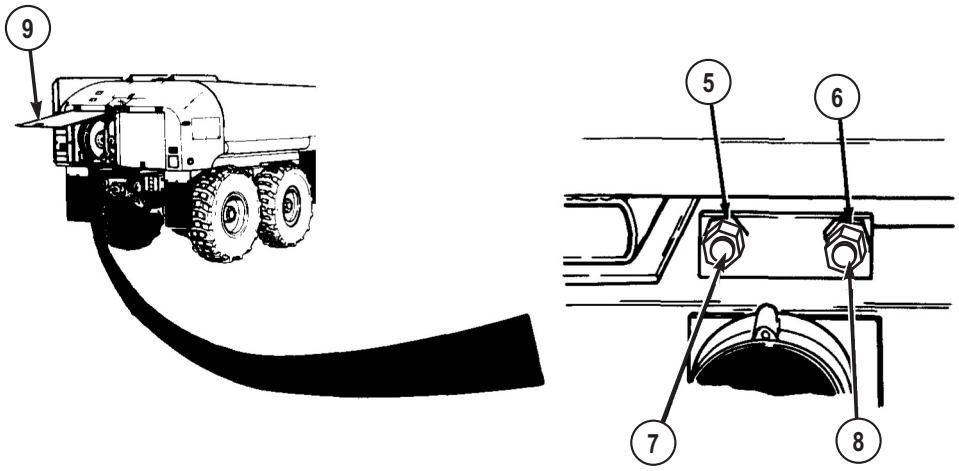


Figure 6.

5. Install return line cap (7) and supply line cap (8).
6. Close left-side pump module rear door (9).
7. Pull out hydraulic selector valve control for tanker pump operation.

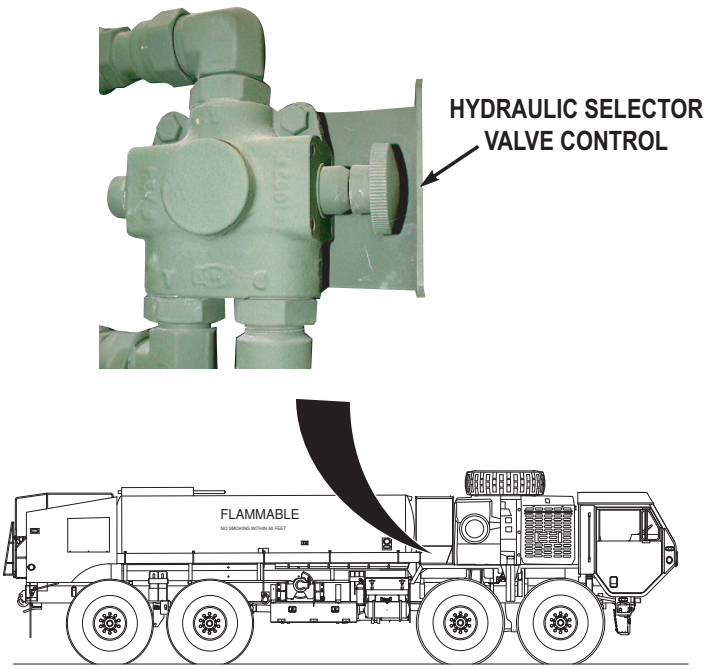


Figure 7.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
PORTABLE WORK LAMP OPERATION

INITIAL SETUP:

Not Applicable

INSTALL/OPERATE/REMOVE PORTABLE WORK LAMP

NOTE

Ensure that 24V battery disconnect switch is ON (WP 0075) before operating work lamp.

1. Remove work lamp (1) and work lamp harness (2) from stowage.

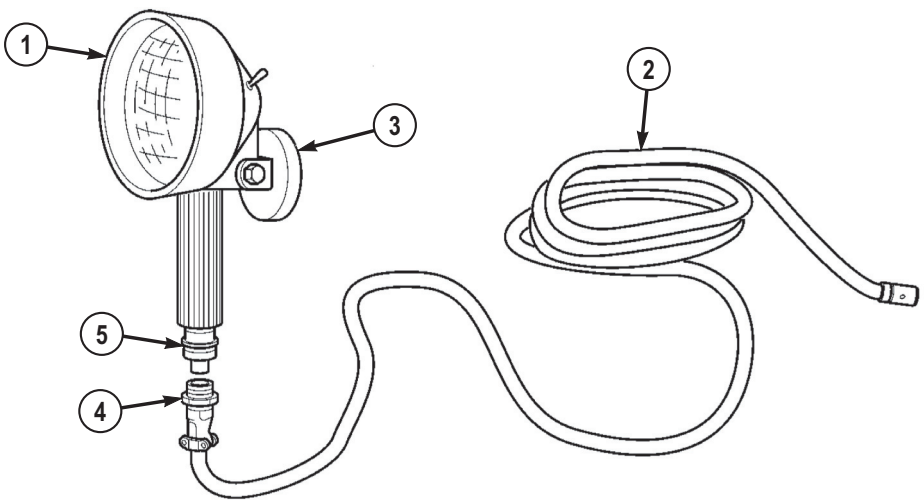


Figure 1.

2. Mount work lamp (1) on vehicle using magnet (3).
3. Install work lamp harness plug (4) on work lamp terminal (5).
4. Route work lamp harness (2) through driver side door opening (6), between inside of cab roof (7) and air horn valve hoses (8).

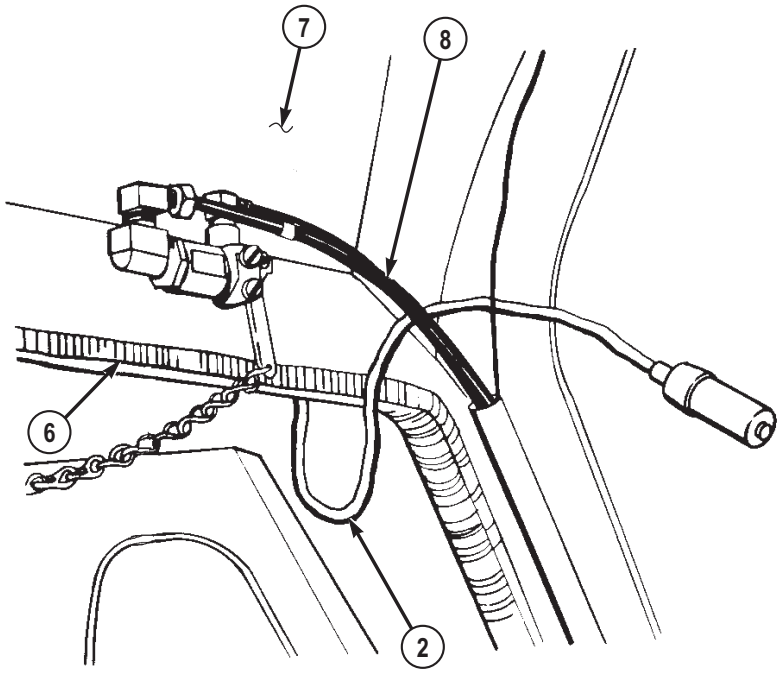


Figure 2.

5. Route work lamp harness (2) across driver side defroster (9) and across center dash panel (10) to utility outlet (11).

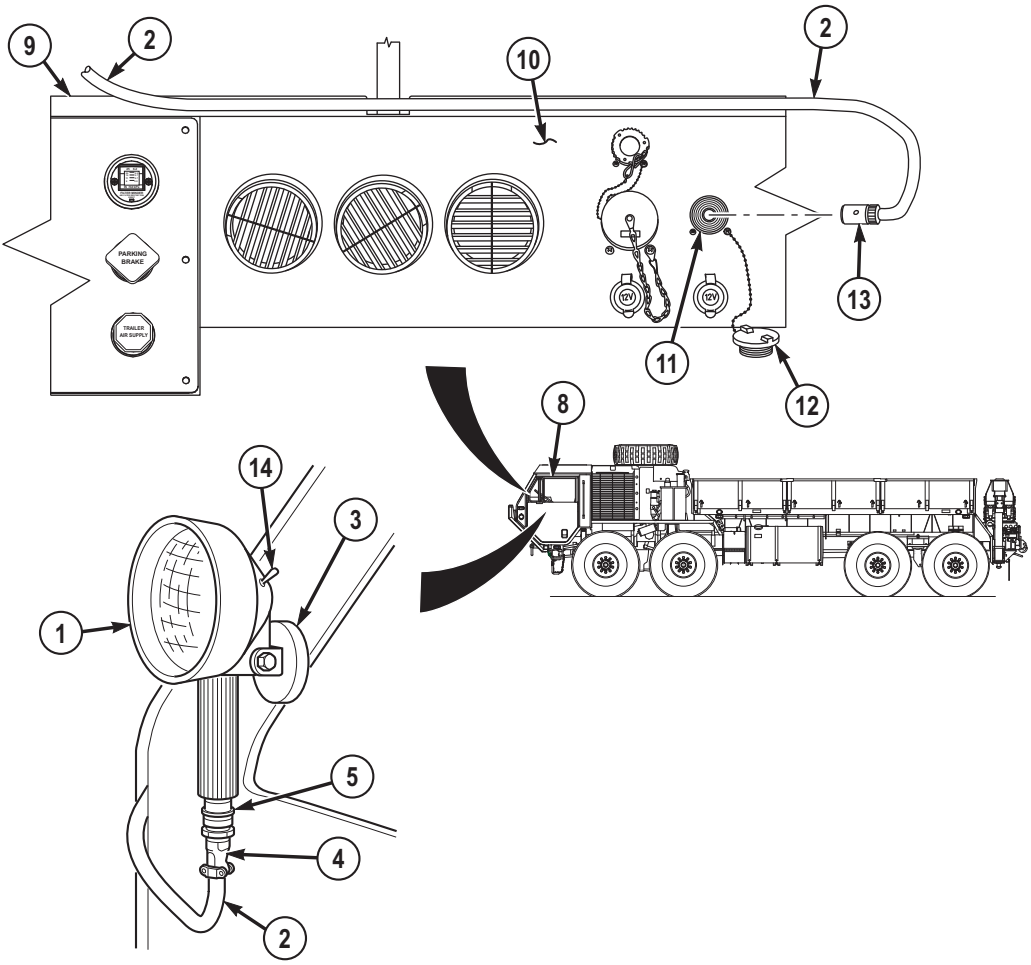


Figure 3.

6. Remove utility outlet cover (12). Insert work lamp harness plug (13) into utility outlet (11).

NOTE

Ignition switch must be positioned to on for portable work lamp to operate.

7. Turn on work lamp (1) using toggle switch (14).

NOTE

Perform Steps (8) through (13) when use of the portable work lamp is no longer required.

8. Turn off work lamp (1) using toggle switch (14).
9. Remove work lamp harness plug (13) from utility outlet (11). Install utility outlet cover (12).
10. Remove work lamp harness (2) from interior of cab.
11. Remove work lamp harness plug (4) from work lamp terminal (5).
12. Disengage magnet (3) from vehicle.
13. Return work lamp (1) and work lamp harness (2) to proper stowage.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATE DOME LIGHT

INITIAL SETUP:

Not Applicable

TURN DOME LIGHT ON/OFF

CAUTION

Failure to place light switches in off position when vehicle is not in use may cause battery and/or vehicle damage.

NOTE

- Dome light is located on very rear of cabin overhead centered between operator and crew seats.
- Dome light switch is a 2-position switch; down is off, up is on.
- Dome light is disabled when B.O. SELECT switch is positioned on.
- Ensure that the 24V battery disconnect switch is set to ON position (WP 0075) before operating lights.

1. Set DOME switch (1) to on/off position as required.

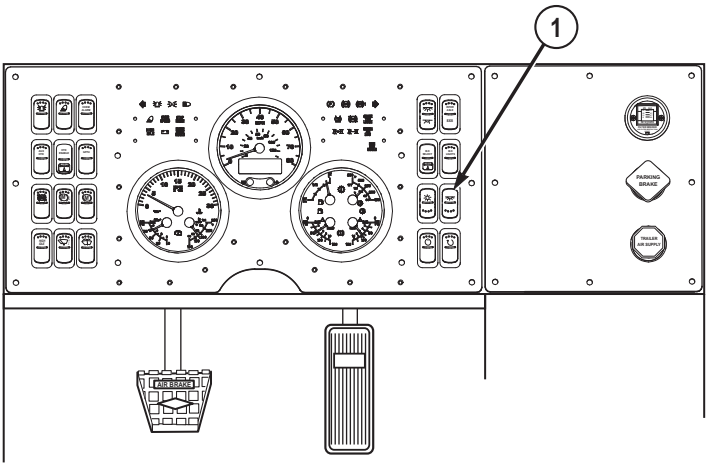


Figure 1.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATE PANEL LIGHTS

INITIAL SETUP:

Not Applicable

TURN PANEL LIGHTS ON/OFF

CAUTION

Failure to place light switches in the off position when vehicle is not in use may cause battery and/or vehicle damage.

NOTE

Ensure that the 24V battery disconnect switch is set to ON position (WP 0075) before operating lights.

1. Set ignition switch (1) to on position.

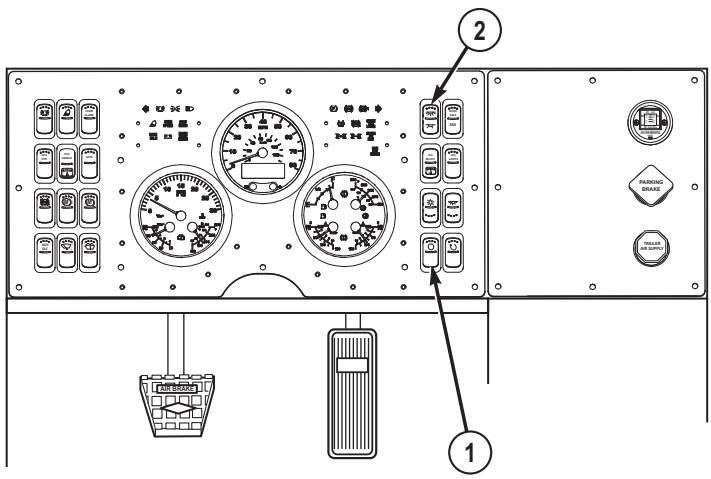


Figure 1.

NOTE

- The dimmer switch is a two-position momentary switch. Each upward/downward momentary depression of the switch will increase/decrease panel light intensity by 5%.
- Pressing and holding dimmer switch up for 3+ seconds will increase panel light intensity to 100%.
- Pressing and holding dimmer switch down for 3+ seconds will decrease panel light intensity to 10%.

2. Adjust panel light brightness using dimmer switch (2).

NOTE

Complete Step (3) when panel lights are no longer required.

3. Set ignition switch (1) to off position.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATE PARKING LIGHTS

INITIAL SETUP:

Not Applicable

TURN PARKING LIGHTS ON/OFF

CAUTION

Failure to place light switches in the off position when vehicle is not in use may cause battery and/or vehicle damage.

NOTE

- The master lighting switch is a three-position switch:
  .
- Ensure that the 24V battery disconnect switch is set to ON position (WP 0075) before operating lights.
- Clearance lights indicator will illuminate whenever master light switch is moved out of off position.

1. Set master lighting switch (1) up one click to center position, clearance light indicator (2) will illuminate.

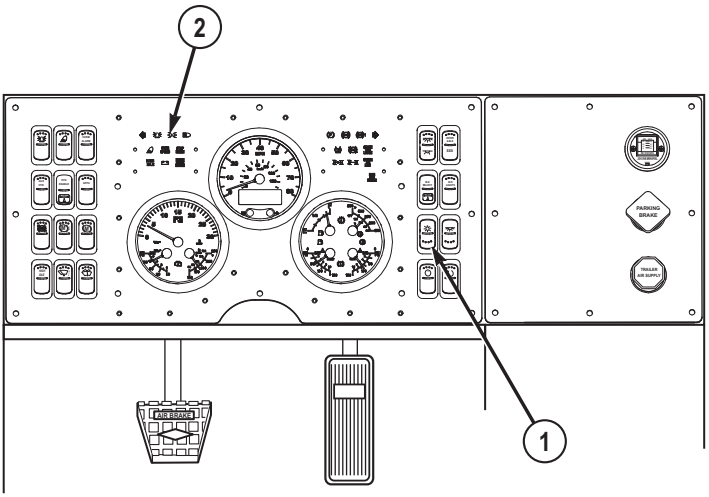


Figure 1.

NOTE

Complete Step (2) when parking lights are no longer required.

2. Position master lighting switch (1) down one click to off position, clearance light indicator (2) will go out.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATE SERVICE DRIVE LIGHTS

INITIAL SETUP:

Not Applicable

TURN SERVICE DRIVE LIGHTS ON/OFF

CAUTION

Failure to place light switches in the off position when vehicle is not in use may cause battery and/or vehicle damage.

NOTE

- The master lighting switch is a three-position switch:
  .
- Ensure that the 24V battery disconnect switch is set to ON position (WP 0075) before operating lights.
- For full explanation of clearance lights, go to operate clearance lights . (WP 0065)
- Clearance lights indicator will illuminate whenever master light switch is moved out of off position.

1. Position master lighting switch (1) up two clicks to full up position, clearance light indicator (2) will illuminate. Service headlights (3), composite lights (4), taillights (5), and clearance lights (6) will illuminate.

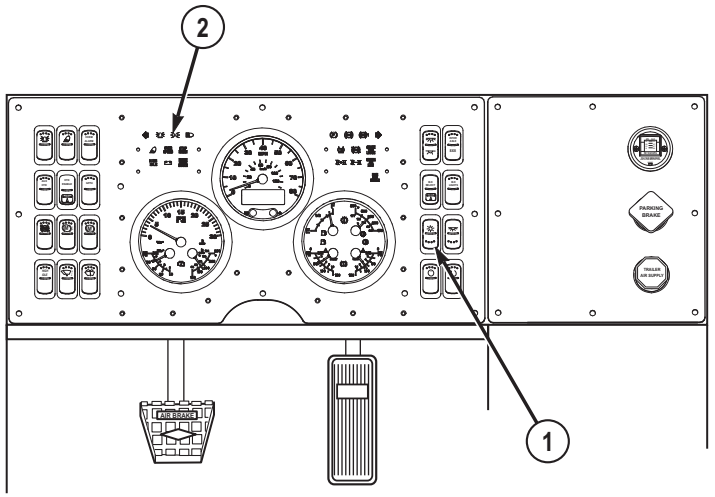


Figure 1.

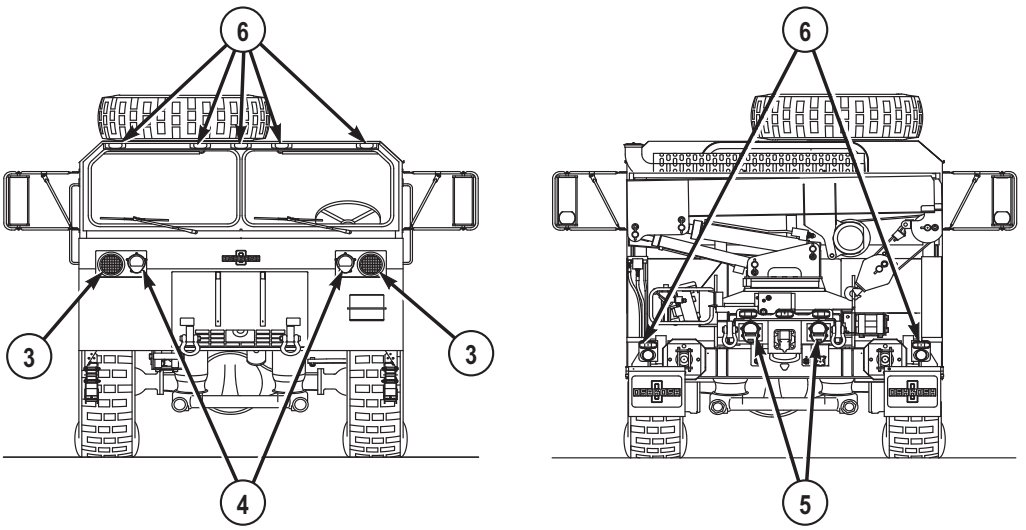


Figure 2.

NOTE

Service stop lights (incorporated in taillights) will illuminate when service brake pedal is applied.

2. Press dimmer switch (7) to cycle between high and low headlight beams. High beam indicator (8) will illuminate (blue) when high beams are selected.

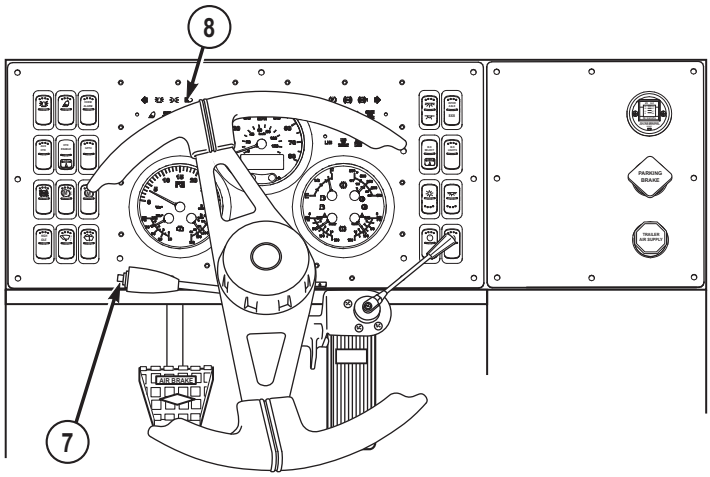


Figure 3.

NOTE

Complete Step (3) when service drive lights are no longer required.

3. Position master lighting switch (1) down two clicks to off position, clearance light indicator (2) will go out.

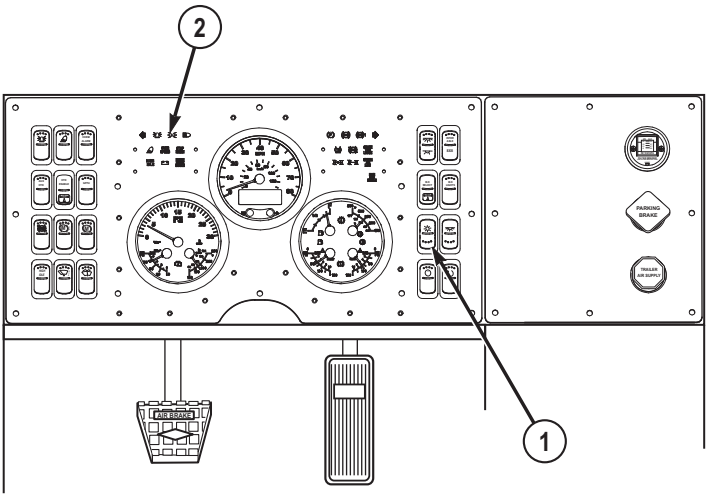


Figure 4.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATE STOPLIGHTS

INITIAL SETUP:

Not Applicable

TURN STOPLIGHTS ON/OFF

NOTE

Ensure that the 24V battery disconnect switch is set to ON position (WP 0075) before operating lights.

1. Stoplights (1) will illuminate when service brake pedal (2) is applied.

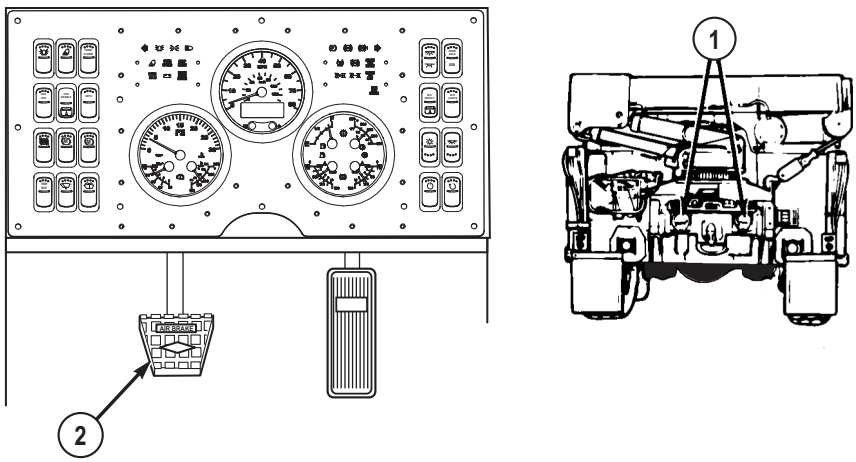


Figure 1.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATE CLEARANCE LIGHTS

INITIAL SETUP:

Not Applicable

TURN CLEARANCE LIGHTS ON/OFF

CAUTION

Failure to place light switches in the OFF position when vehicle is not in use may cause battery and/or vehicle damage.

NOTE

- The master lighting switch is a three-position switch:
  .
- Ensure that the 24V battery disconnect switch is set to ON position (WP 0075) before operating lights.
- Clearance lights indicator will illuminate whenever master light switch is moved out of off position.

1. Set master lighting switch (1) up one or two clicks; clearance light indicator (2) and clearance lights (3) will illuminate.

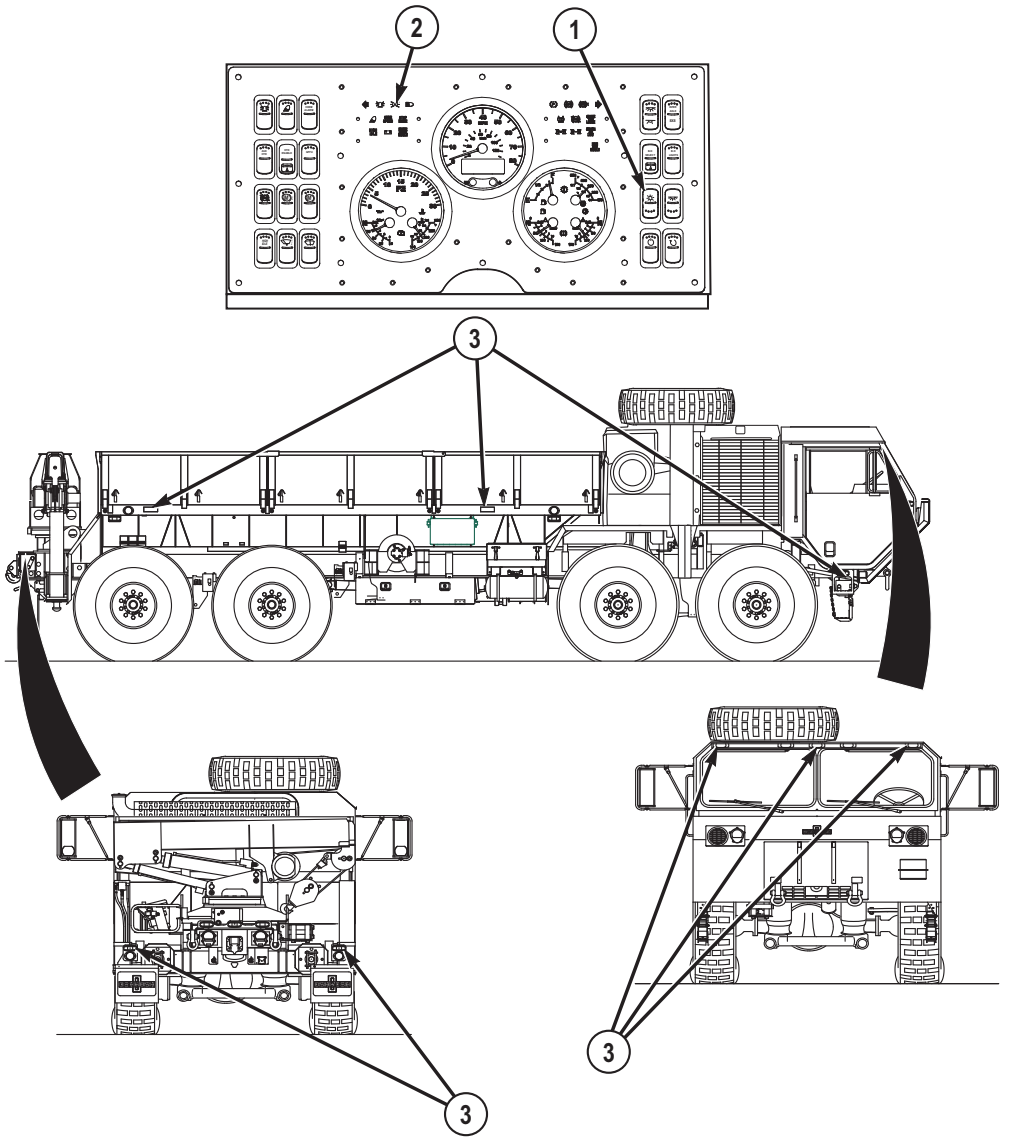


Figure 1.

NOTE

Complete Step (2) when clearance lights are no longer required.

2. Set master lighting switch (1) full down to off position; clearance light indicator (2) and clearance lights (3) will go out.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATE BLACKOUT DRIVE LIGHT

INITIAL SETUP:

Not Applicable

TURN BLACKOUT DRIVE LIGHT ON/OFF

CAUTION

Failure to place light switches in the OFF position when vehicle is not in use may cause battery and/or vehicle damage.

NOTE

- The B.O. LIGHTS switch is a three-position switch:
  .
- Ensure that the 24V battery disconnect switch is set to ON position (WP 0075) before operating lights.
- Use blackout drive light for night driving under blackout conditions.
- Master lighting switch, dome light switch, work light switch, beacon light switch, electric horn (on steering column), and reverse alarm are disabled when B.O. SELECT switch is positioned on.

1. Set B.O. SELECT switch (1) to on position.

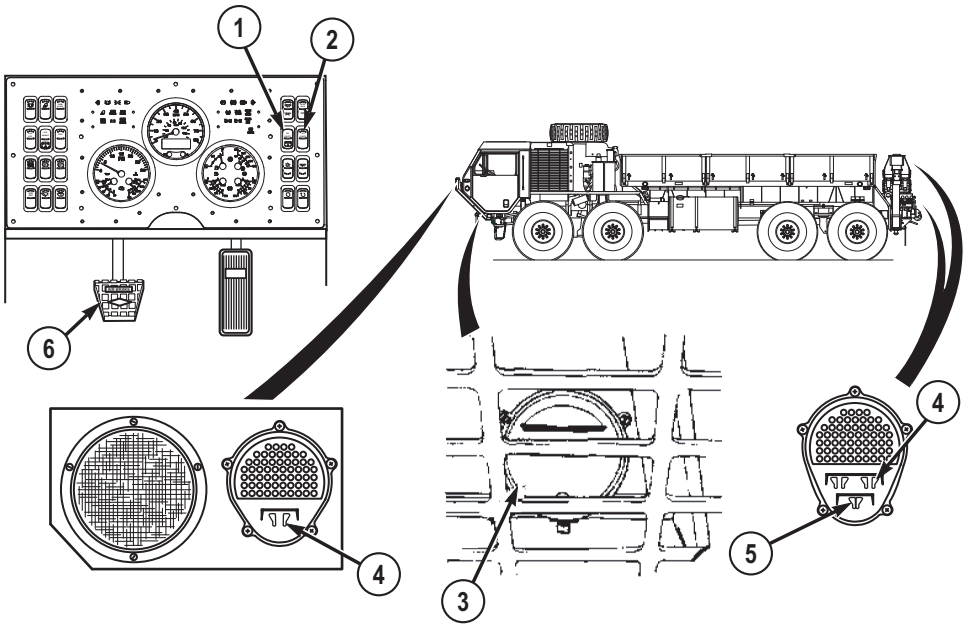


Figure 1.

2. Set B.O. LIGHTS switch (2) up two clicks. Blackout drive light (3) and blackout markers (4) will illuminate.
3. Blackout stoplights (5) will illuminate when service brake pedal (6) is applied.

NOTE

Complete Steps (4) and (5) when blackout lights are no longer required.

4. Set B.O. LIGHTS switch (2) down two clicks to off position. Blackout drive light (3) and blackout markers (4) will go out.
5. Lift switch lock and set B.O. SELECT switch (1) off position.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATE BLACKOUT MARKERS

INITIAL SETUP:

Not Applicable

TURN BLACKOUT MARKERS ON/OFF

CAUTION

Failure to place light switches in the OFF position when vehicle is not in use may cause battery and/or vehicle damage.

NOTE

- The B.O. LIGHTS switch is a three-position switch:
  .
- Ensure that the 24V battery disconnect switch is set to ON position (WP 0075) before operating lights.
- Master lighting switch, dome light switch, work light switch, beacon light switch, electric horn (on steering column), and reverse alarm are disabled when B.O. SELECT switch is positioned on.

1. Set B.O. SELECT switch (1) to on position.

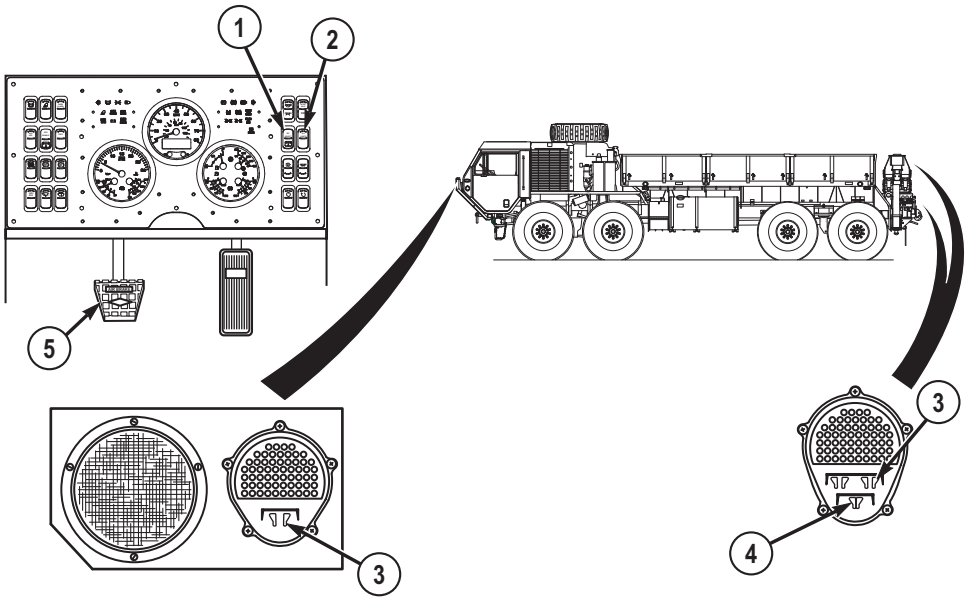


Figure 1.

2. Set B.O. LIGHTS switch (2) up one click to center position. Blackout markers (3) will illuminate.
3. Blackout stoplight markers (4), which are located on vehicle taillights, will illuminate when service brake pedal (5) is applied.

NOTE

Complete Steps (4) and (5) when blackout markers are no longer required.

4. Set B.O. LIGHTS switch (2) one click to off position. Blackout markers (3) will go out.
5. Lift switch lock and set B.O. SELECT switch (1) to off position.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATE WORK LIGHTS

INITIAL SETUP:

Not Applicable

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATE TANKER MODULE LIGHTS

INITIAL SETUP:

Not Applicable

TURN TANKER MODULE LIGHTS ON/OFF

CAUTION

Failure to place light switches in the off position when vehicle is not in use may cause battery and/or vehicle damage.

NOTE

- Ensure that the 24V battery disconnect switch is set to ON position (WP 0075) before operating lights.
- Tanker module has one light on each side, operated in the same fashion.
- Ignition switch is a two-position switch; up is on, down is off.

1. Set ignition switch (1) to on position.

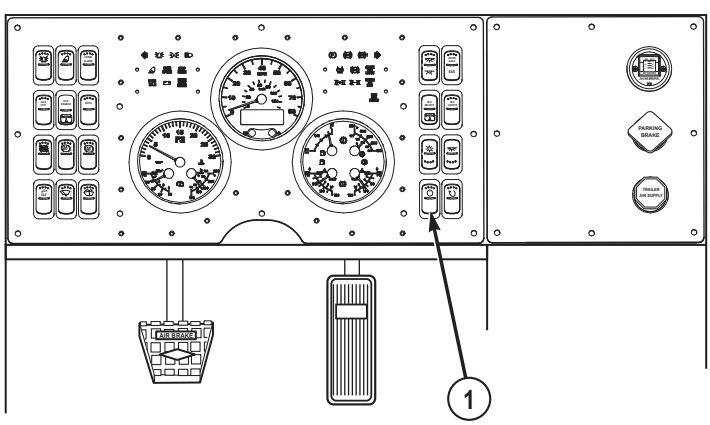


Figure 1.

2. Open pump module rear doors (2).

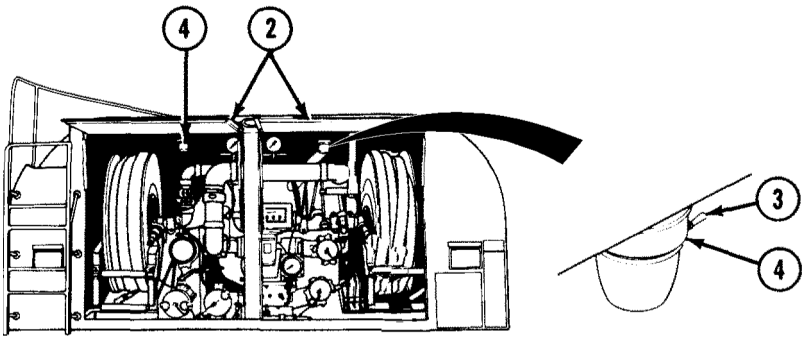


Figure 2.

3. Pull switch (3) to down position to turn desired tanker module light (4) on.

NOTE

Perform Steps (4) through (6) when use of tanker module light(s) are no longer needed.

4. Push switch (3) to up position to turn desired tanker module light (4) off.
5. Close pump module rear doors (2).
6. Set ignition switch (1) to off position.

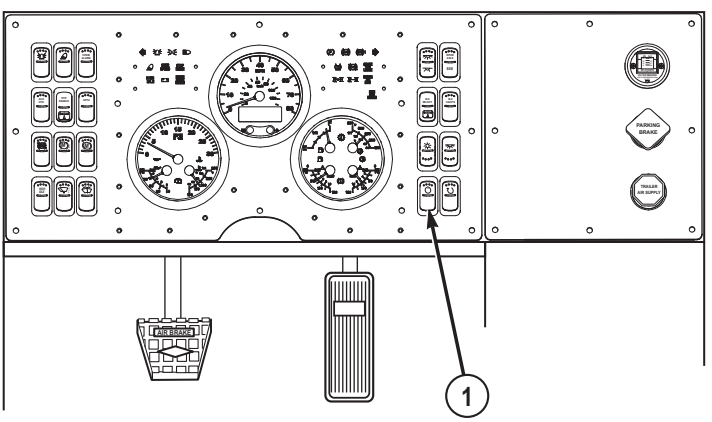


Figure 3.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
PORTABLE BEACON LIGHT OPERATION

INITIAL SETUP:

Not Applicable

INSTALL/REMOVE PORTABLE BEACON LIGHT

NOTE

Ensure that the 24V battery disconnect switch is set to ON position (WP 0075) before operating lights.

1. Remove beacon light (1) from stowage and unwind cord (2).

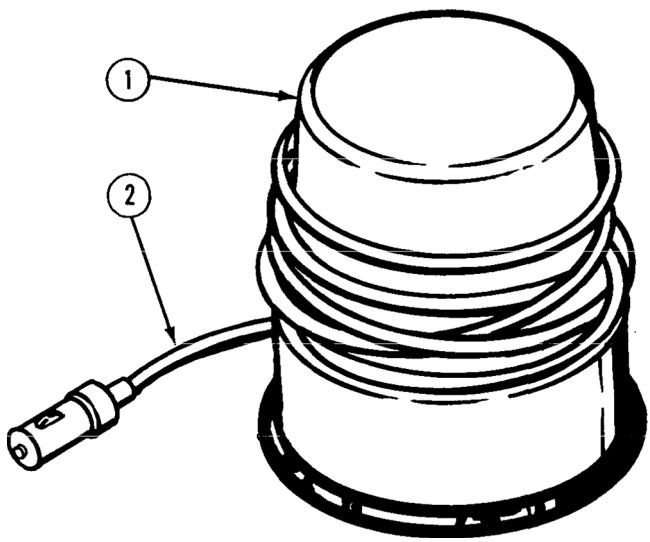


Figure 1.

2. Place beacon light (1) on driver side front corner of cab roof (3) approximately 12 in. (30 cm) from driver side cab, and approximately 2 in. (5 cm) from front edge of cab roof.

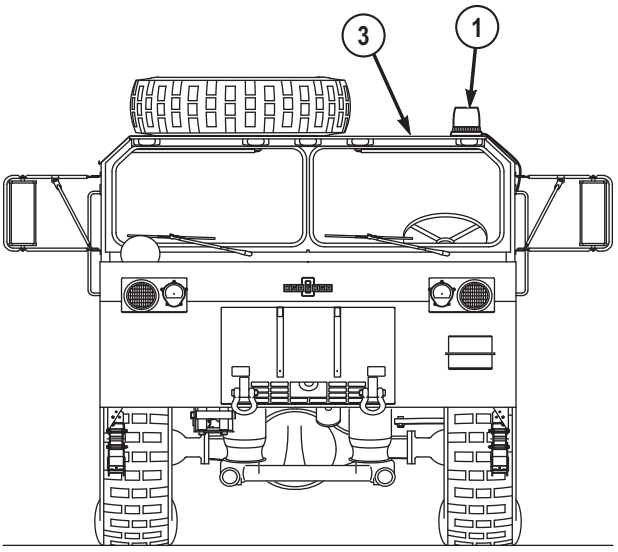


Figure 2.

3. Route beacon cord (2) through driver side door opening (4) and between inside of cab roof (3) and air horn valve hoses (5).

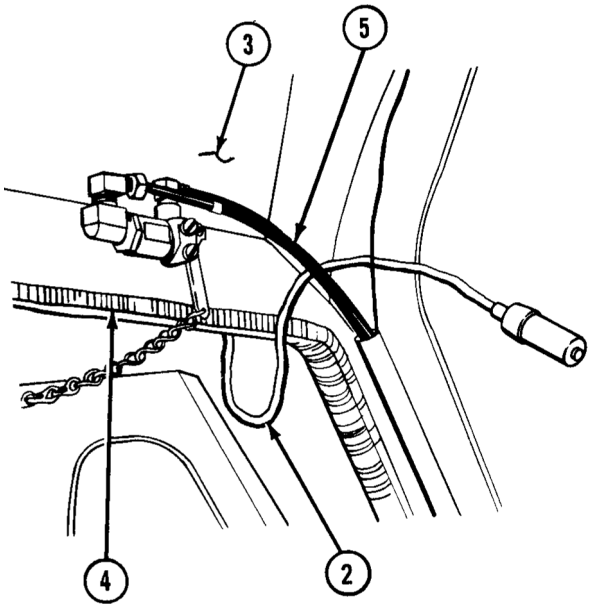


Figure 3.

4. Route beacon cord (2) down left side of driver's windshield (6), across driver side defroster (7), and across center dash panel (8) to utility outlet (9).

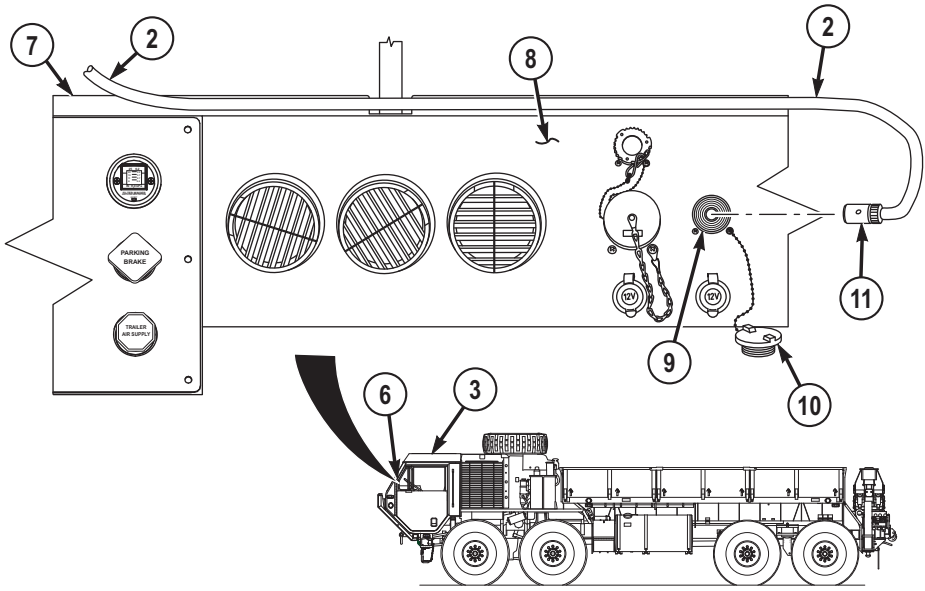


Figure 4.

5. Remove utility outlet cover (10).

NOTE

Ignition switch must be positioned to on for portable beacon light to operate.

6. Insert beacon cord plug (11) into utility outlet (9).

NOTE

Perform Steps (7) through (11) when use of portable beacon light is no longer required.

7. Remove beacon cord plug (11) from utility outlet (9).
8. Install utility outlet cover (10).
9. Remove beacon cord (2) from interior of cab.
10. Remove beacon light from cab roof (3).
11. Rewind cord (2) and return beacon light (1) to appropriate stowage.

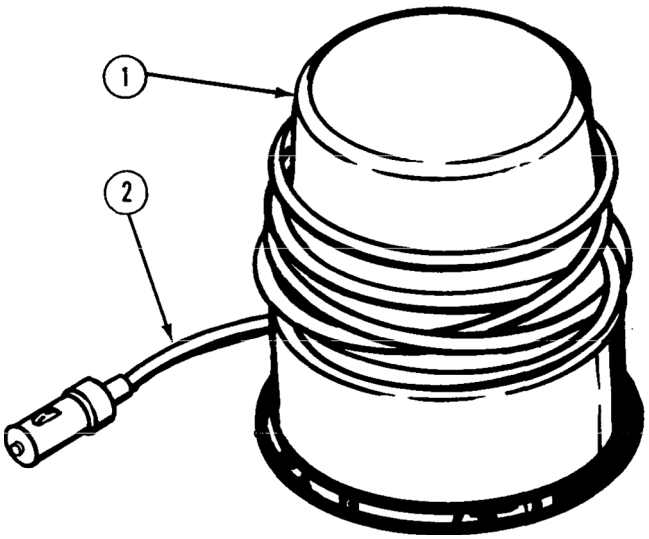


Figure 5.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATE TURN SIGNALS

INITIAL SETUP:

Not Applicable

SET TURN SIGNAL ON/OFF

NOTE

- Ensure that the 24V battery disconnect switch is set to ON position (WP 0075) before operating turn signals.
- If left turn is desired, complete Step (1). If right turn is desired, skip to Step (2).

1. Set turn signal lever (1) down to left turn position. Left turn indicator (2), and driver side front (3) and rear (4) composite lights will flash (approximately once per second) simultaneously.

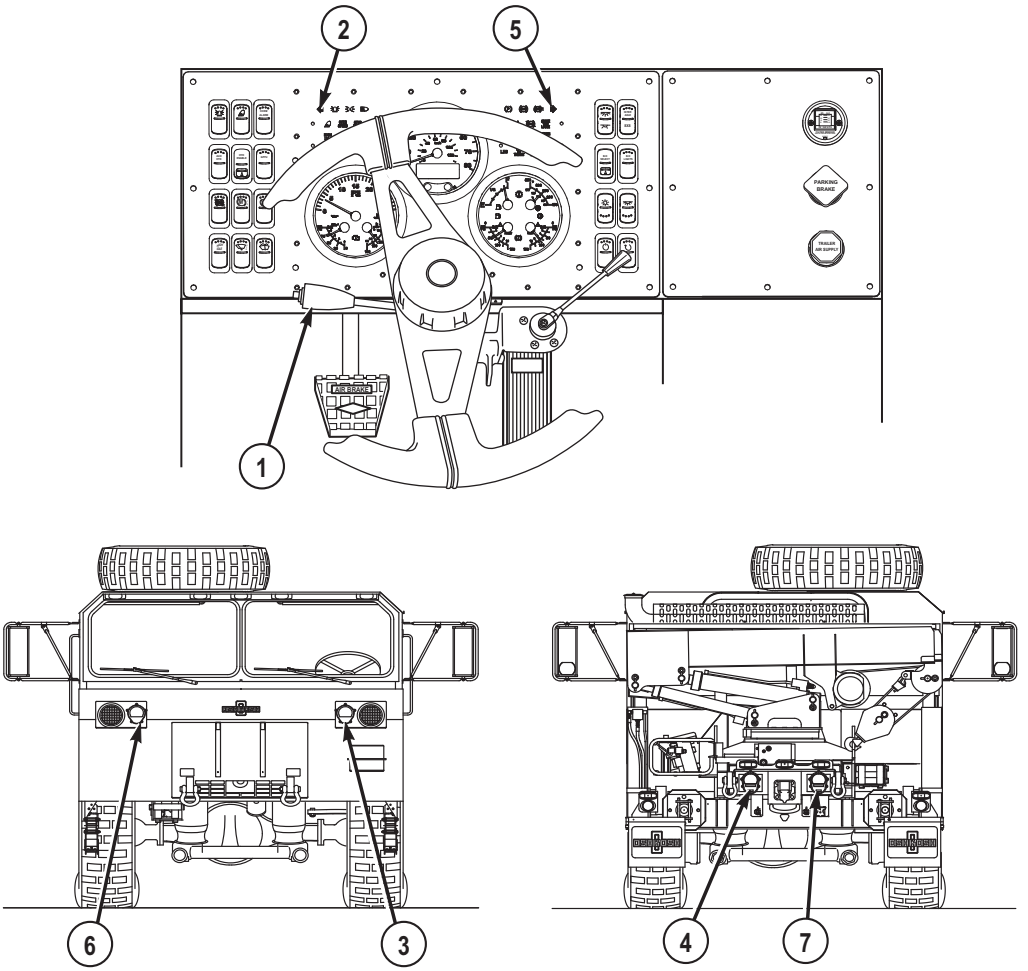


Figure 1.

NOTE

If right turn is desired, complete Step (2).

2. Set turn signal lever (1) up to right turn position. Right turn indicator (5), and passenger side front (6) and rear (7) composite lights will flash (approximately once per second) simultaneously.

NOTE

Turn signal level may return to off (center) position automatically once turn is complete, if this is not the case and/or turn signal is no longer desired, complete Step (3).

3. Set turn signal control lever (1) to off (center) position. Appropriate turn indicator and composite lights will go out.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATE EMERGENCY FLASHERS

INITIAL SETUP:

Not Applicable

TURN EMERGENCY FLASHERS ON/OFF

NOTE

- Ensure that the 24V battery disconnect switch is set to ON position (WP 0075) before operating emergency flashers.
- Highway Emergency Marker Kit (WP 0106) should be used to mark location and caution oncoming traffic whenever vehicle is disabled or must park in areas where there is other traffic.

1. Push emergency flasher switch (1) in. Both left (2) and right (3) turn indicators, and front (4) and rear (5) composite lights will flash simultaneously at approximately once per second.

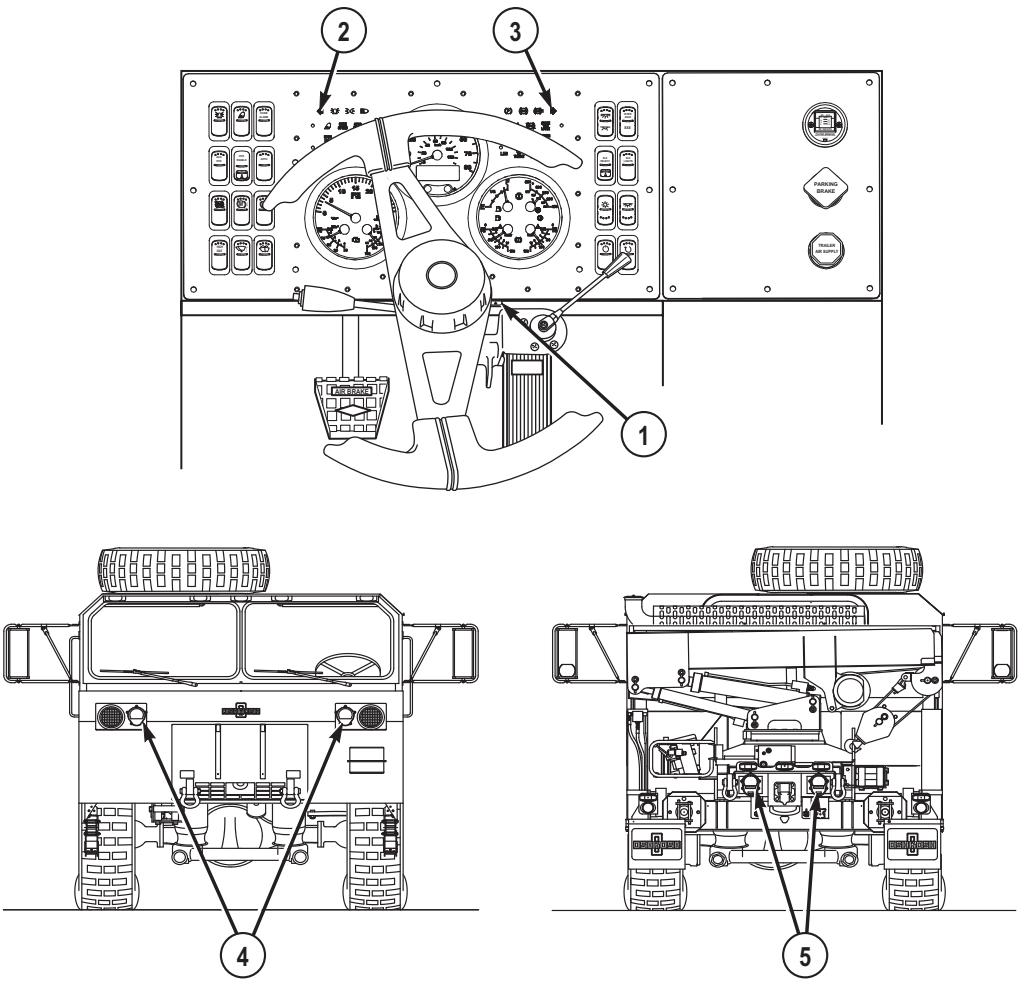


Figure 1.

NOTE

Perform Step (2) when emergency flashers are no longer desired.

2. Pull emergency flasher switch (1) out.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
INSTALL/REMOVE WHEEL CHOCKS

INITIAL SETUP:

Not Applicable

INSTALL WHEEL CHOCKS

NOTE

- Vehicle is equipped with four wheel chocks.
- Always chock tires if vehicle is shut down on uneven terrain.
- Always chock tires if vehicle parking brake is inoperative.
- Ensure local policy for chocking vehicle tires is followed.

1. Remove two wheel chocks (1) from stowage.

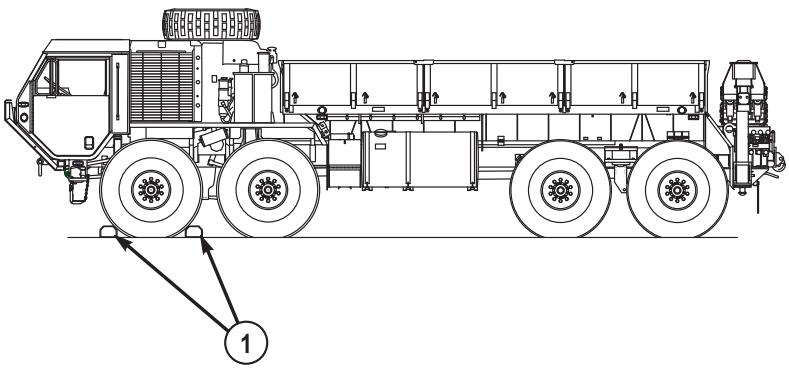


Figure 1.

2. Place one wheel chock (1) snugly against both front and rear of tire (No. 1 axle driver side tire shown).

REMOVE WHEEL CHOCKS

NOTE

- Vehicle is equipped with four wheel chocks.

- Ensure local policy for removing wheel chocks is followed.

1. Remove wheel chocks (1) from both front and rear of tire (No. 1 axle driver side tire shown).

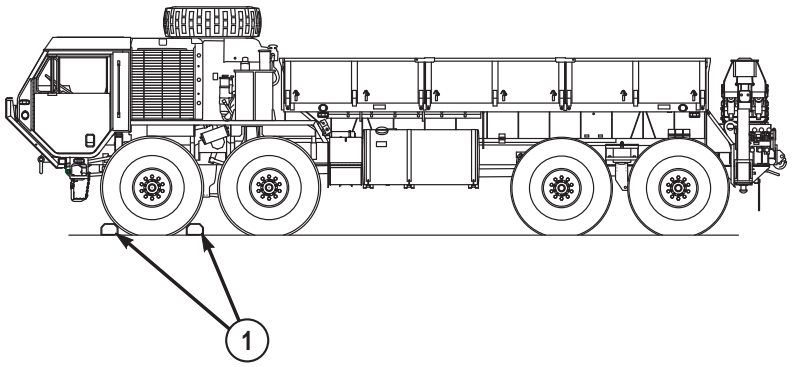


Figure 2.

2. Return wheel chocks (1) to stowage.
3. Repeat Steps (1) and (2) if more than one wheel is chocked.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
CHANGE VEHICLE WEIGHT INDICATOR

INITIAL SETUP:

Not Applicable

CHANGE VEHICLE WEIGHT INDICATOR

NOTE

Refer to load classification table for appropriate vehicle weight.

1. Press in bottom of lockplate (1).

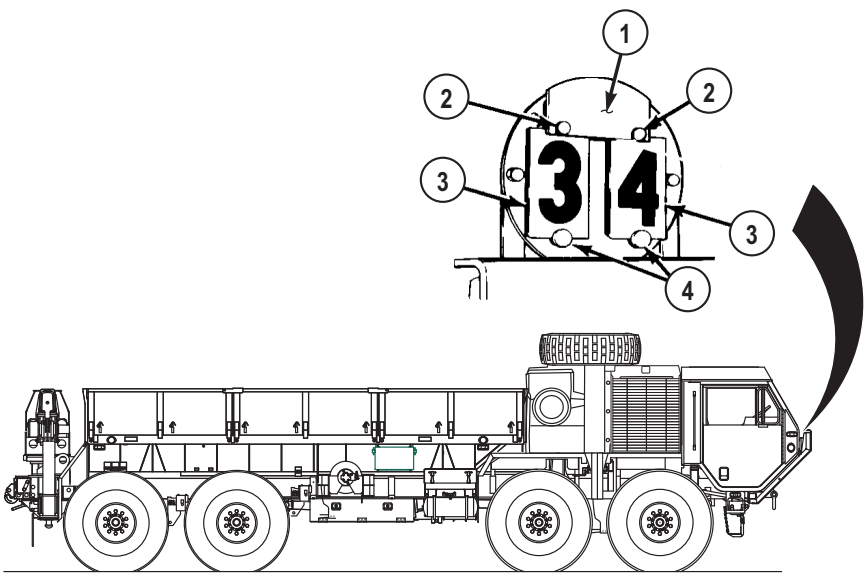


Figure 1.

2. Push lockplate (1) up and off one lockpin (2).
3. Remove number plates (3).
4. Place new number on top of number plates (3).
5. Install number plates (3) on lockpin (4).

6. Push down number plates (3). Slide lockplate (1) on lockpin (2).
7. Repeat Steps (1) through (7) to change other number.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATE 24V BATTERY DISCONNECT SWITCH

INITIAL SETUP:

Not Applicable

OPERATE 24V BATTERY DISCONNECT SWITCH

NOTE

All electrical power to the cab is turned ON/OFF by the 24V disconnect switch.

Turn switch (1) full clockwise (CW) to ON position or full counterclockwise (CCW) to OFF position as desired.

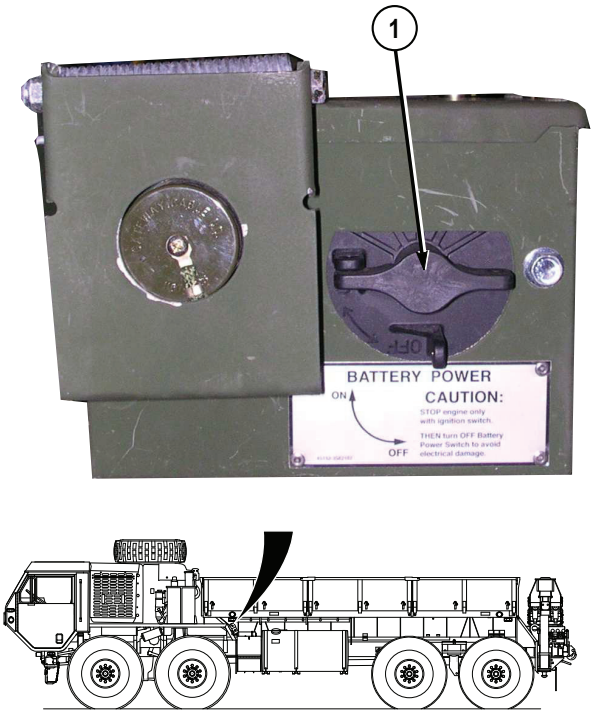


Figure 1.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
ADJUST AIR-RIDE SEAT

INITIAL SETUP:

Not Applicable

ADJUST AIR-RIDE SEAT

WARNING



When adjusting seat ride firmness, keep fingers out from under seat. Failure to comply may result in injury or death to personnel.

NOTE

- Sit in seat and perform Steps (1) through (6) as necessary.
- Driver and crew (passenger side) side seats are adjusted the same way.

1. Pull out (increase) or push in (decrease) knob (1) to adjust seat ride firmness.

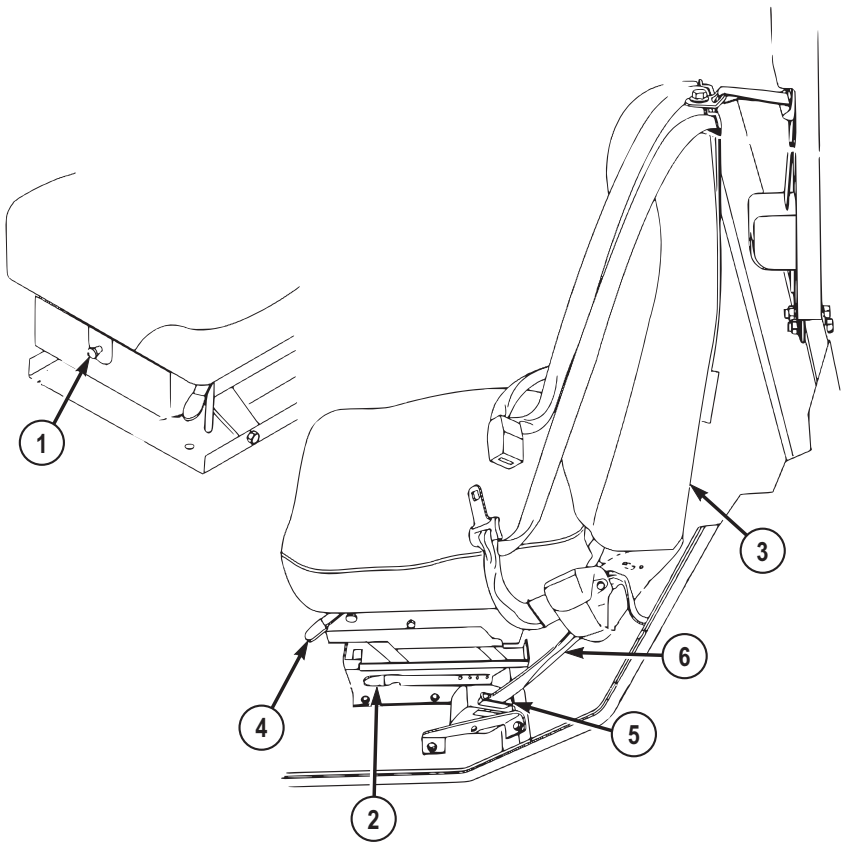


Figure 1.

2. Move lever (2) away from seat (3) and slide seat (3) forward or backwards.
3. Move lever (2) towards seat (3) to lock seat (3) in place.
4. Pull up lever (4) and lift self off seat (3) to raise, or pull up lever (4) and push down on seat (3) to lower.
5. Release lever (4) to lock seat (3) in place.
6. Adjust all vehicle mirrors as necessary once driver's seat is properly adjusted.

NOTE

If vehicle is bounced too hard, seat tether may lock seat in down position. Park vehicle (WP 0055) and perform Steps (7) through (10) to free seat.

7. Push in knob (1) to decrease seat ride firmness.

8. Move lever (2) away from seat (3), and slide seat (3) backwards to relieve tension on retractor (5).
9. Feed some seat tether (6) into retractor (5) until it releases.
10. Perform Steps (1) through (5) as required to reset seat (3) to desired position.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATE FOUR-POINT SEATBELT

INITIAL SETUP:

Not Applicable

OPERATE FOUR-POINT SEATBELT

1. Insert seatbelt flat metal end (1) into buckle (2) until click is heard.

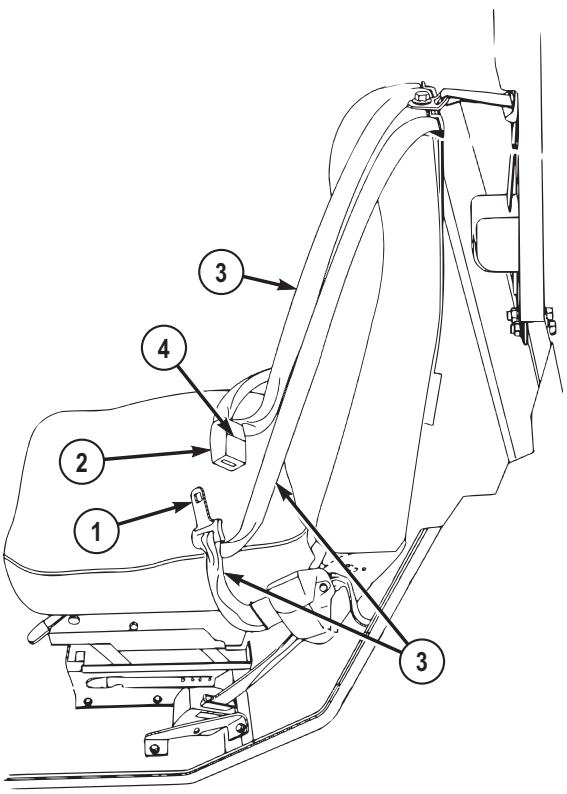


Figure 1.

2. To release seatbelt (3), push in button (4) on buckle (2).

END OF TASK

END OF WORK PACKAGE

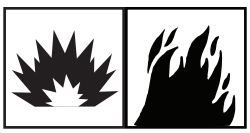
OPERATOR MAINTENANCE
PREPARE TANKER FOR OPERATION

INITIAL SETUP:

Not Applicable

PREPARE VEHICLE

WARNING



To prevent fire or explosion, do not allow smoking, flame, sparks, and hot or glowing objects within 50 ft. (15 m) of vehicle. Read and follow all safety precautions in FM 10-67-1. Failure to comply may result in injury or death to personnel.

NOTE

This procedure should be performed to prepare tanker before all fuel loading, fuel servicing, defueling, fuel recirculation and fuel unloading operations.

1. Start engine (WP 0043), position vehicle for operation, and park vehicle. (WP 0055)
2. Shut OFF engine. (WP 0056)

NOTE

Perform all before-operation PMCS procedures (WP 0139).

3. Remove and stow lock (1) (if so equipped).

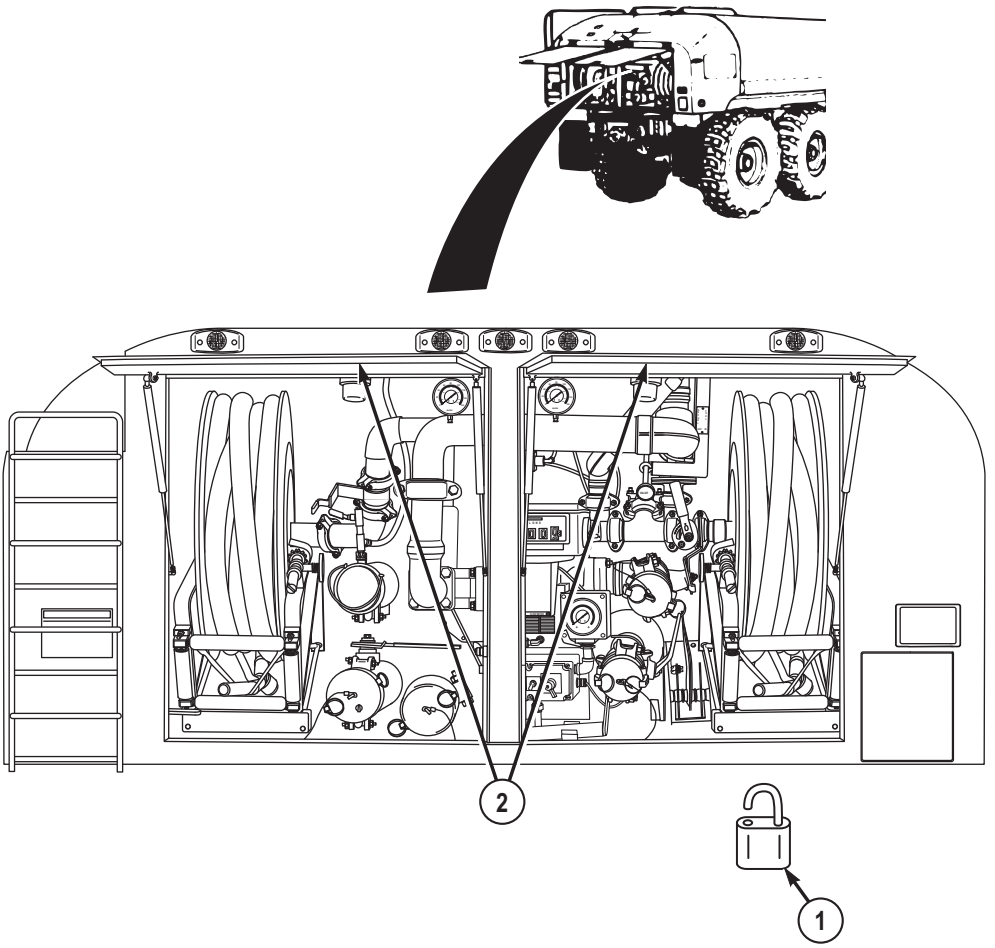


Figure 1.

WARNING

Stand clear to avoid injury when operating pump module rear doors. When each door is about halfway open, gas pistons push doors open quickly and with much force. Failure to comply may result in injury or death to personnel.

4. Open pump module rear doors (2).

POSITION TANKER CONTROLS

1. Push MC MANUAL CONTROL EM VALVE lever (1) full forward and down.

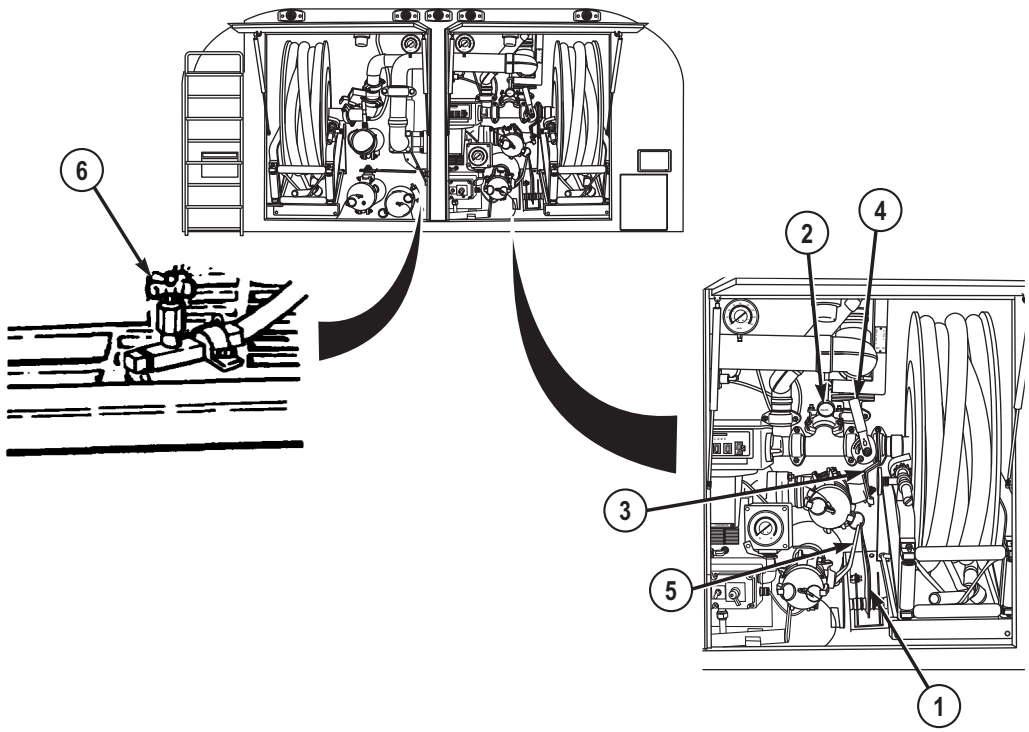


Figure 2.

2. Push in V6 FUEL/DEFUEL VALVE (2) to fueling position.
3. Close VII FLOW VALVE (REG) (3).
4. Push V8 REEL VALVE (H2) (4) straight up to close.
5. Close V18 BULK DEL VALVE (5).
6. Close V15 DRAIN VALVE (6).
7. Turn flowmeter reset knob (7) to zero scale (8).

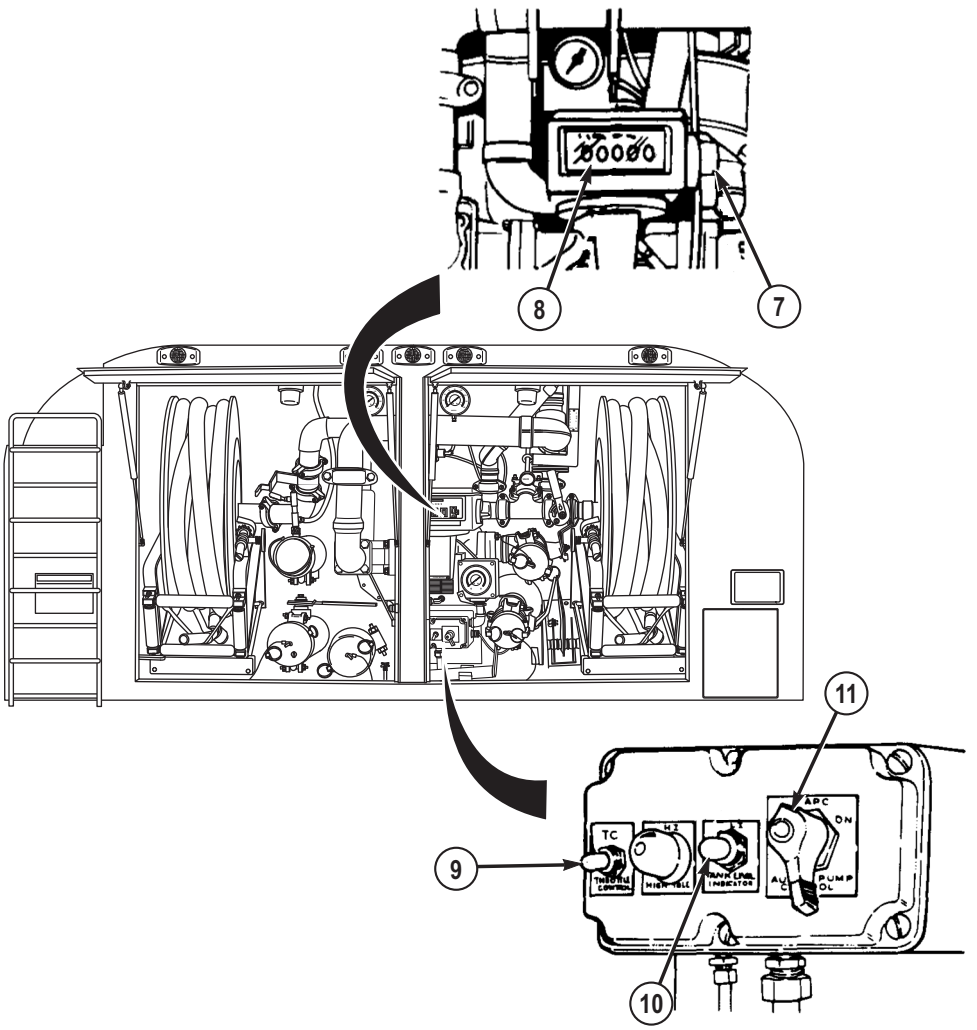


Figure 3.

8. Set TC/THROTTLE CONTROL switch (9) down to OFF position.
9. Set TLI/TANK LEVEL INDICATOR switch (10) down to OFF position.
10. Set APC/AUXILIARY PUMP CONTROL switch (11) APC to shut off.
11. Pull back on PUMP ENGAGEMENT LEVER (12) until locked.

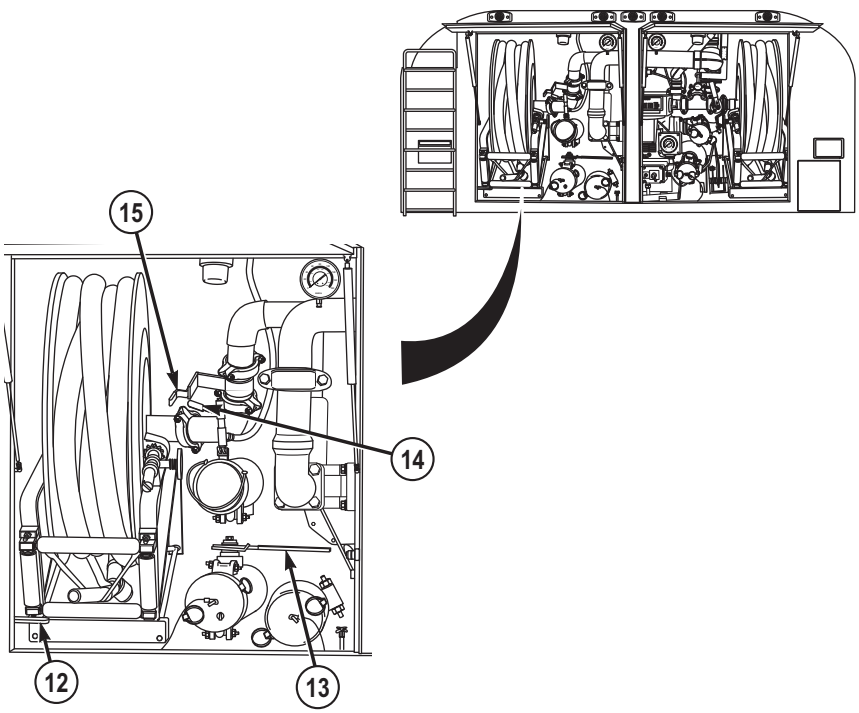


Figure 4.

12. Close V17 GRAVITY VALVE (13).
13. Close V12 B/L PRECHECK VALVE (14).
14. Close V7 REEL VALVE (H1) (15).

NOTE

- V3 SUCTION LINE VALVE is located inside driver side frame rail above rear end of air tank in front of No. 3 axle.
- V3 SUCTION LINE VALVE is shown in open position. Valve is closed when lever is straight down.

15. Move V3 SUCTION LINE VALVE handle (16) to OPEN position (shown).

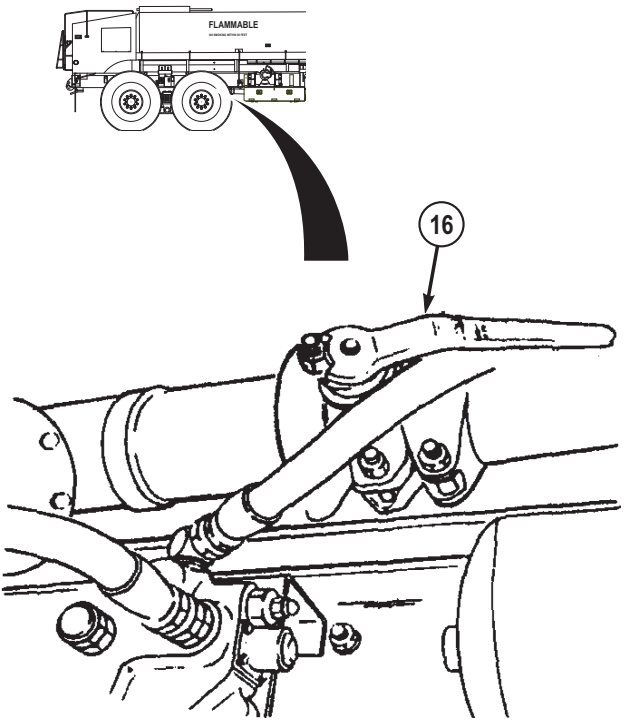


Figure 5.

BONDING AND GROUNDING

NOTE

- Bonding is the process of electrically connecting two units to equalize and form a path for any static potential that might develop during fueling process. Grounding is the process of electrically connecting single or bonded units to ground rods. This discharges into the earth any static potential that might exist at the beginning of operation or that might develop during the operation.
- Both vehicles and equipment involved must be bonded and grounded before performing fueling procedures.
- If you use only one ground rod to ground both vehicles, you do not need to bond.

1. Connect SR1 and SR2 static cables (1) to grounding devices and vehicle being serviced.

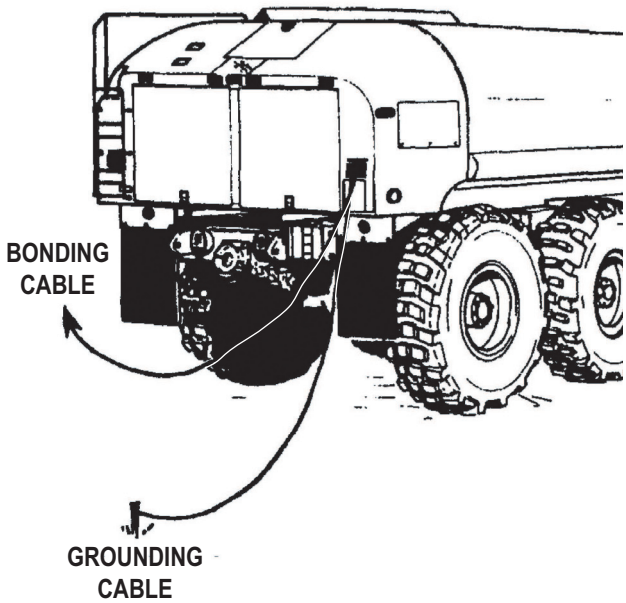


Figure 6.

END OF TASK

END OF WORK PACKAGE

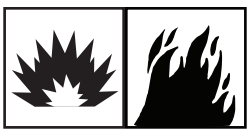
OPERATOR MAINTENANCE
CHECK TANKER FUEL LEVEL

INITIAL SETUP:

Not Applicable

CHECK FUEL LEVEL WITH GAUGES

WARNING



To prevent fire or explosion, do not allow smoking, flame, sparks, and hot or glowing objects within 50 ft. (15 m) of vehicle. Read and follow all safety precautions in FM 10-67-1. Failure to comply may result in injury or death to personnel.

WARNING



Stand clear to avoid injury when operating pump module rear doors. When each door is about halfway open, gas pistons push doors open quickly and with much force. Failure to comply may result in injury or death to personnel.

1. Open passenger side pump module rear door (1).

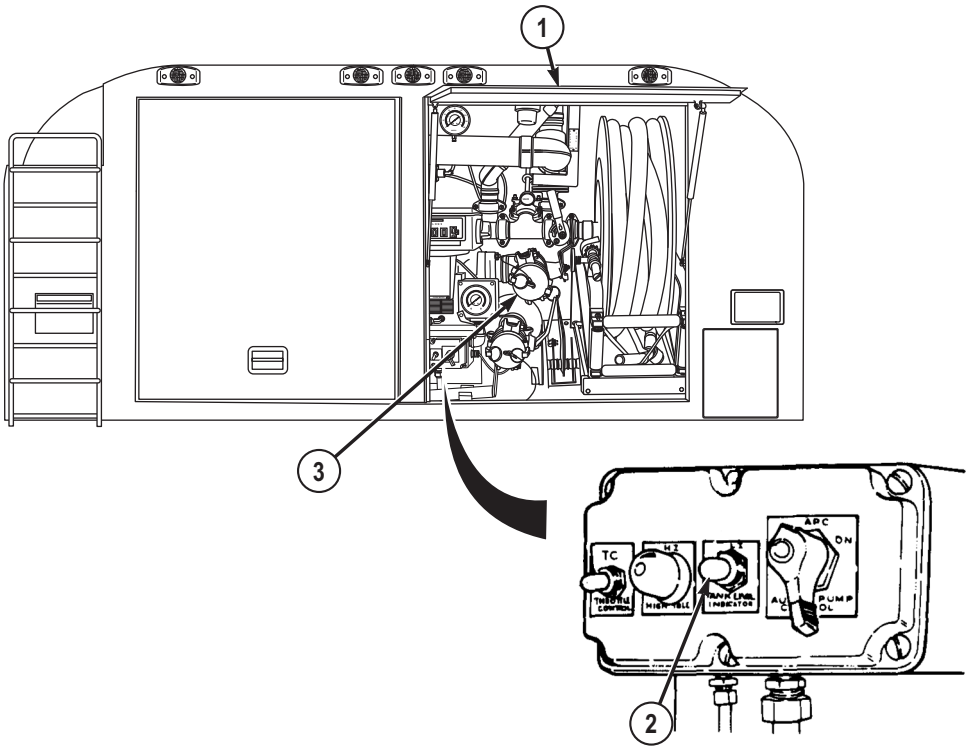


Figure 1.

2. Set TLI/TANK LEVEL INDICATOR switch (2) to ON.
3. Read tank fuel level on indicator gauge (3).

NOTE

If TLI/TANK LEVEL INDICATOR gauge does not show fuel level, check with dipstick.

4. Set TLI/TANK LEVEL INDICATOR switch (2) to OFF.
5. Close passenger side pump module rear door (1).

CHECK FUEL LEVEL WITH DIPSTICK

WARNING



Keep hands clear of ladder hinge. Failure to comply may result in injury or death to personnel.

1. Remove safety pin (1) and pin (2). Lower ladder (3).

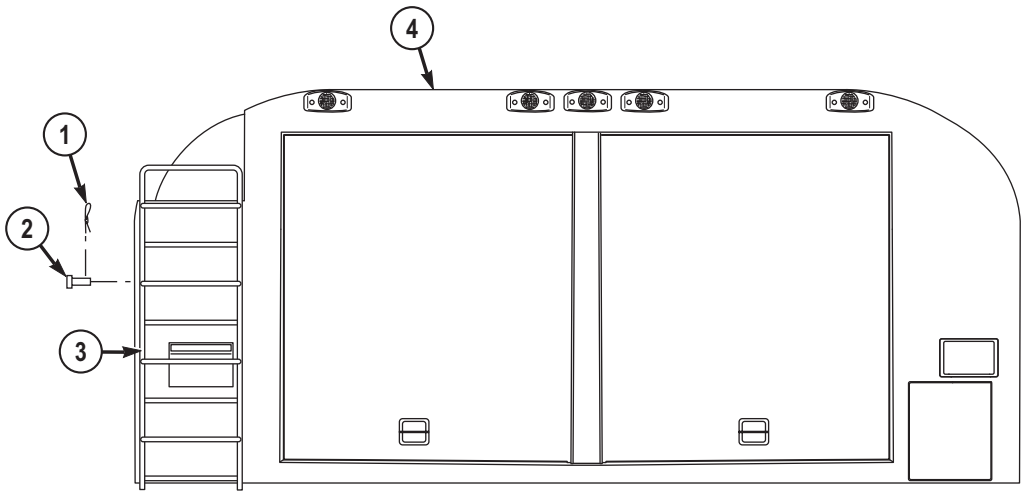


Figure 2.

2. Install pin (2) and safety pin (1) in ladder (3).
3. Climb on top of tank (4).

WARNING



Open manhole cover slowly to relieve pressure. Failure to comply may result in injury or death to personnel.

4. Lift latch (5) and open manhole cover (6).

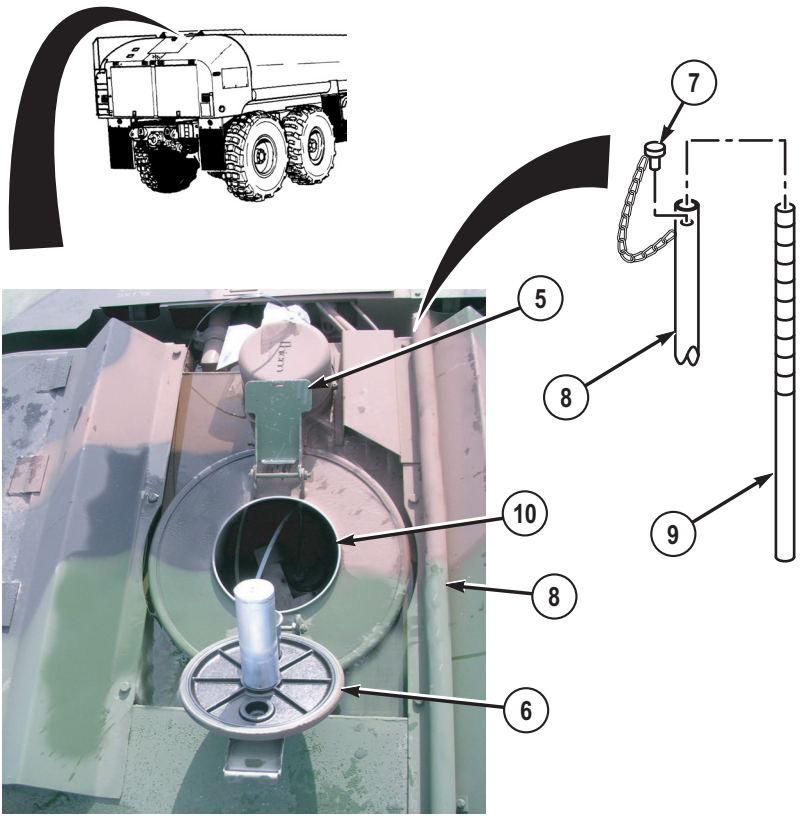


Figure 3.

5. Remove pin (7) from end of sheath (8) and remove dipstick (9).
6. Lower dipstick (9) into manhole fill opening (10) until it touches bottom of tank.
7. Remove dipstick (9) and check marking for fuel level in tank.
8. Wipe off dipstick (9).
9. Push dipstick (9) in sheath (8) and install pin (7).

CLOSE MANHOLE COVER AND SECURE TANKER MODULE

1. Close manhole cover (6) and secure latch (5).

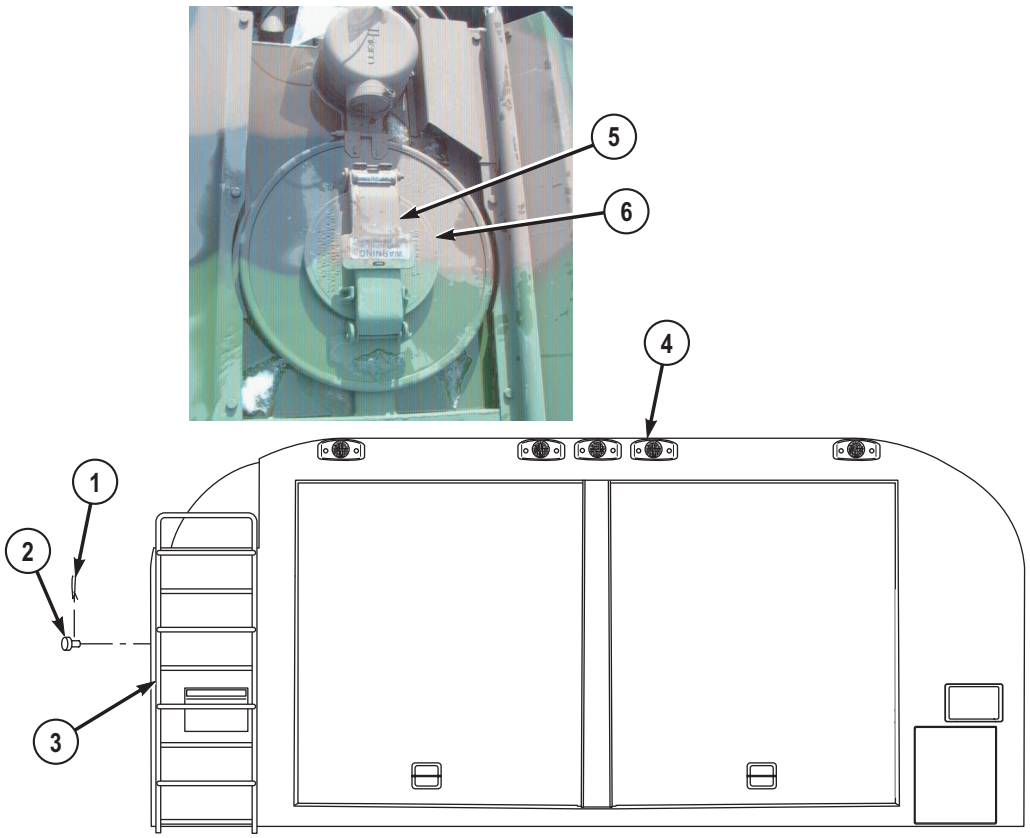


Figure 4.

2. Climb down from top of tank (4).
3. Remove safety pin (1) and pin (2).

WARNING



Keep hands clear of ladder hinge. Failure to comply may result in injury or death to personnel.

4. Raise ladder (3).

5. Install pin (2) and safety pin (1).

END OF TASK

END OF WORK PACKAGE

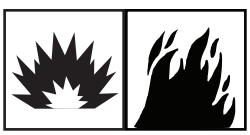
OPERATOR MAINTENANCE
LOAD TANKER WITH FUEL

INITIAL SETUP:

Not Applicable

BOTTOM LOAD TANK WITH EXTERIOR PUMP

WARNING



To prevent fire or explosion, do not allow smoking, flame, sparks, and hot or glowing objects within 50 ft. (15 m) of vehicle. Read and follow all safety precautions in FM 10-67-1. Failure to comply may result in injury or death to personnel.

CAUTION

Drain and flush tank (WP 0084) compartment, filter/separator and piping system with new product when changing to fuel or grade different from last one carried. Notify field level maintenance to change all filter elements. Failure to do so may result in equipment damage.

NOTE

- Refer to FM 10-67-1 for general operating instructions for tanker vehicles.
- If equipment malfunctions, check that all steps of procedure have been performed in proper order. If equipment still malfunctions, do troubleshooting.

1. Prepare tanker for operation. (WP 0078)
2. Connect SR1 and SR2 static cables (1) to source of fuel and to grounding devices.

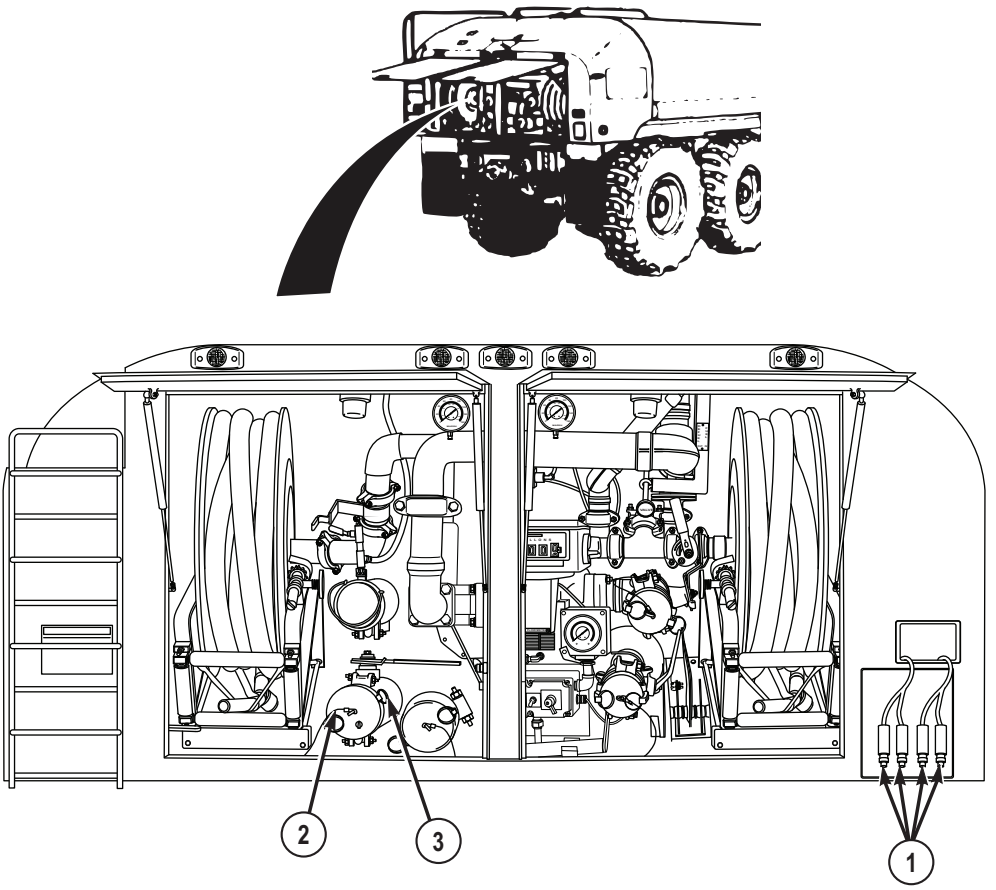


Figure 1.

3. Remove dust cap (2) from A B/L RECEPTACLE (3).
4. Remove D1 adapter (4) from stowage.

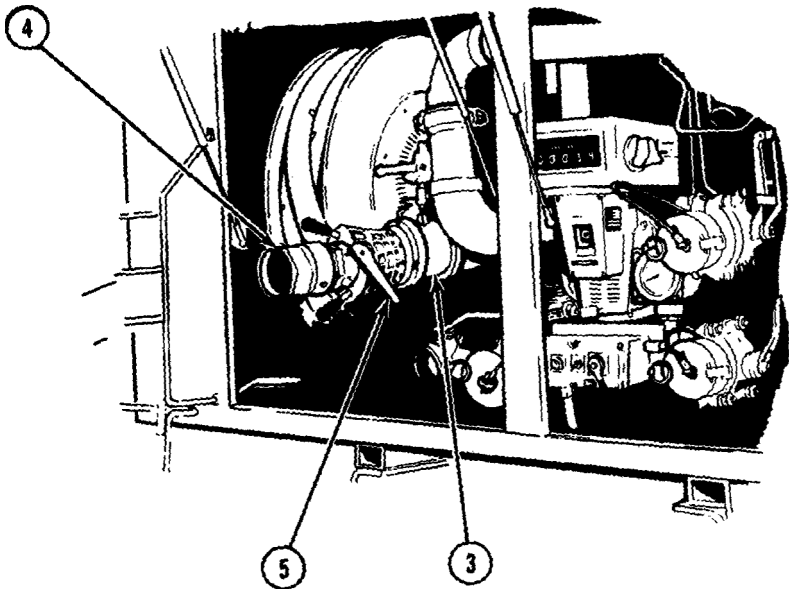


Figure 2.

5. Place end of D1 adapter (4) on A B/L RECEPTACLE (3) and align keyways.
6. Push in and turn D1 adapter (4) clockwise until locked in place.
7. Check that D1 adapter valve lever (5) is in CLOSE position.
8. Open stowage tube cover (6) and remove suction hose (7).

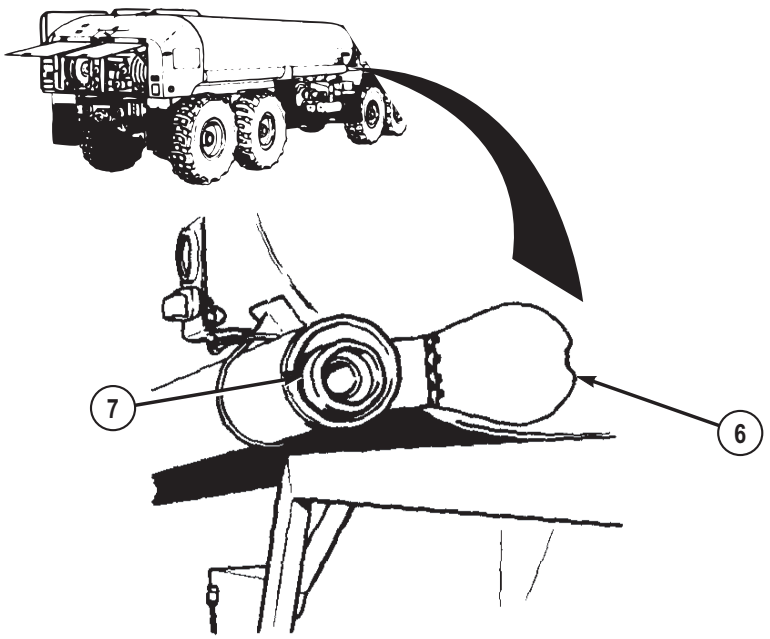


Figure 3.

9. Remove 3 in. adapter coupling (8) from stowage and connect to one end of suction hose (7).

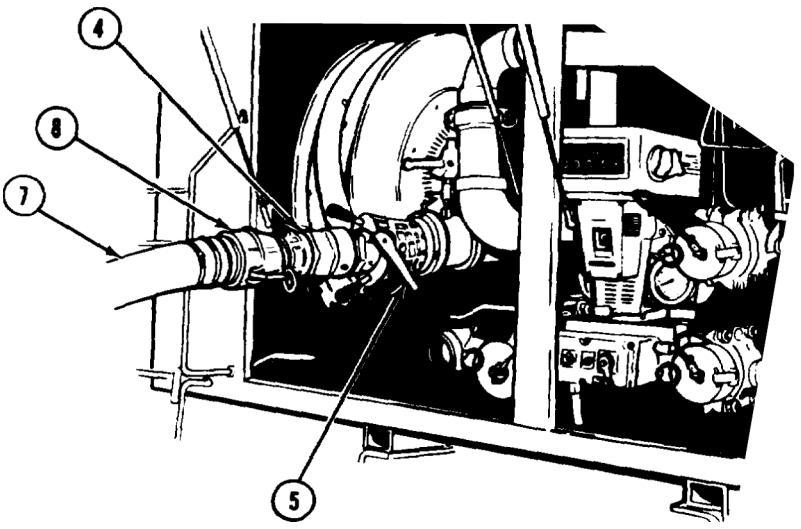


Figure 4.

10. Connect 3 in. adapter coupling (8) to D1 adapter (4).
11. Connect other end of suction hose (7) to fuel supply.
12. After fuel flow is started by fuel station operator, move D1 adapter valve lever (5) to OPEN position.

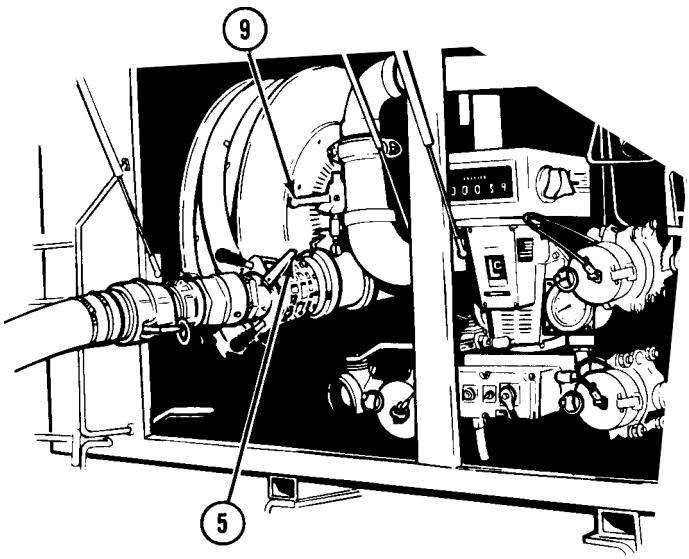


Figure 5.

CAUTION

Fuel loading must be discontinued if fuel flow does not stop within 15 seconds after V12 B/L PRECHECK VALVE is opened. Failure to comply may result in damage to equipment.

13. As soon as fuel starts flowing, open V12 B/L PRECHECK VALVE (9). If fuel flow stops within approximately 15 seconds, close V12 B/L PRECHECK VALVE and continue fuel loading. If fuel flow does not stop within approximately 15 seconds, stop fuel loading and notify field level maintenance.
14. When tank is full and fuel flow stops automatically, move D1 adapter valve lever (5) to CLOSE position.

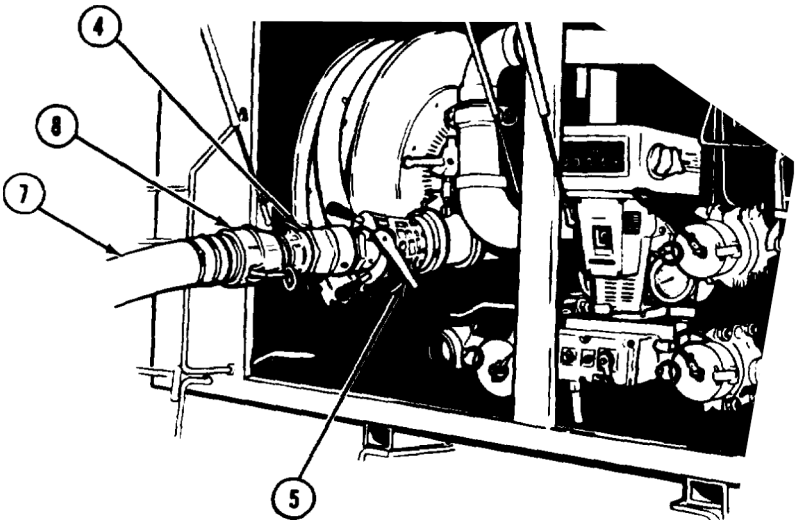


Figure 6.

15. After fuel station operator shuts off fuel, disconnect 3 in. adapter coupling (8) from D1 adapter (4).
16. Remove D1 adapter (4).
17. Drain fuel from suction hose (7) and dispose of fuel in accordance with unit SOP.
18. Disconnect suction hose (7) from fuel supply.
19. Remove 3 in. adapter coupling (8) from suction hose (7).
20. Stow suction hose (7), 3 in. adapter coupling (8), and D1 adapter (4).
21. Install dust cap (2) on A B/L RECEPTACLE (3).

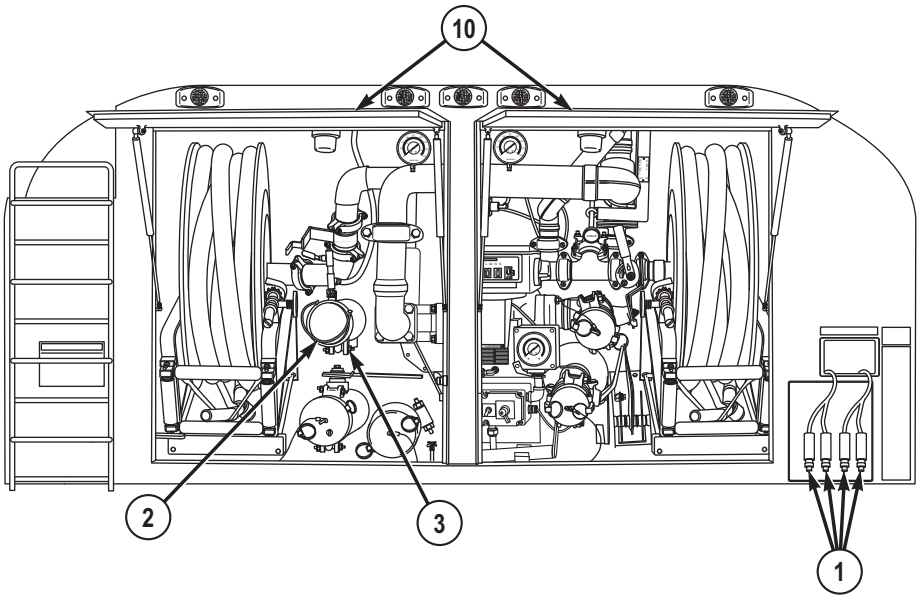
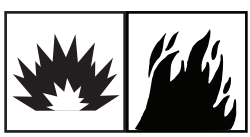


Figure 7.

22. Disconnect and rewind SR1 and SR2 static cables (1).
23. Close pump module rear doors (10).

BOTTOM LOAD TANK WITH TANKER FUEL PUMP

WARNING



To prevent fire or explosion, do not allow smoking, flame, sparks, and hot or glowing objects within 50 ft. (15 m) of vehicle. Read and follow all safety precautions in FM 10-67-1. Failure to comply may result in injury or death to personnel.

CAUTION

- Do not run tanker pump without fuel in system or damage to fuel pump and hydraulic motor may result.
- Do not press accelerator during tanker primary fuel pump operation. Engine speeds higher than 1500 rpm may cause damage to hydraulic motor and primary pump.

- Drain and flush tank compartment, filter separator, and piping system with new product when changing to fuel or grade different from last one carried WP 0084. Notify field level maintenance to change all filter elements. Failure to comply may result in damage to equipment.

NOTE

- Refer to FM 10-67-1 for general operating instructions for tanker vehicles.
- If equipment malfunctions, check that all steps of procedure have been performed in proper order. If equipment still malfunctions, do troubleshooting.

1. Start engine (WP 0043) and position vehicle to load fuel.
2. Park vehicle. (WP 0056)
3. Set HYD ENABLE switch (1) to off position. MAIN HYD ENABLE indicator (2) will go out.

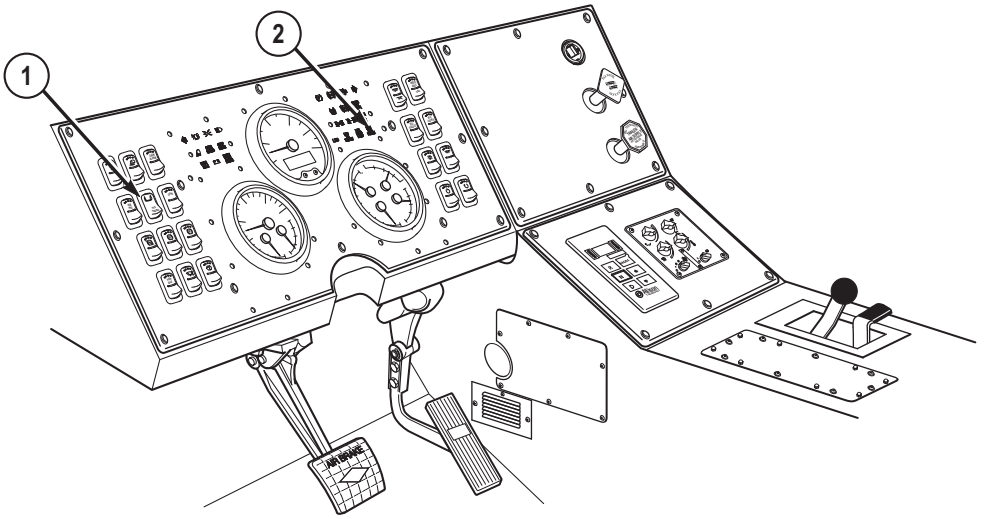


Figure 8.

CAUTION

Do not move hydraulic selector valve control while HYD ENABLE switch is positioned on, or vehicle hydraulic equipment may be damaged.

4. Push in hydraulic selector valve control for tanker pump operation.

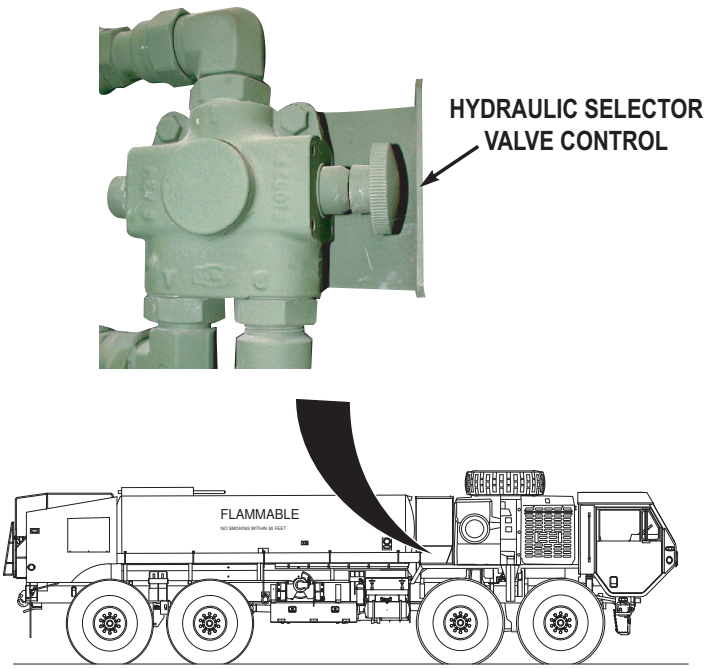


Figure 9.

5. Set HYD ENABLE switch (1) to on position. MAIN HYD ENABLE indicator (2) will illuminate.

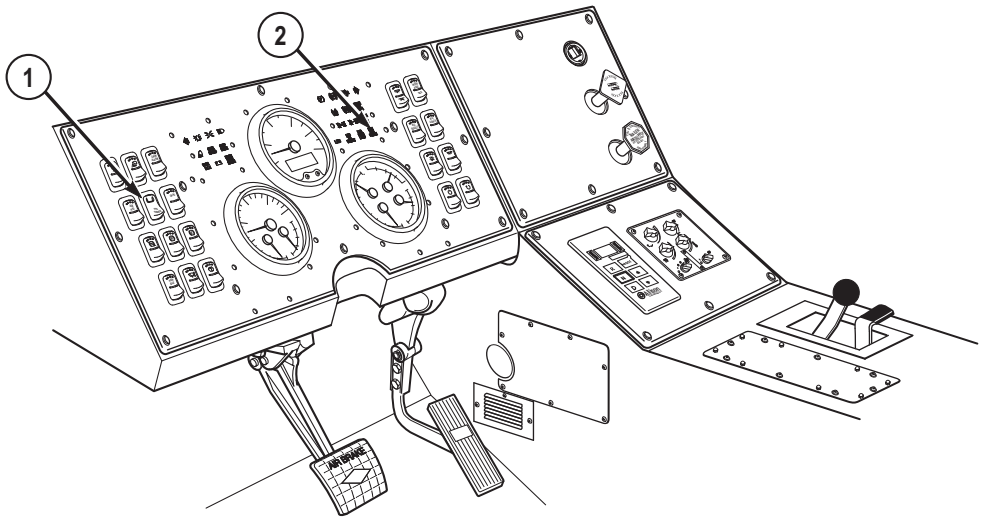


Figure 10.

WARNING



Stand clear to avoid injury when operating pump module rear doors. When each door is about halfway open, gas pistons push doors open quickly and with much force. Failure to comply may result in injury or death to personnel.

6. Open pump module rear doors (3).
7. Position tanker controls. (WP 0078)
8. Connect SR1 and SR2 static cables (4) to source of fuel and to grounding devices.

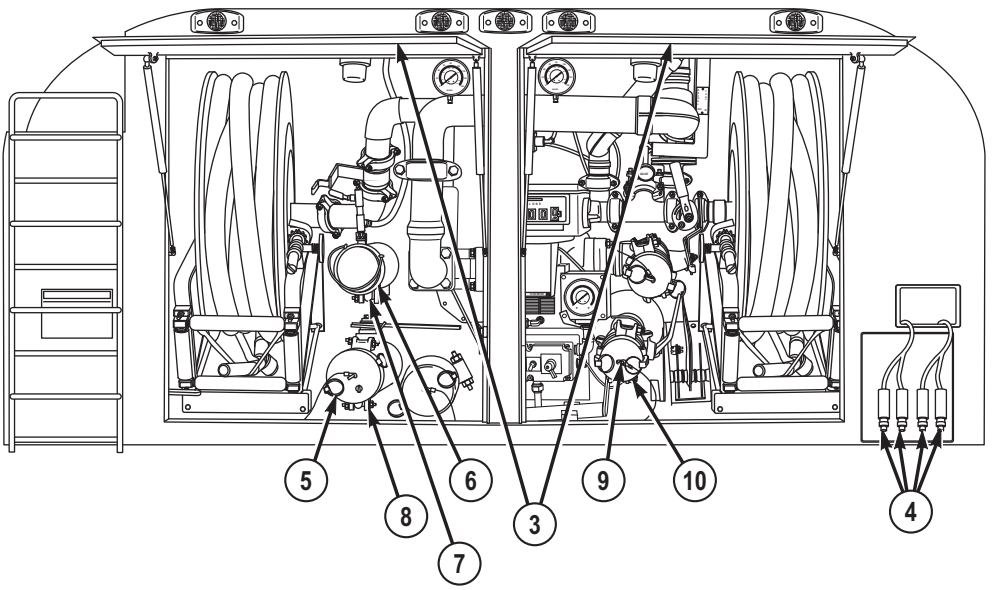


Figure 11.

9. Remove dust cap (5) from A B/L RECEPTACLE (6).
10. Remove dust cap (7) from B GRAVITY RECEPTACLE (8).
11. Remove dust cap (9) from C BULK RECEPTACLE (UNFIL) (10).
12. Open stowage tube cover (11) and remove suction hose (12).

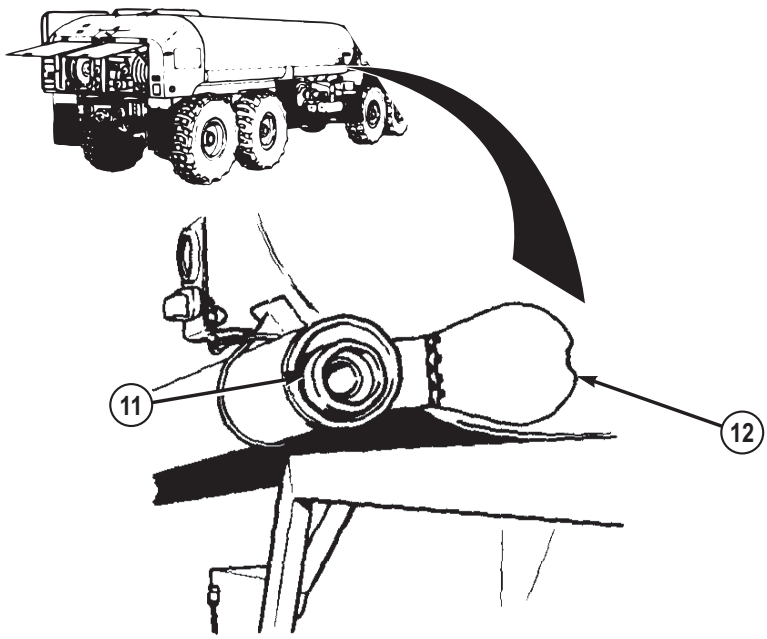


Figure 12.

13. Remove 3 in. adapter coupling (13) and D1 adapter (14) from stowage.

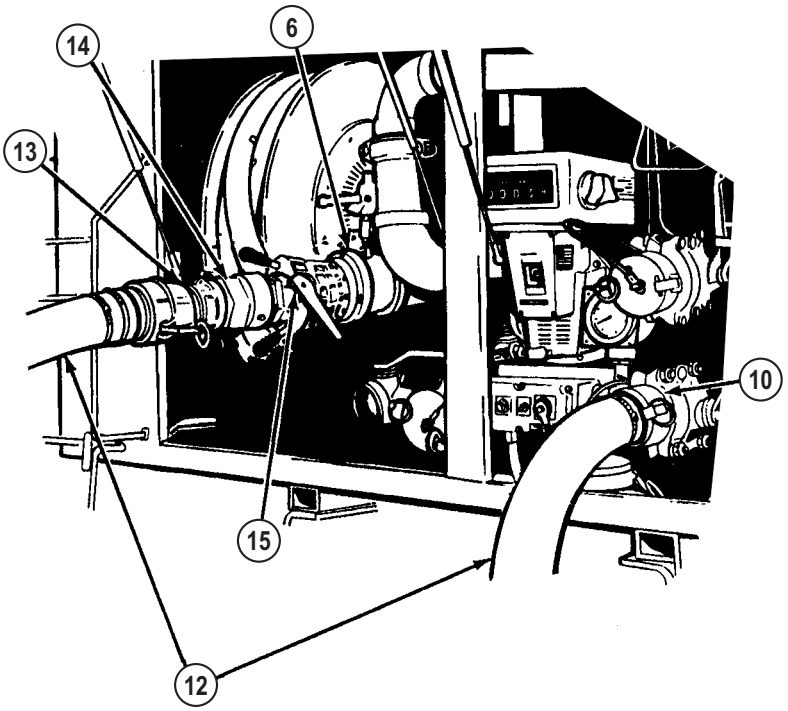


Figure 13.

14. Place end of D1 adapter (14) on A B/L RECEPTACLE (6) and align keyways.
15. Push in and turn D1 adapter (14) clockwise until locked in place.
16. Check that D1 adapter valve lever (15) is in CLOSE position.
17. Connect 3 in. adapter coupling (13) to end of suction hose (12).
18. Connect 3 in. adapter coupling (13) to D1 adapter (14).
19. Connect other end of suction hose (12) to C BULK RECEPTACLE (UNFIL) (10).
20. Connect one end of fuel station suction hose (16) to B GRAVITY RECEPTACLE (8).

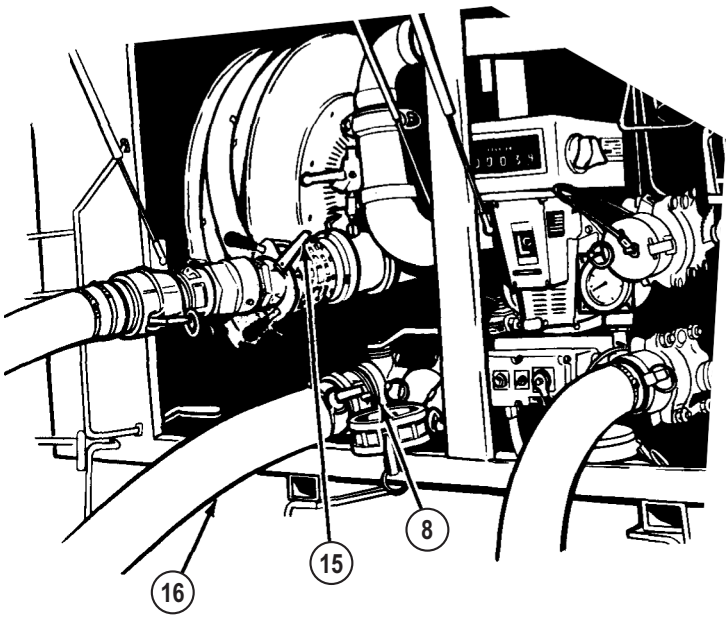


Figure 14.

21. Connect other end of fuel station suction hose (16) to fuel supply.
22. After fuel flow control valve on fuel supply is opened by fuel station operator, set D1 adapter valve lever (15) to OPEN position.
23. Open V17 GRAVITY VALVE (17).

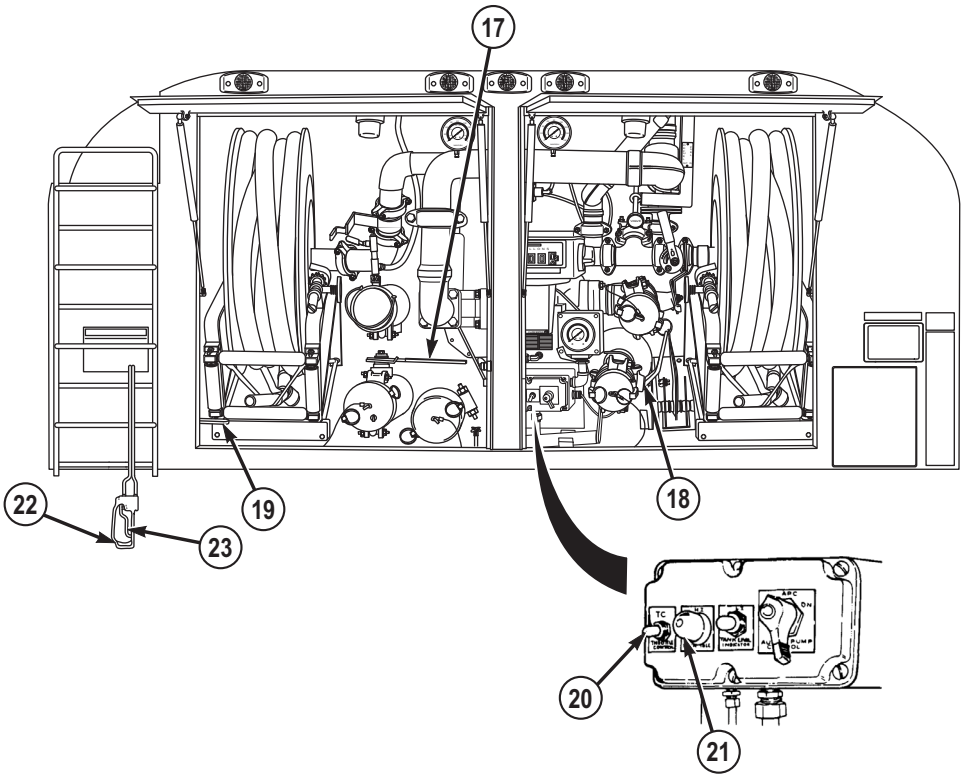


Figure 15.

24. Open V18 BULK DEL VALVE (18).
25. Push PUMP ENGAGEMENT LEVER (19) forward.
26. Set TC/THROTTLE CONTROL switch (20) up to ON position.
27. Press HI/HIGH IDLE switch (21).
28. Pull out HAV HAND ACTUATED CONTROL valve (22).

NOTE

HAV HAND ACTUATED CONTROL valve must be open for fuel to flow.

29. Squeeze and hold lever (23) to open HAV HAND ACTUATED CONTROL valve (22).

CAUTION

Fuel loading must be discontinued if fuel flow does not stop within 15 seconds after V12 B/L PRECHECK VALVE is opened. Failure to comply may result in damage to equipment.

30. As soon as fuel starts flowing, open V12 B/L PRECHECK VALVE (24). If fuel flow stops within approximately 15 seconds, close V12 B/L PRECHECK VALVE and continue fuel loading. If fuel flow does not stop within 15 seconds, stop fueling and notify field level maintenance.

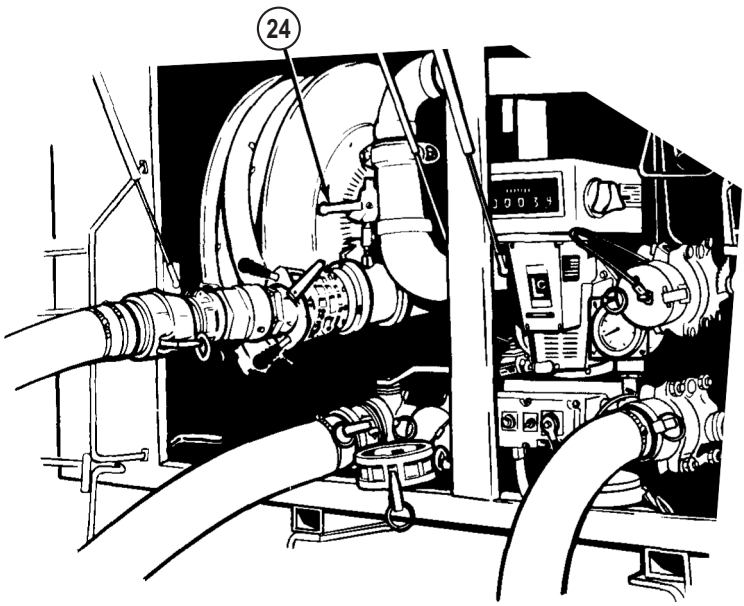


Figure 16.

31. When tank is full and fuel flow stops automatically, let go of HAV HAND ACTUATED CONTROL valve lever (23).

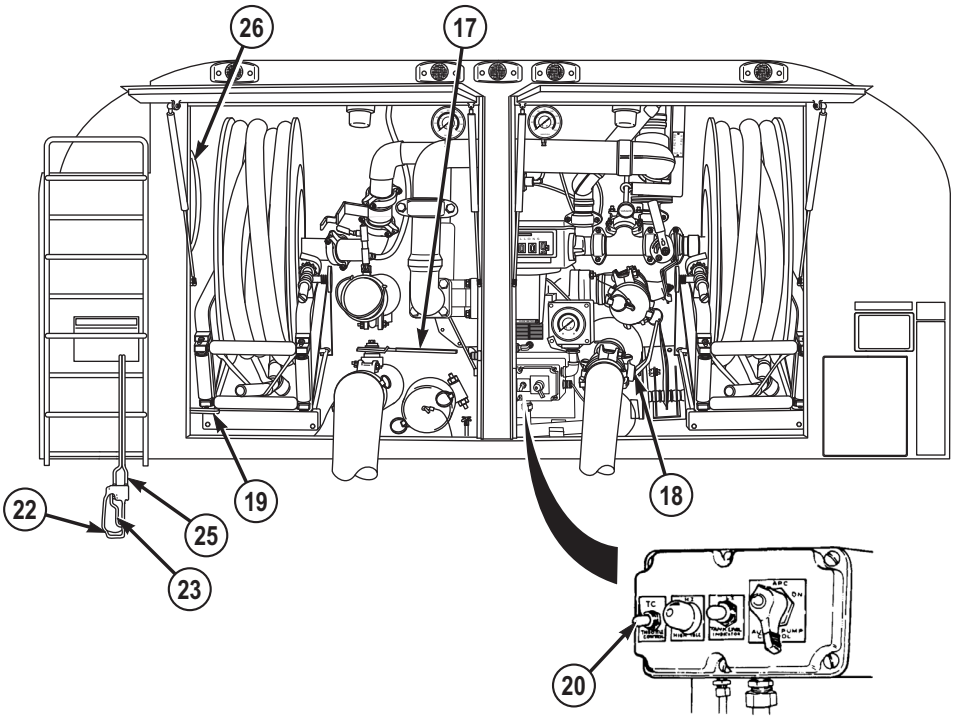


Figure 17.

32. Pull back on PUMP ENGAGEMENT LEVER (19) until locked.

CAUTION

Carefully guide HAV hand actuated control valve hoses through access hole onto reel. Failure to comply may result in damage to equipment.

33. Rewind HAV HAND ACTUATED CONTROL valve hoses (25) onto reel (26).
34. Set TC/THROTTLE CONTROL switch (20) down to OFF position.
35. After fuel station operator shuts off fuel flow from fuel supply, close V18 BULK DEL VALVE (18).
36. Close V17 GRAVITY VALVE (17).
37. Disconnect fuel station suction hose (16) from B GRAVITY RECEPTACLE (8).

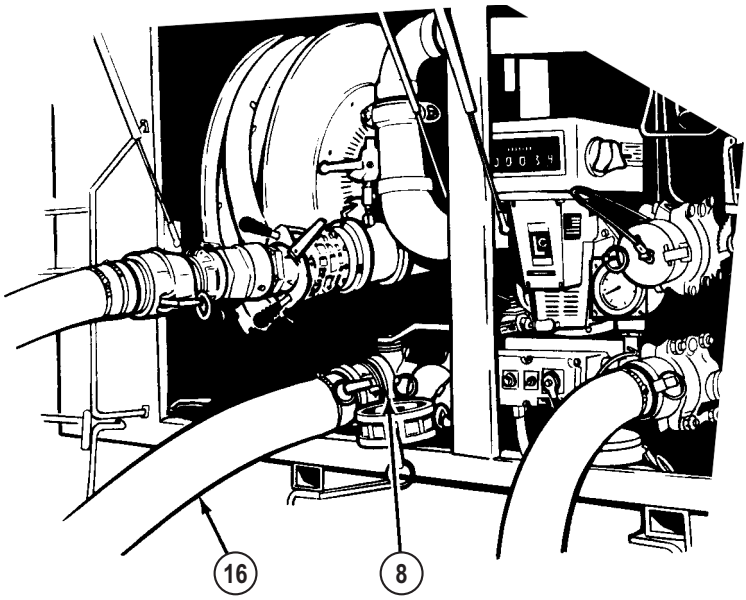


Figure 18.

NOTE

Remove remaining fuel in fuel station suction hose by walking out hose.

38. Drain fuel from fuel station suction hose (16) and dispose of fuel in accordance with unit SOP.
39. Disconnect fuel station suction hose (16) from fuel supply.
40. Set D1 adapter valve lever (15) to CLOSE position.
41. Remove D1 adapter (14) from A B/L RECEPTACLE (6).

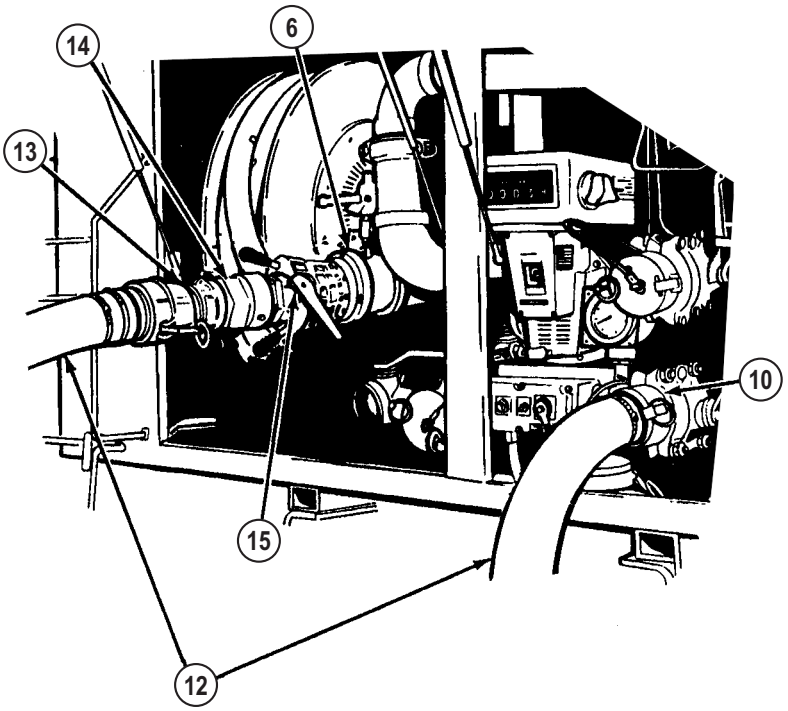


Figure 19.

NOTE

Remove remaining fuel in suction hose by walking out suction hose.

42. Drain fuel from suction hose (12) and dispose of fuel in accordance with unit SOP.
43. Disconnect 3 in. adapter coupling (13) from D1 adapter (14).
44. Disconnect suction hose (12) from C BULK RECEPTACLE (UNFIL) (10).
45. Remove 3 in. adapter coupling (13) from suction hose (12).
46. Return 3 in. adapter coupling (13) and D1 adapter (14) to vehicle stowage.

NOTE

Return fuel station suction hose to fuel station operator.

47. Stow suction hose (12).
48. Install dust caps (5, 7, and 9) on A B/L RECEPTACLE (6), B GRAVITY RECEPTACLE (8), and C BULK RECEPTACLE (UNFIL) (10).

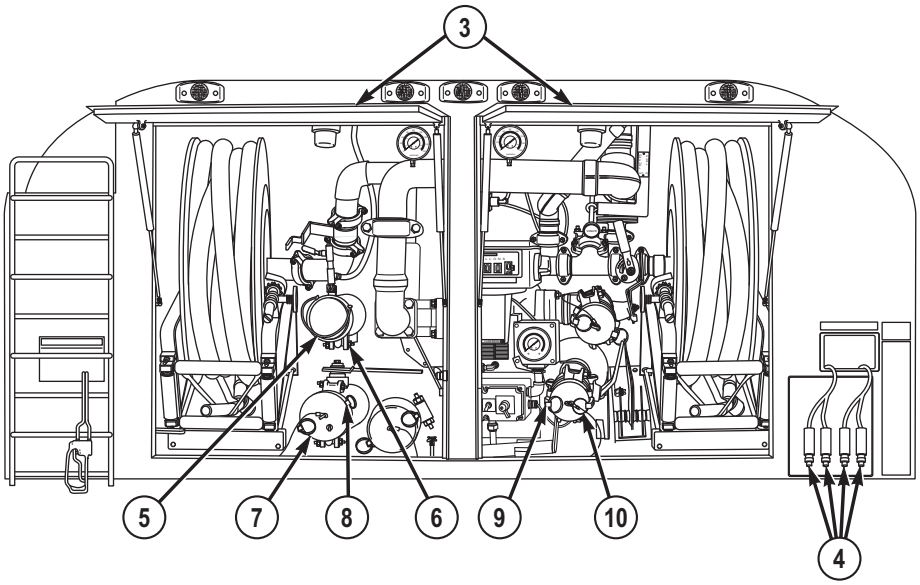


Figure 20.

49. Disconnect and rewind SR1 and SR2 static cables (4).
50. Close pump module rear doors (3).
51. Set HYD ENABLE switch (1) to off position. MAIN HYD ENABLE indicator (2) will go out.

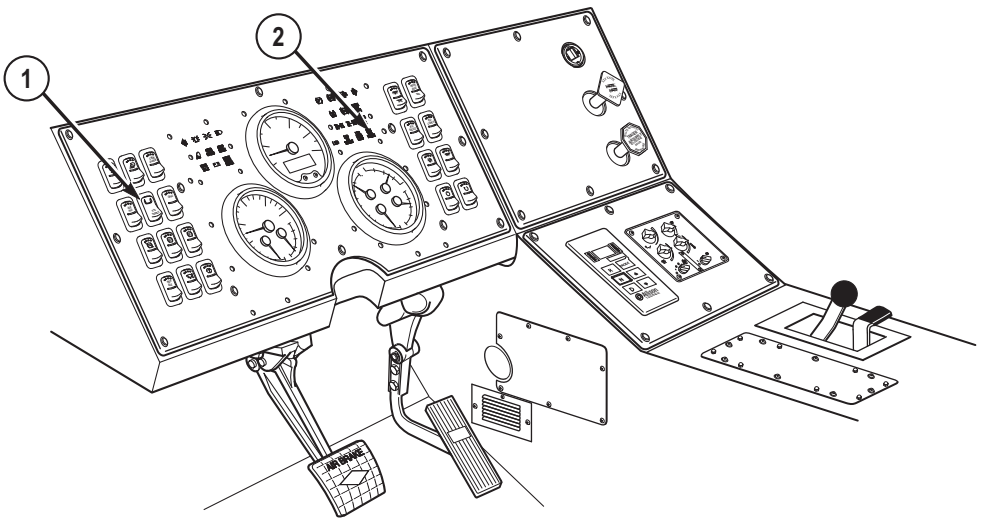
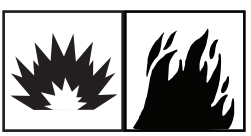


Figure 21.

52. Shut off engine. (WP 0056)

TOP LOADING FUEL

WARNING



- Top loading will be done in emergency situations only, when bottom loading is not possible, and only by order of the Unit Commander. Top loading causes static electricity and vapors. To prevent fire or explosion, do not allow smoking, flame, sparks, and glowing or hot objects within 50 ft. (15 m) of vehicle. Failure to comply may result in injury or death to personnel.
- To prevent explosion caused by electrostatic charge, ground self and equipment prior to opening manhole cover. Failure to comply may result in injury or death to personnel.

CAUTION

- Drain and flush tank compartment, filter/separator, and piping system with new product when changing to fuel or grade different from last one carried WP 0084. Notify field level maintenance to change all filter elements. Failure to do so may result in equipment damage.

- Use top loading only when bottom loading is not possible. An observer should be placed at the manhole cover opening as a safety precaution.

NOTE

- Fuel should only be loaded through manhole when bottom loading cannot be done. Tank should be bottom loaded with either exterior pump or tanker fuel pump whenever possible.
- Refer to FM 10-67-1 for general operating instructions for tanker vehicles.
- If equipment malfunctions, check that all steps of procedure have been performed in proper order. If equipment still malfunctions, do troubleshooting.
- When top loading, slowly begin the flow of product and continue at a reduced rate until the lower end of the drop tube or discharge hose is covered with product and then gradually increase the flow rate and fill the tank.

1. Prepare tanker for operation (WP 0078).
2. Close pump module rear doors (1).

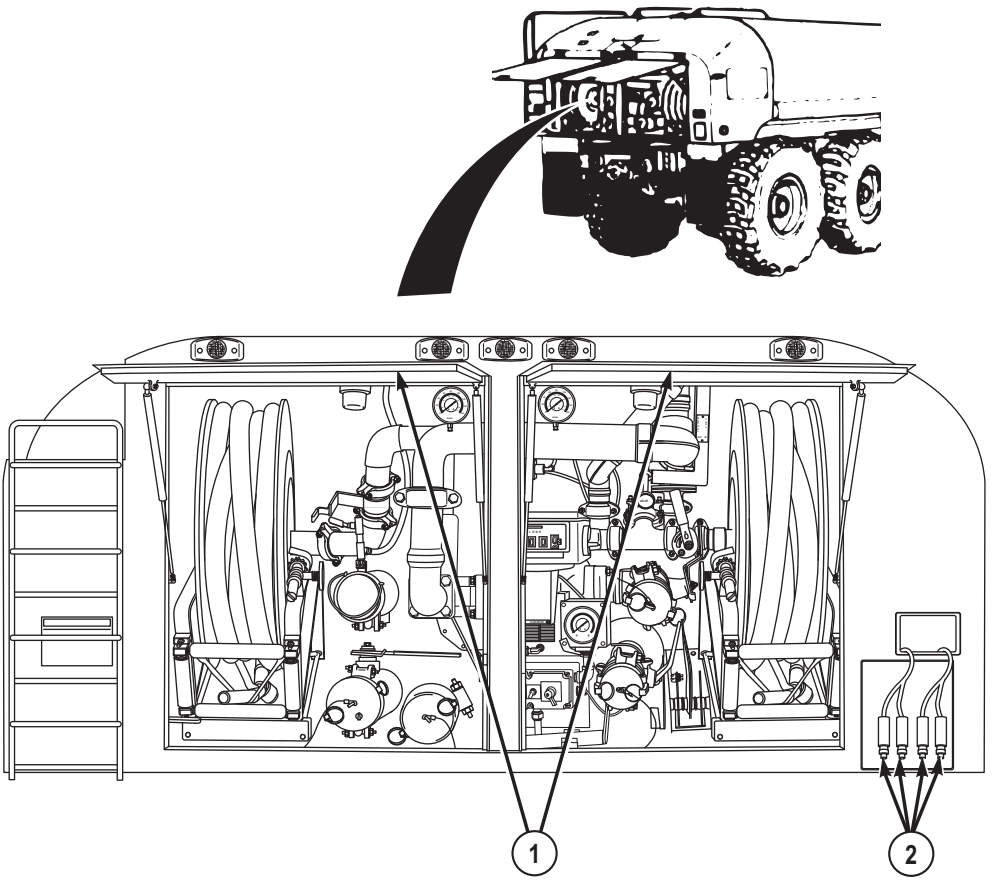


Figure 22.

3. Connect SR1 and SR2 static cables (2) to the fuel source and to grounding devices.

WARNING



Keep hands clear of ladder hinge. Failure to comply may result in injury or death to personnel.

4. Remove vehicle fire extinguishers (WP 0036) and bring them to the point of operation.
5. Remove safety pin (3) and pin (4). Lower ladder (5).

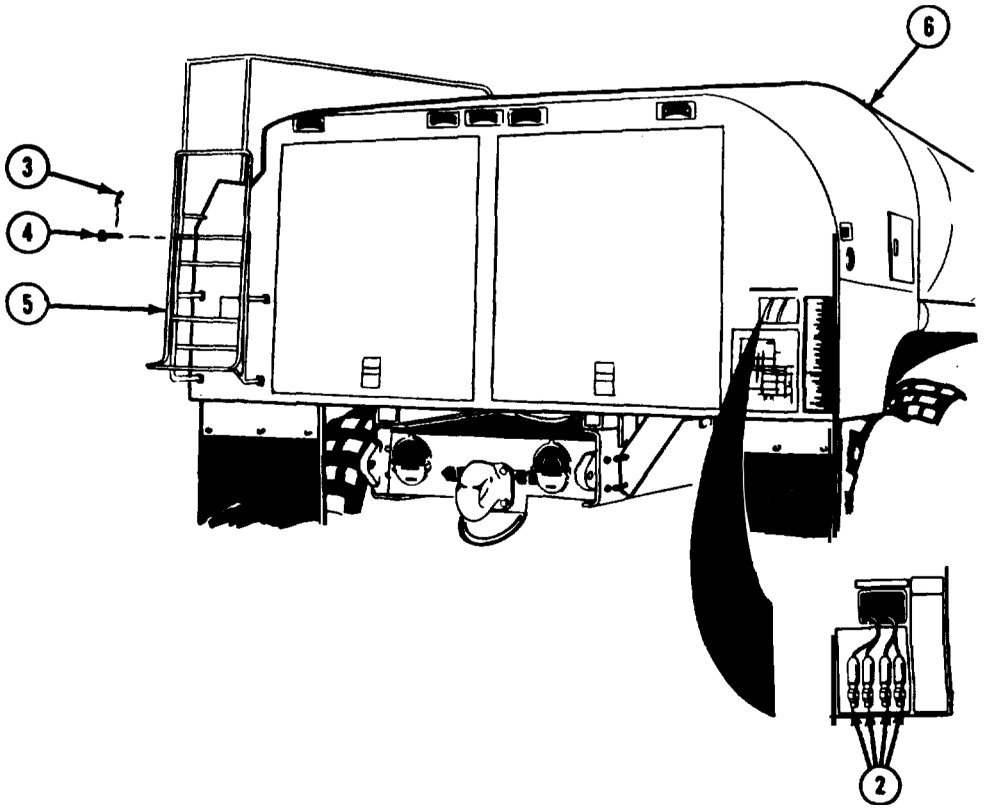


Figure 23.

6. Install pin (4) and safety pin (3) in ladder.
7. Climb on top of tank (6).

WARNING



Open manhole cover slowly to relieve pressure. Failure to comply may result in injury or death to personnel.

8. Lift latch (7) and open manhole cover (8).
9. Put fillstand downspout in manhole fill opening (9).

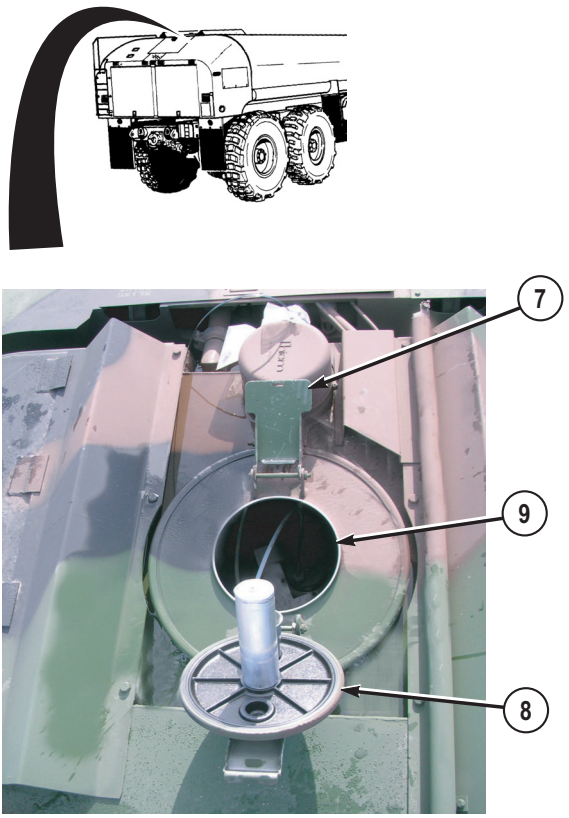


Figure 24.

