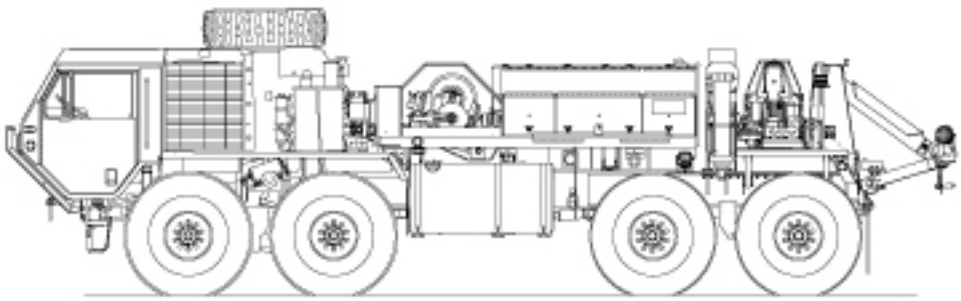
TM 9-2320-342-10-1

TECHNICAL MANUAL
OPERATOR'S MANUAL
FOR

TRUCK, WRECKER, 8X8
M984A4
NSN 2320-01-534-2245 (EIC BG5)



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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 show 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 - 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.
	EAR PROTECTION - headphones over ears show that noise level will harm ears.

FOR INFORMATION ON FIRST AID:

Reference FM 4-25.11. (Volume 2, WP 0200)

WARNING

MODIFICATION HAZARD

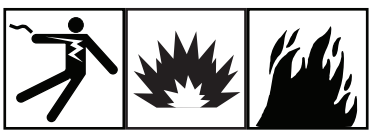
- Unauthorized modifications to, alterations to, or installations on this equipment are prohibited and are in violation of AR 750-10.
- Failure to comply may result in injury or death to personnel or damage to equipment.

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 to 198°F (61 to 92°C), and Type III is 200 to 241°F (93 to 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.

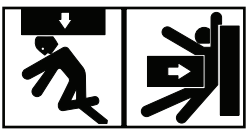
WARNING

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.

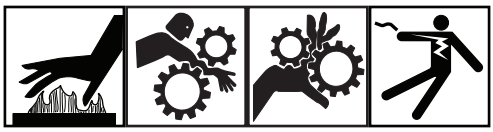
WARNING



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

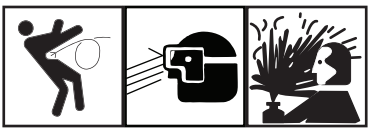
- Use extreme care when operating or working near moving machinery including running engine, rotating shafts, and other moving parts. Failure to comply may result in injury or death to personnel.
- Use extreme care when measuring voltage while engine is running around rotating fan blade and hot engine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

WARNING

HEAVY-DUTY WINCH OPERATION

- All personnel must stand clear during winching operations from possible snapping cable or shifting load. Failure to comply may result in injury or death to personnel.
- When hooking up for winching operations, position throat (open part) of hook upward in case overloading straightens out hook. Failure to comply may result in injury or death to personnel.
- The cable drum requires a minimum of three or four wraps of wire rope (cable) for safety. Failure to comply may result in injury or death to personnel.
- Be careful when handling the winch cable. Ensure cut ends are taped. Ensure cut ends of cable on winch assembly are securely fastened down. Failure to comply may result in injury or death to personnel.
- Always wear leather gloves when handling winch cable. Failure to comply may result in injury or death to personnel.

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.

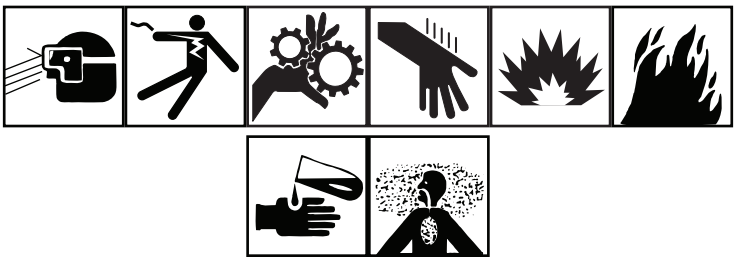
WARNING

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 VOLUMES IS 2, TOTAL NUMBER OF PAGES FOR FRONT AND REAR MATTER IS 181 AND TOTAL NUMBER OF WORK PACKAGES IS 203, CONSISTING OF THE FOLLOWING:

Page/WP No.	Change No.	Page/WP No.	Change No.
Volume 1		WP 0021 (2 pages)	0
Front Cover	0	WP 0022 (16 pages)	0
Warning Summary	0	WP 0023 (6 pages)	0
i-xcii	0	WP 0024 (2 pages)	0
Chp 1 - General Information,		WP 0025 (2 pages)	0
Equipment Description and		WP 0026 (2 pages)	0
Theory of Operation	0	WP 0027 (4 pages)	0
WP 0001 (12 pages)	0	WP 0028 (2 pages)	0
WP 0002 (8 pages)	0	WP 0029 (6 pages)	0
WP 0003 (2 pages)	0	WP 0030 (2 pages)	0
WP 0004 (6 pages)	0	WP 0031 (4 pages)	0
WP 0005 (4 pages)	0	WP 0032 (2 pages)	0
WP 0006 (12 pages)	0	WP 0033 (4 pages)	0
WP 0007 (2 pages)	0	WP 0034 (2 pages)	0
WP 0008 (2 pages)	0	WP 0035 (6 pages)	0
WP 0009 (4 pages)	0	WP 0036 (6 pages)	0
WP 0010 (4 pages)	0	WP 0037 (4 pages)	0
WP 0011 (4 pages)	0	WP 0038 (2 pages)	0
WP 0012 (8 pages)	0	WP 0039 (32 pages)	0
WP 0013 (10 pages)	0	WP 0040 (6 pages)	0
WP 0014 (2 pages)	0	WP 0041 (18 pages)	0
WP 0015 (2 pages)	0	WP 0042 (10 pages)	0
WP 0016 (2 pages)	0	WP 0043 (6 pages)	0
WP 0017 (2 pages)	0	WP 0044 (8 pages)	0
WP 0018 (2 pages)	0	WP 0045 (2 pages)	0
Chp 2 - Operator Instructions	0	WP 0046 (2 pages)	0
WP 0019 (2 pages)	0	WP 0047 (2 pages)	0
WP 0020 (4 pages)	0	WP 0048 (6 pages)	0

Page/WP No.	Change No.	Page/WP No.	Change No.
WP 0049 (2 pages)	0	WP 0093 (6 pages)	0
WP 0050 (2 pages)	0	WP 0094 (6 pages)	0
WP 0051 (4 pages)	0	WP 0095 (4 pages)	0
WP 0052 (6 pages)	0	WP 0096 (2 pages)	0
WP 0053 (6 pages)	0	WP 0097 (2 pages)	0
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WP 0056 (2 pages)	0	WP 0100 (4 pages)	0
WP 0057 (2 pages)	0	WP 0101 (2 pages)	0
WP 0058 (6 pages)	0	WP 0102 (30 pages)	0
WP 0059 (4 pages)	0	WP 0103 (14 pages)	0
WP 0060 (34 pages)	0	WP 0104 (20 pages)	0
WP 0061 (28 pages)	0	WP 0105 (6 pages)	0
WP 0062 (28 pages)	0	WP 0106 (2 pages)	0
WP 0063 (40 pages)	0	WP 0107 (12 pages)	0
WP 0064 (28 pages)	0	WP 0108 (26 pages)	0
WP 0065 (30 pages)	0	WP 0109 (4 pages)	0
WP 0066 (28 pages)	0	WP 0110 (8 pages)	0
WP 0067 (32 pages)	0	WP 0111 (4 pages)	0
WP 0068 (28 pages)	0	WP 0112 (2 pages)	0
WP 0069 (30 pages)	0	WP 0113 (16 pages)	0
WP 0070 (30 pages)	0	WP 0114 (18 pages)	0
WP 0071 (32 pages)	0	WP 0115 (20 pages)	0
WP 0072 (30 pages)	0	WP 0116 (2 pages)	0
WP 0073 (28 pages)	0	WP 0117 (6 pages)	0
WP 0074 (28 pages)	0	WP 0118 (2 pages)	0
WP 0075 (28 pages)	0	WP 0119 (18 pages)	0
WP 0076 (30 pages)	0	WP 0120 (4 pages)	0
WP 0077 (30 pages)	0	WP 0121 (4 pages)	0
WP 0078 (28 pages)	0	WP 0122 (6 pages)	0
WP 0079 (26 pages)	0	WP 0123 (2 pages)	0
WP 0080 (26 pages)	0	WP 0124 (6 pages)	0
WP 0081 (38 pages)	0	WP 0125 (4 pages)	0
WP 0082 (4 pages)	0	WP 0126 (2 pages)	0
WP 0083 (4 pages)	0	WP 0127 (2 pages)	0
WP 0084 (2 pages)	0	WP 0128 (6 pages)	0
WP 0085 (2 pages)	0	WP 0129 (4 pages)	0
WP 0086 (2 pages)	0	WP 0130 (8 pages)	0
WP 0087 (4 pages)	0	WP 0131 (2 pages)	0
WP 0088 (2 pages)	0	WP 0132 (2 pages)	0
WP 0089 (4 pages)	0	WP 0133 (4 pages)	0
WP 0090 (2 pages)	0	WP 0134 (8 pages)	0
WP 0091 (2 pages)	0		
WP 0092 (8 pages)	0		

Page/WP No.	Change No.	Page/WP No.	Change No.
Volume 2		WP 0171 (4 pages)	0
Chp 3 - Troubleshooting		WP 0172 (6 pages)	0
Procedures	0	WP 0173 (2 pages)	0
WP 0135 (8 pages)	0	WP 0174 (2 pages)	0
WP 0136 (6 pages)	0	WP 0175 (4 pages)	0
WP 0137 (6 pages)	0	WP 0176 (2 pages)	0
WP 0138 (4 pages)	0	WP 0177 (4 pages)	0
WP 0139 (4 pages)	0	WP 0178 (2 pages)	0
WP 0140 (4 pages)	0	Chp 4 - Preventive Maintenance	
WP 0141 (4 pages)	0	Checks and Services (PMCS)	0
WP 0142 (4 pages)	0	WP 0179 (4 pages)	0
WP 0143 (4 pages)	0	WP 0180 (42 pages)	0
WP 0144 (4 pages)	0	WP 0181 (46 pages)	0
WP 0145 (2 pages)	0	WP 0182 (64 pages)	0
WP 0146 (4 pages)	0	WP 0183 (74 pages)	0
WP 0147 (4 pages)	0	WP 0184 (38 pages)	0
WP 0148 (4 pages)	0	WP 0185 (16 pages)	0
WP 0149 (4 pages)	0	Chp 5 - Maintenance	
WP 0150 (4 pages)	0	Instructions	0
WP 0151 (10 pages)	0	WP 0186 (16 pages)	0
WP 0152 (6 pages)	0	WP 0187 (4 pages)	0
WP 0153 (6 pages)	0	WP 0188 (6 pages)	0
WP 0154 (4 pages)	0	WP 0189 (2 pages)	0
WP 0155 (4 pages)	0	WP 0190 (18 pages)	0
WP 0156 (4 pages)	0	WP 0191 (2 pages)	0
WP 0157 (8 pages)	0	WP 0192 (6 pages)	0
WP 0158 (4 pages)	0	WP 0193 (10 pages)	0
WP 0159 (6 pages)	0	WP 0194 (6 pages)	0
WP 0160 (4 pages)	0	WP 0195 (8 pages)	0
WP 0161 (6 pages)	0	WP 0196 (4 pages)	0
WP 0162 (4 pages)	0	WP 0197 (2 pages)	0
WP 0163 (6 pages)	0	WP 0198 (2 pages)	0
WP 0164 (6 pages)	0	WP 0199 (2 pages)	0
WP 0165 (4 pages)	0	Chp 6 - Supporting Information	0
WP 0166 (8 pages)	0	WP 0200 (8 pages)	0
WP 0167 (8 pages)	0	WP 0201 (36 pages)	0
WP 0168 (4 pages)	0	WP 0202 (6 pages)	0
WP 0169 (4 pages)	0	WP 0203 (8 pages)	0
WP 0170 (2 pages)	0		

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 15 OCTOBER 2008

TECHNICAL MANUAL

OPERATOR'S MANUAL
TRUCK, WRECKER, 8X8
M984A4
NSN 2320-01-534-2245

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TABLE OF CONTENTS

WP Sequence No.
Page No.

Volume 1

Warning Summary

How to Use this Manual

Chapter 1 - General Information, Equipment Description and Theory of Operation

INTRODUCTION..... WP 0001

Table 1. Overview..... 0001-1

Figure 1. 0001-1

Table 2. Common Nomenclature..... 0001-3

Table 3. Common Abbreviations..... 0001-4

Table 4. Significant Hazard And Safety Recommendations..... 0001-10

WARRANTY PROGRAM..... WP 0002

Table 1. Vehicle Information..... 0002-3

EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES..... WP 0003

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS..... WP 0004

Table 1. HEMTT Series Vehicle Common Component Location..... 0004-1

Figure 1. 0004-1

Figure 2. 0004-3

Table 2. M984A4 Wrecker-Recovery Vehicle Specific Component Location..... 0004-5

Figure 3. 0004-5

DIFFERENCES BETWEEN MODELS..... WP 0005

TABLE OF CONTENTS - Continued

	Page No.	WP Sequence No.
Table 1. Differences Between HEMTT A4 Models	0005-1	
Table 2. Notes	0005-2	
EQUIPMENT DATA		WP 0006
Table 1. Vehicle Operation	0006-1	
Table 2. M984A4 Wrecker Vehicle Dimensions	0006-1	
Table 3. M984A4 Wrecker Vehicle Weight	0006-1	
Table 4. M984A4 Wrecker Vehicle Weight Distribution	0006-2	
Table 5. Vehicle Performance	0006-2	
Table 6. Fluid Capacities	0006-3	
Table 7. Engine	0006-3	
Table 8. Fuel System	0006-4	
Table 9. Electrical System	0006-4	
Table 10. Cooling System	0006-4	
Table 11. Transmission	0006-5	
Table 12. Transfer Case	0006-5	
Table 13. Front Tandem Axles	0006-5	
Table 14. Rear Tandem Axles	0006-5	
Table 15. Brake System	0006-5	
Table 16. Wheels	0006-6	
Table 17. Tires	0006-6	
Table 18. Steering System	0006-6	
Table 19. Towing Eyes	0006-6	

TABLE OF CONTENTS - Continued

	WP Sequence No. / Page No.
Table 20. Pintle Hook	0006-7
Table 21. Cab	0006-7
Table 22. Self-Recovery Winch	0006-7
Table 23. Material Handling Crane	0006-7
Table 24. Recovery (Heavy-Duty) Winch	0006-8
Table 25. Auxiliary Equipment	0006-8
Table 26. M984A4 Wrecker Vehicle Load Classification	0006-9
Table 27. M984A4 Wrecker Vehicle Tire Pressures	0006-9
Table 28. M984A4 Wrecker Vehicle Operating Speeds	0006-10
SELF-RECOVERY WINCH	WP 0007
Figure 1.	0007-1
ELECTRICAL SYSTEM	WP 0008
Figure 1.	0008-1
AIR SYSTEM	WP 0009
Figure 1.	0009-2
MAIN HYDRAULIC SYSTEM	WP 0010
Figure 1.	0010-1
Figure 2.	0010-3
Figure 3.	0010-4
STEERING SYSTEM	WP 0011
Figure 1.	0011-2

TABLE OF CONTENTS - Continued

	Page No.	WP Sequence No.
POWER TRAIN		WP 0012
Figure 1.	0012-1	
Figure 2.	0012-3	
Figure 3.	0012-5	
Figure 4.	0012-6	
Figure 5.	0012-6	
Figure 6.	0012-7	
ENGINE SYSTEMS		WP 0013
Figure 1.	0013-1	
Figure 2.	0013-2	
Figure 3.	0013-3	
Figure 4.	0013-4	
Figure 5.	0013-6	
CAB		WP 0014
Figure 1.	0014-1	
WHEELS AND TIRES		WP 0015
Figure 1.	0015-1	
CRANE		WP 0016
Figure 1.	0016-1	
HEAVY-DUTY WINCH		WP 0017
Figure 1.	0017-1	
RETRIEVAL SYSTEM		WP 0018

TABLE OF CONTENTS - Continued

	WP Sequence No. / Page No.
Figure 1.	0018-1
Chapter 2 - Operator Instructions	
CAB-MOUNTED FOOT CONTROLS	WP 0019
Table 1. Cab-Mounted Foot Controls	0019-1
Figure 1.	0019-1
CAB-MOUNTED HAND CONTROLS	WP 0020
Table 1. Cab-Mounted Hand Controls	0020-2
Figure 1.	0020-2
STEERING COLUMN MOUNTED CONTROLS	WP 0021
Table 1. Steering Column Mounted Controls	0021-1
Figure 1.	0021-1
INSTRUMENT PANEL CONTROLS AND INDICATORS	WP 0022
Table 1. Instrument Panel Controls and Indicators	0022-1
Figure 1.	0022-1
Figure 2.	0022-2
Figure 3.	0022-3
Figure 4.	0022-4
Figure 5.	0022-6
Figure 6.	0022-9
Figure 7.	0022-13
HEATER COMPARTMENT CONTROLS AND INDICATORS	WP 0023
Table 1. Heater Compartment Controls and Indicators	0023-1

TABLE OF CONTENTS - Continued

	Page No.	WP Sequence No.
Figure 1.	0023-1	
Figure 2.	0023-4	
Figure 3.	0023-5	
CENTER DASH PANEL CONTROLS		WP 0024
Table 1. Center Dash Panel Controls	0024-1	
Figure 1.	0024-1	
OPERATOR AND CREW FOUR-POINT SEATBELT/AIR-RIDE SEAT ADJUSTMENT CONTROLS		WP 0025
Table 1. Operator and Crew Four-Point Seatbelt/ Air-Ride Seat Adjustment Controls	0025-1	
Figure 1.	0025-1	
24V BATTERY DISCONNECT SWITCH		WP 0026
Table 1. 24V Battery Disconnect Switch	0026-2	
Figure 1.	0026-2	
TIRE CARRIER PUMP CONTROLS		WP 0027
Table 1. Tire Carrier Pump Controls	0027-2	
Figure 1.	0027-2	
SUSPENSION DUMP VALVE CONTROL		WP 0028
Table 1. Suspension Dump Valve Control	0028-1	
Figure 1.	0028-1	
GROVE CRANE CONTROLS		WP 0029
Table 1. Grove Crane Controls	0029-2	
Figure 1.	0029-2	

TABLE OF CONTENTS - Continued

	Page No.	WP Sequence No.
Figure 2.	0029-4	
GROVE CRANE REMOTE-CONTROL UNIT		WP 0030
Table 1. Grove Crane Remote-Control Unit	0030-1	
Figure 1.	0030-1	
GROVE CRANE POWER DISTRIBUTION BOX CONTROLS AND INDICATORS		WP 0031
Table 1. Grove Crane Power Distribution Box Controls and Indicators	0031-2	
Figure 1.	0031-2	
RETRIEVAL SYSTEM CONTROLS		WP 0032
Table 1. Retrieval System Controls	0032-1	
Figure 1.	0032-1	
RIFLE STOWAGE MOUNT		WP 0033
Table 1. Rifle Stowage Mount	0033-2	
Figure 1.	0033-2	
OPERATE WINDSHIELD WIPERS/WASHER		WP 0034
Figure 1.	0034-1	
Figure 2.	0034-2	
OPERATE CAB TEMPERATURE CONTROLS		WP 0035
Figure 1.	0035-2	
Figure 2.	0035-4	
Figure 3.	0035-5	
OPERATE FIRE EXTINGUISHER		WP 0036

TABLE OF CONTENTS - Continued

	Page No.	WP Sequence No.
Figure 1.	0036-1	
Figure 2.	0036-2	
Figure 3.	0036-3	
Figure 4.	0036-4	
Figure 5.	0036-5	
OPERATE ACCESS LADDER		WP 0037
Figure 1.	0037-1	
Figure 2.	0037-2	
Figure 3.	0037-3	
OPERATE DRAIN PLUG		WP 0038
Figure 1.	0038-1	
Figure 2.	0038-2	
HEAVY-DUTY WINCH OPERATION		WP 0039
Figure 1.	0039-2	
Figure 2.	0039-3	
Figure 3.	0039-3	
Figure 4.	0039-4	
Figure 5.	0039-5	
Figure 6.	0039-6	
Figure 7.	0039-7	
Figure 8.	0039-8	
Figure 9.	0039-9	

TABLE OF CONTENTS - Continued

WP Sequence No.
Page No.

Table 1. Heavy-Duty Winch Pull Capacity..... 0039-9
Figure 10. 0039-11
Figure 11. 0039-12
Figure 12. 0039-13
Figure 13. 0039-14
Figure 14. 0039-15
Figure 15. 0039-16
Figure 16. 0039-16
Figure 17. 0039-17
Figure 18. 0039-18
Figure 19. 0039-20
Figure 20. 0039-21
Figure 21. 0039-22
Figure 22. 0039-23
Figure 23. 0039-24
Figure 24. 0039-25
Figure 25. 0039-26
Figure 26. 0039-27
Figure 27. 0039-27
Figure 28. 0039-28
Figure 29. 0039-29
Figure 30. 0039-30

TABLE OF CONTENTS - Continued

	WP Sequence No. / Page No.
Figure 31.	0039-31
OPERATE AIR SUSPENSION DUMP VALVE	WP 0040
Figure 1.	0040-2
Figure 2.	0040-3
Figure 3.	0040-4
Figure 4.	0040-5
Figure 5.	0040-6
OPERATE TIRE CARRIER	WP 0041
Figure 1.	0041-2
Figure 2.	0041-3
Figure 3.	0041-3
Figure 4.	0041-4
Figure 5.	0041-5
Figure 6.	0041-7
Figure 7.	0041-8
Figure 8.	0041-9
Figure 9.	0041-10
Figure 10.	0041-12
Figure 11.	0041-13
Figure 12.	0041-14
Figure 13.	0041-15
Figure 14.	0041-16

TABLE OF CONTENTS - Continued

	WP Sequence No. Page No.	
Figure 15.	0041-17	
Figure 16.	0041-18	
OPERATE INSTRUMENT PANEL		WP 0042
Figure 1.	0042-1	
Figure 2.	0042-2	
Figure 3.	0042-3	
Figure 4.	0042-4	
Figure 5.	0042-4	
Figure 6.	0042-5	
Figure 7.	0042-5	
Figure 8.	0042-6	
Figure 9.	0042-6	
Figure 10.	0042-7	
Figure 11.	0042-7	
Figure 12.	0042-8	
Figure 13.	0042-8	
Figure 14.	0042-9	
Figure 15.	0042-9	
Figure 16.	0042-10	
OPERATE AIR SUSPENSION BALL VALVES		WP 0043
Figure 1.	0043-2	
Figure 2.	0043-4	

TABLE OF CONTENTS - Continued

	Page No.	WP Sequence No.
START ENGINE		WP 0044
Figure 1.	0044-2	
Figure 2.	0044-3	
Figure 3.	0044-4	
Figure 4.	0044-6	
Figure 5.	0044-7	
OPERATE PARKING BRAKES		WP 0045
Figure 1.	0045-1	
OPERATE SERVICE BRAKES		WP 0046
Figure 1.	0046-2	
OPERATE TRAILER BRAKES		WP 0047
Figure 1.	0047-2	
OPERATE TRANSMISSION AND TRANSFER CASE		WP 0048
Figure 1.	0048-2	
Figure 2.	0048-4	
OPERATE ENGINE BRAKE		WP 0049
Figure 1.	0049-2	
DRIVE VEHICLE FORWARD		WP 0050
Figure 1.	0050-2	
DRIVE VEHICLE IN REVERSE		WP 0051
Figure 1.	0051-2	
DRIVE VEHICLE IN CITY TRAFFIC AND ON HIGHWAY		WP 0052

TABLE OF CONTENTS - Continued

	Page No.	WP Sequence No.
Figure 1.	0052-2	
Figure 2.	0052-3	
Figure 3.	0052-4	
DRIVE VEHICLE IN OFF-ROAD CONDITIONS		WP 0053
Figure 1.	0053-2	
Figure 2.	0053-3	
Figure 3.	0053-5	
DRIVE VEHICLE UP/DOWN STEEP GRADE		WP 0054
Figure 1.	0054-1	
Figure 2.	0054-2	
DRIVE VEHICLE IN SLIPPERY CONDITIONS		WP 0055
Figure 1.	0055-2	
PARK VEHICLE		WP 0056
Figure 1.	0056-1	
SHUT OFF ENGINE		WP 0057
Figure 1.	0057-1	
RETRIEVAL TOWING SYSTEM		WP 0058
Table 1. Maximum Towing Speed	0058-2	
Table 2. Vehicles and Vehicle Series	0058-3	
Table 3. Tow Adapters	0058-3	
Figure 1.	0058-5	
RETRIEVAL SYSTEM OPERATION		WP 0059

TABLE OF CONTENTS - Continued

	WP Sequence No. / Page No.
Figure 1.	0059-1
Figure 2.	0059-2
Figure 3.	0059-3
Figure 4.	0059-4
TOW HEMTT- FRONT LIFT	WP 0060
Figure 1.	0060-2
Figure 2.	0060-3
Figure 3.	0060-3
Figure 4.	0060-4
Figure 5.	0060-5
Figure 6.	0060-5
Figure 7.	0060-6
Figure 8.	0060-8
Figure 9.	0060-9
Figure 10.	0060-10
Figure 11.	0060-10
Figure 12.	0060-11
Figure 13.	0060-12
Figure 14.	0060-12
Figure 15.	0060-13
Figure 16.	0060-13
Figure 17.	0060-14

TABLE OF CONTENTS - Continued

WP Sequence No.
Page No.

Figure 18. 0060-15
Figure 19. 0060-16
Figure 20. 0060-17
Figure 21. 0060-18
Figure 22. 0060-18
Figure 23. 0060-20
Figure 24. 0060-21
Figure 25. 0060-21
Table 1. Maximum Towing Speed..... 0060-22
Figure 26. 0060-23
Figure 27. 0060-24
Figure 28. 0060-25
Figure 29. 0060-25
Figure 30. 0060-26
Figure 31. 0060-26
Figure 32. 0060-27
Figure 33. 0060-28
Figure 34. 0060-29
Figure 35. 0060-29
Figure 36. 0060-30
Figure 37. 0060-31
Figure 38. 0060-32

TABLE OF CONTENTS - Continued

	WP Sequence No. / Page No.
Figure 39.	0060-32
Figure 40.	0060-33
TOW M1074/M1075 - FRONT LIFT	WP 0061
Figure 1.	0061-2
Figure 2.	0061-3
Figure 3.	0061-3
Figure 4.	0061-4
Figure 5.	0061-5
Figure 6.	0061-5
Figure 7.	0061-6
Figure 8.	0061-7
Figure 9.	0061-8
Figure 10.	0061-9
Figure 11.	0061-9
Figure 12.	0061-10
Figure 13.	0061-10
Figure 14.	0061-11
Figure 15.	0061-12
Figure 16.	0061-12
Figure 17.	0061-13
Figure 18.	0061-15
Figure 19.	0061-16

TABLE OF CONTENTS - Continued

	WP Sequence No. / Page No.
Figure 20.	0061-17
Figure 21.	0061-18
Figure 22.	0061-18
Table 1. Maximum Towing Speed	0061-19
Figure 23.	0061-20
Figure 24.	0061-21
Figure 25.	0061-22
Figure 26.	0061-22
Figure 27.	0061-23
Figure 28.	0061-23
Figure 29.	0061-24
Figure 30.	0061-25
Figure 31.	0061-25
Figure 32.	0061-26
Figure 33.	0061-26
TOW M1070 - FRONT LIFT	WP 0062
Figure 1.	0062-2
Figure 2.	0062-3
Figure 3.	0062-3
Figure 4.	0062-4
Figure 5.	0062-5
Figure 6.	0062-5

TABLE OF CONTENTS - Continued

	WP Sequence No. Page No.
Figure 7.	0062-6
Figure 8.	0062-6
Figure 9.	0062-7
Figure 10.	0062-8
Figure 11.	0062-9
Figure 12.	0062-10
Figure 13.	0062-11
Figure 14.	0062-12
Figure 15.	0062-12
Figure 16.	0062-13
Figure 17.	0062-13
Figure 18.	0062-14
Figure 19.	0062-16
Figure 20.	0062-17
Figure 21.	0062-17
Table 1. Maximum Towing Speed	0062-18
Figure 22.	0062-19
Figure 23.	0062-21
Figure 24.	0062-21
Figure 25.	0062-22
Figure 26.	0062-23
Figure 27.	0062-23

TABLE OF CONTENTS - Continued

	WP Sequence No. / Page No.
Figure 28.	0062-24
Figure 29.	0062-25
Figure 30.	0062-25
Figure 31.	0062-26
Figure 32.	0062-26
Figure 33.	0062-27
TOW HEMTT M984A - REAR LIFT	WP 0063
Figure 1.	0063-2
Figure 2.	0063-2
Figure 3.	0063-3
Figure 4.	0063-4
Figure 5.	0063-5
Figure 6.	0063-5
Figure 7.	0063-6
Figure 8.	0063-7
Figure 9.	0063-8
Figure 10.	0063-9
Figure 11.	0063-10
Figure 12.	0063-11
Figure 13.	0063-12
Figure 14.	0063-13
Figure 15.	0063-14

TABLE OF CONTENTS - Continued

	WP Sequence No. Page No.
Figure 16.	0063-15
Figure 17.	0063-16
Figure 18.	0063-16
Figure 19.	0063-17
Figure 20.	0063-18
Figure 21.	0063-18
Figure 22.	0063-19
Figure 23.	0063-20
Figure 24.	0063-21
Figure 25.	0063-22
Figure 26.	0063-24
Figure 27.	0063-25
Figure 28.	0063-26
Figure 29.	0063-27
Figure 30.	0063-28
Figure 31.	0063-28
Figure 32.	0063-29
Figure 33.	0063-30
Figure 34.	0063-30
Figure 35.	0063-32
Figure 36.	0063-33
Figure 37.	0063-33

TABLE OF CONTENTS - Continued

	WP Sequence No. / Page No.
Figure 38.	0063-34
Figure 39.	0063-35
Figure 40.	0063-36
Table 1. Maximum Towing Speed	0063-37
Figure 41.	0063-37
Figure 42.	0063-38
Figure 43.	0063-39
TOW M911 - FRONT LIFT	WP 0064
Figure 1.	0064-2
Figure 2.	0064-3
Figure 3.	0064-3
Figure 4.	0064-4
Figure 5.	0064-5
Figure 6.	0064-5
Figure 7.	0064-6
Figure 8.	0064-6
Figure 9.	0064-7
Figure 10.	0064-8
Figure 11.	0064-9
Figure 12.	0064-10
Figure 13.	0064-11
Figure 14.	0064-12

TABLE OF CONTENTS - Continued

	WP Sequence No. Page No.
Figure 15.	0064-12
Figure 16.	0064-13
Figure 17.	0064-13
Figure 18.	0064-14
Figure 19.	0064-16
Figure 20.	0064-17
Figure 21.	0064-17
Table 1. Maximum Towing Speed	0064-18
Figure 22.	0064-19
Figure 23.	0064-20
Figure 24.	0064-21
Figure 25.	0064-21
Figure 26.	0064-22
Figure 27.	0064-22
Figure 28.	0064-23
Figure 29.	0064-24
Figure 30.	0064-24
Figure 31.	0064-25
Figure 32.	0064-26
Figure 33.	0064-26
Figure 34.	0064-27
Figure 35.	0064-27

TABLE OF CONTENTS - Continued

	WP Sequence No. / Page No.
TOW M915 - FRONT LIFT	WP 0065
Figure 1.	0065-2
Figure 2.	0065-3
Figure 3.	0065-3
Figure 4.	0065-4
Figure 5.	0065-5
Figure 6.	0065-5
Figure 7.	0065-6
Figure 8.	0065-7
Figure 9.	0065-8
Figure 10.	0065-9
Figure 11.	0065-9
Figure 12.	0065-10
Figure 13.	0065-11
Figure 14.	0065-11
Figure 15.	0065-12
Figure 16.	0065-12
Figure 17.	0065-13
Figure 18.	0065-14
Figure 19.	0065-15
Figure 20.	0065-17
Figure 21.	0065-18

TABLE OF CONTENTS - Continued

	WP Sequence No. / Page No.
Figure 22.	0065-18
Table 1. Maximum Towing Speed	0065-19
Figure 23.	0065-20
Figure 24.	0065-21
Figure 25.	0065-22
Figure 26.	0065-22
Figure 27.	0065-23
Figure 28.	0065-24
Figure 29.	0065-25
Figure 30.	0065-25
Figure 31.	0065-26
Figure 32.	0065-27
Figure 33.	0065-27
Figure 34.	0065-28
Figure 35.	0065-28
Figure 36.	0065-29
TOW M966 - FRONT LIFT	WP 0066
Figure 1.	0066-2
Figure 2.	0066-3
Figure 3.	0066-3
Figure 4.	0066-4
Figure 5.	0066-5

TABLE OF CONTENTS - Continued

WP Sequence No.
Page No.

Figure 6. 0066-5
Figure 7. 0066-6
Figure 8. 0066-7
Figure 9. 0066-8
Figure 10. 0066-9
Figure 11. 0066-10
Figure 12. 0066-10
Figure 13. 0066-11
Figure 14. 0066-12
Figure 15. 0066-12
Figure 16. 0066-13
Figure 17. 0066-13
Figure 18. 0066-15
Figure 19. 0066-16
Figure 20. 0066-16
Table 1. Maximum Towing Speed..... 0066-17
Figure 21. 0066-18
Figure 22. 0066-19
Figure 23. 0066-20
Figure 24. 0066-20
Figure 25. 0066-21
Figure 26. 0066-22

TABLE OF CONTENTS - Continued

	WP Sequence No. / Page No.
Figure 27.	0066-23
Figure 28.	0066-24
Figure 29.	0066-25
Figure 30.	0066-26
Figure 31.	0066-26
Figure 32.	0066-27
Figure 33.	0066-27
Figure 34.	0066-28
TOW M1074/M1075 - REAR LIFT	WP 0067
Figure 1.	0067-2
Figure 2.	0067-3
Figure 3.	0067-3
Figure 4.	0067-4
Figure 5.	0067-5
Figure 6.	0067-5
Figure 7.	0067-6
Figure 8.	0067-7
Figure 9.	0067-7
Figure 10.	0067-8
Figure 11.	0067-9
Figure 12.	0067-10
Figure 13.	0067-11

TABLE OF CONTENTS - Continued

WP Sequence No.
Page No.

Figure 14. 0067-12
Figure 15. 0067-13
Figure 16. 0067-14
Figure 17. 0067-14
Figure 18. 0067-15
Figure 19. 0067-15
Figure 20. 0067-16
Figure 21. 0067-17
Figure 22. 0067-18
Figure 23. 0067-19
Figure 24. 0067-19
Table 1. Maximum Towing Speed..... 0067-20
Figure 25. 0067-21
Figure 26. 0067-22
Figure 27. 0067-23
Figure 28. 0067-23
Figure 29. 0067-24
Figure 30. 0067-24
Figure 31. 0067-25
Figure 32. 0067-26
Figure 33. 0067-26
Figure 34. 0067-27

TABLE OF CONTENTS - Continued

	WP Sequence No. / Page No.
Figure 35.	0067-28
Figure 36.	0067-28
Figure 37.	0067-29
Figure 38.	0067-29
Figure 39.	0067-30
Figure 40.	0067-30
TOW M35 - REAR LIFT	WP 0068
Figure 1.	0068-2
Figure 2.	0068-3
Figure 3.	0068-3
Figure 4.	0068-4
Figure 5.	0068-5
Figure 6.	0068-5
Figure 7.	0068-6
Figure 8.	0068-7
Figure 9.	0068-8
Figure 10.	0068-9
Figure 11.	0068-9
Figure 12.	0068-10
Figure 13.	0068-11
Figure 14.	0068-12
Figure 15.	0068-12

TABLE OF CONTENTS - Continued

WP Sequence No.
Page No.

Figure 16. 0068-13
Figure 17. 0068-13
Figure 18. 0068-15
Figure 19. 0068-16
Figure 20. 0068-16
Table 1. Maximum Towing Speed..... 0068-17
Figure 21. 0068-18
Figure 22. 0068-19
Figure 23. 0068-20
Figure 24. 0068-20
Figure 25. 0068-21
Figure 26. 0068-22
Figure 27. 0068-23
Figure 28. 0068-23
Figure 29. 0068-24
Figure 30. 0068-25
Figure 31. 0068-26
Figure 32. 0068-26
Figure 33. 0068-27
Figure 34. 0068-27
TOW M35 - FRONT LIFT USING MULTI-USE ADAPTER (MUA)..... WP 0069
Figure 1. 0069-2

TABLE OF CONTENTS - Continued

	WP Sequence No. Page No.
Figure 2.	0069-3
Figure 3.	0069-3
Figure 4.	0069-4
Figure 5.	0069-5
Figure 6.	0069-5
Figure 7.	0069-6
Figure 8.	0069-7
Figure 9.	0069-8
Figure 10.	0069-9
Figure 11.	0069-10
Figure 12.	0069-10
Figure 13.	0069-11
Figure 14.	0069-12
Figure 15.	0069-13
Figure 16.	0069-13
Figure 17.	0069-14
Figure 18.	0069-15
Figure 19.	0069-16
Figure 20.	0069-16
Table 1. Maximum Towing Speed	0069-17
Figure 21.	0069-18
Figure 22.	0069-20

TABLE OF CONTENTS - Continued

	WP Sequence No. / Page No.
Figure 23.	0069-21
Figure 24.	0069-21
Figure 25.	0069-22
Figure 26.	0069-23
Figure 27.	0069-24
Figure 28.	0069-25
Figure 29.	0069-26
Figure 30.	0069-27
Figure 31.	0069-28
Figure 32.	0069-28
Figure 33.	0069-29
Figure 34.	0069-29
Figure 35.	0069-30
TOW M939 - REAR LIFT	WP 0070
Figure 1.	0070-2
Figure 2.	0070-3
Figure 3.	0070-3
Figure 4.	0070-4
Figure 5.	0070-5
Figure 6.	0070-5
Figure 7.	0070-6
Figure 8.	0070-7

TABLE OF CONTENTS - Continued

	WP Sequence No. Page No.
Figure 9.	0070-8
Figure 10.	0070-9
Figure 11.	0070-9
Figure 12.	0070-10
Figure 13.	0070-11
Figure 14.	0070-11
Figure 15.	0070-12
Figure 16.	0070-13
Figure 17.	0070-13
Figure 18.	0070-15
Figure 19.	0070-15
Figure 20.	0070-16
Table 1. Maximum Towing Speed	0070-17
Figure 21.	0070-17
Figure 22.	0070-19
Figure 23.	0070-19
Figure 24.	0070-20
Figure 25.	0070-21
Figure 26.	0070-22
Figure 27.	0070-23
Figure 28.	0070-24
Figure 29.	0070-25

TABLE OF CONTENTS - Continued

	WP Sequence No. / Page No.
Figure 30.	0070-26
Figure 31.	0070-27
Figure 32.	0070-27
Figure 33.	0070-28
Figure 34.	0070-28
TOW M939 - FRONT LIFT USING MULTI-USE ADAPTER (MUA)	WP 0071
Figure 1.	0071-2
Figure 2.	0071-3
Figure 3.	0071-3
Figure 4.	0071-4
Figure 5.	0071-5
Figure 6.	0071-5
Figure 7.	0071-6
Figure 8.	0071-7
Figure 9.	0071-7
Figure 10.	0071-8
Figure 11.	0071-9
Figure 12.	0071-10
Figure 13.	0071-11
Figure 14.	0071-11
Figure 15.	0071-12
Figure 16.	0071-13

TABLE OF CONTENTS - Continued

	WP Sequence No. Page No.
Figure 17.	0071-13
Figure 18.	0071-14
Figure 19.	0071-16
Figure 20.	0071-16
Figure 21.	0071-17
Table 1. Maximum Towing Speed	0071-18
Figure 22.	0071-18
Figure 23.	0071-20
Figure 24.	0071-21
Figure 25.	0071-21
Figure 26.	0071-22
Figure 27.	0071-23
Figure 28.	0071-24
Figure 29.	0071-25
Figure 30.	0071-26
Figure 31.	0071-27
Figure 32.	0071-28
Figure 33.	0071-28
Figure 34.	0071-29
Figure 35.	0071-30
Figure 36.	0071-31
TOW MTVR - REAR LIFT USING MULTI-USE ADAPTER (MUA)	WP 0072

TABLE OF CONTENTS - Continued

	WP Sequence No. Page No.
Figure 1.	0072-2
Figure 2.	0072-3
Figure 3.	0072-3
Figure 4.	0072-4
Figure 5.	0072-5
Figure 6.	0072-5
Figure 7.	0072-6
Figure 8.	0072-7
Figure 9.	0072-8
Figure 10.	0072-9
Figure 11.	0072-10
Figure 12.	0072-11
Figure 13.	0072-12
Figure 14.	0072-12
Figure 15.	0072-13
Figure 16.	0072-15
Figure 17.	0072-16
Figure 18.	0072-16
Table 1. Maximum Towing Speed	0072-17
Figure 19.	0072-18
Figure 20.	0072-20
Figure 21.	0072-21

TABLE OF CONTENTS - Continued

	WP Sequence No. / Page No.
Figure 22.	0072-21
Figure 23.	0072-22
Figure 24.	0072-22
Figure 25.	0072-23
Figure 26.	0072-24
Figure 27.	0072-25
Figure 28.	0072-26
Figure 29.	0072-26
Figure 30.	0072-27
Figure 31.	0072-28
Figure 32.	0072-29
TOW MTVR - FRONT LIFT USING MULTI-USE ADAPTER (MUA).....	WP 0073
Figure 1.	0073-2
Figure 2.	0073-3
Figure 3.	0073-3
Figure 4.	0073-4
Figure 5.	0073-5
Figure 6.	0073-5
Figure 7.	0073-6
Figure 8.	0073-7
Figure 9.	0073-8
Figure 10.	0073-9

TABLE OF CONTENTS - Continued

WP Sequence No.
Page No.

Figure 11. 0073-10
Figure 12. 0073-11
Figure 13. 0073-11
Figure 14. 0073-12
Figure 15. 0073-14
Figure 16. 0073-15
Figure 17. 0073-16
Table 1. Maximum Towing Speed..... 0073-17
Figure 18. 0073-17
Figure 19. 0073-19
Figure 20. 0073-20
Figure 21. 0073-20
Figure 22. 0073-21
Figure 23. 0073-21
Figure 24. 0073-22
Figure 25. 0073-23
Figure 26. 0073-24
Figure 27. 0073-25
Figure 28. 0073-25
Figure 29. 0073-26
Figure 30. 0073-27
Figure 31. 0073-28

TABLE OF CONTENTS - Continued

	WP Sequence No. / Page No.
TOW FMTV - FRONT LIFT USING MULTI-USE ADAPTER (MUA).....	WP 0074
Figure 1.	0074-2
Figure 2.	0074-3
Figure 3.	0074-3
Figure 4.	0074-4
Figure 5.	0074-5
Figure 6.	0074-5
Figure 7.	0074-6
Figure 8.	0074-7
Figure 9.	0074-8
Figure 10.	0074-9
Figure 11.	0074-10
Figure 12.	0074-11
Figure 13.	0074-11
Figure 14.	0074-12
Figure 15.	0074-13
Figure 16.	0074-15
Figure 17.	0074-16
Figure 18.	0074-16
Table 1. Maximum Towing Speed.....	0074-17
Figure 19.	0074-18
Figure 20.	0074-19

TABLE OF CONTENTS - Continued

	WP Sequence No. / Page No.
Figure 21.	0074-20
Figure 22.	0074-20
Figure 23.	0074-21
Figure 24.	0074-21
Figure 25.	0074-22
Figure 26.	0074-23
Figure 27.	0074-24
Figure 28.	0074-25
Figure 29.	0074-26
Figure 30.	0074-26
Figure 31.	0074-27
Figure 32.	0074-27
Figure 33.	0074-28
TOW M1008 - REAR LIFT	WP 0075
Figure 1.	0075-2
Figure 2.	0075-3
Figure 3.	0075-3
Figure 4.	0075-4
Figure 5.	0075-5
Figure 6.	0075-5
Figure 7.	0075-6
Figure 8.	0075-7

TABLE OF CONTENTS - Continued

	WP Sequence No. Page No.
Figure 9.	0075-7
Figure 10.	0075-8
Figure 11.	0075-9
Figure 12.	0075-10
Figure 13.	0075-11
Figure 14.	0075-12
Figure 15.	0075-12
Figure 16.	0075-13
Figure 17.	0075-14
Figure 18.	0075-14
Figure 19.	0075-15
Figure 20.	0075-16
Figure 21.	0075-16
Table 1. Maximum Towing Speed	0075-17
Figure 22.	0075-18
Figure 23.	0075-19
Figure 24.	0075-20
Figure 25.	0075-20
Figure 26.	0075-21
Figure 27.	0075-22
Figure 28.	0075-23
Figure 29.	0075-23

TABLE OF CONTENTS - Continued

	WP Sequence No. / Page No.
Figure 30.	0075-24
Figure 31.	0075-25
Figure 32.	0075-26
Figure 33.	0075-26
Figure 34.	0075-27
Figure 35.	0075-27
TOW M1008 - FRONT LIFT USING MULTI-USE ADAPTER (MUA).....	WP 0076
Figure 1.	0076-2
Figure 2.	0076-3
Figure 3.	0076-3
Figure 4.	0076-4
Figure 5.	0076-5
Figure 6.	0076-5
Figure 7.	0076-6
Figure 8.	0076-7
Figure 9.	0076-8
Figure 10.	0076-9
Figure 11.	0076-10
Figure 12.	0076-11
Figure 13.	0076-12
Figure 14.	0076-13
Figure 15.	0076-14

TABLE OF CONTENTS - Continued

	WP Sequence No. / Page No.
Figure 16.	0076-15
Figure 17.	0076-16
Figure 18.	0076-16
Table 1. Maximum Towing Speed	0076-17
Figure 19.	0076-18
Figure 20.	0076-19
Figure 21.	0076-20
Figure 22.	0076-21
Figure 23.	0076-22
Figure 24.	0076-22
Figure 25.	0076-23
Figure 26.	0076-24
Figure 27.	0076-25
Figure 28.	0076-26
Figure 29.	0076-27
Figure 30.	0076-27
Figure 31.	0076-28
Figure 32.	0076-29
Figure 33.	0076-30
TOW M966 - REAR LIFT	WP 0077
Figure 1.	0077-2
Figure 2.	0077-3

TABLE OF CONTENTS - Continued

	WP Sequence No. Page No.
Figure 3.	0077-3
Figure 4.	0077-4
Figure 5.	0077-5
Figure 6.	0077-5
Figure 7.	0077-6
Figure 8.	0077-7
Figure 9.	0077-8
Figure 10.	0077-9
Figure 11.	0077-9
Figure 12.	0077-10
Figure 13.	0077-11
Figure 14.	0077-12
Figure 15.	0077-13
Figure 16.	0077-13
Figure 17.	0077-15
Figure 18.	0077-16
Figure 19.	0077-16
Table 1. Maximum Towing Speed	0077-17
Figure 20.	0077-18
Figure 21.	0077-19
Figure 22.	0077-20
Figure 23.	0077-20

TABLE OF CONTENTS - Continued

	WP Sequence No. Page No.
Figure 24.	0077-21
Figure 25.	0077-22
Figure 26.	0077-23
Figure 27.	0077-24
Figure 28.	0077-25
Figure 29.	0077-26
Figure 30.	0077-27
Figure 31.	0077-27
Figure 32.	0077-28
Figure 33.	0077-28
TOW M915 - REAR LIFT	WP 0078
Figure 1.	0078-2
Figure 2.	0078-3
Figure 3.	0078-3
Figure 4.	0078-4
Figure 5.	0078-5
Figure 6.	0078-5
Figure 7.	0078-6
Figure 8.	0078-7
Figure 9.	0078-8
Figure 10.	0078-9
Figure 11.	0078-9

TABLE OF CONTENTS - Continued

WP Sequence No.
Page No.

Figure 12. 0078-10
Figure 13. 0078-11
Figure 14. 0078-12
Figure 15. 0078-12
Figure 16. 0078-13
Figure 17. 0078-13
Figure 18. 0078-15
Figure 19. 0078-15
Figure 20. 0078-16
Table 1. Maximum Towing Speed..... 0078-17
Figure 21. 0078-17
Figure 22. 0078-19
Figure 23. 0078-19
Figure 24. 0078-20
Figure 25. 0078-20
Figure 26. 0078-21
Figure 27. 0078-22
Figure 28. 0078-23
Figure 29. 0078-24
Figure 30. 0078-25
Figure 31. 0078-25
Figure 32. 0078-26

TABLE OF CONTENTS - Continued

	Page No.	WP Sequence No.
Figure 33.	0078-26	
Figure 34.	0078-27	
TOW M1070 - REAR LIFT		WP 0079
Figure 1.	0079-2	
Figure 2.	0079-3	
Figure 3.	0079-4	
Figure 4.	0079-5	
Figure 5.	0079-5	
Figure 6.	0079-6	
Figure 7.	0079-7	
Figure 8.	0079-7	
Figure 9.	0079-8	
Figure 10.	0079-8	
Figure 11.	0079-9	
Figure 12.	0079-10	
Figure 13.	0079-10	
Figure 14.	0079-11	
Figure 15.	0079-12	
Figure 16.	0079-12	
Figure 17.	0079-13	
Figure 18.	0079-13	
Figure 19.	0079-15	

TABLE OF CONTENTS - Continued

	WP Sequence No. / Page No.
Figure 20.	0079-15
Figure 21.	0079-16
Table 1. Maximum Towing Speed	0079-17
Figure 22.	0079-17
Figure 23.	0079-19
Figure 24.	0079-19
Figure 25.	0079-20
Figure 26.	0079-20
Figure 27.	0079-21
Figure 28.	0079-22
Figure 29.	0079-22
Figure 30.	0079-23
Figure 31.	0079-23
Figure 32.	0079-24
Figure 33.	0079-24
Figure 34.	0079-25
Figure 35.	0079-25
TOW M911 - REAR LIFT	WP 0080
Figure 1.	0080-2
Figure 2.	0080-3
Figure 3.	0080-3
Figure 4.	0080-4

TABLE OF CONTENTS - Continued

	WP Sequence No. Page No.
Figure 5.	0080-5
Figure 6.	0080-5
Figure 7.	0080-6
Figure 8.	0080-7
Figure 9.	0080-8
Figure 10.	0080-8
Figure 11.	0080-9
Figure 12.	0080-9
Figure 13.	0080-10
Figure 14.	0080-11
Figure 15.	0080-11
Figure 16.	0080-12
Figure 17.	0080-12
Figure 18.	0080-14
Figure 19.	0080-14
Figure 20.	0080-15
Table 1. Maximum Towing Speed	0080-16
Figure 21.	0080-16
Figure 22.	0080-18
Figure 23.	0080-18
Figure 24.	0080-19
Figure 25.	0080-19

TABLE OF CONTENTS - Continued

	WP Sequence No. / Page No.
Figure 26.	0080-20
Figure 27.	0080-21
Figure 28.	0080-22
Figure 29.	0080-23
Figure 30.	0080-24
Figure 31.	0080-24
Figure 32.	0080-25
Figure 33.	0080-25
Figure 34.	0080-26
TOW HEMTT - REAR LIFT	WP 0081
Figure 1.	0081-2
Figure 2.	0081-3
Figure 3.	0081-3
Figure 4.	0081-4
Figure 5.	0081-5
Figure 6.	0081-5
Figure 7.	0081-6
Figure 8.	0081-7
Figure 9.	0081-7
Figure 10.	0081-8
Figure 11.	0081-9
Figure 12.	0081-10

TABLE OF CONTENTS - Continued

	WP Sequence No. Page No.
Figure 13.	0081-12
Figure 14.	0081-13
Figure 15.	0081-14
Figure 16.	0081-15
Figure 17.	0081-15
Figure 18.	0081-16
Figure 19.	0081-17
Figure 20.	0081-18
Figure 21.	0081-18
Figure 22.	0081-20
Figure 23.	0081-21
Figure 24.	0081-21
Figure 25.	0081-22
Figure 26.	0081-23
Figure 27.	0081-24
Table 1. Maximum Towing Speed	0081-25
Figure 28.	0081-25
Figure 29.	0081-26
Figure 30.	0081-27
Figure 31.	0081-28
Figure 32.	0081-28
Figure 33.	0081-29

TABLE OF CONTENTS - Continued

	WP Sequence No. / Page No.
Figure 34.	0081-29
Figure 35.	0081-30
Figure 36.	0081-31
Figure 37.	0081-31
Figure 38.	0081-32
Figure 39.	0081-32
Figure 40.	0081-33
Figure 41.	0081-33
Figure 42.	0081-34
Figure 43.	0081-34
Figure 44.	0081-35
Figure 45.	0081-36
Figure 46.	0081-36
Figure 47.	0081-37
Figure 48.	0081-38
OPERATE RIFLE STOWAGE MOUNT	WP 0082
Figure 1.	0082-2
Figure 2.	0082-3
PORTABLE WORK LAMP OPERATION	WP 0083
Figure 1.	0083-1
Figure 2.	0083-2
Figure 3.	0083-3

TABLE OF CONTENTS - Continued

	Page No.	WP Sequence No.
OPERATE DOME LIGHT		WP 0084
Figure 1.	0084-2	
OPERATE PANEL LIGHTS		WP 0085
Figure 1.	0085-1	
OPERATE PARKING LIGHTS		WP 0086
Figure 1.	0086-2	
OPERATE SERVICE DRIVE LIGHTS		WP 0087
Figure 1.	0087-2	
Figure 2.	0087-2	
Figure 3.	0087-3	
Figure 4.	0087-4	
OPERATE STOPLIGHTS		WP 0088
Figure 1.	0088-1	
OPERATE CLEARANCE LIGHTS		WP 0089
Figure 1.	0089-2	
OPERATE BLACKOUT DRIVE LIGHT		WP 0090
Figure 1.	0090-2	
OPERATE BLACKOUT MARKERS		WP 0091
Figure 1.	0091-2	
OPERATE WORK LIGHTS		WP 0092
Figure 1.	0092-1	
Figure 2.	0092-2	

TABLE OF CONTENTS - Continued

	Page No.	WP Sequence No.
Figure 3.	0092-3	
Figure 4.	0092-4	
Figure 5.	0092-4	
Figure 6.	0092-5	
Figure 7.	0092-5	
Figure 8.	0092-6	
Figure 9.	0092-7	
REAR BEACON LIGHT OPERATION		WP 0093
Figure 1.	0093-1	
Figure 2.	0093-2	
Figure 3.	0093-3	
Figure 4.	0093-3	
Figure 5.	0093-4	
Figure 6.	0093-5	
Figure 7.	0093-5	
PORTABLE BEACON LIGHT OPERATION		WP 0094
Figure 1.	0094-1	
Figure 2.	0094-2	
Figure 3.	0094-3	
Figure 4.	0094-4	
Figure 5.	0094-5	
OPERATE TURN SIGNALS		WP 0095

TABLE OF CONTENTS - Continued

	Page No.	WP Sequence No.
Figure 1.	0095-2	
OPERATE EMERGENCY FLASHERS		WP 0096
Figure 1.	0096-2	
INSTALL/REMOVE WHEEL CHOCKS		WP 0097
Figure 1.	0097-1	
Figure 2.	0097-2	
CHANGE VEHICLE WEIGHT INDICATOR		WP 0098
Figure 1.	0098-1	
OPERATE 24V BATTERY DISCONNECT SWITCH		WP 0099
Figure 1.	0099-2	
ADJUST AIR-RIDE SEAT		WP 0100
Figure 1.	0100-2	
OPERATE FOUR-POINT SEATBELT		WP 0101
Figure 1.	0101-1	
GROVE CRANE OPERATION (MANUAL CONTROL)		WP 0102
Figure 1.	0102-3	
Figure 2.	0102-4	
Figure 3.	0102-4	
Figure 4.	0102-6	
Figure 5.	0102-7	
Figure 6.	0102-7	
Figure 7.	0102-8	

TABLE OF CONTENTS - Continued

	WP Sequence No. / Page No.
Figure 8.	0102-9
Figure 9.	0102-10
Figure 10.	0102-11
Figure 11.	0102-11
Figure 12.	0102-12
Figure 13.	0102-13
Figure 14.	0102-14
Figure 15.	0102-16
Figure 16.	0102-17
Figure 17.	0102-19
Figure 18.	0102-20
Figure 19.	0102-21
Figure 20.	0102-22
Figure 21.	0102-23
Figure 22.	0102-24
Figure 23.	0102-26
Figure 24.	0102-27
Figure 25.	0102-28
Figure 26.	0102-29
Figure 27.	0102-30
GROVE CRANE OPERATION (REMOTE CONTROL)	WP 0103
Figure 1.	0103-2

TABLE OF CONTENTS - Continued

	WP Sequence No. / Page No.
Figure 2.	0103-3
Figure 3.	0103-4
Figure 4.	0103-6
Figure 5.	0103-7
Figure 6.	0103-8
Figure 7.	0103-9
Figure 8.	0103-10
Figure 9.	0103-10
Figure 10.	0103-12
Figure 11.	0103-13
TOW SPADE INSTALLATION/REMOVAL	WP 0104
Figure 1.	0104-2
Figure 2.	0104-3
Figure 3.	0104-3
Figure 4.	0104-4
Figure 5.	0104-4
Figure 6.	0104-5
Figure 7.	0104-5
Figure 8.	0104-6
Figure 9.	0104-7
Figure 10.	0104-8
Figure 11.	0104-8

TABLE OF CONTENTS - Continued

	WP Sequence No. / Page No.
Figure 12.	0104-9
Figure 13.	0104-9
Figure 14.	0104-10
Figure 15.	0104-11
Figure 16.	0104-11
Figure 17.	0104-12
Figure 18.	0104-12
Figure 19.	0104-13
Figure 20.	0104-13
Figure 21.	0104-14
Figure 22.	0104-15
Figure 23.	0104-15
Figure 24.	0104-16
Figure 25.	0104-16
Figure 26.	0104-17
Figure 27.	0104-17
Figure 28.	0104-18
Figure 29.	0104-18
Figure 30.	0104-19
60-TON TACKLE BLOCK INSTALLATION/REMOVAL	WP 0105
Figure 1.	0105-1
Figure 2.	0105-2

TABLE OF CONTENTS - Continued

	Page No.	WP Sequence No.
Figure 3.	0105-2	
Figure 4.	0105-3	
Figure 5.	0105-4	
Figure 6.	0105-5	
Figure 7.	0105-5	
Figure 8.	0105-6	
VISE OPERATION		WP 0106
Figure 1.	0106-1	
Figure 2.	0106-2	
POWER PLANT REMOVAL/INSTALLATION		WP 0107
Table 1. Technical Manual Listing	0107-1	
Figure 1.	0107-3	
Figure 2.	0107-5	
Figure 3.	0107-6	
Figure 4.	0107-7	
Figure 5.	0107-7	
Figure 6.	0107-8	
Figure 7.	0107-10	
Figure 8.	0107-10	
LIMP HOME/FLAT TIRE WITH NO SPARE		WP 0108
Figure 1.	0108-2	
Figure 2.	0108-3	

TABLE OF CONTENTS - Continued

WP Sequence No.
Page No.

Figure 3. 0108-4
Figure 4. 0108-5
Figure 5. 0108-5
Figure 6. 0108-6
Figure 7. 0108-7
Figure 8. 0108-8
Figure 9. 0108-8
Figure 10. 0108-9
Figure 11. 0108-9
Figure 12. 0108-10
Figure 13. 0108-11
Figure 14. 0108-12
Figure 15. 0108-13
Figure 16. 0108-14
Figure 17. 0108-15
Figure 18. 0108-15
Figure 19. 0108-16
Figure 20. 0108-17
Figure 21. 0108-17
Figure 22. 0108-18
Figure 23. 0108-19
Figure 24. 0108-20

TABLE OF CONTENTS - Continued

	WP Sequence No. / Page No.
Figure 25.	0108-20
Figure 26.	0108-21
Figure 27.	0108-22
Figure 28.	0108-23
Figure 29.	0108-23
Figure 30.	0108-24
Figure 31.	0108-25
Figure 32.	0108-26
PERFORM IMMEDIATE ACTION FOR LOSS OF AIR SUPPLY SYSTEM PRESSURE	WP 0109
Figure 1.	0109-1
INSTALL/REMOVE TIRE CHAINS	WP 0110
Figure 1.	0110-2
Figure 2.	0110-2
Figure 3.	0110-3
Figure 4.	0110-4
Figure 5.	0110-5
Figure 6.	0110-5
Figure 7.	0110-6
Figure 8.	0110-6
FORD WATER OBSTACLE	WP 0111
Figure 1.	0111-2

TABLE OF CONTENTS - Continued

	WP Sequence No. / Page No.
INTERIM NUCLEAR, BIOLOGICAL, AND CHEMICAL (NBC) DECONTAMINATION PROCEDURES	WP 0112
OPERATE TIRE CARRIER USING HAND PUMP	WP 0113
Figure 1.	0113-2
Figure 2.	0113-3
Figure 3.	0113-3
Figure 4.	0113-4
Figure 5.	0113-5
Figure 6.	0113-6
Figure 7.	0113-7
Figure 8.	0113-8
Figure 9.	0113-9
Figure 10.	0113-10
Figure 11.	0113-11
Figure 12.	0113-12
Figure 13.	0113-13
Figure 14.	0113-14
Figure 15.	0113-15
Figure 16.	0113-16
OPERATE TIRE CARRIER USING OUTSIDE AIR SOURCE	WP 0114
Figure 1.	0114-2
Figure 2.	0114-3

TABLE OF CONTENTS - Continued

	WP Sequence No. / Page No.
Figure 3.	0114-3
Figure 4.	0114-4
Figure 5.	0114-5
Figure 6.	0114-7
Figure 7.	0114-8
Figure 8.	0114-9
Figure 9.	0114-10
Figure 10.	0114-12
Figure 11.	0114-13
Figure 12.	0114-14
Figure 13.	0114-15
Figure 14.	0114-16
Figure 15.	0114-17
Figure 16.	0114-18
SELF-RECOVER VEHICLE USING SELF-RECOVERY WINCH	WP 0115
Figure 1.	0115-1
Figure 2.	0115-2
Figure 3.	0115-3
Figure 4.	0115-4
Figure 5.	0115-5
Figure 6.	0115-6
Figure 7.	0115-7

TABLE OF CONTENTS - Continued

	Page No.	WP Sequence No.
Table 1. Self-Recovery Winch Pull Capacity	0115-9	
Figure 8.	0115-10	
Figure 9.	0115-12	
Figure 10.	0115-14	
Figure 11.	0115-15	
Figure 12.	0115-16	
Figure 13.	0115-17	
Figure 14.	0115-19	
SNATCH BLOCK INSTALLATION/REMOVAL		WP 0116
Figure 1.	0116-1	
Figure 2.	0116-2	
CONNECT/DISCONNECT SELF-RECOVERY WINCH CABLE TO ANOTHER VEHICLE		WP 0117
Figure 1.	0117-2	
Figure 2.	0117-3	
Figure 3.	0117-4	
Figure 4.	0117-5	
TOW DISABLED VEHICLE		WP 0118
Figure 1.	0118-2	
CONNECT/DISCONNECT TOW BAR		WP 0119
Figure 1.	0119-2	
Figure 2.	0119-3	

TABLE OF CONTENTS - Continued

	Page No.	WP Sequence No.
Figure 3.	0119-3	
Figure 4.	0119-5	
Figure 5.	0119-6	
Figure 6.	0119-8	
Figure 7.	0119-9	
Figure 8.	0119-10	
Figure 9.	0119-11	
Figure 10.	0119-12	
Figure 11.	0119-13	
Figure 12.	0119-14	
Figure 13.	0119-15	
Figure 14.	0119-16	
OPERATE VEHICLE IN EXTREME HEAT		WP 0120
Figure 1.	0120-2	
OPERATION IN EXTREME DUST		WP 0121
Figure 1.	0121-1	
Figure 2.	0121-2	
Figure 3.	0121-3	
OPERATE VEHICLE IN SAND OR MUD		WP 0122
Figure 1.	0122-2	
Figure 2.	0122-4	
OPERATE VEHICLE IN DESERT ENVIRONMENT		WP 0123

TABLE OF CONTENTS - Continued

	WP Sequence No. / Page No.
OPERATE VEHICLE IN COLD ENVIRONMENT (32°F [0°C] to -25°F [-32°C])	WP 0124
Figure 1.	0124-2
OPERATION IN EXTREME COLD ENVIRONMENT	WP 0125
Figure 1.	0125-3
OPERATE VEHICLE IN FOREST OR ROCKY TERRAIN	WP 0126
OPERATE VEHICLE IN SALTWATER AREAS	WP 0127
SET UP/SECURE HIGHWAY EMERGENCY MARKER KIT	WP 0128
Figure 1.	0128-1
Figure 2.	0128-2
Figure 3.	0128-2
Figure 4.	0128-2
Figure 5.	0128-3
Figure 6.	0128-3
Figure 7.	0128-4
Figure 8.	0128-4
Figure 9.	0128-5
Figure 10.	0128-5
Figure 11.	0128-6
MANUALLY RELEASE SPRING BRAKES	WP 0129
Figure 1.	0129-1
Figure 2.	0129-2

TABLE OF CONTENTS - Continued

	Page No.	WP Sequence No.
Figure 3.	0129-3	
Figure 4.	0129-4	
Figure 5.	0129-4	
SLAVE START VEHICLE		WP 0130
Figure 1.	0130-2	
Figure 2.	0130-3	
Figure 3.	0130-3	
Figure 4.	0130-4	
Figure 5.	0130-5	
Figure 6.	0130-5	
Figure 7.	0130-7	
Figure 8.	0130-7	
Figure 9.	0130-8	
PERFORM IMMEDIATE ACTION FOR LOSS OF HYDRAULIC SYSTEM		WP 0131
PERFORM EMERGENCY HYDRAULIC OPERATION WHEN GROVE CRANE ELECTRICAL POWER FAILS		WP 0132
Figure 1.	0132-2	
LIMP HOME/TRANSMISSION FAULT		WP 0133
Figure 1.	0133-2	
STOWAGE AND SIGN GUIDE		WP 0134
Table 1. Inside Driver Side Door	0134-1	
Table 2. Front Exterior	0134-2	

TABLE OF CONTENTS - Continued

	WP Sequence No. / Page No.
Table 3. M984A4 Wrecker Cabin	0134-3
Table 4. M984A4 Wrecker Driver Side Exterior	0134-4
Table 5. M984A4 Wrecker Passenger Side Exterior	0134-5
Table 6. M984A4 Wrecker Rear Exterior	0134-6
Table 7. M984A4 Miscellaneous Decals/Placards/ Plates/Stencils	0134-7

Volume 2

Chapter 3 - Troubleshooting Procedures

BUZZER SOUNDS AND AIR INDICATOR IS LIT	WP 0135
Figure 1.	0135-2
Figure 2.	0135-3
Figure 3.	0135-4
Figure 4.	0135-5
Figure 5.	0135-6
Figure 6.	0135-7
WINDSHIELD WASHER WILL NOT OPERATE	WP 0136
Figure 1.	0136-1
Figure 2.	0136-2
Figure 3.	0136-3
Figure 4.	0136-4
Figure 5.	0136-4
Figure 6.	0136-5

TABLE OF CONTENTS - Continued

	WP Sequence No. / Page No.
AIR SYSTEM LOSES PRESSURE DURING OPERATION	WP 0137
Figure 1.	0137-2
Figure 2.	0137-3
Figure 3.	0137-4
Figure 4.	0137-5
TRAILER BRAKE DOES NOT APPLY WHEN SERVICE BRAKE TREADLE OR PARKING BRAKE IS USED	WP 0138
Figure 1.	0138-2
Figure 2.	0138-3
AIR HORN WILL NOT OPERATE	WP 0139
Figure 1.	0139-2
Figure 2.	0139-3
Figure 3.	0139-4
ONE OR MORE LIGHTING CIRCUITS NOT OPERATING	WP 0140
Figure 1.	0140-2
Figure 2.	0140-3
FAILS TO CRANK WHEN ENGINE START SWITCH IS TURNED TO START POSITION	WP 0141
Figure 1.	0141-1
Figure 2.	0141-2
CRANKS BUT FAILS TO START	WP 0142
Figure 1.	0142-1
Figure 2.	0142-2

TABLE OF CONTENTS - Continued

	Page No.	WP Sequence No.
Figure 3.	0142-3	
STARTS OR RUNS ROUGHLY AFTER PROPER WARM-UP, DOES NOT MAKE FULL POWER, OR MAKES EXCESSIVE EXHAUST SMOKE		WP 0143
Figure 1.	0143-2	
Figure 2.	0143-3	
Figure 3.	0143-4	
ENGINE OVERHEATS		WP 0144
Figure 1.	0144-2	
Figure 2.	0144-3	
LOW OIL PRESSURE GAUGE INDICATION		WP 0145
Figure 1.	0145-1	
EXCESSIVE OIL CONSUMPTION		WP 0146
Figure 1.	0146-2	
HEAVY-DUTY WINCH WILL NOT OPERATE IN REMOTE CONTROL		WP 0147
Figure 1.	0147-2	
Figure 2.	0147-3	
Figure 3.	0147-4	
WINCH CABLE WILL NOT REEL OUT OR IN, OR OPERATES SLOWLY IN REMOTE CONTROL		WP 0148
Figure 1.	0148-2	
Figure 2.	0148-3	
Figure 3.	0148-4	

TABLE OF CONTENTS - Continued

	WP Sequence No. / Page No.
HEAVY-DUTY WINCH WILL NOT OPERATE IN MANUAL CONTROL.....	WP 0149
Figure 1.	0149-2
Figure 2.	0149-3
Figure 3.	0149-4
WINCH CABLE WILL NOT REEL OUT OR IN, OR OPERATES SLOWLY IN MANUAL CONTROL.....	WP 0150
Figure 1.	0150-2
Figure 2.	0150-3
Figure 3.	0150-4
CONTROLS (REMOTE OR MANUAL) STICKING IN ENGAGED POSITION.....	WP 0151
Figure 1.	0151-2
Figure 2.	0151-3
Figure 3.	0151-5
Figure 4.	0151-6
Figure 5.	0151-7
Figure 6.	0151-8
Figure 7.	0151-9
Figure 8.	0151-10
HYDRAULIC SYSTEM OPERATES TOO SLOW, TOO FAST, WITH JERKY MOVEMENTS; OR ONE OR MORE HYDRAULICS CIRCUITS WILL NOT OPERATE.....	WP 0152
Figure 1.	0152-2
Figure 2.	0152-4

TABLE OF CONTENTS - Continued

	WP Sequence No. / Page No.
BOOM OPERATION ABNORMAL WHEN TELESCOPING IN OR OUT.....	WP 0153
Figure 1.	0153-2
Figure 2.	0153-3
Figure 3.	0153-4
Figure 4.	0153-4
BOOM RAISES OR LOWERS SLOWLY.....	WP 0154
Figure 1.	0154-2
Figure 2.	0154-3
BOOM WILL NOT RAISE OR LOWER.....	WP 0155
Figure 1.	0155-2
BOOM WILL NOT TELESCOPE IN OR OUT.....	WP 0156
Figure 1.	0156-2
CRANE CONTROLS STICKING IN ENGAGED POSITION.....	WP 0157
Figure 1.	0157-2
Figure 2.	0157-3
Figure 3.	0157-5
Figure 4.	0157-6
Figure 5.	0157-7
CRANE WILL NOT OPERATE, OR OPERATES ABNORMALLY.....	WP 0158
Figure 1.	0158-2
Figure 2.	0158-3
Figure 3.	0158-4

TABLE OF CONTENTS - Continued

	WP Sequence No. / Page No.
HOIST OPERATION SLOW OR ABNORMAL WHEN LIFTING OR LOWERING LOAD	WP 0159
Figure 1.	0159-2
Figure 2.	0159-3
Figure 3.	0159-4
Figure 4.	0159-5
Figure 5.	0159-6
HOIST WILL NOT LIFT LOAD	WP 0160
Figure 1.	0160-2
Figure 2.	0160-3
MAST RAISES OR LOWERS ABNORMALLY	WP 0161
Figure 1.	0161-2
Figure 2.	0161-4
MAST RAISES OR LOWERS SLOWLY	WP 0162
Figure 1.	0162-2
Figure 2.	0162-3
OUTRIGGER OPERATION SLOW OR ABNORMAL	WP 0163
Figure 1.	0163-2
Figure 2.	0163-3
Figure 3.	0163-4
Figure 4.	0163-5
Figure 5.	0163-6

TABLE OF CONTENTS - Continued

	Page No.	WP Sequence No.
SWING OPERATION ABNORMAL IN BOTH DIRECTIONS		WP 0164
Figure 1.	0164-2	
Figure 2.	0164-3	
Figure 3.	0164-4	
Figure 4.	0164-5	
Figure 5.	0164-6	
SWING OPERATION ABNORMAL IN ONLY ONE DIRECTION		WP 0165
Figure 1.	0165-2	
Figure 2.	0165-3	
Figure 3.	0165-4	
CONTROLS STICKING IN ENGAGED POSITION		WP 0166
Figure 1.	0166-2	
Figure 2.	0166-3	
Figure 3.	0166-5	
Figure 4.	0166-6	
Figure 5.	0166-7	
RETRIEVAL CYLINDERS RAISE OR LOWER SLOWLY		WP 0167
Figure 1.	0167-2	
Figure 2.	0167-4	
Figure 3.	0167-6	
Figure 4.	0167-7	
RETRIEVAL SYSTEM WILL NOT OPERATE		WP 0168

TABLE OF CONTENTS - Continued

	Page No.	WP Sequence No.
Figure 1.	0168-2	
Figure 2.	0168-3	
Figure 3.	0168-4	
SELF-RECOVERY WINCH DOES NOT WORK		WP 0169
Figure 1.	0169-2	
Figure 2.	0169-3	
UNUSUALLY NOISY WHEN OPERATING		WP 0170
Figure 1.	0170-2	
VEHICLE IS HARD TO STEER, SHIMMIES, WANDERS, OR PULLS TO ONE SIDE		WP 0171
Figure 1.	0171-2	
Figure 2.	0171-3	
VEHICLE STEERING SLOW TO RESPOND OR INTERMITTENT		WP 0172
Figure 1.	0172-2	
Figure 2.	0172-4	
UNUSUALLY NOISY WHEN OPERATING		WP 0173
Figure 1.	0173-1	
SLOW OR DIFFICULT ENGAGEMENT		WP 0174
Figure 1.	0174-1	
TRANSFER CASE SHIFT LEVER WILL NOT SHIFT		WP 0175
Figure 1.	0175-1	
Figure 2.	0175-2	

TABLE OF CONTENTS - Continued

	WP Sequence No. / Page No.
Figure 3.	0175-3
Figure 4.	0175-4
TRANS TEMP GAUGE INDICATES OVERHEATING DURING NORMAL OPERATION	WP 0176
Figure 1.	0176-1
Figure 2.	0176-2
WHEEL WOBBLES	WP 0177
Figure 1.	0177-2
Figure 2.	0177-3
TIRES WORN UNEVENLY OR EXCESSIVELY	WP 0178
Figure 1.	0178-2
Chapter 4 - Preventive Maintenance Checks and Services (PMCS)	
INTRODUCTION - PREVENTIVE MAINTENANCE	WP 0179
Figure 1.	0179-3
BEFORE - PREVENTIVE MAINTENANCE	WP 0180
Table 1. PMCS - BEFORE	0180-1
Figure 1.	0180-4
Figure 2.	0180-5
Figure 3.	0180-8
Figure 4.	0180-9
Figure 5.	0180-10
Figure 6.	0180-11

TABLE OF CONTENTS - Continued

	WP Sequence No. / Page No.
Figure 7.	0180-12
Figure 8.	0180-13
Figure 9.	0180-16
Figure 10.	0180-17
Figure 11.	0180-21
Figure 12.	0180-22
Figure 13.	0180-24
Figure 14.	0180-25
Figure 15.	0180-27
Figure 16.	0180-31
Figure 17.	0180-34
Figure 18.	0180-36
Figure 19.	0180-38
Figure 20.	0180-39
Figure 21.	0180-40
DURING - PREVENTIVE MAINTENANCE	WP 0181
Table 1. PMCS - DURING	0181-1
Figure 1.	0181-2
Figure 2.	0181-5
Figure 3.	0181-6
Figure 4.	0181-7
Figure 5.	0181-8

TABLE OF CONTENTS - Continued

	WP Sequence No. Page No.
Figure 6.	0181-10
Figure 7.	0181-11
Figure 8.	0181-12
Figure 9.	0181-13
Figure 10.	0181-14
Figure 11.	0181-15
Figure 12.	0181-17
Figure 13.	0181-20
Figure 14.	0181-22
Figure 15.	0181-23
Figure 16.	0181-24
Figure 17.	0181-25
Figure 18.	0181-26
Figure 19.	0181-28
Figure 20.	0181-30
Figure 21.	0181-31
Figure 22.	0181-32
Figure 23.	0181-34
Figure 24.	0181-35
Figure 25.	0181-38
Figure 26.	0181-39
Figure 27.	0181-41

TABLE OF CONTENTS - Continued

	WP Sequence No. / Page No.
Figure 28.	0181-42
Figure 29.	0181-44
Figure 30.	0181-45
AFTER - PREVENTIVE MAINTENANCE	WP 0182
Table 1. PMCS - AFTER	0182-1
Figure 1.	0182-5
Figure 2.	0182-7
Figure 3.	0182-8
Figure 4.	0182-10
Figure 5.	0182-12
Figure 6.	0182-13
Figure 7.	0182-15
Figure 8.	0182-16
Figure 9.	0182-17
Figure 10.	0182-18
Figure 11.	0182-19
Figure 12.	0182-20
Figure 13.	0182-21
Figure 14.	0182-22
Figure 15.	0182-24
Figure 16.	0182-25
Figure 17.	0182-26

TABLE OF CONTENTS - Continued

WP Sequence No.
Page No.

Figure 18. 0182-28
Figure 19. 0182-29
Figure 20. 0182-31
Figure 21. 0182-32
Figure 22. 0182-33
Figure 23. 0182-35
Figure 24. 0182-36
Figure 25. 0182-38
Figure 26. 0182-41
Figure 27. 0182-43
Figure 28. 0182-44
Figure 29. 0182-45
Figure 30. 0182-46
Figure 31. 0182-47
Figure 32. 0182-49
Figure 33. 0182-51
Figure 34. 0182-52
Figure 35. 0182-53
Figure 36. 0182-55
Figure 37. 0182-56
Figure 38. 0182-59
Figure 39. 0182-60

TABLE OF CONTENTS - Continued

	Page No.	WP Sequence No.
Figure 40.	0182-62	
Figure 41.	0182-63	
WEEKLY - PREVENTIVE MAINTENANCE		WP 0183
Table 1. PMCS - WEEKLY	0183-1	
Figure 1.	0183-4	
Figure 2.	0183-6	
Figure 3.	0183-7	
Figure 4.	0183-8	
Figure 5.	0183-9	
Figure 6.	0183-10	
Figure 7.	0183-11	
Figure 8.	0183-12	
Figure 9.	0183-13	
Figure 10.	0183-15	
Figure 11.	0183-16	
Figure 12.	0183-18	
Figure 13.	0183-20	
Figure 14.	0183-23	
Figure 15.	0183-24	
Figure 16.	0183-25	
Figure 17.	0183-27	
Figure 18.	0183-29	

TABLE OF CONTENTS - Continued

WP Sequence No.
Page No.

Figure 19. 0183-30
Figure 20. 0183-32
Figure 21. 0183-33
Figure 22. 0183-34
Figure 23. 0183-35
Figure 24. 0183-36
Figure 25. 0183-37
Figure 26. 0183-38
Figure 27. 0183-40
Figure 28. 0183-41
Figure 29. 0183-43
Figure 30. 0183-46
Figure 31. 0183-48
Figure 32. 0183-49
Figure 33. 0183-50
Figure 34. 0183-51
Figure 35. 0183-52
Figure 36. 0183-54
Figure 37. 0183-56
Figure 38. 0183-57
Figure 39. 0183-58
Figure 40. 0183-60

TABLE OF CONTENTS - Continued

	Page No.	WP Sequence No.
Figure 41.	0183-61	
Figure 42.	0183-64	
Figure 43.	0183-65	
Figure 44.	0183-67	
Figure 45.	0183-68	
Figure 46.	0183-70	
Figure 47.	0183-71	
Figure 48.	0183-72	
Figure 49.	0183-73	
SEMIANNUAL - PREVENTIVE MAINTENANCE		WP 0184
Table 1. PMCS- SEMIANNUAL	0184-1	
Figure 1.	0184-3	
Figure 2.	0184-6	
Figure 3.	0184-8	
Figure 4.	0184-9	
Figure 5.	0184-10	
Figure 6.	0184-11	
Figure 7.	0184-11	
Figure 8.	0184-13	
Figure 9.	0184-14	
Figure 10.	0184-15	
Figure 11.	0184-16	

TABLE OF CONTENTS - Continued

WP Sequence No.
Page No.

Figure 12. 0184-17
Figure 13. 0184-18
Figure 14. 0184-19
Figure 15. 0184-20
Figure 16. 0184-22
Figure 17. 0184-23
Figure 18. 0184-24
Figure 19. 0184-25
Figure 20. 0184-26
Figure 21. 0184-27
Figure 22. 0184-28
Figure 23. 0184-29
Figure 24. 0184-30
Figure 25. 0184-31
Figure 26. 0184-32
Figure 27. 0184-33
Figure 28. 0184-34
Figure 29. 0184-36
Figure 30. 0184-37

MONTHLY - PREVENTIVE MAINTENANCE..... WP 0185

Table 1. PMCS - MONTHLY..... 0185-1
Figure 1. 0185-4

TABLE OF CONTENTS - Continued

	WP Sequence No. / Page No.
Figure 2.	0185-5
Figure 3.	0185-6
Figure 4.	0185-7
Figure 5.	0185-8
Figure 6.	0185-8
Figure 7.	0185-9
Figure 8.	0185-10
Figure 9.	0185-12
Figure 10.	0185-14
Figure 11.	0185-15

Chapter 5 - Maintenance Instructions

LUBRICATION INSTRUCTIONS	WP 0186
Table 1. Engine Lubrication	0186-2
Table 2. Transmission and Transfer Case Lubrication	0186-3
Table 3. Axle Lubrication	0186-4
Table 4. Hydraulic Reservoir Servicing	0186-6
Table 5. Radiator Servicing	0186-7
Table 6. Tire Carrier Lubrication	0186-9
Table 7. Self-Recovery Winch Lubrication	0186-10
Table 8. Heavy-Duty Winch Lubrication	0186-11
Table 9. Material Handling Crane Lubrication	0186-11
Table 10. Oil Can Point Lubrication	0186-12

TABLE OF CONTENTS - Continued

	Page No.	WP Sequence No.
Table 11. Miscellaneous Lubrication Points	0186-13	
Table 12. Vehicle Cleaning	0186-14	
CLOSE/OPEN HEATER VALVES		WP 0187
Figure 1.	0187-1	
Figure 2.	0187-2	
Figure 3.	0187-3	
Figure 4.	0187-3	
PRE/POST TOWING PROCEDURE (FRONT LIFT ONLY)		WP 0188
Figure 1.	0188-2	
Figure 2.	0188-3	
Figure 3.	0188-4	
Figure 4.	0188-5	
CLEAN VEHICLE		WP 0189
Figure 1.	0189-1	
Figure 2.	0189-2	
CHANGE WHEEL AND TIRE ASSEMBLY		WP 0190
Figure 1.	0190-2	
Figure 2.	0190-4	
Figure 3.	0190-4	
Figure 4.	0190-5	
Figure 5.	0190-6	
Figure 6.	0190-6	

TABLE OF CONTENTS - Continued

	WP Sequence No. / Page No.
Figure 7.	0190-7
Figure 8.	0190-8
Figure 9.	0190-9
Figure 10.	0190-10
Figure 11.	0190-11
Figure 12.	0190-11
Figure 13.	0190-13
Figure 14.	0190-14
Figure 15.	0190-15
Figure 16.	0190-15
Figure 17.	0190-16
Figure 18.	0190-17
CLEAN FUEL TANK STRAINER	WP 0191
Figure 1.	0191-1
Figure 2.	0191-2
SERVICE AIR CLEANER ELEMENT	WP 0192
Figure 1.	0192-1
Figure 2.	0192-2
Figure 3.	0192-3
Figure 4.	0192-4
Figure 5.	0192-4
Figure 6.	0192-5

TABLE OF CONTENTS - Continued

	Page No.	WP Sequence No.
SERVICE TIRES		WP 0193
Figure 1.	0193-3	
Figure 2.	0193-4	
Figure 3.	0193-5	
Figure 4.	0193-6	
Figure 5.	0193-8	
OPEN/CLOSE BATTERY BOX		WP 0194
Figure 1.	0194-3	
Figure 2.	0194-5	
OPEN/CLOSE ENGINE COVERS AND ENGINE SIDE PANEL REMOVAL/INSTALLATION		WP 0195
Figure 1.	0195-1	
Figure 2.	0195-2	
Figure 3.	0195-3	
Figure 4.	0195-4	
Figure 5.	0195-5	
Figure 6.	0195-5	
Figure 7.	0195-6	
Figure 8.	0195-7	
PRIMING FUEL SYSTEM		WP 0196
Figure 1.	0196-2	
OPEN/CLOSE CIRCUIT BREAKER ACCESS PANEL		WP 0197

TABLE OF CONTENTS - Continued

	Page No.	WP Sequence No.
Figure 1.	0197-1	
Figure 2.	0197-2	
1.5 IN. (38 MM) SPACER ASSEMBLY		WP 0198
Figure 1.	0198-1	
3 IN. (76 MM) SPACER ASSEMBLY		WP 0199
Figure 1.	0199-1	

Chapter 6 - Supporting Information

REFERENCES		WP 0200
COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS		WP 0201
Table 1. List of Usable On Codes	0201-2	
Table 2. Components of End Item	0201-2	
Table 3. Basic Issue Items	0201-4	
ADDITIONAL AUTHORIZATION LIST (AAL)		WP 0202
Table 1. List of Usable On Codes	0202-1	
Table 2. Additional Authorization List	0202-2	
EXPENDABLE AND DURABLE ITEMS LIST		WP 0203
Table 1. Expendable and Durable Items List	0203-1	

HOW TO USE THIS MANUAL

USABLE ON CODE (UOC) INFORMATION

Usable On Code (UOC) - the user should be aware that the M984A4 Wrecker HEMTT series vehicle (with self-recovery winch installed) UOC is "LH7". 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

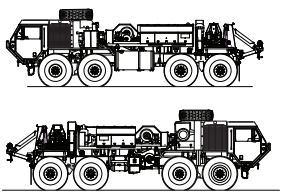
GENERAL INFORMATION, EQUIPMENT DESCRIPTION AND THEORY OF OPERATION

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.

M984A4 WRECKER	DESCRIPTION
 *Figure 1.*	Wrecker vehicle with 99,000 lbs (44 946 kg) GVWR and 114,000 lbs (51 756 kg) GCWR that can be increased to 155,000 lbs (70 370 kg) GCWR under certain conditions. Vehicle is equipped with material handling crane with 6,000 lbs (2 722 kg) load capacity at 18.2 ft. (5.5 m) boom radius, 60,000 lbs (27 240 kg) recovery winch, and equipment body with 10 stowage compartments.

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. (Volume 2, WP 0200)

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 (Volume 2, WP 0200) contains valuable field information on equipment covered in this manual. Information in the TB 43-0001-62 (series) Equipment Improvement Report and Maintenance Digest (Volume 2, WP 0200) 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 (Volume 2, WP 0200) 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

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

(Volume 2, WP 0200) (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 (Volume 2, WP 0200) 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, (Volume 2, WP 0200) Consolidated Index of Army Publications and Blank Forms at http://www.army.mil/usapa/2530.html, and reference section (Volume 2, WP 0200) of this manual. If you have a change recommendation to this manual, submit a DA Form 2028's (Volume 2, WP 0200) (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 (Volume 2, WP 0200) (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 (Volume 2, WP 0200) 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 (Volume 2, WP 0200) 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) (Volume 2, WP 0200) that list end item related equipment (COEI, BII, (Volume 2, WP 0201) and AAL (Volume 2, WP 0202)) 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, (Volume 2, WP 0200) 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.

CORROSION PREVENTION AND CONTROL - Continued

If a corrosion problem is identified, it can be reported using SF 368 (Volume 2, WP 0200). 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 MATERIAL TO PREVENT ENEMY USE

Procedures for the destruction of Army materiel to prevent enemy use are contained in TM 750-244-6 (Volume 2, WP 0200).

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 (Volume 2, WP 0200) 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

NOMENCLATURE CROSS-REFERENCE LIST - Continued

Table 2. Common Nomenclature. - Continued

COMMON NAME	OFFICIAL NOMENCLATURE
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

LIST OF ABBREVIATIONS - Continued

Table 3. Common Abbreviations. - Continued

ABBREVIATION	OFFICIAL NOMENCLATURE
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
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

LIST OF ABBREVIATIONS - Continued

Table 3. Common Abbreviations. - Continued

ABBREVIATION	OFFICIAL NOMENCLATURE
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
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

LIST OF ABBREVIATIONS - Continued

Table 3. Common Abbreviations. - Continued

ABBREVIATION	OFFICIAL NOMENCLATURE
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
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

LIST OF ABBREVIATIONS - Continued

Table 3. Common Abbreviations. - Continued

ABBREVIATION	OFFICIAL NOMENCLATURE
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
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

LIST OF ABBREVIATIONS - Continued

Table 3. Common Abbreviations. - Continued

ABBREVIATION	OFFICIAL NOMENCLATURE
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
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.

SAFETY, CARE, AND HANDLING - Continued

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
Vehicle instability with crane use.	Ensure that outriggers are down on firm ground, side slope does not exceed 5 degrees, and crane is not overloaded.	Abnormal
Connecting towing devices.	Do not go between vehicles until vehicles are stopped and brakes are set.	Normal
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.

NOTE

- Material handling cranes have overload shutdown and/or tilt warning (unstable) systems. Always apply PARKING BRAKE control (WP 0045) prior to crane operation.
- Crane has a yellow caution light at a fixed operator's station and an audible warning signal that alerts the operator when an unstable crane condition occurs.

SAFETY, CARE, AND HANDLING - Continued

Table 4. Significant Hazard And Safety Recommendations. - Continued

HAZARD	SAFETY RECOMMENDATION OR PRECAUTION	OPERATING CONDITION
• Crane has an overload shutdown system which senses lift cylinder pressure to prevent overloading the crane. The system will shut down the crane to prevent hoisting, boom extension, or boom raising when an overload condition exists. Load lowering and boom retraction functions will not be affected. • When crane is overloaded, the overload system will automatically shut off power to telescope boom out, raise boom, or hoist load higher. Overload system will also prevent lowering the boom. An overload condition can be corrected by lowering load to ground or other supporting surface. All crane functions will be restored in approximately six seconds. **NOTE** • The crane operating instruction plates are located on the heater compartment cover in the cab and at each of the fixed operating station. • The outrigger leg plates are located on each of the outrigger cylinders. • The load capacity signs are located at the main and auxiliary control panels, they are also located on the wrecker body rear stowage box doors.		

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 (Volume 2, WP 0200), 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 (Volume 2, WP 0200) or DD Form 1348-1. (Volume 2, WP 0200)

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 (Volume 2, WP 0200) 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.

Explanation of Terms - Continued

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.

Explanation of Terms - Continued

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, Wrecker, Recovery	M984A4 (with winch)	2320-01-534-2245	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.

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.

Coverage-Specific - Continued

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.

Contractor Responsibilities - Continued

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 (Volume 2, WP 0200) or DA Form 2407-1 (Volume 2, WP 0200) to your local Warranty Coordinator.
3. Tag and retain (IAW DA PAM 750-8 and this work package) (Volume 2, WP 0200) 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 (Volume 2, WP 0200) 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) (Volume 2, WP 0200) 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.

Government Responsibilities - Continued

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 (Volume 2, WP 0200) 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 (Volume 2, WP 0200) or DD Form 1149. (Volume 2, WP 0200) If these dates differ, disregard the data plate. The date shown on the DD Form 250 (Volume 2, WP 0200) or DD Form 1149. (Volume 2, WP 0200) 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 (Volume 2, WP 0200) and this work package. Responsibilities of the MACOM are found in AR 700-139. (Volume 2, WP 0200) All Warranty Claim Actions are processed on DA Form 2407 (Volume 2, WP 0200) and DA Form 2407-1. (Volume 2, WP 0200) 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 (Volume 2, WP 0200) 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

Claim Procedures - Continued

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 (Volume 2, WP 0200) and DA Form 2407 Maintenance Request (Volume 2, WP 0200) 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. (Volume 2, WP 0200) 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 M984A4 vehicle is used as a multipurpose vehicle capable of recovering and towing a full spectrum of loaded, wheeled vehicles. This vehicle has lift and reach capability to perform maintenance assistance associated with removing and replacing power packs and heavy components from a wide range of wheeled and tracked vehicles.

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.

EQUIPMENT FEATURES - Continued

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.

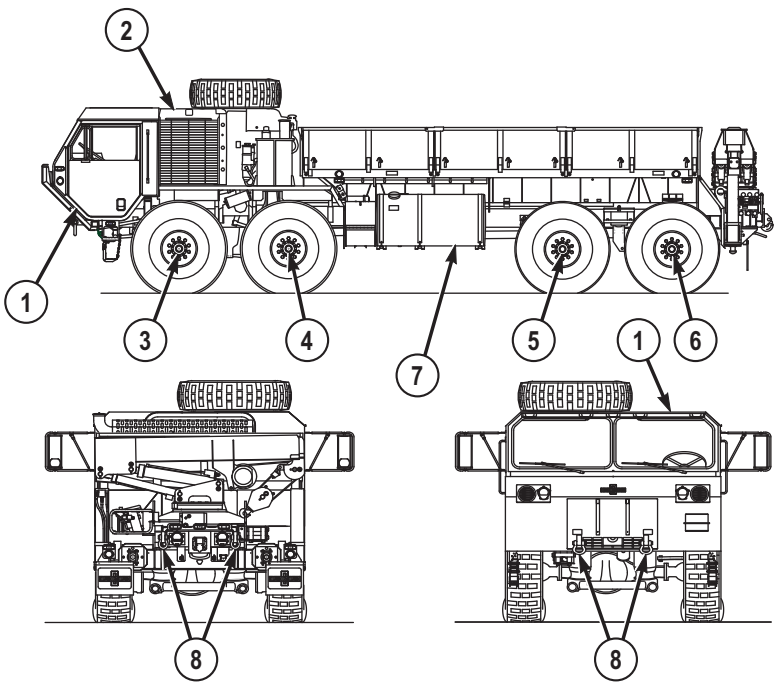


Figure 1.

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.

VEHICLE COMPONENT LOCATION - Continued

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.

VEHICLE COMPONENT LOCATION - Continued

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

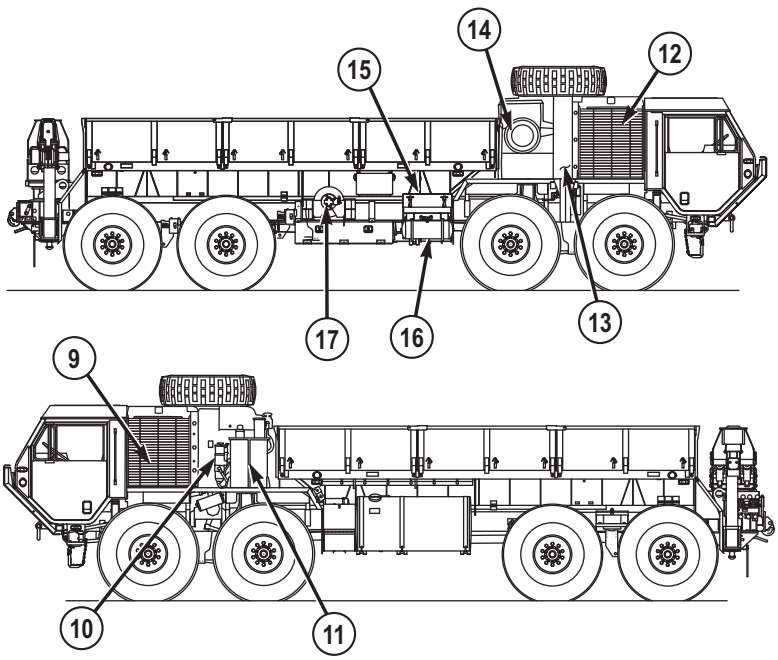


Figure 2.

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.

VEHICLE COMPONENT LOCATION - Continued

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

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.

VEHICLE COMPONENT LOCATION - Continued

Table 2. M984A4 Wrecker-Recovery Vehicle Specific Component Location.

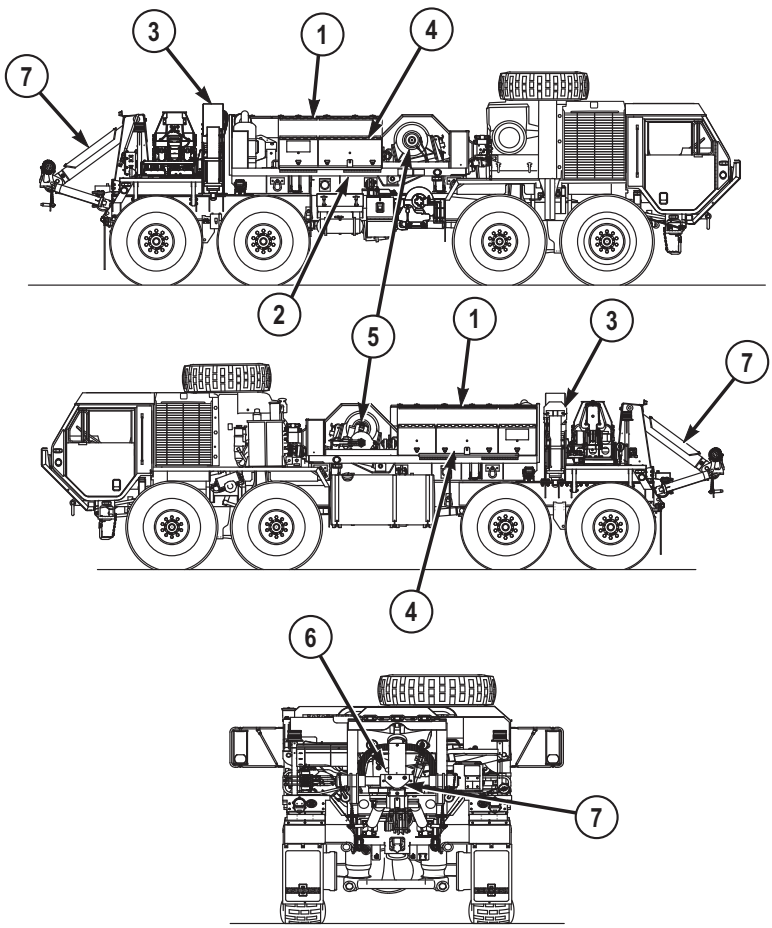


Figure 3.

1	**Equipment Body.** Used to carry COEI, BII, (Volume 2, WP 0201)AAL, (Volume 2, WP 0202) and repair parts.
2	**Access Ladder.** Used by crew to clean window, check oil, or perform other tasks requiring access to parts of vehicle out of normal reach.

VEHICLE COMPONENT LOCATION - Continued

Table 2. M984A4 Wrecker-Recovery Vehicle Specific Component Location. - Continued

3	**Material Handling Crane.** Used to load and unload equipment and cargo.
4	**Stowage Boxes.** Used to stow COEI, BII, (Volume 2, WP 0201)AAL, (Volume 2, WP 0202) and other mission essential items.
5	**Heavy-Duty Winch.** Used to pull vehicle out of ditches, mud, and other areas as needed.
6	**Fairlead Tensioner.** Used to help guide and feed heavy-duty winch cable out with hydraulic motor. Used also to keep tension on cable when reeling cable back in as needed.
7	**Retrieval System.** Used for lifting and towing disabled vehicles.

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	•								
MHC985						•			

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)
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.
5. All HEMTT series vehicles are authorized to carry portable work lamp as an optional accessory.

Table 2. Notes. - Continued

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. M984A4 Wrecker 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: 401 in. (10 185 mm)
Wheelbase: 191 in. (4 851 mm)
Turn Circle (curb to curb): 100 ft. (30.5 m)
Ground Clearance: 24 in. (610 mm)
Center of Gravity: See shipping data plate on inside of driver side door.

Table 3. M984A4 Wrecker Vehicle Weight.

Curb Weight: 54,100 lbs (24 561 kg)
Gross Vehicle Weight Rating (GVWR): 99,000 lbs (44 946 kg)
Gross Combination Weight Rating (GCWR): 114,000 lbs (51 756 kg) - Off-road, LO range, 30% maximum grade. 114,000 lbs (51 756 kg) - Primary or secondary road, LO or HI range, 7% maximum grade.

EQUIPMENT DATA - Continued

Table 3. M984A4 Wrecker Vehicle Weight. - Continued

155,000 lbs (70 370 kg) - Primary road, LO range

Table 4. M984A4 Wrecker Vehicle Weight Distribution.

Front Tandem Axles-Curb: 23,900 lbs (10 851 kg)
Front Tandem Axles-Loaded: 32,000 lbs (14 528 kg)
Rear Tandem Axles-Curb: 27,000 lbs (12 258 kg)
Rear Tandem Axles-Loaded (maximum): 65,000 lbs (29 510 kg)

Table 5. 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)
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

EQUIPMENT DATA - Continued

Table 5. Vehicle Performance. - Continued

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 6. Fluid Capacities.

Refer to lubrication instructions in operator's PMCS (Volume 2, WP 0186) for vehicle fluid capacities.

Table 7. 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)
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

EQUIPMENT DATA - Continued

Table 7. Engine. - Continued

Oil Filter Quantity: 1

Table 8. Fuel System.

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

Table 9. 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
Battery Amp Hours (each, at 20 hour rate): 100 amp

Table 10. Cooling System.

Radiator Working Pressure: 7 psi (48 kPa)

EQUIPMENT DATA - Continued

Table 11. Transmission.

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

Table 12. Transfer Case.

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

Table 13. 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 14. Rear Tandem Axles.

Make: Dana Heavy Axle
Differential Carrier Model Nos.: No. 3 axle: DS650-P, No. 4 axle: RS650

Table 15. Brake System.

Actuation: Air with integrated Automatic Braking System (ABS)

EQUIPMENT DATA - Continued

Table 15. Brake System. - Continued

Number of Brake Chambers: 8
Pressure Range: 60 - 120 psi (4.14 - 8.27 bar)

Table 16. Wheels.

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

Table 17. 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 18. Steering System.

Type: Dual gear with integrated hydraulic power assist

Table 19. Towing Eyes.

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

EQUIPMENT DATA - Continued

Table 20. Pintle Hook.

Type: Manual Release
Maximum Load Capacity - Pulling: 100,000 lbs (45 400 kg)
Maximum Load Capacity - Vertical: 20,000 lbs (9 080 kg)

Table 21. Cab.

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

Table 22. 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 23. Material Handling Crane.

Make: Grove
Model: MHC984

EQUIPMENT DATA - Continued

Table 23. Material Handling Crane. - Continued

Maximum Capacity at Boom Length of 18.2 ft. (5.5 m): 6000 lbs (2 722 kg)

Table 24. Recovery (Heavy-Duty) Winch.

Make: DP Manufacturing
Model: 51022 60K
Type: Automatic Two Speed
Wire Rope Diameter: 1 in. (25 mm)
Wire Rope Length: 220 ft. (67 m)
Line Pull - First Layer (with five wraps): 60,000 lbs (27 240 kg)
Line Pull -Third Layer: 45,000 lbs (20 430 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.

EQUIPMENT DATA - Continued

Table 26. M984A4 Wrecker Vehicle Load Classification.

UNLOADED (TONS)	FULL LOAD (TONS)	WITH TRAILER LOADED (TONS)
19	N/A	C-48 (towing loaded M985)

TIRE PRESSURES

Table 27. M984A4 Wrecker Vehicle 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)
SAND TIRE	60 psi (414 kPa)	NA	NA	25 psi (172 kPa)
Rear Tire Pressure				
STANDARD (XZL) TIRE	100 psi (690 kPa)	85 psi (586 kPa)	70 psi (483 kPa)	20 psi (138 kPa) 70 psi (483 kPa) when towing
SAND TIRE	100 psi (690 kPa)	NA	NA	25 psi (172 kPa) 80 psi (551 kPa) when towing
Spare Tire Pressure				
STANDARD (XZL) TIRE	100 psi (690 kPa)	100 psi (690 kPa)	100 psi (690 kPa)	100 psi (690 kPa)

TIRE PRESSURES - Continued

Table 27. M984A4 Wrecker Vehicle Tire Pressures. - Continued

TIRE	HIGHWAY	CROSS-COUNTRY (DRY)	CROSS-COUNTRY (WET)	SANDY TERRAIN
SAND TIRE	100 psi (690 kPa)	NA	NA	100 psi (690 kPa)

OPERATING SPEEDS

Table 28. M984A4 Wrecker Vehicle 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)
When Towing Another Vehicle				
STANDARD (XZL) TIRE (maximum Speed)	15 mph (24 km/h)*	15 mph (24 km/h)	15 mph (24 km/h)	15 mph (24 km/h)
SAND TIRE (maximum Speed)	15 mph (24 km/h)*	NA	NA	15 mph (24 km/h)

***** Operation at speeds over 15 mph (24 km/h) on paved road can be achieved when the operator determines that the vehicle being towed and the terrain allow for safe operation.

OPERATING SPEEDS - Continued

Table 28. M984A4 Wrecker Vehicle Operating Speeds. - Continued

Under no condition can speeds exceed 35 mph (55 km/h) on paved roads and 15 mph (24 km/h) off paved roads.

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.

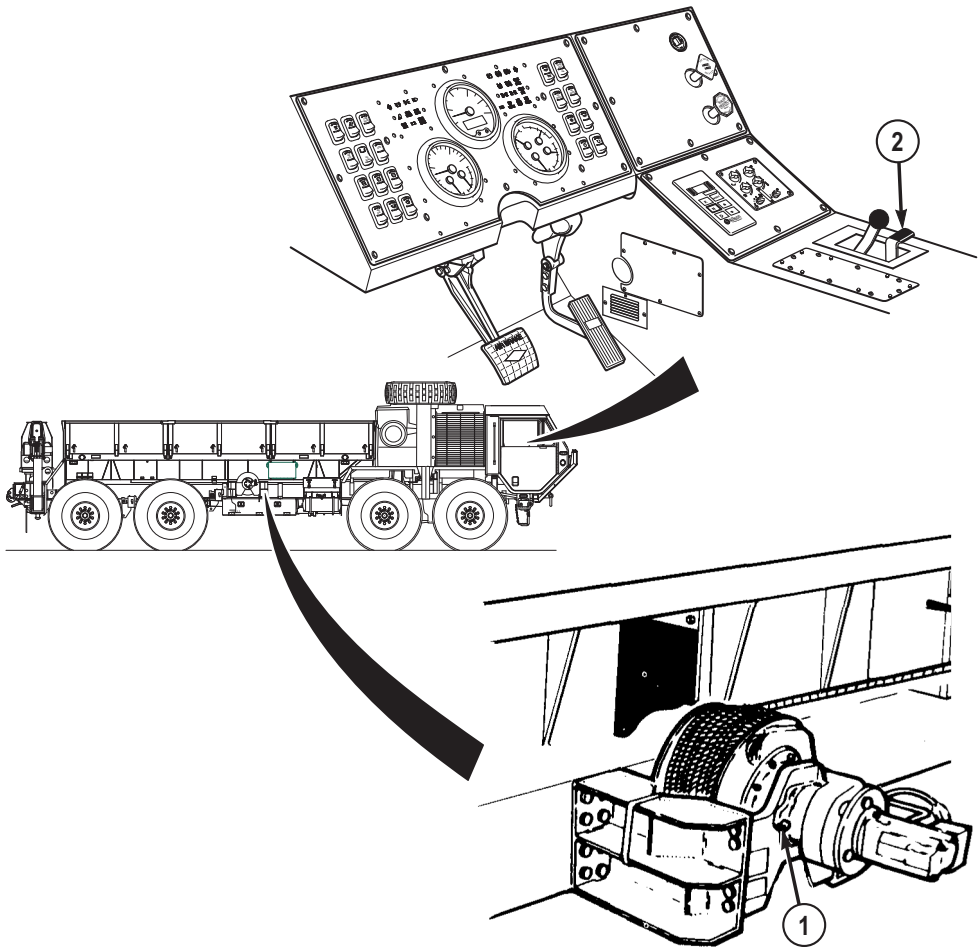


Figure 1.

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

SELF-RECOVERY WINCH - Continued

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 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.

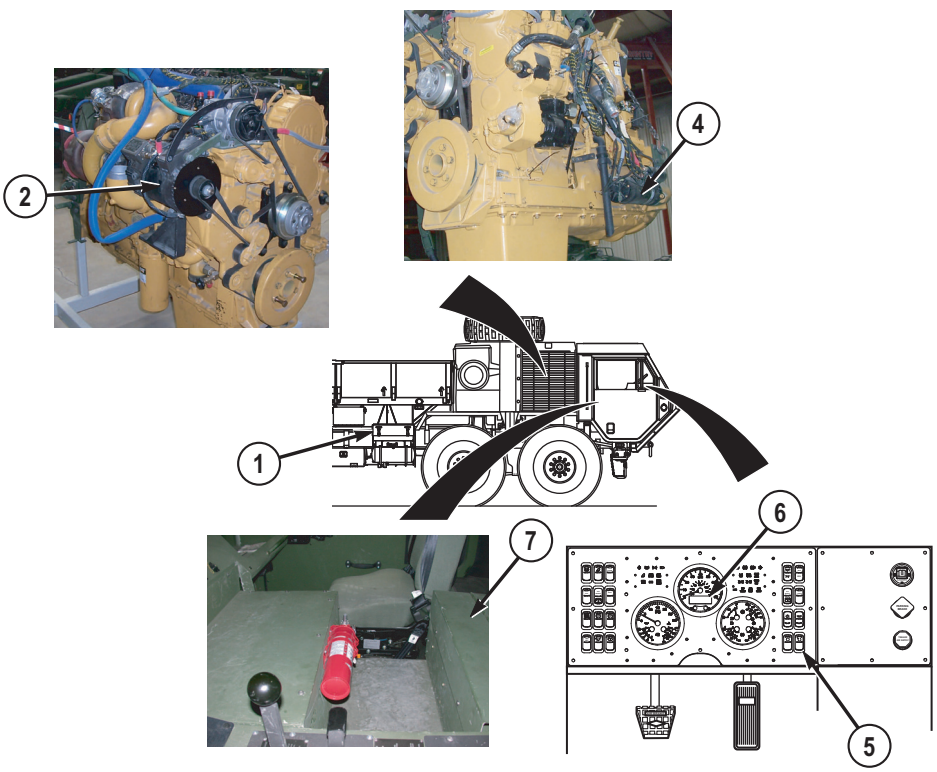


Figure 1.

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

ELECTRICAL SYSTEM - Continued

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).

AIR SYSTEM - Continued

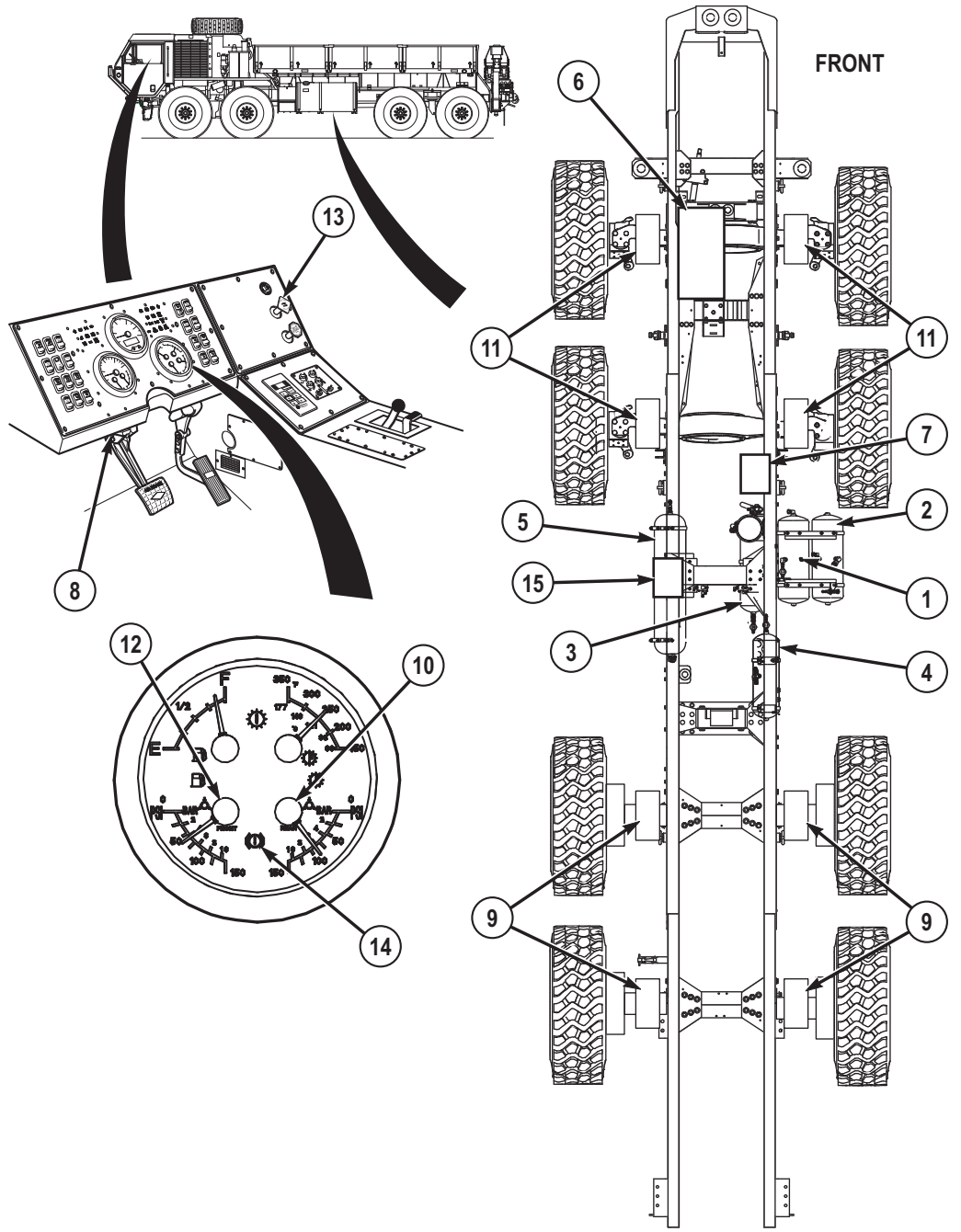


Figure 1.

AIR SYSTEM - Continued

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.

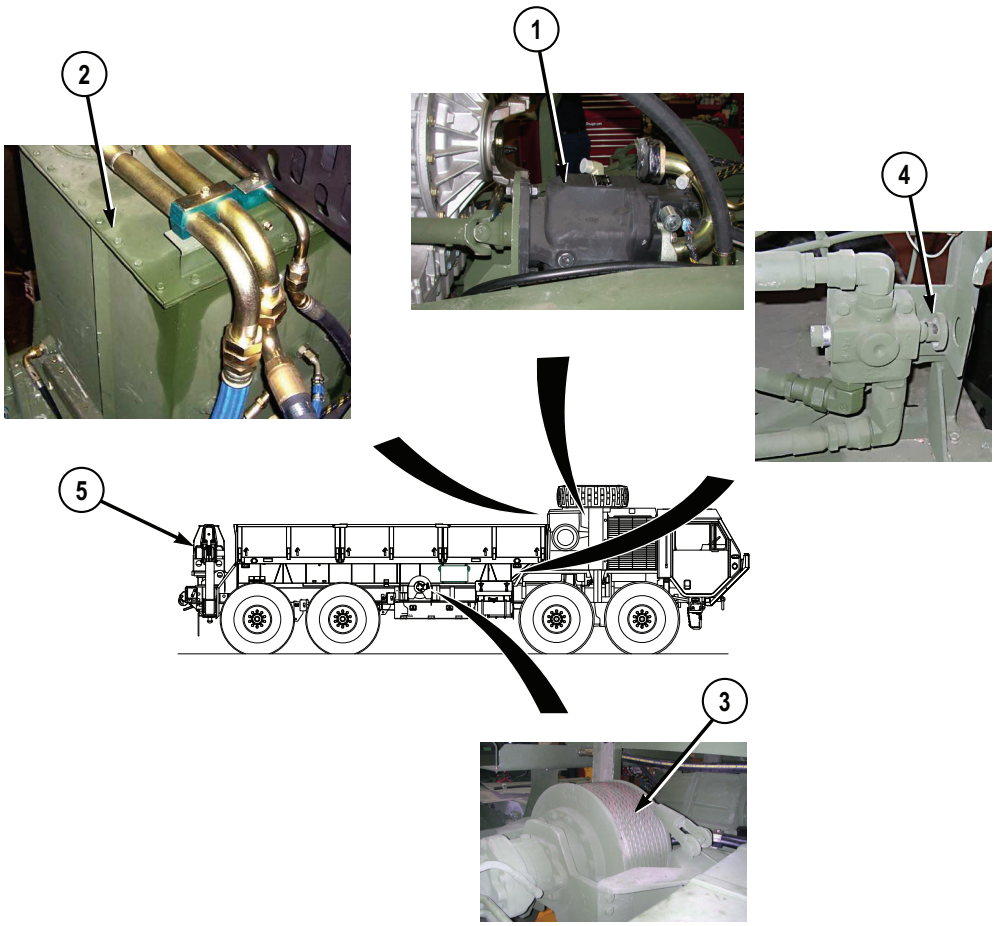


Figure 1.

MAIN HYDRAULIC SYSTEM - Continued

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.

M984A4 WRECKER SPECIFIC MAIN HYDRAULIC SYSTEM

Fluid power for operating the heavy-duty winch (1), self-recovery winch (2), crane (3), and retrieval system (4) is provided by a steering/tensioner pump (5) mounted on the power take-off (PTO) on the transmission.

M984A4 WRECKER SPECIFIC MAIN HYDRAULIC SYSTEM - Continued

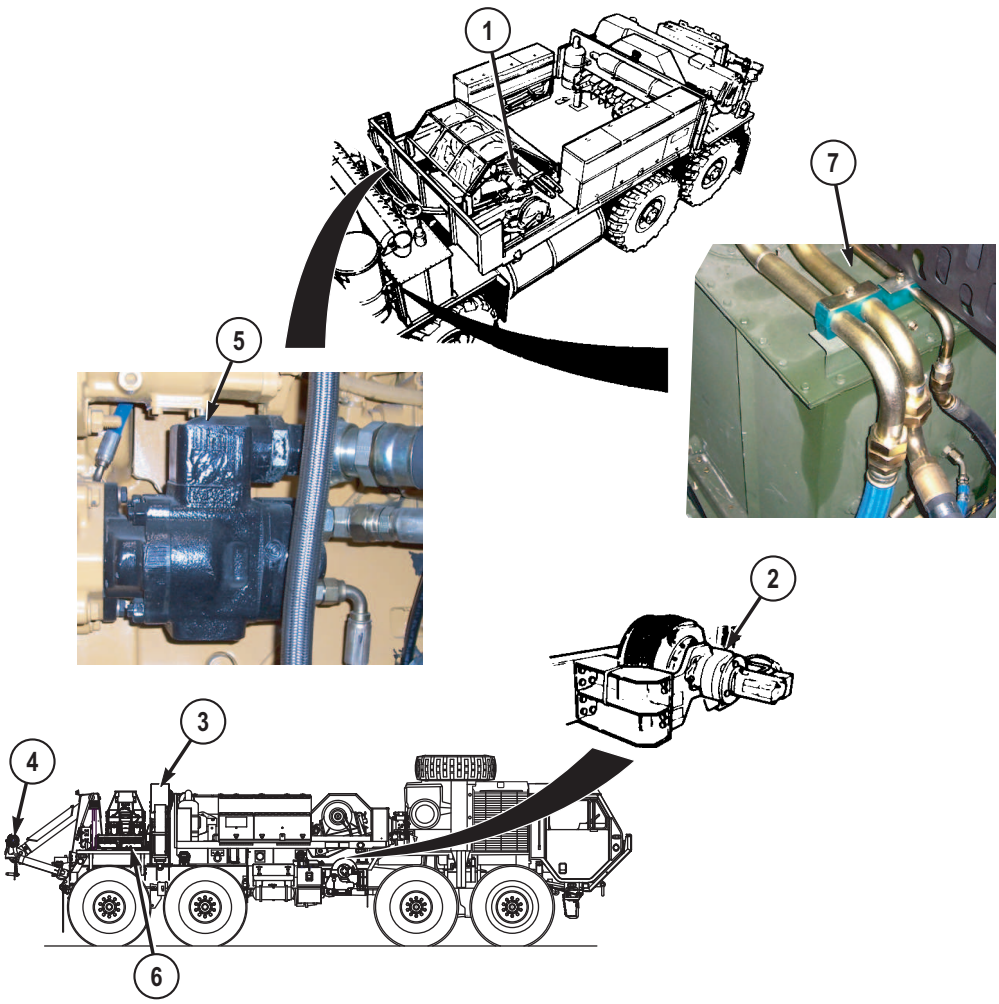


Figure 2.

Auxiliary equipment operation by the PTO driven pump is selected from the crane control panel (6) at rear of vehicle.

Both hydraulic pumps share the same reservoir (7).

FLUID SYSTEM

Pump (1) mounted on the rear of engine provides the fluid power to operate the power steering (2) and cable tensioner (3).

FLUID SYSTEM - Continued

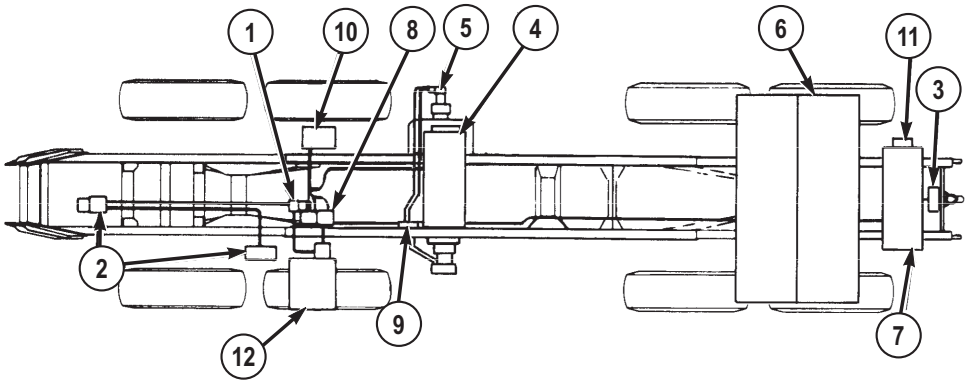


Figure 3.

Fluid power for operating the heavy-duty winch (4), self-recovery winch (5), crane (6), and retrieval system (7) is provided by a hydraulic pump (8) driven by the power take-off (PTO) mounted on the transmission.

Automatic steering/tensioner pump (9) directs hydraulic power to the self-recovery winch (5).

Heavy-duty winch control valve (10) directs hydraulic power to the heavy-duty winch (4).

Operation on the crane (6) and retrieval system (7) is controlled from the control panel (11) at the rear of the vehicle.

Both hydraulic pumps (1 and 8) share the same reservoir (12).

END OF WORK PACKAGE

OPERATOR MAINTENANCE
STEERING SYSTEM

POWER STEERING HYDRAULIC SYSTEM

Power is supplied to the main steering gear (1) by an engine-driven pump (2).

POWER STEERING HYDRAULIC SYSTEM - Continued

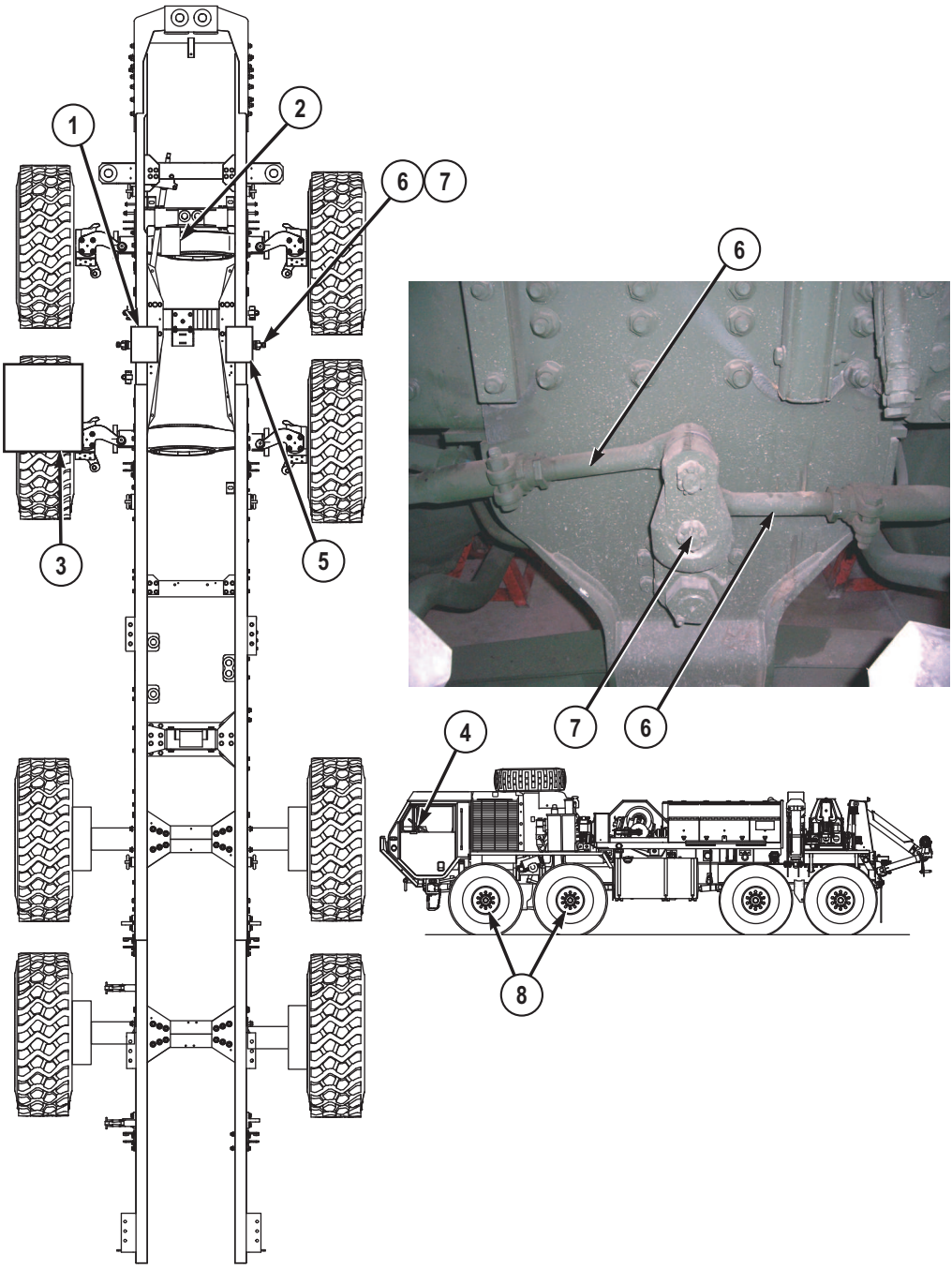


Figure 1.

POWER STEERING HYDRAULIC SYSTEM - Continued

The fluid reservoir (3) is shared with the main hydraulic system.

The steering wheel (4) rotates a gear that positions a spool in the main steering gear. This motion is hydraulically sent to a piston in the slave gear (5) causing it to follow the rotation of the main steering gear.

The main gear pitman arm (6) is mechanically connected to the slave gear pitman arm (7).

These pitman arms move the steering mechanism on the front axles (8) left or right causing the vehicle to steer left or right.

On M984A4 wrecker, the power is supplied to the main steering gear by an engine drive steering/tensioner pump.

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).

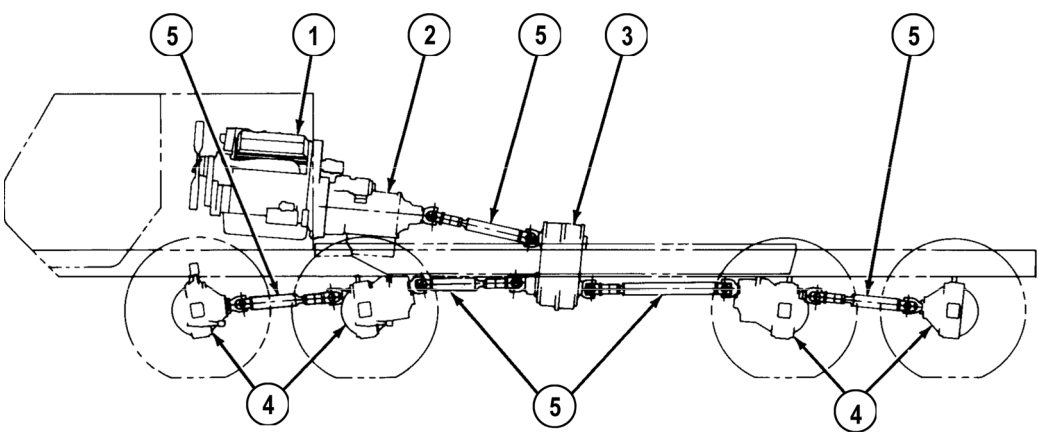


Figure 1.

POWER TRAIN - Continued

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.

AUTOMATIC TRANSMISSION - Continued

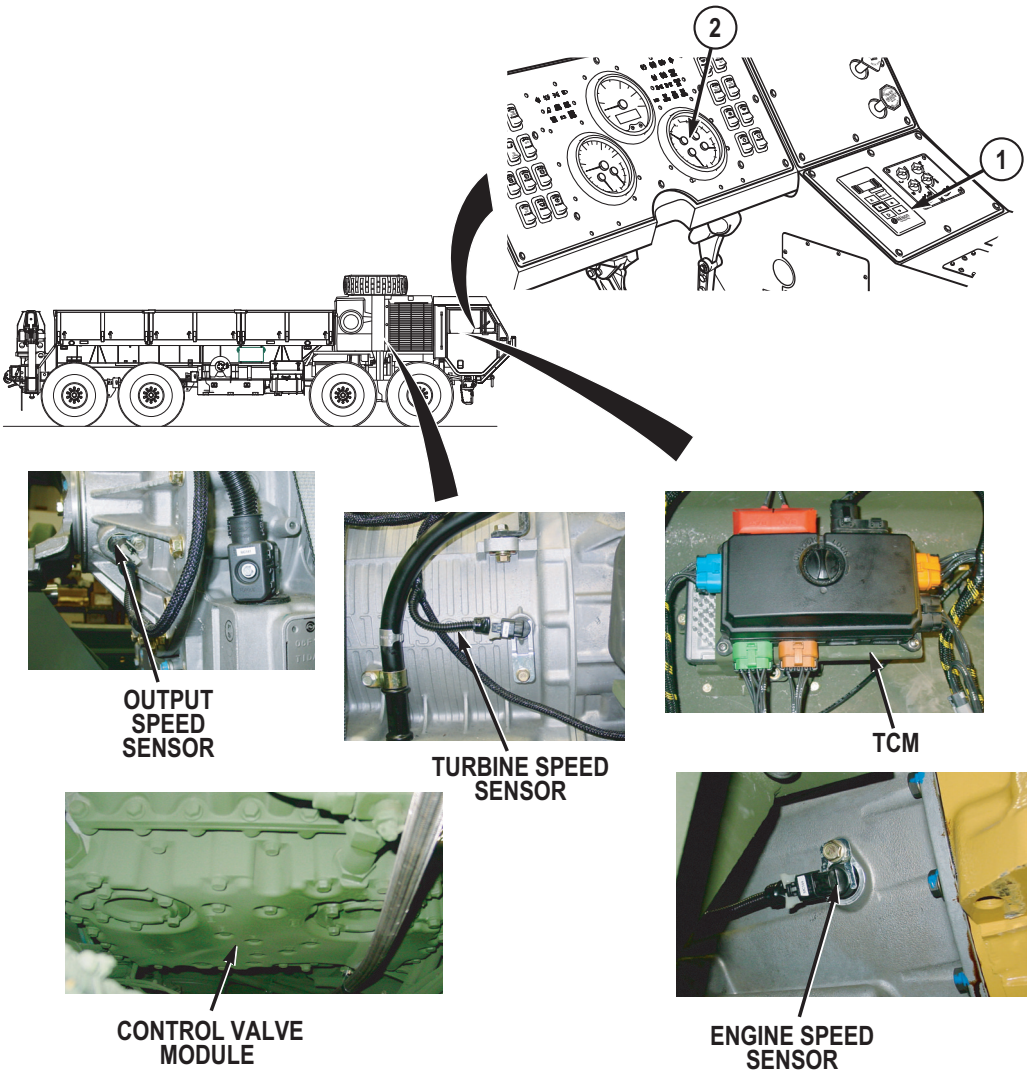


Figure 2.

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.

AUTOMATIC TRANSMISSION - Continued

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 0133) 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 0048) 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.

AUTOMATIC TRANSMISSION - Continued

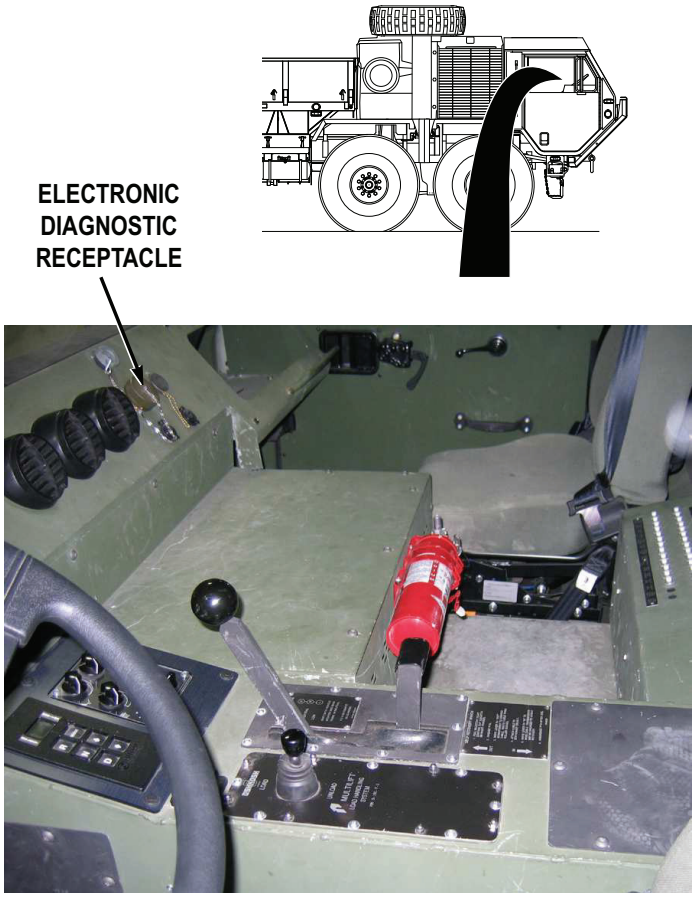


Figure 3.

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.

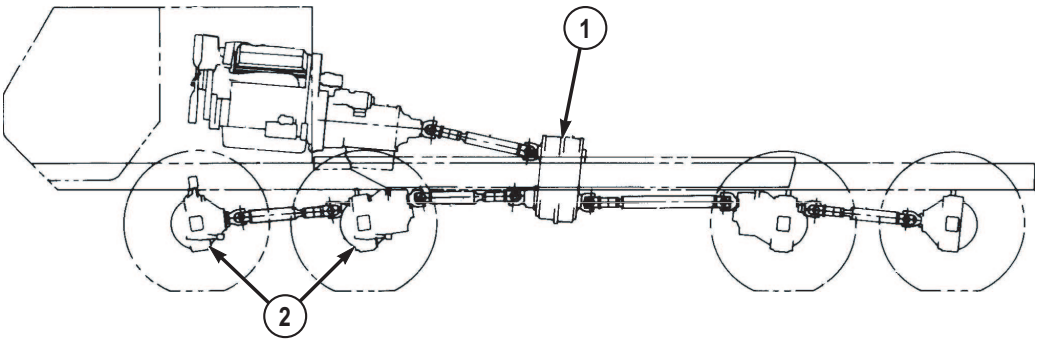


Figure 4.

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.

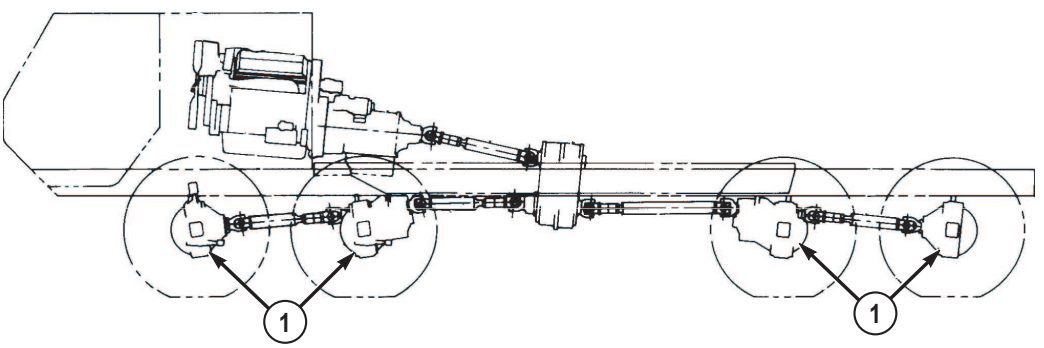


Figure 5.

The front two axles provide vehicle steering

The rear two axles are non-steering.

TANDEM AXLES AND SUSPENSION - Continued

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.

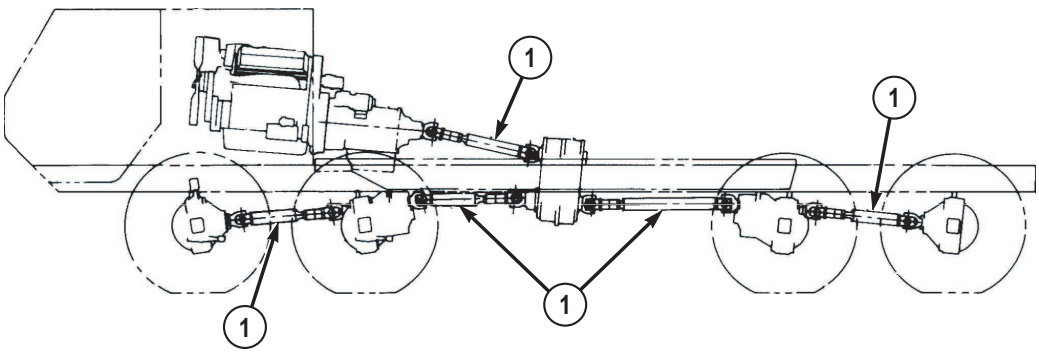


Figure 6.