10. After fuel station operator fills tank to desired level and stops fuel flow, remove fillstand downspout from manhole fill opening (9).
11. Close manhole cover (8) and secure latch (7).
12. Climb down from top of tank (6).

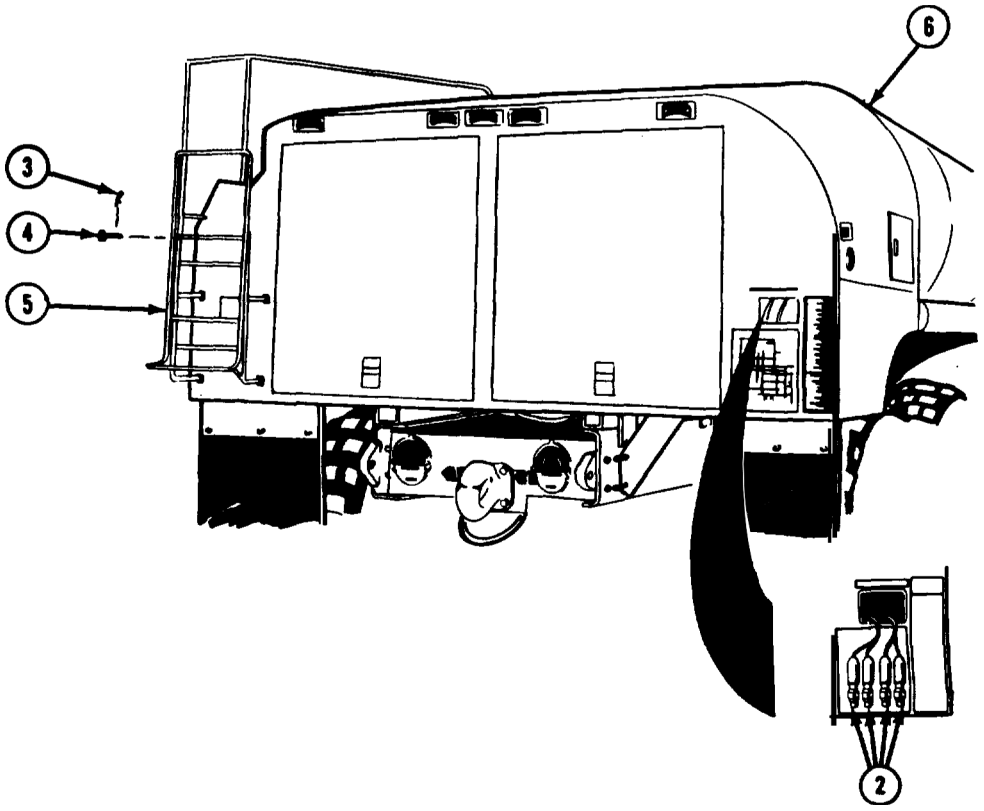


Figure 25.

13. Remove safety pin (3) and pin (4) from ladder (5).
14. Raise ladder (5).
15. Install pin (4) and safety pin (3).
16. Disconnect and rewind SR1 and SR2 static cables (2).
17. Install vehicle fire extinguishers. (WP 0036)

END OF TASK

END OF WORK PACKAGE

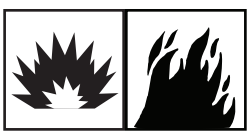
OPERATOR MAINTENANCE
SERVICE LAND VEHICLE OR AIRCRAFT (OVER-WING) WITH FUEL

INITIAL SETUP:

Not Applicable

PREPARE TANKER MODULE

WARNING



To prevent fire or explosion, do not allow smoking, flame, sparks, and hot or glowing objects within 50 ft. (15 m) of vehicle. Read and follow all safety precautions in FM 10-67-1. Failure to comply may result in injury or death to personnel.

CAUTION

- Do not run tanker pump without fuel in system or damage to fuel pump and hydraulic motor may result.
- Do not press accelerator during tanker primary fuel pump operation. Engine speeds higher than 1500 rpm may cause damage to hydraulic motor and primary pump.

NOTE

- Refer to FM 10-67-1 for general operating instructions for tank vehicles and information on aircraft fueling.
- If equipment malfunctions, check that all steps of procedure have been performed in proper order. If equipment still malfunctions, do troubleshooting.

1. Start engine (WP 0043) and position vehicle for fuel servicing.
2. Park vehicle. (WP 0055)
3. Set HYD ENABLE switch (1) to off position. MAIN HYD ENABLE indicator (2) will go out.

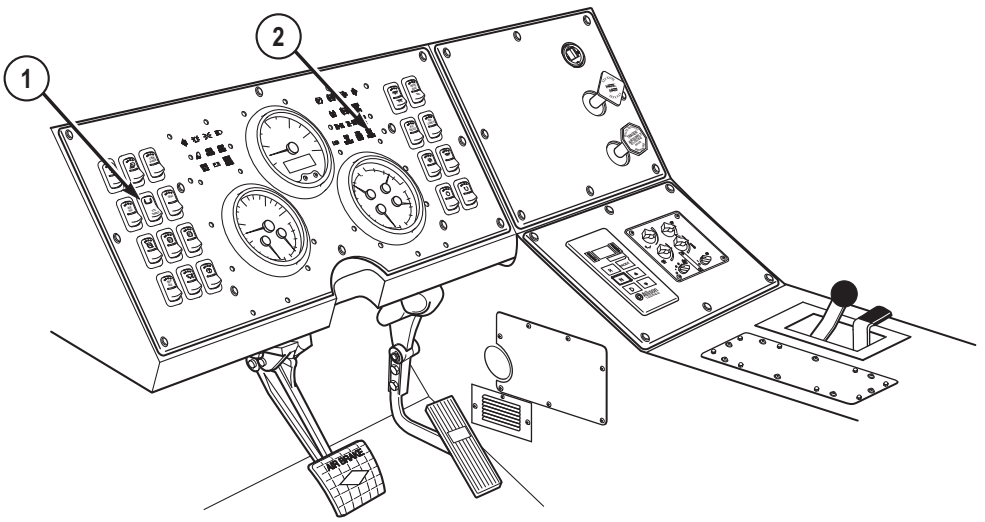


Figure 1.

CAUTION

Do not move hydraulic selector valve control while HYD ENABLE switch is set to on position or vehicle hydraulic equipment may be damaged.

4. Push in hydraulic selector valve control for tanker pump operation.

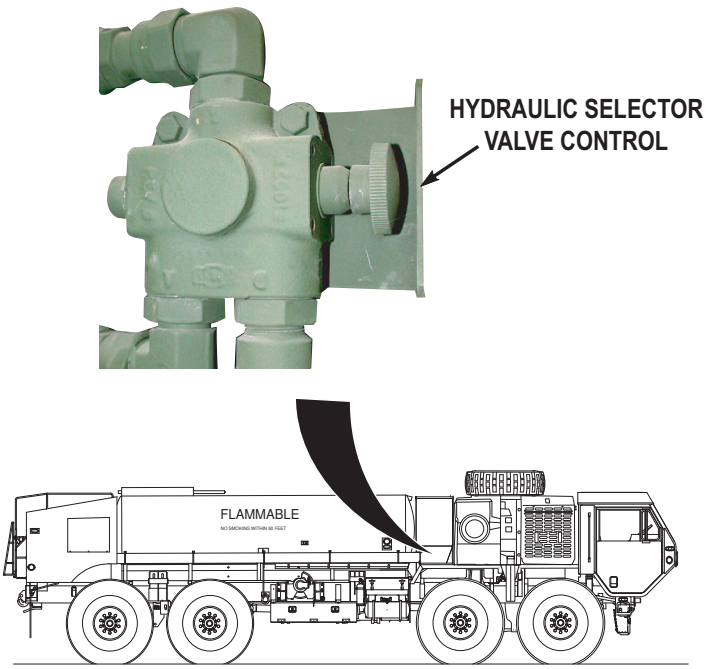


Figure 2.

5. Set HYD ENABLE switch (1) to on position. MAIN HYD ENABLE indicator (2) will illuminate.

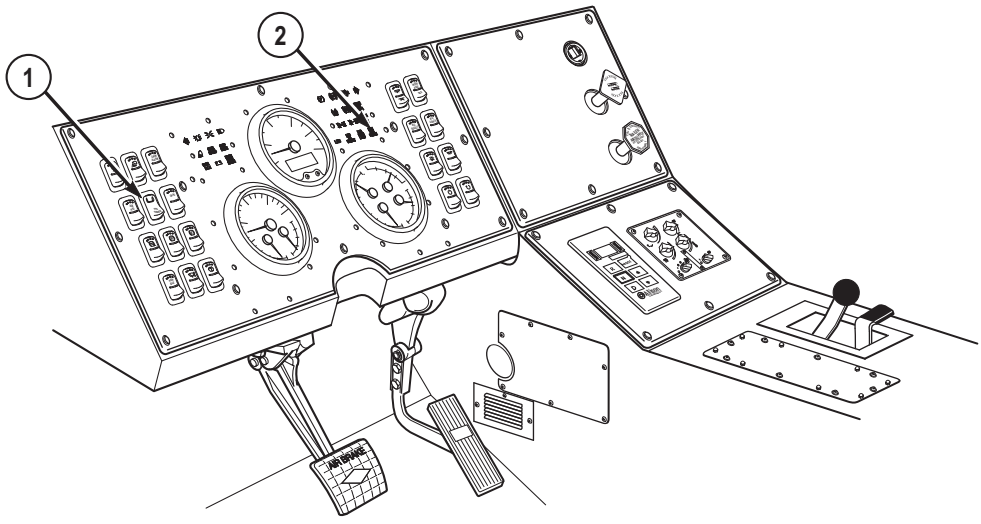


Figure 3.

WARNING



Stand clear to avoid injury when operating pump module rear doors. When each door is about halfway open, gas pistons push doors open quickly and with much force. Failure to comply may result in injury or death to personnel.

6. Open tanker module doors (3).

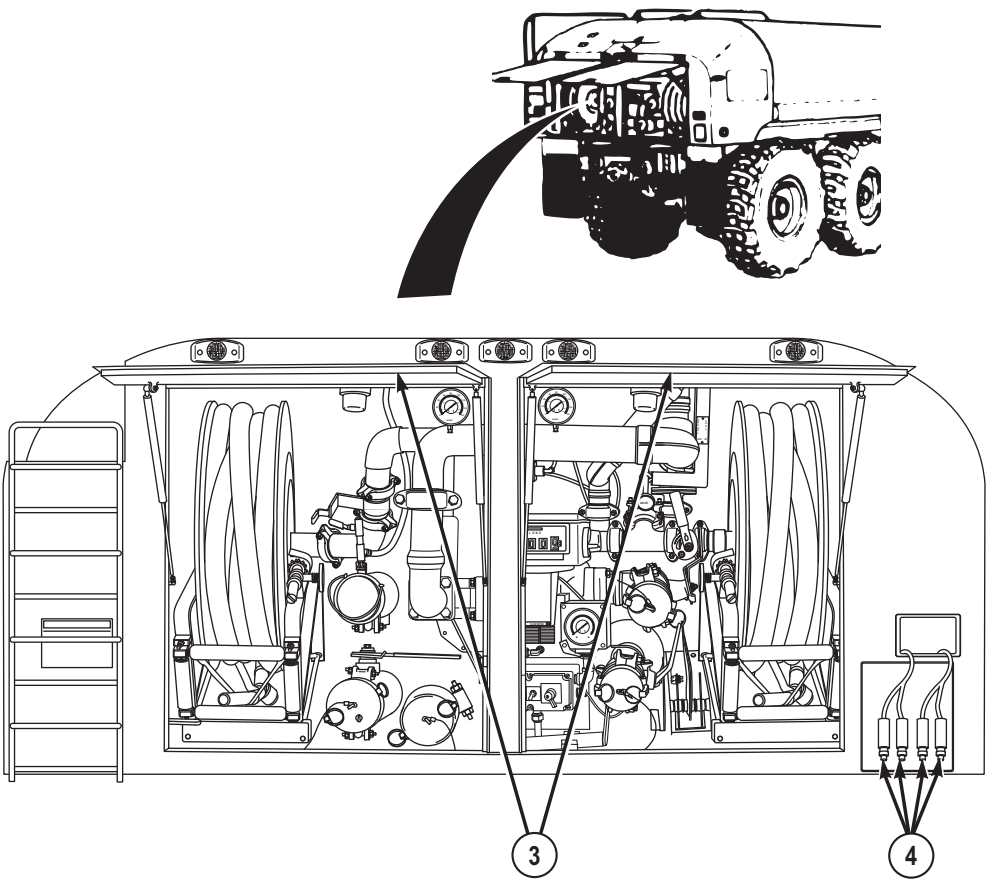


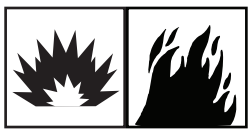
Figure 4.

7. Position tanker controls. (WP 0078)

8. Connect SR1 and SR2 static cables (4) to vehicle being serviced and grounding devices.

FUEL SERVICING

WARNING



To prevent fire or explosion, do not allow smoking, flame, sparks, and hot or glowing objects within 50 ft. (15 m) of vehicle. Read and follow all safety precautions in FM 10-67-1. Failure to comply may result in injury or death to personnel.

NOTE

Driver side servicing hose is shown. Procedure for using passenger side servicing hose is same.

1. Disengage hose reel tension knob (1).

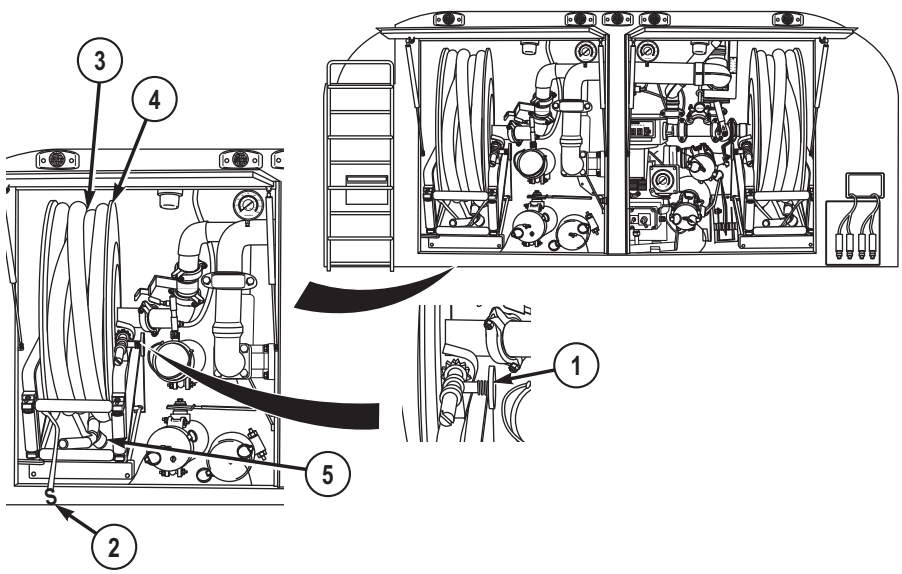


Figure 5.

2. Remove rubber tie down strap (2) to release fuel service nozzle (5) from stowage position.

3. Pull servicing hose (3) completely out from reel (4).
4. Engage hose reel tension knob (1).

NOTE

- Use fuel service nozzle for fueling land vehicles. Use over-wing nozzle for over-wing fueling of aircraft.
- Reducer adapter is used with over-wing nozzle only. If not fueling an aircraft and/or using the over-wing fueling, skip to Step (8).

5. Remove fuel service nozzle (5) from servicing hose (3).

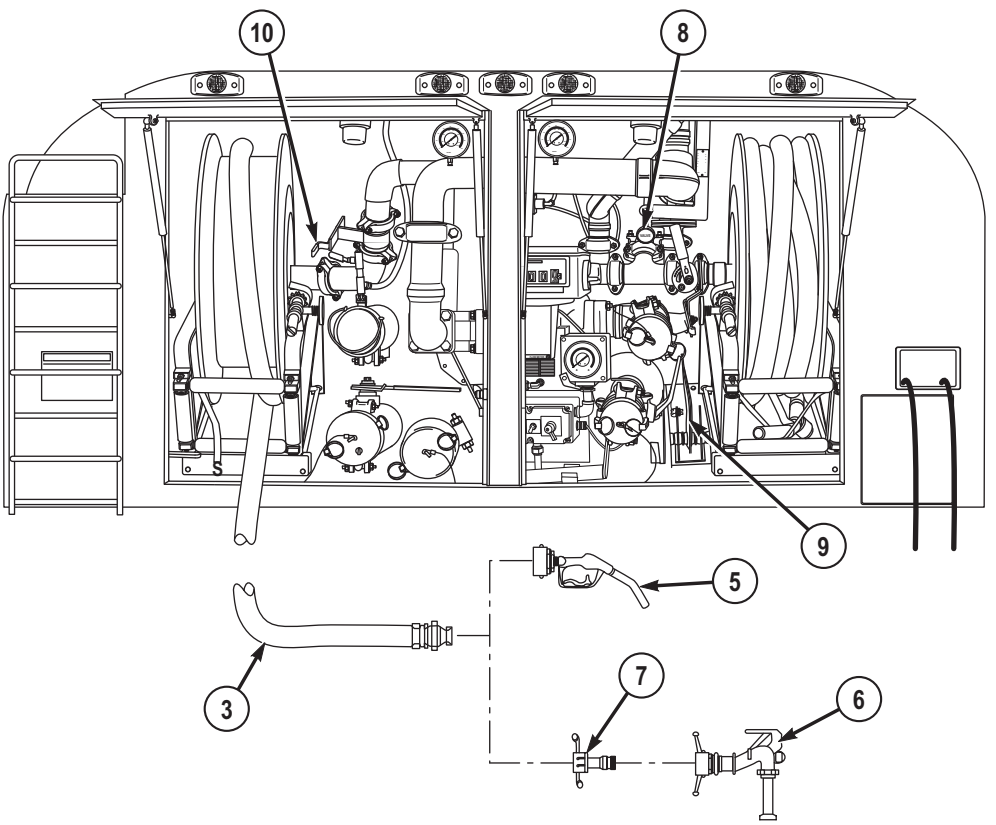


Figure 6.

6. Stow fuel service nozzle (5). Remove over-wing nozzle (6) and reducer adapter (7) from stowage.
7. Install reducer adapter (7) on servicing hose (3). Install over-wing nozzle (6) on reducer adapter (7).

8. Push in V6 FUEL/DEFUEL VALVE control rod (8).
9. Pull back MC MANUAL CONTROL EM VALVE lever (9).

NOTE

Refer to tanker module controls-center (WP 0029) for information about discharge line pressure gauge (DLPG) and venturi-nozzle pressure gauge (VNPG).

10. Determine required rate of delivery for servicing hose being used.

NOTE

V8 REEL VALVE controls rate of fuel delivery when passenger side servicing hose is used for fueling.

11. Adjust V7 REEL VALVE (10) to control rate of fuel delivery through servicing hose (3).

Table 1. V7 and V8 Reel Valve Fueling Delivery Rates

Position	Gallons per Minute
1, 2, 3, 4	105 ± 5
5	90 ± 5
6	75 ± 5
7	50 ± 5
8	15 ± 5

12. Push PUMP ENGAGEMENT LEVER (11) forward.

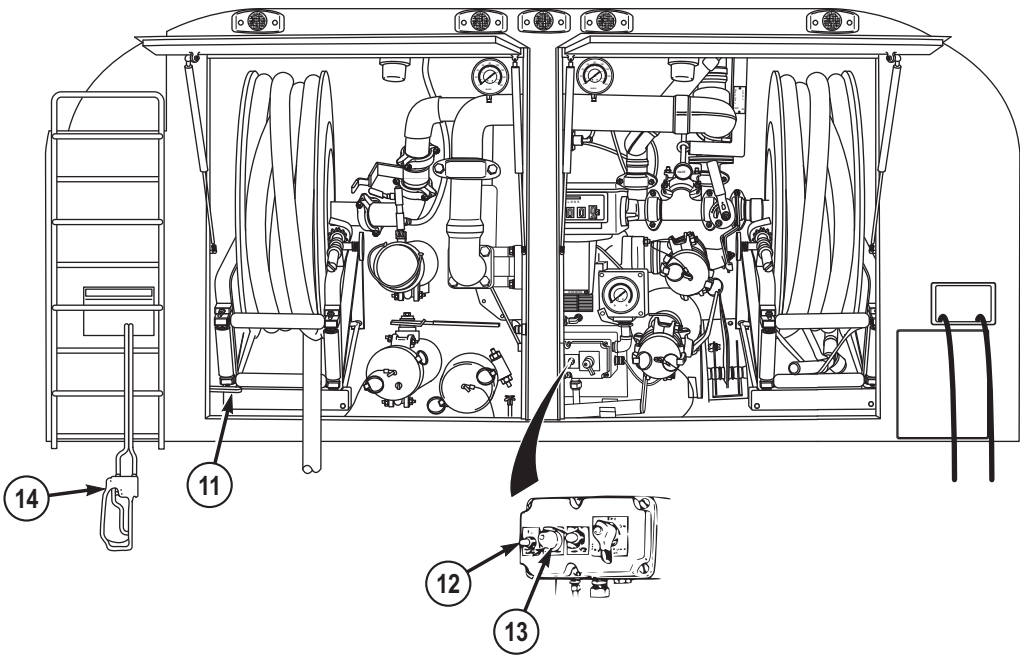


Figure 7.

13. Set TC/THROTTLE CONTROL switch (12) to ON.
14. Press HI/HIGH IDLE switch (13).
15. Pull out HAV HAND ACTUATED CONTROL valve (14).
16. Remove fuel filter cover from receiving vehicle or aircraft.
17. Insert fuel service nozzle (5) or over-wing nozzle (6) through fuel filler of receiving vehicle or aircraft.

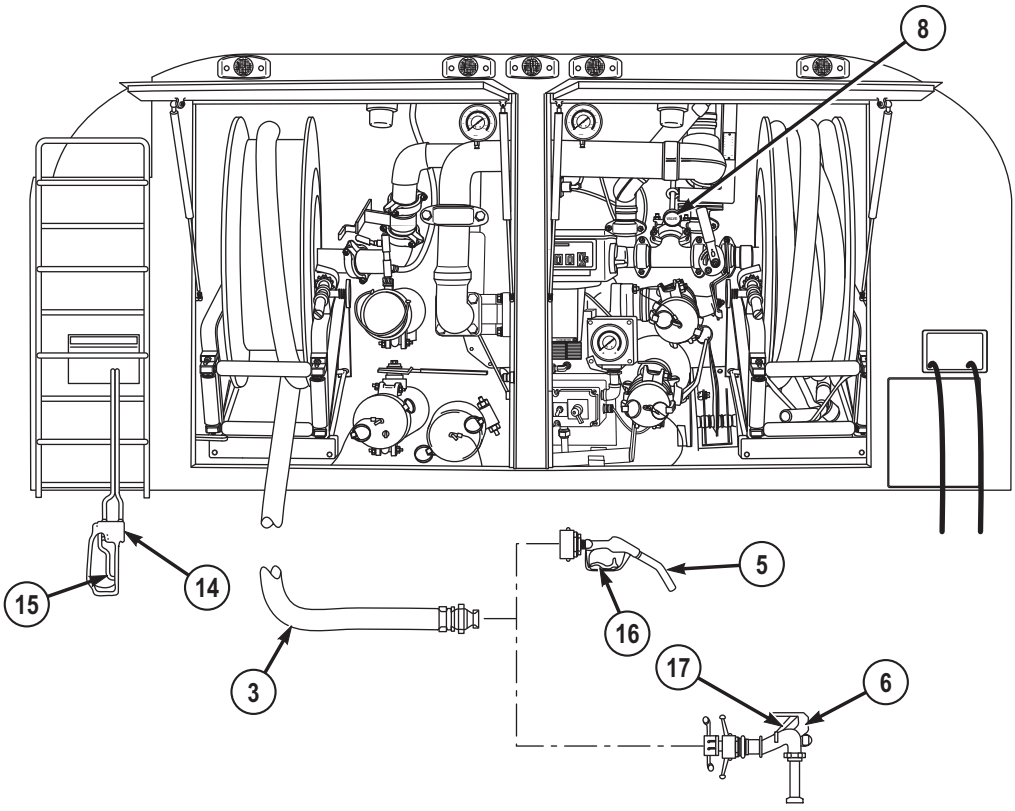


Figure 8.

NOTE

HAV HAND ACTUATED CONTROL valve must be open for fuel to flow.

18. Squeeze and hold lever (15) to open HAV HAND ACTUATED CONTROL valve (14).
19. Squeeze and hold lever (16) on fuel service nozzle (5) or lever (17) on over-wing nozzle (6) to start fuel flow.
20. When receiving vehicle or aircraft tank is filled to desired level, release lever (16 or 17) and HAV HAND ACTUATED CONTROL valve lever (15).
21. Remove fuel service nozzle (5) or over-wing nozzle (6) from receiving vehicle or aircraft fuel filler.
22. Install fuel filler cover on receiving vehicle or aircraft.

NOTE

Tanker must have at least 300 gal (1136 liters) of fuel remaining in order to perform fuel hose evacuation.

23. Pull out V6 FUEL/DEFUEL VALVE control rod (8).
24. Squeeze and hold lever (15) to open HAV HAND ACTUATED CONTROL valve (14).
25. Squeeze and hold lever (16) on fuel service nozzle (5) or level (17) on over-wing nozzle (6) to evacuate fuel from servicing hose (3).
26. When all fuel is evacuated from servicing hose (3), release lever (16 or 17) and lever (15) on HAV HAND ACTUATED CONTROL valve (14). Dispose of fuel in accordance with unit SOP.
27. Let HAV HAND ACTUATED CONTROL valve hoses (18) rewind onto reel (19) and stow inside pump module (20).

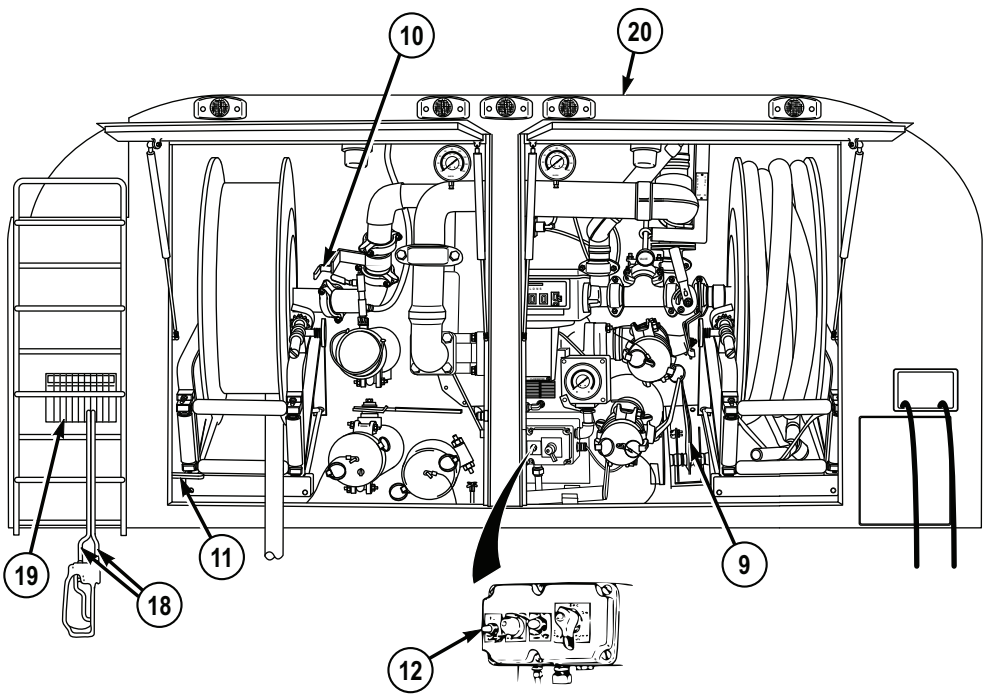


Figure 9.

28. Set TC/THROTTLE CONTROL switch (12) down to OFF position.
29. Pull back on PUMP ENGAGEMENT LEVER (11) until locked.
30. Push MC MANUAL CONTROL EM VALVE lever (9) forward.

31. Close V7 REEL VALVE (10).
32. Remove over-wing nozzle (6) from reducer adapter (7).

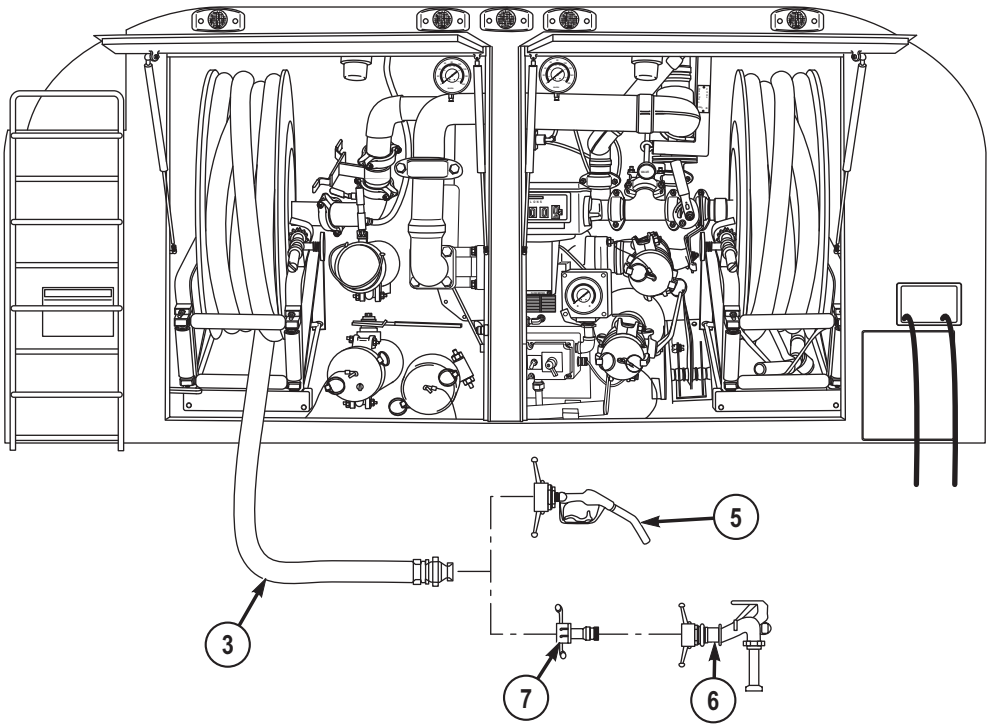


Figure 10.

NOTE

Reducer adapter is used with over-wing nozzle only. If over-wing nozzle was not used, skip to Step (35).

33. Remove reducer adapter (7) from servicing hose (3).
34. Return over-wing nozzle (6) and reducer adapter (7) to stowage.
35. Remove hand crank handle (21) from stowage.

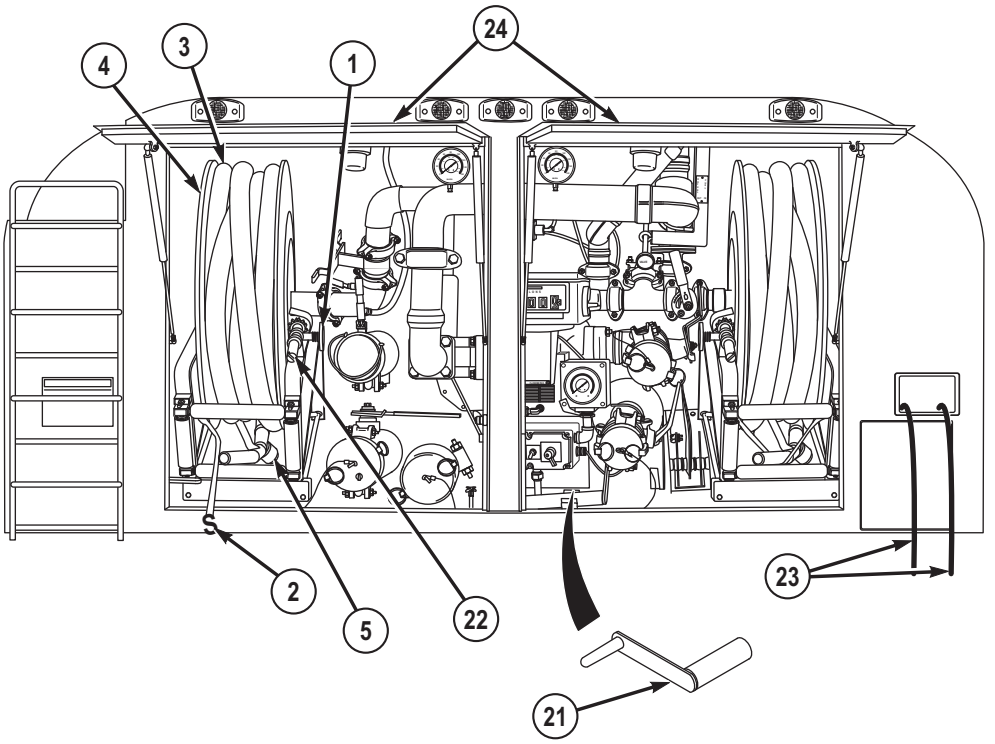


Figure 11.

36. Release hose reel tension knob (1).
37. Insert hand crank handle (21) onto crankshaft (22).
38. Turn hand crank handle (21) to rewind servicing hose (3) onto reel (4).
39. Place fuel service nozzle (5) in stowage position and secure with rubber tiedown strap (2).
40. Engage hose reel tension knob (1).
41. Return hand crank handle (21) to stowage.
42. Disconnect and rewind SR1 and SR2 static cables (23).
43. Close tanker module doors (24).
44. Set HYD ENABLE switch (25) to off position. MAIN HYD ENABLE indicator (26) will go out.

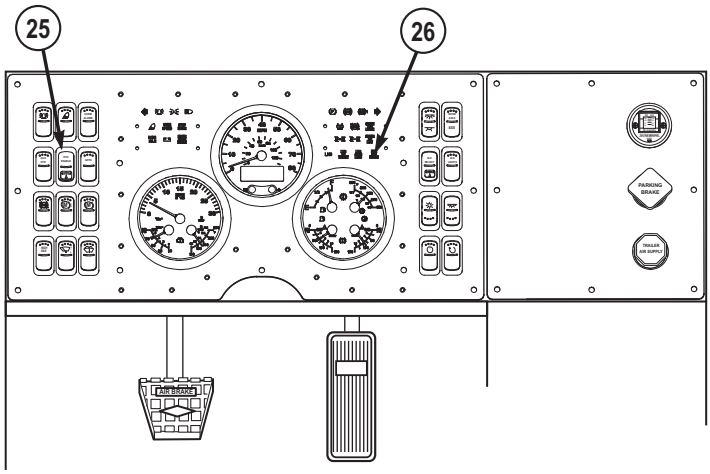


Figure 12.

45. Shut off engine. (WP 0056)

END OF TASK

END OF WORK PACKAGE

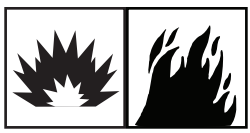
OPERATOR MAINTENANCE
RE-CIRCULATE FUEL

INITIAL SETUP:

Not Applicable

PREPARE TANKER MODULE

WARNING



To prevent fire or explosion, do not allow smoking, flame, sparks, and hot or glowing objects within 50 ft. (15 m) of vehicle. Read and follow all safety precautions in FM 10-67-1. Failure to comply may result in injury or death to personnel.

CAUTION

- Do not run tanker pump without fuel in system or damage to fuel pump and hydraulic motor may result.
- Do not press accelerator during tanker primary fuel pump operation. Engine speeds higher than 1500 rpm may cause damage to hydraulic motor and primary pump.

NOTE

If equipment malfunctions, check that all steps of procedure have been performed in proper order. If equipment still malfunctions, do trouble-shooting.

1. Start engine. (WP 0043)
2. Park vehicle. (WP 0055)
3. Set HYD ENABLE switch (1) to off position. MAIN HYD ENABLE indicator (2) will go out.

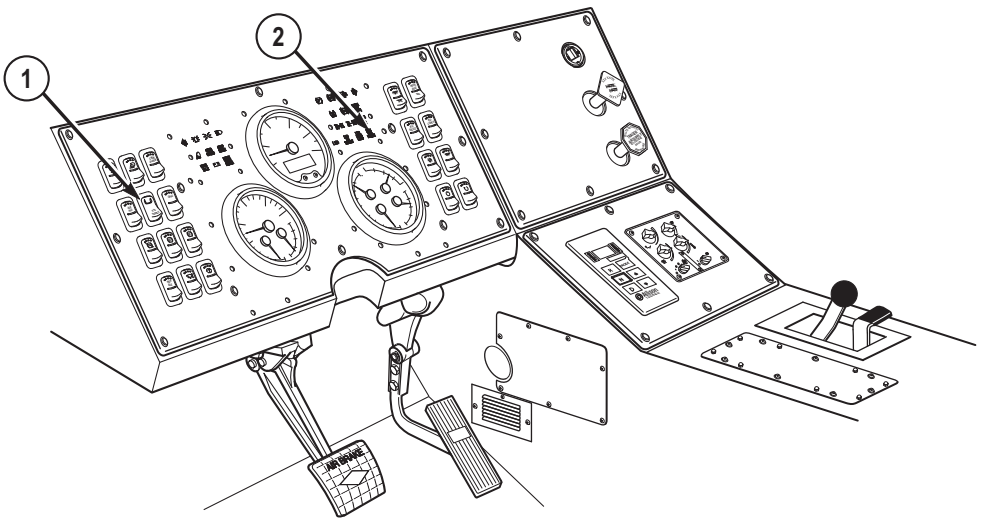


Figure 1.

CAUTION

Do not move hydraulic selector valve control while HYD ENABLE switch is set to on position or vehicle hydraulic equipment may be damaged.

4. Push in hydraulic selector valve control for tanker pump operation.

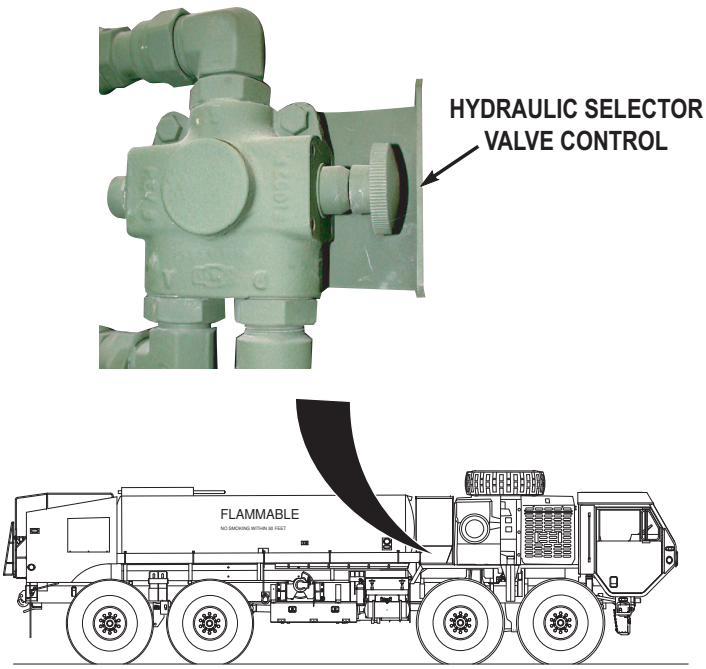


Figure 2.

5. Set HYD ENABLE switch (1) to on position. MAIN HYD ENABLE indicator (2) will illuminate.

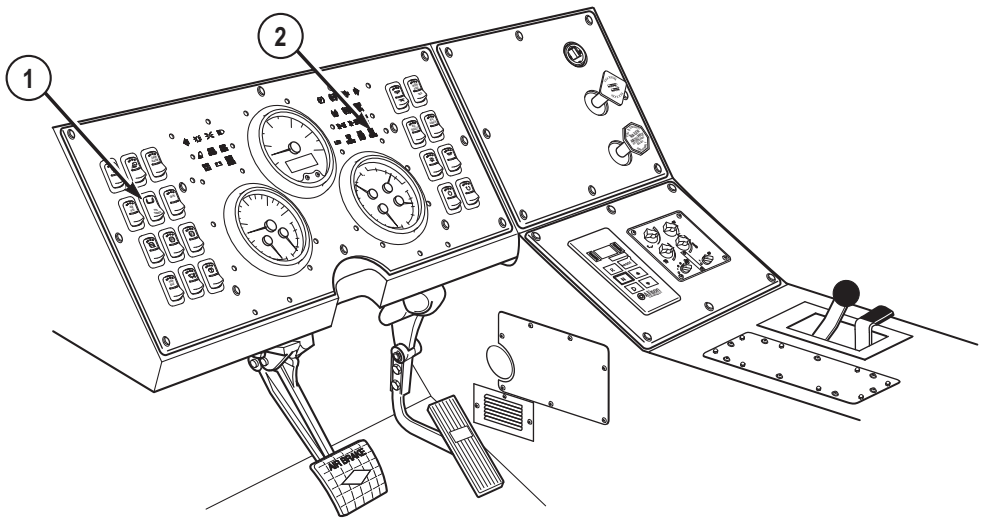


Figure 3.

WARNING



Stand clear to avoid injury when operating pump module rear doors. When each door is about halfway open, gas pistons push doors open quickly and with much force. Failure to comply may result in injury or death to personnel.

6. Open pump module rear doors (3).

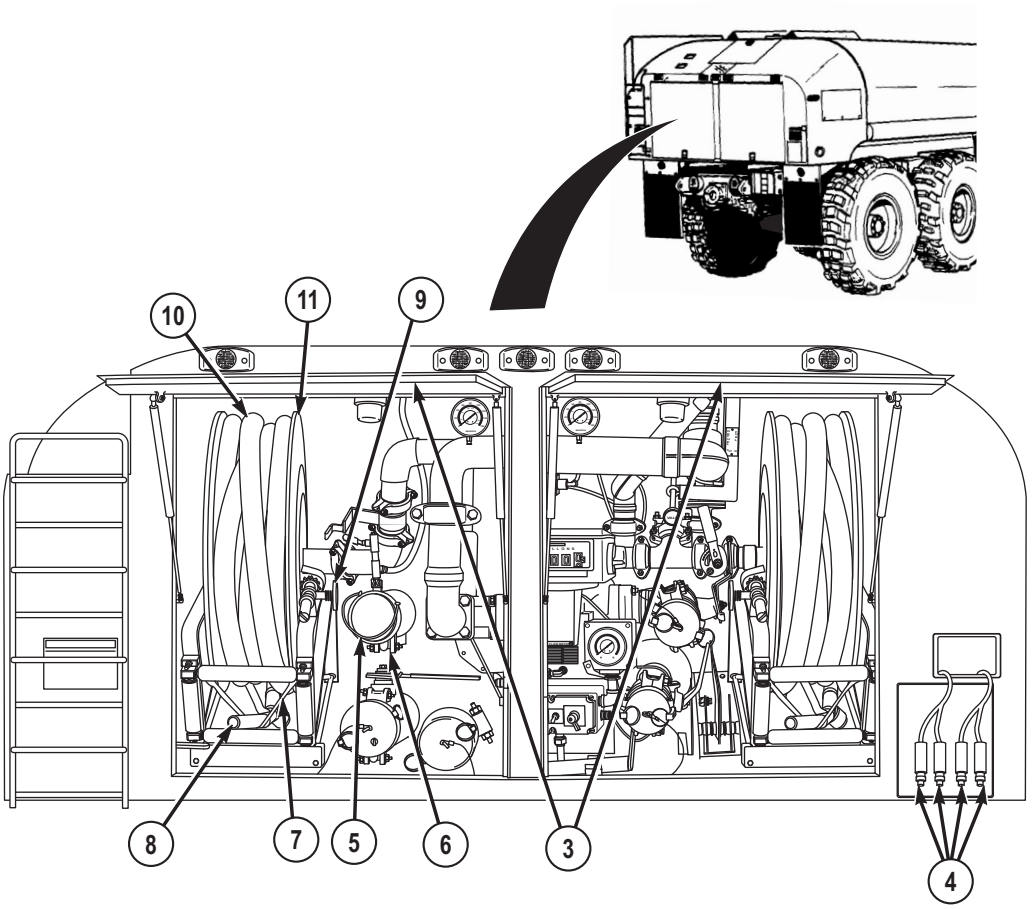


Figure 4.

7. Position tanker controls. (WP 0078)
8. Connect SR1 and SR2 static cables (4) to grounding devices.
9. Remove dust cap (5) from A B/L RECEPTACLE (6).

NOTE

Driver side servicing hose is shown. Procedure for using passenger side servicing hose is same.

10. Remove rubber tie-down strap (7) to release fuel service nozzle (8) from stowed position.
11. Disengage hose reel tension knob (9).
12. Pull out about 15 ft. (5 m) of servicing hose (10) from reel (11).
13. Engage hose reel tension knob (9).
14. Remove fuel service nozzle (8) from servicing hose (10). Place fuel service nozzle (8) in stowage.
15. Remove D1 adapter (12) from stowage.

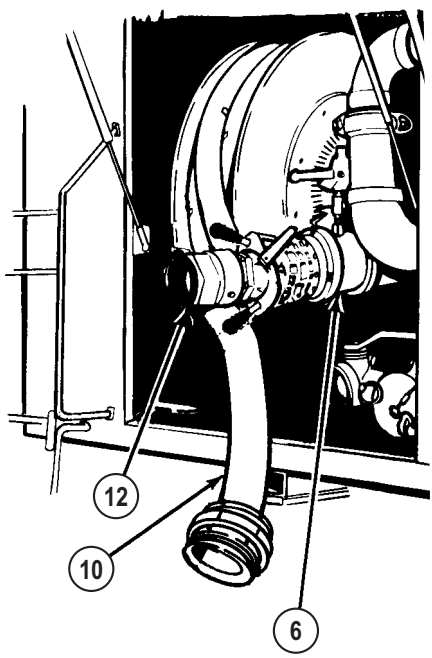
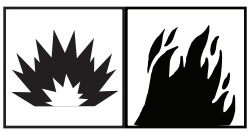


Figure 5.

16. Connect D1 adapter (12) to A B/L RECEPTACLE (6).
17. Connect servicing hose (10) to D1 adapter (12).

RE-CIRCULATE FUEL

WARNING



To prevent fire or explosion, do not allow smoking, flame, sparks, and hot or glowing objects within 50 ft. (15 m) of vehicle. Read and follow all safety precautions in FM 10-67-1. Failure to comply may result in injury or death to personnel.

1. Push in V6 FUEL/DEFUEL valve control rod (1).

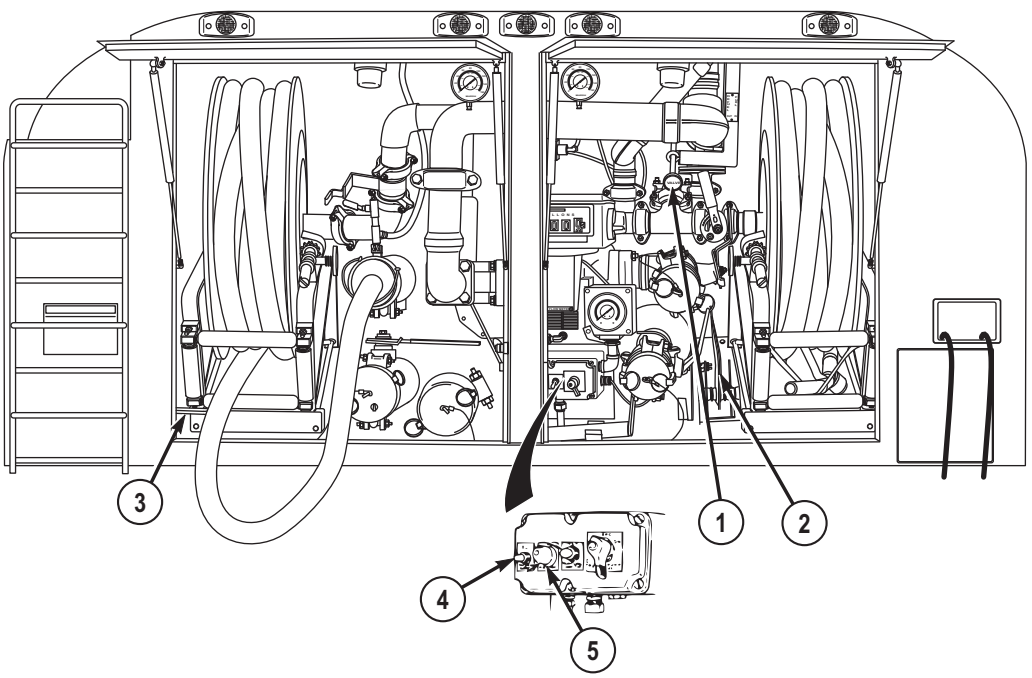


Figure 6.

2. Pull back MC MANUAL CONTROL EM VALVE lever (2).
3. Push PUMP ENGAGEMENT LEVER (3) forward.

4. Set TC/THROTTLE CONTROL switch (4) up to ON position.
5. Press HI/HIGH IDLE switch (5).

NOTE

- Refer to tanker module controls-center (WP 0029) for information about discharge line pressure gauge (DLPG) and venturi-nozzle pressure gauge (VNPG).
- V8 REEL VALVE is used to control flow rate when right side servicing hose is used.

6. Open V7 REEL VALVE (6).

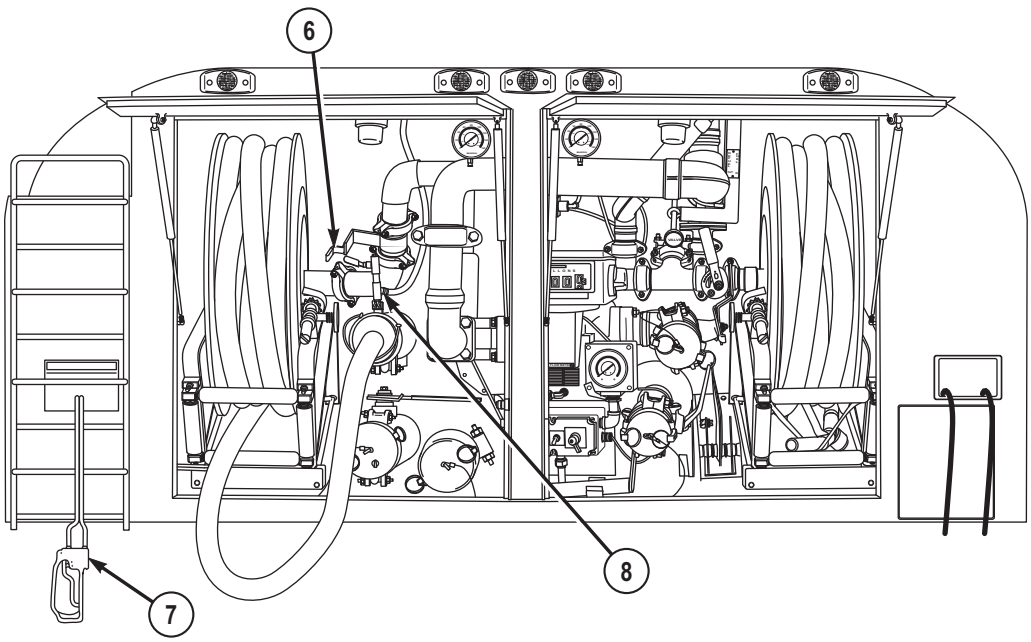


Figure 7.

7. Pull out HAV HAND ACTUATED CONTROL valve (7).
8. Move D1 adapter valve lever (8) to OPEN position.

NOTE

HAV HAND ACTUATED CONTROL valve must be open for fuel to flow.

9. Squeeze and hold HAV HAND ACTUATED CONTROL valve lever (9) to recirculate fuel.

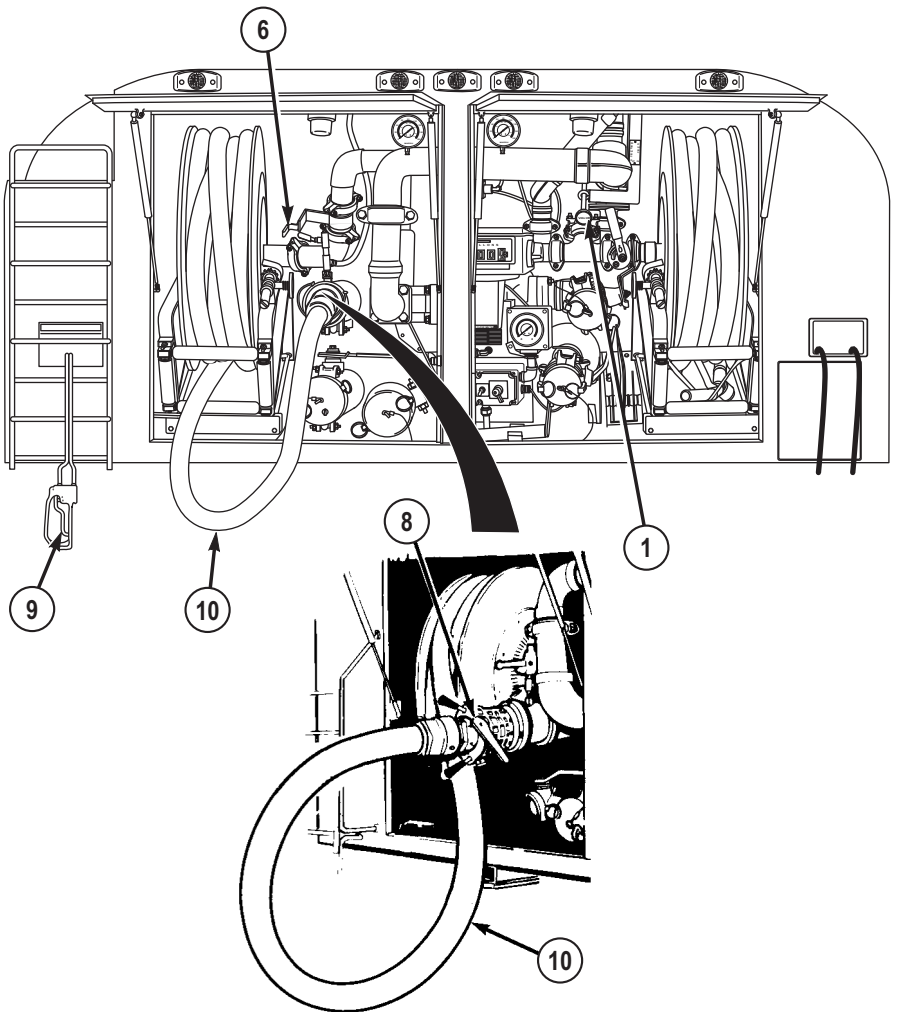


Figure 8.

10. When recirculation is completed, release HAV HAND ACTUATED CONTROL valve lever (9).
11. Move D1 adapter valve lever (8) to CLOSE position.

NOTE

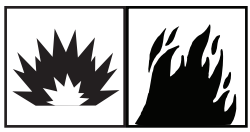
Tanker must be holding at least 300 gal (1136 liters) of fuel in order to perform fuel hose evacuation.

12. Pull out V6 FUEL/DEFUEL VALVE control rod (1).

13. Squeeze and hold HAV HAND ACTUTATED CONTROL valve lever (9) to aid in evacuating fuel from servicing hose (10).
14. Close V7 REEL VALVE (6) and release HAV HAND ACTUATED CONTROL valve lever (9).

SHUT DOWN RE-CIRCULATION OF FUEL

WARNING



To prevent fire or explosion, do not allow smoking, flame, sparks, and hot or glowing objects within 50 ft. (15 m) of vehicle. Read and follow all safety precautions in FM 10-67-1. Failure to comply may result in injury or death to personnel.

NOTE

A small amount of fuel will remain in servicing hose. Keep servicing hose opening pointed up to prevent fuel spillage while installing fuel service nozzle.

1. Disconnect D1 adapter (1) from A B/L RECEPTACLE (2).

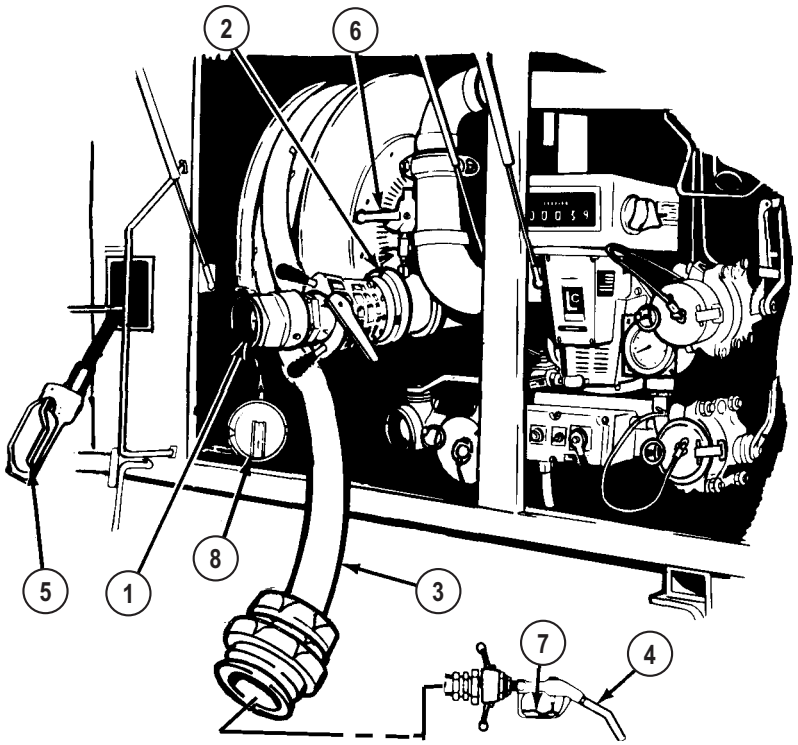


Figure 9.

2. Disconnect servicing hose (3) from D1 adapter (1).
3. Stow D1 adapter (1).
4. Remove fuel service nozzle (4) from stowage and install on servicing hose (3).
5. Squeeze and hold HAV HAND ACTUATED CONTROL valve lever (5) and open V7 REEL VALVE (6).
6. Squeeze and hold lever (7) on fuel service nozzle (4) to complete servicing hose (3) evacuation.
7. When all fuel is emptied from servicing hose (3), release HAV HAND ACTUATED CONTROL valve lever (5) and fuel service nozzle lever (7).
8. Close V7 REEL VALVE (6).
9. Install dust cap (8) on A B/L RECEPTACLE (2).
10. Set TC/THROTTLE CONTROL switch (9) to OFF position.

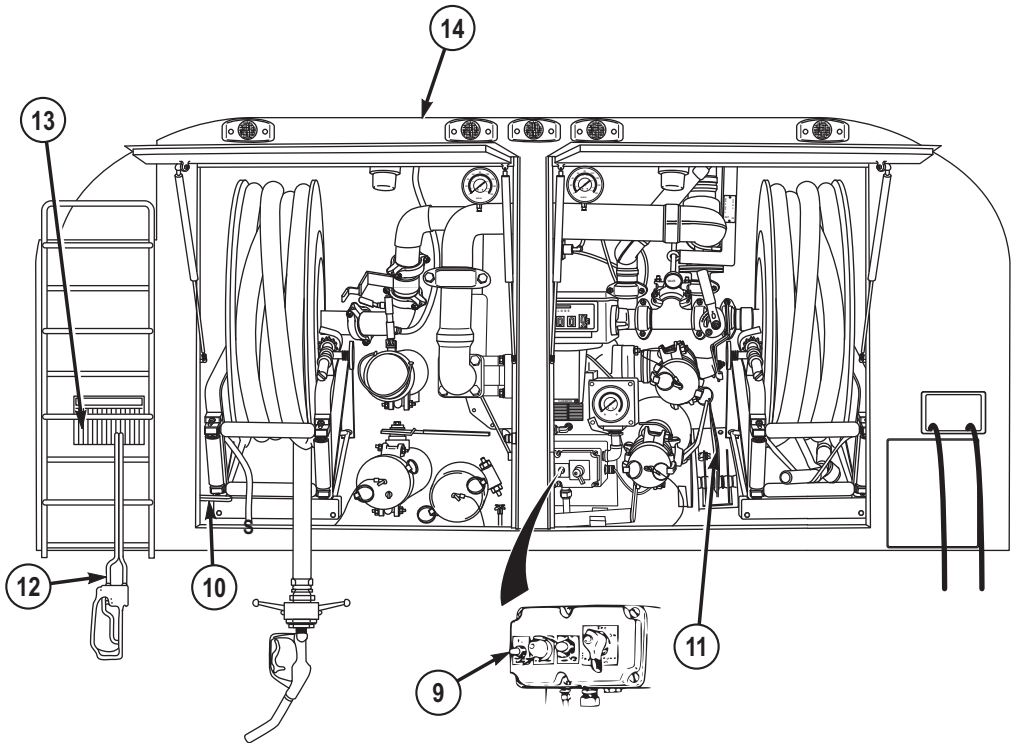


Figure 10.

11. Pull back on PUMP ENGAGEMENT LEVER (10) until locked.
12. Push MC MANUAL CONTROL EM VALVE lever (11) forward.

CAUTION

Carefully guide control valve hoses through access hole onto reel. Failure to comply may result in equipment damage.

13. Rewind HAV HAND ACTUATED CONTROL valve hoses (12) onto reel (13) and stow inside pump module (14).
14. Remove hand crank handle (15) from stowage on pump module (14).

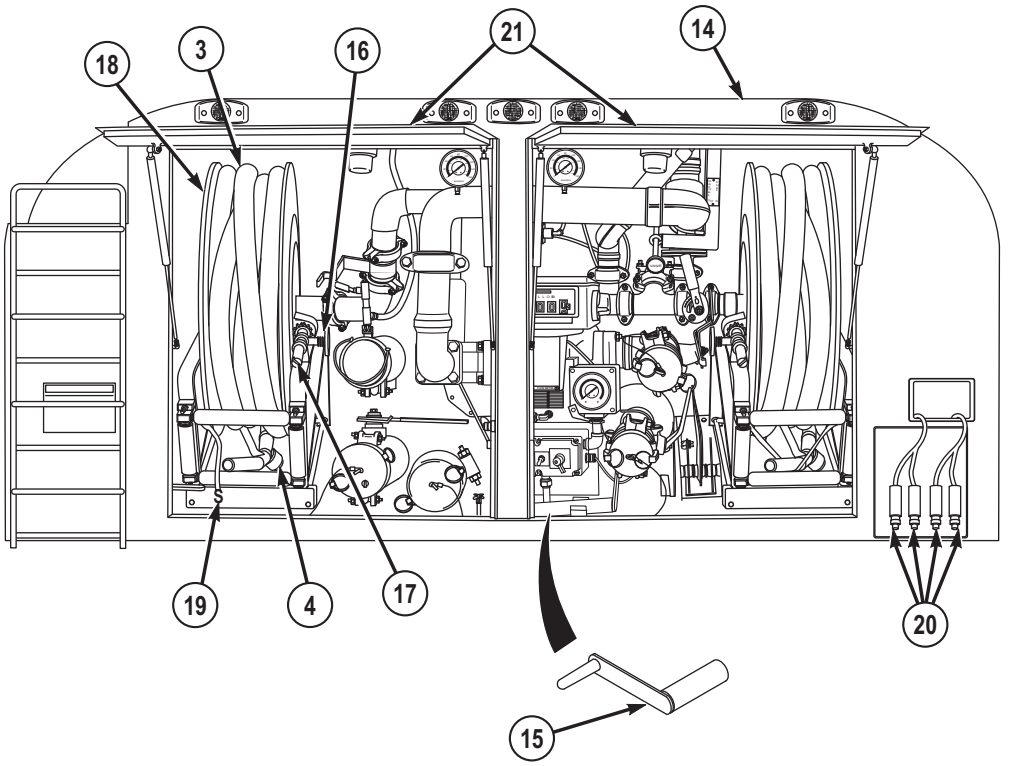


Figure 11.

15. Disengage hose reel tension knob (16).
16. Insert hand crank handle (15) onto crankshaft (17).
17. Turn hand crank handle (15) to rewind servicing hose (3) onto reel (18).
18. Return fuel service nozzle (4) to stowed position and connect rubber tie-down strap (19) to hold fuel service nozzle (4) in place.
19. Engage hose reel tension knob (16).
20. Return hand crank handle (15) to stowage.
21. Disconnect and rewind SR1 and SR2 static cables (20).
22. Close pump module rear doors (21).
23. Set HYD ENABLE switch (22) to off position. MAIN HYD ENABLE indicator (23) will go out.

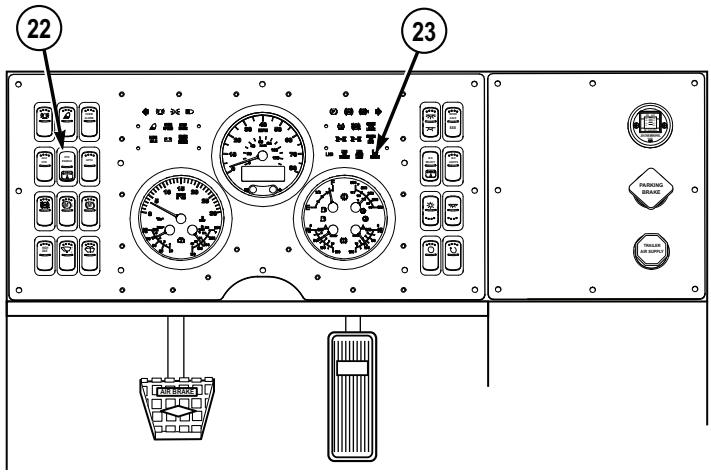


Figure 12.

24. Shut off engine. (WP 0056)

END OF TASK

END OF WORK PACKAGE

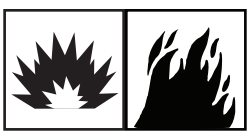
OPERATOR MAINTENANCE
UNLOAD FUEL FROM TANKER

INITIAL SETUP:

Not Applicable

FILTERED BULK UNLOADING

WARNING



To prevent fire or explosion, do not allow smoking, flame, sparks, and hot or glowing objects within 50 ft. (15 m) of vehicle. Read and follow all safety precautions in FM 10-67-1. Failure to comply may result in injury or death to personnel.

CAUTION

- Do not run tanker pump without fuel in system or damage to fuel pump and hydraulic motor may result.
- Do not press accelerator during tanker primary fuel pump operation. Engine speeds higher than 1500 rpm may cause damage to hydraulic motor and primary pump.

NOTE

- Dispose of unloaded/drained fuel in accordance with unit SOP.
- If equipment malfunctions, check that all steps of procedure have been performed in proper order. If equipment still malfunctions, complete troubleshooting procedures.

1. Start engine (WP 0043) and position fuel for bulk unloading.
2. Park vehicle. (WP 0055)
3. Set HYD ENABLE switch (1) to off position. MAIN HYD ENABLE indicator (2) will go out.

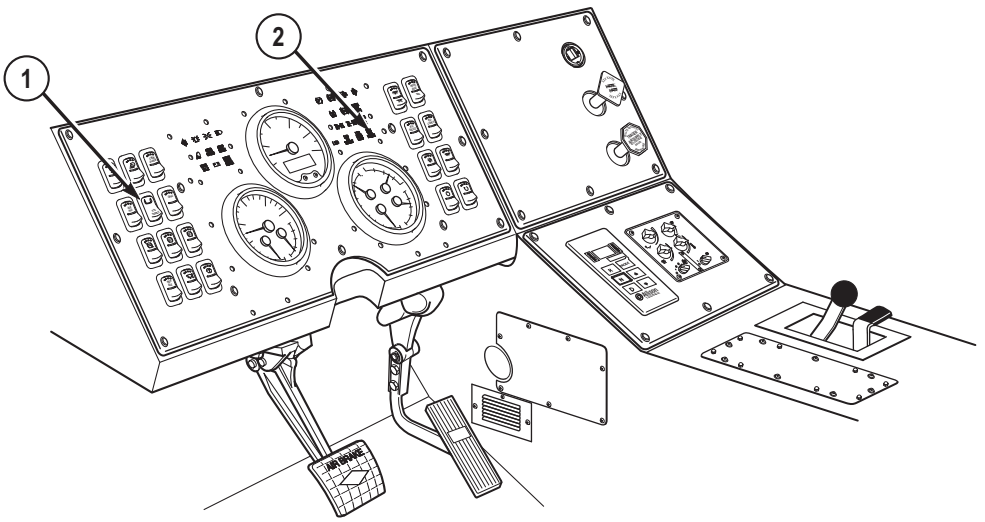


Figure 1.

CAUTION

Do not move hydraulic selector valve control while HYD ENABLE switch is set to on position or vehicle hydraulic equipment may be damaged.

4. Push in hydraulic selector valve control for tanker pump operation.

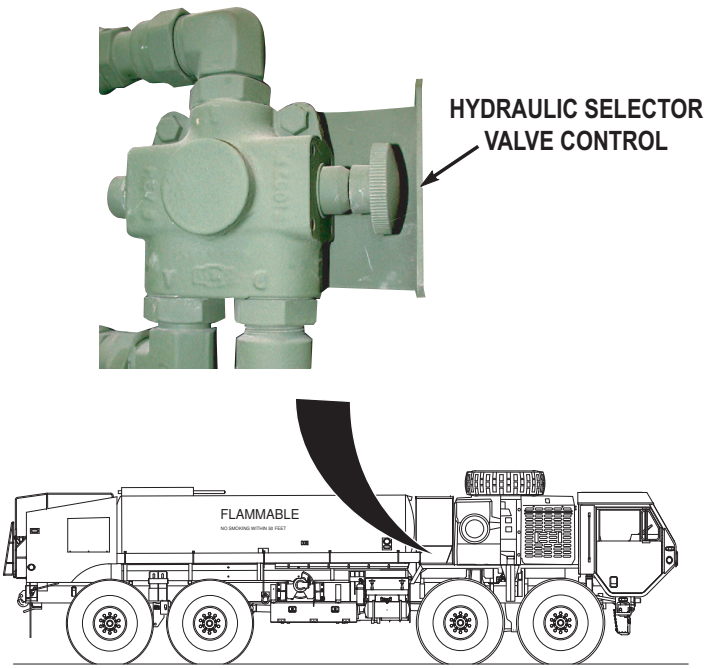


Figure 2.

5. Set HYD ENABLE switch (1) to on position. MAIN HYD ENABLE indicator (2) will illuminate.

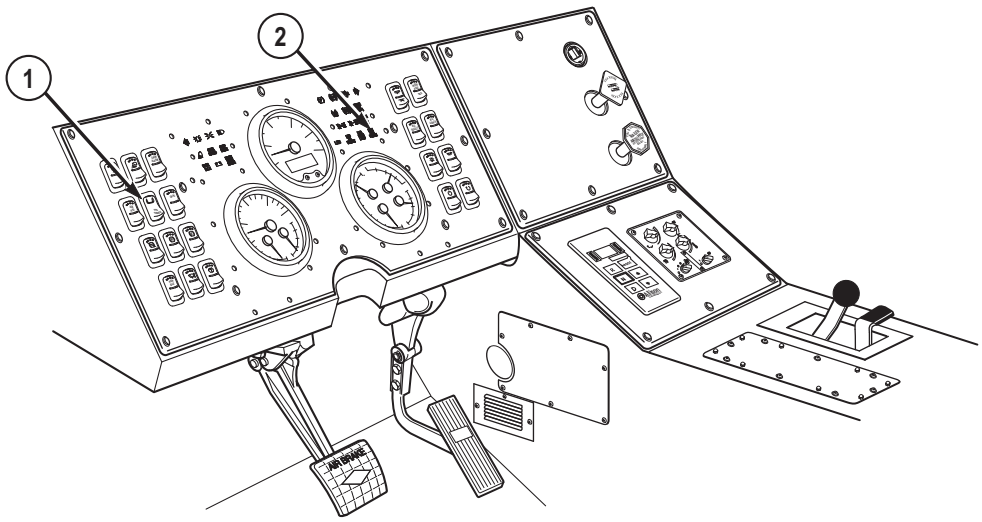


Figure 3.

WARNING



Stand clear to avoid injury when operating pump module rear doors. When each door is about halfway open, gas pistons push doors open quickly and with much force. Failure to comply may result in injury or death to personnel.

6. Open pump module rear doors (3).

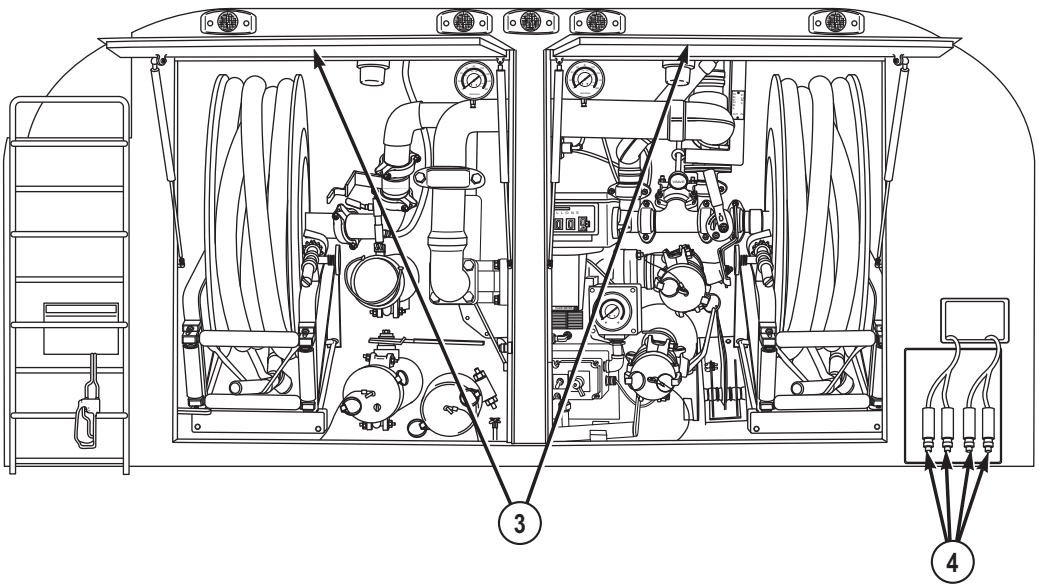


Figure 4.

7. Position tanker controls. (WP 0078)
8. Connect SR1 and SR2 static cables (4) to equipment receiving fuel and to grounding devices.
9. Remove dust cap (5) from D BULK RECEPTACLE (METERED) (6).

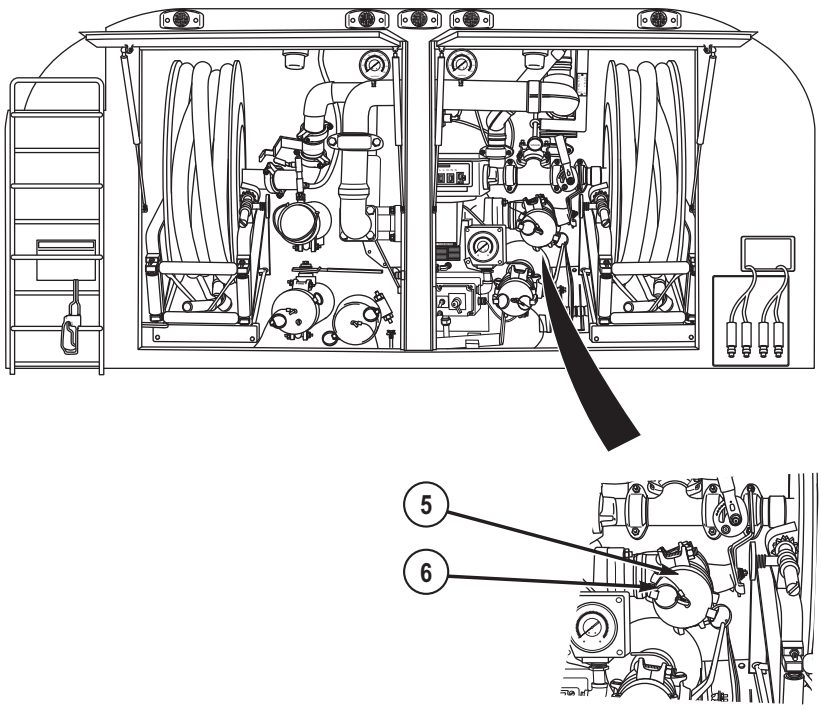


Figure 5.

10. Open stowage tube cover (7) and remove suction hose (8).

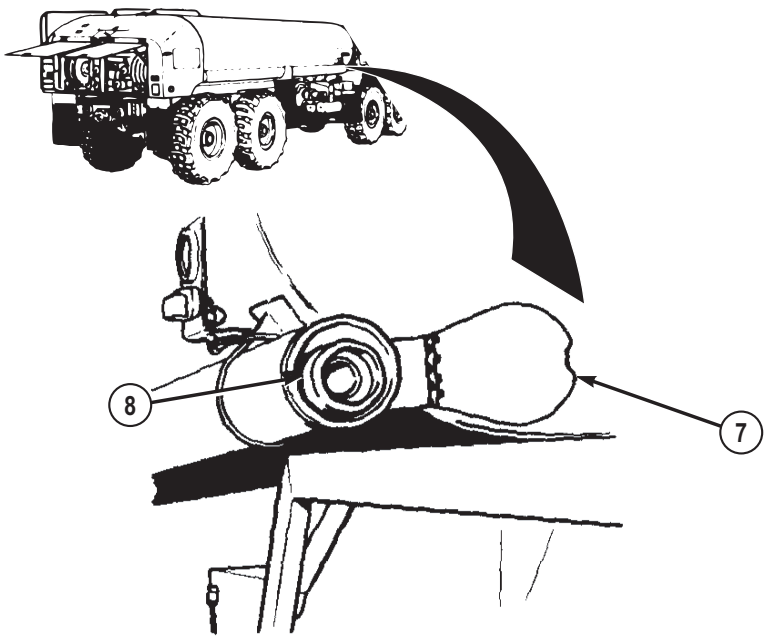


Figure 6.

11. Connect one end of suction hose (8) to D BULK RECEPTACLE (METERED) (6) and other end to receiving receptacle.

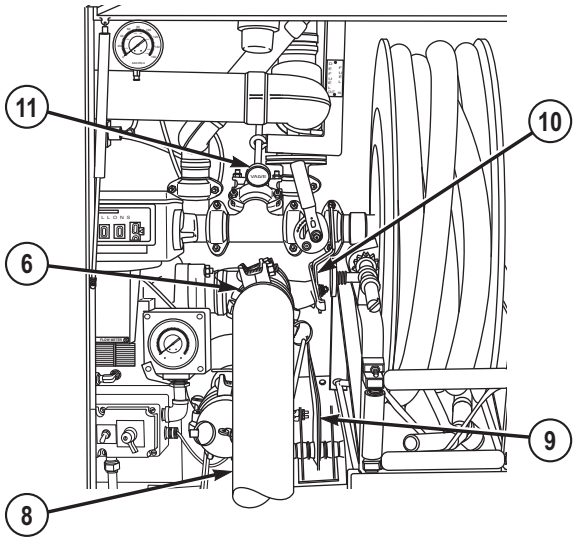


Figure 7.

12. Pull back MC MANUAL CONTROL EM VALVE lever (9).
13. Set V11 FLOW VALVE (REG) (10) to desired flow rate.
14. Push V6 FUEL/DEFUEL VALVE control rod (11) in.
15. Push PUMP ENGAGEMENT LEVER (12) forward.

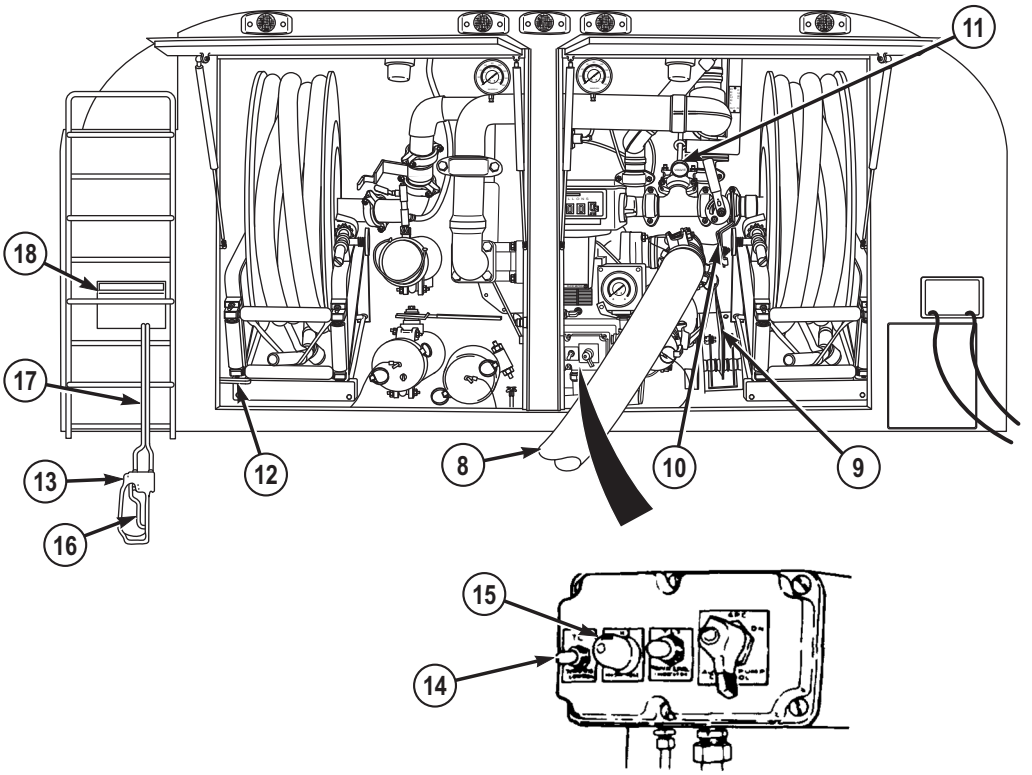


Figure 8.

16. Pull out HAV HAND ACTUATED CONTROL valve (13).
17. Set TC/THROTTLE CONTROL switch (14) up to ON.
18. Press HI/HIGH IDLE switch (15).

NOTE

HAV HAND ACTUATED CONTROL valve must be open for fuel to flow.

19. Squeeze and hold HAV HAND ACTUATED CONTROL valve lever (16) to unload fuel.
20. When unloading is finished, release HAV HAND ACTUATED CONTROL valve lever (16).
21. Set TC/THROTTLE CONTROL switch (14) down to OFF.
22. Pull back on PUMP ENGAGEMENT LEVER (12) until locked.
23. Push MC MANUAL CONTROL EM VALVE lever (9) forward.
24. Push V6 FUEL/DEFUEL VALVE control rod (11) in.

25. Close V11 FLOW VALVE (REG) (10).
26. Rewind HAV HAND ACTUATED CONTROL valve hoses (18) onto reel (19).
27. Remove remaining fuel in suction hose (8) by walking out suction hose.
28. Remove suction hose (8), drain fuel, and dispose of fuel in accordance with unit SOP.
29. Return suction hose (8) to stowage tube and close cover (7).

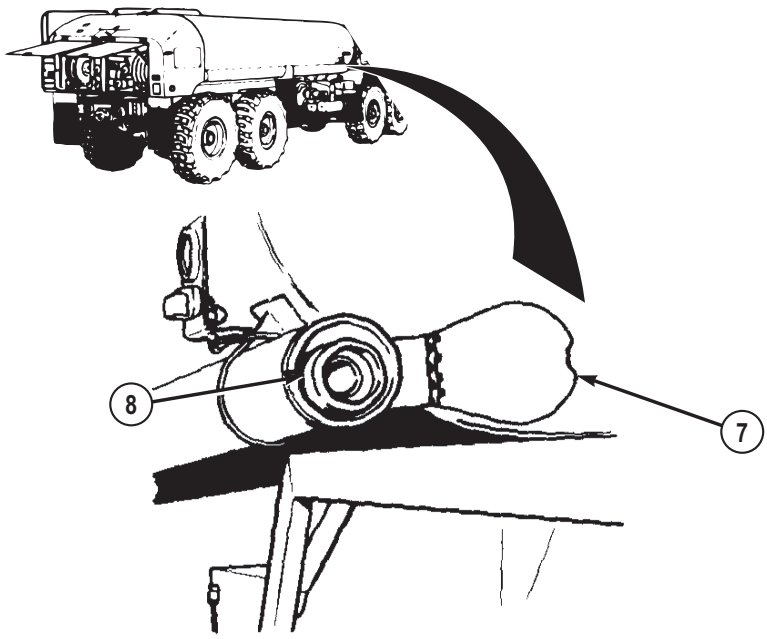


Figure 9.

30. Install dust cap (5) on D BULK RECEPTACLE (METERED) (6).

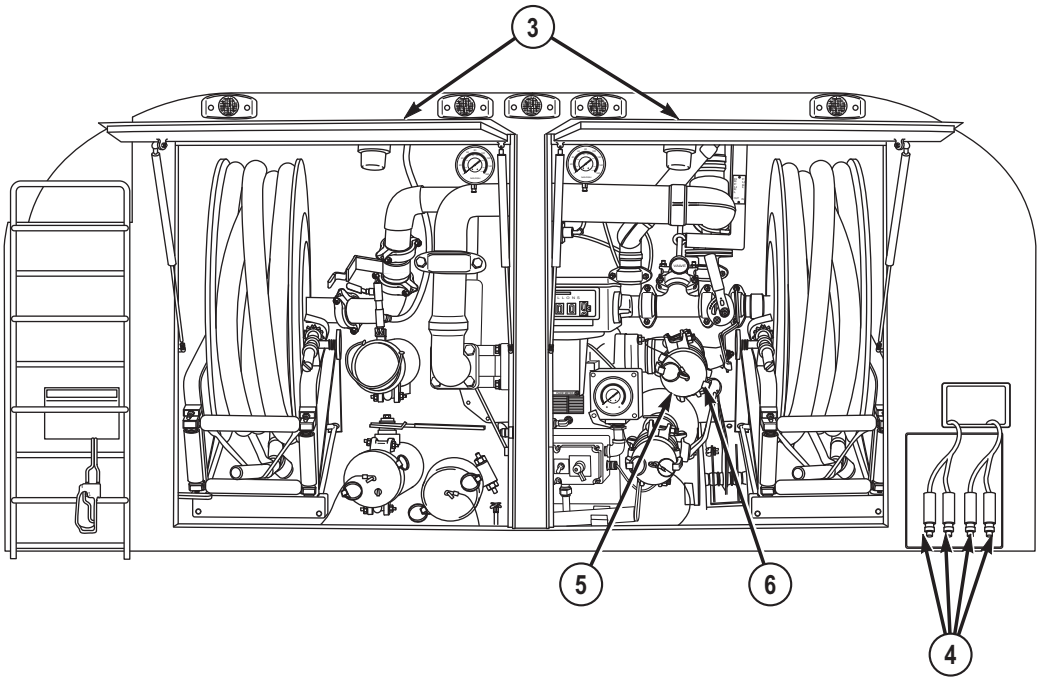


Figure 10.

31. Disconnect and rewind SR1 and SR2 static cables (4).
32. Close pump module rear doors (3).
33. Set HYD ENABLE switch (1) to off position. MAIN HYD ENABLE indicator (2) will go out.

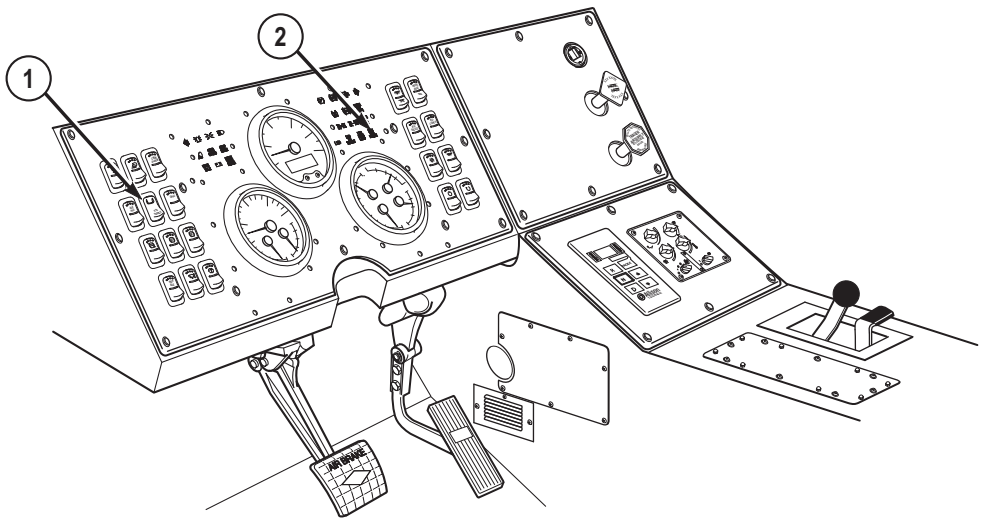
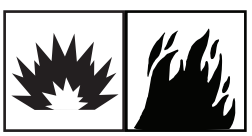


Figure 11.

34. Shut off engine. (WP 0056)

UNFILTERED BULK UNLOADING

WARNING



To prevent fire or explosion, do not allow smoking, flame, sparks, and hot or glowing objects within 50 ft. (15 m) of vehicle. Read and follow all safety precautions in FM 10-67-1. Failure to comply may result in injury or death to personnel.

CAUTION

- Do not run tanker pump without fuel in system or damage to fuel pump and hydraulic motor may result.
- Do not press accelerator during tanker primary fuel pump operation. Engine speeds higher than 1500 rpm may cause damage to hydraulic motor and primary pump.

NOTE

- Dispose of unloaded/drained fuel in accordance with unit SOP.

- If equipment malfunctions, check that all steps of procedure have been performed in proper order. If equipment still malfunctions, complete troubleshooting procedures.

1. Start engine (WP 0043) and position fuel for bulk unloading.
2. Park vehicle. (WP 0055)
3. Set HYD ENABLE switch (1) to off position. MAIN HYD ENABLE indicator (2) will go out.

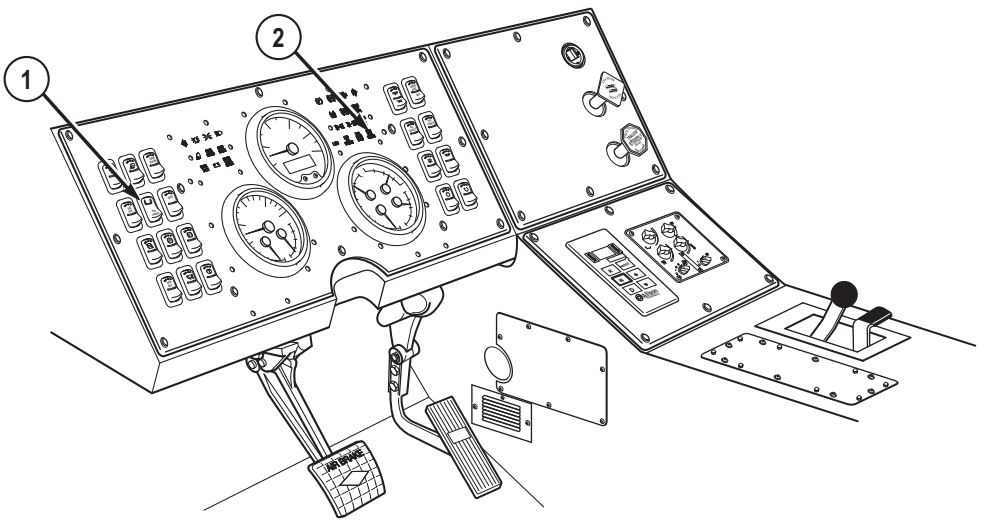


Figure 12.

CAUTION

Do not move hydraulic selector valve control while HYD ENABLE switch is positioned on, or vehicle hydraulic equipment may be damaged.

4. Push in hydraulic selector valve control for tanker pump operation.

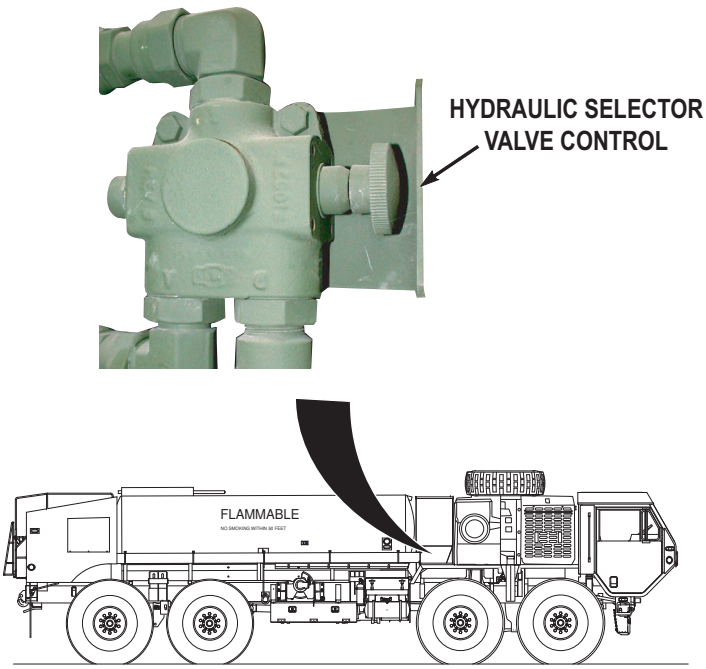


Figure 13.

5. Set HYD ENABLE switch (1) to on position. MAIN HYD ENABLE indicator (2) will illuminate.

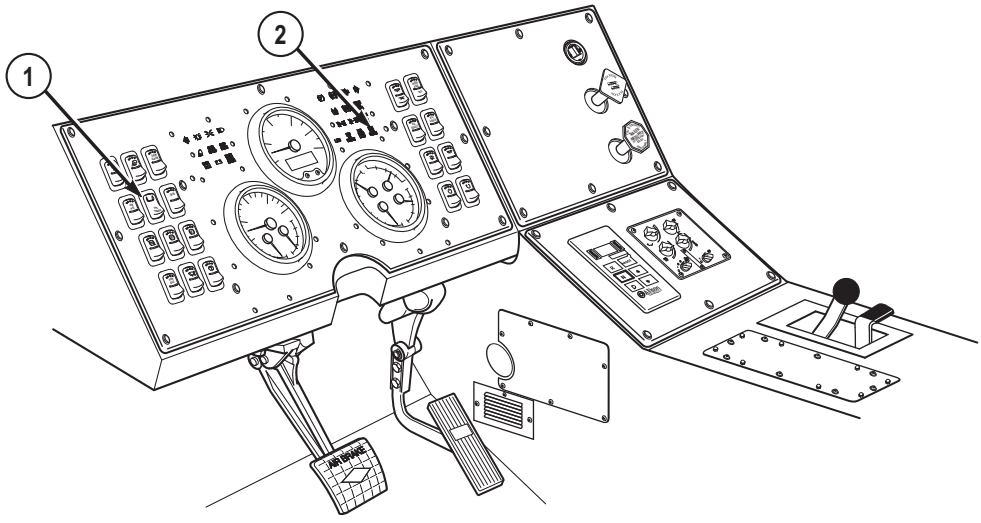


Figure 14.

WARNING



Stand clear to avoid injury when operating pump module rear doors. When each door is about halfway open, gas pistons push doors open quickly and with much force. Failure to comply may result in injury or death to personnel.

6. Open pump module rear doors (3).

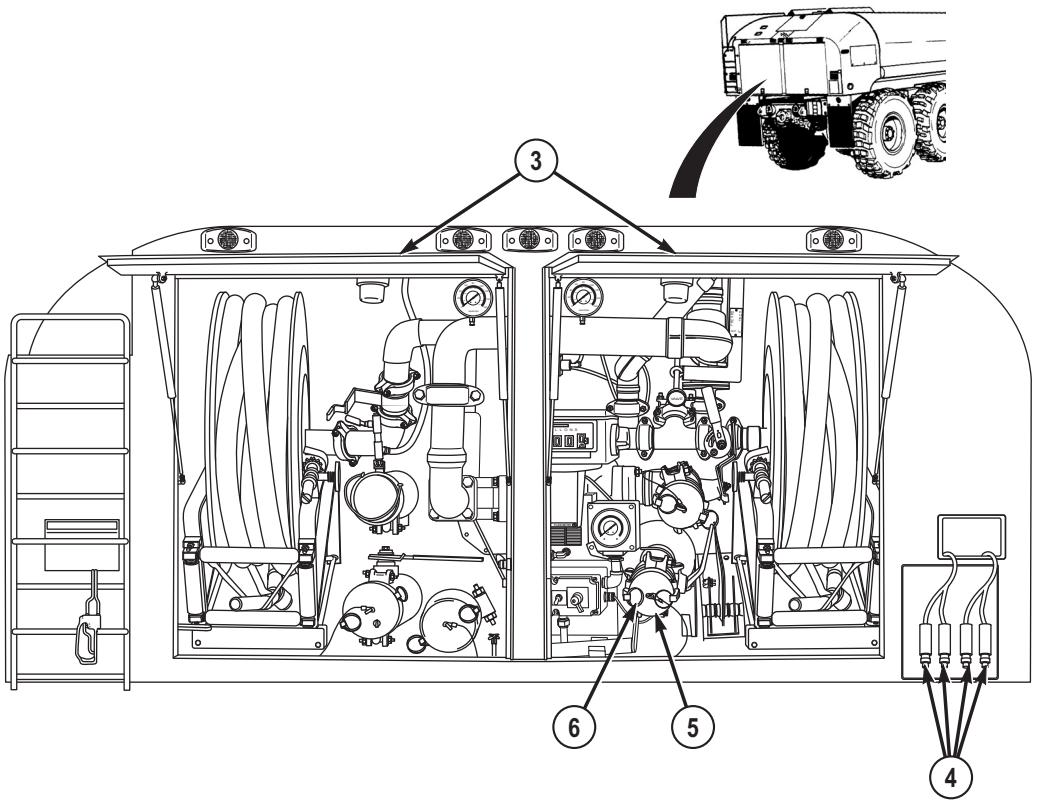


Figure 15.

7. Position tanker controls. (WP 0078)
8. Connect SR1 and SR2 static cables (4) to equipment receiving fuel and to grounding devices.

9. Remove dust cap (5) from C BULK RECEPTACLE (UNFIL) (6).
10. Open stowage tube cover (7) and remove suction hose (8).

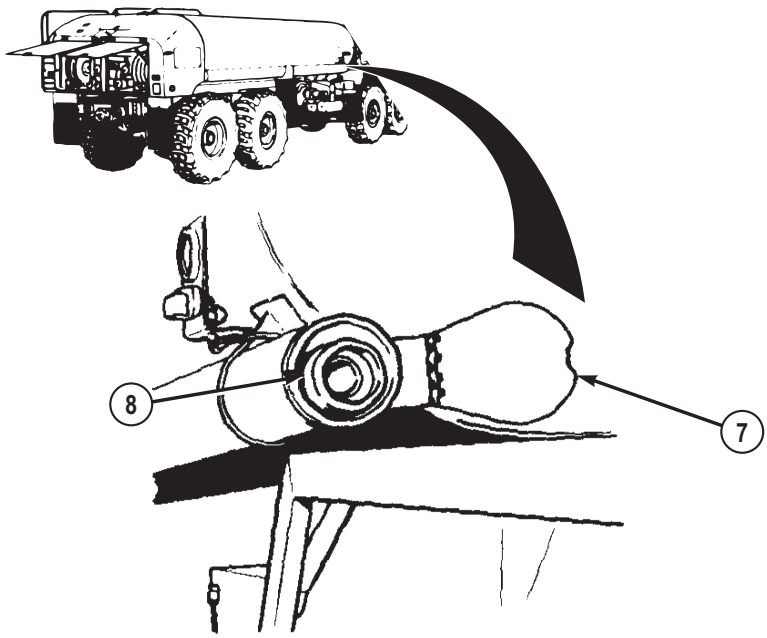


Figure 16.

11. Connect one end of suction hose (8) to C BULK RECEPTACLE (UNFIL) (6) and other end to receiving receptacle.

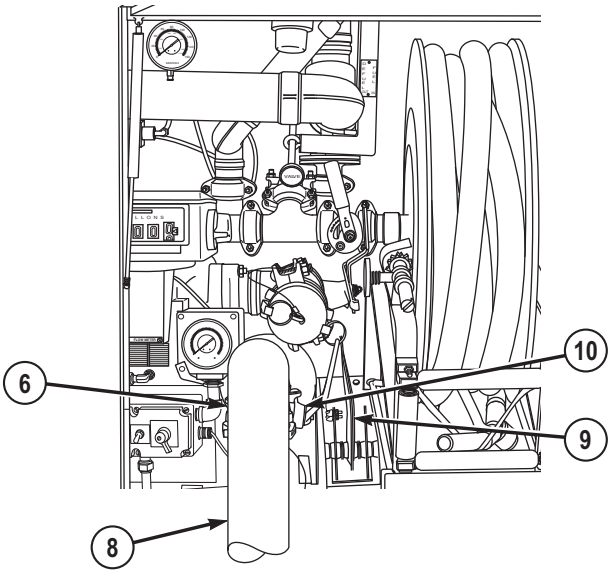


Figure 17.

12. Pull back MC MANUAL CONTROL EM VALVE lever (9).
13. Open V18 BULK DELIVERY VALVE (10).
14. Push PUMP ENGAGEMENT LEVER (11) forward.

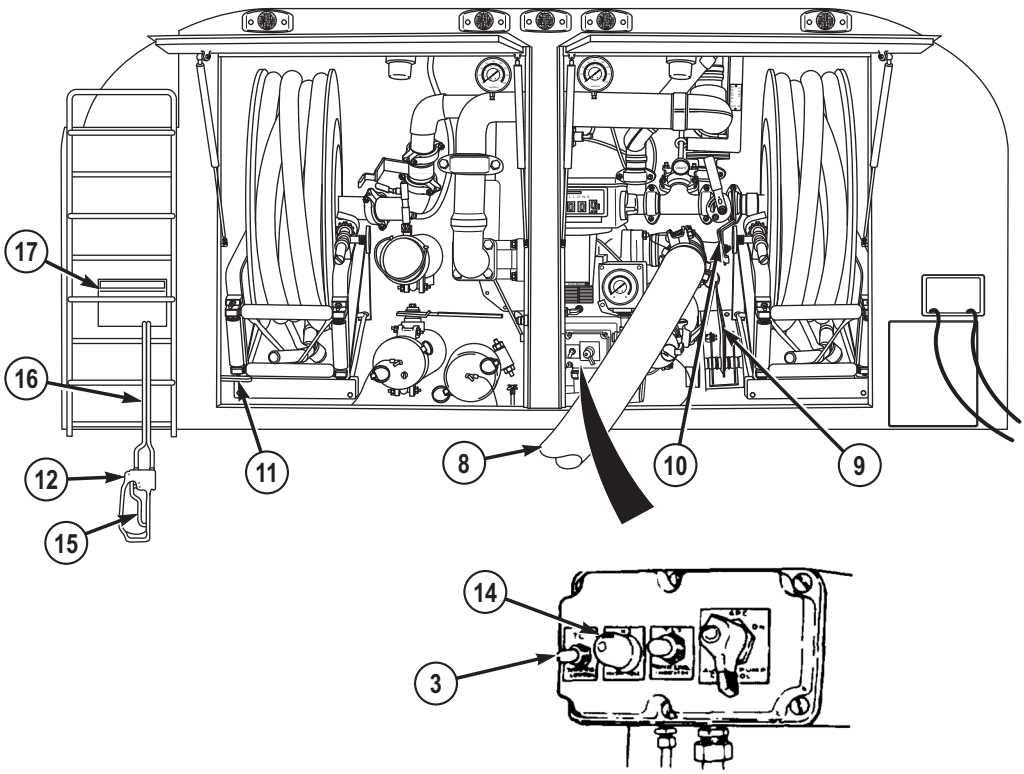


Figure 18.

15. Pull out HAV HAND ACTUATED CONTROL valve (12).
16. Set TC/THROTTLE CONTROL switch (13) up to ON position.
17. Press HI/HIGH IDLE switch (14).

NOTE

HAV HAND ACTUATED CONTROL valve must be open for fuel to flow.

18. Squeeze and hold HAV HAND ACTUATED CONTROL valve lever (15) to unload fuel.
19. When unloading is finished; release HAV HAND ACTUATED CONTROL valve lever (15).
20. Set TC/THROTTLE CONTROL switch (13) down to OFF.
21. Pull back on PUMP ENGAGEMENT LEVER (11) until locked.
22. Push MC MANUAL CONTROL EM VALVE lever (9) forward.
23. Close V18 BULK DELIVERY VALVE (10).

CAUTION

Carefully guide control valve hoses through access hole onto reel. Failure to comply may result in damage to equipment.

24. Rewind HAV HAND ACTUATED CONTROL valve hoses (16) on to reel (17).

NOTE

Remove remaining fuel in suction hose by walking out suction hose.

25. Remove suction hose (8), drain fuel, and dispose of fuel in accordance with unit SOP.
26. Return suction hose (8) to stowage tube and close cover (7).

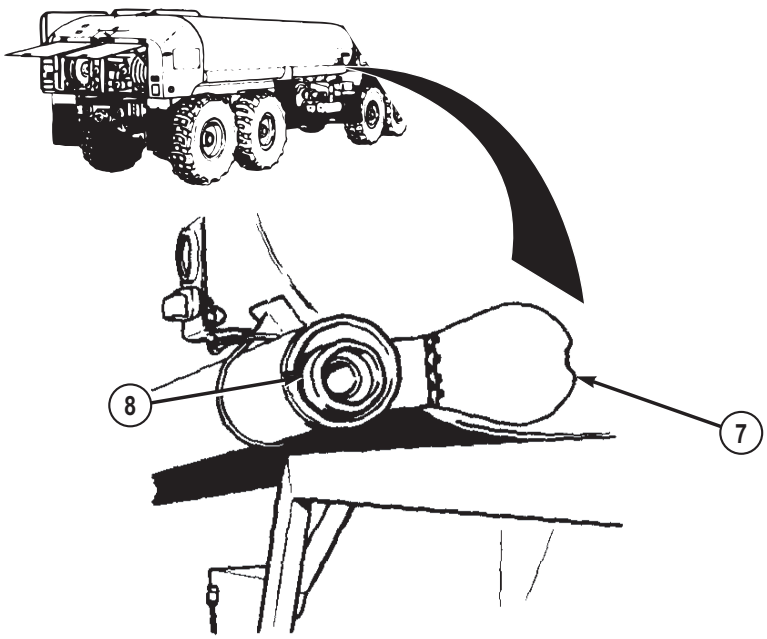


Figure 19.

27. Disconnect and rewind SR1 and SR2 static cables (4).

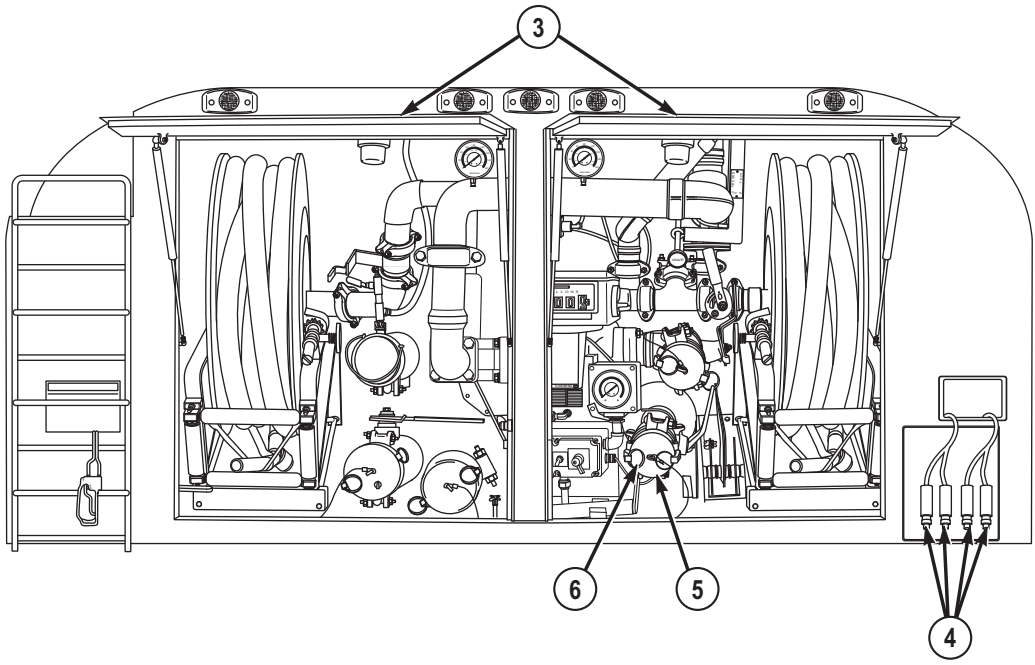


Figure 20.

28. Install dust cap (5) on C BULK RECEPTACLE (UNFIL) (6).
29. Close pump module rear doors (3).
30. Set HYD ENABLE switch (1) to off position. MAIN HYD ENABLE indicator (2) will go out.

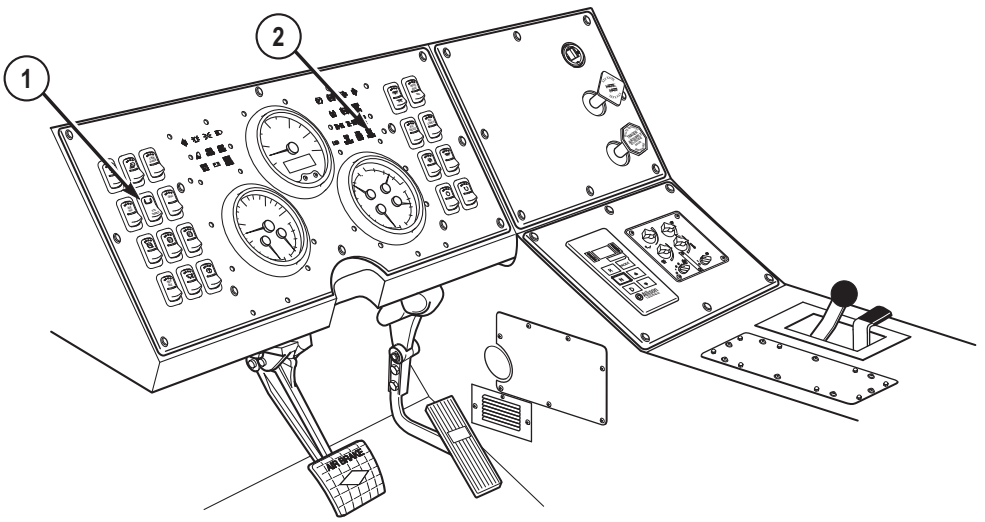
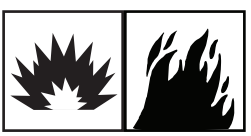


Figure 21.

31. Shut off engine. (WP 0056)

UNFILTERED GRAVITY BULK UNLOADING

WARNING



To prevent fire or explosion, do not allow smoking, flame, sparks, and hot or glowing objects within 50 ft. (15 m) of vehicle. Read and follow all safety precautions in FM 10-67-1. Failure to comply may result in injury or death to personnel.

NOTE

- Dispose of unloaded/drained fuel in accordance with unit SOP.
- If equipment malfunctions, check that all steps of procedure have been performed in proper order. If equipment still malfunctions, complete troubleshooting procedures.

1. Prepare tanker for operation. (WP 0078)
2. Connect SR1 and SR2 static cables (1) to equipment receiving fuel and to grounding devices.

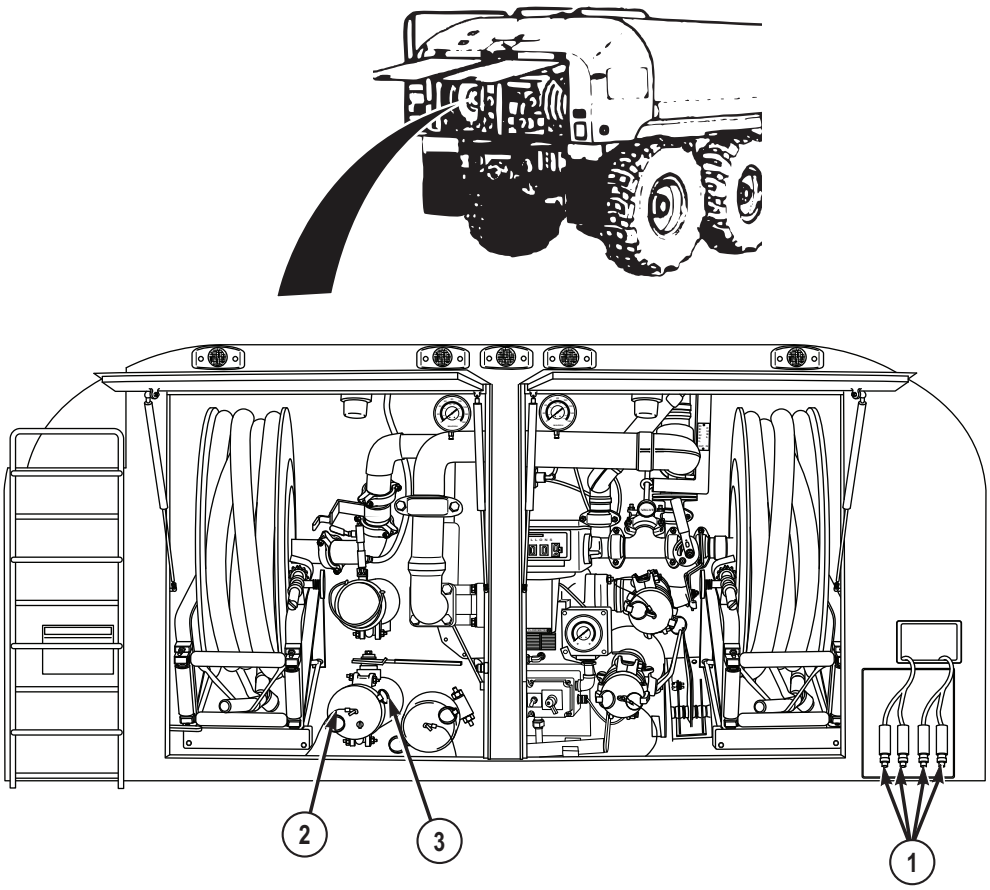


Figure 22.

3. Remove dust cap (2) from B GRAVITY RECEPTACLE (3).
4. Open stowage tube cover (4) and remove suction hose (5).

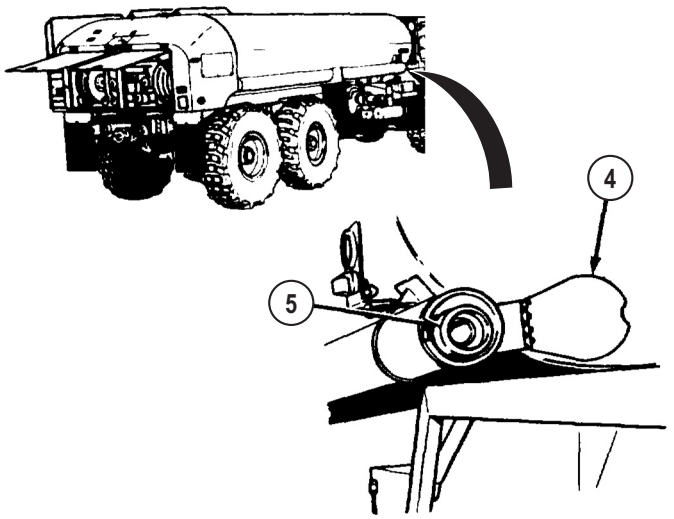


Figure 23.

NOTE

B GRAVITY RECEPTACLE is designed for a 4 in. (101.6 mm) hose. Use an army supplied hose for gravity discharge of fuel.

5. Connect one end of suction hose (5) to B GRAVITY RECEPTACLE (3) and other end to receiving receptacle.

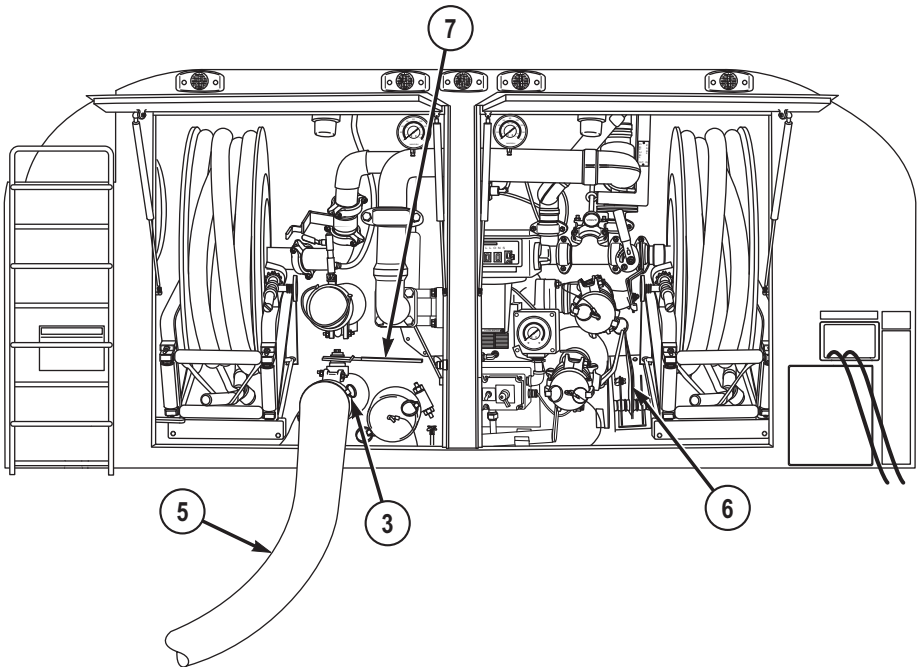


Figure 24.

6. Pull back MC MANUAL CONTROL EM VALVE lever (6).
7. Open V17 GRAVITY VALVE (7) to unload fuel.
8. When unloading is finished, close V17 GRAVITY VALVE (7).
9. Push MC MANUAL CONTROL EM VALVE lever (6) forward.
10. Remove remaining fuel in suction hose by walking out suction hose.
11. Remove suction hose (5), drain fuel, and dispose of fuel in accordance with unit SOP. Stow suction hose.
12. Return suction hose (5) to stowage tube and close cover (4).

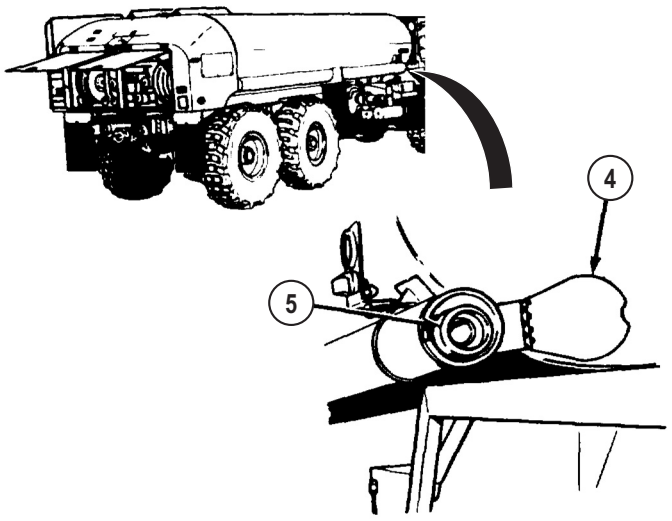


Figure 25.

13. Install dust cap (2) on B GRAVITY RECEPTACLE (3).

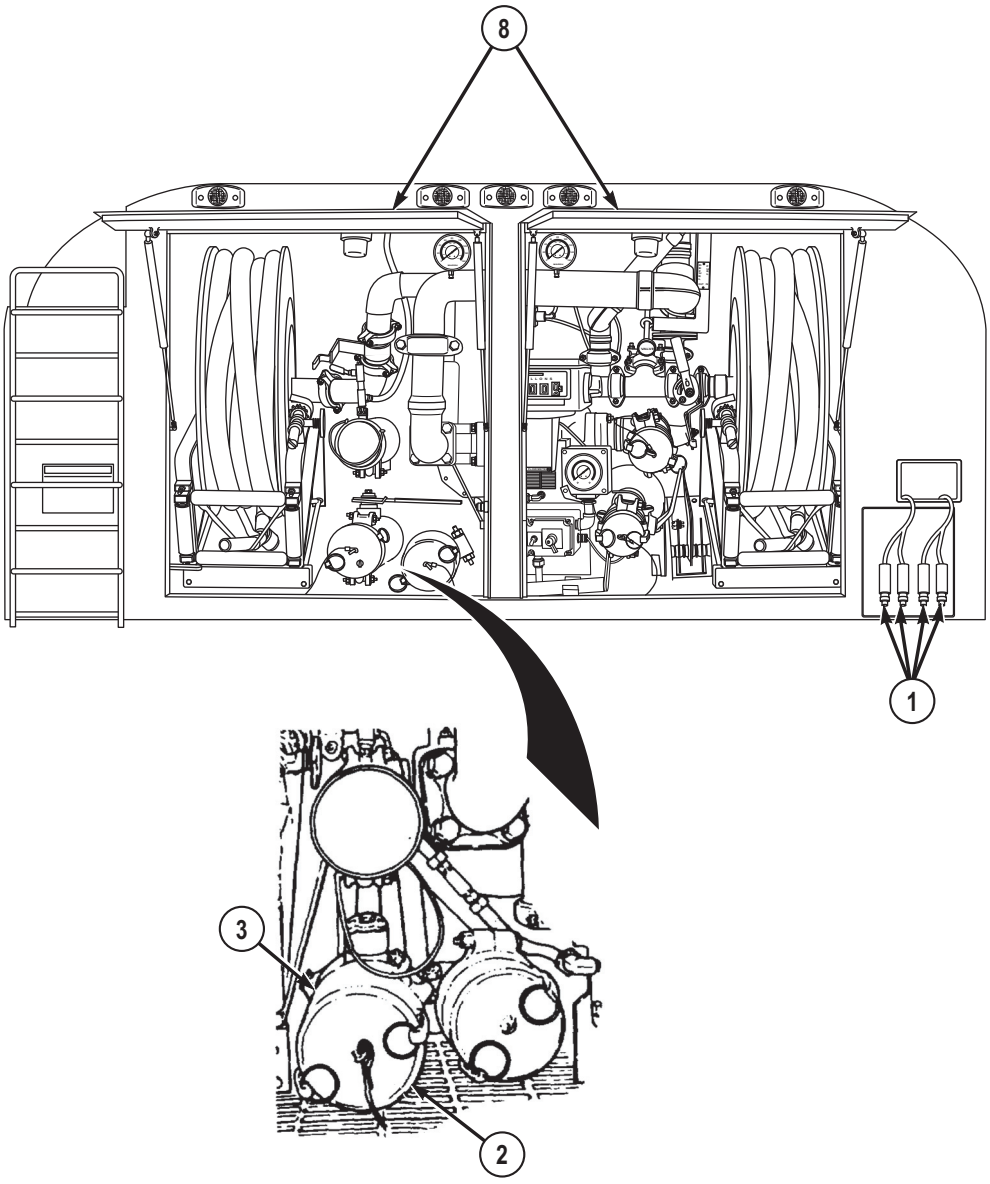


Figure 26.

14. Disconnect and rewind SR1 and SR2 static cables (1).

15. Close pump module rear doors (8).

END OF TASK

END OF WORK PACKAGE

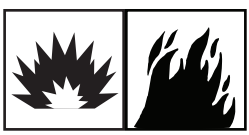
OPERATOR MAINTENANCE
CHANGING TO DIFFERENT FUEL OR FUEL GRADE

INITIAL SETUP:

Not Applicable

PREPARE TANKER MODULE

WARNING



To prevent fire or explosion, do not allow smoking, flame, sparks, and hot or glowing objects within 50 ft. (15 m) of vehicle. Read and follow all safety precautions in FM 10-67-1. Failure to comply may result in injury or death to personnel.

CAUTION

- Do not run tanker pump without fuel in system or damage to fuel pump and hydraulic motor may result.
- Do not press accelerator during tanker primary fuel pump operation. Engine speeds higher than 1500 rpm may cause damage to hydraulic motor and primary pump.

NOTE

- Refer to FM 10-67-1 for general operating instructions for tank vehicles.
- If equipment malfunctions, check that all steps of procedure have been performed in proper order. If equipment still malfunctions, do troubleshooting.
- Tanker must be holding at least 300 gal (1136 liters) of fuel in order to perform fuel hose evacuation.

1. Start engine (WP 0043) and position vehicle for bulk unloading.
2. Park vehicle. (WP 0055)

3. Set HYD ENABLE switch (1) to off position. MAIN HYD ENABLE indicator (2) will go out.

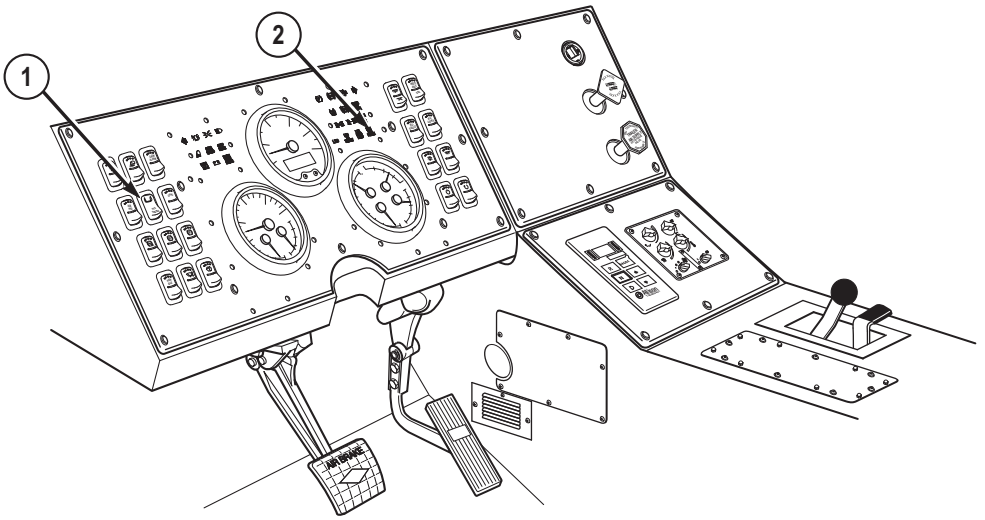


Figure 1.

CAUTION

Do not move hydraulic selector valve control while HYD ENABLE switch is set to on position or vehicle hydraulic equipment may be damaged.

4. Push in hydraulic selector valve control for tanker pump operation.

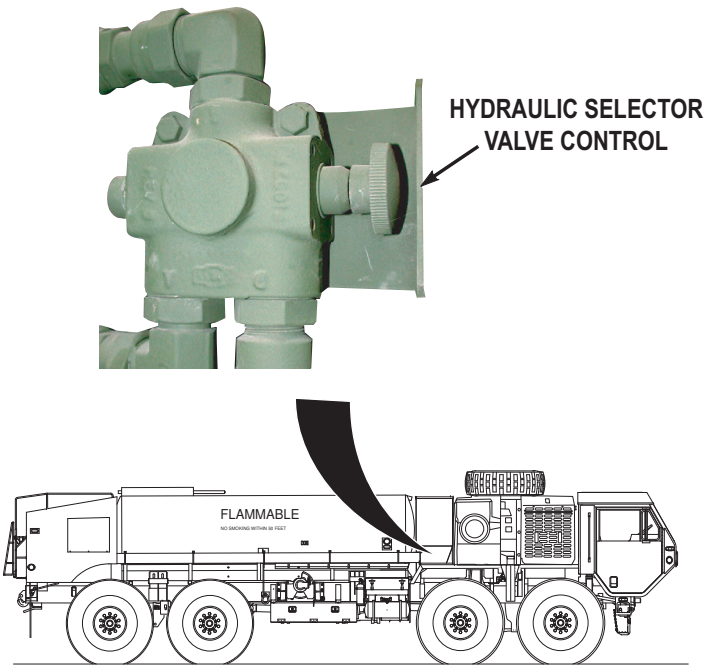


Figure 2.

5. Set HYD ENABLE switch (1) to on position. MAIN HYD ENABLE indicator (2) will illuminate.

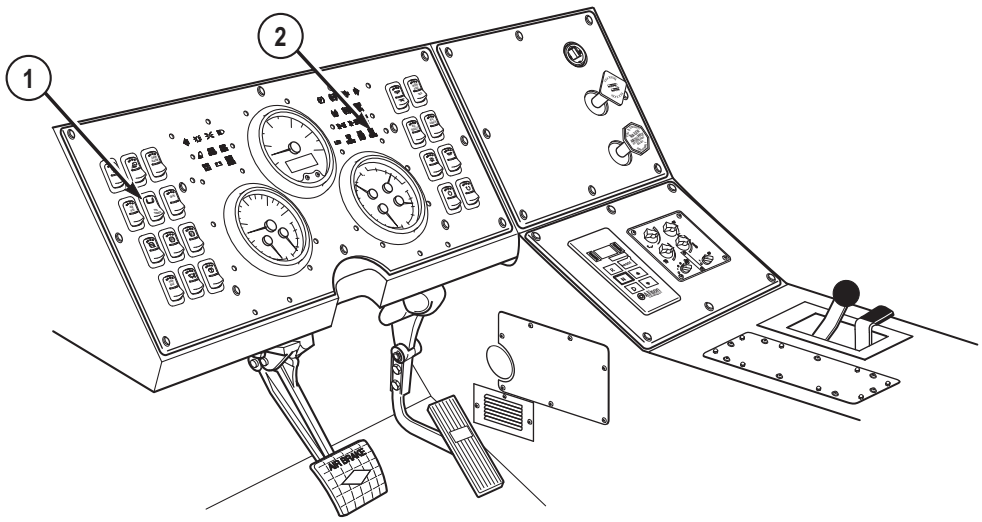


Figure 3.

WARNING



Stand clear to avoid injury when operating pump module rear doors. When each door is about halfway open, gas pistons push doors open quickly and with much force. Failure to comply may result in injury or death to personnel.

6. Open tanker module doors (3).

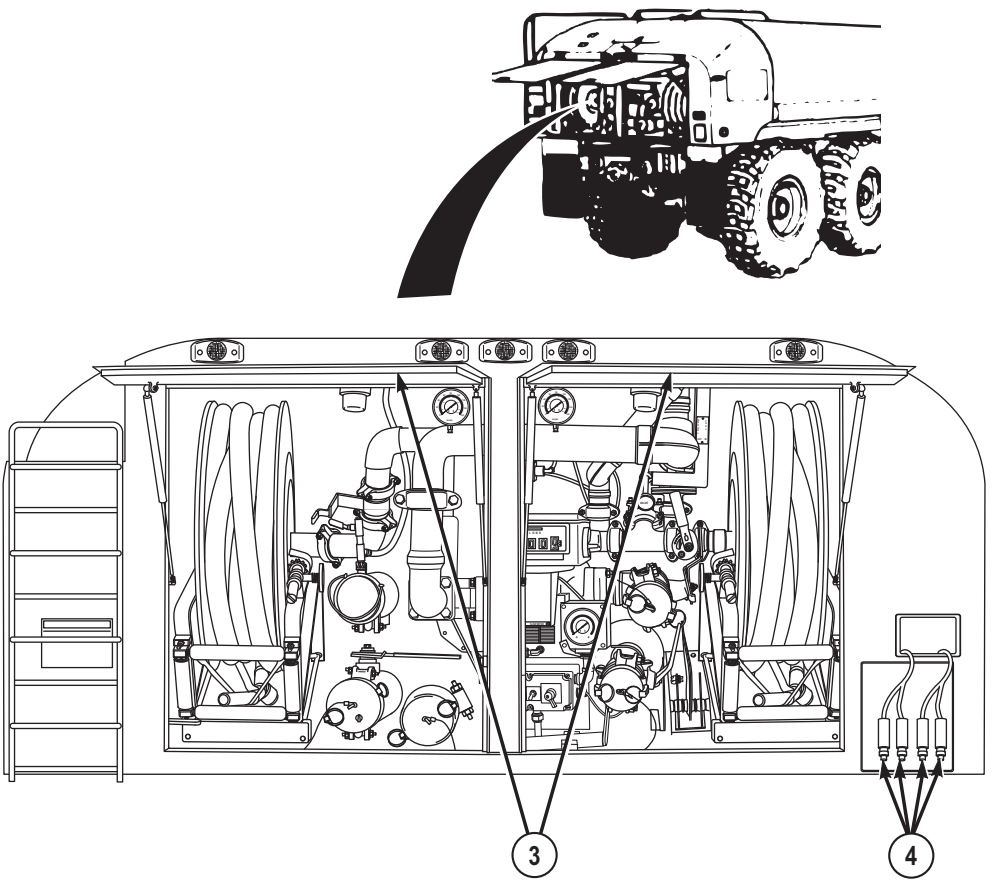


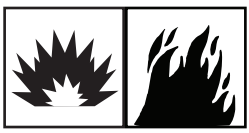
Figure 4.

7. Position tanker controls. (WP 0078)

8. Connect SR1 and SR2 static cables (4) to vehicle being serviced and grounding devices.

DRAIN EXISTING FUEL

WARNING



To prevent fire or explosion, do not allow smoking, flame, sparks, and hot or glowing objects within 50 ft. (15 m) of vehicle. Read and follow all safety precautions in FM 10-67-1. Failure to comply may result in injury or death to personnel.

CAUTION

- Do not run tanker pump without fuel in system or damage to fuel pump and hydraulic motor may result.
- Do not press accelerator during tanker primary fuel pump operation. Engine speeds higher than 1500 rpm may cause damage to hydraulic motor and primary pump.

NOTE

- Refer to FM 10-67-1 for general operating instructions for tank vehicles.
- If equipment malfunctions, check that all steps of procedure have been performed in proper order. If equipment still malfunctions, do troubleshooting.
- Tanker must be holding at least 300 gal (1136 liters) of fuel in order to perform fuel hose evacuation.

1. Disengage hose reel tension knob (1).

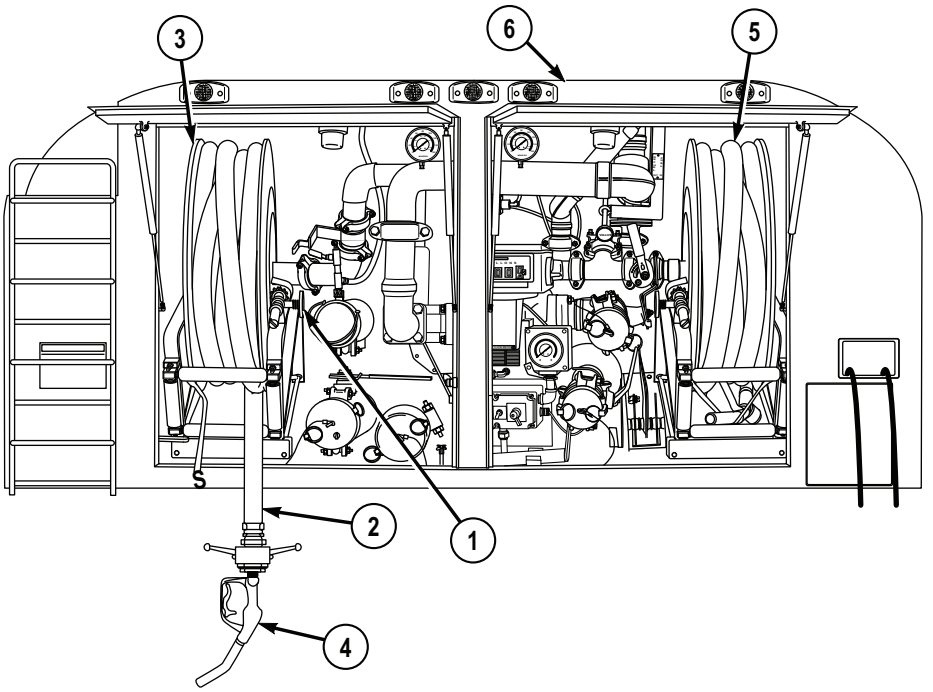


Figure 5.

2. Remove rubber tiedown strap, remove service nozzle (4) from stowage position, and pull out 2 ft. (61 cm) of servicing hose (2) from reel (3).
3. Engage hose reel tension knob (1).
4. Repeat Steps (1) through (3) to set up servicing hose (5) on passenger side of pump module (6).
5. Pull out V6 FUEL/DEFUEL VALVE control rod (7).

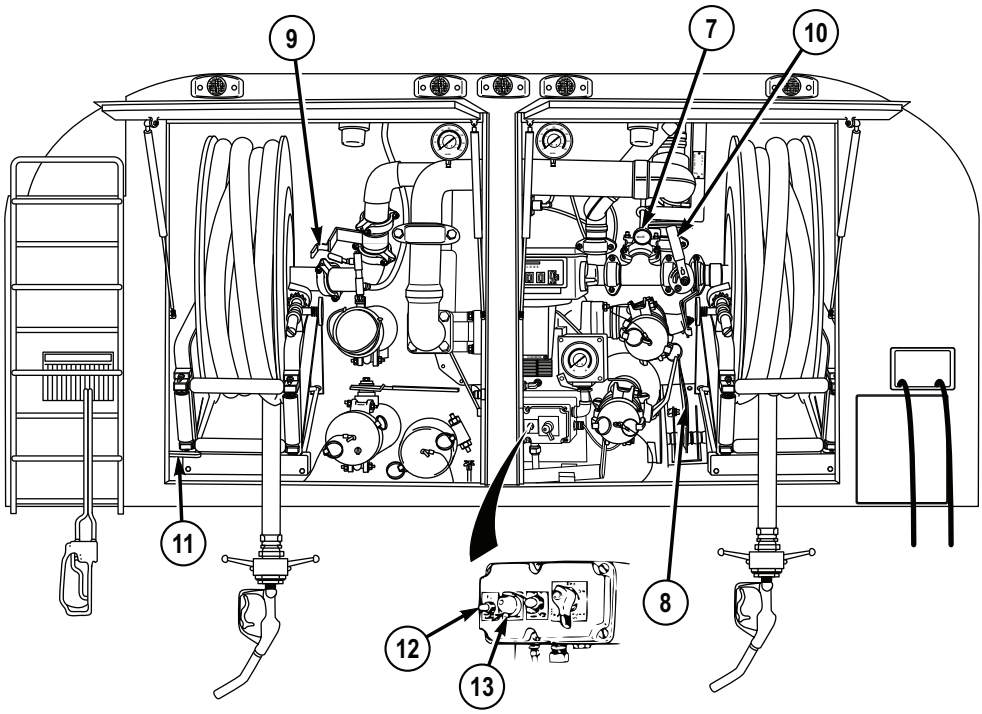


Figure 6.

6. Pull back MC MANUAL CONTROL EM VALVE lever (8).
7. Open V7 (9) and V8 (10) REEL VALVES all the way.
8. Push PUMP ENGAGEMENT LEVER (11) forward.
9. Set TC/THROTTLE CONTROL switch (12) to ON position.
10. Press HI/HIGH IDLE switch (13).
11. Pull out HAV HAND ACTUATED CONTROL valve (14); squeeze and hold lever (15).

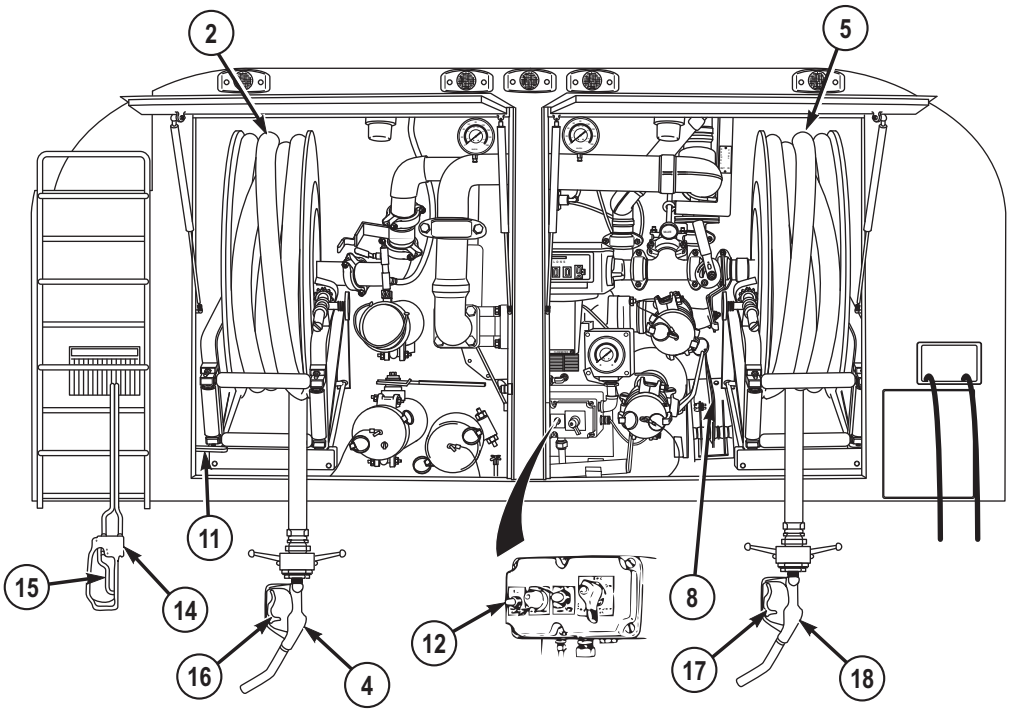


Figure 7.

12. Squeeze and hold lever (16) on fuel service nozzle (4) to empty fuel from servicing hose (2). Dispose of fuel in accordance with unit SOP.
13. When all fuel is emptied from servicing hose (2), release nozzle lever (16).
14. Squeeze and hold lever (17) on fuel service nozzle (18) to empty fuel from servicing hose (5). Dispose of fuel in accordance with unit SOP.
15. When all fuel is emptied from hose (5), release nozzle lever (17) and HAV HAND ACTUATED CONTROL valve lever (15).
16. Set TC/THROTTLE CONTROL switch (12) to OFF position.
17. Pull back on PUMP ENGAGEMENT LEVER (11) until locked.
18. Push MC MANUAL CONTROL EM VALVE lever (8) forward.
19. Close V7 (9) and V8 (10) REEL VALVES.

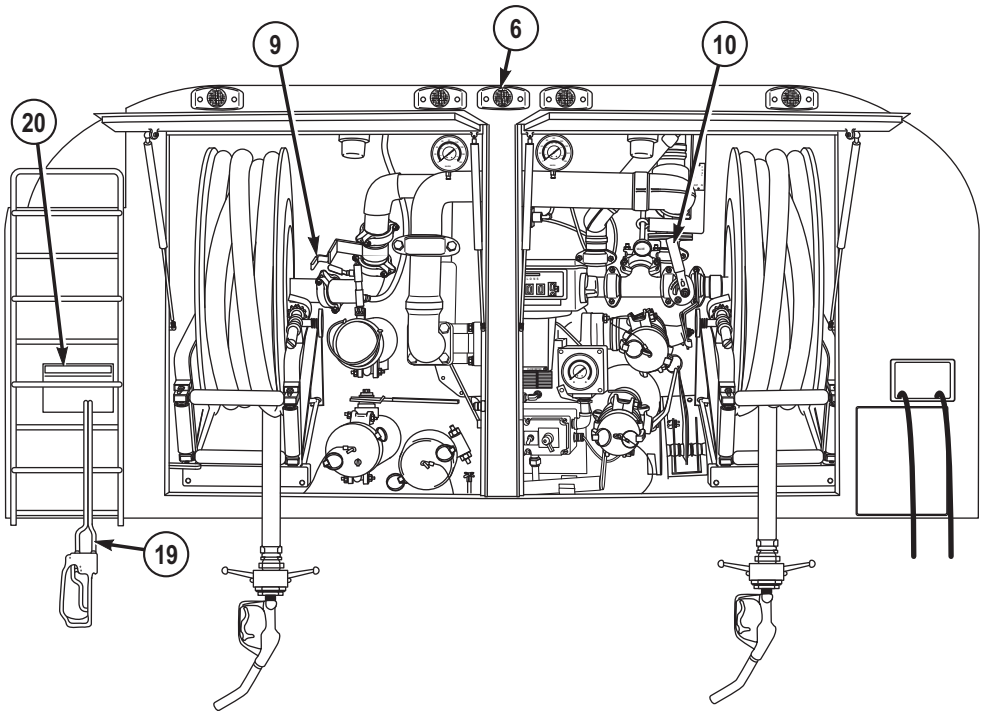


Figure 8.

20. Rewind HAV HAND ACTUATED CONTROL valve hoses (19) onto reel (20) inside pump module (6).
21. Remove hand crank handle (21) from stowage in pump module (6).

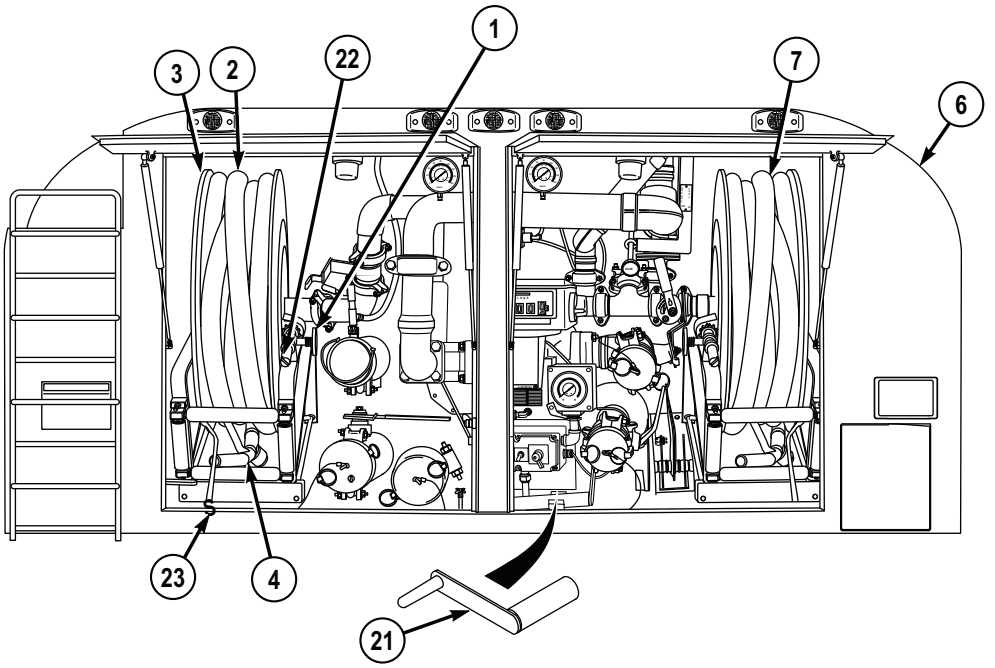


Figure 9.

22. Release hose reel tension knobs (1).
23. Insert hand crank handle (21) onto crankshaft (22) and turn to rewind servicing hose (2) onto reel (3).
24. Return fuel service nozzle (4) to stowage and install rubber tiedown strap (23).
25. Engage hose reel tension knob (1).
26. Repeat Steps (22) through (25) to stow servicing hose (7) on passenger side of pump module (6).
27. Stow hand crank handle (21).
28. Perform gravity bulk unload of tank. (WP 0083)
29. Put suitable non-spark producing container under V15 DRAIN VALVE TUBE (24).

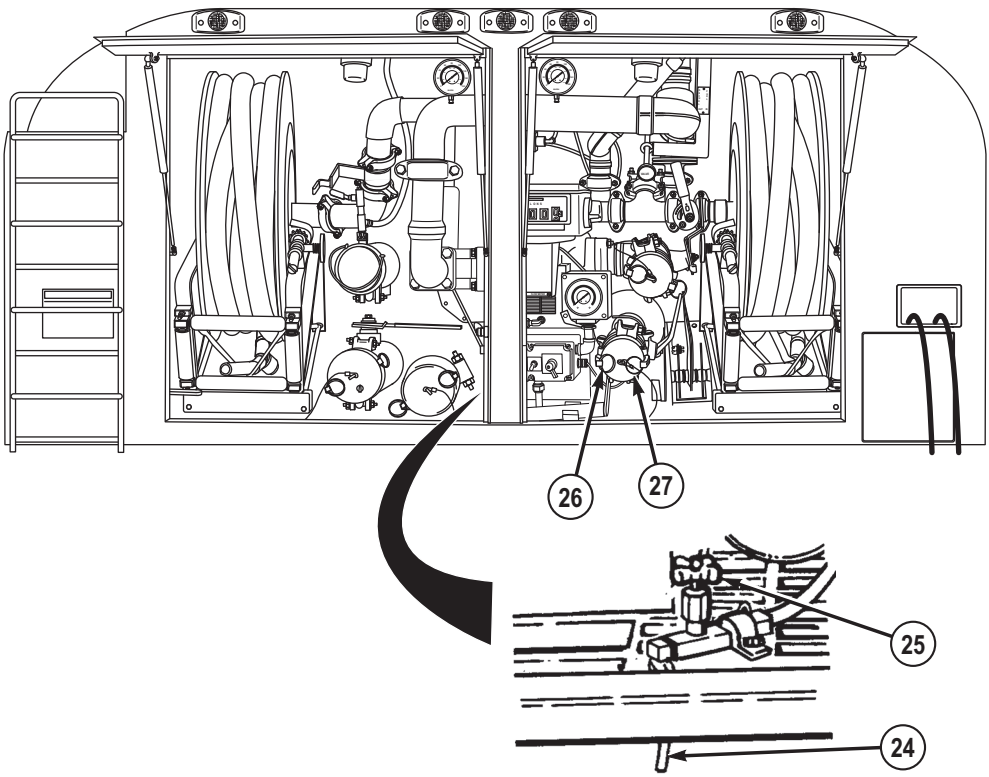


Figure 10.

30. Open V15 DRAIN VALVE (25) to drain all fuel from filter/separator.
31. Close V15 DRAIN VALVE (25) when fuel is completely drained.
32. Dispose of fuel in accordance with unit SOP.
33. Remove dust cap (26) from C BULK RECEPTACLE (UNFIL) (27).
34. Open stowage tube cover (28) and remove suction hose (29).

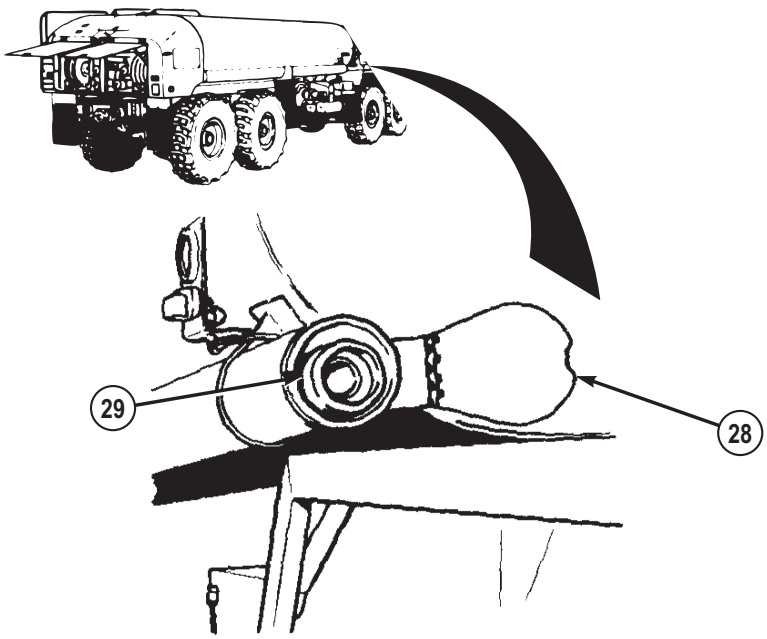


Figure 11.

35. Connect one end of suction hose (29) to C BULK RECEPTACLE (UNFIL) (27) and other end to receiving receptacle or suitable container.

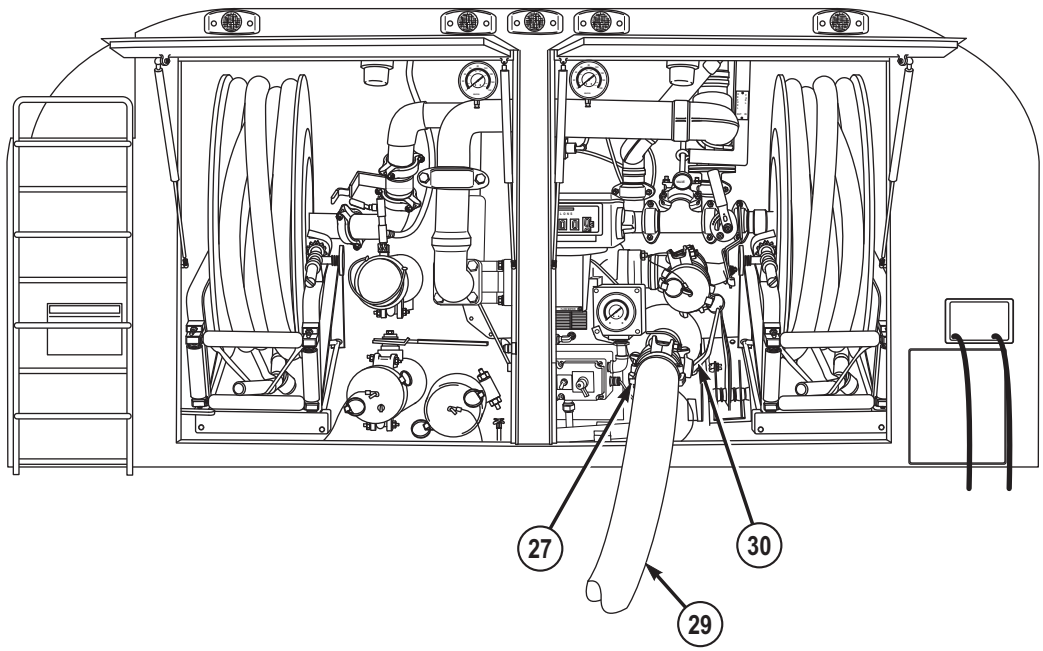


Figure 12.

36. Open V18 BULK DEL VALVE (30) to drain fuel from piping.
37. Close V18 BULK DEL VALVE (30) when fuel is completely drained.
38. Remove and completely drain fuel from suction hose (29). Dispose of fuel in accordance with unit SOP.
39. Return suction hose (29) to stowage tube and close cover (28).

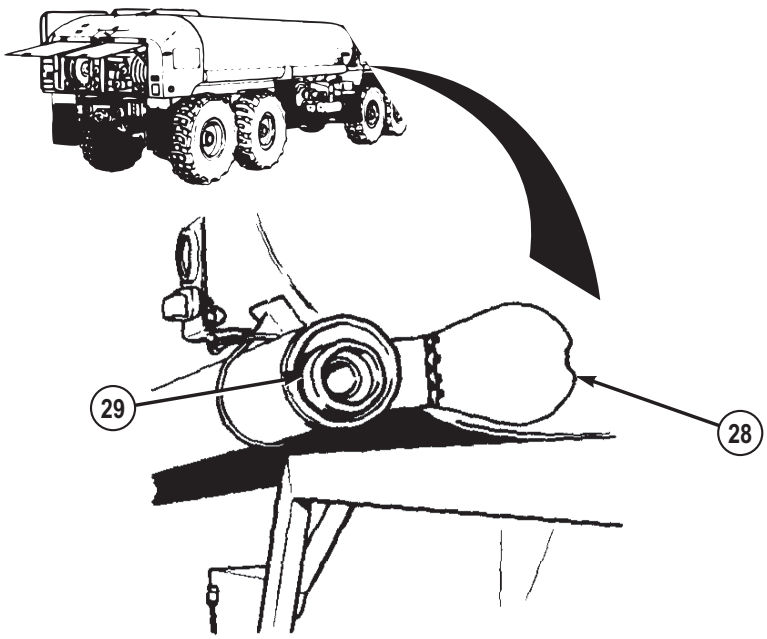


Figure 13.

40. Install dust cap (26) on C BULK RECEPTACLE (UNFIL) (27).

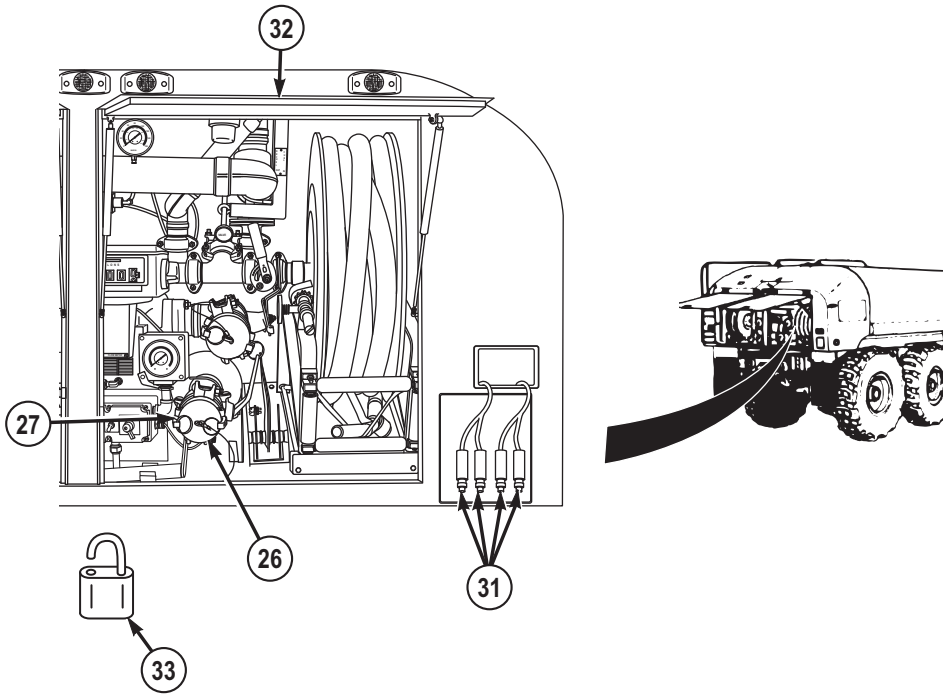


Figure 14.

41. Disconnect and rewind SR1 and SR2 static cables (31).
42. Close pump module rear doors (32).
43. Install lock (33).
44. Set HYD ENABLE switch (34) to off position. MAIN HYD ENABLE indicator (35) will go out.

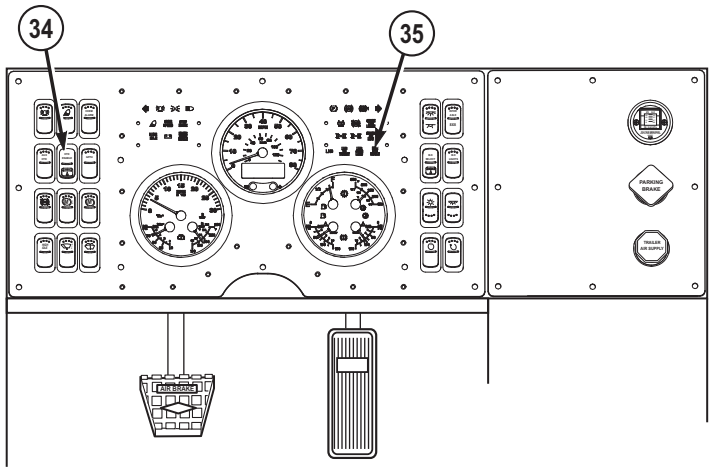


Figure 15.

45. Shut OFF engine. (WP 0056)

LOAD TANKER WITH NEW FUEL

1. Load tank with 300 gal (1136 liters) of fuel or fuel grade to be carried. (WP 0080)
2. Circulate fuel through complete piping system and both fuel servicing hoses. (WP 0082)
3. Repeat Drain existing fuel section of this procedure.
4. Notify field level maintenance to replace filter elements in filter/separator.
5. Load tank with fuel or fuel grade to be carried. (WP 0080)
6. Shut OFF engine. (WP 0056)

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
TRANSFER FUEL BETWEEN DIFFERENT TANKER VEHICLES

INITIAL SETUP:

Not Applicable

TRANSFER FUEL TO M978 TANKER FROM ANOTHER TYPE TANKER TRUCK OR TRAILER

NOTE

- Top loading through the manhole will only be done in emergency situations, when bottom loading is not possible, and only by order of the Unit Commander.
- When transferring fuel between tanker vehicles, the pump on only one vehicle is required. Procedures for transfer fuel shall be coordinated between the two vehicle operators so that only one pump is in operation.

1. When transferring fuel to a HEMTT M978 tanker from another tanker truck or trailer, follow instructions including all WARNINGS, CAUTIONS, and NOTES, for loading tanker with fuel (WP 0080) with the following changes:
   a. Bond and ground M978. Connect the M978 SR1 and SR2 static cables to vehicle from which fuel is to be transferred and to grounding devices.
   b. If transferring through bottom loading, connect enough suction hoses together to keep at least 25 ft. (8 m) between vehicles. The end of the suction hose which is connected to the fuel supply will be connected in accordance with the applicable tanker truck or trailer technical manuals.
   c. During fuel transfer between tankers, the M978 fuel station operator is replaced by the operator of the tanker truck or trailer from which fuel is being transferred.
   d. The transferring tanker may be emptied before the receiving M978 is full. In this case, the fuel flow WILL NOT shut off automatically. Care should be taken when transferring fuel using the receiving M978 pump to avoid running the pump when there is no more fuel to be transferred.
   e. The preferred method for loading transferred fuel is bottom loading with exterior pump (WP 0080).
   f. If fuel is transferred through the manhole, follow procedures in paragraph for transferring through the manhole (WP 0080) including all WARNINGS, CAUTIONS,

and NOTES. The operator of the fuel tank truck or trailer supplying the fuel will follow requirements in paragraph for transferring fuel through the manhole (WP 0080) regarding hose placement within the HEMTT and adjustment of product flow rates.

TRANSFER FUEL FROM M978 TANKER TO ANOTHER TYPE TANKER TRUCK OR TRAILER

1. When transferring fuel from a HEMTT M978 tanker to another tank truck or trailer, follow instructions including all WARNINGS, CAUTIONS, and NOTES for unloading fuel (WP 0083) with the following changes:
   a. Connect SR1 and SR2 static cables to vehicle to which fuel is being transferred and to grounding devices.
   b. The end of the suction hose which is connected to the receiving receptacle shall be connected in accordance with the applicable tanker truck or trailer technical manuals.
   c. The preferred method for unloading fuel to another tanker is filtered bulk unloading (WP 0083).
   d. If fuel is transferred to another tanker using the servicing hose, follow procedures forLand Vehicle or Aircraft Overwing Fuel Servicing (WP 0081), except that the fuel service nozzle is not attached. Follow instructions in the receiving tankers technical manuals and FM 10-67-1 (WP 0157) regarding positioning of the hose in the receiving tanker and adjustment of product flow rates.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
LIMP HOME/FLAT TIRE WITH NO SPARE

INITIAL SETUP:

Not Applicable

INSTALL LIMP HOME SETUP ON NO. 1 AND NO. 2 AXLE TIRES

CAUTION

- Do not use this procedure on fully loaded M983A4 or M983A4 LET vehicle with trailer in tow. Limp home setup will not support extra weight and equipment may be damaged.
- Vehicle must not be driven faster than 10 mph (16 km/h) or farther than 30 miles (48 km) in limp home condition.

NOTE

- Use limp home procedure for emergency only in case of wheel bearing failure, wheel damage, or when unable to change wheel and tire.
- Limp home setup for passenger side No. 1 axle is shown. All limp home setups for No.1 and No.2 axle are done in same manner.

1. Drive flat/shredded tire onto two wheel chocks (1).

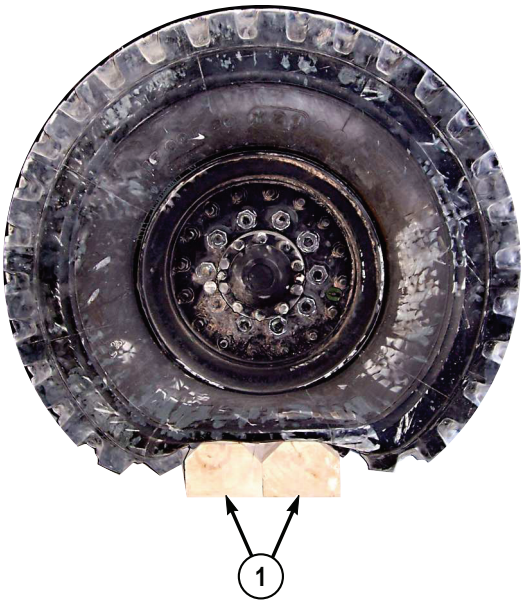


Figure 1.

2. Dump (deflate) air suspension.

NOTE

The distance between the axle and axle stop should be no greater than 2 in. (5 cm) or the limp home setup will not work as intended.

3. Check axle (2) proximity to axle stop (3).

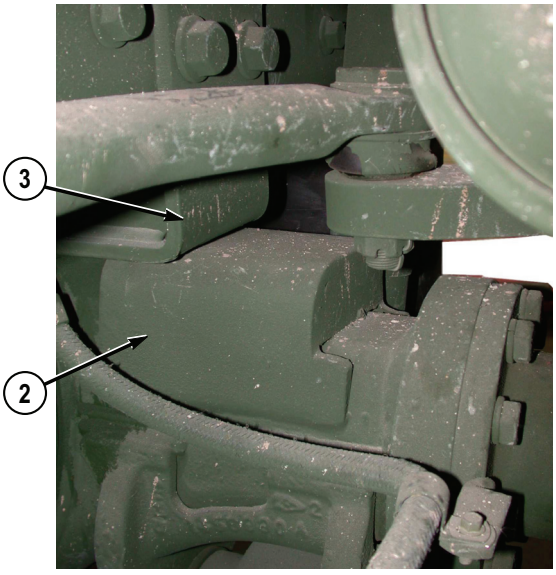


Figure 2.

NOTE

- If axle is too far from axle stop (more than 2 in. [5 cm]) to effectively install limp home setup, discontinue procedure and arrange for vehicle recovery.
- If axle and axle stop are close enough (2 in. [5 cm] or less) to effectively install limp home setup, continue with Step (4).

4. Remove two wheel chocks (4) and 7 ft. (2.1 m) chain (5) from stowage.

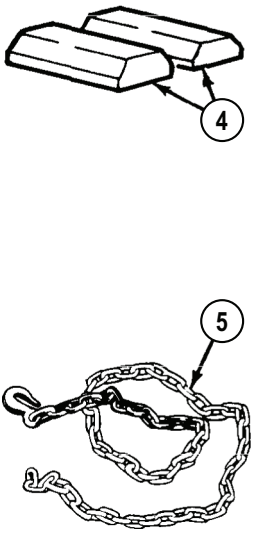


Figure 3.

5. Install two wheel chocks (WP 0073) (4) in front of and behind tire across (on same axle) from tire in which limp home setup is being installed.

CAUTION

Wrap 7 ft. (2.1 m) chain around frame rail and axle only. Do not wrap 7 ft. (2.1 m) chain around lateral torque rod, shock absorber, etc., as they could be crushed. Route 7 ft. (2.1 m) chain so hoses or lines are not between frame and 7 ft. (2.1 m) chain or axle and 7 ft. (2.1 m) chain. Failure to comply may result in damage to equipment.

6. Route 7 ft. (2.1 m) chain (5) around frame rail (6) and axle (2).

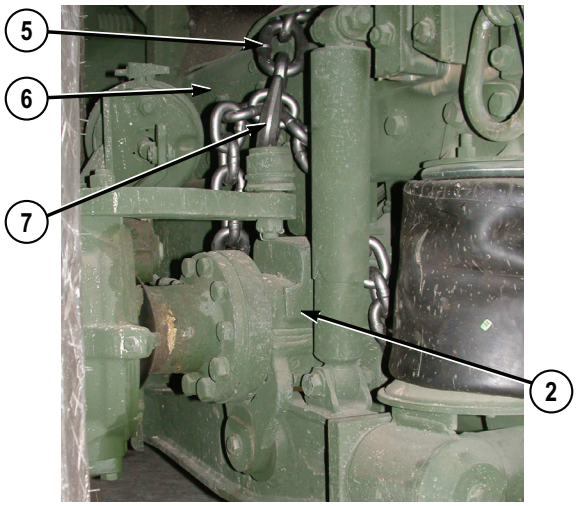


Figure 4.

7. Route end of 7 ft. (2.1 m) chain (5) to chain grab hook (7) and fasten 7 ft. (2.1 m) chain (5) back into itself as tight as possible.

NOTE

Axle will drop slightly when air suspension is serviced (inflated).

8. Service (inflate) air suspension.
9. Remove and stow two wheel chocks (4) from tire opposite of limp home setup.

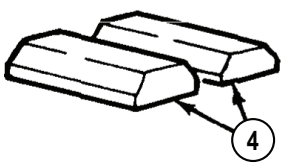


Figure 5.

10. Drive vehicle off two wheel chocks (1) and return wheel chocks (1) to vehicle stowage.

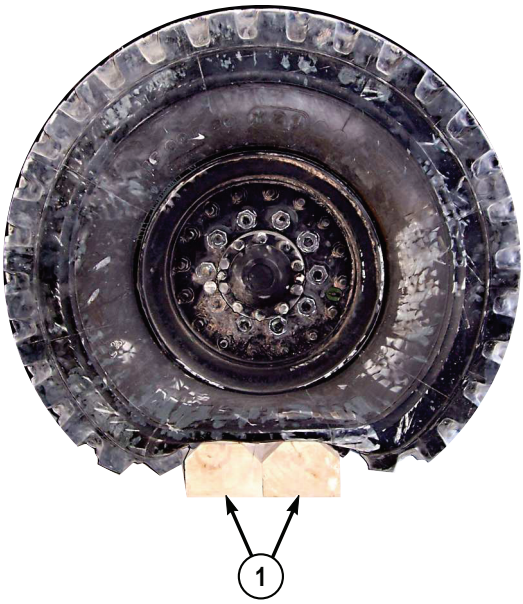


Figure 6.

REMOVE LIMP HOME FROM NO. 1 AND NO. 2 AXLE TIRES

1. Dump (deflate) air suspension.
2. Check to see if 7 ft. (2.1 m) chain (1) can be disconnected from grab hook (2).

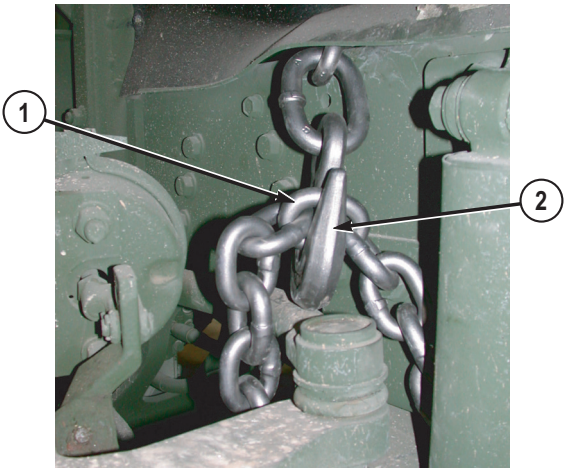


Figure 7.

NOTE

- If 7 ft. (2.1 m) chain can be disconnected, skip to Step (5).
- If 7 ft. (2.1 m) chain is too tight to disconnect, continue with Step (3).
- Removal of limp home setup No. 1 axle is shown. Removal of limp home setup for No. 2 axle is done in same manner.

3. Drive flat/shredded tire onto two wheel chocks (3).

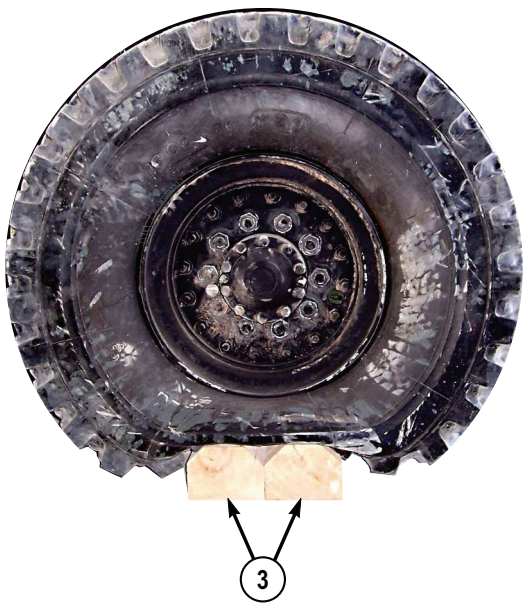


Figure 8.

4. Install two wheel chocks (WP 0073) (4) in front of and behind tire across (on same axle) from tire in which limp home setup is being removed.

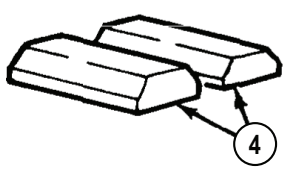


Figure 9.

5. Unhook 7 ft. (2.1 m) chain (1) and remove from around frame rail (5) and axle (6).

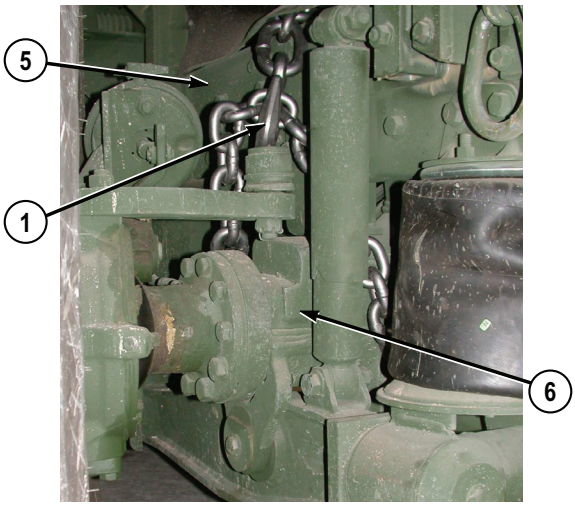


Figure 10.

6. Return 7 ft. (2.1 m) chain (1) to stowage.

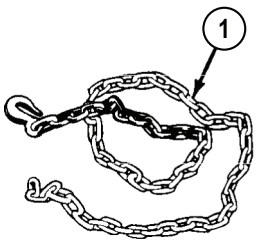


Figure 11.

7. Service (inflate) air suspension.
8. Drive vehicle off two wheel chocks (3) and return wheel chocks (3) to vehicle stowage.

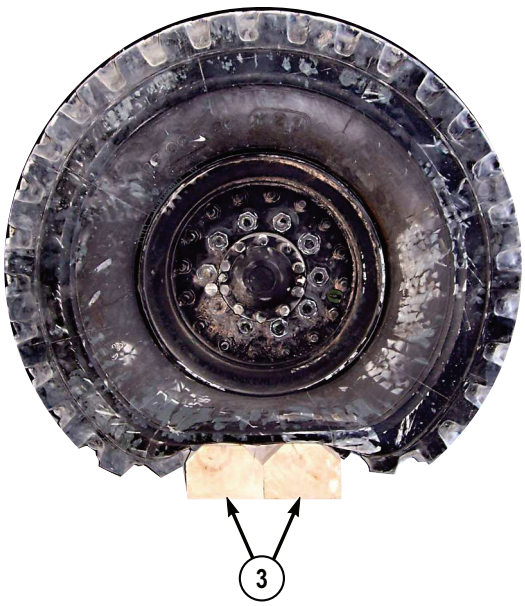


Figure 12.

INSTALL LIMP HOME SETUP ON NO. 3 AND NO. 4 AXLE TIRES

CAUTION

- Do not use this procedure on fully loaded M983A4 or M983A4 LET vehicle with trailer in tow. Limp home setup will not support extra weight and equipment may be damaged.
- Vehicle must not be driven faster than 10 mph (16 km/h) or farther than 30 miles (48 km) in limp home condition. Failure to comply may result in damage to equipment.

NOTE

- Use limp home procedure for emergency only in case of wheel bearing failure, wheel damage, or when unable to change wheel and tire.
- Limp home setup for passenger side No. 4 axle is shown. All limp home setups for No. 3 and No. 4 axle are done in same manner.
- If possible, place wheel chock under flat/shredded tire to assist in axle/axle stop proximity before vehicle air suspension is dumped.

1. Drive flat/shredded tire onto two wheel chocks (1).

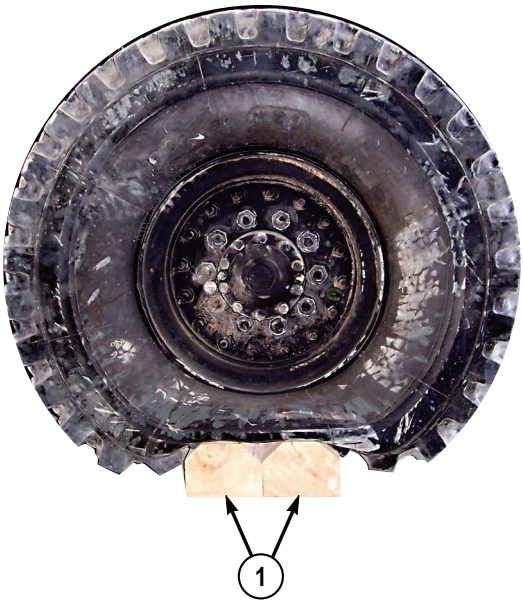


Figure 13.

2. Dump (deflate) air suspension.

NOTE

The distance between the axle and axle stop should be no greater than 2 in. (5 cm) or the limp home setup will not work as intended.

3. Check axle (2) proximity to axle stop (3).

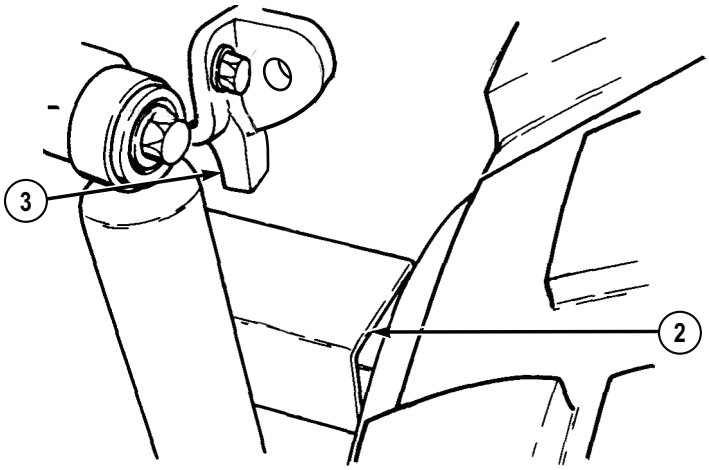


Figure 14.

NOTE

- If axle and axle stop are close enough (2 in. [5 cm] or less) to effectively install limp home setup, skip to Step (9).
- If axle is too far from axle stop (more than 2 in. [5 cm]) to effectively install limp home setup, continue with Step (4).

4. Remove two wheel chocks (4), jack base plate (5), jack (6), 7 ft. (2.1 m) chain (7), and shackle (8) from stowage.

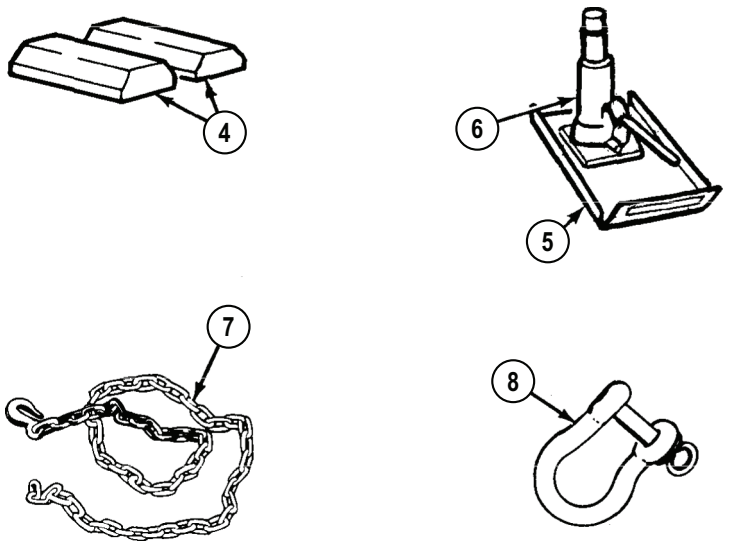


Figure 15.

5. Install two wheel chocks (WP 0073) (4) in front of and behind tire across (on same axle) from tire in which limp home setup is being installed.

CAUTION

Jack placement is critical to avoid damaging vehicle suspension components. Follow jack placement notes and procedures carefully. Failure to comply may result in damage to equipment.

NOTE

Center jack on flat spot in center of transverse beam casting.

6. Place jack base plate (5) and jack (6) under transverse beam casting (9).



Figure 16.

7. Unscrew jack ram (10) until it contacts transverse beam end casting (9), or is at full extension.

NOTE

If axle cannot be jacked close enough to axle stop (2 in. [5 cm] or less) to effectively install limp home setup, discontinue procedure and arrange for vehicle recovery.

8. Raise vehicle until axle (2) is as close as it will go to axle stop (3).

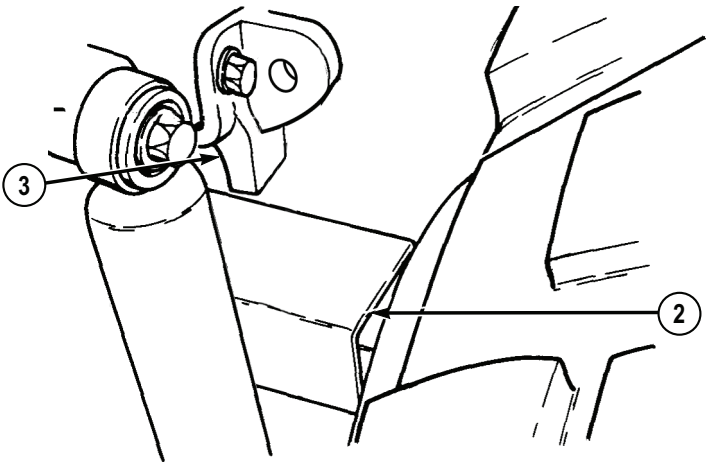


Figure 17.

9. Install shackle (8) on axle stop (3) with pin (11).

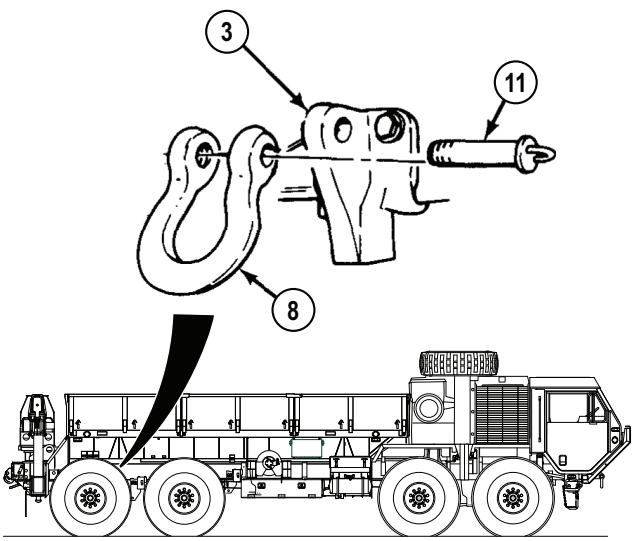


Figure 18.

CAUTION

Wrap 7 ft. (2.1 m) chain around axle only. Do not wrap 7 ft. (2.1 m) chain around shock absorber or brake chamber bracket. Route 7 ft. (2.1 m) chain so hoses or lines are not between axle and 7 ft. (2.1 m) chain. Failure to comply may result in damage to equipment.

10. Route 7 ft. (2.1 m) chain (7) through shackle (8).

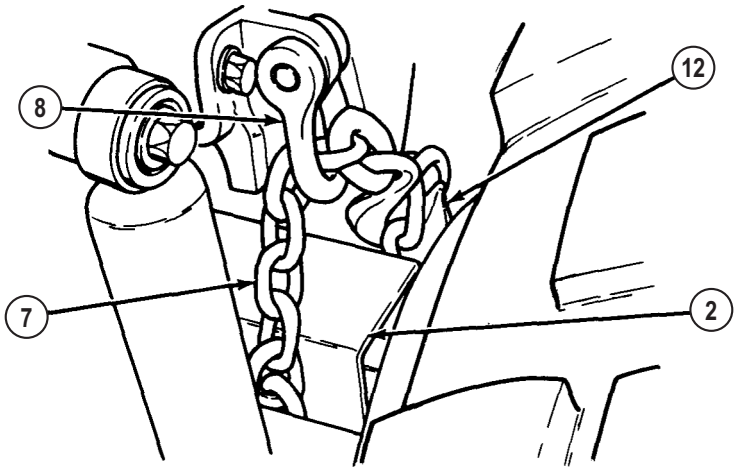


Figure 19.

11. Route end of 7 ft. (2.1 m) chain (7) around axle (2).
12. Bring end of 7 ft. (2.1 m) chain (7) up to chain grab hook (12) and fasten 7 ft. (2.1 m) chain (7) back into itself as tight as possible.

WARNING



Keep hands away from chain when lowering jack. Hands and fingers could be crushed. Failure to comply may result in injury or death to personnel.

NOTE

- If vehicle DID NOT require jacking, skip to Step (15).
- If vehicle DID require jacking, continue with Step (13).
- Axle will drop slightly when jack is lowered.

13. Lower jack (6) and remove jack base plate (5) and jack (6) from under transverse beam casting (9).



Figure 20.

14. Return jack base plate (5) and jack (6) to stowage.
15. Service (inflate) air suspension.
16. Remove two wheel chocks (WP 0073) (4) from in front of and behind tire across (on same axle) from tire in which limp home setup was installed.

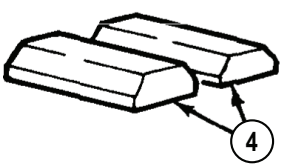


Figure 21.

17. Drive vehicle off two wheel chocks (1) and return wheel chocks (1) to vehicle stowage.

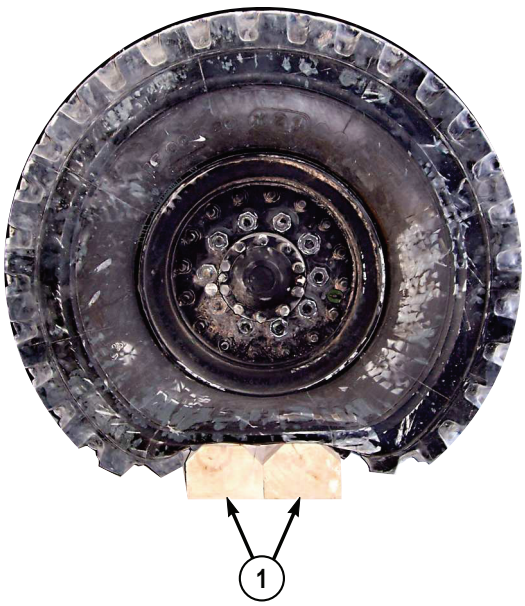


Figure 22.

REMOVE LIMP HOME SETUP FROM NO. 3 AND NO. 4 AXLE TIRES

1. Dump (deflate) air suspension.
2. Check to see if 7 ft. (2.1 m) chain (1) can be disconnected from grab hook (2).

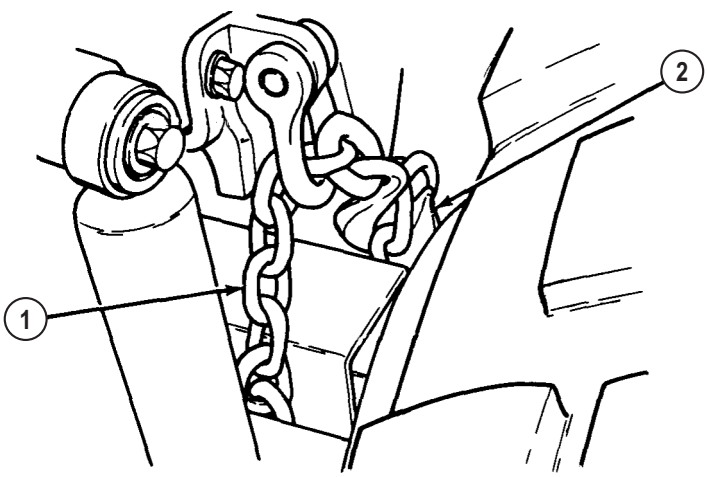


Figure 23.

NOTE

- If 7 ft. (2.1 m) chain can be disconnected, skip to Step (9).
- If 7 ft. (2.1 m) chain is too tight to disconnect, continue with Step (3).
- Removal of limp home setup No. 4 axle is shown. Removal of limp home setup for No. 3 axle is done in same manner.

3. Drive flat/shredded tire onto two wheel chocks (3).

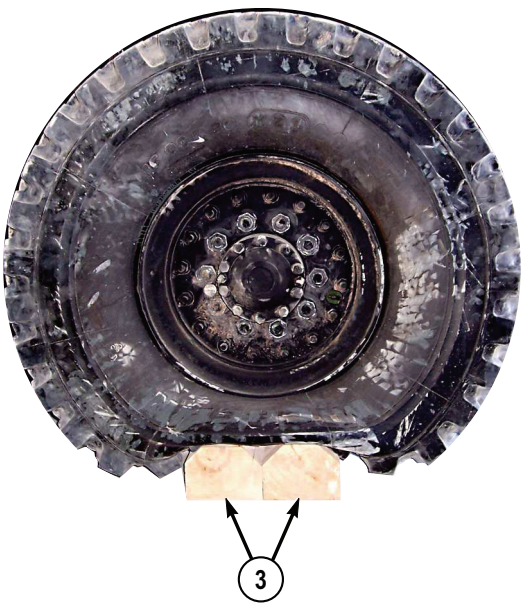


Figure 24.

4. Check to see if 7 ft. (2.1 m) chain (1) can be disconnected from grab hook (2).

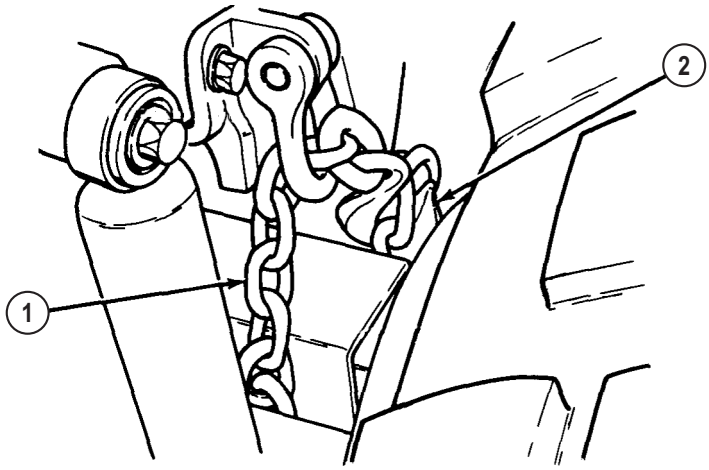


Figure 25.

NOTE

- If 7 ft. (2.1 m) chain can be disconnected, skip to Step (9).
- If 7 ft. (2.1 m) chain is too tight to disconnect, continue with Step (5).
- Removal of limp home setup No. 4 axle is shown. Removal of limp home setup for No. 3 axle is done in same manner.

5. Remove two wheel chocks (4), jack base plate (5), and jack (6) from stowage.

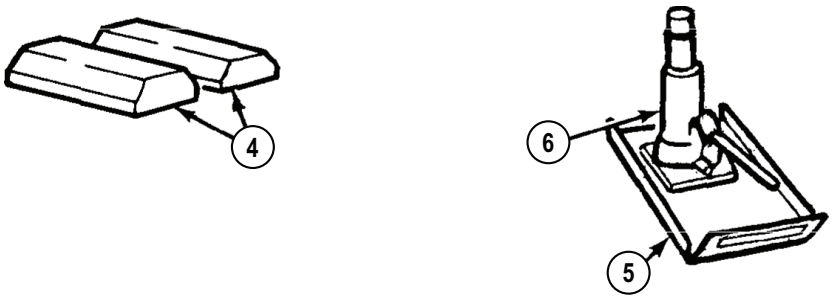


Figure 26.

6. Install two wheel chocks (WP 0073) (4) in front of and behind tire across (on same axle) from tire in which limp home setup is being installed.

CAUTION

Jack placement is critical to avoid damaging vehicle suspension components. Follow jack placement notes and procedures carefully. Failure to comply may result in damage to equipment.

NOTE

- Jack ram should be fully screwed down (making jack as short as possible) for Step (7).
- Center jack on flat spot in center of transverse beam casting.

7. Place jack base plate (5), and jack (6) under transverse beam casting (7).



Figure 27.

NOTE

If possible, unscrew jack ram until it contacts jacking point on equalizing beam.

8. Raise vehicle until axle (8) is as close as it will go to axle stop (9).

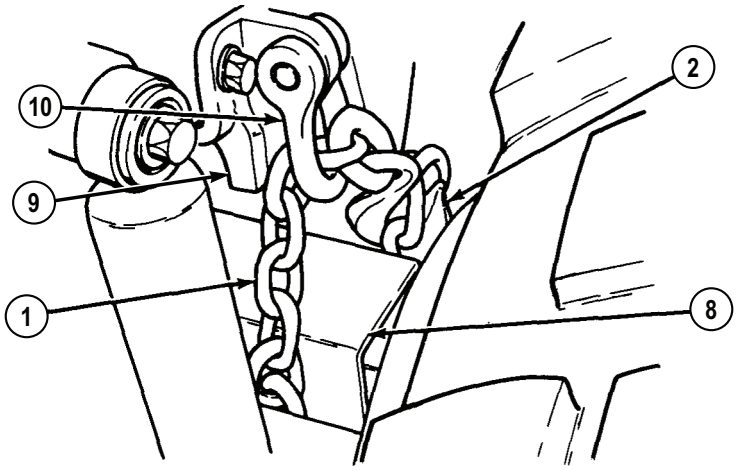


Figure 28.

9. Unhook 7 ft. (2.1 m) chain (1) from grab hook (2) and remove 7 ft. (2.1 m) chain (1) from shackle (10) and axle (8).
10. Remove pin (11) from shackle (10) and axle stop (9).

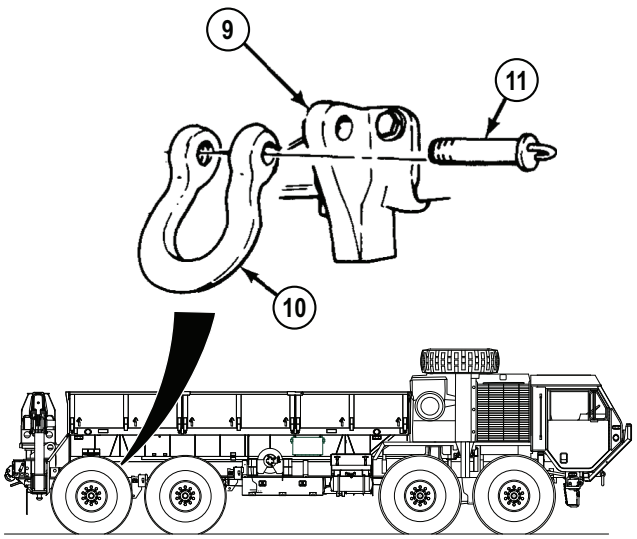


Figure 29.

NOTE

- If vehicle DID NOT require jacking, skip to Step (13).

- If vehicle DID require jacking, continue with Step (11).

11. Lower vehicle until jack (6) and jack base plate (5) can be removed from under transverse beam casting (7).



Figure 30.

12. Return jack base plate (5) and jack (6) to stowage.

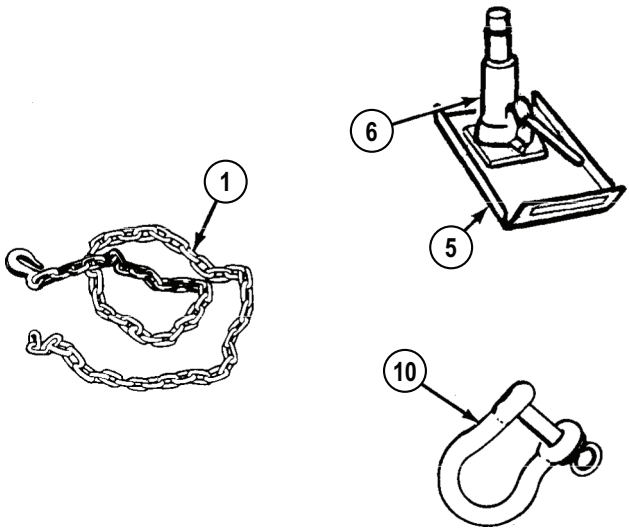


Figure 31.

13. Return 7 ft. (2.1 m) chain (1), and shackle (10) to stowage.
14. Service (inflate) air suspension.

NOTE

Complete Step (15) if vehicle was driven onto two wheel chocks to facilitate 7 ft. (2.1 m) chain removal.

15. Drive vehicle off two wheel chocks (3) and return wheel chocks (3) to vehicle stowage.

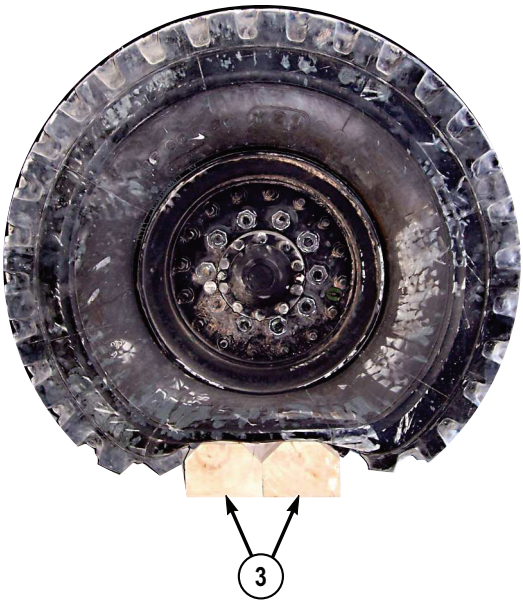


Figure 32.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
PERFORM IMMEDIATE ACTION FOR LOSS OF AIR SUPPLY SYSTEM PRESSURE

INITIAL SETUP:

Not Applicable

PERFORM PROCEDURE

1. If brake system failure (LOW AIR) indicator (1) illuminates and warning buzzer sounds while driving vehicle, check both FRONT (2) and REAR (3) air pressure gauges.

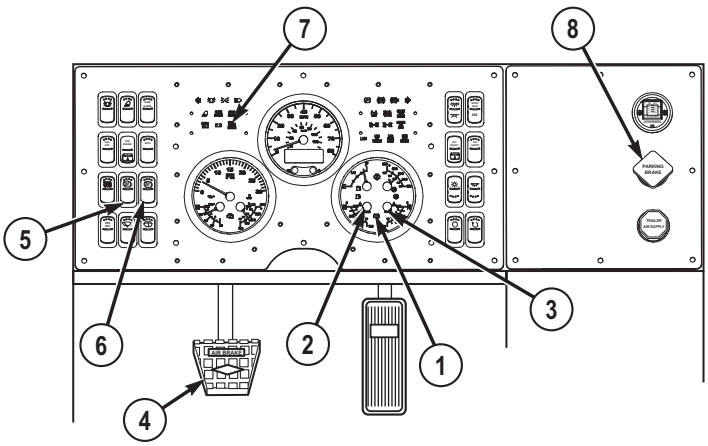


Figure 1.

NOTE

If both FRONT and REAR air pressure gauges read zero, skip to Step (4).

2. If REAR air pressure gauge (3) reads zero and FRONT air pressure gauge (2) reads normal air pressure of 100 to 130 psi (7 to 9 bar), complete the following:
   a. Continue operation of vehicle. Brakes on all eight wheels and trailer (if applicable) will operate.
   b. Notify field level maintenance as soon as possible.

WARNING



When REAR air pressure gauge reads zero, vehicle braking capability is greatly reduced. Extra care must be taken to avoid collision. Failure to comply may result in injury or death to personnel.

NOTE

If both FRONT and REAR air pressure gauges read zero, skip to Step (4).

3. If FRONT air pressure gauge (2) is at zero and REAR air pressure gauge (3) shows normal air pressure of 100 to 130 psi (7 to 9 bar), complete the following:
   a. Continue operation of vehicle. Brakes on No. 3 and No. 4 axles and trailer (if applicable) will operate. Use caution, and comply with the following:
      (1) Leave additional distance between vehicles.
      (2) Apply service brake pedal (4) earlier than usual when slowing vehicle.
      (3) Downshift as necessary when slowing vehicle.

WARNING



Do not use engine brake when vehicle is on slippery surface. If engine brake is used incorrectly, vehicle may skid out of control. Failure to comply may result in injury or death to personnel.

      (4) If necessary to slow vehicle, set engine brake high/medium/low switch (5) to low position and set engine brake on/off switch (6) to on. ENGINE BRAKE ENABLE indicator (7) will illuminate.
      (5) Notify field level maintenance as soon as possible.
4. If both FRONT (2) and REAR (3) air pressure gauges read zero, complete the following:
   a. Look for a place to stop vehicle without blocking other traffic.
   b. Downshift as needed to control vehicle speed until place is found to stop.

WARNING



Use of service brake pedal will not slow or stop vehicle when both FRONT and REAR air pressure gauges read zero. Use the following procedure to safely stop vehicle after loss of air pressure. Failure to comply may result in injury or death to personnel.

NOTE

- When spring brakes are applied, vehicle will stop quickly. Vehicle cannot be driven again until malfunction is repaired and there is enough air supply for operation of service brakes.
- Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

c. When suitable area is found to stop vehicle, pull out PARKING BRAKE control (8) to apply spring brakes on four rear wheels.

d. Notify field level maintenance.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
INSTALL/REMOVE TIRE CHAINS

INITIAL SETUP:

Not Applicable

INSTALL TIRE CHAINS

CAUTION

When tire chains are used, they must be used on all four rear wheels. Chains must not be used when driving on hard surfaces where there is no wheel slippage. Improper use of tire chains may result in equipment damage.

NOTE

- This procedure is a two soldier task.
- Tire chains on No. 3 and No. 4 axle tires are all installed the same. Passenger side No. 4 axle shown.
- Maximum speed limit for vehicles driving with chains in city or on highway is 10 mph (16 km/h).
- Maximum speed limit for vehicles driving with chains off-road is 15 mph (24 km/h).

1. With aid of an assistant, place tire chain (1) on ground with cross chain connecting links (2) facing down.

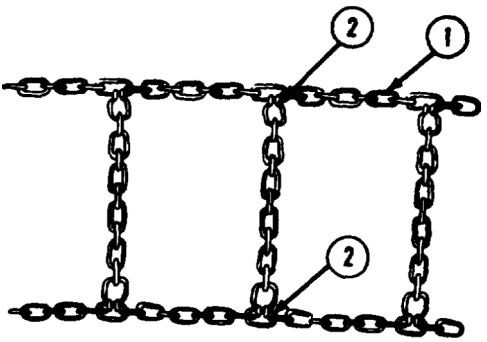


Figure 1.

NOTE

Assistant shall ensure vehicle is stopped when only tire in contact with tire chains is tire being equipped.

2. Move vehicle onto tire chain (1) while assistant guides vehicle so tire (3) is about one-third of way on tire chain.

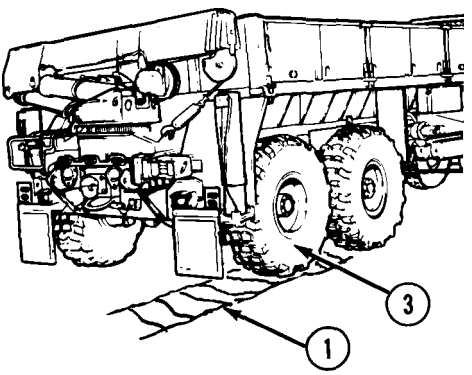


Figure 2.

NOTE

Ensure only tire in contact with tire chains is tire being equipped.

3. Park vehicle. (WP 0055)
4. With aid of an assistant, wrap tire chain (1) around tire (3).

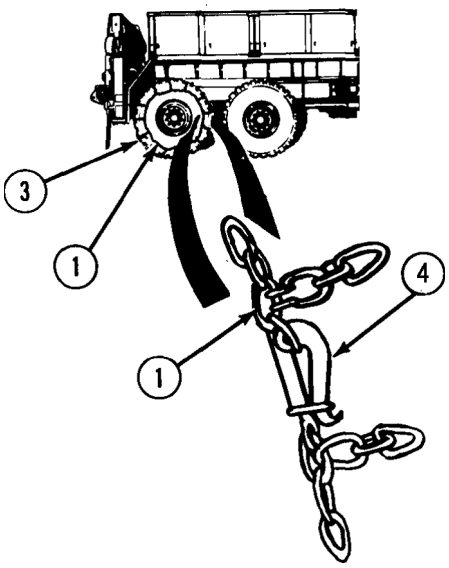


Figure 3.

5. With aid of an assistant, connect and secure inside and outside clamps (4) so tire chain (1) is as tight as possible.
6. With aid of an assistant, repeat Steps (1) through (5) on remaining tires of No. 3 and No. 4 axles.
7. Drive vehicle forward (WP 0049) about 15 ft. (4.6 m) and then drive vehicle in reverse (WP 0050) about 15 ft. (4.6 m) as guided by assistant.
8. Park vehicle. (WP 0055)

NOTE

Tire chains on No. 3 and No. 4 axle tires are all tightened up the same. Passenger side No. 4 axle shown.

9. With aid of an assistant, disconnect inside clamp (4) of tire chain (1) on tire (3).

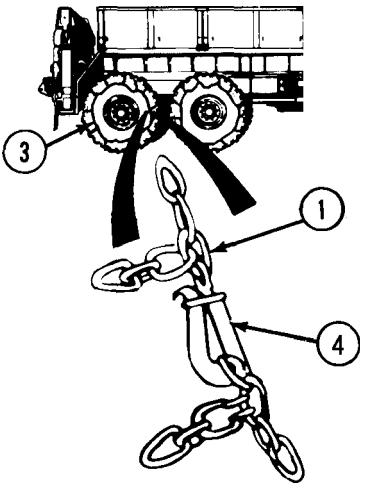


Figure 4.

10. With aid of an assistant, take up slack in tire chain (1).
11. With aid of an assistant, connect inside clamp (4).
12. With aid of an assistant, disconnect outside clamp (4) of tire chain (1) on tire (3).
13. With aid of an assistant, take up slack in tire chain (1).
14. With aid of an assistant, connect outside clamp (4).
15. With aid of an assistant, take up slack in tire chains on other three rear tires by repeating Steps (10) through (15).

REMOVE TIRE CHAINS

NOTE

- This procedure is a two soldier task.
- Tire chains on No. 4 axle tires are both removed the same. Passenger side shown.

1. Move vehicle into position so tire chain (1) and clamps (2) on tire (3) are at 4 o'clock position while assistant guides vehicle.

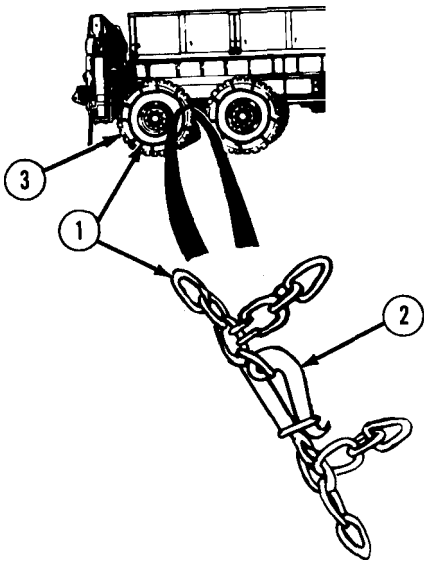


Figure 5.

2. Park vehicle. (WP 0055)
3. With aid of an assistant, disconnect inside and outside clamps (2) of tire chain (1).

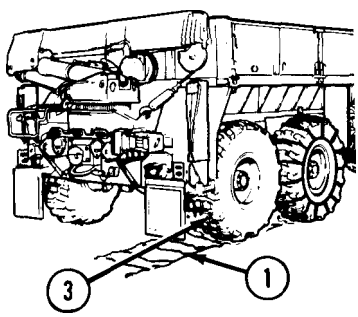


Figure 6.

4. With aid of an assistant, unwrap tire chain (1) from tire (3) and spread tire chain out on ground behind vehicle.
5. Drive vehicle forward (WP 0049) off tire chain (1) while assistant guides vehicle.
6. With aid of an assistant, repeat Steps (2) through (5) for opposite side tire.

NOTE

Tire chains on No. 3 axle tires are both removed the same. Passenger side shown.

7. Move vehicle into position so tire chain (4) and clamps (5) on tire (6) are at 8 o'clock position while assistant guides vehicle.

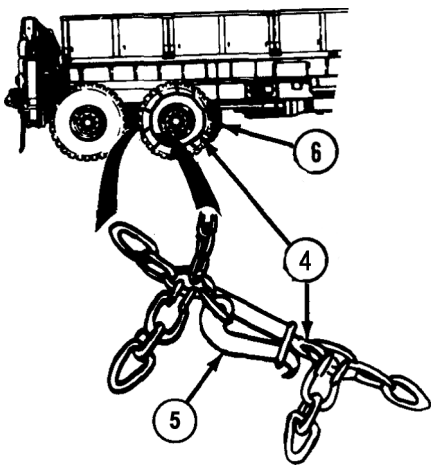


Figure 7.

8. Park vehicle. (WP 0055)
9. With aid of an assistant, disconnect inside and outside clamps (5) of tire chain (4).
10. With aid of an assistant, unwrap tire chain (4) from tire (6) and spread tire chain out on ground in front of tire.

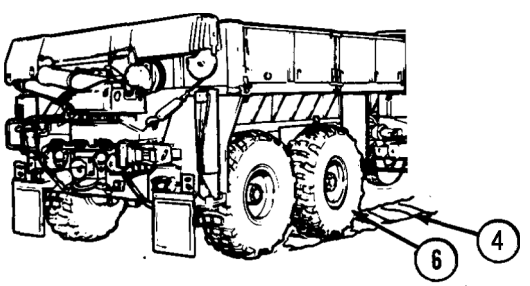


Figure 8.

11. Drive vehicle forward (WP 0049) off tire chain (4) while assistant guides vehicle.

12. With aid of an assistant, repeat Steps (7) through (11) for opposite side tire.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
FORD WATER OBSTACLE

INITIAL SETUP:

Not Applicable

WARNING



Do not ford water unless depth is known. Water deeper than 4 ft. (1.2 m) may enter vehicle. Failure to comply may result in injury or death to personnel.

NOTE

After vehicle fords water obstacle, service all lubrication points below fording depth and check submerged gearboxes for presence of water upon return from mission (refer to lubrication instructions (WP 0145) for more information).

CAUTION

Towing a trailer may affect maximum fording depth (refer to applicable trailer operators manual). Do not ford water obstacle deeper than maximum depth allowed by either vehicle or trailer (whichever depth is less). Failure to comply may result in damage to equipment.

1. Ensure depth of fording site is not more than 4 ft. (1.2 m).
2. Ensure bottom at fording site is firm enough that 4 ft. (1.2 m) maximum fording depth will not be exceeded and vehicle will not become mired.
3. Stop vehicle at edge of water.
4. If brakes have been used heavily and are hot, allow drums and shoes to cool before entering water if possible.
5. Ensure engine is operating correctly before entering water.
6. Set TRANSFER CASE shift lever (1) to LO, 8X8 drive indicator (2) will illuminate.

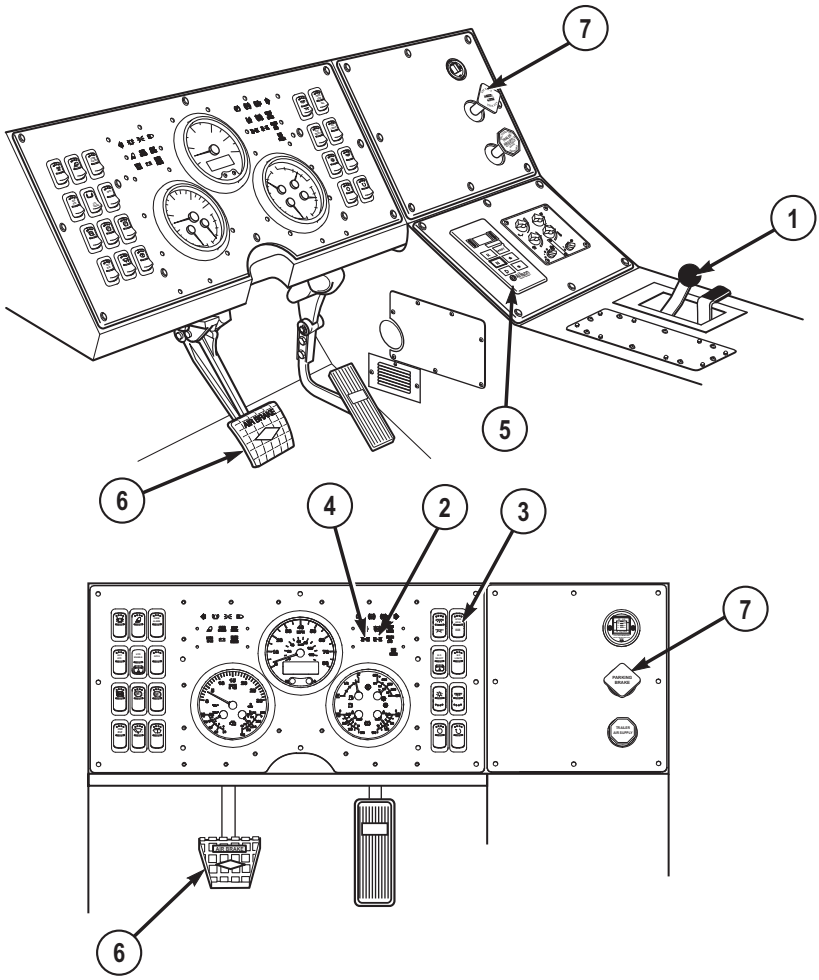


Figure 1.

7. Position traction control switch (3) to INTER AXLE for added traction, indicator (4) will come on.
8. Set transmission range selector (5) to 1 (1st gear range).
9. Drive vehicle slowly into water.
10. If engine stops, immediately attempt to restart engine. If engine will not start, tow or winch vehicle from water with another vehicle as soon as possible.
11. Drive vehicle at 3 to 4 mph (5 to 6 km/h) or less, through water.
12. Unless absolutely necessary, do not stop while in water.
13. If vehicle accidentally enters water deeper than 4 ft. (1.2 m), do the following:

a. Apply service brake pedal (6) and hold to stop vehicle.

b. Set transmission range selector (5) to R (reverse).

c. Release service brake pedal (6).

d. Slowly back vehicle out of deep water.

14. After leaving water, lightly press service brake pedal (6) and hold while driving slowly to dry out brake linings.
15. When clear of fording area, stop vehicle.
16. Apply and release PARKING BRAKE control (WP 0044) (7) several times to remove water from brake components.
17. Remove water and clean deposits from all vehicle parts as soon as possible.
18. Deliver vehicle to field level maintenance as soon as possible.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
INTERIM NUCLEAR, BIOLOGICAL, AND CHEMICAL (NBC) DECONTAMINATION PROCEDURES

INITIAL SETUP:

Not Applicable

INTRODUCTION AND PROCEDURES

NOTE

To reduce the effects of contamination in an NBC-contaminated environment, the HEMTT series vehicle should be operated with all windows, doors, and stowage boxes closed.

1. The HEMTT series vehicle is capable of being operated by personnel wearing nuclear, biological, or chemical (NBC) protective clothing without special tools or supporting equipment. Refer to FM 3-11.5 (WP 0157) for information on decontamination procedures. Specific procedures for the HEMTT series vehicle are as follows:
   a. Rubber sleeves and other rubber items, rope, and gaskets will absorb and retain chemical agents. Replacement of these items is the recommended method of decontamination.
   b. Lubricants or fluids may be present on the external surfaces of the HEMTT series vehicle or its components due to leaks or normal operation. These fluids will absorb NBC agents. The preferred method of decontamination is removal of these fluids using conventional decontamination methods in accordance with FM 3-11.5. (WP 0157)
   c. Continued decontamination of the external HEMTT series vehicle surfaces with supertropical bleach (STB)/decontamination solution number 2 (DS2) will degrade clear plastic (e.g., hydraulic fluid reservoir sight glass) to the point where looking through it will become impossible. This problem will become more evident for soldiers wearing protective masks. Therefore, the use of STB or DS2 decontamination in the area of clear plastic should be minimized. Clear plastic should be decontaminated with warm, soapy water.
   d. External surfaces of the HEMTT series vehicle and related equipment such as the remote control units that are marked with painted or stamped lettering will not withstand repeated decontamination with STB or DS2 without degradation of this lettering. Therefore, the recommended method of decontamination for these areas is washing with warm, soapy water.

NOTE

Replacement of hardware, as well as conventional methods of decontamination, are the preferred methods of decontamination for the areas listed below.

2. Areas that will entrap contaminants, making efficient decontamination extremely difficult include the following:
   a. Exposed heads of screws.
   b. Areas adjacent to and behind exposed hydraulic lines.
   c. Hinged areas or access doors on the stowage boxes.
   d. Retaining chains for lynchpins and lockpins.
   e. Areas around the tiedowns, lifting rings, crevices around access doors, external valves and drains, and exposed hydraulic connectors.
   f. Areas behind knobs, levers, externally-mounted equipment, specification and advisory data plates, and roller and locking mechanisms.
   g. Winch cable and winch hook assembly.
3. Conventional methods of decontamination should be used on all areas listed in Steps (1) and (2), while stressing the importance of thoroughness, and the probability of some degree of continuing contact, including vapor hazard.
4. For additional NBC information, refer to FM 3-11.3 (WP 0157) and FM 3-11.4. (WP 0157)

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATE TIRE CARRIER USING HAND PUMP

INITIAL SETUP:

Not Applicable

LOWER TIRE CARRIER

CAUTION

- Ensure the passenger side of the vehicle has 6 ft. (1.83 m) of clearance from the battery box forward to accommodate the tire carrier lowering or damage to equipment may occur.
- Do not dump (deflate) vehicle air suspension system (WP 0039) when spare tire is attached to tire carrier and in contact with the ground. Failure to comply may result in damage to equipment.
- Do not add a significant amount of weight to the vehicle when spare tire is attached to tire carrier and in contact with the ground. Failure to comply may result in damage to equipment.

NOTE

This procedure is a two soldier task.

1. Remove access ladder from stowage and connect to passenger side front fender. (WP 0037)
2. Disconnect safety pin (1) from right lock rod (2). Leave safety pin (1) hang from its lanyard (3).

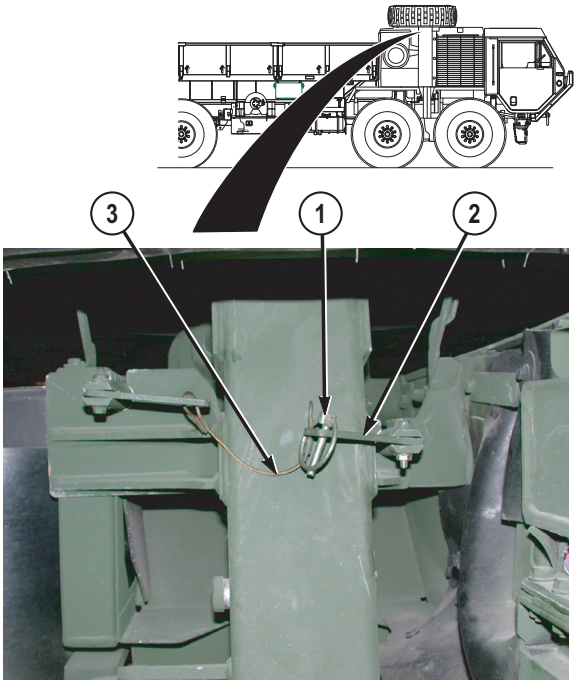


Figure 1.

CAUTION

The tire carrier lock rods are a snag hazard to the movement of the tire carrier and must be properly stowed in stowage brackets prior to lowering the tire carrier. Failure to properly stow tire carrier lock rods prior to lowering operation may result in damage to equipment.

3. Turn left lock rod (4) CCW until enough slack is made to push left lock rod (4) up and into its stowage bracket (5).

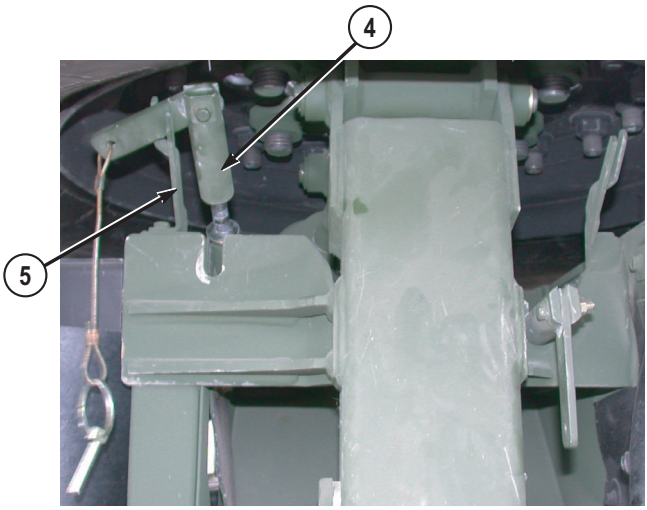


Figure 2.

4. Turn right lock rod (6) CCW until enough slack is made to push right lock rod (6) up and into its stowage bracket (7).

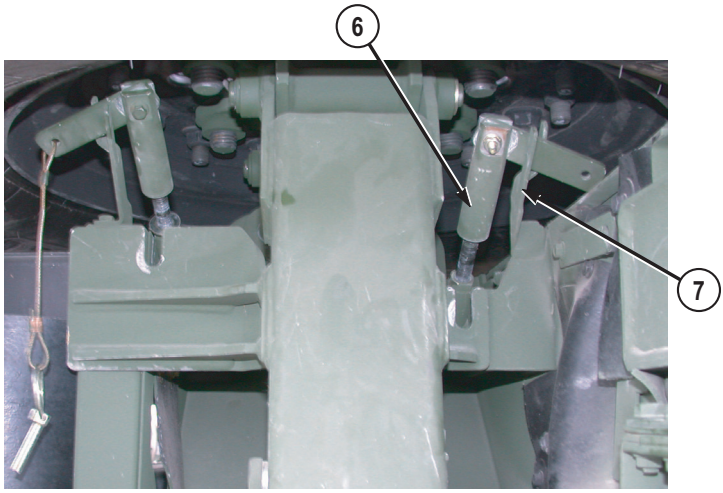


Figure 3.

WARNING



If tire carrier is in any position other than full up and locked (tire carrier latch engaged) or resting on ground, only tire carrier pump operator should be within six feet (1.83 m) of passenger side of vehicle from battery box forward. Failure to comply may result in personnel being struck by tire carrier/spare tire, causing injury or death to personnel.

5. Ensure safety area is clear of personnel and equipment. Assistant will stand outside the safety area and ensure no personnel wander into safety area while lowering operation is taking place.

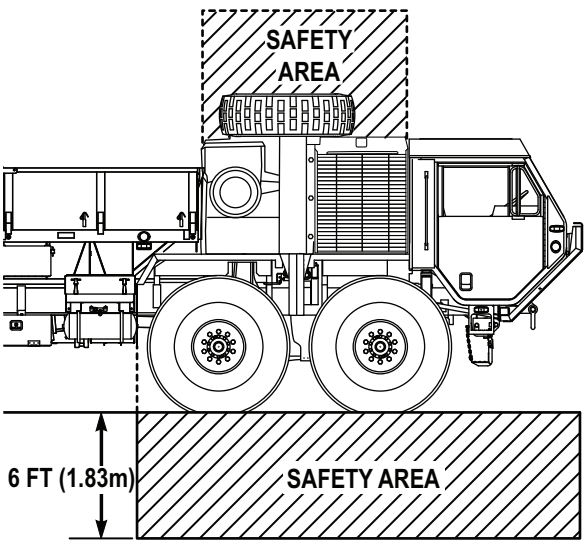


Figure 4.

6. Set directional control lever (8) to LOWER position.

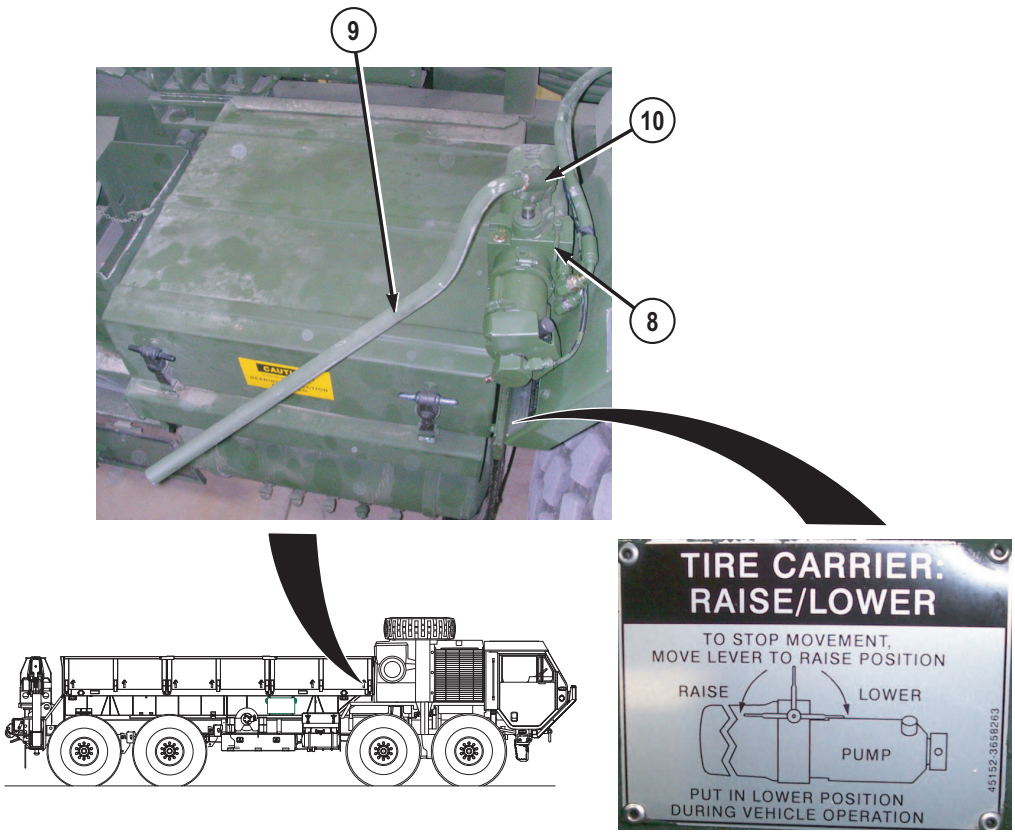


Figure 5.

7. Remove hand pump handle (9) from stowage, insert into hand pump receptacle (10). Move hand pump handle (9) up and down rapidly, tire carrier should begin to move.

CAUTION

Once tire is in contact with the ground, do not pump hand pump handle with directional control lever in LOWER position. This could put undue stress on tire carrier and may cause damage to equipment.

NOTE

The tire carrier can be stopped at any time during lowering operations by stopping use of hand pump and moving the directional control lever to RAISE position.

8. Once tire carrier has passed vertical (approximately 6 in. [15.24 cm] of movement), stop pumping hand pump handle (9) and allow the tire carrier to lower on its own until spare tire contacts ground.

9. Move directional control lever (8) to raise position.

RAISE TIRE CARRIER

CAUTION

Ensure the passenger side of the vehicle has 6 ft. (1.83 m) of clearance from the battery box forward to accommodate the tire carrier lowering or damage to equipment may occur.

NOTE

This procedure is a two soldier task.

1. If vehicle is not idling, set ignition switch (1) to on position , and check that SPARE TIRE LOOSE indicator (2) is illuminated.

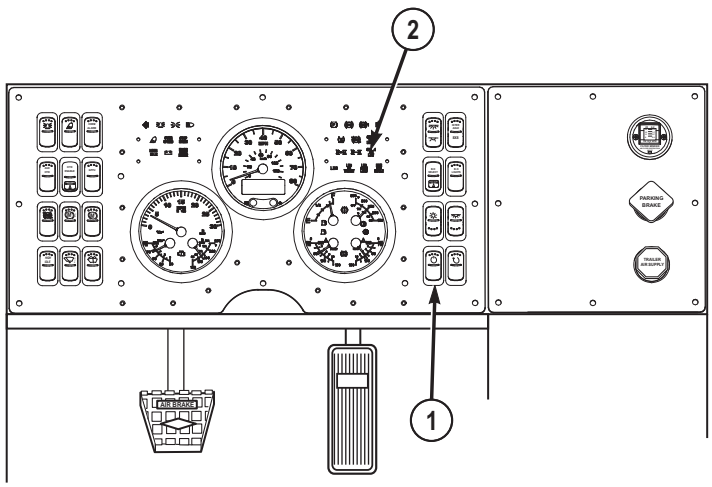


Figure 6.

2. Ensure spare tire is securely fastened to the tire carrier.

CAUTION

Ensure the passenger side top engine access cover is closed and secured prior to raising the tire carrier with spare tire installed. If access cover is braced open, spare tire will contact it and cause damage to the cover as well as prevent the tire carrier from locking in full up position.

NOTE

If passenger side top engine access cover is open and laying flat, the tire (in the full up position) will not allow the access cover to be closed.

3. Ensure passenger side top engine access cover is secured closed.

CAUTION

The tire carrier lock rods are a snag hazard to the movement of the tire carrier and must be properly stowed in stowage brackets prior to lowering the tire carrier. Failure to properly stow tire carrier lock rods prior to lowering operation may result in damage to equipment.

4. Ensure left lock rod (3) is properly stowed in stowage bracket (4).

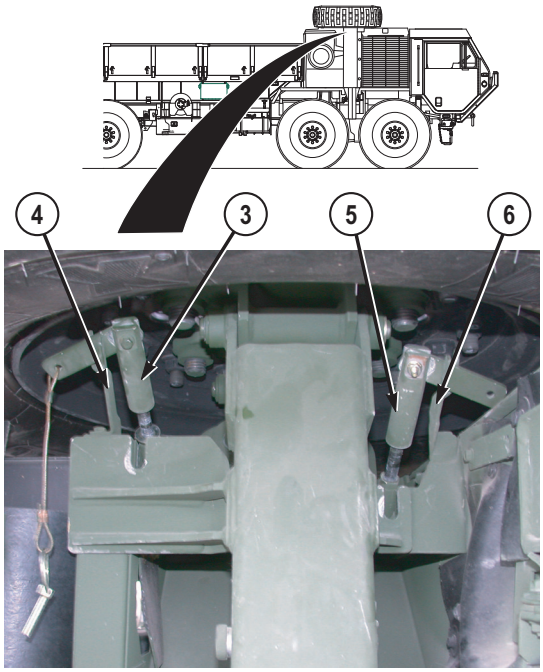


Figure 7.

5. Ensure right lock rod (5) is properly stowed in stowage bracket (6).

WARNING



If tire carrier is in any position other than full up and locked (tire carrier latch engaged) or resting on ground, only tire carrier pump operator should be within six feet (1.83 m) of passenger side of vehicle from battery

box forward. Failure to comply may result in personnel being struck by tire carrier/spare tire, causing injury or death to personnel.

6. Ensure safety area is clear of personnel and equipment. Assistant will stand outside the safety area and ensure no personnel wander into safety area while raising operation is taking place.

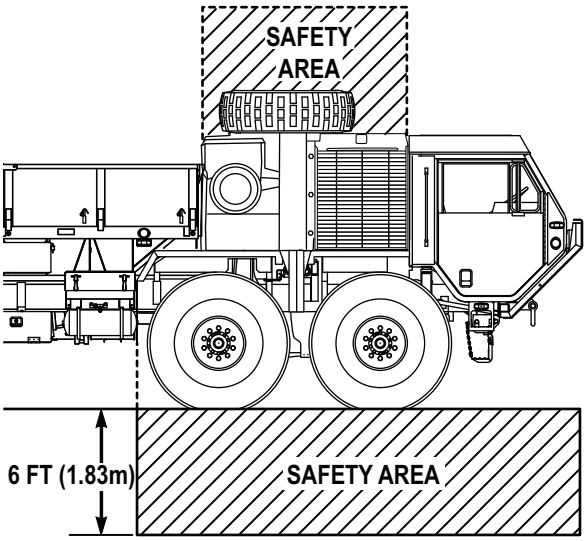


Figure 8.

7. Set directional control lever (7) to RAISE position.

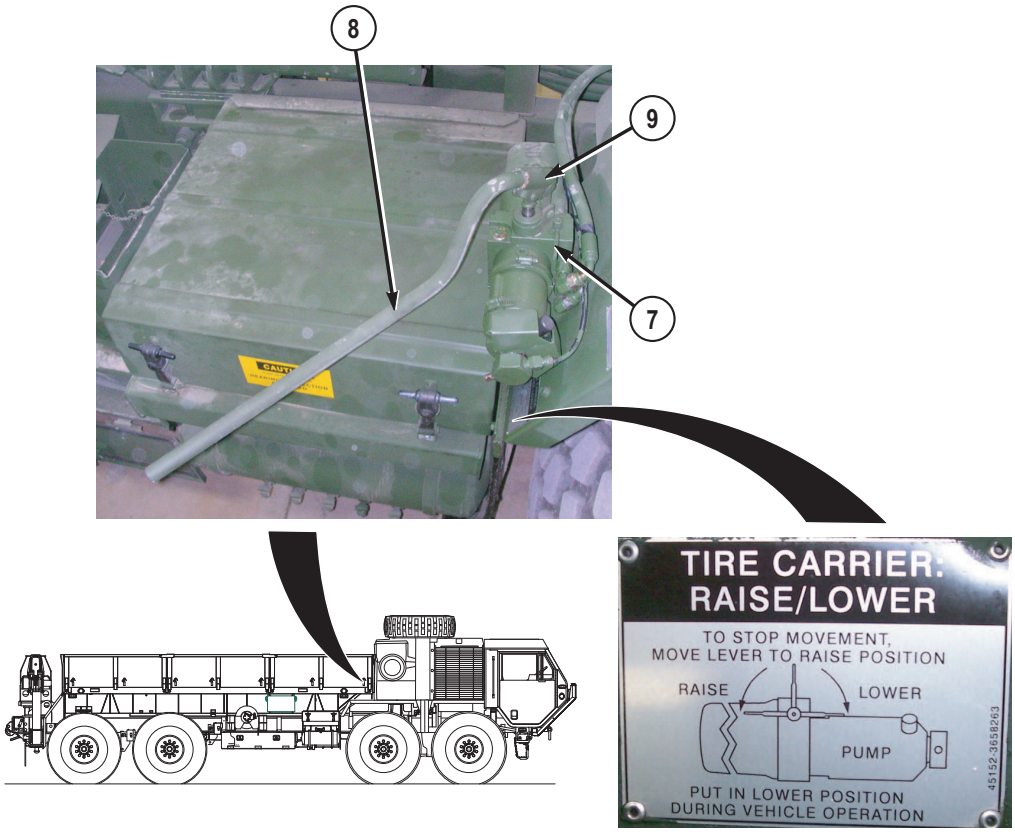


Figure 9.

8. Remove hand pump handle (8) from stowage, insert into hand pump receptacle (9). Move hand pump handle (8) up and down rapidly, tire carrier should begin to move.

NOTE

The tire carrier can be stopped at any time during raising operations.

9. Continue to raise tire carrier until it is in the full up position. Stop use of hand pump.

WARNING



Always maintain a distance of six feet (1.83 m) until confirmation that tire carrier latch is engaged. Failure to comply may result in personnel being

struck by tire carrier/spare tire causing severe injury or death to personnel.

10. Maintaining a safe distance of 6 ft. (1.83 m), the assistant will check the tire carrier latch (10), ensuring it has fully engaged the tire carrier arm bar (11).

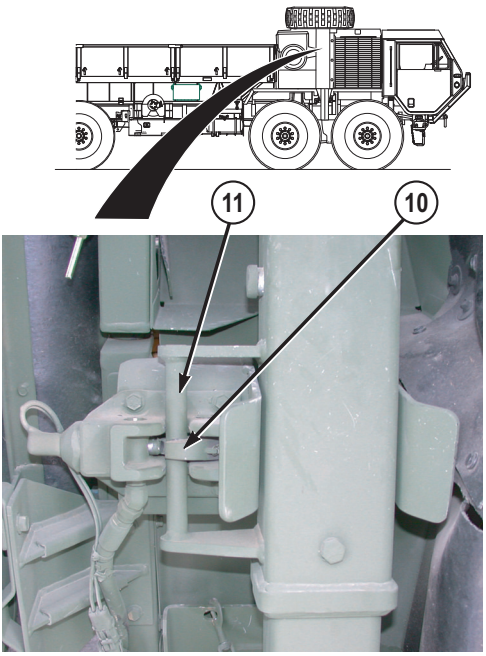


Figure 10.

11. With the assistant maintaining the safety area, the operator will proceed to the driver side cabin and check to ensure the SPARE TIRE LOOSE indicator (2) has gone out.

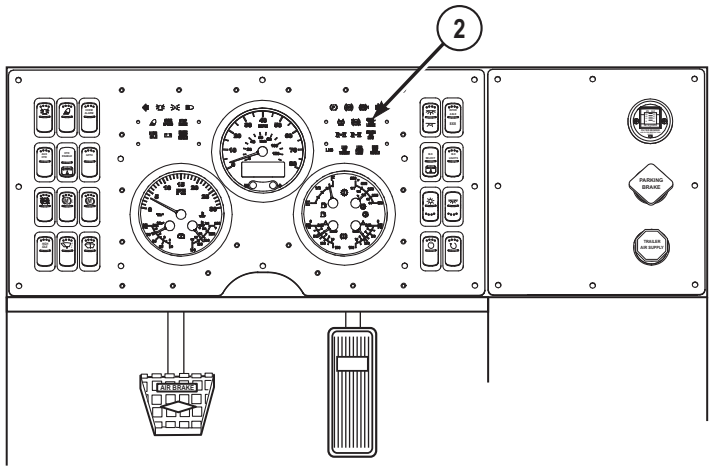


Figure 11.

NOTE

- If tire carrier latch is fully engaged, and SPARE TIRE LOOSE indicator light has gone out, skip to Step (15).
- If tire carrier latch fails to fully engage tire carrier bar, or SPARE TIRE LOOSE indicator fails to go out, perform Steps (12) through (14).

12. Move directional control lever (7) to LOWER.

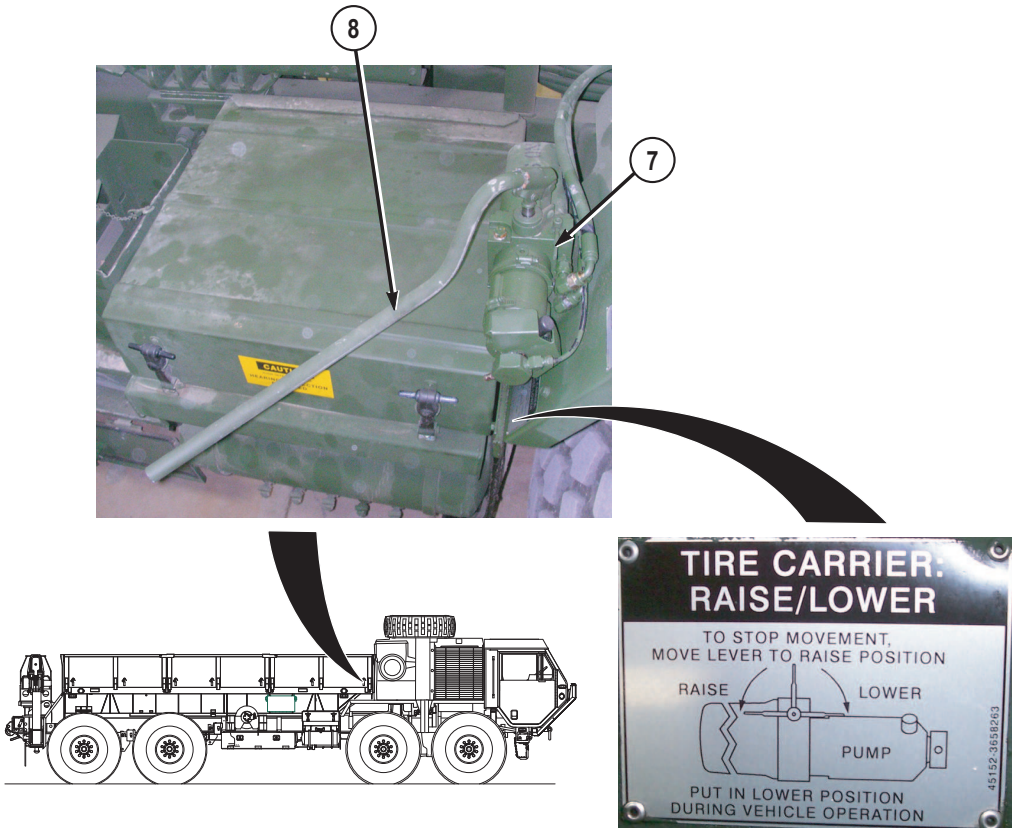


Figure 12.

13. Pump hand pump handle (8) until tire carrier lowers approximately 1 ft. (30 cm).
14. Repeat Steps (7) through (11).

NOTE

If tire carrier latch is fully engaged, and SPARE TIRE LOOSE indicator light has gone out, complete Steps (15) through (20).

15. Remove right lock rod (5) from stowage bracket (6) and pull down to end of groove (12) until it stops. Turn right lock rod (5) CW until it is hand tight, with jointed end (13) across tire carrier arm (14).

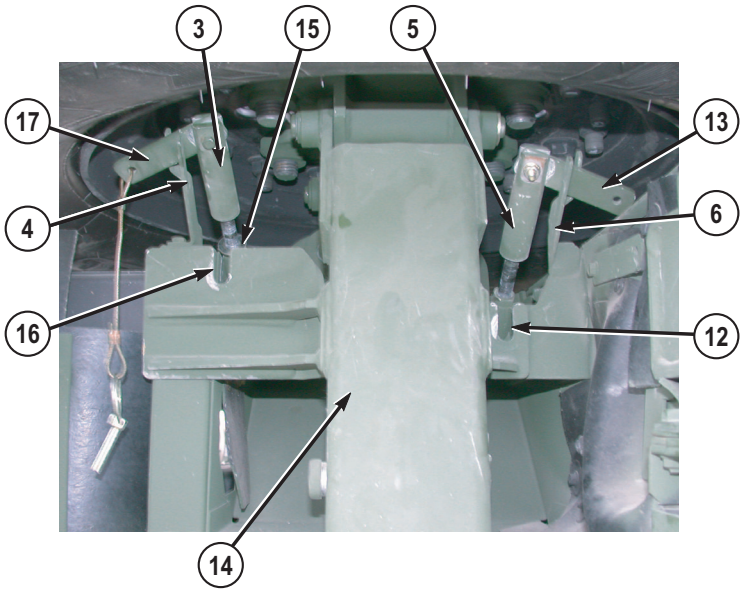


Figure 13.

16. Remove left lock rod (3) from stowage bracket (4), locate washer (15) and pull towards left lock rod (3) until it stops. Pull both left lock rod (3) and washer (15) down to end of groove (16). Turn left Lock rod (4) CW until it is hand tight, with jointed end (17) pointed towards tire carrier arm (14).
17. Insert safety pin (18) through hole located on right lock rod jointed end (13).

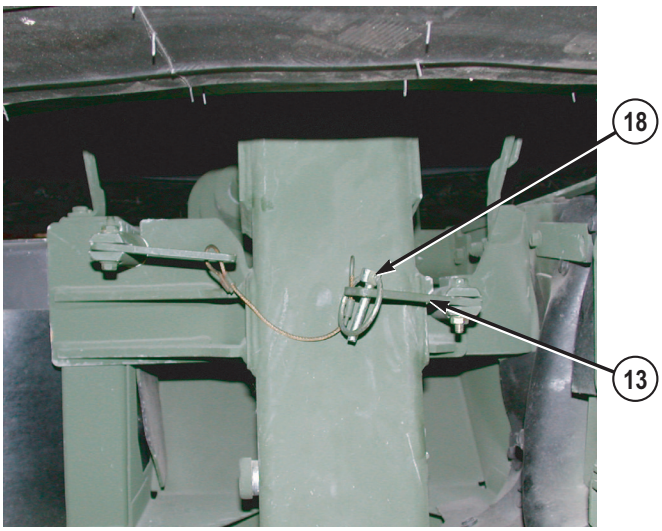


Figure 14.

NOTE

Tire carrier directional control lever should always be in LOWER position for vehicle operation.

18. Set directional control lever (7) to LOWER position.

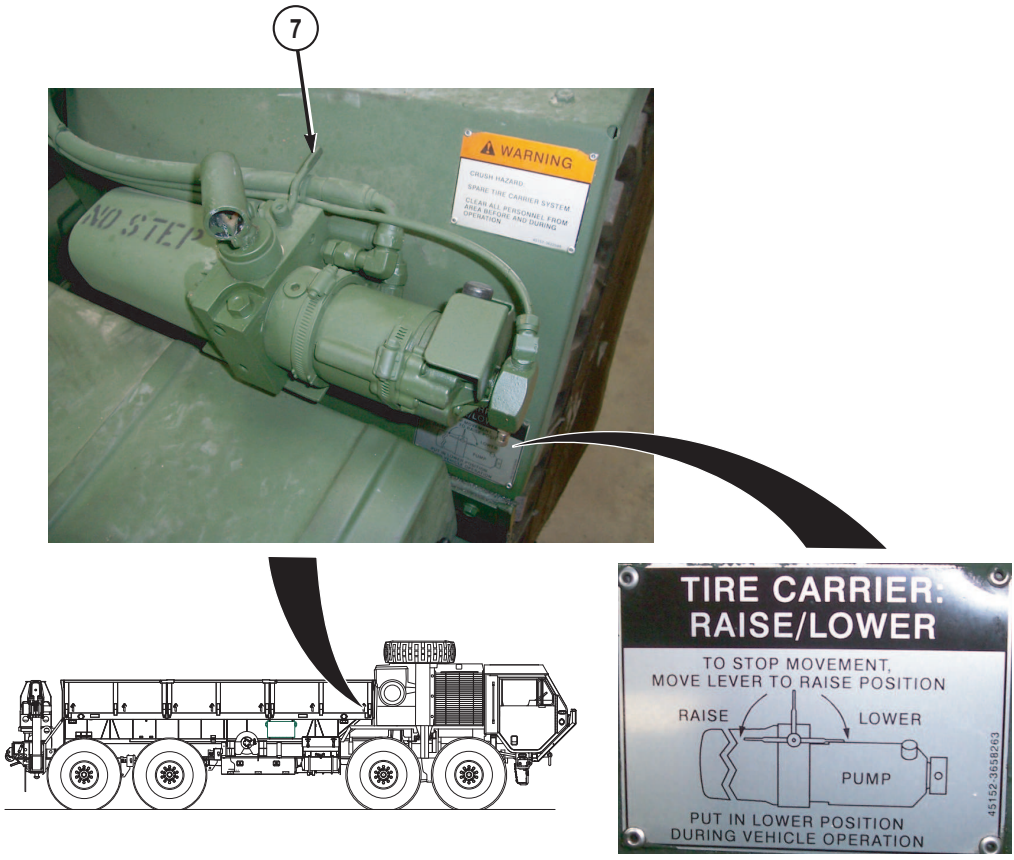


Figure 15.

19. Shut off engine (WP 0056) or set ignition switch (1) to off position (as applicable).

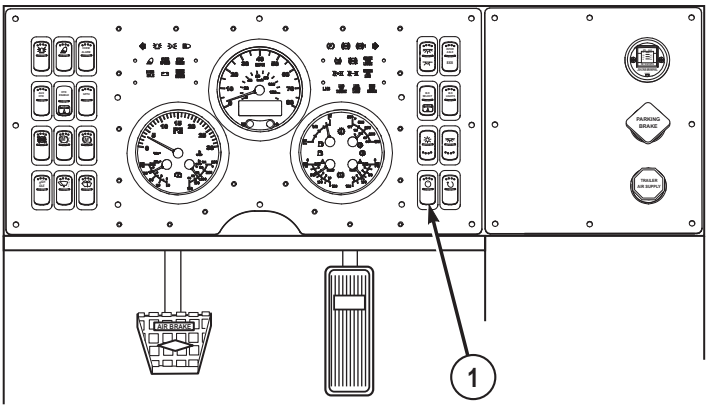


Figure 16.

20. Stow access ladder. (WP 0037)

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATE TIRE CARRIER USING OUTSIDE AIR SOURCE

INITIAL SETUP:

Not Applicable

LOWER TIRE CARRIER

CAUTION

- Ensure the passenger side of the vehicle has 6 ft. (1.83 m) of clearance from the battery box forward to accommodate the tire carrier lowering or damage to equipment may occur.
- Do not dump (deflate) vehicle air suspension system (WP 0039) when spare tire is attached to tire carrier and in contact with the ground. Failure to comply may result in damage to equipment.
- Do not add a significant amount of weight to the vehicle when spare tire is attached to tire carrier and in contact with the ground. Failure to comply may result in damage to equipment.

NOTE

This procedure is a two soldier task.

1. Remove access ladder from stowage and connect to passenger side front fender. (WP 0037)
2. Disconnect safety pin (1) from right lock rod (2). Leave safety pin (1) hang from its lanyard (3).

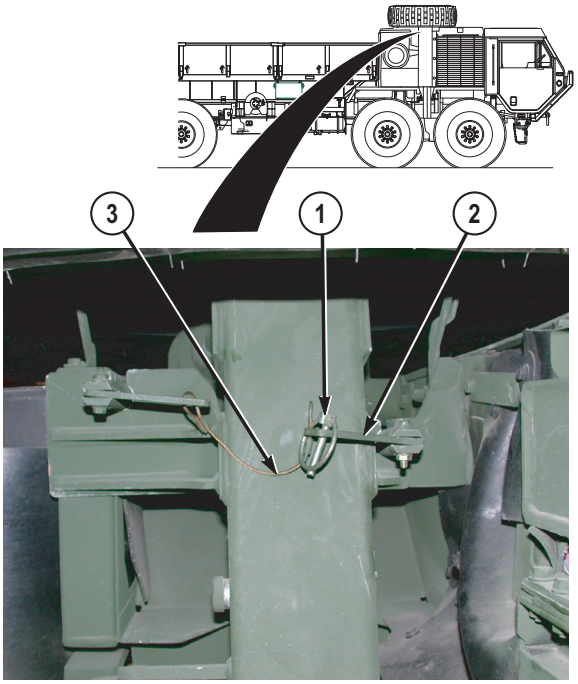


Figure 1.

CAUTION

The tire carrier lock rods are a snag hazard to the movement of the tire carrier and must be properly stowed in stowage brackets prior to lowering the tire carrier. Failure to properly stow tire carrier lock rods prior to lowering operation may result in damage to equipment.

3. Turn left lock rod (4) CCW until enough slack is made to push left lock rod (4) up and into its stowage bracket (5).

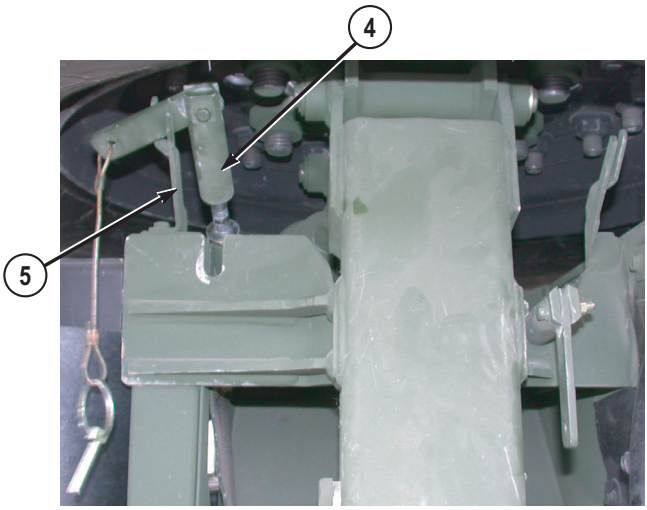


Figure 2.

4. Turn right lock rod (6) CCW until enough slack is made to push right lock rod (6) up and into its stowage bracket (7).

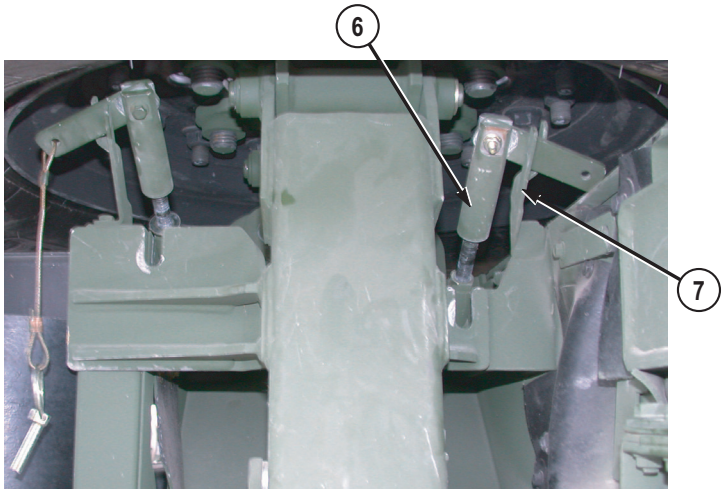


Figure 3.

WARNING



If tire carrier is in any position other than full up and locked (tire carrier latch engaged) or resting on ground, only tire carrier pump operator should be within six feet (1.83 m) of passenger side of vehicle from battery box forward. Failure to comply may result in personnel being struck by tire carrier/spare tire, causing injury or death to personnel.

5. Ensure safety area is clear of personnel and equipment. Assistant will stand outside the safety area and ensure no personnel wander into safety area while lowering operation is taking place.

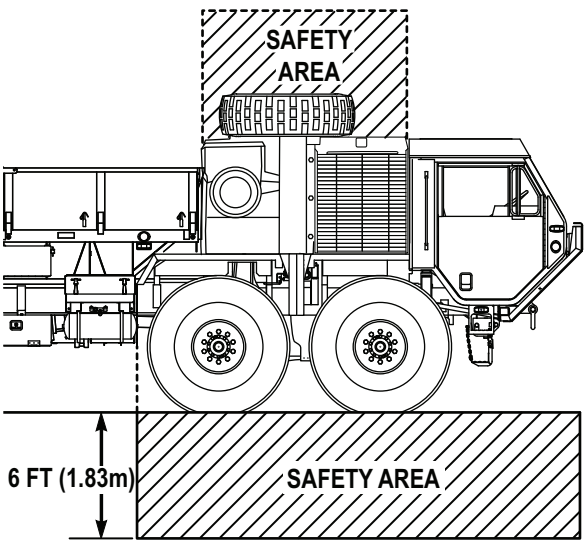


Figure 4.

6. Set directional control lever (8) to LOWER position.

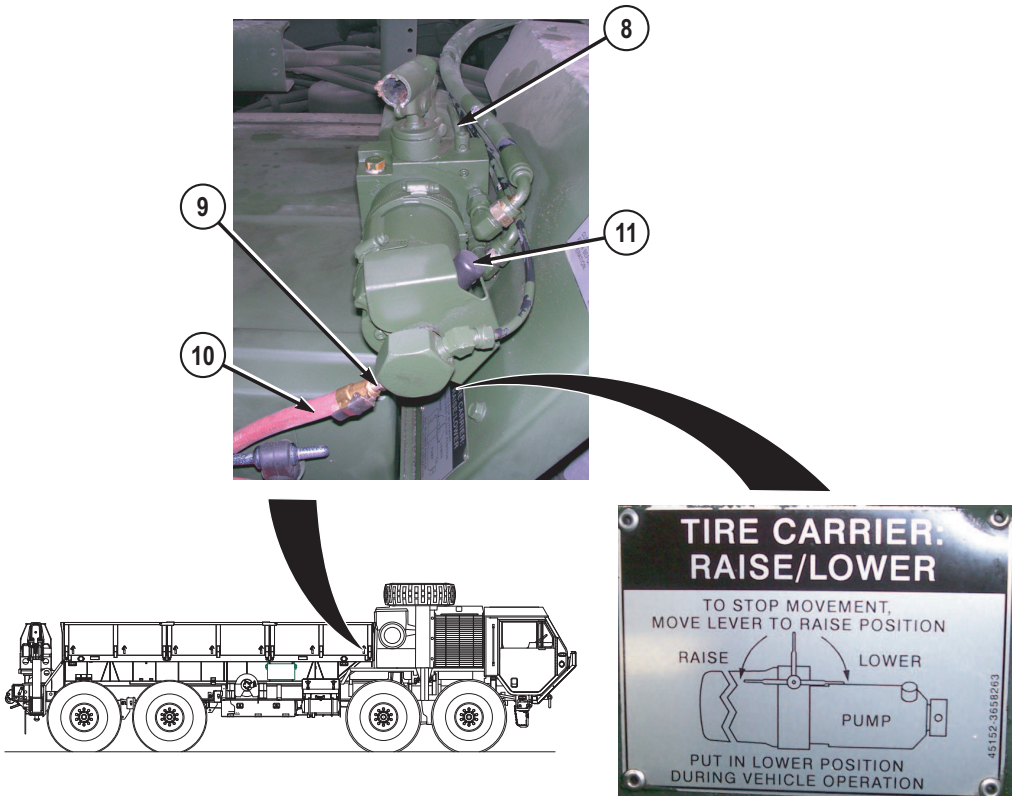


Figure 5.

7. Remove cap from auxiliary air fitting (9).
8. Connect air hose (10) to auxiliary air fitting (9).

NOTE

- It may be necessary to simultaneously hold lever on air hose with tire carrier pump power control dependant on type air hose used.
- The operator will notice a small amount of oil being expelled with the air from the tire carrier pump each time it cycles, this is a normal condition.

9. Press and hold power control (11). The tire carrier pump cyclic rate will be rapid at first, and then slow noticeably. As cyclic rate slows, the operator should notice tire carrier begin to move.

CAUTION

Once tire is in contact with the ground, do not press power control with directional control lever in LOWER position. This could put undue stress on tire carrier and may cause damage to equipment.

NOTE

The tire carrier can be stopped at any time during lowering operations by releasing the power control and moving the directional control lever to RAISE position.

10. Once tire carrier has passed vertical (approximately 6 in. [15.24 cm] of movement), release power control (11) and allow tire carrier to lower on its own until tire contacts ground.
11. Move directional control lever (8) to raise position.

RAISE TIRE CARRIER

CAUTION

Ensure the passenger side of the vehicle has 6 ft. (1.83 m) of clearance from the battery box forward to accommodate the tire carrier lowering or damage to equipment may occur.

NOTE

This procedure is a two soldier task.

1. If vehicle is not idling, set ignition switch (1) to on position , and check that SPARE TIRE LOOSE indicator (2) is illuminated.

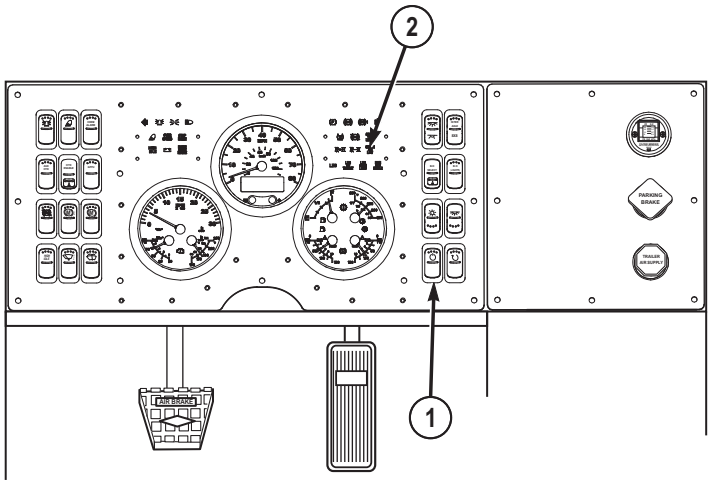


Figure 6.

2. Ensure spare tire is securely fastened to the tire carrier.

CAUTION

Ensure the passenger side top engine access cover is closed and secured prior to raising the tire carrier with spare tire installed. If access cover is braced open, spare tire will contact it and cause damage to the cover as well as prevent the tire carrier from locking in full up position.

NOTE

If passenger side top engine access cover is open and laying flat, the tire (in the full up position) will not allow the access cover to be closed.

3. Ensure passenger side top engine access cover is secured closed.

CAUTION

The tire carrier lock rods are a snag hazard to the movement of the tire carrier and must be properly stowed in stowage brackets prior to lowering the tire carrier. Failure to properly stow tire carrier lock rods prior to lowering operation may result in damage to equipment.

4. Ensure left lock rod (3) is properly stowed in stowage bracket (4).

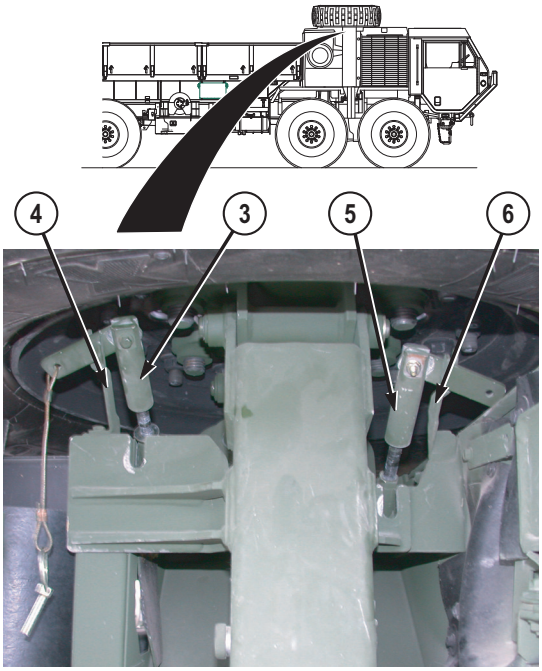


Figure 7.

5. Ensure right lock rod (5) is properly stowed in stowage bracket (6).

WARNING



If tire carrier is in any position other than full up and locked (tire carrier latch engaged) or resting on ground, only tire carrier pump operator should be within six feet (1.83 m) of passenger side of vehicle from battery box forward. Failure to comply may result in personnel being struck by tire carrier/spare tire, causing injury or death to personnel.

6. Ensure safety area is clear of personnel and equipment. Assistant will stand outside the safety area and ensure no personnel wander into safety area while raising operation is taking place.

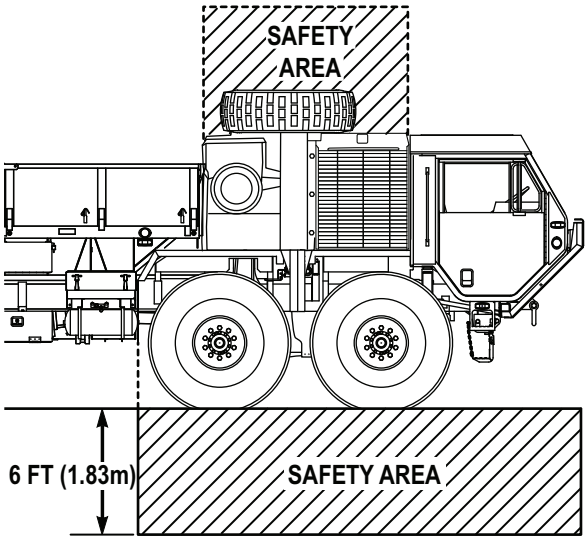


Figure 8.

7. Set directional control lever (7) to RAISE position.

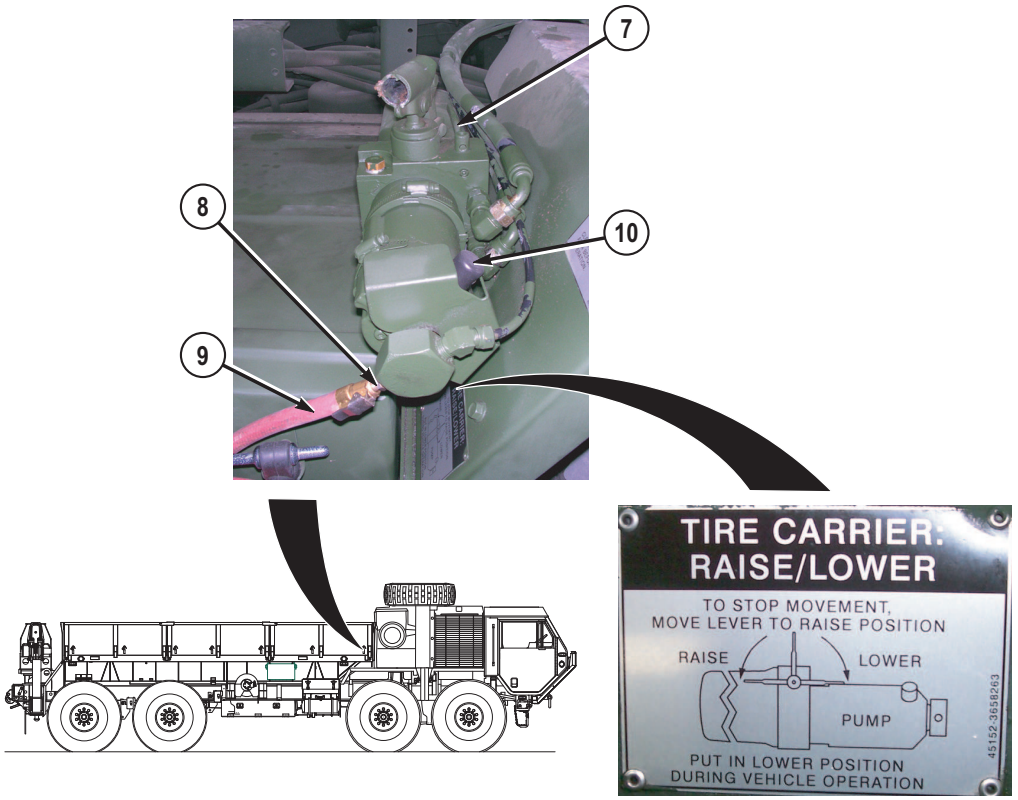


Figure 9.

8. Remove cap from auxiliary air fitting (8).
9. Connect air hose (9) to auxiliary air fitting (8).

NOTE

- It may be necessary to simultaneously hold lever on air hose with tire carrier pump power control dependant on type air hose used.
- The operator will notice a small amount of oil being expelled with the air from the tire carrier pump each time it cycles, this is a normal condition.
- When the power control is pressed, the tire carrier pump cyclic rate will be rapid at first, and then slow noticeably. As cyclic rate slows, the operator should notice the tire carrier begin to move.

10. Press and hold power control (10).

NOTE

- The tire carrier can be stopped at any time during raising operations by releasing power control.
- As the tire carrier is raised, the tire carrier pump will begin to cycle at an increased rate.

11. Continue to raise tire carrier until it is in the full up position. The operator will notice a significant slow down in the tire carrier pump cyclic rate. Release power control (10).

WARNING



Always maintain a distance of six feet (1.83 m) until confirmation that tire carrier latch is engaged. Failure to comply may result in personnel being struck by tire carrier/spare tire causing severe injury or death to personnel.

12. Maintaining a safe distance of 6 ft. (1.83 m), the assistant will check the tire carrier latch (11), ensuring it has fully engaged the tire carrier arm bar (12).

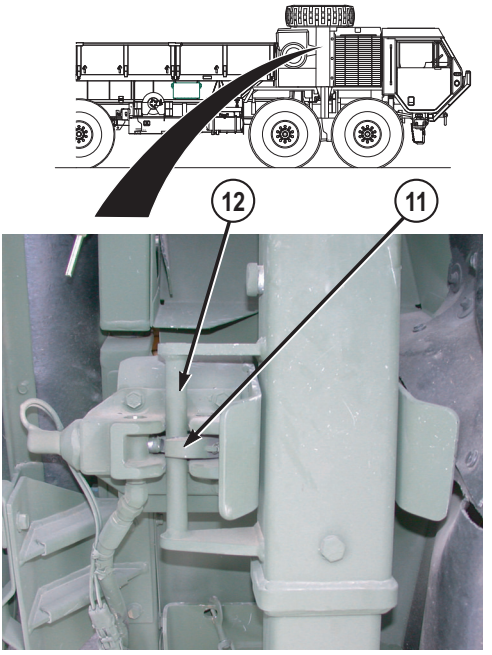


Figure 10.

13. With the assistant maintaining the safety area, the operator will proceed to the driver side cabin and check to ensure the SPARE TIRE LOOSE indicator (2) has gone out.

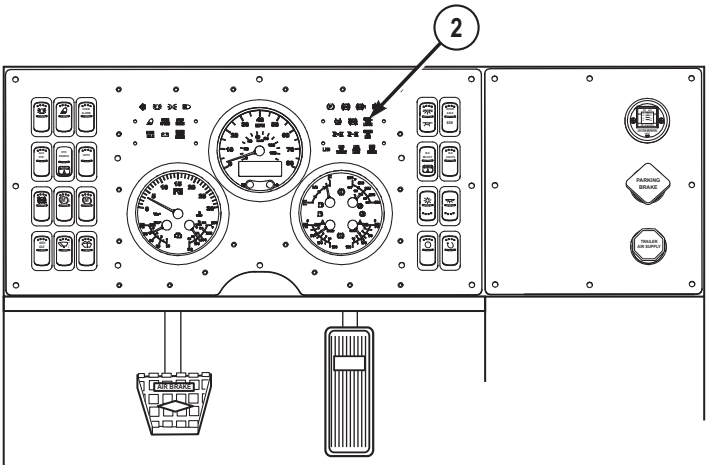


Figure 11.

NOTE

- If tire carrier latch is fully engaged, and SPARE TIRE LOOSE indicator light has gone out, skip to Step (17).
- If tire carrier latch fails to fully engage tire carrier bar, or SPARE TIRE LOOSE indicator fails to go out, perform Steps (14) through (16).

14. Move directional control lever (7) to LOWER.

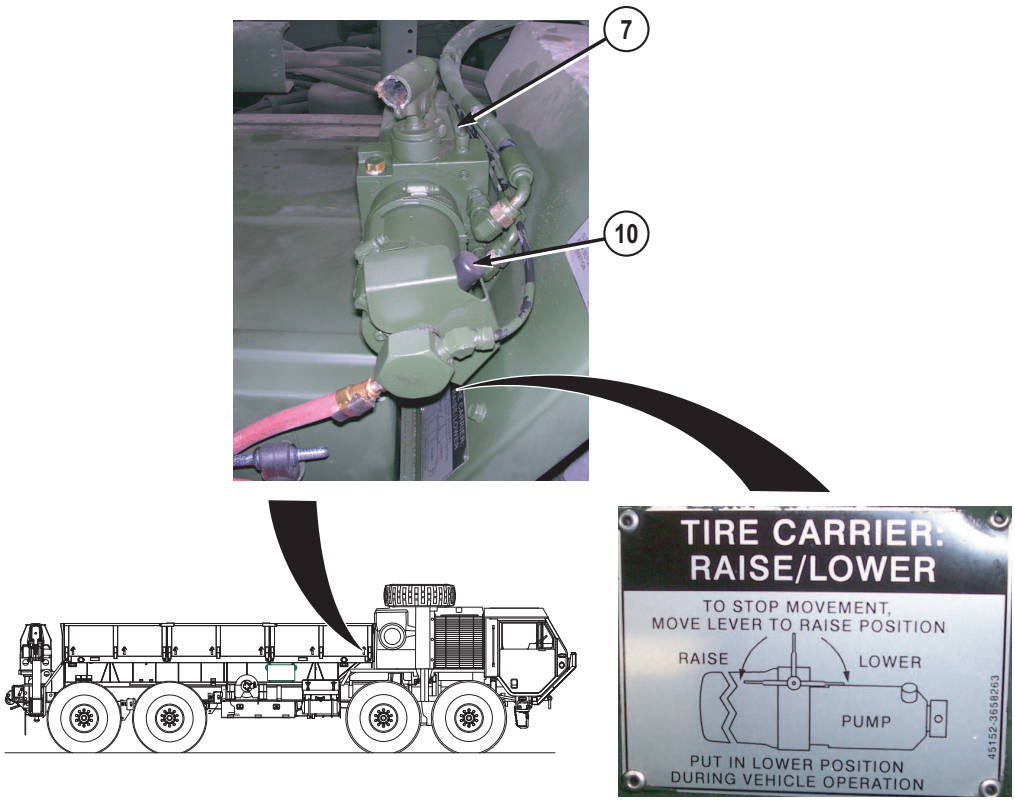


Figure 12.

15. Press power control (10) until tire carrier lowers approximately 1 ft. (30 cm).
16. Repeat Steps (7) through (13).

NOTE

If tire carrier latch is fully engaged, and SPARE TIRE LOOSE indicator light has gone out, complete Steps (17) through (22).

17. Remove right lock rod (5) from stowage bracket (6) and pull down to end of groove (13) until it stops. Turn right lock rod (5) CW until it is hand tight, with jointed end (14) across tire carrier arm (15).

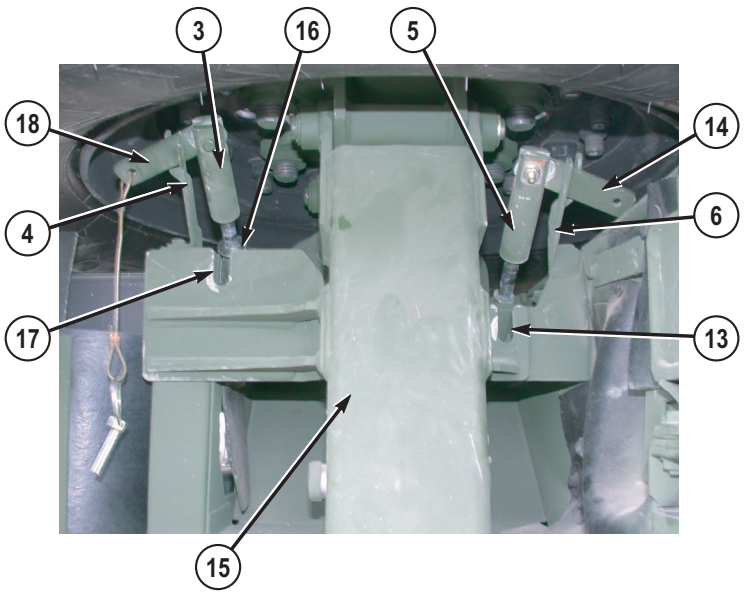


Figure 13.

18. Remove left lock rod (3) from stowage bracket (4), locate washer (16) and pull towards left lock rod (3) until it stops. Pull both left lock rod (3) and washer (16) down to end of groove (17). Turn left lock rod (3) CW until it is hand tight, with jointed end (18) pointed towards tire carrier arm (15).
19. Insert safety pin (19) through hole located on right lock rod jointed end (14).

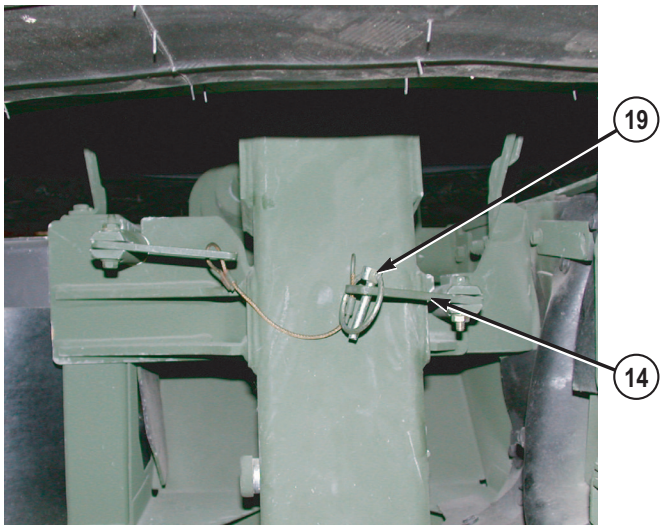


Figure 14.

NOTE

Tire carrier directional control lever should always be in LOWER position for vehicle operation.

20. Set directional control lever (7) to LOWER position.

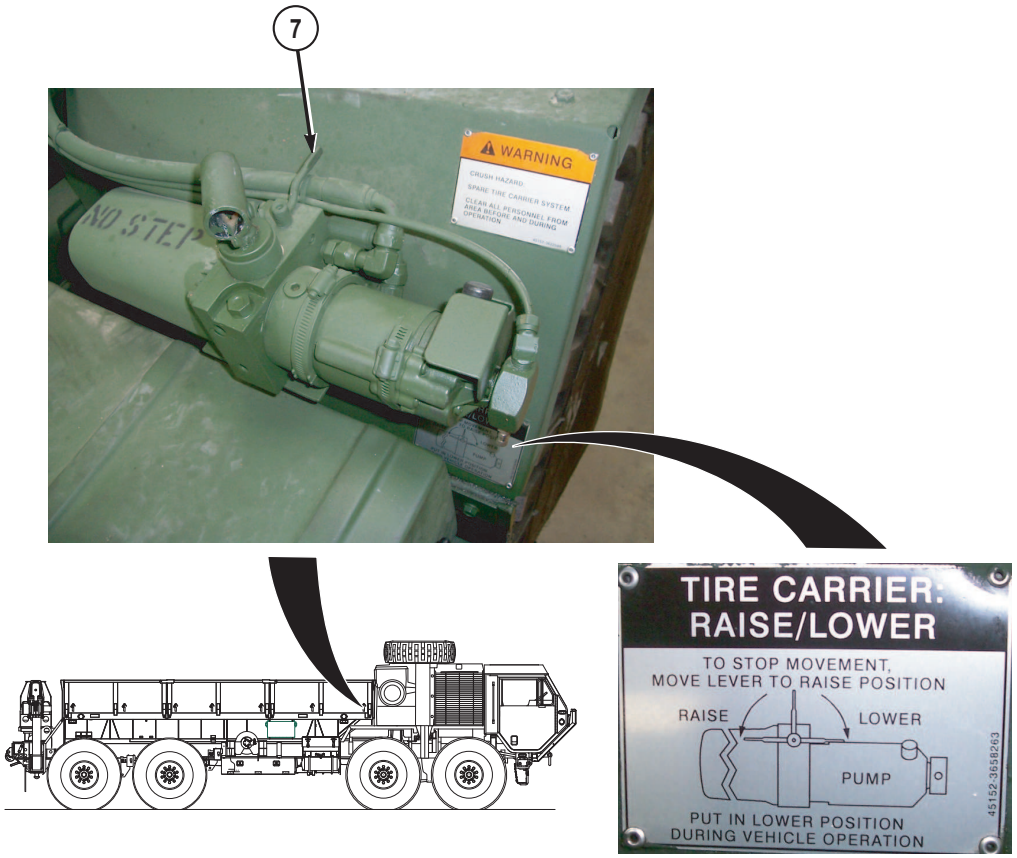


Figure 15.

21. Shut off engine (WP 0056) or set ignition switch (1) to off position (as applicable).

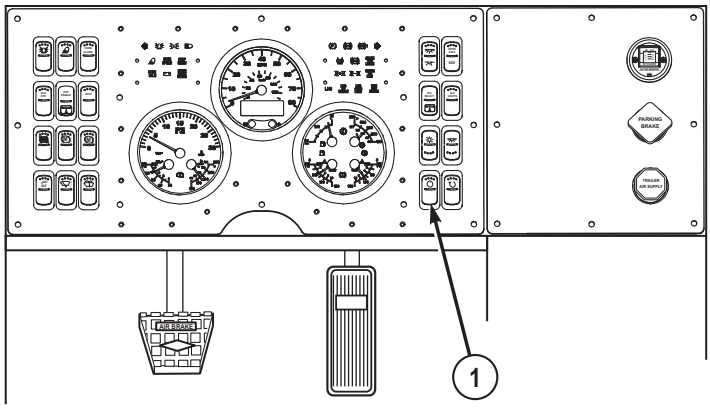


Figure 16.

22. Stow access ladder. (WP 0037)

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
SELF-RECOVER VEHICLE USING SELF-RECOVERY WINCH

INITIAL SETUP:

Not Applicable

WINCH MIRED VEHICLE FORWARD

NOTE

- For additional information on vehicle self-recovery, refer to FM 4-30.31. (WP 0157)
- Vehicle self-recovery is a two soldier task. Soldiers must communicate by hand signals.

1. Shut off engine. (WP 0056)
2. Adjust mirror (1) so assistant can be clearly seen during procedure.

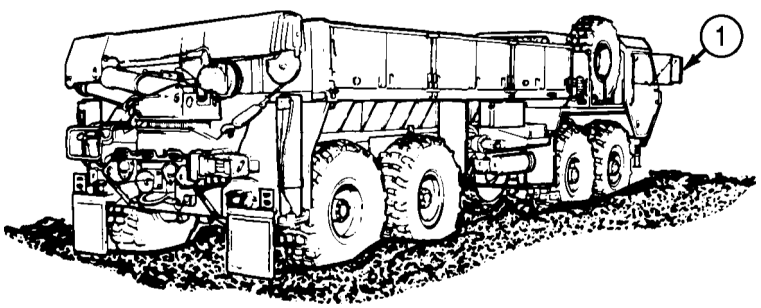


Figure 1.

3. Adjust mirror (1) so assistant can be clearly seen during procedure.

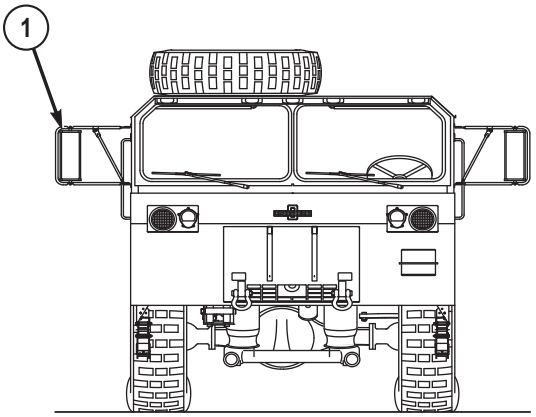


Figure 2.

CAUTION

HYD ENABLE switch must be in off position before moving hydraulic selector valve control to prevent equipment damage.

4. Set HYD ENABLE switch (2) to off position. MAIN HYD ENABLE indicator (3) will go out.

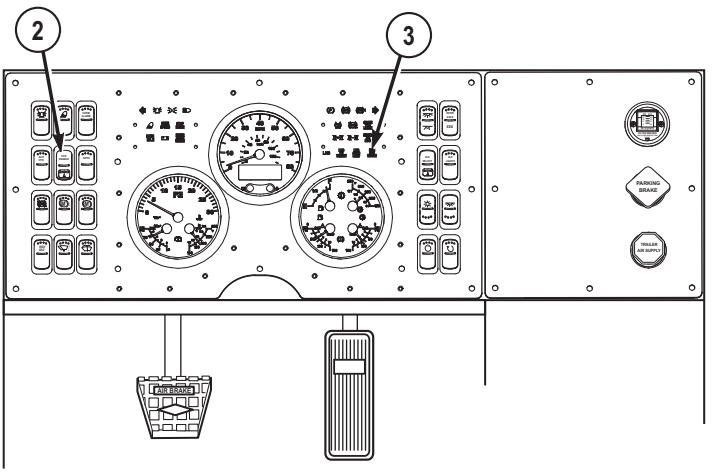


Figure 3.

5. Pull out hydraulic selector valve control.

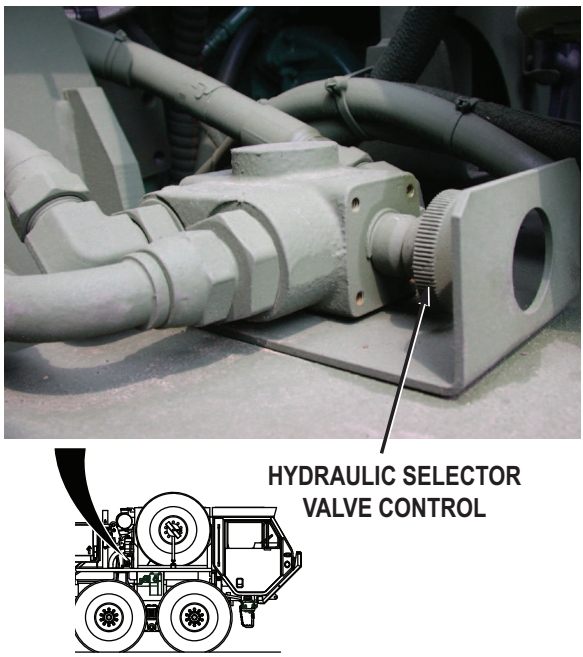


Figure 4.

6. Pull out hydraulic selector valve control.

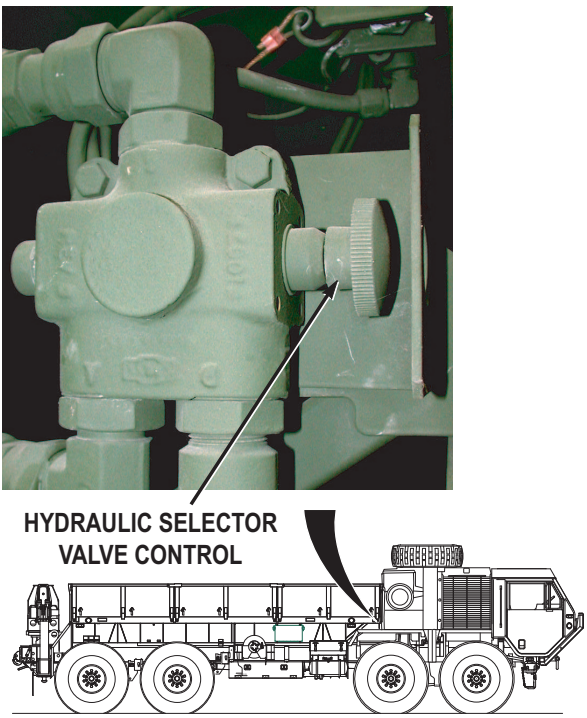


Figure 5.

7. Start engine. (WP 0043)
8. Set HYD ENABLE switch (2) to on position. MAIN HYD ENABLE indicator (3) will illuminate.

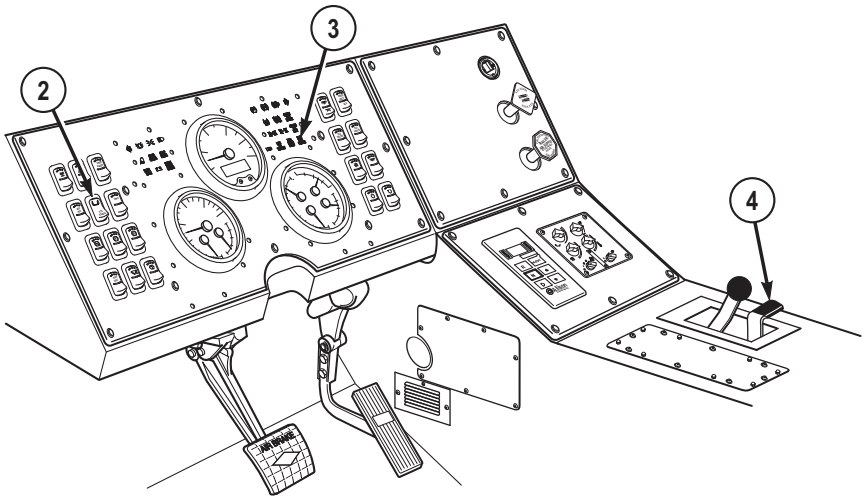


Figure 6.

9. Move winch shift lever (4) to OUT position to pay out small amount of cable.
10. Release winch shift lever (4) to center position.
11. Set PTO ENGAGE switch (2) to OFF position. Indicator light (3) will go out.
12. Set HYD ENABLE switch (2) to off position. MAIN HYD ENABLE indicator (3) will go out.
13. Remove cotter pin (5) from pin (6).

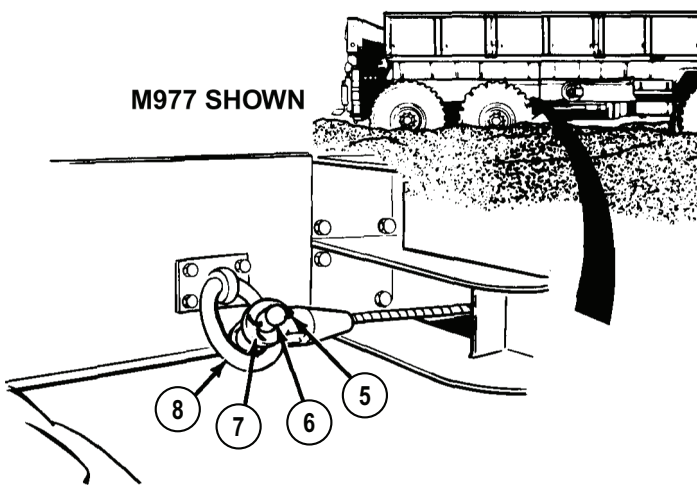


Figure 7.

14. Remove pin (6) from clevis (7) and disconnect clevis (7) from tiedown ring (8).

WARNING



- Always wear protective gloves when handling winch cable. Never let cable run through hands. Frayed cables can cut severely. Failure to comply may result in injury or death to personnel.
- Never operate winch with less than five wraps of cable on winch drum. Failure to comply may result in injury or death to personnel.

15. Route winch cable (9) around, and over top of winch (10) toward front of vehicle (as shown).

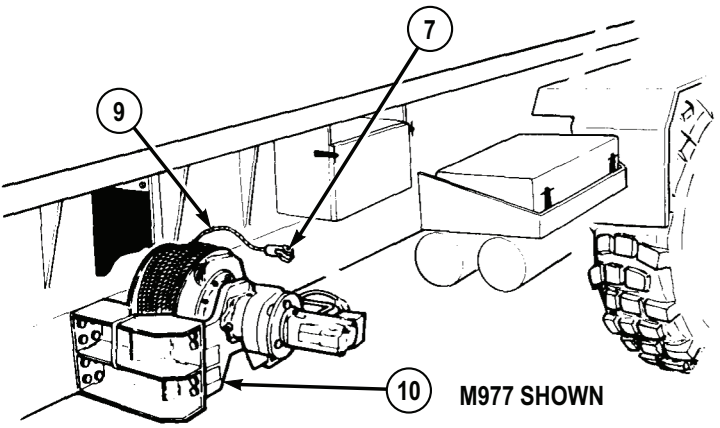


Figure 8.

16. Set HYD ENABLE switch (2) to on position. MAIN HYD ENABLE indicator (3) will illuminate.

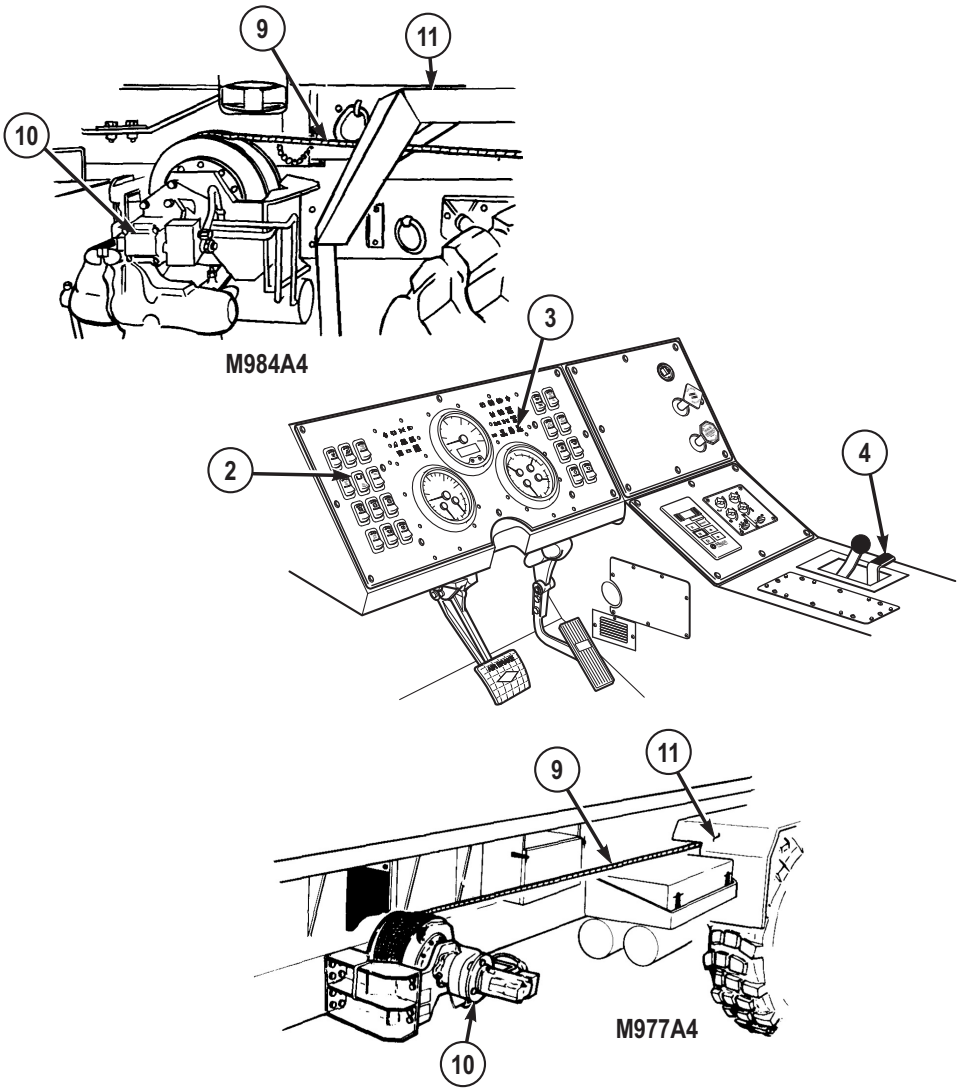


Figure 9.

17. Move winch shift lever (4) to OUT and pay out winch cable (9), while assistant routes cable (9) through notch in fender (11).

NOTE

- Do not place cable between tensioning device pulleys at this time.
- When pulling cable through tensioning device, push sheave towards frame rail to allow clevis to pass through.

18. Pay out cable (9) while assistant pulls cable (9) until it is 6 in. to 1 ft. (15 cm to 30 cm) past the front roller guide (12).