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:

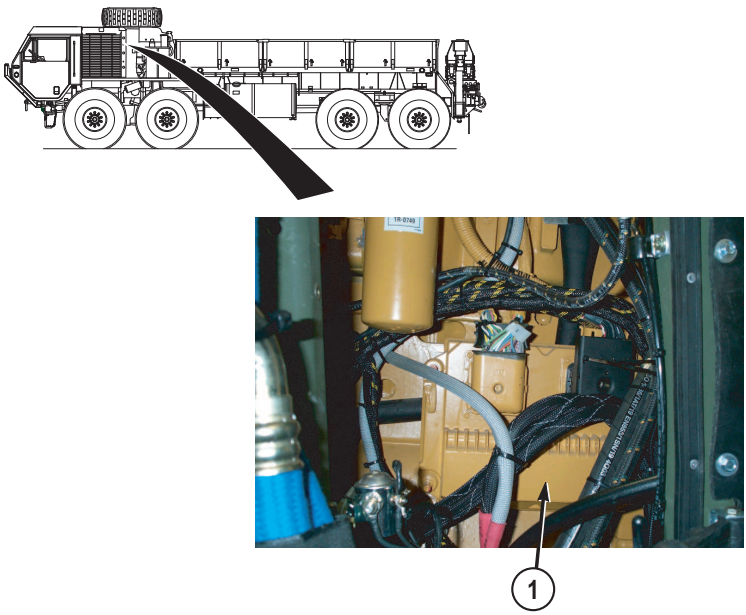


Figure 1.

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.

ENGINE - Continued

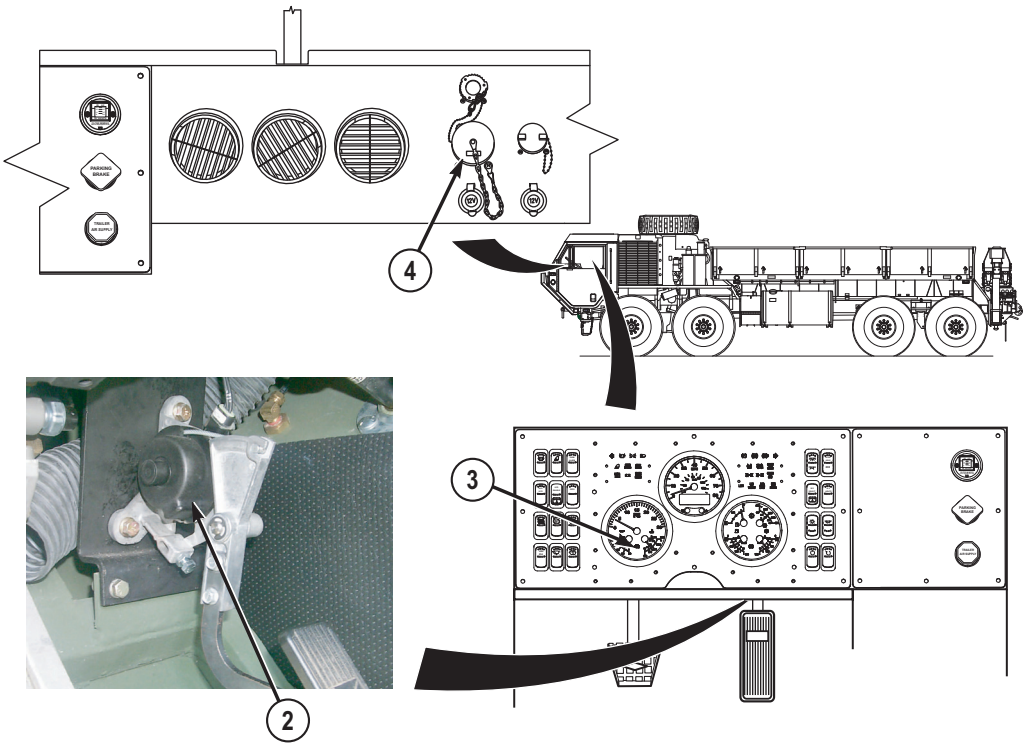


Figure 2.

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).

AIR INTAKE SYSTEM - Continued

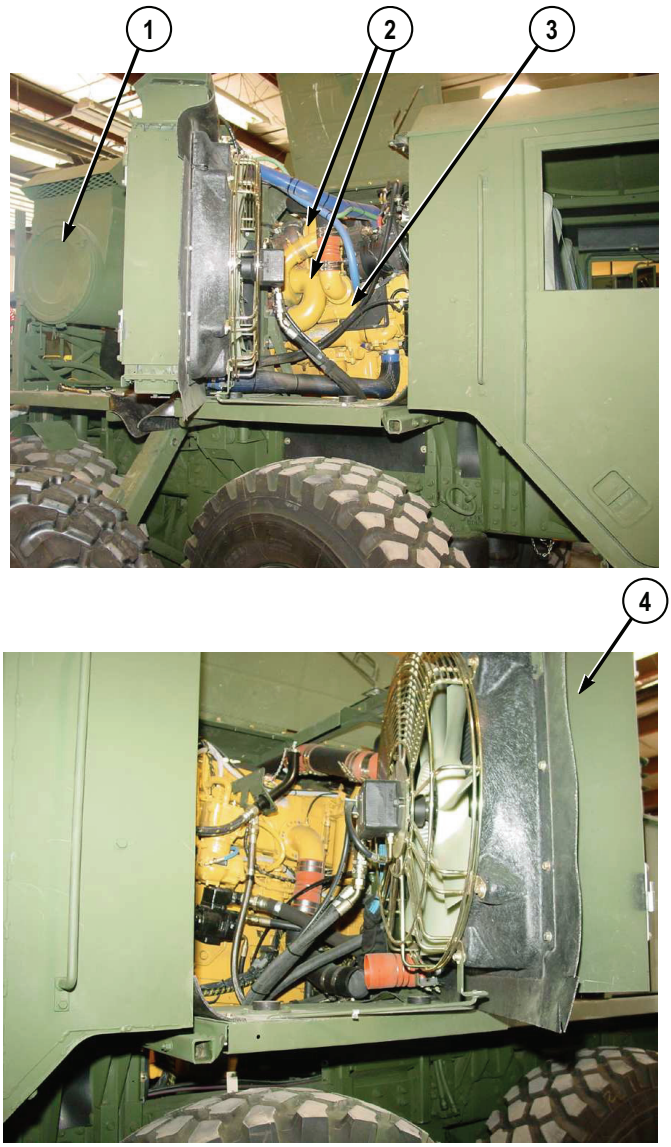


Figure 3.

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

AIR INTAKE SYSTEM - Continued

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).

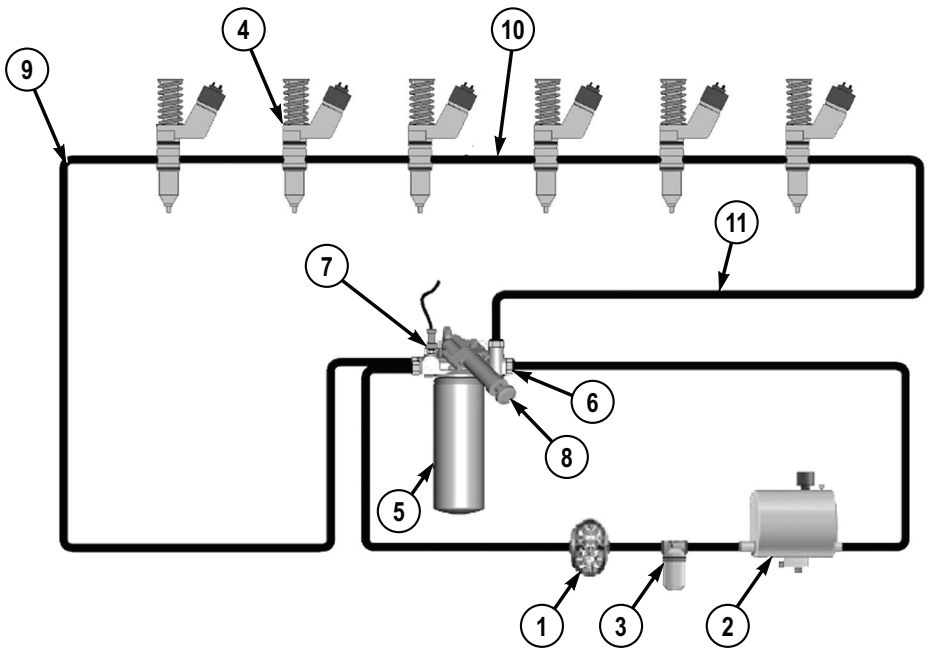


Figure 4.

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.

FUEL SYSTEM - Continued

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).

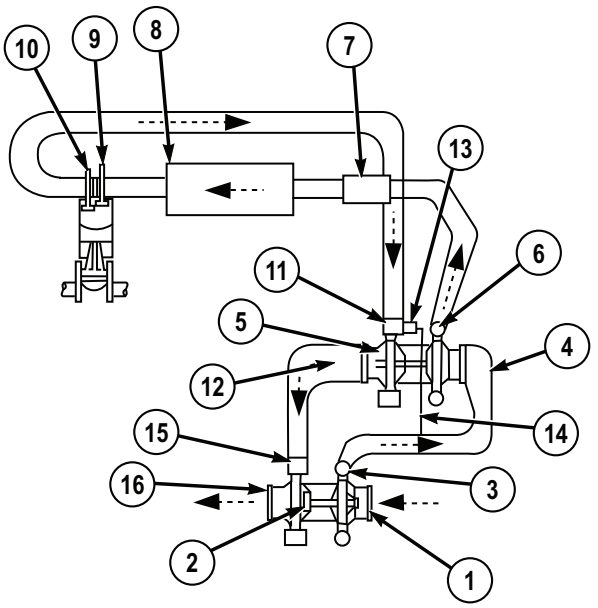


Figure 5.

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.

COOLING SYSTEM - Continued

- 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.

COOLING SYSTEM - Continued

- 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.

COOLING SYSTEM - Continued

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.

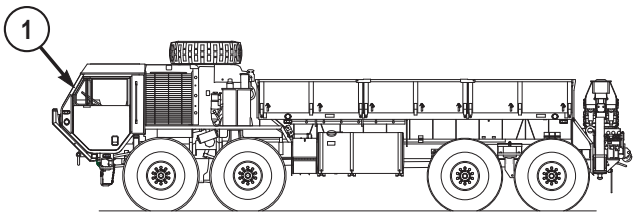


Figure 1.

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.

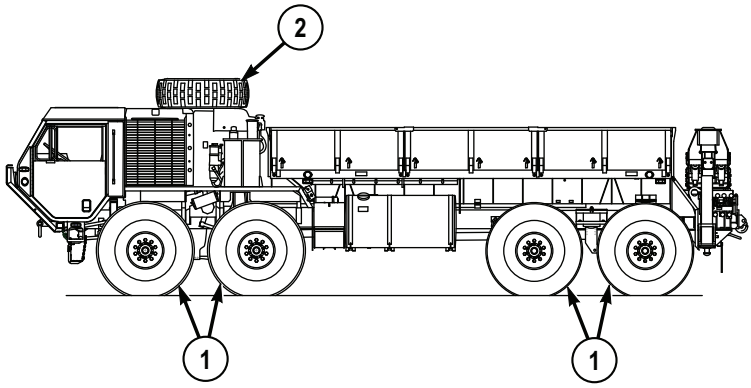


Figure 1.

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

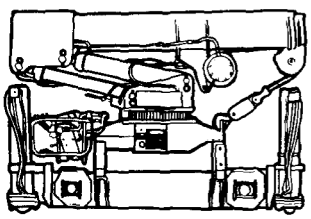
END OF WORK PACKAGE

OPERATOR MAINTENANCE
CRANE

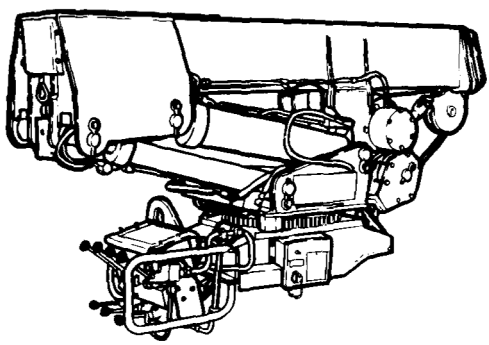
CRANE OVERVIEW

The cranes are operated by two functional systems: the electrical system and the hydraulic system.

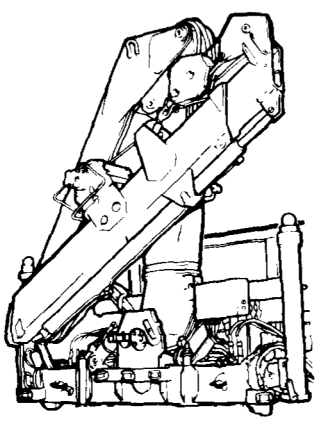
A number of cranes are used on the HEMTT series vehicles:



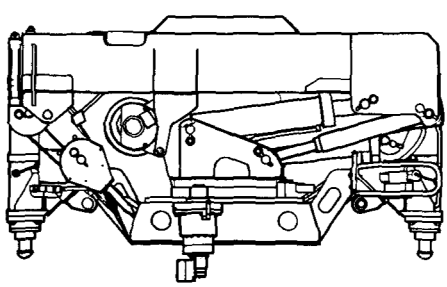
M977 CARGO VEHICLE



M985 CARGO VEHICLE



M985 E1/GMT CARGO VEHICLE



M984
WRECKER-RECOVERY VEHICLE

Figure 1.

Refer to operator's manuals for specifications, dimensions, and operating procedures for the different crane models.

The cranes are completely hydraulic powered and their principles of operation are the same.

CRANE OVERVIEW - Continued

Individual control panel, boom-hydraulic cylinder arrangements, and lifting capacities are different.

All cranes are powered from the vehicle's hydraulic system.

All are equipped with outriggers for stability during operation.

All cranes use a combination of hinged joints and telescoping members to give them their motions.

The hydraulic-powered hoisting winch has an automatic brake to prevent accidental lowering of the load.

CRANE OPERATING INSTRUCTION PLATE LOCATIONS

NOTE

Refer to stowage and decal/data plate guide for more information on plate locations.

The crane operating instruction plates are located on the heater compartment cover in the cab at each of the fixed operating stations.

The outrigger leg signs are located on each of the outrigger cylinders.

The load capacity signs are located at the main and auxiliary control panels, and on M984A they are located on the wrecker body rear stowage box doors.

CRANE ELECTRICAL SYSTEM

Material handling cranes for models M977, M984A, and M985 all have overload shutdown and/or tilt warning (unstable) systems.

When M977, M985, and M984A cranes are overloaded, the overload system will automatically shut off power to telescope boom out, raise boom, or hoist load higher. The M977 and M984A overload system will also prevent lowering the boom. An overload condition can be corrected by lowering the boom. An overload condition can be corrected by lowering load to ground or other supporting surface. All functions will be restored in approximately six seconds.

The crane electrical system is supplied with power by the vehicle 24 VDC system.

The junction box on the crane connects and distributes the various control circuits of the crane.

Tilt warning, outrigger extended warning, and remote control systems are electronically controlled.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
HEAVY-DUTY WINCH

HEAVY-DUTY WINCH

The heavy-duty winch assembly (1) is mounted onto chassis frame, between the equipment body and crane. It is powered by an automatic two-speed hydraulic motor which drives the winch drum through a planetary gearbox.

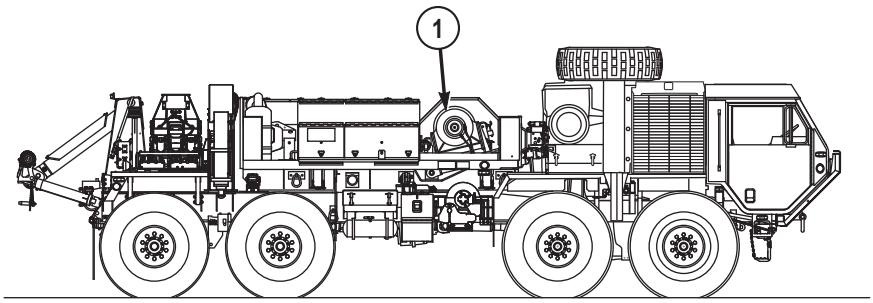


Figure 1.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
RETRIEVAL SYSTEM

RETRIEVAL SYSTEM

The retrieval system is shown below, mounted on rear frame and is powered from wrecker hydraulic system. The retrieval system is operator-controlled from retrieval control assembly (1) located about driver side rear fender.

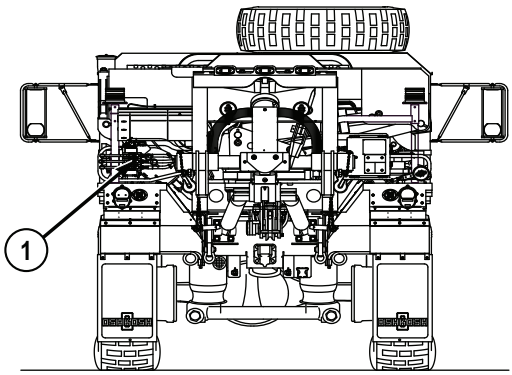


Figure 1.

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

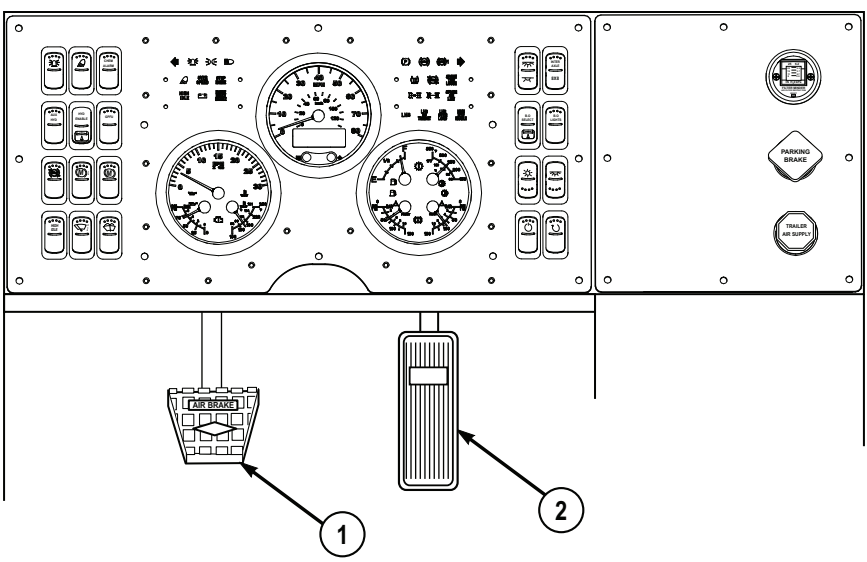


Figure 1.

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

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Table 1. Cab-Mounted Hand Controls.

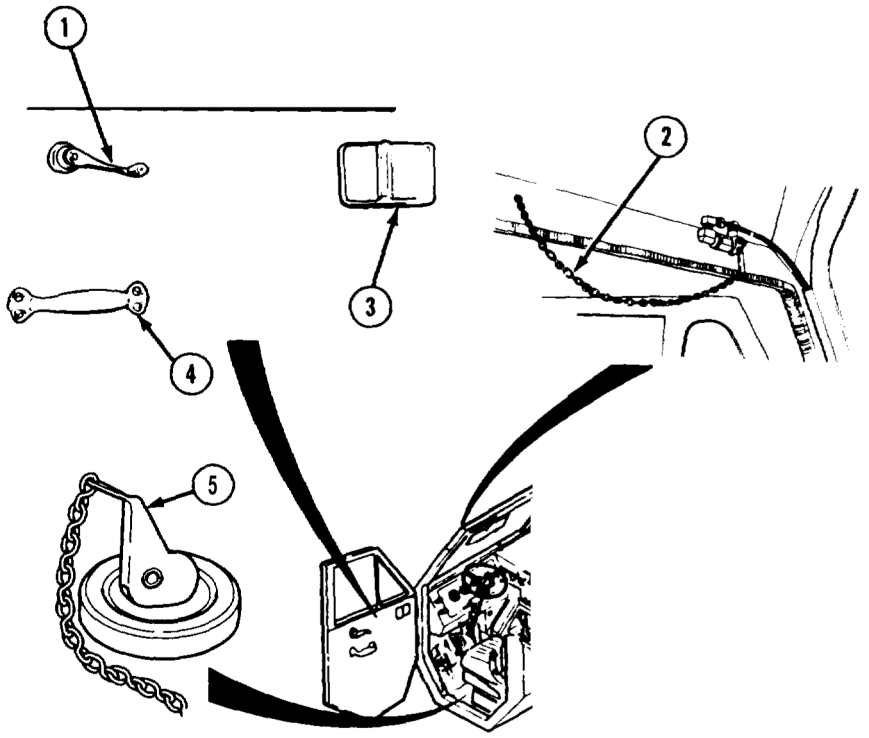
Key	Control/ Indicator	Function
		

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.

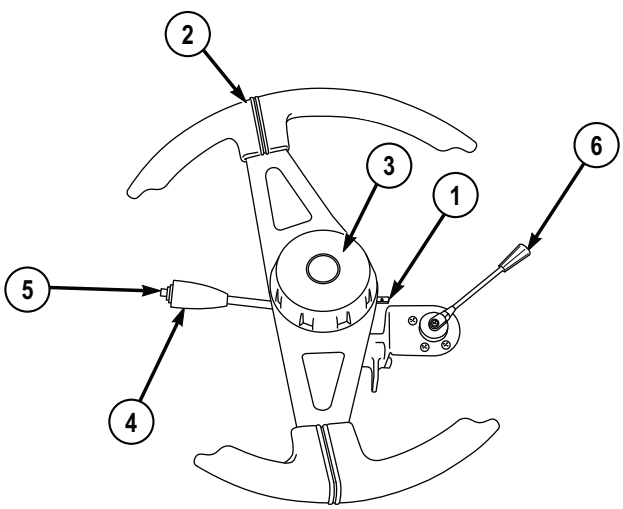
Key	Control/ Indicator	Function
		
		Figure 1.
1	Emergency Flasher Control	To turn on emergency flashers, push in red tab. Pull red tab out to turn emergency flashers off.

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 0022)
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

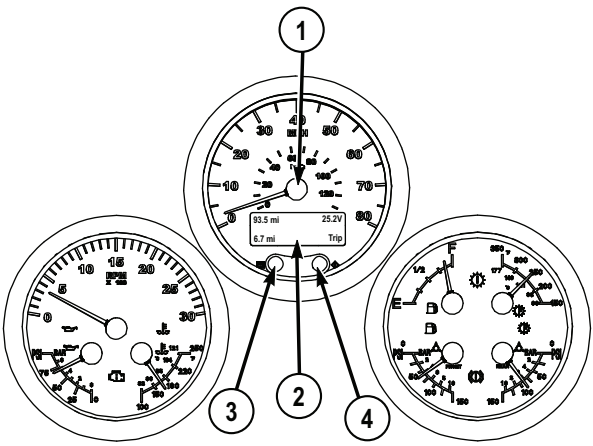


Figure 1.

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.

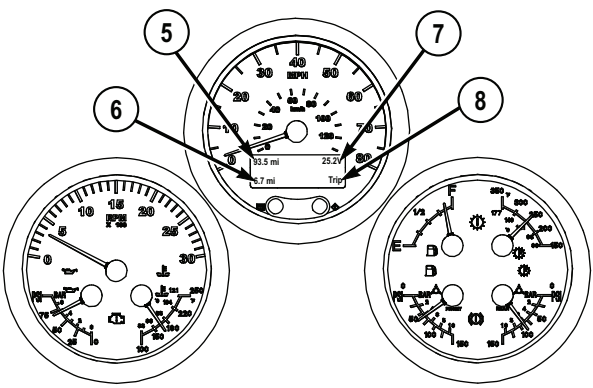


Figure 2.

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.

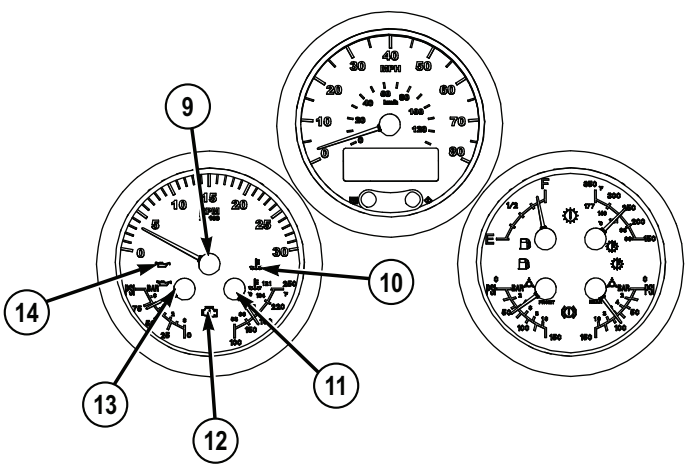


Figure 3.

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.

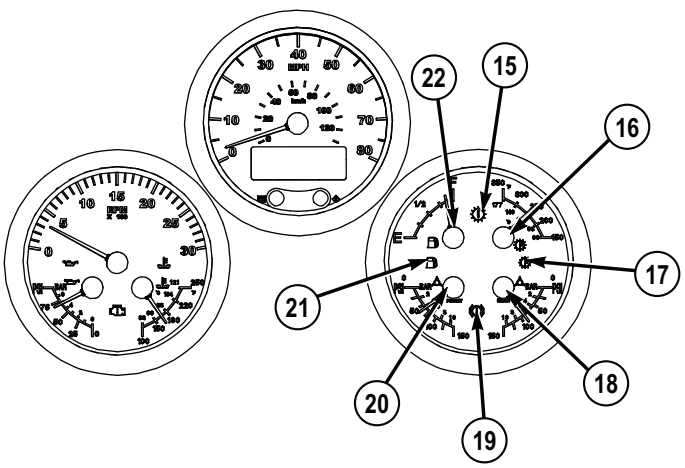


Figure 4.

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.

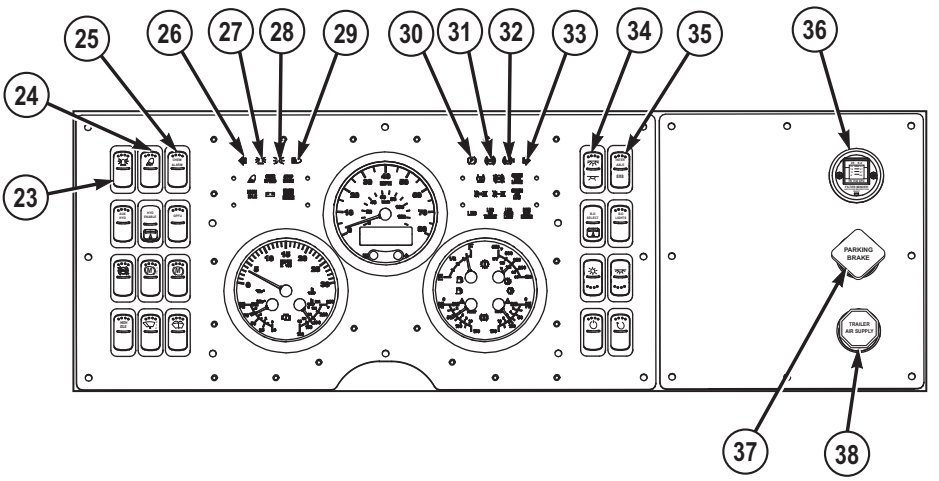


Figure 5.

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

Table 1. Instrument Panel Controls and Indicators. - Continued

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

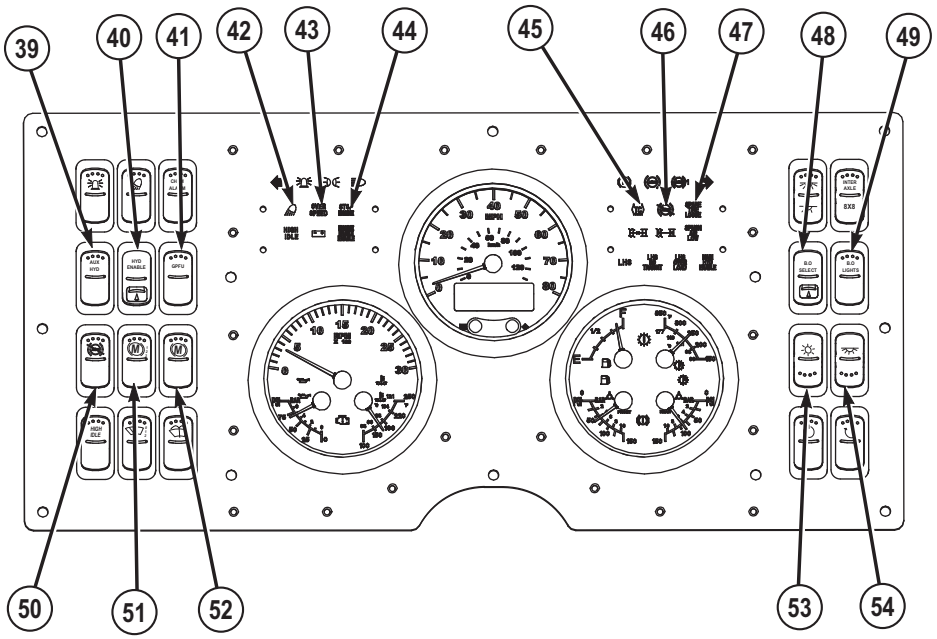


Figure 6.

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.

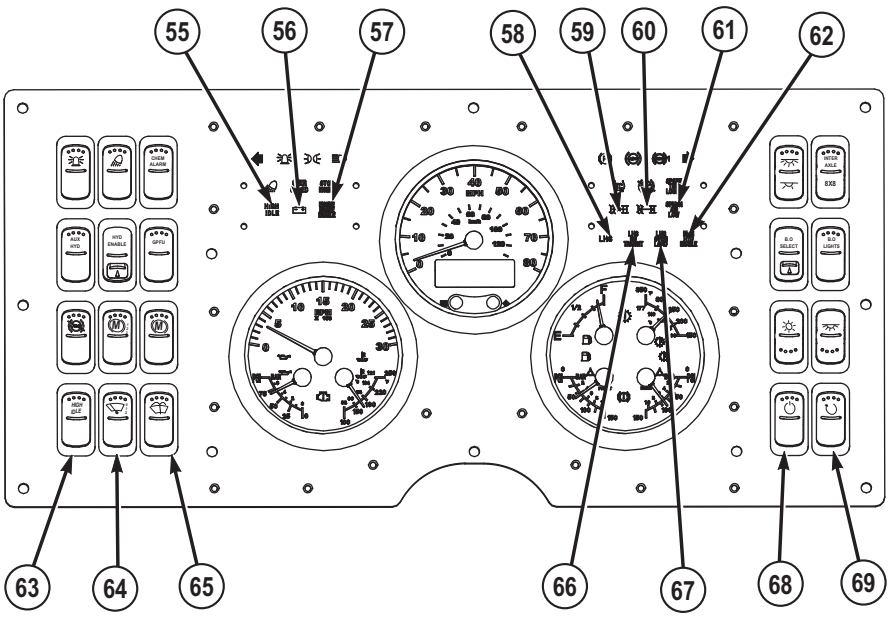


Figure 7.

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

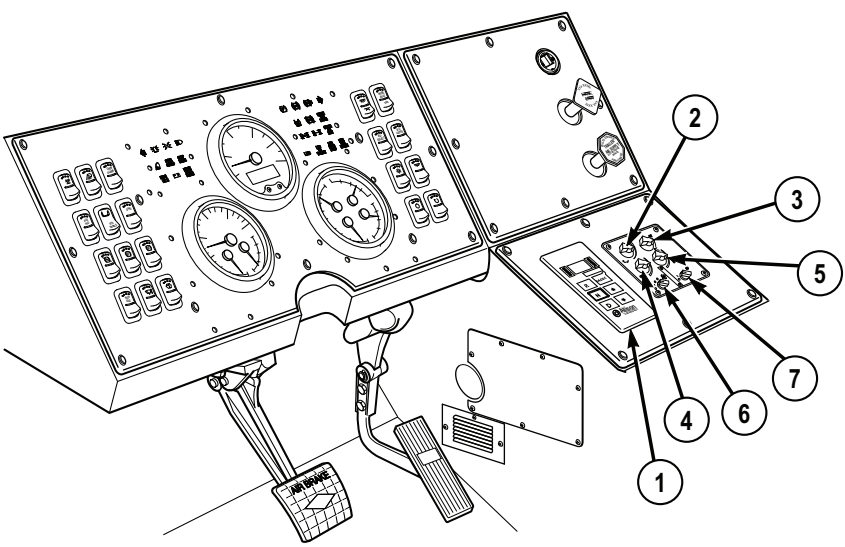


Figure 1.

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).

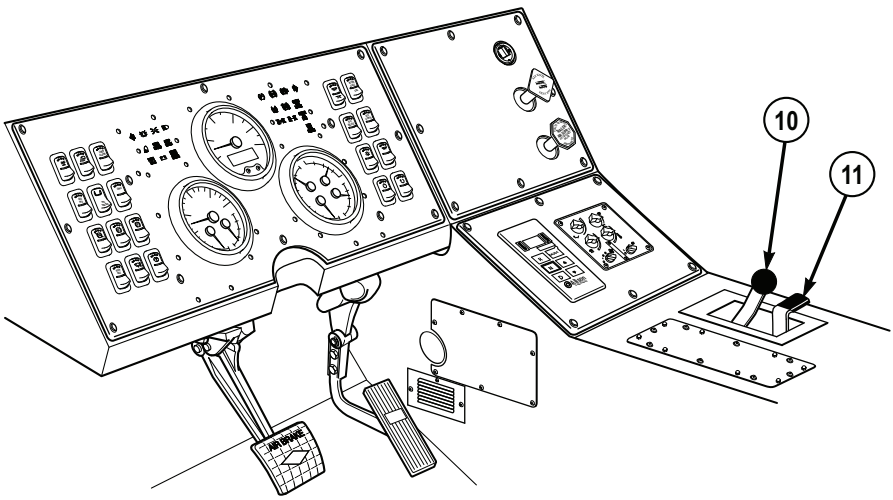


Figure 3.

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

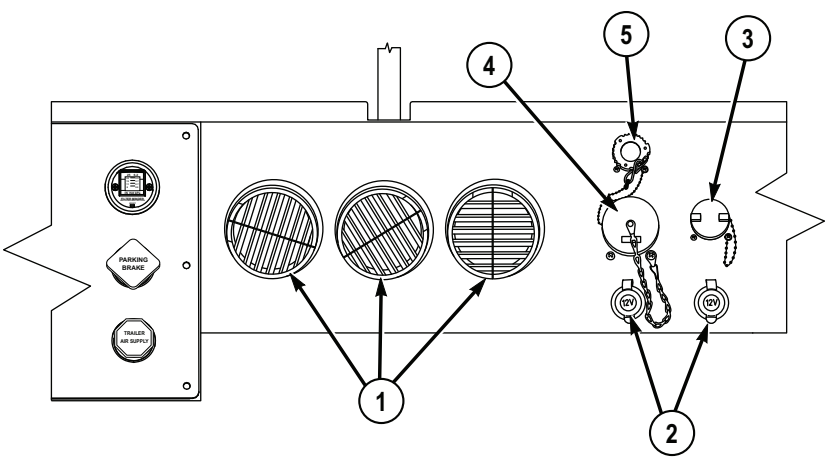


Figure 1.

1	Operator/Crew Air Vents	Rotate to direct air as desired.

Table 1. Center Dash Panel Controls. - Continued

Key	Control/ Indicator	Function
2	12 Volt Receptacle (Two)	Supplies 12V electrical power to cab.
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

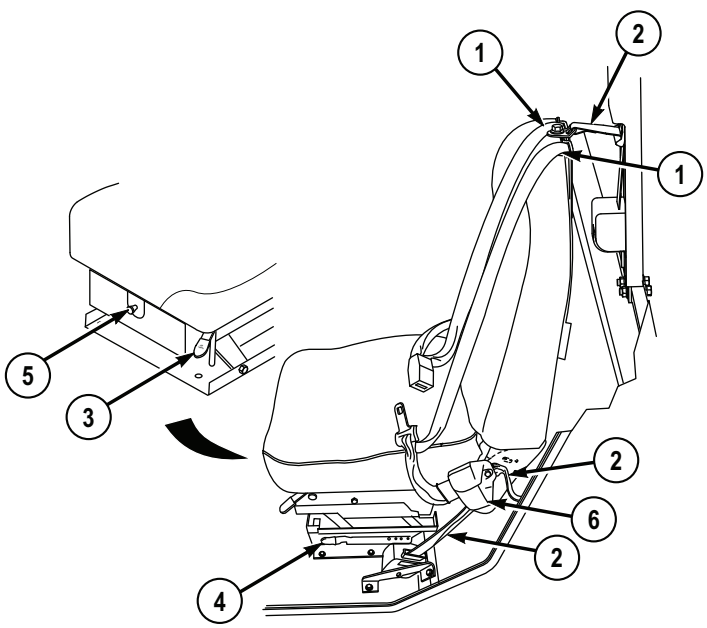


Figure 1.

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.

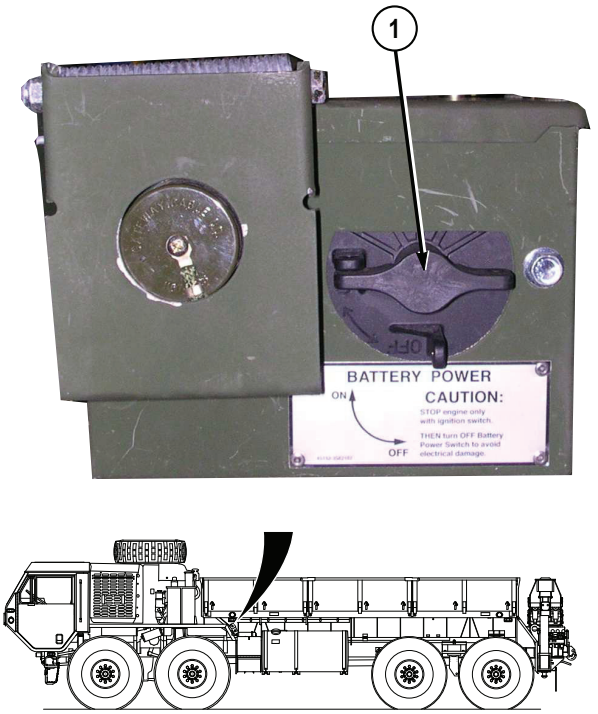


Figure 1.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
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

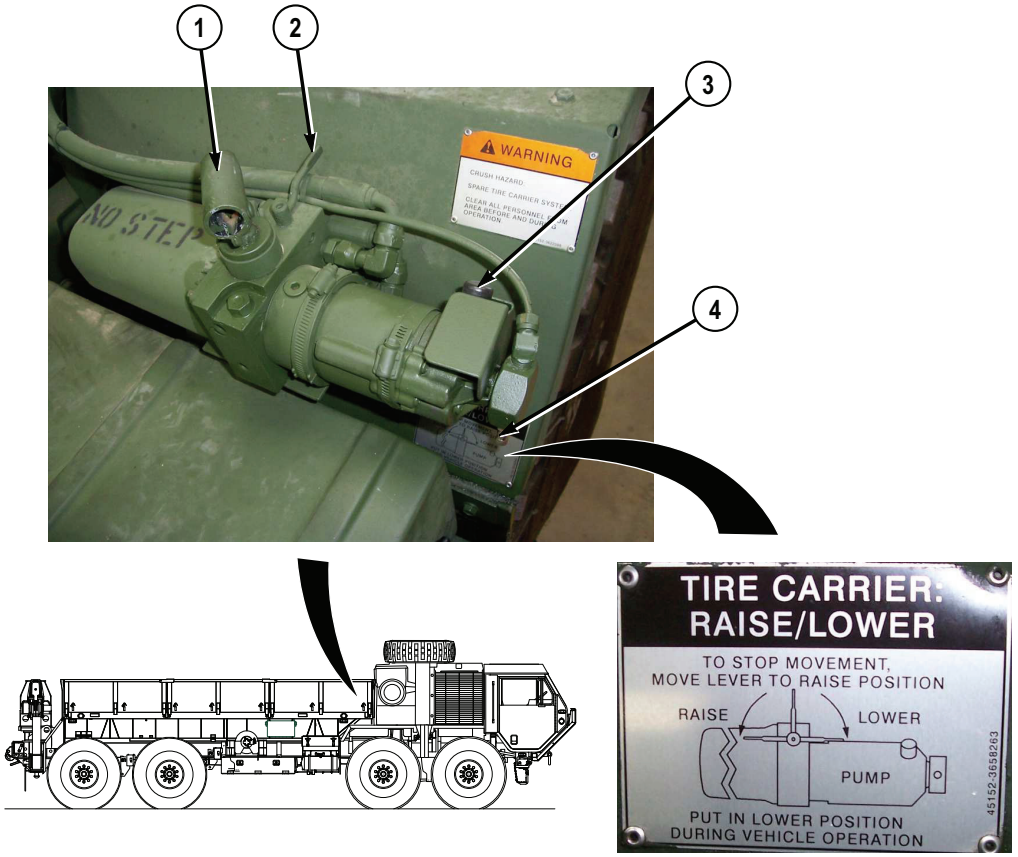


Figure 1.

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:

Table 1. Tire Carrier Pump Controls. - Continued

Key	Control/ Indicator	Function
		Outboard - LOWER
		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

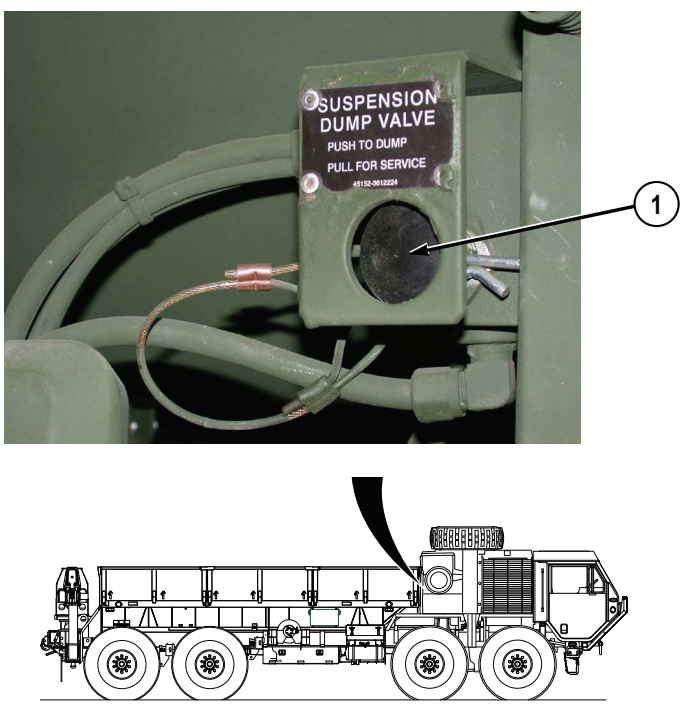


Figure 1.

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
GROVE CRANE CONTROLS

CONTROLS AND INDICATORS INTRODUCTION

This section displays the location and describes the use of grove crane 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 grove crane controls.

Table 1. Grove Crane Controls.

Key	Control/ Indicator	Function

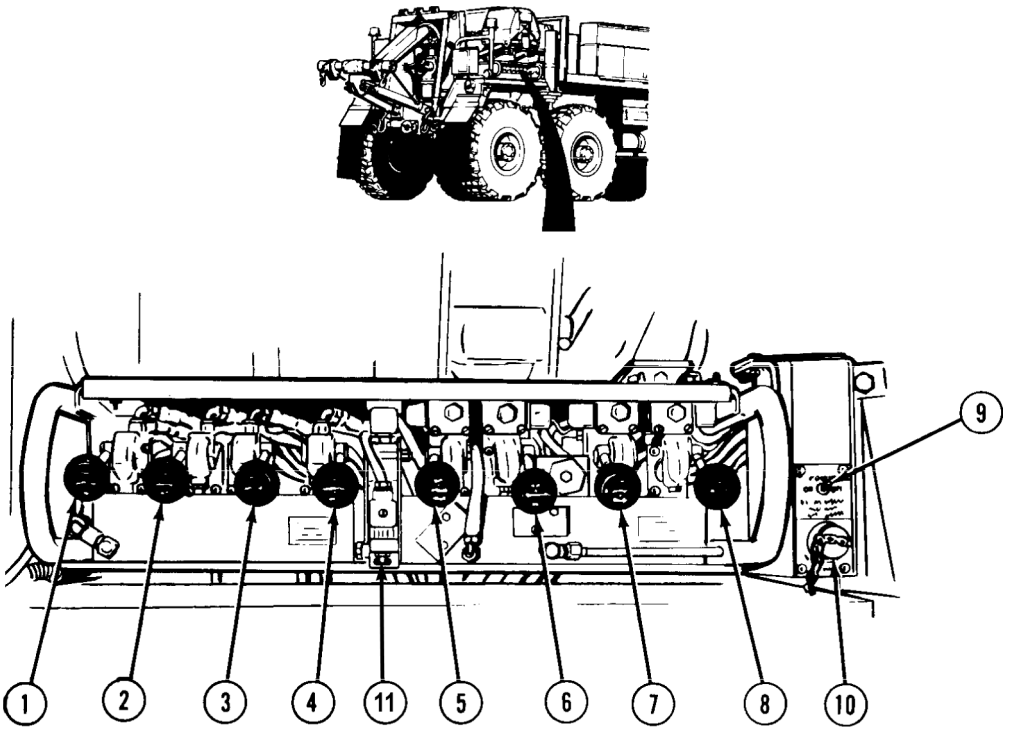


Figure 1.

1	LH O/R JACK Control Lever	Lowers (DOWN) and raises (UP) left outrigger jack.
2	MAST Control Lever	Raises (UP) mast to operating position and lowers (DOWN) mast to stowage position.
3	O/R EXT. Control Lever	Extends (OUT) and retracts (IN) outrigger beams.

Table 1. Grove Crane Controls. - Continued

Key	Control/ Indicator	Function
4	RH O/R JACK Control Lever	Lowers (DOWN) and raises (UP) right outrigger jack.
5	SWING Control Lever	Moves crane clockwise (CW) and counterclockwise (CCW).
6	TELESCOPE Control Lever	Extends (OUT) and retracts (IN) first and second stages of boom.
7	BOOM Control Lever	Raises (UP) and lowers (DOWN) boom.
8	HOIST Control Lever	Reels in and pays out hoist cable.
9	POWER Switch	Turns electrical power to crane ON/OFF.
10	R.H. REMOTE CONTROL HOOK-UP	Receptacle for connecting remote-control unit cable.

Table 1. Grove Crane Controls. - Continued

Key	Control/ Indicator	Function
11	Shut-Down Solenoid Valve Button	Provides emergency hydraulic power when electrical power fails.

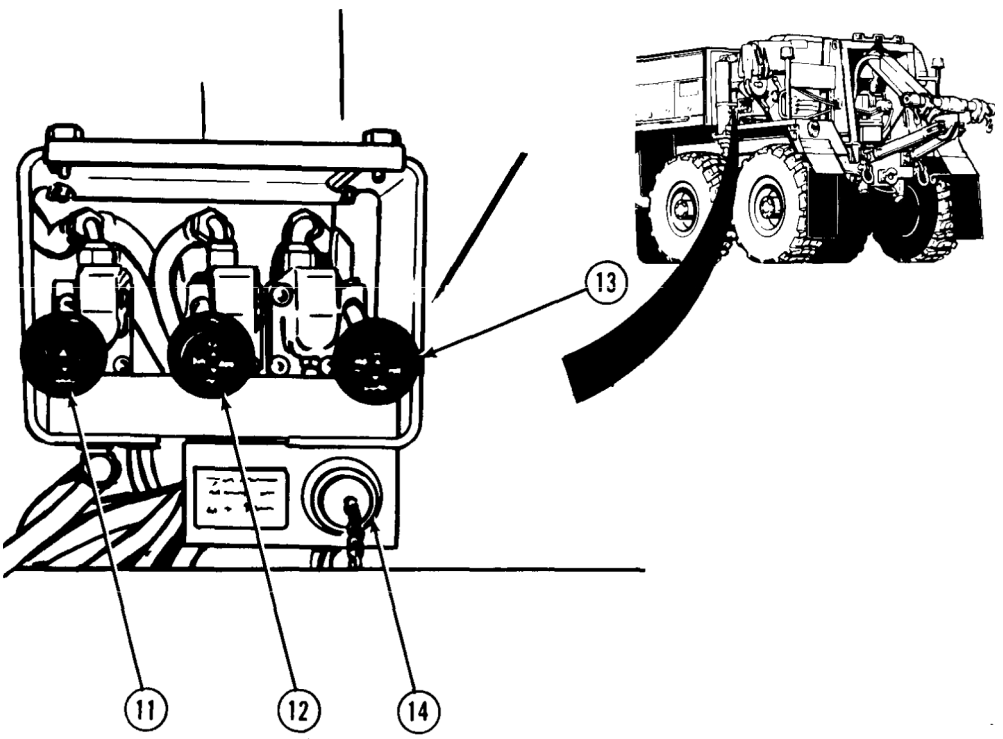


Figure 2.

11	LH O/R JACK Control Lever (driver side of vehicle)	Lowers (DOWN) and raises (UP) left outrigger jack.
12	O/R EXT. Control Lever	Extends (OUT) and retracts (IN) outrigger beams.

Table 1. Grove Crane Controls. - Continued

Key	Control/ Indicator	Function
	(driver side of vehicle)	
13	RH O/R JACK Control Lever (driver side of vehicle)	Lowers (DOWN) and raises (UP) right outrigger jack.
14	L.H. REMOTE CONTROL HOOK-UP	Receptacle for connecting remote-control unit cable.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
GROVE CRANE REMOTE-CONTROL UNIT

CONTROLS AND INDICATORS INTRODUCTION

This section displays the location and describes the use of Grove Crane Remote-Control Unit 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 Grove Crane Remote-Control Unit.

Table 1. Grove Crane Remote-Control Unit.

Key	Control/ Indicator	Function

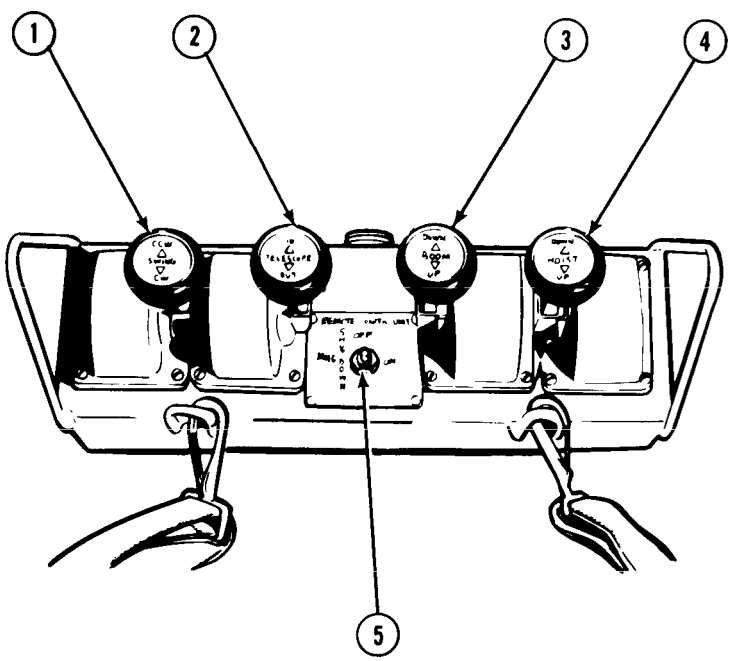


Figure 1.

Table 1. Grove Crane Remote-Control Unit. - Continued

Key	Control/ Indicator	Function
1	SWING Control Lever	Moves boom clockwise (CW) and counterclockwise (CCW).
2	TELESCOPE Control Lever	Extends (OUT) and retracts (IN) first and second stages of boom.
3	BOOM Control Lever	Raises (UP) and lowers (DOWN) boom.
4	HOIST Control Lever	Reels in (UP) and pays out (DOWN) hoist cable.
5	REMOTE-CONTROL UNIT ON/OFF Switch	Turns remote-control unit ON/OFF.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
GROVE CRANE POWER DISTRIBUTION BOX CONTROLS AND INDICATORS

CONTROLS AND INDICATORS INTRODUCTION

This section displays the location and describes the use of grove crane power distribution box 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 grove crane power distribution box controls and indicators.

Table 1. Grove Crane Power Distribution Box Controls and Indicators.

Key	Control/ Indicator	Function

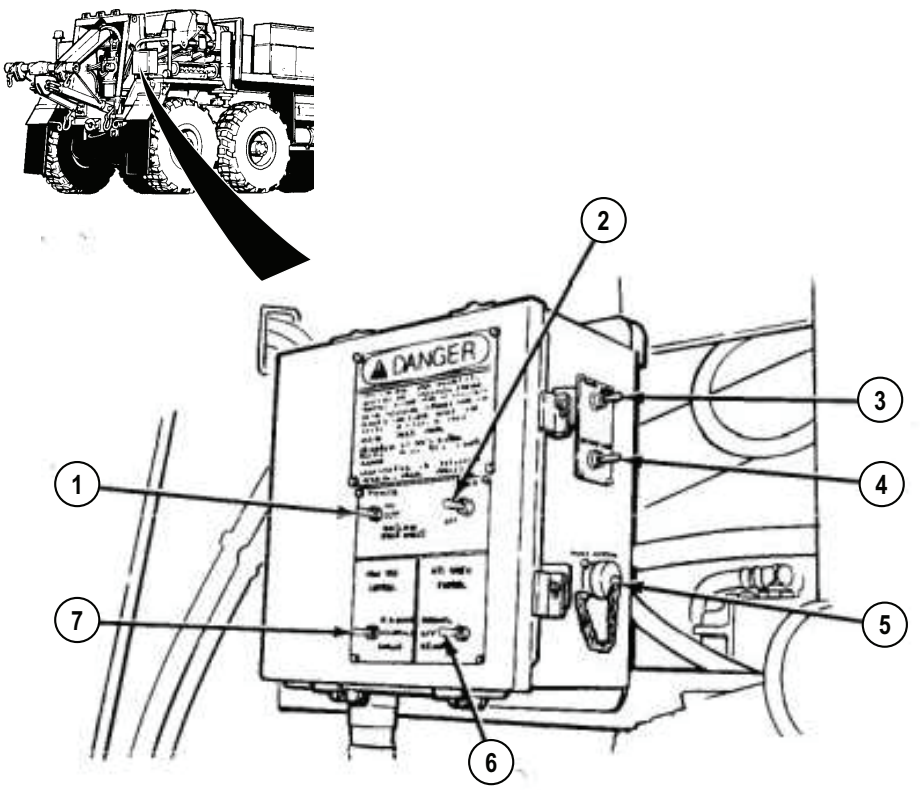


Figure 1.

1	POWER Switch	Turns electrical power to power distribution box ON/OFF.
2	LATCH Switch (Momentary)	Locks in power switch circuits for operation when positioned to ON and released. Switch will automatically return to OFF position when released.

Table 1. Grove Crane Power Distribution Box Controls and Indicators. - Continued

Key	Control/ Indicator	Function
3	WORK LIGHT Switch	Turns work lights ON/OFF.
4	BEACON LIGHTS Switch	Turns rear beacon lights ON/OFF.
5	WINCH CONTROL Remote Outlet	Receptacle to hook-up heavy-duty winch remote-control unit.
6	H.D. WINCH CONTROL Switch (Three-Position)	Allows the operator to supply power for either MANUAL control (up position) or REMOTE control (down position) for winch. Center position is OFF.
7	HIGH IDLE CONTROL Switch (Three-Position)	Allows the operator to select high idle setting for crane remote control (CRANE), winch remote-control (H.D. WINCH), or CONTINUOUS operation.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
RETRIEVAL SYSTEM CONTROLS

CONTROLS AND INDICATORS INTRODUCTION

This section displays the location and describes the use of retrieval system 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 retrieval system controls.

Table 1. Retrieval System Controls.

Key	Control/ Indicator	Function

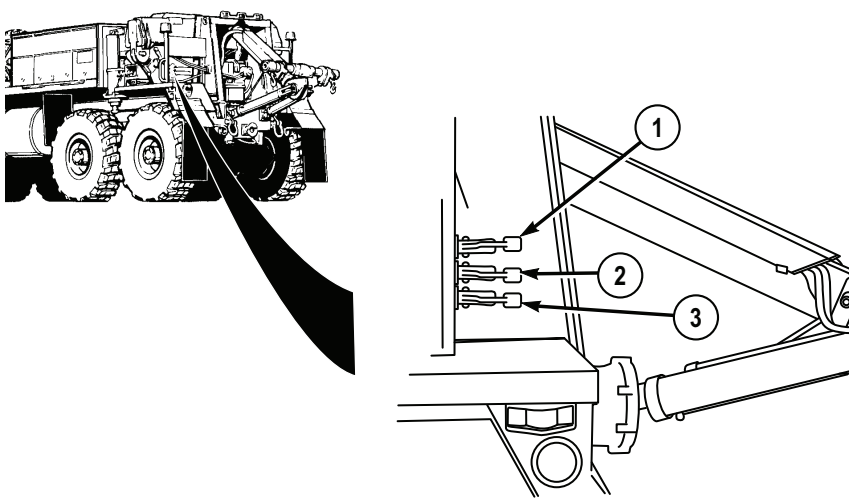


Figure 1.

Table 1. Retrieval System Controls. - Continued

Key	Control/ Indicator	Function
1	RIGHT TOW CYLINDER Control Lever	Extends (OUT) and retracts (IN) right cylinder to align tow adapters.
2	LEFT TOW CYLINDER Control Lever	Extends (OUT) and retracts (IN) left cylinder to align tow adapters.
3	LIFT CYLINDER Control Lever	Extends (OUT) and retracts (IN) lift cylinder to raise and lower crosstube.

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

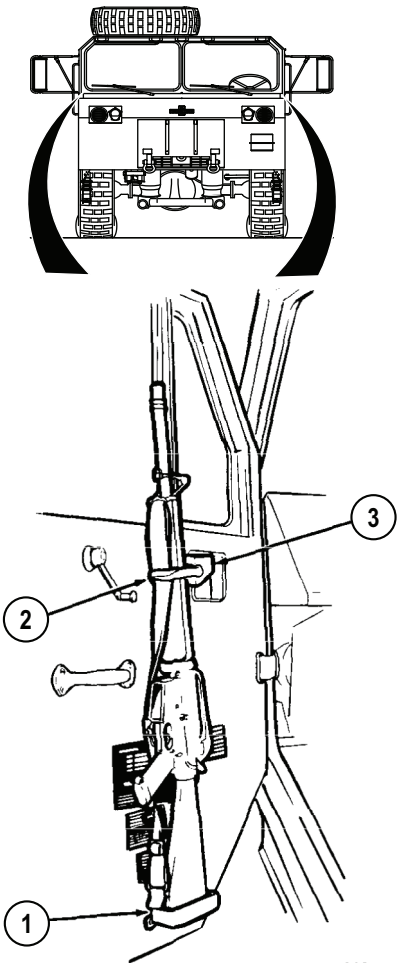


Figure 1.

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 0099) to operate windshield wipers.

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

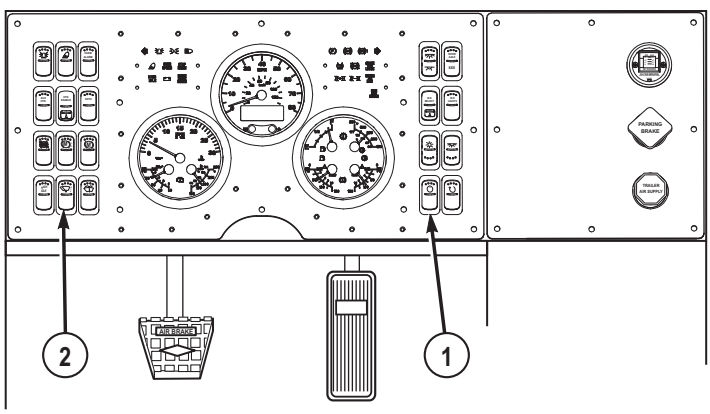


Figure 1.

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 0099) to operate windshield wipers.

OPERATE WINDSHIELD WASHER - Continued

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

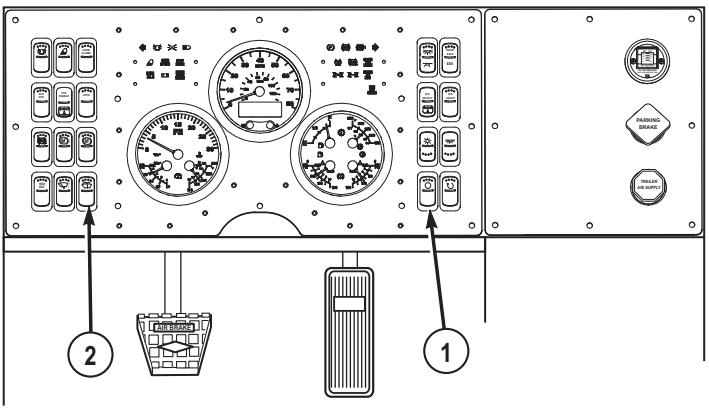


Figure 2.

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.

OPERATE PERSONNEL HEATER - Continued

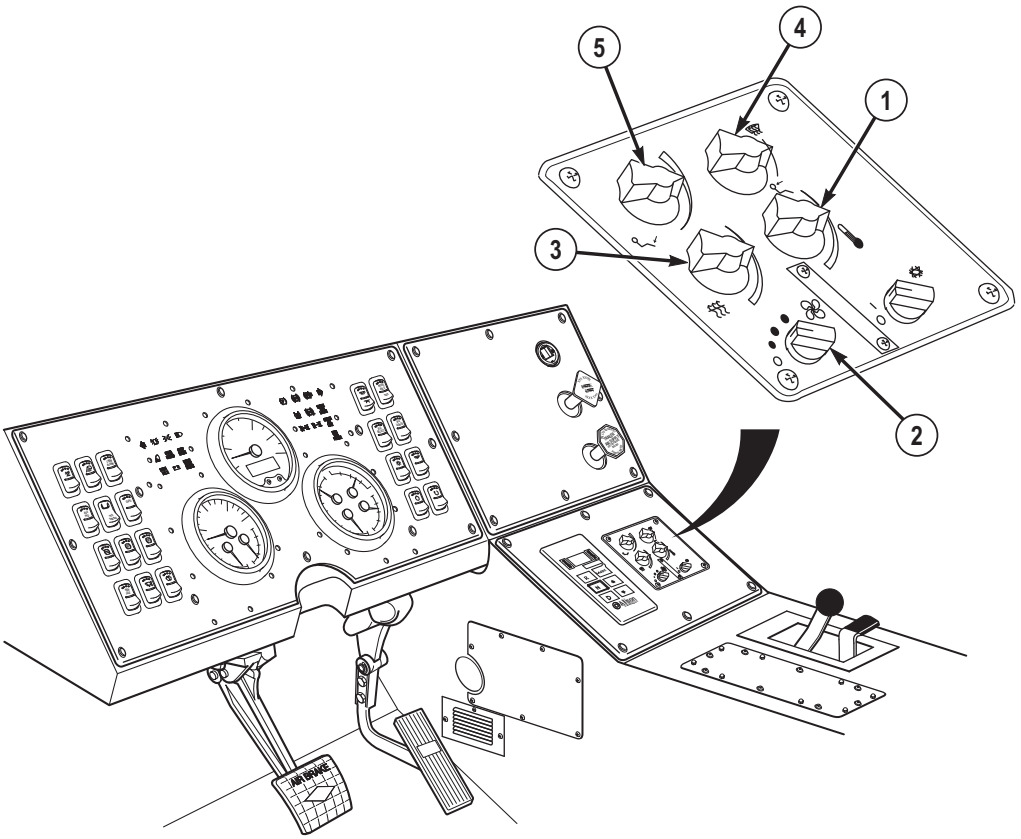


Figure 1.

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.

OPERATE PERSONNEL HEATER - Continued

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.

OPERATE WINDSHIELD DEFROST - Continued

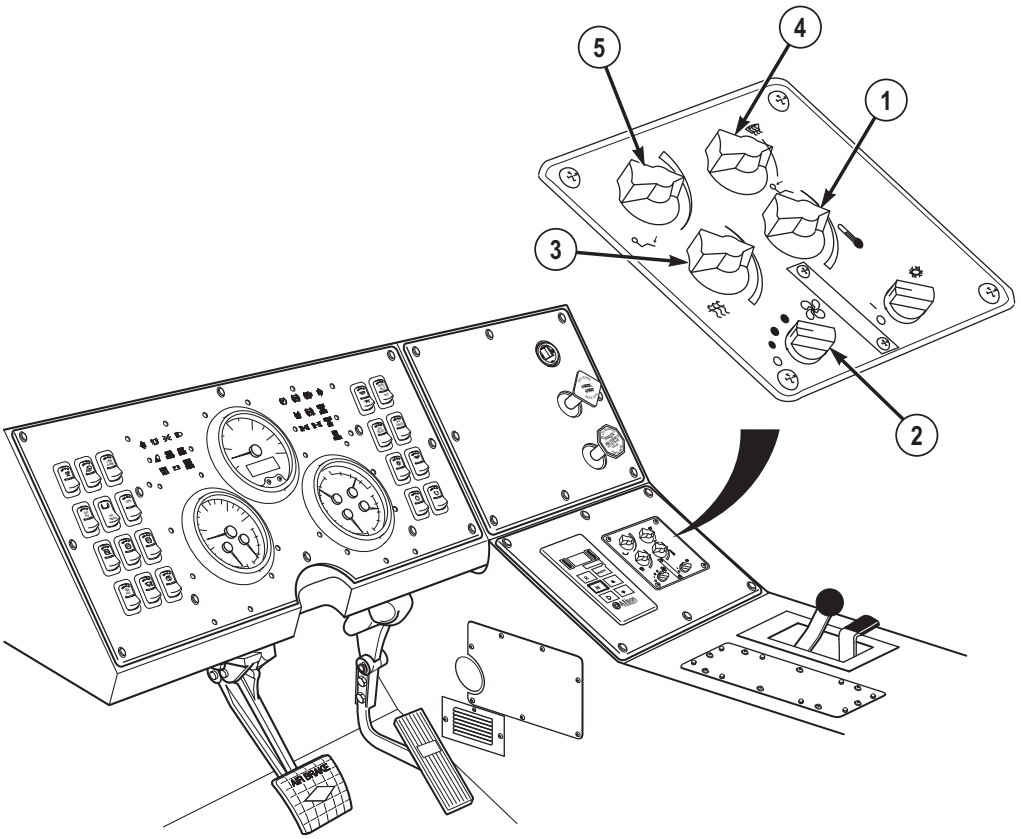


Figure 2.

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.

OPERATE WINDSHIELD DEFROST - Continued

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).

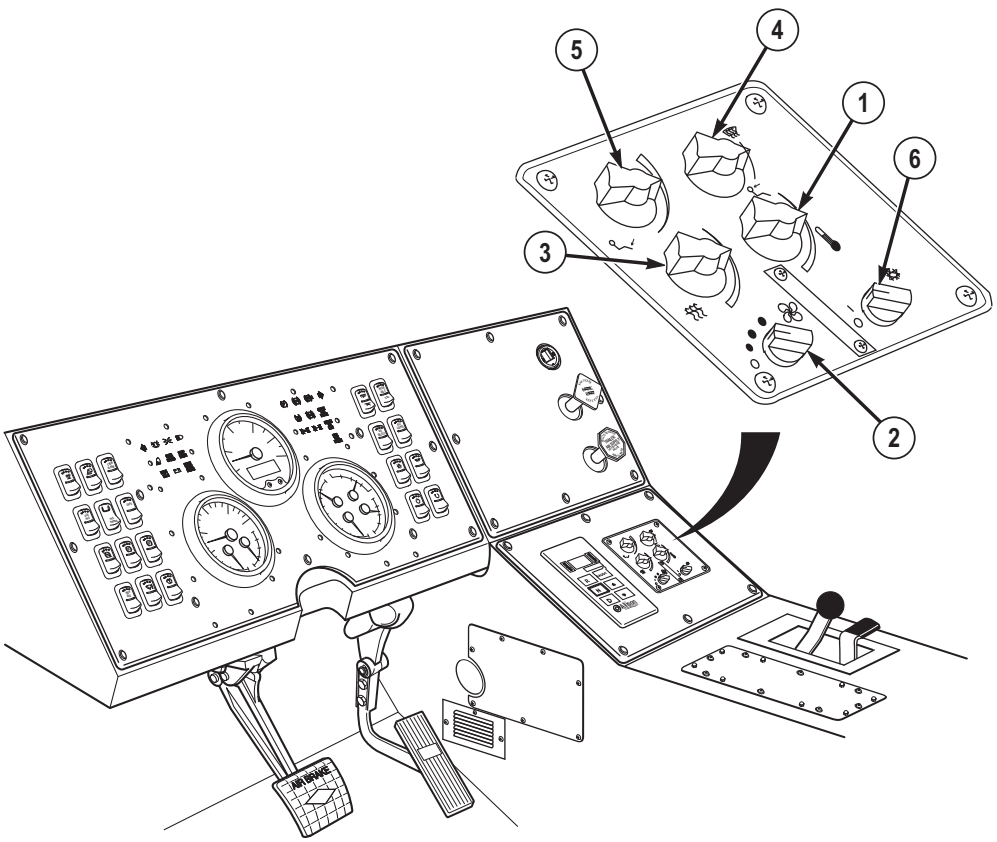


Figure 3.

2. Set fan switch (2) to desired setting:
   a. Off - full CCW.

OPERATE AIR CONDITIONER - Continued

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).