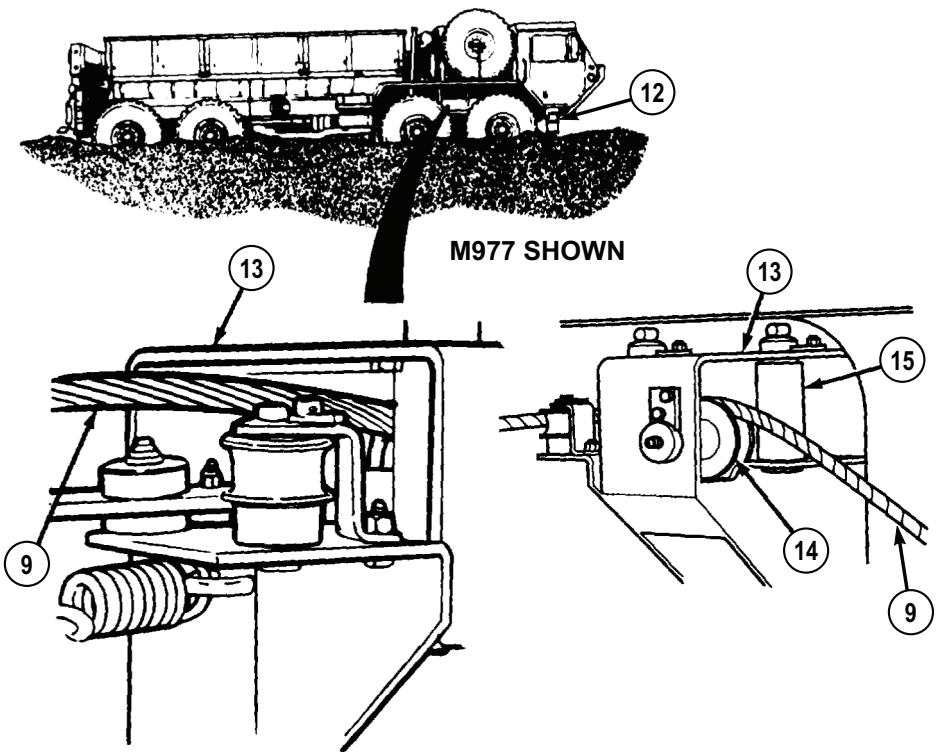


Figure 10.

NOTE

- Do not place cable between tensioning device pulleys at this time.
- When pulling cable through tensioning device, push sheave towards frame rail to allow clevis to pass through.

19. Pay out cable (9) while assistant pulls cable (9) until it is 6 in. to 1 ft. (15 cm to 30 cm) past the front roller guide (12).

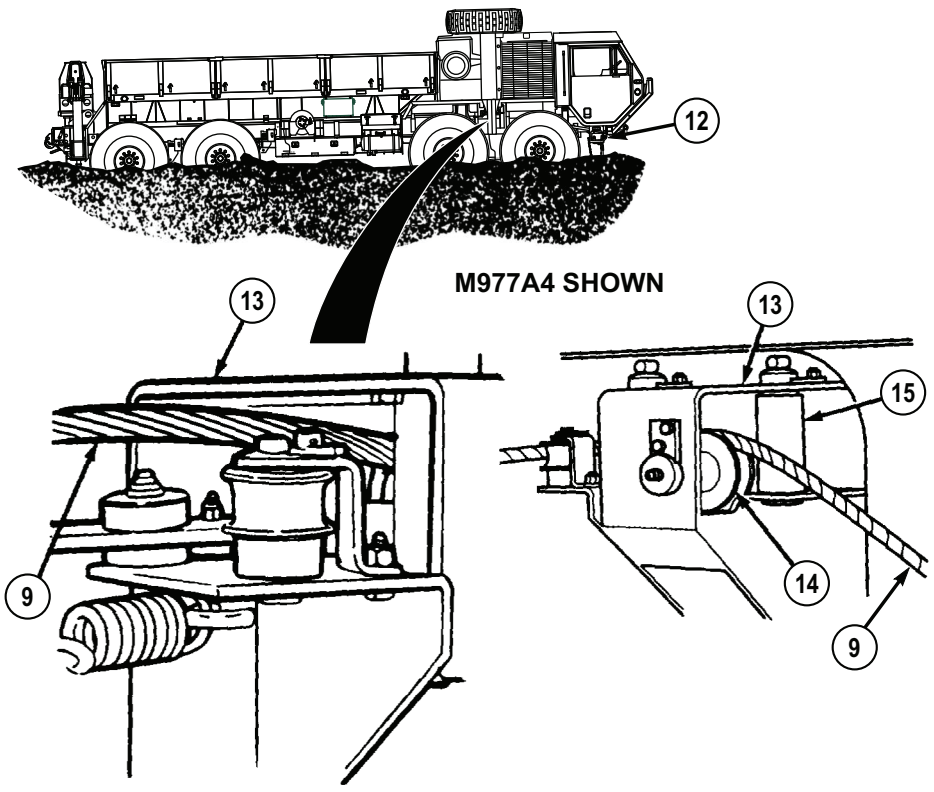


Figure 11.

20. Stop paying out cable (9).
21. Assistant routes cable (9) through cable guide (13), over sheave (14), between roller (15), and side of cable guide (13).
22. Pay out winch cable (9) as assistant routes cable over first axle and 1 ft. (30 cm) past front roller guide assembly (12).

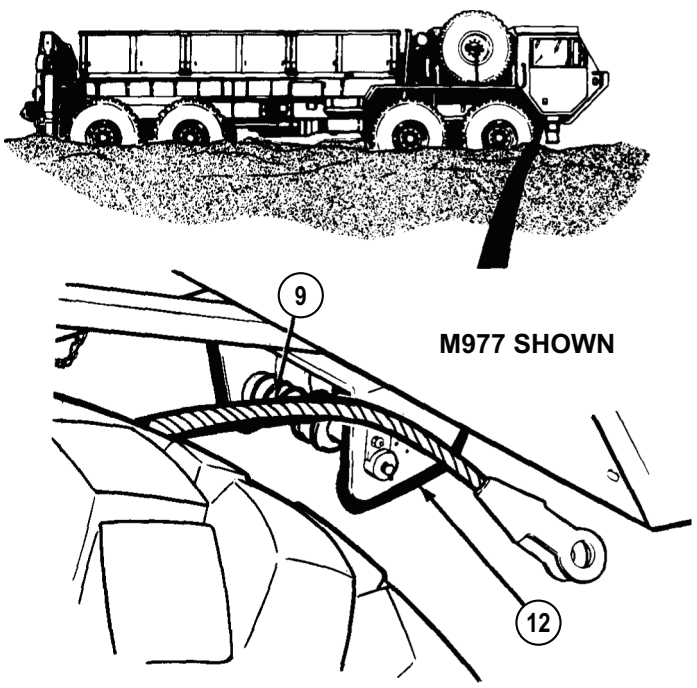


Figure 12.

23. Pay out winch cable (10) as assistant routes cable over first axle and 1 ft. (30 cm) past front roller guide assembly (12).

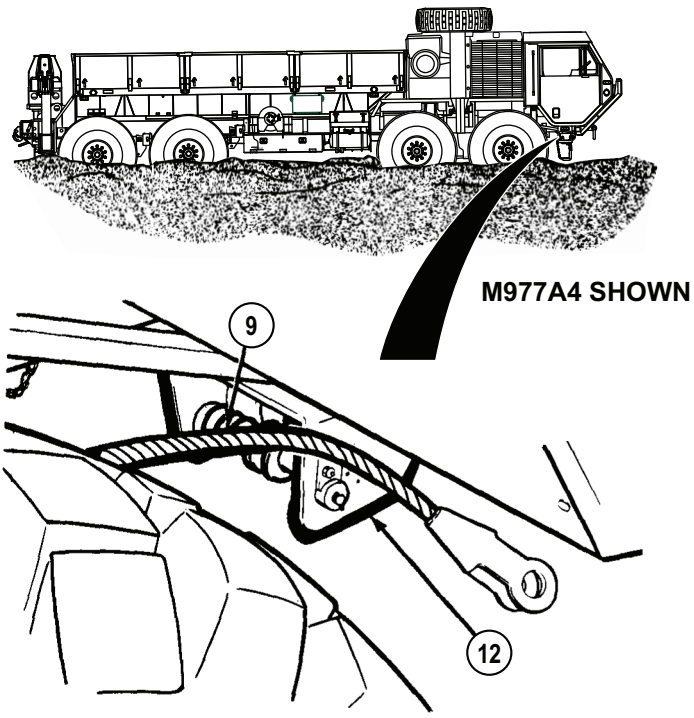


Figure 13.

24. Release winch shift lever (4) to center position.

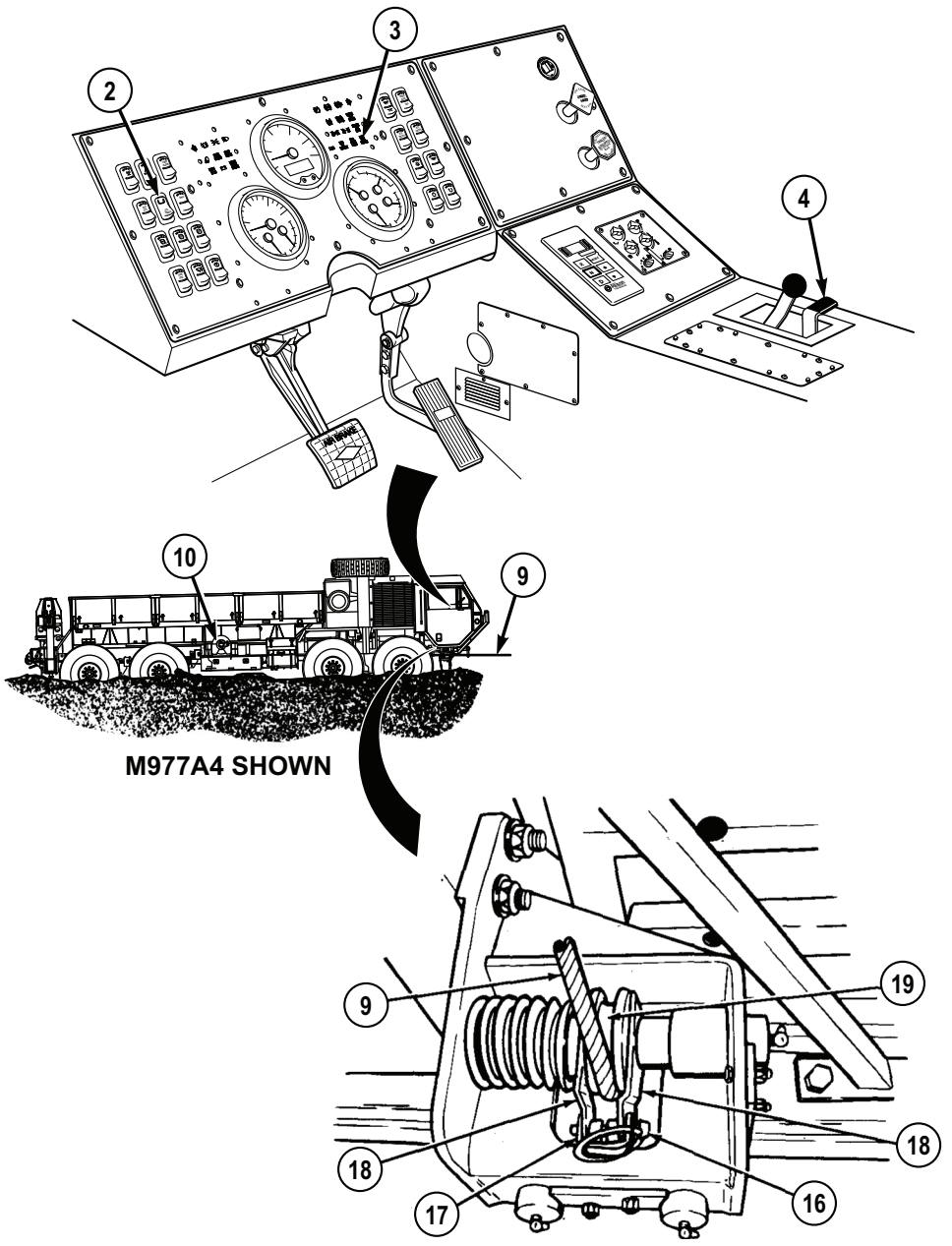


Figure 14.

25. Set PTO ENGAGE switch (2) to OFF position. Indicator light (3) will go out.

26. Set HYD ENABLE switch (2) to off position. MAIN HYD ENABLE indicator (3) will go out.
27. Remove quick release pin (16) and guide bracket (17). Move cable guide brackets (18) apart so cable (9) can be placed against bottom of sheave (19).
28. Move cable guide brackets (18) together and install guide bracket (17) and quick release pin (16).
29. Set PTO ENGAGE switch (2) to ON position. Indicator light (3) will illuminate.
30. Set HYD ENABLE switch (2) to on position. MAIN HYD ENABLE indicator (3) will illuminate.
31. Move winch shift lever (4) to OUT and pay out winch cable (9) while assistant pulls cable to tree, another heavy vehicle (WP 0095), or another heavy object refer to FM 4-30.31. (WP 0157)
32. When winch cable (9) is let out to heavy object, release winch shift lever (4) to center position.
33. Set PTO ENGAGE switch (2) to OFF position. Indicator light (3) will go out.
34. Set HYD ENABLE switch (2) to off position. MAIN HYD ENABLE indicator (3) will go out.
35. If snatch block must be used for self-recovery operation, attach self-recovery winch cable (9) to snatch block (WP 0094) and connect end of self-recovery winch cable to mired vehicle left front towing eye. (WP 0095) Attach snatch block to tree, another vehicle, or heavy object refer to FM 4-30.31. (WP 0157)

CAUTION

There must always be at least five wraps of cable on winch. If load is applied with less than five wraps of cable on winch, cable may come loose on drum.

36. Check that there are at least five wraps of winch cable (9) left on winch (10). If there are not at least five wraps of winch cable left on self-recovery winch, stop using self-recovery winch and continue with Step (54) of this procedure.

CAUTION

Do not go over winch pull capacity or winch may be damaged.

37. Ensure weight of mired vehicle and amount of winch cable (9) left on self-recovery winch (10) does not go over pull capacity (refer to FM 4-30.31 (WP 0157) and Self-Recovery Winch Pull Capacity table below). If pull will go over capacity, stop using self-recovery winch and continue with Step (54) of this procedure.

Table 1. Self-Recovery Winch Pull Capacity.

Cable Layer	Maximum Line Pull
1st layer (five wraps)	20,000 lbs (9 080 kg)
2nd layer	18,173 lbs (8 251 kg)
3rd layer	16,663 lbs (7 565 kg)
4th layer	15,361 lbs (6 974 kg)
5th layer	14,254 lbs (6 471 kg)

NOTE

If winch cable will be connected to another vehicle acting as a stationary anchor, refer to FM 4-30.31 (WP 0157) or Connect/Disconnect Self-Recovery Winch Cable to Another Vehicle (WP 0095) for connecting procedures.

38. If it is determined using self-recovery winch (10) will not go over winch pull capacity, connect winch cable (9) to heavy object.
39. Ensure winch shift lever (4) is at center position.
40. Ensure PTO ENGAGE switch (2) is set to OFF position. Indicator light (3) will go out.
41. Ensure HYD ENABLE switch (2) is set to off position. MAIN HYD ENABLE indicator (3) will go out.

WARNING



Do not operate winch while personnel are working on or around tensioning device. Failure to comply may result in injury or death to personnel.

42. Pull back and hold tension pulley lever (20).

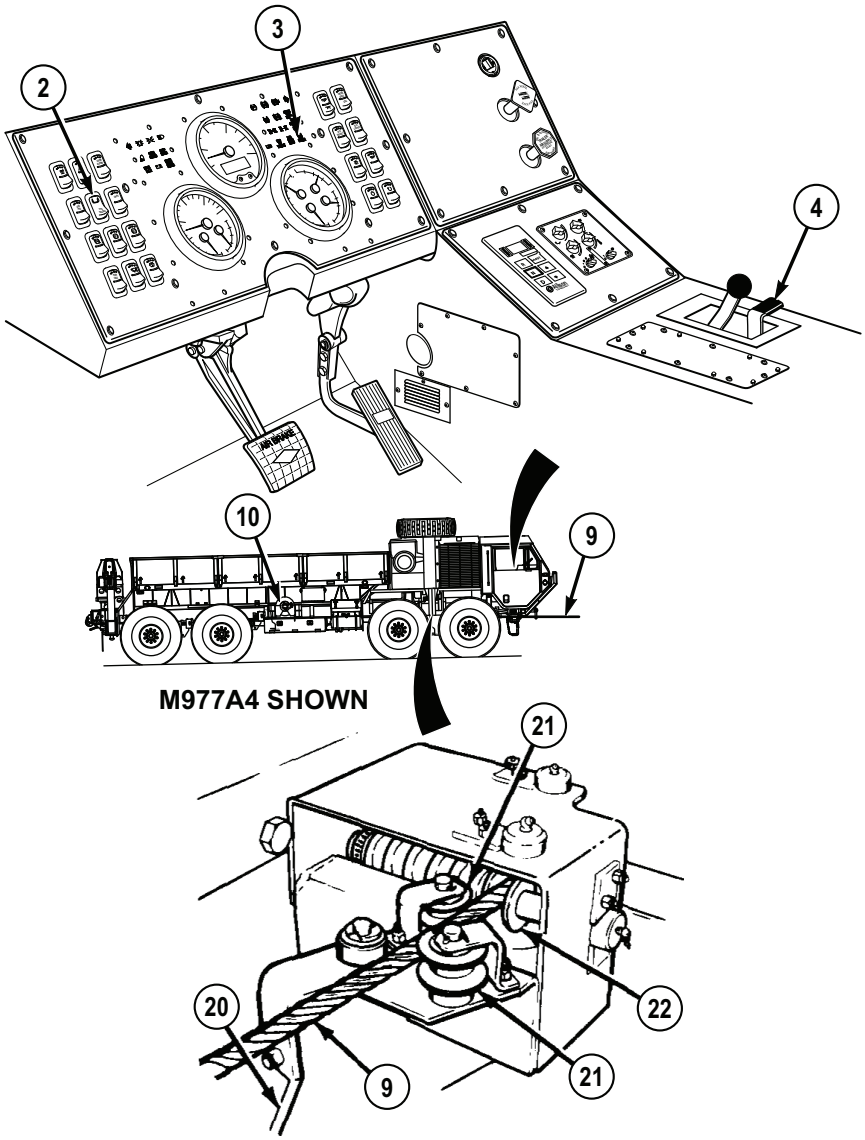


Figure 15.

43. Put winch cable (9) between tensioning device pulleys (21).
44. Release tension pulley lever (20).
45. Check that winch cable (9) rests inside grooves of both tensioning device pulleys (21) and sheave (22).

46. Check that winch cable (9) is not caught on vehicle or any other objects.

WARNING



Keep all personnel clear of area near winch cable when tension is on cable. Failure to comply may result in injury or death to personnel.

47. Ensure all personnel are clear of self-recovery winch (10) and winch cable (9).
48. Set PTO ENGAGE switch (2) to ON position. Indicator light (3) will illuminate.
49. Set HYD ENABLE switch (2) to on position. MAIN HYD ENABLE indicator (3) will illuminate.
50. Move winch shift lever (4) to IN until slack is out of cable.
51. Release winch shift lever (4) to center position.

WARNING

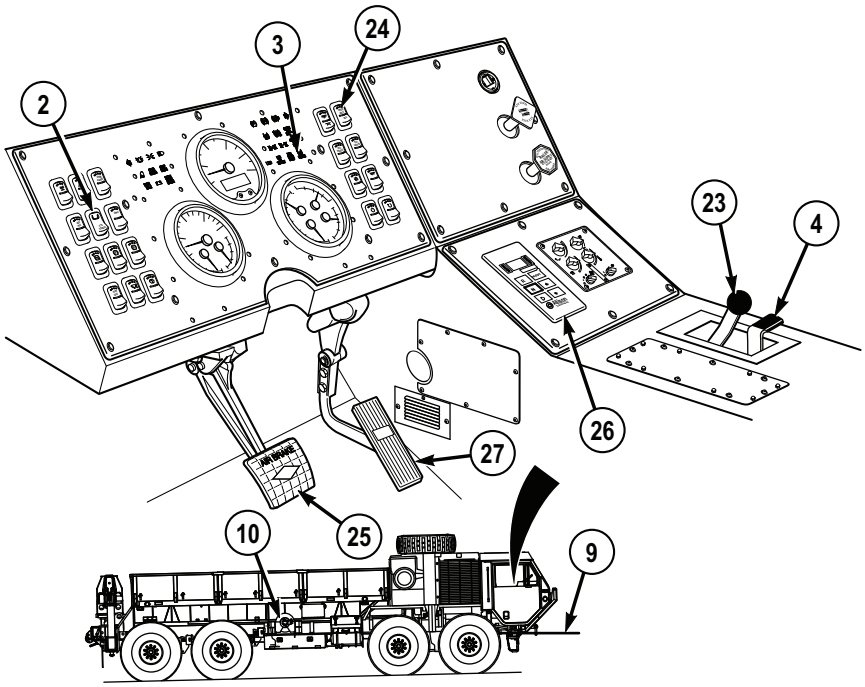


Keep all personnel clear of area near winch cable when tension is on cable. Failure to comply may result in injury or death to personnel.

CAUTION

- Self-recovery winch is not designed to winch mired vehicle by itself. Mired vehicle drive system power must always be used with winch to self-recover vehicle, or damage to equipment may result.
- If winch does not move mired vehicle, stop using winch, overheat damage may result.

52. Ensure TRANSFER CASE shift lever (23) is set to LO.



M977A4 SHOWN

Figure 16.

53. Ensure TRACTION CONTROL lever (24) is set to INTER-AXLE DIFF. LOCK.
54. Ensure traction control switch (24) is set to INTER AXLE.
55. Apply service brake pedal (25).
56. Set transmission range selector (26) to 1 (1st gear range).
57. Release service brake pedal (25).
58. Move winch shift lever (4) to IN and apply slight pressure to throttle pedal (27).

NOTE

Keep winch cable tight at all times so cable does not get tangled with vehicle.

59. Adjust position of throttle pedal (27) to change engine speed as needed to keep winch cable (9) tight and vehicle moving.
60. When mired vehicle is on solid ground, release winch shift lever (4) to center position.
61. Park vehicle. (WP 0055)
62. Set winch shift lever (4) to OUT and pay out winch cable (9) until all tension is off cable.

63. When all tension is off winch cable (9), release winch shift lever (4) to center position.
64. Set PTO ENGAGE switch (2) to OFF position. Indicator light (3) will go out.
65. Set HYD ENABLE switch (2) to off position. MAIN HYD ENABLE indicator (3) will go out.

NOTE

If winch cable is connected to another vehicle, refer to Connect/Disconnect Self-Recovery Winch Cable to Another Vehicle (WP 0095) for disconnecting procedures.

66. Disconnect winch cable (9) from heavy object.
67. If snatch block was used, disconnect end of winch cable (10) from vehicle and remove snatch block from winch cable and from tree, other vehicle, or heavy object refer to FM 4-30.31. (WP 0157)

CAUTION

Do not reel clevis end of winch cable through roller guides. Clevis may catch on roller guide and cause cable or roller guide to break.

68. Set PTO ENGAGE switch (2) to ON position. Indicator light (3) will illuminate.
69. Set HYD ENABLE switch (2) to on position. MAIN HYD ENABLE indicator (3) will illuminate.
70. Move winch shift lever (4) to IN.

WARNING



- Always wear protective gloves when handling winch cable. Never let cable run through hands. Frayed cables can cut severely. Failure to comply may result in injury or death to personnel.
- Never operate winch with less than five wraps of cable on winch drum. Failure to comply may result in injury or death to personnel.

71. Reel in winch cable (9) while assistant uses tire iron extension handle to guide cable (9) onto self-recovery winch (10) so cable wraps are level across face of self-recovery winch (10).
72. When end of cable (9) is near front of vehicle, release winch shift lever (4) to center position.
73. Set PTO ENGAGE switch (2) to OFF position. Indicator light (3) will go out.

74. Set HYD ENABLE switch (2) to off position. MAIN HYD ENABLE indicator (3) will go out.

75. Remove quick release pin (16) and guide bracket (17). Move cable guide brackets (18) apart so winch cable (9) can be removed from sheave (19).

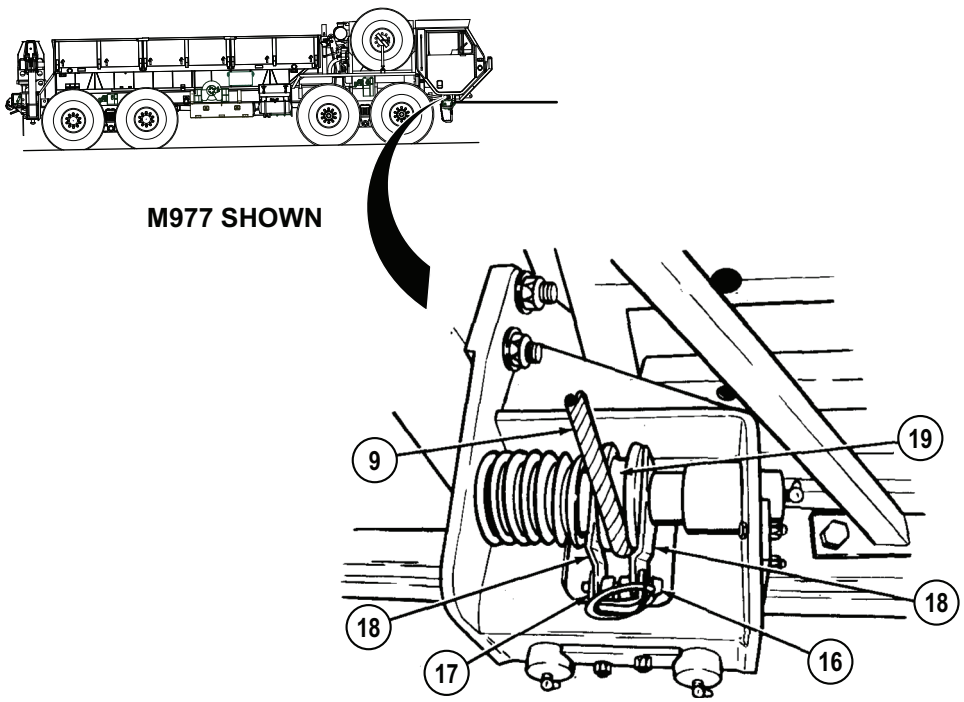


Figure 17.

76. Remove quick release pin (16) and guide bracket (17). Move cable guide brackets (18) apart so winch cable (9) can be removed from sheave (19).

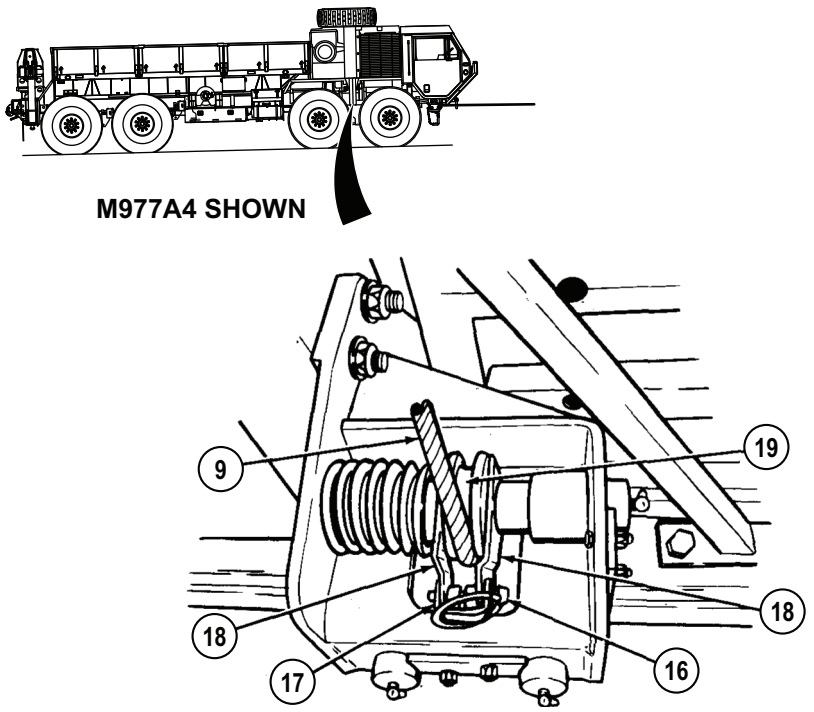


Figure 18.

77. Move cable guide bracket (18) together. Install guide bracket (17) and quick release pin (16).
78. Pull back and hold tension pulley lever (20).

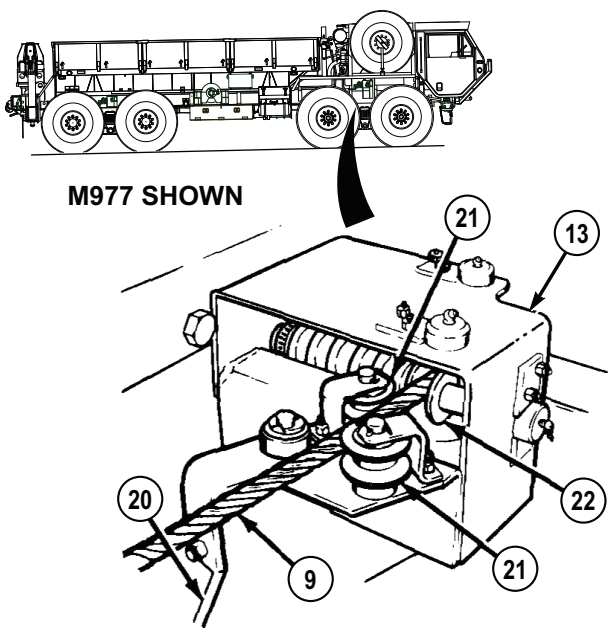


Figure 19.

79. Pull back and hold tension pulley lever (20).

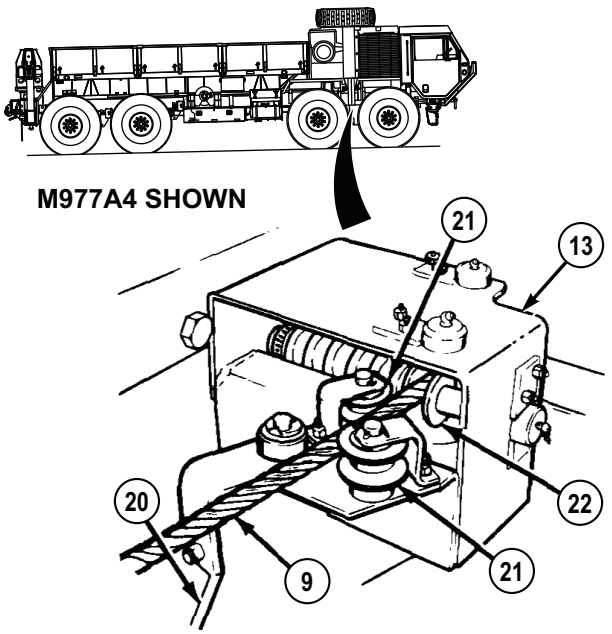


Figure 20.

80. Lift winch cable (9) out of tensioning device pulleys (21).
81. Release tension pulley lever (20).
82. Pull winch cable (9) back and out of cable guide (13).
83. Set HYD ENABLE switch (2) to on position. MAIN HYD ENABLE indicator (3) will illuminate.

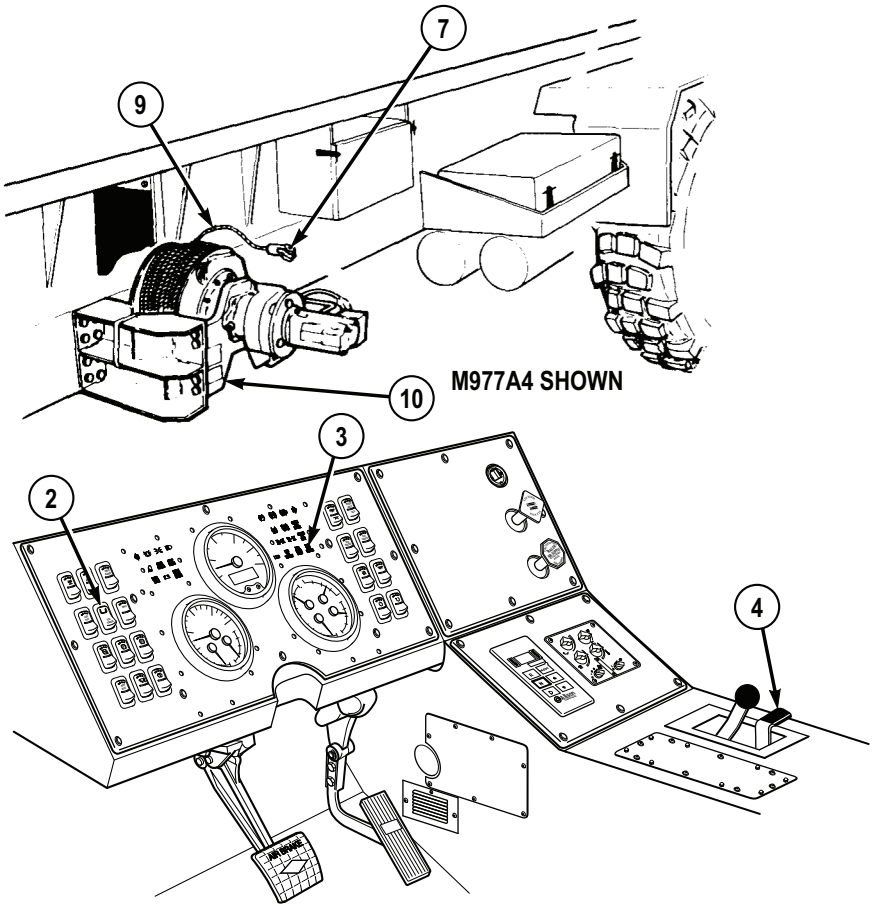


Figure 21.

84. While assistant guides winch cable (9), move winch shift lever (4) to IN.
85. When clevis (7) is approximately 2 ft. (61 cm) from winch (10), release winch shift lever (4) to center position.
86. Set PTO ENGAGE switch (2) to OFF position. Indicator light (3) will go out.
87. Set HYD ENABLE switch (2) to off position. MAIN HYD ENABLE indicator (3) will go out.
88. Assistant routes end of winch cable (9) down along front face of winch (10).

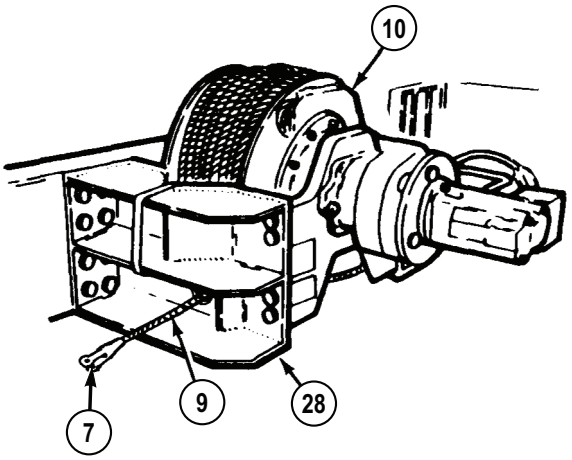


Figure 22.

89. Assistant routes end of winch cable (9) under winch (10) and out through hole in bottom of rear winch frame (28).
90. Assistant connects clevis (7) at end of winch cable (9) to tiedown ring (8) with pin (6) and cotter pin (5).

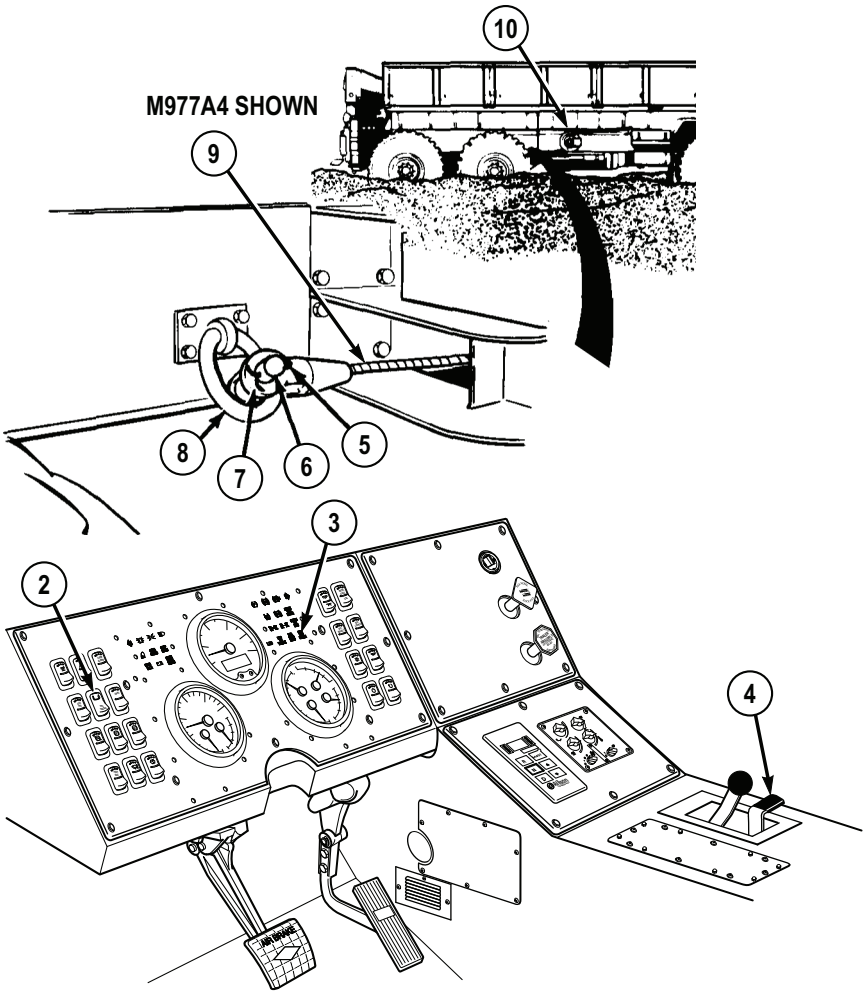


Figure 23.

91. Set PTO ENGAGE switch (2) to ON position. Indicator light (3) will illuminate.
92. Set HYD ENABLE switch (2) to on position. MAIN HYD ENABLE indicator (3) will illuminate.

WARNING



Keep all personnel clear of area near winch cable when tension is on cable. Failure to comply may result in injury or death to personnel.

93. Order all personnel to stand clear of area near winch (10).

CAUTION

Do not reel in winch cable too tightly. If too much tension is applied, cable or tiedown ring can break, or winch may be damaged.

94. Once assistant and all other personnel are clear of area, move winch shift lever (4) to IN and take all slack out of winch cable (9).
95. When winch cable (9) is tight, release winch shift lever (4) to center position.
96. Set PTO ENGAGE switch (2) to OFF position. Indicator light (3) will go out.
97. Set HYD ENABLE switch (2) to off position. MAIN HYD ENABLE indicator (3) will go out.
98. Shut off engine. (WP 0056)
99. Push in hydraulic selector valve control.

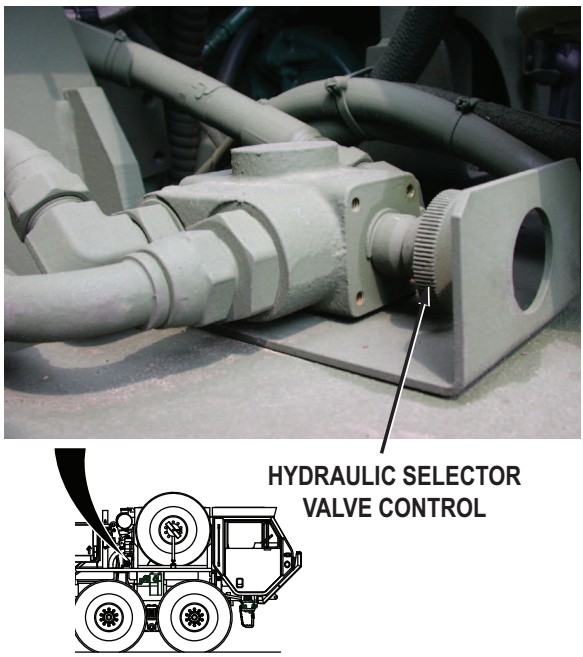


Figure 24.

100. Push in hydraulic selector valve control.

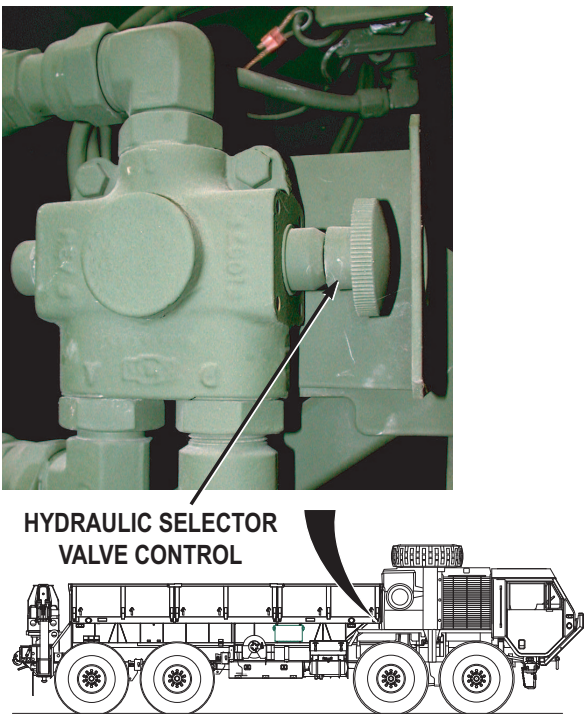


Figure 25.

101 Adjust mirror (1) for driving.

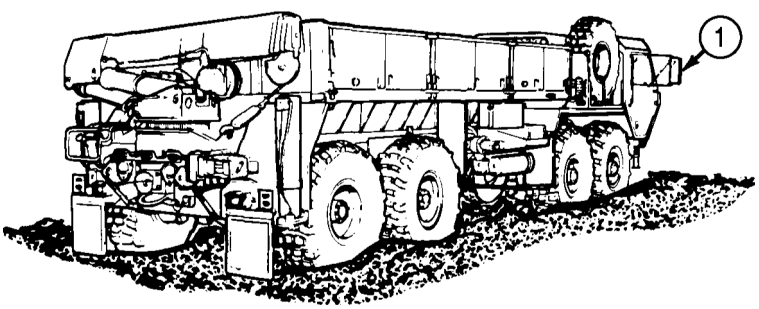


Figure 26.

102 Adjust mirror (1) for driving.

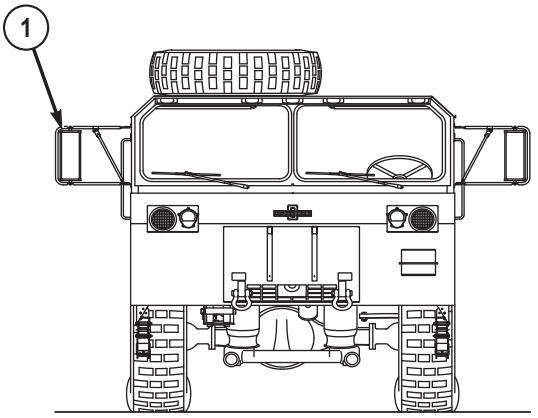


Figure 27.

WINCH MIRED VEHICLE TO THE REAR

NOTE

- For additional information on vehicle self-recovery refer to FM 4-30.31. (WP 0157)
- Vehicle self-recovery is a two soldier task. Soldiers must communicate by hand signals.

1. Shut off engine. (WP 0056)
2. Adjust mirror (1) so assistant can be clearly seen during procedure.

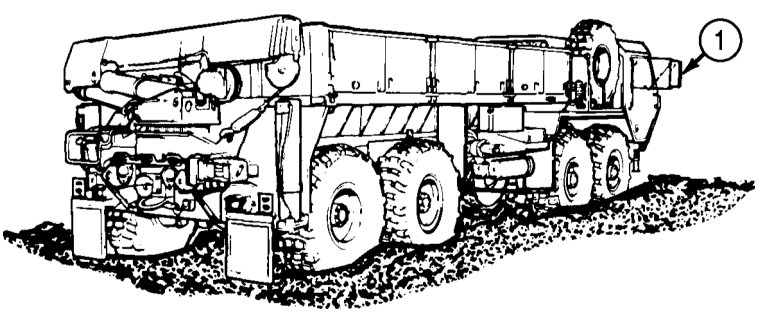


Figure 28.

3. Adjust mirror (1) so assistant can be clearly seen during procedure.

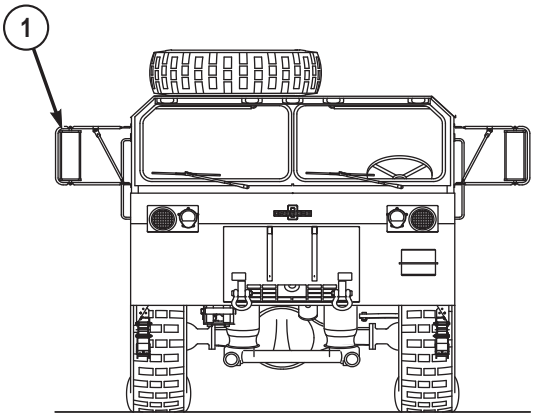


Figure 29.

CAUTION

HYD ENABLE switch must be in off position before moving hydraulic selector valve to prevent equipment damage.

4. Set HYD ENABLE switch (2) to off position. MAIN HYD ENABLE indicator (3) will go out.

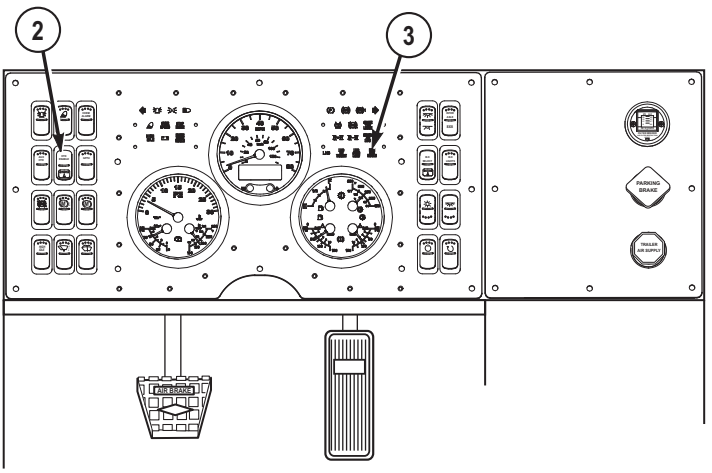


Figure 30.

5. Pull out hydraulic selector valve control.

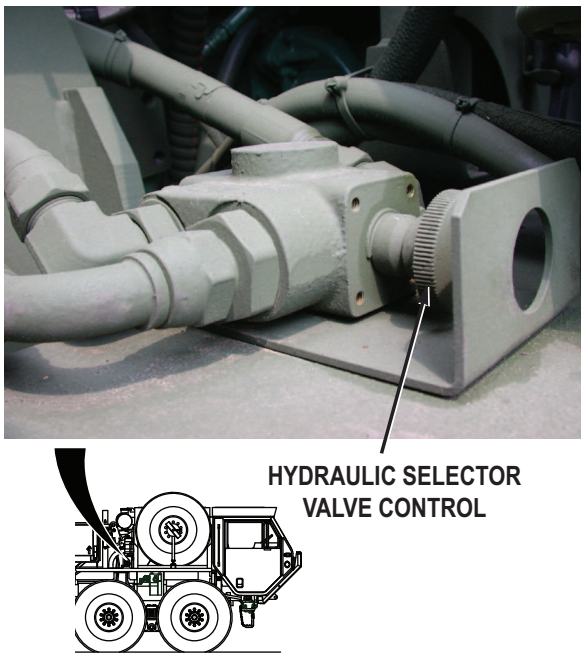


Figure 31.

6. Pull out hydraulic selector valve control.

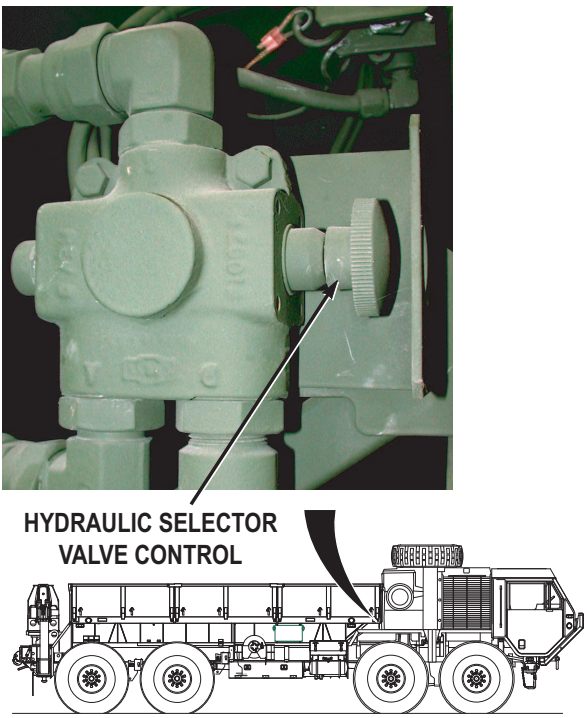


Figure 32.

7. Set HYD ENABLE switch (2) to on position. MAIN HYD ENABLE indicator (3) will illuminate.

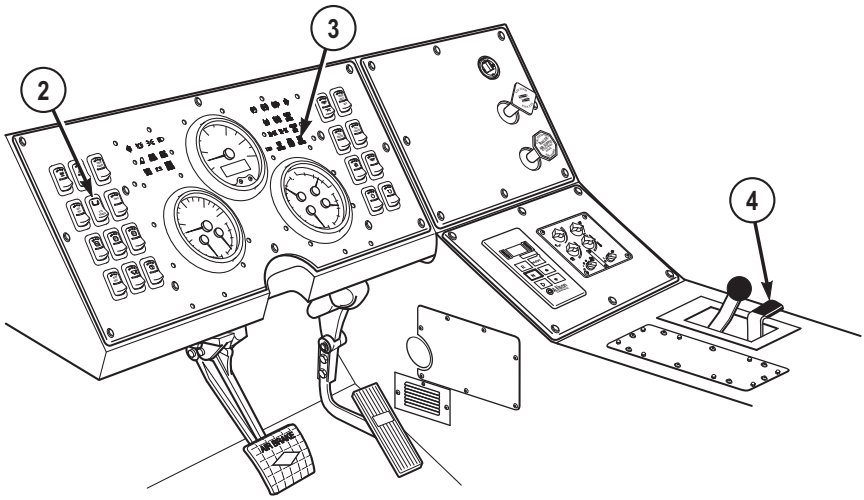


Figure 33.

8. Move winch shift lever (4) to OUT position to pay out small amount of cable.
9. Release winch shift lever (4) to center position.
10. Set PTO ENGAGE switch (2) to OFF position. Indicator light (3) will go out.
11. Set HYD ENABLE switch (2) to off position. MAIN HYD ENABLE indicator (3) will go out.
12. Remove cotter pin (5) from pin (6).

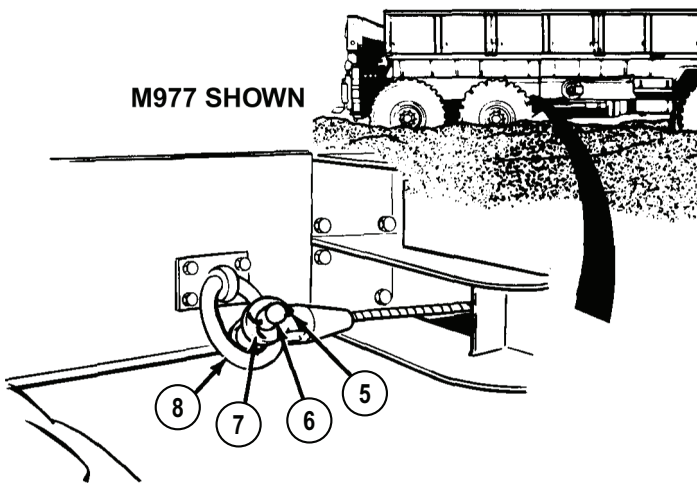


Figure 34.

13. Remove pin (6) from clevis (7) and disconnect clevis from tiedown ring (8).
14. Set HYD ENABLE switch (2) to on position. MAIN HYD ENABLE indicator (3) will illuminate.

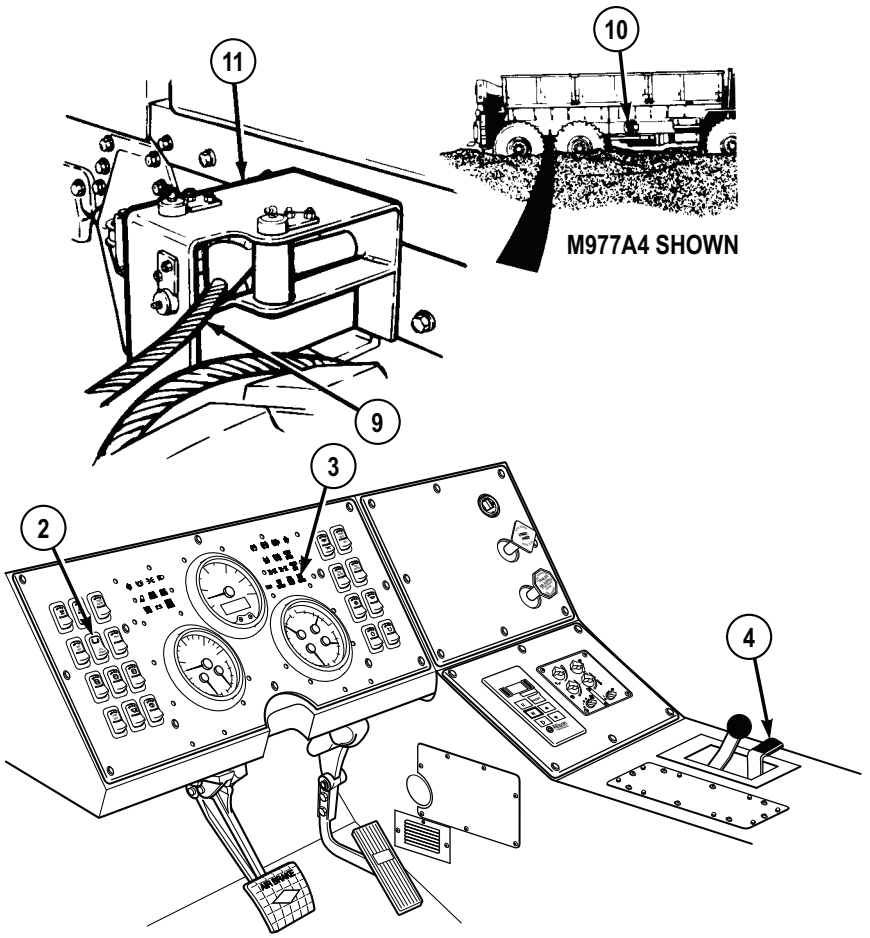


Figure 35.

WARNING



- Always wear protective gloves when handling winch cable. Never let cable run through hands. Frayed cables can cut severely. Failure to comply may result in injury or death to personnel.
- Never operate winch with less than five wraps of cable on winch drum. Failure to comply may result in injury or death to personnel.

15. Move winch shift lever (4) to OUT while assistant pulls winch cable (9) from self-recovery winch (10) toward rear of vehicle.

NOTE

- Do not place cable between tensioning device pulleys at this time.
- When pulling cable through tensioning device, push sheave towards frame rail to allow clevis to pass through.

16. Continue to pay out winch cable (9) while assistant routes cable through cable guide (11).
17. Continue to pay out winch cable (9) while assistant routes cable through roller guide (12).

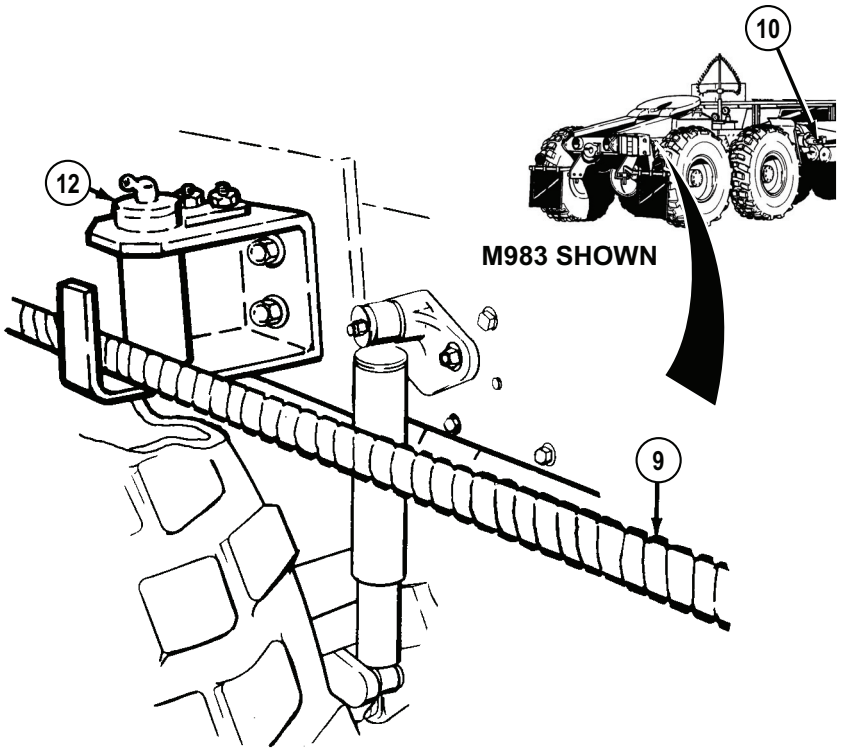


Figure 36.

18. Continue to pay out winch cable (9) while assistant routes cable through hole (12) in fender and through roller guide (13).

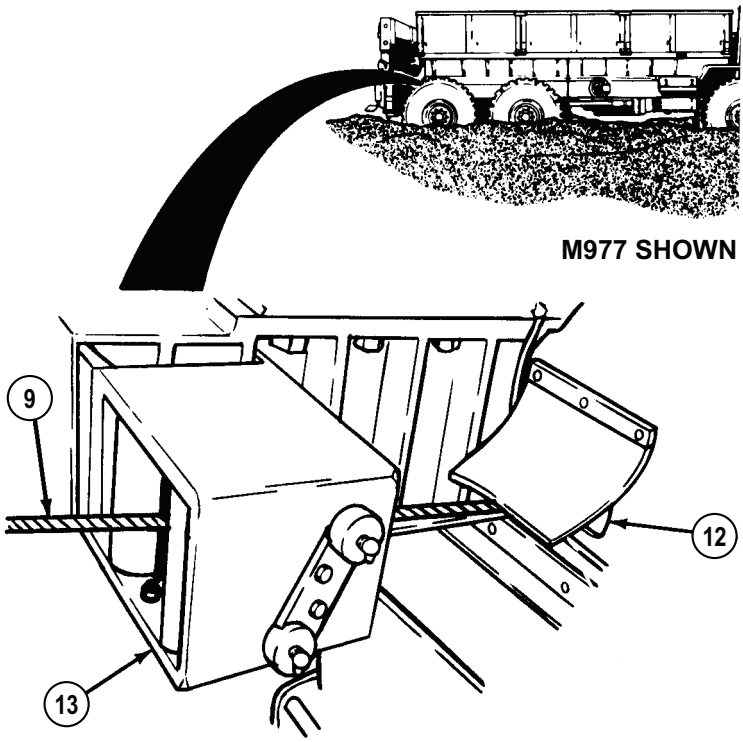


Figure 37.

19. Continue to pay out winch cable (9) while assistant routes cable roller guide (13).

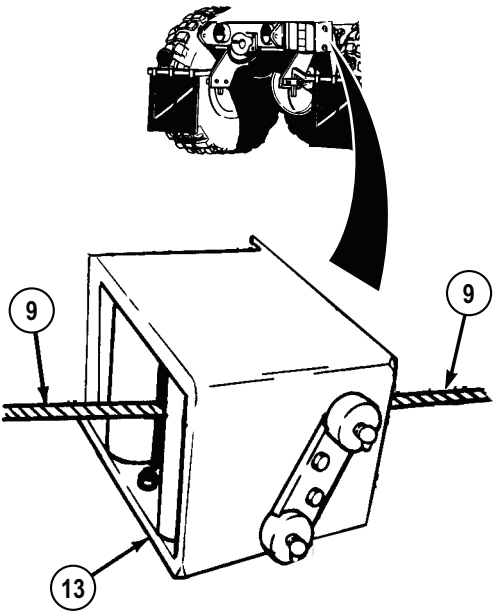


Figure 38.

20. Pay out winch cable (9) while assistant pulls cable to tree, another vehicle, or heavy object refer to FM 4-30.31. (WP 0157)
21. When winch cable (9) is let out to tree, another vehicle, heavy object, release winch shift lever (4) to center position.
22. Set HYD ENABLE switch (2) to off position. MAIN HYD ENABLE indicator (3) will go out.

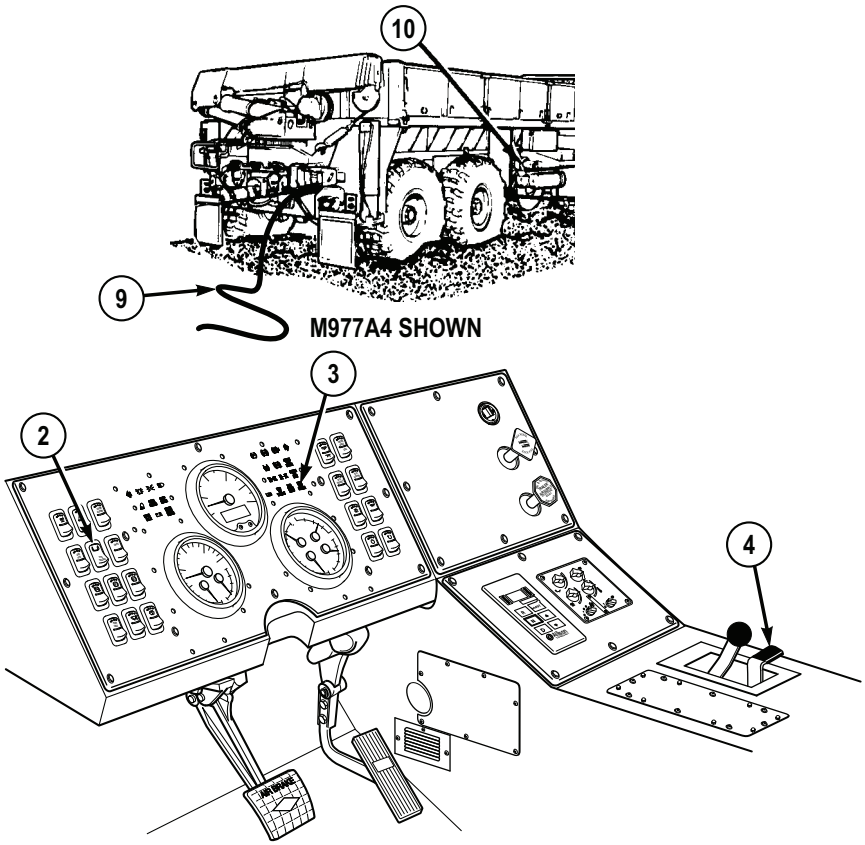


Figure 39.

23. If snatch block must be used for self-recovery operation, attach self-recovery winch cable (9) to snatch block (WP 0094) and connect end of self-recovery winch cable to mired vehicle left rear towing eye. (WP 0095) Attach snatch block to a tree, another vehicle, or heavy object refer to FM 4-30.31. (WP 0157)

CAUTION

There must be at least five wraps of cable on winch. If load is applied with less than five wraps of cable on winch, cable may come loose on drum.

24. Check that there are at least five wraps of winch cable (9) left on winch (10). If there are not at least five wraps of winch cable left on winch (10), stop using self-recovery winch (10) and continue with Step (46) of this procedure.

CAUTION

Do not go over winch pull capacity or winch could be damaged.

25. Ensure weight of mired vehicle and amount of winch cable (9) left on winch (10) does not go over pull capacity refer to FM 4-30.31 (WP 0157) and Self-Recovery Winch Pull Capacity table below). If pull will go over capacity, stop using self-recovery winch and continue with Step (46) of this procedure.

Table 2. Self-Recovery Winch Pull Capacity.

Cable Layer	Maximum Line Pull
1st layer (five wraps)	20,000 lbs (9 080 kg)
2nd layer	18,173 lbs (8 251 kg)
3rd layer	16,663 lbs (7 565 kg)
4th layer	15,361 lbs (6 974 kg)
5th layer	14,254 lbs (6 471 kg)

NOTE

If winch cable will be connected to another vehicle acting as a stationary anchor, refer to FM 4-30.31 (WP 0157) or Connect/Disconnect Self-Recovery Winch Cable to Another Vehicle (WP 0095) for connecting procedures.

26. If it is determined using self-recovery winch (10) will not go over winch pull capacity, connect winch cable (9) to heavy object.
27. Ensure winch shift lever (4) is at center position.
28. Set PTO ENGAGE switch (2) to OFF position. Indicator light (3) will go out.
29. Set HYD ENABLE switch (2) to off position. MAIN HYD ENABLE indicator (3) will go out.

WARNING



Do not operate winch while personnel are working on or around tensioning device. Failure to comply may result in injury or death to personnel.

30. Pull back and hold tension pulley lever (14).

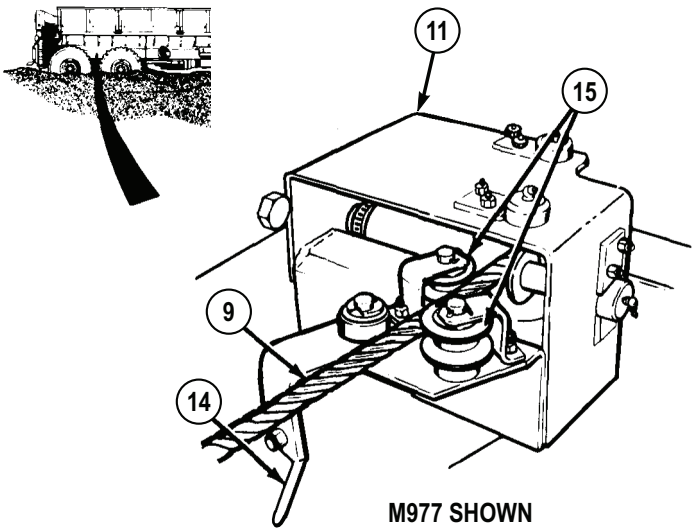


Figure 40.

31. Route winch cable (9) between pulleys (15).
32. Release tension pulley lever (14).
33. Ensure winch cable (9) rests inside grooves of both pulleys (15).
34. Ensure winch cable (9) is not caught on vehicle or any other objects.
35. Ensure all personnel are clear of winch (10) and winch cable (9).

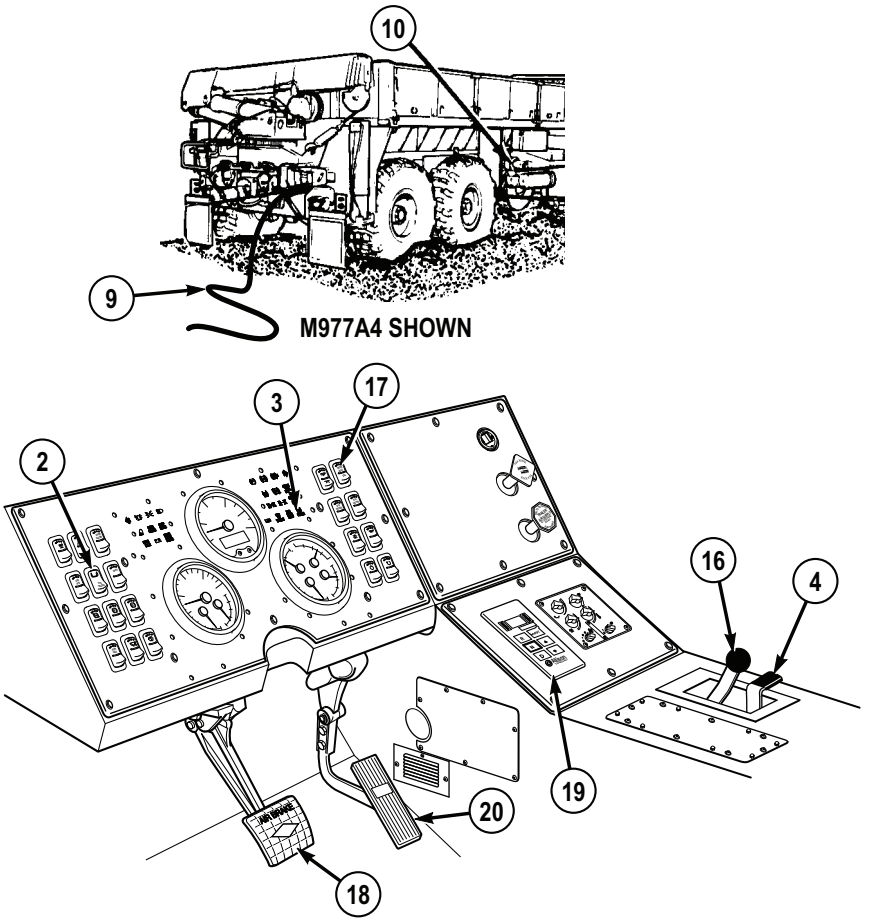


Figure 41.

36. Set PTO ENGAGE switch (2) to ON position. Indicator light (3) will illuminate.
37. Set HYD ENABLE switch (2) to on position. MAIN HYD ENABLE indicator (3) will illuminate.
38. Move winch shift lever (4) to IN until slack is out of winch cable (9).
39. Release winch shift lever (4) to center position.

WARNING



Keep all personnel clear of area near winch cable when tension is on cable. Failure to comply may result in injury or death to personnel.

CAUTION

- Self-recovery winch is not designed to winch mired vehicle by itself. Mired vehicle drive system power must always be used with winch to self-recover vehicle, or damage to equipment can result.
- If winch does not move mired vehicle, stop using winch, overheat damage may result.

40. Ensure that TRANSFER CASE shift lever (16) is set to LO.
41. Ensure TRACTION CONTROL lever (17) is set to INTER-AXLE DIFF. LOCK.
42. Ensure traction control switch (17) is set to INTER AXLE.
43. Apply service brake pedal (18).
44. Set transmission range selector (19) to R (reverse).
45. Release service brake pedal (18).
46. Slightly press throttle pedal (20) and move winch shift lever (4) to IN.

NOTE

Keep winch cable tight at all times so cable does not get tangled with vehicle.

47. Adjust position of throttle pedal (20) to change engine speed as needed to keep winch cable (9) tight and mired vehicle moving.
48. When mired vehicle is on solid ground, release winch shift lever (4) to center position.
49. Park vehicle. (WP 0055)
50. Set winch shift lever (4) to OUT and pay out winch cable (9) until all tension is released.
51. When all tension is off winch cable (9), release winch shift lever (4) to center position.
52. Set PTO ENGAGE switch (2) to OFF position. Indicator light (3) will go out.
53. Set HYD ENABLE switch (2) to off position. MAIN HYD ENABLE indicator (3) will go out.

NOTE

If winch cable is connected to another vehicle, refer to Connect/Disconnect Self-Recovery Winch Cable to Another Vehicle (WP 0095) for disconnecting procedures.

54. Disconnect winch cable (9) from heavy object.
55. If snatch block was used, disconnect end of winch cable (9) from vehicle. (WP 0095) Remove snatch block from winch cable (WP 0094) and tree, another vehicle, or heavy object refer to FM 4-30.31. (WP 0157)

CAUTION

Do not reel clevis end of winch cable through roller guides. Clevis may catch on roller guide and cause cable or roller guide to break.

56. Set PTO ENGAGE switch (2) to ON position. Indicator light (3) will illuminate.
57. Set HYD ENABLE switch (2) to on position. MAIN HYD ENABLE indicator (3) will illuminate.
58. Set winch shift lever (4) to IN.
59. When end of cable is near rear of vehicle, release winch shift lever (4) to center position.
60. Set PTO ENGAGE switch (2) to OFF position. Indicator light (3) will go out.
61. Set HYD ENABLE switch (2) to off position. MAIN HYD ENABLE indicator (3) will go out.

WARNING



- Always wear protective gloves when handling winch cable. Never let cable run through hands. Frayed cables can cut severely. Failure to comply may result in injury or death to personnel.
- Never operate winch with less than five wraps of cable on winch drum. Failure to comply may result in injury or death to personnel.

62. Pull clevis (7) end of winch cable (9) forward through roller guide (13) and hole (12) in fender.

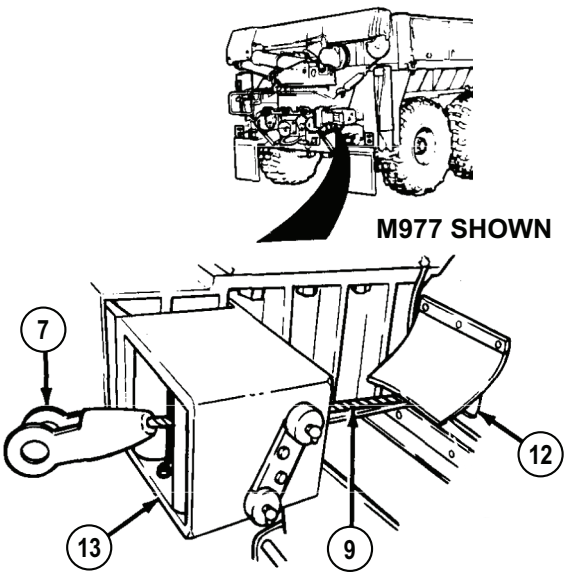


Figure 42.

WARNING



- Always wear protective gloves when handling winch cable. Never let cable run through hands. Frayed cables can cut severely. Failure to comply may result in injury or death to personnel.
- Never operate winch with less than five wraps of cable on winch drum. Failure to comply may result in injury or death to personnel.

63. Pull clevis (7) end of winch cable (9) forward through roller guide (13).

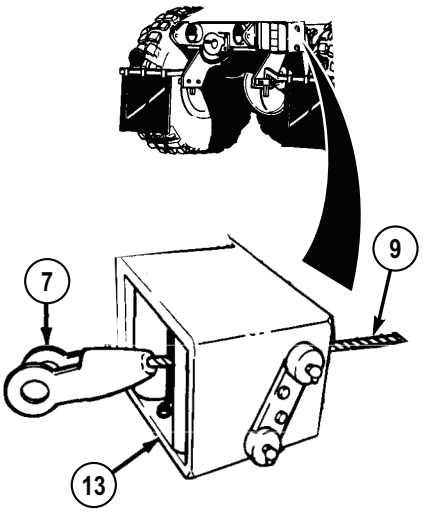


Figure 43.

64. Lift winch cable (9) out of roller guide (12).

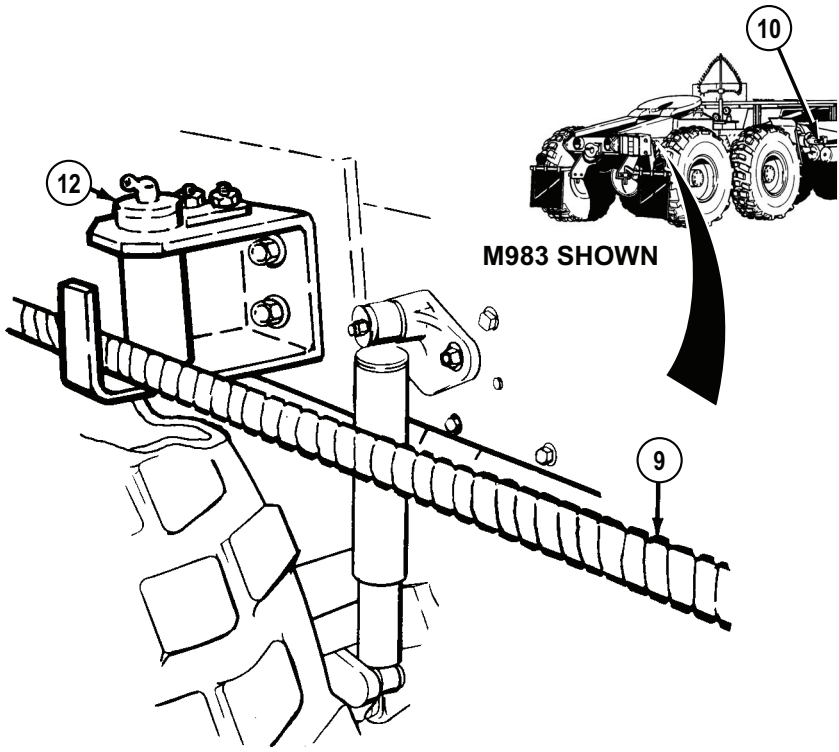


Figure 44.

65. Pull back and hold tension pulley lever (14).

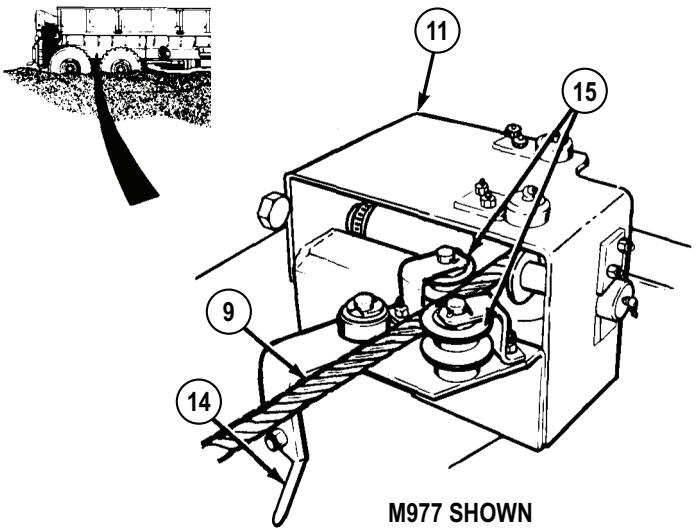


Figure 45.

66. Lift winch cable (9) out of pulleys (15).
67. Release tension pulley lever (14).
68. Pull winch cable (9) forward and out of cable guide (11).
69. Set HYD ENABLE switch (2) to on position. MAIN HYD ENABLE indicator (3) will illuminate.

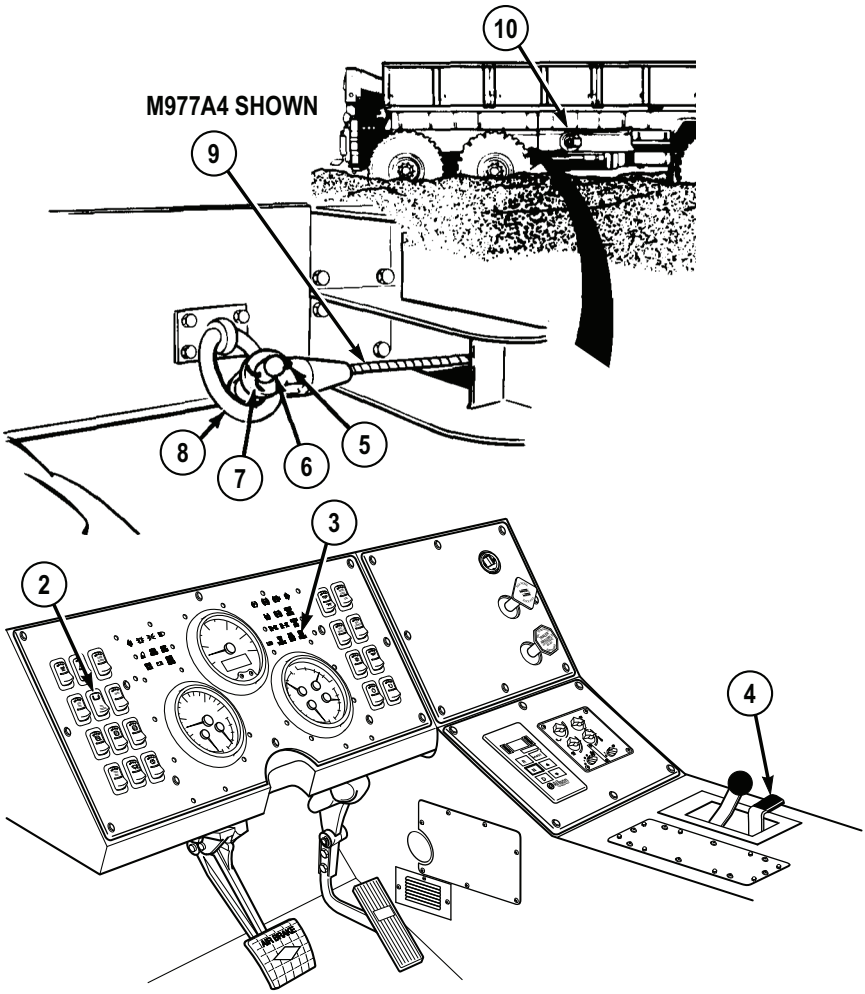


Figure 46.

70. Move winch shift lever (4) to IN position to reel in cable while assistant guides winch cable (9) to tiedown ring (8).
71. When clevis (7) is approximately 2 ft. (61 cm) from winch (10), release winch shift lever (4) to center position.
72. Assistant connects clevis (7) to tiedown ring (8) with pin (6) and cotter pin (5).

WARNING



Keep all personnel clear of area near winch cable when tension is on cable. Failure to comply may result in injury or death to personnel.

73. Order all personnel to stand clear of area near winch (10).

CAUTION

Do not reel in winch cable too tightly. If too much tension is applied, cable or tiedown ring can break, or winch may be damaged.

74. Once assistant and all other personnel are clear of area, move winch shift lever (4) to IN and take all slack out of winch cable (9).
75. When cable is tight, release winch shift lever (4) to center position.
76. Set PTO ENGAGE switch (2) to OFF position. Indicator light (3) will go out.
77. Set HYD ENABLE switch (2) to off position. MAIN HYD ENABLE indicator (3) will go out.
78. Shut off engine. (WP 0056)
79. Push in hydraulic selector valve control.

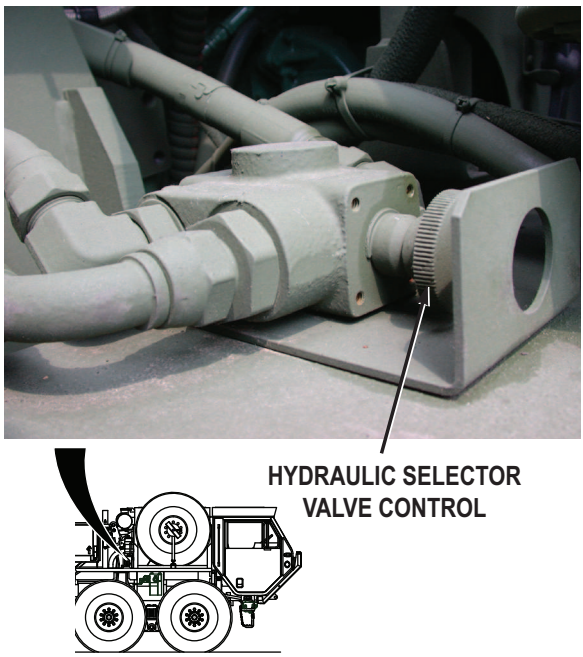


Figure 47.

80. Push in hydraulic selector valve control.

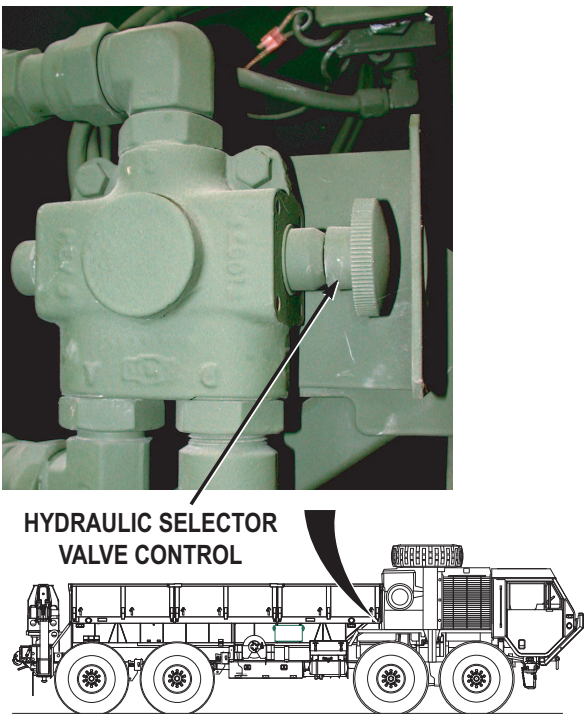


Figure 48.

81. Adjust mirror (1) for driving.

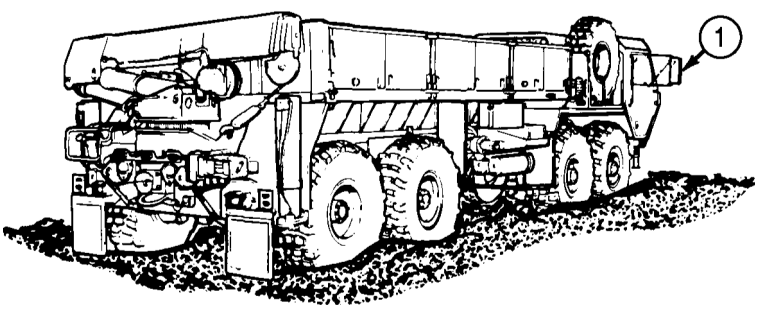


Figure 49.

82. Adjust mirror (1) for driving.

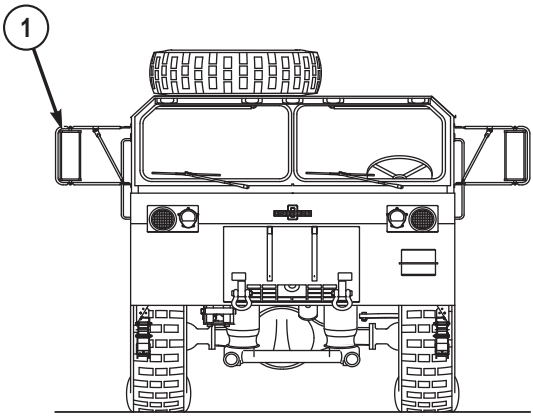


Figure 50.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
SNATCH BLOCK INSTALLATION/REMOVAL

INITIAL SETUP:

Not Applicable

ATTACH SNATCH BLOCK TO SELF-RECOVERY WINCH CABLE

1. Remove snatch block (1) from stowage.

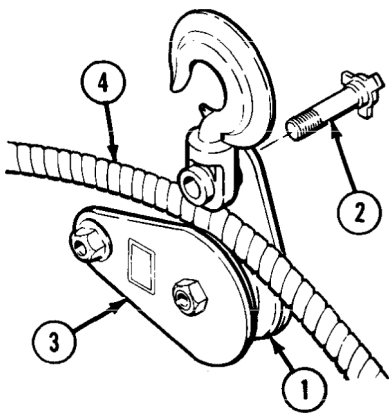


Figure 1.

2. Remove screw (2).
3. Move plate (3) to side to open snatch block (1).
4. Place winch cable (4) in snatch block (1).
5. Close plate (3) and align holes.
6. Install screw (2).
7. Ensure screw (2) is tight and winch cable (4) can be moved freely through snatch block (1).
8. Continue with self-recovery operation (WP 0093).

REMOVE SNATCH BLOCK FROM SELF-RECOVERY WINCH CABLE

1. Check that there is enough slack in winch cable (1).

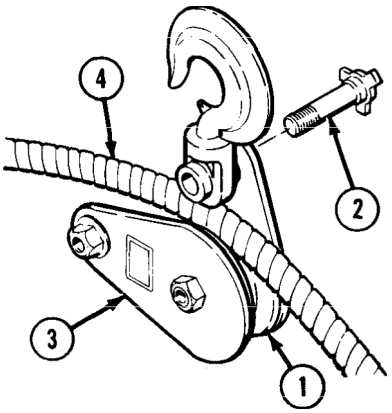


Figure 2.

2. Remove screw (2).
3. Move plate (3) to side to open snatch block (4).
4. Take winch cable (1) out of snatch block (4).
5. Close plate (3) and align holes.
6. Install screw (2).
7. Stow snatch block (4) in stowage box.
8. Continue with self-recovery operation (WP 0093).

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
CONNECT/DISCONNECT SELF-RECOVERY WINCH CABLE TO ANOTHER VEHICLE

INITIAL SETUP:

Not Applicable

CONNECT CABLE TO VEHICLE

CAUTION

When attaching self-recovery winch cable to another vehicle, that vehicle must be used only as an anchor point or damage to equipment can result.

NOTE

There are three tiedown rings on each side of vehicle.

1. Unscrew one tiedown ring (1) from mounting plate (2).

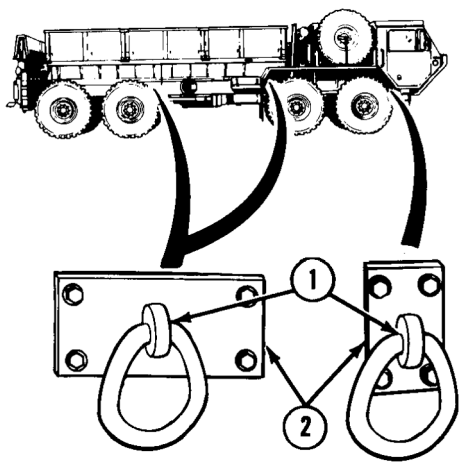


Figure 1.

2. Unscrew one tiedown ring (1) from mounting plate (2).

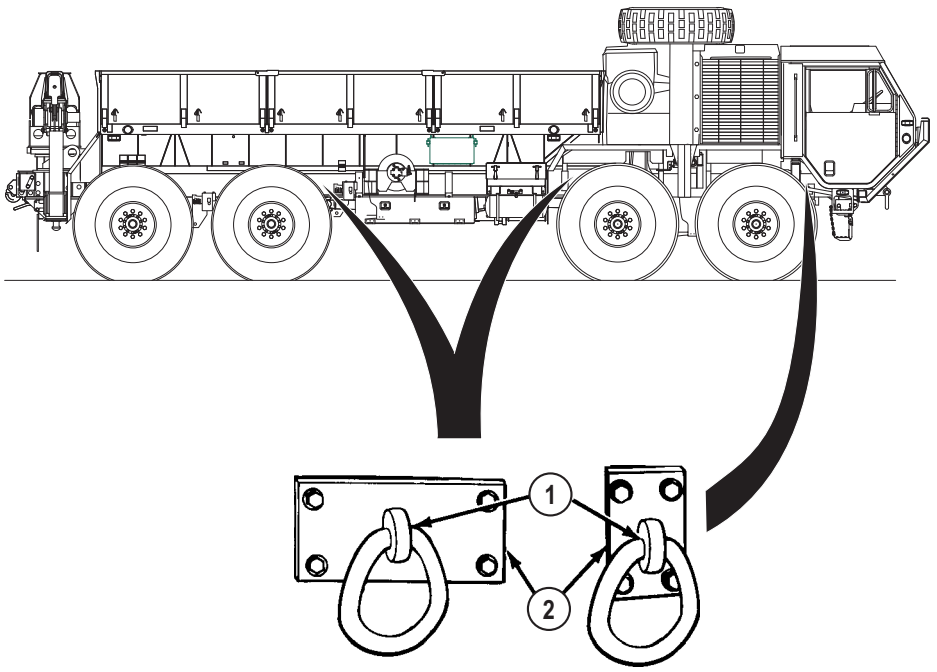


Figure 2.

3. Remove lifting shackle (3) from stowage.

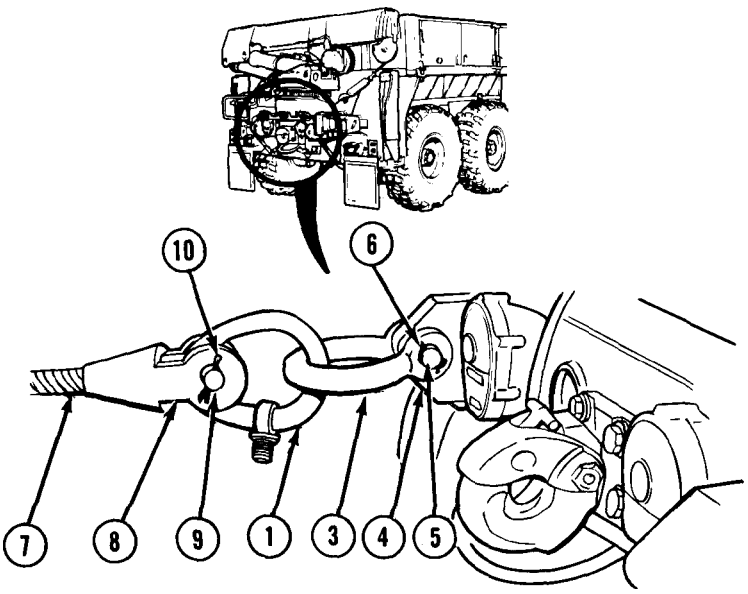


Figure 3.

4. Insert lifting shackle (3) through tiedown ring (1).
5. Connect lifting shackle (3) to left front of left rear tow eye (4) with pin (5).
6. Install cotter pin (6).
7. Connect self-recovery winch cable (7) with clevis (8) to tiedown ring (1) with pin (9).
8. Install cotter pin (10).
9. Continue with self-recovery winch operation (WP 0093).

DISCONNECT CABLE FROM VEHICLE

1. Ensure there is enough slack in winch cable (1).

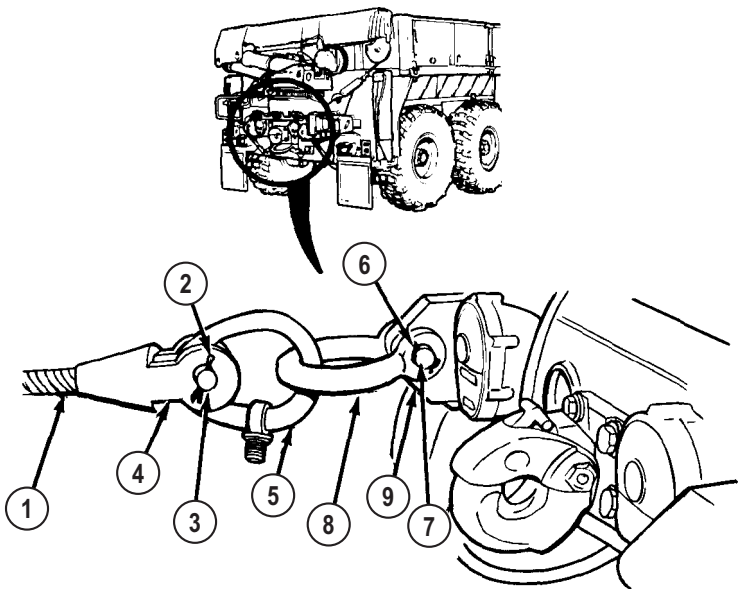


Figure 4.

2. Remove cotter pin (2).
3. Remove pin (3) and disconnect clevis (4) from tiedown ring (5).
4. Remove cotter pin (6).
5. Remove pin (7) and disconnect lifting shackle (8) from tow eye (9).
6. Remove tiedown ring (5) from lifting shackle (8).
7. Stow lifting shackle (8).

NOTE

There are three tiedown rings on each side of vehicle.

8. Install tiedown ring (5) into mounting plate (10).

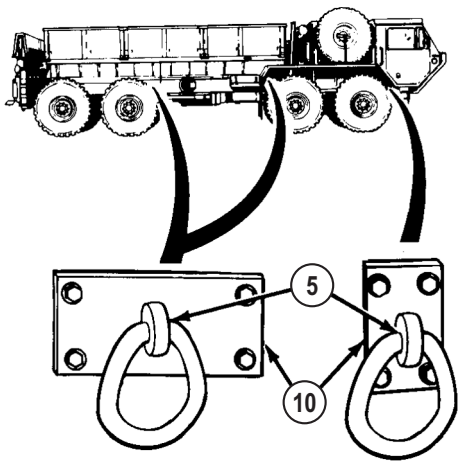


Figure 5.

NOTE

There are three tiedown rings on each side of vehicle.

9. Install tiedown ring (5) into mounting plate (10).

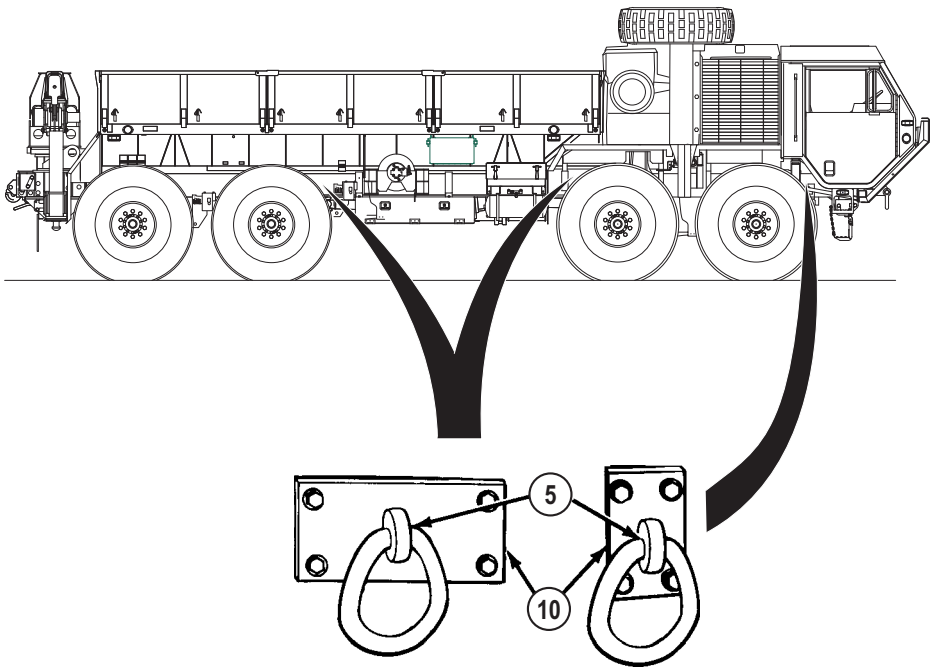


Figure 6.

10. Continue with self-recovery winch operation (WP 0093).

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
TOW DISABLED VEHICLE

INITIAL SETUP:

Not Applicable

TOW DISABLED VEHICLE

CAUTION

- When towing another vehicle, do not go over GCWR given in equipment data (WP 0006). Failure to comply may result in damage to equipment.
- Propeller shaft must be removed by field level maintenance before towing disabled vehicle or equipment may be damaged.

NOTE

Disabled vehicles must be prepared and moved in accordance with FM 21-305 . If instructed to do so, manually release spring brakes (WP 0107) as part of preparing disabled vehicle for towing.

1. Install and operate portable beacon lights. (WP 0070)
2. Set TRANSFER CASE shift lever (1) to NEUT (neutral) position.
3. Set traction control switch (2) to off (center) position.

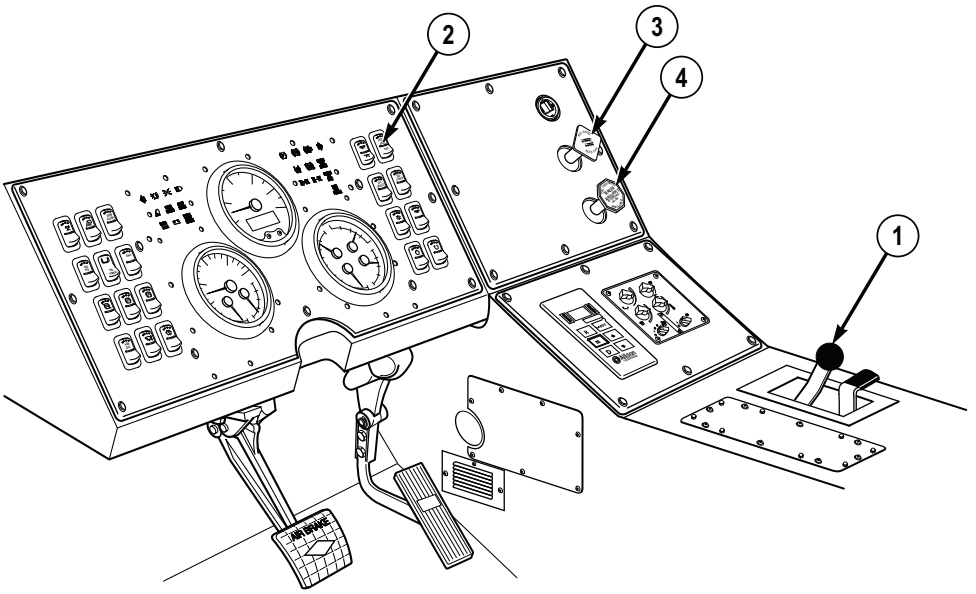


Figure 1.

4. Push in PARKING BRAKE control on disabled vehicle (refer to operator's manual).
5. Push in TRAILER AIR SUPPLY control (4) on recovery vehicle.
6. Transport disabled vehicle.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
CONNECT/DISCONNECT TOW BAR

INITIAL SETUP:

Not Applicable

CONNECT TOW BAR

WARNING



Do not use 10-ton tow bar with self-guided coupler (normally found on some M1120 LHS and M1977 CBT models). Self-guided coupler is not compatible with 10-ton tow bar. Failure to comply may result in injury or death to personnel

WARNING



Tow bar is heavy. Do not attempt to lift or move tow bar without the aid of two assistants and a lifting device. Failure to comply may result in injury or death to personnel.

NOTE

- This procedure is a three soldier task.
- The 10-ton tow bar should always be used in conjunction with two 16 ft. (5 m) safety chains.
- Allow ample distance between towing vehicle and disabled vehicle to connect 10-ton tow bar.

1. Align rear of towing vehicle near front of disabled vehicle.

WARNING



Tow bar is heavy. Do not attempt to lift or move tow bar without the aid of two assistants and a lifting device. Failure to comply may result in injury or death to personnel.

2. With aid of two assistants and a lifting device, remove tow bar (1) from stowage.

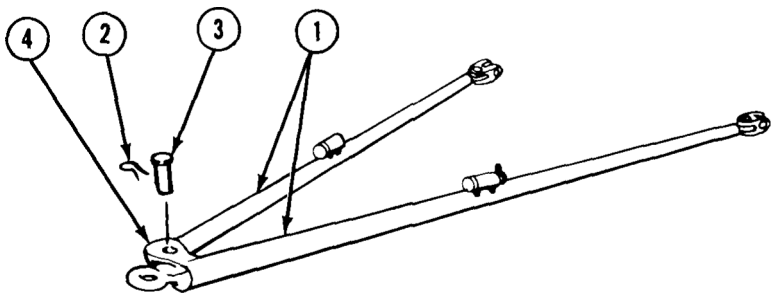


Figure 1.

3. Remove cotter hairpin (2) and pin (3) from tow bar (1).
4. Separate tow bar (1) at pivot point (4).

NOTE

Towing eyes on all models of HEMTT series vehicles are same in appearance, operation, and location. HEMTT M977 shown.

5. Position legs of tow bar (1) in front of disabled vehicle with spare pins (5) facing up.

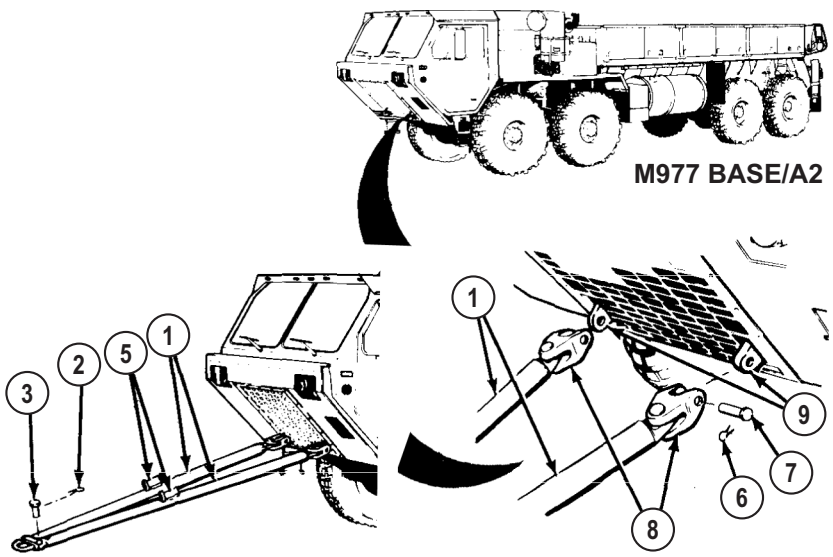


Figure 2.

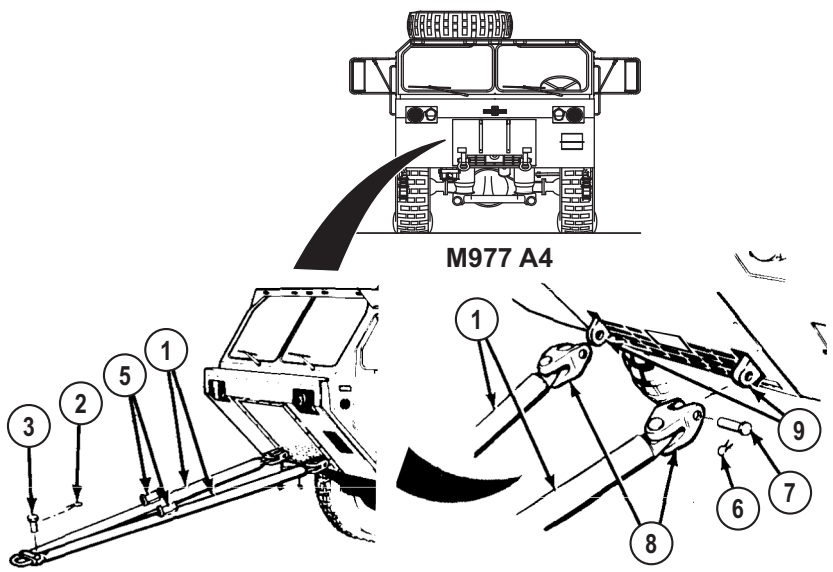


Figure 3.

6. Remove two cotter hairpins (6) and pins (7) from tow bar shackles (8).

WARNING



Tow bar is heavy. Do not attempt to lift or move tow bar without the aid of two assistants and a lifting device. Failure to comply may result in injury or death to personnel.

7. While two assistants hold one leg of tow bar (1) and align shackle (8) with towing eye (9), install pin (7) and cotter hairpin (6).
8. Repeat Step (7) for other leg of tow bar (1).
9. Align legs of tow bar (1) at pivot point (4) and install pin (3) and cotter hairpin (2).

WARNING



Do not use 10-ton tow bar with self-guided coupler (normally found on some M1120 LHS and M1977 CBT models). Self-guided coupler is not compatible with 10-ton tow bar. Failure to comply may result in injury or death to personnel

NOTE

Pintle hook on all models of HEMTT series vehicles are same in appearance, operation, and location. HEMTT M977 shown.

10. Position the towing vehicle so pintle hook is aligned with tow bar lunette eye.
11. Remove cotter pin (10) from pintle hook (11).

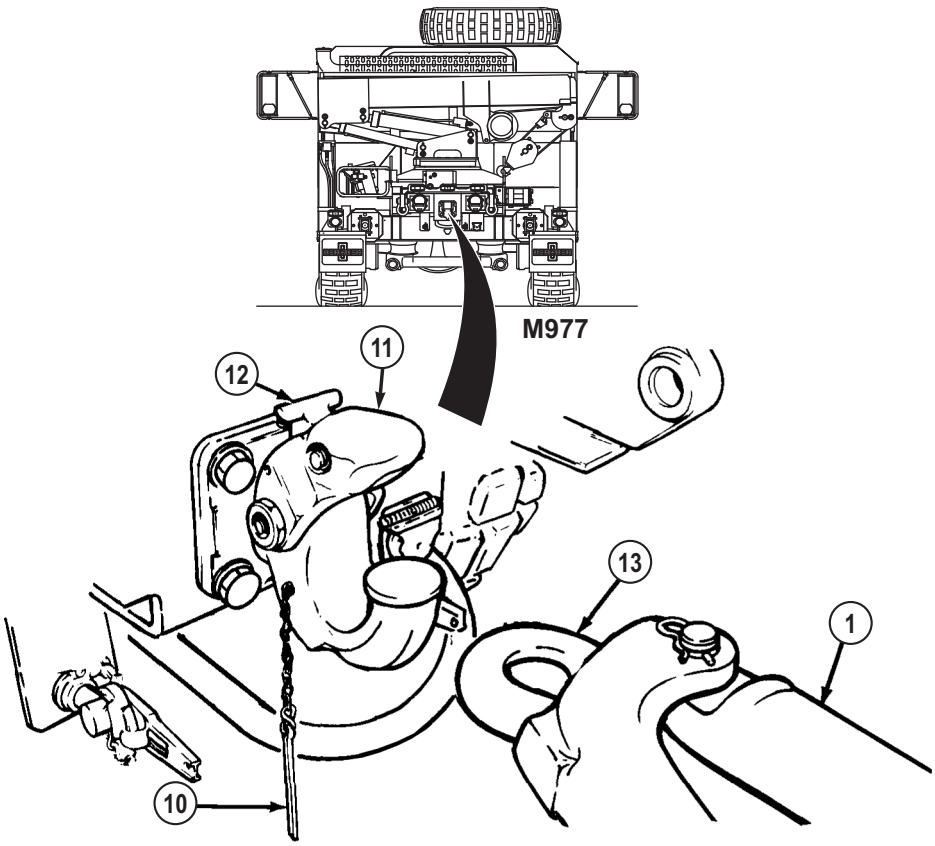


Figure 4.

12. Pull latch (12) away from vehicle and hold.
13. Lift top of pintle hook (11) and let go of latch (12). Pintle hook (11) will be locked open.

WARNING



Tow bar is heavy. Do not attempt to lift or move tow bar without the aid of two assistants and a lifting device. Failure to comply may result in injury or death to personnel.

WARNING



Do not put hands near pintle hook while aligning lunette eye with pintle hook. Failure to comply may result in injury or death to personnel.

14. While two assistants lift tow bar (1), slowly back up towing vehicle until tow bar lunette eye (13) connects to pintle hook (11).
15. Pull latch (12) and close top half of pintle hook (11).
16. Install cotter pin (10) in pintle hook (11).

NOTE

If air system of disabled vehicle is damaged, manually release spring brakes (WP 0107) and skip to Step (20).

17. Remove two inter-vehicular air lines (14) from stowage.

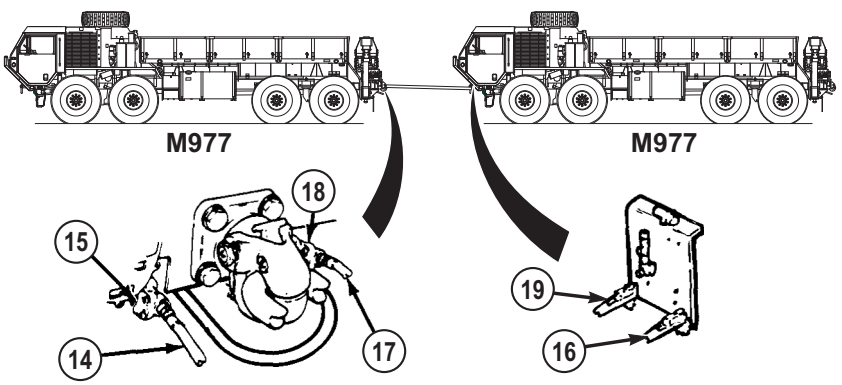


Figure 5.

NOTE

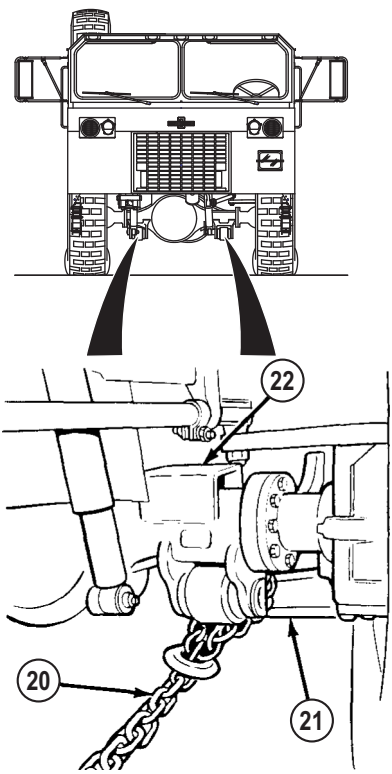
Gladhands on all models of HEMTT series vehicles are same in appearance, operation, and location. HEMTT M977 shown.

18. Connect first intervehicular air line (14) to driver side rear gladhand (15) of towing vehicle and driver side front gladhand (16) of disabled vehicle.
19. Connect second intervehicular air line (17) to passenger side rear gladhand (18) of towing vehicle and passenger side front gladhand (19) of disabled vehicle.
20. Remove two 16 ft. (5 m) safety chains (20) from stowage.

NOTE

- Both driver side and passenger side walking beams are same. Driver side shown.
- If disabled vehicle is either a BASE or A2 model HEMTT series vehicle (refer to data plate on inside of drivers door), complete Step (21). If disabled vehicle is an A4 model HEMTT series vehicle (refer to data plate on inside of drivers door), skip to Step (22).

21. Route one 16 ft. (5 m) safety chain (20) over walking beam (21) behind No. 1 axle (22) on disabled vehicle, and hook 16 ft. (5 m) safety chain (20) back into itself under walking beam (21) as shown.



BASE/A2 MODELS

Figure 6.

CAUTION

Special care should be taken when connecting 16 ft. (5 m) safety chain to tiedown ring. The procedure listed below routes the 16 ft. (5 m) safety chain in such a way as to minimize excessive contact with vehicle air

suspension air springs during towing. Failure to comply may result in damage to equipment.

NOTE

Both driver side and passenger side tiedown rings are same. Driver side shown.

22. Connect 16 ft. (5 m) safety chain (20) to disabled vehicle tiedown ring (23):
    a. Route end (without safety shackle) of 16 ft. (5 m) safety chain (20) through tiedown ring (23) from inboard to outboard until grab hook (24) hangs just below bottom of air spring (25).

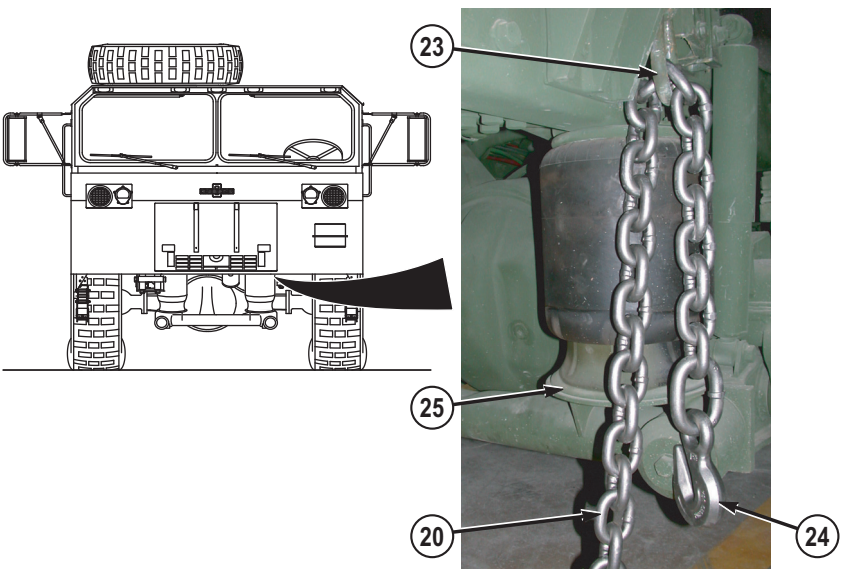


Figure 7.

    b. Hook 16 ft. (5 m) safety chain (20) back to itself. Grab hook (24) should open towards ground (shown) when tension is applied to 16 ft. (5 m) safety chain (20).

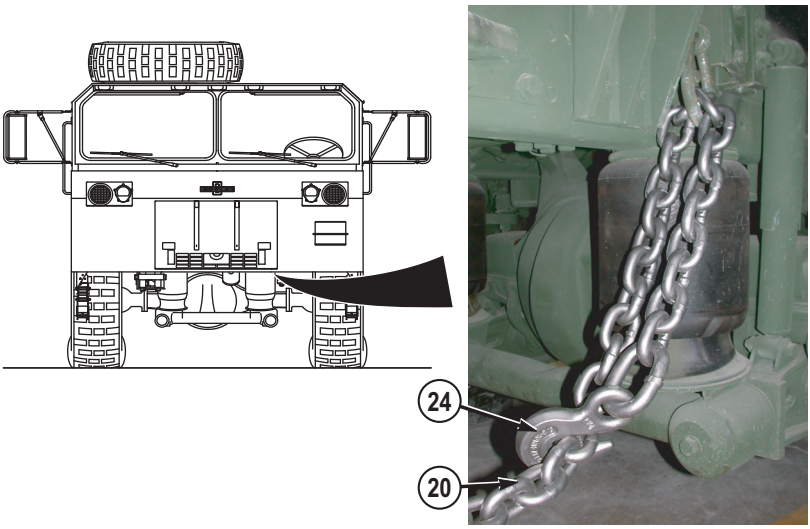


Figure 8.

23. Repeat Steps (21) or (22) for other side of disabled vehicle.

NOTE

- 16 ft. (5 m) safety chain may be attached to either safety chain loop or towing shackles.
- 16 ft. (5 m) safety chain should be attached so they are just above, but not in contact with the ground.

24. Route free ends of two 16 ft. (5 m) safety chain (20) through safety chain loop (26) on towing vehicle and attach each 16 ft. (5 m) safety chain (20) back into itself as shown.

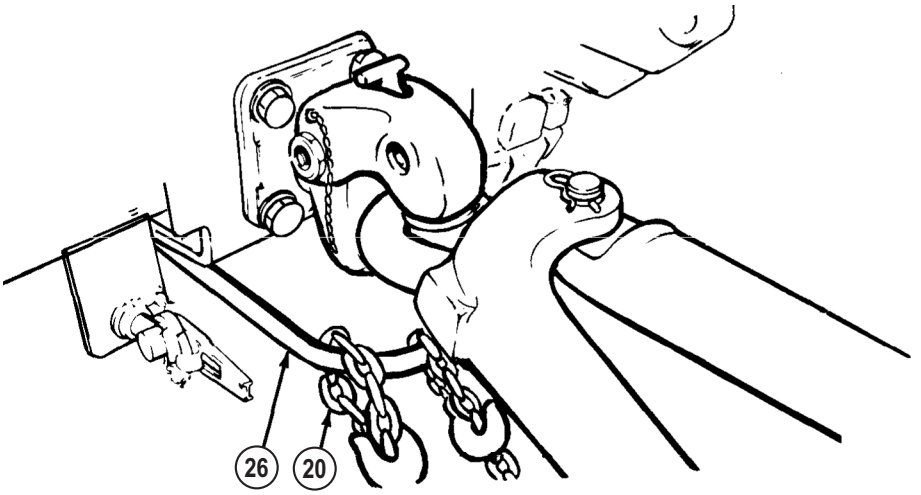


Figure 9.

25. Tow disabled vehicle. (WP 0096)

DISCONNECT TOW BAR

NOTE

- This procedure is a three soldier task.
- Vehicle should be parked and disconnected on level ground.

1. Park towing vehicle. (WP 0055)
2. Pull out TRAILER AIR SUPPLY control (1) on towing vehicle.

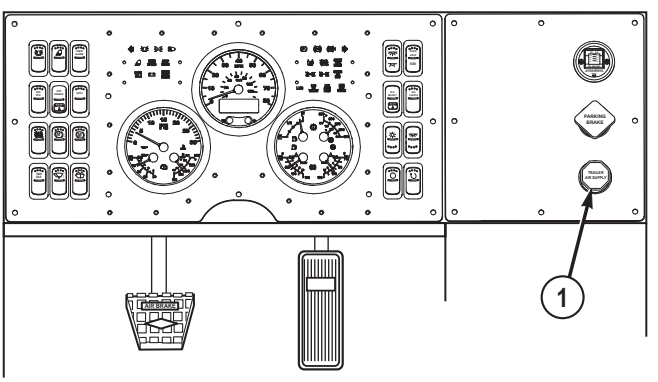


Figure 10.

NOTE

If disabled vehicle parking brake is inoperable and/or spring brakes on disabled vehicle were manually released, install wheel chocks (refer to operator's manual).

3. Engage parking brake on disabled vehicle (refer to operator's manual).
4. Disconnect two 16 ft. (5 m) safety chains (2) from towing vehicle and disabled vehicle. Return 16 ft. (5 m) safety chains (2) to stowage.

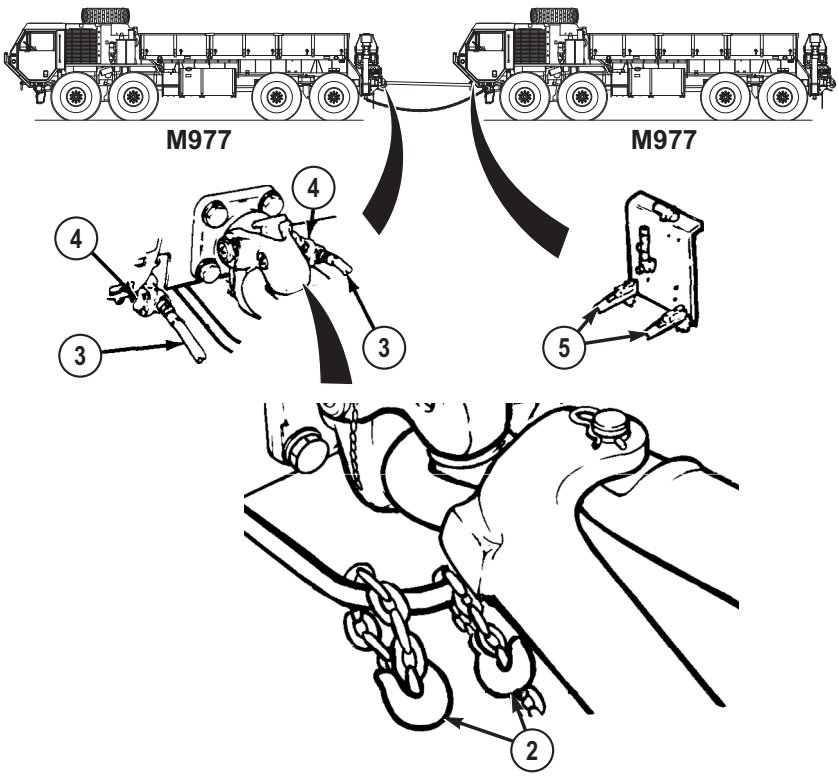


Figure 11.

NOTE

If spring brakes on disabled vehicle were manually released before towing, skip to Step (6).

5. Disconnect two intervehicular air lines (3) from towing vehicle rear gladhands (4) and from disabled vehicle front gladhands (5). Return intervehicular air lines (5) to stowage.
6. Remove cotter pin (6) from towing vehicle pintle hook (7).

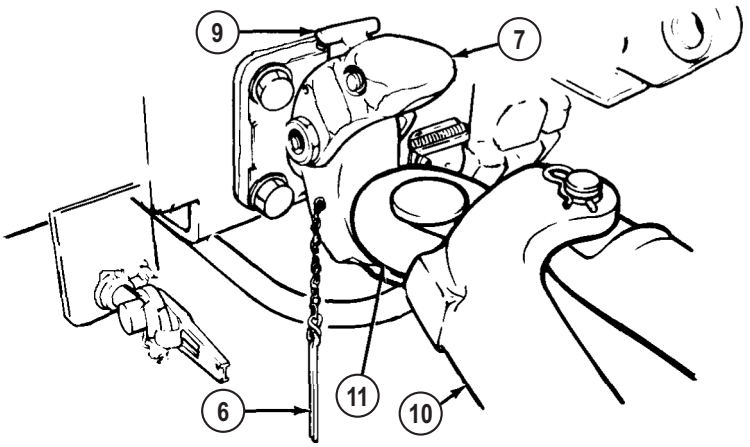


Figure 12.

7. Pull latch (9) away from vehicle and hold.
8. Lift top of pintle hook (7) and let go of latch (9). Pintle hook (7) will be locked open.
9. As two assistants lift tow bar (10) until lunette eye (11) is clear of pintle hook (10), drive towing vehicle forward approximately 15 ft. (4.6 m).
10. As assistants lower tow bar (10) to the ground, park towing vehicle.
11. Pull latch (9) to close towing vehicle pintle hook (7) and install cotter pin (6) in pintle hook (7).
12. Remove cotter hairpin (12) and pin (13) and separate tow bar (10) at pivot point (14).

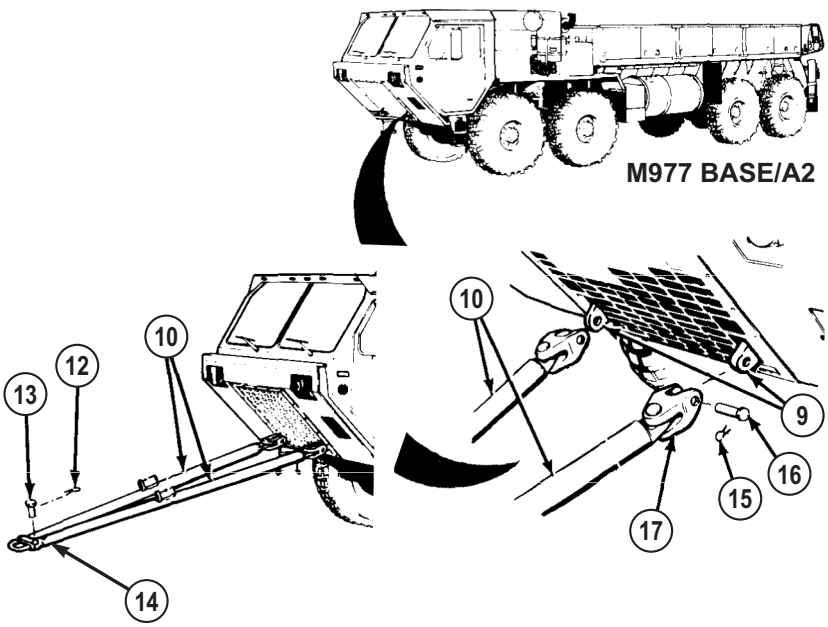


Figure 13.

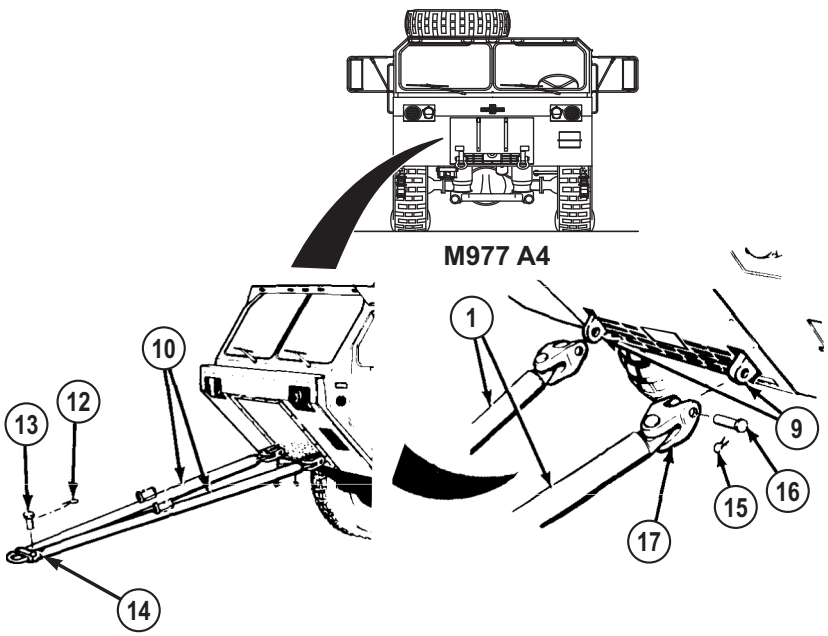


Figure 14.

13. With aid of an assistant, hold one leg of tow bar (10) while another assistant removes cotter hairpin (15) and pin (16) from shackle (17).
14. Repeat Step (13) for other leg of tow bar (10).
15. With aid of two assistants, lower tow bar (10) to the ground.
16. Install two pins (16) and cotter hairpins (15) is shackles (17).
17. Align legs of tow bar (10) at pivot point (14) and install pin (13) and cotter hairpin (12).

WARNING



Tow bar is heavy. Do not attempt to lift or move tow bar without the aid of two assistants and a lifting device. Failure to comply may result in injury or death to personnel.

18. With aid of two assistants and lifting device, return tow bar (10) to stowage.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATE VEHICLE IN EXTREME HEAT

INITIAL SETUP:

Not Applicable

EXTREME HEAT OPERATION

CAUTION

- When operating vehicle in very hot temperatures of above 100°F (38° C), extra care must be taken to prevent overheating engine (temperatures over 230°F (110°C) and transmission (temperatures over 300°F, 149°C). Watch water and transmission temperature gauges closely. Failure to comply may result in damage to equipment.
- Check oil levels often and keep operating strain as low as possible. Vehicle cooling and lubrication systems support each other. Failure of one system will rapidly cause failure of other systems.

NOTE

- Close heater valves to improve the efficiency of cabin air conditioning.
- Closing the heater valves disables cabin heat.

1. Keep operating temperatures as low as possible:
   a. Set transmission range selector (1) to N (neutral) while engine is running and not required to move.
   b. Use low gear ranges only when necessary.
   c. Stop vehicle for cooling off periods, and idle engine as often as possible. Let engine idle for approximately 3 minutes before shutting down. Idling will cool engine faster than quick shutdown and may prevent damage from remaining engine heat.
   d. Check oil levels often. Oil seals are more likely to leak in extreme hot weather.
   e. Check air filter restriction indicator (2) frequently. If indicator shows red:
      (1) Park vehicle. (WP 0055)
      (2) Shut off engine. (WP 0056)

(3) Notify field level maintenance.

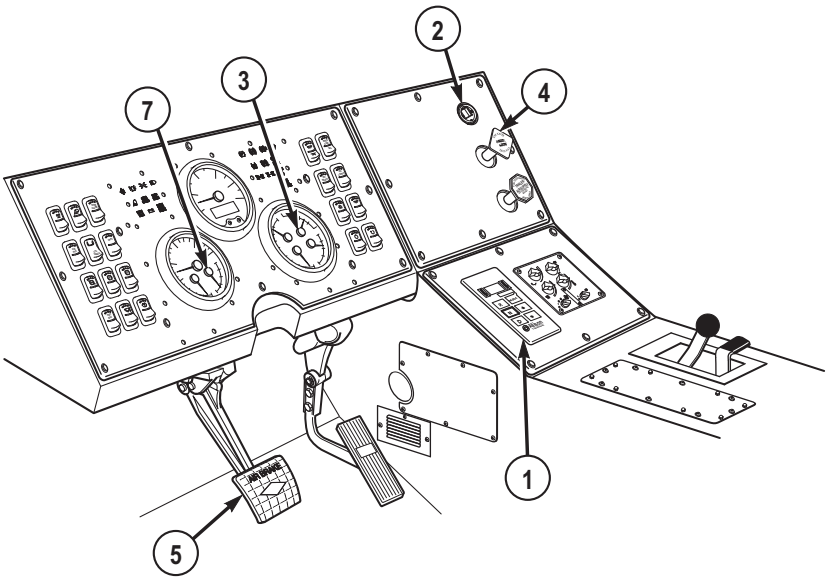


Figure 1.

2. If transmission temperature gauge (3) reads 300°F (149°C) or above, perform the following steps:
   a. Slow vehicle.
   b. Set transmission range selector (1) to next lower gear range.
   c. Continue operation.
   d. When transmission temperature gauge (3) reads normal range:
      (1) Set transmission range selector (1) to normal gear range.
      (2) Continue operation.
   e. If transmission temperature gauge (3) does not return to normal range:
      (1) Stop vehicle.
      (2) Set transmission range selector (1) to N (neutral).

NOTE

Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

(3) Pull out PARKING BRAKE control (4).

(4) Allow transmission to cool.

f. When transmission temperature gauge (3) reads normal range:

(1) Apply service brake pedal (5).

NOTE

Dashboard parking brake indicator will go out when PARKING BRAKE control is released.

(2) Push in PARKING BRAKE control (4).

(3) Set transmission range selector (1) to normal gear range.

(4) Continue operation.

3. If water temperature gauge (6) indicates coolant temperature is near overheating, perform the following steps:

a. Slow vehicle.

b. Set transmission range selector (1) to next lower gear range.

c. Continue operation.

d. When water temperature gauge (6) reads normal range:

(1) Set transmission range selector (1) to normal gear range.

(2) Continue operation.

e. If water temperature gauge (6) does not return to normal range:

(1) Stop vehicle.

(2) Set transmission range selector (1) to N (neutral).

NOTE

Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

(3) Pull out PARKING BRAKE control (4).

(4) Allow engine to cool.

f. When water temperature gauge (6) reads normal range:

(1) Apply service brake pedal (5).

NOTE

Dashboard parking brake indicator will go out when PARKING BRAKE control is released.

(2) Push in PARKING BRAKE control (4).

(3) Set transmission range selector (1) to normal gear range.

(4) Continue operation.

4. Check cooling system often and notify field level maintenance if any of the following are found:
   a. Low coolant level in radiator.
   b. Leaking hose connections which have been tightened but still leak.
   c. Cracked or leaking hoses.
   d. Radiator or charge air cooler fins/grill plugged with mud, debris, etc.

NOTE

- Batteries do not hold charge well in extreme heat.
- Battery will be tagged (white circle printed on top) for use in extreme heat conditions as specific gravity must be changed to adjust for heat (refer to TM 9-6140-200-14).

5. Keep batteries full, but do not overfill. Check battery electrolyte daily.
6. In hot, damp climates check body and chassis often and notify field level maintenance if any of the following are found:
   a. Signs of pitting or paint blistering on metal surfaces.
   b. Signs of mildew, mold, or fungus on fabrics and rubber.
7. Adjust lubrication intervals as specified in applicable Lubrication Table.
8. Park vehicle (WP 0055) in sheltered area, out of wind if possible. If no shelter is available, park so vehicle does not face into wind.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATION IN EXTREME DUST

INITIAL SETUP:

Not Applicable

OPERATE VEHICLE IN EXTREME DUST

CAUTION

Clouds of dust can scratch glass surfaces. Keep glass surfaces covered as much as possible in these conditions to prevent scratching.

1. Leave glass surfaces covered if not needed for operations. Take extra care when cleaning glass to prevent scratching surfaces.
2. Keep close watch on air filter restriction indicator (1) located on top right side of driver's instrument panel.

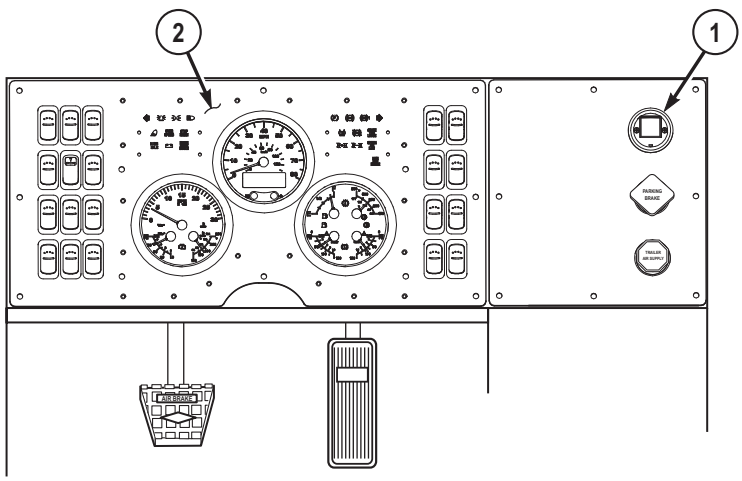


Figure 1.

3. Continuously scan gauges and indicators on driver's instrument panel (2) to be sure dust does not affect equipment.
4. Allow as much distance as possible between vehicles and operate at low speeds.

5. At stops, check and drain fuel/water separator (3).

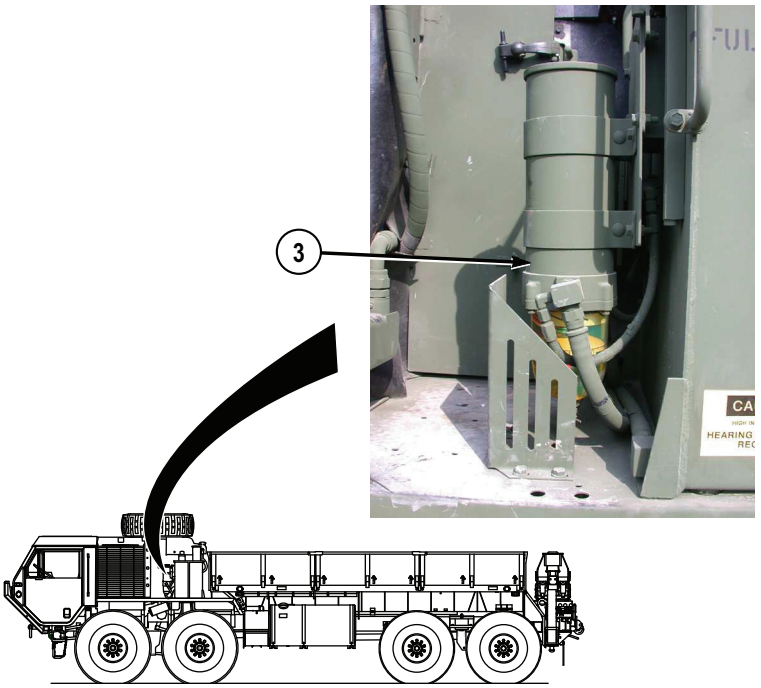


Figure 2.

6. When possible, park vehicle so it does not face into wind.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATE VEHICLE IN SAND OR MUD

INITIAL SETUP:

Not Applicable

OPERATE VEHICLE IN SAND OR MUD

CAUTION

Blowing sand may scratch glass surfaces. Glass surfaces should remain covered as much as possible in these conditions to prevent scratching.

NOTE

Operating in mud can worsen vehicle braking and speed up brake wear. If braking worsens while operating in mud, dry brakes by driving vehicle approximately 500 ft. (153 m) with service brakes frequently applied. This must be done with brake drums totally out of mud, so that drying action can take place. If adequate braking is not restored by drying brakes, notify field level maintenance.

1. Leave glass surfaces covered if not needed for operations. Extra care should be taken when cleaning glass surfaces to prevent scratching surfaces.

NOTE

Principles of driving in sand can also be applied to driving in mud. Best time to drive on sand is at night or early morning when sand is damp. Damp sand gives better traction.

   a. Check air filter restriction indicator (1) often.

2. Adjust tires to correct tire pressure for type tire and environment. (WP 0006)
3. Set TRANSFER CASE shift lever (2) to LO. 8X8 drive indicator (3) will illuminate.

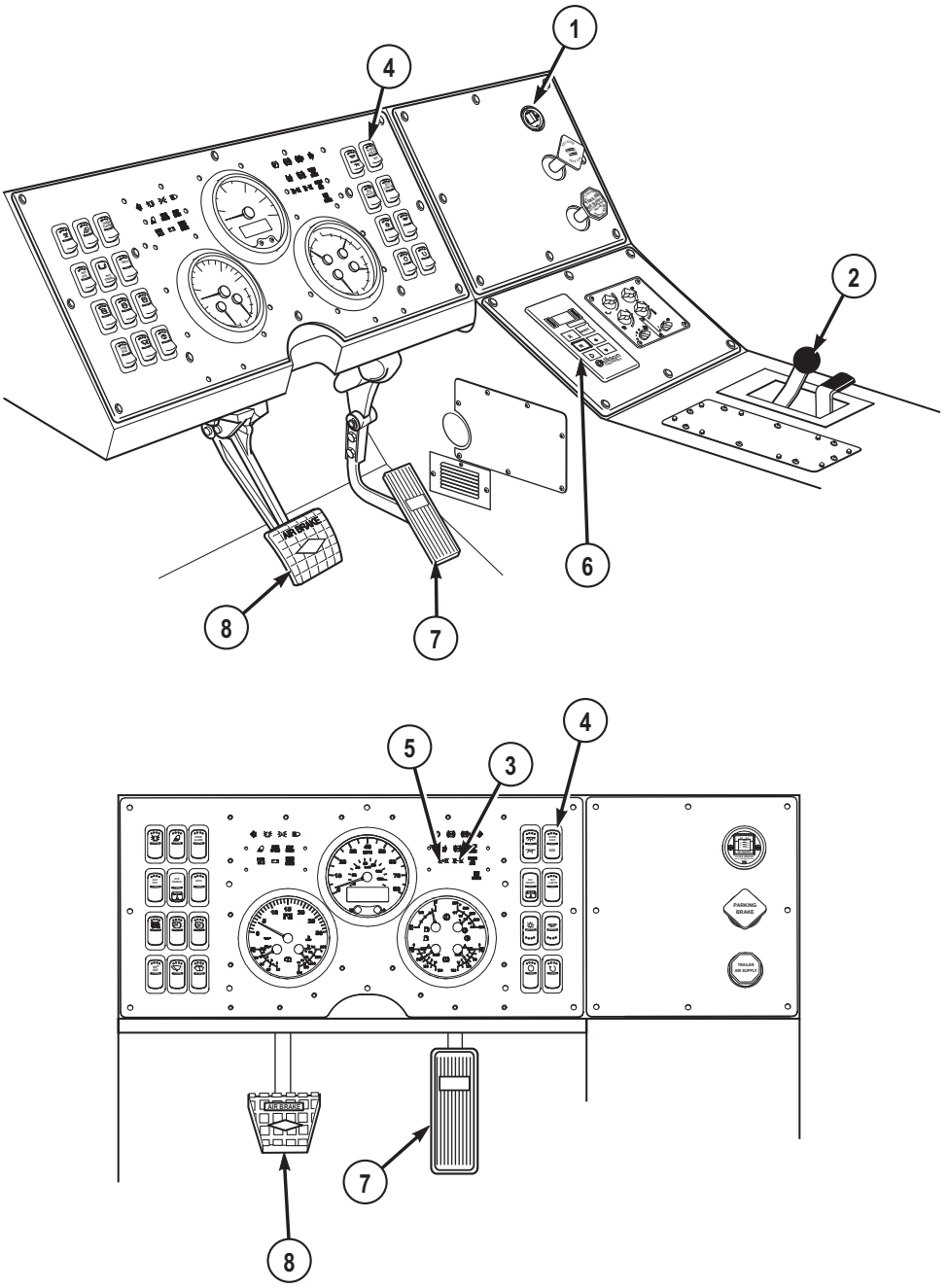


Figure 1.

CAUTION

Wheel hop condition should be avoided to prevent possible damage to drivetrain. If wheel hop begins to occur, ease up on throttle to allow tires to grip surface. If wheel hop continues, release throttle and apply brakes. Apply throttle slowly as traction permits.

4. Start slowly. Do not spin wheels when starting to move vehicle.
5. Set traction control switch (4) to INTER AXLE for added traction. Indicator light (5) will illuminate.
6. Set transmission range selector (6) to 2 (2nd) or 1 (1st), as needed for added traction.
7. Do not straddle sand mounds or drive on sides of two sand mounds. Loose sand will not support vehicle on steep slopes.
8. Keep throttle pedal (7) steady after vehicle reaches desired speed.
9. Turn vehicle slowly when on loose sand or mud.
10. Steer vehicle straight up and down hills if possible.
11. To move vehicle forward and turn after vehicle is stopped in loose sand or mud, do the following:
    a. Set transmission range selector (6) to R (reverse).
    b. Press throttle pedal (7) and move vehicle straight back about 20 ft. (6.1 m).
    c. Release throttle pedal (7) and press service brake pedal (8).
    d. Set transmission range selector (6) to 1 (1st).
    e. Release service brake pedal (8) and press throttle pedal (7) to move vehicle forward.
    f. Turn vehicle gradually.
    g. Set transmission range selector (6) to D (drive) when vehicle picks up speed and is moving forward smoothly.
12. If vehicle starts to skid, do the following:
    a. Release throttle pedal (7).
    b. Steer in direction of skid until vehicle stops skidding.
    c. Press throttle pedal (7) slowly and steer vehicle on straight course.

PARK VEHICLE

1. Park vehicle as follows:
    a. Vehicle should not face into wind.
    b. Clean mud off vehicle as soon as possible.

CAUTION

- Do not hit axle breathers when cleaning mud from axles.
- Do not direct high pressure water stream at glass surfaces, seals, air intake, axle breathers, exhaust outlet, or any other component of vehicle that could be easily damaged by high pressure water stream.

2. Clean mud from wheels, brakes, axles, universal joints, steering mechanism, and radiator as soon as possible.
3. Make sure axle breather vent caps move freely on breather body.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATE VEHICLE IN DESERT ENVIRONMENT

INITIAL SETUP:

Not Applicable

DESERT ENVIRONMENT OPERATION

NOTE

FM 90-3 contains detailed instructions for living and working in desert.

1. Principles for operating in extreme heat (WP 0098) and extreme dust (WP 0099), sand, or mud (WP 0100) apply to desert environment.

NOTE

- Close heater valves to improve the efficiency of cabin air conditioning.
- Closing the heater valves disables cabin heat.

2. Temperatures may change as much as 70°F (21°C) degrees between day and night. These changes may damage equipment if vehicle is not properly prepared.
   a. Due to expansion and contraction of all fluids and air, care should be taken when filling fuel tank and fluid reservoirs to prevent overflow when temperatures change.
   b. Precision instruments may be affected by temperature changes and may need adjustment more often.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATE VEHICLE IN COLD ENVIRONMENT (32°F [0°C] TO -25°F [-32°C])

INITIAL SETUP:

Not Applicable

OPERATE VEHICLE IN COLD ENVIRONMENT

WARNING



Do not touch extremely cold metal (below -26°F, -32°C to -65°F, -54°C). Bare skin may freeze to cold metal. Failure to comply may result in injury or death to personnel.

CAUTION

- Before operating vehicle in extreme cold environment, ensure engine arctic kit is installed and vehicle has been prepared as described in FM 9-207 . Refer to FM 31-70 , FM 31-71 , and FM 21-305 for additional information on operations in extreme cold environment.
- Watch instrument panel closely. If any unusual readings occur, stop vehicle and shut off engine. Check engine immediately.
- Park in shelter when possible. If shelter is not available, park so vehicle does not face into wind. Place planks or brush under wheels so vehicle will not freeze in place.
- Fuel filter should be drained before topping off fuel tank. Keep fuel tank as full as possible during cold operations. Water forms in empty fuel tank as it cools. Water in fuel system could freeze and block system.
- All snow and ice should be removed from vehicle as soon as possible. Snow and ice may slow or stop movement of critical parts if allowed to pile up.
- Special care must be used during operations in extreme cold environment. In extreme cold, engine coolant and fluid in windshield

washer can freeze. Batteries can freeze and crack. Oil and grease may get thick and stiff. Rubber and metal parts may crack or become brittle and break easily.

- Proper component lubrication is a must for extreme cold operation.

1. Install tire chains (WP 0088) (as needed).
2. Start engine (WP 0043) and allow engine warm up thoroughly.

NOTE

Positioning TRANSFER CASE shift lever to LO automatically activates 8X8 drive.

3. Set TRANSFER CASE shift lever (1) to LO. 8X8 DRIVE indicator (2) will illuminate.

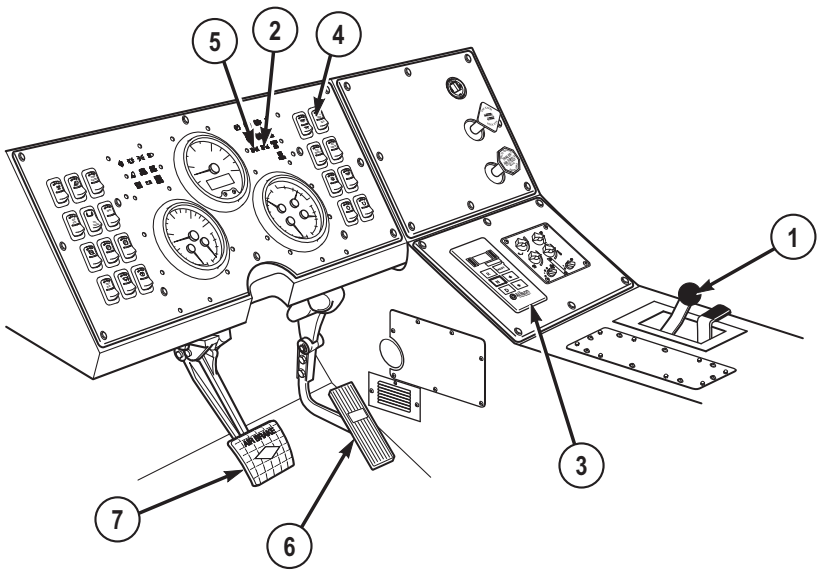


Figure 1.

4. Set transmission range selector (3) to 1 (1st gear range) and drive at lowest possible speed to warm driveline components and tires.
5. Drive on mud, snow, ice, and slippery surfaces as follows:

NOTE

- Traction control switch should be set to 8X8 when transfer case shift lever is set to HI range while driving on slippery surfaces.

- Positioning TRANSFER CASE shift lever to LO automatically activates 8X8 drive.

a. Set TRANSFER CASE shift lever (1) to LO for added traction. 8X8 DRIVE indicator (2) will illuminate.

NOTE

Traction control switch should be set to INTER AXLE when transfer case shift lever is set to LO range while driving on slippery surfaces.

b. Set traction control switch (4) in INTER AXLE (when LO range is used - recommended) or 8X8 (if HI range is required), as needed, when driving on slippery surfaces. INTER-AXLE LOCK indicator (5) and/or 8X8 DRIVE indicator (2) will illuminate as applicable.

c. Press throttle pedal (6) slowly when changing speed.

d. Keep throttle pedal (6) steady after vehicle reaches desired speed.

e. Turn vehicle slowly when on slippery surfaces.

f. Steer vehicle away from ruts and large snowbanks.

g. Steer vehicle straight up and down hills if possible.

h. Use gear range 2 (2nd) or 3 (3rd) to go down medium grades.

i. Use gear range 1 (1st) to go down steep or very slippery grades.

j. Drive at slower speeds and stay twice normal distance from vehicle ahead.

k. Signal turns sooner than normal to give vehicles behind ample time to safely slow down.

WARNING



Do not use engine brake when vehicle is on slippery surface. If engine brake is used incorrectly, vehicle may skid out of control. Failure to comply may result in injury or death to personnel.

NOTE

Pressing service brake pedal lightly will help keep vehicle from skidding.

l. Apply brakes sooner, and press service brake pedal (7) lightly to give early warning that vehicle will slow or stop.

m. Downshift, if necessary, when slowing or stopping vehicle on slick surfaces.

n. Keep windshield, windows, mirrors, headlights, stoplights, and body lights clean and free of snow and ice. Use defroster and windshield wipers to keep windshield free of snow and ice.

o. Drive slowly and test brakes after driving through slush or water. If brakes slip, do the following:

(1) Continue to drive slowly.

(2) Apply moderate pressure on service brake pedal (7) to cause slight brake drag.

(3) When brakes are dry and no longer slip, release service brake pedal (7).

(4) Resume normal driving speed for conditions.

p. If absolutely necessary for better traction, lower vehicle tire pressure to emergency air pressure limit:

(1) Ensure each tire has a valve cap.

(2) Drive at low speed when tire pressures are reduced.

q. If rear of vehicle skids, do the following:

(1) Ease up on throttle pedal (6).

(2) Steer in same direction that vehicle is skidding.

(3) When vehicle is under control, lightly apply service brake pedal (7).

(4) Steer vehicle on a straight course and slowly apply throttle pedal (6).

r. If vehicle starts to slide while climbing a grade, do the following:

(1) Ease up on throttle pedal (6).

(2) Steer in same direction that vehicle is skidding.

(3) Slowly apply throttle pedal (6) and steer vehicle on a straight course.

s. If vehicle becomes stuck, do the following:

(1) Shovel a clear path ahead of each tire.

(2) Put boards, brush, or similar material in cleared paths to get better traction.

(3) If vehicle remains stuck, use another vehicle to winch or tow stuck vehicle clear.

(4) If another vehicle is not available, self-recover vehicle using self-recovery winch. (WP 0093)

6. Park vehicle (WP 0055) as follows:

NOTE

If no shelter is available, park vehicle so it does not face into the wind. Vehicle facing opposite of the direction of the wind is optimal.

a. Park vehicle in sheltered area, out of wind if possible.

NOTE

If no high, dry ground is available, spread out planks, brush, etc., to create a raised area so that vehicle tires will not freeze in snow, water, ice, or mud.

b. Park vehicle on high, dry ground if possible.

c. Park vehicle on level ground so vehicle body does not twist.

d. Leave transfer case shift lever (1) in LO.

NOTE

Do not hit axle breathers when cleaning mud, snow, and ice from axles.

7. Clean snow, ice, and mud off vehicle as soon as possible.
8. Clean mud, snow, and ice from wheels, brakes, axles, universal joints, mirrors, steering mechanism, and radiator as soon as possible.
9. Ensure axle breather vent caps move freely on breather body.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATION IN EXTREME COLD ENVIRONMENT

INITIAL SETUP:

Not Applicable

OPERATE VEHICLE IN EXTREME COLD ENVIRONMENT (-26°F[-32°C] to -65°F[-54° C])

WARNING



Do not touch extremely cold metal (below -26°F, -32°C to -65°F, -54°C). Bare skin may freeze to cold metal. Failure to comply may result in injury or death to personnel.

CAUTION

- Before operating vehicle in extreme cold environment, ensure engine arctic kit is installed and vehicle has been prepared as described in FM 9-207.
- Refer to FM 31-70 , FM 31-71 , and FM 21-305 for additional information on operations in extreme cold environment.
- Watch instrument panel closely. If any unusual readings occur, stop vehicle and shut off engine. Check immediately.
- Park in shelter when possible. If shelter is not available, park so vehicle does not face into wind. Place planks or brush under wheels so vehicle will not freeze in place.
- Fuel filter should be drained before topping off fuel tank. Keep fuel tank as full as possible during cold operations. Water forms in empty fuel tank as it cools. Water in fuel system could freeze and block system.
- All snow and ice should be removed from vehicle as soon as possible. Snow and ice may slow or stop movement of critical parts if allowed to pile up.

- Special care must be used during operations in extreme cold environment. In extreme cold, engine coolant and fluid in windshield washer can freeze. Batteries can freeze and crack. Oil and grease may get thick and stiff. Rubber and metal parts may crack or become brittle and break easily.
- Proper component lubrication is a must for extreme cold operation.

1. Principles and procedures for operating in cold environment (WP 0102) also apply to extreme cold environment.
2. Ensure arctic engine heater kit has been installed.
3. Operate arctic engine heater as needed.

WARNING



Do not touch extremely cold metal (below -26°F, -32°C to -65°F, -54°C). Bare skin may freeze to cold metal. Failure to comply may result in injury or death to personnel.

NOTE

If additional air is put in tires for standby periods, lower tire pressure to normal amounts before driving vehicle.

4. In areas where temperatures reach -50°F (-46°C) or colder, fill tires with air approximately 10 psi above normal for long standby periods and overnight.

OPERATE TANKER MODULE IN EXTREME COLD ENVIRONMENT (-26°F[-32°C] to -65°F [-54°C])

WARNING



Do not touch extremely cold metal (below -26°F, -32°C to -65°F, -54°C). Bare skin may freeze to cold metal. Failure to comply may result in injury or death to personnel.

1. Before performing fuel handling operations, perform warm-up as follows:
   a. Prepare tanker for operations. (WP 0078)

b. Start engine. (WP 0043)

c. Properly warm up vehicle.

d. Set PTO ENGAGE switch (1) to ON position. Indicator light (2) will illuminate.

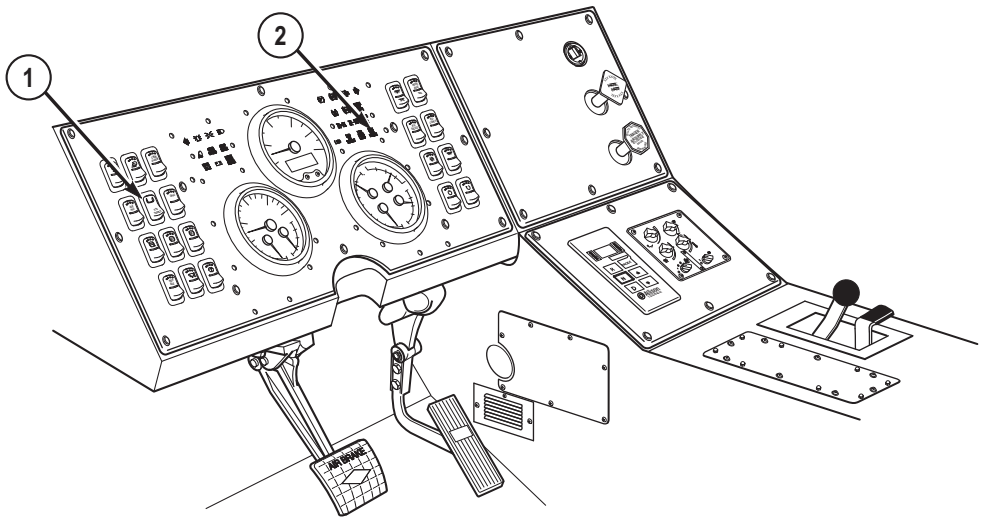


Figure 1.

e. With engine at low idle, engage primary pump for at least 5 minutes.

f. Disengage primary pump.

2. Continue with fuel handling operations.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATE VEHICLE IN FOREST OR ROCKY TERRAIN

INITIAL SETUP:

Not Applicable

OPERATE VEHICLE IN FOREST OR ROCKY TERRAIN

WARNING



Ensure tire pressure is correct for vehicle operation. Failure to comply may result in injury or death to personnel.

NOTE

When driving over very rocky terrain is part of the mission route, be sure spare wheel and tire are on vehicle, in good repair, and at correct pressure for normal operations. There is greater chance of tire punctures when operating in rocky terrain.

1. Fold vehicle side mirrors in far enough so area to rear of vehicle can still be seen, but mirrors will not be damaged by rocks, trees, and other obstructions.

CAUTION

Before driving over ground obstructions such as stumps and large rocks, ensure vehicle has adequate clearance. Stumps and rocks may damage components underneath vehicle.

2. Avoid driving over obstructions if possible.

CAUTION

Ensure vehicle can clear overhanging tree limbs and other obstructions. Low overhead obstructions may damage cargo, cargo cover, and other parts on top of vehicle.

3. Avoid low overhanging obstructions if possible.

4. Check traction and braking. Rocks and fallen leaves can be very slick, especially when wet.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATE VEHICLE IN SALTWATER AREAS

INITIAL SETUP:

Not Applicable

OPERATION

1. Inspect vehicle and major components (crane, tanker module, LHS, etc.) frequently for the buildup of salt deposits, rust, and corrosion.

NOTE

Do not direct high-pressure water hose nozzles, or steam cleaner nozzles into hydraulic system seals and/or electrical junction boxes.

2. If salt deposits are located, clean the affected areas using authorized local procedures.
3. Frequently wash the vehicle and major components to prevent the buildup of salt deposits.
4. If corrosion is present, notify your supervisor as these conditions need to be corrected immediately.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
SET UP/SECURE HIGHWAY EMERGENCY MARKER KIT

INITIAL SETUP:

Not Applicable

PREPARE VEHICLE/MARKERS FOR USE

1. Turn vehicle emergency flashers on. (WP 0072)
2. Remove emergency marker kit (1) from stowage brackets (2).

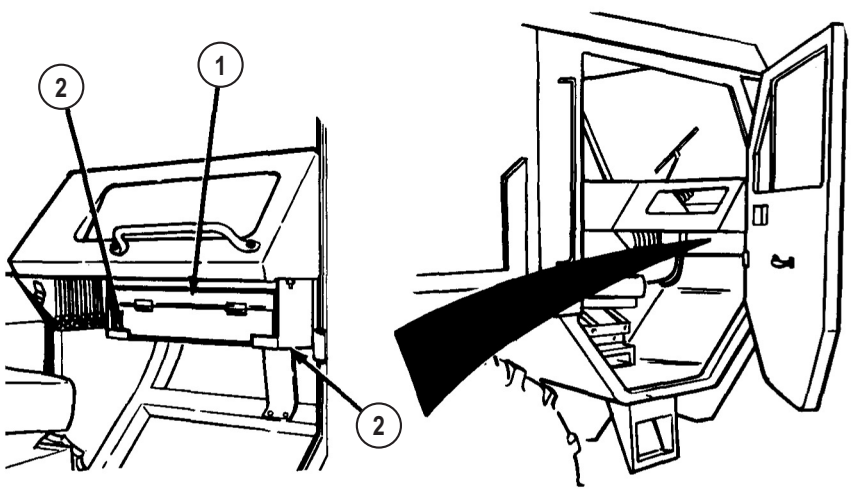


Figure 1.

3. Remove markers (3) from case.

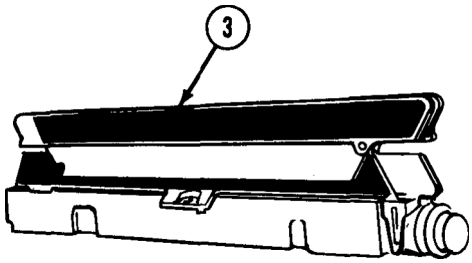


Figure 2.

4. Raise arms (4).

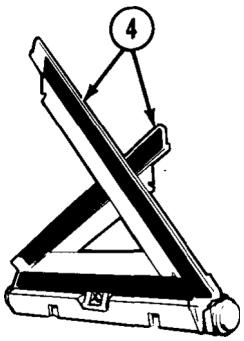


Figure 3.

5. Snap pin (5) into slot (6).

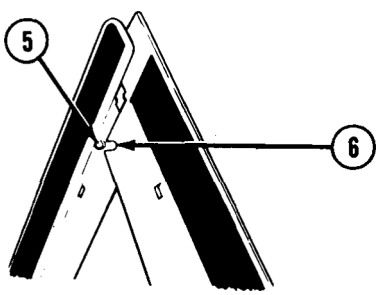


Figure 4.

6. Rotate marker (3) about ¼ turn on base (7) until it stops.

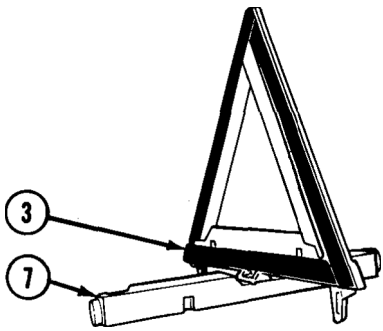


Figure 5.

PLACE MARKERS ON UNDIVIDED HIGHWAY

1. Place one marker (1) about 40 paces (100 ft. [30 m]) in front of vehicle, so marker faces traffic approaching from front.

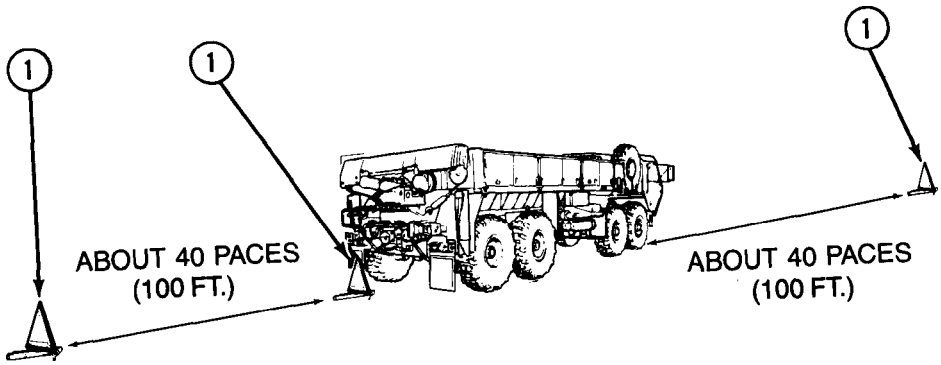


Figure 6.

2. Place another marker (1) directly behind vehicle, so marker faces traffic approaching from rear.
3. Place third marker (1) approximately about 40 paces (100 ft. [30 m]) behind vehicle, so marker faces traffic approaching from rear.

PLACE MARKERS ON DIVIDED HIGHWAY

1. Place one marker (1) directly behind vehicle, so marker faces traffic approaching from rear.

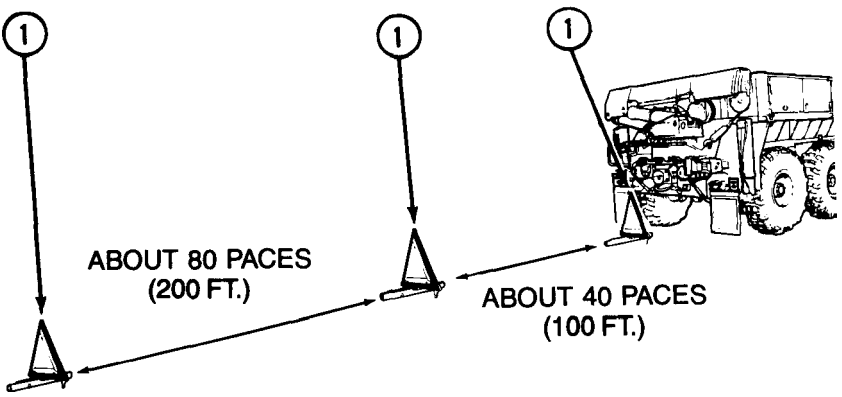


Figure 7.

2. Place second marker (1) about 40 paces (100 ft. [30 m]) behind vehicle, so marker faces traffic approaching from rear.
3. Place third marker (1) about 80 paces (200 ft. [60 m]) behind second marker, so marker faces traffic approaching from rear.

SECURE MARKERS

1. Rotate marker (1) over base (2).

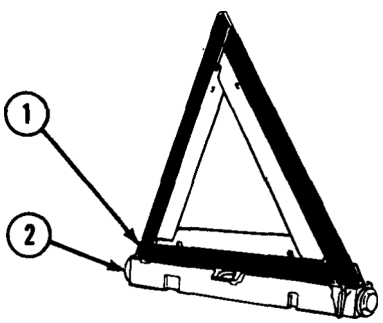


Figure 8.

2. Separate arms (3).

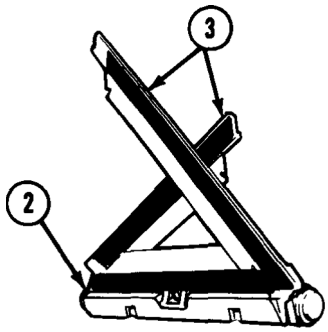


Figure 9.

3. Fold arms (3) down onto base (2).

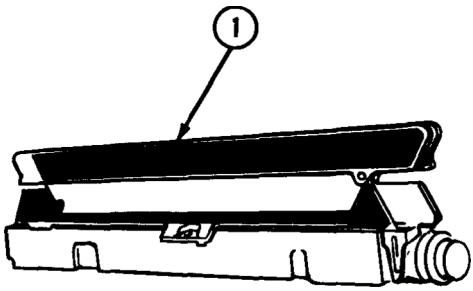


Figure 10.

4. Put markers (1) in case.
5. Put emergency marker kit (4) in stowage brackets (5).

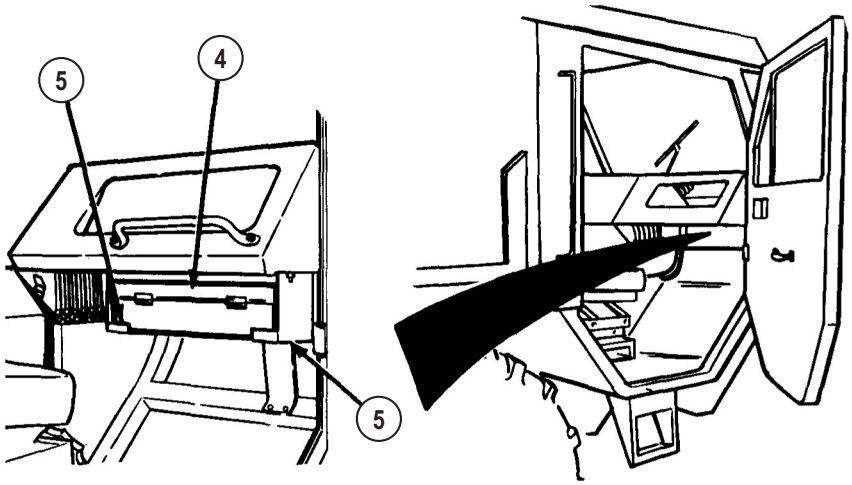


Figure 11.

6. Turn vehicle emergency flashers off. (WP 0072)

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
MANUALLY RELEASE SPRING BRAKES

INITIAL SETUP:

Not Applicable

CHOCK REAR WHEELS

NOTE

This procedure should only be used when vehicle air system is totally inoperative and vehicle cannot be towed with rear end raised by wrecker.

1. Remove wheel chocks (1) from stowage.

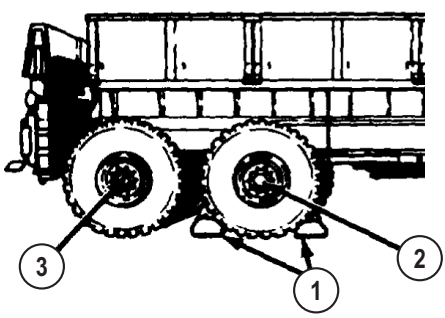
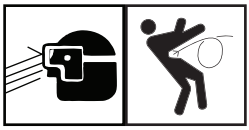


Figure 1.

2. Place wheel chocks (1) in front and back of one wheel on No. 3 (2) or No. 4 (3) axle.

RELEASE BRAKES

WARNING



Ensure brake chamber is caged while releasing brakes. Spring is under 2,500 lbs (1,136 kg) tension. Failure to comply may result in injury or death to personnel.

NOTE

Driver side brake chamber on No. 4 axle is shown. Steps are same for No. 4 axle passenger side and No. 3 axle.

1. Remove dust cap (1) from brake chamber (2).

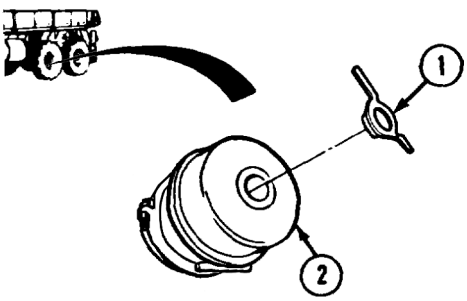


Figure 2.

2. Remove nut (3), washer (4), and release-bolt (5) from bracket (6).

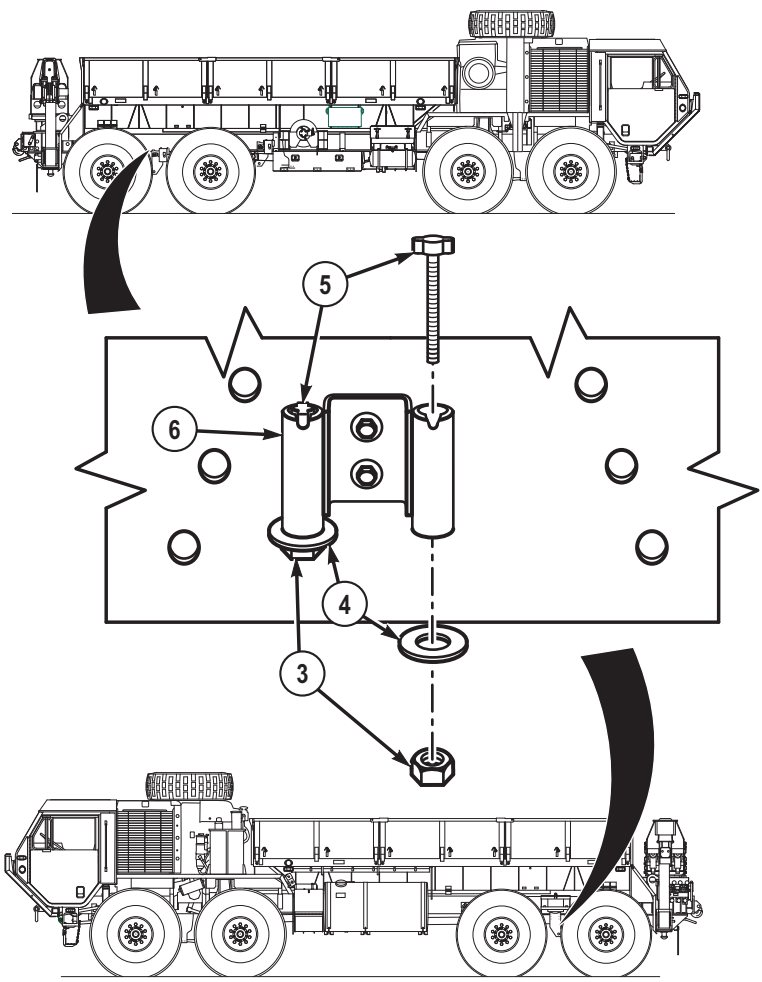


Figure 3.

3. Insert release-bolt (5) into brake chamber (2).

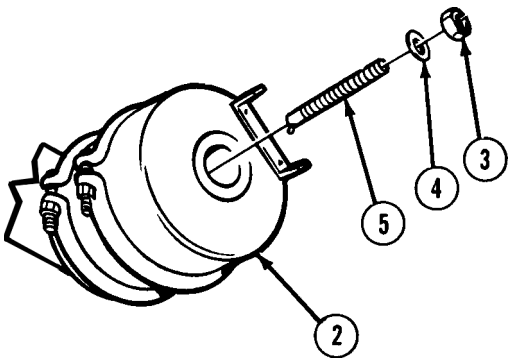


Figure 4.

4. Turn release-bolt (5) 1/4 turn to engage inside brake chamber (2).
5. Install washer (4) and nut (3) on release-bolt (5).
6. Tighten nut (3) until clevis (7) is pulled to rear of brake chamber (2).

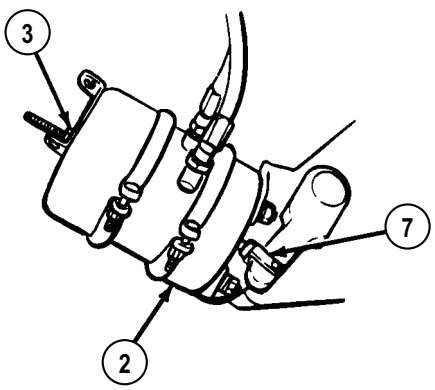


Figure 5.

7. Repeat Steps (1) through (6) to release three remaining spring brakes on No. 3 and No. 4 axles.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
SLAVE START VEHICLE

INITIAL SETUP:

Not Applicable

PREPARE ASSIST VEHICLE

NOTE

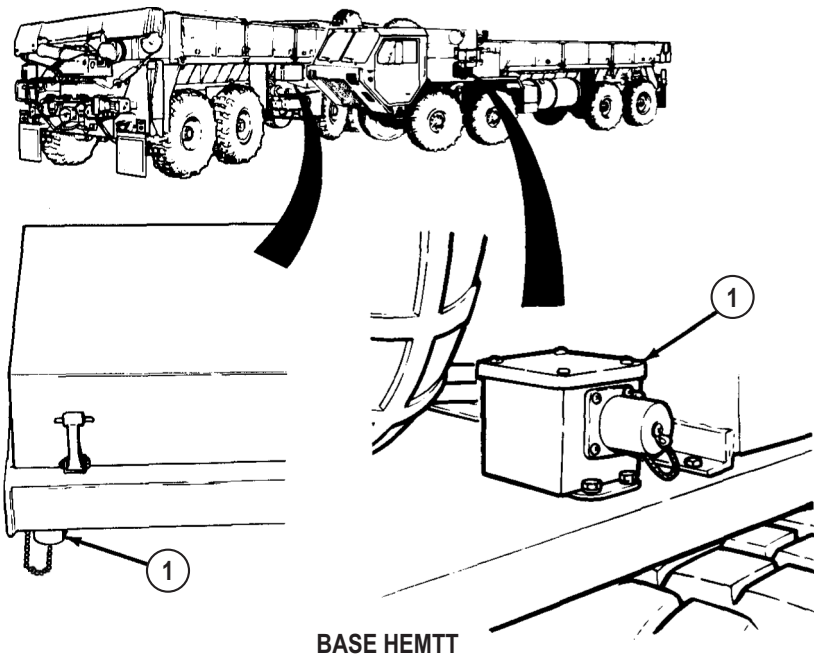
This procedure is a two soldier task.

1. Start engine of assist vehicle. (WP 0043)

NOTE

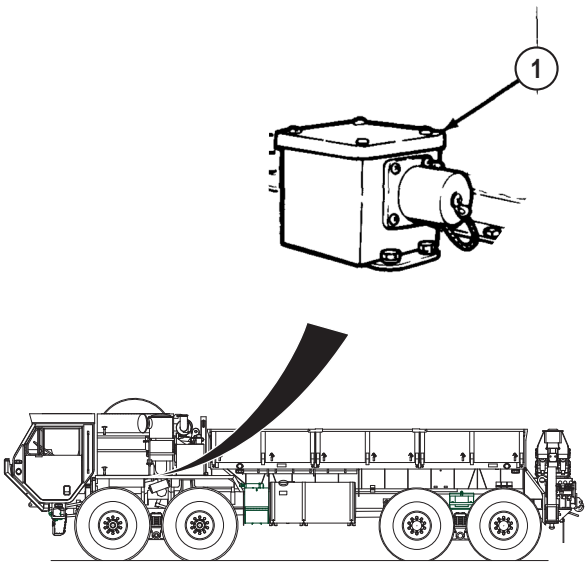
- Model of truck can be determined by information plate on inside of driver side cabin door.
- Base Model HEMTT - Slave receptacle may be located either on battery box or driver side front fender.
- A2 Model HEMTT - Slave receptacle is located on driver side front fender.
- A4 Model HEMTT - Slave receptacle is located on driver side front fender.

2. Move assist vehicle into position beside disabled vehicle so slave receptacles (1) on both vehicles are side by side.



BASE HEMTT

Figure 1.



A2 HEMTT

Figure 2.

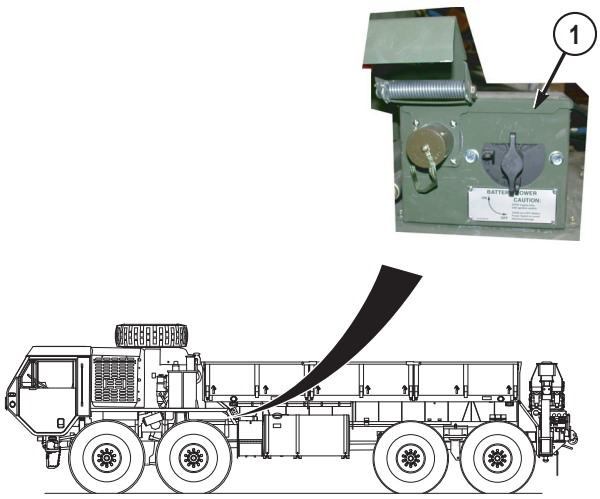


Figure 3.

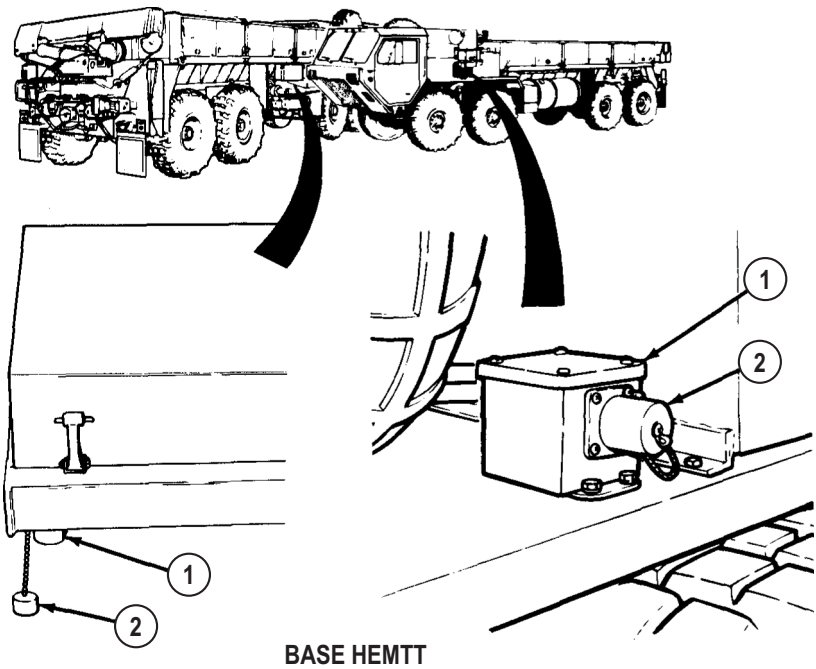
3. Shut off engine of assist vehicle. (WP 0056)

SLAVE START DISABLED VEHICLE

NOTE

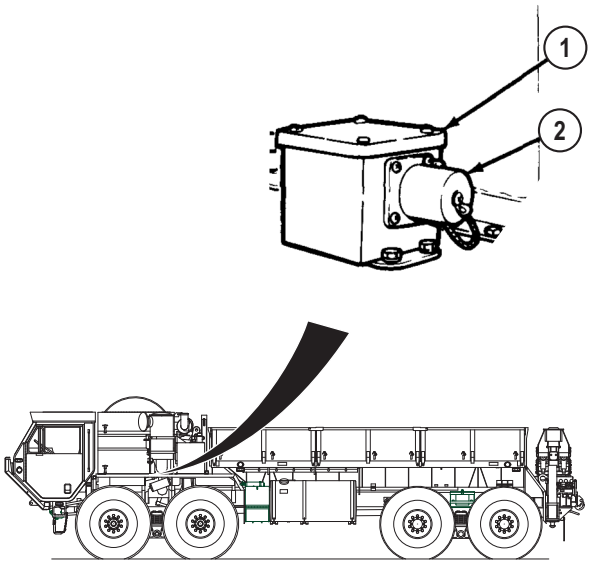
- Model of truck can be determined by information plate on inside of driver side cabin door.
- Base Model HEMTT - Slave receptacle may be located either on battery box or driver side front fender.
- A2 Model HEMTT - Slave receptacle is located on driver side front fender.
- A4 Model HEMTT - Slave receptacle is located on driver side front fender.

1. Remove caps (2) from slave receptacles (1) on both vehicles.



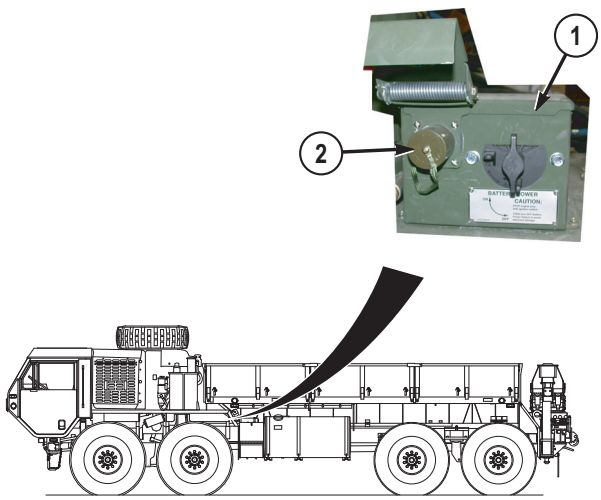
BASE HEMTT

Figure 4.



A2 HEMTT

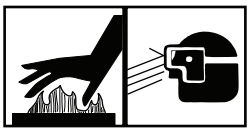
Figure 5.



A4 HEMTT

Figure 6.

WARNING



Hot transmission/oil can cause severe burns. Wear gloves and proper eye protection while performing troubleshooting or maintenance. Failure to comply may result in injury or death to personnel.

NOTE

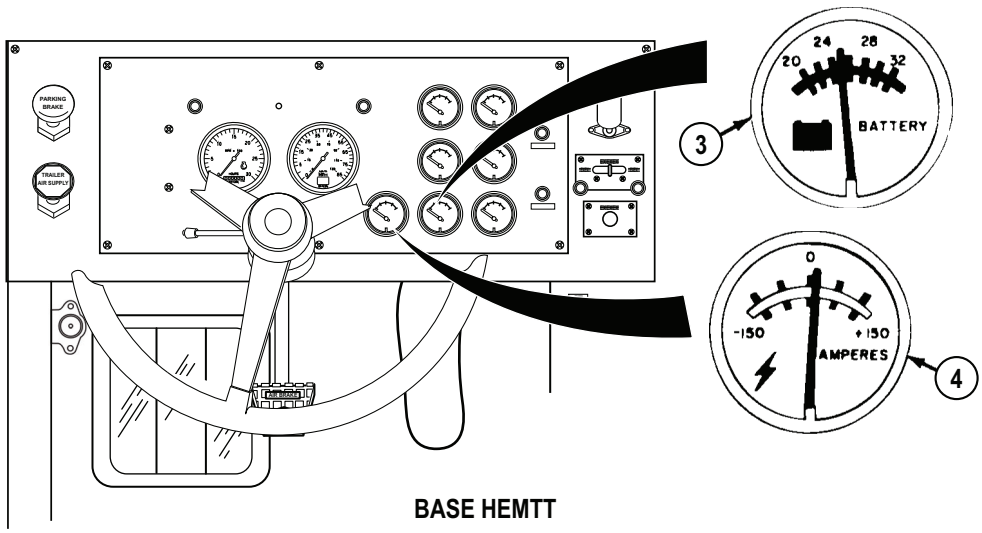
Make sure connectors and receptacles are free from dirt, sand, and debris before use.

2. Remove NATO slave cable from stowage and plug into slave receptacles of both vehicles.
3. Start engine of assist vehicle. (WP 0043)
4. Using the throttle pedal, increase assist vehicle engine speed to more than 1000 rpm, while assistant starts engine of disabled vehicle. (WP 0043)
5. As soon as disabled vehicle engine is running smoothly, remove NATO slave cable from slave receptacles (1) on both vehicles and return to stowage.
6. Install caps (2) on slave receptacles (1) of both vehicles.
7. Move assist vehicle. (WP 0049)
8. Shut off engine of assist vehicle. (WP 0056)

NOTE

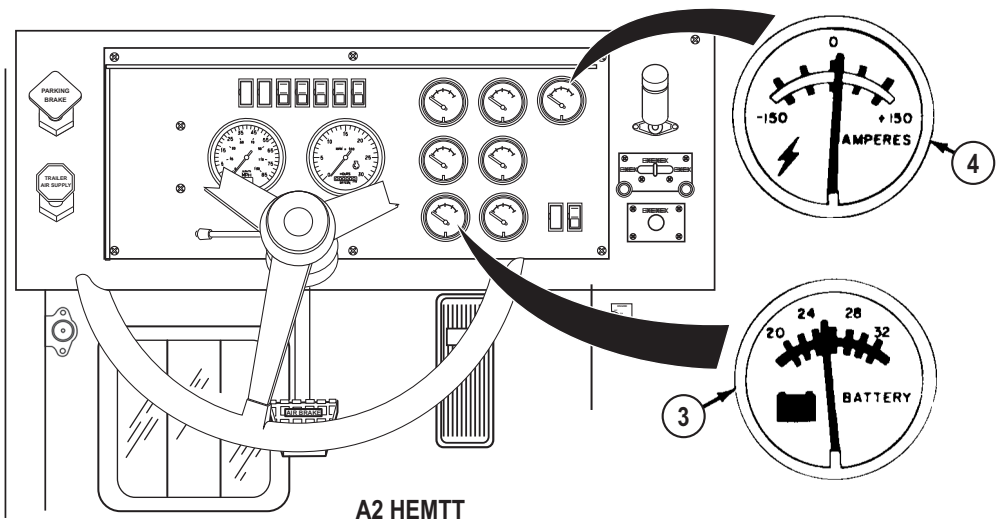
- Model of truck can be determined by information plate on inside of driver side cabin door.
- A4 Model HEMTT does not have an AMPERES gauge. Battery voltage readout is located in top right corner of Liquid Crystal Display (LCD) on instrument panel.
- Gauges are located in different places dependant on model HEMTT. Select correct view below for model HEMTT being serviced.

9. Check BATTERY gauge (3) of disabled vehicle. If BATTERY gauge (3) shows less than 24 volts, notify field level maintenance. If BATTERY gauge (3) shows 24 volts or more, continue with Step (11).



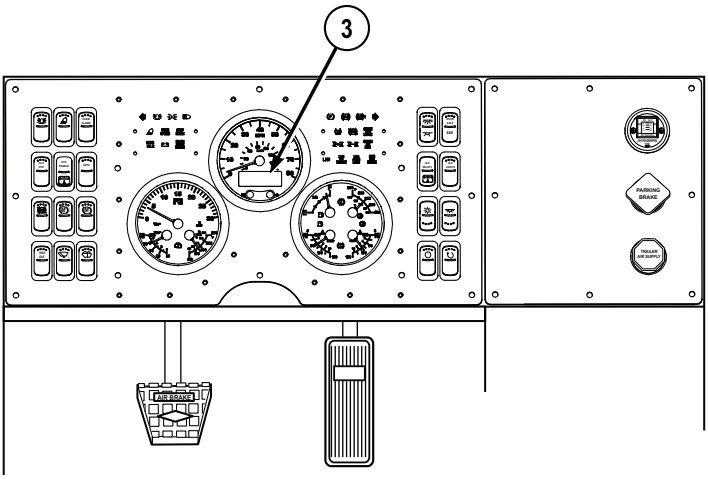
BASE HEMTT

Figure 7.



A2 HEMTT

Figure 8.



A4 HEMTT

Figure 9.

10. Check AMPERES gauge (4) of disabled vehicle (as applicable). If AMPERES gauge shows discharge condition, notify field level maintenance. If AMPERES gauge (4) shows charging, continue operation of vehicle.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
PERFORM IMMEDIATE ACTION FOR LOSS OF HYDRAULIC SYSTEM

INITIAL SETUP:

Not Applicable

NOTE

Steering wheel will be harder to turn after failure of hydraulic system.

1. If failure occurs while driving, continue steering as before.

NOTE

Failure of hydraulic system will stop operation of any crane, winch, or hydraulic motor on vehicle. All cranes and winches are equipped with automatic locking mechanisms to hold cranes and winches in position they were in before hydraulics failed.

2. Do not try to continue operation of any crane or winch.
3. Do not try to repair hydraulic system. Notify your supervisor.
4. Perform fuel servicing using auxiliary pump. (WP 0110)
5. Notify field level maintenance.

END OF TASK

END OF WORK PACKAGE

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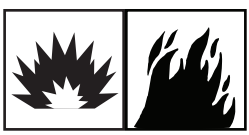
OPERATOR MAINTENANCE
PERFORM FUEL SERVICING USING AUXILIARY PUMP

INITIAL SETUP:

Not Applicable

PREPARATION

WARNING



To prevent fire or explosion, do not allow smoking, flame, sparks, and hot or glowing objects within 50 ft. (15 m) of vehicle. Read and follow all safety precautions in FM 10-67-1. Failure to comply may result in injury or death to personnel.

NOTE

- This procedure should be used to perform fuel servicing of land vehicles when tanker primary pump cannot be used. Whenever possible, use tanker primary pump for fuel handling operations.
- Refer to FM 10-67-1 for general operating instructions for tanker vehicles.
- If equipment malfunctions, check that all steps of procedure have been performed in proper sequence. If equipment still malfunctions, perform troubleshooting.

1. If primary pump is inoperative, notify field level maintenance as soon as possible.
2. Prepare tanker for operation. (WP 0078)
3. Connect SR1 and SR2 static cables (1) to grounding devices and vehicle being serviced.

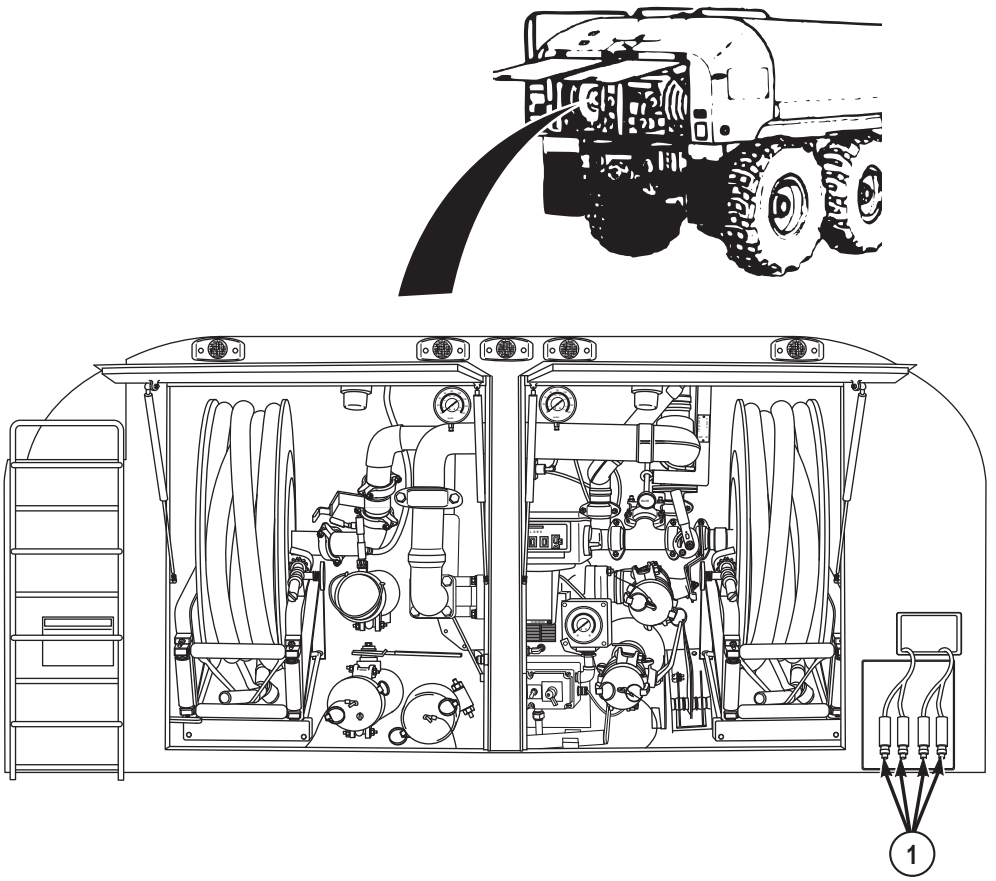


Figure 1.

FUEL SERVICING

NOTE

Driver side servicing hose is shown in this procedure. Procedure for using passenger side servicing hose is same except where noted.

1. Disengage hose reel tension knob (1).

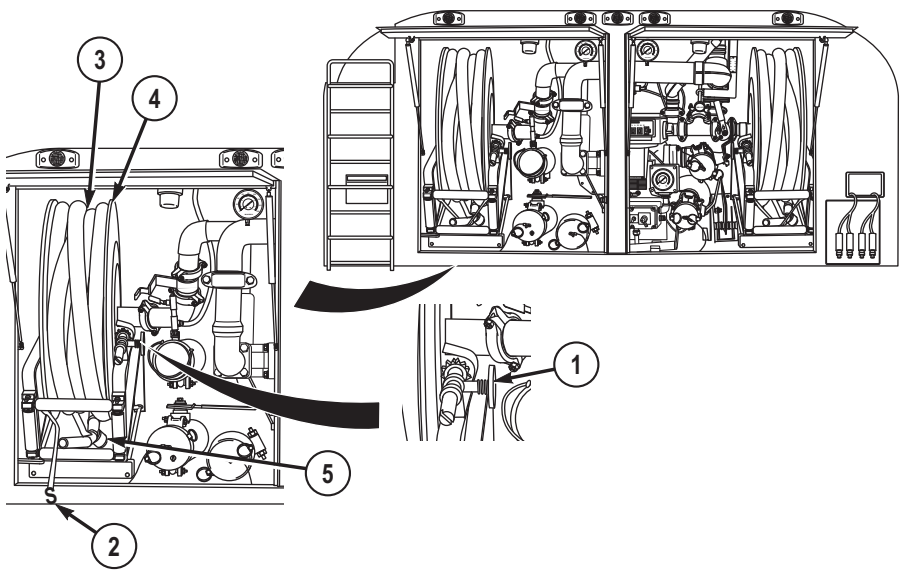


Figure 2.

2. Remove rubber tie down strap (2) to release fuel service nozzle (5) from stowage position.
3. Pull servicing hose (3) completely out from reel (4).
4. Engage hose reel tension knob (1).

NOTE

- Use fuel service nozzle for fueling land vehicles. Use over-wing nozzle and reducer adapter for over-wing fueling of aircraft.
- Reducer adapter is used with over-wing nozzle only. If not fueling an aircraft and/or using the over-wing fueling nozzle, skip to Step (8).

5. Remove fuel service nozzle (5) from servicing hose (3).

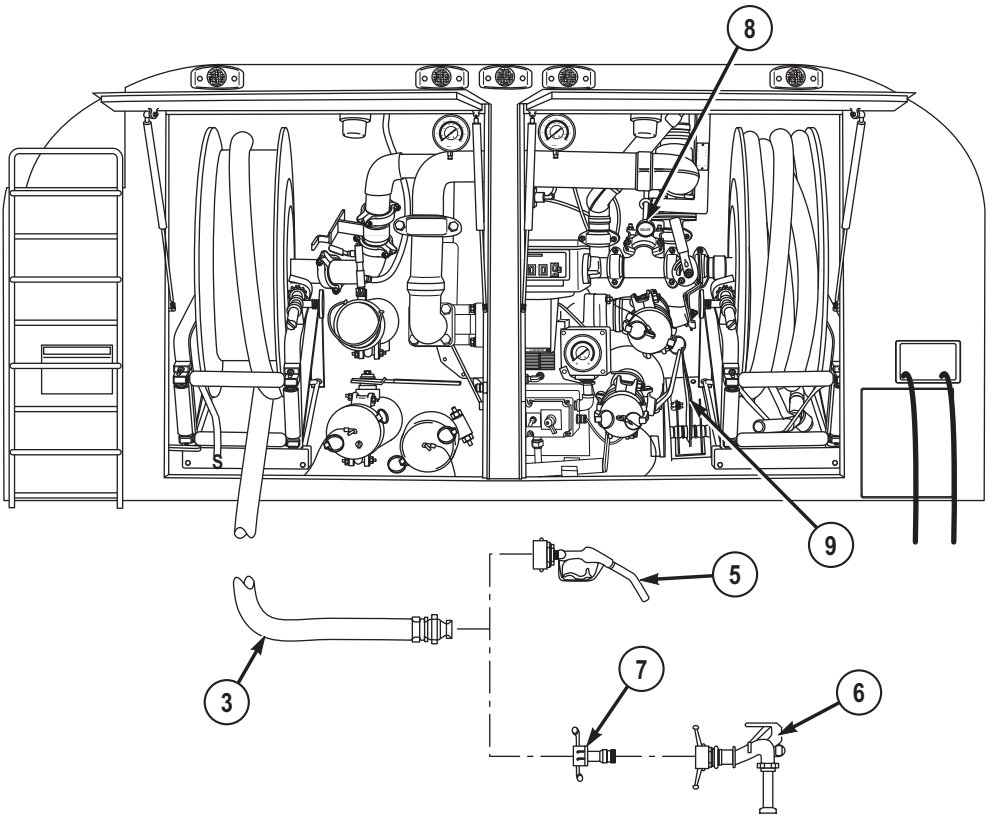


Figure 3.

6. Stow fuel service nozzle (5). Remove over-wing nozzle (6) and reducer adapter (7) from stowage.
7. Install reducer adapter (7) on servicing hose (3). Install over-wing nozzle (6) on reducer adapter (7).
8. Push in V6 FUEL/DEFUEL VALVE control rod (8).
9. Pull back MC MANUAL CONTROL EM VALVE lever (9).

NOTE

V3 SUCTION LINE VALVE is located inside left frame rail above rear end of air tank in front of No. 3 axle.

10. Set V3 SUCTION LINE VALVE handle (10) to CLOSE position.

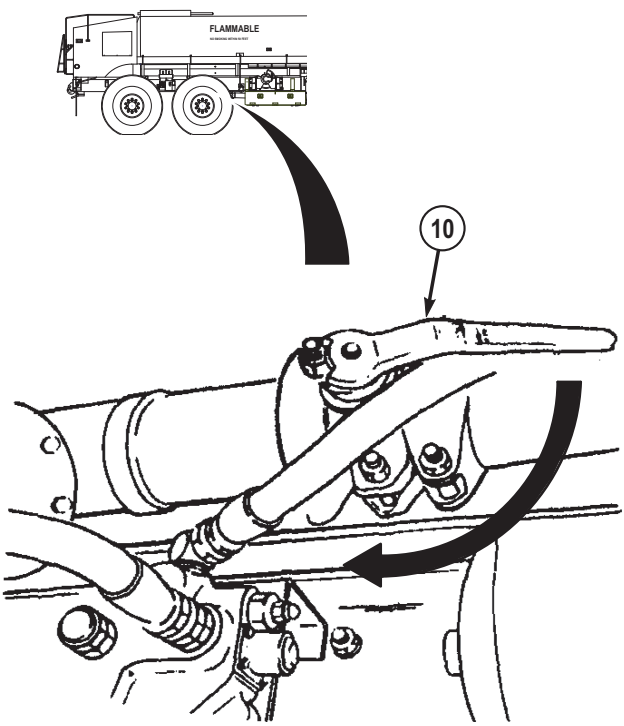


Figure 4.

NOTE

V8 REEL VALVE controls fuel flow rate when passenger side servicing hose is used for fueling.

11. Adjust V7 REEL VALVE (11) to full open position.

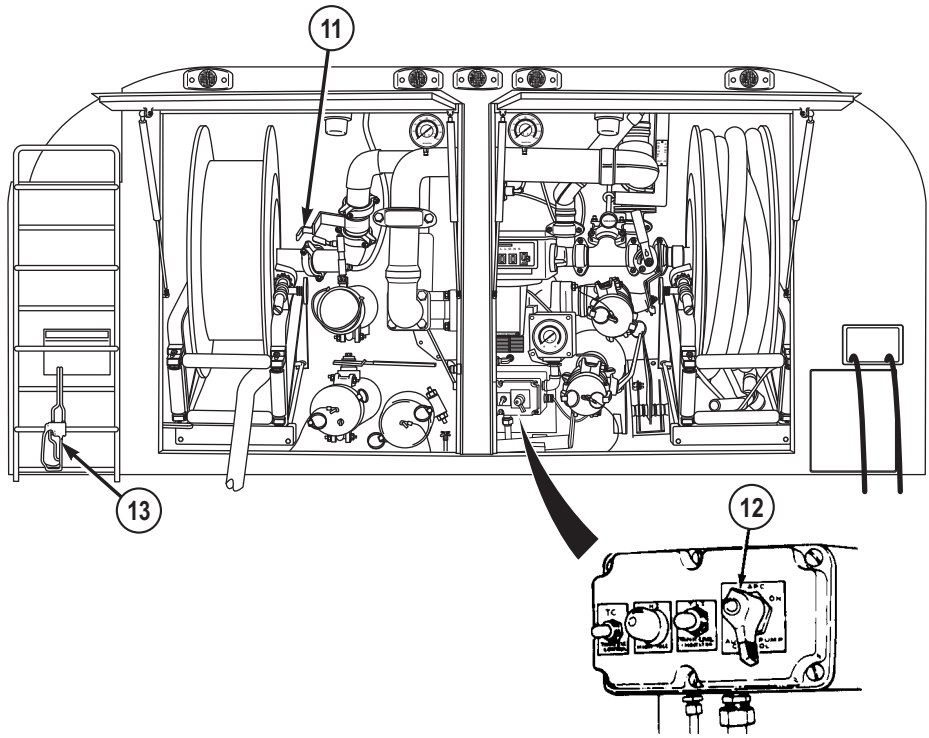


Figure 5.

12. Set APC AUXILIARY PUMP CONTROL valve (12) to ON.
13. Pull out HAV HAND ACTUATED CONTROL valve (13).
14. Remove fuel filler cover from receiving vehicle or aircraft.
15. Insert fuel service nozzle (5) or over-wing nozzle (6) through fuel filler of receiving vehicle or aircraft.

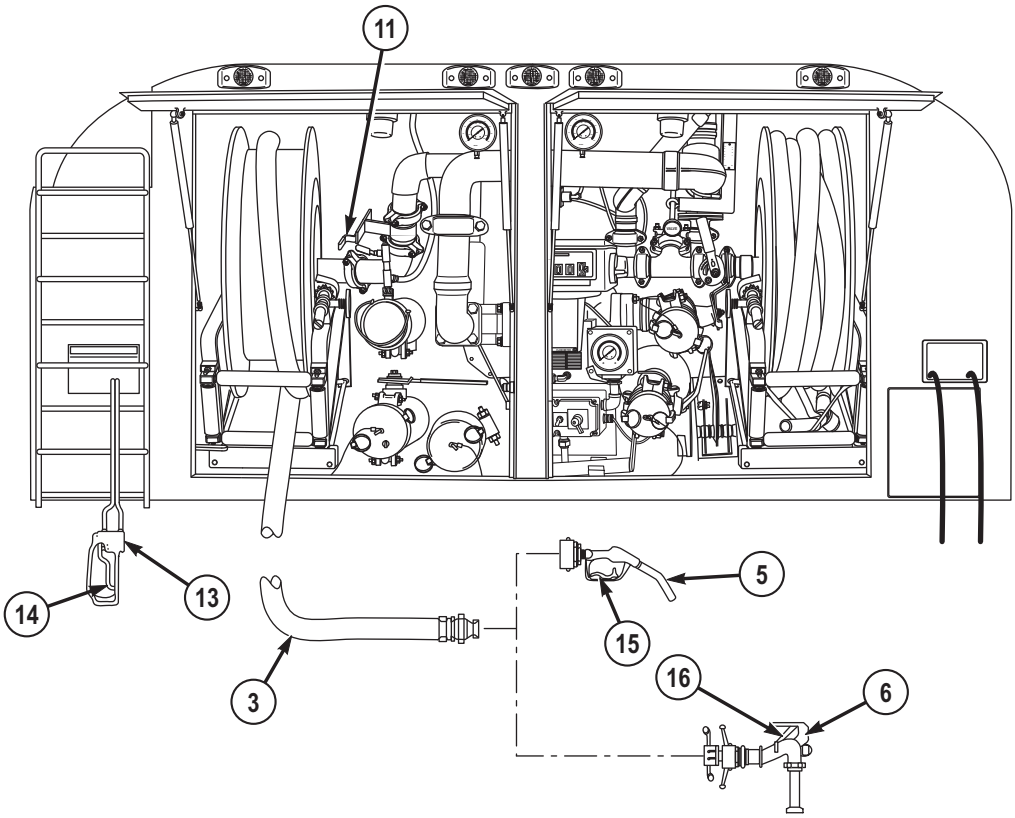


Figure 6.

NOTE

HAV HAND ACTUATED CONTROL valve must be open for fuel to flow.

16. Squeeze and hold lever (14) to open HAV HAND ACTUATED CONTROL valve (13).
17. Squeeze and hold lever (15) on fuel service nozzle (5) or lever (16) on over-wing nozzle (6) to start fuel flow.
18. When receiving vehicle or aircraft tank is filled to desired level, release lever (15 or 16) and HAV HAND ACTUATED CONTROL valve lever (14).
19. Remove fuel service nozzle (5) or over-wing nozzle (6) from receiving vehicle or aircraft fuel filler.
20. Install fuel filler cover on receiving vehicle or aircraft.
21. Close V7 REEL valve (11).

22. Drain fuel from servicing hose (3) by squeezing and holding lever (15) on fuel service nozzle (5) or lever (16) on over-wing nozzle (6) and dispose of fuel in accordance with unit SOP.
23. Set APC AUXILLARY PUMP CONTROL switch (12) to APC to shut off.

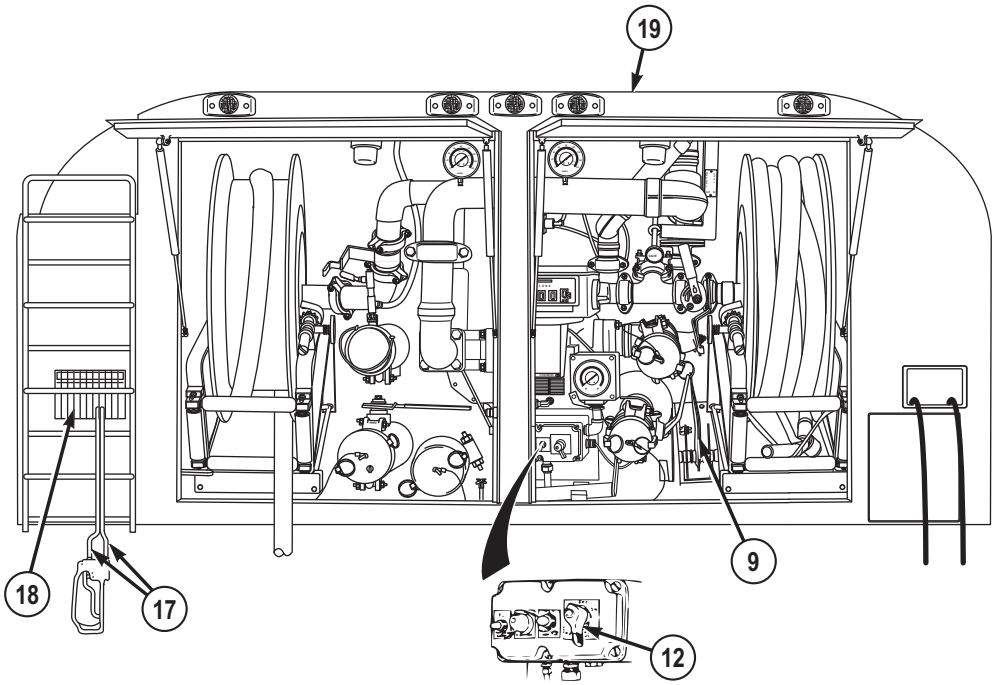


Figure 7.

24. Push MC MANUAL CONTROL EM VALVE lever (9) forward.

CAUTION

Carefully guide hoses back onto reel through access hole. Failure to do so may result in damage to equipment.

25. Let HAV HAND ACTUATED CONTROL valve hoses (17) rewind onto reel (18) and stow inside pump module (19).

NOTE

Reducer adapter is used with over-wing nozzle only. If over-wing nozzle was not used, skip to Step (29).

26. Remove over-wing nozzle (6) from reducer adapter (7).

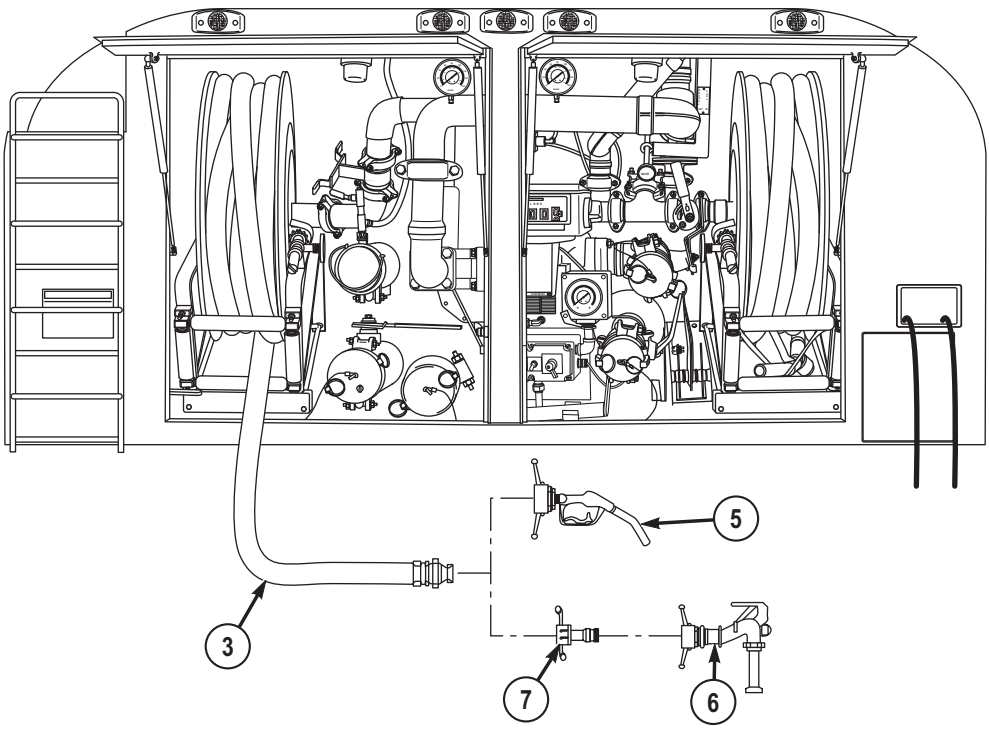


Figure 8.

27. Remove reducer adapter (7) from servicing hose (3).
28. Return over-wing nozzle (6) and reducer adapter (7) to stowage.
29. Remove hand crank handle (20) from stowage.

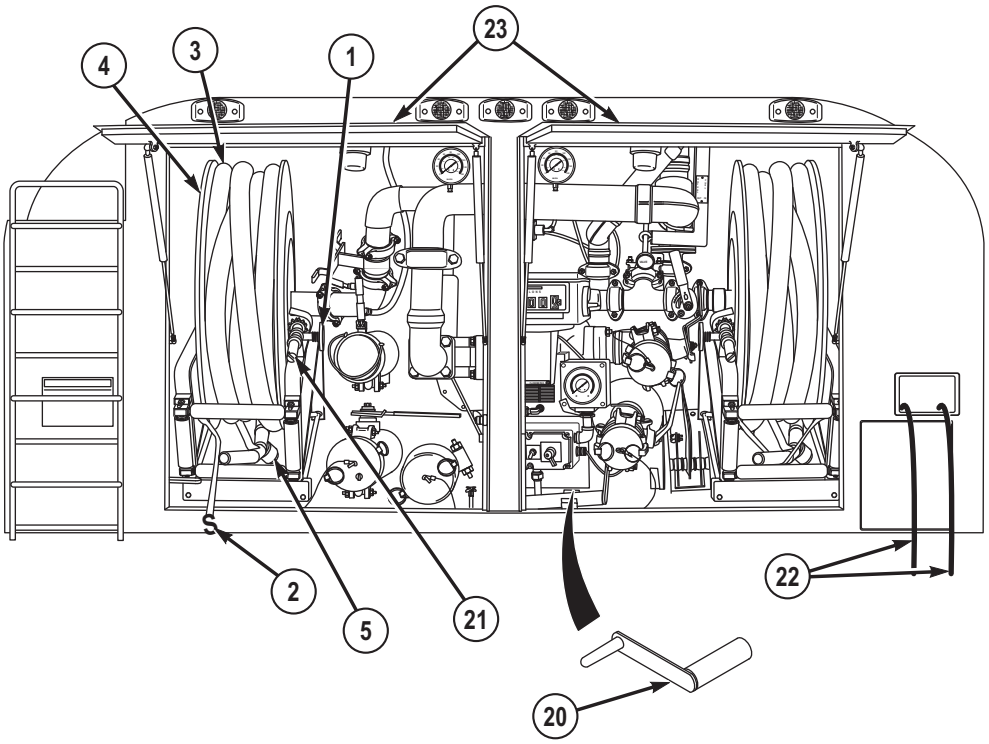


Figure 9.

30. Release hose reel tension knob (1).
31. Insert hand crank handle (20) onto crankshaft (21).
32. Turn hand crank handle (20) to rewind servicing hose (3) onto reel (4).
33. Place fuel service nozzle (5) in stowage position and secure with rubber tie down strap (2).
34. Engage hose reel tension knob (1).
35. Return hand crank handle (20) to stowage.
36. Disconnect and rewind SR1 and SR2 static cables (22).
37. Close tanker module doors (23).

NOTE

V3 SUCTION LINE VALVE is located inside left frame rail above rear end of air tank in front of No. 3 axle.

38. Set V3 SUCTION LINE VALVE handle (10) to OPEN position.

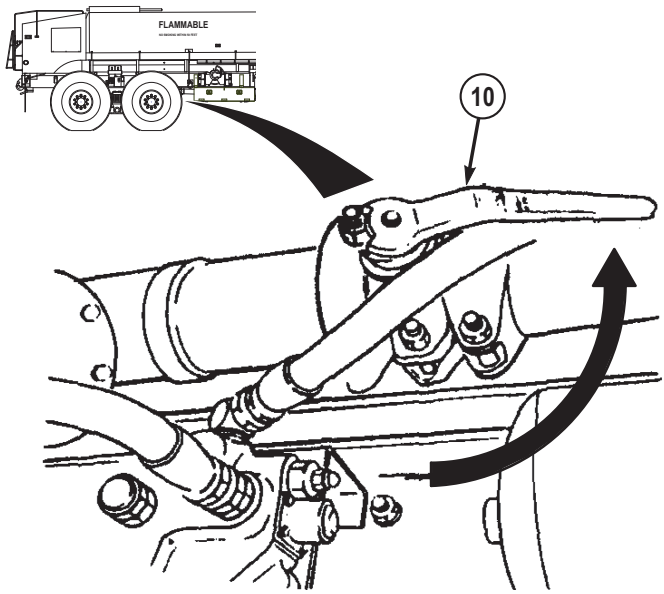


Figure 10.

END OF TASK

END OF WORK PACKAGE

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OPERATOR MAINTENANCE
LIMP HOME/TRANSMISSION FAULT

INITIAL SETUP:

Not Applicable

TRANSMISSION WILL NOT SHIFT INTO OR OUT OF GEAR (CHECK TRANSMISSION INDICATOR ILLUMINATED)

CAUTION

If transmission range selector flashes current range selection while operating vehicle (shift selection is inhibited), **DO NOT SHUT OFF ENGINE** or attempt to change range selection. Shutting off engine may result in the inability of selecting a drive range at startup, and diagnostic data may be lost. Move vehicle to safe place and notify field level maintenance as soon as possible.

NOTE

When transmission oil is below 19°F (-7°C), the only gears available are R (reverse), N (Neutral), and 3 (third gear range) when D (drive) is selected. The remaining gears in D (drive) will not be available until transmission oil in sump warms above 19°F (-7°C).

1. If check transmission indicator (1) illuminates when operating vehicle, apply service brake pedal (2) and stop vehicle.

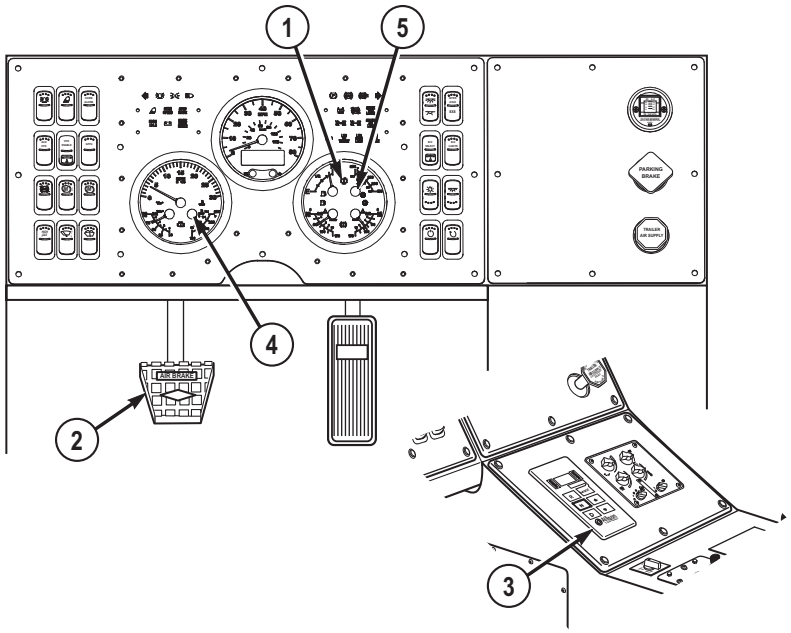


Figure 1.

NOTE

DO NOT shift transmission to N (neutral).

2. Set transmission range selector (3) to R (reverse):
   a. If vehicle DOES shift into R (reverse):
      (1) Set transmission range selector (3) to appropriate position.
      (2) Continue with mission, and notify field level maintenance when mission is completed.
   b. If vehicle DOES NOT shift into R (reverse):

NOTE

The operator must be aware that once the engine is turned off, the vehicle will not be operable until the problem is corrected.

(1) The transmission may be locked into specific gear, and may not come out of that gear until the engine is turned off.

WARNING



When operating the vehicle in the transmission limp home mode, the operator must not rely on the parking brake to hold the vehicle in place. The service brakes must also be applied. Failure to comply may result in injury or death to personnel.

NOTE

The operator should consider the following guidelines carefully with regard to type of mission, environment, terrain, etc., when deciding on whether to continue the mission, deadline, or return vehicle to field level maintenance.

(2) No additional damage to the transmission will occur. The operator can continue to operate vehicle in the limp home mode and complete mission. However, the operator must be aware of the following guidelines:

(a) DO NOT shut off engine until the decision is made to deadline vehicle. Once the engine is shut off, the vehicle will not be operable until the problem is corrected.

(b) As the engine cannot be turned off and the transmission is locked into gear, the operator will not be able to leave the cab until vehicle is deadlined.

(c) The vehicle will not be able to operate in R (reverse).

(d) Depending on gear range the transmission is locked into, the operator may not be able to drive vehicle up steep grades. (WP 0053)

(e) The service brake pedal (2) may need to be applied slightly earlier than normal when stopping the vehicle.

(f) Depending upon gear range the transmission is locked into and the terrain the vehicle is operating in, the engine and/or transmission may overheat. The operator must closely monitor the engine coolant temperature gauge (4) and the transmission oil temperature gauge (5).

CAUTION

If overheating occurs when operating in the transmission limp home mode, the operator should stop the vehicle (do not shut off engine), and allow the transmission and engine to cool down to normal operating levels. If the engine and transmission do not cool down, or overheating reoccurs, the operator should

shut off engine and notify field level maintenance. Failure to comply may result in damage to equipment.

(g) Notify field level maintenance as soon as possible.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
STOWAGE AND SIGN GUIDE

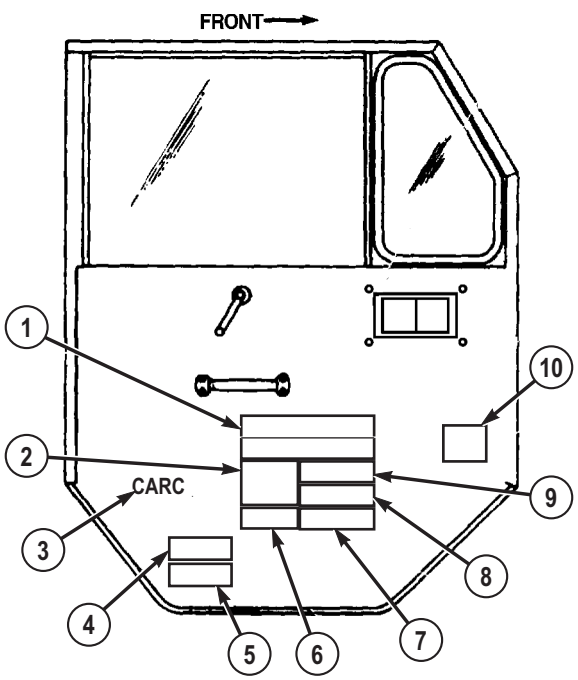
SCOPE

This work package shows locations for data plates, decals, and stencils that are required to be in place on the HEMTT series vehicles.

GENERAL

The following figures show the location of metal signs, decals, and stencils used on the vehicle. Most of these signs and stencils contain cautions or information needed to operate the vehicle safely. For stowage locations of Components Of End Item (COEI) and Basic Issue Items (BII), refer to Components of End Item and Basic Issue Items tables. (WP 0158)

Table 1. Inside Driver Side Door.

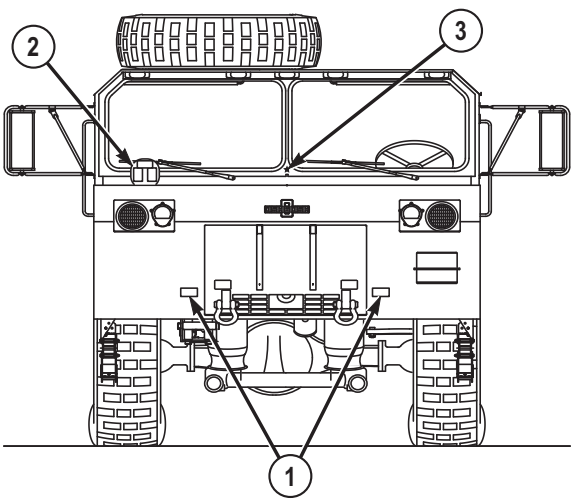


INDEX	DECAL/PLATE/STENCIL

Table 1. Inside Driver Side Door. - Continued

1	Manufacturer's Certification Information
2	Parts Data
3	“CARC” Stencil
4	Overhaul Data (included on all vehicles)
5	Noise Exemption Decal
6	Rustproofing CAUTION
7	Rustproofing Data
8	Warranty Information
9	Tire Inflation Data
10	Shipping Data

Table 2. Front Exterior.

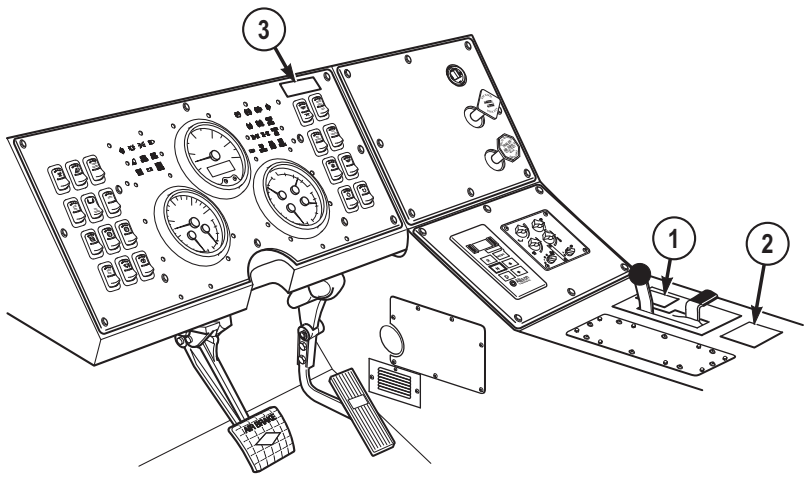


INDEX	PLACARD/STENCIL

Table 2. Front Exterior. - Continued

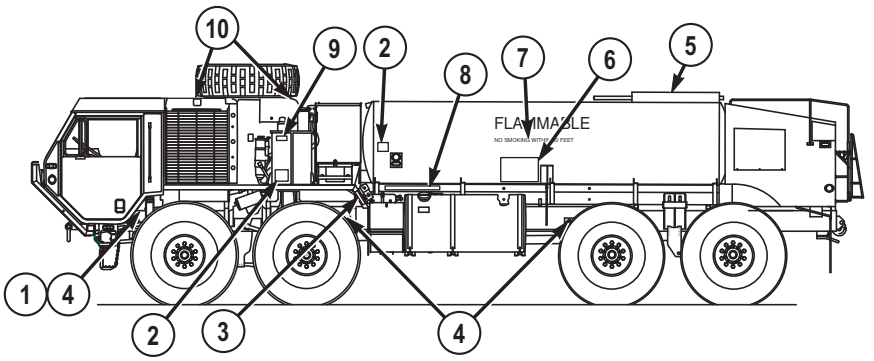
1	”TIEDOWN” Stencil
2	Sign Kit/Weight Indicator
3	US Army Star Stencil

Table 3. M978A4 Tanker Cabin.



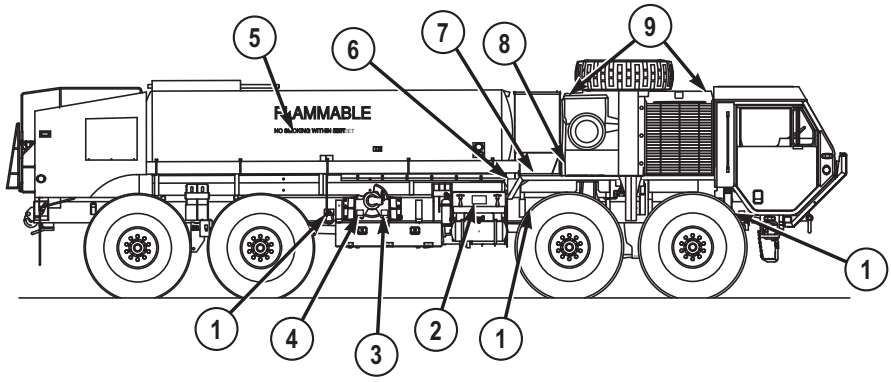
INDEX	DECAL/PLATE
1	Transfer Case Data Plate
2	Self-Recovery Winch Data Plate (vehicles equipped with self-recovery winch only)
3	Traction Control Data Decal

Table 4. M978A4 Tanker Driver Side Exterior.



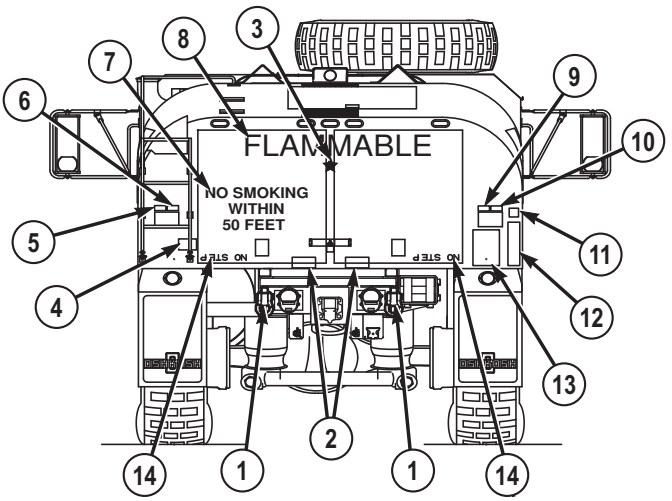
INDEX	DECAL/PLACARD/PLATE/STENCIL
1	Vehicle Identification Number (VIN) Placard
2	CAUTION Decal (hearing protection required)
3	”24V” Stencil
4	”TIEDOWN” Stencil
5	”WARNING OPEN SLOWLY TO RELIEVE PRESSURE” Stencil (on manhole cover latch)
6	”EMERGENCY FUEL SHUTOFF” Stencil
7	”FLAMMABLE NO SMOKING WITHIN 50 FEET” Stencil
8	Certification Plate
9	”FULL COLD” Stencil
10	”NO STEP” Stencil (multiple on exhaust and engine access panels)

Table 5. M978A4 Tanker Passenger Side Exterior.



INDEX	DECAL/PLACARD/PLATE/STENCIL
1	”TIEDOWN” Stencil
2	CAUTION Decal (hearing protection required)
3	WARNING (self-recovery winch) Plate (vehicles equipped with self-recovery winch only)
4	Self-Recovery Winch Data Plate (vehicles equipped with self-recovery winch only)
5	”FLAMMABLE NO SMOKING WITHIN 50 FEET” Stencil
6	WARNING and Instructions for Tire Carrier Pump (2 placards total)
7	CAUTION (hydraulic selector valve) Decal (vehicles equipped with self-recovery winch only)
8	SUSPENSION DUMP VALVE Placard
9	”NO STEP” Stencil (multiple on exhaust and engine access panels)

Table 6. M978A4 Tanker Rear Exterior.



INDEX	PLACARD/PLATE/STENCIL
1	”SLING POINT” and “TIEDOWN” Stencils (one each per side)
2	”CAUTION SPRING LOADED DOOR” Stencil
3	US Army Star Stencil
4	”CAUTION DO NOT ACTIVATE PUMP WITH ENGINE SPEED ABOVE IDLE” Placard (includes instructions for fuel pump engagement lever)
5	”HAV HAND ACTUATED CONTROL” Placard
6	”HAVR HAND ACTUATED CONTROL REEL” Placard
7	”NO SMOKING WITHIN 50 FEET” Stencil
8	”FLAMMABLE” Stencil
9	”SRI STATIC REEL” Placard
10	”SR2 STATIC REEL” Placard

Table 6. M978A4 Tanker Rear Exterior. - Continued

11	”CAUTION DO NOT ACTUATE V1 VALVE WITH PUMP ENGAGED” Placard
12	Tanker Module Operation Instructions Placard
13	Fuel Routing Diagram Plate
14	”NO STEP” Stencil

Table 7. M978A4 Miscellaneous Decals/Placards/Plates/Stencils.

LOCATION	QUANTITY
Axle Housing	4
Carrier	4
Transfer Case	1
Engine	1
Transmission	1
Total	11

END OF WORK PACKAGE

CHAPTER 3

TROUBLESHOOTING PROCEDURES

OPERATOR MAINTENANCE
BUZZER SOUNDS AND AIR INDICATOR IS LIT

INITIAL SETUP:

Equipment Condition
Engine OFF. (WP 0056)
Parking brakes applied. (WP 0055)
Wheels chocked. (WP 0073)

TROUBLESHOOTING PROCEDURE
BUZZER SOUNDS AND AIR INDICATOR IS LIT

TEST 1 - Is air pressure greater than 75 psi (517 kPa)?

1. Start engine, (WP 0043)and allow air pressure to build.
2. Check air pressure.

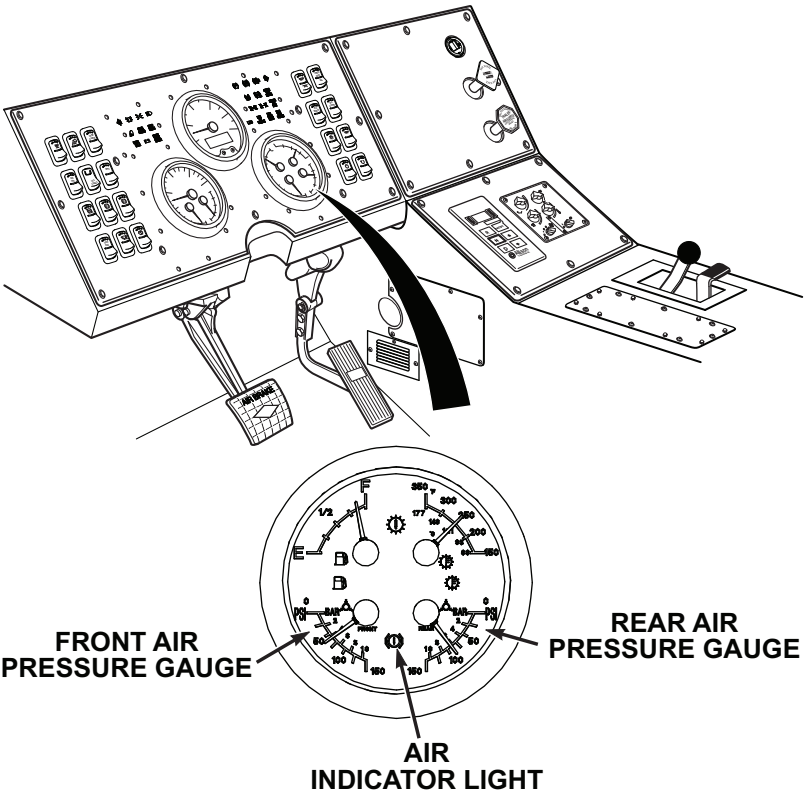


Figure 1.

3. Turn engine OFF. (WP 0056)

CONDITION/INDICATION

Is air pressure greater than 75 psi (517 kPa)?

DECISION

No - Test 2 - Are any petcock valves open?
Yes - Notify Supervisor.

TEST 2 - Are any petcock valves open?

1. Check if any air reservoir petcock/drain valves are open. If valve(s) open, close petcock (s).

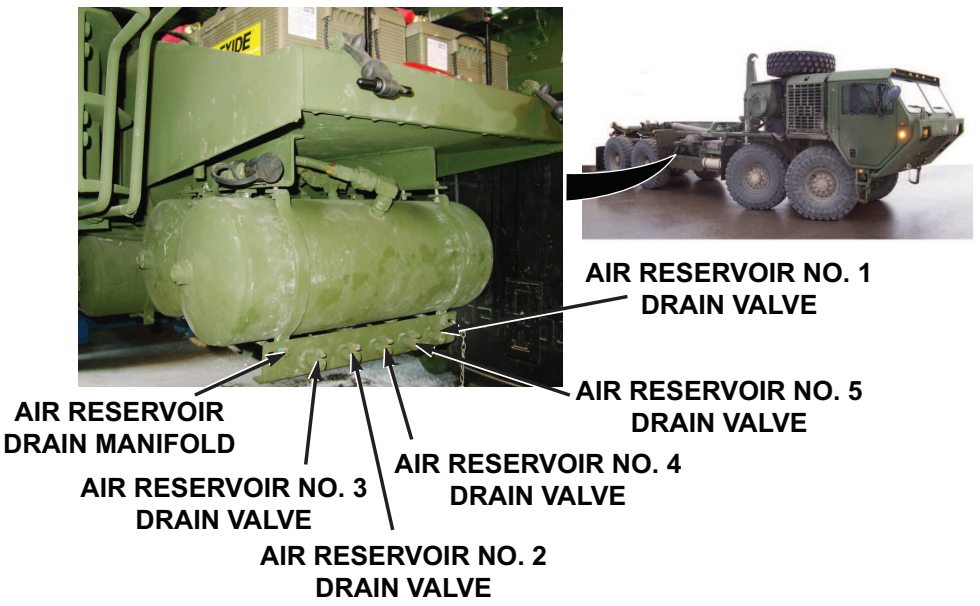


Figure 2.

CONDITION/INDICATION

Are any petcock valves open?

DECISION

Petcock(s) open - Test 6 - Does buzzer stop, and air indicator light extinguish?
Petcock's closed - Test 3 - Is trailer air supply control in correct position?

TEST 3 - Is trailer air supply control in correct position?

1. Check that trailer air supply control is pulled out (OFF position) if no trailer is coupled, and pushed in (ON position) if trailer is coupled.
2. If trailer air control is found in an incorrect position, set to correct position.

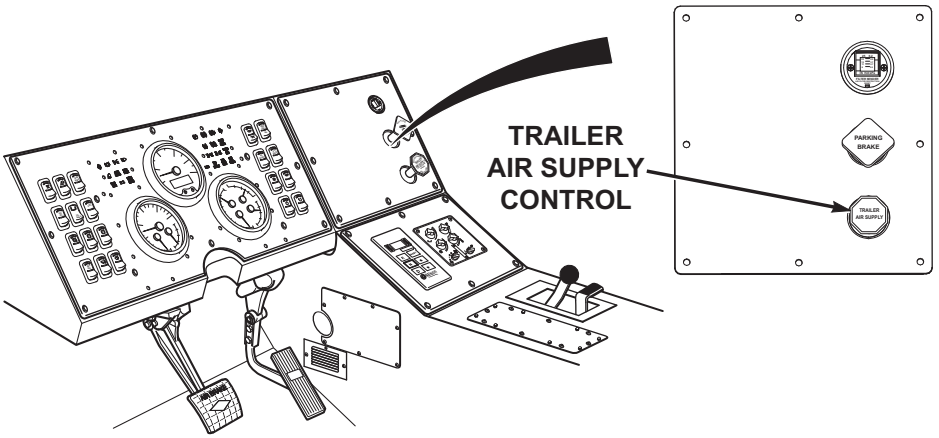


Figure 3.

CONDITION/INDICATION

Is trailer air supply control in correct position?

DECISION

No - Test 6 - Does buzzer stop, and air indicator light extinguish?
Yes - Test 4 - Does air reservoir, hoses, lines, fittings, and/or connectors leak?

TEST 4 - Does air reservoir, hoses, lines, fittings, and/or connectors leak?

1. Check air reservoir, hoses, lines, fittings, and/or connectors for leaks. Tighten any leaks found.

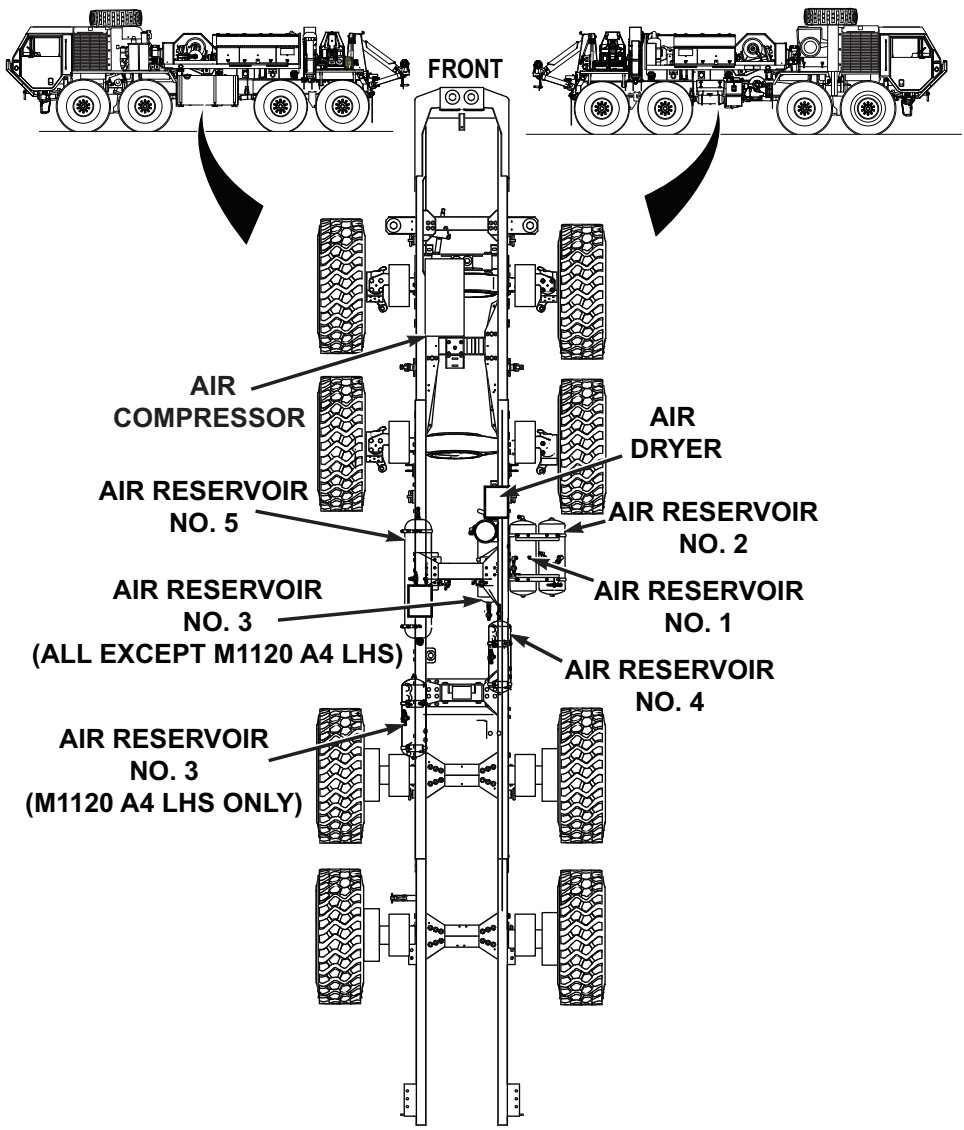


Figure 4.

CONDITION/INDICATION

Does air reservoir, hoses, lines, fittings, and/or connectors leak?

DECISION

Air reservoir, hoses, lines and/or connectors leak. - Notify Supervisor. Test 6 - Does buzzer stop, and air indicator light extinguish?Notify Supervisor.
Air reservoir, hoses, lines, fittings, and/or connectors OK - Test 5 - Does buzzer sound, and air indicator light illuminate when trailer is disconnected?

TEST 5 - Does buzzer sound, and air indicator light illuminate when trailer is disconnected?

1. If trailer is coupled, disconnect trailer from vehicle.

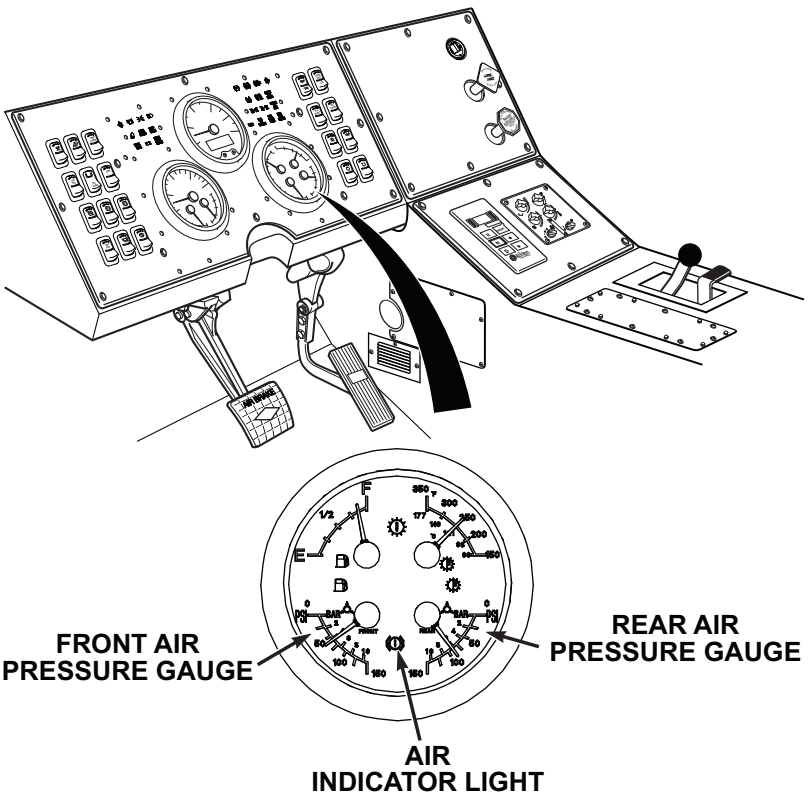


Figure 5.

2. Start engine, (WP 0043) and allow air pressure to build.
3. Check if buzzer continues to sound, and if air indicator light is illuminated.
4. Turn engine off. (WP 0056)

CONDITION/INDICATION

Does buzzer sound, and air indicator light illuminate when trailer is disconnected?

DECISION

No - Notify Supervisor.
Yes - Problem corrected.

TEST 6 - Does buzzer stop, and air indicator light extinguish?

1. Start engine, (WP 0043) and allow air pressure to build.
2. Check that buzzer does not sound, and air indicator light is off.

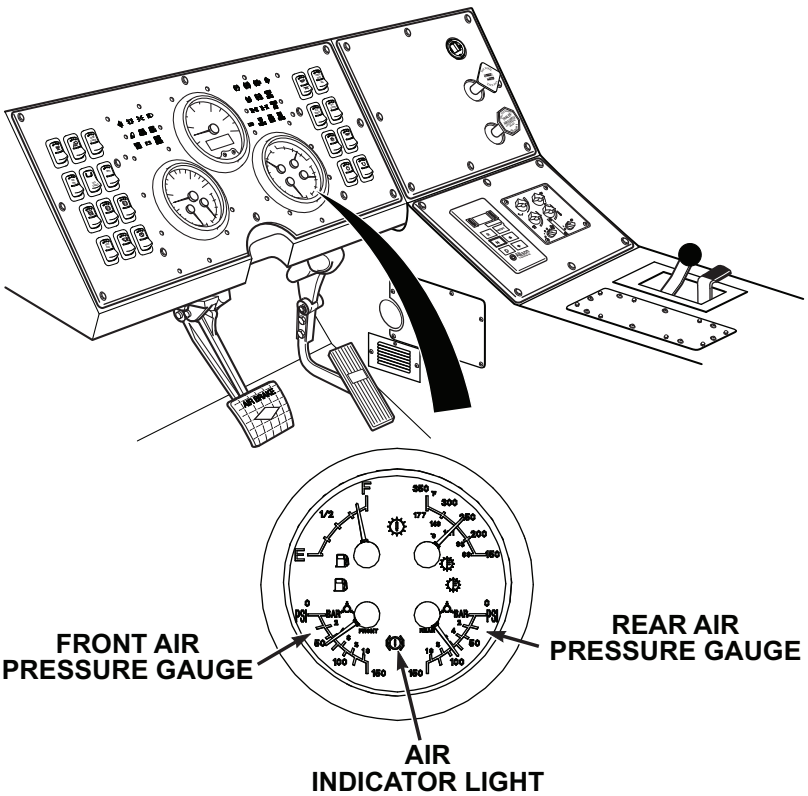


Figure 6.

3. Turn engine off. (WP 0056)

CONDITION/INDICATION

Does buzzer stop, and air indicator light extinguish?

DECISION

No - Notify Supervisor.
Yes - Problem corrected.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
AIR SYSTEM LOSES PRESSURE DURING OPERATION

INITIAL SETUP:

Equipment Condition
Engine OFF. (WP 0056)
Parking brakes applied. (WP 0055)
Wheels chocked. (WP 0073)

TROUBLESHOOTING PROCEDURE
AIR SYSTEM LOSES PRESSURE DURING OPERATION

TEST 1 - Are any petcock valves open?

WARNING



Caution the hose connections could be under pressure be sure to wear eye protection to avoid personal injury.

1. Check to make sure all five air reservoir petcock/drain valves are closed.

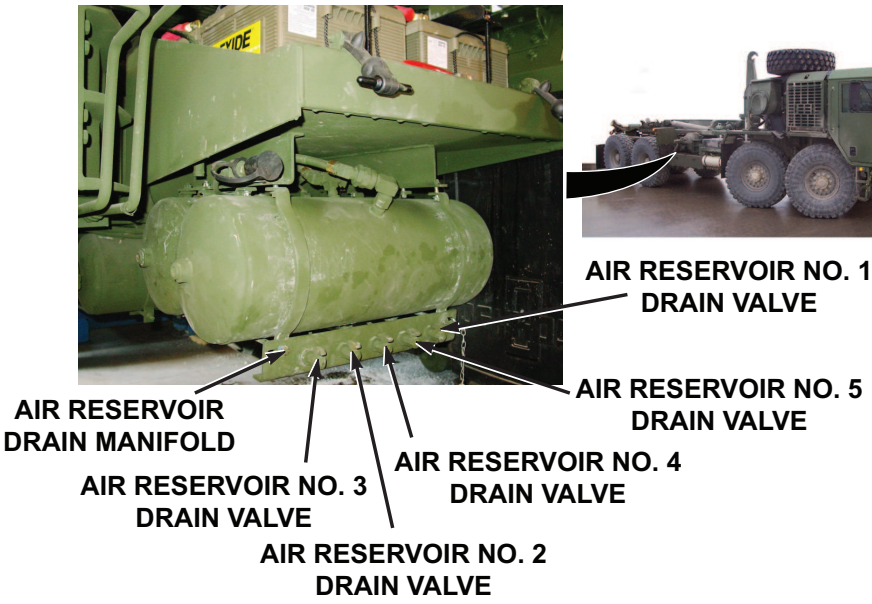


Figure 1.

CONDITION/INDICATION

Are any petcock valves open?

DECISION

Petcock(s) open - Test 5 - Does air system lose pressure during operation?
Petcocks closed - Test 2 - Is trailer air supply control in correct position?

TEST 2 - Is trailer air supply control in correct position?

1. Check if trailer air supply control is pulled out (OFF position) if no trailer is coupled, and pushed in (ON position) if trailer is coupled.
2. If trailer air supply control is found in an incorrect position, set to correct position.

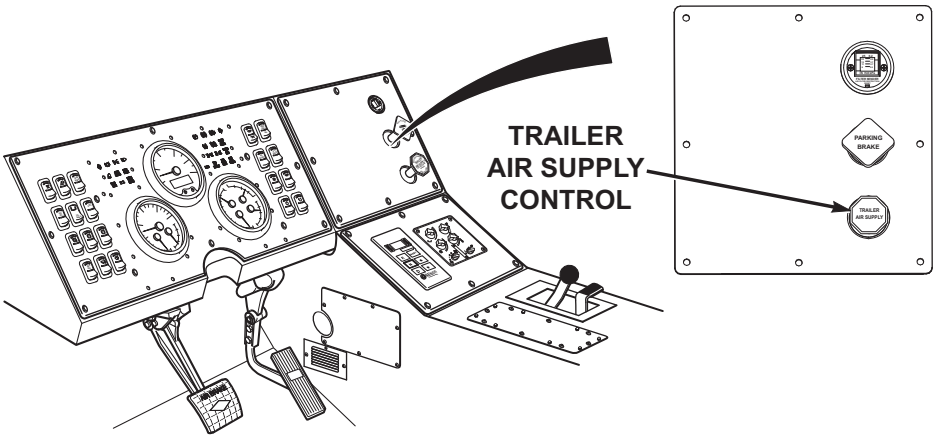


Figure 2.

CONDITION/INDICATION

Is trailer air supply control in correct position?

DECISION

No - Test 5 - Does air system lose pressure during operation?

Yes - Test 3 - Does air pressure reach 120 psi (827 kPa) with engine accelerated?

TEST 3 - Does air pressure reach 120 psi (827 kPa) with engine accelerated?

1. Start engine. (WP 0043)
2. Accelerate engine and check if air pressure reaches 120 psi (827 kPa).

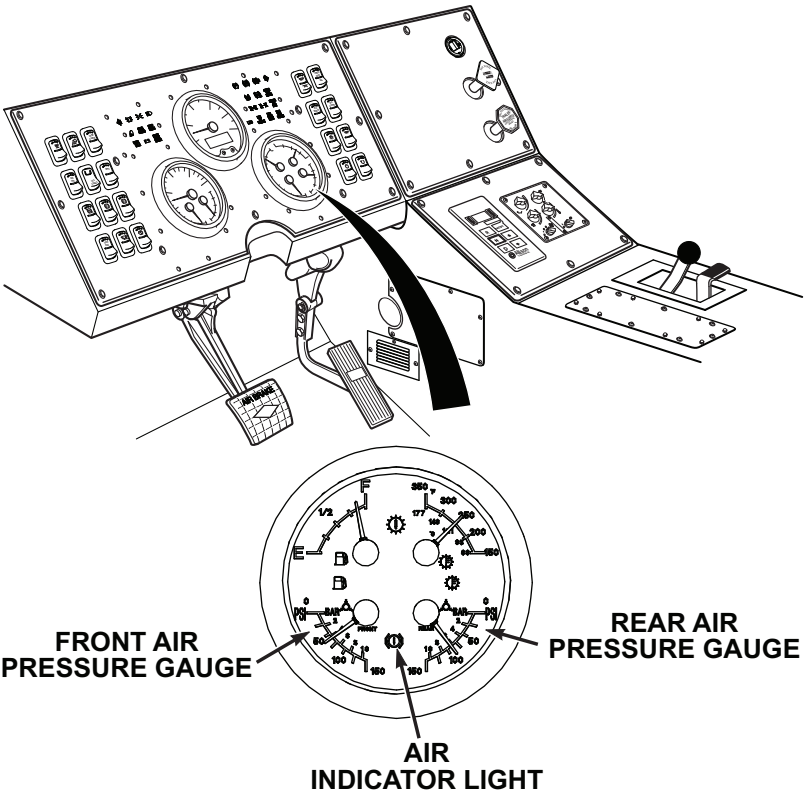


Figure 3.

CONDITION/INDICATION

Does air pressure reach 120 psi (827 kPa) with engine accelerated?

DECISION

No - Notify Supervisor.

Yes - Test 4 - Are air leaks present?

TEST 4 - Are air leaks present?

1. Turn engine off. (WP 0056)
2. Press service brake treadle completely down, and have crew member check for air leaks.

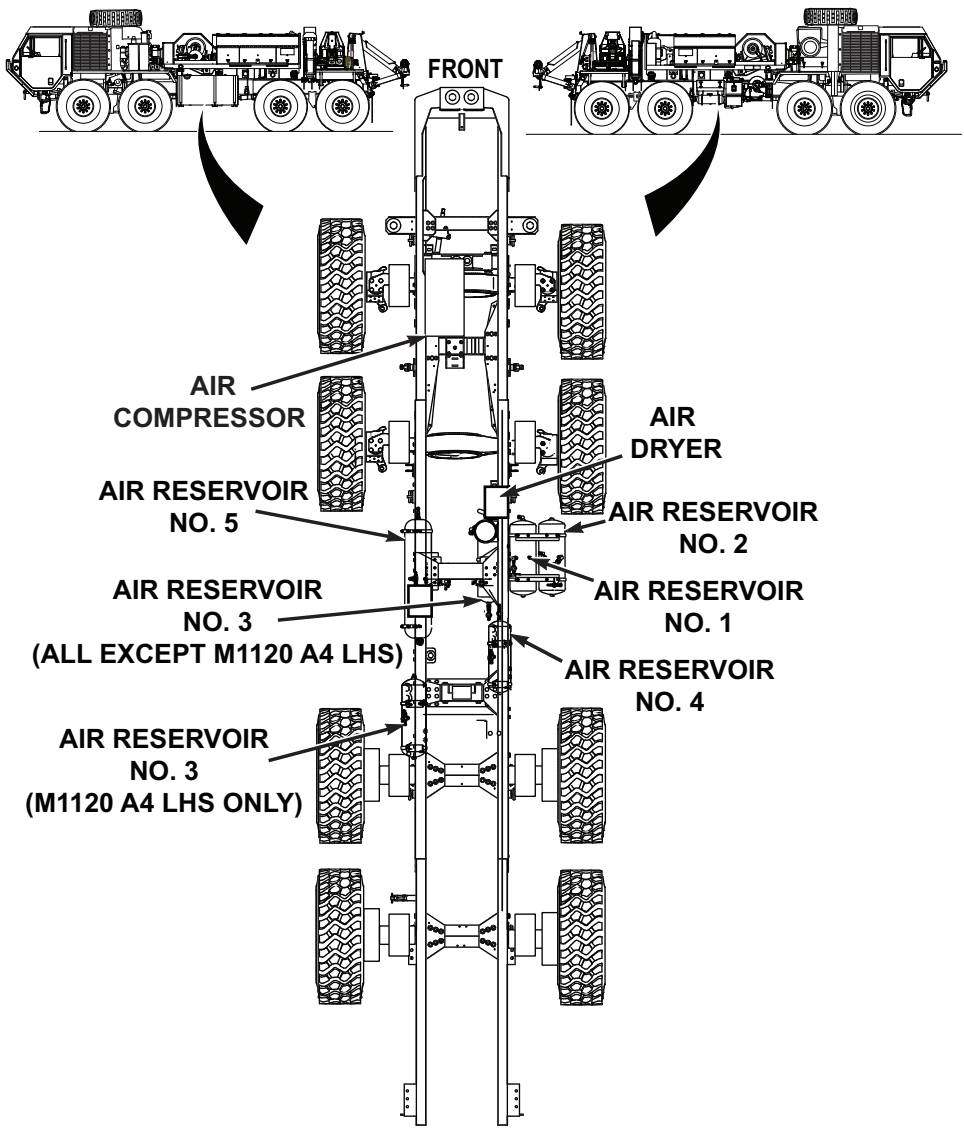


Figure 4.

3. If leaky fitting(s) found, tighten fittings.

CONDITION/INDICATION

Are air leaks present?

DECISION

Air leaks found - Notify Supervisor.

No air leaks found - Test 5 - Does air system lose pressure during operation?

TEST 5 - Does air system lose pressure during operation?

1. Start engine. (WP 0043)
2. Test drive vehicle.
3. Observe and note air pressure.

CONDITION/INDICATION

Does air system lose pressure during operation?

DECISION

No - Notify Supervisor.
Yes - Problem corrected.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
TRAILER BRAKE DOES NOT APPLY WHEN SERVICE BRAKE TREADLE OR PARKING BRAKE IS USED

INITIAL SETUP:

Equipment Condition
Engine OFF. (WP 0056)
Parking brakes applied. (WP 0055)
Wheels chocked. (WP 0073)

TROUBLESHOOTING PROCEDURE
TRAILER BRAKE DOES NOT APPLY WHEN SERVICE BRAKE TREADLE OR PARKING BRAKE IS USED

TEST 1 - Are intervehicular air hoses securely and correctly connected?

1. Check that intervehicular air hoses are secure and correctly connected. If not, reconnect correctly.

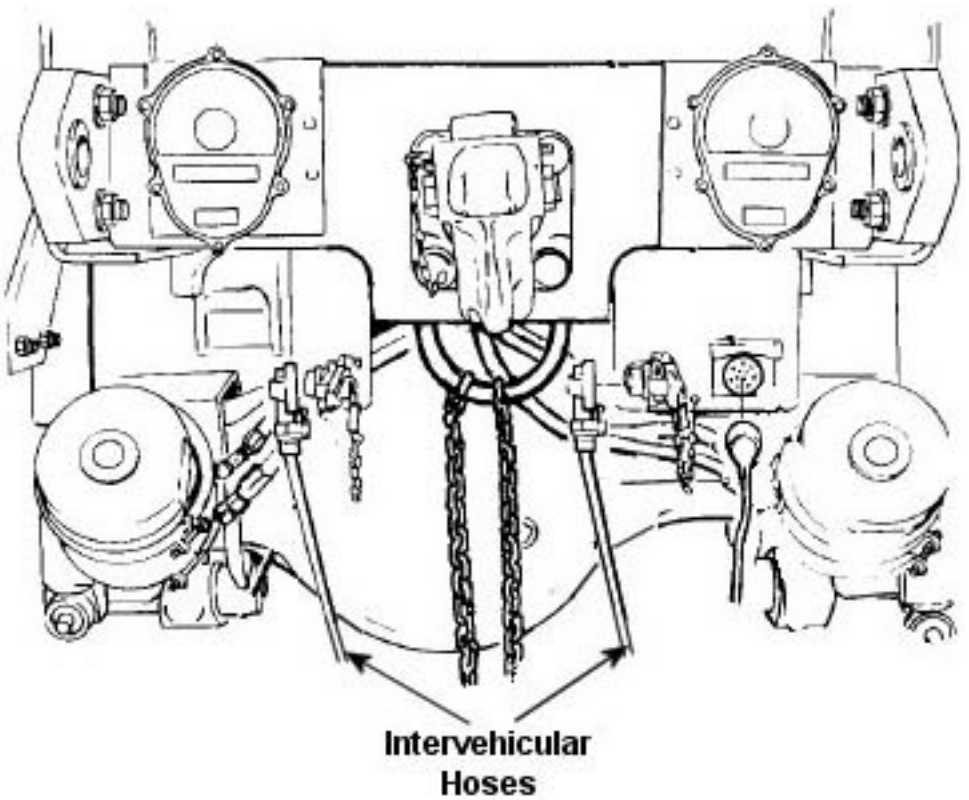


Figure 1.

CONDITION/INDICATION

Are intervehicular air hoses securely and correctly connected?

DECISION

No - Test 3 - Do trailer brakes apply when service brake treadle or parking brake is used?

Yes - Test 2 - Is trailer air supply control pushed in (ON position)?

TEST 2 - Is trailer air supply control pushed in (ON position)?

1. Check if trailer air supply control is pushed in (ON position).

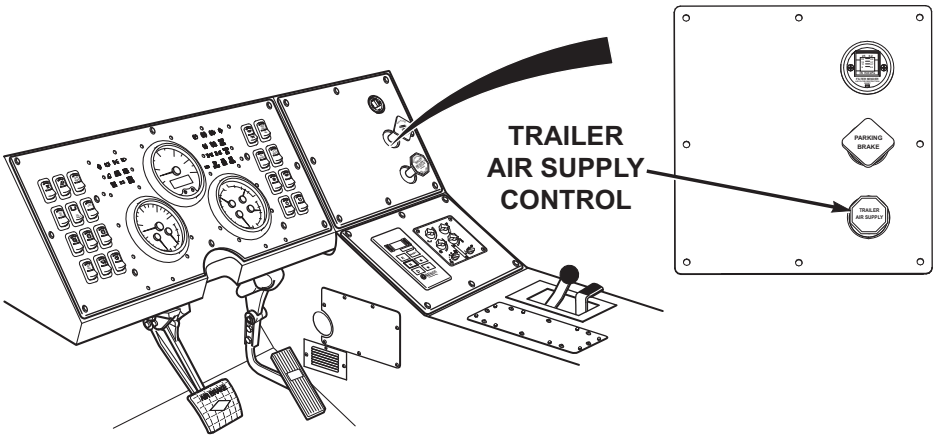


Figure 2.

2. If trailer air supply control is found pulled out (OFF position), push in.

CONDITION/INDICATION

Is trailer air supply control pushed in (ON position)?

DECISION

No - Test 3 - Do trailer brakes apply when service brake treadle or parking brake is used?

Yes - Notify Supervisor.

TEST 3 - Do trailer brakes apply when service brake treadle or parking brake is used?

1. Start engine. (WP 0043)
2. Test drive vehicle.
3. Note trailer brake operations.

CONDITION/INDICATION

Do trailer brakes apply when service brake treadle or parking brake is used?

DECISION

No - Notify Supervisor.

Yes - Problem corrected.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
WINDSHIELD WASHER WILL NOT OPERATE

INITIAL SETUP:

Equipment Condition
Engine OFF. (WP 0056)
Parking brakes applied. (WP 0055)
Wheels chocked. (WP 0073)

TROUBLESHOOTING PROCEDURE
WINDSHIELD WASHER WILL NOT OPERATE

TEST 1 - Is washer fluid reservoir free from damage or cracks?
1. Check washer fluid reservoir for cracks and/or damage.

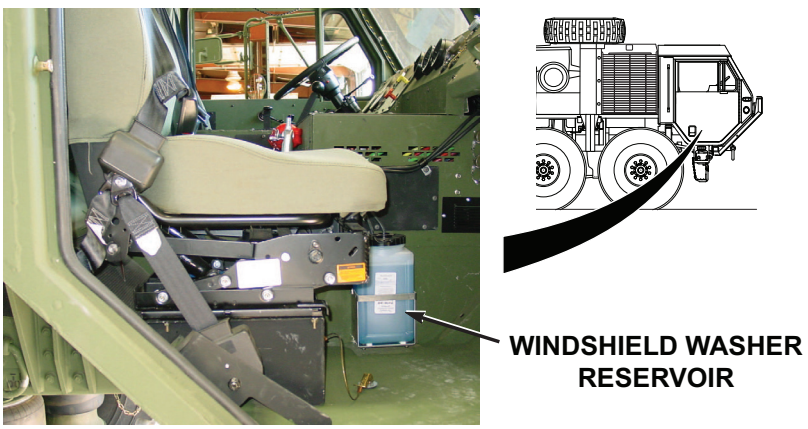


Figure 1.

CONDITION/INDICATION
Is washer fluid reservoir free from damage or cracks?

DECISION
No - Notify Supervisor.
Yes - Test 2 - Is washer fluid present in washer fluid reservoir?

TEST 2 - Is washer fluid present in washer fluid reservoir?

CAUTION

Do not fill windshield washer reservoir with water when temperatures are likely to be 32°F (0°C) or less. If water freezes, reservoir can crack or break.

1. Check washer fluid level in reservoir. if low, fill windshield washer reservoir.

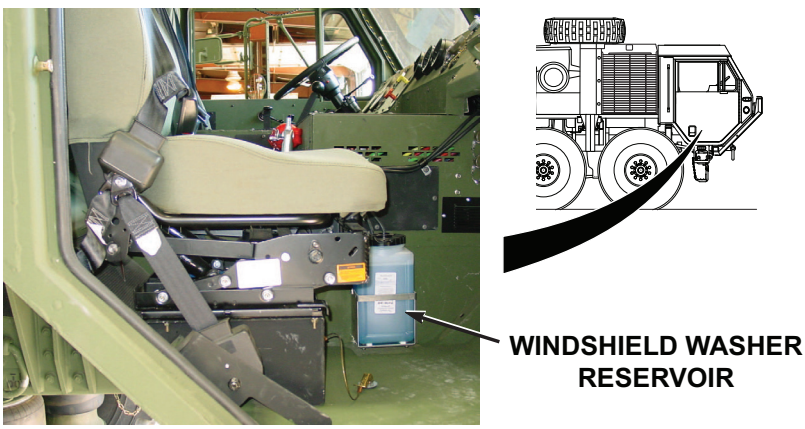


Figure 2.

CONDITION/INDICATION

Is washer fluid present in washer fluid reservoir?

DECISION

No - Test 6 - Does the windshield washer operate?
Yes - Test 3 - Are all hoses securely attached to reservoir?

TEST 3 - Are all hoses securely attached to reservoir?

1. Check that all hoses are securely attached to reservoir. If loose hoses are found, attach to reservoir.

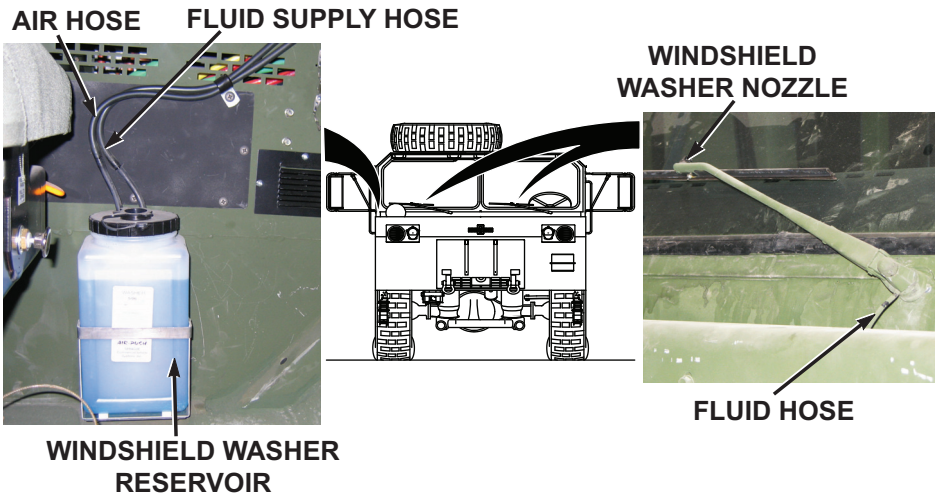


Figure 3.

CONDITION/INDICATION

Are all hoses securely attached to reservoir?

DECISION

No - Test 6 - Does the windshield washer operate?
Yes - Test 4 - Are hoses free of cracks or damage?

TEST 4 - Are hoses free of cracks or damage?

1. Check if hoses are cracked or damaged.

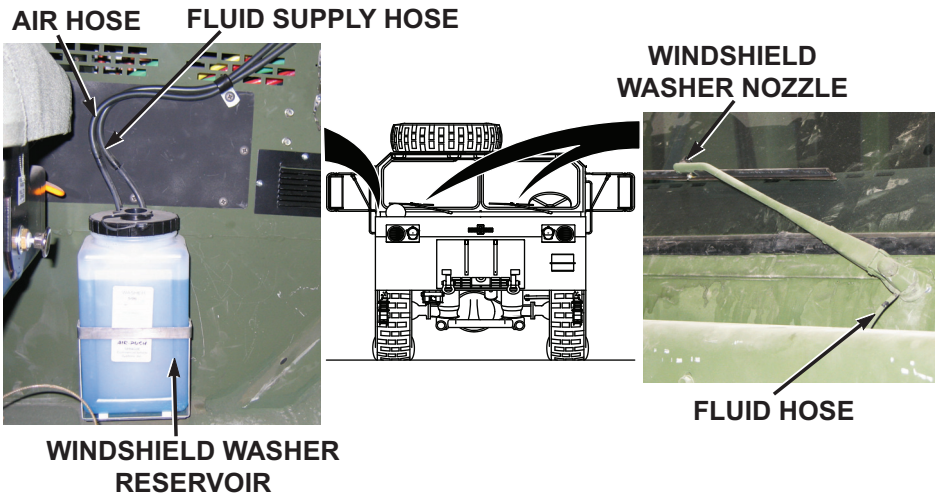


Figure 4.

CONDITION/INDICATION

Are hoses free of cracks or damage?

DECISION

No - Notify Supervisor.

Yes - Test 5 - Are washer spray openings free of debris?

TEST 5 - Are washer spray openings free of debris?

1. Check washer spray openings on wipers for clogs.

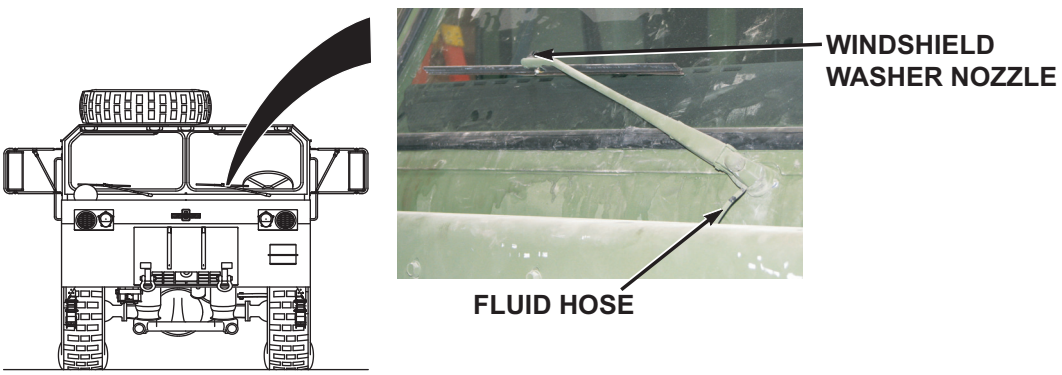


Figure 5.

2. If openings are clogged, clear washer spray opening using pin, wire, or similar item.

CONDITION/INDICATION

Are washer spray openings free of debris?

DECISION

No - Test 6 - Does the windshield washer operate?
Yes - Notify Supervisor.

TEST 6 - Does the windshield washer operate?

1. Start engine, (WP 0043)and allow air pressure to build.
2. Check windshield washer for proper operation.

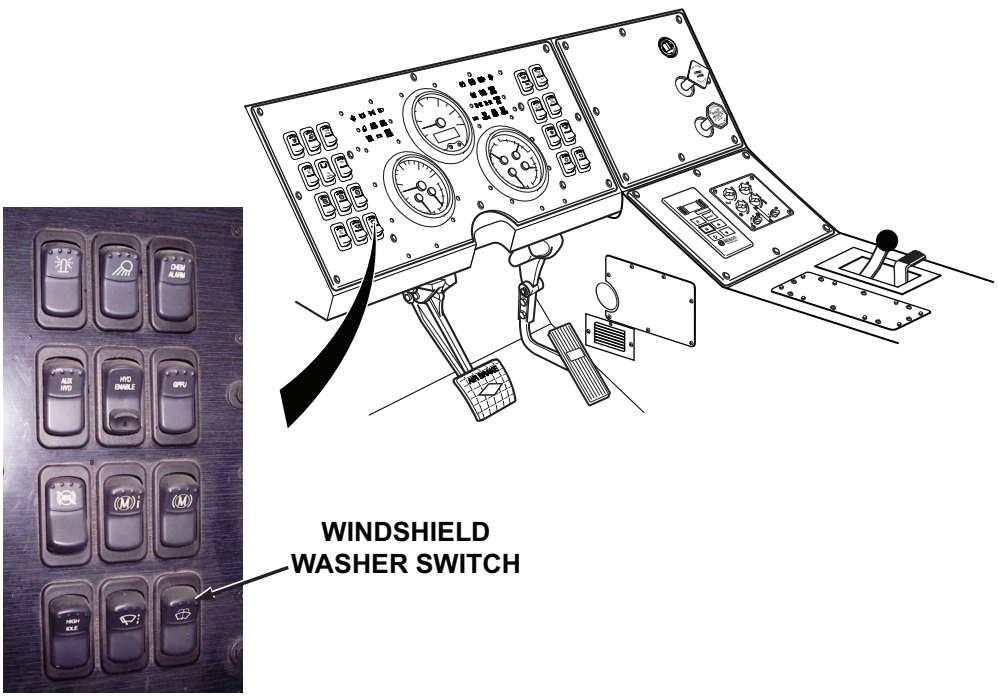


Figure 6.

CONDITION/INDICATION

Does the windshield washer operate?

DECISION

No - Notify Supervisor.
Yes - Problem corrected.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
AIR HORN WILL NOT OPERATE

INITIAL SETUP:

Equipment Condition
Engine OFF. (WP 0056)
Parking brakes applied. (WP 0055)
Wheels chocked. (WP 0073)

TROUBLESHOOTING PROCEDURE
AIR HORN WILL NOT OPERATE

TEST 1 - Are air hoses tight?

WARNING



Caution the hose connections could be under pressure be sure to wear eye protection to avoid personal injury.

1. Check air hose connections for tightness. Tighten any loose hose connections found.

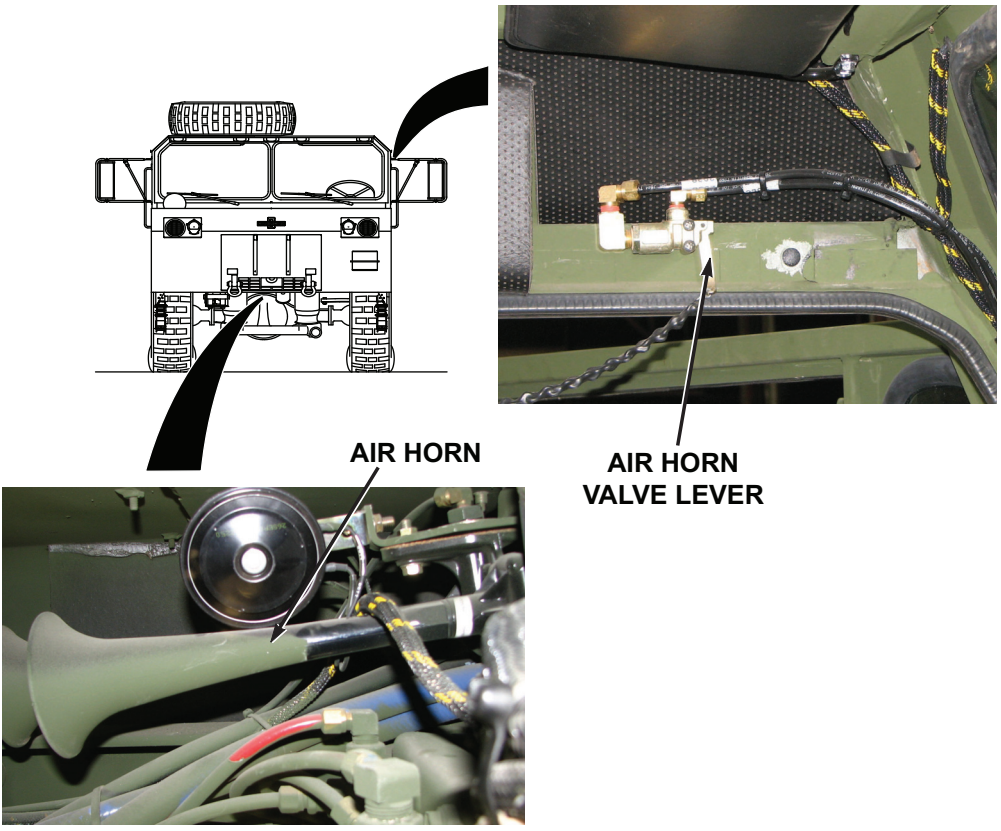


Figure 1.

CONDITION/INDICATION

Are air hoses tight?

DECISION

Connections loose - Test 3 - Does air horn operate?
Connections OK - Test 2 - Does horn valve lever move freely?

TEST 2 - Does horn valve lever move freely?

1. Check horn valve lever for freedom of movement.

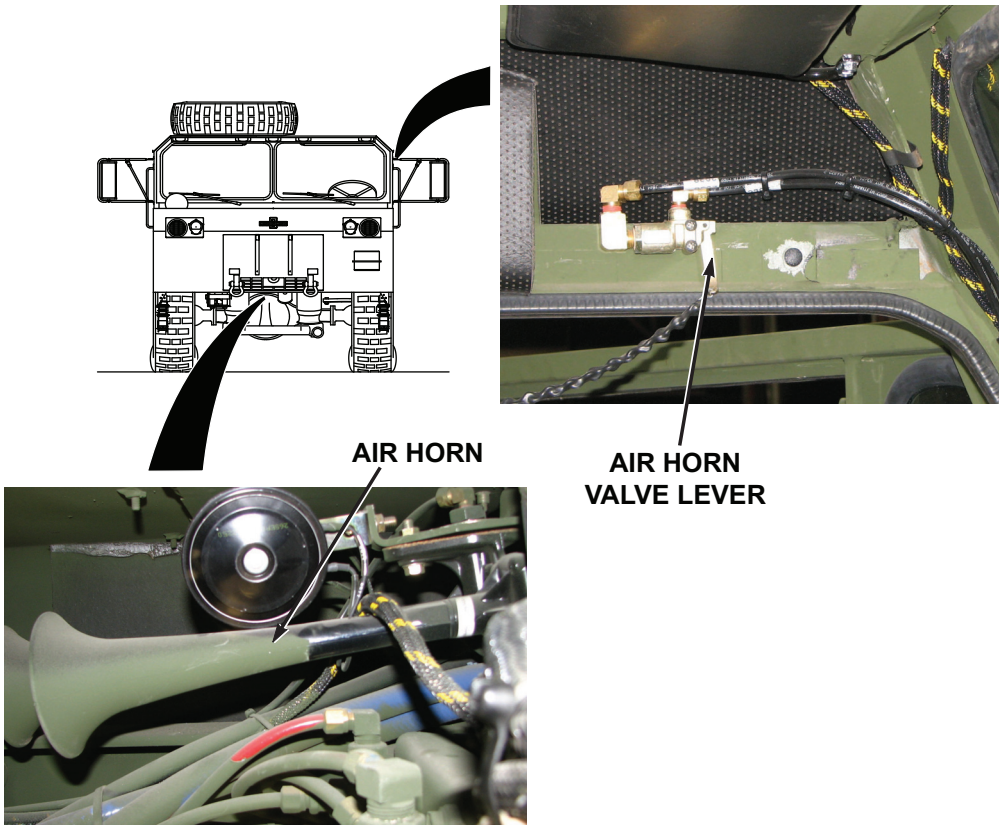


Figure 2.

CONDITION/INDICATION

Does horn valve lever move freely?

DECISION

No - Notify Supervisor.

Yes - Test 3 - Does air horn operate?

TEST 3 - Does air horn operate?

1. Start engine, (WP 0043) and allow air pressure to build.
2. Check air horn for proper operation.

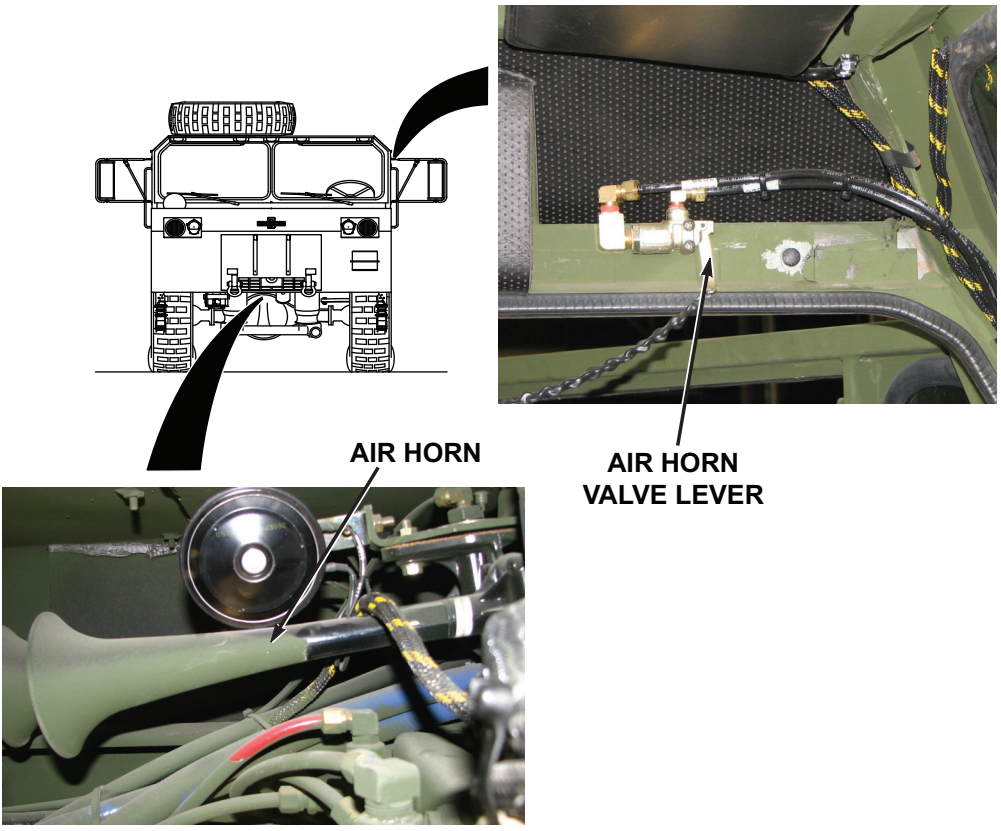


Figure 3.

3. Turn engine off. (WP 0056)

CONDITION/INDICATION

Does air horn operate?

DECISION

No - Notify Supervisor.

Yes - Problem corrected.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
ARCTIC ENGINE HEATER FAILS TO OPERATE

INITIAL SETUP:

Equipment Condition
Engine OFF. (WP 0056)
Parking brakes applied. (WP 0055)
Wheels chocked. (WP 0073)

TROUBLESHOOTING PROCEDURE
ARCTIC ENGINE HEATER FAILS TO OPERATE

TEST 1 - Is fuel present in fuel tank?
1. Turn engine start switch ON. (WP 0020)
2. Turn engine start switch OFF.
3. Add fuel to fuel tank if no fuel present.

CONDITION/INDICATION
Is fuel present in fuel tank?

DECISION
No - Test 3 - Does arctic heater operate?
Yes - Test 2 - Are arctic heater intake port and exhaust tube free from blockage?

TEST 2 - Are arctic heater intake port and exhaust tube free from blockage?
1. Inspect arctic heater inlet port and exhaust tube for foreign objects and obstructions. Remove any items found.

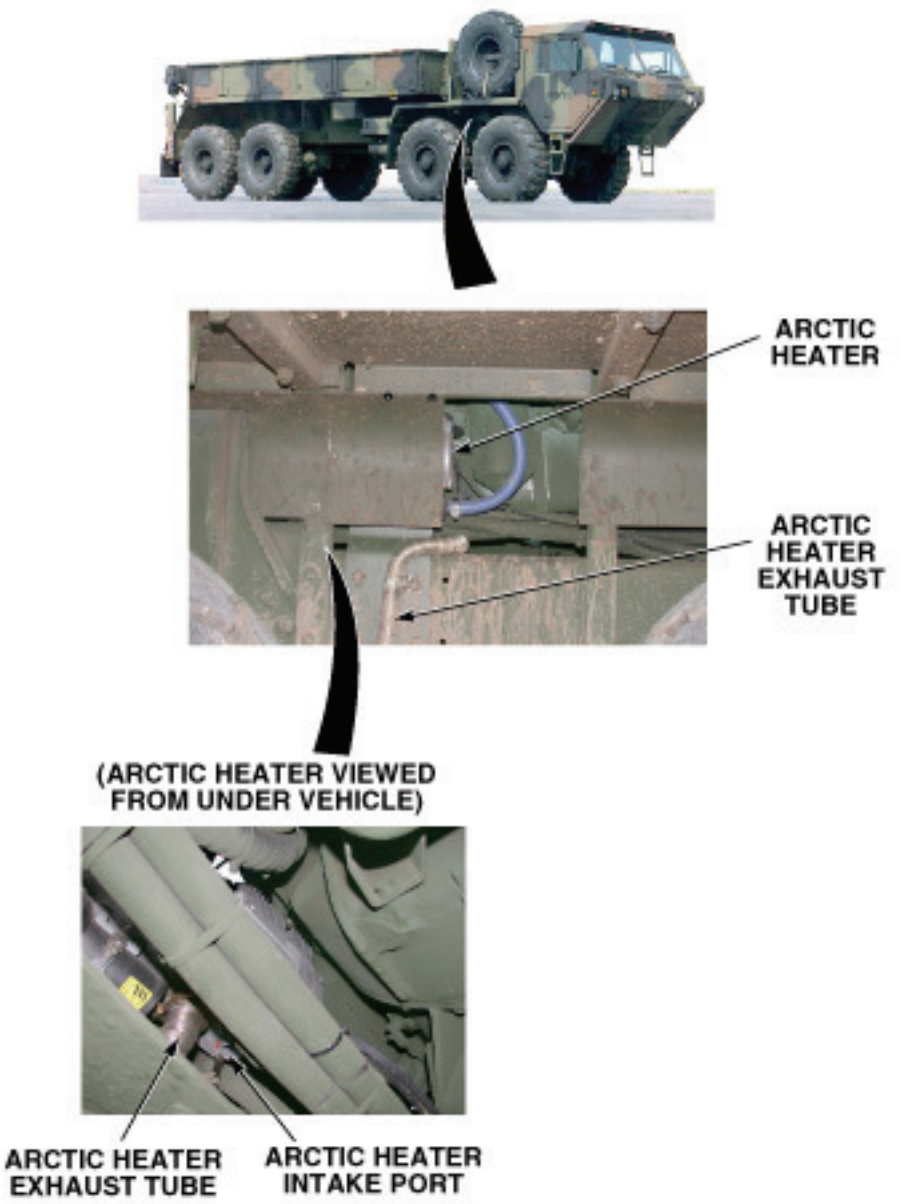


Figure 1.

CONDITION/INDICATION

Are arctic heater intake port and exhaust tube free from blockage?

DECISION

-

Continue - Test 3 - Does arctic heater operate?

TEST 3 - Does arctic heater operate?

CAUTION

Do not attempt to operate arctic heater if arctic heater fails to start, or shutdown occurs during normal operation. System shutdown may indicate an arctic heater system fault. Failure to comply may cause system lockout.

CAUTION

Do not operate arctic heater if arctic heater indicator light flashes during normal operation. Arctic heater indicator light flashing indicates an arctic heater system fault. Failure to comply may cause system lockout.

NOTE

If arctic heater does not operate, arctic heater may be in lockout mode due to, either too many overheat occurrences (code 15), or too many start attempts (code 50). Arctic heater lockout mode (code 50) is activated if arctic heater fails to start after 20 successive start attempts (10 start cycles in succession).

NOTE

The arctic heater will attempt to start two times per start cycle. After the second failed start attempt, the arctic heater will not operate until the arctic heater on/off switch is turned off, then back on.

NOTE

Audible clicking from the arctic heater fuel metering pump may indicate that the arctic heater fuel system isn't primed. If audible clicking is heard from the arctic heater fuel metering pump, repeat steps (1) through (4) four times, or until arctic heater starts. Do not attempt to start arctic heater more than five times. The arctic heater should prime itself within nine start attempts.

1. Turn arctic heater ON.
2. Observe arctic heater indicator light for steady illumination.
3. Observe arctic heater for proper operation.
4. Turn arctic heater on/off switch OFF.



Figure 2.

CONDITION/INDICATION

Does arctic heater operate?

DECISION

No - Notify Supervisor.
Yes - Problem corrected.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
ONE OR MORE LIGHTING CIRCUITS NOT OPERATING

INITIAL SETUP:

Equipment Condition
Engine OFF. (WP 0056)
Parking brakes applied. (WP 0055)
Wheels chocked. (WP 0073)

TROUBLESHOOTING PROCEDURE
ONE OR MORE LIGHTING CIRCUITS NOT OPERATING

TEST 1 - Is the lighting system control in the ON or OPERATING position?
1. Check if lighting system control is ON or in OPERATING position.

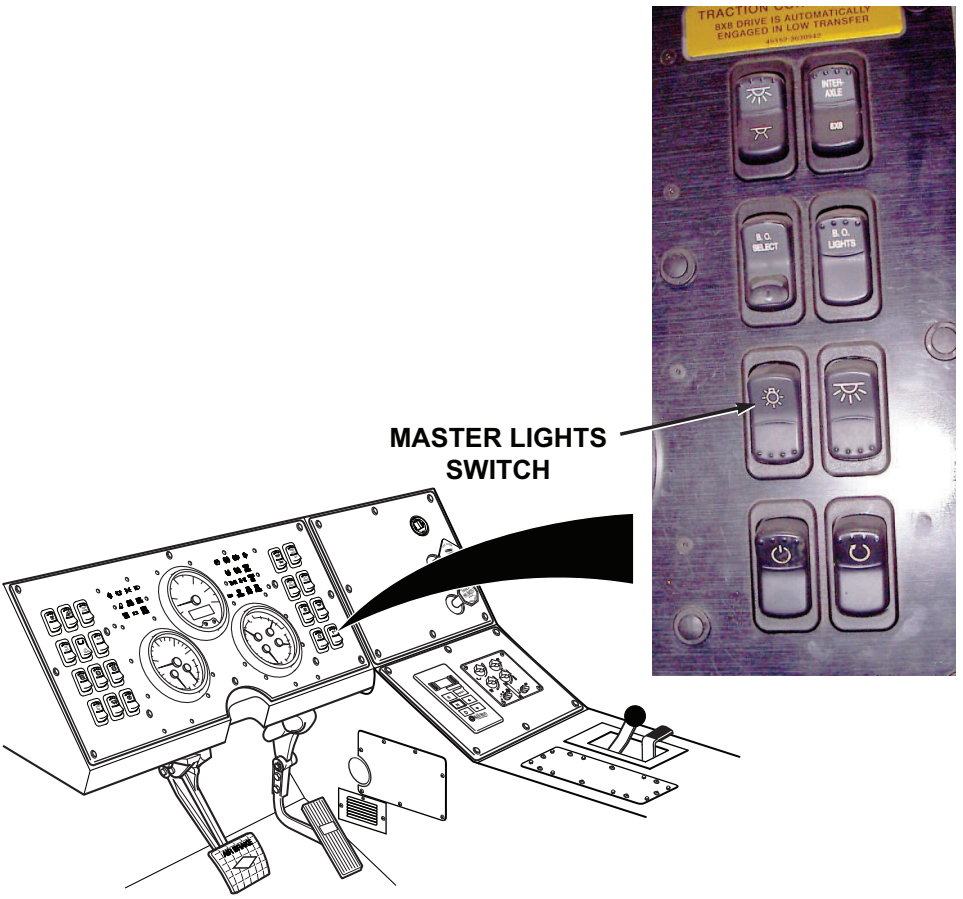


Figure 1.