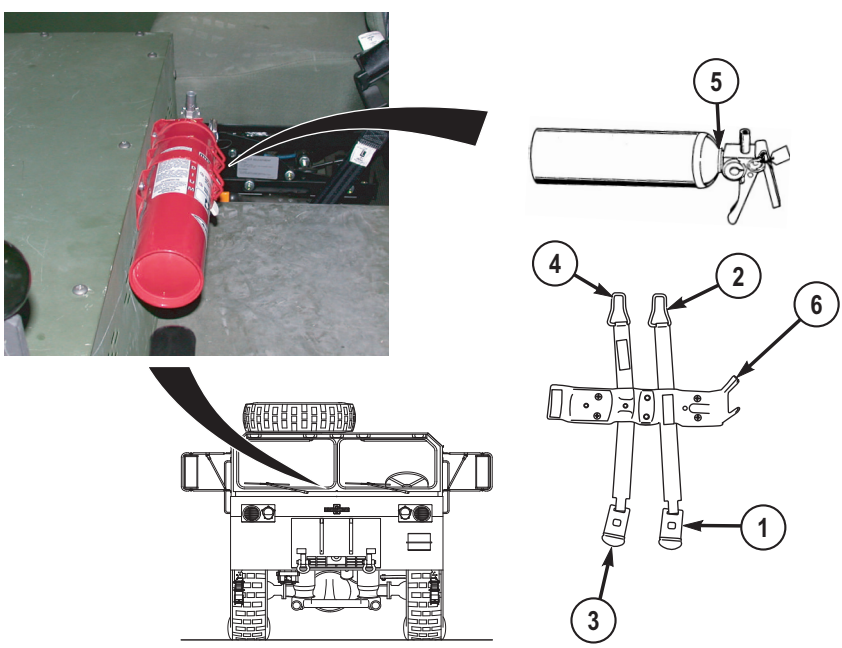


Figure 1.

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

REMOVE FIRE EXTINGUISHER FROM PASSENGER SIDE STOWAGE BOX

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

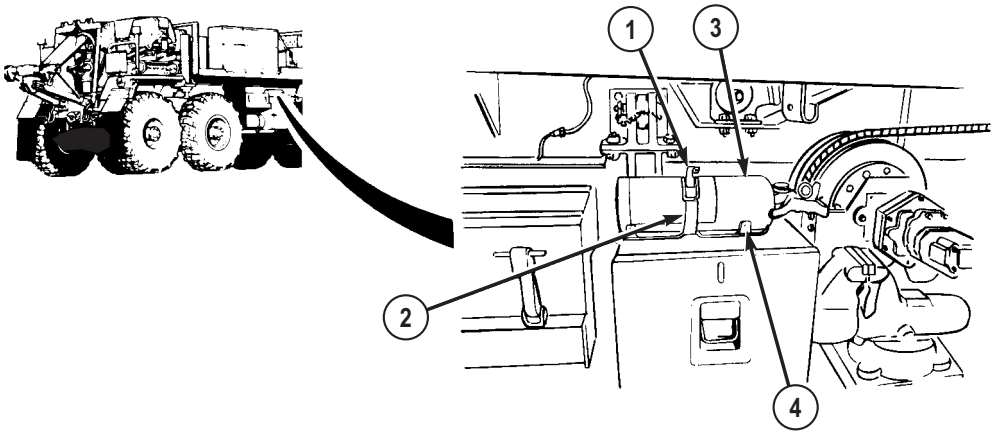


Figure 2.

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).

EXTINGUISH FIRE - Continued

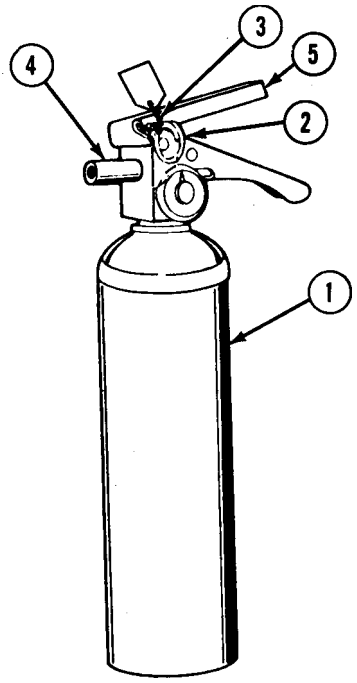


Figure 3.

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).

INSTALL FIRE EXTINGUISHER IN CAB - Continued

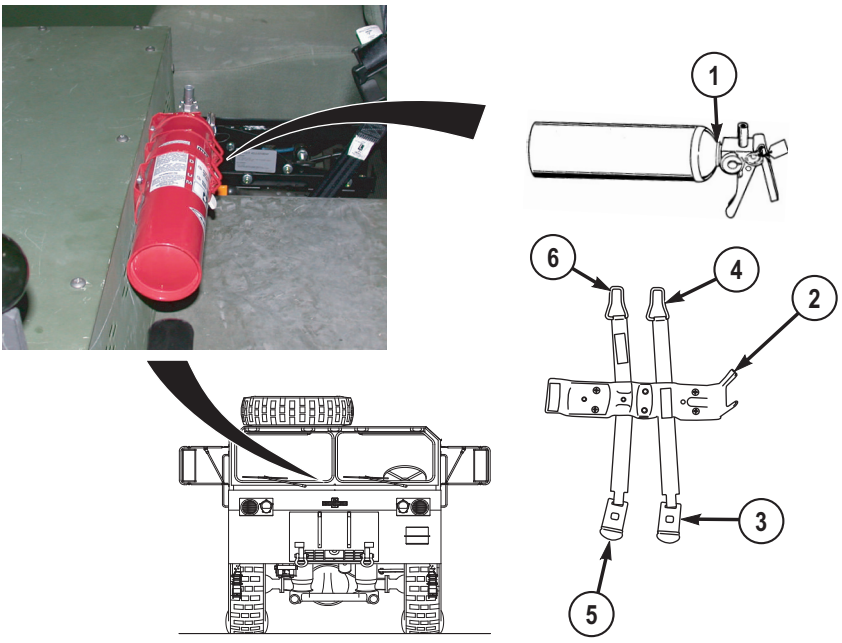


Figure 4.

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 PASSENGER SIDE STOWAGE BOX

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

INSTALL FIRE EXTINGUISHER ON PASSENGER SIDE STOWAGE BOX - Continued

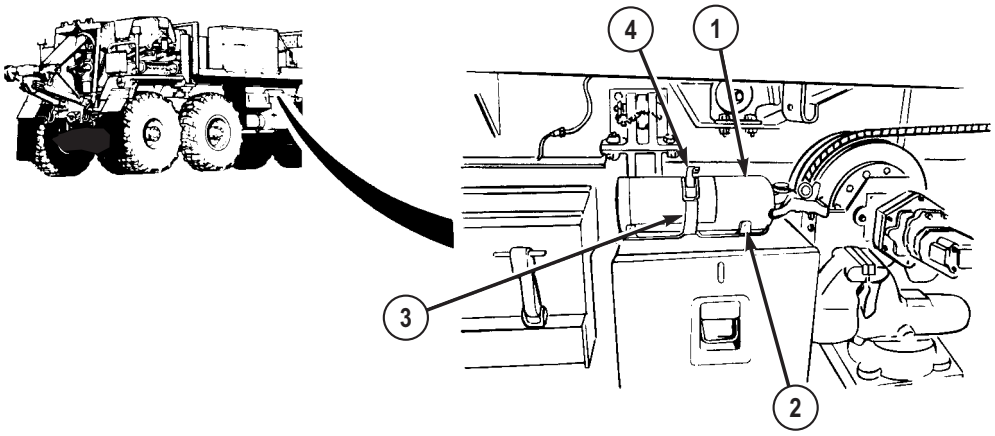


Figure 5.

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. Remove quick pin (1) and pin (2).

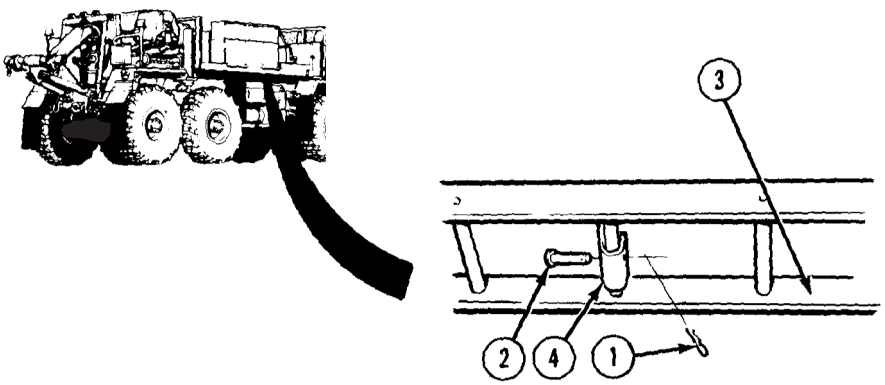


Figure 1.

2. Remove access ladder (3) from bracket (4).
3. Reinstall pin (2) and quick pin (1) in bracket (4).

NOTE

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

4. 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.

INSTALL ACCESS LADDER - Continued

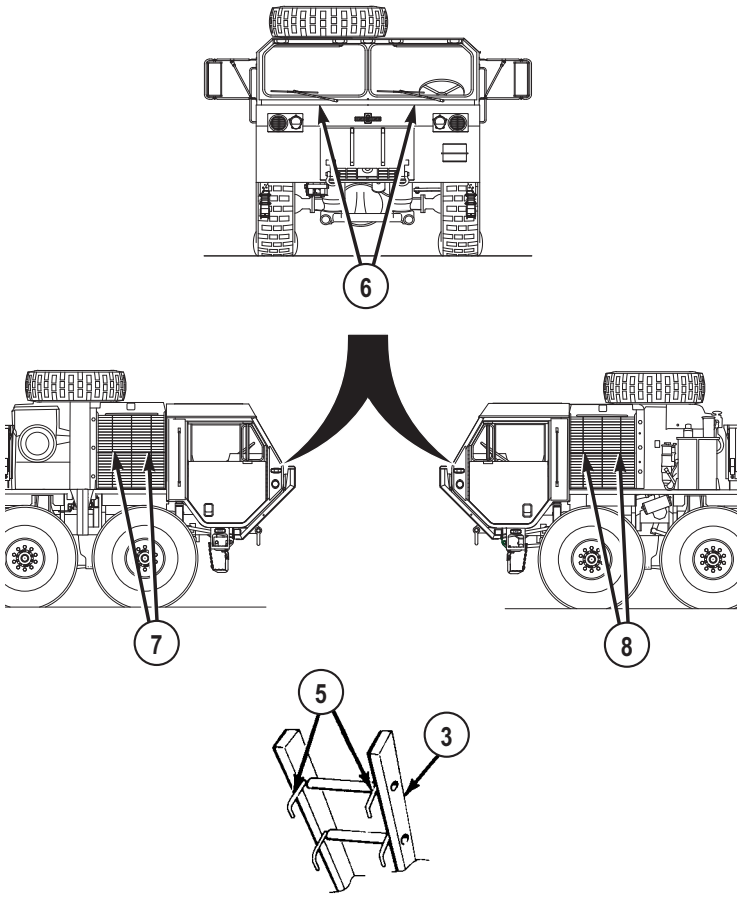


Figure 2.

STOW ACCESS LADDER

1. Remove quick pin (1) and pin (2) from bracket (4).

STOW ACCESS LADDER - Continued

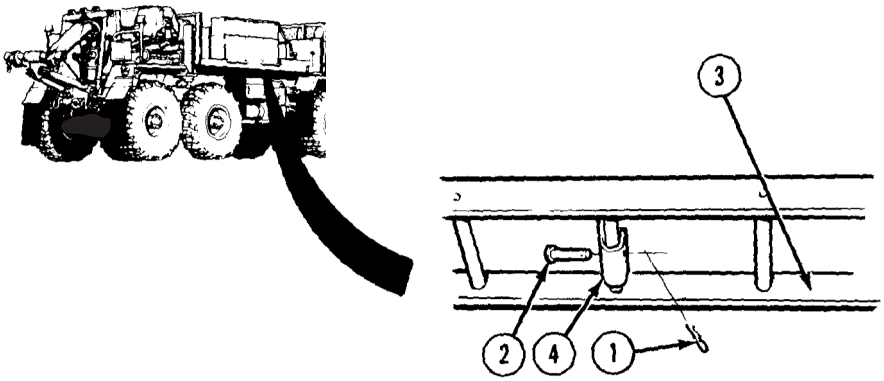


Figure 3.

2. Put access ladder (3) in bracket (4). Reinstall pin (2) and quick pin (1).

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).

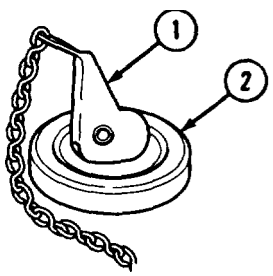


Figure 1.

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.

INSTALL DRAIN PLUG - Continued

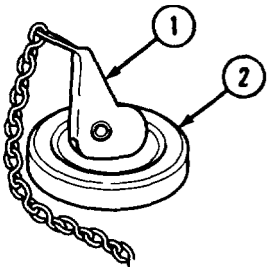


Figure 2.

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

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
HEAVY-DUTY WINCH OPERATION

INITIAL SETUP:

Not Applicable

PREPARE TO OPERATE HEAVY-DUTY WINCH

WARNING

Excessive noise levels are present any time the heavy-duty winch, crane, or retrieval system is operating. Wear single hearing protection (earplugs or equivalent) while working around equipment when it is running. Failure to comply may result in injury or death to personnel. Seek medical aid should you suspect a hearing problem.

NOTE

This procedure is a two soldier task.

1. Start engine. (WP 0044)
2. If possible, always position vehicle for straight pull on solid ground so tires have good traction.
3. Set transmission range selector (1) to N (neutral).

PREPARE TO OPERATE HEAVY-DUTY WINCH - Continued

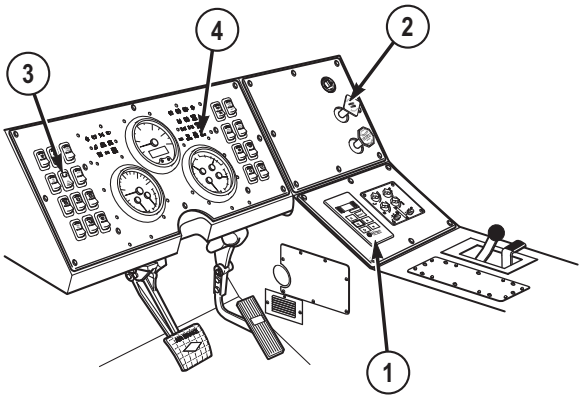


Figure 1.

NOTE

Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

4. Pull out PARKING BRAKE control (2).
5. Set up rear beacon lights. (WP 0093)
6. Set HYD ENABLE switch (3) to ON position. MAIN HYD ENABLE indicator (4) will illuminate.
7. Push in FRONT BRAKE APPLICATION control (5).

PREPARE TO OPERATE HEAVY-DUTY WINCH - Continued

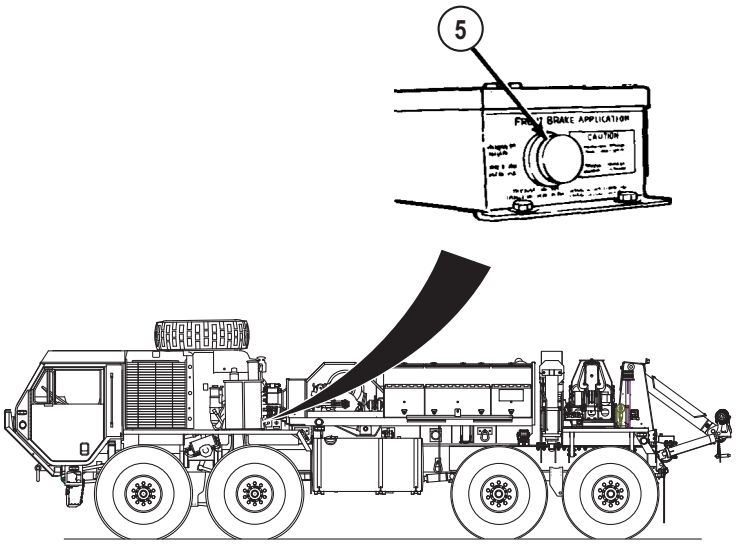


Figure 2.

8. Set ON/OFF POWER switch (6) to ON.

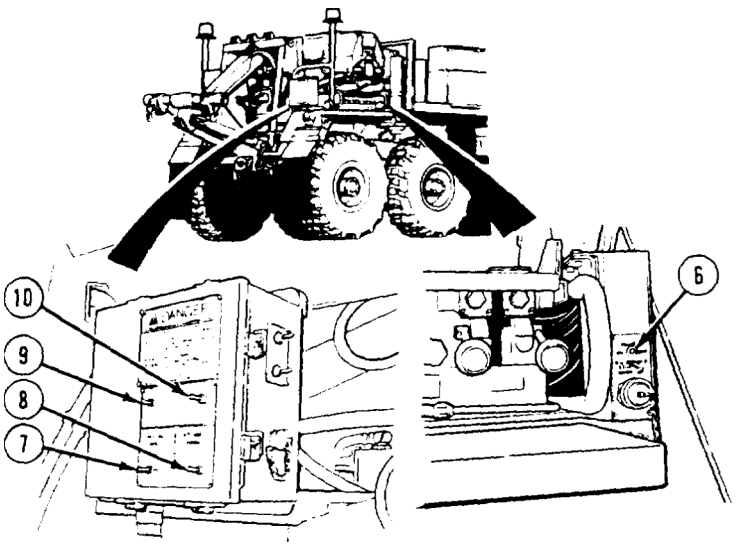


Figure 3.

9. Set HIGH IDLE CONTROL switch (7) to CONTINUOUS.

PREPARE TO OPERATE HEAVY-DUTY WINCH - Continued

10. Set H.D. WINCH CONTROL switch (8) to OFF.
11. Set POWER switch (9) to ON.
12. Push LATCH switch (10) to ON, and release. Engine idle should increase to approximately 1500 rpm.
13. Pull RIGHT TOW CYLINDER control lever (11) and LEFT TOW CYLINDER control lever (12) to fully extend right tow cylinder (13) and left tow cylinder (14).

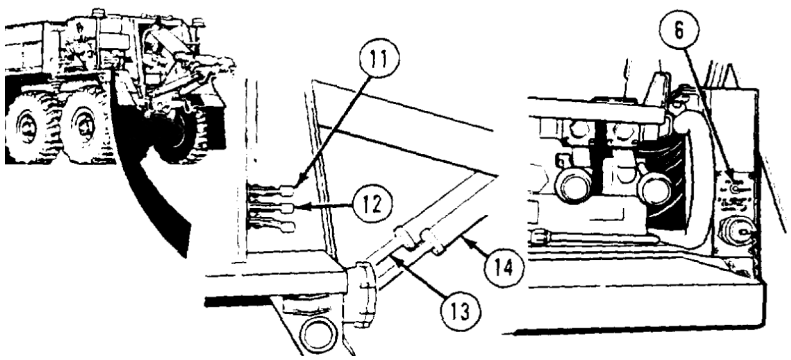


Figure 4.

14. Set ON/OFF POWER switch (6) to OFF.
15. Loosen ratchet (15) and remove hook (16) from winch clevis (17).

PREPARE TO OPERATE HEAVY-DUTY WINCH - Continued

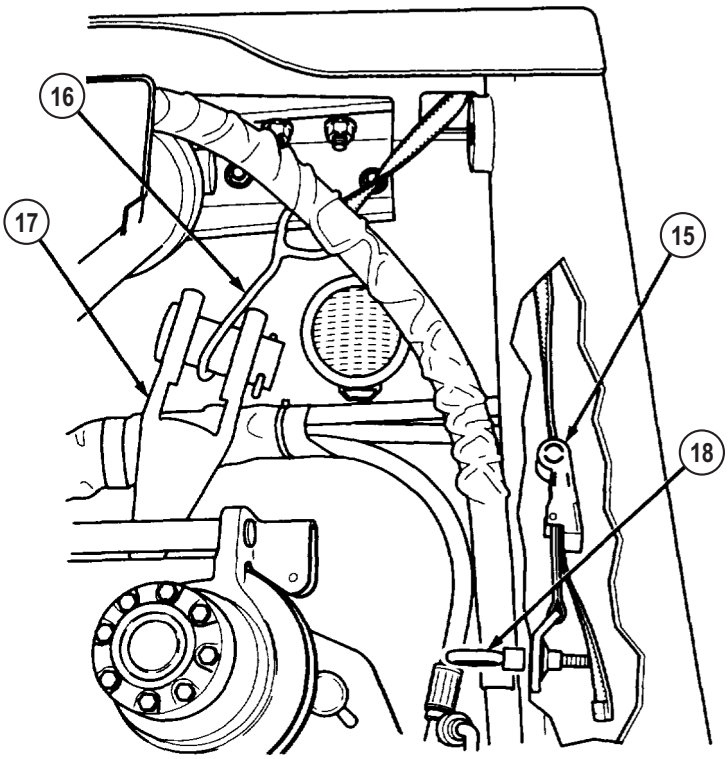
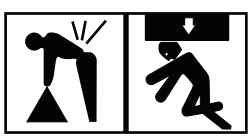


Figure 5.

16. Stow tiedown by inserting hook (16) in eyebolt (18) and tightening ratchet (15).

WARNING



Fairlead/tensioner is very heavy and rotates, making it difficult to raise and lower. Hold fairlead/tensioner tight and always use an assistant whenever raising or lowering. Failure to comply may result in injury or death to personnel.

PREPARE TO OPERATE HEAVY-DUTY WINCH - Continued

NOTE

There is a pin on each side of the fairlead/tensioner which locks the fairlead/tensioner in place. Only passenger side is shown.

17. Hold fairlead/tensioner (19) in place while assistant removes two quick pins (20) and pins (21).

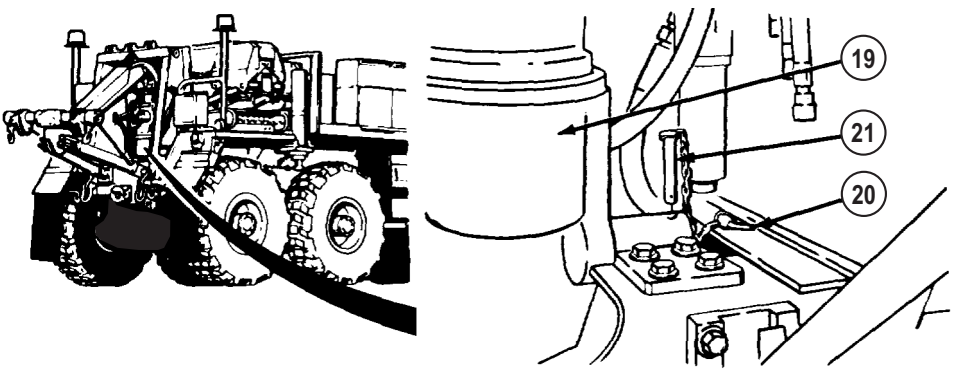


Figure 6.

18. With aid of an assistant, lower fairlead/tensioner (19).
19. Install two pins (21) and quick pins (20).

PAYOUT CABLE AND CONNECT TO MIRED VEHICLE

1. Set HIGH IDLE CONTROL switch (1) to H.D. WINCH.

PAYOUT CABLE AND CONNECT TO MIRED VEHICLE - Continued

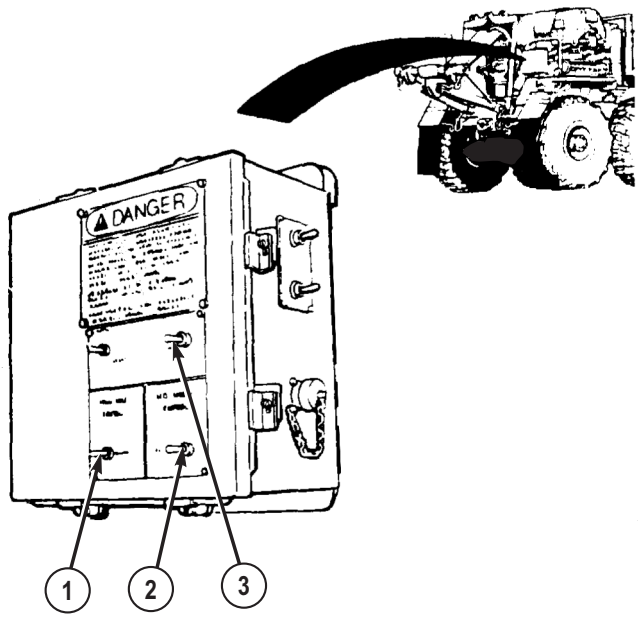


Figure 7.

2. Set H.D. WINCH CONTROL switch (2) to MANUAL.
3. Push LATCH switch (3) to ON and release.
4. Set HIGH IDLE switch (4) to ON. Engine idle should increase to approximately 1500 rpm.

PAYOUT CABLE AND CONNECT TO MIRED VEHICLE - Continued

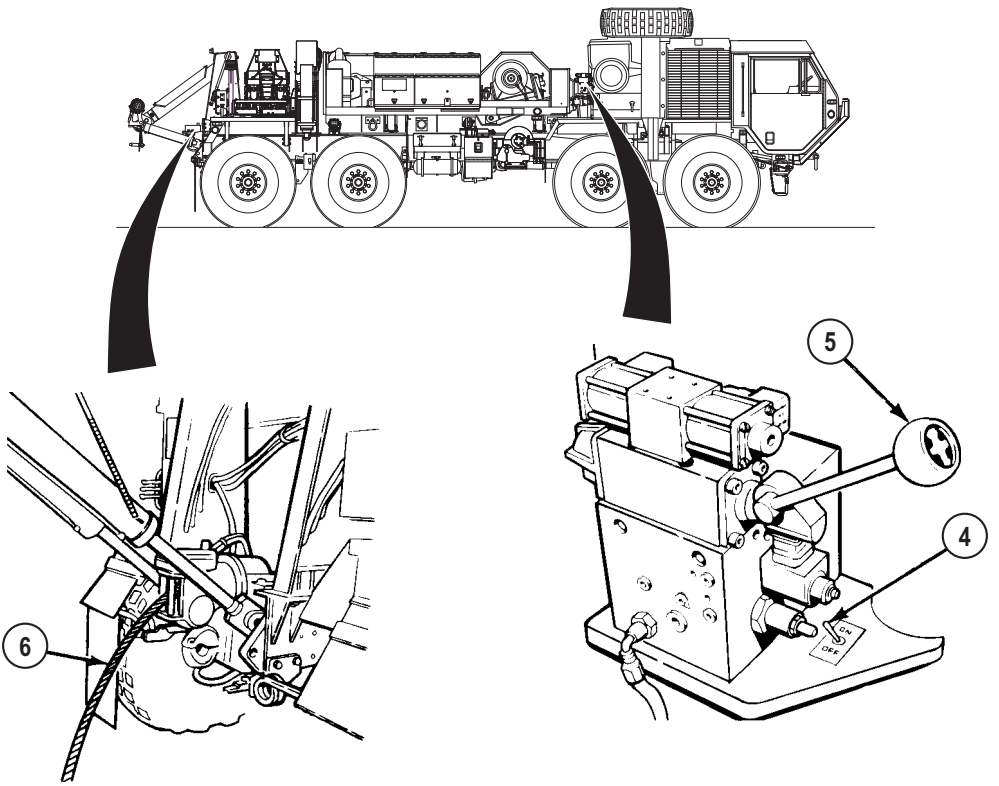


Figure 8.

WARNING

- Always wear protective gloves when handling winch cable. Never let cable run through hands. Frayed cable can cut severely. Failure to comply may result in injury or death to personnel.
- Do not operate winch with heavy-duty winch drum guard open. Failure to comply may result in injury or death to personnel.
- Do not place hands or feet near heavy-duty winch drum or fairlead/ tensioner sheave during heavy-duty winch operation. Failure to comply may result in injury or death to personnel.

PAYOUT CABLE AND CONNECT TO MIRED VEHICLE - Continued

CAUTION

Do not allow other vehicles to run over heavy-duty winch cable. Heavy-duty winch cable may be damaged. Failure to comply may result in damage to equipment.

5. Move WINCH control lever (5) to OUT and pay out winch cable (6) while assistant routes cable to mired vehicle.
6. Set HIGH IDLE switch (4) to OFF.
7. Position fairlead/tensioner (7) for type of pull being made.

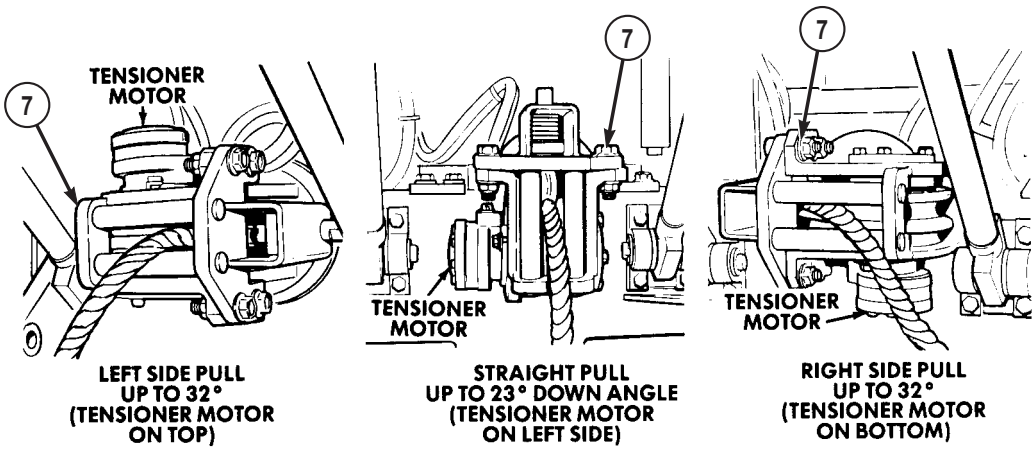


Figure 9.

CAUTION

Always be sure there are at least seven wraps of cable on winch drum. If there are less than seven wraps of cable on winch drum, cable may come loose and damage equipment.

8. Check that there are at least seven wraps of winch cable on winch. If there are not at least seven wraps of winch cable left on winch, move recovery vehicle closer to mired vehicle and continue recovery or shut down winch.

Table 1. Heavy-Duty Winch Pull Capacity.

Winch Type	Cable Layer	Cable on Drum	Capacity
60,000 lbs	1	0-48 ft. (0-14.64 m)	60,000 lbs (27 240 kg)

PAYOUT CABLE AND CONNECT TO MIRED VEHICLE - Continued

Table 1. Heavy-Duty Winch Pull Capacity. - Continued

Winch Type	Cable Layer	Cable on Drum	Capacity
	2	49-105 (14.95-32.03 m)	49,780 lbs (22 600 kg)
	3	106-172 (32.33-52.46 m)	42,545 lbs (19 315 kg)
	4	173-250 (52.77-76.25 m)	37,140 lbs (16 862 kg)

9. Make sure weight of mired vehicle and amount of winch cable left on winch does not go over pull capacity (refer to FM 4-30.31 (Volume 2, WP 0200) and Heavy-Duty Winch Pull Capacity table above).
10. If 60-ton tackle block must be used for recovery, attach 60-ton tackle block to disabled vehicle and winch cable. (WP 0105)Remove snatch block from winch cable (WP 0116) and tree, another vehicle, or heavy object (refer to FM 4-30.31). (Volume 2, WP 0200)
11. Connect end of winch cable to rear tow eye of wrecker, another vehicle, or other heavy object. (Volume 2, WP 0200)
12. Connect winch cable to mired vehicle.

RECOVER MIRED VEHICLE

NOTE

- If using remote-control unit, skip to Step (2).
- If using vehicle mounted (manual) controls, continue with Step (1).

1. **VEHICLE MOUNTED (MANUAL) CONTROLS:**
   a. Set POWER switch (1) to ON (LOW IDLE ONLY).

RECOVER MIRED VEHICLE - Continued

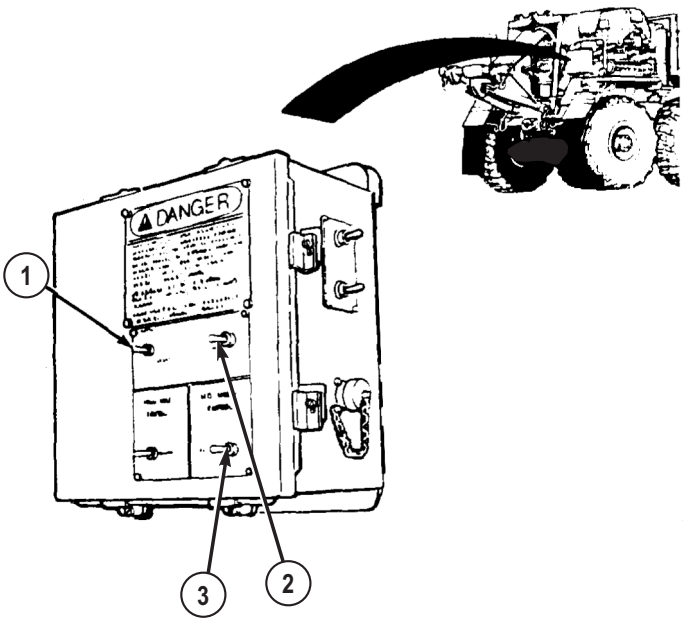


Figure 10.

b. Push and release LATCH switch (2) to ON.

c. Set H.D. WINCH CONTROL switch (3) to MANUAL.

d. Set HIGH IDLE switch (4) to ON position.

RECOVER MIRED VEHICLE - Continued

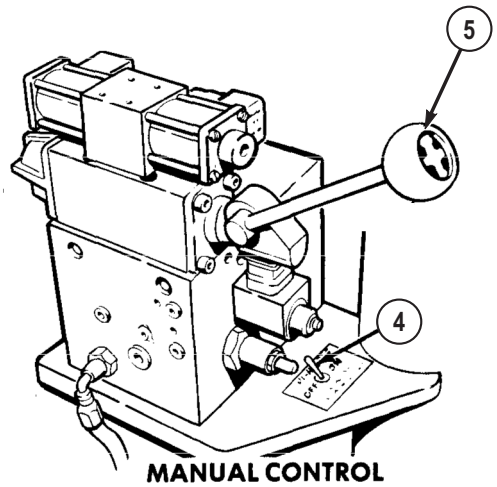


Figure 11.

WARNING

- Keep all personnel clear of area when tension is on winch cable. Winch cable could come loose or break. Failure to comply may result in injury or death to personnel.
- Keep recovery vehicle in stable position at all times. Do not allow any tire to raise off ground. Vehicle could turn over. Failure to comply may result in injury or death to personnel.

CAUTION

Apply power gradually to avoid high impact loading of winch cable.

e. Move WINCH control lever (5) to IN and slowly tighten winch cable.

f. Set HIGH IDLE switch (4) to ON position.

g. Set POWER switch (1) to ON.

RECOVER MIRED VEHICLE - Continued

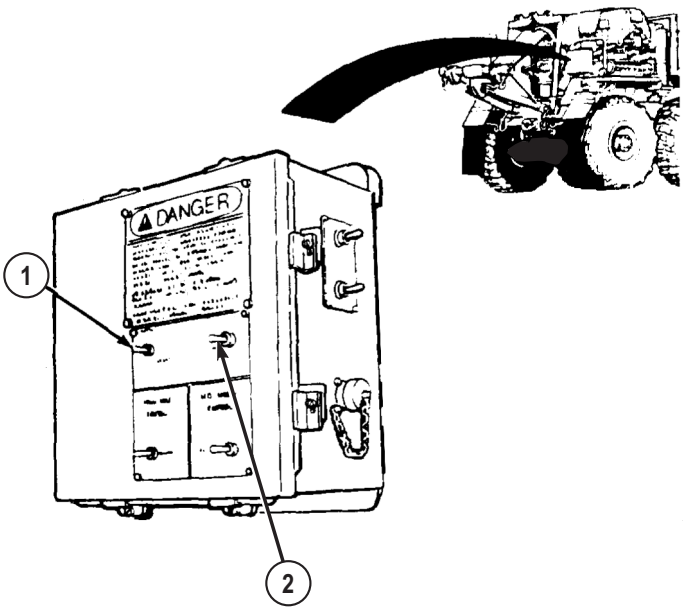


Figure 12.

h. Push LATCH switch (2) to ON and release.

i. Make sure recovery area is clear of personnel.

NOTE

Recheck your rigging.

j. Set HIGH IDLE switch (4) to ON. Engine idle should increase to approximately 1500 rpm.

RECOVER MIRED VEHICLE - Continued

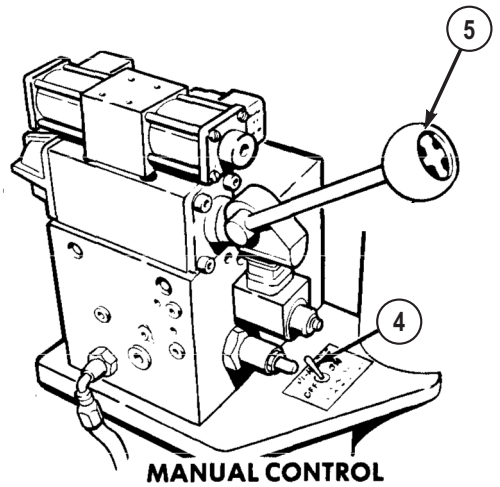


Figure 13.

WARNING

- Keep all personnel clear of area when tension is on winch cable. Winch cable could come loose or break. Failure to comply may result in injury or death to personnel.
- Keep recovery vehicle in stable position at all times. Do not allow any tire to raise off ground. Vehicle could turn over. Failure to comply may result in injury or death to personnel.

NOTE

If M984A tires do not provide enough traction to recover mired vehicle, use tow spades (WP 0104).

k. Move WINCH control lever (5) to IN and recover mired vehicle.

l. When mired vehicle is fully recovered, move WINCH control lever (5) to OUT to allow enough slack in winch cable to disconnect.

m. Set HIGH IDLE switch (4) to OFF position.

n. If tow spades were used, remove and stow tow spades remove and stow tow spades. (WP 0104)

RECOVER MIRED VEHICLE - Continued

NOTE

Complete Step (2) if using remote-control unit.

2. **REMOTE CONTROL UNIT:**

a. Remove HEAVY DUTY WINCH REMOTE CONTROL (6) and remote control cable (7) from stowage.

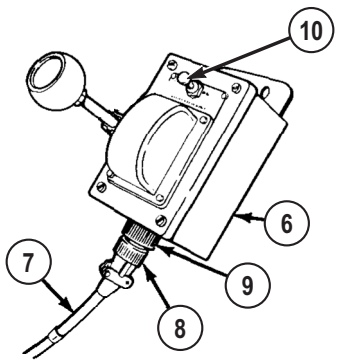


Figure 14.

b. Clean any dirt and water from remote control cable plug (8) and receptacle (9).

c. Connect remote control cable plug (8) to HEAVY DUTY WINCH REMOTE CONTROL receptacle (9). Check that HEAVY DUTY WINCH switch (10) is set to OFF.

d. Remove cover (11) from receptacle (12).

RECOVER MIRED VEHICLE - Continued

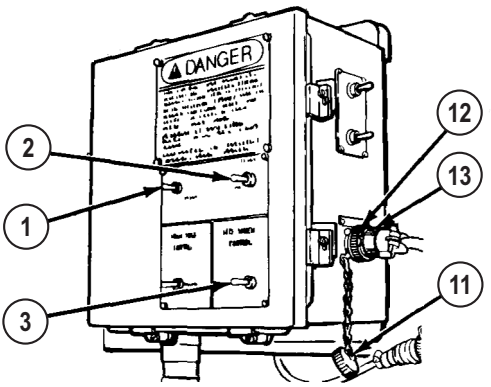


Figure 15.

e. Connect remote control cable plug (13) to receptacle (12).

f. Set POWER switch (1) to ON (LOW IDLE ONLY).

g. Push and release LATCH switch (2) to ON.

h. Set H.D. WINCH CONTROL switch (3) to REMOTE.

i. Set HEAVY DUTY WINCH switch (10) to ON.

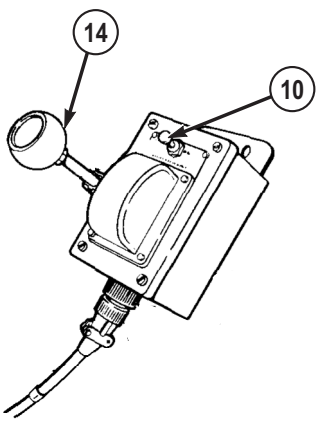


Figure 16.

RECOVER MIRED VEHICLE - Continued

WARNING

- Keep all personnel clear of area when tension is on winch cable. Winch cable could come loose or break. Failure to comply may result in injury or death to personnel.
- Keep recovery vehicle in stable position at all times. Do not allow any tire to raise off ground. Vehicle could turn over. Failure to comply may result in injury or death to personnel.

CAUTION

Apply power gradually to avoid high impact loading of winch cable.

j. Move WINCH control lever (14) to IN and slowly tighten winch cable.

k. Set HEAVY DUTY WINCH switch (10) to OFF.

l. Set POWER switch (1) to ON.

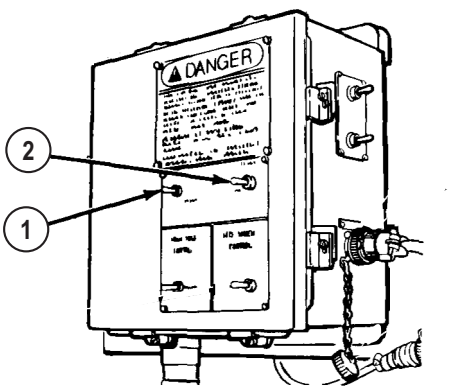


Figure 17.

m. Push LATCH switch (2) to ON and release.

n. Make sure recovery area is clear of personnel.

NOTE

Recheck your rigging.

RECOVER MIRED VEHICLE - Continued

o. Set HEAVY DUTY WINCH switch (10) to ON. Engine idle should increase to approximately 1500 rpm.

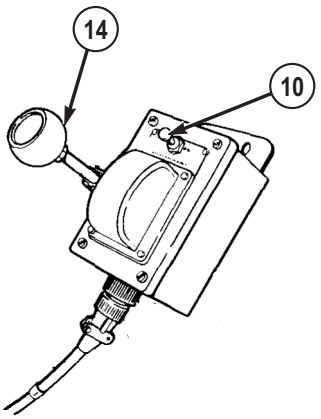


Figure 18.

WARNING

- Keep all personnel clear of area when tension is on winch cable. Winch cable could come loose or break. Failure to comply may result in injury or death to personnel.
- Keep recovery vehicle in stable position at all times. Do not allow any tire to raise off ground. Vehicle could turn over. Failure to comply may result in injury or death to personnel.

NOTE

If M984A tires do not provide enough traction to recover mired vehicle, use tow spades. (WP 0104)

p. Move WINCH control lever (14) to IN and recover mired vehicle.

q. When mired vehicle is fully recovered, move WINCH control lever (14) to OUT to allow enough slack in winch cable to disconnect.

r. Set HEAVY DUTY WINCH switch (10) to OFF.

s. If tow spades were used, remove and stow tow spades.

DISCONNECT CABLE, AND STOW

NOTE

- If using remote-control unit, skip to Step (2).
- If using vehicle mounted (manual) controls, continue with Step (1).

1. **VEHICLE MOUNTED (MANUAL) CONTROLS:**

WARNING

- Always wear protective gloves when handling winch cable. Never let cable run through hands. Frayed cable can cut severely. Failure to comply may result in injury or death to personnel.
- Do not operate winch with heavy-duty winch drum guard open. Failure to comply may result in injury or death to personnel.
- Do not place hands or feet near heavy-duty winch drum or fairlead/tensioner sheave during heavy-duty winch operation. Failure to comply may result in injury or death to personnel.

a. Disconnect winch cable (1) from M984A, another vehicle, or other heavy object. (Volume 2, WP 0200)

DISCONNECT CABLE, AND STOW - Continued

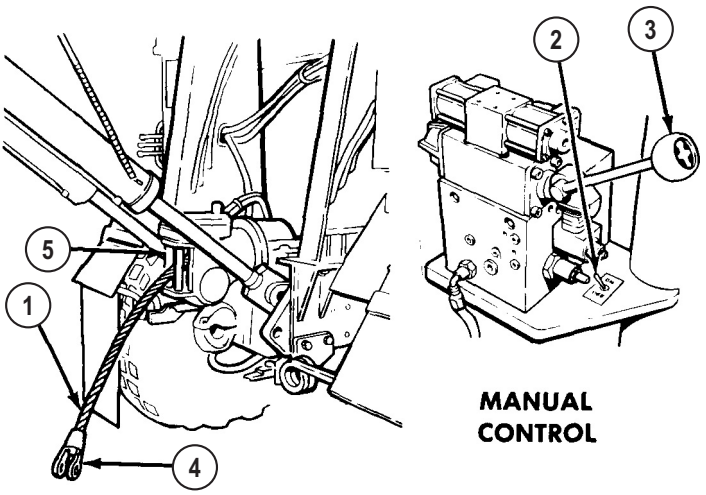


Figure 19.

b. Disconnect 60-ton tackle block from winch cable (1) and disabled vehicle.

c. Set HIGH IDLE switch (2) to ON. Engine idle should increase to approximately 1500 rpm.

CAUTION

Do not dead-end winch cable into fairlead/tensioner. Damage to fairlead/tensioner can result.

d. Move WINCH control lever (3) to IN and reel in winch cable (1).

e. Allow approximately 2 in. (50 mm) between clevis (4) and rollers (5).

f. Set HIGH IDLE switch (2) to OFF.

g. Set H.D. WINCH CONTROL switch (6) to OFF.

DISCONNECT CABLE, AND STOW - Continued

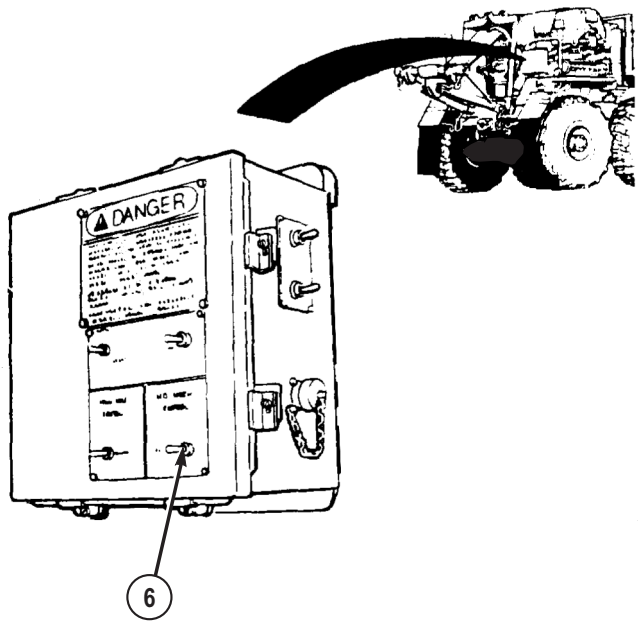


Figure 20.

h. Position fairlead/tensioner (7) with tensioner motor (8) on bottom.

DISCONNECT CABLE, AND STOW - Continued

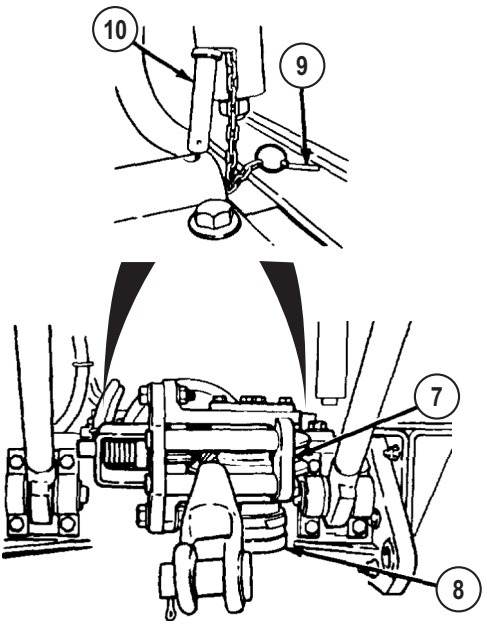
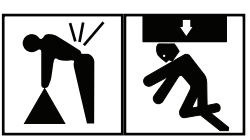


Figure 21.

i. Remove two quick pins (9) and pins (10).

WARNING



Fairlead/tensioner is very heavy and rotates, making it difficult to raise and lower. Hold fairlead/tensioner tight and always use an assistant whenever raising or lowering. Failure to comply may result in injury or death to personnel.

j. With aid of an assistant, raise fairlead/tensioner (7) to stowed position.

k. Hold fairlead/tensioner (7) in place while assistant installs two pins (10) and quick pins (9).

l. Loosen ratchet (11) and remove hook (12) from eyebolt (13).

DISCONNECT CABLE, AND STOW - Continued

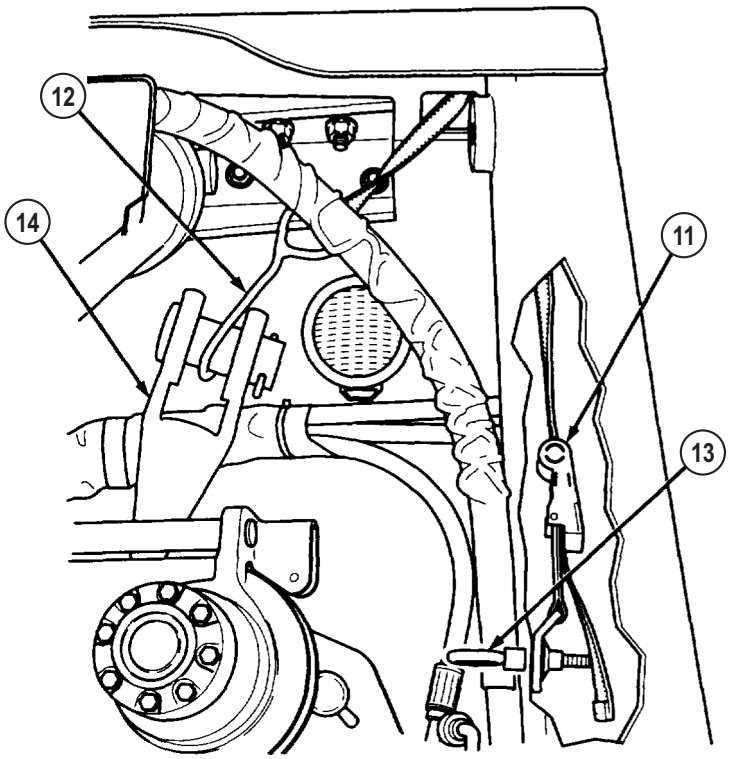


Figure 22.

m. Attach hook (12) to winch clevis (14) and tighten rachet (11) to secure winch clevis in place.

n. Set POWER switch (15) to ON.

DISCONNECT CABLE, AND STOW - Continued

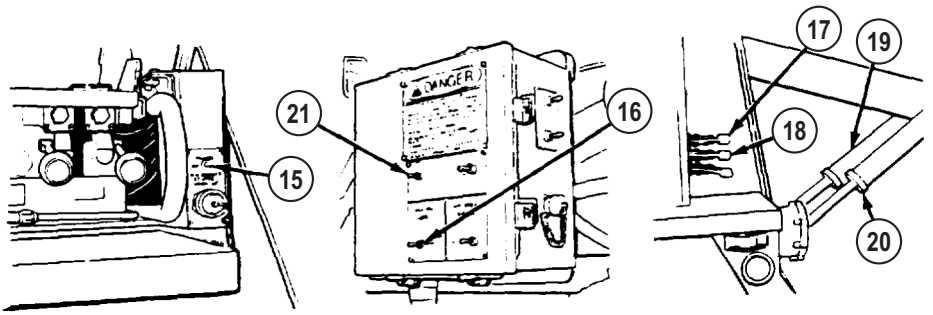


Figure 23.

o. Set HIGH IDLE CONTROL switch (16) to CONTINUOUS. Engine idle should increase to approximately 1500 rpm.

p. Push RIGHT TOW CYLINDER control lever (17) and LEFT TOW CYLINDER control lever (18) and fully retract right tow cylinder (19) and left tow cylinder (20).

q. Set POWER switch (15) to OFF.

r. Set POWER switch (21) to OFF.

s. Pull FRONT BRAKE APPLICATION control (22) to release front brakes.

DISCONNECT CABLE, AND STOW - Continued

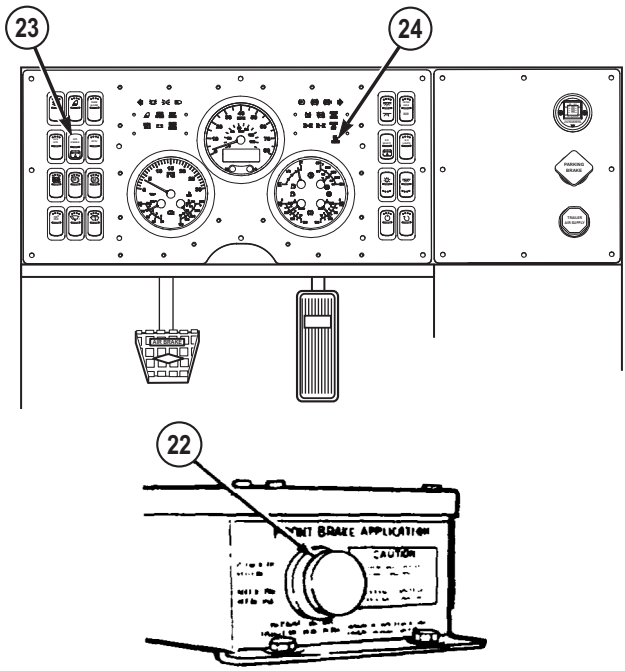


Figure 24.

t. Set HYD ENABLE switch (23) to off position. MAIN HYD ENABLE indicator (24) will go out.

u. Shut OFF rear beacon lights.

v. Shut OFF engine.

NOTE

Complete Step (2) if using remote-control unit.

2. **REMOTE-CONTROL UNIT:**

a. Disconnect winch cable (1) from M984A, another vehicle, or other heavy object. (Volume 2, WP 0200)

DISCONNECT CABLE, AND STOW - Continued

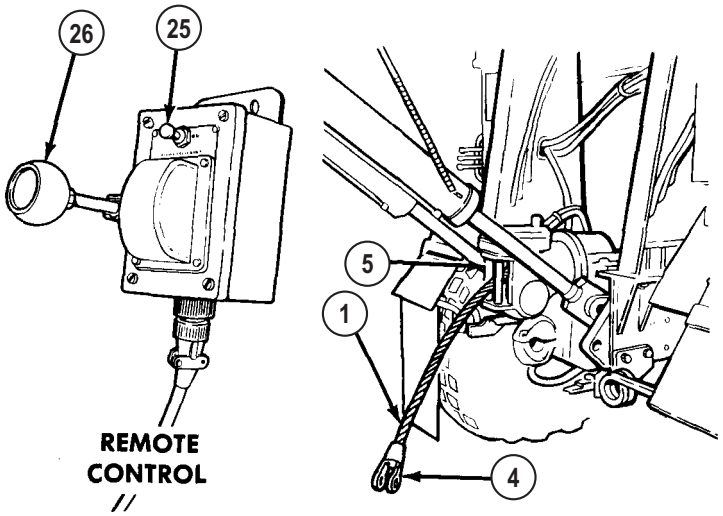


Figure 25.

b. Disconnect 60-ton tackle block from winch cable (1) and disabled vehicle.

c. Set HEAVY DUTY WINCH switch (25) to ON, engine idle should increase to approximately 1500 rpm.

CAUTION

Do not dead-end winch cable into fairlead/tensioner. Damage to fairlead/tensioner can result.

d. Move WINCH control lever (26) to IN and reel in winch cable (1).

e. Allow approximately 2 in. (50 mm) between clevis (4) and rollers (5).

f. Set HEAVY DUTY WINCH switch (25) to OFF.

g. Set H.D. WINCH CONTROL switch (6) to OFF.

DISCONNECT CABLE, AND STOW - Continued

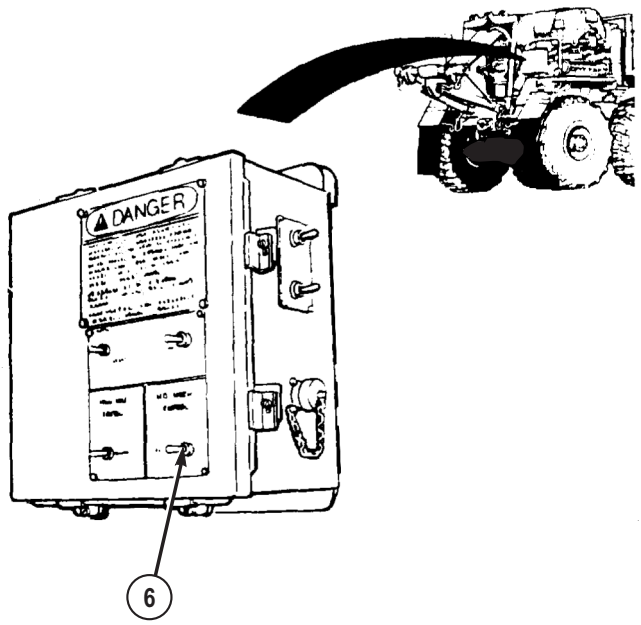


Figure 26.

h. Disconnect remote control cable plug (27) from receptacle (28).

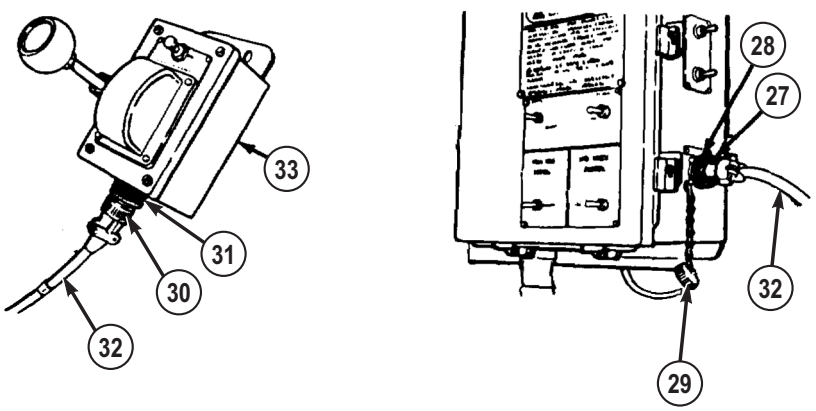


Figure 27.

i. Install cover (29) on receptacle (28).

DISCONNECT CABLE, AND STOW - Continued

j. Disconnect remote control cable plug (30) from HEAVY DUTY WINCH REMOTE CONTROL (31).

k. Return remote control cable (32) and HEAVY DUTY WINCH REMOTE CONTROL (33) in stowage.

l. Position fairlead/tensioner (7) with tensioner motor (8) on bottom.

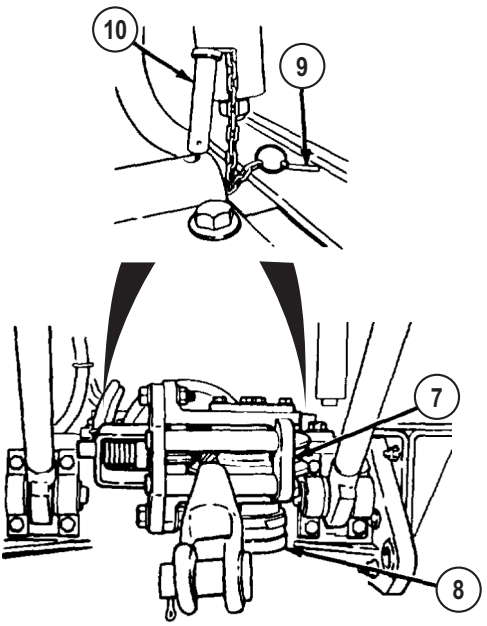
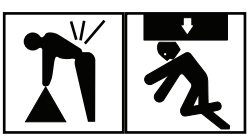


Figure 28.

m. Remove two quick pins (9) and pins (10).

WARNING



Fairlead/tensioner is very heavy and rotates, making it difficult to raise and lower. Hold fairlead/tensioner tight and always use an assistant whenever raising or lowering. Failure to comply may result in injury or death to personnel.

n. With aid of an assistant, raise fairlead/tensioner (7) to stowed position.

DISCONNECT CABLE, AND STOW - Continued

o. Hold fairlead/tensioner (7) in place while assistant installs two pins (10) and quick pins (9).

p. Loosen ratchet (11) and remove hook (12) from eyebolt (13).

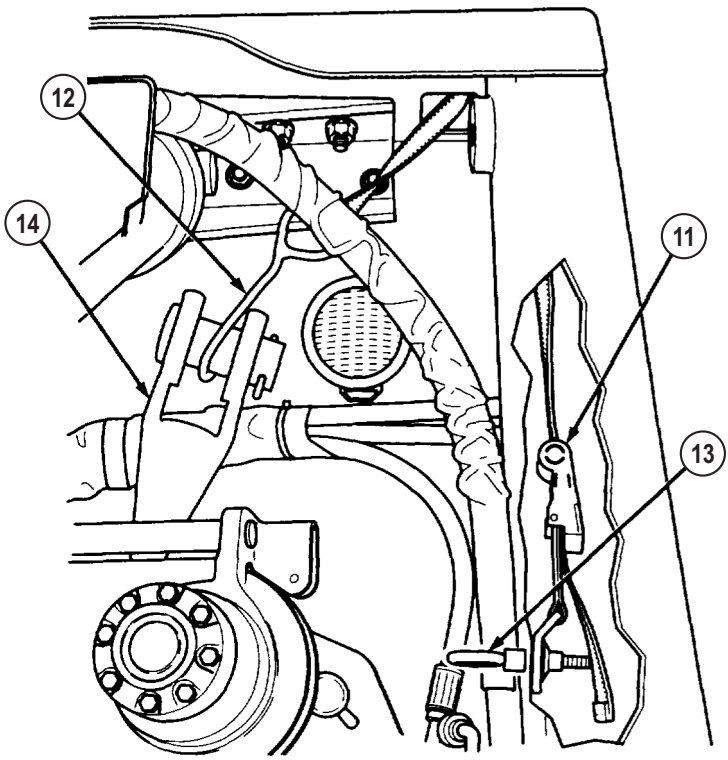


Figure 29.

q. Attach hook (12) to winch clevis (14) and tighten rachet (11) to secure winch clevis in place.

r. Set POWER switch (15) to ON.

DISCONNECT CABLE, AND STOW - Continued

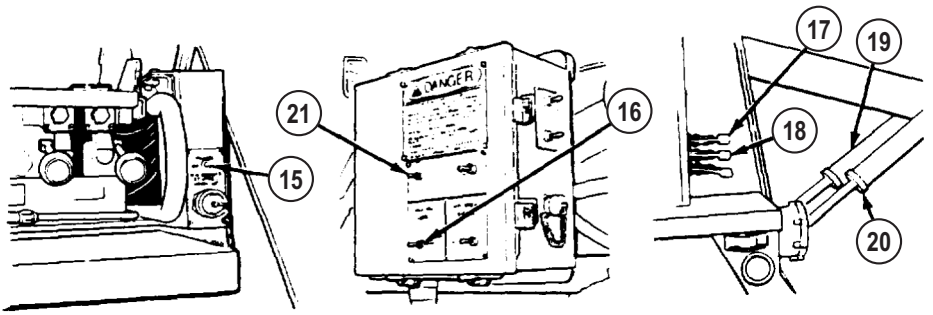


Figure 30.

s. Set HIGH IDLE CONTROL switch (16) to CONTINUOUS. Engine idle should increase to approximately 1500 rpm.

t. Push RIGHT TOW CYLINDER control lever (17) and LEFT TOW CYLINDER control lever (18) and fully retract right tow cylinder (19) and left tow cylinder (20).

u. Set ON/OFF POWER switch (15) to OFF.

v. Set POWER switch (21) to OFF.

w. Pull FRONT BRAKE APPLICATION control (22) to release front brakes.

DISCONNECT CABLE, AND STOW - Continued

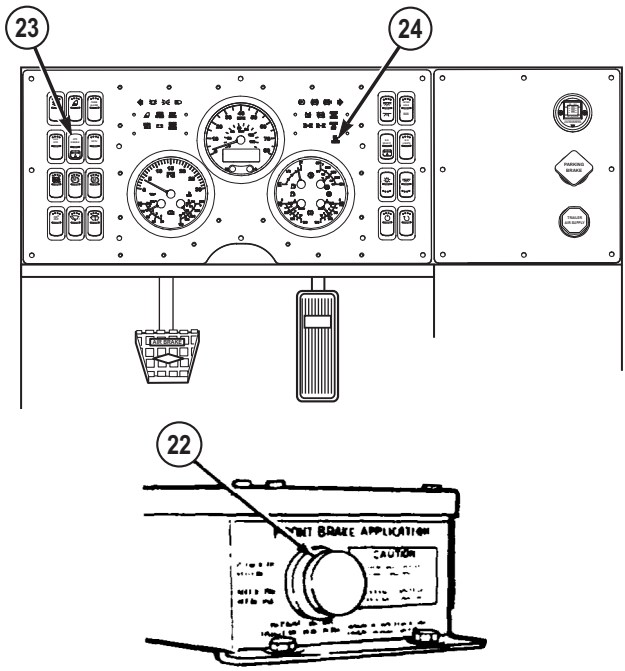


Figure 31.

x. Set HYD ENABLE switch (23) to off position. MAIN HYD ENABLE indicator (24) will go out.

y. Shut OFF rear beacon lights.

z. Shut OFF engine.

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 0043) for further information on ball valve operation.

1. Position all required (air springs to be dumped) ball valves to ON. (WP 0043)

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).

DUMP (DEFLATE) AIR SUSPENSION - Continued

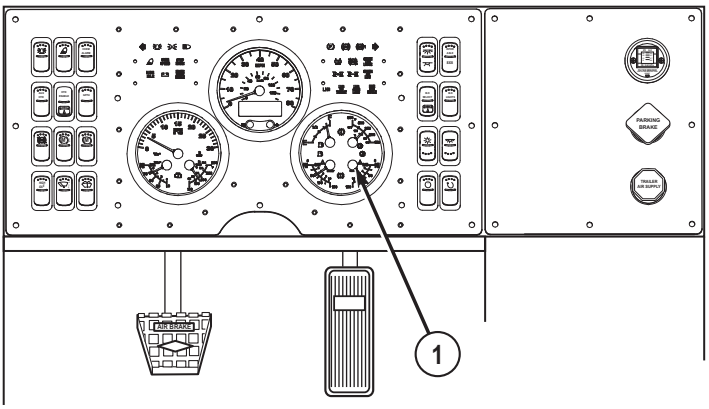


Figure 1.

3. If rear air pressure gauge (1) reads less that 70 psi (4.8 bar), start engine (WP 0044) 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.

DUMP (DEFLATE) AIR SUSPENSION - Continued

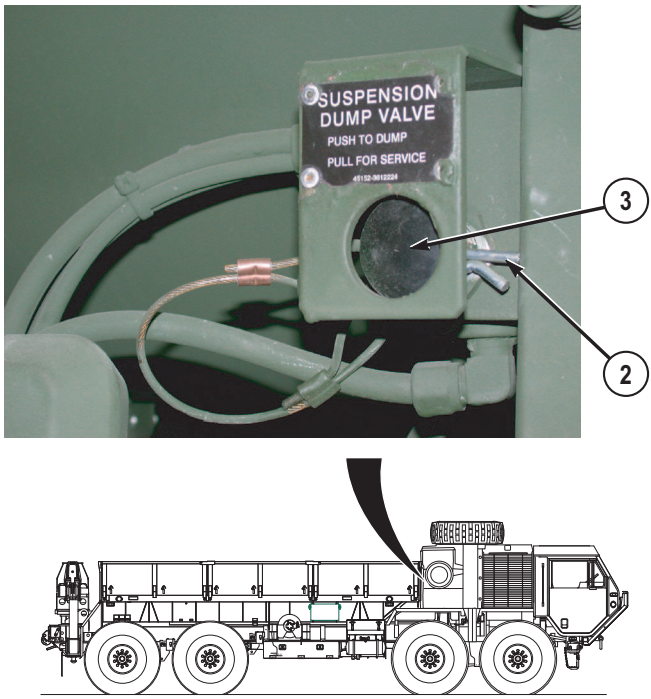


Figure 2.

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.

SERVICE (INFLATE) AIR SUSPENSION - Continued

- 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 0044) and idle during air suspension servicing.
- Refer to operate air suspension ball valves (WP 0043) for further information on ball valve operation.

1. Ensure all (air springs to be serviced) ball valves are positioned ON. (WP 0043)

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).

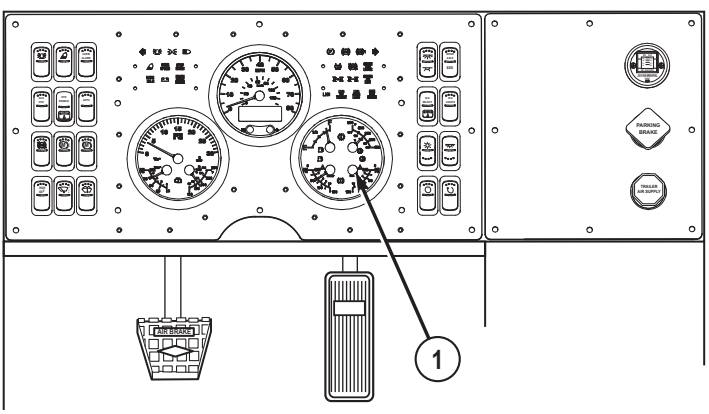


Figure 3.

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

SERVICE (INFLATE) AIR SUSPENSION - Continued

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.