CONDITION/INDICATION

Is the lighting system control in the ON or OPERATING position?

DECISION

No - Test 3 - Do all lighting circuits operate properly?
Yes - Notify Supervisor.

TEST 2 - Is intervehicular connection secure and/or connected correctly?

1. If trailer lights are the problem, make sure cable is securely connected.

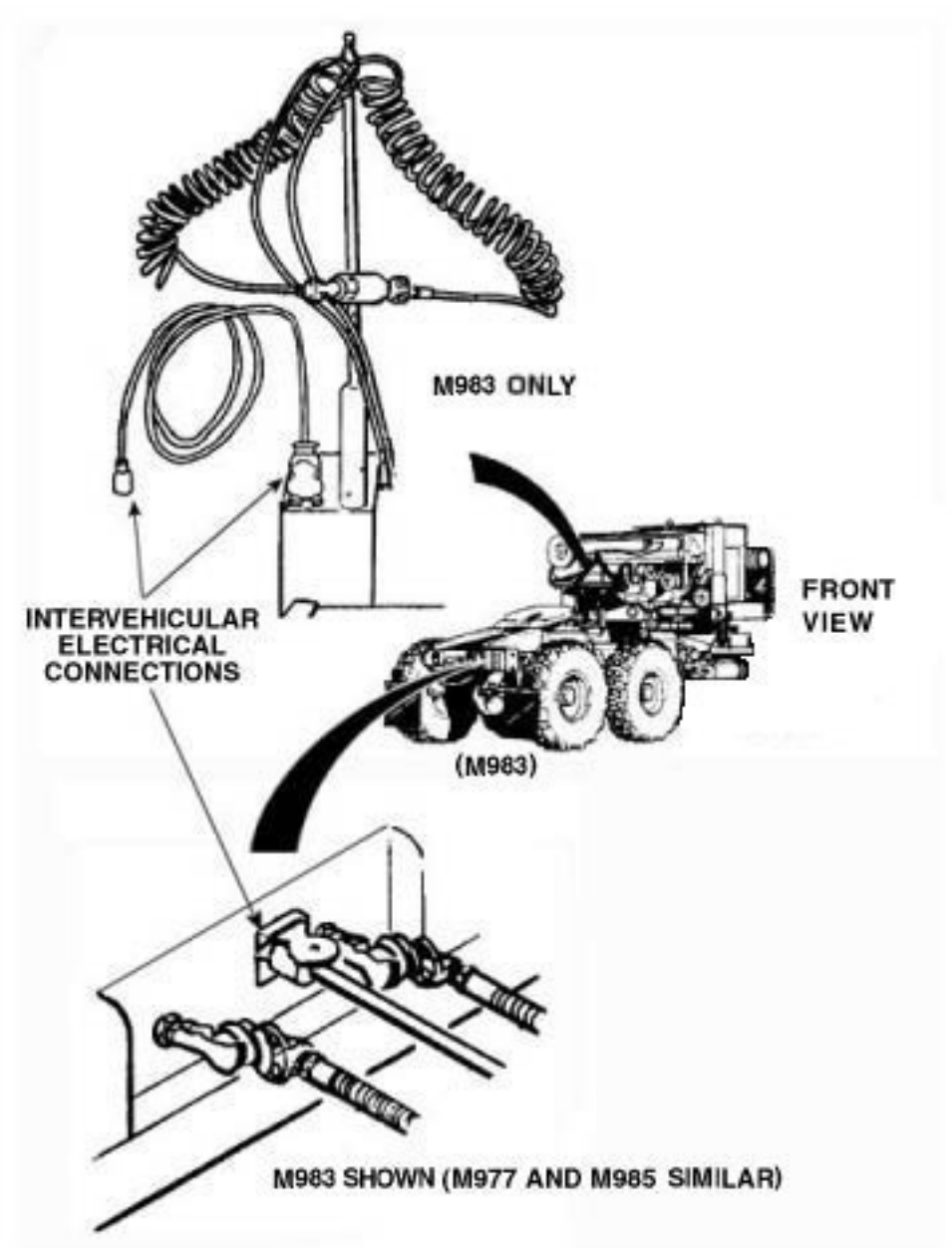


Figure 2.

CONDITION/INDICATION

Is intervehicular connection secure and/or connected correctly?

DECISION

Intervehicular cable loose. - Test 3 - Do all lighting circuits operate properly?Notify Supervisor.
Intervehicular connection OK. - Notify Supervisor.

TEST 3 - Do all lighting circuits operate properly?

1. Check for proper operation of dome lights. (WP 0060)
2. Check for proper operation of panel lights. (WP 0061)
3. Check for proper operation of service drive lights. (WP 0063)
4. Check for proper operation of parking lights. (WP 0062)
5. Check for proper operation of clearance lights. (WP 0065)
6. Check for proper operation of stoplight. (WP 0064)
7. Check for proper operation of tanker module lights. (WP 0069)
8. Check for proper operation of blackout drive lights. (WP 0066)
9. Check for proper operation of blackout marker lights. (WP 0067)
10. Check for proper operation of turn signal lights. (WP 0071)

CONDITION/INDICATION

Do all lighting circuits operate properly?

DECISION

No - Notify Supervisor.
Yes - Problem corrected.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
FAILS TO CRANK WHEN ENGINE START SWITCH IS TURNED TO START POSITION

INITIAL SETUP:

Equipment Condition
Engine OFF. (WP 0056)
Parking brakes applied. (WP 0055)
Wheels chocked. (WP 0073)

TROUBLESHOOTING PROCEDURE
FAILS TO CRANK WHEN ENGINE START SWITCH IS TURNED TO START POSITION

TEST 1 - Is transmission range selector in neutral (N)?
1. Verify range selector is in neutral (N) position. If not in neutral (N), shift it to neutral (N).

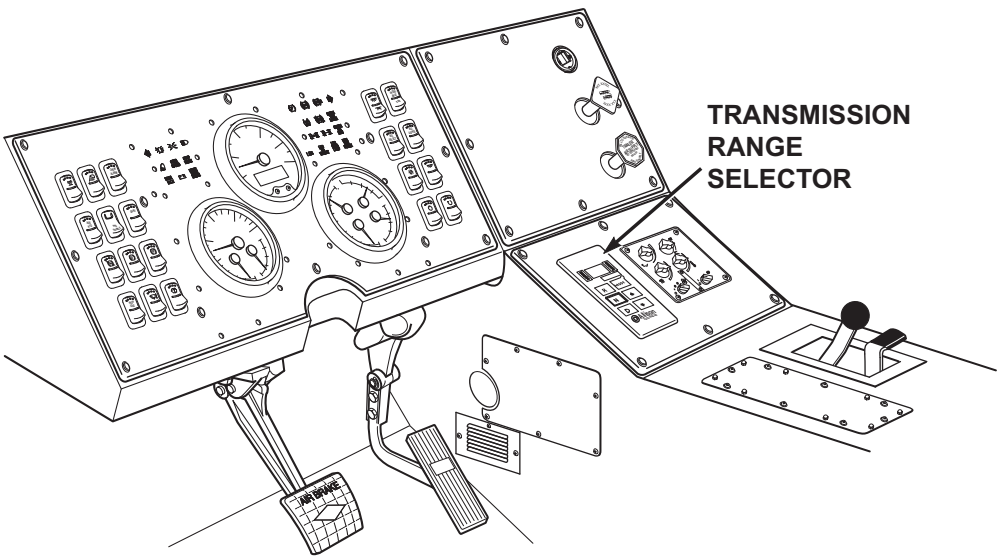


Figure 1.

CONDITION/INDICATION
Is transmission range selector in neutral (N)?

DECISION
No - Test 3 - Does engine crank when engine start switch is turned to start position?
Yes - Test 2 - Are battery cable connections clean, tight, and free from damage?

TEST 2 - Are battery cable connections clean, tight, and free from damage?
1. Remove battery box cover. (WP 0153)
2. Check battery cable connections for dirt, corrosion and/or looseness.

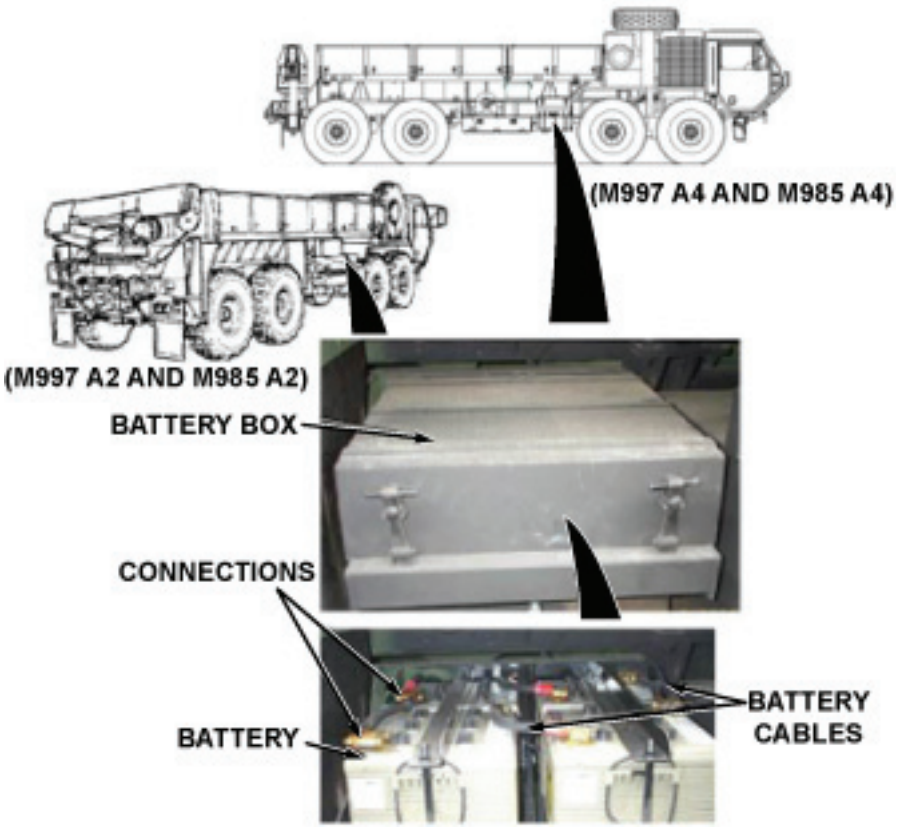


Figure 2.

3. Check battery cables for damage.

CONDITION/INDICATION

Are battery cable connections clean, tight, and free from damage?

DECISION

No - Notify Supervisor.

Yes - Test 3 - Does engine crank when engine start switch is turned to start position?

TEST 3 - Does engine crank when engine start switch is turned to start position?
1. Install battery box cover. (WP 0153)
2. Attempt to start engine. (WP 0043)

CONDITION/INDICATION

Does engine crank when engine start switch is turned to start position?

DECISION

No - Notify Supervisor.
Yes - Problem corrected.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
CRANKS BUT FAILS TO START

INITIAL SETUP:

Equipment Condition
Engine OFF. (WP 0056)
Parking brakes applied. (WP 0055)
Wheels chocked. (WP 0073)

TROUBLESHOOTING PROCEDURE
CRANKS BUT FAILS TO START

TEST 1 - Does fuel gauge indicate the presence of fuel?
1. Turn engine start switch ON. (WP 0020)
2. Check fuel gauge for indication of fuel presence.

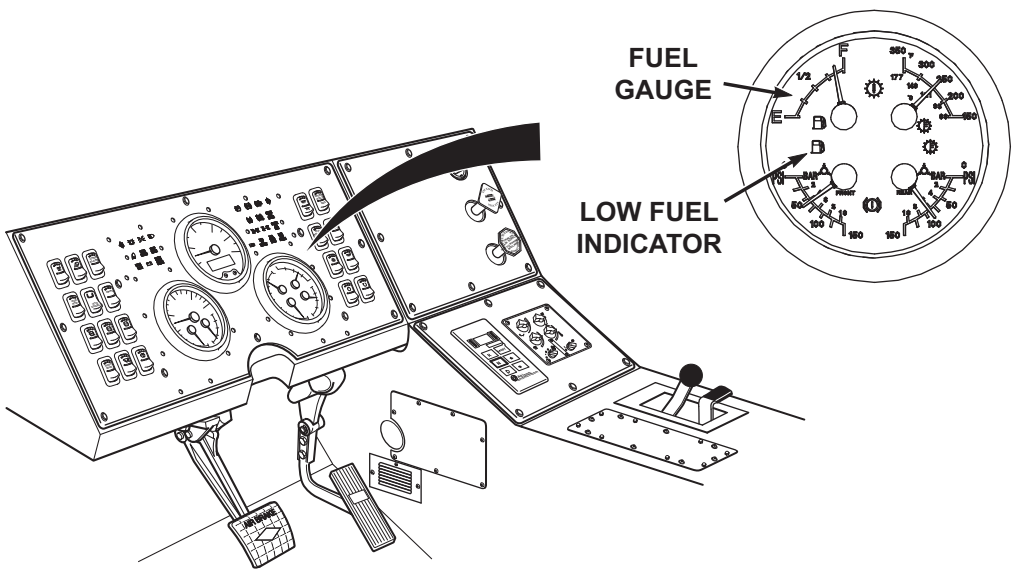


Figure 1.

3. Turn engine start switch OFF. (WP 0020)

CONDITION/INDICATION
Does fuel gauge indicate the presence of fuel?

DECISION

No - Test 4 - Does engine start?

Yes - Test 2 - Is there fuel present in fuel tank?

TEST 2 - Is there fuel present in fuel tank?

1. Remove fuel tank cap and filter screen from fuel tank.

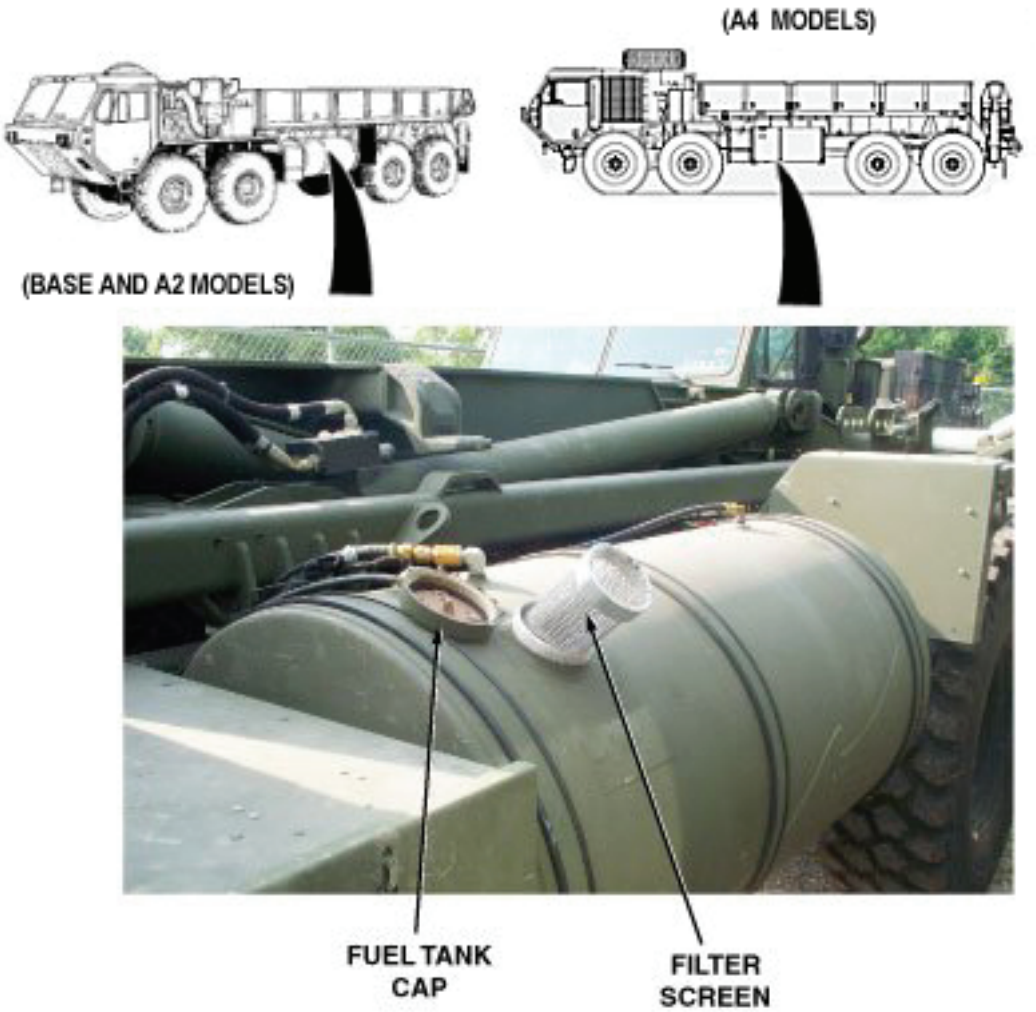


Figure 2.

2. Check fuel tank for presence of fuel.
3. Add fuel to fuel tank if no fuel was present.
4. Replace filter screen and fuel tank cap on fuel tank.

CONDITION/INDICATION
Is there fuel present in fuel tank?

DECISION
No - Test 4 - Does engine start?
Yes - Test 3 - Is air filter restricted?

TEST 3 - Is air filter restricted?
1. Attempt to start engine and note indication on air filter restriction indicator.

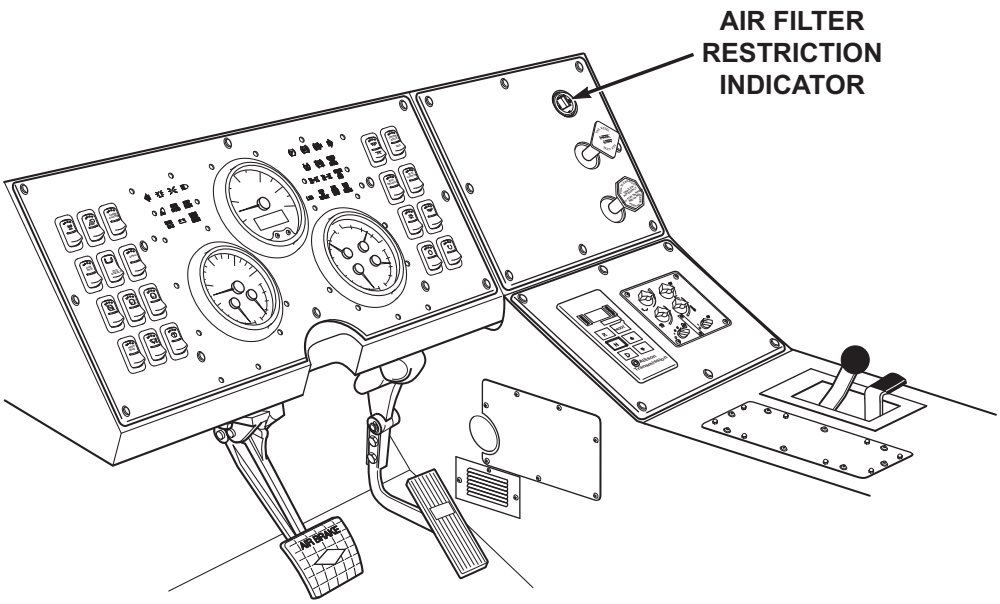


Figure 3.

CONDITION/INDICATION
Is air filter restricted?

DECISION
Restricted - Service air filter. (WP 0151)
Not Restricted - Test 4 - Does engine start?

TEST 4 - Does engine start?
1. Attempt to start engine. (WP 0043)

CONDITION/INDICATION
Does engine start?

DECISION

Air filter indicator shows red after cleaning filter. - Notify Supervisor. Notify Supervisor. Engine starts. - Problem corrected.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
STARTS OR RUNS ROUGHLY AFTER PROPER WARM-UP, DOES NOT MAKE FULL POWER, OR MAKES EXCESSIVE EXHAUST SMOKE

INITIAL SETUP:

Equipment Condition
Engine OFF. (WP 0056)
Parking brakes applied. (WP 0055)
Wheels chocked. (WP 0073)

TROUBLESHOOTING PROCEDURE
STARTS OR RUNS ROUGHLY AFTER PROPER WARM-UP, DOES NOT MAKE FULL POWER, OR MAKES EXCESSIVE EXHAUST SMOKE

TEST 1 - Is PTO engaged?
1. Start engine and allow engine to reach normal operating temperature. (WP 0043)
2. Check HYD Enable switch and Main HYD Enable indicator to make sure that PTO is disengaged. Light should be off.

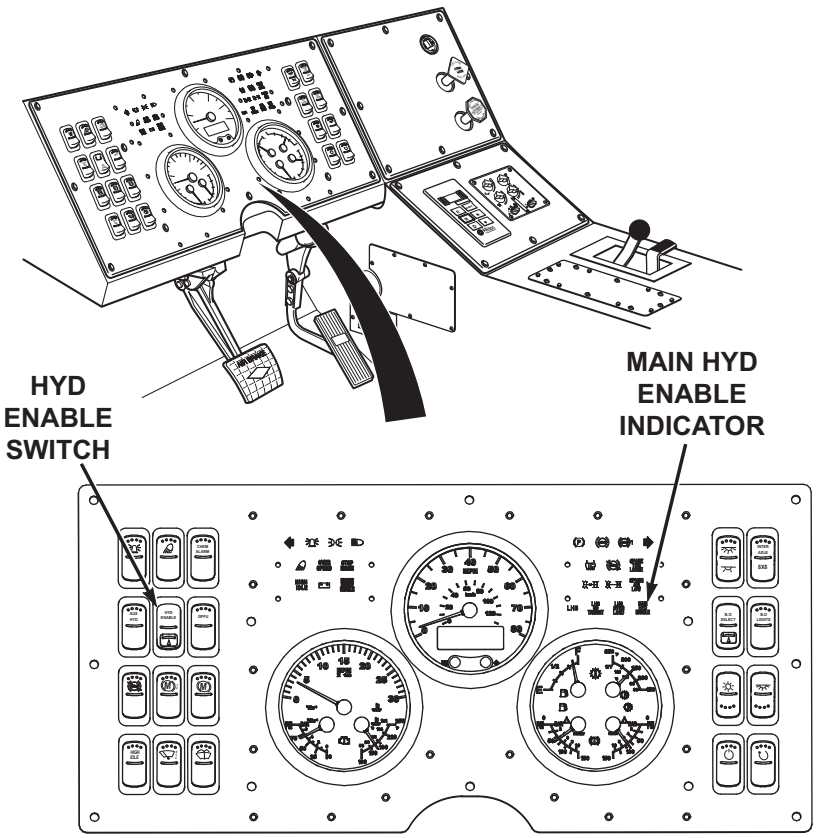


Figure 1.

CONDITION/INDICATION

Is PTO engaged?

DECISION

PTO engaged. - Test 4 - Does engine start or run roughly after proper warm-up, and/or does not make full power or makes excessive exhaust smoke?

PTO disengaged. - Test 2 - Does air filter restriction indicator show red and/or VACUUM INCHES H2O window show 18 or more after being reset?

TEST 2 - Does air filter restriction indicator show red and/or VACUUM INCHES H2O window show 18 or more after being reset?

1. Reset air filter restriction indicator.
2. Start engine. (WP 0043)
3. Check if air filter restriction indicator is red and/or VACUUM INCHES/kPa H2O window shows 18 or more.

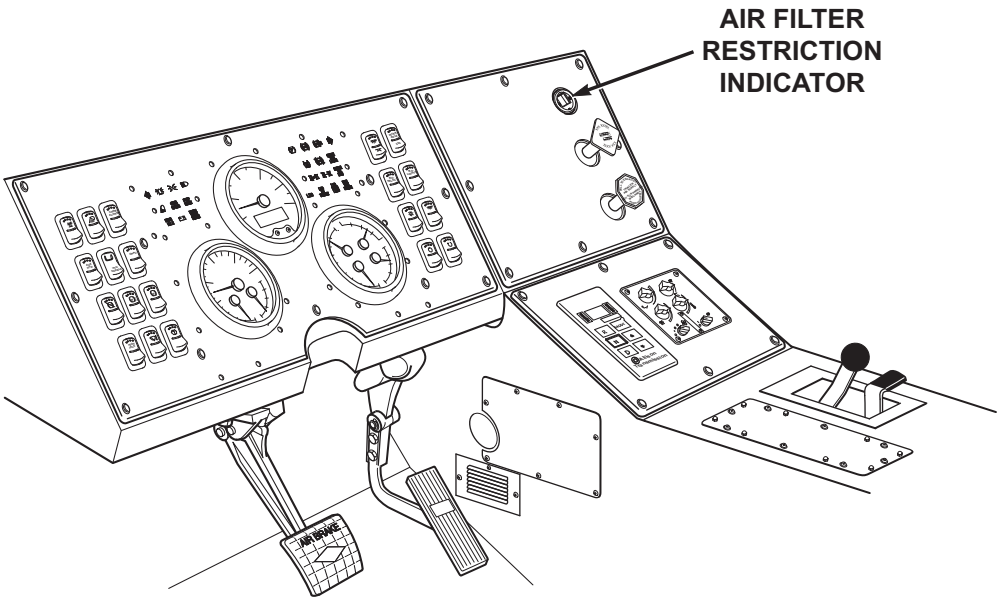


Figure 2.

CONDITION/INDICATION

Does air filter restriction indicator show red and/or VACUUM INCHES H2O window show 18 or more after being reset?

DECISION

Restricted. - Test 3 - Does air filter restriction indicator show red and/or VACUUM INCHES H2O window show 18 or more after being cleaned?

Not restricted. - Test 4 - Does engine start or run roughly after proper warm-up, and/or does not make full power or makes excessive exhaust smoke?

TEST 3 - Does air filter restriction indicator show red and/or VACUUM INCHES H2O window show 18 or more after being cleaned?

1. Turn engine OFF. (WP 0056)
2. Clean air filter. (WP 0151)
3. Start engine. (WP 0043)
4. Check if air filter restriction indicator is red and/or VACUUM INCHES/kPa H2O window shows 18 or more.

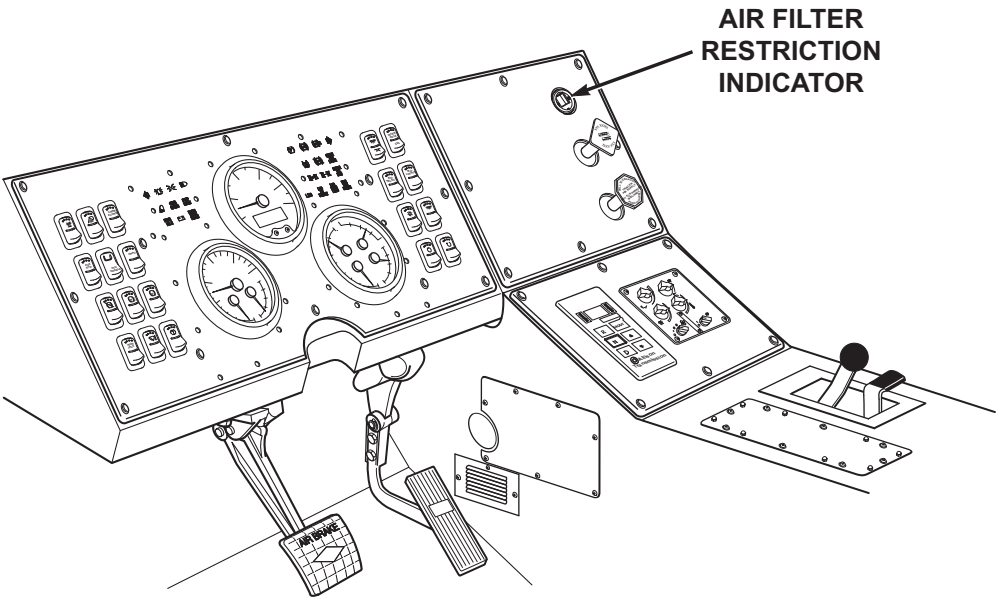


Figure 3.

CONDITION/INDICATION

Does air filter restriction indicator show red and/or VACUUM INCHES H2O window show 18 or more after being cleaned?

DECISION

Restricted. - Notify Supervisor.
Not restricted. - Test 4 - Does engine start or run roughly after proper warm-up, and/or does not make full power or makes excessive exhaust smoke?

TEST 4 - Does engine start or run roughly after proper warm-up, and/or does not make full power or makes excessive exhaust smoke?

1. Test drive vehicle.

CONDITION/INDICATION

Does engine start or run roughly after proper warm-up, and/or does not make full power or makes excessive exhaust smoke?

DECISION

Runs rough. - Notify Supervisor.
Runs normal. - Problem corrected.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
ENGINE OVERHEATS

INITIAL SETUP:

Equipment Condition
Engine OFF. (WP 0056)
Parking brakes applied. (WP 0055)
Wheels chocked. (WP 0073)

TROUBLESHOOTING PROCEDURE
ENGINE OVERHEATS

TEST 1 - Are right-side radiator hoses and housing free from leaks?

WARNING



Radiator coolant hoses are very hot and pressurized during vehicle operation. Allow radiator to cool prior to checking hoses. Failure to comply may result in injury or death to personnel.

1. Open driver and passenger side engine covers. (WP 0154)
2. Check upper and lower radiator hoses and housing for leaks.
3. Check that all clamps are tight and secure.

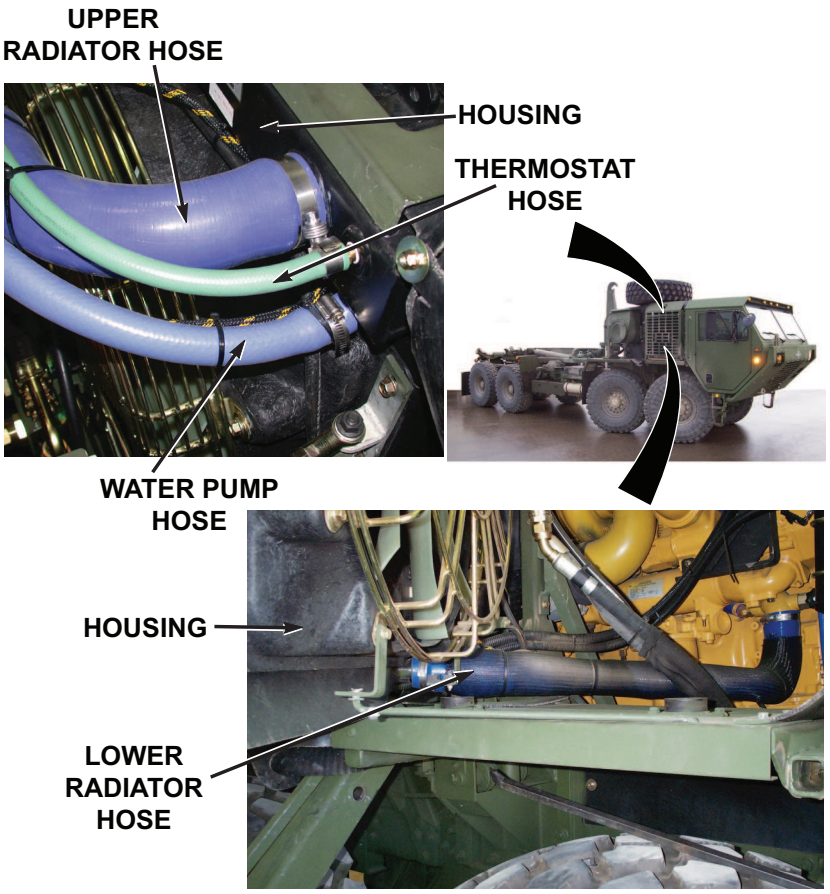


Figure 1.

CONDITION/INDICATION

Are right-side radiator hoses and housing free from leaks?

DECISION

Radiator hoses and/or housing damaged. - Notify Supervisor. Test 2 - Does engine overheat?Notify Supervisor.

Radiator hoses and/or housing free from damage and/or leaks. - Notify Supervisor.

TEST 2 - Does engine overheat?

1. Close driver and passenger side engine covers. (WP 0154)
2. Start engine. (WP 0043)

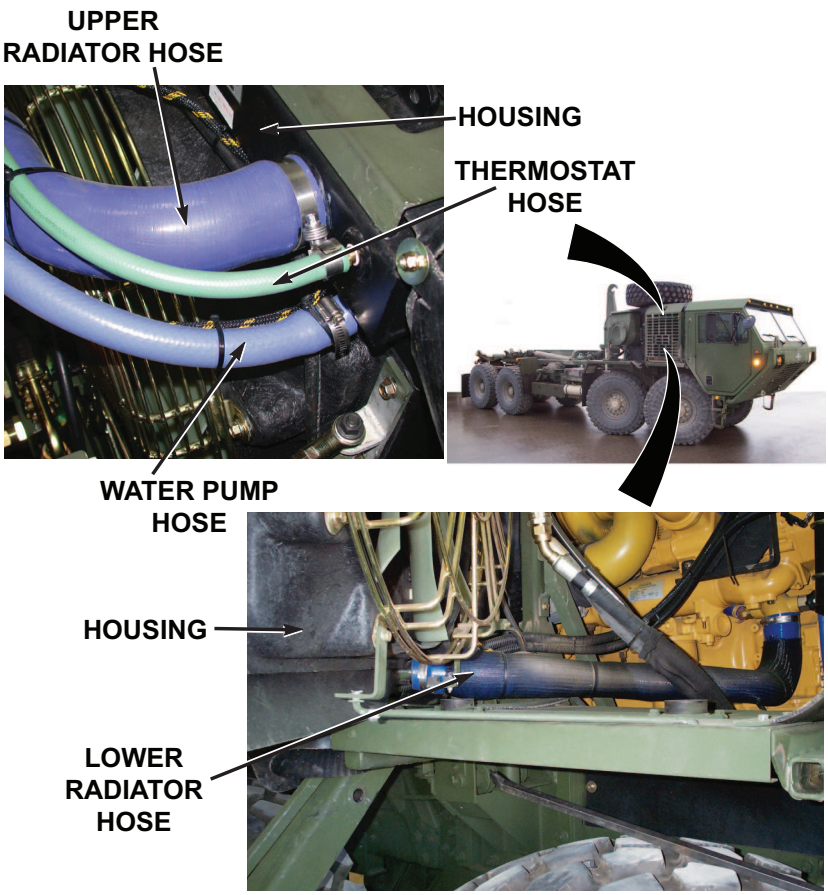


Figure 2.

3. Test drive vehicle.

CONDITION/INDICATION

Does engine overheat?

DECISION

Engine overheats - Notify Supervisor.
Engine OK - Problem corrected.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
LOW OIL PRESSURE GAUGE INDICATION

INITIAL SETUP:

Equipment Condition
Engine OFF. (WP 0056)
Parking brakes applied. (WP 0055)
Wheels chocked. (WP 0073)

TROUBLESHOOTING PROCEDURE
LOW OIL PRESSURE GAUGE INDICATION

TEST 1 - Is engine oil level low?
1. Check engine oil level. (WP 0141)

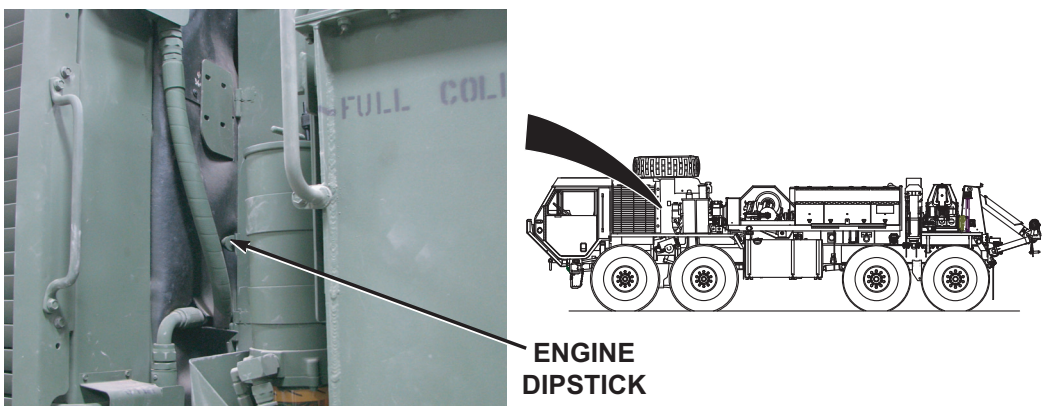


Figure 1.

2. If oil level is low, fill oil to proper level. (WP 0141)

CONDITION/INDICATION
Is engine oil level low?

DECISION
-
Continue - Test 2 - Is engine oil pressure still low?

TEST 2 - Is engine oil pressure still low?
1. Start engine and allow engine to reach operating temperature. (WP 0043)
2. Check OIL PRESS gauge. Gauge should read as follows:

- At idle, oil pressure can go as low as 5 psi (34 kPa).
- Normal operation range is 40 psi to 60 psi (276 to 414 kPa) between engine speeds 1800 to 2100 rpm. Minimum for safe operation is 30 psi (207 kPa).

CONDITION/INDICATION

Is engine oil pressure still low?

DECISION

Oil pressure low. - Notify Supervisor.
Oil pressure OK. - Problem corrected.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
EXCESSIVE OIL CONSUMPTION

INITIAL SETUP:

Equipment Condition
Engine OFF. (WP 0056)
Parking brakes applied. (WP 0055)
Wheels chocked. (WP 0073)

TROUBLESHOOTING PROCEDURE
EXCESSIVE OIL CONSUMPTION

TEST 1 - Are engine oil lines loose?

WARNING



Caution the oil lines could be under pressure be sure to wear the proper eye protection to avoid personal injury.

1. Open driver and passenger side engine covers. (WP 0154)

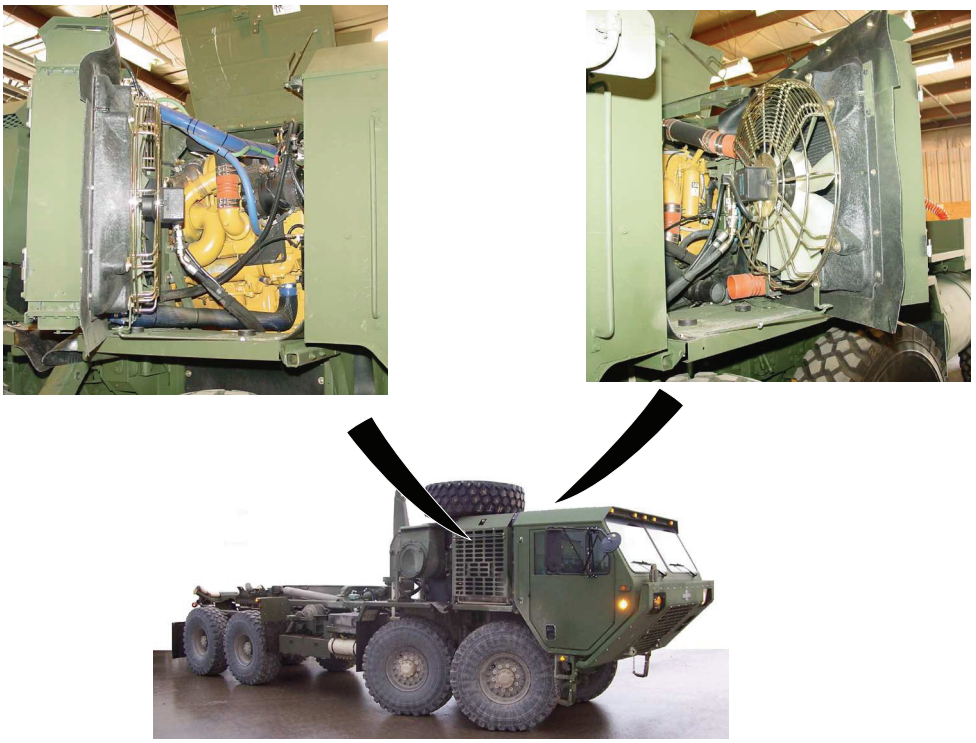


Figure 1.

2. Check for loose engine oil lines or damaged components.

CONDITION/INDICATION

Are engine oil lines loose?

DECISION

Lines Loose - Notify Supervisor.
Lines OK - Test 2 - Are any engine oil leaks present?

TEST 2 - Are any engine oil leaks present?

1. Tighten any loose fittings/components if found.
2. Visually check for engine oil leaks.

CONDITION/INDICATION

Are any engine oil leaks present?

DECISION

Leaks found. - Notify Supervisor.
No leaks found. - Notify Supervisor.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
HYDRAULIC SYSTEM OPERATES TOO SLOW, TOO FAST, WITH JERKY MOVEMENTS; OR ONE OR MORE HYDRAULICS CIRCUITS WILL NOT OPERATE

INITIAL SETUP:

Equipment Condition
Engine OFF. (WP 0056)
Parking brakes applied. (WP 0055)
Wheels chocked. (WP 0073)

TROUBLESHOOTING PROCEDURE
HYDRAULIC SYSTEM OPERATES TOO SLOW, TOO FAST, WITH JERKY MOVEMENTS; OR ONE OR MORE HYDRAULICS CIRCUITS WILL NOT OPERATE

TEST 1 - Is hydraulic fluid level within normal operating range?
1. Check hydraulic fluid level. If low, add hydraulic fluid. (WP 0141)

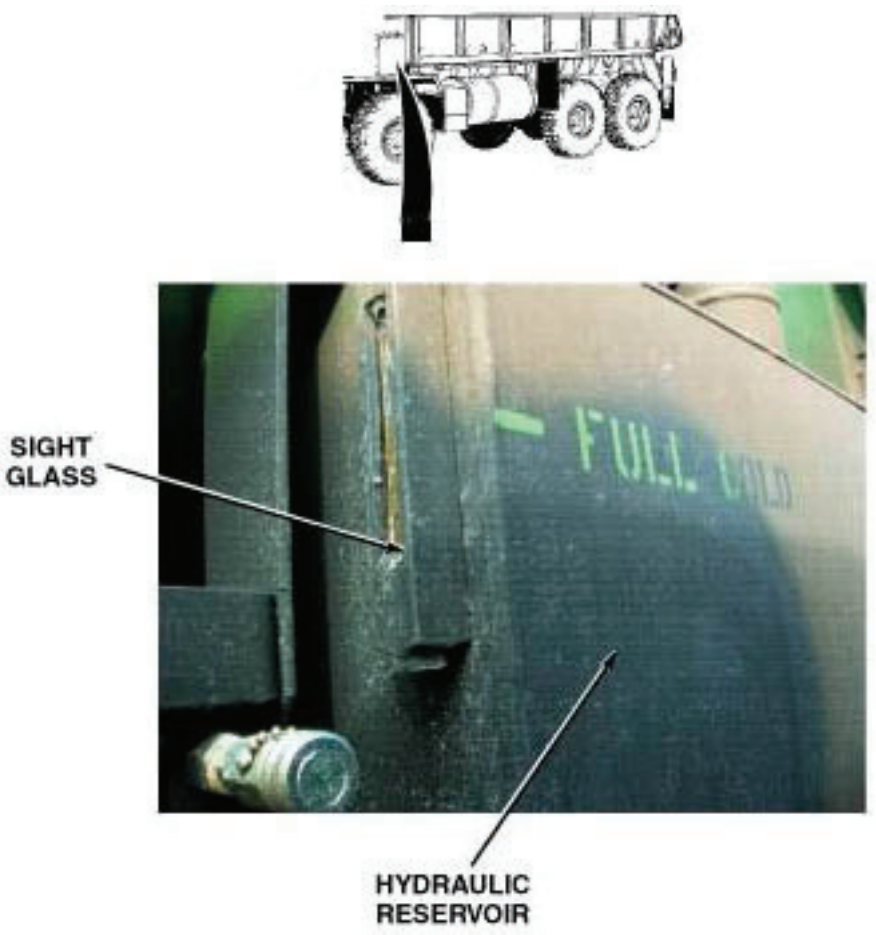


Figure 1.

CONDITION/INDICATION

Is hydraulic fluid level within normal operating range?

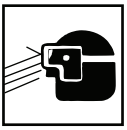
DECISION

No - Test 3 - Do all hydraulic systems operate properly?

Yes - Test 2 - Are hydraulic hoses and connections free from leaks and/or damage?

TEST 2 - Are hydraulic hoses and connections free from leaks and/or damage?

WARNING



Caution the hydraulic system maybe under pressure be sure to wear the proper eye protection to avoid personal injury.

1. Check hydraulic hoses and connections for leaks and/or damage.

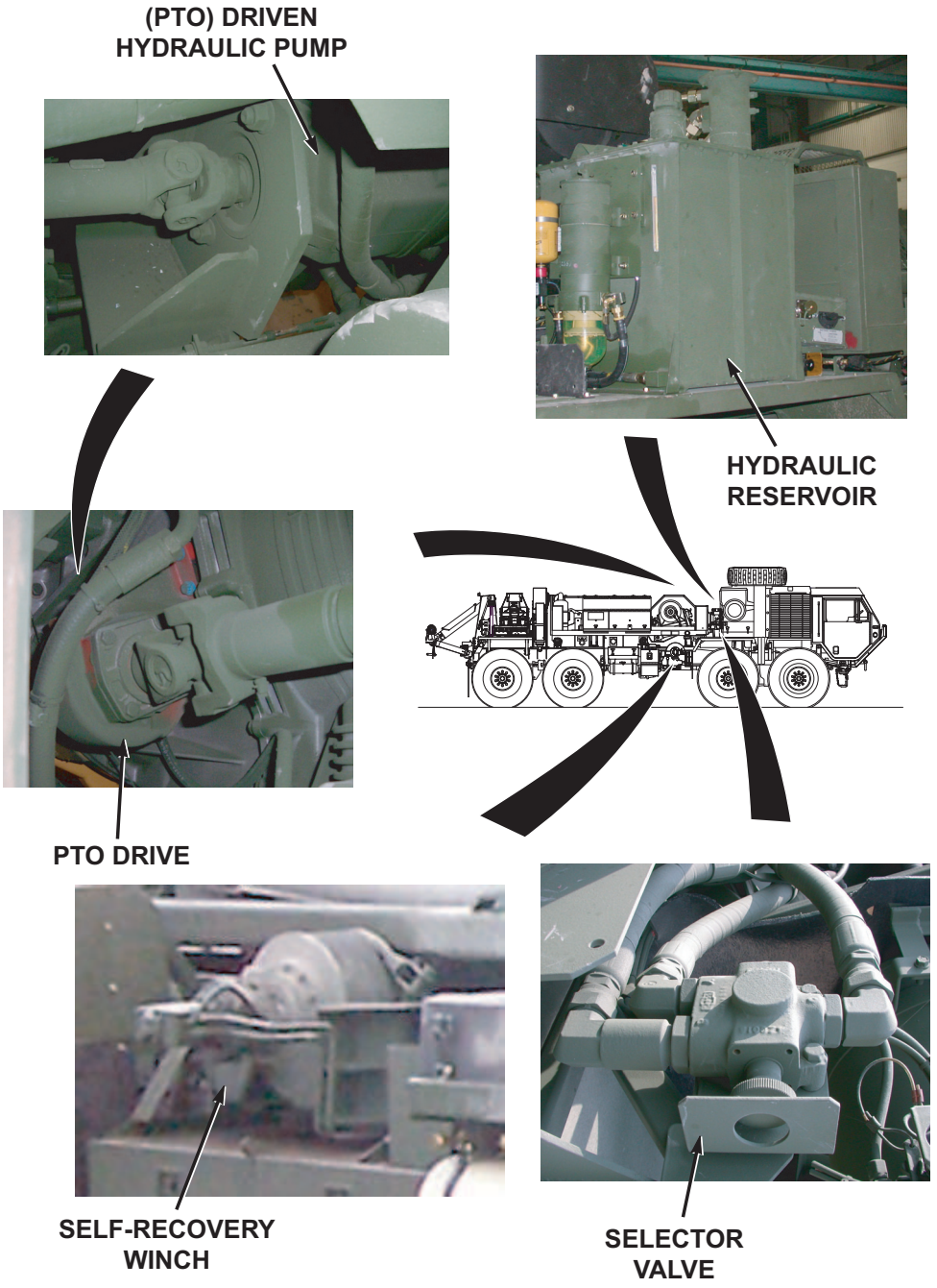

(PTO) DRIVEN
HYDRAULIC PUMP
HYDRAULIC
RESERVOIR
PTO DRIVE
SELF-RECOVERY
WINCH
SELECTOR
VALVE

Figure 2.

2. Attempt to tighten loose hose(s) and/or connection(s).

CONDITION/INDICATION

Are hydraulic hoses and connections free from leaks and/or damage?

DECISION

Hydraulic hose or connection damaged. - Notify Supervisor. Test 3 - Do all hydraulic systems operate properly?Notify Supervisor.
Hydraulic hoses and connections OK. - Notify Supervisor.

TEST 3 - Do all hydraulic systems operate properly?

1. Start engine. (WP 0043)
2. Operate hydraulic systems to check for proper operation.

CONDITION/INDICATION

Do all hydraulic systems operate properly?

DECISION

No - Notify Supervisor.
Yes - Problem corrected.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
SELF-RECOVERY WINCH DOES NOT WORK

INITIAL SETUP:

Equipment Condition
Engine OFF. (WP 0056)
Parking brakes applied. (WP 0055)
Wheels chocked. (WP 0073)

TROUBLESHOOTING PROCEDURE
SELF-RECOVERY WINCH DOES NOT WORK

TEST 1 - Is hydraulic fluid level within normal operating range?
1. Check hydraulic fluid level. If low, add hydraulic fluid. (WP 0141)

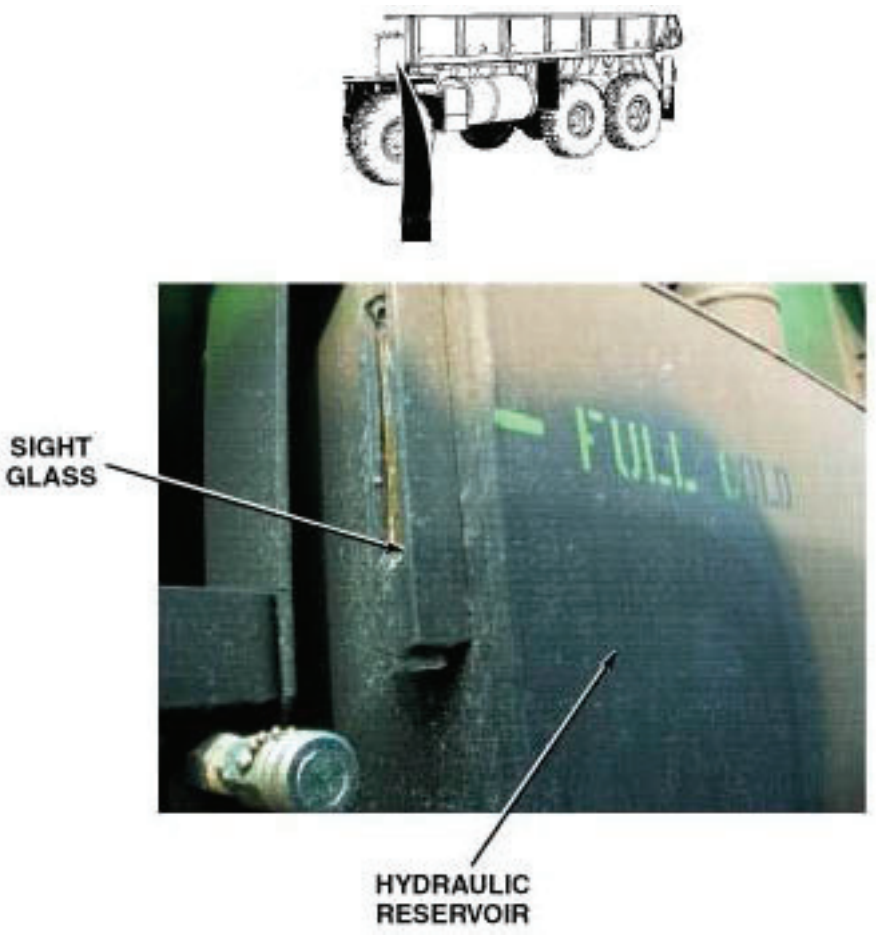


Figure 1.

CONDITION/INDICATION

Is hydraulic fluid level within normal operating range?

DECISION

No - Test 3 - Does self-recovery winch operate properly?

Yes - Test 2 - Is self-recovery winch shift linkage free from debris and damage?

TEST 2 - Is self-recovery winch shift linkage free from debris and damage?

1. Check self-recovery winch shift linkage for debris and damage. If debris found, clean shift linkage. (WP 0148)



Figure 2.

2. Check self-recovery winch shift linkage for debris and damage. If debris found, clean shift linkage. (WP 0148)



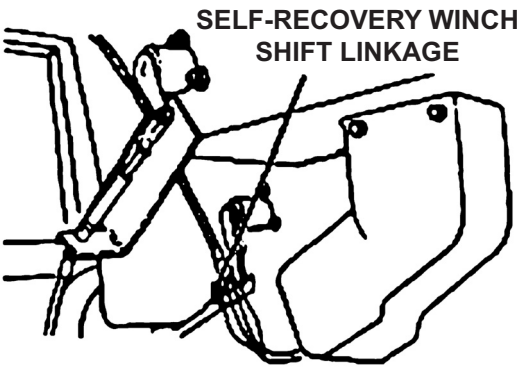


Figure 3.

CONDITION/INDICATION

Is self-recovery winch shift linkage free from debris and damage?

DECISION

Linkage damaged. - Notify Supervisor. Test 3 - Does self-recovery winch operate properly?Notify Supervisor.
Linkage OK. - Notify Supervisor.

TEST 3 - Does self-recovery winch operate properly?

1. Start engine. (WP 0043)
2. Check operation of self-recovery winch. (WP 0093)

CONDITION/INDICATION

Does self-recovery winch operate properly?

DECISION

No - Notify supervisor.
Yes - Problem corrected.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
UNUSUALLY NOISY WHEN OPERATING

INITIAL SETUP:

Equipment Condition
Engine OFF. (WP 0056)
Parking brakes applied. (WP 0055)
Wheels chocked. (WP 0073)

TROUBLESHOOTING PROCEDURE
UNUSUALLY NOISY WHEN OPERATING

TEST 1 - Is self-recovery winch cable free of twists, tangles, or binding?

1. Check if self-recovery winch cable is twisted, tangled, or causing drum to bind. If cable is tangled, pay out or take up cable as necessary to straighten.

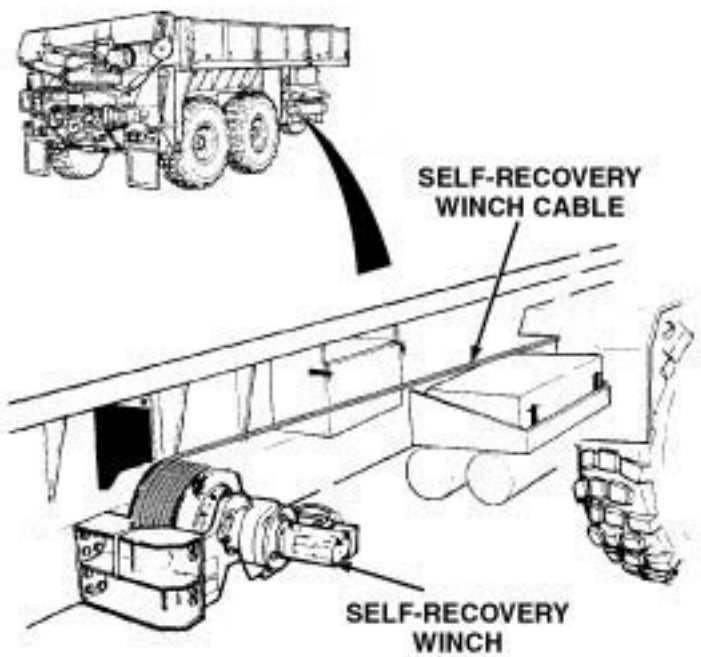


Figure 1.

CONDITION/INDICATION
Is self-recovery winch cable free of twists, tangles, or binding?

DECISION
No - Notify supervisor.
Yes - Test 2 - Is self-recovery winch free of unusual noise when operating?

TEST 2 - Is self-recovery winch free of unusual noise when operating?
1. Start engine. (WP 0043)
2. Operate self-recovery winch, and listen for unusual noise. (WP 0093)



Figure 2.

CONDITION/INDICATION
Is self-recovery winch free of unusual noise when operating?

DECISION
No - Notify supervisor.
Yes - Problem corrected.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
VEHICLE IS HARD TO STEER, SHIMMIES, WANDERS, OR PULLS TO ONE SIDE

INITIAL SETUP:

Equipment Condition
Engine OFF. (WP 0056)
Parking brakes applied. (WP 0055)
Wheels chocked. (WP 0073)

TROUBLESHOOTING PROCEDURE
VEHICLE IS HARD TO STEER, SHIMMIES, WANDERS, OR PULLS TO ONE SIDE

TEST 1 - Are tires inflated to proper pressure for road condition?

WARNING



- Prior to entering tank, read and follow all safety precautions in FM 10-67-1 . Liquids and vapors carried in the M978 tanker are flammable and may cause injury or death.
- To prevent fire or explosion, do not allow smoking, flame, sparks, and hot or glowing objects within 50 ft. (15 m) of vehicle. Failure to comply may result in injury or death to personnel.

NOTE

- Inflate tires only when they are cool. Inflate to proper pressure for road condition.
  Tire tread is non-directional. Vehicle operation is not affected by direction of traction bars.

1. Check tires for proper inflation. (WP 0139)

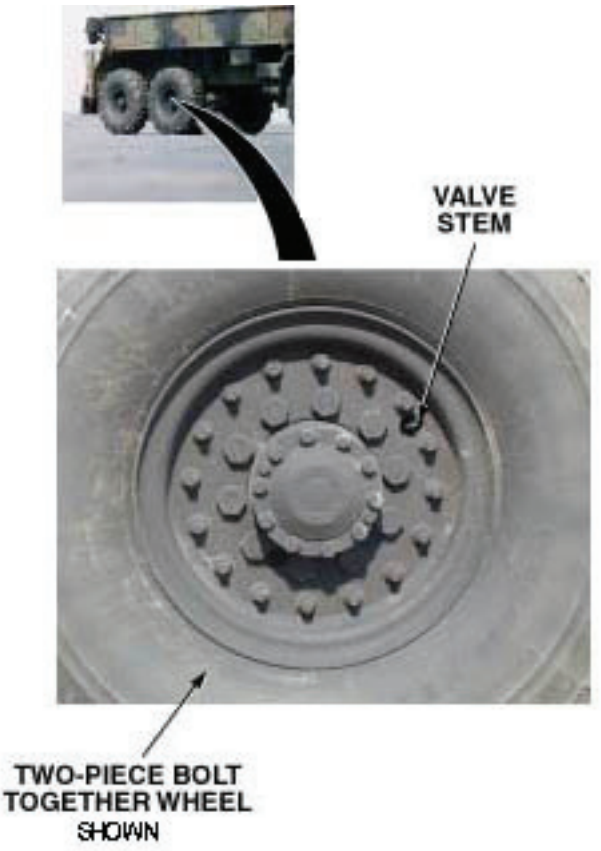


Figure 1.

2. If tires are improperly inflated, inflate or deflate tires to proper pressure.

CONDITION/INDICATION

Are tires inflated to proper pressure for road condition?

DECISION

Improperly inflated - Test 3 - Is vehicle hard to steer; or does it shimmy, wander, or pull to one side?
Inflation OK - Test 2 - Are wheels free of loose, missing, or broken lugnuts?

TEST 2 - Are wheels free of loose, missing, or broken lugnuts?

1. Check for loose, missing, or broken lugnuts.



Figure 2.

CONDITION/INDICATION

Are wheels free of loose, missing, or broken lugnuts?

DECISION

No - Tighten and/or replace loose, missing, or damaged lugnut(s). (WP 0149)
Yes - Notify Supervisor.

TEST 3 - Is vehicle hard to steer; or does it shimmy, wander, or pull to one side?

1. Start engine. (WP 0043)
2. Test drive vehicle.

CONDITION/INDICATION

Is vehicle hard to steer; or does it shimmy, wander, or pull to one side?

DECISION

No - Notify Supervisor.
Yes - Problem corrected.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
VEHICLE STEERING SLOW TO RESPOND OR INTERMITTENT

INITIAL SETUP:

Equipment Condition
Engine OFF. (WP 0056)
Parking brakes applied. (WP 0055)
Wheels chocked. (WP 0073)

TROUBLESHOOTING PROCEDURE
VEHICLE STEERING SLOW TO RESPOND OR INTERMITTENT

TEST 1 - Is hydraulic fluid low?

1. Check for low hydraulic fluid. (WP 0141)
2. If fluid level is low,add hydraulic fluid. (WP 0141)

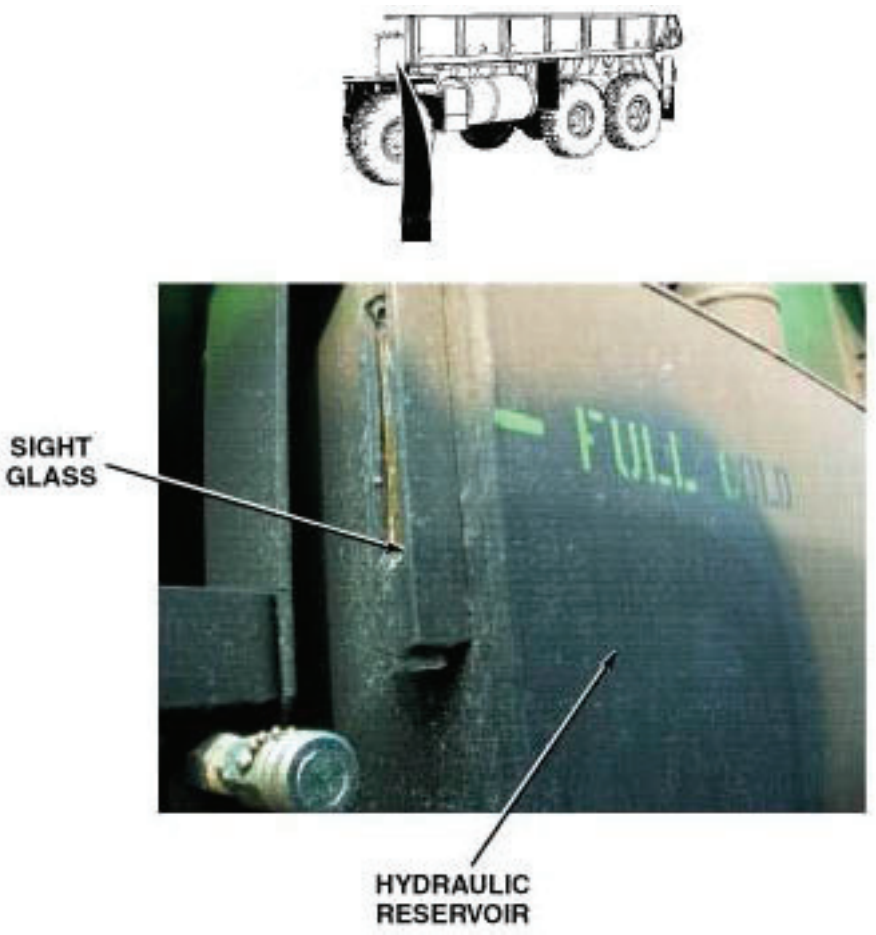


Figure 1.

CONDITION/INDICATION

Is hydraulic fluid low?

DECISION

Fluid level low - Test 3 - Is steering slow to respond or intermittent?

Fluid level OK - Test 2 - Are there any leaking or damaged hydraulic fittings or lines?

TEST 2 - Are there any leaking or damaged hydraulic fittings or lines?

WARNING



Caution the hydraulic system maybe under pressure be sure to wear the proper eye protection to avoid personal injury.

1. Check for leaking or damaged hydraulic lines and/or fittings.

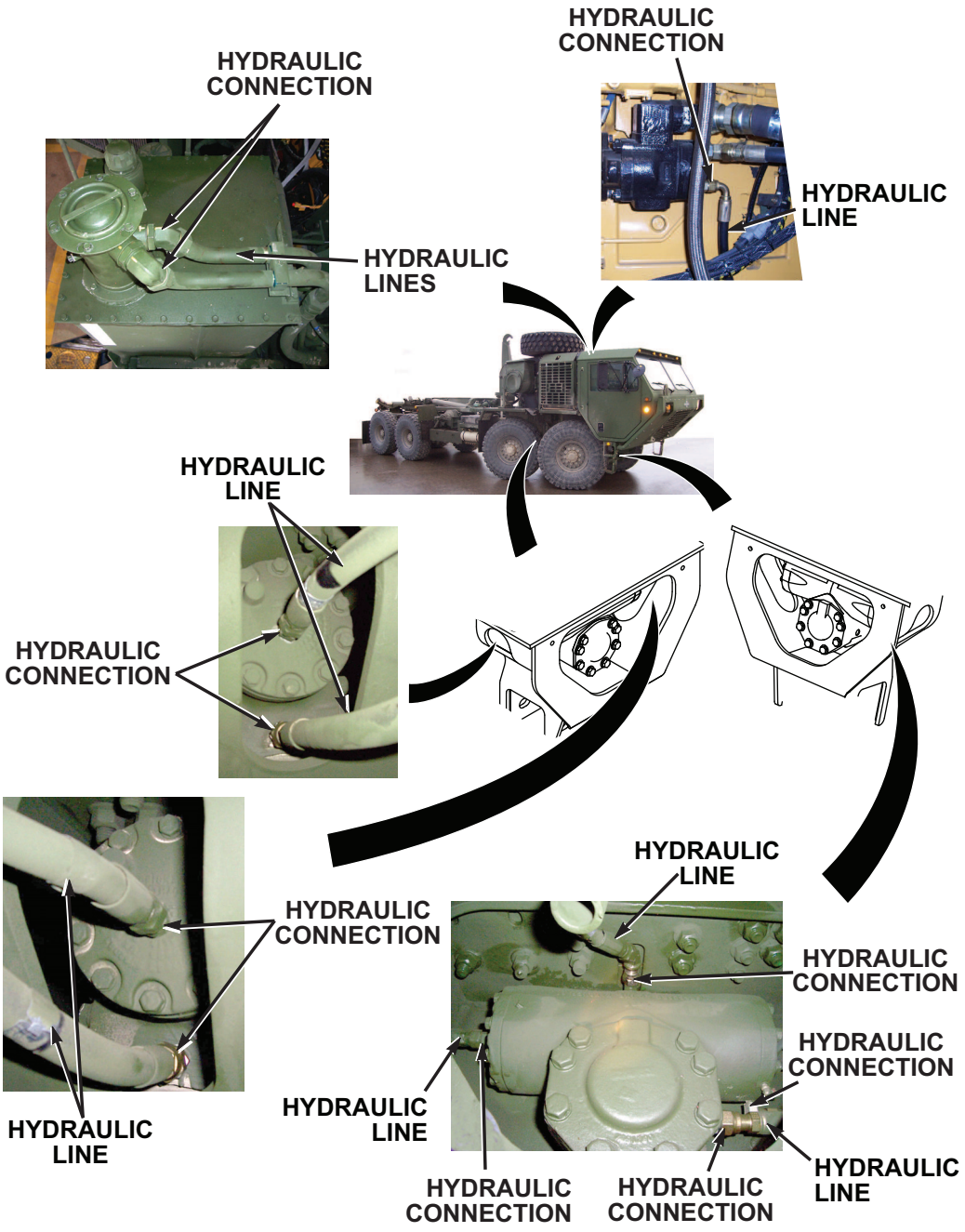


Figure 2.

2. If loose hydraulic fluid fittings are found, tighten fittings.

CONDITION/INDICATION

Are there any leaking or damaged hydraulic fittings or lines?

DECISION

Hydraulic lines damaged or leaking. - Ensure fittings are tightened and notify supervisor of faulty hydraulic lines. Tighten loose fittings. (Test 3 - Is steering slow to respond or intermittent?)Notify Supervisor.

No leaks, damaged lines or loose fittings found. - Notify Supervisor.

TEST 3 - Is steering slow to respond or intermittent?

1. Start engine. (WP 0043)
2. Test drive vehicle.

CONDITION/INDICATION

Is steering slow to respond or intermittent?

DECISION

Steering faulty - Notify Supervisor.

Steering OK - Problem corrected.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
WATER IS DISPENSED WITH FUEL

INITIAL SETUP:

Equipment Condition
Engine OFF. (WP 0056)
Parking brakes applied. (WP 0055)
Wheels chocked. (WP 0073)

TROUBLESHOOTING PROCEDURE
WATER IS DISPENSED WITH FUEL

TEST 1 - Is fuel free from contamination?

NOTE

Drain fuel from filter separator tank into suitable, non-spark producing container.

1. Drain fuel from filter separator by opening V15 DRAIN VALVE on filter-separator.

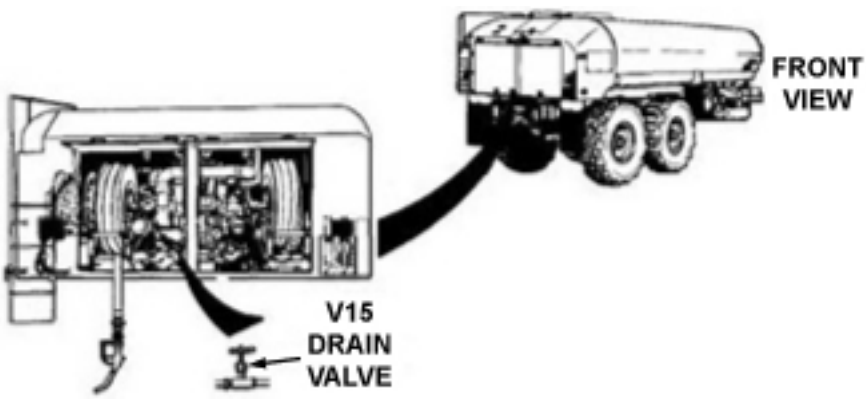


Figure 1.

2. Check fuel for water contamination. If fuel is cloudy, drain fuel until clean fuel is discharged.

CONDITION/INDICATION
Is fuel free from contamination?

DECISION

No - Notify Supervisor.
Yes - Problem corrected.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
UNUSUALLY NOISY WHEN OPERATING

INITIAL SETUP:

Equipment Condition
Engine OFF. (WP 0056)
Parking brakes applied. (WP 0055)
Wheels chocked. (WP 0073)

TROUBLESHOOTING PROCEDURE
UNUSUALLY NOISY WHEN OPERATING

TEST 1 - Is transmission/transfer case free from unusual noise while operating?
1. Start engine. (WP 0043)
2. Test drive vehicle.



Figure 1.

CONDITION/INDICATION
Is transmission/transfer case free from unusual noise while operating?

DECISION
No - Notify supervisor.
Yes - Problem corrected.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
SLOW OR DIFFICULT ENGAGEMENT

INITIAL SETUP:

Equipment Condition
Engine OFF. (WP 0056)
Parking brakes applied. (WP 0055)
Wheels chocked. (WP 0073)

TROUBLESHOOTING PROCEDURE
SLOW OR DIFFICULT ENGAGEMENT

TEST 1 - Does transmission and/or transfer case engage normally?

1. Start engine. (WP 0043)
2. Test drive vehicle.



Figure 1.

CONDITION/INDICATION
Does transmission and/or transfer case engage normally?

DECISION
No - Notify Supervisor.
Yes - Problem corrected.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
TRANSFER CASE SHIFT LEVER WILL NOT SHIFT

INITIAL SETUP:

Equipment Condition
Engine OFF. (WP 0056)
Parking brakes applied. (WP 0055)
Wheels chocked. (WP 0073)

TROUBLESHOOTING PROCEDURE
TRANSFER CASE SHIFT LEVER WILL NOT SHIFT

TEST 1 - Does transfer case shift lever shift when transmission is shifted from Neutral (N) to Drive (D)?

1. Start engine (WP 0043)
2. Move transmission range selector from Neutral (N) to Drive (D). Apply throttle to roll vehicle slightly, and shift transmission from (D) to (N). As vehicle stops, shift TRANSFER CASE shift lever.

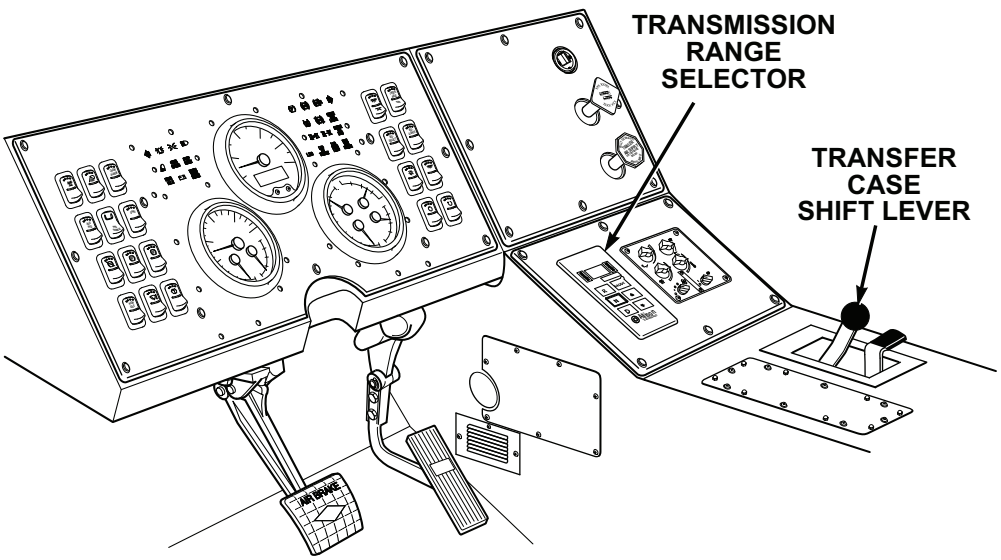


Figure 1.

CONDITION/INDICATION

Does transfer case shift lever shift when transmission is shifted from Neutral (N) to Drive (D)?

DECISION

No - Test 2 - Does transfer case shift lever shift when transmission is shifted from Neutral (N) to Reverse (R)?
Yes - Problem corrected.

TEST 2 - Does transfer case shift lever shift when transmission is shifted from Neutral (N) to Reverse (R)?

1. Move transmission range selector from Neutral (N) to Reverse (R). Apply throttle to roll vehicle slightly and shift transmission from R to N. As vehicle stops, shift TRANSFER CASE shift lever.

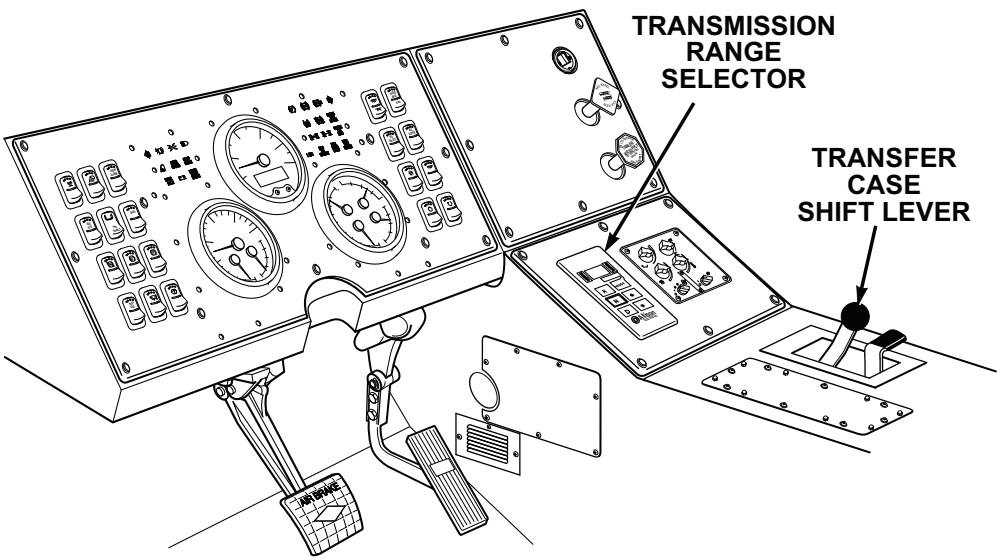


Figure 2.

CONDITION/INDICATION

Does transfer case shift lever shift when transmission is shifted from Neutral (N) to Reverse (R)?

DECISION

No - Test 3 - Is shift cable free of mud and debris?
Yes - Problem corrected.

TEST 3 - Is shift cable free of mud and debris?

1. Turn engine OFF. (WP 0056)

2. Check shift cable for mud and/or debris.

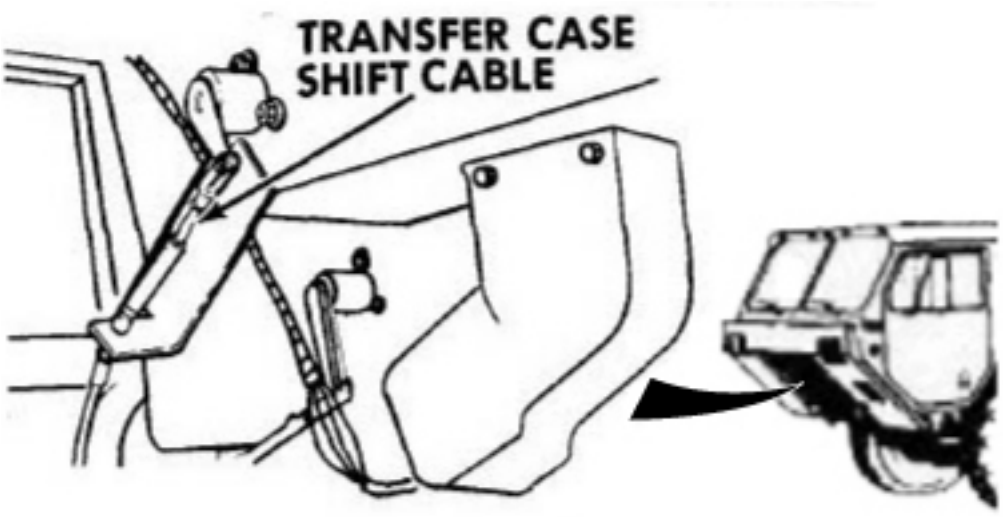


Figure 3.

3. If needed, clean shift cable. (WP 0148)

CONDITION/INDICATION

Is shift cable free of mud and debris?

DECISION

Dirty - Test 4 - Does transfer case shift lever shift normally?
Clean - Notify Supervisor.

TEST 4 - Does transfer case shift lever shift normally?

1. Start engine. (WP 0043)
   a. Test drive vehicle.
2. Attempt to shift transfer case. (WP 0047)

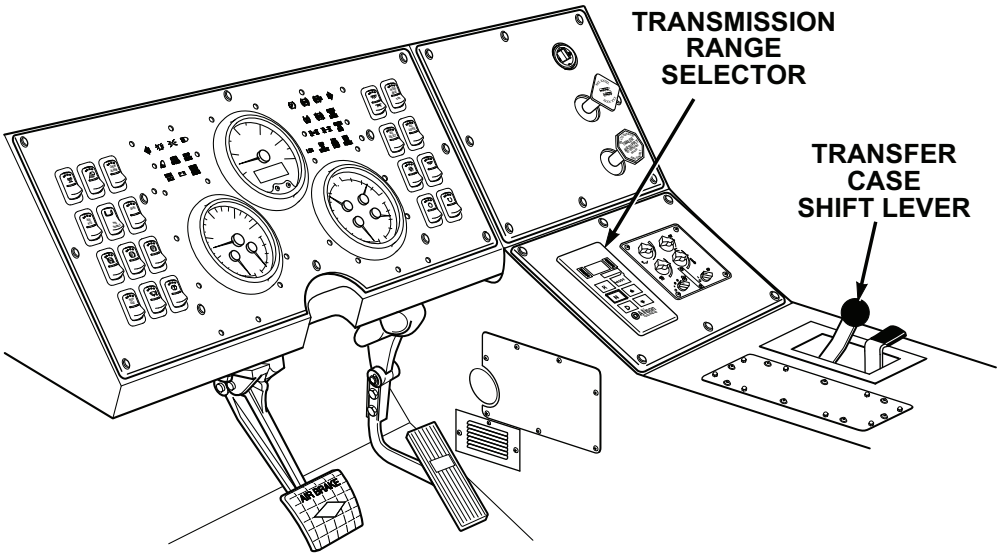


Figure 4.

3. Turn engine OFF. (WP 0056)

CONDITION/INDICATION

Does transfer case shift lever shift normally?

DECISION

No - Notify Supervisor.
Yes - Problem corrected.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
TRANS TEMP GAUGE INDICATES OVERHEATING DURING NORMAL OPERATION

INITIAL SETUP:

Equipment Condition
Engine OFF. (WP 0056)
Parking brakes applied. (WP 0055)
Wheels chocked. (WP 0073)

TROUBLESHOOTING PROCEDURE
TRANS TEMP GAUGE INDICATES OVERHEATING DURING NORMAL OPERATION

TEST 1 - Is transmission fluid at proper operating level?

1. Check transmission fluid level. (WP 0141)

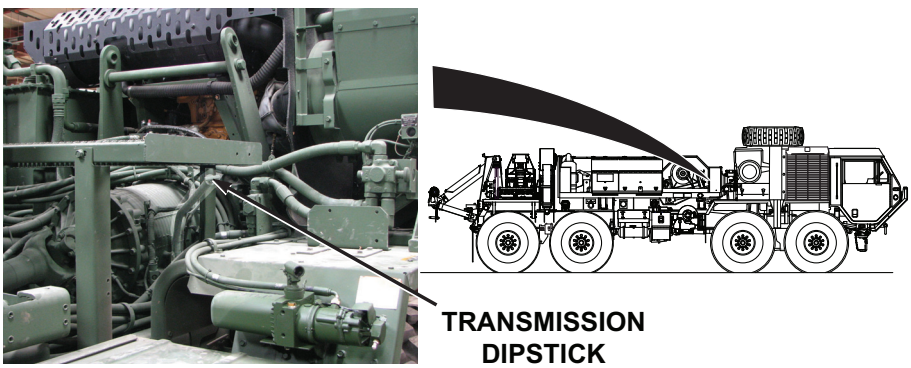


Figure 1.

2. If transmission fluid is low, add transmission fluid. (WP 0141)

CONDITION/INDICATION

Is transmission fluid at proper operating level?

DECISION

Transmission fluid was high. - Notify Supervisor. Test 2 - Does TRANS TEMP gauge indicate overheating during normal operation?
Transmission fluid was at proper level. - Notify Supervisor.

TEST 2 - Does TRANS TEMP gauge indicate overheating during normal operation?

1. Start engine. (WP 0043)
2. Test drive vehicle.

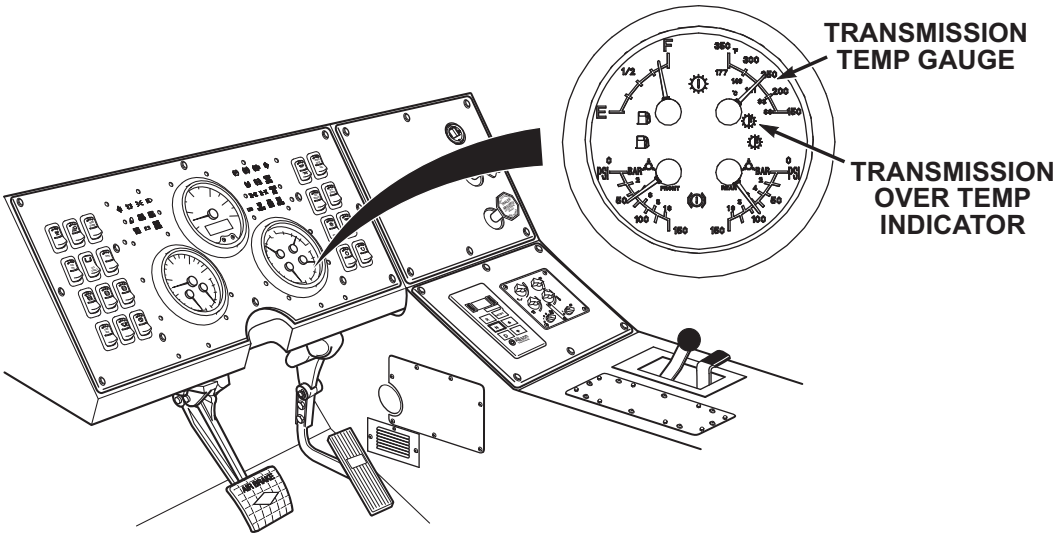


Figure 2.

CONDITION/INDICATION

Does TRANS TEMP gauge indicate overheating during normal operation?

DECISION

Overheating - Notify Supervisor.
Correct temperature - Problem corrected.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
WHEEL WOBBLES

INITIAL SETUP:

Equipment Condition
Engine OFF. (WP 0056)
Parking brakes applied. (WP 0055)
Wheels chocked. (WP 0073)

TROUBLESHOOTING PROCEDURE
WHEEL WOBBLES

TEST 1 - Are any lugnuts loose, missing or broken?

1. Check wheels for loose, missing or broken lugnuts.

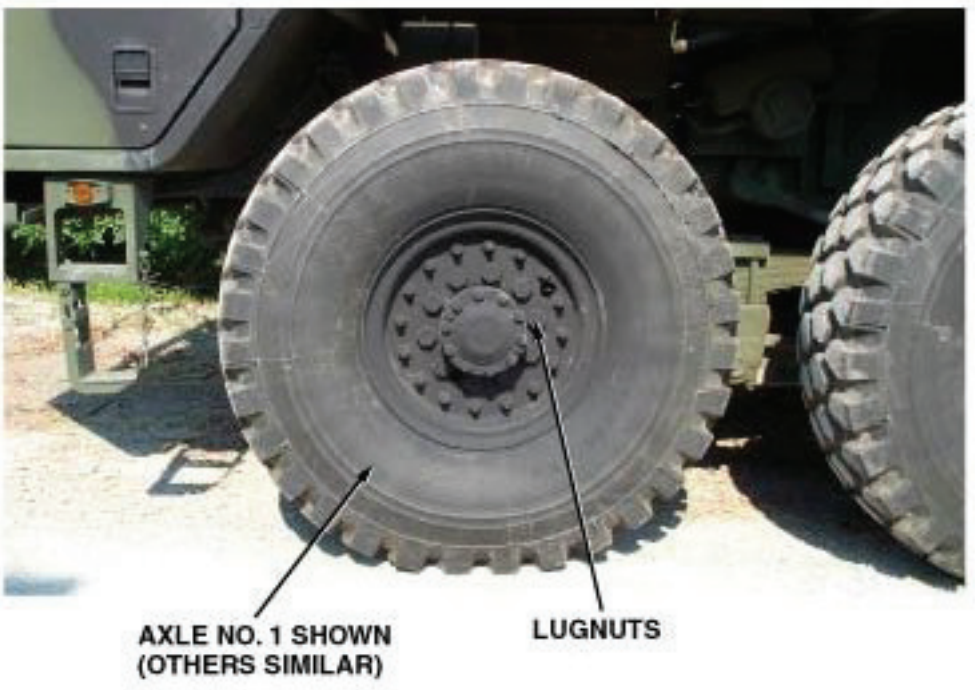


Figure 1.

CONDITION/INDICATION

Are any lugnuts loose, missing or broken?

DECISION

No - Tighten or replace lugnut(s). (WP 0149)
Yes - Test 2 - Are any of the wheels bent?

TEST 2 - Are any of the wheels bent?

1. Check to see if any of the wheels are bent.

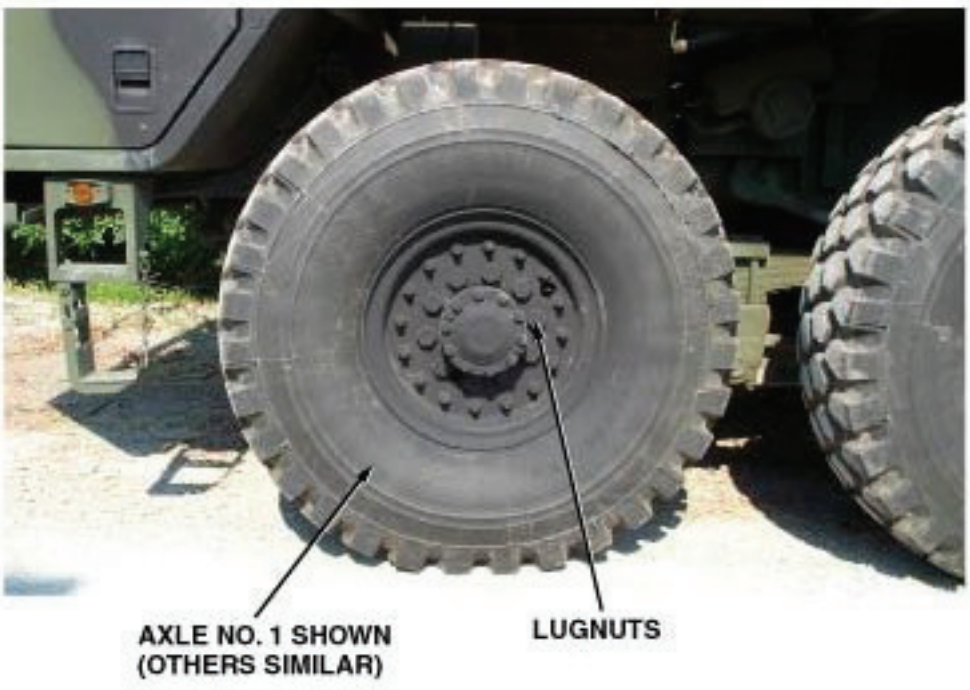


Figure 2.

CONDITION/INDICATION

Are any of the wheels bent?

DECISION

Wheel bent - Replace damaged wheel(s). (WP 0149)
Wheels OK - Notify Supervisor.

TEST 3 - Do any of the wheels wobble?

1. Start engine. (WP 0043)
2. Test drive vehicle.

CONDITION/INDICATION

Do any of the wheels wobble?

DECISION

Wheel wobbles - Notify Supervisor.
Wheel OK - Notify Supervisor.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
TIRES WORN UNEVENLY OR EXCESSIVELY

INITIAL SETUP:

Equipment Condition
Engine OFF. (WP 0056)
Parking brakes applied. (WP 0055)
Wheels chocked. (WP 0073)

TROUBLESHOOTING PROCEDURE
TIRES WORN UNEVENLY OR EXCESSIVELY

TEST 1 - Are tires inflated to proper pressure for road condition?

WARNING



Tire air pressure must be checked properly. Failure to comply may result in injury or death to personnel.

NOTE

- Inflate tires only when they are cool. Inflate to proper pressure for road condition.
  Tire tread is non-directional. Vehicle operation is not affected by direction of traction bars.

1. Check tires for proper inflation. (WP 0142)

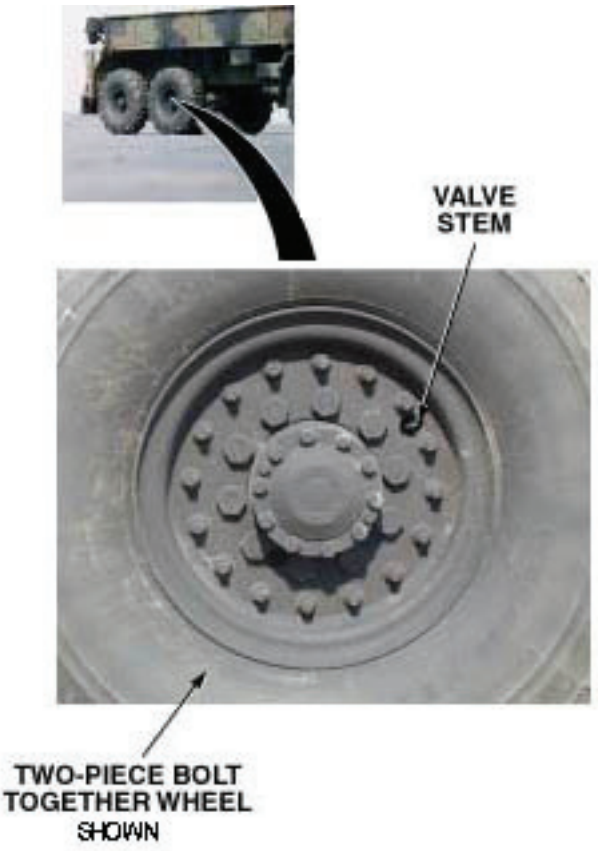


Figure 1.

2. If tires are improperly inflated, inflate or deflate to proper pressure.

CONDITION/INDICATION

Are tires inflated to proper pressure for road condition?

DECISION

Improperly inflated - Notify Supervisor.
Inflation OK - Notify Supervisor.

END OF WORK PACKAGE

CHAPTER 4

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

OPERATOR MAINTENANCE
INTRODUCTION - PREVENTIVE MAINTENANCE

PMCS INTRODUCTION

This section contains PMCS requirements for HEMTT series vehicles. The PMCS tables contain checks and services necessary to ensure that the vehicle is ready for operation. Using PMCS tables, perform maintenance at specified intervals.

MAINTENANCE FORMS AND RECORDS

Every mission begins and ends with paperwork. There is not much of it, but it must be kept up. The filled out forms and records have several uses. They are a permanent record of services, repairs, and modifications made on the vehicle; they are reports to unit maintenance and to your Commander; and they serve as a checklist to find out what is wrong with the vehicle after its last use, and whether those faults have been fixed. For the information needed on forms and records, refer to DA PAM 750-8. (WP 0157)

PREVENTIVE MAINTENANCE CHECKS AND SERVICES

- Do the before (B) PREVENTIVE MAINTENANCE just before operating vehicle. Pay attention to the CAUTIONS and WARNINGS.
- Do the during (D) PREVENTIVE MAINTENANCE while vehicle and/or its component systems are in operation. Pay attention to the CAUTIONS and WARNINGS.
- Do the after (A) PREVENTIVE MAINTENANCE right after operating vehicle. Pay attention to the CAUTIONS and WARNINGS.
- Do the (W) PREVENTIVE MAINTENANCE weekly. Pay attention to the CAUTIONS and WARNINGS
- Do the (M) PREVENTIVE MAINTENANCE once a month. Pay attention to the CAUTIONS and WARNINGS.
- If something does not work, troubleshoot and notify the supervisor.
- Always do PREVENTIVE MAINTENANCE in the same order until it gets to be habit. Once practiced, problems can be spotted in a hurry.
- If something looks wrong and cannot be fixed right then, write it on DA Form 2404 (WP 0157) or DA Form 5988-E. (WP 0157) If something seems seriously wrong, report it to organizational maintenance RIGHT NOW.
- When doing PREVENTIVE MAINTENANCE, take along the tools needed and a rag or two to make all the checks.

GENERAL MAINTENANCE PROCEDURE

- **Cleanliness:** Dirt, grease, oil, and debris only get in the way and may cover up a serious problem. Use solvent cleaning compound (WP 0160, Table 1, Item 6, 7, 8, 9, 10, 11) on all metal surfaces and soapy water on rubber.
- **Bolts, Nuts, and Screws:** Check bolts, nuts, and screws for obvious looseness, missing, bent, or broken condition and tighten or replace as necessary. They cannot all be checked with a tool, of course, but look for chipped paint, bare metal, or rust around bolt heads.
- **Welds:** Look for loose or chipped paint, rust, or gaps where parts are welded together. If a bad weld is found, have it repaired.
- **Electric Wires and Connectors:** Look for cracked or broken insulation, bare wires, and loose or broken connectors. Tighten loose connectors and make sure wires are in good shape.
- **Hydraulic Lines and Fittings:** Look for wear, damage, and leaks, and make sure clamps and fittings are tight. Wet spots show leaks, of course, but a stain around a fitting or connector can indicate a leak. If a connector or fitting is loose, tighten it. If something is broken or worn out, repair or replace per applicable procedure.
- **Damage is defined as:** Any conditions that affect safety or would render the vehicle unserviceable for mission requirements.

FLUID LEAKAGE

It is necessary to know how fluid leakage affects the status of fuel, oil, coolant, and the hydraulic systems. The following are definitions of types/classes of leakage necessary to know in order to determine the status of the vehicle.

NOTE

Equipment operation is allowable with minor leakage (Class I or II). Consideration must be given to the fluid capacity in the item/system being checked/inspected. When in doubt, notify the supervisor. When operating with Class I or II leaks, continue to check fluid levels as required in the PMCS. Class III leaks should be repaired per applicable procedure.

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.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

Prior to performing your PMCS, check with your PLL clerk to verify that the latest publications are being used by the operator and organizational unit.

Listed below are links to each section of the PMCS. Just click on desired PMCS.

PMCS - BEFORE (WP 0139)

PMCS - DURING (WP 0140)

PMCS - AFTER (WP 0141)

PMCS - WEEKLY (WP 0142)

PMCS - MONTHLY (WP 0144)

PMCS - SEMIANNUAL (WP 0143)

Vehicles designated or dispatched to transport Class A or B ammunition, explosives, poisons, or radioactive yellow III materials over public highways require more stringent inspections.

Daily Walk Around PMCS Diagram. This routing diagram will be of help to complete the B, D, or A PMCS. It shows the vehicle PMCS routing track, which matches the sequence of PMCS to be performed.

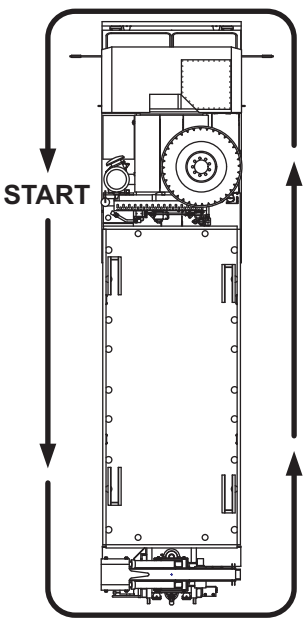


Figure 1.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
BEFORE - PREVENTIVE MAINTENANCE

INITIAL SETUP:

Tools and Special Tools
Gloves, Welders
None

Table 1. PMCS - BEFORE

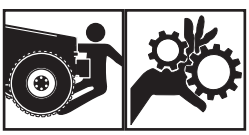
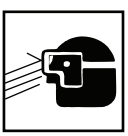
Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			WARNING  Do not start engine or move vehicle when personnel are under vehicle or working on brake lines. Failure to comply may result in injury or death to personnel. **WARNING**  Ensure engine is OFF and eye protection is worn when checking for leaks. Failure to comply may result in injury or death to personnel.	

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			NOTE Perform Operator's Before, After, and Weekly PMCS checks if: • You are the assigned driver but have not operated the vehicle since the last weekly inspection. • You are operating the vehicle for the first time. **NOTE** • Clean all lubrication points with cleaning compound, solvent and allow to dry prior to servicing. • When using a grease gun, apply lubricant to the fitting until clean lubricant squeezes out of the part being lubricated. • Always refer to lubrication instructions (WP 0145) to ensure equipment has correct lubricants appropriate to operating environment (expected continuous temperatures). If not, remove/drain and reapply/refill equipment with appropriate lubricants for operating environment as	

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			prescribed in lubrication instructions. (WP 0145) **NOTE** If leakage is detected, further investigation is needed to determine the location and cause of the leak. If there is any doubt, contact your supervisor or field level maintenance.	
1	Before	Driver Side Exterior	1. Check underneath entire length of driver side of vehicle for fluid and air leaks.	Any fuel, Class III leak, or air lines/fittings leaking or damaged.
			2. Visually check driver side of vehicle for obvious damage that would impair operation.	Any damage that would impair operation.
			3. Check for missing or damaged fire extinguisher on tool box:	Fire extinguisher missing or damaged.

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

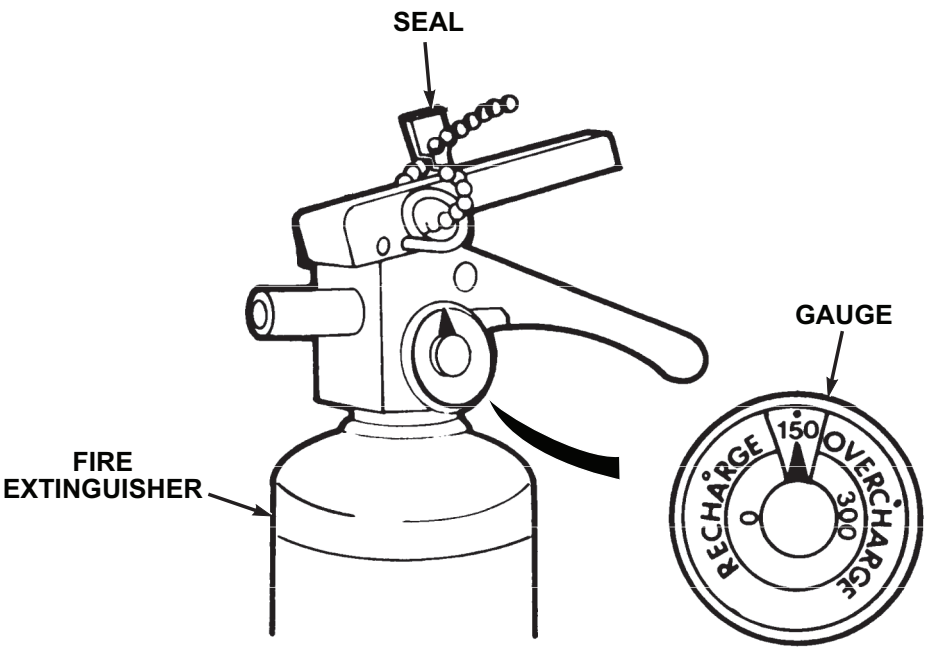


Figure 1.

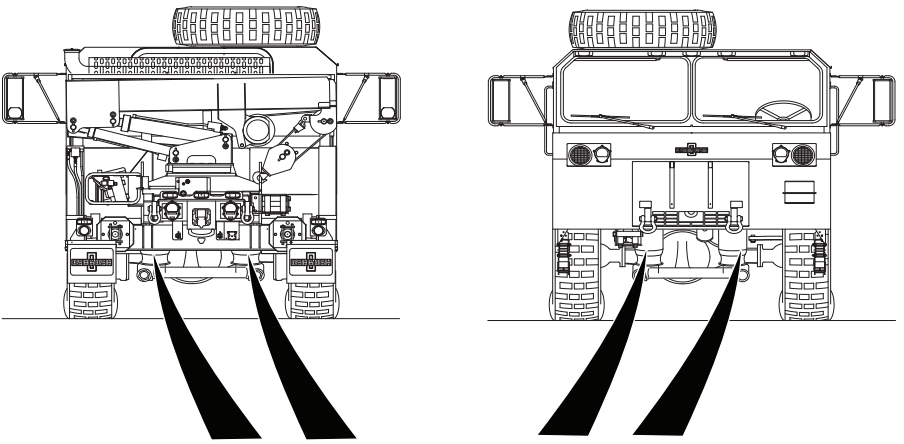
			a. Check gauge for proper pressure. b. Ensure fire extinguisher mounting is secure.	Pressure gauge needle in RECHARGE area.

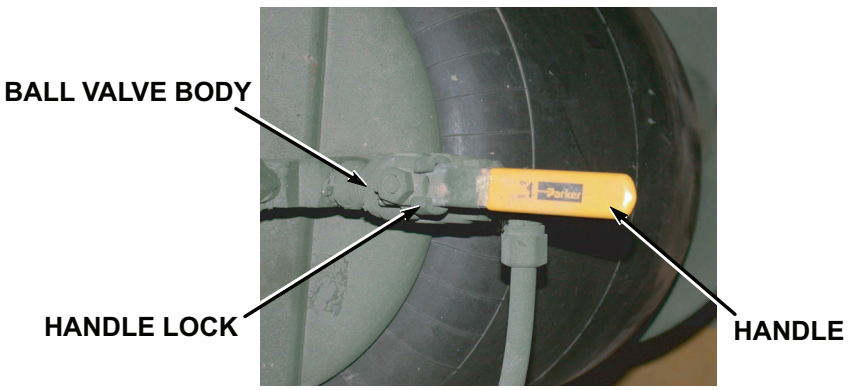
Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			c. Check for damaged or missing seal. **NOTE** Ball valve is in ON position when handle is in line with ball valve body (shown below).	Seal broken or missing.
2	Before	Driver Side Air Springs	1. Ensure two driver side air suspension ball valves are in ON position. (WP 0042)	Ball valves have damage that would prevent normal operation.

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:





BALL VALVE SHOWN IN ON POSITION

Figure 2.

			2. Check each air spring for inflation and obvious damage.	Air springs will not inflate or have damage that would

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
				prevent normal operation.



AIR SPRING

AIR SPRING SHOWN IS ON THE PASSENGER SIDE OF VEHICLE. EACH AXLE HAS AN AIR SPRING THAT IS SIMILAR.

Figure 3.

			WARNING  Do not operate a vehicle with a tire in an over-inflated or under-inflated condition, or with a questionable defect. Failure to comply may result in injury or death to personnel and damage to equipment.	

Table 1. PMCS - BEFORE - Continued

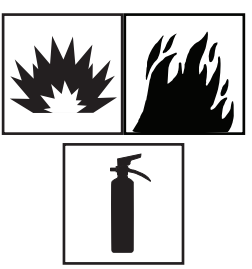
Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			NOTE • A tire is bad or in need of repair if the bead, sidewall, and tread areas show signs of damage. • Remember that this process requires you to make judgement calls and the goal is to safely maintain equipment in top quality conditions.	
3	Before	Driver Side Tires	Check for correct air pressure on each driver side tire and service tire (WP 0152) as required. **WARNING**  Fuel is very flammable and can explode easily. Keep fuel away from open fire and keep fire extinguisher within easy reach when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited when engine is hot. When working with fuel, post	Tire missing, deflated, or unserviceable.

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			signs that read NO SMOKING WITHIN 50 FEET OF VEHICLE. Failure to comply may result in injury or death to personnel. **NOTE** • Drain fuel into suitable container. • Operation of vehicle with malfunctioning fuel/water separator may violate AR 385-55. (WP 0157)	
4	Before	Fuel/Water Separator	1. Check for level of water in bowl of fuel/water separator. If there is water, turn thumb nut on bottom of bowl to open contaminant drain valve. Keep drain open until only pure fuel is flowing out of drain tube. Close drain valve by turning thumb nut.	

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

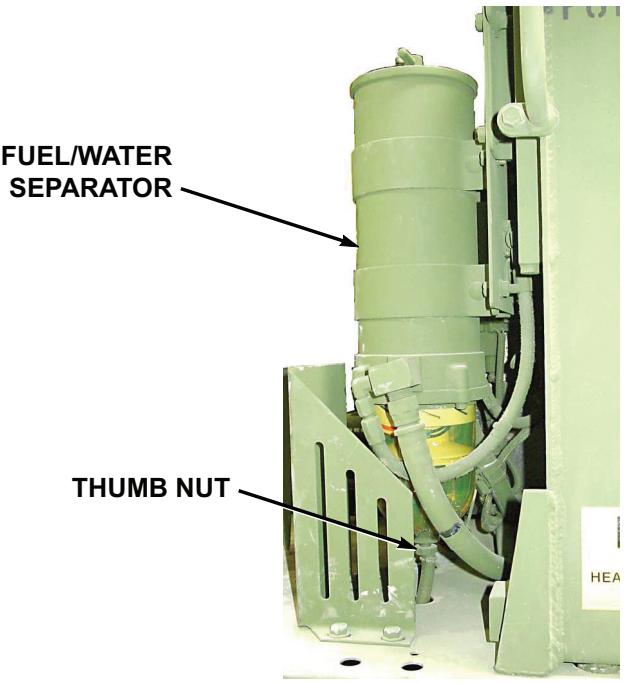


Figure 4.

			2. Check fuel/water separator for leaks and damage.	Any fuel leak.
5	Before	Engine	1. Check engine oil level on dip-stick.	

Table 1. PMCS - BEFORE - Continued

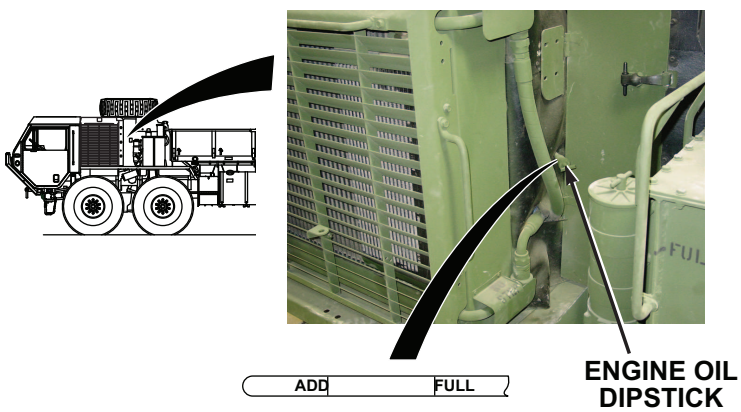
Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
				

Figure 5.

			NOTE Engine oil level should be between ADD and FULL mark on dipstick. a. Add engine oil as required. (WP 0145, Table 1) b. Drain excess engine oil as required, or notify field level maintenance.	
6	Before	24V Battery Disconnect Switch	Check 24V battery disconnect switch for proper operation. (WP 0075)	24V battery disconnect switch inoperative.

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

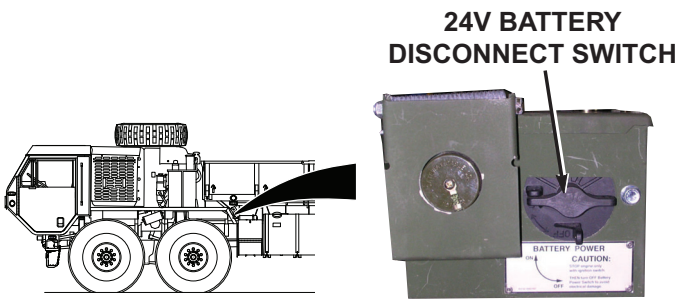


Figure 6.

7	Before	Rear of Vehicle	Visually check rear of vehicle for obvious damage that would impair operation.	Any damage that would impair operation.
8	Before	Fuel Tank Module	1. Check fuel tank for cracks and signs of leakage.	Fuel tank leaks.

Table 1. PMCS - BEFORE - Continued

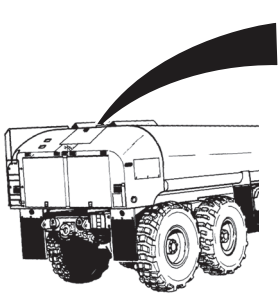
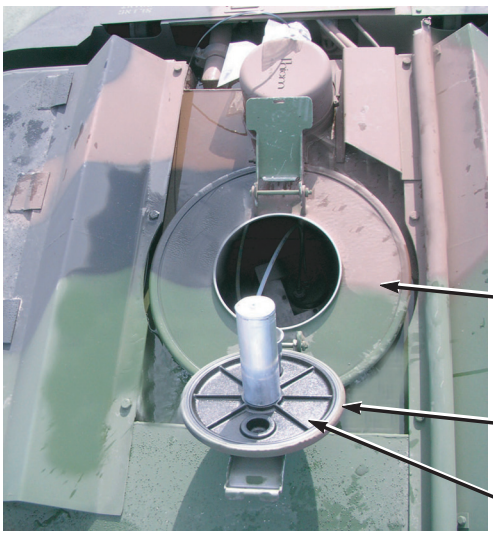
Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			 	
			WARNING  Open manhole cover slowly to relieve pressure. Failure to comply may result in injury to personnel.	
			2. Inspect Manhole cover for damage.	Manhole cover is unserviceable.

Figure 7.

Table 1. PMCS - BEFORE - Continued

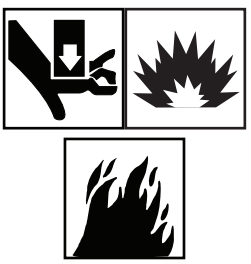
Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			3. Inspect fill cover and seal for damage and proper closure.	Fill cover is unserviceable.
			4. Check that fuel does not leak around fill hose seal.	Any fuel leak.
			WARNING  • Keep clear when operating pump module rear doors. When each door is about halfway open, gas pistons push doors open quickly and with much force. Failure to comply may result in injury or death to personnel. • Fuel is very flammable and can explode easily. Keep fuel away from open fire and keep fire extinguisher within easy reach when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited	

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			when engine is hot. When working with fuel, post signs that read NO SMOKING WITHIN 50 FEET OF VEHICLE. Failure to comply may result in injury or death to personnel. • Discharge from filter-separator tank shall be drained into non-spark producing container to prevent fire or explosion. Failure to comply may result in injury or death to personnel. **NOTE** Drain fuel and water into a suitable container.	
9	Before	Fuel Tank Module	1. Open V15 DRAIN VALVE and drain water and other contaminants out of filter-separator tank until pure fuel is coming out of valve.	

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

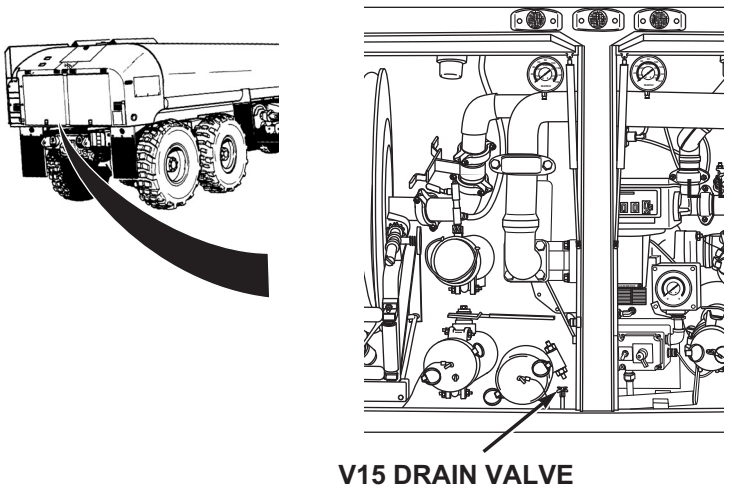


Figure 8.

			2. Check hoses and hose reels for obvious damage.	Hose or hose reel is damaged and is needed for intended mission.

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

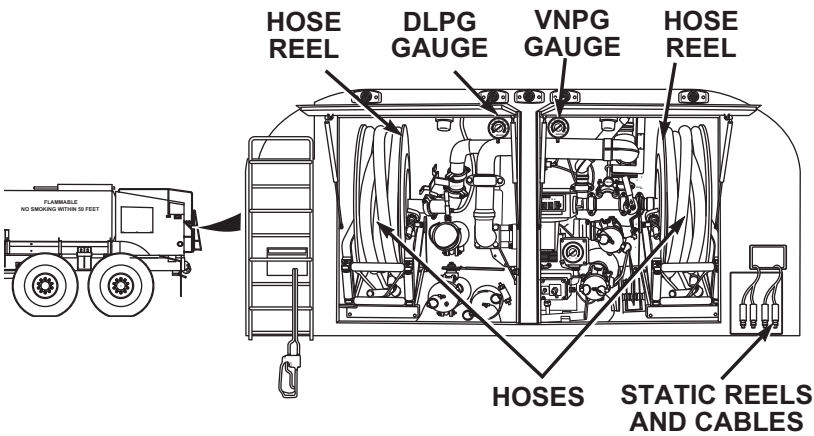


Figure 9.

			3. Check nozzles and adapters for obvious damage.	Nozzle or reducer adapter is damaged and is needed for intended mission.
			4. Check static reels and cables for damage that would prevent their use.	Either/both of the two static reels or cables are missing or unserviceable.
			5. Check DLPG gauge and VNPG gauge glass bezels to ensure	Glass bezel is missing or

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			that they are firmly attached to gauge bodies.	broken and is required for intended mission.
			6. Check fuel suction hose and storage tube for obvious damage and missing parts.	Fuel suction hose and/or storage tube is damaged or missing parts.

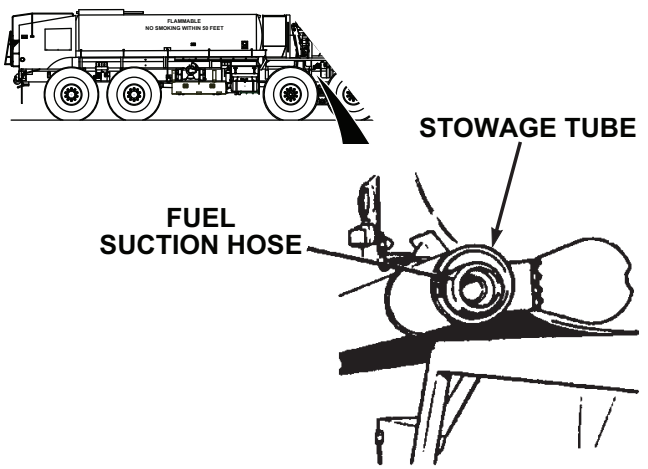


Figure 10.

10	Before	Self-Recovery Winch (SRW)	1. Inspect self-recovery winch for obvious damage.	Self-recovery winch unserviceable.

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

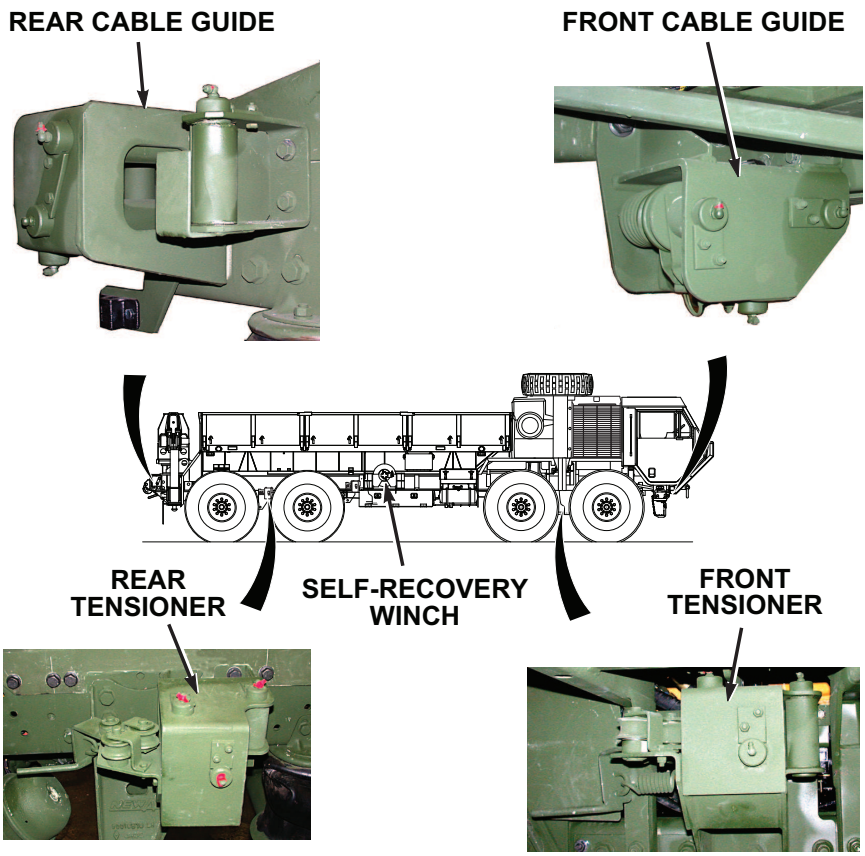


Figure 11.

		2.	Inspect front cable guide for any loose or missing parts and any obvious damage.	Front cable guide has loose or missing parts, or is

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
				unserviceable.
			3. Inspect front tensioner for loose or missing parts and any obvious damage.	Front tensioner has loose or missing parts, or is unserviceable.
			4. Inspect rear tensioner for loose or missing parts and any obvious damage.	Rear tensioner has loose or missing parts, or is unserviceable.
			5. Inspect rear cable guide for loose or missing parts and any obvious damage	Rear cable guide has loose or missing parts, or is unserviceable.
11	Before	Wheel Chocks	Ensure vehicle is equipped with four wheel chocks.	Vehicle is equipped with less than four wheel chocks.
			NOTE If leakage is detected, further investigation is needed to de-	

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			termine the location and cause of the leak. If there is any doubt, contact your supervisor or field level maintenance.	
12	Before	Passenger Side Exterior	1. Check underneath entire length of driver side of vehicle for fluid and air leaks.	Any fuel, Class III leak, or air lines/fittings leaking or damaged.
			2. Visually check driver side of vehicle for obvious damage that would impair operation.	Any damage that would impair operation.
			3. Check for missing or damaged fire extinguisher mounted on rear of battery box:	Fire extinguisher missing or damaged.

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

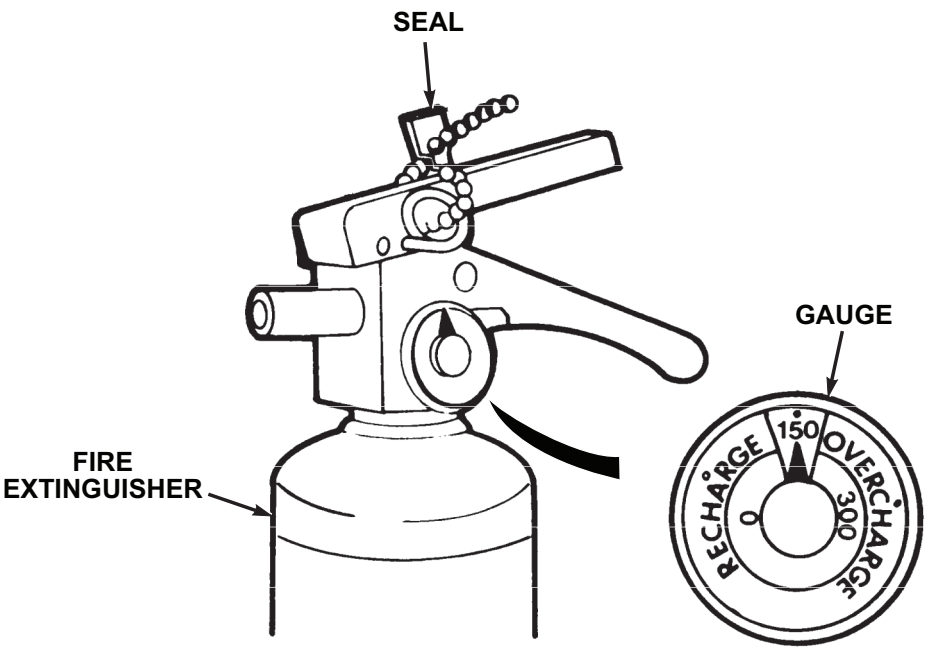


Figure 12.

			a. Check gauge for proper pressure.	Pressure gauge needle in RECHARGE area.
			b. Ensure fire extinguisher mounting is secure.	

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			c. Check for damaged or missing seal.	Seal broken or missing.
13	Before	Passenger Side Air Springs	1. Ensure two passenger side air suspension ball valves are in ON position. (WP 0042)	Ball valve damaged/ will not move to ON position.



AIR SPRING SHOWN IS ON THE PASSENGER SIDE OF VEHICLE. EACH AXLE HAS AN AIR SPRING THAT IS SIMILAR.

Figure 13.

			2. Check each air spring for inflation and obvious damage.	Air springs will not inflate or have damage that would prevent normal operation.

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			WARNING  Do not operate a vehicle with a tire in an over-inflated or under-inflated condition, or with a questionable defect. Failure to comply may result in injury or death to personnel and damage to equipment. **NOTE** • Remember that a tire in storage (spare) can be flat but not look like it. The HEMTT tire sidewalls can support the wheel. Don't be fooled. • A tire is bad or in need of repair if the bead, sidewall, and tread areas show signs of damage. • Remember that this process requires you to make judgement calls and the goal is to safely maintain equipment in top quality conditions.	
14	Before	Passenger Side Tires (in-	1. Check for correct air pressure on each passenger side tire (includ-	Tire missing, defla-

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
		cluding spare tire)	ing spare tire) and service tire (WP 0152) as required. **WARNING**  • During normal vehicle operation, cooling system can become very hot. Allow cooling system to cool prior to servicing. Failure to comply may result in injury to personnel. • Use extreme care when removing radiator cap. Sudden release of pressure can cause a steam flash. Slowly loosen radiator cap to the first stop to relieve pressure before removing radiator cap completely. Failure to comply may result in injury to personnel. • Use a clean, thick waste cloth or like material to remove radiator cap. Avoid using gloves. If hot water soaks through gloves, personnel could	ted, or un-serviceable.

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			be burned. Failure to comply may result in injury to personnel. **NOTE** • Coolant should completely fill lower sight glass at any engine temperature. • Coolant should completely fill upper sight glass if engine is hot. • Coolant should partially fill upper sight glass if engine is cold.	
15	Before	Radiator	Check sight glass on radiator to ensure coolant level is correct.	Coolant is low.

Table 1. PMCS - BEFORE - Continued

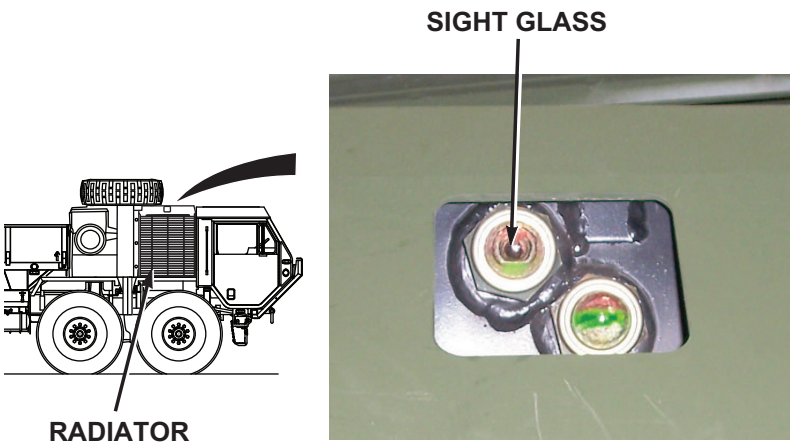
Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
				

Figure 14.

			WARNING  Ensure proper inspection and maintenance procedures of seat belt systems are adhered to. Failure to comply may result in injury or death to personnel. **NOTE** Vehicle operation with inoperative seat belts may violate AR 385-55. (WP 0157)	

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
16	Before	Seat Belts	1. Check seat belt strap webbing wear, tears, fraying, etc.	Webbing is cut, frayed or excessively worn.

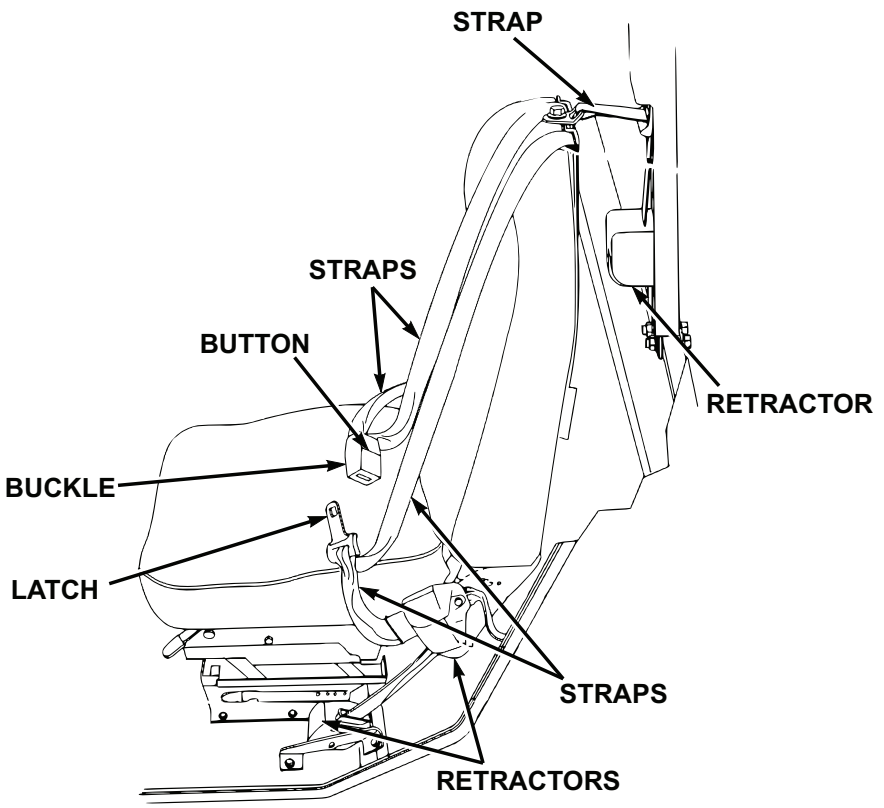


Figure 15.

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			2. Check latch and buckle for proper operation, wear, deformation, damage, and broken casing.	Buckle/latch does not engage with a solid-sounding “click” and/ or does not release freely when button is pushed. Molded plastic around buckle/latch is deformed, cracked, or broken.
			3. Check all seat belt retractors are not locked up and pay out/reel in webbing straps properly.	Retractor(s) do not operate properly, or retractor cover(s) are cracked/ broken.
			4. Check all seat belt mounting hardware for looseness and other damage.	Hardware is loose, missing, rusted, corroded, or damaged.
17	Before	Seats	Check operation of seat adjusting mechanisms. (WP 0023)	Seat adjustment mech-

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
				anism broken or missing.

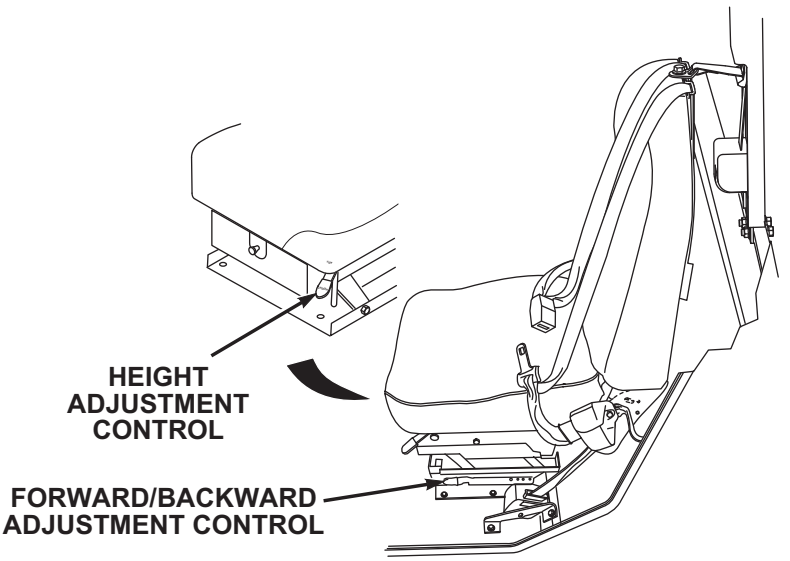


Figure 16.

18	Before	Fire Extinguisher (cab)	1. Check for missing or damaged fire extinguisher.	Fire extinguisher missing or damaged.

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

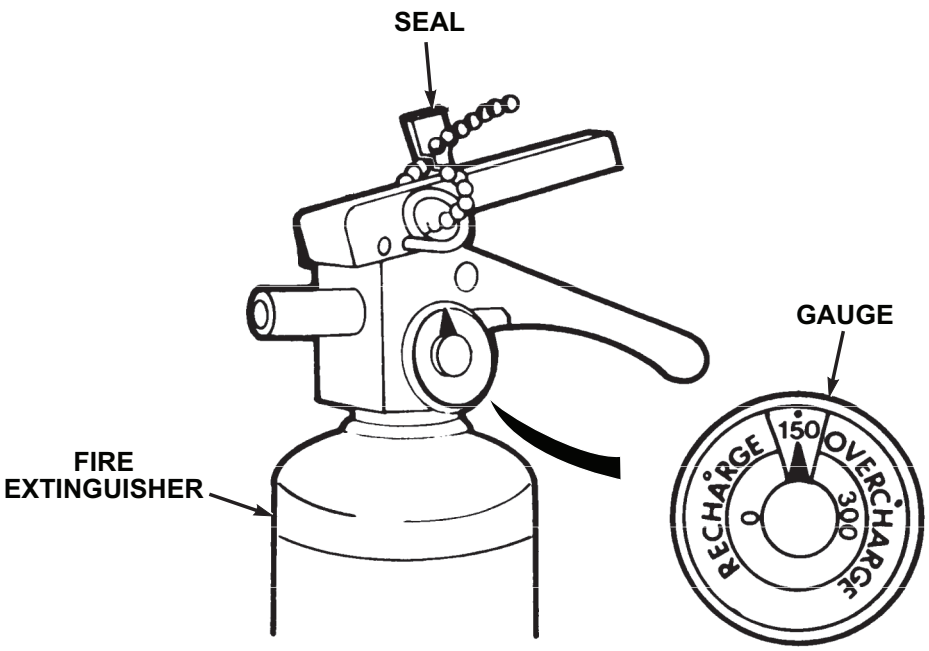


Figure 17.

			2. Check gauge for proper pressure of about 150 psi (1034 kPa).	Pressure gauge needle in RECHARGE area.
			3. Ensure fire extinguisher mounting is secure.	

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			4. Check for damaged or missing seal. **NOTE** • Complete all start engine (WP 0043) procedures, and comply with all notes, cautions, and warnings within that procedure before completing the PMCS checks below. • Once all start engine (WP 0043) procedures are completed, engine should be kept running for the remaining PMCS checks.	Seal broken or missing.
19	Before	Engine	Start engine. (WP 0043) **NOTE** Check the instruments listed below for damage, operation, and condition.	Engine fails to start.
20	Before	Instru-ments	1. Engine oil pressure gauge.	Engine oil pressure gauge is in-operative.

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

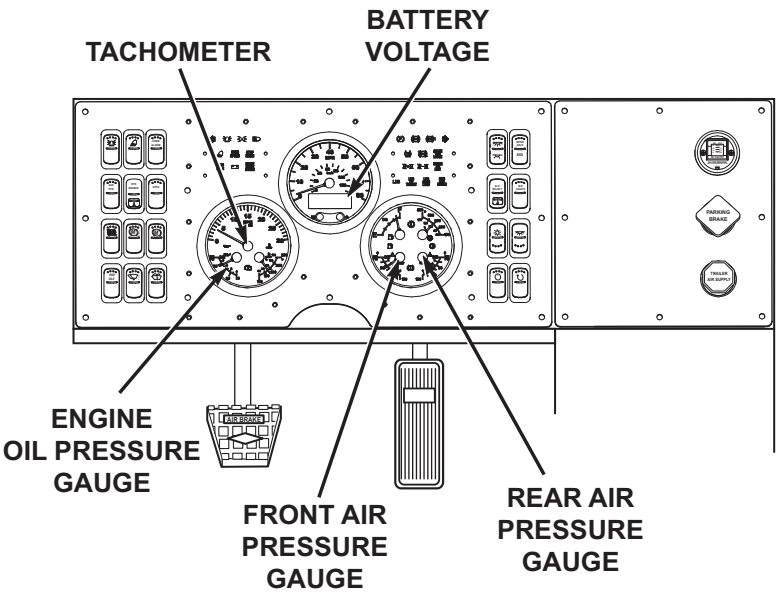


Figure 18.

			2. Tachometer.	Tachometer is inoperative or indicates less than 625 rpm or more than 725 rpm at idle after engine has been properly warmed up (start engine (WP

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
				0043) procedure completed).
			3. Battery voltage readout.	Battery voltage readout is inoperative, or indicates less than 24 VDC or more than 28 VDC with engine running.
			NOTE Air pressure buzzer will sound anytime low air indicator is illuminated. Ensure low air indicator and buzzer activate when air pressure falls below 60 to 70 psi (4.83 bar) in FRONT air system.	
			4. FRONT air pressure gauge.	FRONT air pressure gauge is inoperative or indicates FRONT air system is below 70 psi (4.83 bar) after engine has been properly

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
				warmed up (start engine (WP 0043) procedure completed). Low air pressure indicator and/ or buzzer remain on, or do not operate.
			NOTE Air pressure buzzer will sound anytime low air indicator is illuminated. Ensure low air indicator and buzzer activate when air pressure falls below 60 to 70 psi (4.83 bar) in REAR air system.	
			5. REAR air pressure gauge.	REAR air pressure gauge is inoperative or indicates REAR air system is below 70 psi (4.83 bar) after engine has been properly warmed up (start en-

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
				gine (WP 0043) procedure completed). Low air pressure indicator and/ or buzzer remain on, or do not operate.
			6. Air filter restriction indicator.	Air filter restriction indicator inoperative, cracked, or unserviceable.

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

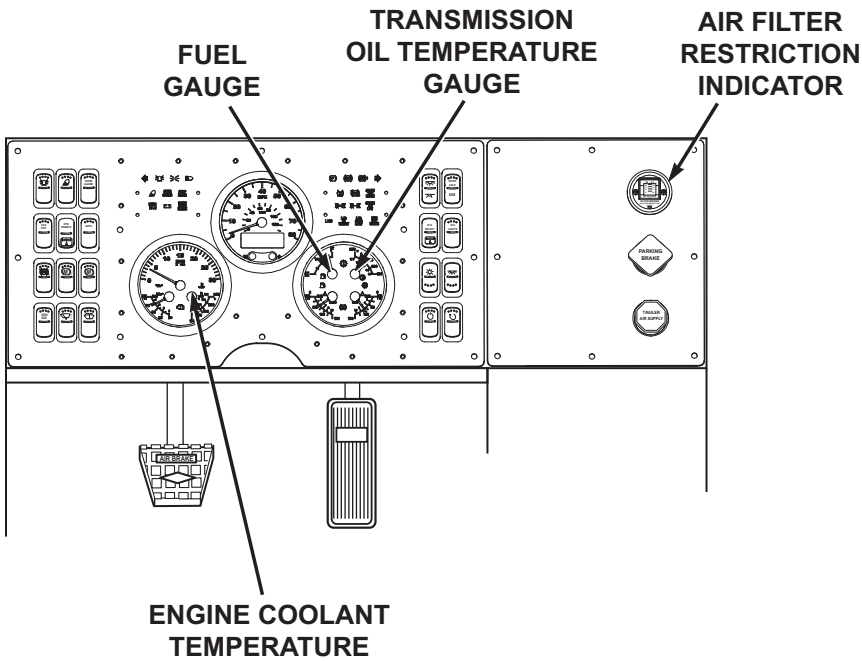


Figure 19.

			NOTE Several minutes are required for engine to warm up so an accurate reading can be taken.	
			7. Engine coolant temperature gauge.	Engine coolant temperature gauge is in-

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
				operative, or indicates less than 180°F (82° C) or more than 219°F (104°C) after engine has been properly warmed up (start engine (WP 0043) procedure completed).
			NOTE Transmission may not reach 160°F (71°C) oil temperature at idle for several minutes.	
			8. Transmission oil temperature gauge.	Transmission oil temperature gauge indicates more than 250°F (121°C).
			9. Fuel gauge.	FUEL gauge is inoperative, or indicates less than the required amount of

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
				fuel needed to complete the mission.
21	Before	TRANSFER CASE Shift Lever and Traction Control Switch	**CAUTION** Vehicle must be parked when making this check. Failure to comply may result in damage to equipment. Transfer case will be damaged if shifted while vehicle is moving. **NOTE** Engine must be running to perform this check. 1. TRANSFER CASE Shift Lever - Check operation: (WP 0047)	

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

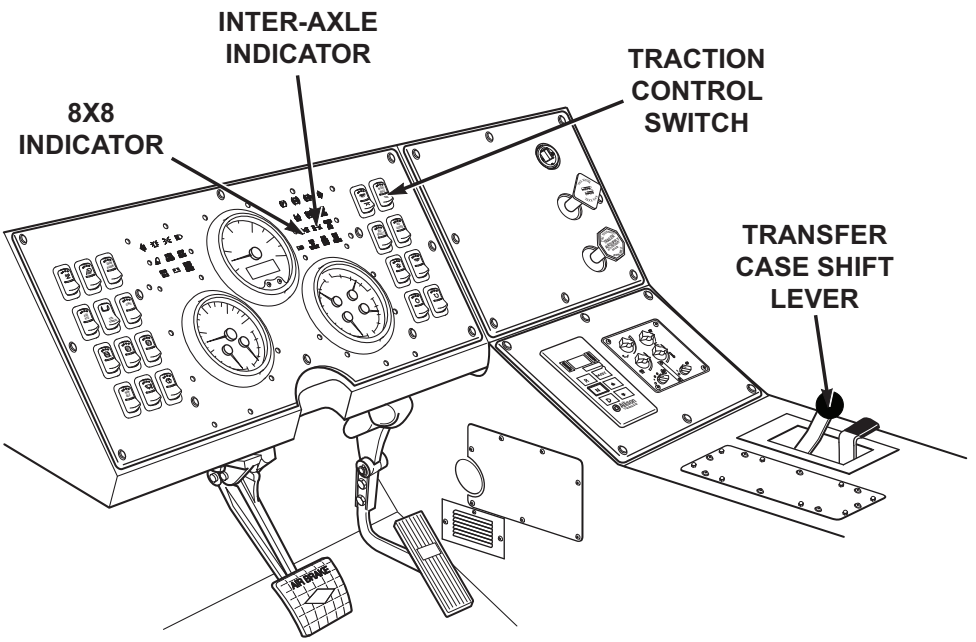


Figure 20.

			a. With transmission in N (neutral), shift transfer lever through all range positions. Lever should move freely through all range positions.	TRANSFER CASE shift lever inoperable or binds between range detents.
			2. Traction Control Switch - Check operation: (WP 0020)	

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			a. Switch should interact with transfer case shift lever to show correct indications on instrument panel. (WP 0020)	Traction control switch or indicators inoperable.
			NOTE Engine must be running to perform this check.	
22	Before	Engine Brake	1. Check engine retarder/brake for proper operation: (WP 0048) a. Set transmission range selector to N (neutral) position.	

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

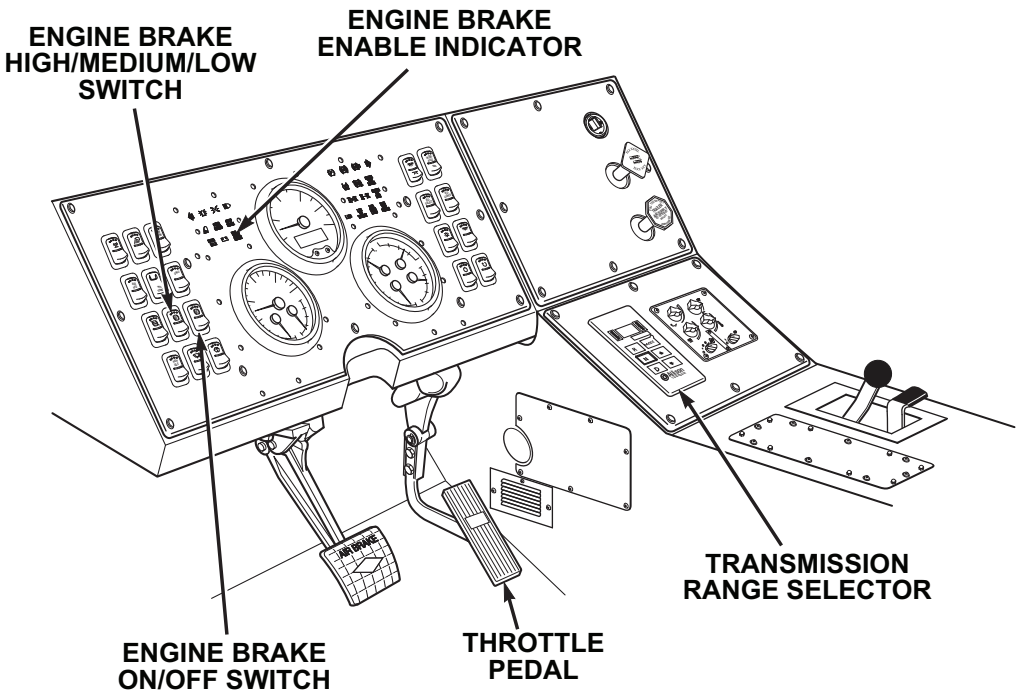


Figure 21.

			b. Push in throttle pedal and increase engine speed to between 1900 and 2100 rpm. c. Set engine brake high/medium/low switch to low position. d. Place engine retarder/brake switch to ON.	

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			e. Lift foot off throttle pedal and listen for a popping or chattering sound, which indicates the engine retarder/brake is working.	Engine retarder/brake does not engage.
			NOTE Engine must be running to perform this check.	
23	Before	Steering	1. Check vehicle steering for proper operation:	
			a. Turn steering wheel from full left to full right, back to full left.	Steering inoperable or binds.
			NOTE Engine must be running to perform this check.	
24	Before	HYD ENABLE Switch	Set HYD ENABLE switch to on position. MAIN HYD ENABLE indicator will illuminate.	HYD ENABLE switch and/or MAIN HYD ENABLE indicator does not operate.

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

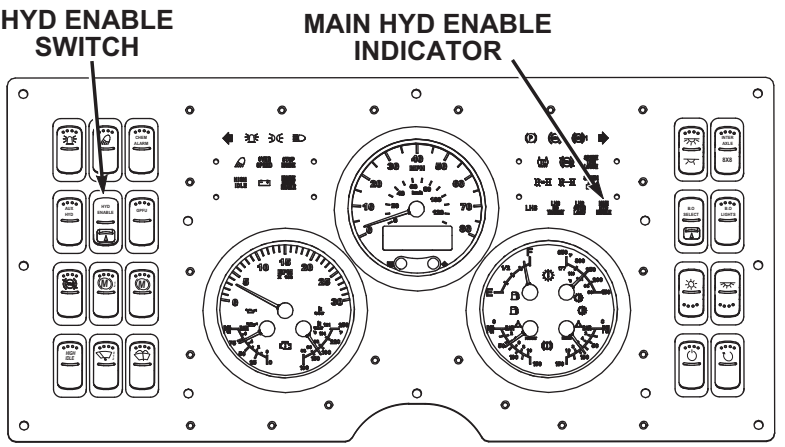


Figure 22.

			NOTE Operation of vehicle with malfunctioning windshield wiper may violate AR 385-55. (WP 0157)	
25	Before	Windshield Wiper/ Washer Switches	1. Check windshield wiper switch for proper operation. (WP 0034)	

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

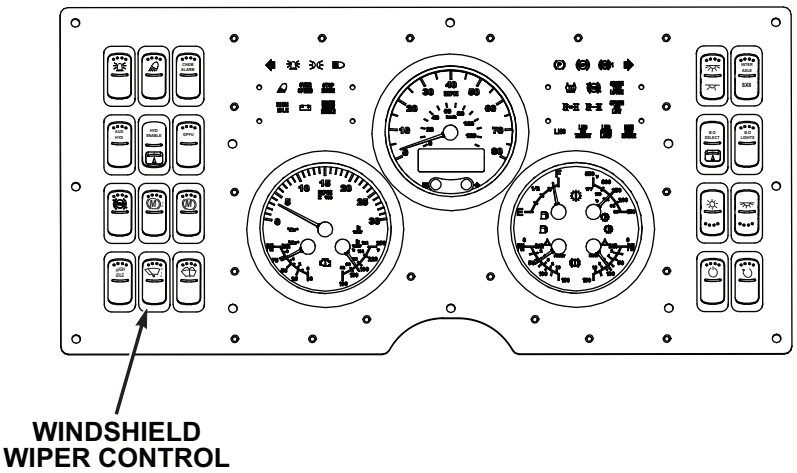


Figure 23.

			2. Check windshield washer switch for proper operation. (WP 0034) **NOTE** • Engine must be running to perform this check. • Operation of vehicle with malfunctioning windshield wiper may violate AR 385-55. (WP 0157)	
26	Before	Parking Brake Control	1. Check PARKING BRAKE control for proper operation: (WP 0044)	

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

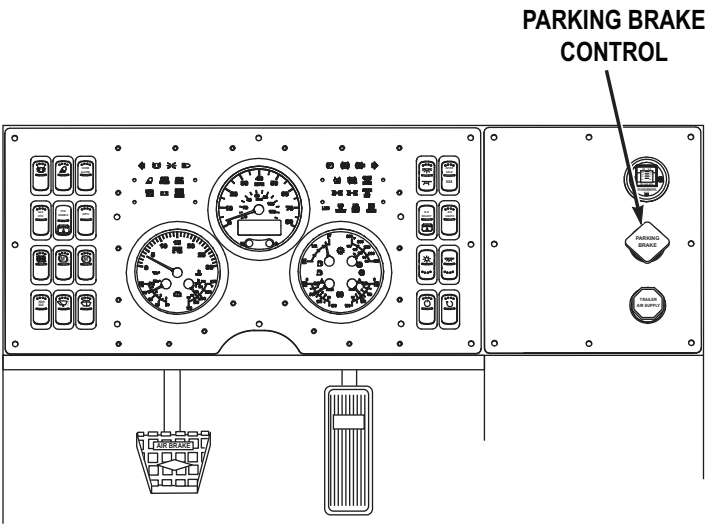


Figure 24.

			a. With vehicle at idle and service brake pedal engaged, (WP 0045)set transmission range selector to D (drive). (WP 0047) **NOTE** Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied. b. Pull out PARKING BRAKE control. (WP 0044)	

Table 1. PMCS - BEFORE - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			c. Release service brake pedal. (WP 0045)	Vehicle moves with PARKING BRAKE control applied (pulled out).
			d. Set transmission range selector to N (neutral). (WP 0047) **NOTE** Operator may continue on with mission if vehicle requires no servicing.	
27	Before	Engine	Shut OFF engine (WP 0056) (as required).	

END OF WORK PACKAGE

OPERATOR MAINTENANCE
DURING - PREVENTIVE MAINTENANCE

INITIAL SETUP:

Tools and Special Tools
Gloves, Welders
None

Table 1. PMCS - DURING

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			WARNING  Ensure engine is OFF and eye protection is worn when checking for leaks. Failure to comply may result in injury or death to personnel.	
1	During	Engine	Check and/or listen for excessive smoke, unusual noise, rough running, and misfiring. **NOTE** Check trailer handbrake control lever only if a trailer is hooked up to vehicle.	Engine has excessive smoke, unusual noise, runs rough, or misfires.

Table 1. PMCS - DURING - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
2	During	Trailer Hand-brake Control Lever	Check trailer handbrake control lever for proper operation. (WP 0046)	Control lever does not apply trailer brakes.

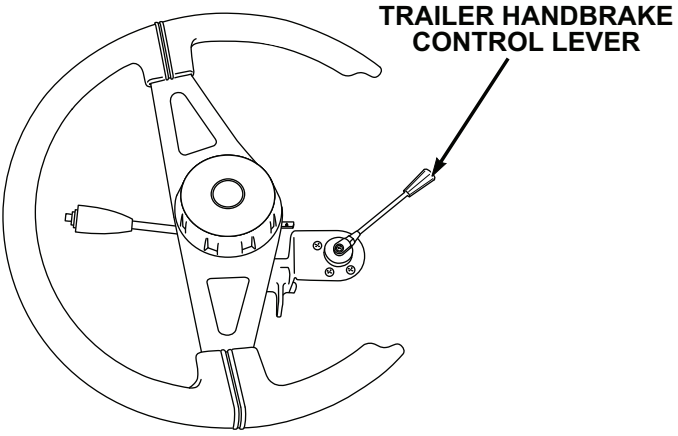


Figure 1.

			Listen for actuation. If none, refer to applicable trailer operator's manual. **NOTE** During operation, all gauges should maintain the proper readings listed in the PMCS BEFORE checks. (WP 0139)	

Table 1. PMCS - DURING - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
3	During	Instruments	Monitor all gauges, indicators, and warning lights for proper reading and operation while operating vehicle.	Gauges, indicators, and warning lights do not read/operate properly.
4	During	Transmission	Check transmission for proper operation. (WP 0047)	Transmission slips or will not shift.
5	During	Steering	Be alert for any unusual noise, binding, or difficulty in steering during operation.	Steering binds or is unresponsive.
6	During	Service Brakes	Be alert for chatter, noise, and side pull.	Service brakes do not operate properly.
			NOTE • TANK FUEL LEVEL INDICATOR must be at least 1/8 of a tank to perform this procedure. • Engine must be running to perform this check.	
7	During	Fuel Tank Module	1. Check that main fuel pump operates using the following procedure:	Main fuel pump inoperable.

Table 1. PMCS - DURING - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			CAUTION Do not move hydraulic selector valve control while PTO is engaged or vehicle hydraulic equipment may be damaged. a. Push hydraulic selector valve in.	

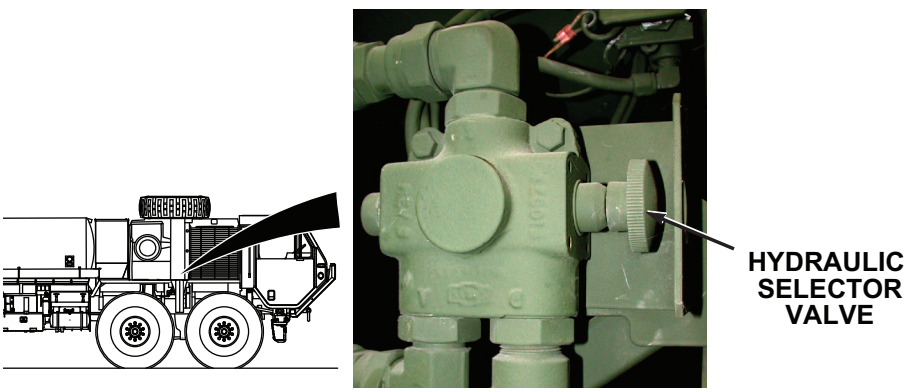


Figure 2.

			b. Start engine. (WP 0043) c. Set HYD ENABLE switch to on position. MAIN HYD ENABLE indicator will illuminate.	

Table 1. PMCS - DURING - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

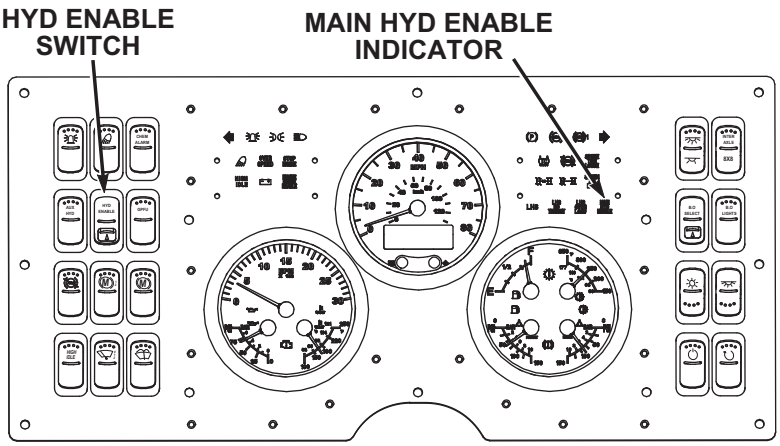


Figure 3.

			d. Pull back on MC MANUAL CONTROL EM VALVE lever.

Table 1. PMCS - DURING - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

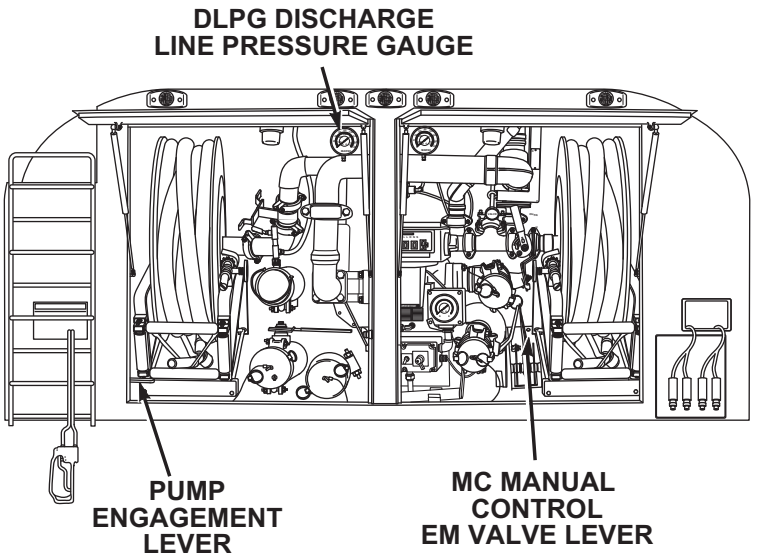


Figure 4.

			e. Push forward on PUMP ENGAGEMENT lever. **NOTE** Make following check at engine idle. f. Check indication of discharge line pressure gauge (DLPG). If gauge does not indicate any pressure, the main fuel pump is inoperable. If some pressure is indicated, pump is operating.

Table 1. PMCS - DURING - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			However, it is necessary to verify system operating pressure described in next check. **NOTE** Make following check with engine at high idle. g. Check discharge line pressure gauge (DLPG) for proper operation (WP 0029) and pressure indication.	Gauge indicates less than 40 psi (276 kPa) or more than 55 psi (379 kPa).
			2. Check differential pressure gauge (DPG) for proper operation (WP 0029) and damage.	Gauge indicates in DIRTY range of 15-20 psi (103-138 kPa).

Table 1. PMCS - DURING - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

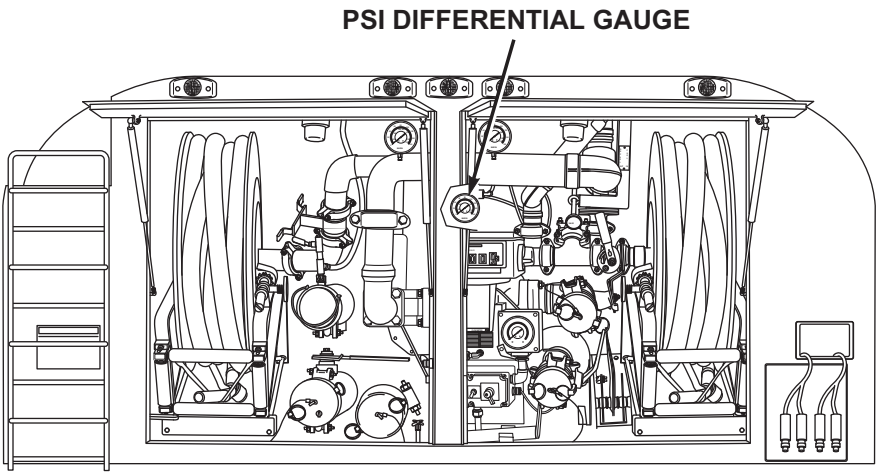


Figure 5.

		3. Check flowmeter (FM) for damage and proper operation. (WP 0029)	

Table 1. PMCS - DURING - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

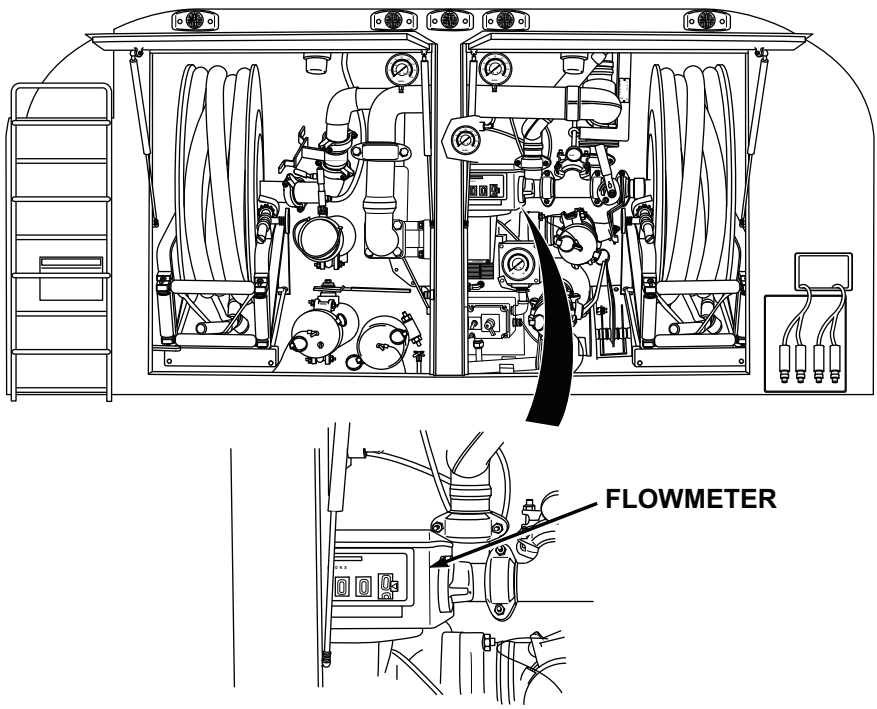


Figure 6.

			4. While dispensing fuel, check venturi-nozzle pressure gauge (VNPG) for proper operation (WP 0029) and any obvious damage. The gauge pressure should read a few psi less than the discharge line pressure gauge (DLPG).	Gauge does not register or pressure is not similar to discharge line pressure gauge (DLPG).

Table 1. PMCS - DURING - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

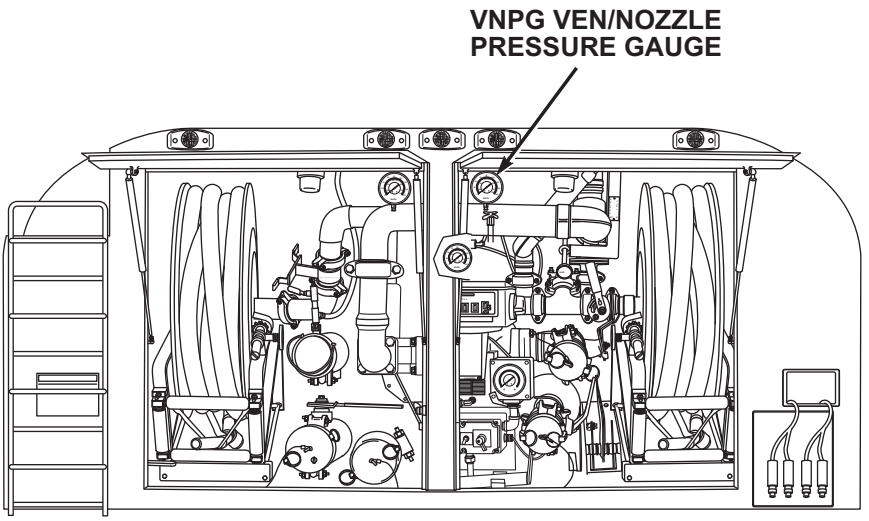


Figure 7.

		5. Check HAV hand actuated control for proper operation (WP 0028) and any obvious damage. Air should be exhausted when HAV handle is released.	HAV control does not operate properly.

Table 1. PMCS - DURING - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

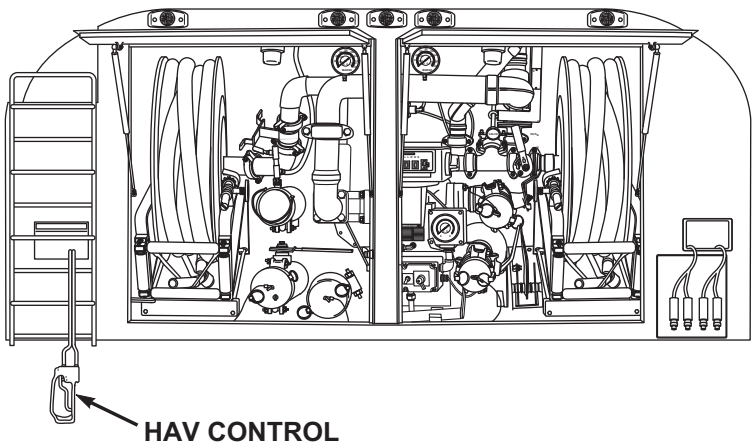


Figure 8.

			6. Check HAV air lines, fuel delivery hoses, valves, fittings, connectors and piping for leaks, defects, and obvious damage.	Any fuel leak is present and/or no other fuel hoses are available.
			7. Check liquid tank level gauge for proper operation (WP 0029) and any obvious damage. Verify level with measuring stick.	

Table 1. PMCS - DURING - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

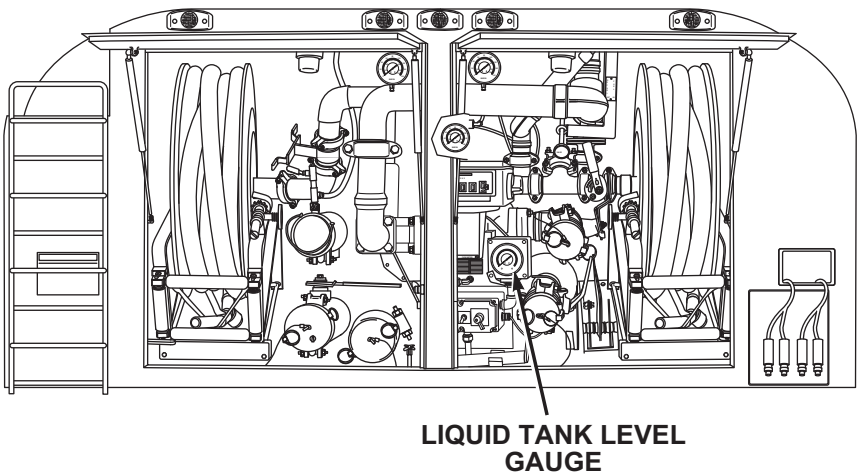


Figure 9.

			8. To check main fuel pump shut-down system, use the following procedure:

Table 1. PMCS - DURING - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

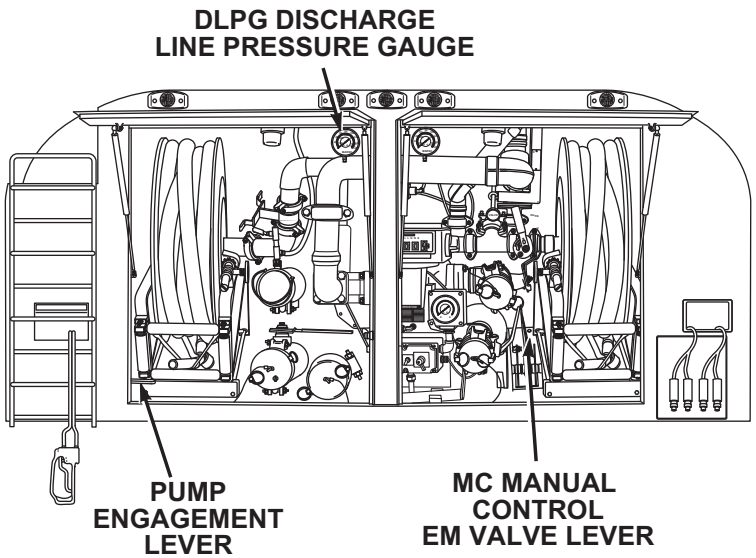


Figure 10.

			a. Pull back on PUMP ENGAGEMENT LEVER until it contacts latch. b. Push forward on MC MANUAL CONTROL EM VALVE lever. c. Reading on discharge line pressure gauge (DLPG) remains at or slightly below operating pressure.	

END OF WORK PACKAGE

OPERATOR MAINTENANCE
AFTER - PREVENTIVE MAINTENANCE

INITIAL SETUP:

Tools and Special Tools
Gloves, Welders
None

Table 1. PMCS - AFTER

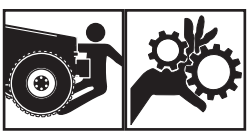
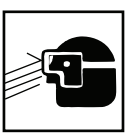
Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			WARNING  Do not start engine or move vehicle when personnel are under vehicle or working on brake lines. Failure to comply may result in injury or death to personnel. **WARNING**  Ensure engine is OFF and eye protection is worn when checking for leaks. Failure to comply may result in injury or death to personnel.	

Table 1. PMCS - AFTER - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			NOTE Perform Operator's Before, After, and Weekly PMCS checks if: • You are the assigned driver but have not operated the vehicle since the last weekly inspection. • You are operating the vehicle for the first time. **NOTE** • Clean all lubrication points with cleaning compound, solvent and allow to dry prior to servicing. • When using a grease gun, apply lubricant to the fitting until clean lubricant squeezes out of the part being lubricated. • Always refer to lubrication instructions (WP 0145) to ensure equipment has correct lubricants appropriate to operating environment (expected continuous temperatures). If not, remove/drain and reapply/refill equipment with appropriate lubricants for operating environment as	

Table 1. PMCS - AFTER - Continued

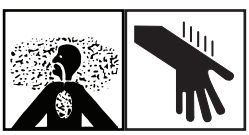
Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			prescribed in lubrication instructions. (WP 0145)	
1	After	Underneath Vehicle	1. Check entire underside of vehicle for fluid and air leaks.	Any fuel, Class III leak, or air lines/fittings leaking or damaged.
			2. Check entire underside of vehicle for signs of fluid leakage (fuel, oil, and coolant). **WARNING**  Prolonged contact with lubricating oil may cause skin rash. Immediately wash skin and clothing that come in contact with lubricating oil thoroughly and remove saturated clothing. Keep area well-ventilated to keep fumes at a minimum. Failure to comply may result in injury or death to personnel. **CAUTION** Do not fill hydraulic reservoir past FULL COLD mark. Fail-	Any fuel leak. Class III leak of any other fluid.

Table 1. PMCS - AFTER - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			ure to comply may result in damage to equipment. **NOTE** • Hydraulic oil expands when heated, which may give the operator false (high) fluid level readings if the vehicle has been recently operated. • If possible, wait until hydraulic reservoir is completely cooled down (minimum of 2 hours) prior to adding hydraulic oil, otherwise fill reservoir to FULL COLD mark.	
2	After	Hydraulic Fluid Reservoir	1. Check that hydraulic fluid level in sight glass on hydraulic fluid reservoir is at FULL COLD mark (may be above FULL COLD mark if vehicle has been recently operated). If low, add hydraulic oil to FULL COLD mark:	

Table 1. PMCS - AFTER - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
				
			a. Remove cap from hydraulic reservoir. b. Fill hydraulic reservoir with lubricating oil (WP 0145, Table 4) until sight glass reads at FULL COLD mark. c. Install cap on hydraulic reservoir.	
			2. Check appearance of hydraulic fluid in sight glass. Make sure it is clear and not milky or foamy.	Fluid appears milky or foamy.

Figure 1.

Table 1. PMCS - AFTER - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
3	After	Driver Side Wheels	1. Check wheels for broken, cracked, and bent surfaces.	Wheel is broken, cracked, or bent.
			2. Check lugnuts and wheel studs for obvious looseness and damage. If loose, tighten and report to maintenance as soon as practical.	Two or more lugnuts or studs on the same wheel are missing, broken, or bent.
4	After	Driver Side Shock Absorbers	Check driver side shock absorbers for leaks and damage.	Damaged or Class III leak present.
5	After	Rear Exterior	Check rear of vehicle for obvious damage that would impair operation.	Any damage that would impair operation.
6	After	Towing Gladhands	Check for presence and condition of towing gladhands and rubber grommets.	
7	After	Passenger side Wheels	1. Check wheels for broken, cracked, and bent surfaces.	Wheel is broken, cracked, or bent.
			2. Check lugnuts and wheel studs for obvious looseness and dam-	Two or more lug-

Table 1. PMCS - AFTER - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			age. If loose, tighten and report to maintenance as soon as practical.	nuts or studs on the same wheel are missing, broken, or bent.
8	After	Passenger Side Shock Absorbers	Check passenger side shock absorbers for leaks and damage. **WARNING**  Vehicles air system is pressurized, be sure to wear proper eye protection and keep face away from drain valves while draining air reservoirs. Open air drain valves slowly to prevent sudden blast of air. Failure to comply may result in injury to personnel.	
9	After	Air Reservoirs	1. Drain all air reservoirs by opening five air reservoir drain valves on air system drain manifold under battery box.	

Table 1. PMCS - AFTER - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

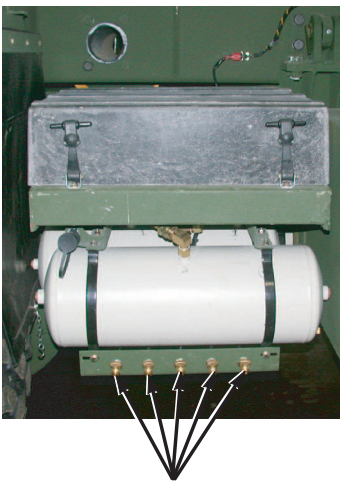


Figure 2.

			2. Once all air is exhausted from air reservoirs, close air reservoir drain valves on air system drain manifold. **CAUTION** Clean around end of fill tube prior to removing dipstick. This will aid in preventing dirt or foreign matter from entering the transmission and causing damage.	

Table 1. PMCS - AFTER - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			NOTE Vehicle is parked (WP 0055) on a flat, level surface. Engine is at idle. Transmission is at normal operating temperature, 160-200°F (71-93°C).	
10	After	Trans-mission	1. With engine running, check transmission fluid level on dip-stick.	

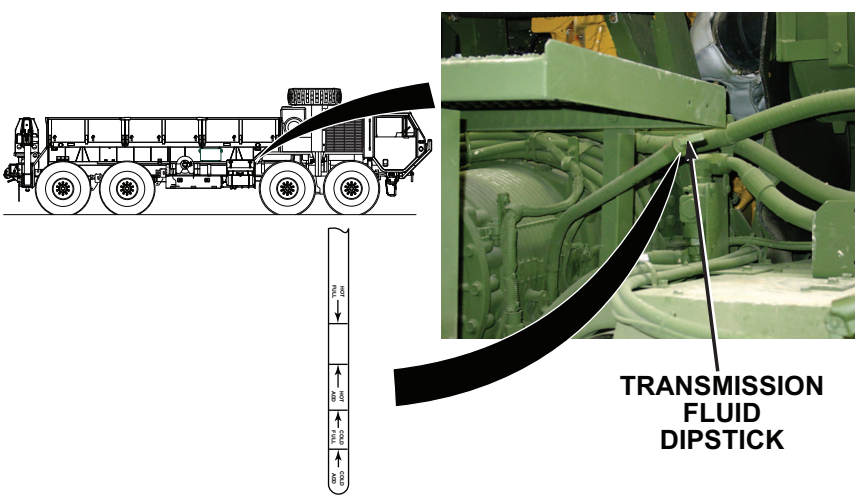


Figure 3.

Table 1. PMCS - AFTER - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			NOTE Fluid level should be between HOT FULL and HOT ADD marks.	
			2. Add OE/HDO (WP 0145, Table 2) as required.	Overfull. Notify field level maintenance.
11	After	Spare Tire/ Wheel	1. With engine running, lower tire carrier (WP 0040) and check spare tire for cuts, gouges, cracks, or scratches. Remove any sharp objects.	Tire has cuts, gouges, or cracks that could result in tire failure. Tire is missing or unserviceable.
			2. Check wheel for broken, cracked, and bent surfaces.	Wheel is broken, cracked, or bent.
			3. Check lugnuts and wheel studs for obvious looseness and damage.	Two or more lugnuts or studs are missing, broken, or bent.
			4. Raise tire carrier.	

Table 1. PMCS - AFTER - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
12	After	Exterior of Cab	1. Visually inspect cab and components for damage. **NOTE** Operation of vehicle with broken/missing mirrors may violate AR 385-55. (WP 0157)	Any component is damaged that would impair vehicle mission.
13	After	Mirrors	Check condition of mirrors.	

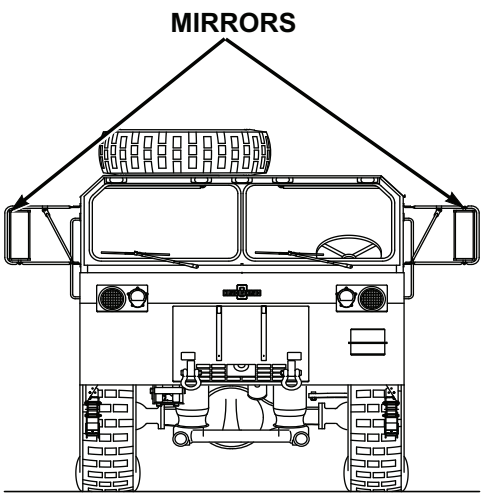


Figure 4.

Table 1. PMCS - AFTER - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			NOTE Operation of vehicle with damaged or missing windshield may violate AR 385-55. (WP 0157)	
14	After	Windshield and Wiper Arms/ Blades	1. Check windshield glass for presence and condition.	

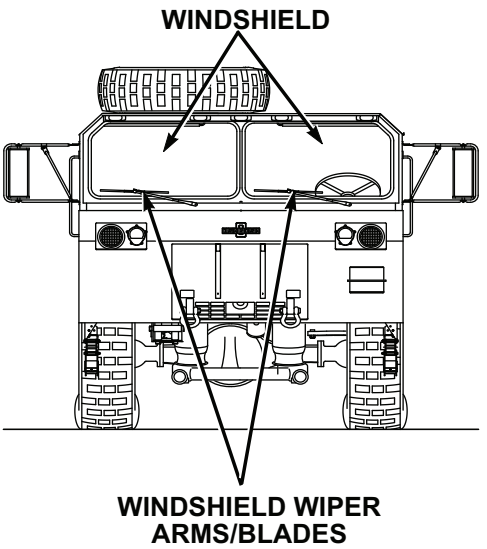


Figure 5.

Table 1. PMCS - AFTER - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			NOTE Operation of vehicle with damaged wiper arms/blades may violate AR 385-55. (WP 0157) 2. Check condition of wiper arms and blades.	
15	After	Fan Switch	Check fan control switch for proper operation (WP 0035) in low, medium, and high positions.	

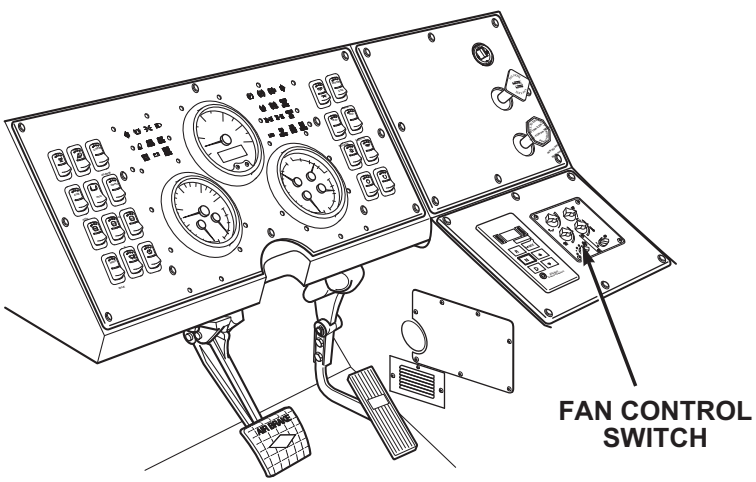


Figure 6.

			NOTE Operation of vehicle with malfunctioning windshield wash-	

Table 1. PMCS - AFTER - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			er may violate AR 385-55. (WP 0157)	
16	After	Washer Control	Check windshield washer control for proper operation.	

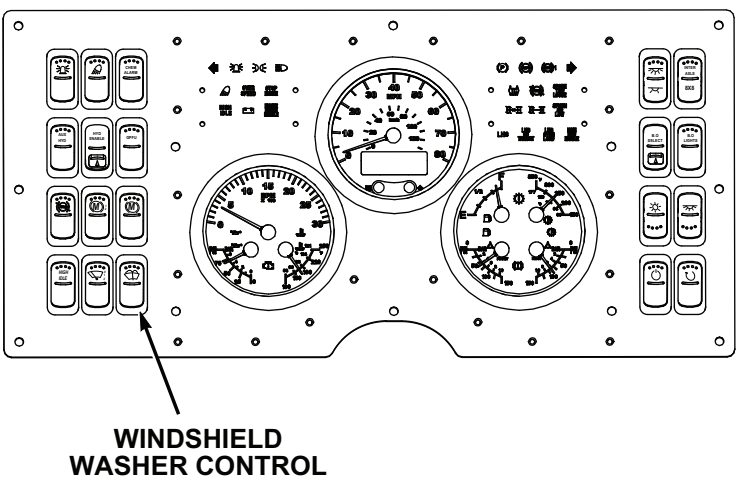


Figure 7.

			NOTE Operation of vehicle with malfunctioning windshield wiper may violate AR 385-55. (WP 0157)	
17	After	Wiper Control	Check windshield wiper control for proper operation (WP 0034) in both low and high speed position.	

Table 1. PMCS - AFTER - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

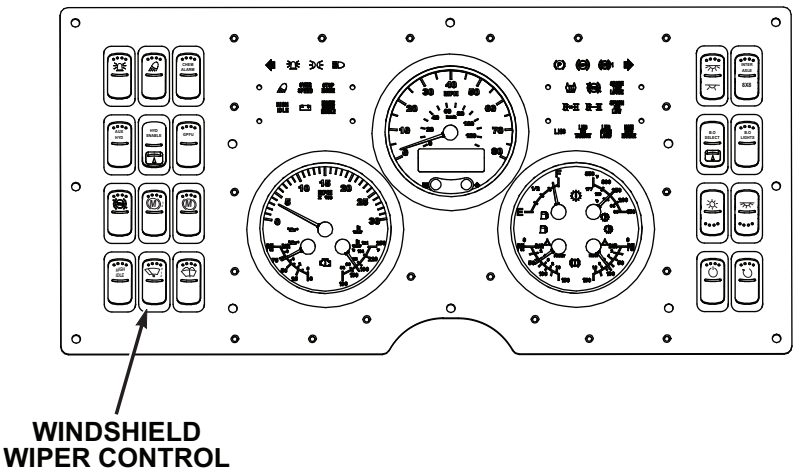


Figure 8.

			NOTE Operation of vehicle with malfunctioning horn may violate AR AR 385-55. (WP 0157)	
18	After	Horns	Check both horns (air and electric) for proper operation.	
			NOTE • Light checks will require assistance. • Operation of vehicle with malfunctioning turn signal	

Table 1. PMCS - AFTER - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			control may violate AR 385-55. (WP 0157)	
19	After	Turn Signal Control	Check turn signal control for proper operation. (WP 0019)	

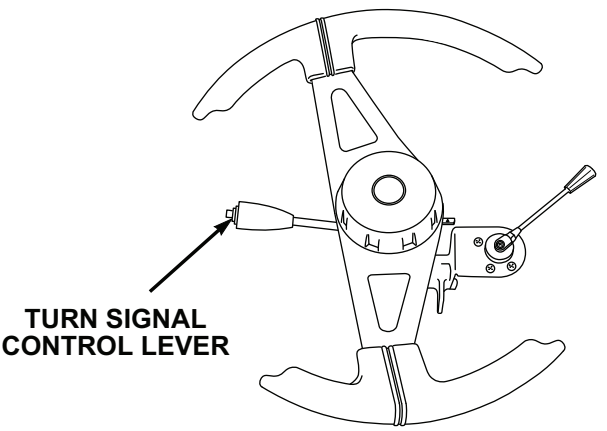


Figure 9.

20	After	Turn Signal Indicators	Check turn signal indicators for proper operation. (WP 0020)	

Table 1. PMCS - AFTER - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

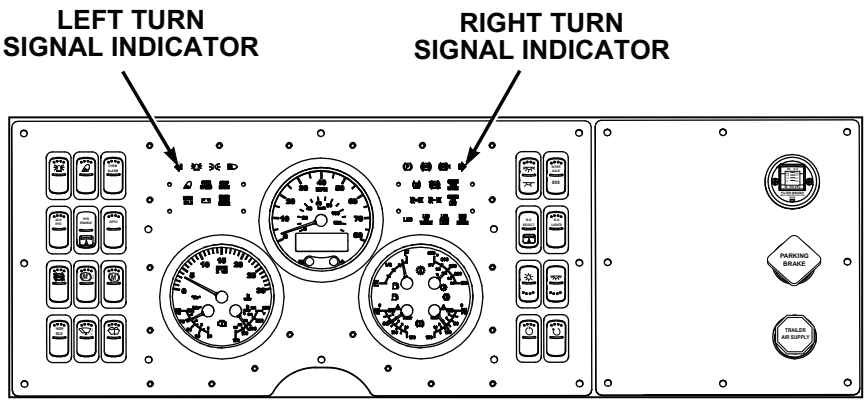


Figure 10.

			NOTE • Light checks will require assistance. • Operation of vehicle with malfunctioning emergency flasher control may violate AR 385-55. (WP 0157)	
21	After	Emergency Flasher Control	Check emergency flasher control for proper operation. (WP 0019)	

Table 1. PMCS - AFTER - Continued

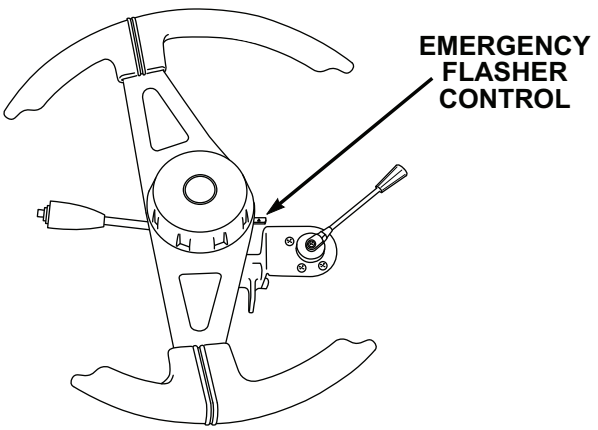
Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			 *Figure 11.*	
22	After	Lights	**NOTE** • Light checks will require assistance. • Operation of vehicle with malfunctioning service lights may violate AR 385-55. (WP 0157) Check headlights, clearance lights, turn signals, and brake lights for proper operation. **NOTE** Operation of vehicle with malfunctioning beacon light may	

Table 1. PMCS - AFTER - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			violate AR 385-55. (WP 0157)	
23	After	Portable Beacon Light (If equip-ped)	Remove beacon light from glove box and check for proper operation. (WP 0070)	

END OF WORK PACKAGE

OPERATOR MAINTENANCE
WEEKLY - PREVENTIVE MAINTENANCE

INITIAL SETUP:

Tools and Special Tools
Gloves, Welders
None

Table 1. PMCS - WEEKLY

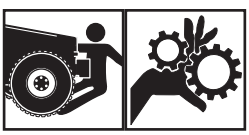
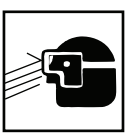
Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			WARNING  Do not start engine or move vehicle when personnel are under vehicle or working on brake lines. Failure to comply may result in injury or death to personnel. **WARNING**  Ensure engine is OFF and eye protection is worn when checking for leaks. Failure to comply may result in injury or death to personnel.	

Table 1. PMCS - WEEKLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			NOTE Perform Operator's Before, After, and Weekly PMCS checks if: • You are the assigned driver but have not operated the vehicle since the last weekly inspection. • You are operating the vehicle for the first time. **NOTE** • Lubrication intervals are for normal operating conditions. Intervals may be shortened as required for severe operating conditions. • Clean all lubrication points with cleaning compound, solvent and allow to dry prior to servicing. • When using a grease gun, apply lubricant to the fitting until clean lubricant squeezes out of the part being lubricated. • Always refer to lubrication instructions (WP 0145) to ensure equipment has correct lubricants appropriate to operating environment (expected continuous	

Table 1. PMCS - WEEKLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			temperatures). If not, remove/drain and reapply/refill equipment with appropriate lubricants for operating environment as prescribed in lubrication instructions. (WP 0145) **WARNING**  Do not operate a vehicle with a tire in an over-inflated or under-inflated condition, or with a questionable defect. Failure to comply may result in injury or death to personnel and damage to equipment.	
1	Weekly	Driver Side Tires	Check tires for correct air pressure.	
2	Weekly	Propeller Shafts and U-Joints	1. Check propeller shafts and U-joints for excessive movement, obvious damage, and loose, missing or broken nuts and screws.	Propeller shaft or U-Joint has excessive movement, obvious damage, or one or more nuts or screws are loose, miss-

Table 1. PMCS - WEEKLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
				ing, or damaged.

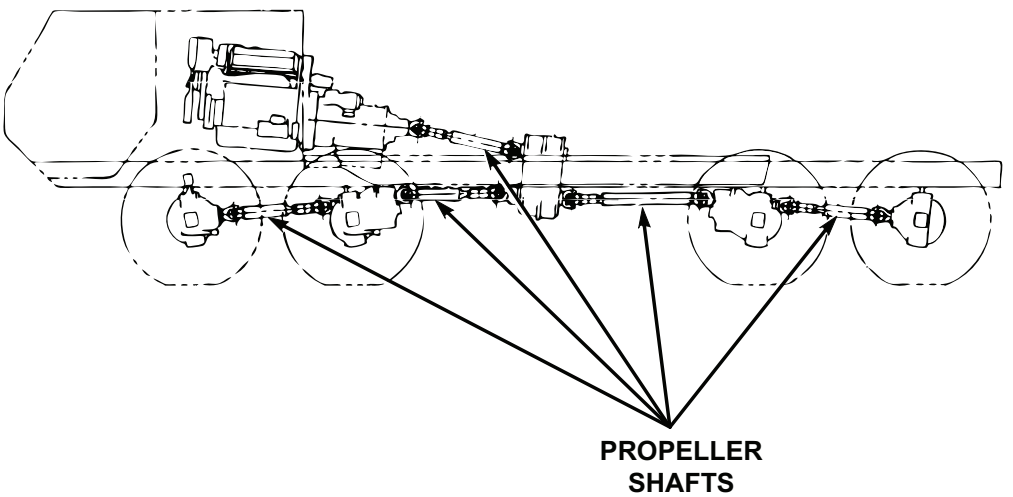


Figure 1.

			NOTE • When vehicle is operating under severe conditions, lubricate propeller shafts and universal joints every 50 hours of vehicle operation. • Complete Step 2 only if vehicle is operating under severe conditions. 2. Lubricate all propeller shafts, transmission to transfer case	

Table 1. PMCS - WEEKLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			propeller shaft, and U-joints with GAA (WP 0145) as required (refer to operator's semiannual PMCS table (item no. 2) for procedures. (WP 0143)	
3	Weekly	Axle Breathers	Check four axle breathers for damage and free movement of vent caps on breather body.	Any axle breather caps are damaged or vent caps do not move freely on breather body.

Table 1. PMCS - WEEKLY - Continued

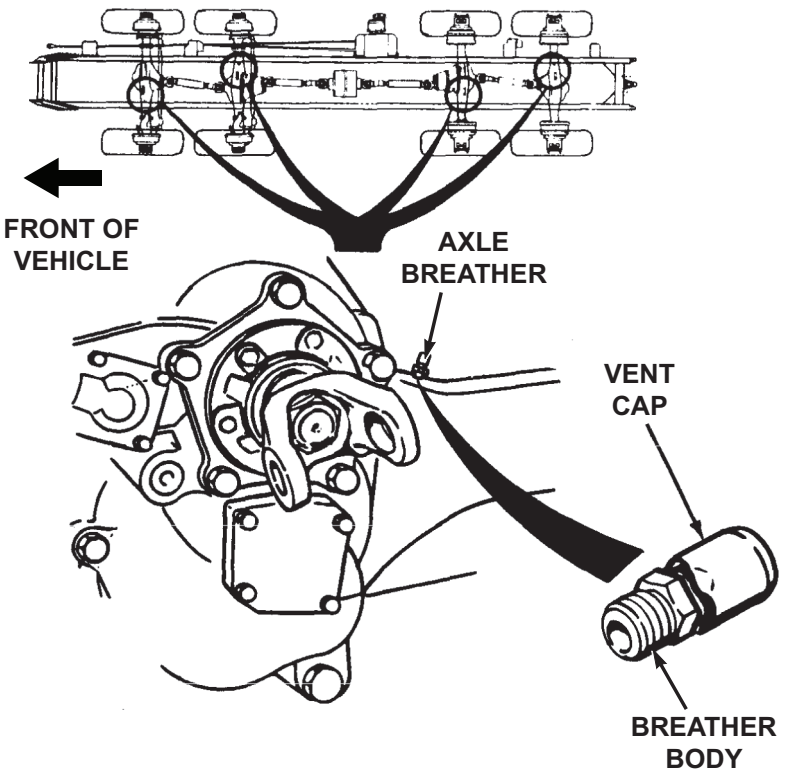
Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
				
			NOTE Operation of vehicle with damaged/malfunctioning air compressor may violate AR 385-55. (WP 0157)	

Figure 2.

Table 1. PMCS - WEEKLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
4	Weekly	Air Compressor	Check air compressor for loose screws, damaged mounting flange and air hoses, and loose fittings/connections.	Screws missing, mounting flange broken, air hoses damaged or fittings/connections loose.

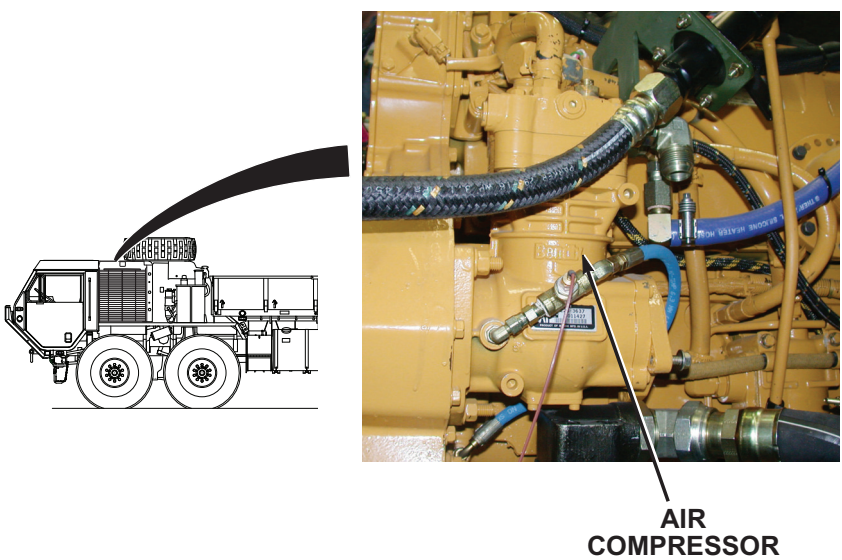


Figure 3.

5	Weekly	Secondary Fuel Filter	Check secondary fuel filter for leaks or damage.	Any fuel leak.

Table 1. PMCS - WEEKLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

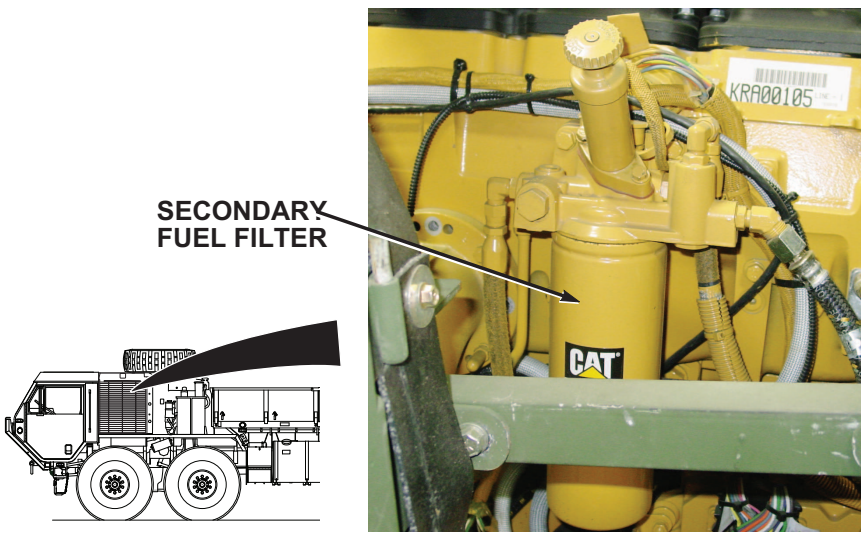


Figure 4.

			NOTE Operation of vehicle with any exhaust leaks may violate AR 385-55. (WP 0157)	
6	Weekly	Exhaust System	Check exhaust pipe, muffler, heat-shield, tailpipe, raincap, clamps, and mounting for obvious damage, looseness, exhaust leak, and carbon build-up.	Exhaust pipe between turbocharger and exhaust manifold leaks. Any exhaust pipe miss-

Table 1. PMCS - WEEKLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
				ing or damaged.

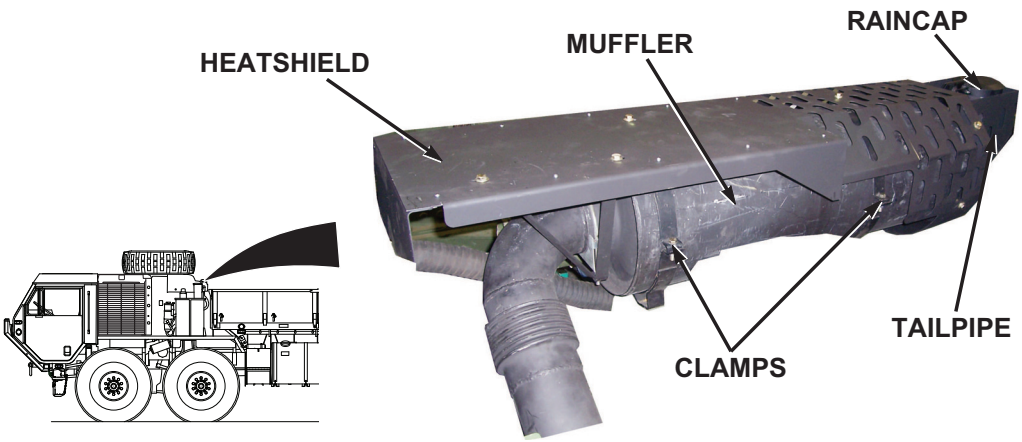


Figure 5.

7	Weekly	Fuel Tank	Check fuel tank, fuel hoses, fuel tank connections, and fuel tank socket head pipe plug for leaks and/or damage.	Any fuel leak.

Table 1. PMCS - WEEKLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

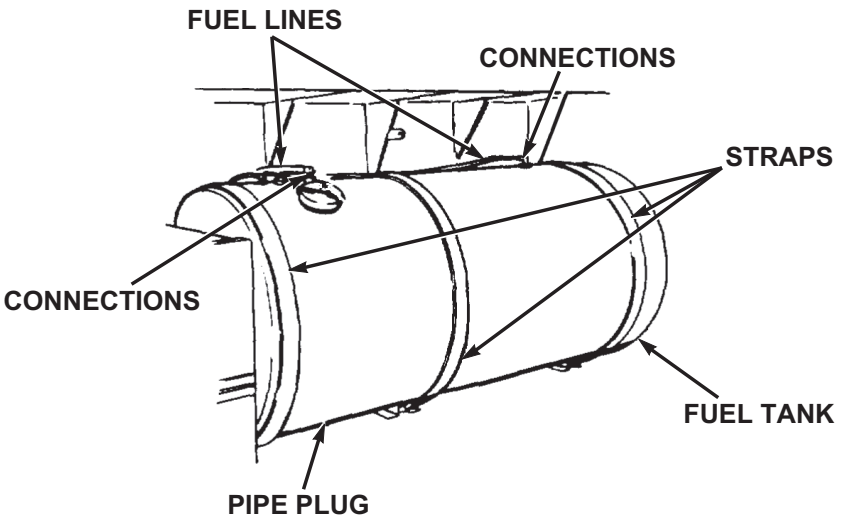


Figure 6.

8	Weekly	Fuel Tank Strainer	Check fuel tank strainer for clogs or damage. If strainer is clogged, clean strainer.	

Table 1. PMCS - WEEKLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

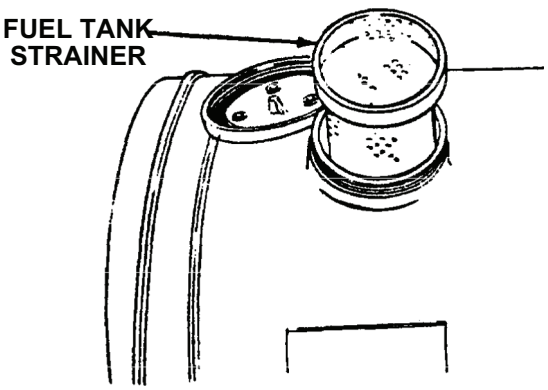


Figure 7.

9	Weekly	Hydraulic Pump	Check hydraulic pump for loose screws, leaks, and damage. Check for loose hose fittings.	Any Class III leak present or any mount-ing screw is loose or missing.

Table 1. PMCS - WEEKLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

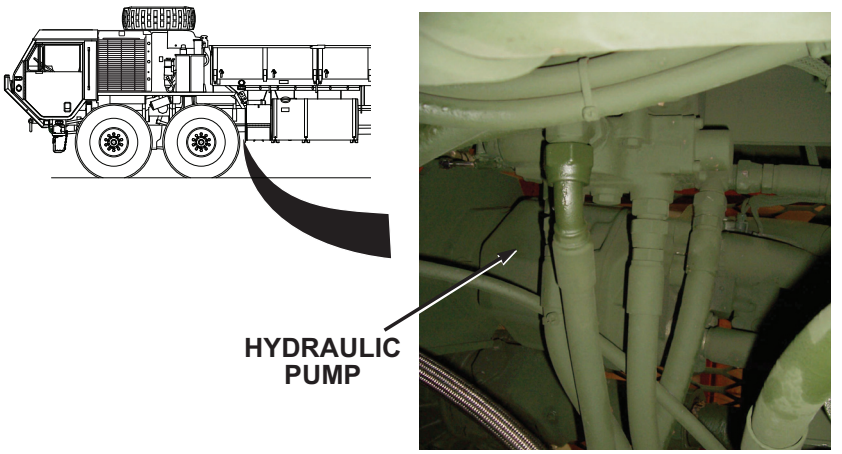


Figure 8.

10	Weekly	Hydraulic Hoses	Check all hydraulic hose routing for obvious damage to hydraulic hoses, chaffing, and leaks. **NOTE** • It is possible for properly tightened rear mounting screws to turn by hand in the mount. Properly tightened front mounting	Class III leak present. Chaffing or obvious damage to hydraulic hose present.

Table 1. PMCS - WEEKLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			screws can be tilted slightly in mounts. • Mounting screws have specific torque requirements and at times may appear to be loose. Do not attempt to tighten. If in doubt, notify your supervisor.	
11	Weekly	Fuel Tank Mounting Screws	Check that fuel tank module mounting screws (both driver and passenger side) are not loose, broken, or missing.	One or more fuel tank module mounting screws are broken or missing.

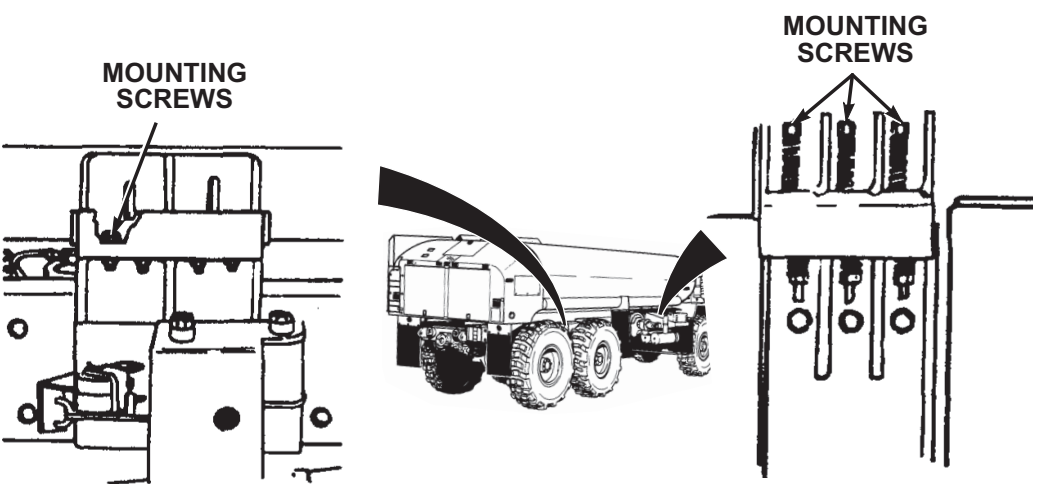


Figure 9.

Table 1. PMCS - WEEKLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
12	Weekly	Stowage Boxes	1. Check all stowage boxes/compartments for missing hardware and other obvious damage. 2. Check inside all stowage boxes/compartments for torn or damaged seals, water in bottom of stowage box/compartment, or other obvious damage.	
13	Weekly	Rear Spring/ Parking Brake Chambers	Check rear spring/parking brake chambers to ensure dust covers are in place and secure.	
14	Weekly	Towing Shackles	Check towing shackles for serviceability.	
15	Weekly	Pintle Hook	1. Check pintle hook for looseness and damaged locking mechanism of locking pin.	Pintle hook loose or locking mechanism damaged/ unserviceable.

Table 1. PMCS - WEEKLY - Continued

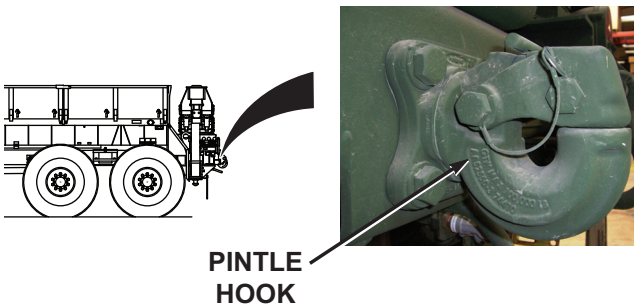
Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
				
			2. Clean pintle hook and coat with GAA. (WP 0145, Table 9)	
16	Weekly	Rear Lifting Shackles	Check rear lifting shackles for serviceability.	
17	Weekly	Inter-vehicle Connector	Check inter-vehicle connector seal and cable for damage.	

Figure 10.

Table 1. PMCS - WEEKLY - Continued

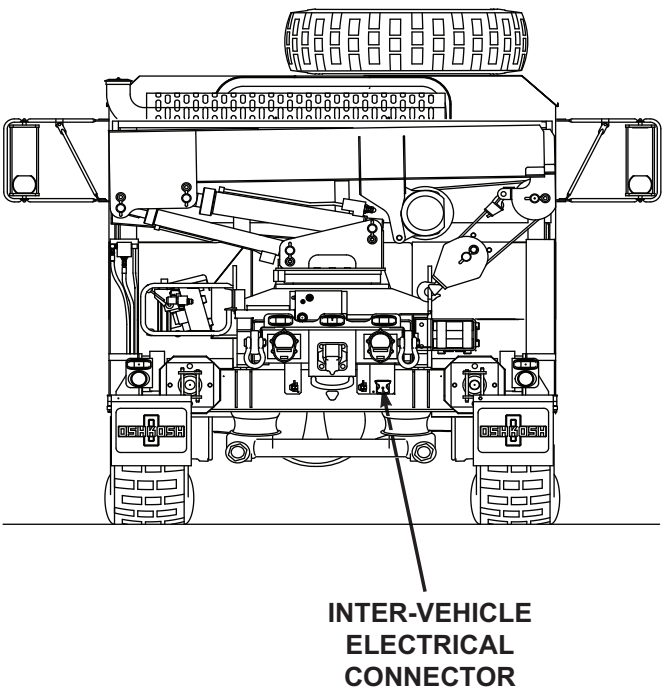
Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
				

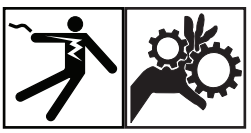
Figure 11.

			WARNING  Do not operate a vehicle with a tire in an over-inflated or under-inflated condition, or with a questionable defect. Failure	

Table 1. PMCS - WEEKLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			to comply may result in injury or death to personnel and damage to equipment. **NOTE** Inspection of passenger side tires includes spare tire.	
18	Weekly	Passen-ger Side Tires	Check tires for correct air pressure. **WARNING**  Wear proper eye and skin protection when working around batteries. Do not smoke, have open flames, or make sparks around batter-ies, especially if caps are off. Batteries can explode. Failure to comply may result in injury or death to personnel.	

Table 1. PMCS - WEEKLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			WARNING  Remove all jewelry such as rings, ID tags, bracelets, etc. prior to working on or around vehicle. Jewelry and tools can catch on equipment, contact positive electrical circuits, and cause a direct short, severe burns, or electrical shock. Failure to comply may result in injury or death to personnel.	
19	Weekly	Batteries	1. Check battery box for damage.	Cracks or holes in battery box.

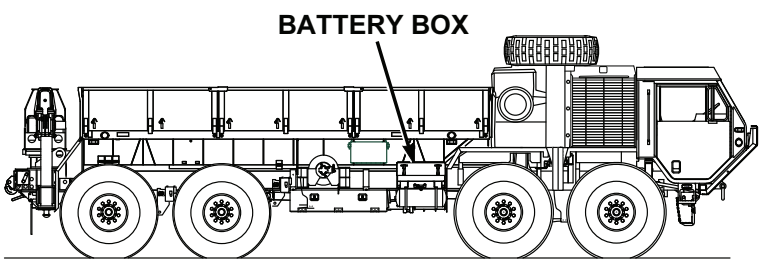


Figure 12.

			2. Check battery cables for presence, frays, splits, and looseness.	Battery cables missing, frayed,

Table 1. PMCS - WEEKLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
				split, or loose.
			3. Check for loose, missing, or damaged batteries and corroded or burnt battery terminals.	One or more batteries missing, cracked, or unserviceable. Any battery terminal corroded or burnt. Any hold down not secure.
			NOTE The tire carrier pump will normally vent a small amount of oil as a mist when in use. This results in a coating of oil on the pump and the immediate surrounding area. This is normal and is not to be considered as a leak.	
20	Weekly	Tire Carrier	1. Check tire carrier pump for obvious damage and leaks.	Tire carrier pump has obvious damage or Class III leak is present.

Table 1. PMCS - WEEKLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

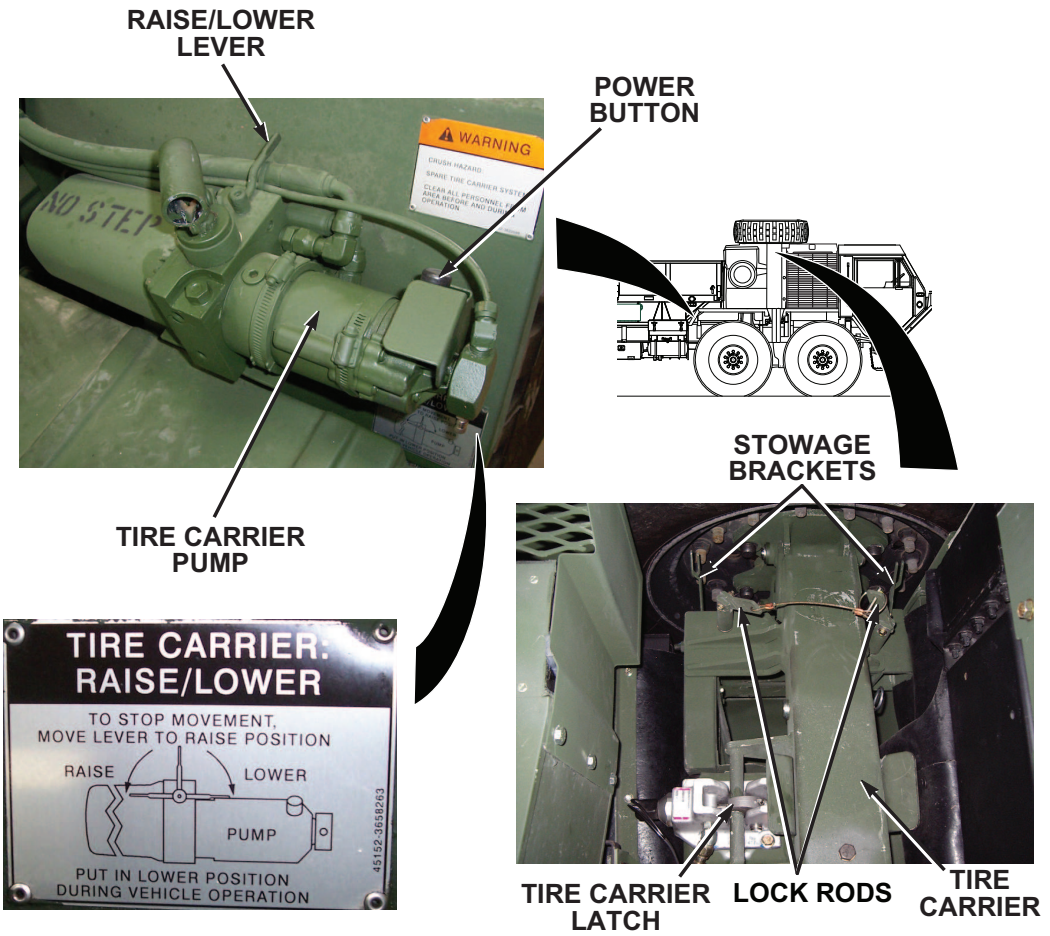


Figure 13.

			2. Check tire carrier latch for obvious damage and leaks.	Tire carrier latch has obvious

Table 1. PMCS - WEEKLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
				damage or Class III leak is present.
			3. Check operation/lower tire carrier: (WP 0040) a. Remove both lock rods from tire carrier and place on stowage brackets. **WARNING**  If tire carrier is in any position other than full up and locked (tire carrier latch engaged) or resting on ground, only tire carrier pump operator should be within six feet (1.83 m) of passenger side of vehicle from battery box forward. Failure to comply may result in personnel being struck by tire carrier/spare tire, causing injury or death to personnel. **CAUTION** • Ensure passenger side of vehicle has six ft. (1.8 m) of clearance from battery box forward to	

Table 1. PMCS - WEEKLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			accommodate lowering of tire carrier or damage to equipment may result. • Do not dump air suspension system with tire carrier in down position. Damage to tire carrier arm may result. **NOTE** • Once tire carrier has passed vertical (approximately 6 in. [15.24 cm] of movement), release power control (9) and allow the tire carrier to lower on its own until tire contacts ground. • The tire carrier can be stopped at any time during lowering operations by releasing the power control and moving the directional control lever to RAISE (pointing inboard) position. b. Set directional control lever to LOWER (pointing out-board) position. Push and hold power control on tire carrier pump to lower tire to ground.	Tire carrier does not lower to ground.

Table 1. PMCS - WEEKLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
21	Weekly	Air Intake System	1. Check air intake system for damaged air intake tube and loose clamps. Tighten clamps as needed.	Air intake system has damaged air intake tube or unserviceable clamps.

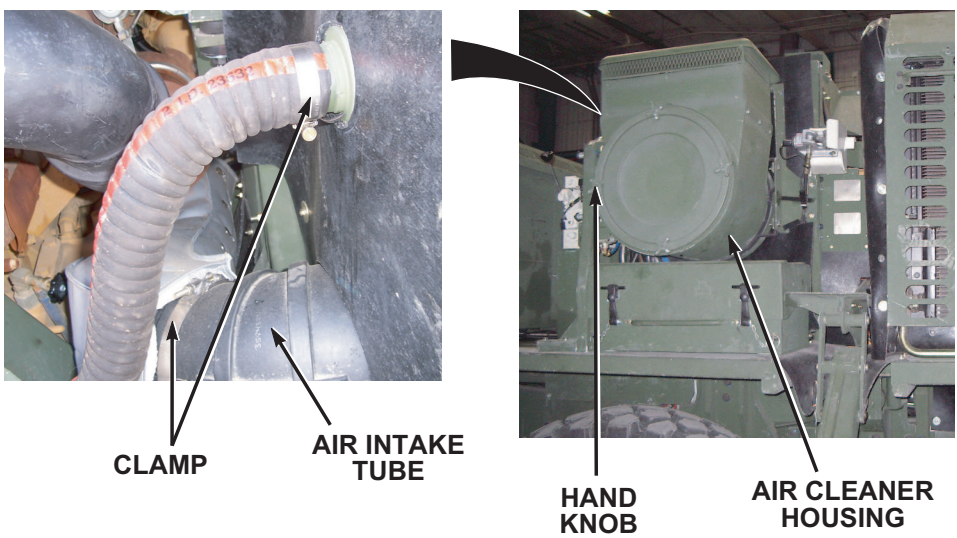


Figure 14.

			2. Check air cleaner housing for loose hand knobs. Tighten as needed.	
22	Weekly	Air Dryer	Check air dryer for loose screws and connections.	

Table 1. PMCS - WEEKLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

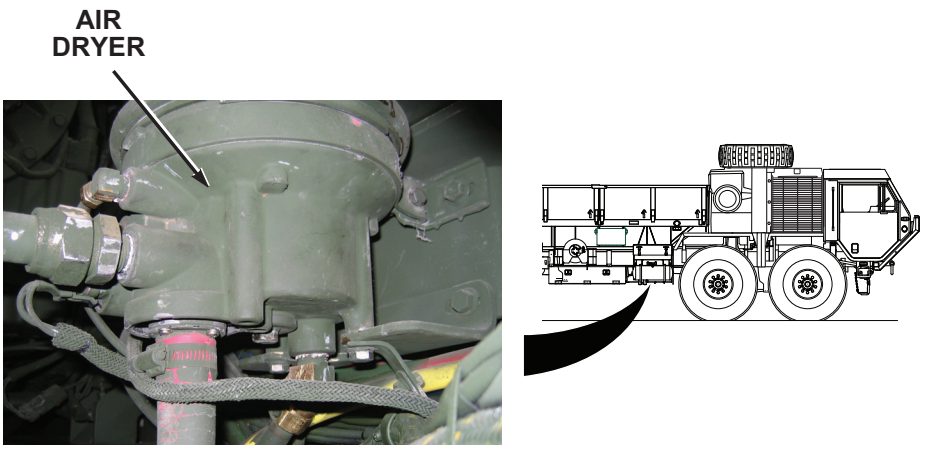


Figure 15.

			NOTE Pressurize air system prior to performing this check.	
23	Weekly	Air Lines and Hoses	Check routing, for obvious damage to air lines and hoses. Check for leaks.	Any leaks or damage to air lines, hoses, or fittings are found.
24	Weekly	Radiator and Hoses	1. Check radiator and hoses for leaks, clogs, or damaged fins. Check for loose hose clamps.	Any Class III leak.

Table 1. PMCS - WEEKLY - Continued

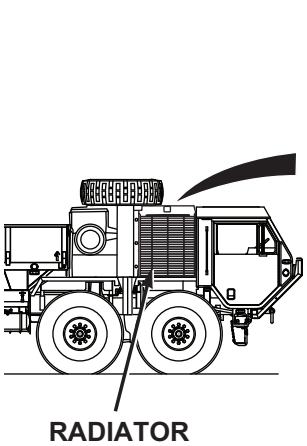
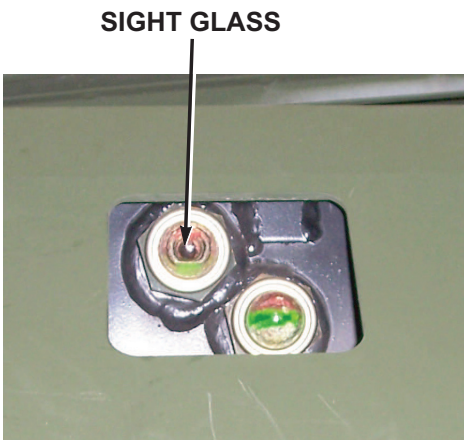
Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			  *Figure 16.*	
			CAUTION Ensure lock rods are secured on stowage brackets before raising tire carrier. Damage to tire carrier may result. **NOTE** • Raising the tire carrier requires approximately 70 psi (5 bar) of air from the vehicle rear air system. If possible, the operator should start engine (WP 0043) and let idle during raise operation to ensure adequate supply of air.	

Table 1. PMCS - WEEKLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			• Ensure engine covers are closed before raising tire carrier.	
25	Weekly	Raise Tire Carrier	1. Raise tire carrier:	

Table 1. PMCS - WEEKLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

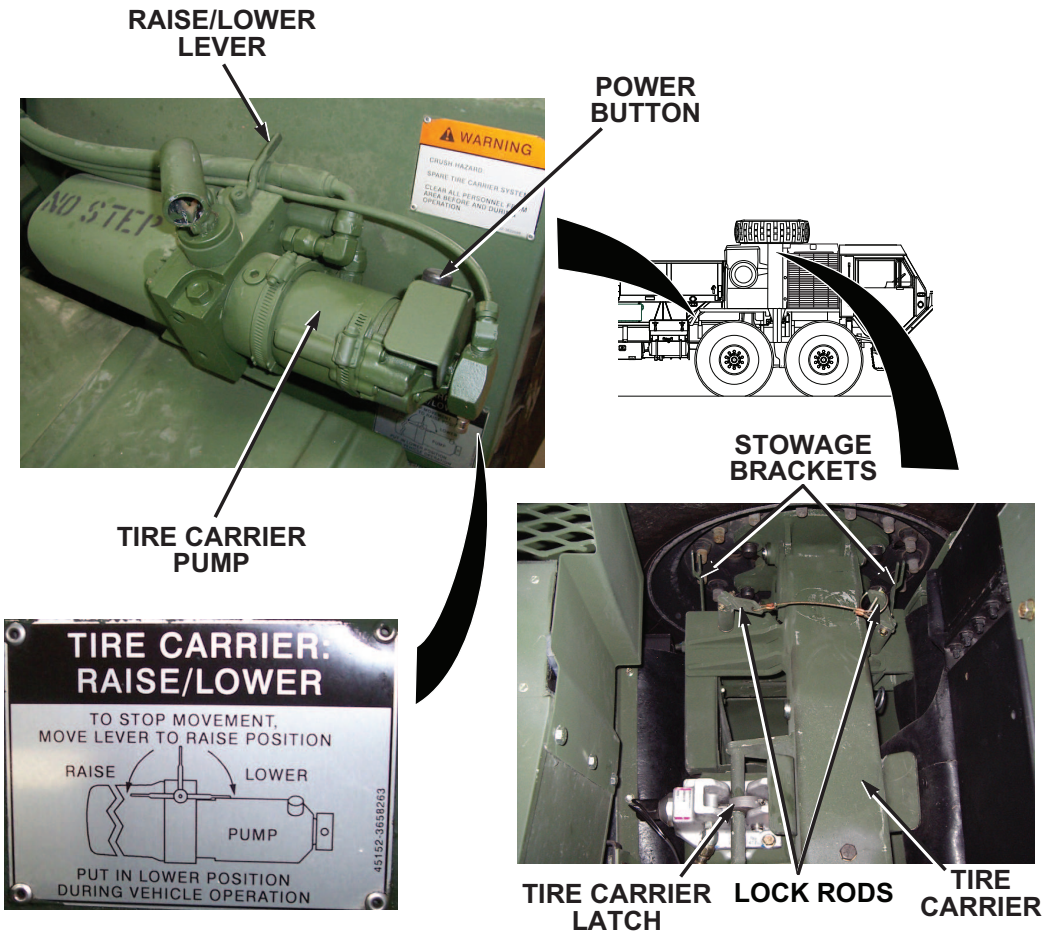


Figure 17.

Table 1. PMCS - WEEKLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			2. Set directional control lever to RAISE (pointing inboard) position.	
			3. Push and hold power control until tire carrier is fully raised and tire carrier latch is engaged.	Tire carrier does not raise or does not engage carrier latch.
			4. Remove lock rods from stowage brackets and install on tire carrier.	
			5. Tighten lock rods as required to properly secure tire carrier.	
			NOTE Operation of vehicle with damaged doors or windows may violate AR 385-55. (WP 0157)	
26	Weekly	Doors, Handles, and Windows	Check condition and operation of door, handles, and windows. (WP 0018)	
27	Weekly	Drive Belts and Pulleys	1. Check drive belts for cracking, fraying, and breaks. Check for tightness. Play should be about 1/2 in. (13 mm).	Any drive belt is broken, cracked to the belt fiber, has more than

Table 1. PMCS - WEEKLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
				one crack (1/8 in. in depth or 50% of belt thickness), has frays more than 2 in. long or excessive play.

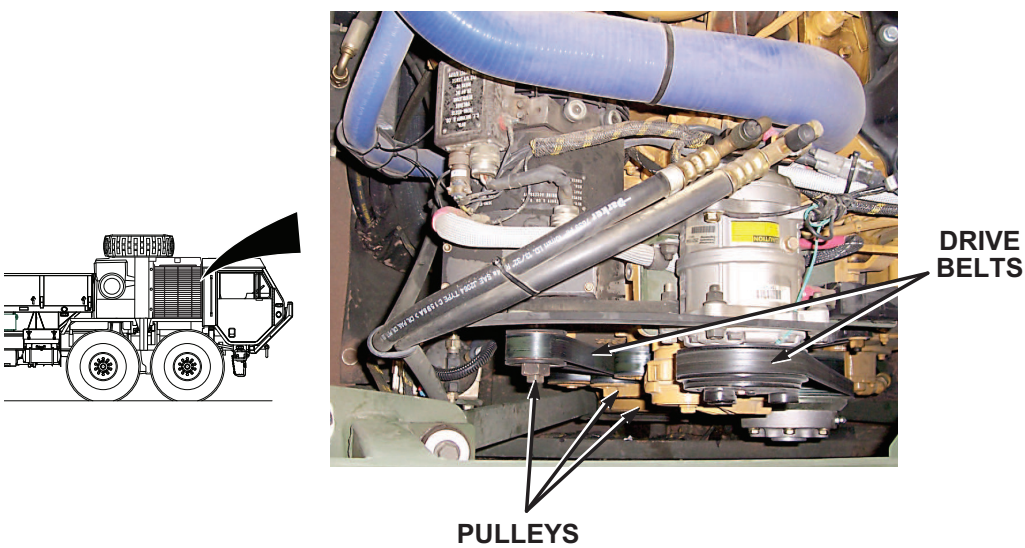


Figure 18.

			2. Check for bent or damaged pulley.	Pulley damaged or unserviceable.

Table 1. PMCS - WEEKLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			NOTE Start Engine. (WP 0043) Engine must be running for remaining PMCS checks.	
28	Weekly	Cab Temperature Controls	1. Check cab temperature controls for proper for proper operation: (WP 0035)	

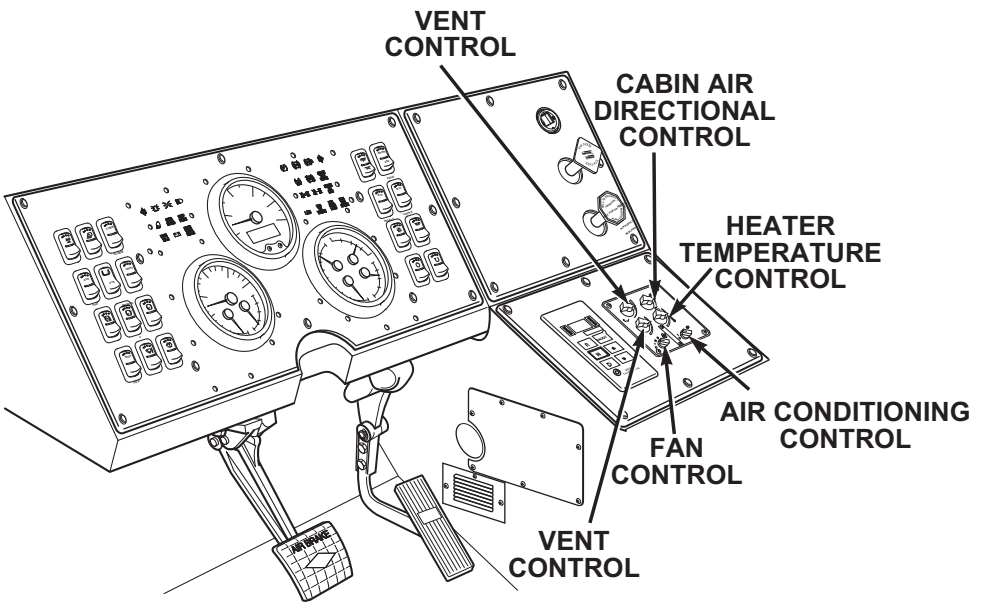


Figure 19.

			a. Check two vent controls.

Table 1. PMCS - WEEKLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			b. Check fan control. c. Check cabin air directional control. d. Check heater temperature control. e. Check air conditioning control.	
29	Weekly	Emergency Fuel Shut Off System	1. Check operation of emergency fuel shut off system: a. Pull back on MC MANUAL CONTROL EM VALVE lever.	

Table 1. PMCS - WEEKLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

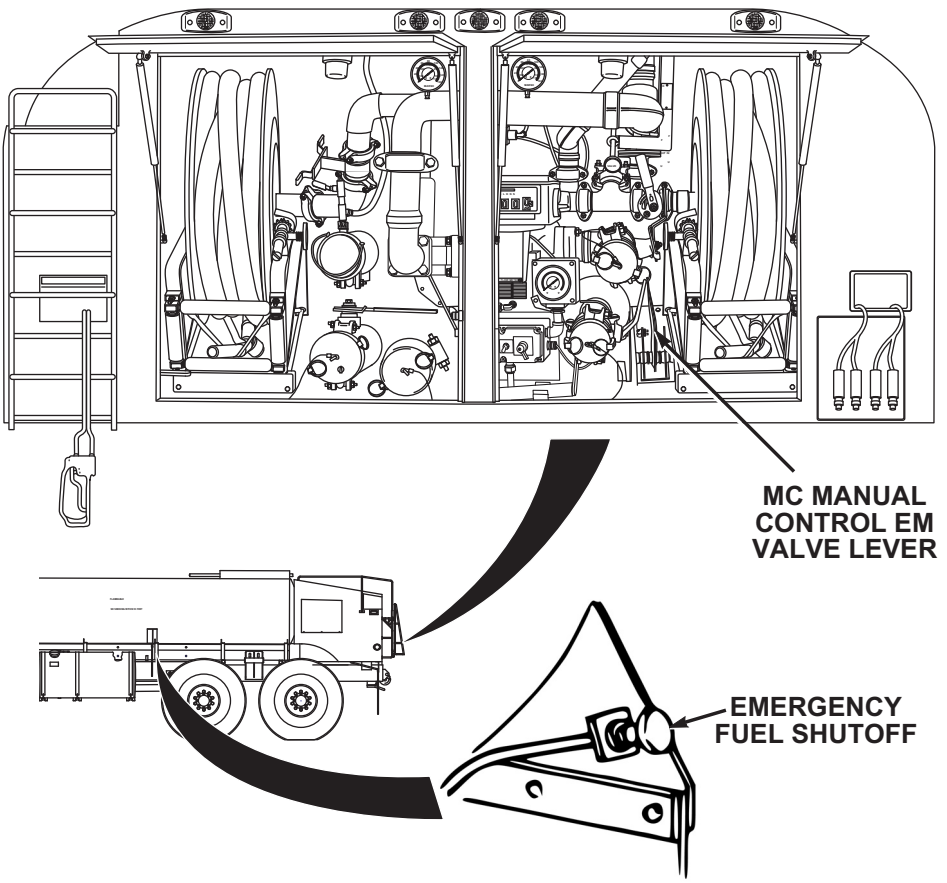


Figure 20.

			b. Pull out Emergency Fuel Shut-Off.

Table 1. PMCS - WEEKLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			c. Determine if MC MANUAL CONTROL EM VALVE lever has been set in closed (forward) position.	MC MANUAL CONTROL EM VALVE does not return to the closed (forward) position when the EMERGENCY FUEL SHUT OFF is pulled out.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
SEMIANNUAL - PREVENTIVE MAINTENANCE

INITIAL SETUP:

Tools and Special Tools
Gloves, Welders
None

Table 1. PMCS- SEMIANNUAL

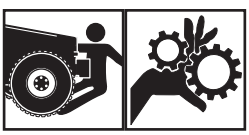
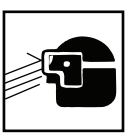
Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			WARNING  Do not start engine or move vehicle when personnel are under vehicle or working on brake lines. Failure to comply may result in injury or death to personnel. **WARNING**  Ensure engine is OFF and eye protection is worn when checking for leaks. Failure to comply may result in injury or death to personnel.	

Table 1. PMCS- SEMIANNUAL - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			NOTE • Lubrication intervals are for normal operating conditions. Intervals may be shortened as required for severe operating conditions. • Clean all lubrication points with cleaning compound, solvent and allow to dry prior to servicing. • When using a grease gun, apply lubricant to the fitting until clean lubricant squeezes out of the part being lubricated. • Always refer to lubrication instructions (WP 0145) to ensure equipment has correct lubricants appropriate to operating environment (expected continuous temperatures). If not, remove/drain and reapply/refill equipment with appropriate lubricants for operating environment as prescribed in lubrication instructions. (WP 0145)	
1	Semian-nual	Brake System	Lubricate axles No. 1, No. 2, No. 3, and No. 4 brake camshafts and slack	Fitting will not purge old lubricant

Table 1. PMCS- SEMIANNUAL - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			adjusters (four fittings per axle) with GAA. (WP 0145, Table 9)	out of component.

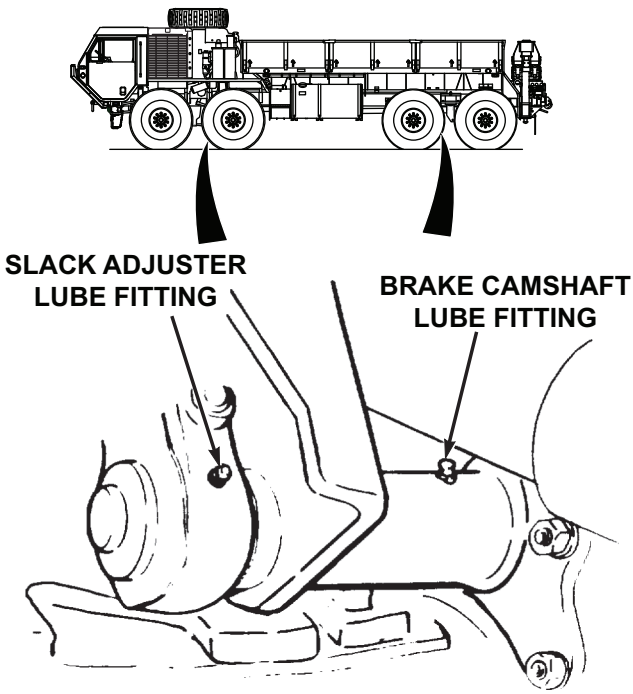


Figure 1.

			NOTE • When vehicle is operating under severe conditions, lubricate propeller shafts and universal joints every 50 hours of vehicle operation.	

Table 1. PMCS- SEMIANNUAL - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			• Use the proper lubricant to purge all four bearing seals of each universal joint. This flushes abrasive contaminants from each bearing and assures all four bearings are filled properly. Pop the seals, these seals are made to be popped. • If any seals fail to purge, move propeller shaft from side-to-side while applying gun pressure. This allows greater clearance on thrust end of bearing that is not purging. If seals still do not purge, rock vehicle by releasing the parking brake, start engine, put transmission in D (drive) or R (reverse), and allow vehicle to roll. This removes the windup in the drive line and allows for a greater clearance on the thrust end of the universal joint. • Because of the design of the universal joint seal, there will occasionally be one or more bearing seals of a joint that may not purge. If this occurs, notify field level maintenance.	

Table 1. PMCS- SEMIANNUAL - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			• Universal joint may have one or two grease fittings. If there are two grease fittings, either fitting can be greased. It is not necessary to grease both fittings.	
2	Semian-nual	Propeller Shafts and U-Joints	1. Lubricate all axle propeller shafts, transmission to transfer case propeller shaft, and U-joints with GAA: (WP 0145, Table 9)	Fitting will not purge old lubricant out of com-ponent.

Table 1. PMCS- SEMIANNUAL - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

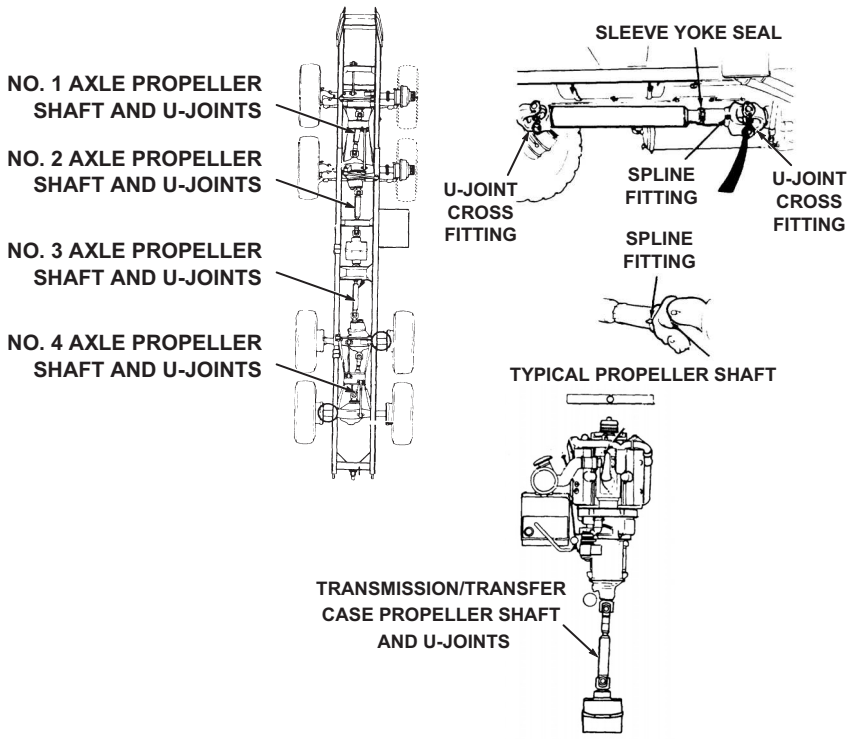


Figure 2.

			a. Complete the following when lubricating the spline end of the propeller shafts: (1) Apply GAA (WP 0145, Table 9) to spline fitting	Fitting will not purge old lubricant out of component.

Table 1. PMCS- SEMIANNUAL - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			until lubricant appears at pressure relief hole. (2) Cover pressure relief hole with finger and continue adding grease until it appears at sleeve yoke seal.	
3	Semiannual	Steering System	1. Lubricate steering column linkage, two steering gear boxes, and steering shaft universal joints (four fittings) with GAA. (WP 0145, Table 9)	Damage or wear present. Fitting will not purge old lubricant out of component.

Table 1. PMCS- SEMIANNUAL - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

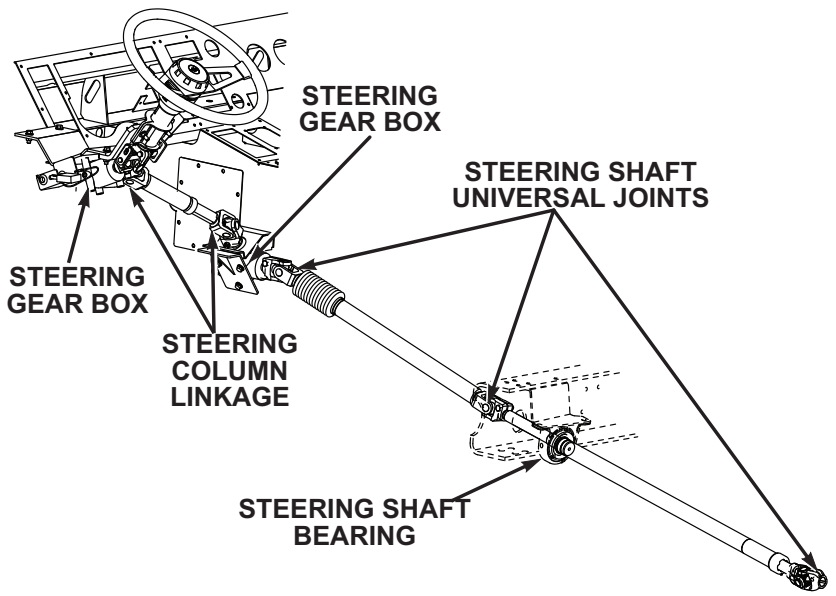


Figure 3.

			2. Lubricate steering shaft bearing (four fittings) with GAA. (WP 0145, Table 9)	Fitting will not purge old lubricant out of component.
			3. Lubricate master steering gear input shaft end (one fitting) with GAA. (WP 0145, Table 9)	Fitting will not purge old lubricant out of component.

Table 1. PMCS- SEMIANNUAL - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

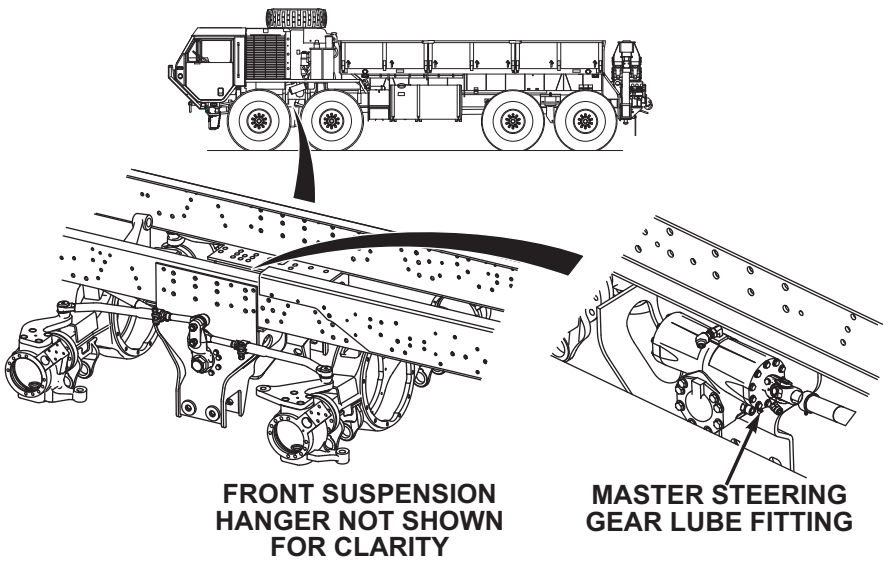


Figure 4.

			NOTE • The top trunnion bearing should be given 10 to 12 strokes with a grease gun through existing fitting. • The plug below the bottom should temporarily be removed and a grease fitting installed. The lower trunnion bearing should be lubricated with 10 to 12 strokes from a grease	

Table 1. PMCS- SEMIANNUAL - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			gun. The grease fitting should then be removed and the plug reinstalled.	
			4. Lubricate axles No. 1 and No. 2 trunnion bearings with GAA. (WP 0145, Table 9)	Fitting will not purge old lubricant out of component.

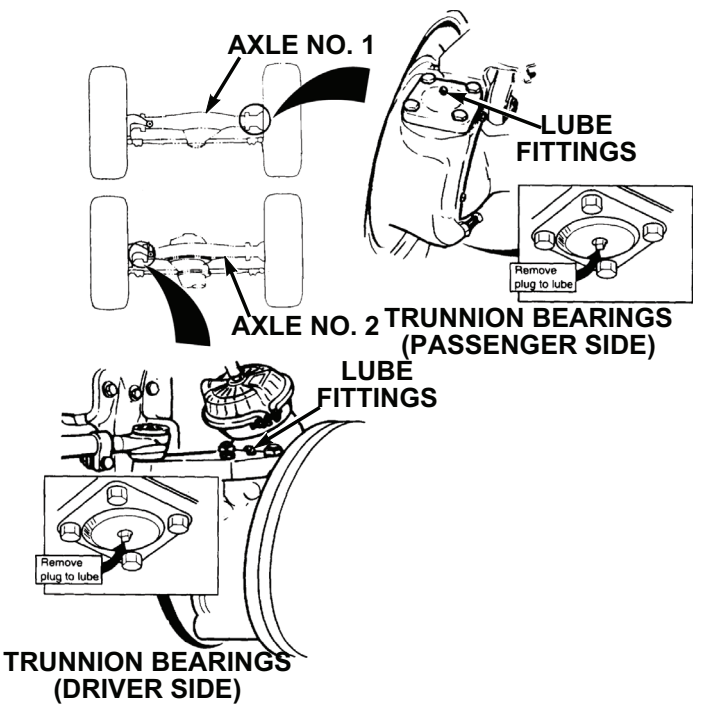


Figure 5.

Table 1. PMCS- SEMIANNUAL - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
4	Semian-nual	Battery Electrical System	Coat slave receptacle with corrosion preventive compound.	

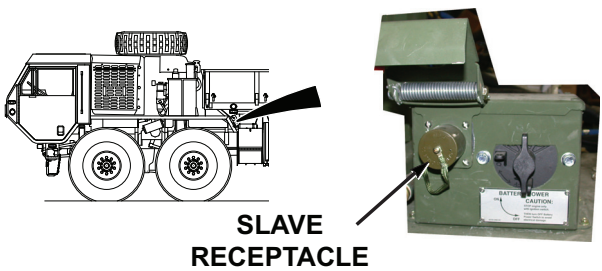


Figure 6.

5	Semian-nual	Mirror As-sembly	Lubricate mirror assembly swivel joints with GAA. (WP 0145)	

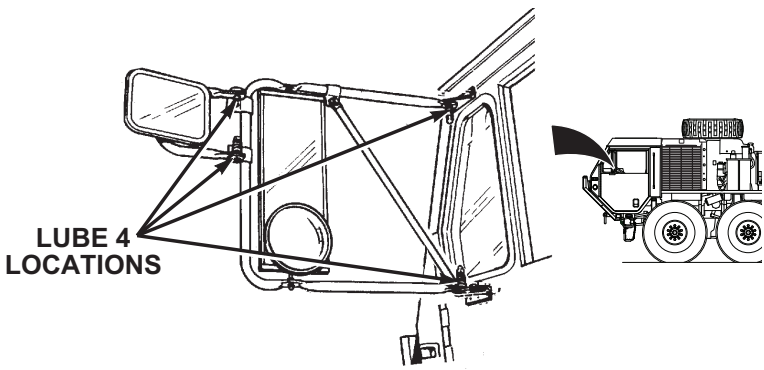


Figure 7.

Table 1. PMCS- SEMIANNUAL - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			NOTE Pintle hook plate lubrication fitting can be on any side.	
6	Semian-nual	Pintle Hook	1. Lubricate pintle hook (3 fittings) with GAA. (WP 0145, Table 9)	Fitting will not purge old lubricant out of com-ponent.

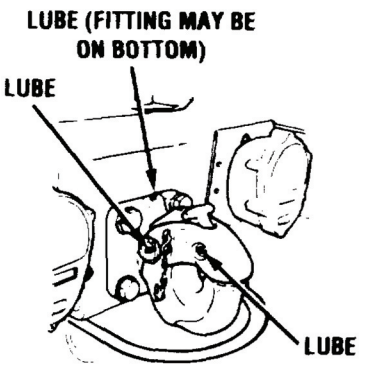


Figure 8.

7	Semian-nual	Self-Re-covery Winch	1. Unreel, (WP 0093) clean, and lu-bricate cable with OE/HDO. (WP 0145, Table 7)	
			2. Lubricate front and rear cable tensioner rollers (three fittings per tensioner) with GAA. (WP 0145, Table 9)	Fitting will not purge old lubricant out of com-ponent.

Table 1. PMCS- SEMIANNUAL - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

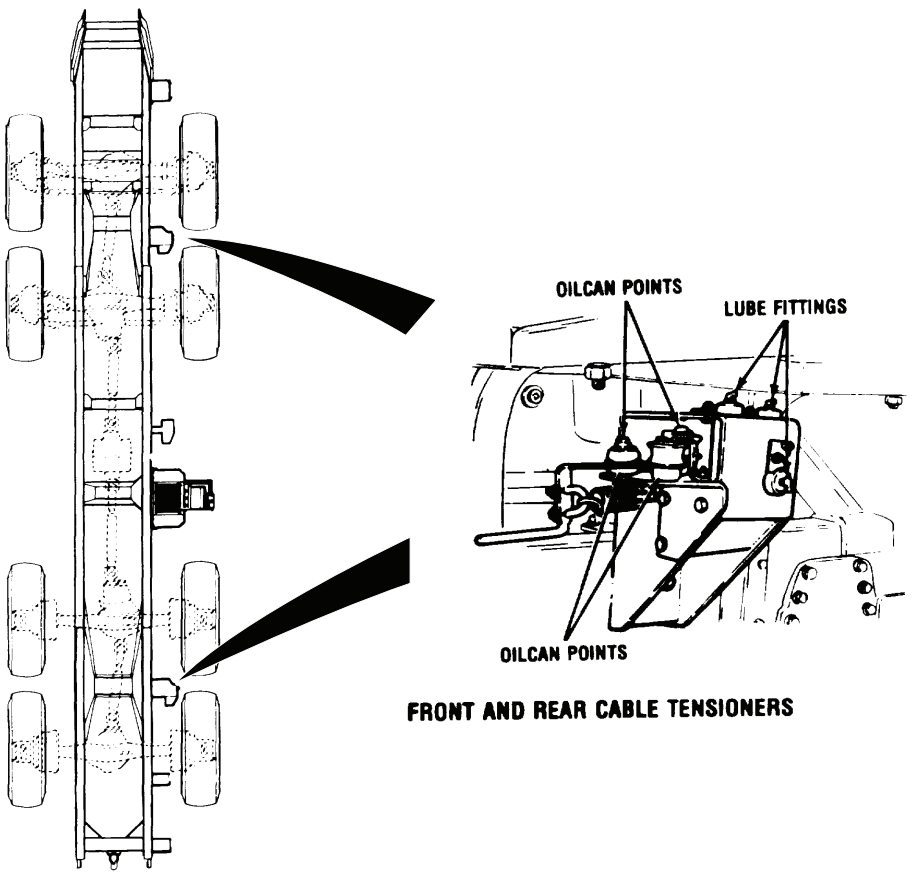


Figure 9.

		3. Lubricate pivot points and pressure rollers with OE/HDO. (WP 0145, Table 8)	

Table 1. PMCS- SEMIANNUAL - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			4. Lubricate rear cable guide roller (four fittings) with GAA. (WP 0145, Table 9)	Fitting will not purge old lubricant out of component.

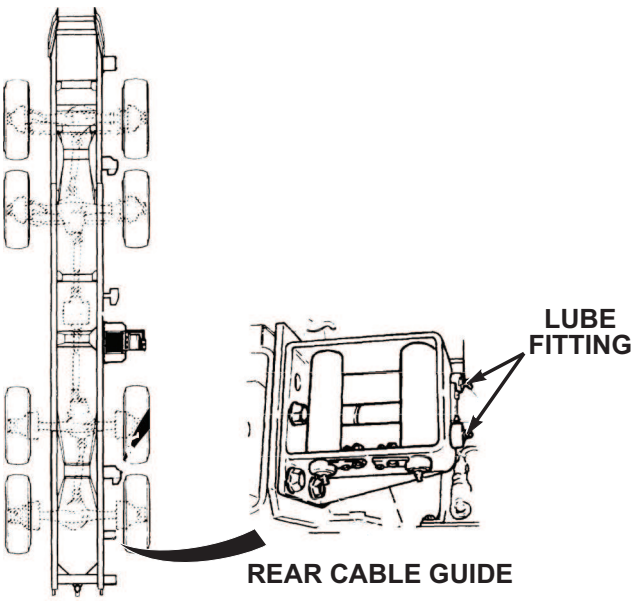


Figure 10.

			5. Lubricate front cable guide (four fittings) with GAA. (WP 0145, Table 9)	Fitting will not purge old lubricant

Table 1. PMCS- SEMIANNUAL - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
				out of component.

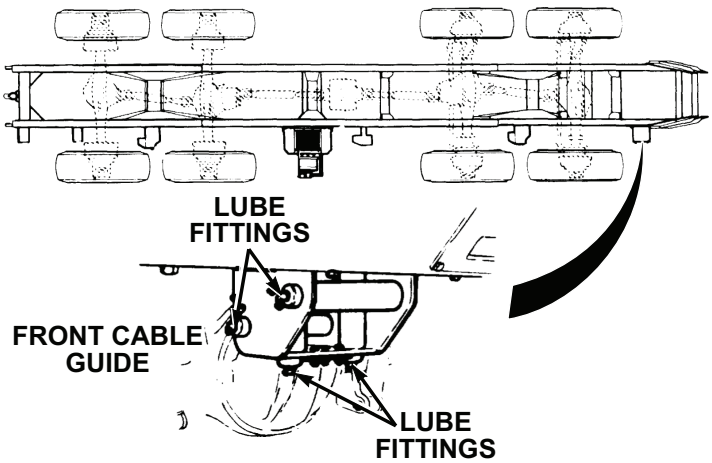


Figure 11.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
MONTHLY - PREVENTIVE MAINTENANCE

INITIAL SETUP:

Tools and Special Tools
Gloves, Welders
None

Table 1. PMCS - MONTHLY

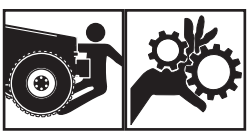
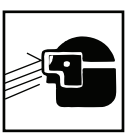
Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			WARNING  Do not start engine or move vehicle when personnel are under vehicle or working on brake lines. Failure to comply may result in injury or death to personnel. **WARNING**  Ensure engine is OFF and eye protection is worn when checking for leaks. Failure to comply may result in injury or death to personnel.	

Table 1. PMCS - MONTHLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			NOTE • Lubrication intervals are for normal operating conditions. Intervals may be shortened as required for severe operating conditions. • Clean all lubrication points with cleaning compound, solvent and allow to dry prior to servicing. • When using a grease gun, apply lubricant to the fitting until clean lubricant squeezes out of the part being lubricated. • Always refer to lubrication instructions (WP 0145) to ensure equipment has correct lubricants appropriate to operating environment (expected continuous temperatures). If not, remove/drain and reapply/refill equipment with appropriate lubricants for operating environment as prescribed in lubrication instructions. (WP 0145)	
1	Monthly	Damage And Cor-	Check entire vehicle for obvious damage and/or corrosion.	Any broken, cracked, bent frame

Table 1. PMCS - MONTHLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
		rosion Check		rails, cross-members, or screws are found.
2	Monthly	Lubricate Oilcan Points	1. Lubricate cabin door latching mechanisms and hinges with OE/HDO. (WP 0145) 2. Lubricate all side panel and engine cover hinges, locks, and latches with OE/HDO. (WP 0145) **NOTE** Steady illumination of the arctic engine heater indicator light indicates proper operation.	
3	Monthly	Arctic Engine Heater	1. Position arctic engine heater ON/OFF switch to ON position, indicator light will illuminate.	

Table 1. PMCS - MONTHLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

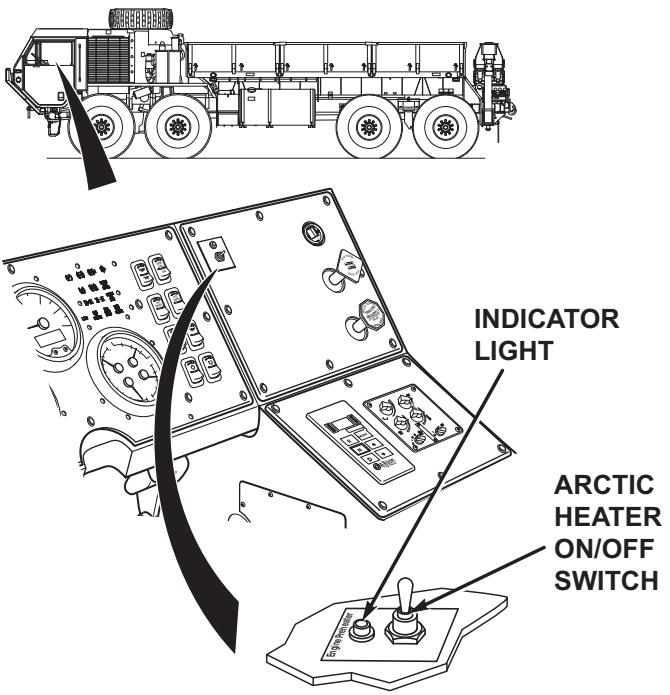


Figure 1.

		2. Visually check all fuel lines for leaks, cuts, loose clamps, and other obvious damage.	Any Class III leak.

Table 1. PMCS - MONTHLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

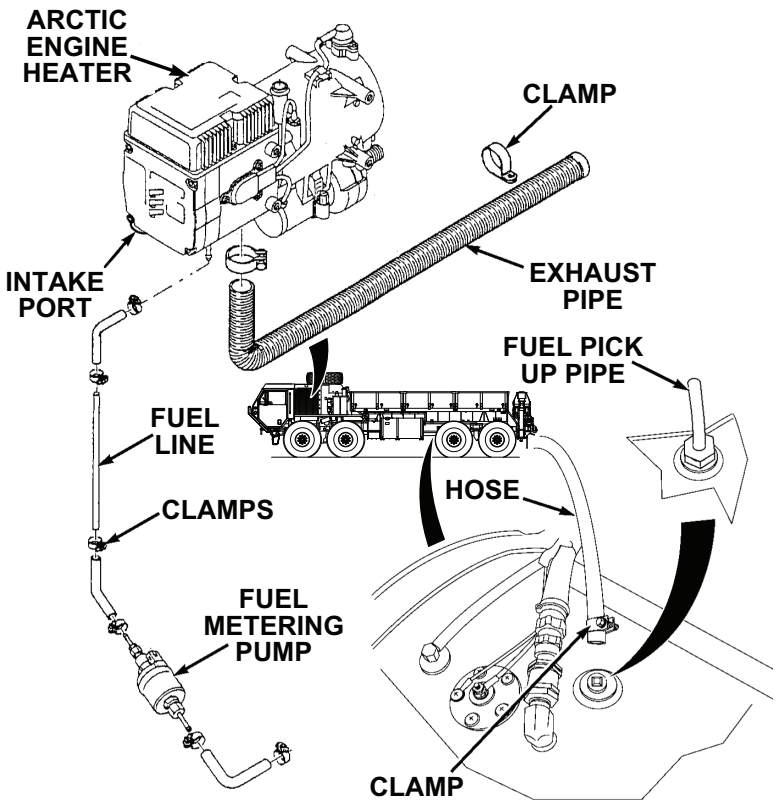


Figure 2.

		3. Visually check intake port and exhaust pipe for blockage. 4. Check water pump for unusual noise.	

Table 1. PMCS - MONTHLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

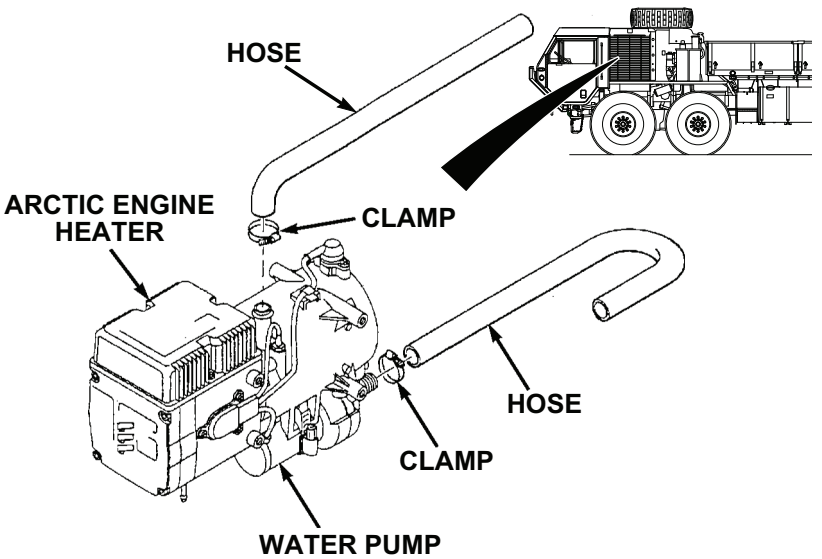


Figure 3.

		5. Check coolant hoses at arctic engine heater for leaks, cuts, loose hose clamps, and other obvious damage.	Any Class III leak.
		6. Check coolant hoses and fittings on engine for leaks, cuts, loose hose clamps, and other obvious damage.	Any Class III leak.

Table 1. PMCS - MONTHLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

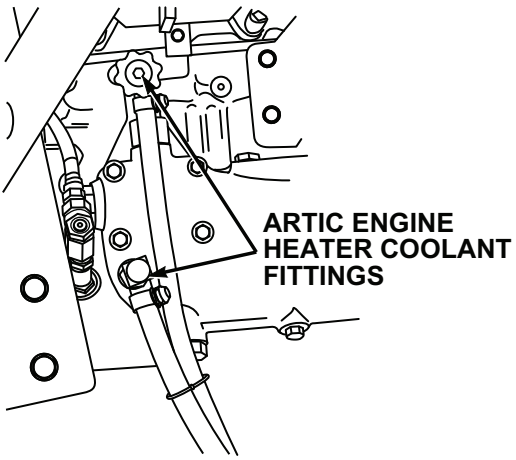


Figure 4.

			7. Run arctic engine heater for a minimum of 15 minutes at least once a month. **CAUTION** DO NOT lubricate B GRAVITY receptacle. Fuel contamination may occur. Failure to comply may result in damage to equipment.	
4	Monthly	Fuel Tank Module	1. Lubricate specific points of fuel service module:	

Table 1. PMCS - MONTHLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

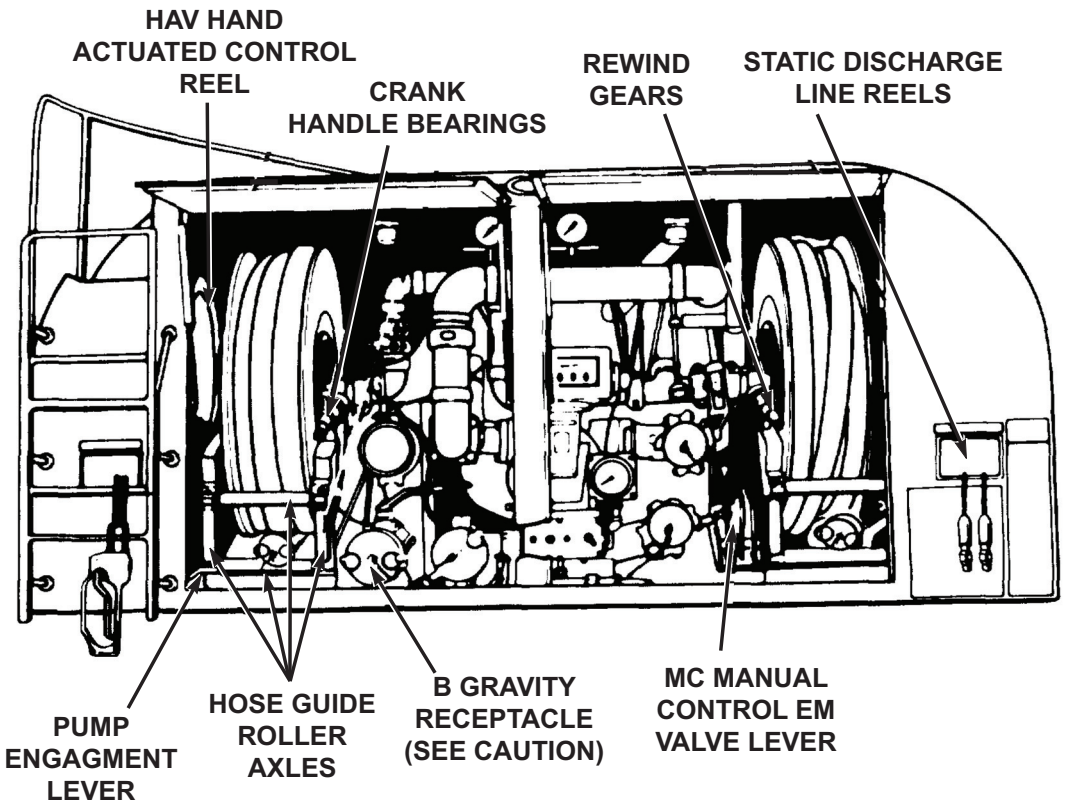


Figure 5.

			a. Lubricate HAV Hand actuated control reel ratchet mechanism with OE/HDO. (WP 0145, Table 8)	

Table 1. PMCS - MONTHLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

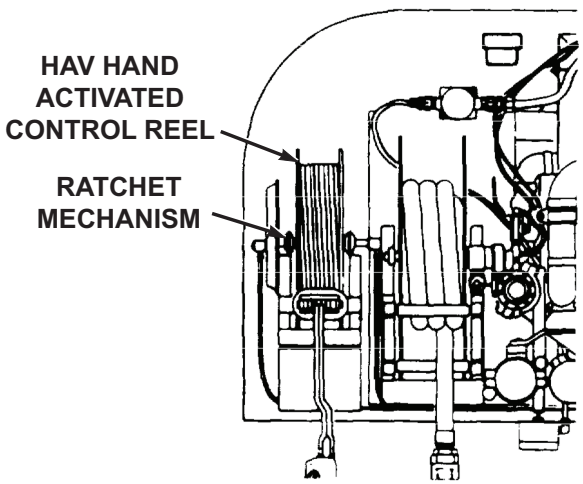


Figure 6.

			b. Lubricate pump engagement lever lubrication points with OE/HDO. (WP 0145, Table 8)

Table 1. PMCS - MONTHLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

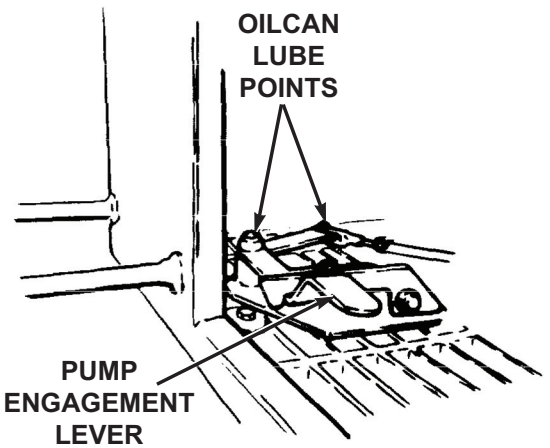
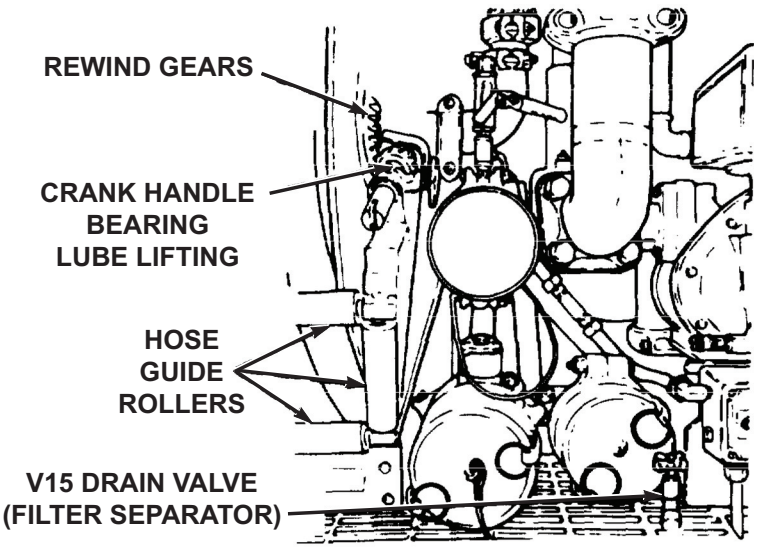


Figure 7.

			c. Lubricate four driver side and four passenger side (eight total) hose guide roller axles with OE/HDO. (WP 0145, Table 8)

Table 1. PMCS - MONTHLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:



FUEL HOSE REEL AND GUIDE ROLLERS

Figure 8.

			d. Lubricate V15 drain valve (filter separator) handle with OE/HDO. (WP 0145) e. Lubricate driver side and passenger side fuel hose reel crank handle bearings (one fitting one each reel) with GAA. (WP 0145) f. Lubricate driver side and passenger side rewind gears	Fitting will not purge old lubricant out of component.

Table 1. PMCS - MONTHLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			with light coating of GAA. (WP 0145) g. Lubricate static discharge line reels (two total) pawl and ratchet mechanism with OE/ HDO. (WP 0145)	

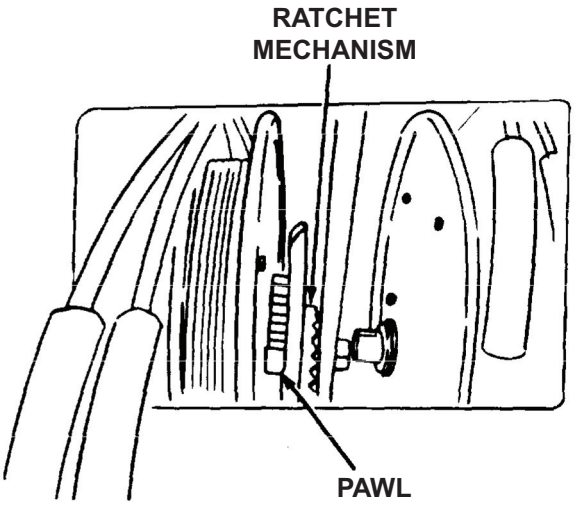


Figure 9.

			h. Lubricate MC manual control EM valve lever:	

Table 1. PMCS - MONTHLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

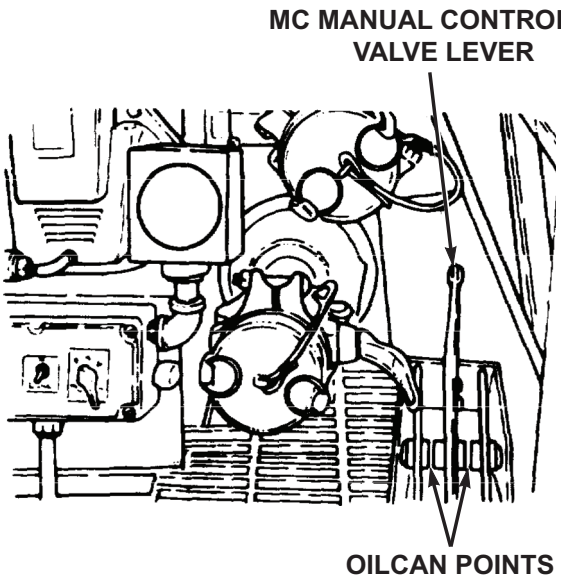


Figure 10.

			(1) Lubricate pivot points with OE/HDO. (WP 0145) (2) Lubricate sliding points of lever and linkage with OE/HDO. (WP 0145)

Table 1. PMCS - MONTHLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
			WARNING  • Always wear protective gloves when handling winch cable. Never let cable run through hands. Frayed cables can cut severely. Failure to comply may result in injury or death to personnel. • Never operate winch with less than five wraps of cable on winch drum. Failure to comply may result in injury or death to personnel.	
5	Monthly	Self-Recovery Winch (SRW)	1. Check winch cable for kinks, frays, and breaks. 2. Check self-recovery winch (SRW) lever (WP 0021) for proper operation in both directions.	

Table 1. PMCS - MONTHLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

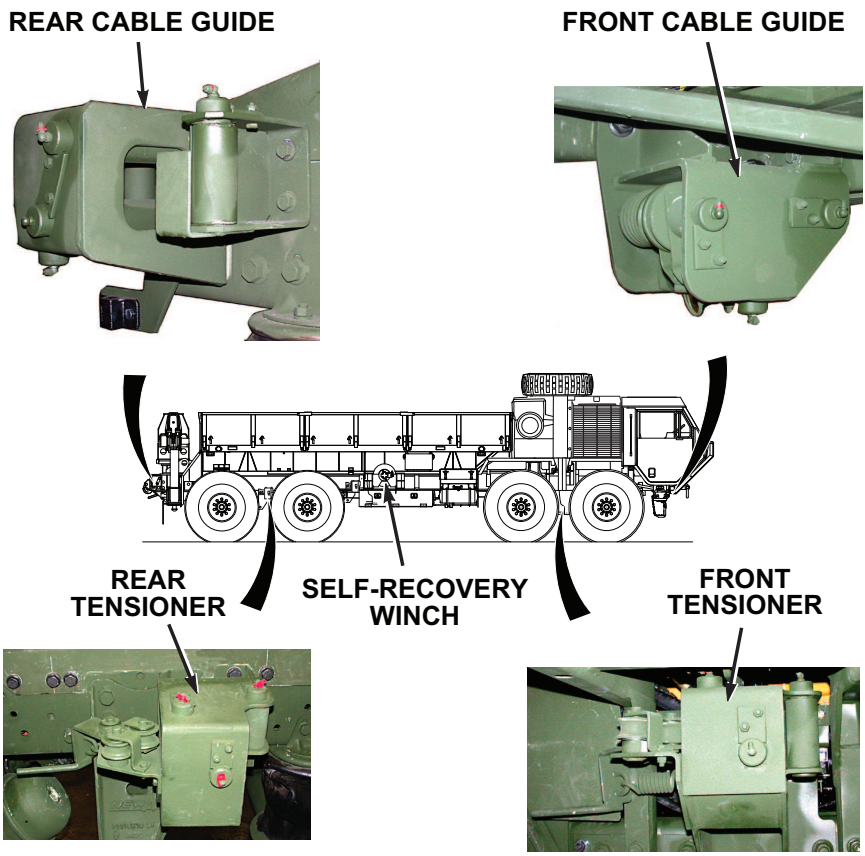


Figure 11.

		3. Inspect front cable guide for any loose or missing parts and any obvious damage.	Front cable guide has loose/miss-ing parts or

Table 1. PMCS - MONTHLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
				is unserviceable.
			4. Inspect front tensioner for loose or missing parts and any obvious damage.	Front tensioner has loose/missing parts or is unserviceable.
			5. Inspect rear tensioner for loose or missing parts and any other obvious damage.	Rear tensioner has loose/missing parts or is unserviceable.
			6. Inspect rear cable guide for loose or missing parts and any obvious damage.	Rear cable guide has loose/missing parts or is unserviceable.
			NOTE Gas particulate filter unit must be in operation to perform the following checks.	
6	Monthly	Gas Particulate Filter Unit (GPFU)	1. Check heater for unusual loud noise or improper operation.	Heater does not operate/ operates abnormally and GPFU is required for mission.

Table 1. PMCS - MONTHLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:

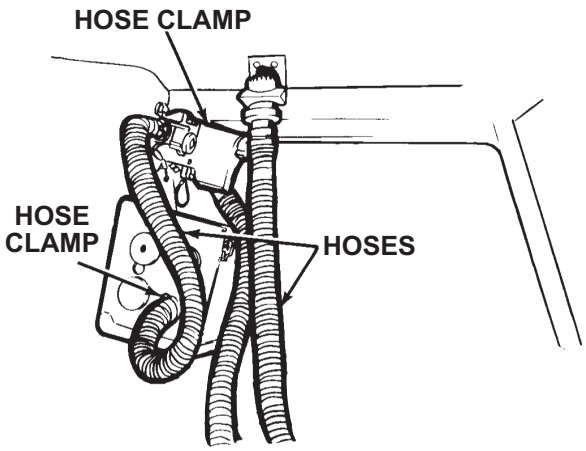


Figure 12.

			2. Disconnect two air duct breakaway sockets from mount and feel for airflow.	No airflow or not enough airflow and GPFU is required for mission.
			3. Turn heater control knob clockwise to make sure indicator light illuminates.	Heater is inoperative and GPFU is required for mission.
			4. Check hoses for cuts, tears, and other obvious damage.	Hoses cut, torn, or damaged and GPFU

Table 1. PMCS - MONTHLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
				is required for mission.
			5. Make sure hose clamps are secure.	Clamps loose and GPFU is required for mission.
7	Monthly	Rifle Stowage Mount	1. Check that mounting screws on top mount and lower mount are not broken or missing.	

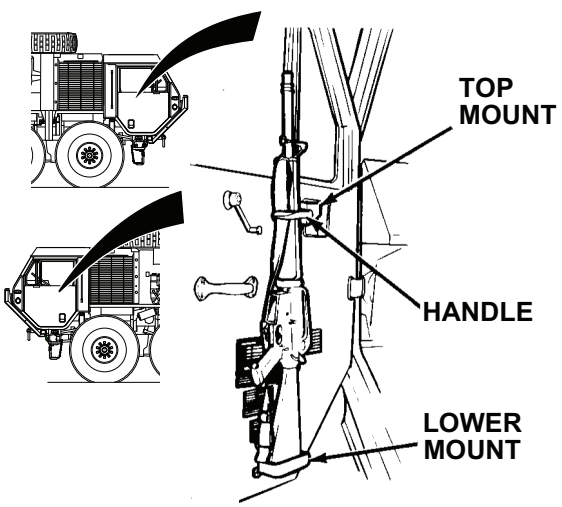


Figure 13.

			2. Check handle for excessive looseness or binding.	

Table 1. PMCS - MONTHLY - Continued

Item No.	Interval	Item to be Checked or Serviced	Procedure	Equipment Not Ready/ Available If:
8	Monthly	Machine Gun Operator's Platform Support	Check machine gun operator's platform support for loose, broken, or missing mounting screws.	
9	Monthly	Machine Gun Operator's Platform	Check machine gun operator's platform for cracks, loose or broken leg, missing or broken tie down strap.	
10	Monthly	Ring Mount	Check machine gun mounts for loose, broken, or missing mounting screws.	
11	Monthly	M-13 Decontamination Unit	Refer to TM 3-4230-214-12&P (WP 0157) for M-13 Decontamination Unit PMCS.	
12	Monthly	M-8 Chemical Alarm	Refer to TM 3-6665-225-12 (WP 0157) for M-8 Chemical Alarm PMCS.	
13	Monthly	Radio	Refer to TM 11-5820-498-12 (WP 0157) for radio PMCS.	

END OF WORK PACKAGE

CHAPTER 5

MAINTENANCE INSTRUCTIONS

OPERATOR MAINTENANCE
LUBRICATION INSTRUCTIONS

INITIAL SETUP:

Not Applicable

WARNING



Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. Keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water. Failure to comply may result in injury or death to personnel.

NOTE

- The lowest level of maintenance authorized to lubricate a specific point is indicated by where that lubrication point falls within the PMCS tables. Operator/crew are only authorized to lubricate those points within the operator PMCS tables. Field level maintenance personnel are authorized to lubricate all points regardless of which tables (operator or field level) those lubrication points are listed.
- Refer to PMCS tables for specific lubrication points and localized views.
- Lubrication intervals are for normal operating conditions. Intervals may be shortened as required for severe operating conditions.
- Clean all lubrication points with cleaning compound, solvent and allow to dry prior to servicing.
- When using a grease gun, apply lubricant to the fitting until clean lubricant squeezes out of the part being lubricated.
- After a thorough high pressure washing, lubricate all grease fittings and oil can points outside and underneath vehicle.

- If vehicle fords water obstacle, service all lubrication points below fording depth and check submerged gearboxes for presence of water.
- Ensure equipment has correct lubricants appropriate to operating environment (expected continuous temperatures). If not, remove/drain and reapply/refill equipment with appropriate lubricants for operating environment as prescribed in these lubrication instructions.

Table 1. Engine Lubrication.

Item	**Capacities**	**Expected Temperatures Above +15°F (-9° C)**	**Expected Temperatures +40 to -15° F (+4 to -26° C)**	**Expected Temperatures +40 to -50° F (+4 to -46° C)**	**Desert Conditions**	**Interval**
Engine Oil (with filter change)	42 qt. (39.73 L)	OE/ HDO-15W /40 MIL-PRF-2104	OE/ HDO-15W/ 40 MIL-PRF-2104 or OEA MIL-PRF-46167 (Notes 1 and 2)	OE/ HDO-15W/ 40 MIL-PRF-2104 or OEA MIL-PRF-46167 (Notes 1 and 2)	OE/ HDO-40 MIL-PRF-2104	A-Annual (1 year)
Engine Oil (without filter change)	40 qt. (37.84 L)	OE/ HDO-15W /40 MIL-PRF-2104	OE/ HDO-15W/ 40 MIL-PRF-2104 or OEA MIL-PRF-46167 (Notes 1 and 2)	OE/ HDO-15W/ 40 MIL-PRF-2104 or OEA MIL-PRF-46167 (Notes 1 and 2)	OE/ HDO-40 MIL-PRF-2104	A-Annual (1 year)

Table 1. Engine Lubrication. - Continued

Item	Capacities	Expected Temperatures Above +15°F (-9° C)	Expected Temperatures +40 to -15° F (+4 to -26° C)	Expected Temperatures +40 to -50° F (+4 to -46° C)	Desert Conditions	Interval

NOTE

1. OEA must be used when temperatures are consistently below 0°F (-18°C).
2. OE/HDO-15W/40 must be used when temperatures are consistently above 0°F (-18°C).

Table 2. Transmission and Transfer Case Lubrication.

Item	Capacities	Expected Temperatures Above +15° F (-9°C)	Expected Temperatures +40 to -15°F (+4 to -26°C)	Expected Temperatures +40 to -50°F (+4 to -46° C)	Interval
Transmission Oil (with filter change)	40 qt. (37.84 L)	OE/ HDO-15W/ 40 MIL-PRF-2104	OE/ HDO-15W/ 40 MIL-PRF-2104 (Note 2)	OE/ HDO-15W/ 40 MIL-PRF-2104 (Note 2)	A-Annual (1 year)
Transmission Oil (without filter change)	39 qt. (36.89 L)	OE/ HDO-15W/ 40 MIL-PRF-2104	OE/ HDO-15W/ 40 MIL-PRF-2104 (Note 2)	OE/ HDO-15W/ 40 MIL-PRF-2104 (Note 2)	A-Annual (1 year)
Transfer Case	6.5 qt. (6.15 L)	OE/ HDO-15W/ 40 MIL-PRF-2104	OE/ HDO-15W/ 40 MIL-PRF-2104 or	OE/ HDO-15W/ 40 MIL-PRF-2104 or	A-Annual (1 year)

Table 2. Transmission and Transfer Case Lubrication. - Continued

Item	Capacities	Expected Temperatures Above +15° F (-9°C)	Expected Temperatures +40 to -15°F (+4 to -26°C)	Expected Temperatures +40 to -50°F (+4 to -46° C)	Interval
			OEA MIL-PRF-46167 (Notes 1 and 2)	OEA MIL-PRF-46167 (Notes 1 and 2)	
All Other Transmission and Transfer Case Lubrication Points	As Required	GAA MIL-PRF-10924	GAA MIL-PRF-10924 (Note 2)	GAA MIL-PRF-10924 (Note 2)	As Required (Note 3)

NOTE

1. OE/HDO-15W/40 must be used when temperatures are consistently above 0°F (-18°C).
2. Refer to FM 9-207 (WP 0157) for arctic operation.
3. Refer to PMCS tables for specific lubrication intervals.

Table 3. Axle Lubrication.

Item	Capacities	Expected Temperatures Above +15° F (-9°C)	Expected Temperatures +40 to -15°F (+4 to -26° C)	Expected Temperatures +40 to -50°F (+4 to -46° C)	Interval
Axle 1	17.5 qt. (16.56 L)	GO-85W/140 MIL-PRF-2105	GO-85W/140 MIL-PRF-2105 or GO-80W/90	GO-80W/90 MIL-PRF-2105 or GO-75	B-Bienniel (2 Years) (Note 4)

Table 3. Axle Lubrication. - Continued

Item	Capacities	Expected Temperatures Above +15° F (-9°C)	Expected Temperatures +40 to -15°F (+4 to -26° C) MIL-PRF-2105 (Notes 1 and 3)	Expected Temperatures +40 to -50°F (+4 to -46° C) MIL-PRF-2105 (Notes 2 and 3)	Interval
Axle 2 (and Power Divider)	21.5 qt. (20.34 L)	GO-85W/140 MIL-PRF-2105	GO-85W/140 MIL-PRF-2105 or GO-80W/90 MIL-PRF-2105 (Notes 1 and 3)	GO-80W/90 MIL-PRF-2105 or GO-75 MIL-PRF-2105 (Notes 2 and 3)	B-Bienniel (2 Years) (Note 4)
Axle 3 (and Power Divider)	21 qt. (19.87 L)	GO-85W/140 MIL-PRF-2105	GO-85W/140 MIL-PRF-2105 or GO-80W/90 MIL-PRF-2105 (Notes 1 and 3)	GO-80W/90 MIL-PRF-2105 or GO-75 MIL-PRF-2105 (Notes 2 and 3)	B-Bienniel (2 Years) (Note 4)
Axle 4	16.5 qt. (15.61 L)	GO-85W/140 MIL-PRF-2105	GO-85W/140 MIL-PRF-2105 or GO-80W/90 MIL-PRF-2105 (Notes 1 and 3)	GO-80W/90 MIL-PRF-2105 or GO-75 MIL-PRF-2105 (Notes 2 and 3)	B-Bienniel (2 Years) (Note 4)

Table 3. Axle Lubrication. - Continued

Item	Capacities	Expected Temperatures Above +15° F (-9°C)	Expected Temperatures +40 to -15°F (+4 to -26° C)	Expected Temperatures +40 to -50°F (+4 to -46° C)	Interval
Oil Lubed Wheel Bearings	N/A	GO-85W/140 MIL-PRF-2105	GO-85W/140 MIL-PRF-2105 or GO-80W/90 MIL-PRF-2105 (Notes 1 and 3)	GO-80W/90 MIL-PRF-2105 or GO-75 MIL-PRF-2105 (Notes 2 and 3)	B-Bienniel (2 Years)
All Other Axle Lubrication Points	As Required	GAA MIL-PRF-10924	GAA MIL-PRF-10924 (Note 3)	GAA MIL-PRF-10924 (Note 3)	As Required (Note 5)

NOTE

1. GO-85W/140 must be used when temperatures are consistently above 30°F (-1° C).
2. GO-85W/90 must be used when temperatures are consistently above -15°F (-26° C).
3. Refer to FM 9-207 (WP 0157) for arctic operation.
4. An initial lubrication change on new or rebuilt axles should occur between 500 mi. (805 km) and 1,000 miles (1 609 km). Refer to Field Level Annual PMCS for more information.
5. Refer to PMCS tables for specific lubrication intervals.

Table 4. Hydraulic Reservoir Servicing.

Item	Capacities	Expected Temperatures Above +15° F (-9°C)	Expected Temperatures +40 to -15°F (+4 to -26° C)	Expected Temperatures +40 to -50°F (+4 to -46° C)	Interval
Hydraulic Reservoir	153.5 qt. (145.21 L)	OE/HDO-10 MIL-PRF-2104 or OE/HDO-30 MIL-PRF-2104 (Note 1)	OE/HDO-10 MIL-PRF-2104 (Note 2)	OEA MIL-PRF-46167 (Notes 2 and 3)	A-Annual (1 year)

NOTE

1. OE/HDO-30 must be used only when temperatures are consistently above 60°F (16°C).
2. Refer to FM 9-207 (WP 0157) for arctic operation.
3. OEA must be used when temperatures are consistently below 0°F (-18°C).

Table 5. Radiator Servicing.

Item	Capacities	Expected Temperatures Above +15° F (-9°C)	Expected Temperatures +40 to -15°F (+4 to -26° C)	Expected Temperatures +40 to -50°F (+4 to -46° C)	Interval
Antifreeze (CID A-A-52624) (Note 1)	58.5 qt. (55.34 L)	58.5 qt. (55.34 L) 50% Ethylene Glycol Type IC (Recycled) (Notes 1 and 2)	58.5 qt. (55.34 L) 50% Ethylene Glycol Type IC (Recycled) (Notes 1 and 2)	58.5 qt. (55.34 L) 60% Ethylene Glycol Arctic Type IB (Recycled) (Notes 1, 2, and 3)	A-Annual (1 year) (Note 4)

Table 5. Radiator Servicing. - Continued

Item	Capacities	Expected Temperatures Above +15° F (-9°C)	Expected Temperatures +40 to -15°F (+4 to -26° C)	Expected Temperatures +40 to -50°F (+4 to -46° C)	Interval
Antifreeze (CID A-A-52624) (Note 1)	58.5 qt. (55.34 L)	29.5 qt. (27.91 L) 100% Ethylene Glycol Type IA (Recycled) plus 29 qt. (27.43 L) water (Notes 1 and 5)	29.5 qt. (27.91 L) 100% Ethylene Glycol Type IA (Recycled) plus 29 qt. (27.43 L) water (Notes 1 and 5)	35.1 qt. (33.2 L) 100% Ethylene Glycol Type IA (Recycled) plus 23.4 qt. (22.14 L) water (Notes 1, 3, and 6)	A-Annual (1 year) (Note 4)
Antifreeze (CID A-A-52624) (Note 1)	58.5 qt. (55.34 L)	29.5 qt. (27.91 L) 100% 100% Propylene Glycol Type IIA (virgin) plus 29 qt. (27.43 L) water (Notes 1 and 7)	29.5 qt. (27.91 L) 100% Propylene Glycol Type IIA (virgin) plus 29 qt. (27.43 L) water (Notes 1 and 7)	35.1 qt. (33.2 L) 100% Propylene Glycol Type IIA (virgin) plus 23.4 qt. (22.14 L) water (Notes 1, 3, and 8)	A-Annual (1 year) (Note 4)
Corrosion Inhibitor (Note 1)	1.8 qt. (1.7 L)	(Note 1)	(Note 1)	(Notes 1 and 3)	As Required

NOTE

1. Refer to TB 750-651 (WP 0157) for more information on antifreeze and additives used in the HEMTT series vehicle engine cooling system, and TM 750-254 (WP 0157) for detailed instructions for draining, cleaning, and flushing cooling systems of tactical vehicles.

Table 5. Radiator Servicing. - Continued

Item	Capacities	Expected Temperatures Above +15° F (-9°C)	Expected Temperatures +40 to -15°F (+4 to -26° C)	Expected Temperatures +40 to -50°F (+4 to -46° C)	Interval
2. Type 1C (normal) and Type 1B (arctic) antifreeze is premixed, and DOES NOT REQUIRE the addition of water. Never add water or inhibitor to Type IB anti-freeze. 3. Refer to FM 9-207 (WP 0157) for arctic operation. 4. Engine coolant contaminant level is checked annually. Engine coolant does not need to be changed until it fails check. 5. A mixture of 50% Ethylene Glycol (EG) antifreeze to 50% water will provide freeze protection down to -34°F (-37°C). 6. A mixture of 50% Propylene Glycol (PG) antifreeze to 50% water will provide freeze protection down to -27°F (-33°C). 7. A mixture of 60% Ethylene Glycol (EG) antifreeze to 40% water will provide freeze protection down to -62°F (-52°C). 8. A mixture of 60% Propylene Glycol (PG) antifreeze to 40% water will provide freeze protection down to -56°F (-49°C).					

Table 6. Tire Carrier Lubrication.

Item	Capacities	Expected Temperatures Above +15° F (-9°C)	Expected Temperatures +40 to -15°F (+4 to -26° C)	Expected Temperatures +40 to -50°F (+4 to -46° C)	Interval
Tire Carrier Pump (Note 1)	1.5 qt. (1.42 L)	OE/HDO-10 MIL-PRF-2104	OE/HDO-10 MIL-PRF-2104 (Note 2)	OEA MIL-PRF-46167 (Note 2)	S-Semian-nual (WP 0143) (6 Months) (Note 3)

NOTE

1. Refer to tire carrier hydraulic system fill for information on servicing tire carrier pump.
2. Refer to FM 9-207 (WP 0157) for arctic operation.

Table 6. Tire Carrier Lubrication. - Continued

Item	Capacities	Expected Temperatures Above +15° F (-9°C)	Expected Temperatures +40 to -15°F (+4 to -26° C)	Expected Temperatures +40 to -50°F (+4 to -46° C)	Interval
3. Check level and add fluid as necessary. Currently there is no requirement to drain/fill tire carrier pump reservoir.					

Table 7. Self-Recovery Winch Lubrication.

Item	Capacities	Expected Temperatures Above +15° F (-9°C)	Expected Temperatures +40 to -15°F (+4 to -26° C)	Expected Temperatures +40 to -50°F (+4 to -46° C)	Interval
Self-Recovery Winch Gearbox (Note 1)	2 qt. (1.89 L)	GO-85W/140 MIL-PRF-2105	GO-75 MIL-PRF-2105 or GO-80W/90 MIL-PRF-2105 (Note 2)	GO-75 MIL-PRF-2105 (Note 2)	A-Annual (1 year)
Winch Cable	As Required	OE/HDO-30 MIL-PRF-2104	OE/HDO-10 MIL-PRF-2104 (Note 1)	OEA MIL-PRF-46167 (Note 1)	S-Semiannual (WP 0143) (6 Months)
All Other Self-Recovery Winch Lubrication Points	As Required	GAA MIL-PRF-10924	GAA MIL-PRF-10924 (Note 2)	GAA MIL-PRF-10924 (Note 2)	As Required (Note 3)

NOTE

1. Pre-lubricated from manufacturer.
2. Refer to FM 9-207 (WP 0157) for arctic operation.

Table 7. Self-Recovery Winch Lubrication. - Continued

Item	Capacities	Expected Temperatures Above +15° F (-9°C)	Expected Temperatures +40 to -15°F (+4 to -26° C)	Expected Temperatures +40 to -50°F (+4 to -46° C)	Interval

3. Refer to PMCS tables for specific lubrication intervals.

Table 8. Oil Can Point Lubrication.

Capacities	Expected Temperatures Above +15°F (-9°C)	Expected Temperatures +40 to -15°F (+4 to -26°C)	Expected Temperatures +40 to -50°F (+4 to -46°C)	Intervals
As Required	OE/HDO-30 MIL-PRF-2104	OE/HDO-10 MIL-PRF-2104 (Note 1)	OEA MIL-PRF-46167 (Note 1)	As Required (Note 2)

NOTE

1. Refer to FM 9-207 (WP 0157) for arctic operation.
2. Refer to PMCS tables for specific oilcan lubrication intervals.

Table 9. Miscellaneous Lubrication Points.

Item	Capacities	Expected Temperatures Above +15° F (-9°C)	Expected Temperatures +40 to -15°F (+4 to -26° C)	Expected Temperatures +40 to -50°F (+4 to -46°C)	Interval
Brake Cam Slack Adjusters	As Required	GAA MIL-PRF-10924	GAA MIL-PRF-10924 (Note 1)	GAA MIL-PRF-10924 (Note 1)	S-Semiannual (WP 0143) (6 Months)
Fuel Service Module	As Required	GAA	GAA MIL-PRF-10924	GAA MIL-PRF-10924	As Required (Note 3)

Table 9. Miscellaneous Lubrication Points. - Continued

Item Compo-nents	Capacities	Expected Temperatures Above +15° F (-9°C) MIL-PRF-10924	Expected Temperatures +40 to -15°F (+4 to -26° C) (Note 1)	Expected Temperatures +40 to -50°F (+4 to -46°C) (Note 1)	Interval
Pintle Hook	As Required	GAA MIL-PRF-10924	GAA MIL-PRF-10924 (Note 1)	GAA MIL-PRF-10924 (Note 1)	W-Weekly (WP 0142) S-Semian-nual (WP 0143) (6 Months) (service fit-tings)
Propeller Driver Shafts and U-Joints	As Required	GAA MIL-PRF-10924	GAA MIL-PRF-10924 (Note 1)	GAA MIL-PRF-10924 (Note 1)	S-Semian-nual (WP 0143) (6 Months) (Note 2)
Steering System	As Required	GAA MIL-PRF-10924	GAA MIL-PRF-10924 (Note 1)	GAA MIL-PRF-10924 (Note 1)	S-Semian-nual (WP 0143) (6 Months)

NOTE

1. Refer to FM 9-207 (WP 0157) for arctic operation.
2. When vehicle is operating under severe conditions, lubricate propeller shafts and universal joints every 50 hours of vehicle operation.
3. Refer to PMCS tables for specific lubrication intervals.