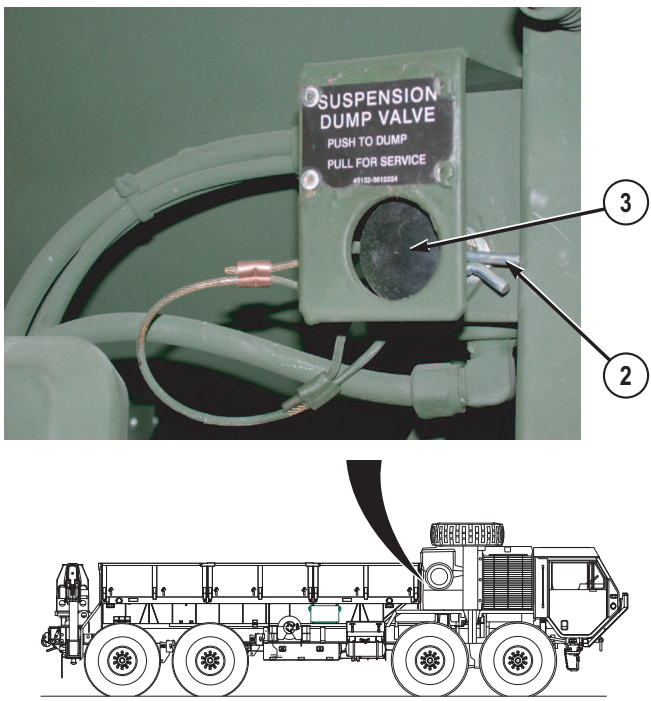


Figure 4.

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:

SERVICE (INFLATE) AIR SUSPENSION - Continued

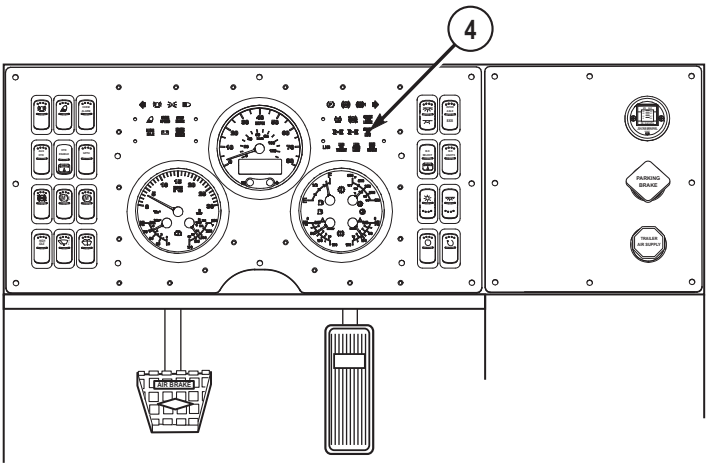


Figure 5.

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 0040) 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).

LOWER TIRE CARRIER - Continued

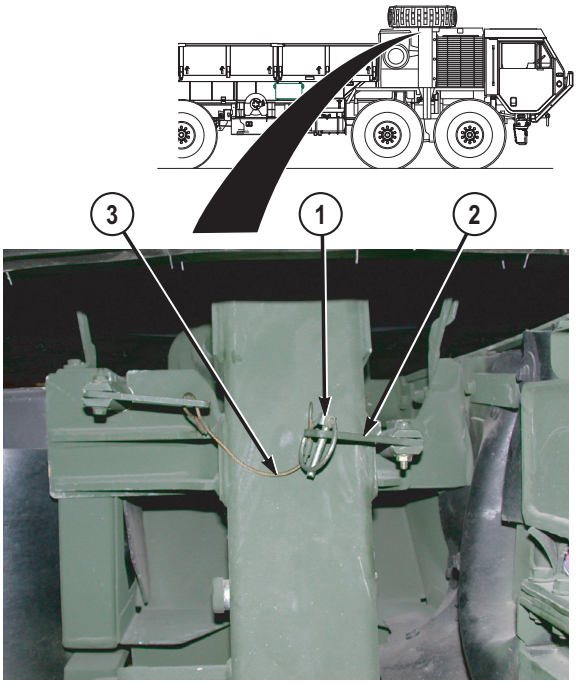


Figure 1.

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).

LOWER TIRE CARRIER - Continued

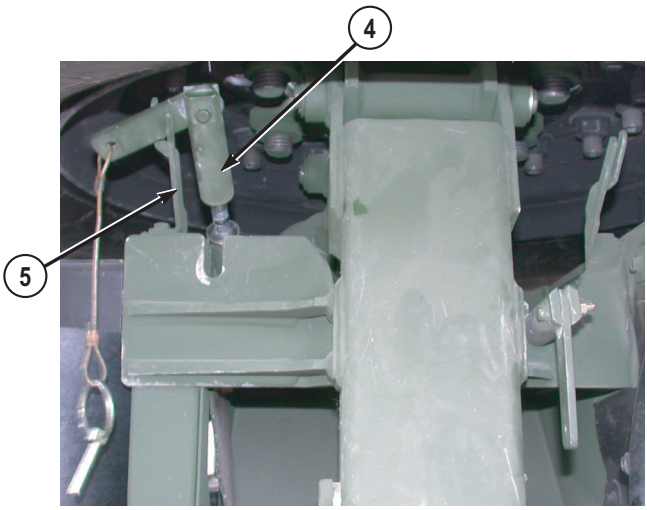


Figure 2.

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).

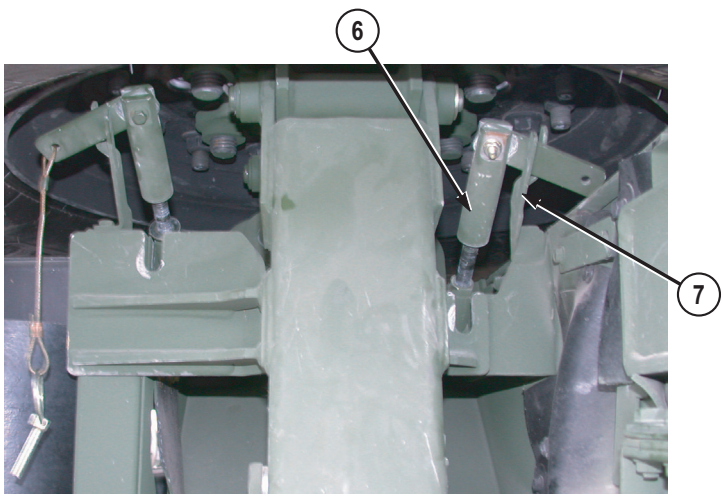


Figure 3.

LOWER TIRE CARRIER - Continued

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.

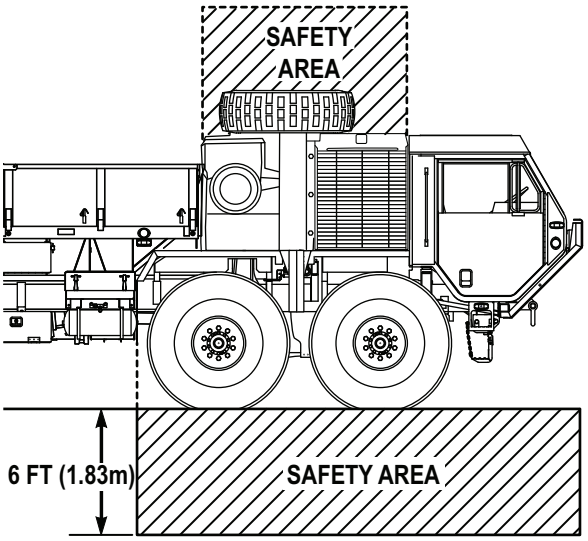


Figure 4.

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

LOWER TIRE CARRIER - Continued

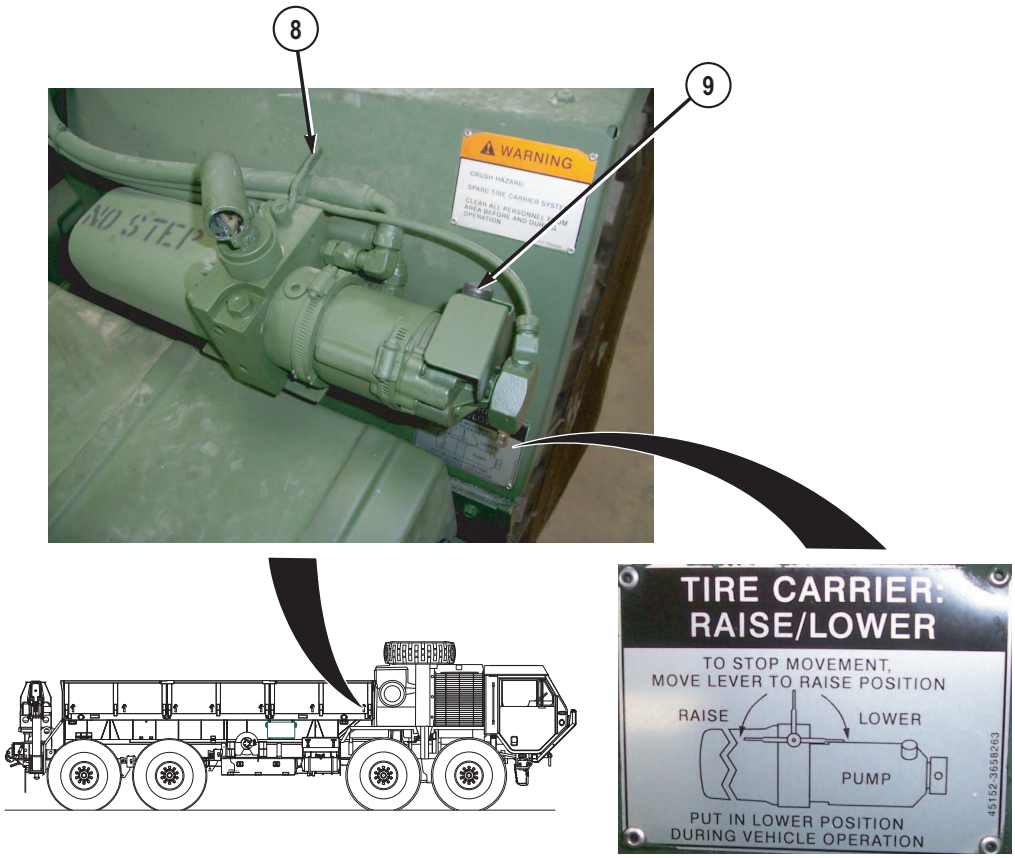


Figure 5.

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.

LOWER TIRE CARRIER - Continued

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 0044) 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:

RAISE TIRE CARRIER - Continued

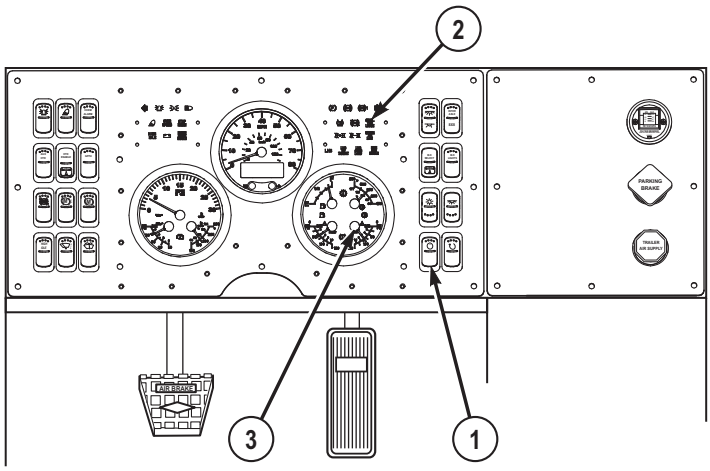


Figure 6.

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 0044) and allow rear air system to recharge.

(2) Raise tire carrier using outside air source. (WP 0114)

(3) Raise tire carrier using hand pump. (WP 0113)

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.

RAISE TIRE CARRIER - Continued

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).

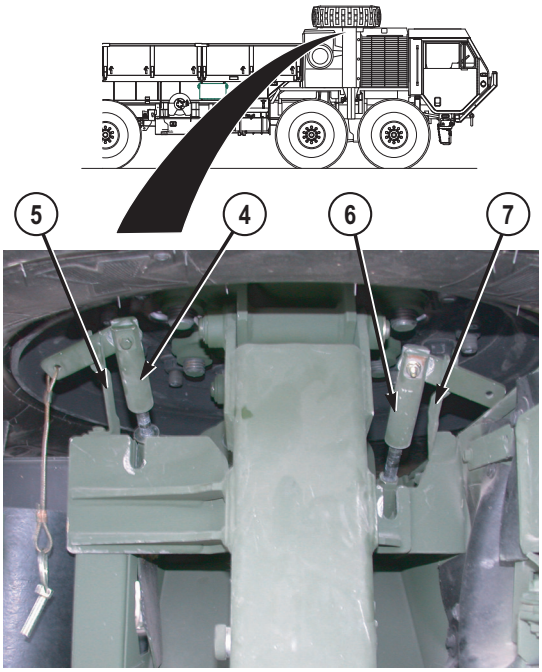


Figure 7.

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

RAISE TIRE CARRIER - Continued

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.

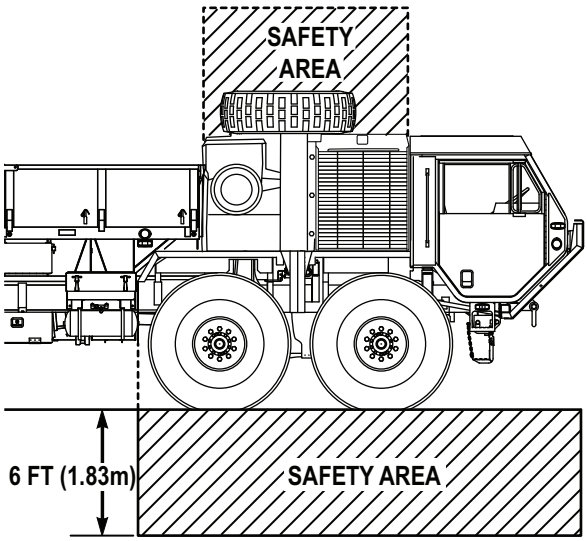


Figure 8.

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

RAISE TIRE CARRIER - Continued

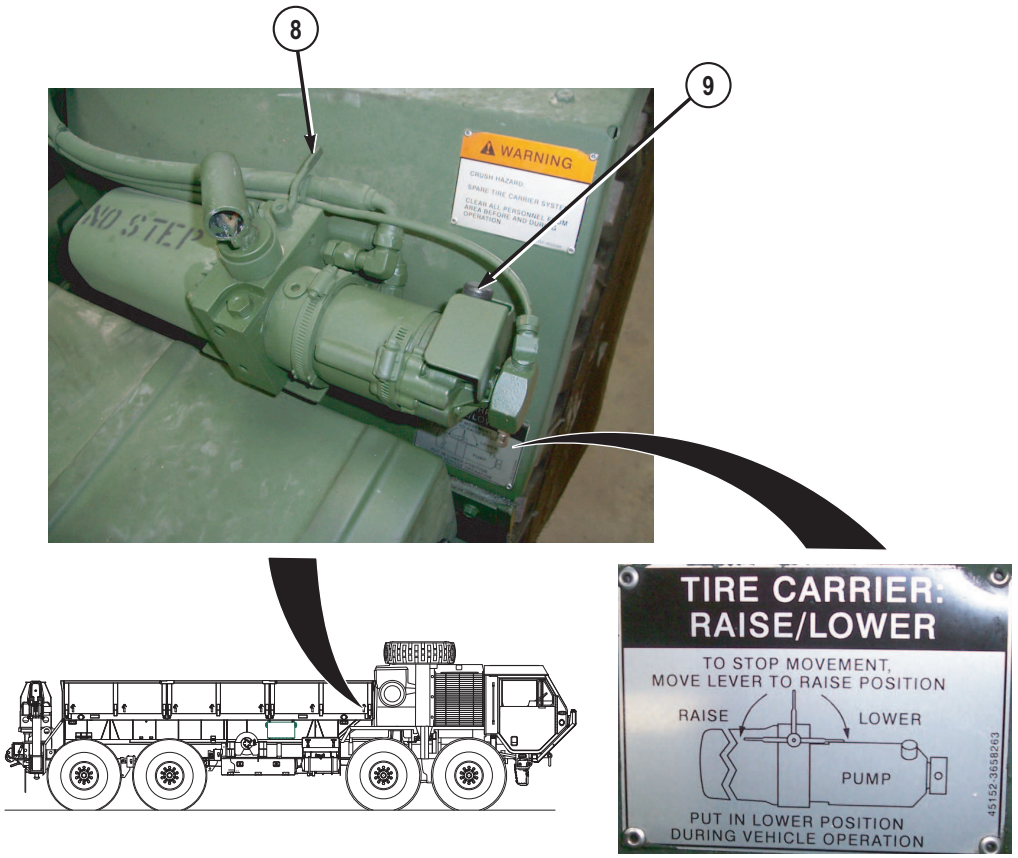


Figure 9.

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).

RAISE TIRE CARRIER - Continued

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).

RAISE TIRE CARRIER - Continued

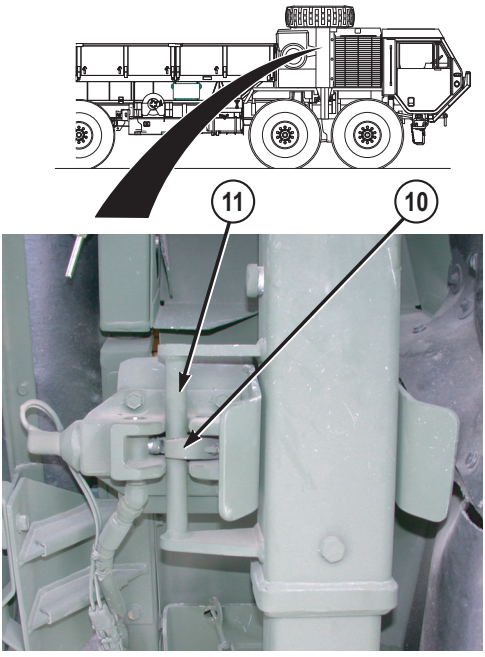


Figure 10.

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.

RAISE TIRE CARRIER - Continued

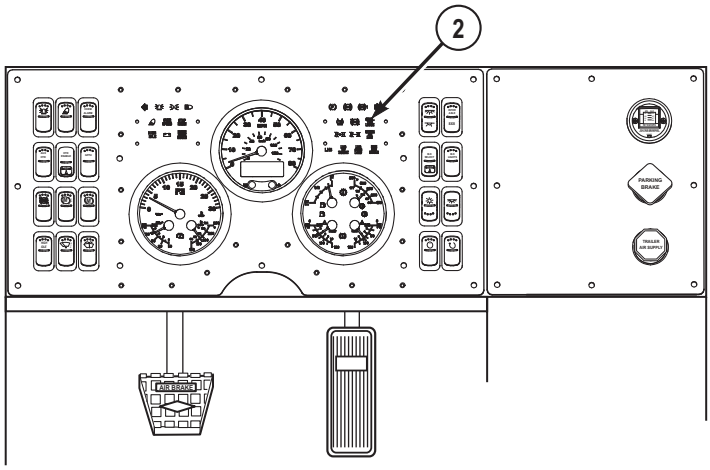


Figure 11.

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.

RAISE TIRE CARRIER - Continued

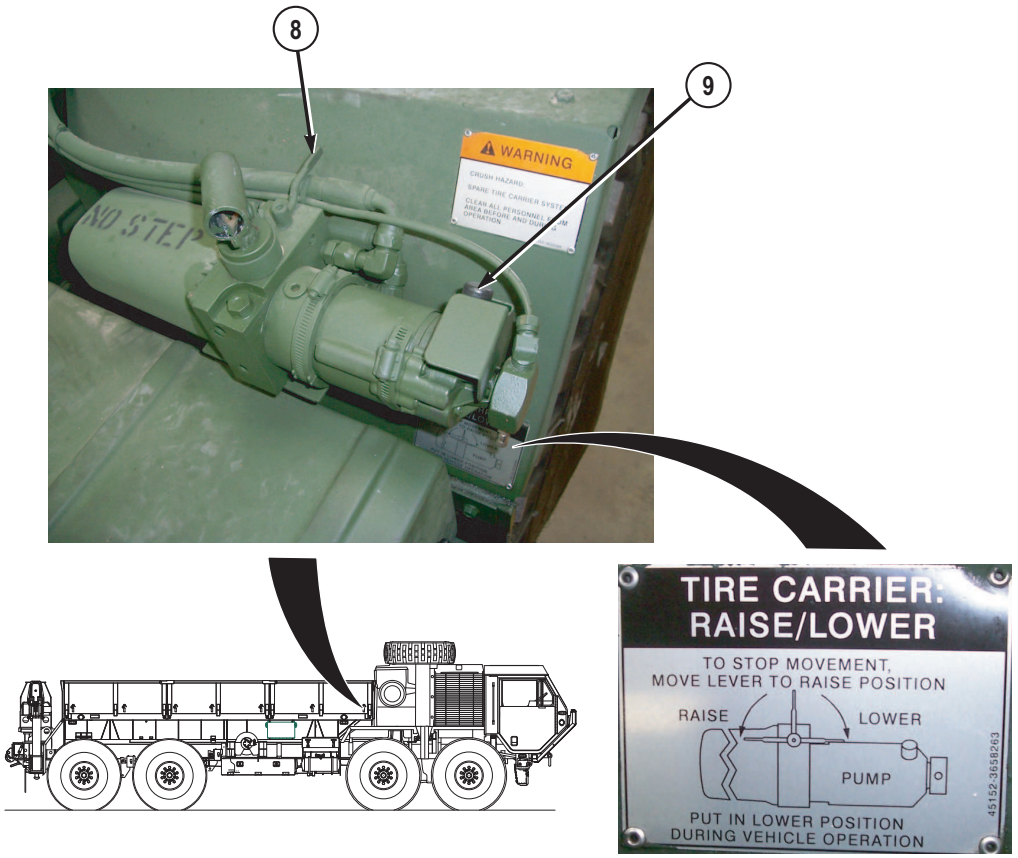


Figure 12.

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).

RAISE TIRE CARRIER - Continued

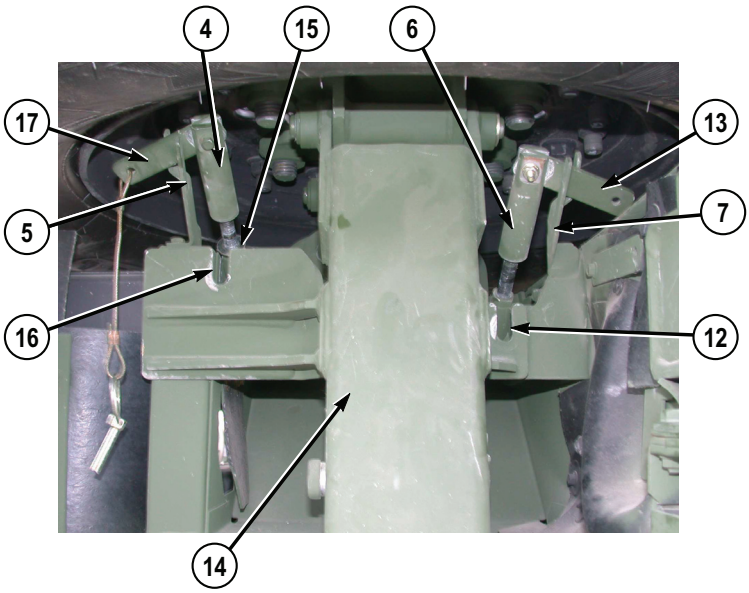


Figure 13.

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).

RAISE TIRE CARRIER - Continued

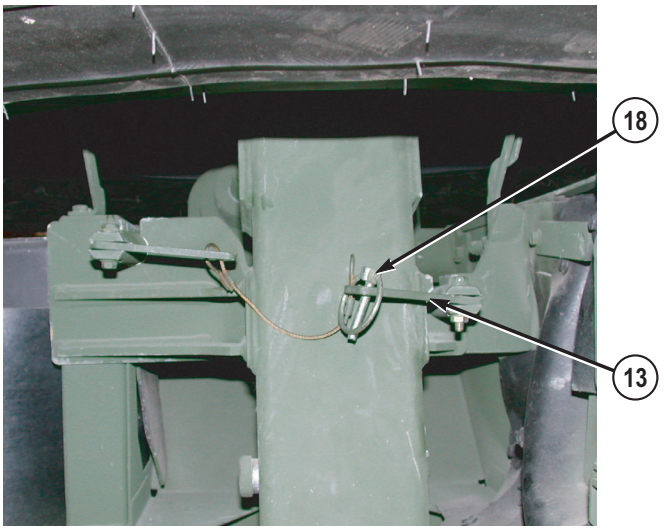


Figure 14.

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.

RAISE TIRE CARRIER - Continued

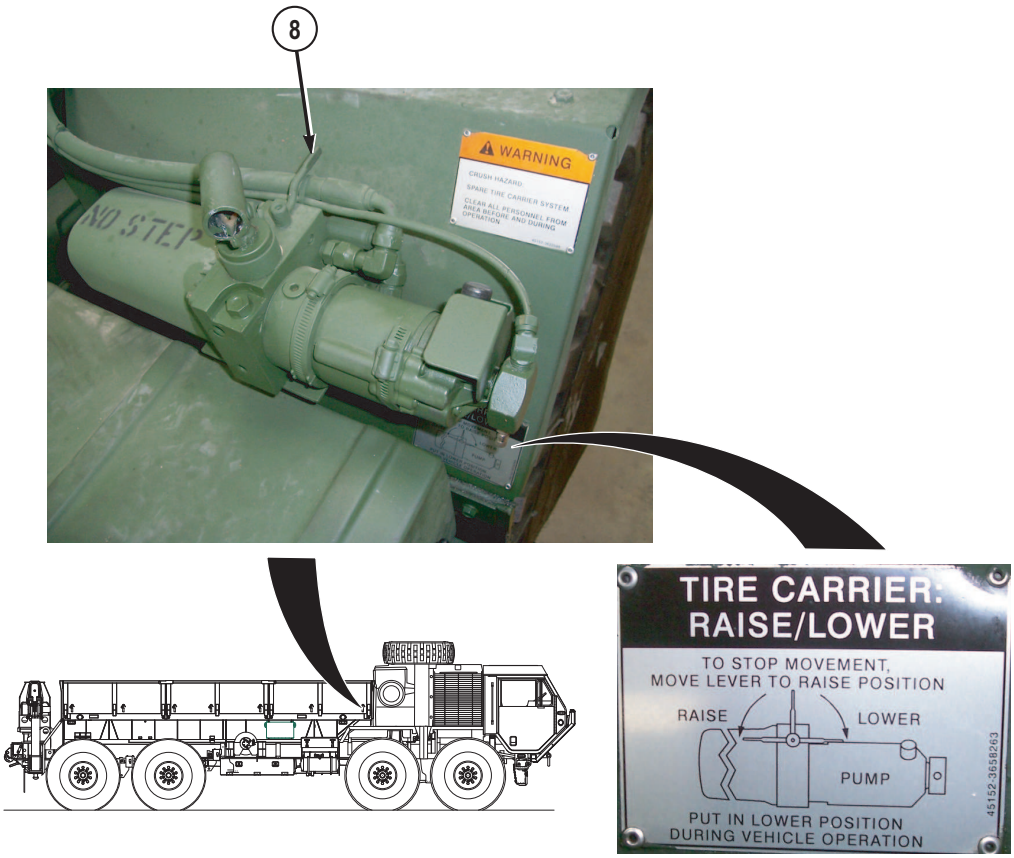


Figure 15.

19. Shut off engine (WP 0057) or set ignition switch (1) to off position (as applicable).

RAISE TIRE CARRIER - Continued

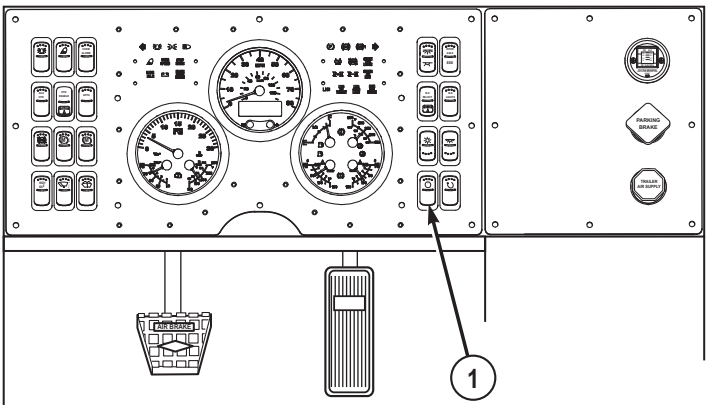


Figure 16.

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.

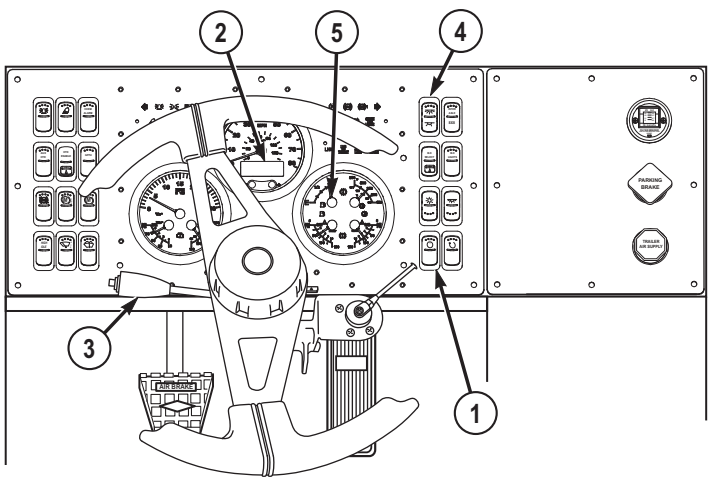


Figure 1.

INSTRUMENT PANEL MODES - Continued

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).

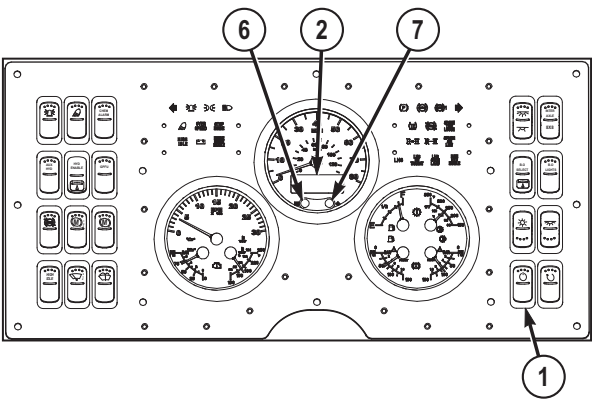


Figure 2.

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.

INSTRUMENT PANEL MODES - Continued

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.

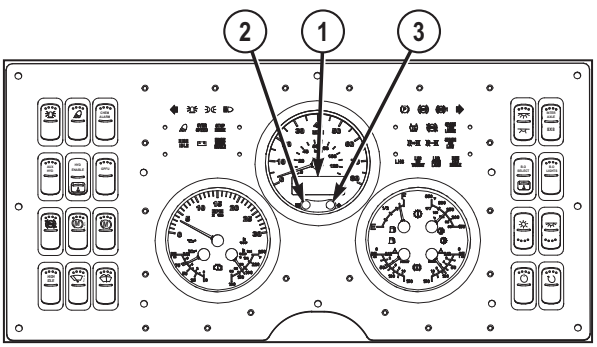


Figure 3.

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.

LCD MESSAGE CENTER - Continued

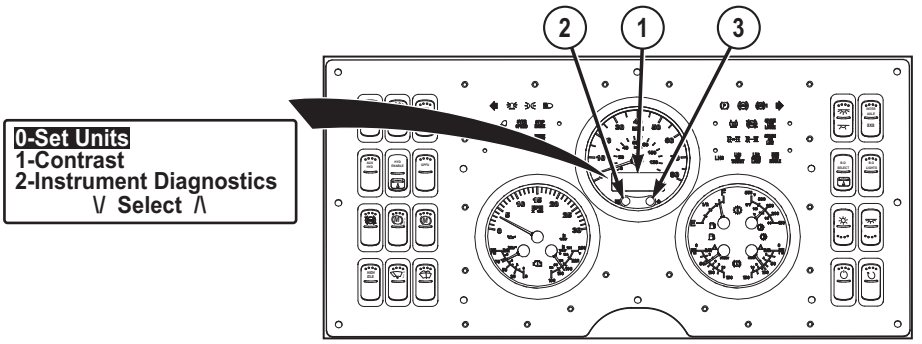


Figure 4.

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.

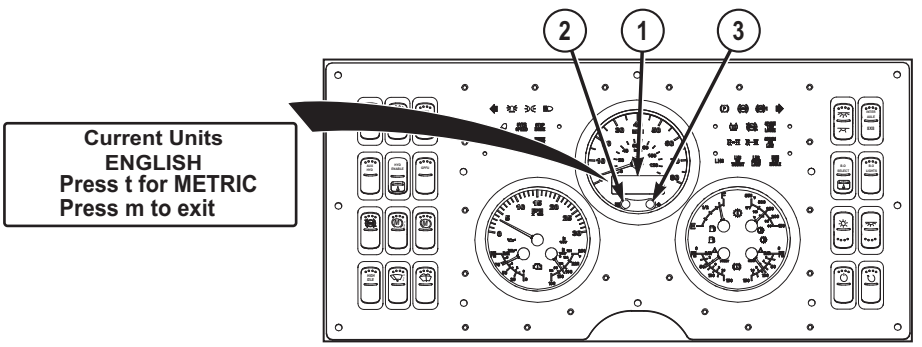


Figure 5.

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.

LCD MESSAGE CENTER - Continued

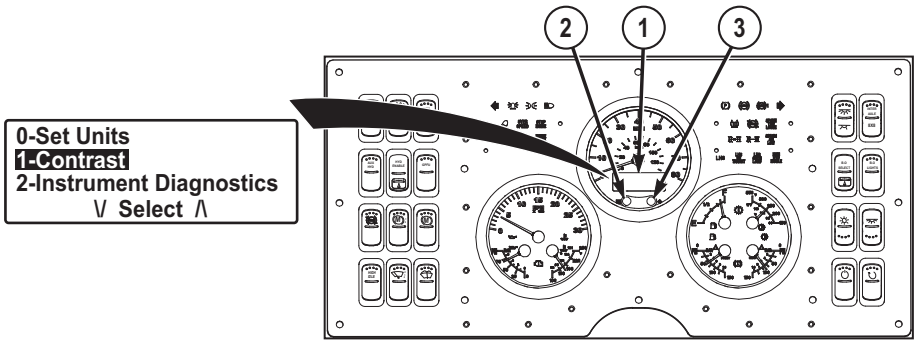


Figure 6.

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.

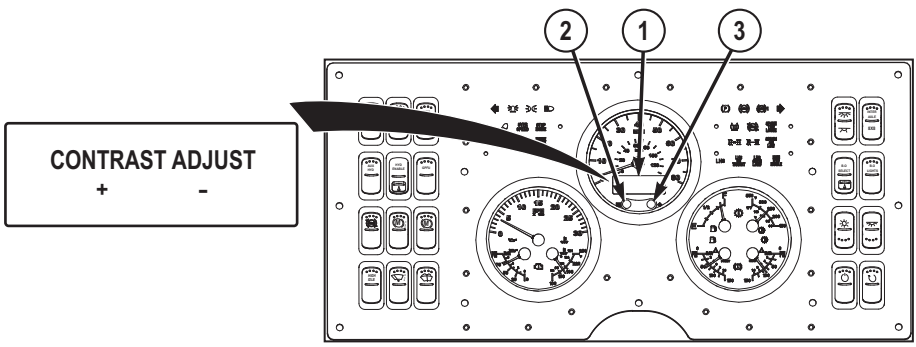


Figure 7.

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.

LCD MESSAGE CENTER - Continued

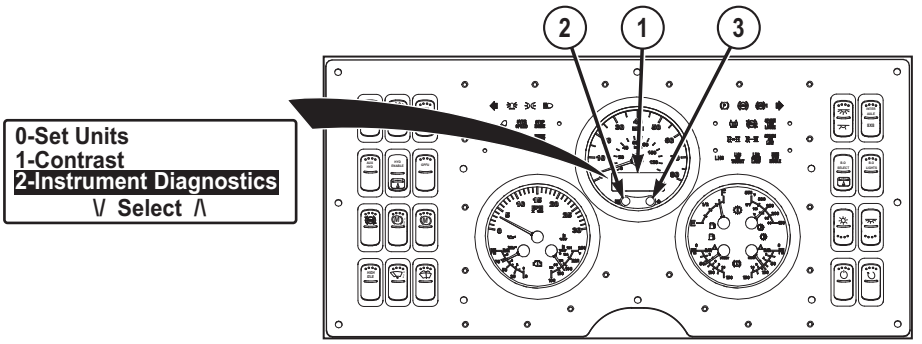


Figure 8.

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.

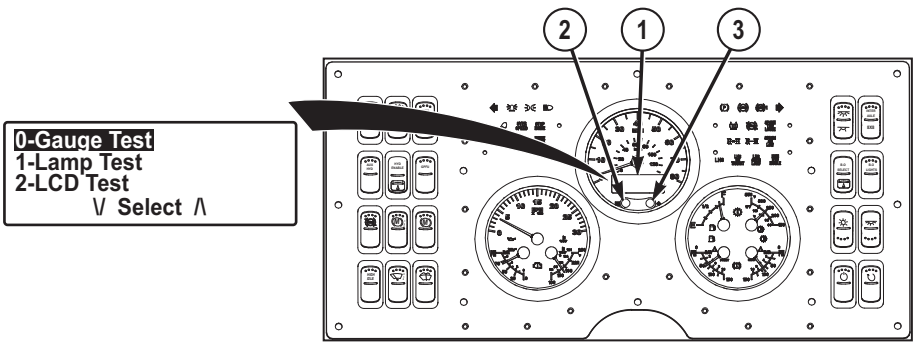


Figure 9.

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.

LCD MESSAGE CENTER - Continued

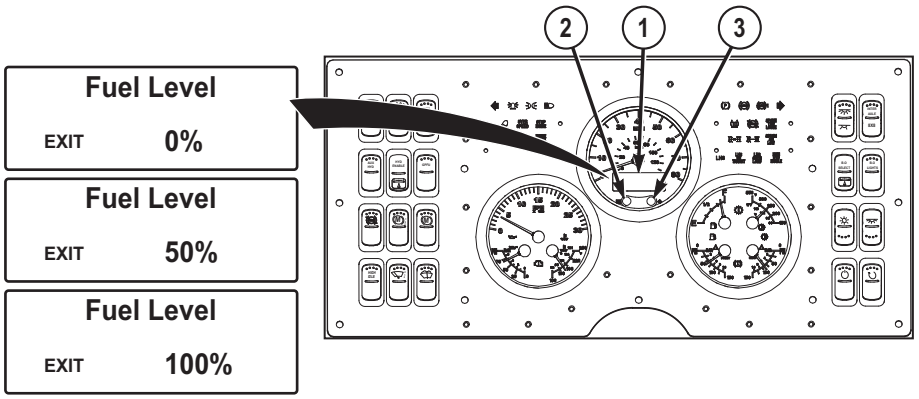


Figure 10.

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.

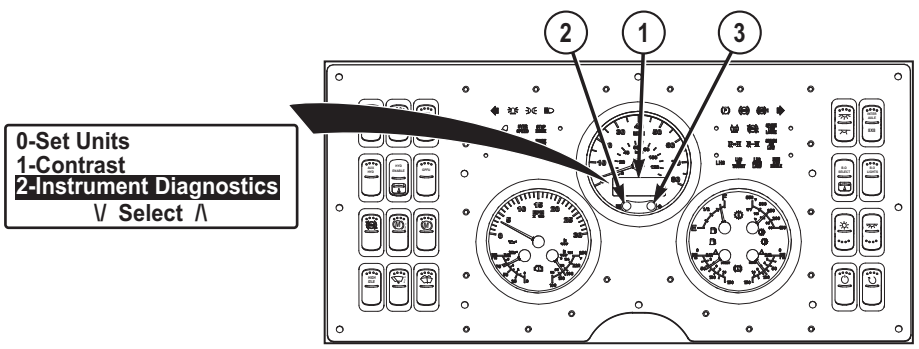


Figure 11.

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.

LCD MESSAGE CENTER - Continued

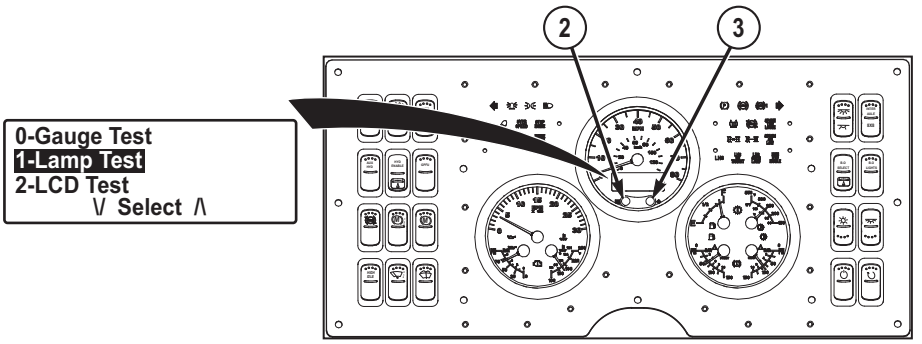


Figure 12.

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).

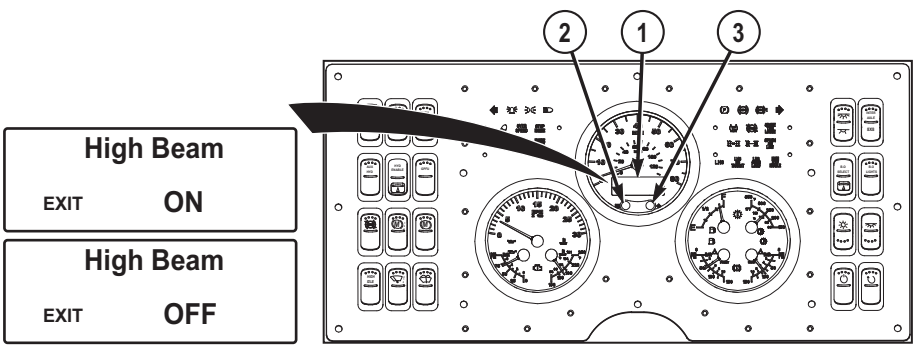


Figure 13.

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.

LCD MESSAGE CENTER - Continued

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

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

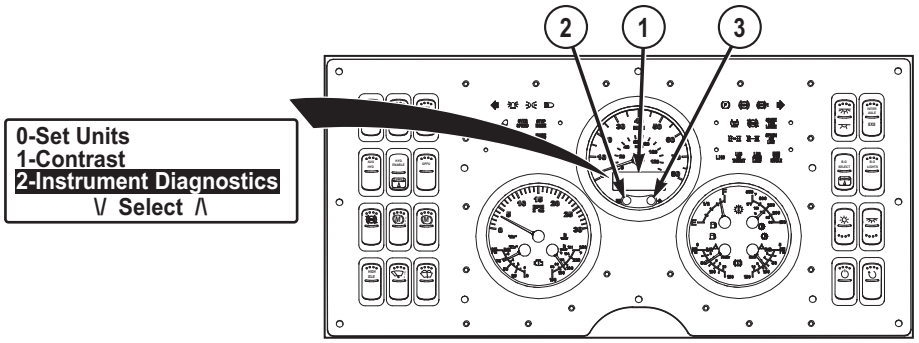


Figure 14.

   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.

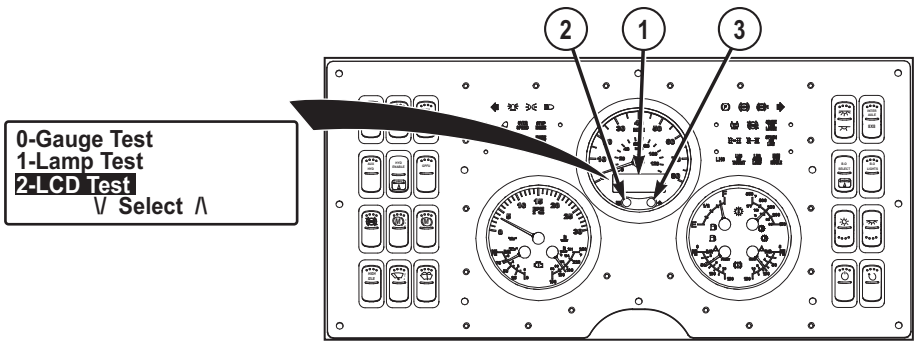


Figure 15.

   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.

LCD MESSAGE CENTER - Continued

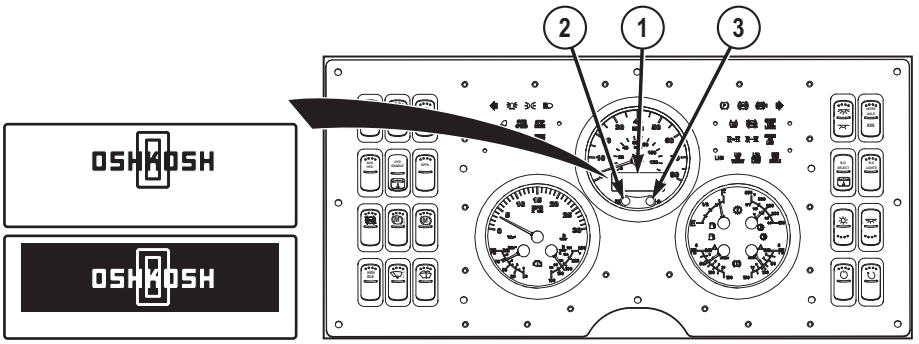


Figure 16.

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).

TURN BALL VALVES ON - Continued

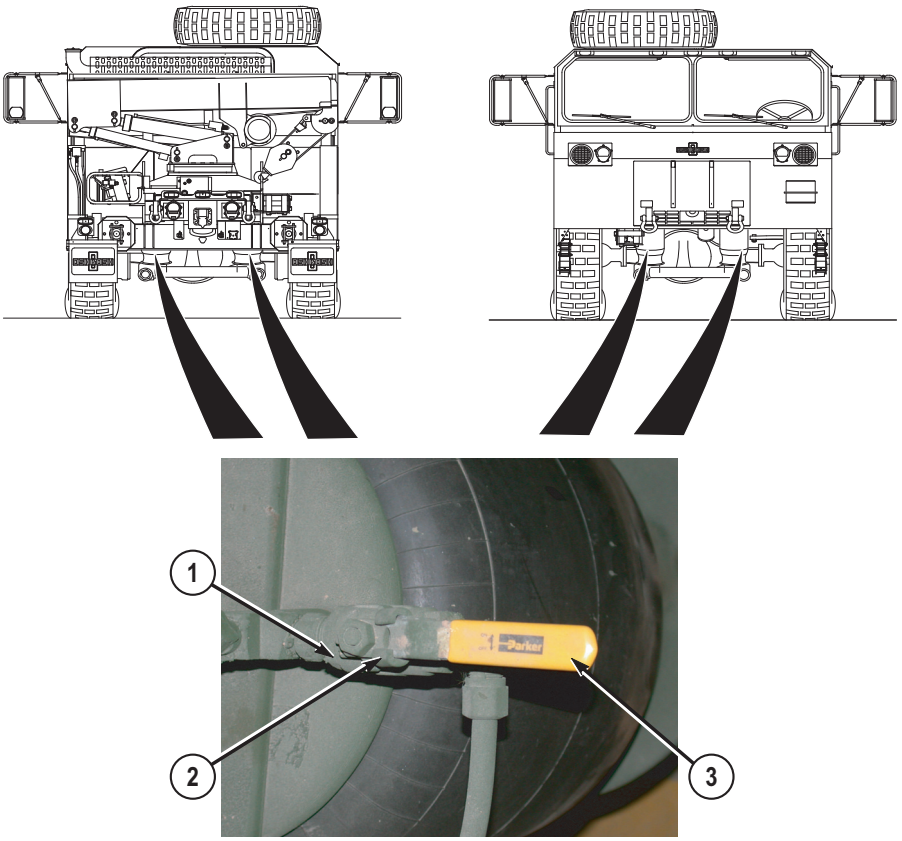


Figure 1.

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 0040) 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).

TURN BALL VALVES OFF - Continued

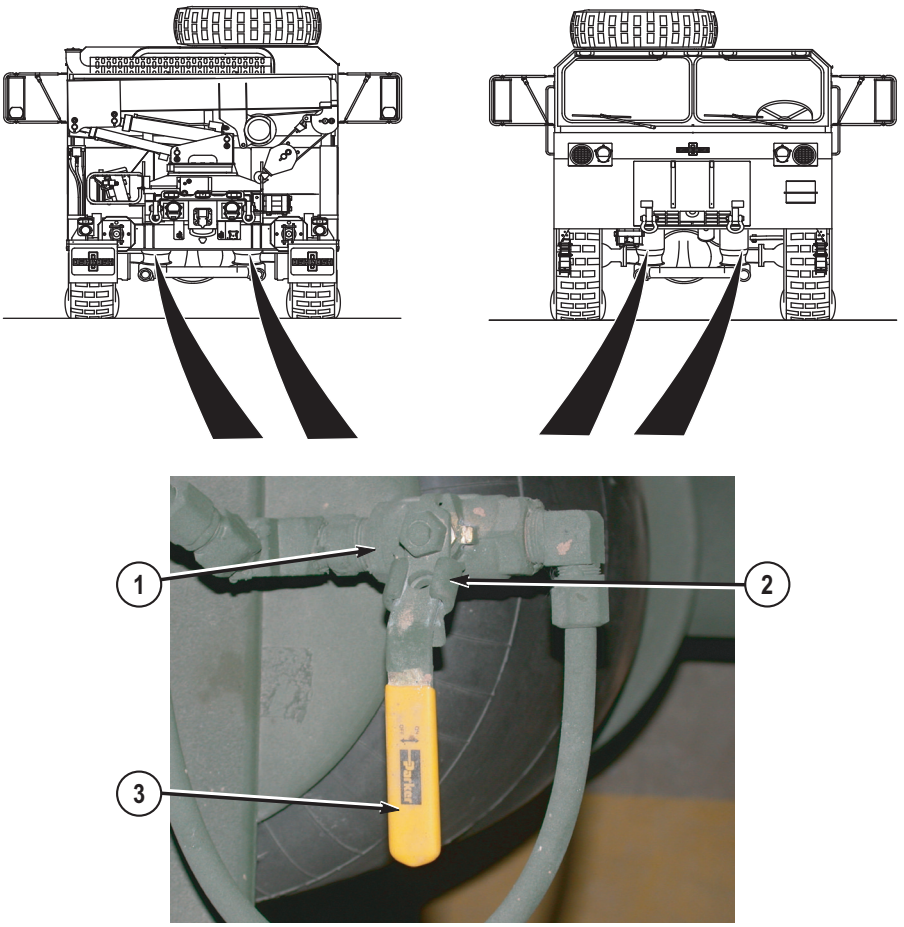


Figure 2.

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 0040) for more information on air suspension servicing/dumping procedures.

TURN BALL VALVES OFF - Continued

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 0099) before attempting to start engine.
- Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

1. Pull out PARKING BRAKE control (1).

START COLD ENGINE - Continued

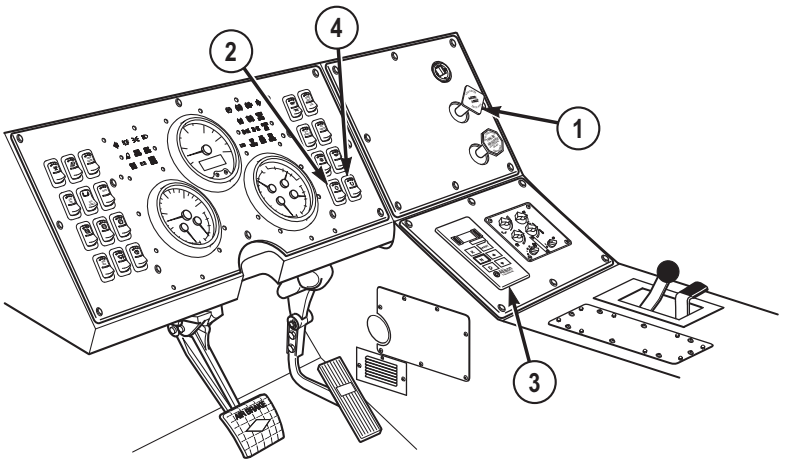


Figure 1.

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.

START COLD ENGINE - Continued

- If oil pressure gauge does not show engine oil pressure within 10 to 15 seconds after starting engine, immediately shut off engine (WP 0057) 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).

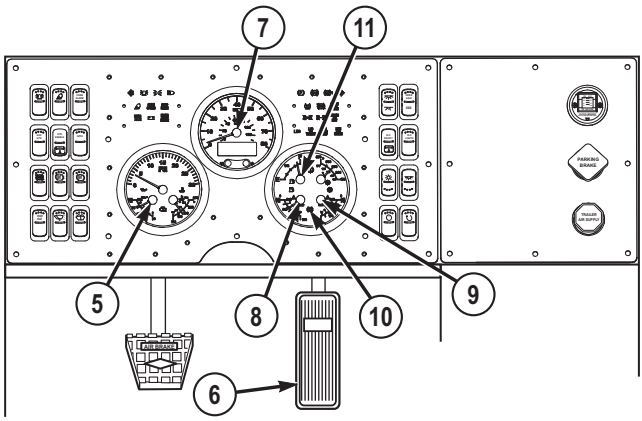


Figure 2.

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 0057) 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).

START COLD ENGINE - Continued

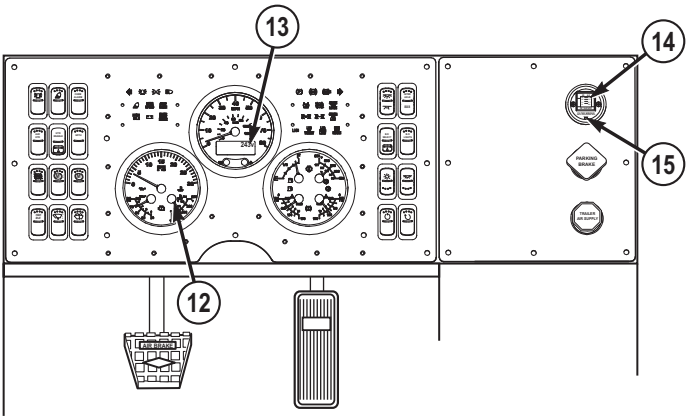


Figure 3.

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 0057) and clean air filter elements. (Volume 2, WP 0192)

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 0099) before attempting to start engine.
- Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

1. Pull out PARKING BRAKE control (1).

START WARM ENGINE - Continued

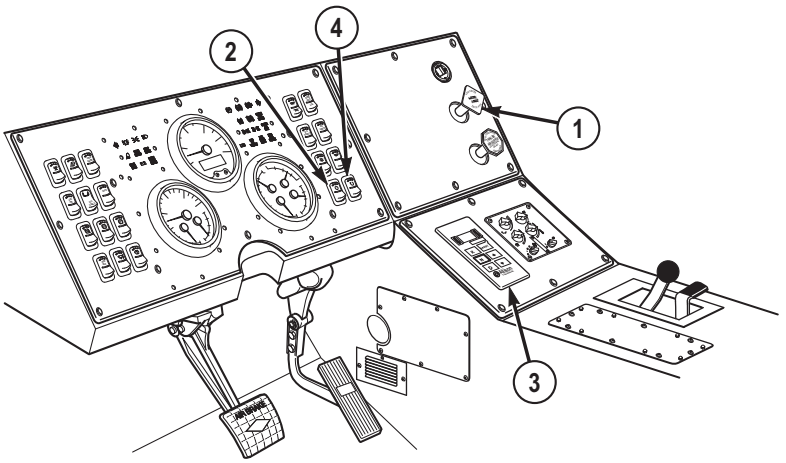


Figure 4.

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 0057) immediately and notify field level maintenance. Failure to comply may result in damage to equipment.

START WARM ENGINE - Continued

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.

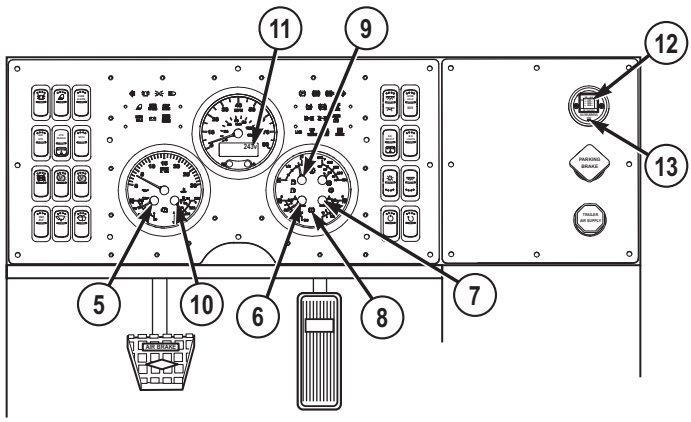


Figure 5.

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).

START WARM ENGINE - Continued

12. If air filter restriction indicator (12) still shows red and/or VACUUM INCHES H2O window shows 18, shut off engine (WP 0057) and clean air filter elements. (Volume 2, WP 0192)

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.

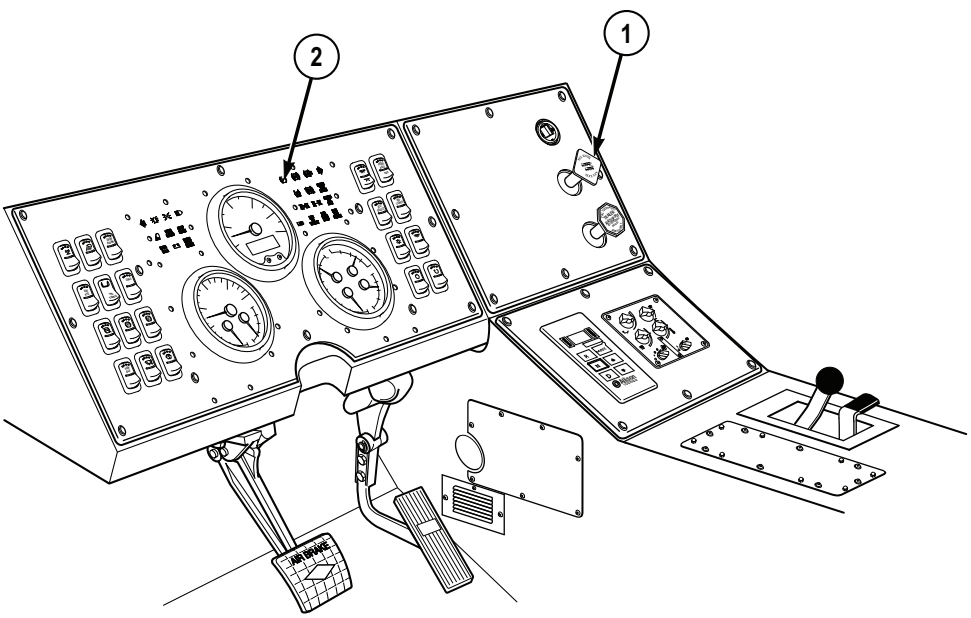


Figure 1.

OPERATE PARKING BRAKES - Continued

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.

OPERATE SERVICE BRAKES - Continued

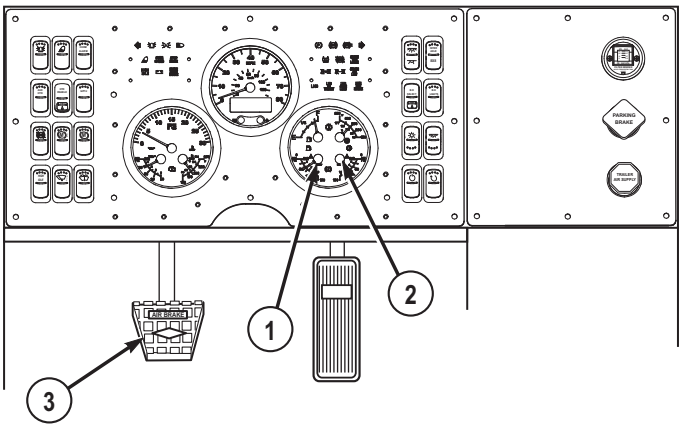


Figure 1.

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.

OPERATE TRAILER BRAKES - Continued

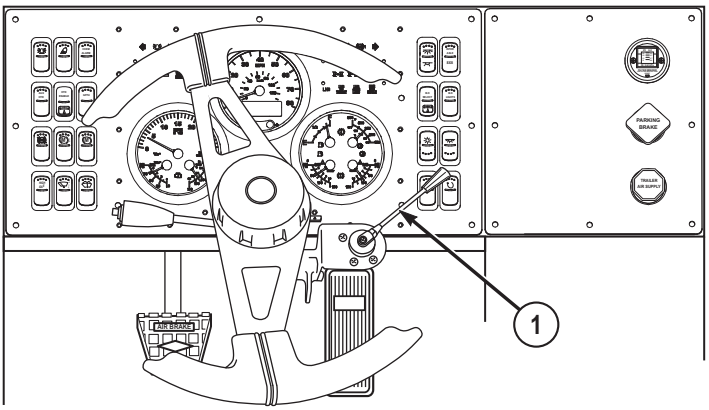


Figure 1.

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 0133)

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.

OPERATE TRANSMISSION - Continued

1. Press the N (neutral) button (1) for the following:
   a. Start engine. (WP 0044)

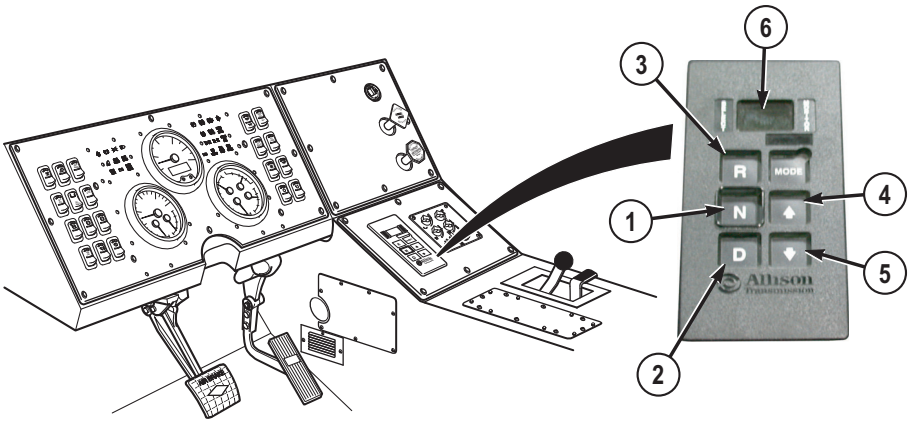


Figure 1.

   b. Park vehicle. (WP 0056)
   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 0051)
   b. D (Drive) (2):
      (1) Drive in normal conditions.
      (2) Drive vehicle forward (WP 0050) 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:

OPERATE TRANSMISSION - Continued

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 0053)

(b) Drive vehicle in city traffic and on highway. (WP 0052)

(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 0054)

(c) Drive vehicle in slippery conditions. (WP 0055)

OPERATE TRANSFER CASE

1. Start engine. (WP 0044)

OPERATE TRANSFER CASE - Continued

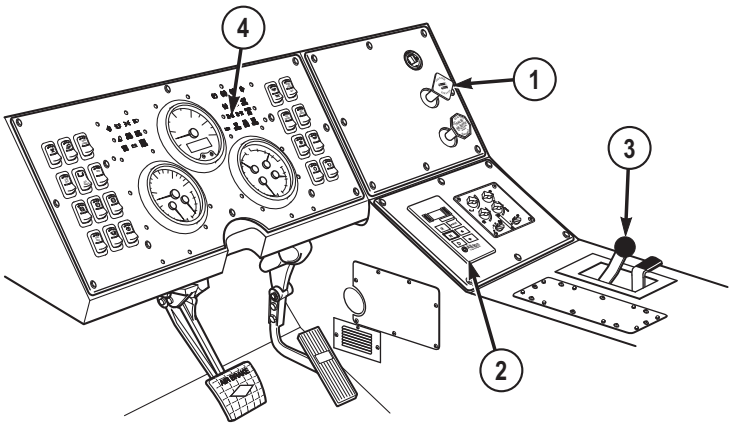


Figure 2.

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. (Volume 2, WP 0175)

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

OPERATE TRANSFER CASE - Continued

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.

OPERATE ENGINE BRAKE - Continued

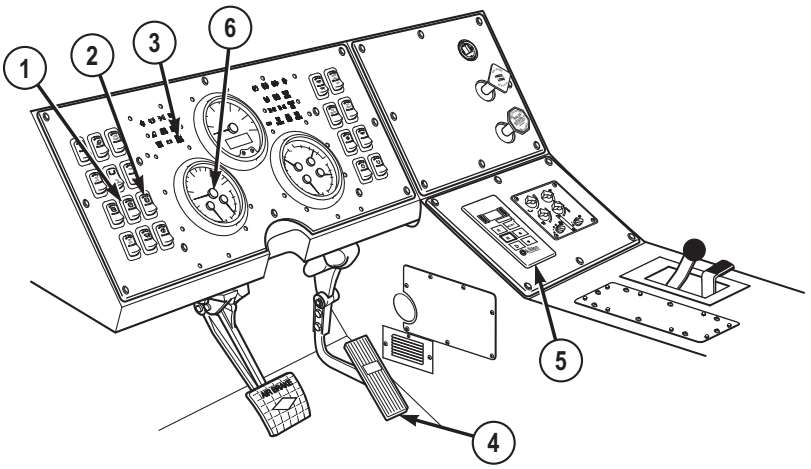


Figure 1.

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 0097)
2. Ensure grove crane, outriggers, and outrigger pads are secured in stowed position. (WP 0102)
3. Ensure heavy duty winch cables clevis is retracted to fairlead/tensioner. (WP 0039)
4. Ensure fairlead/tensioner is in stowed position. (WP 0039)
5. Ensure retrieval cylinders are fully retracted. (WP 0039)
6. Ensure equipment body doors are closed.
7. Ensure vise is returned to stowed position. (WP 0106)
8. Ensure all equipment in equipment body is securely stowed.
9. Adjust air-ride seat and mirrors as needed. (WP 0100)
10. Adjust four-point seatbelt as needed. (WP 0101)
11. Ensure air suspension dump valve control is pinned in ‘service’ position. (WP 0028)
12. Ensure all four suspension ball valves are open. (WP 0043)
13. Ensure tire carrier is secure in raised position.
14. Start engine. (WP 0044)
15. Turn on lights as required.

PREPARE VEHICLE - Continued

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.

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

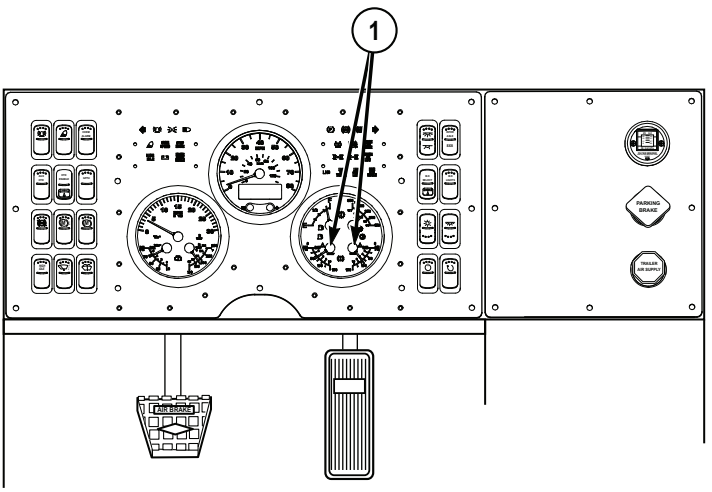


Figure 1.

DRIVE VEHICLE FORWARD

1. Drive vehicle in city traffic and on highway. (WP 0052)
2. Drive vehicle in off-road conditions. (WP 0053)
3. Drive vehicle in slippery conditions. (WP 0055)
4. Drive vehicle up/down steep grade. (WP 0054)

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 0100)
3. Adjust four-point seatbelt as needed. (WP 0101)
4. Start engine. (WP 0044)
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.

DRIVE VEHICLE IN REVERSE - Continued

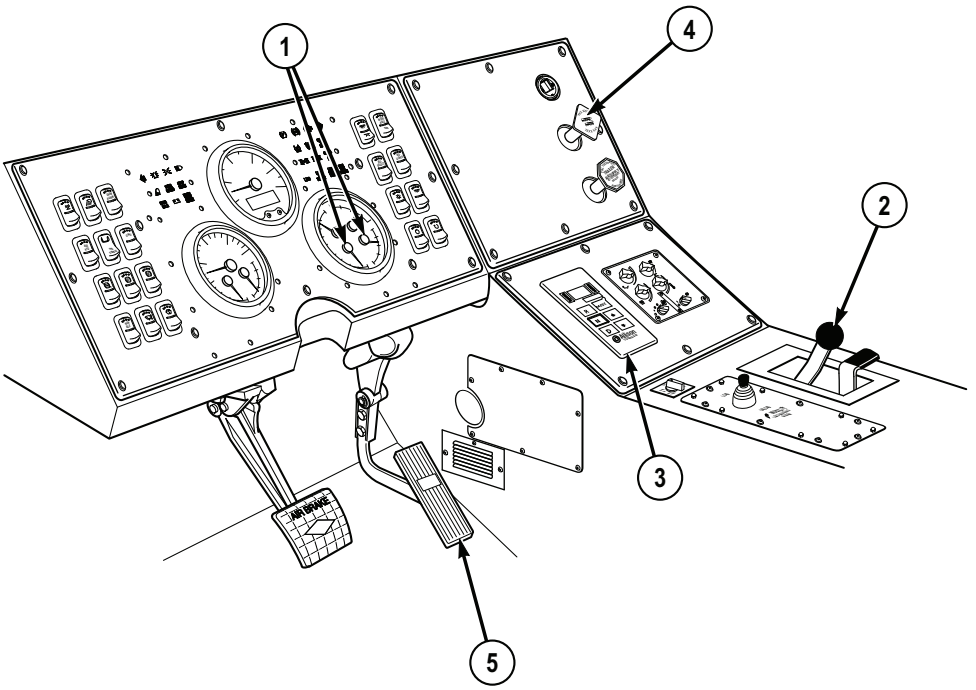


Figure 1.