Table 10. Vehicle Cleaning.

Item	Capacities	Expected Temperature	Intervals
Cleaning Compound, Solvent (Note 1)	As Required	SD All Temperatures (Note 2)	As Required

NOTE

1. After a thorough high pressure washing, lubricate all grease fittings and oil can points outside and underneath vehicle.
2. Refer to FM 9-207 (WP 0157) for arctic operation.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
CLOSE/OPEN HEATER VALVES

INITIAL SETUP:

Equipment Condition
Engine OFF. (WP 0056)
Wheels chocked. (WP 0073)
Open passenger side engine cover. (WP 0154)

CLOSE HEATER VALVES

NOTE

- Closing two heater valves will improve the efficiency of the cabin air conditioning.
- Closing two heater valves will disable cabin heat.
- Heater valve knob is located on rear passenger side of engine.

1. Turn heater valve knob (1) counterclockwise to close.

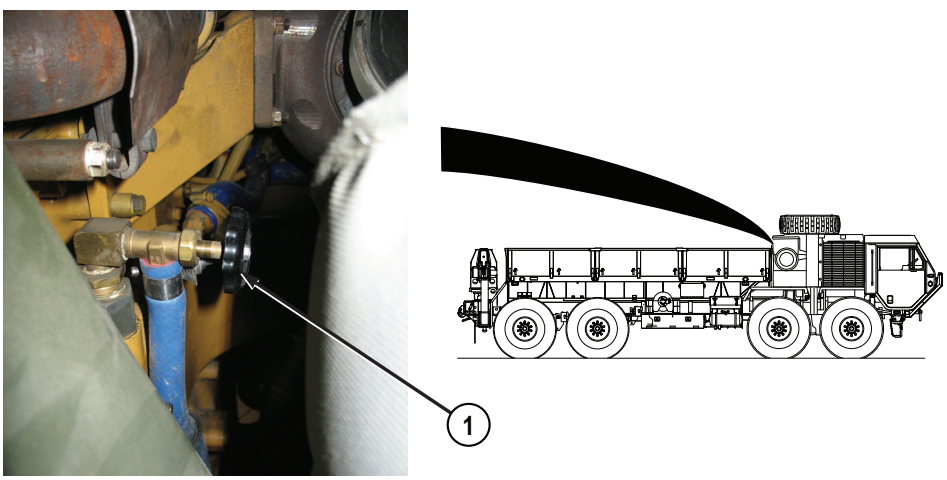


Figure 1.

NOTE

Heater valve knob is located towards bottom of front passenger side of engine.

2. Turn heater valve knob (2) counterclockwise to close.

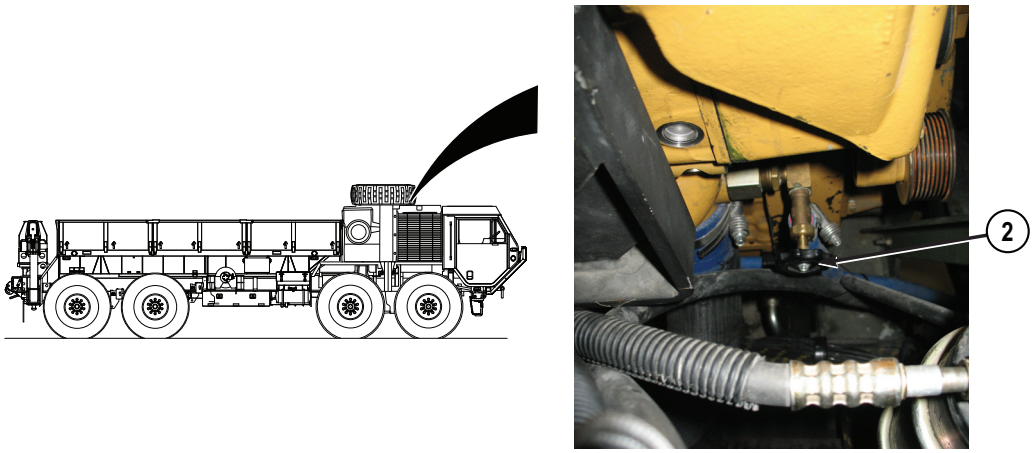


Figure 2.

END OF TASK

OPEN HEATER VALVES

NOTE

- Opening two heater valves will diminish efficiency of air conditioning kit.
- Opening two heater valves will enable cabin heat.
- Heater valve knob is located on rear passenger side of engine.

1. Turn heater valve knob (1) clockwise to close.

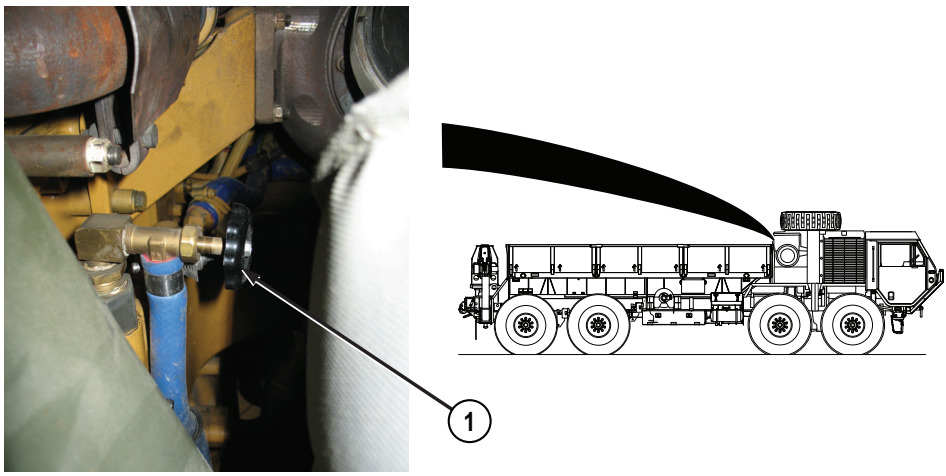


Figure 3.

NOTE

Heater valve knob is located towards bottom of front passenger side of engine.

2. Turn heater valve knob (2) clockwise to close.

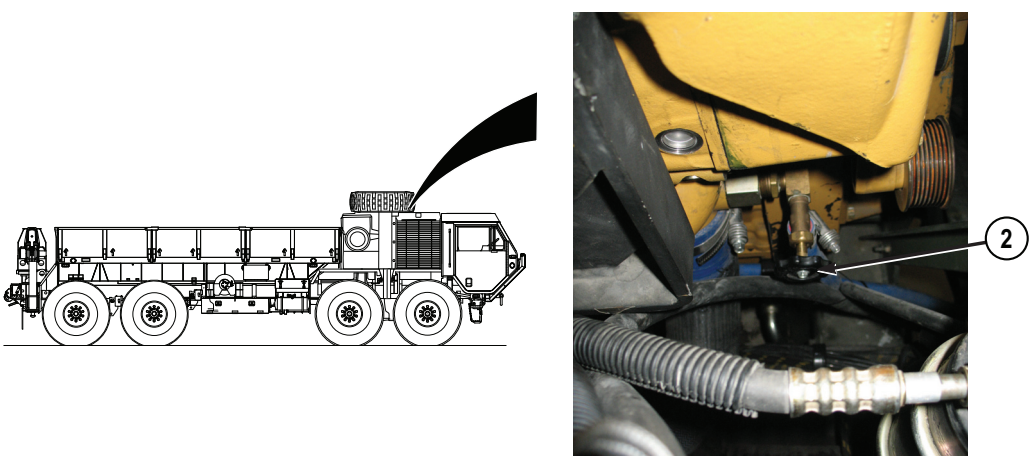


Figure 4.

END OF TASK

FOLLOW-ON MAINTENANCE

1. Close passenger side engine cover. (WP 0154)
2. Remove wheel chocks.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
PRE/POST TOWING PROCEDURE (FRONT LIFT ONLY)

INITIAL SETUP:

Tools and Special Tools
Chain, 8 ft. (supplied by wrecker)
Chain, 7 ft. (supplied by wrecker) (WP 0158, Table 3, Item 6)

Equipment Condition
Engine OFF. (WP 0056)

PREPARE VEHICLE FOR TOWING

CAUTION

When installing axle restraint chains, route chains so hoses or lines are not between frame and chain or axle and chain. Failure to comply may result in damage to equipment.

NOTE

- This procedure is applicable to preparation for towing a HEMTT series vehicle from the front ONLY (refer to tow HEMTT-front lift for further information).
- If disabled vehicle is either a BASE or A2 model HEMTT series vehicle (refer to data plate on inside of driver side door), complete Step (1).
- If disabled vehicle is an A4 model HEMTT series vehicle (refer to data plate on inside of driver side door), skip to Step (2).

1. Perform the following on disabled vehicle:
   a. Remove propeller shaft between transfer case and No. 3 axle.
   b. Install axle restraint chains (1):

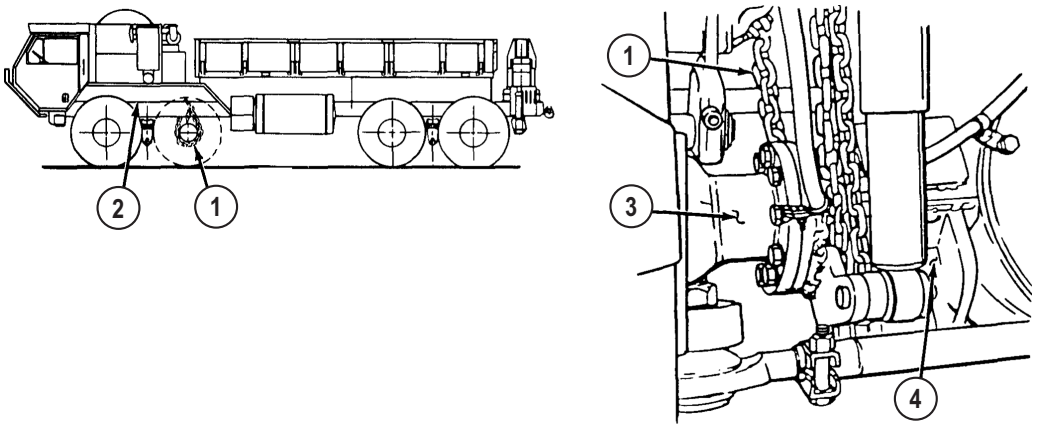


Figure 1.

NOTE

- Axle restraint chains are installed the same way, driver side shown.
- No. 2 axle should be restrained with chains on both sides of vehicle.

(1) Route axle restraint chain (1) over frame rail (2) and around axle (3) beside walking beam (4).

(2) Hook axle restraint chain (1) back into itself.

(3) Repeat Steps (1) and (2) for opposite side of No. 2 axle (3).

CAUTION

When installing axle restraint chains, route chain around frame rail and axle only. Do not wrap chain around lateral torque rod, shock absorber, shift cables, etc. as they could be crushed. Route chains so hoses or lines are not between frame and chain or axle and chain. Failure to comply may result in damage to equipment.

NOTE

- This procedure is applicable to preparation for towing a HEMTT series vehicle from the front ONLY (refer to tow HEMTT-front lift for further information).
- If disabled vehicle is an A4 model HEMTT series vehicle (refer to data plate on inside of driver side door), complete Step (2).

2. Perform the following on disabled vehicle:

a. Remove propeller shaft between transfer case and No. 3 axle.

b. Install axle restraint chains (1):

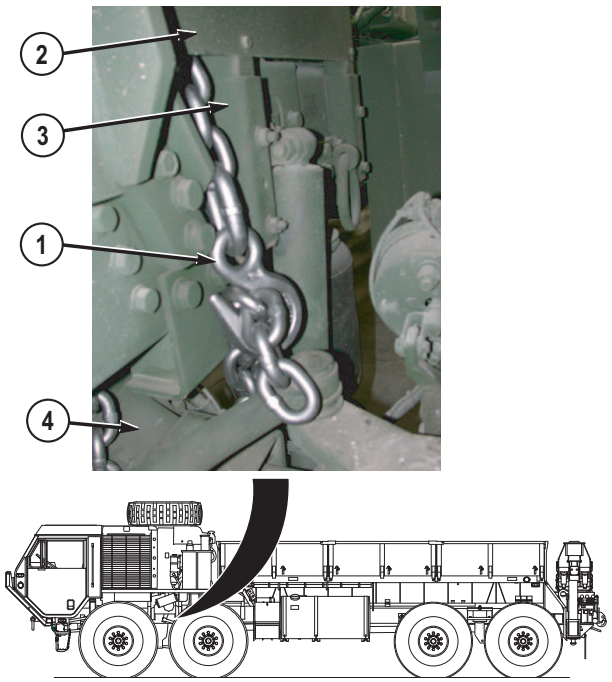


Figure 2.

NOTE

- Axle restraint chains are installed the same way, driver side shown.
- No. 2 axle should be restrained with chains on both sides of vehicle.

(1) Route axle restraint chain (1) under engine shroud (2), over frame rail (3), and around axle (4).

(2) Hook axle restraint chain (1) back into itself as shown.

(3) Repeat Steps (1) and (2) for opposite side of No. 2 axle (3).

END OF TASK

POST TOWING PROCEDURE

NOTE

- This post towing procedure is applicable to a HEMTT series vehicle that has been towed from the front ONLY (refer to tow HEMTT-front lift for further information).
- If disabled vehicle is either a BASE or A2 model HEMTT series vehicle (refer to data plate on inside of driver side door), complete Step (1).
- If disabled vehicle is an A4 model HEMTT series vehicle (refer to data plate on inside of driver side door), skip to Step (2).

1. Perform the following to disabled vehicle:
   a. Remove two axle restraint chains (1) from around frame rails (2) and No. 2 axle (3).

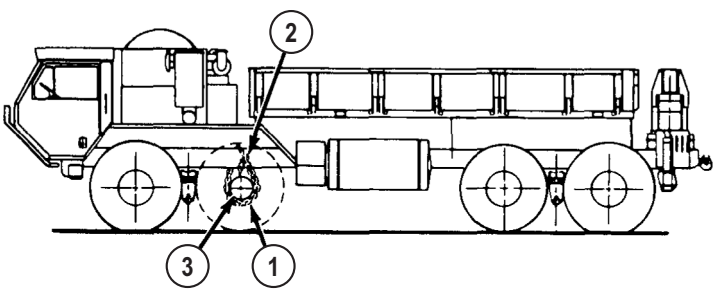


Figure 3.

   b. Return two axle restraint chains (1) to wrecker stowage.
   c. Install propeller shaft between transfer case and No. 3 axle.

NOTE

- This post towing procedure is applicable to a HEMTT series vehicle that has been towed from the front ONLY (refer to tow HEMTT-front lift for further information).
- If disabled vehicle is an A4 model HEMTT series vehicle (refer to data plate on inside of driver side door), complete Step (2).

2. Perform the following to disabled vehicle:
   a. Remove two axle restraint chains (1) from under engine shroud (2), around frame rail (3), and No. 2 axle (4).

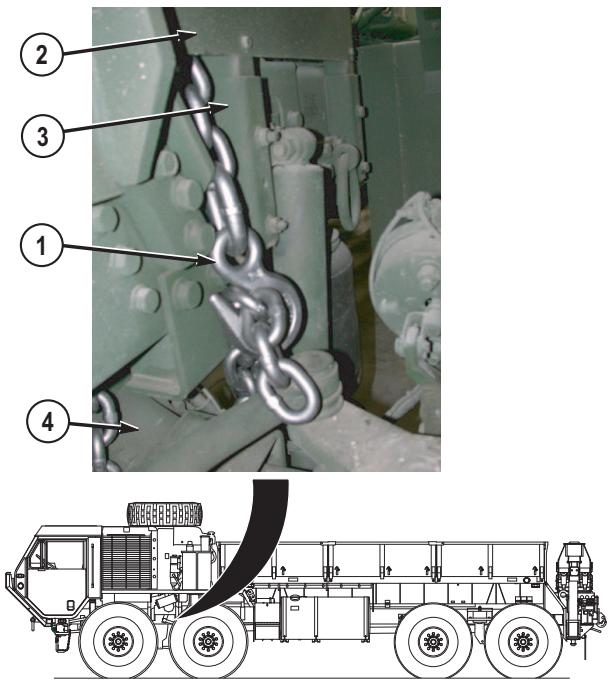


Figure 4.

b. Return two axle restraint chains (1) to wrecker stowage.

c. Install propeller shaft between transfer case and No. 3 axle.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
CLEAN VEHICLE

INITIAL SETUP:

Materials/Parts
Rag, Wiping (WP 0160, Table 1, Item 50)

Equipment Condition
Engine OFF. (WP 0056)
Wheels chocked. (WP 0073)

CLEAN EXTERIOR

CAUTION

Do not wipe dirt off vehicle when vehicle is dry. Dirt, stones, or debris may scratch and damage vehicle.

NOTE

After a thorough high pressure washing, lubricate all grease fittings and oil can points outside and underneath vehicle (refer to lubrication instructions (WP 0145) for more information).

1. Wash vehicle often with cool or warm water. Do not use strong detergent or abrasives.

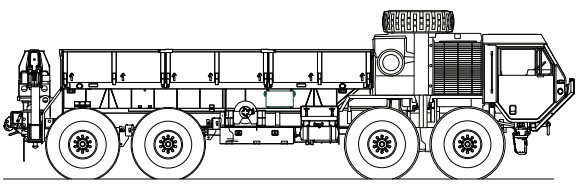


Figure 1.

2. While cleaning vehicle, look closely for rust, corrosion, bare metal, or other damage. Report any damage to Field Level Maintenance.

END OF TASK

CLEAN INTERIOR

1. Remove loose dirt and dust from cab interior components (1).

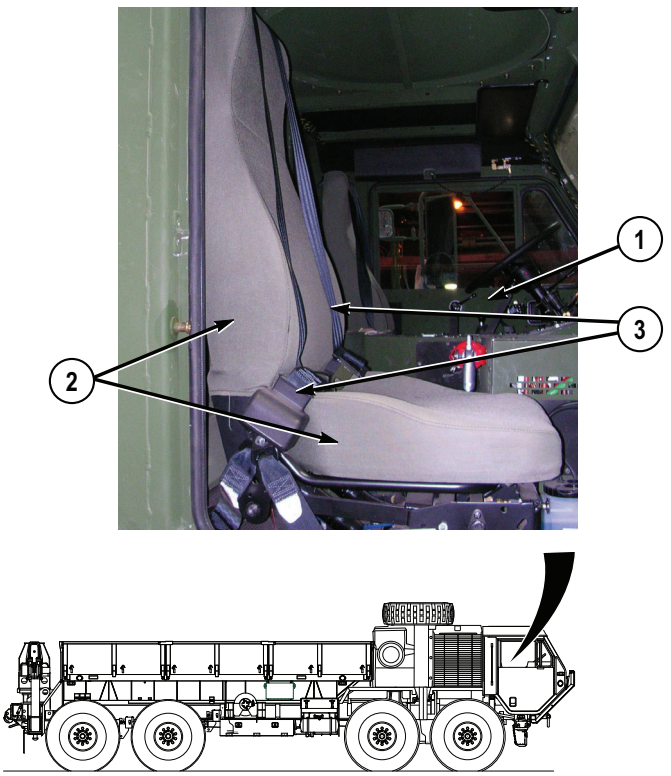


Figure 2.

2. Clean seat cushions (2) and seatbelts (3) with warm soapy water. Do not use abrasives or solvents.
3. Wipe seat cushions (2) and seatbelts (3) dry.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
CHANGE WHEEL AND TIRE ASSEMBLY

INITIAL SETUP:

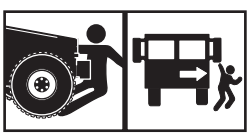
Tools and Special Tools
- Chocks, Wheel (4) (WP 0158, Table 3, Item 8)
- Extension, Handle (WP 0158, Table 3, Item 15)
- Handle, Wrench (WP 0158, Table 3, Item 18)
- Jack, 12-ton, With Handle (WP 0158, Table 3, Item 21)
- Jack, Base Plate (WP 0158, Table 3, Item 26)
- Warning Device Set, Triangular (WP 0158, Table 3, Item 28)
- Wrench, Wheel Lugnut (WP 0158, Table 3, Item 39)
- Wrench, Adjustable (WP 0158, Table 3, Item 37)

Personnel Required
- Motor Transport Operator MOS 88M (2)

PREPARE VEHICLE

1. Shut off engine. (WP 0056)

WARNING



Park vehicle in safe area, out of traffic, where there is no danger to personnel changing tire assembly. Park vehicle on hard level ground. Failure to comply may result in injury or death to personnel.

2. Turn on emergency flashers. (WP 0072)
3. Set up emergency marker kit, as necessary. (WP 0106)

END OF TASK

REMOVE SPARE WHEEL AND TIRE ASSEMBLY FROM TIRE CARRIER

NOTE

- This procedure is a two soldier task.

- This procedure is not applicable when removing wheel and tire assembly for maintenance purposes and installing same wheel and tire assembly on vehicle:
  If wheel and tire assembly to be removed and reinstalled is on No. 1 or No. 2 axle, refer to remove wheel and tire assembly from No. 1 or No. 2 axle.
  If wheel and tire assembly to be removed and reinstalled is on No. 3 or No. 4 axle, refer to remove wheel and tire assembly from No. 3 or No. 4 axle.

1. Lower tire carrier. (WP 0040)
2. With spare wheel and tire assembly resting on ground, remove four spare wheel and tire assembly retention screws (1) from tire carrier mounting bracket (2).

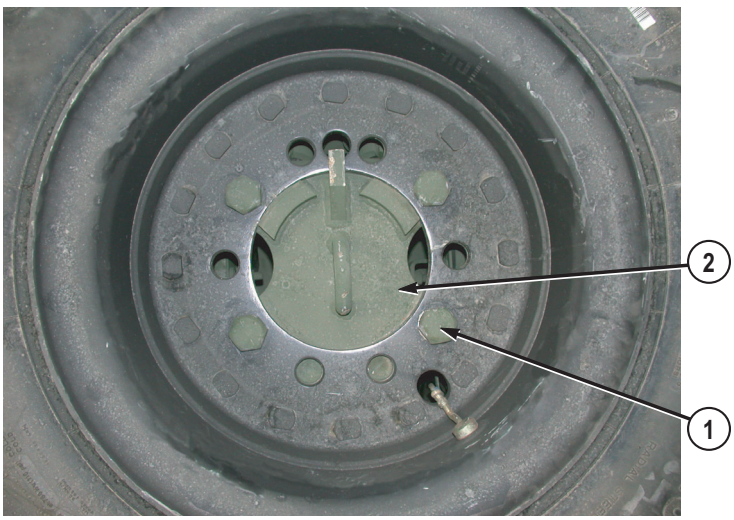


Figure 1.

3. While assistant steadies spare wheel and tire assembly, lower tire carrier (WP 0040) until completely clear of spare wheel and tire assembly.
4. With aid of an assistant, roll spare wheel and tire assembly to vehicle near flat wheel and tire assembly, and lean spare wheel and tire assembly against vehicle.
5. Check spare wheel and tire assembly air pressure.
6. Service spare wheel and tire assembly as required. (WP 0152)

END OF TASK

REMOVE WHEEL AND TIRE ASSEMBLY FROM NO. 1 OR NO. 2 AXLE

1. Service (inflate) vehicle air suspension to perform jacking procedure.
2. Turn No. 1 axle ball valves OFF to perform jacking procedure.

CAUTION

Jack placement is critical to avoid damaging vehicle suspension components. Follow jack placement notes and procedures carefully. Failure to comply may result in damage to equipment.

NOTE

- If wheel and tire assembly to be removed is on No. 3 or No. 4 axle, refer to remove wheel and tire assembly from No. 3 or No. 4 axle.
- All wheel and tire assemblies on No. 1 and No. 2 axles are removed the same. Passenger side No. 1 axle wheel and tire assembly shown.
- Jack ram should be fully screwed down (making jack as short as possible) for Step (3).

3. Check if jack base plate (1) and jack (2) will fit under apex of equalizing beam (3):



Figure 2.

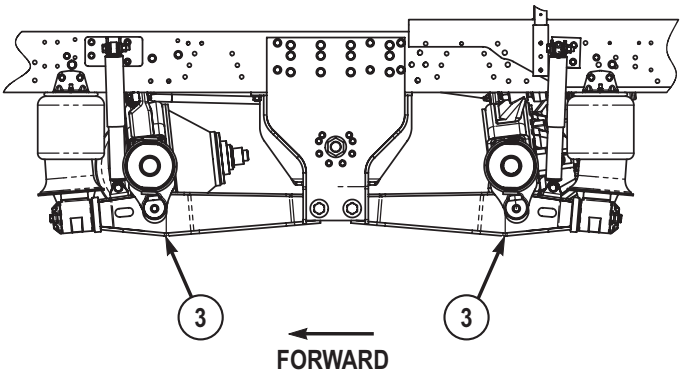


Figure 3.

NOTE

Position jack 12 in. (30 cm) from end of equalizing beam. The jack should be centered on apex as shown.

a. If jack base plate (1) and jack (2) fit under apex of equalizing beam (3), skip to Step (5).

b. If jack base plate (1) and jack (2) DO NOT fit under apex of equalizing beam (3), continue with Step (4).

4. Drive flat/shredded wheel and tire assembly onto two wheel chocks (4).

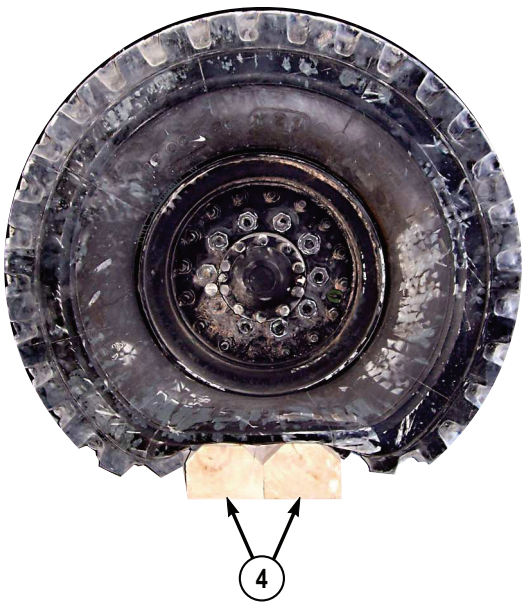


Figure 4.

5. Install two wheel chocks (WP 0073) (4) in front of and behind tire across (on same axle) from tire and wheel assembly which is being removed.

CAUTION

Jack placement is critical to avoid damaging vehicle suspension components. Follow jack placement notes and procedures carefully. Failure to comply may result in damage to equipment.

NOTE

- Jack ram should be fully screwed down (making jack as short as possible) for Step (6).
- Center jack on apex, 12 in. (30 cm) from end of equalizing beam.

6. Position jack base plate (1) and jack (2) under apex of equalizing beam (3).

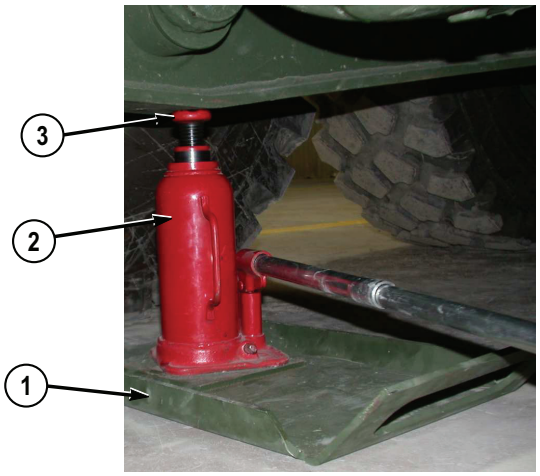


Figure 5.

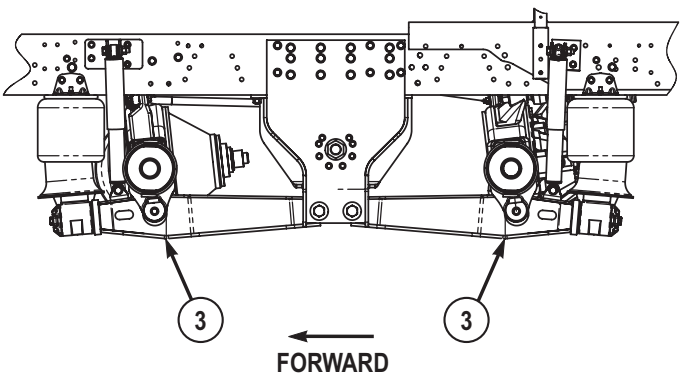


Figure 6.

NOTE

If possible, unscrew jack ram until it contacts jacking point on equalizing beam prior to completing Step (7).

7. Raise jack (2) until firm contact is established with apex of equalizing beam (3).

NOTE

- Studs and lugnuts on driver side of vehicle have left-hand threads. Rotate lugnuts clockwise to loosen, counterclockwise to tighten. Studs and lugnuts on passenger side of vehicle have right-hand

threads. Rotate lugnuts counterclockwise to loosen, clockwise to tighten.

- Loosen lugnuts enough so they can be easily removed once weight is off wheel and tire assembly, but do not remove them.

8. Assistant loosens 10 lugnuts (5) until they turn easily.

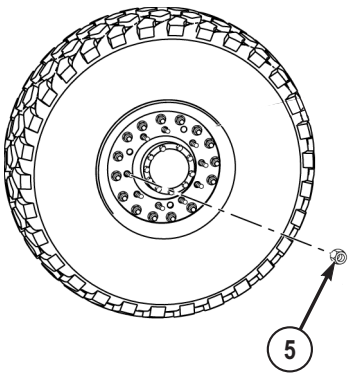


Figure 7.

NOTE

If wheel chocks were used under flat/shredded wheel and tire assembly to aid in jack placement, wheel and tire assembly does not have to be clear of wheel chocks.

9. Raise vehicle until wheel and tire assembly can be removed.
10. Assistant removes and sets 10 lugnuts (5) aside.

NOTE

If wheel chocks were used under flat/shredded wheel and tire assembly to aid in jack placement, remove them and return to vehicle stowage.

11. Lower vehicle until wheel and tire assembly is just touching ground.
12. Raise vehicle slightly while assistant tilts top of wheel and tire assembly forward. Flat wheel and tire assembly should move forward.
13. Repeat Steps (11) and (12) to walk wheel and tire assembly off axle studs (6).

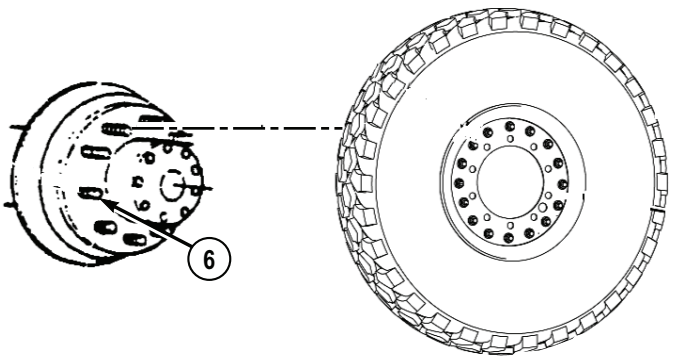


Figure 8.

14. With aid of an assistant, remove wheel and tire assembly and lean wheel and tire assembly against vehicle.

END OF TASK

REMOVE WHEEL AND TIRE ASSEMBLY FROM NO. 3 OR NO. 4 AXLE

NOTE

- If wheel and tire assembly to be removed is on No. 1 or No. 2 axle, refer to remove wheel and tire assembly from No. 1 or No. 2 axle.
- All wheel and tire assemblies on No. 3 and No. 4 axles are removed the same. Passenger side No. 4 axle wheel and tire assembly shown.
- It may be necessary to drive flat/shredded wheel and tire assembly onto two wheel chocks in order to fit jack base plate and jack under transverse beam casting.

1. Service (inflate) vehicle air suspension needs to be serviced (inflated) to perform jacking procedure.
2. Turn No. 4 axle ball valves OFF to perform jacking procedure.
3. Install two wheel chocks (WP 0073) in front of and behind tire across (on same axle) from tire and wheel assembly which is being removed.

CAUTION

Jack placement is critical to avoid damaging vehicle suspension components. Follow jack placement notes and procedures carefully. Failure to comply may result in damage to equipment.

NOTE

Position jack directly under flat spot in center of transverse beam casting.

4. Place jack base plate (1) and jack (2) under transverse beam casting (3):

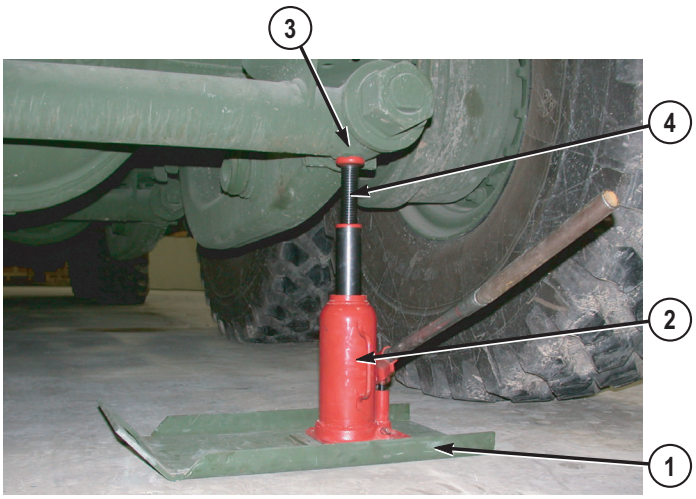


Figure 9.

5. Unscrew jack ram (4) until it is at full extension or contacts transverse beam end casting (3).
6. Raise jack (2) until firm contact is established with jacking point on transverse beam end casting (3).

NOTE

- Studs and lugnuts on driver side of vehicle have left-hand threads. Rotate lugnuts clockwise to loosen.
- Studs and lugnuts on passenger side of vehicle have right-hand threads. Rotate lugnuts counterclockwise to loosen.
- Loosen lugnuts enough so they can be easily removed once weight is off wheel and tire assembly, but do not remove them.

7. Assistant loosens 10 lugnuts (5) until they turn easily.

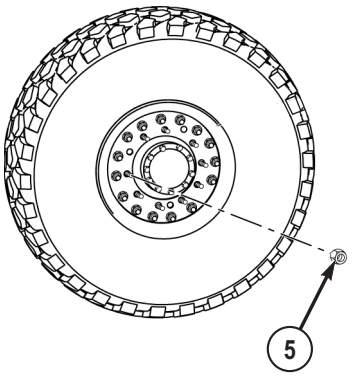


Figure 10.

NOTE

If wheel chocks were used under flat/shredded wheel and tire assembly to aid in jack placement, wheel and tire assembly does not have to be clear of wheel chocks.

8. Raise vehicle until wheel and tire assembly can be removed.
9. Assistant removes and sets 10 lugnuts (5) aside.

NOTE

If wheel chocks were used under flat/shredded wheel and tire assembly to aid in jack placement, remove them and return to vehicle stowage.

10. Lower vehicle until wheel and tire assembly is just touching ground.
11. Raise vehicle slightly while assistant tilts top of wheel and tire assembly forward. Tire should move forward.
12. Repeat Steps (10) and (11) to walk wheel and tire assembly off studs (6).

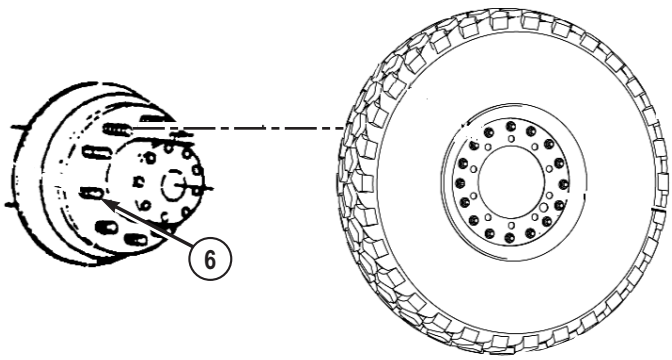


Figure 11.

13. With aid of an assistant, remove wheel and tire assembly and lean wheel and tire assembly against vehicle.

END OF TASK

INSTALL WHEEL AND TIRE ASSEMBLY

NOTE

Tire tread is non-directional. Vehicle operation is not affected by direction of traction bars.

1. With aid of an assistant, roll wheel and tire assembly (1) up to axle (2).

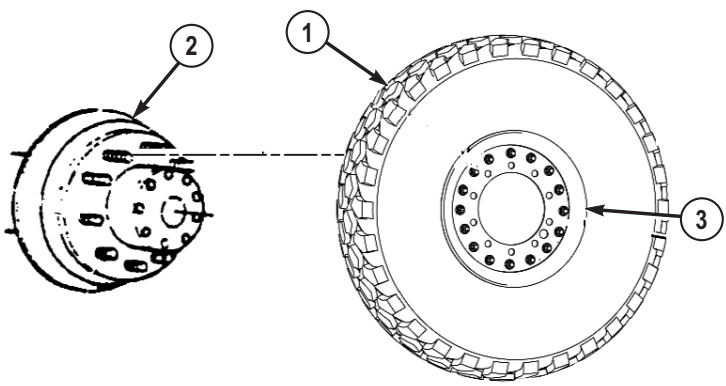


Figure 12.

NOTE

Check that spare wheel and tire assembly wheel dish is in same position as flat wheel and tire assembly wheel dish. Deep side of wheel dish will face toward vehicle on four front wheels. Deep side of wheel dish will face away from vehicle on four rear wheels except M984A4. All eight wheels on M984A4 are installed with deep side of wheel dish facing toward vehicle.

2. Make sure deep side of spare wheel and tire assembly wheel dish (3) is in same position as flat/shredded wheel and tire assembly wheel dish when flat/shredded wheel and tire assembly was removed.

NOTE

- Tire valve stem extension must be removed to reposition wheel and tire assembly valve stem extension.
- It may be necessary to reposition valve stem to accomplish installation of valve stem extension.

3. Make sure wheel and tire assembly valve stem (4) is pointing out, away from vehicle.

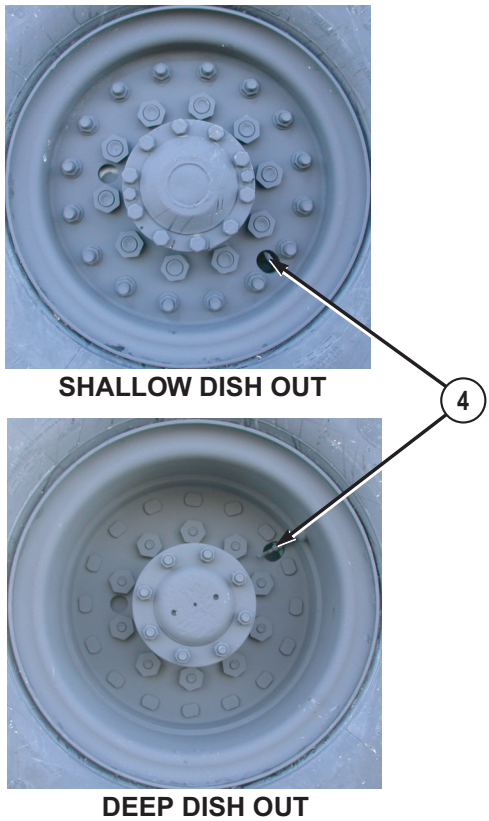


Figure 13.

4. Line up holes in rim (5) of wheel and tire assembly (1) with studs (6) on axle (2).

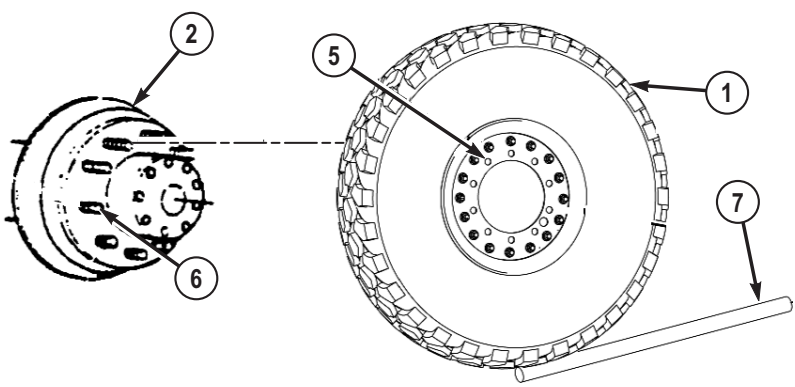


Figure 14.

WARNING



Wheel/tire assembly weighs 540 lbs (245 kg). Do not attempt to lift or move wheel/tire assembly without the aid of an assistant and a lifting device. Failure to comply may result in injury or death to personnel.

5. Lean top of wheel and tire assembly (1) against studs (6) and axle (2).

NOTE

Install a lugnut on top stud, and hand-tighten to hold wheel and tire assembly in place.

6. Using handle extension (7), slide spare wheel and tire assembly onto studs (6) while assistant raises vehicle with jack. Bottom of wheel and tire assembly (1) should swing toward axle (2).
7. Assistant lowers vehicle until wheel and tire assembly (1) just touches ground.
8. Repeat Steps (5) through (7) until wheel and tire assembly (1) is seated on axle (2) and studs (6).

NOTE

- Studs and lugnuts on driver side of vehicle have left-hand threads. Rotate lugnuts counterclockwise to tighten.
- Studs and lugnuts on passenger side of vehicle have right-hand threads. Rotate lugnuts clockwise to tighten.

9. Install and tighten 10 lugnuts (8) in order shown using wheel lugnut wrench.

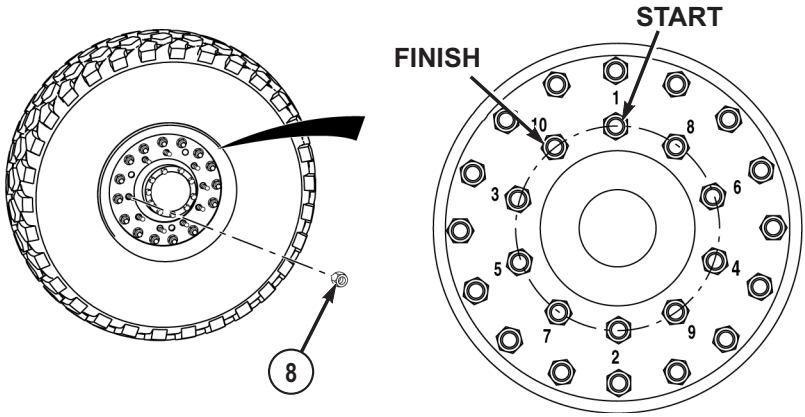


Figure 15.

10. Assistant lowers jack (9) until vehicle weight is fully supported by suspension system.
11. Remove jack (9) and jack base plate (10) from under vehicle.

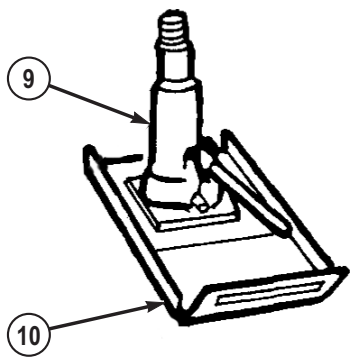


Figure 16.

12. Tighten 10 lugnuts (8) in order shown until they no longer tighten.

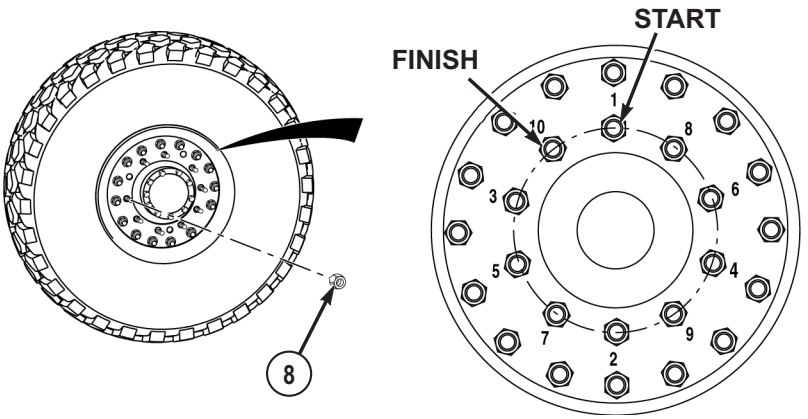


Figure 17.

13. Return all tools and equipment to proper stowage boxes.
14. Turn No. 1 or No. 4 axle ball valves ON (WP 0042) (as applicable).
15. Return vehicle to field level maintenance and have lugnuts (8) tightened to torque requirements as soon as possible.

END OF TASK

STOW FLAT/SHREDDED WHEEL AND TIRE ASSEMBLY

1. With aid of an assistant, roll flat/shredded wheel and tire assembly into position in front of wheel and tire assembly carrier.
2. While assistant maneuvers flat/shredded wheel and tire assembly, raise and lower wheel and tire assembly carrier (WP 0040) until wheel and tire assembly carrier mounting bracket tooth (1) catches rim (2) of spare wheel and tire assembly.

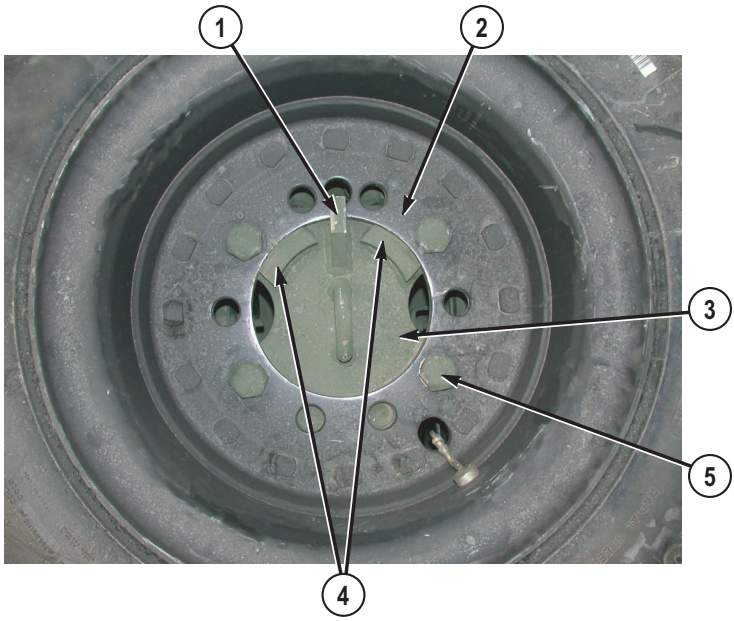


Figure 18.

3. Raise tire carrier slightly so weight of flat wheel and tire assembly pulls itself closer to tire carrier mounting bracket (3) and onto carrier mounting bracket alignment ridges (4).
4. Install and hand-tighten four spare wheel and tire assembly retention screws (5) into holes provided in tire carrier mounting bracket (3).
5. Securely tighten four spare wheel and tire assembly retention screws (5).
6. Raise tire carrier.
7. Pick up and stow emergency marker kit (as necessary).

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
CLEAN FUEL TANK STRAINER

INITIAL SETUP:

Materials/Parts
Rag, Wiping (WP 0160, Table 1, Item 50)

Equipment Condition
Engine OFF. (WP 0056)
Wheels chocked. (WP 0073)

REMOVE/CLEAN FUEL TANK STRAINER

WARNING



Fuel is very flammable and can explode easily. Keep fuel away from open fire and keep fire extinguisher within easy reach when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited when engine is hot. When working with fuel, post signs that read NO SMOKING WITHIN 50 FEET OF VEHICLE. Failure to comply may result in injury or death to personnel.

1. Wipe off dirt from fuel filler cap (1).

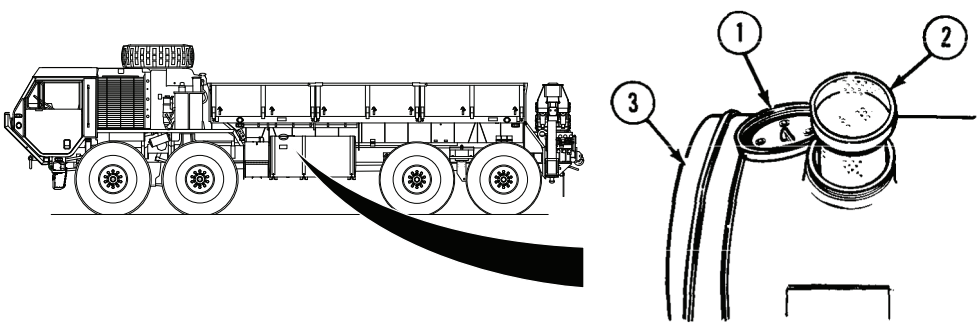


Figure 1.

2. Remove fuel filler cap (1).

3. Pull strainer (2) out of fuel tank (3).
4. Clean strainer (2) with clean dry rag.

END OF TASK

INSTALL FUEL TANK STRAINER

1. Put strainer (2) in fuel tank (3).

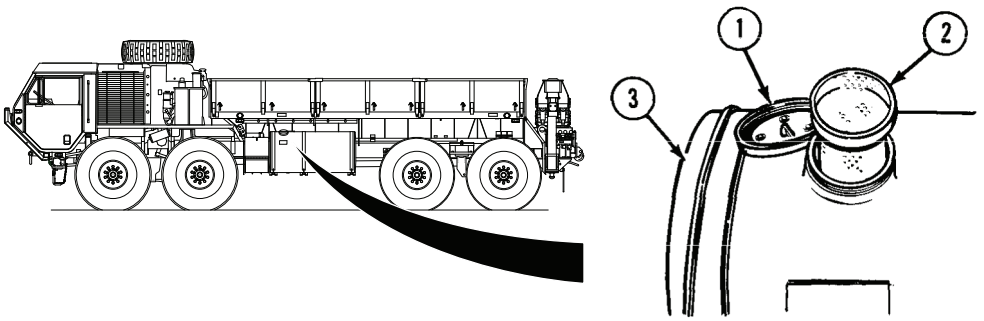


Figure 2.

2. Install and tighten fuel filler cap (1).

END OF TASK

FOLLOW-ON MAINTENANCE

1. Remove wheel chocks.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
SERVICE AIR CLEANER ELEMENT

INITIAL SETUP:

Tools and Special Tools
Ladder (WP 0158, Table 2, Item 3)

Equipment Condition
Engine OFF. (WP 0056)
Wheels chocked. (WP 0073)

Materials/Parts
Rag, Wiping (WP 0160, Table 1, Item 50)

REMOVE AIR CLEANER ELEMENT

1. Unscrew four knobs (1) until retaining ring (2) is loose.

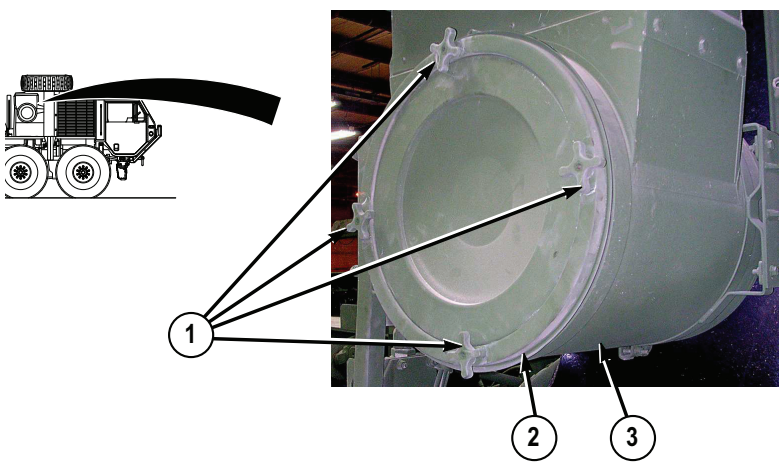


Figure 1.

2. Remove retaining ring (2) from canister (3).
3. Remove air cleaner element (4) from canister (3).

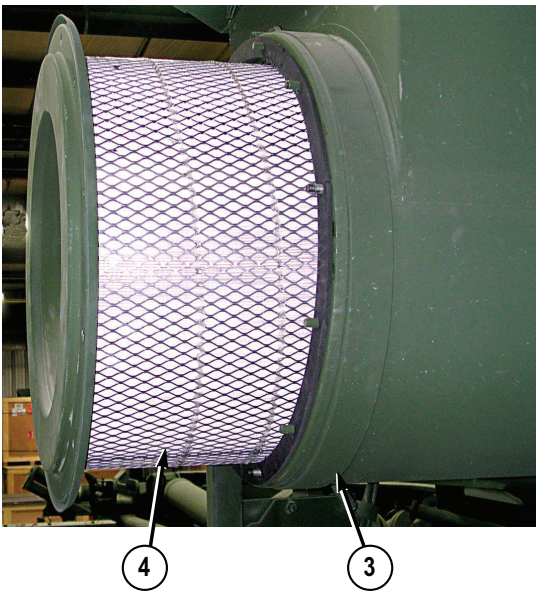


Figure 2.

END OF TASK

CLEAN AIR CLEANER ELEMENT

NOTE

Notify field level maintenance if air cleaner element is damaged or cannot be cleaned by tapping.

1. Tap side of air cleaner element (4) lightly against hand.

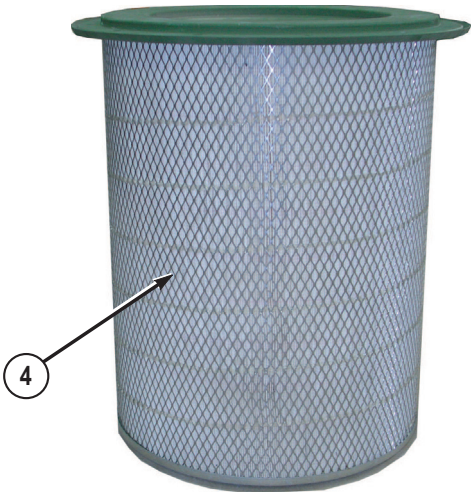


Figure 3.

2. Dump out dirt and dust from primary element (4).
3. Wipe air cleaner element (4) with clean rag.

END OF TASK

INSTALL AIR CLEANER ELEMENT

1. Install air cleaner element (4) in canister (3).

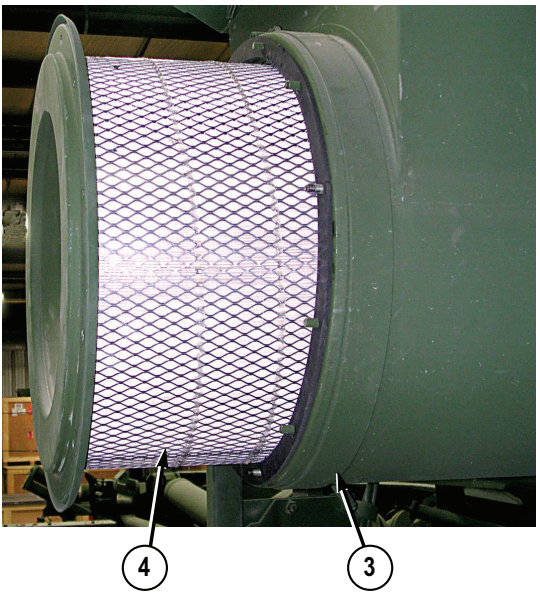


Figure 4.

2. Position retaining ring (2) over canister (3).

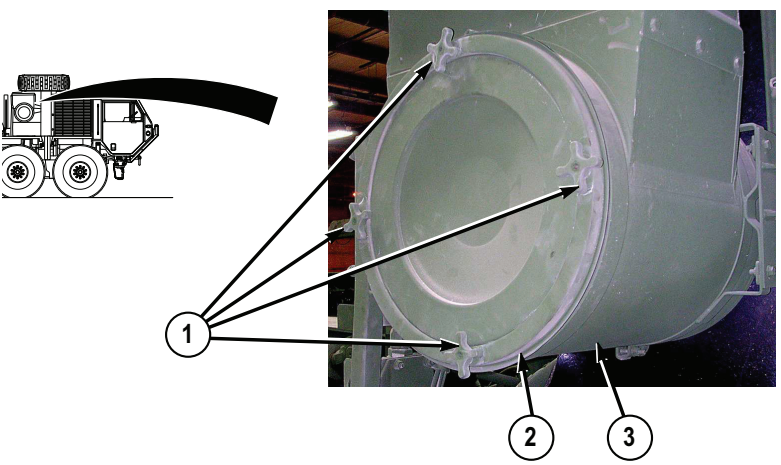


Figure 5.

3. Tighten four knobs (1) to secure retaining ring (2).
4. Start engine. (WP 0043)
5. Push button (5) to reset air cleaner restriction indicator (6). If indicator window (7) shows VACUUM INCHES H20 below 20, continue with vehicle operation. If indicator window

shows VACUUM INCHES H20 above 20, notify Field Level Maintenance as soon as possible.

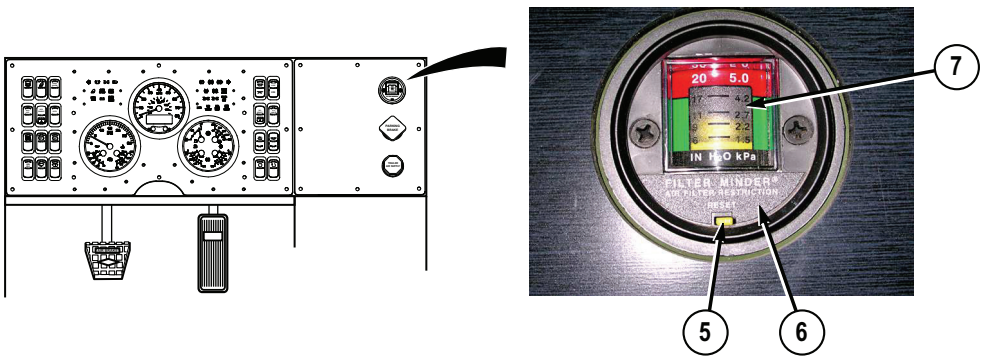


Figure 6.

6. Shut OFF engine. (WP 0056)

END OF TASK

FOLLOW-ON MAINTENANCE

1. Remove wheel chocks.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
SERVICE TIRES

INITIAL SETUP:

Tools and Special Tools
Gauge, Tire Pressure (WP 0158, Table 3, Item 13)
Gauge, Tire Pressure (WP 0158, Table 3, Item 20)
Hose: Air, Pneumatic (WP 0158, Table 3, Item 19)

Equipment Condition
Engine OFF. (WP 0056)
Wheels chocked. (WP 0073)

CHECK TIRE PRESSURE

WARNING



Failure to comply with these procedures may result in faulty positioning of the tire and/or rim parts and cause the assembly to burst with explosive force. Never mount or use damaged tires or rims. Failure to comply may result in injury or death to personnel.

NOTE

There are two types of air pressure gauges. One is a separate handheld gauge. The other is a combined pressure gauge/inflation hose.

Both may be used to check air pressure in tire.

ALWAYS use combined pressure gauge/inflation hose to inflate tire.

1. Check tire air pressure with tire pressure gauge.
2. Ensure tires have correct air pressure for road conditions and driving speed .

END OF TASK

INFLATE TIRE

1. Remove air hose (1) from stowage and connect air hose (1) to quick-disconnect coupling (2) by pushing back sleeve (3).

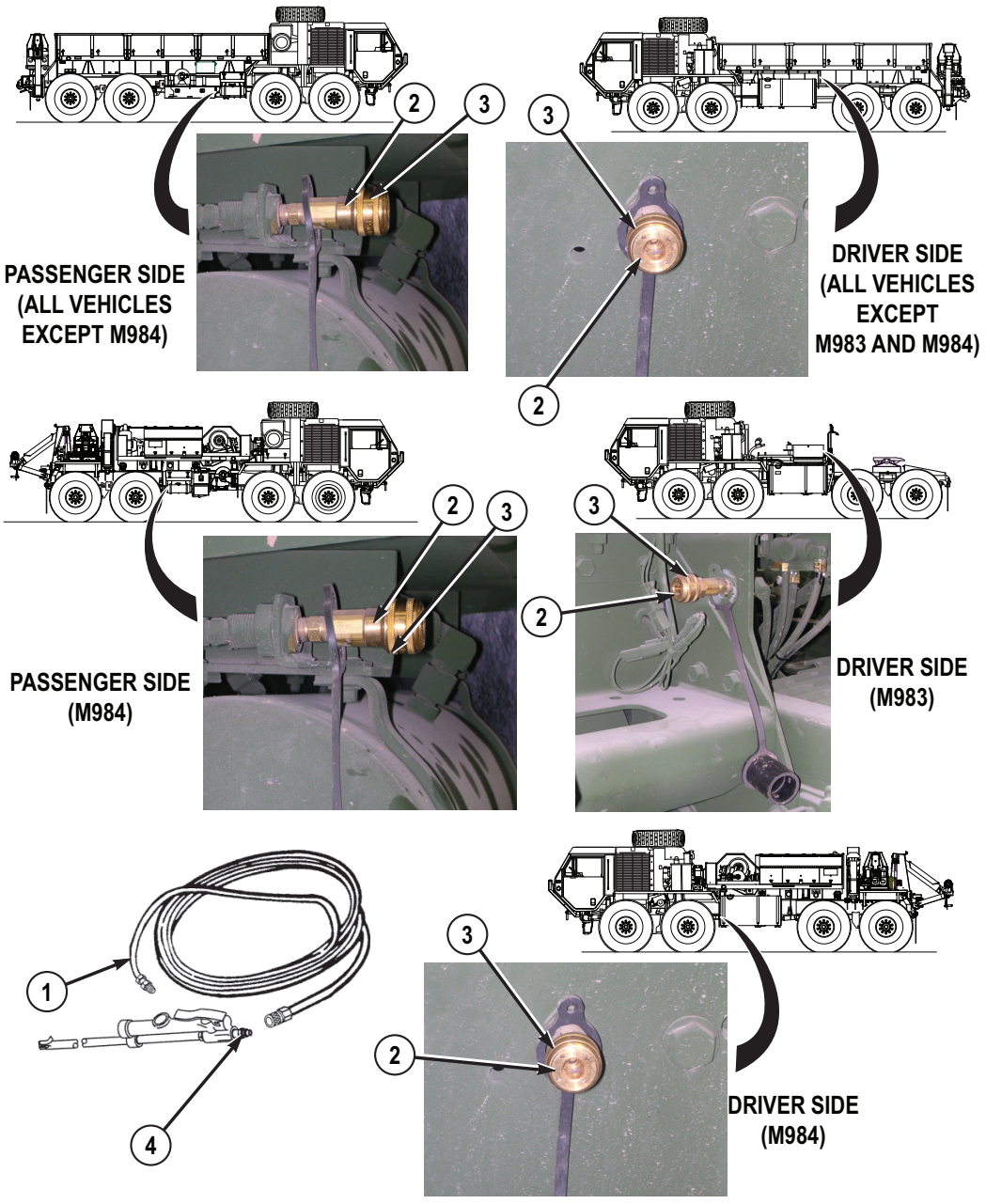


Figure 1.

2. Connect combined pressure gauge/inflation hose (4) to air hose (1).
3. Start engine. (WP 0043)

4. Remove valve stem cap (5) from valve stem (6).

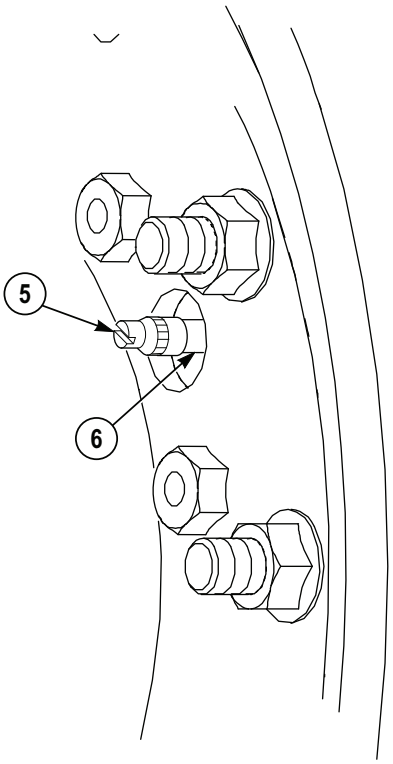


Figure 2.

WARNING



Prior to inflating or deflating tire, stand clear of trajectory area. Failure to comply may result in injury or death to personnel.

NOTE

- Trajectory area as shown applies to all wheel/tire assemblies.
- Air chuck must clamp securely with no leaks or air pressure gauge readings will be inaccurate.

- There are two types of air pressure gauges. One model is a separate handheld gauge . The other is a combined pressure gauge/inflation hose.
- Both may be used to check air pressure in tire.
- ALWAYS use combined pressure gauge/inflation hose to inflate tire.

5. Push latch handle (7) inward, while pushing air chuck (8) onto valve stem (6). Release latch handle (7) and immediately step out of the trajectory area and read tire air pressure gauge.

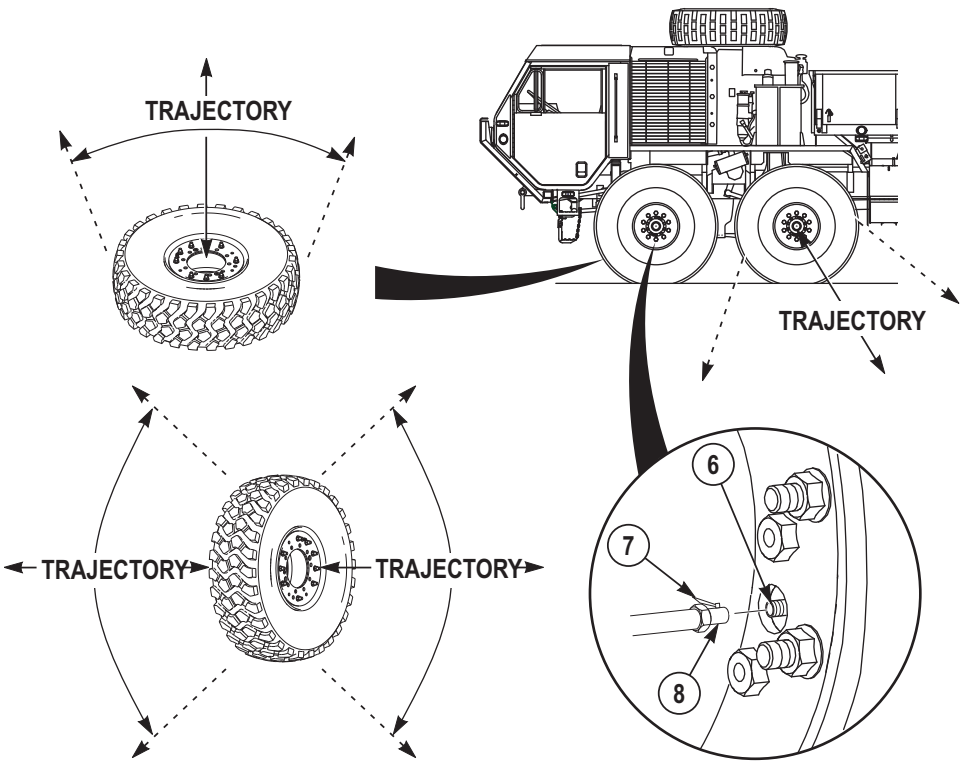


Figure 3.

WARNING



Prior to inflating or deflating tire, stand clear of trajectory area. Failure to comply may result in injury or death to personnel.

NOTE

Trajectory area as shown applies to all wheel/tire assemblies.

6. Inflate or deflate until proper pressure is attained. Press latch handle (7) and pull air chuck (8) from valve stem extension (6). Install valve cap (5).

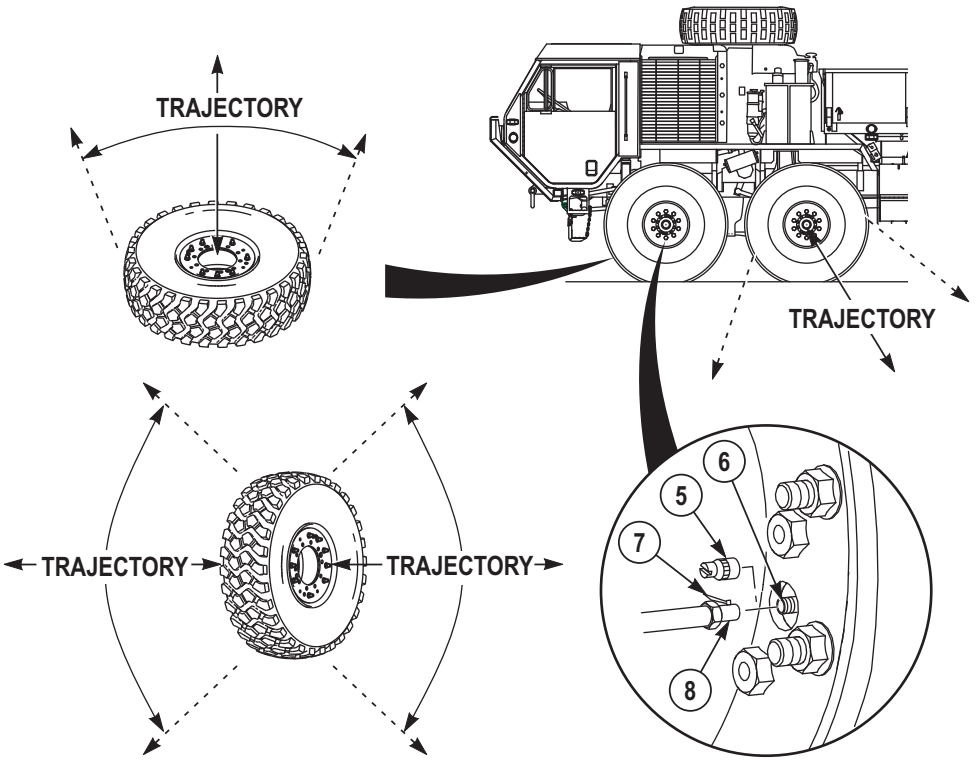


Figure 4.

7. Shut OFF engine. (WP 0056)

WARNING



Hold end of air line when disconnecting from quick-disconnect coupling. Air line is under pressure and can be ejected at a high rate of speed. Failure to comply may result in injury or death to personnel.

8. Remove combined pressure gauge/inflation hose (4) from air hose (1).

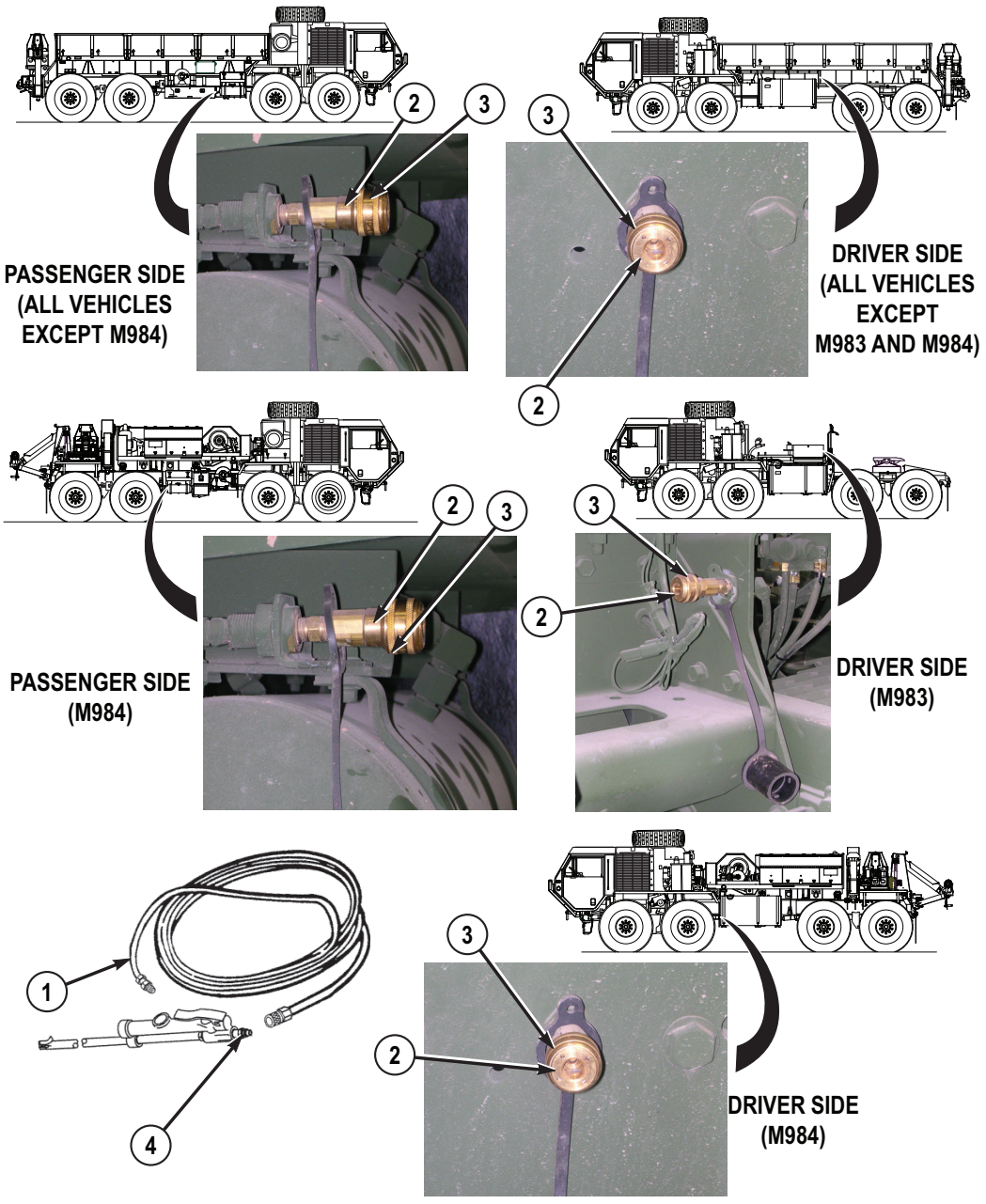


Figure 5.

9. Hold end of air hose (1) and push sleeve (3) back and remove air hose (1) from quick-disconnect coupling (2).

10. Stow air hose (1) and combined pressure gauge/inflation hose (4).

END OF TASK

FOLLOW-ON MAINTENANCE

1. Remove wheel chocks.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPEN/CLOSE BATTERY BOX

INITIAL SETUP:

Equipment Condition
Engine OFF. (WP 0056)
Wheels chocked. (WP 0073)

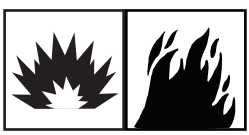
OPEN BATTERY BOX

WARNING



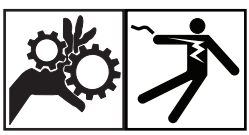
Wear proper eye protection when working around batteries. Failure to comply may result in injury or death to personnel.

WARNING



Batteries produce explosive gases. Do not smoke or use open flame near batteries. Do not allow hot, sparking, or glowing objects near batteries. If batteries are giving off gases, presence of a heat, flame, or spark may cause fire and/or explosion. Failure to comply may result in injury or death to personnel.

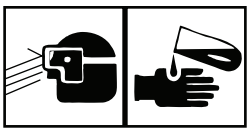
WARNING



Use extreme care not to short out battery terminals. Remove all jewelry such as rings, ID tags, bracelets, etc. prior to working on or around vehicle. Jewelry and tools can catch on equipment, contact positive elec-

trical circuits, and cause a direct short, severe burns, or electrical shock. Failure to comply may result in injury or death to personnel.

WARNING



LEAD-ACID BATTERIES - Avoid battery electrolyte contact with skin, eyes, or clothing. If battery electrolyte spills, take immediate action to stop burning effects:

- External - If battery electrolyte contacts skin, immediately flush effected area with cold running water to remove all acid. Failure to comply may result in injury or death to personnel.
- Eyes - If battery electrolyte contacts eyes, immediately flush eyes with cold water for 15 minutes and seek immediate medical attention. IMPORTANT - If only one eye is affected, ensure the affected eye is always (during both flushing and transport) kept lower (the lower the better) than unaffected eye. This will help keep affected eye from draining into (and contaminating) the unaffected eye. Failure to comply may result in injury or death to personnel.
- Internal - If battery electrolyte is ingested (swallowed), drink large amounts of water or milk. Follow with milk of magnesia, a beaten egg, or vegetable oil and seek immediate medical attention. Failure to comply may result in injury or death to personnel.
- Clothing or vehicle - Immediately flush area with cold water and neutralize battery electrolyte with baking soda or household ammonia solution. Failure to comply may result in injury or death to personnel.

1. Disconnect two rubber hooks (1).

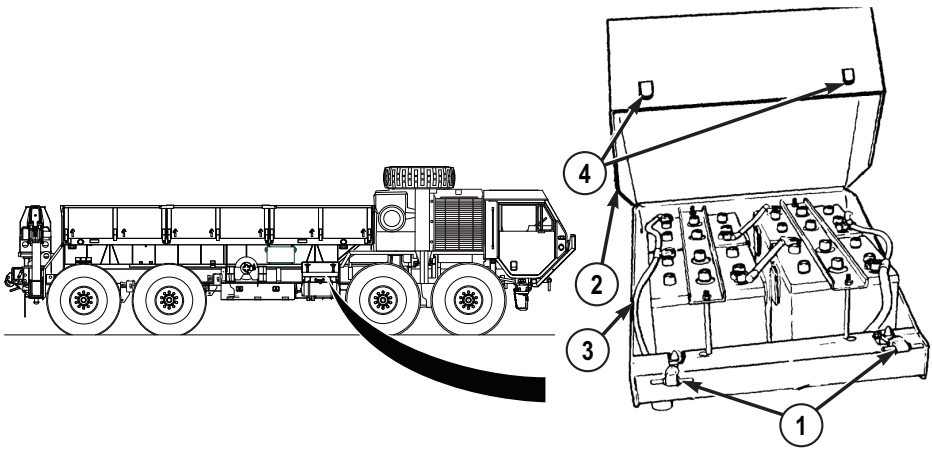


Figure 1.

2. Slide cover (2) up and out.
3. Hold cover (2) in place or remove cover.

END OF TASK

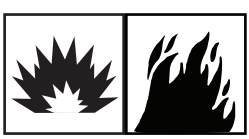
CLOSE BATTERY BOX

WARNING



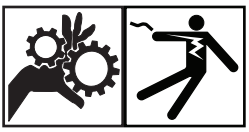
Wear proper eye protection when working around batteries. Failure to comply may result in injury or death to personnel.

WARNING



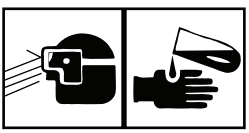
Batteries produce explosive gases. Do not smoke or use open flame near batteries. Do not allow hot, sparking, or glowing objects near batteries. If batteries are giving off gases, presence of a heat, flame, or spark may cause fire and/or explosion. Failure to comply may result in injury or death to personnel.

WARNING



Use extreme care not to short out battery terminals. Remove all jewelry such as rings, ID tags, bracelets, etc. prior to working on or around vehicle. Jewelry and tools can catch on equipment, contact positive electrical circuits, and cause a direct short, severe burns, or electrical shock. Failure to comply may result in injury or death to personnel.

WARNING



LEAD-ACID BATTERIES - Avoid battery electrolyte contact with skin, eyes, or clothing. If battery electrolyte spills, take immediate action to stop burning effects:

- External - If battery electrolyte contacts skin, immediately flush effected area with cold running water to remove all acid. Failure to comply may result in injury or death to personnel.
- Eyes - If battery electrolyte contacts eyes, immediately flush eyes with cold water for 15 minutes and seek immediate medical attention. IMPORTANT - If only one eye is affected, ensure the affected eye is always (during both flushing and transport) kept lower (the lower the better) than unaffected eye. This will help keep affected eye from draining into (and contaminating) the unaffected eye. Failure to comply may result in injury or death to personnel.
- Internal - If battery electrolyte is ingested (swallowed), drink large amounts of water or milk. Follow with milk of magnesia, a beaten egg, or vegetable oil and seek immediate medical attention. Failure to comply may result in injury or death to personnel.
- Clothing or vehicle - Immediately flush area with cold water and neutralize battery electrolyte with baking soda or household ammonia solution. Failure to comply may result in injury or death to personnel.

1. Slide cover (2) on battery box (3).

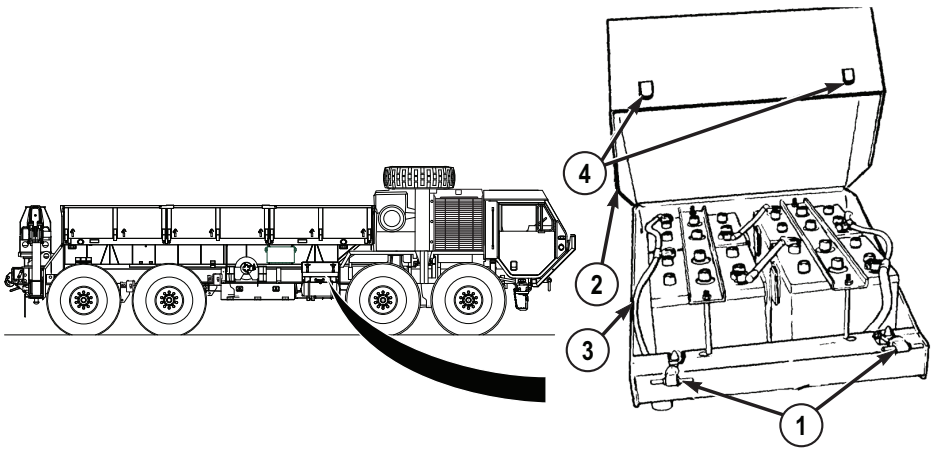


Figure 2.

2. Align rubber hooks (1) and brackets (4).
3. Connect rubber hooks (1).

END OF TASK

FOLLOW-ON MAINTENANCE

1. None.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPEN/CLOSE ENGINE COVERS AND ENGINE SIDE PANEL REMOVAL/ INSTALLATION

INITIAL SETUP:

Equipment Condition
Engine OFF. (WP 0056)
Wheels chocked. (WP 0073)
Tire carrier lowered (if opening passenger side engine cover). (WP 0040)

OPEN ENGINE COVERS

NOTE

Driver side and passenger side engine covers are opened the same way. Driver side shown.

1. Lift handle (1) and turn clockwise.

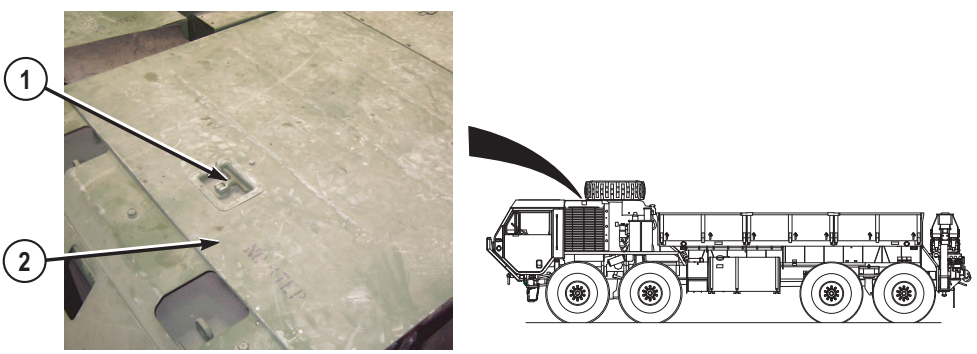


Figure 1.

2. Lift engine cover (2).
3. Release hood prop rod (3) from holding bracket (4).

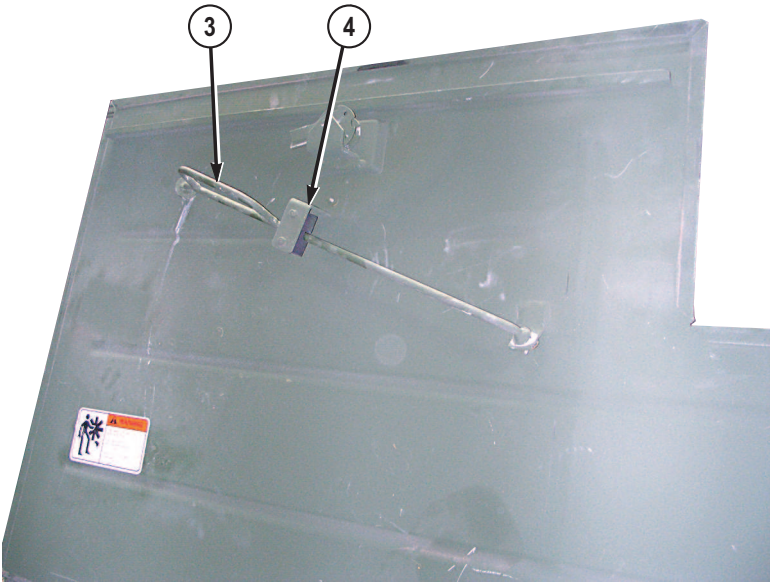


Figure 2.

4. Insert hood prop end (5) into support bracket (6).

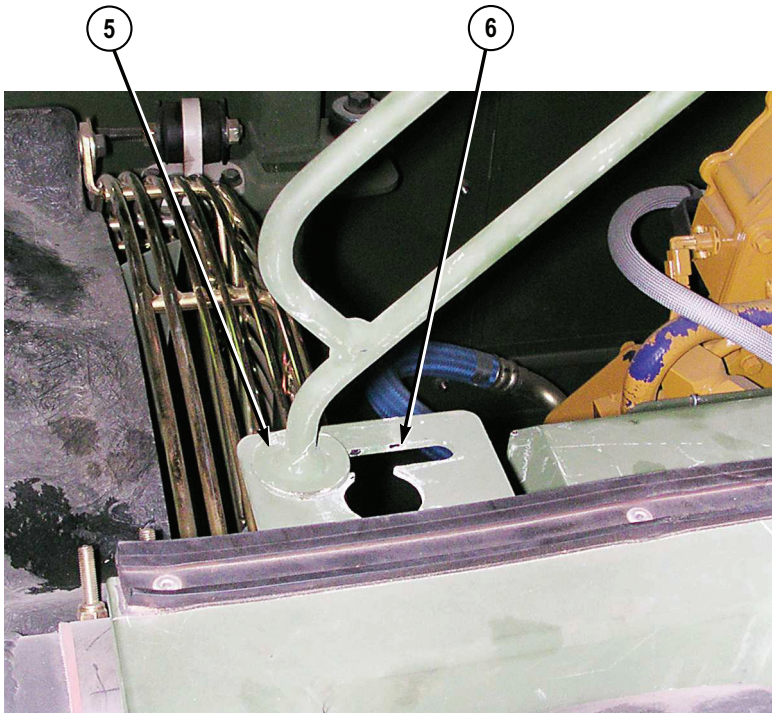


Figure 3.

END OF TASK

CLOSE ENGINE COVERS

NOTE

Driver side and passenger side engine covers are closed the same way. Driver side shown.

1. Remove hood prop rod end (5) from support bracket (6).

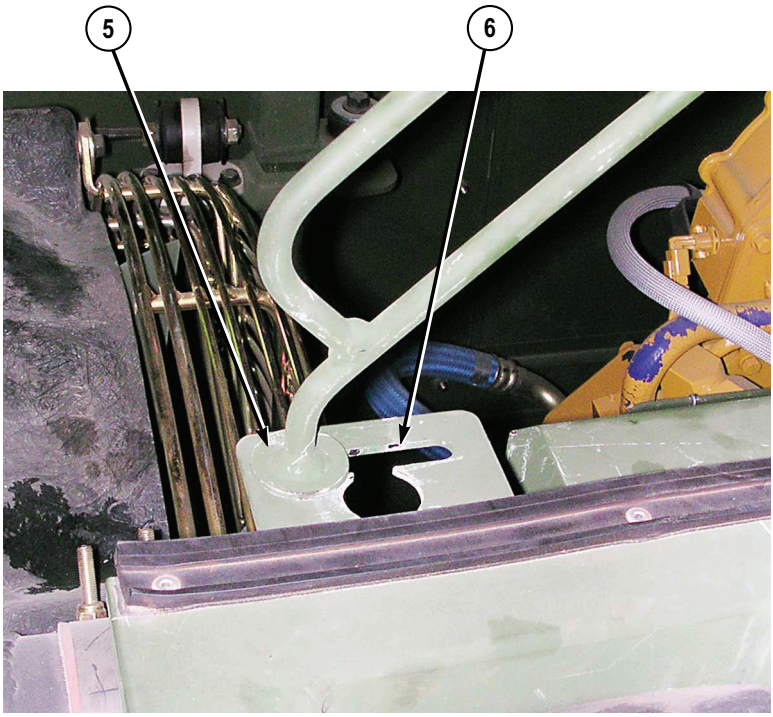


Figure 4.

2. Insert hood prop rod (3) into holding bracket (4).

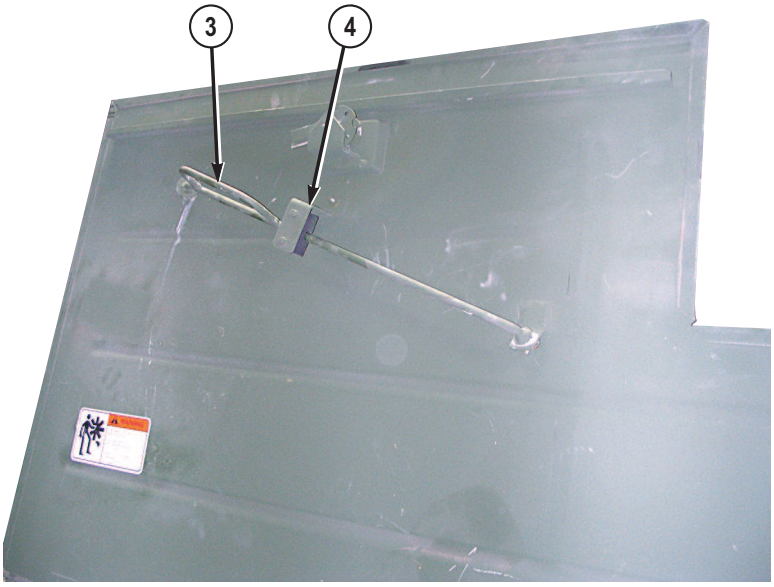


Figure 5.

3. Close engine cover (2).

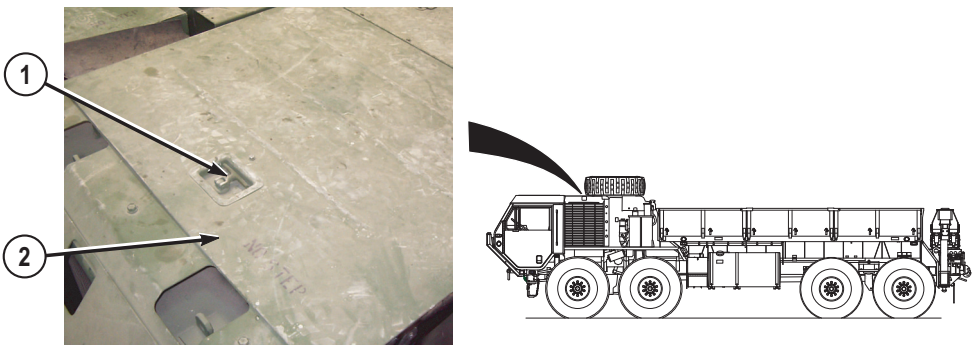


Figure 6.

4. Turn handle (1) counterclockwise and fold down handle (1).

END OF TASK

DRIVER SIDE ENGINE ACCESS PANEL REMOVAL

1. Unlatch two rubber latches (1) from brackets (2).

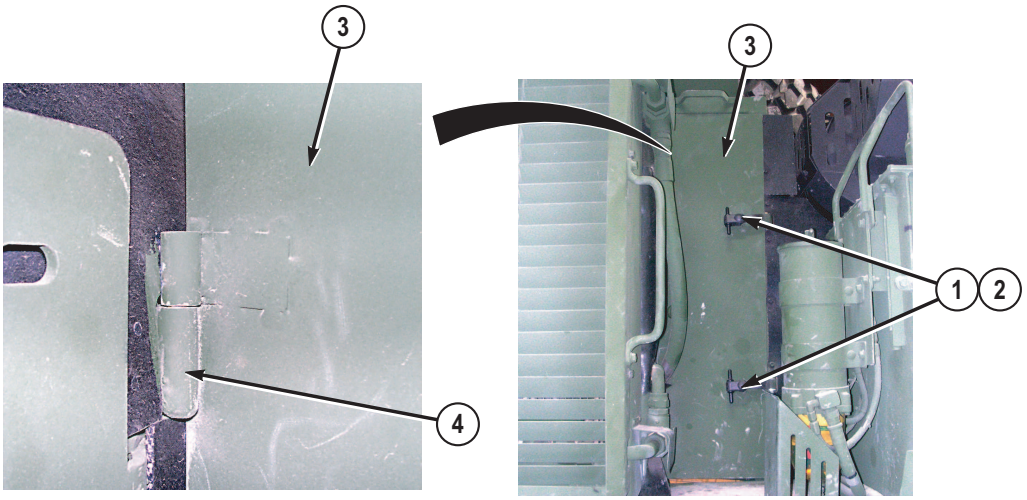


Figure 7.

2. Open access panel (3).
3. Lift access panel (3) straight up and remove from two hinge pins (4).

END OF TASK

DRIVER SIDE ENGINE ACCESS PANEL INSTALLATION

1. Install access panel (3) on two hinge pins (4).

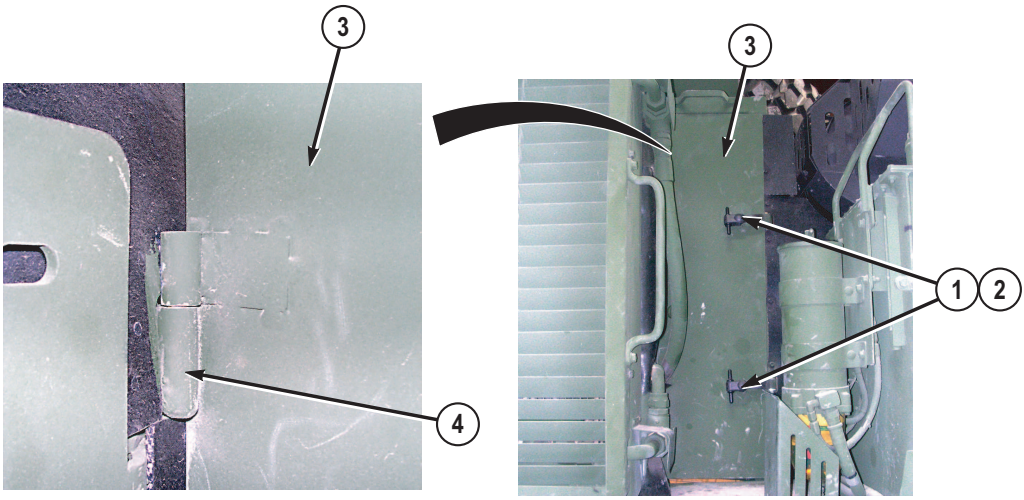


Figure 8.

2. Close access panel (3).
3. Latch two rubber latches (1) on brackets (2).

END OF TASK

FOLLOW-ON MAINTENANCE

1. Raise tire carrier (if passenger side engine cover was opened). (WP 0040)
2. Remove wheel chocks.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
PRIMING FUEL SYSTEM

INITIAL SETUP:

Materials/Parts
Rag, Wiping (WP 0160, Table 1, Item 50)

Equipment Condition
Driver side engine cover opened. (WP 0154)
Driver side engine access panel opened. (WP 0154)

PRIMING

WARNING



Fuel and oil are slippery and can cause falls. To avoid injury, wipe up spilled oil with a clean cloth. Failure to comply may result in injury or death to personnel.

WARNING



Fuel is very flammable and can explode easily. Keep fuel away from open fire and keep fire extinguisher within easy reach when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited when engine is hot. When working with fuel, post signs that read NO SMOKING WITHIN 50 FEET OF VEHICLE. Failure to comply may result in injury or death to personnel.

1. Loosen air bleed plug (1) three full turns. Do not remove air bleed plug.

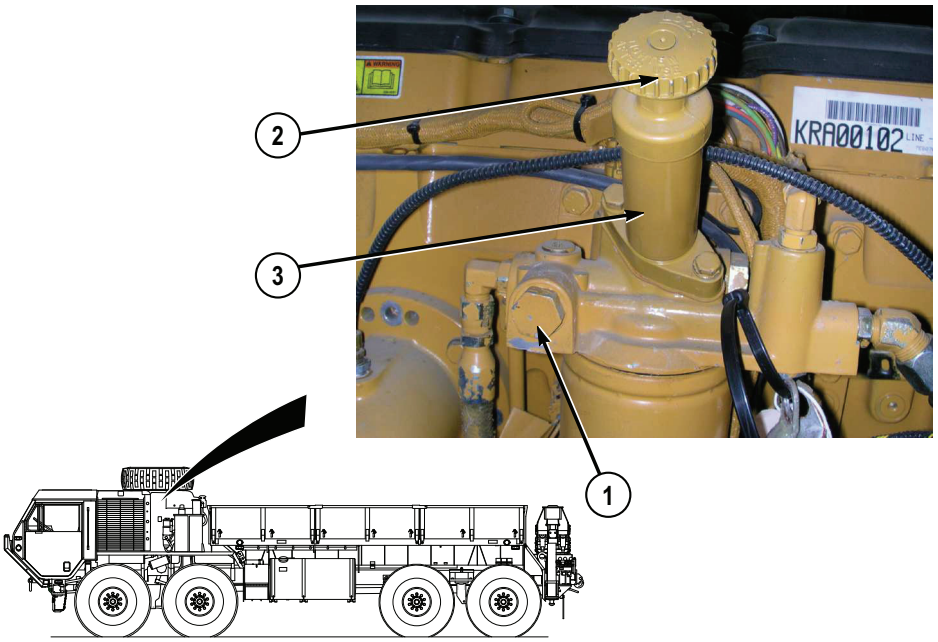


Figure 1.

2. Turn knob (2) counterclockwise until knob (2) can be pulled out.
3. Push and pull knob (2) on priming pump (3) until fuel appears at air bleed plug (1).
4. Tighten air bleed plug (1).
5. Push and pull knob (2) until strong resistance is felt.

CAUTION

Fuel priming pump knob must be in locked position prior to starting engine. Failure to comply may result in damage to equipment.

6. Push knob (2) in and turn clockwise until locked.

CAUTION

If engine fails to start within 30 seconds, turn ignition switch to OFF and allow starter motor to cool at least two minutes before trying again. Failure to comply may result in damage to equipment.

NOTE

If vehicle does not start after three attempts, contact field level maintenance.

7. Attempt to start engine. (WP 0043) If engine fails to start or does not operate smoothly for more than 30 seconds, repeat Steps (1) through (6).

END OF TASK

FOLLOW-ON MAINTENANCE

1. Close driver side engine access panel. (WP 0154)
2. Close driver side engine cover. (WP 0154)

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPEN/CLOSE CIRCUIT BREAKER ACCESS PANEL

INITIAL SETUP:

Equipment Condition
Engine OFF. (WP 0056)
Wheels chocked. (WP 0073)

OPEN

1. Push in two screws (1) and turn counterclockwise to release screws (1) and open circuit breaker access panel (2).



Figure 1.

END OF TASK

CLOSE

1. Close circuit breaker access panel (2) and turn two screws (1) clockwise to lock.



Figure 2.

END OF TASK

FOLLOW-ON MAINTENANCE

1. None.

END OF WORK PACKAGE

CHAPTER 6

SUPPORTING INFORMATION

FIELD MAINTENANCE REFERENCES

SCOPE

This work package lists all pamphlets, forms, field manuals, technical manuals, and other publications referenced in this manual. Also, those publications that should be consulted for additional information about vehicle operations are listed.

DEPARTMENT OF ARMY PAMPHLETS

The following indexes should be consulted frequently for latest changes or revisions and for new publications relating to material covered in this technical manual.

DA PAM 25-30	Consolidated Index of Army Publications and Blank Forms
DA PAM 25-33	User's Guide for Army Publications and Forms
DA PAM 710-2-1	Using Unit Supply System (Manual Procedures)
DA PAM 750-8	The Army Maintenance Management System (TAMMS) Users Manual

FORMS

DA FORM 2028	Recommended Changes to Publications and Blank Forms
DA FORM 2401	Organization Control Record for Equipment
DA FORM 2402	Maintenance Tag
DA FORM 2404	Equipment Inspection and Maintenance Worksheet
DA FORM 2407	Maintenance Request
DA FORM 2407-1	Maintenance Request Continuation Sheet
DA FORM 2408	Equipment Log Assembly (Records)
DA FORM 2408-9	Equipment Control Record
DA FORM 5988-E	Equipment Inspection Maintenance Worksheet (EGA)
DD FORM 250	Material Inspection and Receiving Report
DD FORM 314	Preventive Maintenance Schedule and Record
DD FORM 1149	Requisition and Invoice/Shipping Document
DD FORM 1348-1	DOD Single Line Item Release/Receipt Document
DD FORM 1397	Processing and Deprocessing Record for Shipment, Storage, and Issue of Vehicles and Spare Engines

FORMS - Continued

DD FORM 2282	Reinspection Decal Convention for Safe Containers
OPTIONAL FORM 346	U.S. Government Motor Vehicle Operator Identification Card
STANDARD FORM 91	Motor Vehicle Accident Report
STANDARD FORM 364	Report of Discrepancy (ROD)
STANDARD FORM 368	Product Quality Deficiency Report
STANDARD FORM 4895	Equipment Preservation Data Sheet (EPDS)

FIELD MANUALS

FM 3-6	Field Behavior of NBC Agents (Including Smoke and Incendiaries)
FM 3-11.3	Multiservice Tactics, Techniques, and Procedures For Chemical, Biological, Radiological, and Nuclear Decontamination Avoidance {MCWP 3-37.2A, NTTP 3-11.25, AFTTP(I) 3-2.56}
FM 3-11.4	Multiservice Tactics, Techniques, and Procedures For Nuclear, Biological, and Chemical (NBC) Protection {MCWP 3-37.2; NTTP 3-11.27; AFTTP (I) 3-2.46} (This Item is included on EM 0205)
FM 3-11.5	Multiservice Tactics, Techniques, and Procedures For Chemical, Biological, Radiological, and Nuclear Decontamination {MCWP 3-37.3; NTTP 3-11.26; AFTTP(I) 3-2.60}
FM 4-25.11	First Aid
FM 4-30.31	Recovery and Battle Damage Assessment and Repair
FM 5-100-15	Corps Engineer Operations
FM 5-125	Rigging Techniques, Procedures, and Applications
FM 9-207	Operation and Maintenance of Ordnance Materiel in Cold Weather
FM 10-16	General Fabric Repair
FM 10-67-1	Concepts and Equipment of Petroleum Operations
FM 20-3	Camouflage, Concealment, and Decoys
FM 21-10	Field Hygiene and Sanitation
FM 21-305	Manual for the Wheeled Vehicle Driver
FM 31-70	Basic Cold Weather Manual
FM 31-71	Northern Operations
FM 55-21	Railway Operating and Safety Rules

FIELD MANUALS - Continued

FM 55-30	Army Motor Transport Units and Operations
FM 90-3	Desert Operations
FM 90-13	River Crossing Operations

TECHNICAL BULLETINS

TB ORD 1030	Manufacture of Data Plates
TB 5-5420-234-15	Warranty Program for Common Bridge Transporter (CBT)
TB 9-2300-281-35	Standards for Oversea Shipment or Domestic Issue of Special Purpose Vehicles, Combat, Tactical, Construction, and Selected Industrial and Troop Support US Army Tank-Automotive Materiel Readiness Command Managed Items
TB 9-2300-422-20	Security of Tactical Wheeled Vehicles
TB 43-0001-62-SERIES	Equipment Improvement Report and Maintenance Digest for Tank, Automotive, and Armament Equipment
TB 43-0142	Safety Inspection and Testing of Lifting Devices
TB 43-0209	Color, Marking and Camouflage Painting of Military Vehicles, Construction Equipment, and Materials Handling Equipment
TB 43-0212	Purging, Cleaning, and Coating Interior Ferrous and Terne Sheet Vehicle Fuel Tanks
TB 43-0216	Safety and Hazard Warnings for Operation and Maintenance of TACOM Equipment
TB 750-651	Use of Antifreeze Solutions, Antifreeze Extender, Cleaning Compounds and Test Kit in Engine Cooling Systems
TB 9-289	Reconditioning of Type I and Type II Reusable Metal Containers

TECHNICAL MANUALS

TM 3-4230-214-12&P	Operator's and Unit Maintenance Manual Including Repair Parts and Special Tools List for Decontamination Apparatus
TM 3-4240-280-10	Operator's Manual for Mask, Chemical-Biological: Aircraft, ABC-M24 and Accessories and Mask, Chemical-Biological, Tank, M25A1 and Accessories (Reprinted W/Basic Incl C1-2) (This item is included on EM 0045)
TM 3-6665-225-12	Operator's and Organizational Maintenance Manual: for Alarm Chemical
TM 5-1940-277-10	Operator’s Manual for Boat, Bridge Erection, Twin Jet, Aluminum Hull, Models USCSBMK 1 (NSN 1940-01-105-5728) and USCSBMK 2 (1940-01-218-9165)
TM 5-2090-202-12&P	Operator’s and Unit Maintenance Manual (Including Repair Parts and Special Tools List) for Cradle, Bridge Erection Boat, Twin Jet, Aluminum Hull (NSN 2090-01-106-9789)

TECHNICAL MANUALS - Continued

TM 5-5420-208-12&P	Operator and Unit Maintenance Manual Including Repair Parts and Special Tools List for Cargo Pallet, Ribbon Bridge Transporter (NSN 5420-01-006-7436)
TM 5-5420-209-12	Operator's and Unit Maintenance Manual for Improved Float Bridge (Ribbon Bridge)
TM 5-5420-277-14&P	Operator's, Unit, Direct Support, and General Support Maintenance Manual (Including Repair Parts and Special Tools List) for Cradle, Boat, Improved, M14, (NSN 3990-01-442-1914)
TM 9-214	Inspection, Care and Maintenance of Antifriction Bearings
TM 9-243	Use and Care of Hand Tools and Measuring Tools
TM 9-1005-245-13&P	Operator's, Unit, and Direct Support Maintenance Manual with Repair Parts and Special Tools List (RPSTL) for Machine Gun Mounts and Combinations for Tactical/Armored Vehicles
TM 9-1440-600-10	Operator's Manual, Launching Station, M901 Guided Missile, Semitrailer Mount
TM 9-2320-326-10HR	Hand Receipt Covering Contents Of Components Of End Item (COEI), Basic Issue Items (BII), And Additional Authorization List (AAL) for M977 Series, 8x8 Heavy Expanded Mobility Tactical Trucks
TM 9-2330-357-14&P	Operator's, Organizational, Direct Support, and General Support Maintenance Manual (Including Repair Parts and Special Tools Lists) For Semitrailer, Flatbed, Radar Set and Launching Station M860A1 (NSN 2330-01-117-3280) (This Item Is Included On EM 0049)
TM 9-2330-385-14	Operator's, Unit, Direct Support and General Support Maintenance Manual for Palletized Load System Trailer (PLST) Model M1076 (NSN 2330-01-303-5197)
TM 9-2330-385-24P	Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List for Trailer, Palletized Load System (PLST) Model M1076 (NSN 2330-01-303-5197)
TM 9-2610-200-14	Operator's, Unit, Direct Support, and General Support Maintenance Manual for Care, Maintenance, Repair, and Inspection of Pneumatic Tires and Inner Tubes
TM 9-3990-206-14&P	Operator's Unit, Direct Support and General Support Maintenance Manual (Including Repair Parts and Special Tools List) for Palletized Load System (PLS) Flatrack Model M1077/ M1077A1
TM 9-3990-260-14&P	Operator's, Unit, Direct Support and General Support Maintenance Manual (Including Repair Parts and Special Tools List) For Container Roll-In/Out Platform (CROP) Model M3 (NSN 3990-01-442-2751); Container Roll-In/Out Platform (CROP) Model M3A1 (3990-01-450-5671) (This Item is Included on EM 0038 and EM 0052)

TECHNICAL MANUALS - Continued

TM 9-2330-366-14&P	Operator's, Organizational, Direct Support, and General Support Maintenance Including Repair Parts and Special Tools Lists For Semitrailer, Lowbed, 12-Ton, XM974 (NSN 2330-01-116-0288)
TM 9-4910-571-12&P	Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tools List) for Simplified Test Equipment for Internal Combustion Engines (STE/ICE-R)
TM 9-4910-783–13&P	Operator's, Unit, and Direct Support Maintenance Manual (Including Repair Parts and Special Tools List) for Standard Automotive Test Set (SATS)
TM 9-4940-468-13	Operator's, Unit, and Direct Support Maintenance Manual for Tool Outfit, Hydraulic Systems Test and Repair Unit (HSTRU)
TM 9-4940-568-10	Operator's Maintenance Manual for Forward Repair System (FRS)
TM 9-6115-465-24P	Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List (Including Deport Maintenance Repair Parts and Special Tools List) for Generator Set, Diesel Engine Driven, Tactical
TM 9-6140-200-14	Operator's, Unit, Direct Support and General Support Maintenance Manual for Lead-Acid Storage Batteries
TM 9-8000	Principles of Automotive Vehicles
TM 11-5820-498-12	Operator's and Organizational Maintenance Manual: Radio Sets
TM 11-5820-498-35	Direct Support, General Support, and Depot Maintenance Manual for Radio Sets
TM 38-250	Preparing Hazardous Materials for Military Air Shipments
TM 43-0139	Painting Instructions for Army Materiel
TM 55-2200-001-12	Transportability Guidance for Application of Blocking, Bracing and Tiedown Materials for Rail Transport
TM 55-2320-279-14	Transportability Guidance Heavy Expanded Mobility Tactical Truck (HEMTT)
TM 750-244-3	Procedures for Destruction of Equipment to Prevent Enemy Use (Mobility Equipment Command)
TM 750-244-6	Procedures for Destruction of Tank Automotive Equipment to Prevent Enemy Use (U.S. Army Tank-Automotive Command)
TM 750-254	Cooling Systems: Tactical Vehicles
TM 5-2330-378-14&P	Operator's, Unit, Direct Support, and General Support Maintenance Manual (Including Repair Parts and Special Tools List) for Semitrailer, Lowbed: 40-Ton Construction Equipment Transporter, M870 (CCE) (CMI/Load King Model 403LF), and M870A1

TECHNICAL MANUALS - Continued

TM 5-2330-325-14&P	Operator's, Unit, and Direct Support Maintenance Manual with Repair Parts and Special Tools List (RPSTL) for Trailer, Medium Heavy Equipment Transporter (MHET), 40-Ton, M870A3
TM 9-2330-213-14&P	Operator’s, Unit, Direct Support, and General Support Maintenance Manual (Including Repair Parts and Special Tools Lists) For Trailer, Chassis: 1-1/2-Ton, 2-Wheel M103A1 (NSN 2330-00-835-8629) M103A3 (NSN 2330-00-141-8052) Trailer, Cargo: 1-1/2-Ton, 2-Wheel M105A1 (NSN 2330-00-835-8631) M105A2 (NSN 2330-00-141-8050) M105A2C (NSN 2330-00-542-5689) Trailer, Tank, Water: 1-1/2-Ton, 2-Wheel, 400-Gallon M107A1 (NSN 2330-00-835-8633) M107A2 (NSN 2330-00-141-8049) M107A2C (NSN 2330-00-542-5688) Trailer, Van, Shop: Folding Sides, 1-1/2-Ton, 2-Wheel M448 (NSN 2330-00-631-5692)
TM 9-2330-231-14&P	Technical Manual Operator's, Organizational, Direct Support, And General Support Maintenance (Including Repair Parts and Special Tools List) Trailer, Ammunition: 1 1/2-Ton, 2-Wheel, M332 (NSN 2330-00-200-1785)
TM 9-2330-368-14&P	Operators, Organizational, Including Repair Parts and Special Tools List For Trailer, Ammunition, Heavy Expanded Mobility, 11-Ton, M989 (NSN 2330-01-109-4258)

MISCELLANEOUS PUBLICATIONS

AR 70-1	Army Acquisition Policy
AR 200-1	Environmental Protection and Enhancement
AR 385-55	Prevention of Motor Vehicle Accidents
AR 700-138	Army Logistics Readiness and Sustainability
AR 700-139	Army Warranty Program
AR 702-7	Product Quality Deficiency Report Program
AR 750-1	Army Materiel Maintenance Policy
AR 750-10	Army Modification Program
CTA 8-100	Army Medical Department Expendable/Durable Items
CTA 50-970	Expendable/Durable Items (Except Medical, Class V, Repair Parts, and Heraldic Items)
GPM 94-02	Maintenance Advisory for Purging all Fuel Tankers using a Biodegradable Purging Solution
SB 725-92-1	US Army Missile Command Nonexpendable Reusable Shipping and Storage Containers
TC 9-237	Welding Theory and Application

MISCELLANEOUS PUBLICATIONS - Continued

TC 9-510	Metal Body Repair and Related Operations
TO 00-25-234	General Shop Practice Requirements for Repair, Maintenance, and Test of Electronic Equipment

END OF WORK PACKAGE

OPERATOR MAINTENANCE
COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS

INTRODUCTION

Scope

This work package lists COEI and BII for the HEMTT series vehicles to help you inventory items required for safe and efficient operation.

General

The Components of End Item and Basic Issue Items Lists are divided into the following lists:

Components of End Item (COEI) This listing is for informational purposes only and is not authority for requisition replacements. These items are part of the HEMTT series vehicle. 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 separately packaged for transportation or shipment only when necessary. Illustrations are furnished to help you find and identify the items.

Basic Issue Items (BII) These are the minimum essential items required to place the HEMTT series vehicle in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged, BII must be with the vehicle during operation and when it is transferred between property accounts. Listing these items is your authority to request/requisition them for replacement based on your authorization of the end item by the TOE/MTOE. Illustrations are furnished to help you find and identify the items.

Explanation of Entries in the COEI List and BII List

The following provides an explanation of columns found in the tabular listings:

Item Number. Gives you the reference number of the item listed.

National Stock Number (NSN) and Illustration. Identifies the stock number of the item to be used for requisitioning purposes and provides an illustration of the item.

Description, Part Number/(CAGEC). Identifies the Federal item name (in all capital letters) followed by a minimum description when needed. The stowage location of COEI and BII is also included in this entry. The last line below the description is the part number and the Commercial and Government Entity Code (CAGEC) (in parentheses).

Usable On Code. When applicable, gives you a code if the item you need is not the same for different models of equipment. These codes are identified below:

Table 1. List of Usable On Codes

Code	Used On
LH3	M978A4 Tanker with winch
LH4	M978A4 Tanker w/o winch

Column (5) - U/I Unit of Issue (U/I) U/I. Unit of Issue (U/I) indicates the physical measurement or count of the item as issued per the National Stock Number shown in column (2).

Column (6) - Qty. Indicates the quantity required.

COMPONENTS OF END ITEM

Table 2. Components of End Item

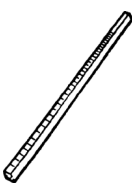
(1) Illus No.	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable On Code	(5) U/I	(6) Qty Rqr
1	6680-01-208-4495 	GAUGE ROD, LIQUID LEVEL: Tanker Dipstick (Located near manhole cover on top of module) 1460070(45152)	LH3 LH4	EA	1
2	4720-01-185-6067 	HOSE ASSEMBLY, NONMETALLIC: Fuel 15 ft. (Located in tube along passenger side of tanker module) 1378080(45152)	LH3 LH4	EA	1

Table 2. Components of End Item - Continued

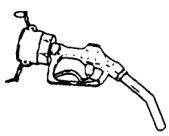
(1) Illus No.	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable On Code	(5) U/I	(6) Qty Rqr
3	2540-01-166-1384 	LADDER, VEHICLE BOARDING (Located over battery box on passenger side of vehicle) 1766590W(45152)	LH3 LH4	EA	1
4	4930-01-318-6091 	NOZZLE, FUEL AND OIL SERVICING: 2.5 in. Automotive (Location: Connected to fuel delivery hoses in rear of tanker module) 311AG1(81718)	LH3 LH4	EA	2

Table 3. Basic Issue Items

(1) Illus No.	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable On Code	(5) U/I	(6) Qty Rqr

Table 3. Basic Issue Items - Continued

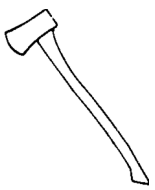
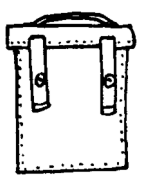
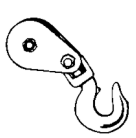
(1) Illus No.	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable On Code	(5) U/I	(6) Qty Rqr
1	5110-00-293-2336 	AXE, SINGLE BIT (Located on pioneer tool bracket) 6150925(19207)	LH3 LH4	EA	1
2	8105-01-353-2497 	BAG, TEXTILE: Pamphlet (Located in cabin in glove box forward of passenger/ crew seat) 1362710(45152)	LH3 LH4	EA	1
3	7510-00-889-3494 	BINDER, LOOSE-LEAF (Located on passenger side of cab in glove box) 11677003(19207)	LH3 LH4	EA	1
4	3940-01-163-2319 	BLOCK, TACKLE: 20 Ton (Located in driver side tool box) 168400(75535)	LH3 LH4	EA	1

Table 3. Basic Issue Items - Continued

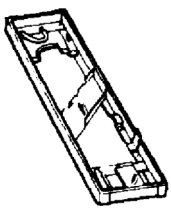
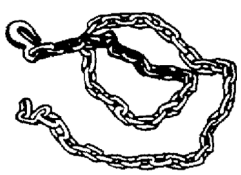
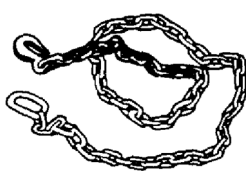
(1) Illus No.	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable On Code	(5) U/I	(6) Qty Rqr
5	2540-00-409-8891 	BRACKET ASSEMBLY, TOOL: Pioneer (Located to the left of fuel can stowage box) MS53053-1(96906)	LH3 LH4	EA	1
6	4010-01-200-1506 	CHAIN ASSEMBLY, SINGLE LEG: 7 ft. Limp Home (Located in driver side tool box) 1452490(45152)	LH3 LH4	EA	1
7	4010-01-249-0548 	CHAIN ASSEMBLY, SINGLE LEG: 14 ft. Utility (Located in driver side tool box) 00044-9973(96508)	LH3 LH4	EA	1

Table 3. Basic Issue Items - Continued

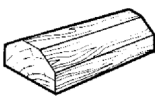
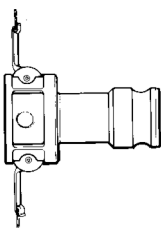
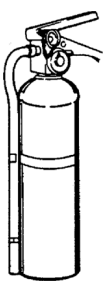
(1) Illus No.	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable On Code	(5) U/I	(6) Qty Rqr
8	2540-01-165-6136 	CHOCK, WHEEL-TRACK (Located in wheel chock stowage box (carries a maximum of two wheel chocks) and vehicle mounted stowage boxes) CS-2540-0067(16236)	LH3 LH4	EA	4
9	4730-01-222-6705 	COUPLING HALF, QUICK DISCONNECT: Reducer Adapter (to connect fuel nozzles) 25CX20A(33813)	LH3 LH4	EA	2
10	4210-01-460-9083 	EXTINGUISHER, FIRE (Located: One each mounted on driver side stowage box, and passenger side battery box) 36250(99539)	LH3 LH4	EA	2

Table 3. Basic Issue Items - Continued

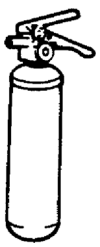
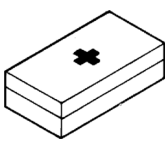
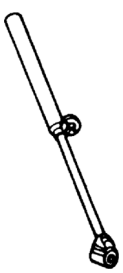
(1) Illus No.	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable On Code	(5) U/I	(6) Qty Rqr
11	4210-01-133-9053 	EXTINGUISHER, FIRE: 2.7 lbs, 10 BC (Located: mounted to rear cabin wall, left of crew/ passenger seat) 429101(03670)	LH3 LH4	EA	1
12	6545-00-922-1200 	FIRST AID KIT, GENERAL PURPOSE (Located in cabin in glove box forward of passenger/crew seat) SCC-6545-ILVOL2 (64616)	LH3 LH4	EA	1
13	4910-01-003-9599 	GAUGE, TIRE PRESSURE, SELF-CONTAINED (Located in cabin in glove box forward of passenger/ crew seat) 61-J2-1506(94894)	LH3 LH4	EA	2

Table 3. Basic Issue Items - Continued

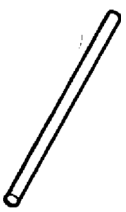
(1) Illus No.	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable On Code	(5) U/I	(6) Qty Rqr
14	5120-01-526-1378 	HAMMER, HAND: 6 lbs (Located in driver side toolbox) 1362600(45152)	LH3 LH4	EA	1
15	5340-01-209-7841 	HANDLE, EXTENSION (for lug wrench) (Located in driver side tool box) 1347720(45152)	LH3 LH4	EA	1
16	5120-00-288-6574 	HANDLE, PICK-MATTOCK (Located on driver side tool box) 10501973(56161)	LH3 LH4	EA	1

Table 3. Basic Issue Items - Continued

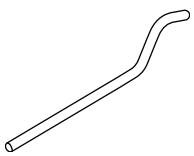
(1) Illus No.	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable On Code	(5) U/I	(6) Qty Rqr
17	5340-01-558-6515 	HANDLE, PUMP, TIRE CARRIER (Located in passenger side stowage box) 3636440(45152)	LH3 LH4	EA	1
18	5120-01-233-9508 	HANDLE, SOCKET WRENCH: Wheel Lugnut (Located in driver side toolbox) ORR301(66784)	LH3 LH4	EA	1
19	4720-01-558-6415 	HOSE ASSEMBLY, NONMETALLIC: Air 50 ft. 2155210U(45152)	LH3 LH4	EA	2

Table 3. Basic Issue Items - Continued

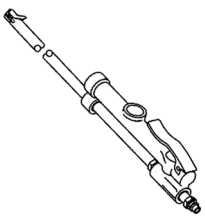
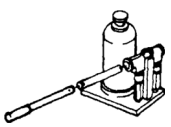
(1) Illus No.	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable On Code	(5) U/I	(6) Qty Rqr
20	4910-01-386-4300 	INFLATOR-GAUGE, PNEUMATIC TIRE (Located in cabin in glove box forward of passenger/crew seat) I-405M(63900)	LH3 LH4	EA	2
21	5120-01-146-8096 	JACK, HYDRAULIC, HAND: 12 Ton with Handle (Located in driver side tool box) EBJ-12GC(26952)	LH3 LH4	EA	1
22	5120-00-243-2395 	MATTOCK: Pick (Located in driver side tool box) 11677022(19207)	LH3 LH4	EA	1
23	4930-00-051-3194 	NOZZLE, FUEL AND OIL SERVICING: D1 64349CDK(0DT23)	LH3 LH4	EA	1

Table 3. Basic Issue Items - Continued

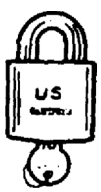
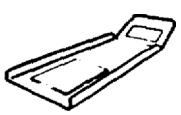
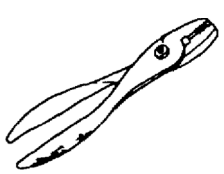
(1) Illus No.	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable On Code	(5) U/I	(6) Qty Rqr
24	5340-00-158-3807 	PADLOCK: With Chain (for stowage boxes) AA59487-2SC(58536)	LH3 LH4	EA	3
25	5340-00-158-3805 	PADLOCK: Without Chain (Located in stowage box) AA59487-2S(58536)	LH3 LH4	EA	3
26	2540-01-165-5987 	PLATE, BASE, JACK (Located in driver side toolbox) 2540V0730(16236)	LH3 LH4	EA	1
27	5120-01-480-0640 	PLIERS, SLIP JOINT: 10 in. Adjustable (Located in driver side toolbox - part of tool roll) 1350150(45152)	LH3 LH4	EA	1

Table 3. Basic Issue Items - Continued

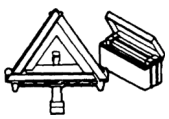
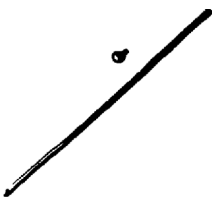
(1) Illus No.	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable On Code	(5) U/I	(6) Qty Rqr
28	9905-01-480-0644 	REFLECTOR SET, HIGHWAY WARNING, TRIANGULAR (Located in cabin mounted under glove box forward of passenger/crew seat) 6432GBX(45152)	LH3 LH4	SE	1
29	5975-00-878-3791 	ROD, GROUND: 30 in. With Connector (Located in fuel can stowage) A104(82370)	LH3 LH4	EA	6
30	5140-01-167-1541 	ROLL, TOOLS AND ACCESSORIES (Located in driver side stowage box) 1350190(45152)	LH3 LH4	EA	1

Table 3. Basic Issue Items - Continued

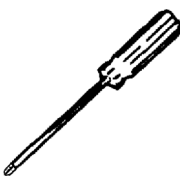
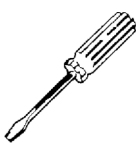
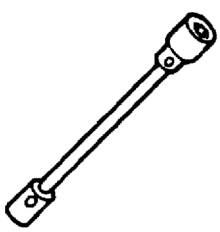
(1) Illus No.	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable On Code	(5) U/I	(6) Qty Rqr
31	5120-01-398-8053 	SCREWDRIVER, CROSS TIP: Phillips No. 3 (Located in driver side toolbox - part of tool roll) SDFP56(96508)	LH3 LH4	EA	1
32	5120-00-293-3309 	SCREWDRIVER, FLAT TIP: No. 6 (Located in driver side toolbox - part of tool roll) 66-110(03914)	LH3 LH4	EA	1
33	4030-00-377-1397 	SHACKLE: Anchor, Limp Home (Located in driver side toolbox) RR-C-271 TY4AGRBCL2SZ 1.000(81348)	LH3 LH4	EA	1
34	4030-01-197-2334 	SHACKLE: Slinging (Located on rear towing eyes) 1451750(45152)	LH3 LH4	EA	2

Table 3. Basic Issue Items - Continued

(1) Illus No.	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable On Code	(5) U/I	(6) Qty Rqr
35	4030-01-316-1552 	SHACKLE: Towing: (Located on front towing eyes) RR-C-271D TYIVAGRACL1 3/8 IN (81348)	LH3 LH4	EA	2
36	5120-01-515-7117 	SHOVEL, HAND (Located on pioneer tool bracket) 3453866(45152)	LH3 LH4	EA	1
37	5120-01-436-2924 	WRENCH, ADJUSTABLE: 8 in. (Located in driver side toolbox - part of tool roll) AC18(96508)	LH3 LH4	EA	1

Table 3. Basic Issue Items - Continued

(1) Illus No.	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable On Code	(5) U/I	(6) Qty Rqr
38	5120-00-264-3796 	WRENCH, ADJUSTABLE: 12 in. (Located in driver side toolbox - part of tool roll) 120405A(45152)	LH3 LH4	EA	1
39	5120-01-070-8386 	WRENCH, SOCKET: Wheel Nut (Located in driver side tool box) 1048-TR(45152)	LH3 LH4	EA	1

END OF WORK PACKAGE

OPERATOR MAINTENANCE
ADDITIONAL AUTHORIZATION LIST (AAL)

INTRODUCTION

Scope

This work package lists additional authorization items that are needed to operate and maintain the HEMTT Series Vehicles.

General

This list identifies items that do not have to accompany the HEMTT Series Vehicles and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

Explanation of Columns in the AAL

Column (1) - National Stock Number (NSN). Identifies the stock number of the item to be used for requisitioning purposes.

Column (2) - Description, Part Number/(CAGEC). Identifies the Federal item name (in all capital letters) followed by a minimum description when needed. The last line below the description is the part number and the Commercial and Government Entity Code (CAGEC) (in parentheses).

Column (3) - Usable On Code. When applicable, gives you a code if the item you need is not the same for different models of equipment.

Table 1. List of Usable On Codes

Code	Used On
LH3	M978A4 Tanker with winch
LH4	M978A4 Tanker w/o winch

Column (4) - U/I. Unit of Issue (U/I) indicates the physical measurement or count of the item as issued per the National Stock Number.

Column (5) - Qty Recm. Indicates the quantity recommended.

Table 2. Additional Authorization List

(1) National Stock Number (NSN)	(2) Description, Part Number/ (CAGEC)	(3) Usable On Code	(4) U/I	(5) Qty Recom
4910-00-347-9703	BAR ASSEMBLY, HOISTING 8690061(52793)	LH3 LH4	EA	1
6150-01-022-6004	CABLE ASSEMBLY, POWER, ELECTRICAL: NATO 11682336-1(19207)	LH3 LH4	EA	1
2540-01-152-7813	CHAIN, TIRE, EMERGENCY 2624-10-8(46156)	LH3 LH4	PR	2
4730-00-951-3294	COUPLING HALF, QUICK DISCONNECT: 3 in. MALE to 2 in. FEMALE REDUCER M549000-3(96906)	LH3 LH4	EA	1
4230-01-220-3221	DECONTAMINATION KIT, INDIVIDUAL EQUIPMENT 5705588(19207)	LH3 LH4	EA	1
5130-01-400-0129	EXTENSION, SOCKET WRENCH: IMPACT 3/4 in. DRIVE, 13 in. LONG 07569(1CV05)	LH3 LH4	EA	1
4210-00-965-1108	EXTINGUISHER, FIRE: 20 lb. 32937(03670)	LH3 LH4	EA	4
4240-01-220-6373	GAS PARTICULATE KIT 3SK663(45152)	LH3 LH4	KT	1
8415-00-634-4658	GLOVES, LEATHER 37G2940(90142)	LH3 LH4	PR	2
2990-01-509-1935	HEATER, COOLANT, ENGINE: ARCTIC 3463618(45152)	LH3 LH4	EA	1

Table 2. Additional Authorization List - Continued

(1) National Stock Number (NSN)	(2) Description, Part Number/ (CAGEC)	(3) Usable On Code	(4) U/I	(5) Qty Recom
4720-01-341-4912	HOSE ASSEMBLY 1759750U(45152)	LH3 LH4	EA	1
N/A-NONE FOUND	HOSE ASSEMBLY, ARCTIC (hand actuated valve) 45A254-P5(17566)	LH3 LH4	EA	1
4720-01-254-0189	HOSE ASSEMBLY, NONMETALLIC: INTER-VEHICULAR MS39325-9-140-8(96906)	LH3 LH4	EA	2
4720-00-083-0048	HOSE, DISCHARGE (3 in. x 50 ft.) 553104350(73842)	LH3 LH4	EA	1
N/A-NONE FOUND	HOSE, DISCHARGE (2 in. x 50 ft.) 13219E0503(97403)	LH3 LH4	EA	1
5895-01-506-4503	INSTALLATION KIT, ELECTRONIC EQUIPMENT: C4ISR 3418900(45152)	LH3 LH4	EA	1
1005-01-519-2126	INSTALLATION KIT: MOUNTING, MACHINE GUN 1301740UW/OR45152	LH3 LH4	KT	1
6665-01-220-3220	KIT, CHEMICAL ALARM 5705589(19207)	LH3 LH4	KT	1
6220-01-250-5190	LIGHT, WARNING: BEACON 3145661(45152)	LH3 LH4	EA	1

Table 2. Additional Authorization List - Continued

(1) National Stock Number (NSN)	(2) Description, Part Number/ (CAGEC)	(3) Usable On Code	(4) U/I	(5) Qty Recom
5120-00-892-5709	MIRROR, INSPECTION UH1487(11676)	LH3 LH4	EA	1
1005-01-266-1233	MOUNT, RIFLE: INSTALLATION 5705590(19207)	LH3 LH4	EA	1
4930-00-516-0839	NOZZLE AND ADAPTER: AIRCRAFT FUELING CCA 107/02(79326)	LH3 LH4	EA	4
4930-00-117-4726	NOZZLE, FUEL AND OIL SERVICING CCN 101/14(79326)	LH3 LH4	EA	4
4930-00-051-3194	NOZZLE, FUEL AND OIL SERVICING: D-1 64349CDK(0DT23)	LH3 LH4	EA	2
2910-01-388-6870	PARTS KIT, FUEL TANK: SEVERE DUTY REINFORCEMENT 35K800(45152)	LH3 LH4	EA	1
2910-01-428-3166	PARTS KIT, FUEL TANK: VAPOR RECOVERY 45D016(088A2)	LH3 LH4	KT	1
	PLATE, TRANSPORT, WELDMENT (used for air transportability)No NSN assigned at date of publish. 2248330W	LH3 LH4	EA	1
4910-00-402-9623	PRIMER, FUEL SYSTEM 5110760(3D921)	LH3 LH4	EA	1

Table 2. Additional Authorization List - Continued

(1) National Stock Number (NSN)	(2) Description, Part Number/ (CAGEC)	(3) Usable On Code	(4) U/I	(5) Qty Recom
5120-00-197-9473	PUNCH, BLACKSMITH'S: 17 in. 647008(60903)	LH3 LH4	EA	1
5975-01-050-5707	ROD, GROUND 13219E0462(97403)	LH3 LH4	EA	4
4030-01-316-1552	SHACKLE: TOWING (used with towbar, 10 ton) 1307540(45152)	LH3 LH4	EA	2
3940-01-270-3389	SLING, MULTIPLE LEG: 16 FT. SAFETY CHAINTwo (2) 16 ft. safety chains should be used in conjunction with Tow Bar: 10 Ton NSN: 2540-00-378-2012, P/N: 8383802, C/C: 19207. 1482010(45152)	LH3 LH4	EA	2
5130-01-400-0164	SOCKET, SOCKET WRENCH (3/4 in. drive, 1 3/4 in. hex, impact) J07528L(1CV05)	LH3 LH4	EA	1
2540-00-378-2012	TOW BAR, MOTOR VEHICLE: 10 tonShould be used in conjunction with two (2) safety chains: 16 ft. NSN: 3940-01-270-3389, P/N: 1482010, C/C: 45152. 8383802(19207)	LH3 LH4	EA	1
5130-01-428-3751	WRENCH, IMPACT, PNEUMATIC 1789100U(45152)	LH3 LH4	EA	1

Table 2. Additional Authorization List - Continued

(1) National Stock Number (NSN)	(2) Description, Part Number/ (CAGEC)	(3) Usable On Code	(4) U/I	(5) Qty Recom
4730-01-068-5070	WYE ASSEMBLY 13219E0477(97403)	LH3 LH4	EA	3

END OF WORK PACKAGE

OPERATOR MAINTENANCE
EXPENDABLE AND DURABLE ITEMS LIST

INTRODUCTION

Scope

This work package lists expendable supplies and materials that are needed to operate and maintain the HEMTT Series Vehicles. This list is for information only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, Expendable/Durable Items (Except Medical, Class V Repair Parts, and Heraldic Items), CTA 50-909, Field and Garrison Furnishings and Equipment or CTA 8-100, Army Medical Department Expendable/Durable Items.

Explanation of Entries in the Expendable/Durable Items List

Item No. This number is assigned to the entry in the list and is referenced in the narrative instructions to identify the item (e.g., Use brake fluid (Expendable/Durable Items List)).

Level. This column identifies the lowest level of maintenance that requires the listed item.
- C -- Operator/Crew
- O -- Unit/AMC
- F -- Direct Support/ASB
- H -- General Support
- D -- Depot

National Stock Number (NSN). This is the NSN assigned to the item which you can use to requisition it.

Item Name, Description, Part Number/(CAGEC). This column provides the other information you need to identify the item. The last line below the description is the part number and the Commercial and Government Entity Code (CAGEC) (in parentheses).

(U/I). Unit of Issue (U/I) code shows the physical measurement or count of an item, such as gallon, dozen, gross, etc.

Table 1. Expendable and Durable Items List

(1) Item No.	(2) Level	(3) National Stock Number (NSN)	(4) Item Name, Description, Part Number/ (CAGEC)	(5) U/I

Table 1. Expendable and Durable Items List - Continued

(1) Item No.	(2) Level	(3) National Stock Number (NSN)	(4) Item Name, Description, Part Number/ (CAGEC)	(5) U/I
			Antifreeze, Arctic Type	
1	O	6850-01-441-3248	Antifreeze, Arctic Type 55-gal drum A-A-52624 (58536)	DR
			Antifreeze, Permanent, Glycol, Inhibited	
2	O	6850-01-464-9125	Antifreeze, Permanent, Glycol, Inhibited 1-gal container AA52624 (58536)	GL
3	O	6850-00-181-7933	Antifreeze, Permanent, Glycol, Inhibited 5-gal container MILA46153 (81349)	CO
4	O	6850-01-464-9152	Antifreeze, Permanent, Glycol, Inhibited 55-gal drum A-A-52624 TY I RECYCLED (58536)	DR
			Cleaner, Lubricant	
5	O	9150-01-079-6124	Cleaner, Lubricant A,4 oz bottle w/ extender tube MIL-PRF-63460 (81349)	BT
			Cleaning Compound, Solvent	
6	O	6850-01-474-2319	Cleaning Compound, Solvent 1 gallon can MIL-PRF-680 Type II (81349)	GL
7	O	6850-01-474-2317	Cleaning Compound, Solvent 5 gallon can MIL-PRF-680 Type II (81349)	CO

Table 1. Expendable and Durable Items List - Continued

(1) Item No.	(2) Level	(3) National Stock Number (NSN)	(4) Item Name, Description, Part Number/ (CAGEC)	(5) U/I
8	O	6850-01-474-2316	Cleaning Compound, Solvent 55 gallon drum MIL-PRF-680 Type II (81349)	DR
9	O	6850-01-474-2318	Cleaning Compound, Solvent 1 gallon can MIL-PRF-680 Type III (81349)	GL
10	O	6850-01-474-2320	Cleaning Compound, Solvent 5 gallon can MIL-PRF-680 Type III (81349)	BX
11	O	6850-01-474-2321	Cleaning Compound, Solvent 5 gallon can MIL-PRF-680 Type III (81349)	DR
			Compound, Cleaning Windshield	
12	O	6850-00-926-2275	Compound, Cleaning Windshield 1-pt can 0854-000 (0FTT5)	BX
			Fuel, DF-1, Winter	
13	O	9140-01-413-7511	Fuel, DF-1, Winter Bulk VV-F-800 (81348)	GL
14	O	9140-00-286-5286	Fuel, DF-1, Winter Bulk ASTM D 975 (81346)	GL
15	O	9140-00-286-5287	Fuel, DF-1, Winter 5-gal can ASTM D 975 (81346)	CN
16	O	9140-00-286-5288	Fuel, DF-1, Winter 55-gal drum, 16 gauge ASTM D 975 (81346)	DR
17	O	9140-00-286-5289	Fuel, DF-1, Winter 55-gal drum, 18 gauge ASTM D 975 (81346)	DR

Table 1. Expendable and Durable Items List - Continued

(1) Item No.	(2) Level	(3) National Stock Number (NSN)	(4) Item Name, Description, Part Number/ (CAGEC)	(5) U/I
			Fuel	
18	O	9130-01-031-5816	Fuel, JP8 Bulk MILT83133 GR JP8 (81349)	GL
19	O	9140-01-412-1311	Fuel, DF-2, Regular Bulk VV-F-800 (81348)	GL
20	O	9140-00-286-5294	Fuel, DF-2, Regular Bulk ASTM D 975 (81346)	GL
21	O	9140-00-286-5295	Fuel, DF-2, Regular 5-gal can ASTM D 975 (81346)	CN
22	O	9140-00-286-5296	Fuel, DF-2, Regular 55-gal drum, 16 gauge ASTM D 975 (81346)	DR
23	O	9140-00-286-5297	Fuel, DF-2, Regular 55-gal drum, 18 gauge ASTM D 975 (81346)	DR
			Grease, Automotive and Artillery GAA	
24	O	9150-01-197-7688	Grease, Automotive and Artillery GAA 2-1/2 oz tube M-10924-A (81349)	TU
25	O	9150-01-197-7693	Grease, Automotive and Artillery GAA 14-oz cartridge M-10924-B (81349)	CA
26	O	9150-01-197-7690	Grease, Automotive and Artillery GAA 1-lb can M-10924-C (81349)	CN

Table 1. Expendable and Durable Items List - Continued

(1) Item No.	(2) Level	(3) National Stock Number (NSN)	(4) Item Name, Description, Part Number/ (CAGEC)	(5) U/I
27	O	9150-01-197-7689	Grease, Automotive and Artillery GAA 5-lb can M-10924-D (81349)	CN
28	O	9150-01-197-7692	Grease, Automotive and Artillery GAA 35-lb can M-10924-E (81349)	CN
			Oil, Lubricating Gear, GO 75	
29	O	9150-01-035-5390	Oil, Lubricating Gear, GO 75 1-qt can M2105-1-75W (81349)	QT
30	O	9150-01-048-4593	Oil, Lubricating Gear, GO 75 5-gal can MIL-PRF-2105 (81349)	GL
31	O	9150-01-035-5391	Oil, Lubricating Gear, GO 75 55-gal drum M2015-3-75W (81349)	CN
			Oil, Lubricating Gear, GO 80W/90	
32	O	9150-01-035-5393	Oil, Lubricating Gear, GO 80W/90 5-gal can J2360 (81343)	CN
			Oil, Lubricating OEA Ice, Subzero	
33	O	9150-00-402-4478	Oil, Lubricating OEA Ice, Subzero 1-qt can EMERY3908D (33358)	QT
34	O	9150-00-402-2372	Oil, Lubricating OEA Ice, Subzero 5-gal can MIL-PRF-46167 (81349)	CN

Table 1. Expendable and Durable Items List - Continued

(1) Item No.	(2) Level	(3) National Stock Number (NSN)	(4) Item Name, Description, Part Number/ (CAGEC)	(5) U/I
35	O	9150-00-491-7197	Oil, Lubricating OEA Ice, Subzero 55-gal drum, 16 gauge MIL-PRF-46167 (81349)	DR
			Oil, Lubricating OE/HDO 10	
36	O	9150-00-189-6727	Oil, Lubricating OE/HDO 10 1-qt can M2104-1-10W (81349)	QT
37	O	9150-00-186-6668	Oil, Lubricating OE/HDO 10 5-gal can M2104-3-10W (81349)	CN
38	O	9150-00-191-2772	Oil, Lubricating OE/HDO 10 55-gal drum, 18 gauge M2104-4-10W (81349)	DR
39	O	9150-01-496-1939	Oil, Lubricating OE/HDO 10 55-gal drum, 16 gauge MIL-PRF-2104 (81349)	DR
			Oil, Lubricating OE/HDO 30, (SAE 30)	
40	O	9150-00-183-7808	Oil, Lubricating OE/HDO 30, (SAE 30) Bulk M2104-2-30W (81349)	GL
41	O	9150-00-186-6681	Oil, Lubricating OE/HDO 30, (SAE 30) 1-qt can M2104-1-30W (81349)	QT
42	O	9150-00-188-9858	Oil, Lubricating OE/HDO 30, (SAE 30) 5-gal can M2104-3-30W (81349)	CN
43	O	9150-01-433-7978	Oil, Lubricating OE/HDO 30, (SAE 30) 55-gal drum, 16 gauge MIL-PRF-2104 (81349)	DR

Table 1. Expendable and Durable Items List - Continued

(1) Item No.	(2) Level	(3) National Stock Number (NSN)	(4) Item Name, Description, Part Number/ (CAGEC)	(5) U/I
44	O	9150-00-189-6729	Oil, Lubricating OE/HDO 30, (SAE 30) 55-gal drum, 18 gauge M2104-4-30W (81349)	DR
			Oil, Lubricating OE/HDO 50	
45	O	9150-00-188-9865	Oil, Lubricating OE/HDO 50 5-gal drum BRAYC0423H (98308)	CN
			Oil, Lubricating Gear, GO 85W/140	
46	O	9150-01-035-5396	Oil, Lubricating Gear, GO 85W/140 J2360 (81343)	DR
			Oil, Lubricating, OE/HDO-15W/40	
47	O	9150-01-352-2962	Oil, Lubricating, OE/HDO-15W/40 5-gal can A-A-52306 (58536)	CO
48	O	9150-01-152-4119	Oil, Lubricating OE/HDO 15W/40 55-gal drum, 18 gauge M2104-4-15W40 (81349)	DR
			Oil, Lubricating, OE/HDO 40	
49	O	9150-01-467-8161	Oil, Lubricating, OE/HDO 40 55-gal drum 40 GRADE (81343)	DR
			Rag, Wiping	
50	O	7920-00-205-1711	Rag, Wiping 50-pound bale 7920-00-205-1711 (80244)	BE

Table 1. Expendable and Durable Items List - Continued

(1) Item No.	(2) Level	(3) National Stock Number (NSN)	(4) Item Name, Description, Part Number/ (CAGEC)	(5) U/I
			Rope	
51	O	4020-00-968-1357	Rope, Fibrous MIL-R-17343 (81349)	RL

END OF WORK PACKAGE

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25-30; the proponent agency is OAASA	Use Part II *(reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	DATE
TO: *(Forward to proponent of publication or form) (Include ZIP Code)* TACOM Life Cycle Management Command, ATTN: AMSTA-LC-LMPP/TECH PUBS, 1 Rock Island Arsenal, Rock Island, IL 61299-7630	**FROM:** *(Activity and location) (Include ZIP Code)*	

PART I - ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER	DATE	TITLE

ITEM	PAGE	PARA-GRAPH	LINE	FIGURE NO.	TABLE	RECOMMENDED CHANGES AND REASON

** Reference to line numbers within the paragraph or subparagraph.*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

TO: *(Forward direct to addressee listed in publication)* TACOM Life Cycle Management Command, ATTN: AMSTA-LC-LMPP/TECH PUBS, 1 Rock Island Arsenal, Rock Island, IL 61299-7630	**FROM:** *(Activity and location) (Include ZIP Code)*	**DATE**

PART II - REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION NUMBER	DATE	TITLE

PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

PART III - REMARKS *(Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

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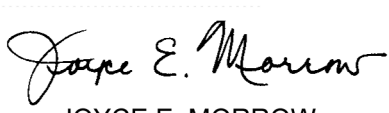
TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

USAPA V3.01

By Order of the Secretary of the Army:

GEORGE W. CASEY, JR.
General, United States Army
Chief of Staff

Official:



JOYCE E. MORROW
Administrative Assistant to the
Secretary of the Army
0809916

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THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE
1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
1 Kilometer = 1000 Meters = 0.621 Miles

WEIGHTS
1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
1 Kilogram = 1000 Grams = 2.2 Lb
1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

LIQUID MEASURE
1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

SQUARE MEASURE
1 Sq Centimeter = 100 Sq Millimeters = 0.155 Sq Inches
1 Sq Meter = 10,000 Sq Centimeters = 10.76 Sq Feet
1 Sq Kilometer = 1,000,000 Sq Meters = 0.386 Sq Miles

CUBIC MEASURE
1 Cu Centimeter = 1000 Cu Millimeters = 0.06 Cu Inches
1 Cu Meter = 1,000,000 Cu Centimeters = 35.31 Cu Feet

TEMPERATURE
5/9 (F - 32) = 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 C + 32 = F

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
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/Sq Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Sq Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Sq Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Metrication	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds per Sq Inch	0.145
Km per Liter	Miles per Gallon	2.354
Km per Hour	Miles per Hour	0.621