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.

DRIVE VEHICLE IN REVERSE - Continued

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.

OPERATE VEHICLE - Continued

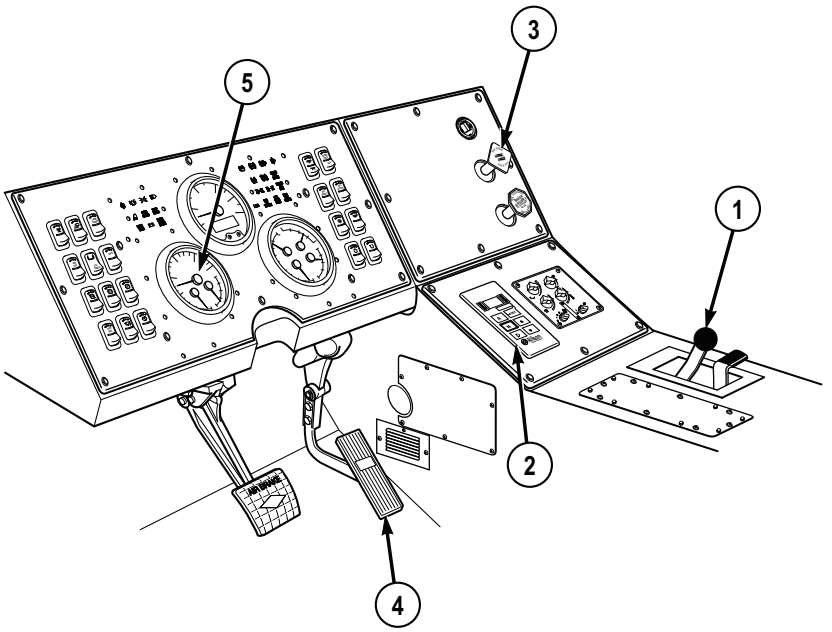


Figure 1.

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.

OPERATE VEHICLE - Continued

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.

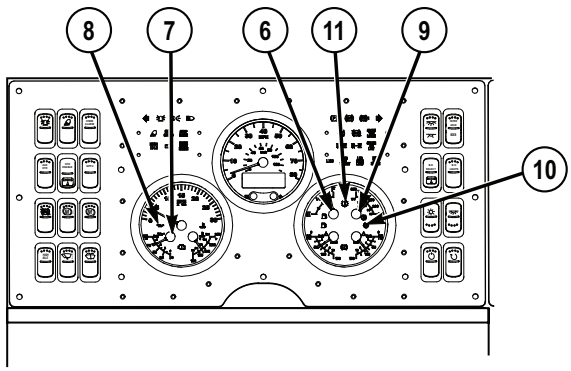


Figure 2.

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 0057), 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 0057), 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

OPERATE VEHICLE - Continued

is above 350° (177°C); park vehicle (WP 0056) 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 0133)

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).

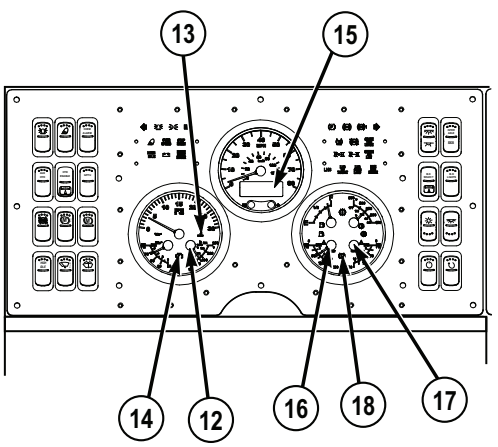


Figure 3.

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 0057) 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

OPERATE VEHICLE - Continued

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 0022)

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 0109)

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
DRIVE VEHICLE IN OFF-ROAD CONDITIONS

INITIAL SETUP:

Not Applicable

DRIVE WRECKER IN OFF-ROAD CONDITIONS

CAUTION

Raise and hook mud flaps before operating vehicle off-road. Rear mud flaps can be torn off when working in off-road conditions.

NOTE

- Remove dirt from hole in mud flap before installing to off-road position.
- Driver and passenger side mud flaps are raised the same.

1. Lift up mud flap (1) and turn toward vehicle fender (2).

DRIVE WRECKER IN OFF-ROAD CONDITIONS - Continued

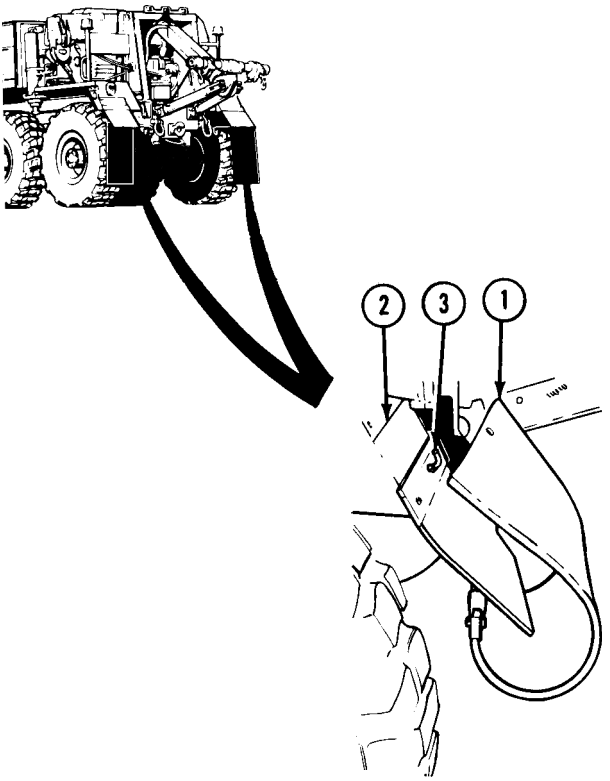


Figure 1.

2. Install mud flap (1) on hook (3).

NOTE

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

3. Set ABS disable switch (4) to on position, ABS disabled indicator (5) will illuminate.

DRIVE WRECKER IN OFF-ROAD CONDITIONS - Continued

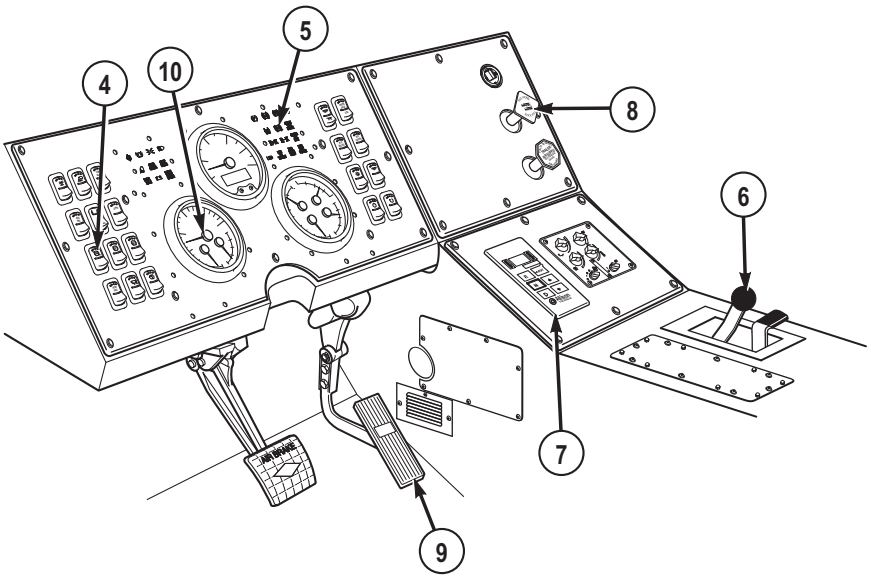


Figure 2.

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.

NOTE

8x8 indicator (WP 0022) will illuminate when TRANSFER CASE shift lever is positioned to L (LO).

4. Set TRANSFER CASE shift lever (6) to L (LO).
5. Set transmission range selector (7) to 2 (2nd gear range) or 1 (1st gear range), (WP 0048) depending on ground condition.

NOTE

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

6. Push in PARKING BRAKE control (8).

CAUTION

Never let engine exceed maximum no-load governed engine speed (approximately 2170 rpm) or maximum governed engine speed under

DRIVE WRECKER IN OFF-ROAD CONDITIONS - Continued

load (approximately 2150 rpm). If engine is allowed to go over governed engine speeds, serious engine damage may result.

7. Slowly depress throttle pedal (9) until vehicle reaches desired speed. Tachometer (10) should read 1650 to 2100 rpm.

CAUTION

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

8. Accelerate, brake, and steer as required.

NOTE

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

9. Set ABS disable switch (4) to off position. ABS disabled indicator (5) will go out.

NOTE

- When off-road driving is completed, remove mud flaps from off-road position.
- Driver and passenger side mud flaps are removed the same.

10. Remove mud flap (1) from hook (3) on vehicle fender (2).

DRIVE WRECKER IN OFF-ROAD CONDITIONS - Continued

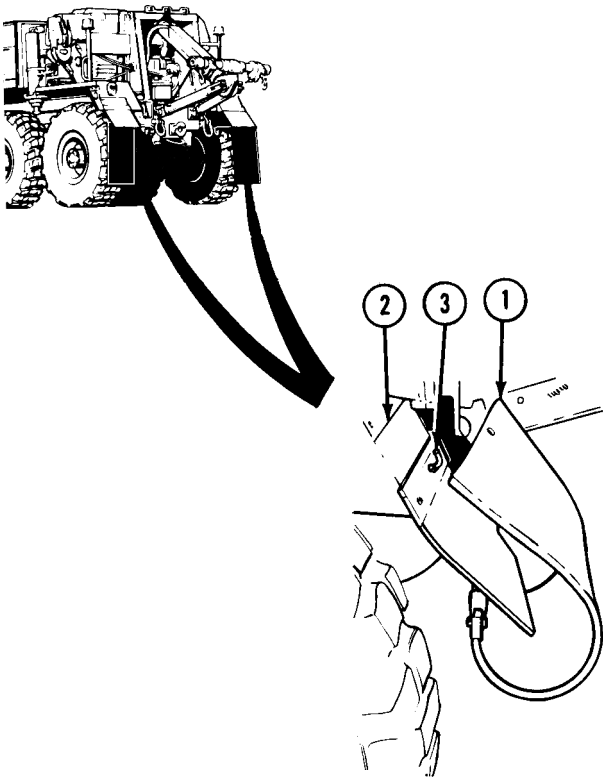


Figure 3.

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.

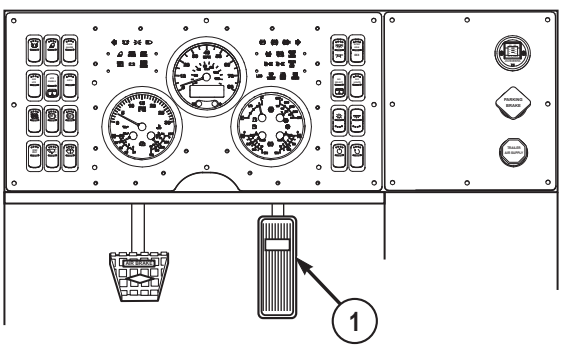


Figure 1.

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.

DRIVE VEHICLE DOWN STEEP GRADE - Continued

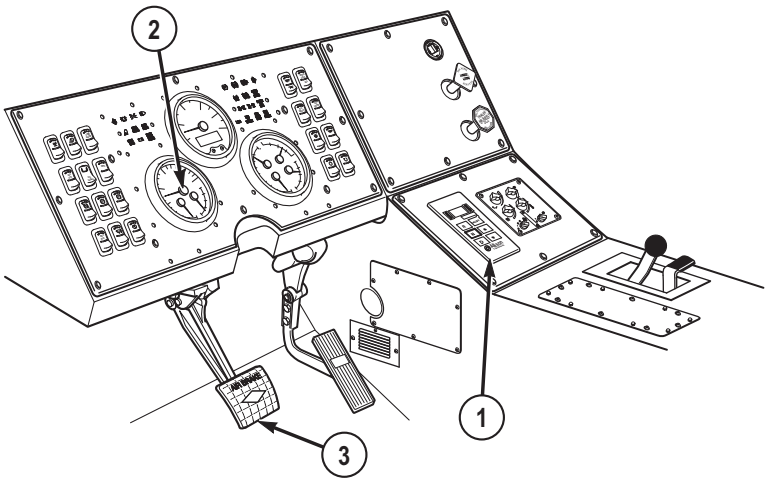


Figure 2.

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 0049) 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.

OPERATE VEHICLE - Continued

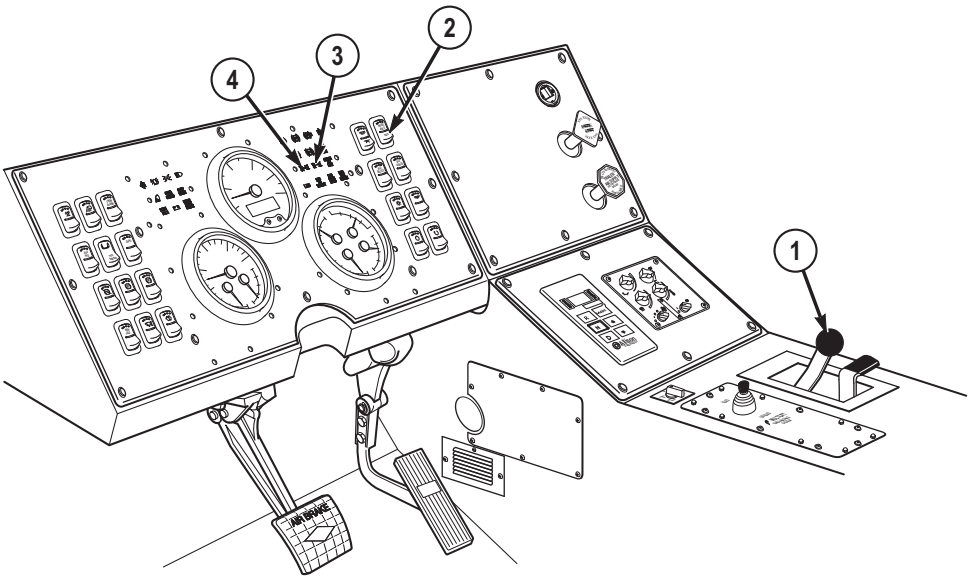


Figure 1.

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.

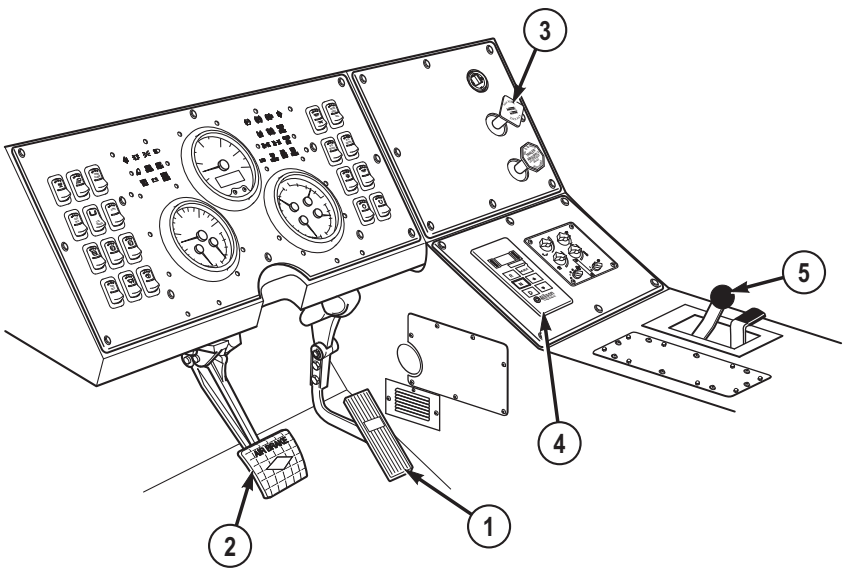


Figure 1.

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.

OPERATE VEHICLE - Continued

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 0097) 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 0056)

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.

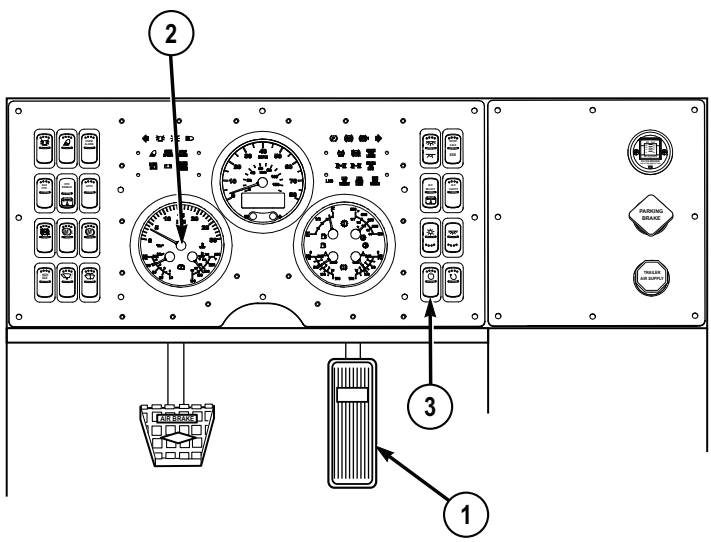


Figure 1.

3. Lift foot off throttle pedal (1).

SHUT OFF ENGINE - Continued

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 0099)

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
RETRIEVAL TOWING SYSTEM

INITIAL SETUP:

Not Applicable

INTRODUCTION

WARNING

The M984 Wrecker should not be operated at speeds over 15 MPH (24 km/hr) except on paved roads when the operator determines that the vehicle being towed and the terrain allow safe operation. Engine brake switch must ON for all towing operations. Speed in excess of the below table may result in loss of control, serious injury, or death to personnel.

CAUTION

- Extreme care must be used when towing the disabled vehicle to prevent further damage to disabled vehicle. Failure to comply may result in damage to equipment.
- Both tow cylinders must be fully retracted before towing the disabled vehicle, or damage to tow cylinders may result.
- Both rear towing shackles must be removed from rear tow eyes on M984A wrecker before performing retrieval operations or damage to tow cylinder may result.
- Ensure vehicle to be towed does not exceed wrecker maximum weight restrictions. Operator should take into account vehicle to be towed payload, and armor configuration - both of which may add a significant amount of weight. Failure to comply may result in damage to equipment.

INTRODUCTION - Continued

NOTE

- When possible, front towing is preferred for larger vehicles, because braking can be controlled to the rear of most vehicles with the towing air lines.
- The disabled vehicle's operator manual must be checked for towing preparation before the vehicle is towed.
- For detailed instructions on towing procedures refer to FM 4-30.31.
- Because of M984A wrecker rigid retrieval system, ALL OFF-ROAD TOWING must be performed with towed vehicle's front or rear tires lifted off ground.

The M984A wrecker is capable of towing a wide range of vehicles. The towing cylinders and crosstube attach to the disabled vehicle by means of adapters that mount on the crosstube. The lift and tow cylinders are used to position the adapters, raise/lower and tow the disabled vehicle. Chains are attached between the wrecker and disabled vehicle for safety purposes.

Table 1. Maximum Towing Speed.

Terrain Condition	Maximum Speed Towed Load Up To 50,000 lbs (22 700 kg)	Maximum Speed Towed Load Above 50,000 lbs (22 700 kg)
On Road-Level	35 mph (56 km/hr)	30 mph (48 km/hr)
On Road-Hilly	30 mph (48 km/hr)	20 mph (32 km/hr)
Off-Road	15 mph (24 km/hr)	15 mph (24 km/hr)

TOWING CATEGORIES

1. The M984A wrecker will perform two types of towing.
   a. Lift and Tow (OFF ROAD) - With the retrieval system attached to one end (front or rear) of the disabled vehicle, it is raised as high as possible, but (lifted tires) not more than 1 ft. (30 cm) above the ground.
   b. Tow (HIGHWAY) - With the retrieval system attached (same as lift and tow) to the front of the disabled vehicle, it is towed with all tires on the ground. If required, front or rear of disabled vehicle may be lifted (lifted tires) not more than 1 ft. (30 cm) above the ground. Refer to FM 4-30.31 (Volume 2, WP 0200) for more information.

VEHICLES AND VEHICLE SERIES THE M984A4 WRECKER WILL TOW

Table 2. Vehicles and Vehicle Series.

1. M977	5. M35	9. M966
2. M1074/M1075	6. M911	10. M1008
3. M1070	7. M915	11. FMTV
4. M984A	8. M939	12. MTVR

DISABLED VEHICLE ADAPTERS

NOTE

Refer to M984A Components of End Item (COEI) List (Volume 2, WP 0201) for more information on adapters.

Table 3. Tow Adapters.

Vehicle	Towing Attachment	Adapter	Adapter Stowage Location
M977	Front	A	Crosstube
	Rear	B	Equipment Body
M1074	Front	A	Crosstube
	Rear	B	Equipment Body
M1070	Front	D	Equipment Body
	Rear	B	Equipment Body
M35	Front	F	Equipment Body
	Rear	C	Equipment Body
M911	Front	D	Equipment Body
	Rear	C	Equipment Body
M915	Front	D	Equipment Body

DISABLED VEHICLE ADAPTERS - Continued

Table 3. Tow Adapters. - Continued

Vehicle	Towing Attachment	Adapter	Adapter Stowage Location
	Rear	C	Equipment Body
M939	Front	F	Equipment Body
	Rear	C	Equipment Body
M966	Front	D and G	Equipment Body
	Rear	D and G	Equipment Body
M1008	Front	F	Equipment Body
	Rear	E	Equipment Body
FMTV	Front	F	Equipment Body
	Rear	N/A	Equipment Body
MTVR	Front	F	Equipment Body
	Rear	F	Equipment Body

DISABLED VEHICLE ADAPTERS - Continued

Table 3. Tow Adapters. - Continued

Vehicle	Towing Attachment	Adapter	Adapter Stowage Location

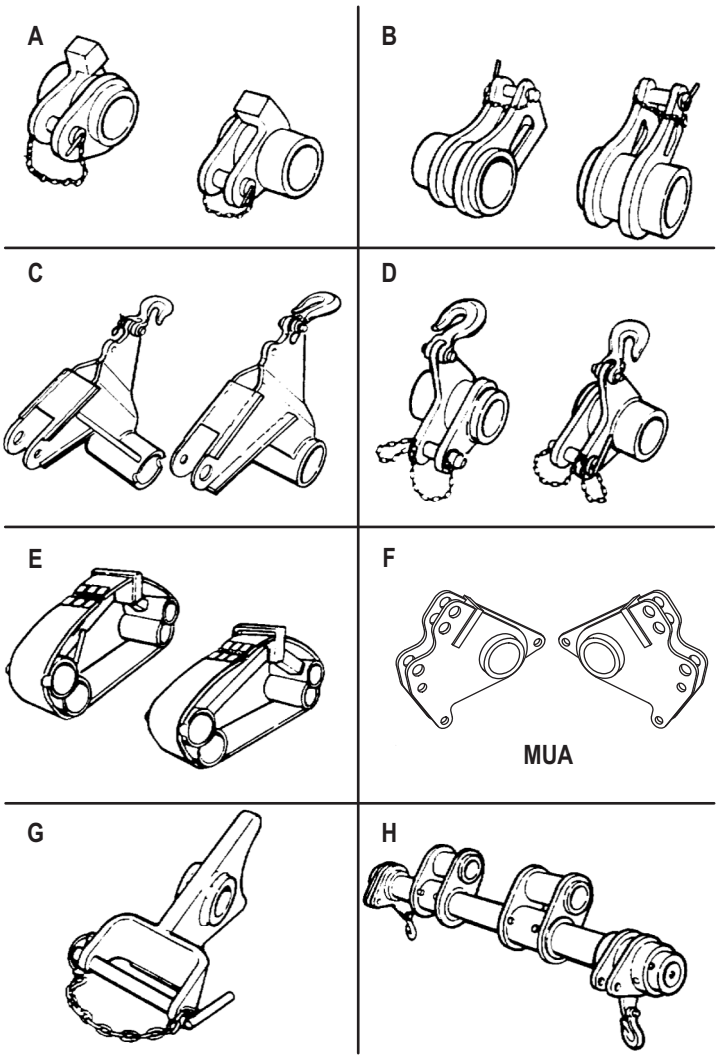


Figure 1.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
RETRIEVAL SYSTEM OPERATION

INITIAL SETUP:

Not Applicable

PREPARE RETRIEVAL SYSTEM FOR OPERATION

1. Set up rear beacon lights. (WP 0093)
2. Start engine. (WP 0044)
3. Set HYD ENABLE switch (1) to on position. MAIN HYD ENABLE indicator (2) will illuminate.

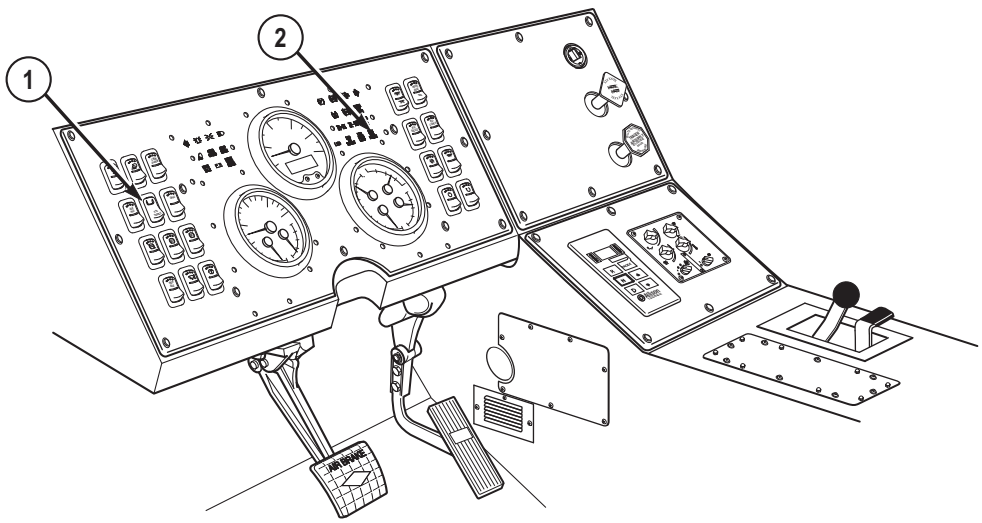


Figure 1.

4. Position M984A wrecker in front of disabled vehicle as required.
5. Set POWER switch (3) to ON position.

PREPARE RETRIEVAL SYSTEM FOR OPERATION - Continued

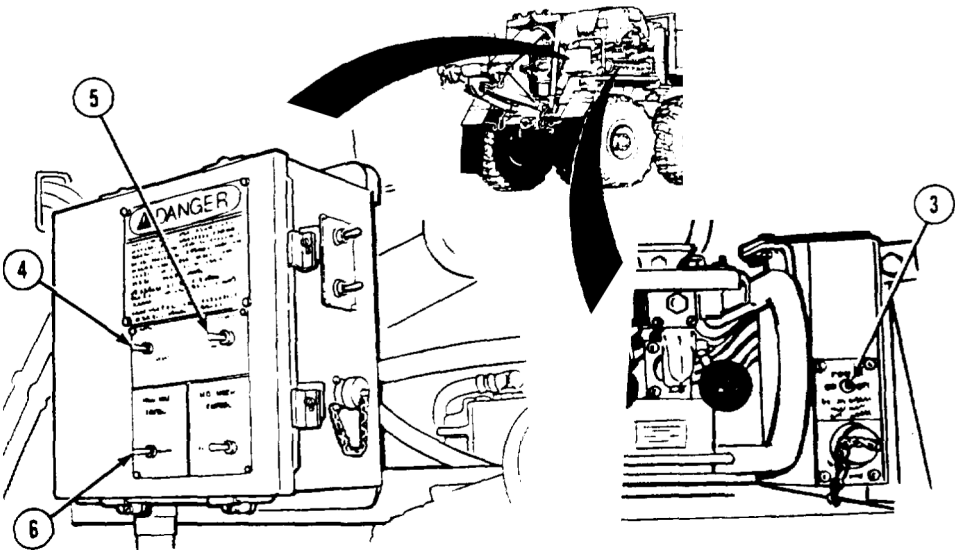


Figure 2.

6. Set POWER switch (4) to ON position (LOW IDLE ONLY).
7. Set HIGH IDLE switch (6) to CONTINUOUS.
8. Push and release LATCH switch (5). Engine speed will increase to approximately 1500 rpm.

POSITION RETRIEVAL SYSTEM

1. To operate right tow cylinder, push RIGHT TOW CYLINDER control lever (1) in to retract right tow cylinder (2), and pull RIGHT TOW CYLINDER control lever out to extend right tow cylinder.

POSITION RETRIEVAL SYSTEM - Continued

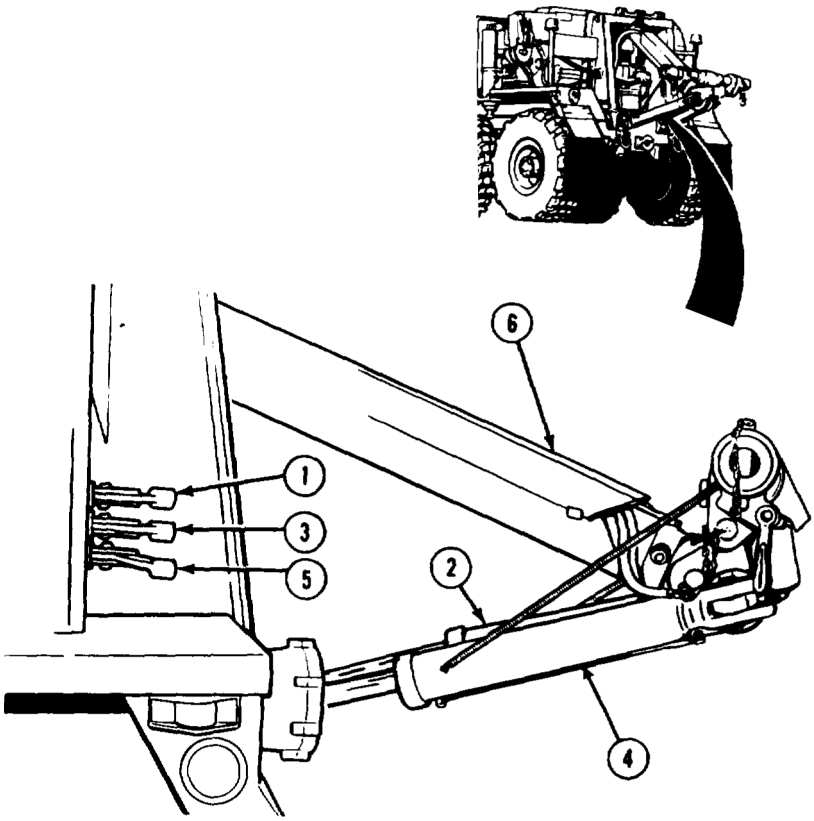


Figure 3.

2. To operate left tow cylinder, push LEFT TOW CYLINDER control lever (3) in to retract left tow cylinder (4), and pull LEFT TOW CYLINDER control lever out to extend left tow cylinder.
3. To operate lift cylinder, push LIFT CYLINDER control lever (5) in to retract lift cylinder (6) and pull LIFT CYLINDER control lever out to extend lift cylinder.

STOW LIFT CYLINDER

Fully retract lift cylinder (6), then operate LIFT CYLINDER CONTROL lever (5) forward just enough to relieve pressure.

STOW LIFT CYLINDER - Continued

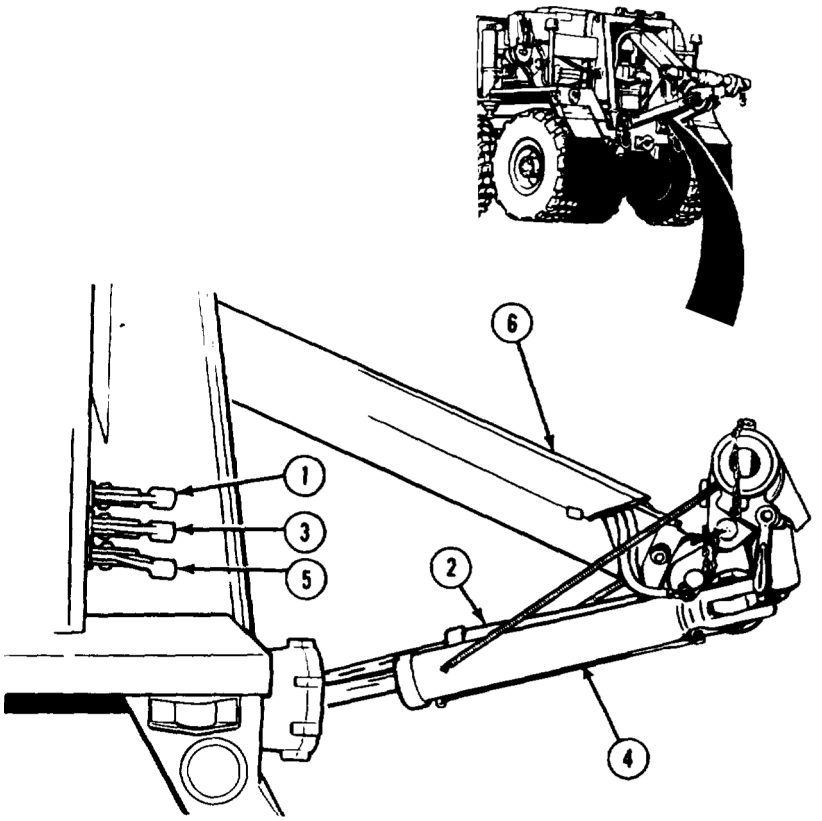


Figure 4.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
TOW HEMTT- FRONT LIFT

INITIAL SETUP:

Not Applicable

HOOKUP

WARNING

Armor access plate weighs 75 lbs (34 kg). Do not attempt to lift or move access plate without the aid of an assistant and a lifting device. Failure to comply may result in injury or death to personnel

CAUTION

Due to weight considerations, HEMTT series vehicles that have armor kit installed must be completely emptied of payload prior to beginning front lift and tow procedures. Failure to comply may result in damage to equipment.

NOTE

- If disabled vehicle does not have armor kit installed, skip to Step (2).
- This procedure is a two soldier task.

1. Complete the following steps if disabled vehicle has armor kit installed:
   a. Remove armor access plate which fits around front tow eyes of disabled vehicle.
   b. With aid of an assistant, stow armor access plate on disabled vehicle.

NOTE

- Each recovery situation is unique and requires assessment to determine if the driveline is suitable for transport. When in doubt, consult with field level maintenance.
- This procedure is a two soldier task.

HOOKUP - Continued

2. Review procedures for operating retrieval towing system (WP 0058) and prepare retrieval system for operation. (WP 0059)

CAUTION

Both rear towing shackles must be removed from rear tow eyes on wrecker before performing retrieval operations, or damage to tow cylinder may result.

NOTE

Driver side and passenger side towing shackles are removed the same way.

3. Remove two rear towing shackles from wrecker:

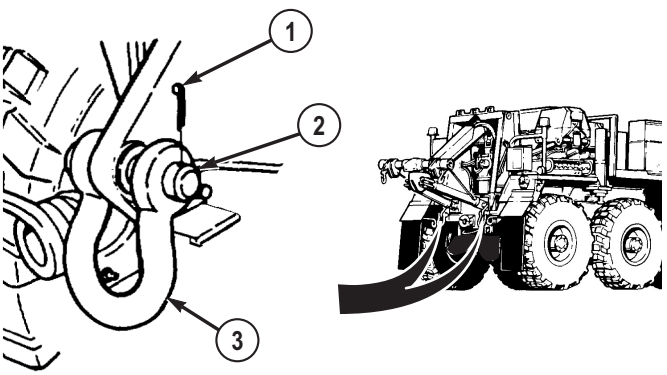


Figure 1.

a. Remove cotter pin (1), pin (2), and towing shackle (3).

b. Replace pin (2) in shackle (3), and cotter pin (1) in pin (2).

c. Repeat Steps (a) and (b) for opposite side towing shackle (3).

d. Stow two rear towing shackles on wrecker vehicle.

4. Pull LIFT CYLINDER control lever (4) to lower cross tube (5) to approximately 3 ft. (1 m) above ground.

HOOKUP - Continued

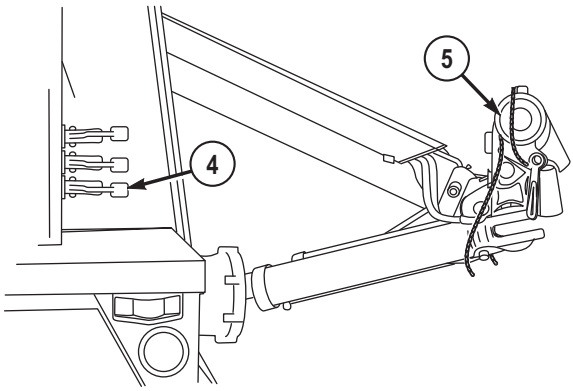


Figure 2.

5. Position wrecker so that cross tube (5) is approximately 1 ft. (30 cm) from tow eyes of disabled vehicle and centered on disabled vehicle.

6. Turn adapters (6) so pins (7) are on top. Remove two quick pins (8) and pins (7) from adapters (6).

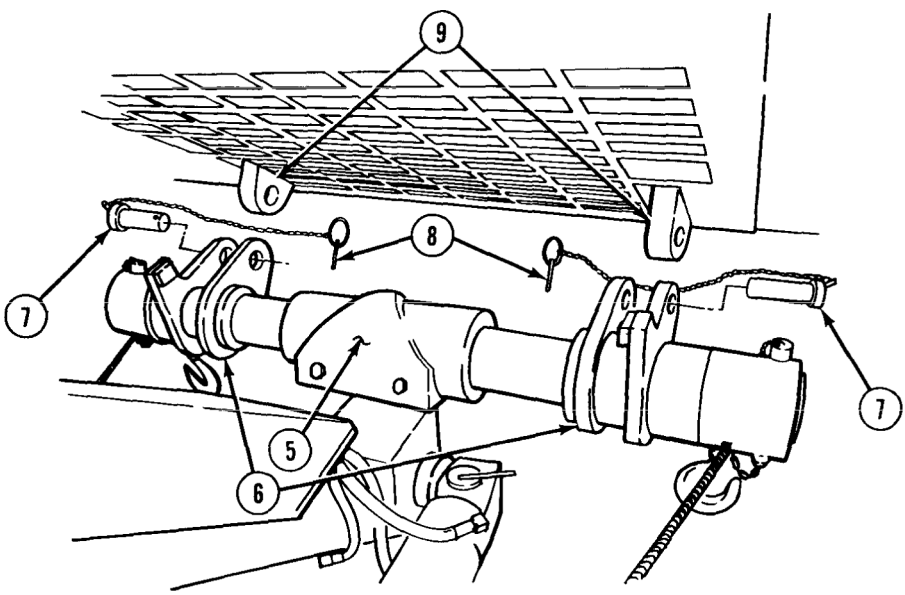
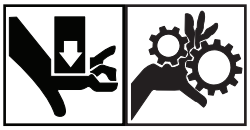


Figure 3.

HOOKUP - Continued

WARNING



Keep hands and fingers away from adapters and tow eyes when operating retrieval controls. Failure to comply may result in injury or death to personnel.

7. Operate retrieval system, and with aid of an assistant position cross tube (5) so holes in adapters (6) align with holes of front tow eyes (9).
8. Insert two pins (7) through adapters (6) and holes of front tow eyes (9). Install quick pins (8) in pins (7).

NOTE

If disabled vehicle air system is inoperative, manually release spring brakes (WP 0129).

9. Push in PARKING BRAKE control (10) on disabled vehicle.

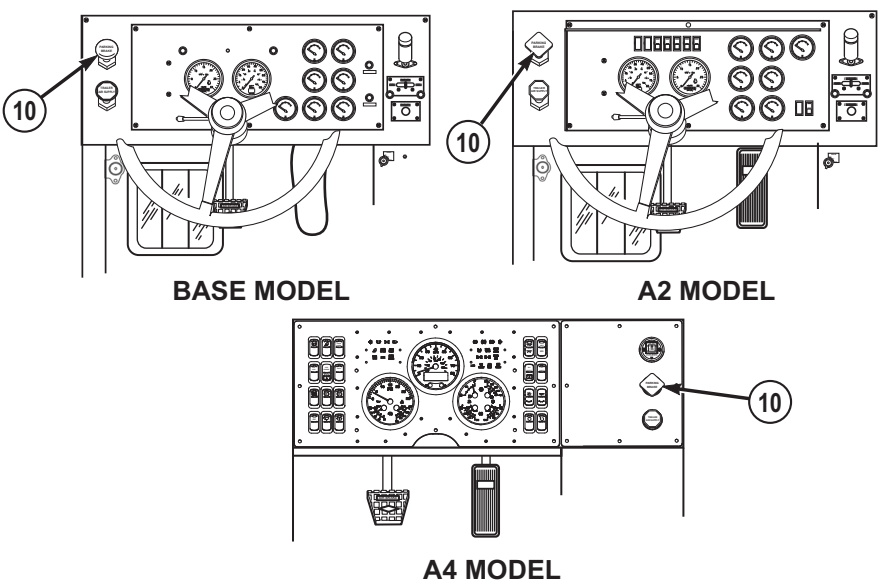


Figure 4.

10. Operate retrieval system until tow cylinders (11) are fully retracted.

HOOKUP - Continued

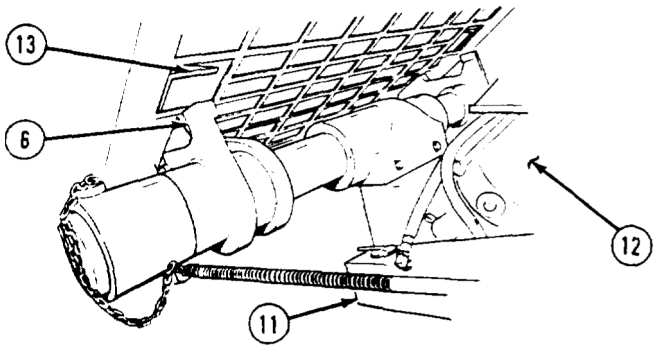


Figure 5.

11. Operate retrieval system and retract lift cylinder (12) until adapters (6) contact frame (13) of disabled vehicle.
12. Remove two air lines (14) from stowage and attach to rear gladhands (15) on wrecker.

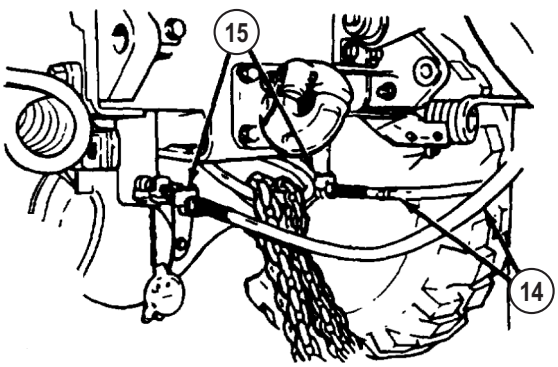


Figure 6.

CAUTION

Do not route air lines between retrieval cylinders or damage to equipment may result.

NOTE

- Driver side rear air line from wrecker must be connected to driver side front gladhand on disabled vehicle. Passenger side rear air line from wrecker must be connected to passenger side front gladhand on disabled vehicle.

HOOKUP - Continued

- gladhands on all models of HEMTT series vehicle are similar in appearance and location. BASE/A2 model shown.

13. Route air lines (14) over cross tube (5) and attach to front gladhands (16) on disabled vehicle.

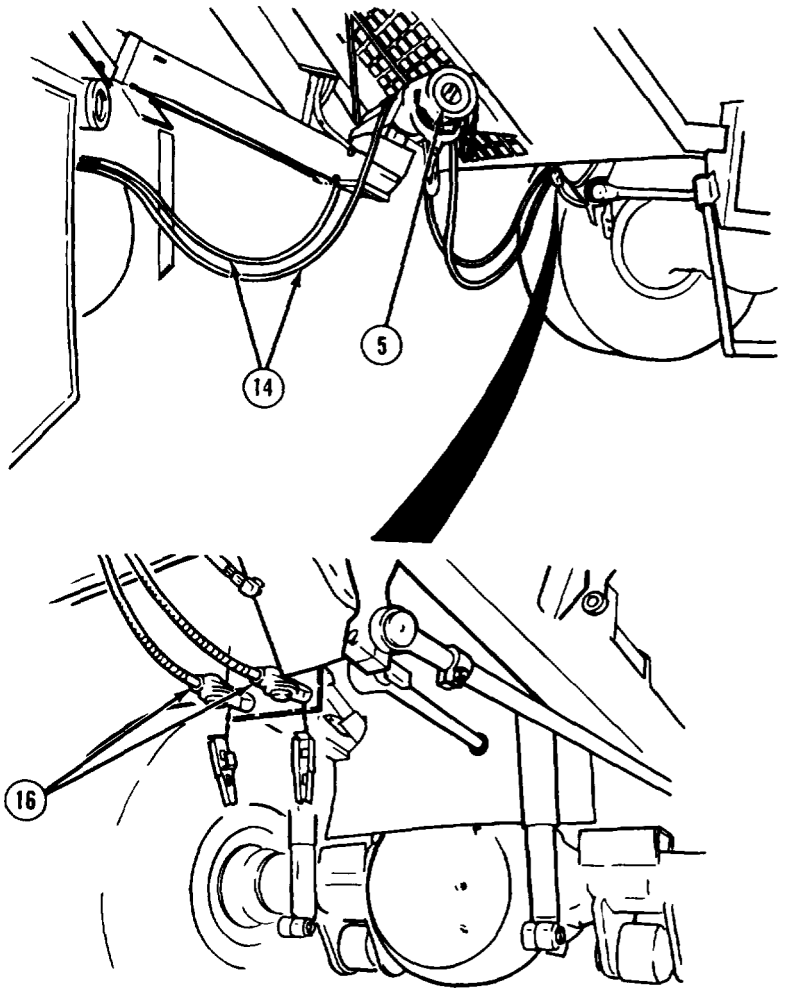


Figure 7.

14. Remove two 16 ft. (5 m) safety chains (17) from wrecker stowage.

HOOKUP - Continued

CAUTION

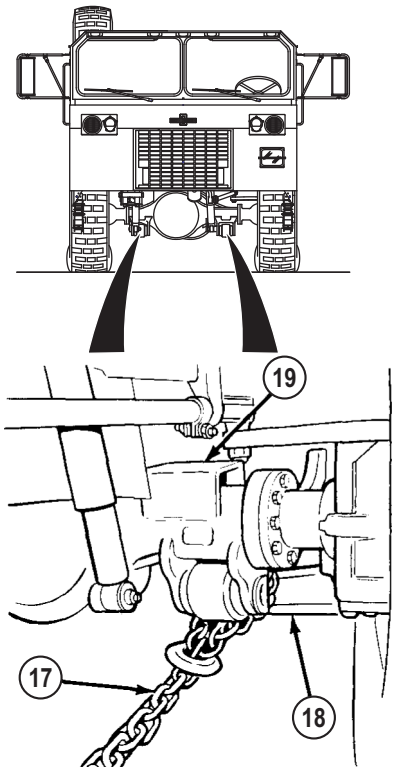
Care must be taken to identify which model of HEMTT series vehicle is being towed (refer to data plate on inside of driver side door). Safety chain attachment points depend on model of HEMTT series vehicle. Failure to comply may result in damage to equipment.

NOTE

- 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 (15).
- If disabled vehicle is an A4 model HEMTT series vehicle (refer to data plate on inside of driver side door), skip to Step (16).

15. Route end of 16 ft. (5 m) safety chain (17) without safety shackle over walking beam (18) behind No. 1 axle (19) on disabled vehicle and hook 16 ft. (5 m) safety chain (17) back into itself under walking beam (18) as shown.

HOOKUP - Continued



BASE/A2 MODELS

Figure 8.

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 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.

16. Connect 16 ft. (5 m) safety chain (17) to disabled vehicle tiedown ring (20):

HOOKUP - Continued

a. Route end (without safety shackle) of 16 ft. (5 m) safety chain (17) through tiedown ring (20) from inboard to outboard until grab hook (21) hangs just below bottom of air spring (22).

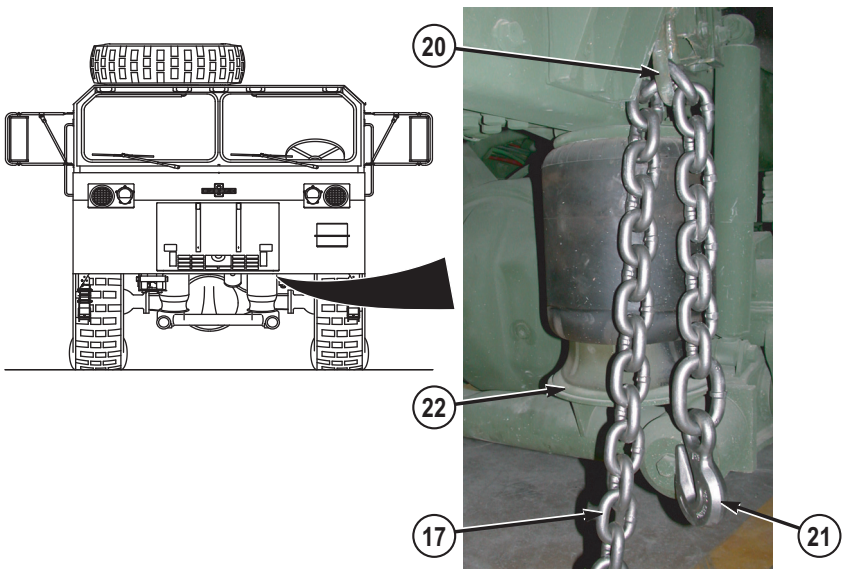


Figure 9.

b. Hook 16 ft. (5 m) safety chain (17) back to itself. Grab hook (21) should open towards ground (shown) when tension is applied to 16 ft. (5 m) safety chain (17).

HOOKUP - Continued

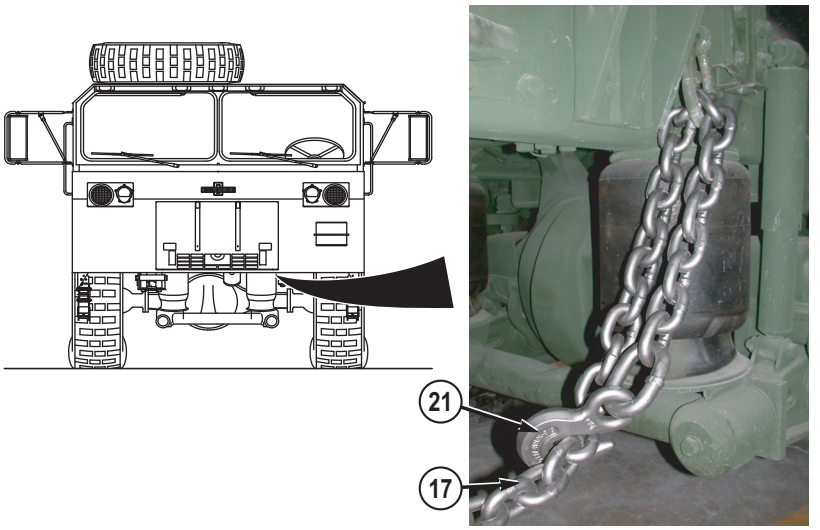


Figure 10.

17. Repeat Step (15) or (16) for other side of disabled vehicle (as applicable).

NOTE

Adjust chain slack so safety chains are approximately 6 in. (15 cm) above the ground.

18. Route two safety chains (17) through safety chain hoop (23) on wrecker, hook 16 ft. (5 m) safety chain (17) back to itself, and secure grab hook (24) with safety shackle (25).

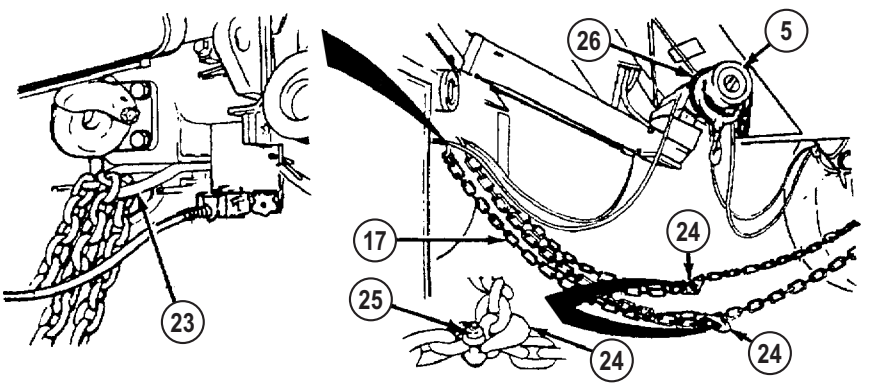


Figure 11.

HOOKUP - Continued

19. Wrap two springs (26) around cross tube (5) and secure.
20. Prepare disabled vehicle for towing. (Volume 2, WP 0188)
21. Remove emergency tow lights (27) and two brackets (28) from wrecker stowage.

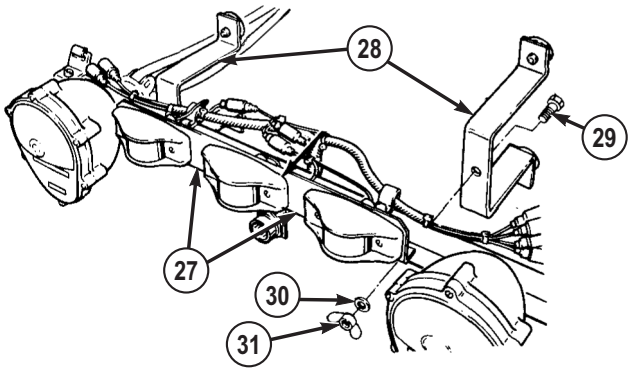


Figure 12.

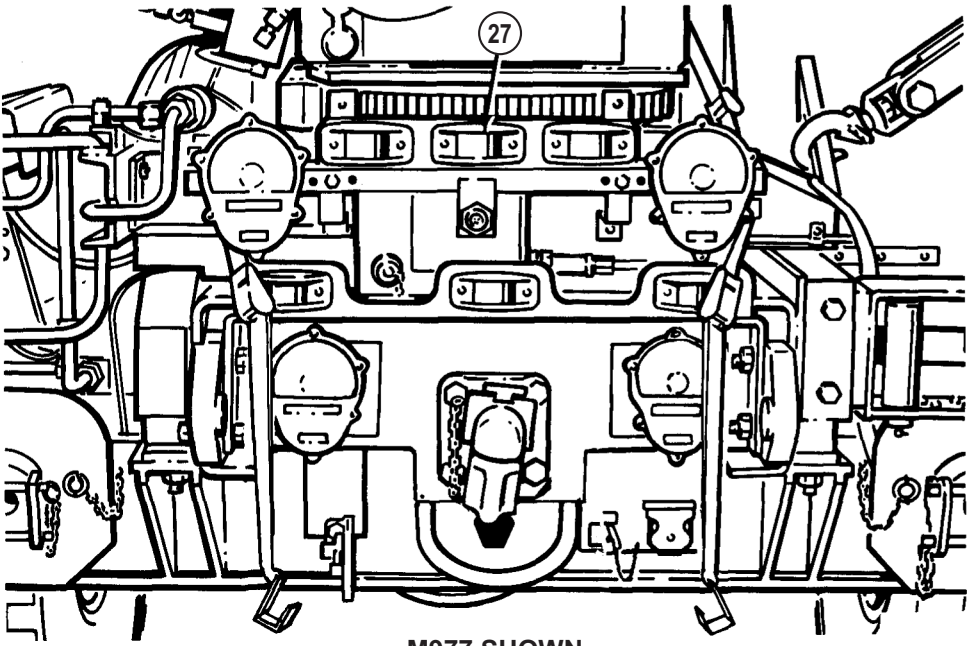
22. Install two brackets (28) in outside holes of emergency tow lights (27) with two screws (29), washers (30), and nuts (31).

NOTE

Exact placement of emergency light straps varies from model to model. Secure emergency light straps to parts of disabled vehicle that will not move during towing.

23. Position emergency tow lights (27) and straps (32) securely on disabled vehicle:

HOOKUP - Continued



M977 SHOWN

Figure 13.

a. Press in handle (33) on strap clamp (34) and pull strap (32) to lengthen.

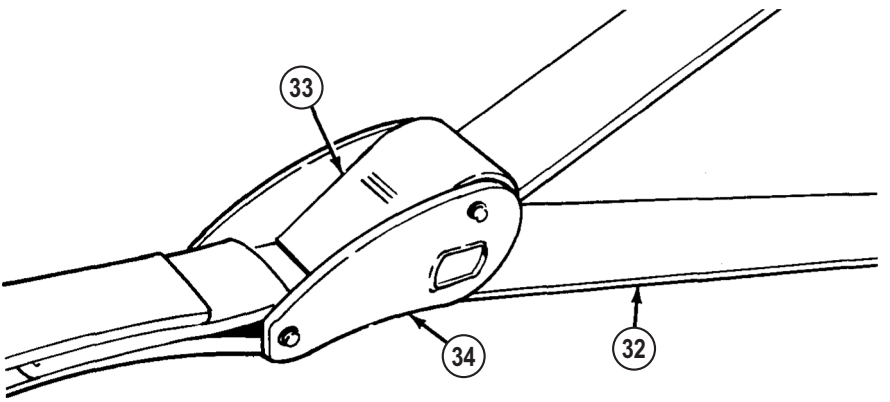


Figure 14.

b. Secure top strap hooks to area of vehicle (M977 shown) that will not move and lower strap hooks (35) to safety chain hoop (23).

HOOKUP - Continued

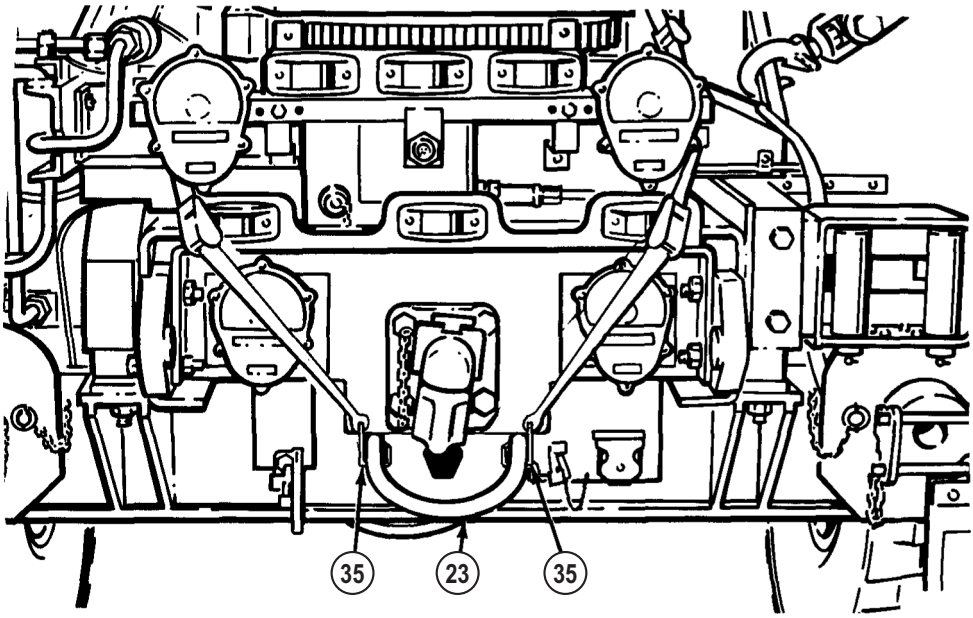


Figure 15.

24. Remove tow light cable (36) from stowage and connect to rear electrical connector (37) on wrecker.

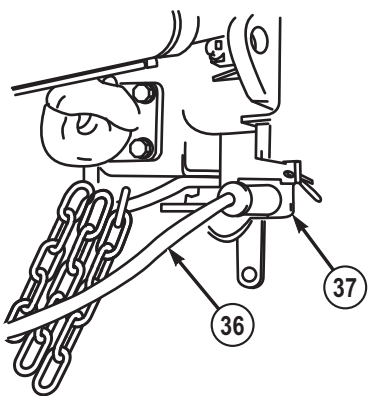


Figure 16.

HOOKUP - Continued

CAUTION

Route cable so it does not drag on ground or interfere with turning tires. Failure to comply may result in damage to equipment.

25. Route other end of tow light cable (36) to emergency tow lights (27) on disabled vehicle, and plug in at connector (38).

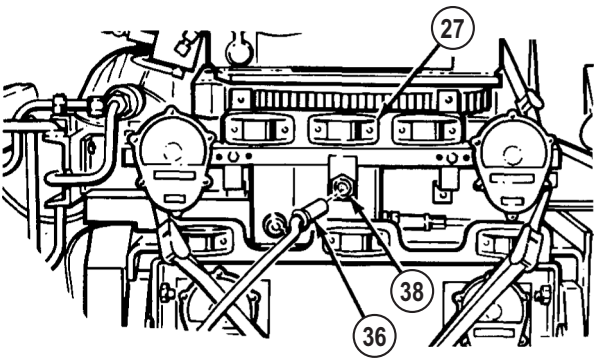


Figure 17.

CAUTION

If disabled vehicle is to be towed with all tires in contact with road, this procedure can be accomplished on paved roads only. Failure to comply may result in damage to equipment.

NOTE

- If disabled vehicle is to be lifted and towed skip to Step (30).
- Operator must allow wrecker air suspension system to completely adjust for added weight of disabled vehicle after vehicle has been raised. Wrecker air suspension system may overcompensate and raise disabled vehicle higher than desired.

26. If disabled vehicle will be towed with all tires in contact with road:
    a. Raise cross tube enough to partially unload disabled vehicle's front suspension.
    b. Keep front tires in firm contact with ground.
    c. Skip to Step (30).

HOOKUP - Continued

NOTE

- If disabled vehicle is BASE/A2 HEMTT series vehicle (refer to data plate on inside of drivers door) continue with Step (27).
- If disabled vehicle is A4 HEMTT series vehicle (refer to data plate on inside of drivers door) skip to Step (28).

27. Install steering lock bracket (39) on disabled vehicle:

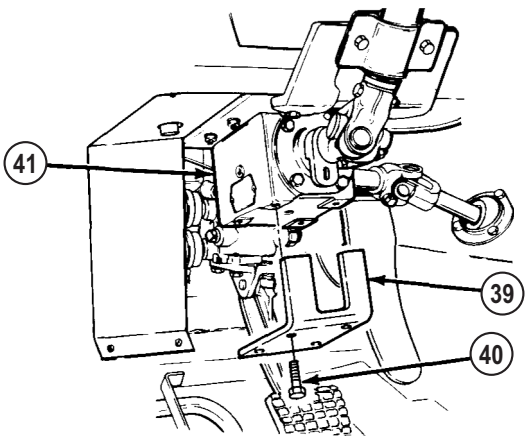


Figure 18.

NOTE

If tires of disabled vehicle have to be straightened manually, drive wrecker forward (WP 0050) 20 to 30 ft. (6 to 10 m) while assistant straightens tires on disabled vehicle.

a. Straighten front wheels on disabled vehicle.

b. Remove steering lock bracket (39) and four screws (40) from stowage.

c. Install steering lock bracket (39) on 90 degree gearbox (41) with four screws (40).

NOTE

If disabled vehicle is A4 HEMTT series vehicle (refer to data plate on inside of drivers door) continue with Step (28).

28. Install steering lockpin (42) on disabled vehicle:

HOOKUP - Continued

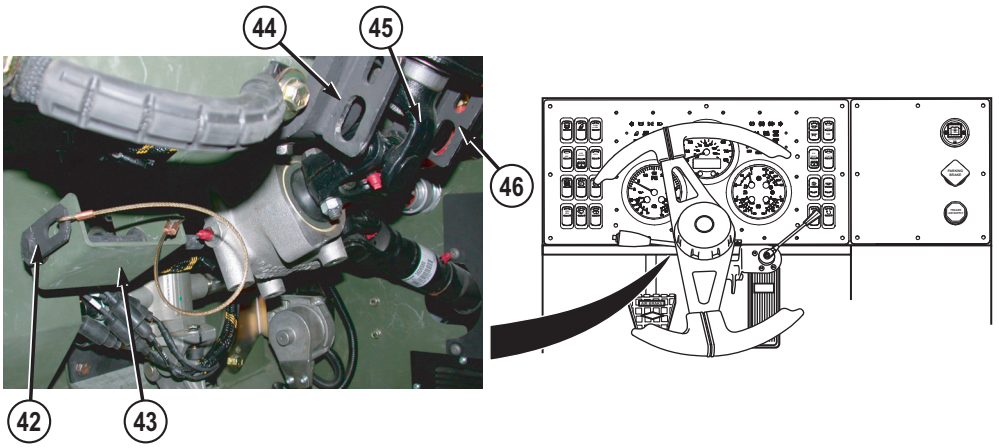


Figure 19.

NOTE

If tires of disabled vehicle have to be straightened manually, drive wrecker forward (WP 0050) 20 to 30 ft. (6 to 10 m) while assistant straightens tires on disabled vehicle.

a. Straighten front wheels on disabled vehicle.

b. Remove steering lockpin (42) from stowage bracket (43) under driver side dash panel.

NOTE

It may be necessary to turn steering wheel to line up steering column yoke with holes in locking bracket.

c. Install steering lockpin (42) through left hole (44) of lock bracket, steering column yoke (45), and right hole (46) of lock bracket.

d. Rotate steering lockpin (42) to align hole in steering lockpin handle with upper hole in lock bracket and install lock (47).

HOOKUP - Continued

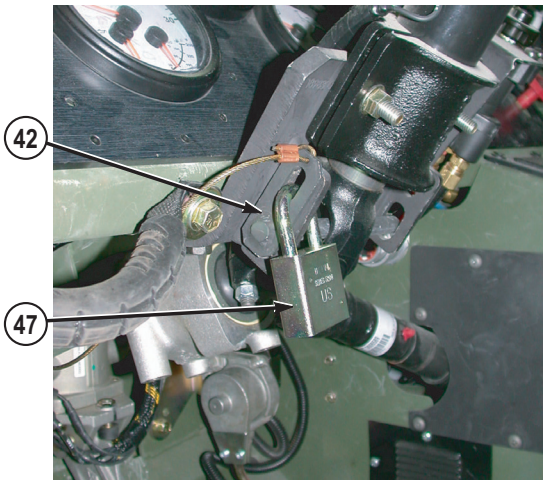


Figure 20.

CAUTION

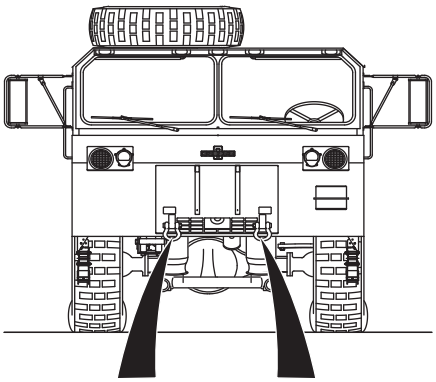
When lifting and towing an A4 HEMTT series vehicle (refer to data plate on inside of drivers side door) special care must be taken to avoid causing damage to the vehicle air suspension system. Always turn No. 1 axle (front lift only) air suspension ball valves OFF prior to lifting the A4 HEMTT series vehicle (refer to operate air suspension ball valves (WP 0043) for more information on ball valve operation). Failure to comply may result in damage to equipment.

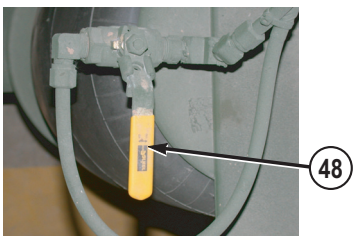
NOTE

- If disabled vehicle is A4 HEMTT series vehicle (refer to data plate on inside of driver side door), complete Step (29).
- If disabled vehicle is BASE or A2 HEMTT series vehicle (refer to data plate on inside of driver side door), skip to Step (29).

29. Position disabled vehicle No. 1 axle driver side (shown) and passenger side ball valve handles (48) OFF.

HOOKUP - Continued





BALL VALVE OFF

Figure 21.

30. Set POWER switch (49) to ON position.

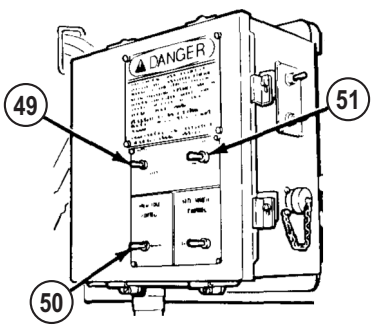


Figure 22.

31. Set HIGH IDLE switch (50) to CONTINUOUS.
32. Push and release LATCH switch (51). Engine speed will increase to approximately 1500 rpm.

HOOKUP - Continued

WARNING

Keep out from under retrieval system and disabled vehicle when raised off ground. Failure to comply may result in injury or death to personnel.

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

CAUTION

- Fully retract both tow cylinders before lifting disabled vehicle. Failure to comply may result in damage to equipment.
- Ensure all rigging is secure. Loose rigging can become entangled. Failure to comply may result in damage to equipment.

NOTE

Operator must allow wrecker air suspension system to completely adjust for added weight of disabled vehicle before raising disabled vehicle to final height of 1 ft. (30 cm).

33. Push LIFT CYLINDER control lever (4) to retract lift cylinder (12) and raise disabled vehicle approximately 3 in. (8 cm):
    a. Once wrecker air suspension system has adjusted for added weight of disabled vehicle, push LIFT CYLINDER control lever (4) to retract lift cylinder (12) and raise disabled vehicle to final height of 1 ft. (30 cm).

HOOKUP - Continued

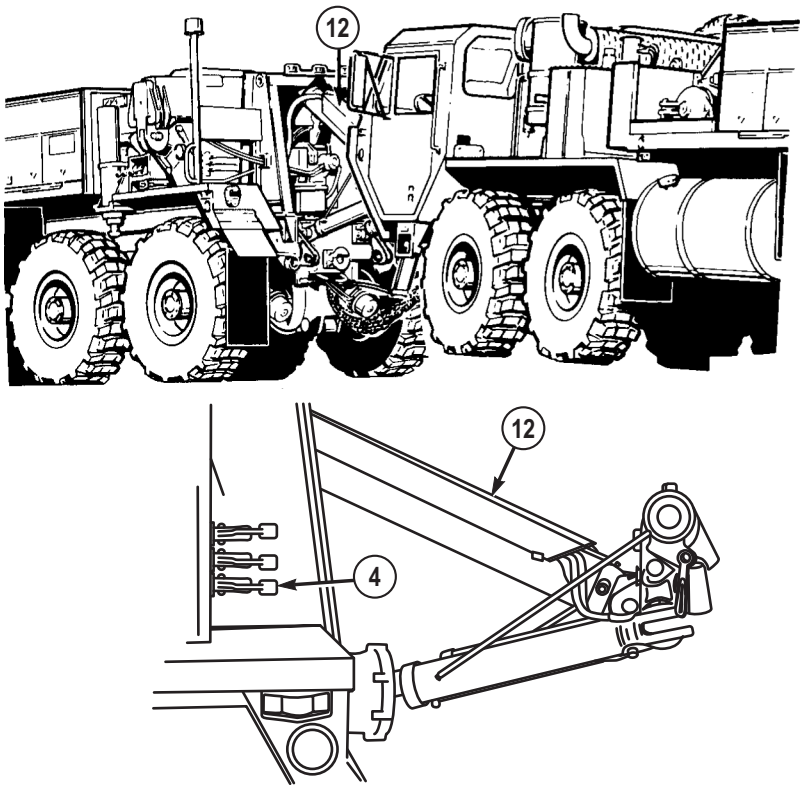


Figure 23.

34. Set POWER switch (52) to OFF position.

HOOKUP - Continued

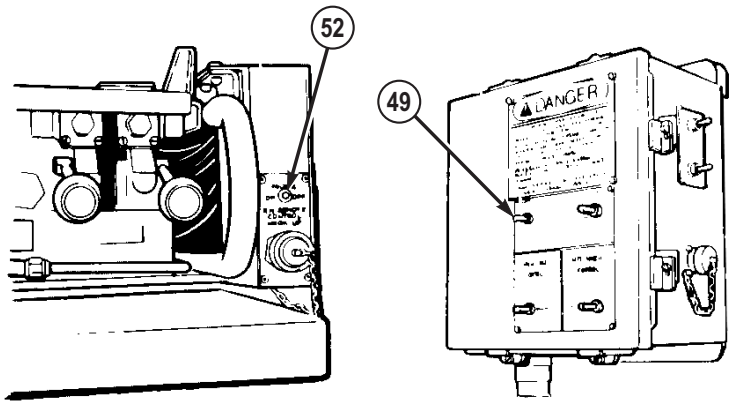


Figure 24.

35. Set POWER switch (49) to OFF position.
36. Set HYD ENABLE switch (53) to off position. MAIN HYD ENABLE indicator (54) will go out.

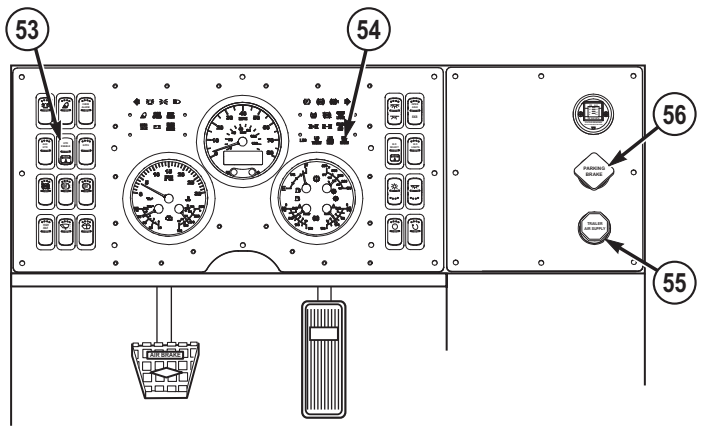


Figure 25.

37. Push in TRAILER AIR SUPPLY control (55).
38. Turn on wrecker service drive lights. (WP 0087)
39. Turn on wrecker emergency flashers. (WP 0096)
40. Turn on disabled vehicle emergency flashers (refer to operator's manual).

HOOKUP - Continued

NOTE

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

41. Push in PARKING BRAKE control (56).

WARNING

The M984 Wrecker should not be operated at speeds over 15 MPH (24 km/hr) except on paved roads when the operator determines that the vehicle being towed and the terrain allow safe operation. Engine brake switch must ON for all towing operations. Speed in excess of the below table may result in loss of control, serious injury, or death to personnel.

42. Select desired gear (WP 0048) and transport disabled vehicle.

Table 1. Maximum Towing Speed.

Terrain Condition	Maximum Speed Towed Load Up To 50,000 lbs (22 700 kg)	Maximum Speed Towed Load Above 50,000 lbs (22 700 kg)
On Road-Level	35 mph (56 km/hr)	30 mph (48 km/hr)
On Road-Hilly	30 mph (48 km/hr)	20 mph (32 km/hr)
Off-Road	15 mph (24 km/hr)	15 mph (24 km/hr)

DISCONNECT

NOTE

This procedure is a two soldier task.

1. Set transmission range selector (1) to N (neutral).

DISCONNECT - Continued

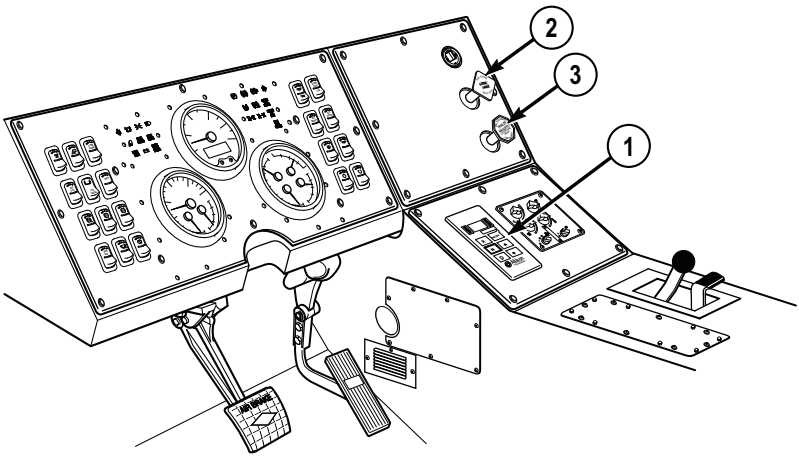


Figure 26.

NOTE

Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

2. Pull out PARKING BRAKE control (2).
3. Pull out TRAILER AIR SUPPLY control (3).

WARNING

Keep out from under retrieval system and disabled vehicle when raised off ground. Failure to comply may result in injury or death to personnel.

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

DISCONNECT - Continued

NOTE

- After lowering disabled vehicle, extend lift and tow cylinders approximately 2 to 4 in. (50 to 100 mm) to allow for adjustment when removing adapters.
- Expect wrecker air suspension system to deflate air springs to achieve normal ride height once weight of disabled vehicle is removed.

4. Prepare retrieval system for operation (WP 0059) and pull LIFT CYLINDER control lever (4) and lower disabled vehicle to ground.

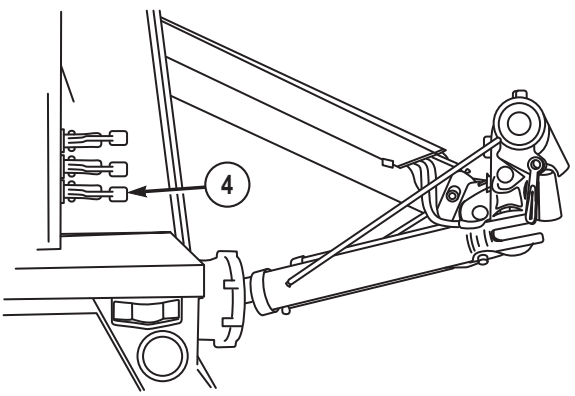


Figure 27.

WARNING

If disabled vehicle's parking brake is inoperative, chock wheels of disabled vehicle (refer to operator's manual). Failure to comply may result in injury or death to personnel.

5. Pull out PARKING BRAKE control (5) on disabled vehicle.

DISCONNECT - Continued

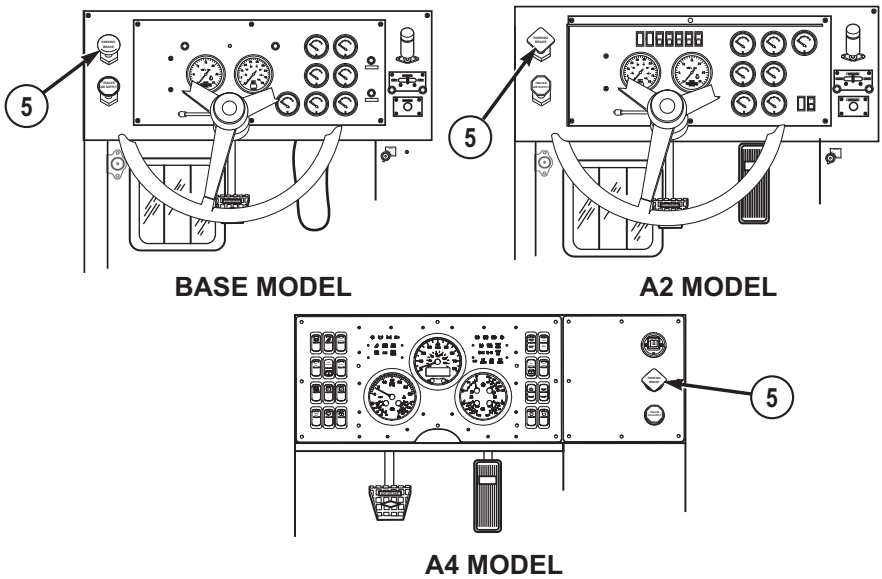


Figure 28.

6. Remove tow light cable (6) from wrecker.

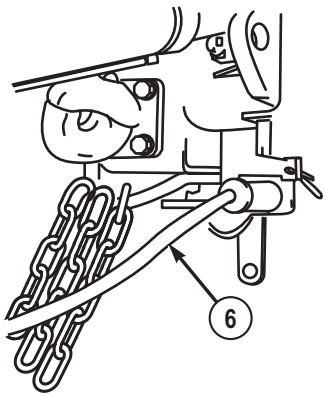


Figure 29.

7. Remove tow light cable (6) from connector (7) and return to wrecker stowage.

DISCONNECT - Continued

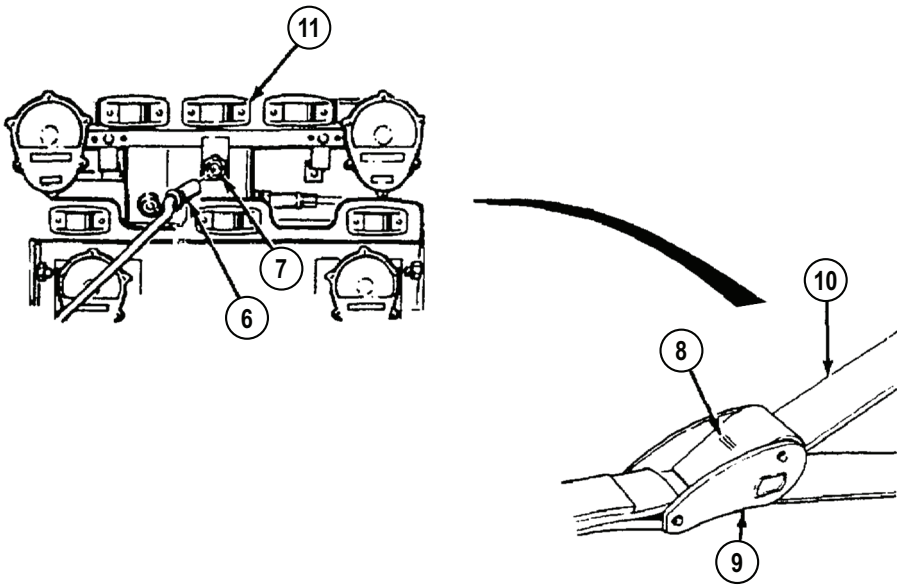


Figure 30.

8. Press in handle (8) on strap clamp (9). Pull strap (10) to loosen straps on emergency tow lights (11).
9. Remove emergency tow lights (11) from disabled vehicle.
10. Remove two nuts (12), washers (13), screws (14), and brackets (15) from emergency tow lights (11).

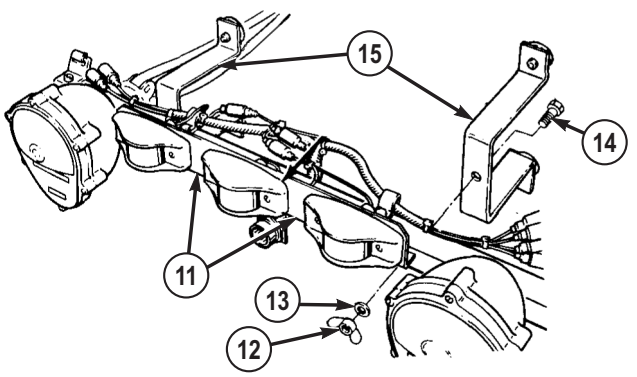


Figure 31.

DISCONNECT - Continued

11. Return emergency tow lights (11) and brackets (15) to wrecker stowage.
12. Remove two 16 ft. (5 m) stow safety chains (16) and air lines (17) from wrecker and disabled vehicle. Return two 16 ft. (5 m) stow safety chains (16) and air lines (17) to wrecker stowage.

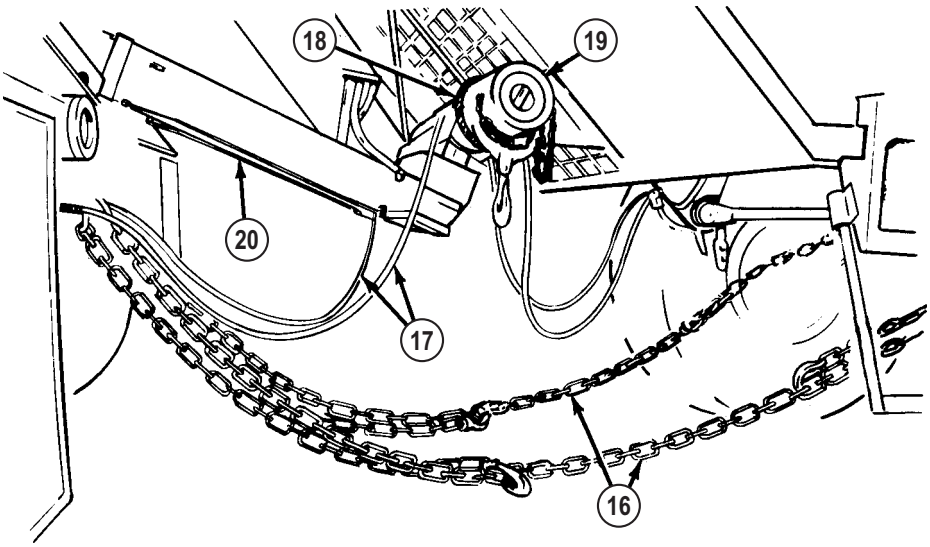


Figure 32.

13. Unwrap two springs (18) from cross tube (19).
14. Connect two springs (18) to tow cylinders (20).
15. Operate retrieval system, and with the aid of an assistant position cross tube (19) to relieve tension from adapters (21).

DISCONNECT - Continued

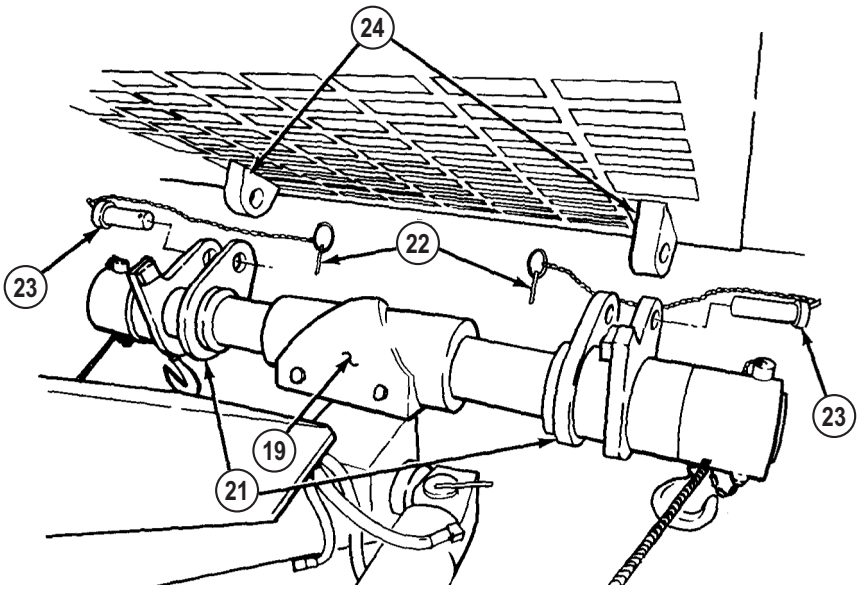


Figure 33.

16. Remove two quick pins (22) and pins (23) from adapters (21).
17. Remove two adapters (21) from tow eyes (24) on disabled vehicle.
18. Install two pins (23) in adapters (21).
19. Install two quick pins (22) in pins (23).
20. Drive wrecker forward (WP 0050) several feet and park. (WP 0056)
21. Operate retrieval system and fully retract lift cylinder (25) and tow cylinders (26).

DISCONNECT - Continued

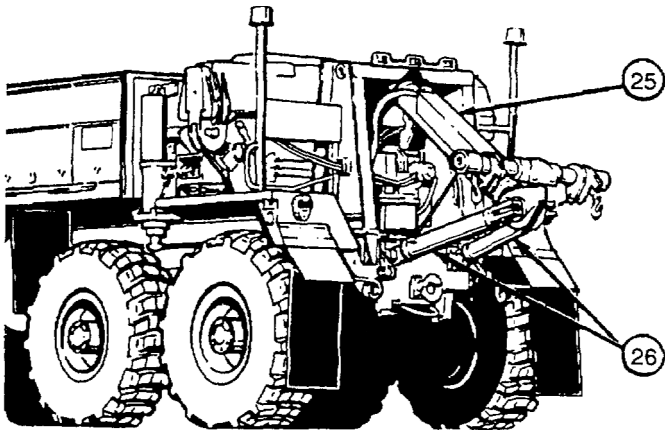


Figure 34.

22. Set POWER switch (30) to OFF position.

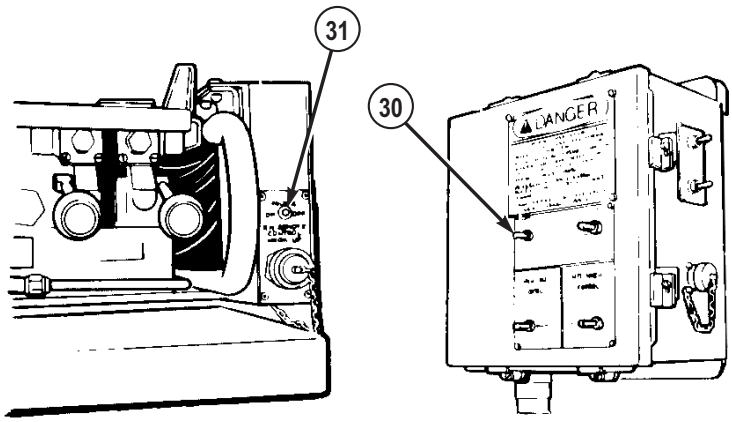


Figure 35.

23. Set POWER switch (31) to OFF position.
24. Turn off wrecker service drive lights. (WP 0087)
25. Turn off wrecker emergency flashers. (WP 0096)
26. Set HYD ENABLE switch (32) to off position. MAIN HYD ENABLE indicator (33) will go out.

DISCONNECT - Continued

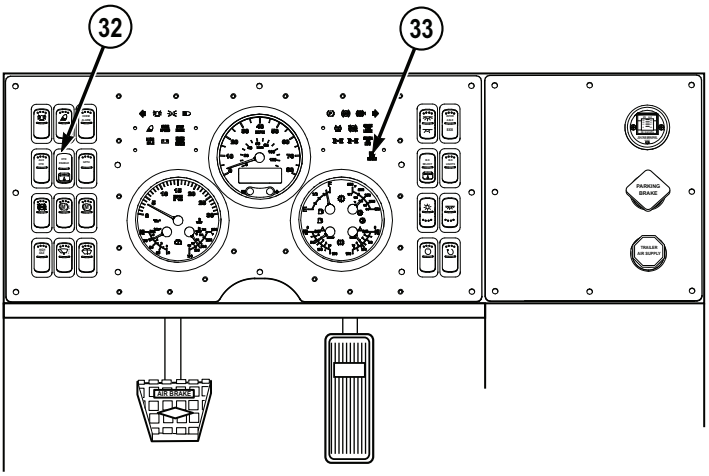


Figure 36.

27. Remove and stow portable beacon lights. (WP 0094)
28. Shut off wrecker engine. (WP 0057)

NOTE

- If disabled vehicle is either a BASE or A2 model HEMTT series vehicle (refer to data plate on inside of drivers door), complete Step (30).
- If disabled vehicle is an A4 model HEMTT series vehicle (refer to data plate on inside of drivers door), skip to Step (31).

29. Perform the following on BASE or A2 model HEMTT series disabled vehicle:
    a. Turn off disabled vehicle emergency flashers (refer to operator's manual). (WP 0096)
    b. Remove four screws (34) and steering lock bracket (35) from 90 degree gearbox (36) and return to wrecker stowage.

DISCONNECT - Continued

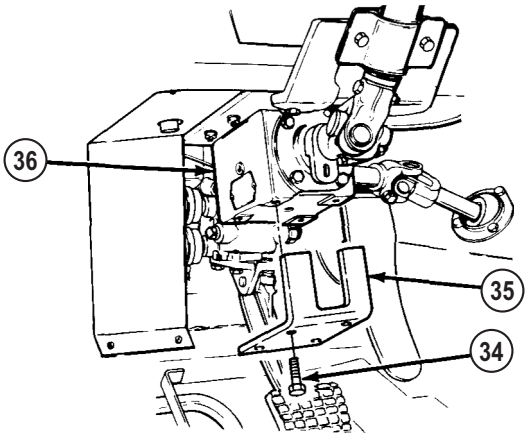


Figure 37.

NOTE

If disabled vehicle is an A4 model HEMTT series vehicle (refer to data plate on inside of driver side door), complete Step (31).

30. Perform the following on A4 model HEMTT series disabled vehicle:

    a. Turn off disabled vehicle emergency flashers (refer to operator's manual). (WP 0096)

    b. Remove lock (37) and steering lockpin (38).

DISCONNECT - Continued

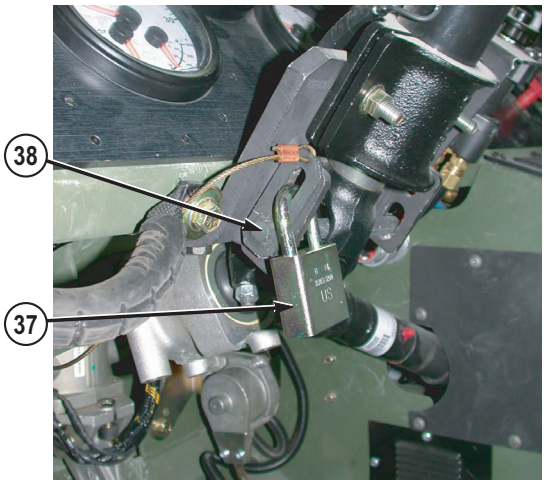


Figure 38.

c. Install steering lockpin (38) in stowage bracket (39) located under driver side dash panel.

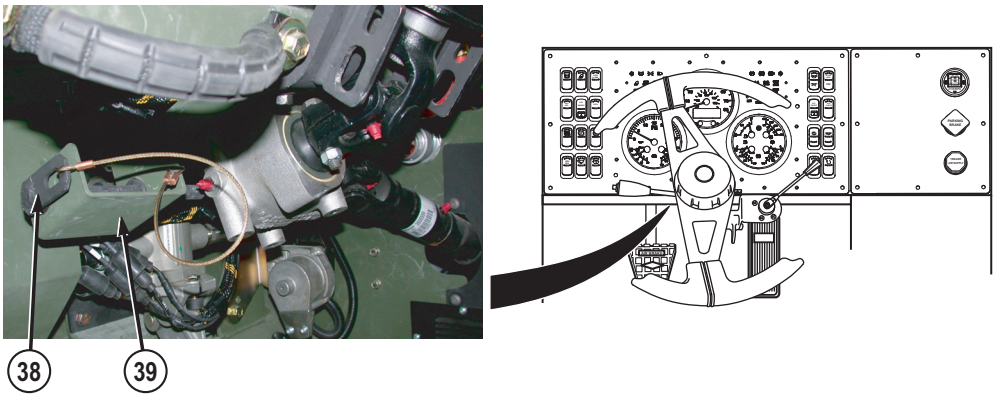


Figure 39.

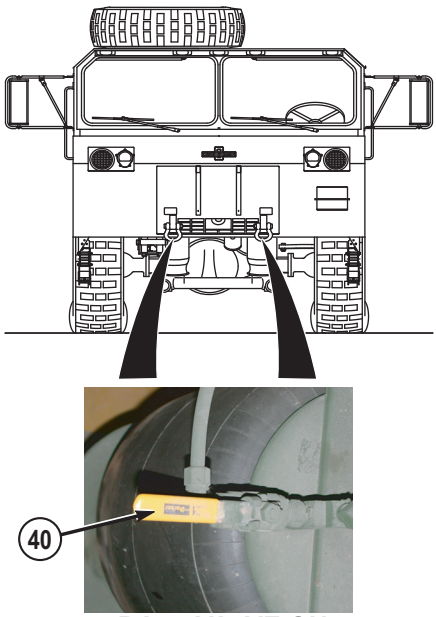
CAUTION

When lifting and towing an A4 HEMTT series vehicle (refer to data plate on inside of driver side door) special care must be taken to avoid causing damage to the vehicle air suspension system. Always turn No. 1 axle air suspension ball valves ON before abandoning disabled A4 HEMTT series vehicle (refer to operate air suspension

DISCONNECT - Continued

ball valves (WP 0043) for more information on ball valve operation). Failure to comply may result in damage to equipment.

d. Position disabled vehicle No. 1 axle driver side (shown) and passenger side ball valve handles (40) ON. (WP 0043)



BALL VALVE ON

Figure 40.

31. Perform post towing procedure to disabled vehicle.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
TOW M1074/M1075 - FRONT LIFT

INITIAL SETUP:

Not Applicable

HOOKUP

CAUTION

- When lifting and towing a PLS (Palletized Load System) with an M1077 flatrack, the flatrack must be empty, or if stacked, no more than three high or damage to equipment may result.
- When lifting and towing a PLS with an M1 flatrack, the flatrack must be empty with both end walls folded, or if stacked, no more than three high or damage to equipment may result.

NOTE

- Each recovery situation is unique and requires assessment to determine if the driveline is suitable for transport. When in doubt, consult with field level maintenance.
- This procedure is a two soldier task.

1. Review procedures for operating retrieval towing system (WP 0058) and prepare retrieval system for operation. (WP 0059)

CAUTION

Both rear towing shackles must be removed from rear tow eyes on wrecker before performing retrieval operations, or damage to tow cylinder may result.

NOTE

Driver side and passenger side towing shackles are removed the same way.

2. Remove two rear towing shackles from wrecker vehicle:

HOOKUP - Continued

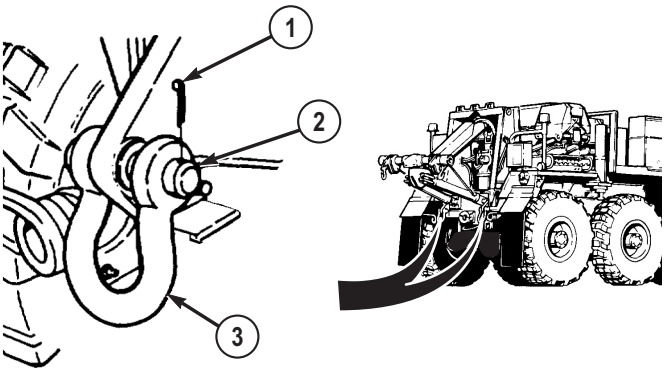


Figure 1.

a. Remove cotter pin (1), pin (2), and towing shackle (3).

b. Replace pin (2) in shackle (3), and cotter pin (1) in pin (2).

c. Repeat Steps (a) and (b) for opposite side towing shackle (3).

d. Stow two rear towing shackles on wrecker vehicle.

3. Remove two cotter pins (4), pins (5), and towing shackles (6) from disabled vehicle and stow.

HOOKUP - Continued

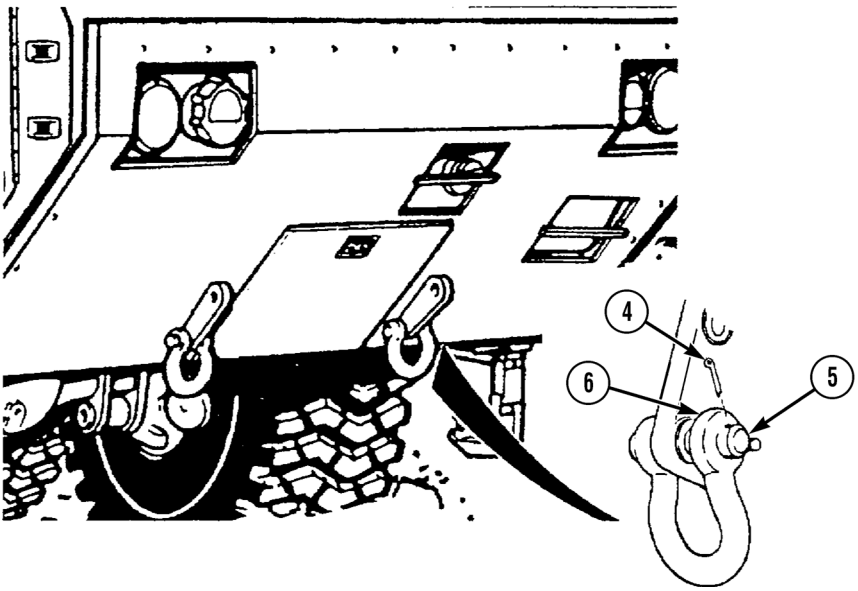


Figure 2.

4. Pull LIFT CYLINDER control lever (7) to lower cross tube (8) to approximately 3 ft. (1 m) above ground.

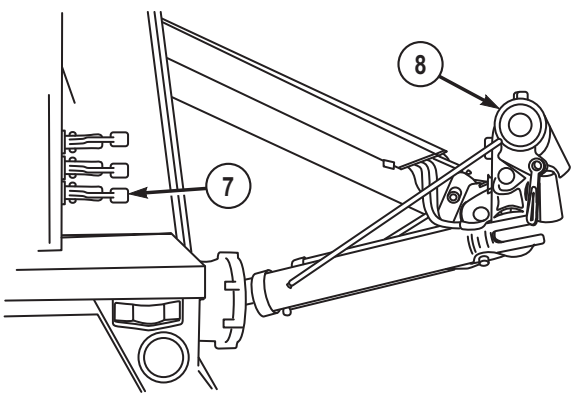


Figure 3.

5. Position wrecker so that cross tube (8) is approximately 1 ft. (30 cm) from tow eyes of disabled vehicle and centered on disabled vehicle.

HOOKUP - Continued

6. Turn adapters (9), so pins (10) are on top. Remove two quick pins (11) and pins (10) from adapters.

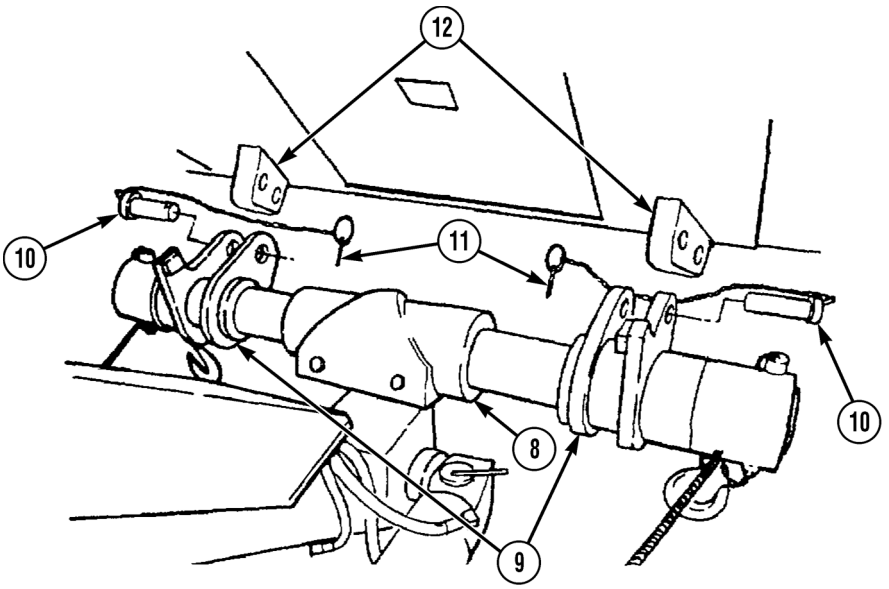


Figure 4.

WARNING

- Keep hands and fingers away from adapters and tow eyes when operating retriever controls. Failure to comply may result in injury or death to personnel.
- Adapters must be connected to lower holes of front tow eyes or disabled vehicle may contact M984 Wrecker during towing operations. Failure to comply may result in injury or death to personnel and damage to equipment.

7. Operate retrieval system, and with aid of an assistant position cross tube (8) so holes in adapters (9) align with lower holes of front tow eyes (12).

8. Insert two pins (10) through adapters (9) and lower holes of front tow eyes (12), and install two quick pins (11) in pins (10).

HOOKUP - Continued

NOTE

If disabled vehicle air system is inoperative, manually release spring brakes (refer to operator's manual).

9. Push in PARKING BRAKE control (13) on disabled vehicle.

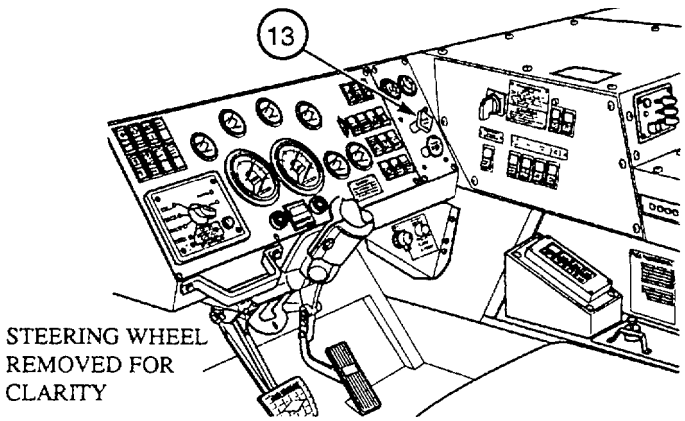


Figure 5.

10. Turn disabled vehicle steering axles straight forward and install lock on steering column (refer to operator's manual).
11. Prepare disabled vehicle for towing (refer to operator's manual).
12. Operate retrieval system until tow cylinders (14) are fully retracted.

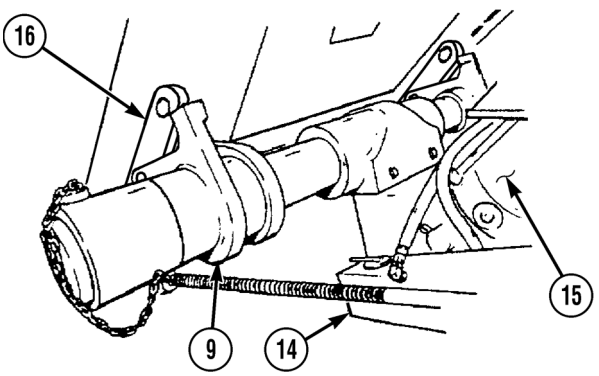


Figure 6.

HOOKUP - Continued

13. Operate retrieval system to retract lift cylinder (15) until adapters (9) contact tow eyes (16).
14. Remove two air lines (17) from stowage and attach to rear gladhands (18) on wrecker.

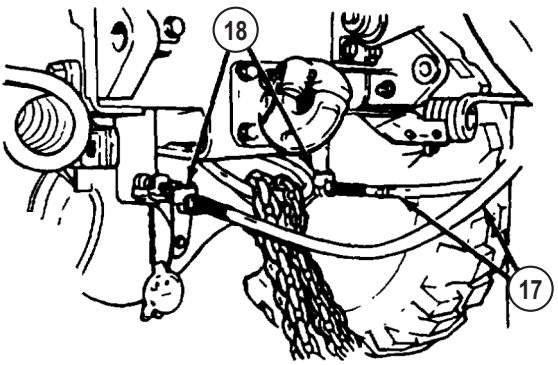


Figure 7.

CAUTION

Do not route air lines between retrieval cylinders or damage to equipment may result.

NOTE

Driver side rear air line from wrecker must be connected to driver side front gladhand on disabled vehicle. Passenger side rear air line from wrecker must be connected to passenger side front gladhand on disabled vehicle.

15. Route air lines (17) over cross tube (8) and attach to front gladhands (19) on disabled vehicle.

HOOKUP - Continued

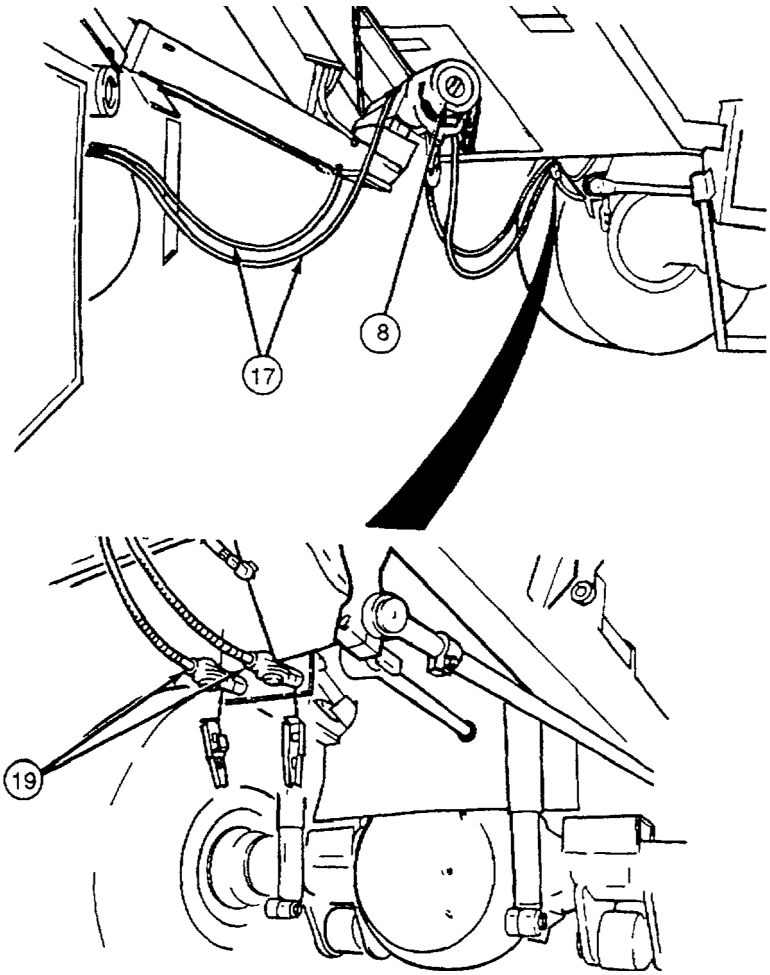


Figure 8.

16. Remove two 16 ft. (5 m) safety chains (20) from wrecker stowage.

HOOKUP - Continued

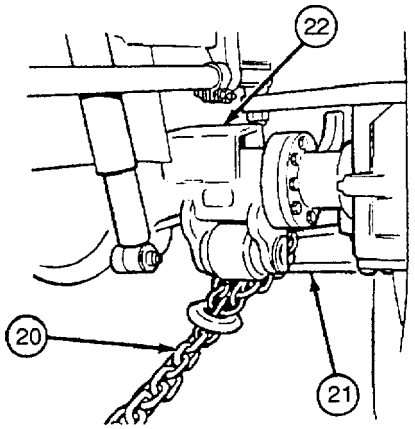


Figure 9.

17. Route chain end without safety shackle, over walking beam (21) behind No. 1 axle (22) on disabled vehicle.
18. Hook 16 ft. (5 m) safety chain (20) together under walking beam (21).
19. Repeat Steps (18) and (19) for other side of disabled vehicle.

NOTE

- Safety chains are connected to wrecker safety chain hoop.
- Adjust chain slack so chains are approximately 6 in. (15 cm) above the ground.

20. Route two 16 ft. (5 m) safety chains (20) through safety chain hoop (23) on wrecker and secure grab hook (24) with safety shackle (25).

HOOKUP - Continued

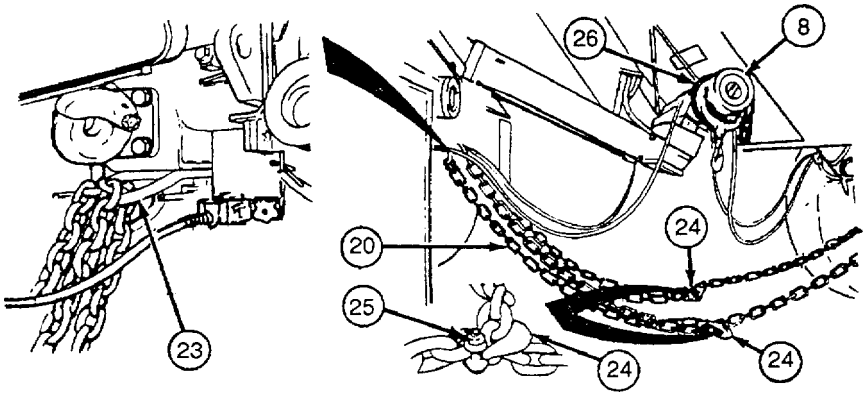


Figure 10.

21. Wrap two springs (26) around cross tube (8) and secure.
22. Remove emergency tow lights (27) and two brackets (28) from wrecker stowage.

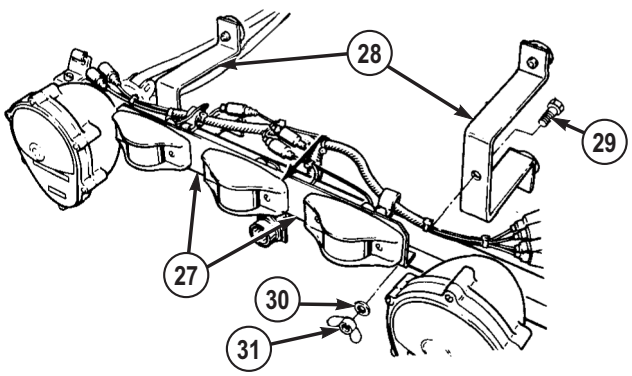


Figure 11.

23. Install two brackets (28) in inside holes of emergency tow lights (27) with two screws (29), washers (30), and nuts (31).
24. Position emergency tow lights (27) securely on disabled vehicle (32).

HOOKUP - Continued

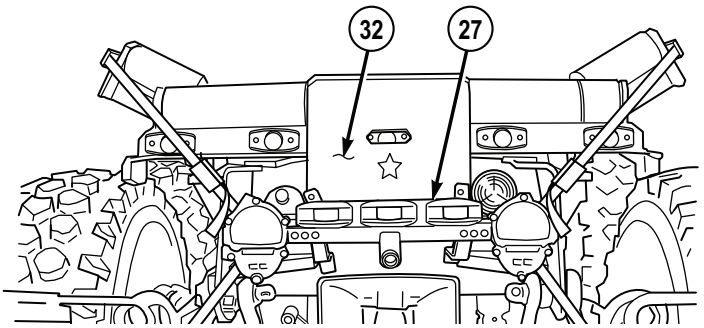


Figure 12.

25. Press in handle (33) on strap clamp (34) and pull strap (35) to lengthen.

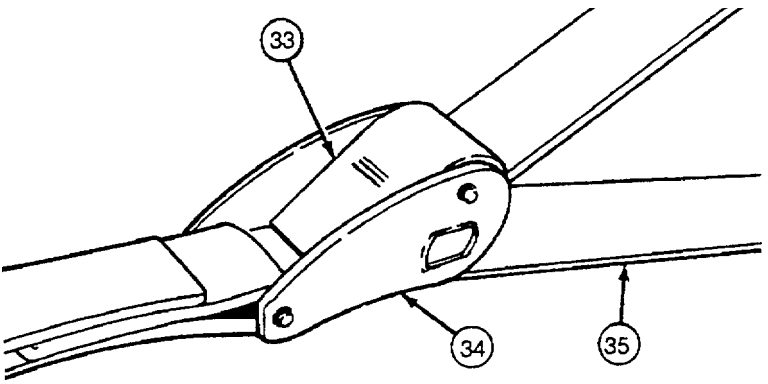


Figure 13.

26. Install top right strap hook (36) on right-angled roller assembly (32) of disabled vehicle.

HOOKUP - Continued

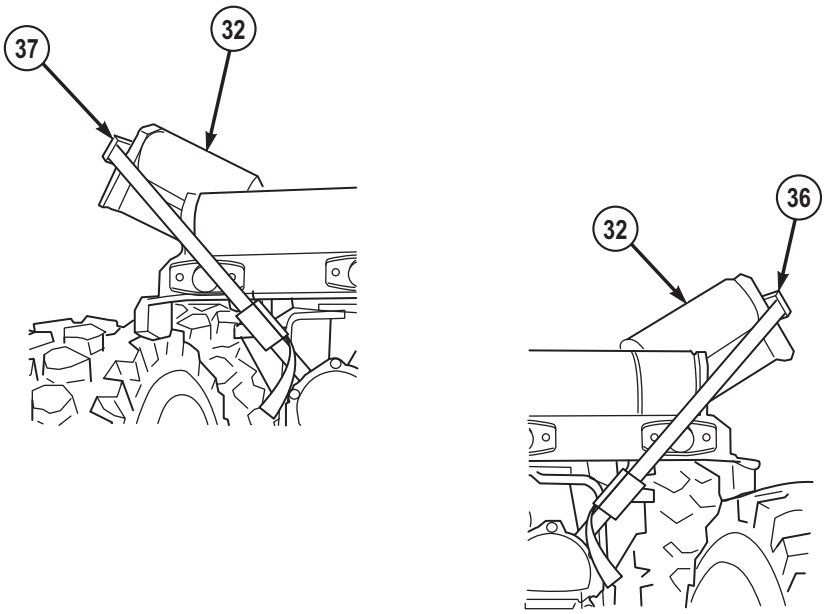


Figure 14.

27. Install top left strap hook (37) on left angled roller assembly (32) of disabled vehicle.
28. Install lower left and lower right strap hooks (38) to driver side and passenger side mud flap mounting brackets. Tighten straps.

HOOKUP - Continued

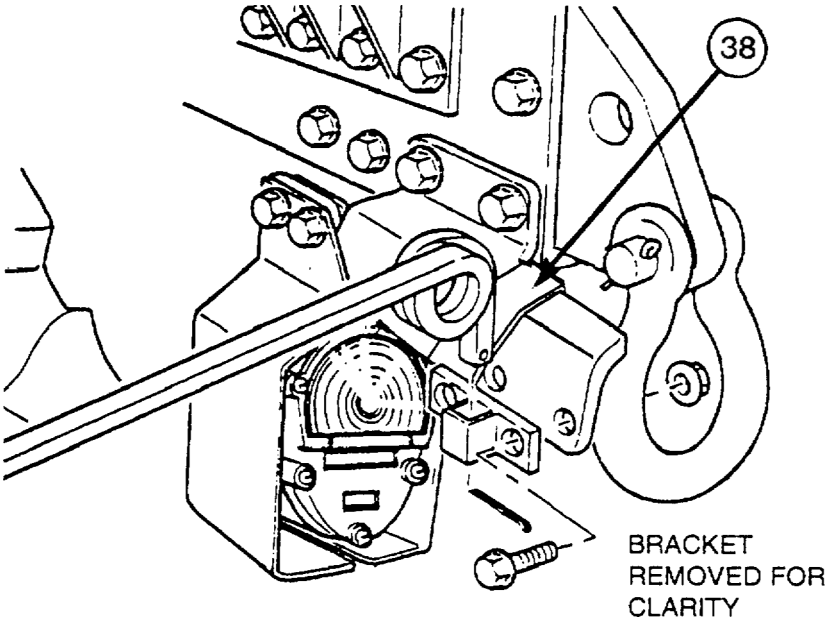


Figure 15.

29. Remove tow light cable (39) from stowage and connect to rear electrical connector (40) on wrecker.

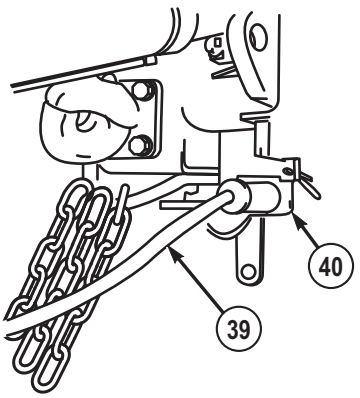


Figure 16.

HOOKUP - Continued

CAUTION

Route cable so it does not drag on ground or interfere with turning tires. Failure to comply may result in damage to equipment.

30. Route other end of tow light cable (39) to emergency tow lights (27) on disabled vehicle, remove dust cap (41), and plug in at connector (42).

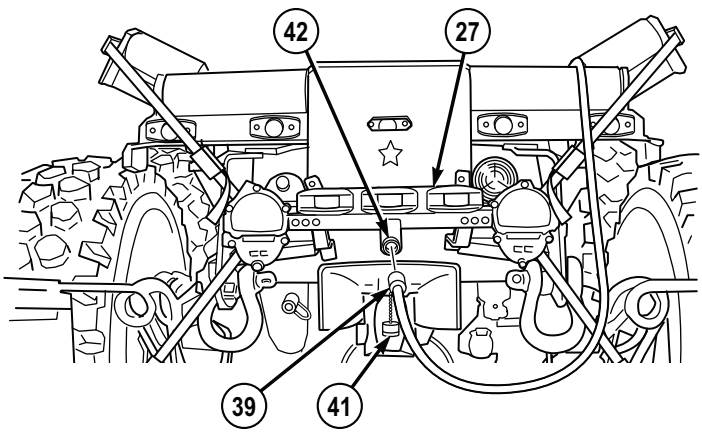


Figure 17.

CAUTION

If disabled vehicle is to be towed with all tires in contact with road, this procedure can be accomplished on paved roads only. Failure to comply may result in damage to equipment.

NOTE

- If disabled vehicle is to be lifted and towed, skip to Step (32).
- Operator must allow wrecker air suspension system to completely adjust for added weight of disabled vehicle after vehicle has been raised. Wrecker air suspension system may overcompensate and raise disabled vehicle higher than desired.

31. If disabled vehicle will be towed with all tires in contact with road:
    a. Raise cross tube enough to partially unload disabled vehicle's front suspension.
    b. Keep front tires in firm contact with ground.
    c. Proceed to Step (38).

HOOKUP - Continued

WARNING

Steering axles must be turned straight forward or disabled vehicle will not track properly. Failure to comply may result in injury or death to personnel.

WARNING

Driveshafts can weigh up to 100 lbs (45 kg). Properly support driveshafts when removing screws. After screws and brackets are removed, driveshaft can fall. Failure to comply may result in injury or death to personnel.

NOTE

- To remove driveshaft screw, use wrench located in PLS BII storage box.
- Both PLS No. 3 axle driveshaft ends are removed the same way.

32. Support No. 3 axle driveshaft (43) while assistant removes eight screws (44) and four brackets (45).

HOOKUP - Continued

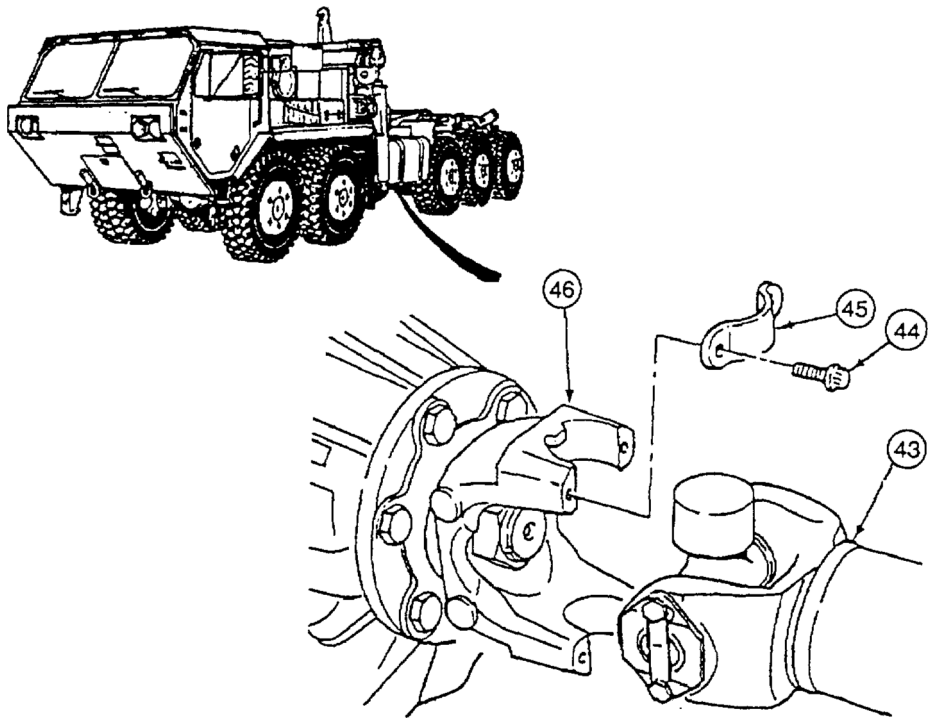


Figure 18.

33. Remove No. 3 axle driveshaft (43) from flange (46) of No. 3 axle and transfer case.
34. Install eight screws (44) and four brackets (45) on driveshaft (43) to prevent loss.
35. Stow driveshaft (43) in passenger side of disabled vehicle cab.
36. Set POWER switch (47) to ON position.

HOOKUP - Continued

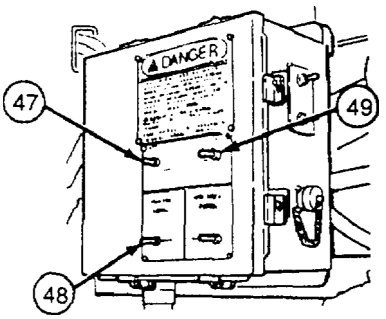


Figure 19.

37. Set HIGH IDLE switch (48) to CONTINUOUS.
38. Push and release LATCH switch (49). Engine speed will increase to approximately 1500 rpm.

WARNING

Keep out from under retrieval system and disabled vehicle when raised off ground. Failure to comply may result in injury or death to personnel.

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

CAUTION

- Fully retract both tow cylinders before lifting disabled vehicle. Failure to comply may result in damage to equipment.
- Ensure all rigging is secure. Loose rigging can become entangled. Failure to comply may result in damage to equipment.

HOOKUP - Continued

NOTE

Operator must allow wrecker air suspension system to completely adjust for added weight of disabled vehicle before raising disabled vehicle to final height of 1 ft. (30 cm).

39. Push LIFT CYLINDER control lever (7) to retract lift cylinder (15) and raise disabled vehicle approximately 3 in. (8 cm):

    a. Once wrecker air suspension system has adjusted for added weight of disabled vehicle, push LIFT CYLINDER control lever (7) to retract lift cylinder (15) and raise disabled vehicle to final height of 1 ft. (30 cm).

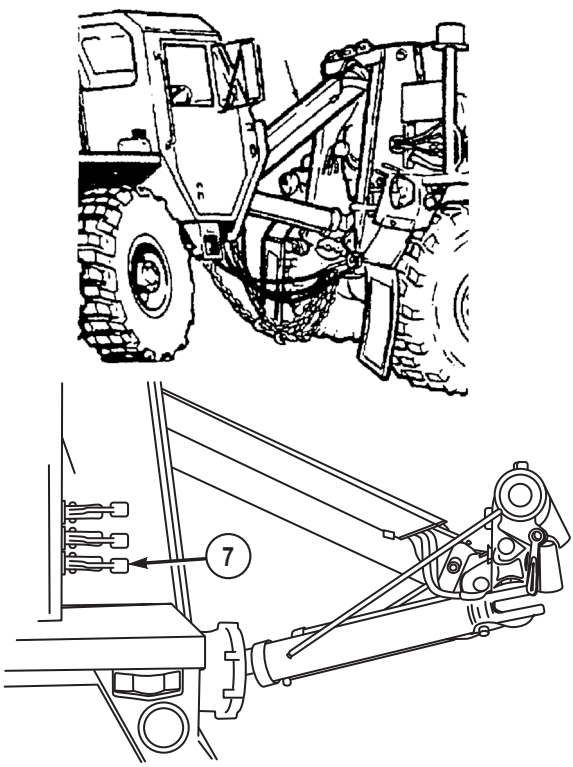


Figure 20.

40. Set POWER switch (47) to OFF position.

HOOKUP - Continued

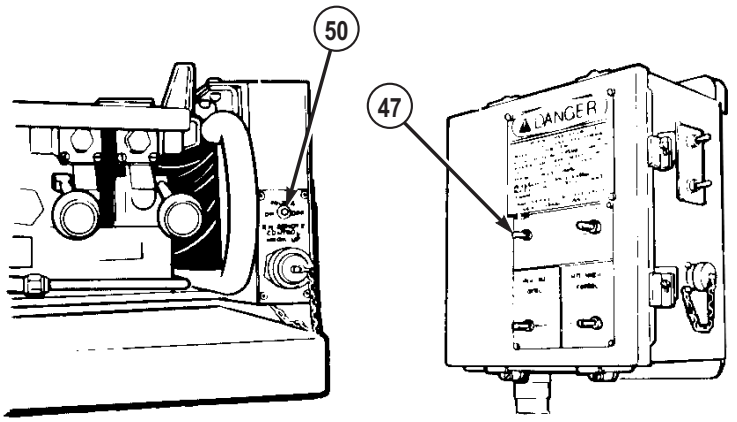


Figure 21.

41. Set POWER switch (50) to OFF position.
42. Set HYD ENABLE switch (51) to off position. MAIN HYD ENABLE indicator (52) will go out.

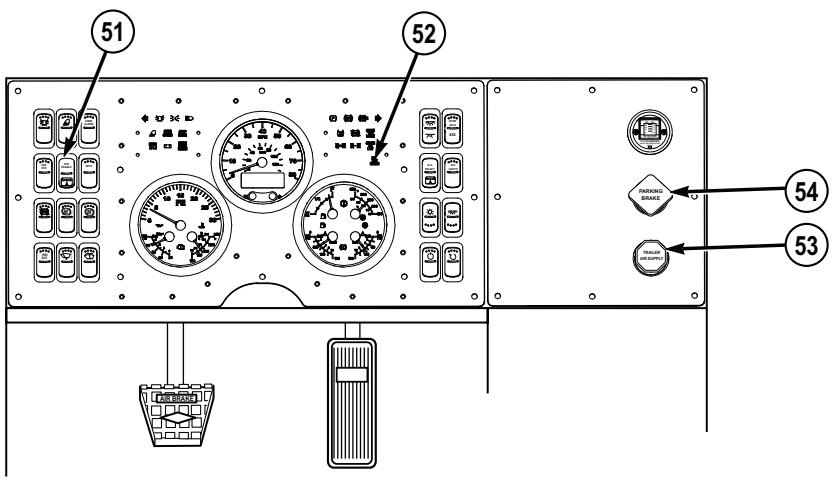


Figure 22.

43. Push in TRAILER AIR SUPPLY control (53).
44. Turn on wrecker service drive lights. (WP 0087)
45. Turn on wrecker emergency flashers. (WP 0096)

HOOKUP - Continued

46. Make sure disabled vehicle emergency flashers are turned on (refer to operator's manual).

WARNING

The M984 Wrecker should not be operated at speeds over 15 MPH (24 km/hr) except on paved roads when the operator determines that the vehicle being towed and the terrain allow safe operation. Engine brake switch must ON for all towing operations. Speed in excess of the below table may result in loss of control, serious injury, or death to personnel.

47. Select desired gear (WP 0048) and transport disabled vehicle.

Table 1. Maximum Towing Speed.

Terrain Condition	Maximum Speed Towed Load Up To 50,000 lbs (22 700 kg)	Maximum Speed Towed Load Above 50,000 lbs (22 700 kg)
On Road-Level	35 mph (56 km/hr)	30 mph (48 km/hr)
On Road-Hilly	30 mph (48 km/hr)	20 mph (32 km/hr)
Off-Road	15 mph (24 km/hr)	15 mph (24 km/hr)

DISCONNECT

NOTE

This procedure is a two soldier task.

1. Set transmission range selector (1) to N (neutral).

DISCONNECT - Continued

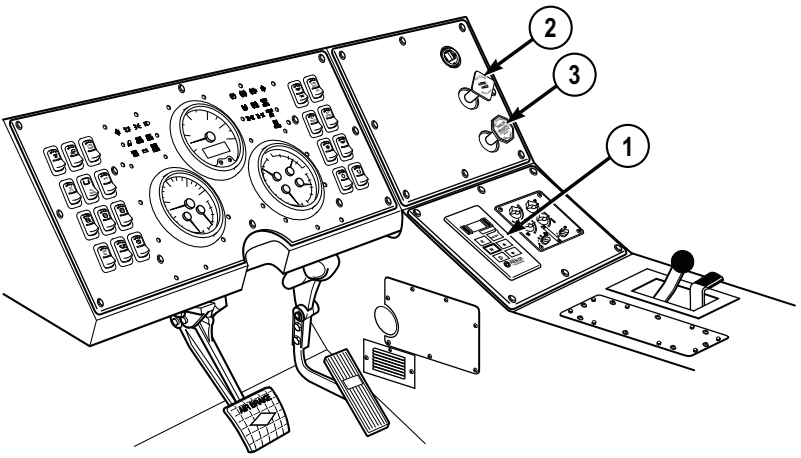


Figure 23.

NOTE

Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

2. Pull out PARKING BRAKE control (2).
3. Pull out TRAILER AIR SUPPLY control (3).

WARNING

Keep out from under retrieval system and disabled vehicle when raised off ground. Failure to comply may result in injury or death to personnel.

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

DISCONNECT - Continued

NOTE

- After lowering disabled vehicle, extend lift and tow cylinders approximately 2 to 4 inches (50 to 100 mm) to allow for adjustment when removing adapters.
- Expect wrecker air suspension system to deflate air springs to achieve normal ride height once weight of disabled vehicle is removed.

4. Prepare retrieval system for operation (WP 0059) and pull LIFT CYLINDER control lever (4) and lower disabled vehicle to ground.

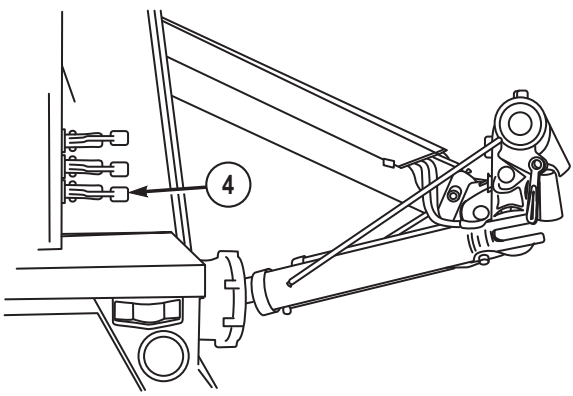


Figure 24.

WARNING

If disabled vehicle's parking brake is inoperative, chock wheels of disabled vehicle (refer to operator's manual). Failure to comply may result in injury or death to personnel.

5. Engage (pull out) PARKING BRAKE control on disabled vehicle (refer to operator’s manual).
6. Remove tow light cable (5) from wrecker.

DISCONNECT - Continued

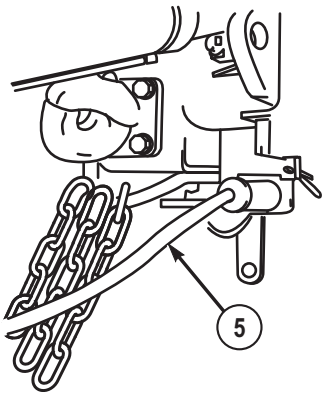


Figure 25.

7. Remove tow light cable (5) from connector (6), install caps (7) on both ends, and stow.

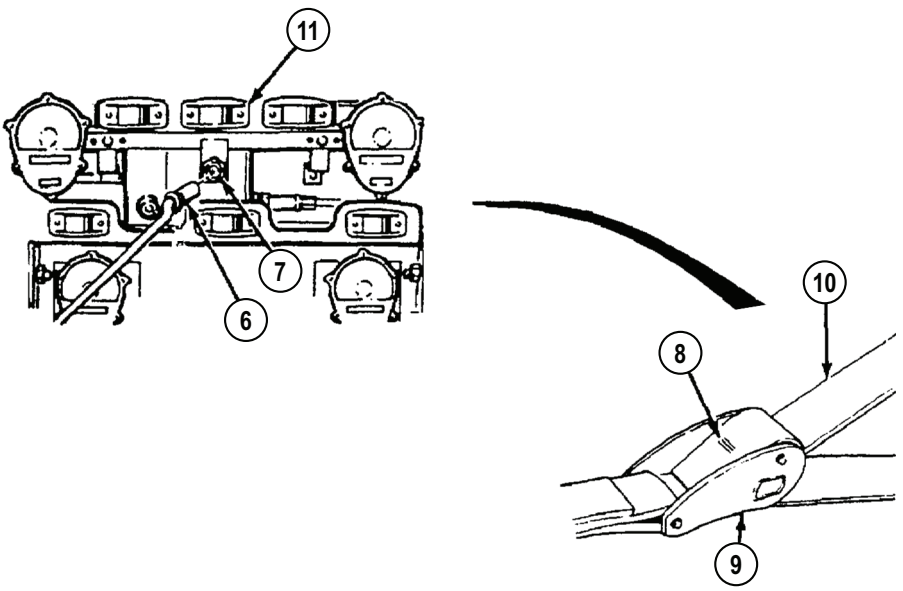


Figure 26.

8. Press in handle (8) on strap clamp (9). Pull strap (10) to loosen straps on emergency tow lights (11).
9. Remove emergency tow lights (11) from disabled vehicle.

DISCONNECT - Continued

10. Remove two nuts (12), washers (13), screws (14), and brackets (15) from emergency tow lights (11).

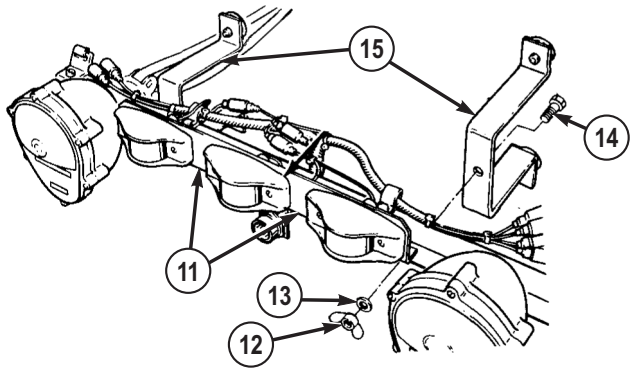


Figure 27.

11. Stow emergency tow lights (11) and brackets (15).
12. Remove and stow safety chains (16) and air lines (17).

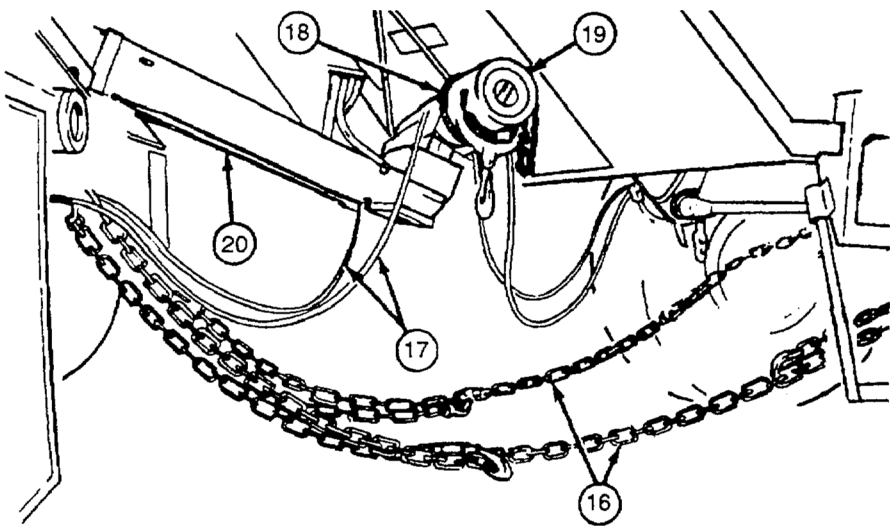


Figure 28.

13. Unwrap two springs (18) from cross tube (19).

DISCONNECT - Continued

14. Connect two springs (18) to tow cylinders (20).
15. Operate retrieval system, and with aid of an assistant position cross tube (19) to relieve tension from adapters (21).

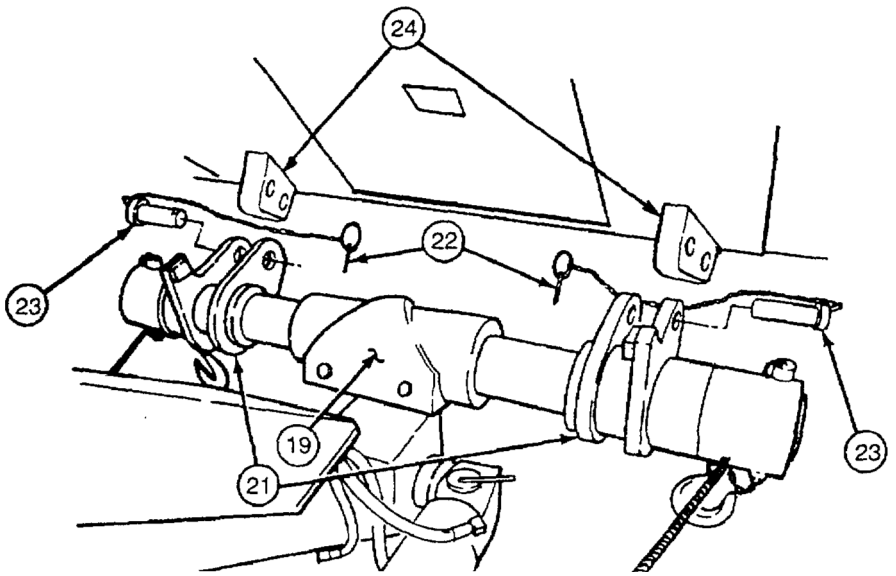


Figure 29.

16. Remove two quick pins (22) and pins (23) from adapters (21).
17. Remove two adapters (21) from tow eyes (24) on disabled vehicle.
18. Install pins (23) in adapters (21).
19. Install quick pins (22) in pins (23).
20. Drive wrecker forward (WP 0050) several feet and park. (WP 0056)
21. Operate retrieval system and fully retract lift cylinder (25) and tow cylinders (26).

DISCONNECT - Continued

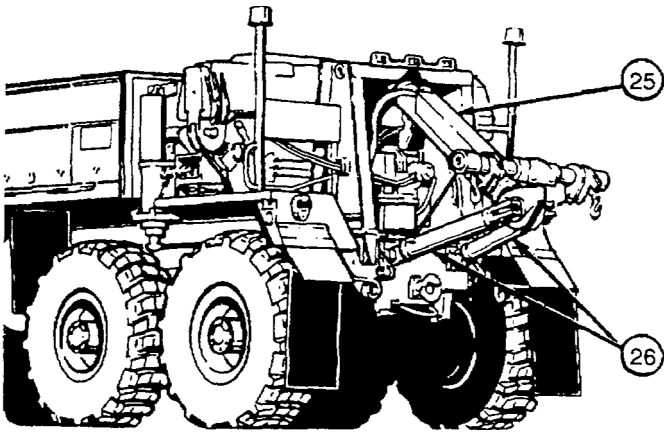


Figure 30.

NOTE

Driver side and passenger side towing shackles are installed the same way.

22. Install two rear towing shackles (27), pins (28) and cotter pins (29).

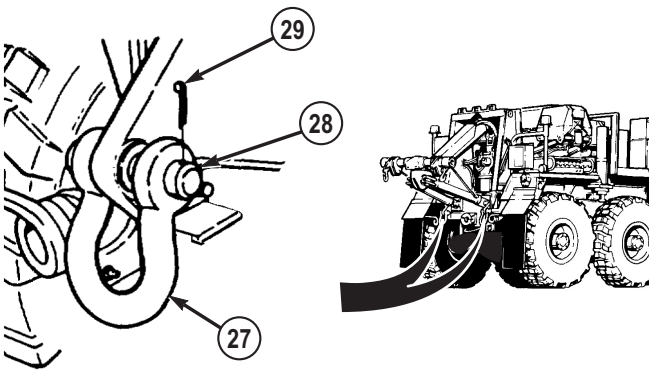


Figure 31.

23. Set POWER switch (30) to OFF position.

DISCONNECT - Continued

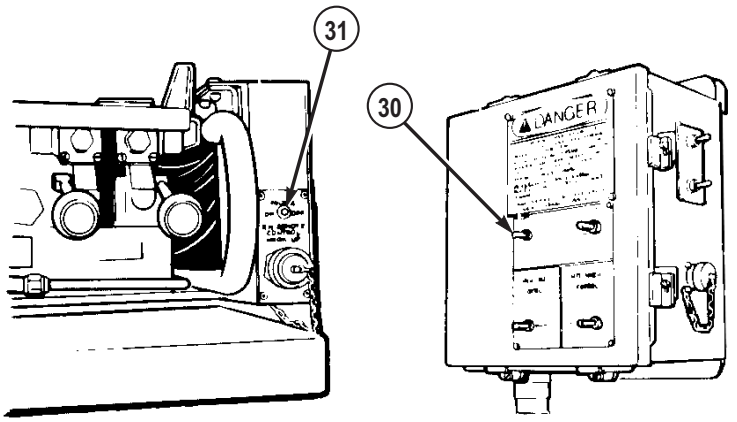


Figure 32.

24. Set POWER switch (31) to OFF position.
25. Turn off wrecker service drive lights. (WP 0087)
26. Turn off wrecker emergency flashers. (WP 0096)
27. Set HYD ENABLE switch (32) to off position. MAIN HYD ENABLE indicator (33) will go out.

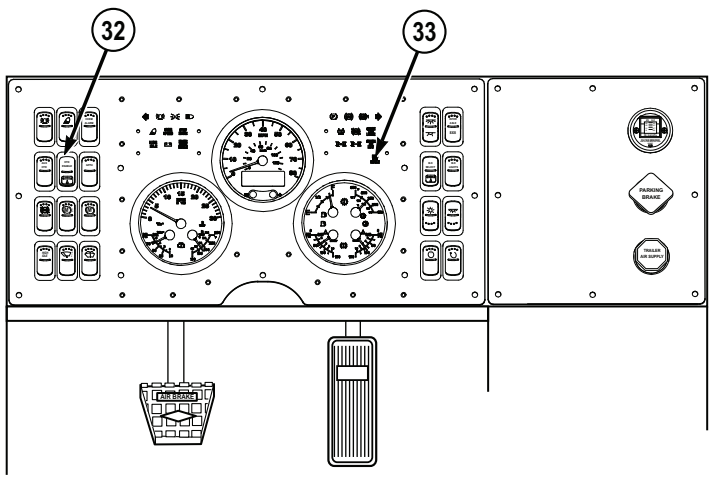


Figure 33.

28. Remove and stow portable beacon lights. (WP 0094)

DISCONNECT - Continued

29. Shut off engine. (WP 0057)
30. Turn off disabled vehicle emergency flashers and remove lock from steering column (refer to operator's manual).

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
TOW M1070 - FRONT LIFT

INITIAL SETUP:

Not Applicable

HOOKUP

WARNING

Do not conduct lift and tow operations on side slopes in excess of 25%. Vehicle may roll over. Failure to comply may result in injury or death to personnel and damage to equipment.

NOTE

- Each recovery situation is unique and requires assessment to determine if the driveline is suitable for transport. When in doubt, consult with field level maintenance.
- This procedure is a two soldier task.

1. Review procedures for operating retrieval towing system (WP 0058) and prepare retrieval system for operation. (WP 0059)
2. Set PARKING BRAKE and chock wheels on disabled vehicle (refer to operator's manual).

WARNING

- Hold cross tube when removing springs, cross tube can swing in all directions and adapters may slide off. Failure to comply may result in injury or death to personnel.

HOOKUP - Continued

- Intervehicular air lines are not connected when towing from rear. Disabled vehicle will not have braking. Use extreme care when transporting disabled vehicle using rear hookup. Failure to comply may result in injury or death to personnel.

3. Disconnect two springs (1) from tow cylinders (2).

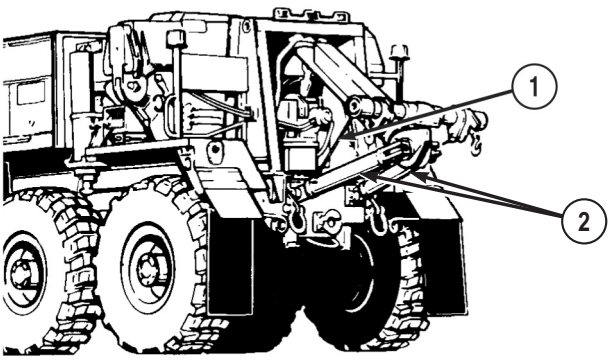


Figure 1.

CAUTION

Both rear towing shackles must be removed from rear tow eyes on wrecker before performing retrieval operations, or damage to tow cylinder may result.

NOTE

Driver side and passenger side towing shackles are removed the same way.

4. Remove two rear towing shackles from wrecker vehicle:

HOOKUP - Continued

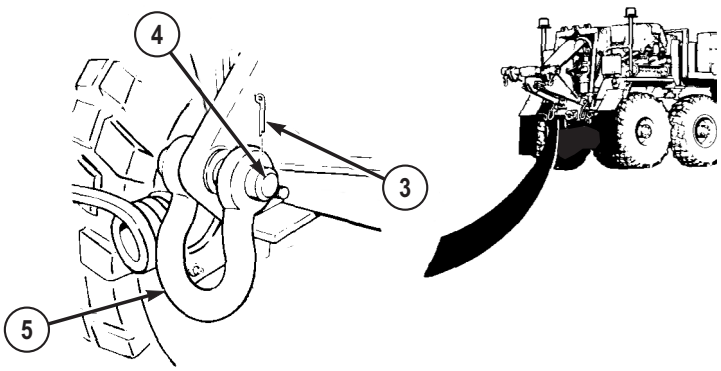


Figure 2.

a. Remove cotter pin (3), pin (4), and towing shackle (5).

b. Replace pin (4) in shackle (5), and cotter pin (3) in pin (4).

c. Repeat Steps (a) and (b) for opposite side towing shackle (5).

d. Stow two rear towing shackles on wrecker vehicle.

5. Pull LIFT CYLINDER control lever (6) to lower cross tube (7) to approximately 3 ft. (1 m) above the ground.

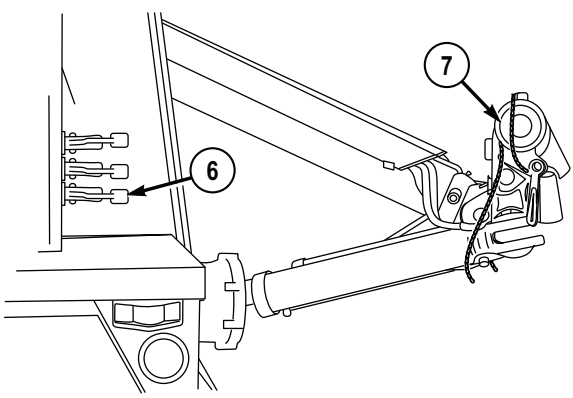


Figure 3.

6. Position wrecker so that cross tube (7) is approximately 1 ft. (30 cm) from tow eyes of disabled vehicle and centered on disabled vehicle.

HOOKUP - Continued

WARNING

When springs and end caps are removed, cross tube can swing in all directions and adapters may slide off and cause injury or death to personnel.

7. Remove two quick pins (8) and pins (9) from end caps (10).

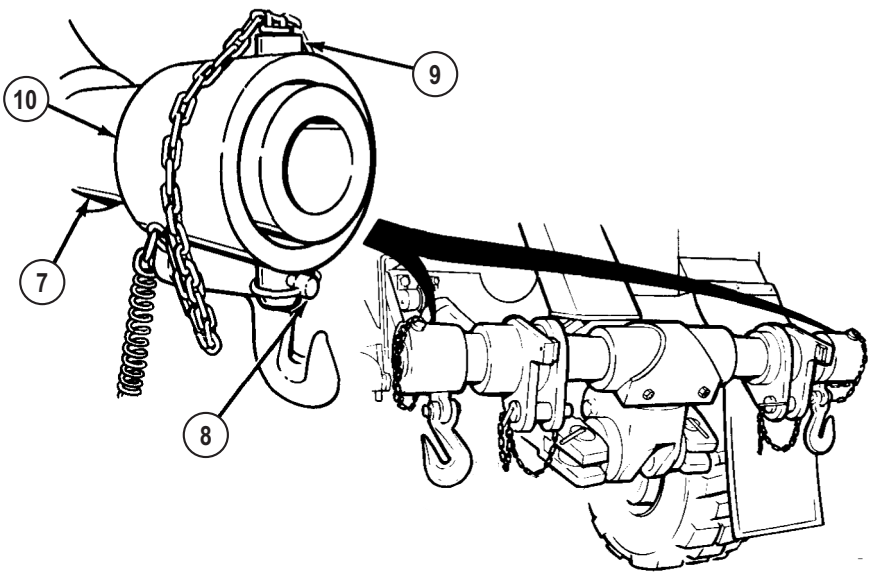


Figure 4.

8. Remove two end caps (10) from cross tube (7).
9. Remove two front adapters (11) from cross tube (7) and place on equipment body floor (12).

HOOKUP - Continued

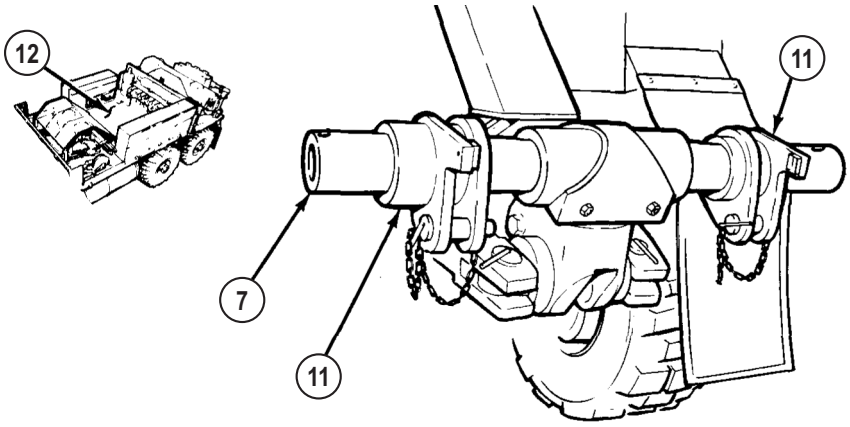


Figure 5.

10. Remove lock handle (13), lock plate (14), and two front tow adapters (1481840W and 1481830W) (15).

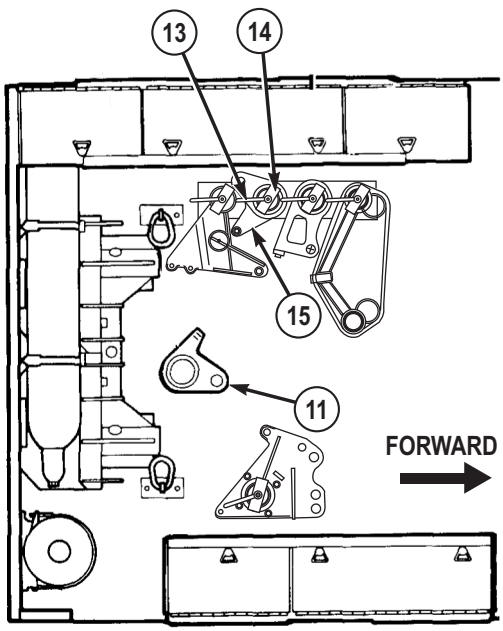


Figure 6.

HOOKUP - Continued

11. Install two front adapters (11) on equipment body floor (12) with lock plate (14) and lock handle (13).
12. Install two front tow adapters (15) on cross tube (7).

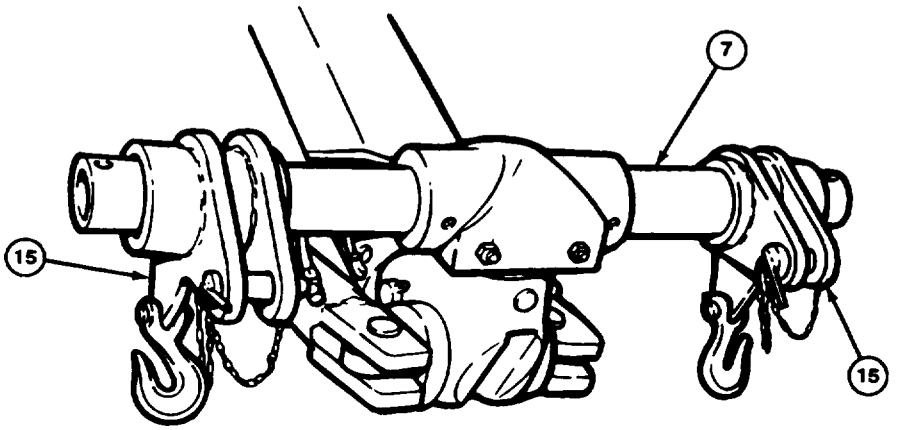


Figure 7.

NOTE

End caps will hang over end of cross tube.

13. Install two end caps (10) on cross tube (7) with two pins (9) and quick pins (8).

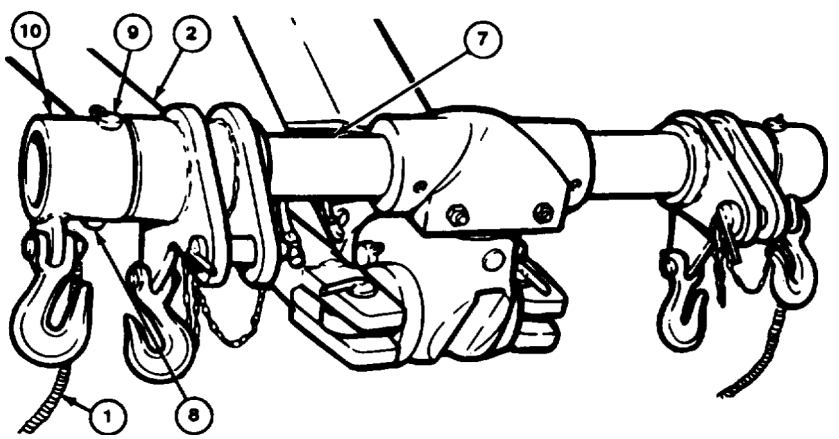


Figure 8.

14. Attach two springs (1) on tow cylinders (2).

HOOKUP - Continued

15. Remove two quick pins (16) and pins (17) from adapter (15).

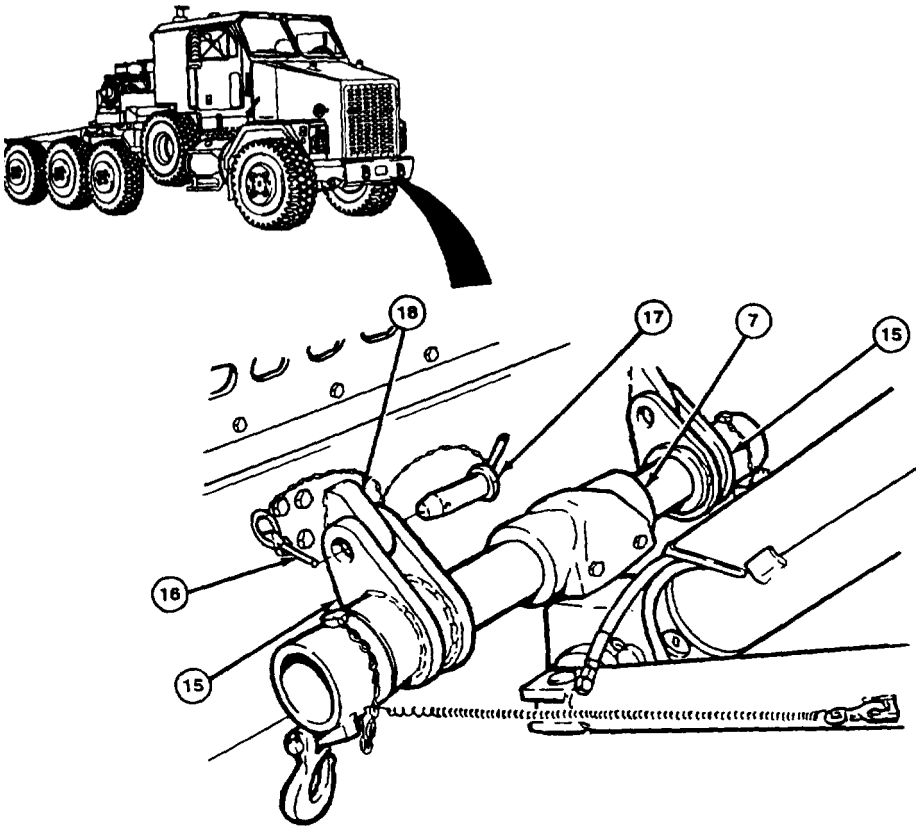


Figure 9.

WARNING

Keep hands and fingers away from adapters and tow eyes when operating retriever controls. Failure to comply may result in injury or death to personnel.

HOOKUP - Continued

NOTE

If disabled vehicle has towing shackles installed, remove shackles and stow in disabled vehicle.

16. Operate retrieval system and with aid of an assistant, position cross tube (7) so holes in adapters (15) align with holes in front tow eyes (18).
17. Install two pins (17) through adapters (15) and front tow eyes (18), install quick pins (16) in pins (17).
18. Reposition cross tube (7) so that adapter bottom is tight to front bumper (19).

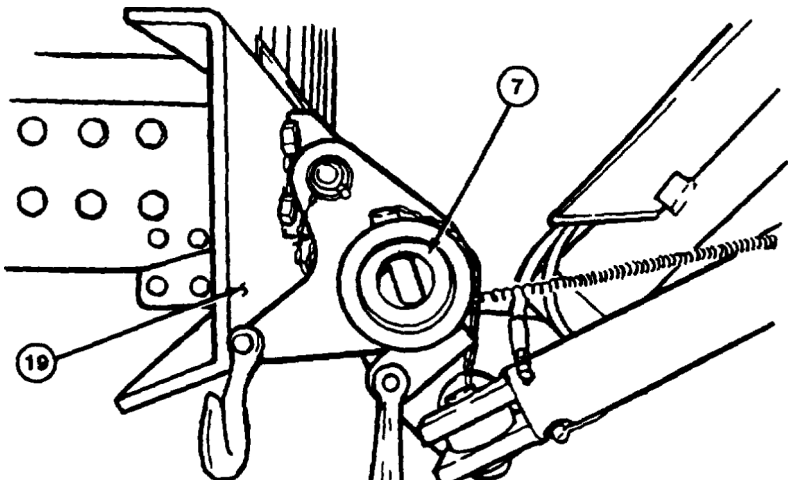


Figure 10.

19. Remove two 16 ft. (5 m) safety chains (20) from stowage.

HOOKUP - Continued

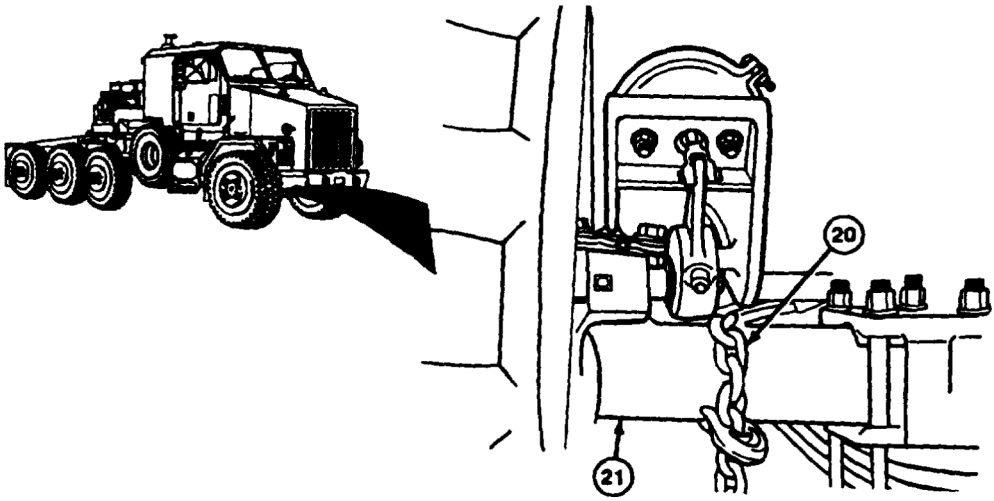


Figure 11.

20. Route end (without safety shackle) of 16 ft. (5 m) safety chain (20) over No. 1 axle (21) of disabled vehicle.
21. Hook 16 ft. (5 m) safety chain (20) together in front of No. 1 axle (21) of disabled vehicle.
22. Repeat Steps (20) and (21) for other side of No. 1 axle (21) of disabled vehicle.
23. Pull 16 ft. (5 m) safety chain (20) tight and install on adapter grab hook (22).

HOOKUP - Continued

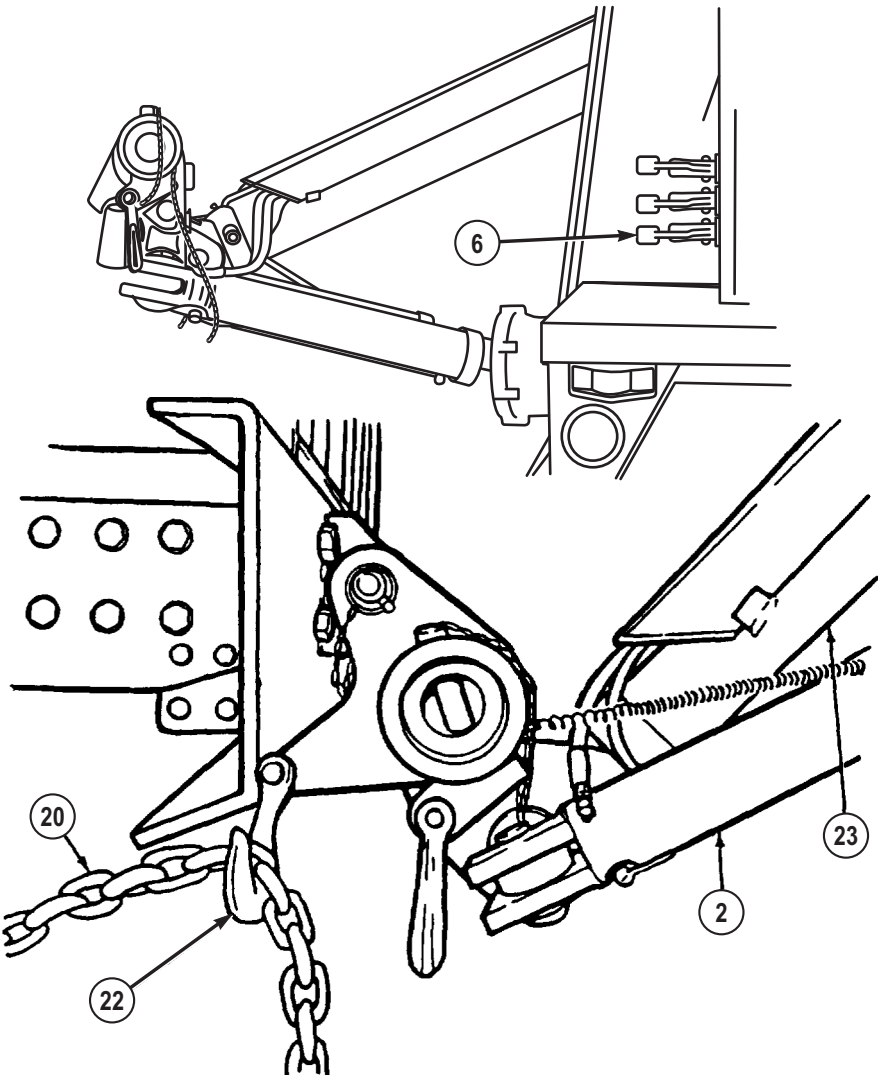


Figure 12.

24. Repeat Step (23) for other 16 ft. (5 m) safety chain (20).
25. Prepare disabled vehicle for towing (Refer to operator's manual).
26. Operate retrieval system until tow cylinders (2) are fully retracted.
27. Push in LIFT CYLINDER control lever (6) to retract lift cylinder (23) until slack is removed from safety chains (20).

HOOKUP - Continued

NOTE

- Safety chains are connected to wrecker safety chain hoop.
- Safety chains should just touch ground when secured.

28. Route two 16 ft. (5 m) safety chains (20) through safety chain hoop (24) on wrecker, hook 16 ft. (5 m) safety chains back into themselves (shown), and secure grab hook (25) with safety shackle (26).

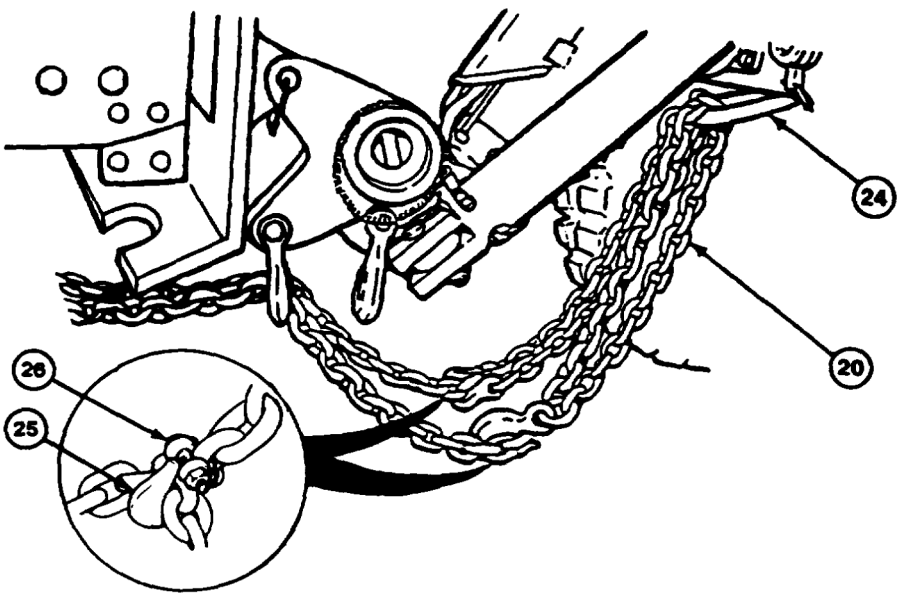


Figure 13.

29. Remove two air lines (27) from stowage and attach to rear gladhands (28) on wrecker.

HOOKUP - Continued

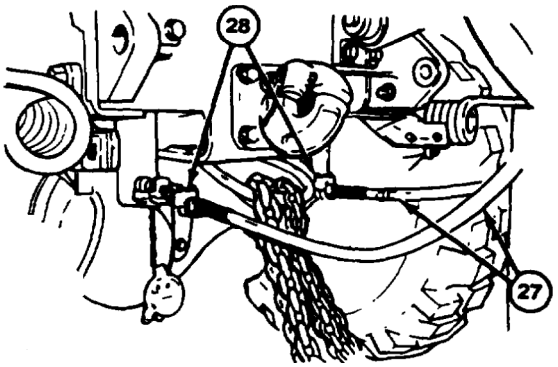


Figure 14.

30. Remove dummy couplings (29) from front gladhands (30) of disabled vehicle.

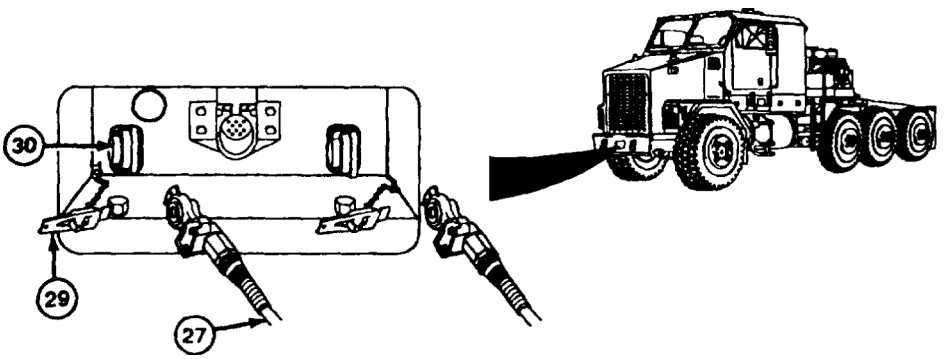


Figure 15.

CAUTION

Air lines should not be routed through retrieval cylinders or damage to air lines may result.

NOTE

Driver side rear air line from wrecker must be connected to driver side front gladhand on disabled vehicle. Passenger side rear air line from wrecker must be connected to passenger side front gladhand on disabled vehicle.

31. Install two air lines (27) on front gladhands (30) of disabled vehicle.
32. Remove emergency tow lights (31) from stowage.

HOOKUP - Continued

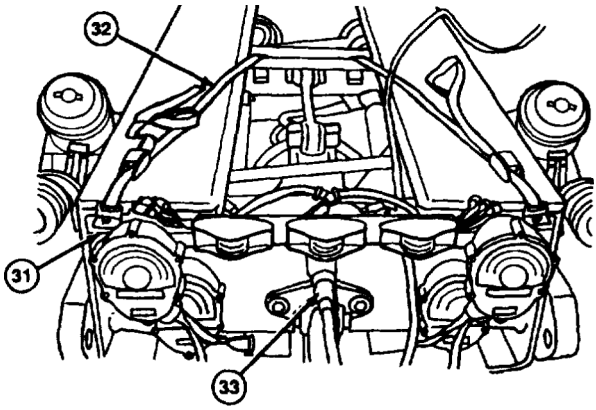


Figure 16.

33. Install tow lights (31) on rear of disabled vehicle and fasten securely with straps (32).
34. Remove tow light cable (33) from stowage and connect to emergency tow lights (31).

CAUTION

Route cable so it does not drag on ground or interfere with turning tires. Failure to comply may result in damage to equipment.

35. Route free end of tow light cable (33) along disabled vehicle and connect to rear electrical connector (34) on wrecker.

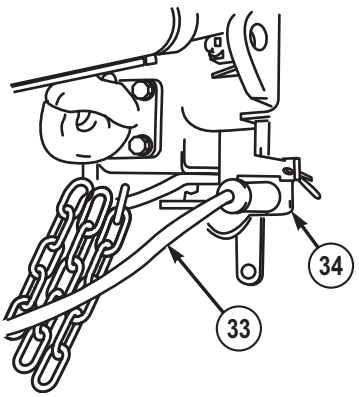


Figure 17.

HOOKUP - Continued

CAUTION

Vehicle can only be towed with all tires in contact with paved roads only. Failure to comply may result in damage to equipment.

NOTE

- If disabled vehicle is to be lifted and towed, skip to Step (37).
- Operator must allow wrecker air suspension system to completely adjust for added weight of disabled vehicle after vehicle has been raised. Wrecker air suspension system may overcompensate and raise disabled vehicle higher than desired.

36. If disabled vehicle will be towed with all tires in contact with road:
    a. Raise cross tube enough to partially unload disabled vehicle's front suspension.
    b. Keep front tires in firm contact with ground.
    c. Skip to Step (43).
37. Refer to operator's manual of disabled vehicle to lock steering.
38. Set POWER switch (35) to ON position.

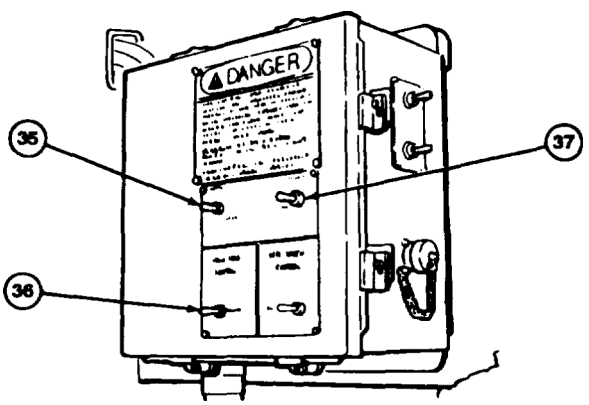


Figure 18.

39. Set HIGH IDLE switch (36) to CONTINUOUS.
40. Push and release LATCH switch (37). Engine speed will increase to approximately 1500 rpm.

HOOKUP - Continued

WARNING

Keep out from under retrieval system and disabled vehicle when raised off ground. Failure to comply may result in injury or death to personnel.

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

CAUTION

- Fully retract both tow cylinders before lifting disabled vehicle. Failure to comply may result in damage to equipment.
- Ensure all rigging is secure. Loose rigging can become entangled. Failure to comply may result in damage to equipment.
- When M1070 is lifted from the front it is approximately 12 ft. 9 in. (3.9 m) high. Do not transport M1070 under anything that does not have this clearance. Use caution when approaching low bridges to avoid contact with structures below 12 ft. 9 in. (3.9 m). Failure to comply will result in damage to equipment.

NOTE

Operator must allow wrecker air suspension system to completely adjust for added weight of disabled vehicle before raising disabled vehicle to final height of 1 ft. (30 cm).

41. Push LIFT CYLINDER control lever (6) to retract lift cylinder (23) and raise disabled vehicle approximately 3 in. (8 cm):
    a. Once wrecker air suspension system has adjusted for added weight of disabled vehicle, push LIFT CYLINDER control lever (6) to retract lift cylinder (23) and raise disabled vehicle to final height of 1 ft. (30 cm).

HOOKUP - Continued

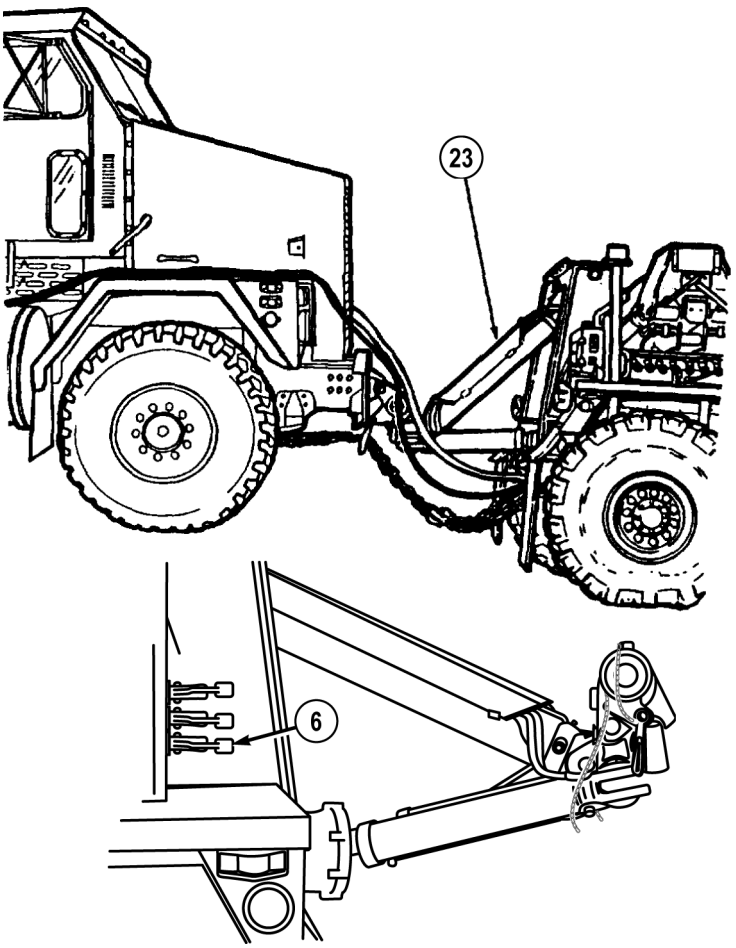


Figure 19.

42. Set POWER switch (35) to OFF position.

HOOKUP - Continued

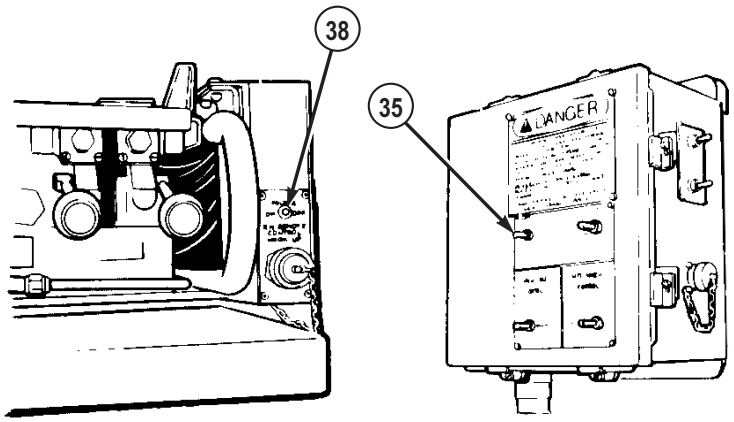


Figure 20.

43. Set POWER switch (38) to OFF position.
44. Set HYD ENABLE switch (39) to off position. MAIN HYD ENABLE indicator (40) will go out.

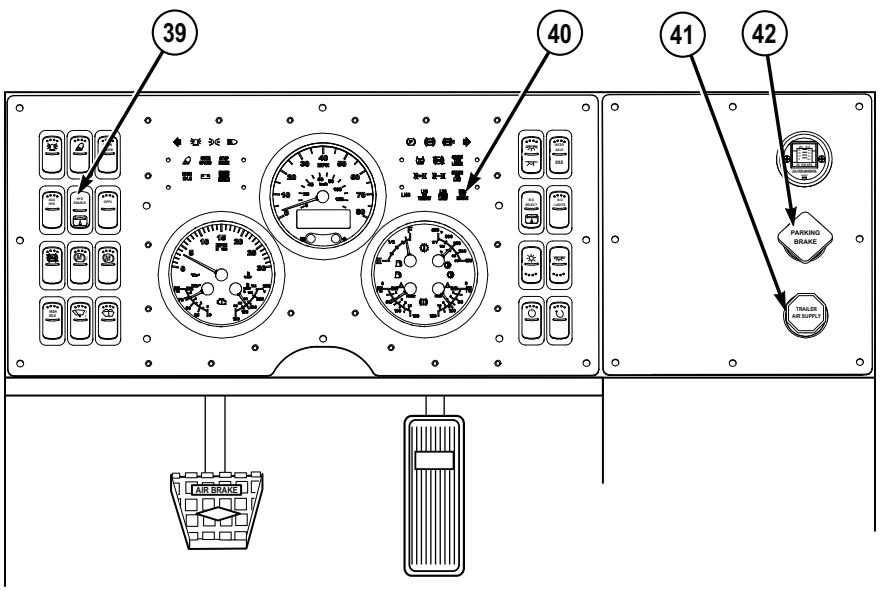


Figure 21.

45. Push in TRAILER AIR SUPPLY control (41).

HOOKUP - Continued

46. Turn on wrecker service drive lights. (WP 0087)
47. Turn on wrecker emergency flashers. (WP 0096)
48. Make sure disabled vehicle emergency flashers are turned on (refer to operator's manual).

NOTE

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

49. Push in PARKING BRAKE control (42).

WARNING

The M984 Wrecker should not be operated at speeds over 15 MPH (24 km/hr) except on paved roads when the operator determines that the vehicle being towed and the terrain allow safe operation. Engine brake switch must ON for all towing operations. Speed in excess of the below table may result in loss of control, serious injury, or death to personnel.

50. Select desired gear (WP 0048) and transport disabled vehicle.

Table 1. Maximum Towing Speed.

Terrain Condition	Maximum Speed Towed Load Up To 50,000 lbs (22 700 kg)	Maximum Speed Towed Load Above 50,000 lbs (22 700 kg)
On Road-Level	35 mph (56 km/hr)	30 mph (48 km/hr)
On Road-Hilly	30 mph (48 km/hr)	20 mph (32 km/hr)
Off-Road	15 mph (24 km/hr)	15 mph (24 km/hr)

DISCONNECT

NOTE

This procedure is a two soldier task.

1. Set transmission range selector (1) to N (neutral).

DISCONNECT - Continued

NOTE

Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

2. Pull out PARKING BRAKE control (2).

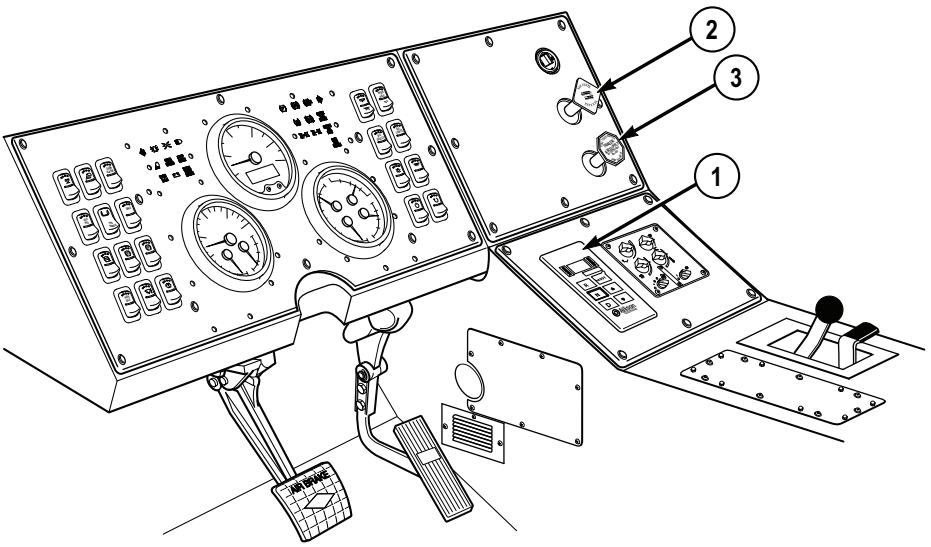


Figure 22.

3. Pull out TRAILER AIR SUPPLY control (3).

WARNING

Keep out from under retrieval system and disabled vehicle when raised off ground. Failure to comply may result in injury or death to personnel.

DISCONNECT - Continued

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

NOTE

- After lowering disabled vehicle, extend lift and tow cylinders approximately 2 to 4 inches (50 to 100 mm) to allow for adjustment when removing adapters.
- Expect wrecker air suspension system to deflate air springs to achieve normal ride height once weight of disabled vehicle is removed.

4. Prepare retrieval system for operation and lower disabled vehicle to ground (WP 0059) until safety chains at front axle are slack.

WARNING

If disabled vehicle's parking brake is inoperative, chock wheels of disabled vehicle (refer to operator's manual). Failure to comply may result in injury or death to personnel.

5. Engage PARKING BRAKE on disabled vehicle (refer to operator’s manual).
6. Remove tow light cable (4) from emergency tow lights (5).

DISCONNECT - Continued

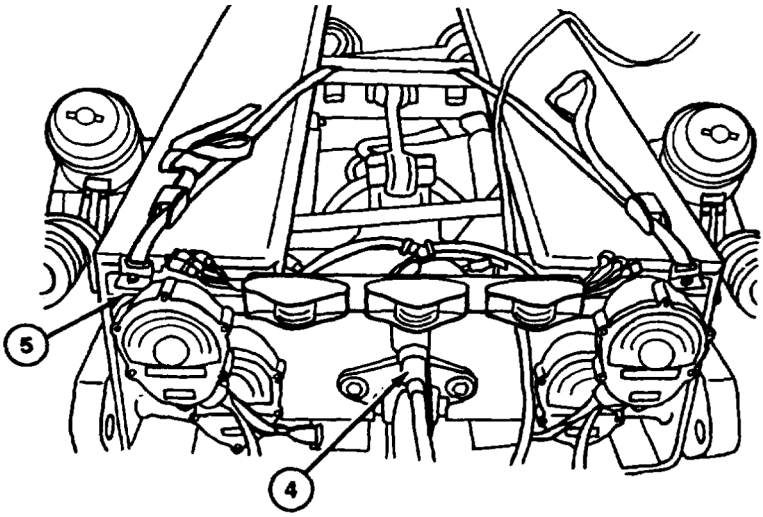


Figure 23.

7. Remove emergency tow lights (5) from disabled vehicle.
8. Remove tow light cable (4) from rear electrical connector of wrecker. Stow emergency tow lights and tow light cable.

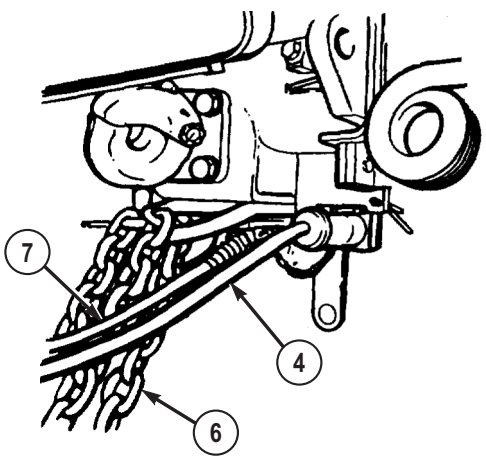


Figure 24.

9. Remove and stow two safety chains (6) and air lines (7).
10. Remove two quick pins (8) and pins (9) from adapters (10).

DISCONNECT - Continued

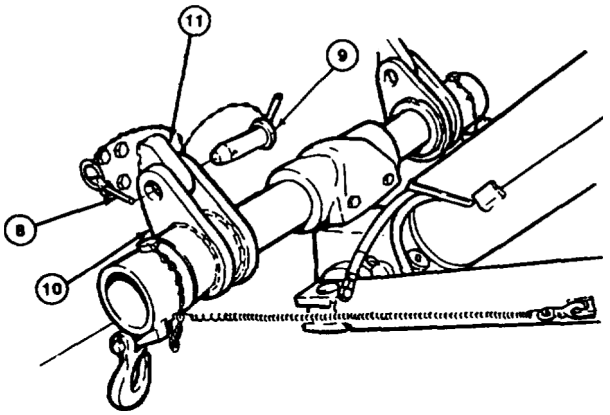


Figure 25.

11. Remove two adapters (10) from tow eyes (11).
12. Install two pins (9) in adapters (10).
13. Install two quick pins (8) in pins (9).
14. Drive wrecker forward (WP 0050) several feet and park. (WP 0056)

WARNING

When springs and end caps are removed, cross tube can swing in all directions and adapters may slide off and cause injury or death to personnel.

15. Remove two springs (12) from tow cylinders (13).

DISCONNECT - Continued

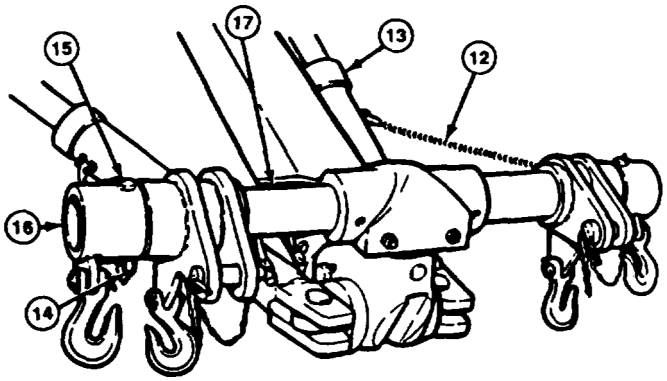


Figure 26.

16. Remove two quick pins (14) and pins (15) from end caps (16).
17. Remove end caps (16) from cross tube (17).
18. Remove two adapters (10) from cross tube (17) and place on equipment body floor (18).

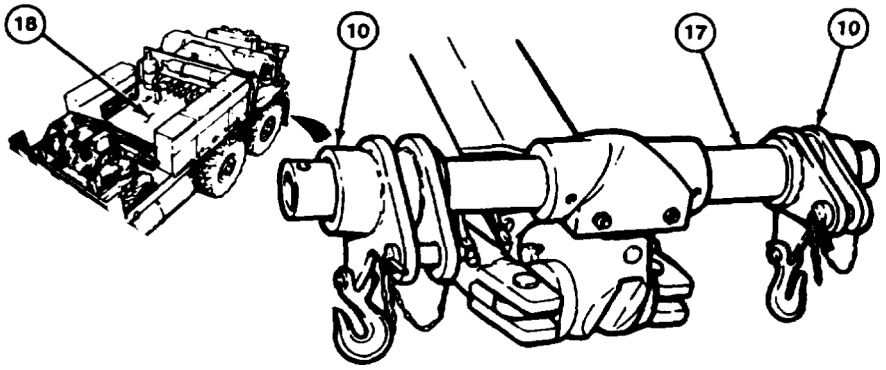


Figure 27.

19. Remove lock handle (19), lock plate (20), and two front tow adapters (21).
20. Install two adapters (10) with lock plate (20) and lock handle (19).

DISCONNECT - Continued

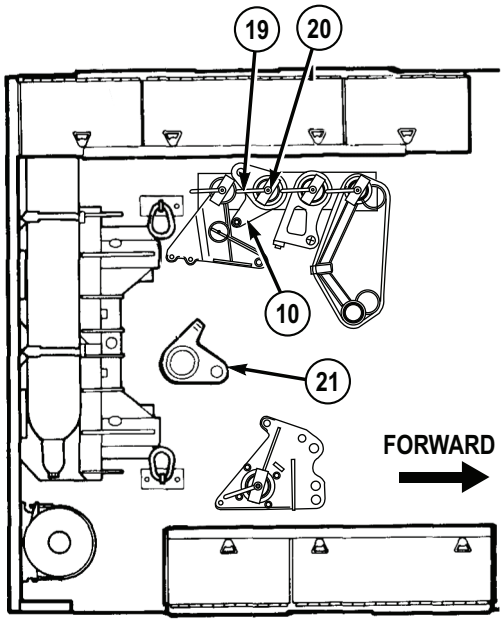


Figure 28.

21. Install two adapters (21) on cross tube (17).

DISCONNECT - Continued

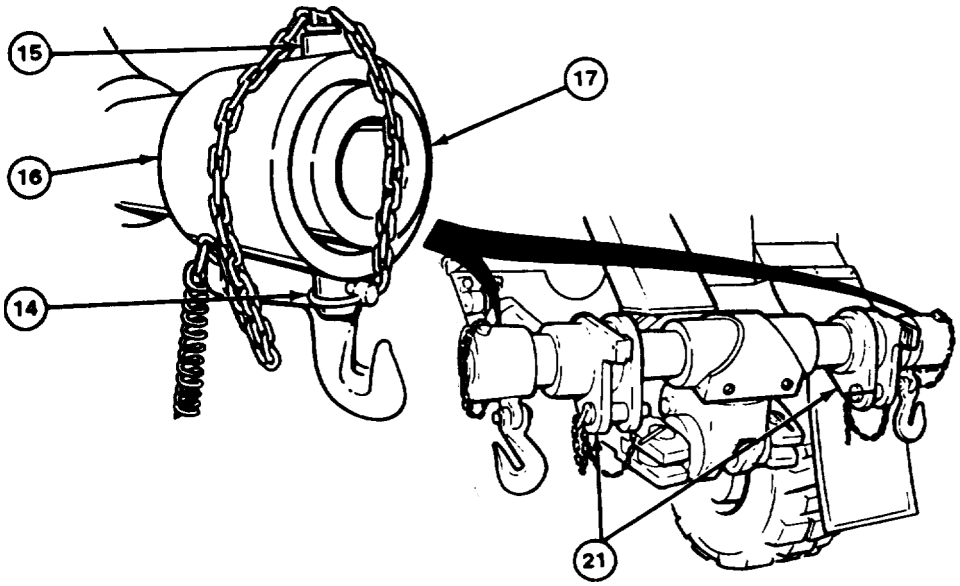


Figure 29.

22. Install two end caps (16) on cross tube (17) with two pins (15) and two quick pins (14).
23. Install two springs (12) on tow cylinders (13).

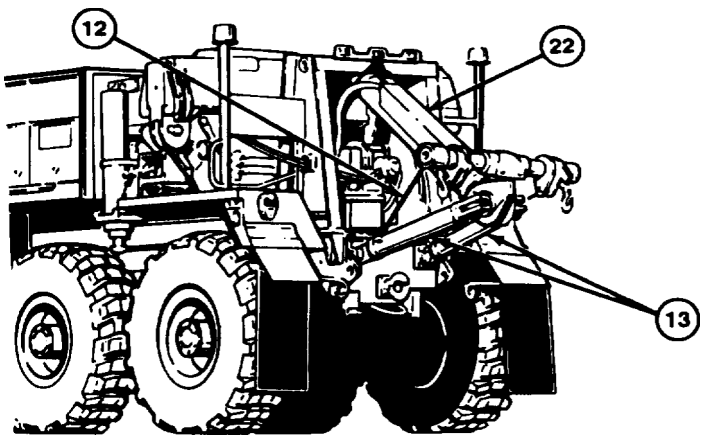


Figure 30.

24. Operate retrieval system and fully retract lift cylinder (22) and tow cylinders (13).

DISCONNECT - Continued

NOTE

Driver side and passenger side towing shackles are installed the same way.

25. Install two rear towing shackles (23), pins (24), and cotter pins (25).

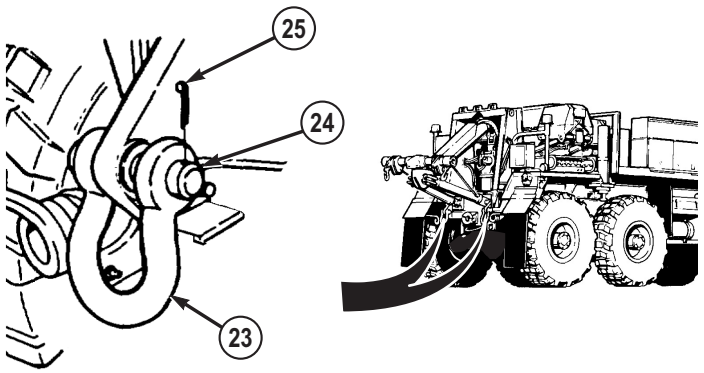


Figure 31.

26. Set POWER switch (26) to OFF position.

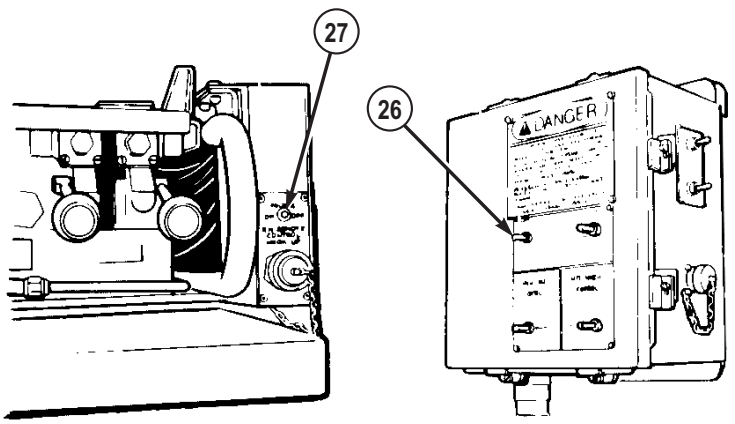


Figure 32.

27. Set POWER switch (27) to OFF position.
28. Turn off wrecker emergency flashers. (WP 0096)
29. Turn off wrecker service drive lights. (WP 0087)

DISCONNECT - Continued

30. Set HYD ENABLE switch (28) to off position. MAIN HYD ENABLE indicator (29) will go out.

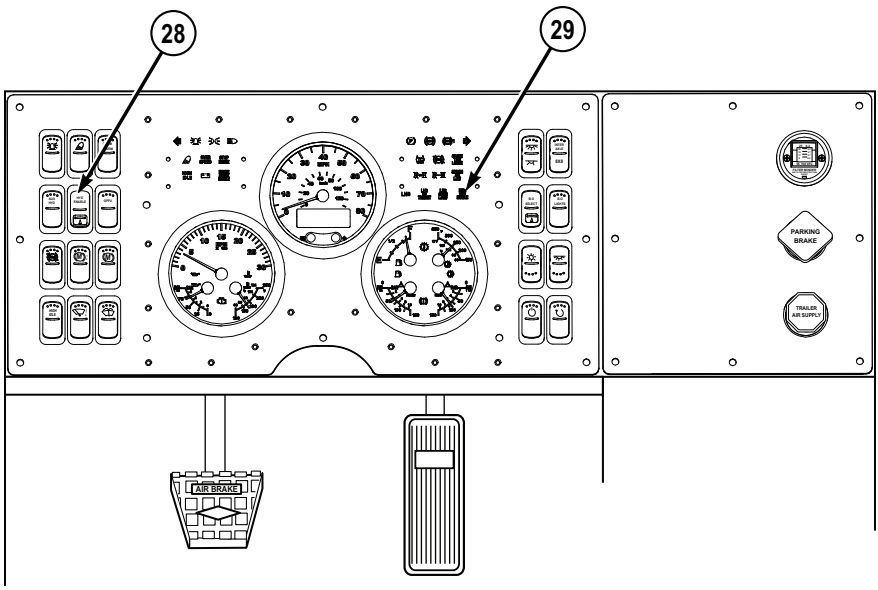


Figure 33.

31. Shut off engine. (WP 0057)
32. Remove and stow portable beacon lights. (WP 0094)
33. Turn off disabled vehicle emergency flashers and unlock steering column (refer to operator's manual).

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
TOW HEMTT M984A - REAR LIFT

INITIAL SETUP:

Not Applicable

PREPARE RECOVERY VEHICLE

NOTE

- This procedure is a two soldier task.
- The following rear lift procedures apply to HEMTT M984A wrecker ONLY. For all other models of HEMTT series vehicle, refer to tow HEMTT - rear lift. (WP 0081)

1. Review procedures for operating retrieval towing system (WP 0058) and prepare retrieval system for operation. (WP 0059)

WARNING

- Hold cross tube when removing springs, cross tube can swing in all directions and adapters may slide off. Failure to comply may result in injury or death to personnel.
- Intervehicular air lines are not connected when towing from rear. Disabled vehicle will not have braking. Use extreme care when transporting disabled vehicle using rear hookup. Failure to comply may result in injury or death to personnel.

2. Disconnect two springs (1) from tow cylinders (2).

PREPARE RECOVERY VEHICLE - Continued

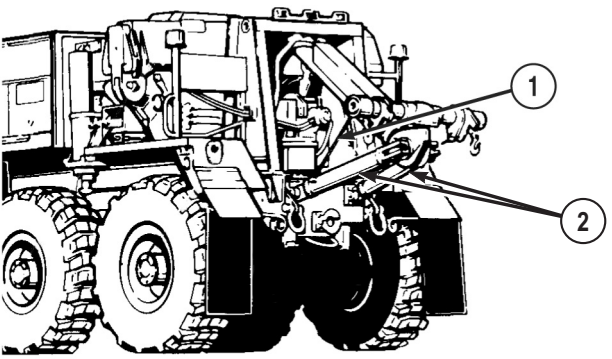


Figure 1.

NOTE

Driver side and passenger side towing shackles are removed the same way.

3. Remove towing shackles (5) from rear of disabled vehicle:

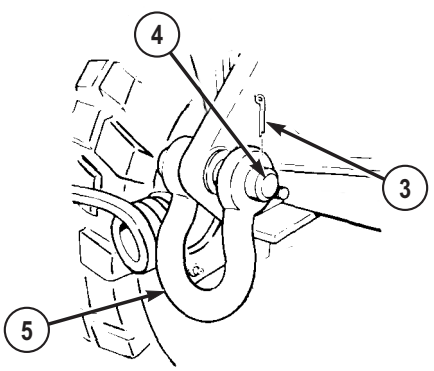


Figure 2.

a. Remove two cotter pins (3), pins (4), and towing shackles (5).

PREPARE RECOVERY VEHICLE - Continued

b. Install two pins (4) in towing shackles (5), install two cotter pins (3) in pins (4).

c. Stow towing shackles on disabled vehicle.

4. Pull LIFT CYLINDER control lever (6) to lower cross tube (7) to approximately 3 ft. (1 m) above ground.

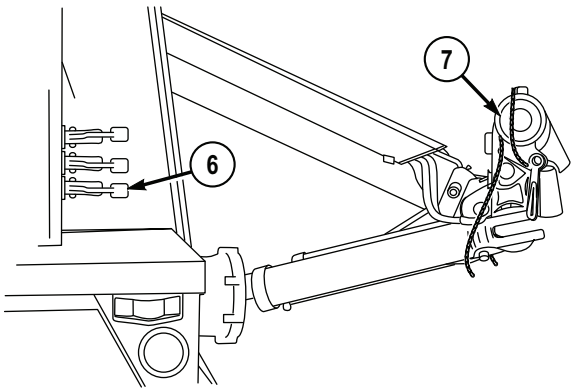


Figure 3.

5. Position recovery vehicle so that cross tube (7) is approximately 1 ft. (30 cm) from tow eyes of disabled vehicle and centered on disabled vehicle.

PREPARE DISABLED VEHICLE

WARNING

- Hold cross tube when removing springs, cross tube can swing in all directions and adapters may slide off. Failure to comply may result in injury or death to personnel.
- Intervehicular air lines are not connected when towing from rear. Disabled vehicle will not have braking. Use extreme care when transporting disabled vehicle using rear hookup. Failure to comply may result in injury or death to personnel.

1. Disconnect two springs (1) from tow cylinders (2) on disabled vehicle.

PREPARE DISABLED VEHICLE - Continued

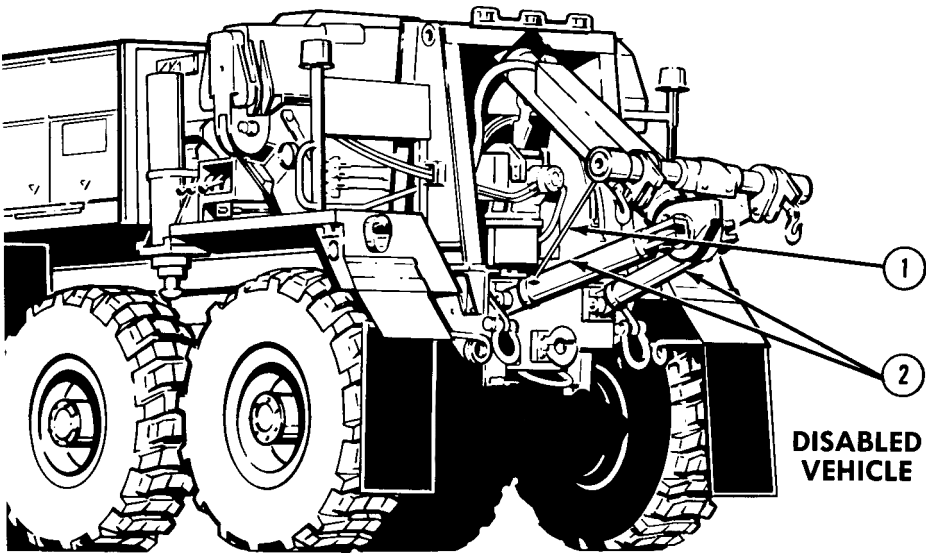


Figure 4.

WARNING

When springs and end caps are removed, cross tube can swing in all directions and adapters may slide off and cause injury or death to personnel.

2. Remove two quick pins (3) and pins (4) from end caps (5) on disabled vehicle.

PREPARE DISABLED VEHICLE - Continued

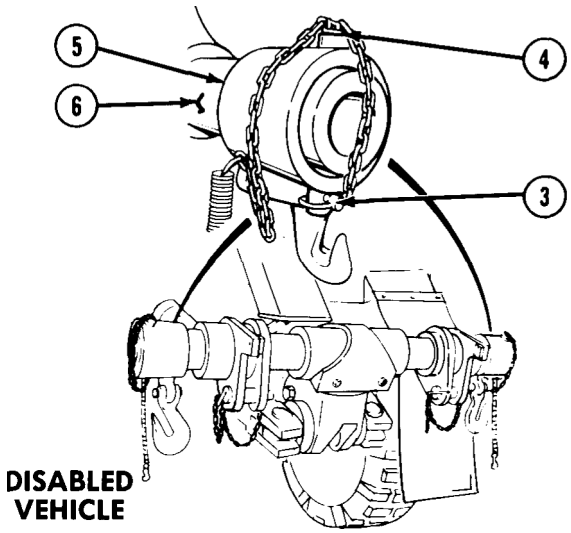


Figure 5.

3. Remove two end caps (5) from cross tube (6).
4. Remove two front adapters (7) from cross tube (6) and place on equipment body floor (8).

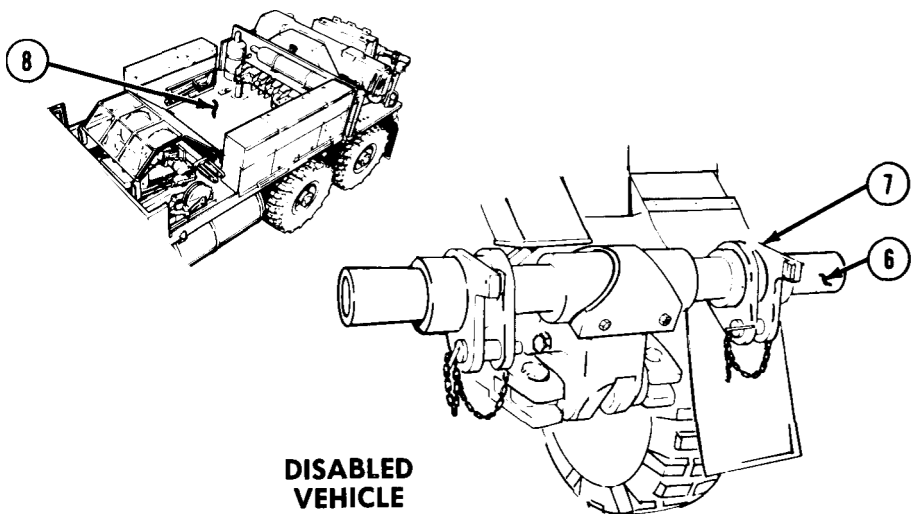


Figure 6.

PREPARE DISABLED VEHICLE - Continued

5. Install two end caps (5) on disabled vehicle cross tube (6).

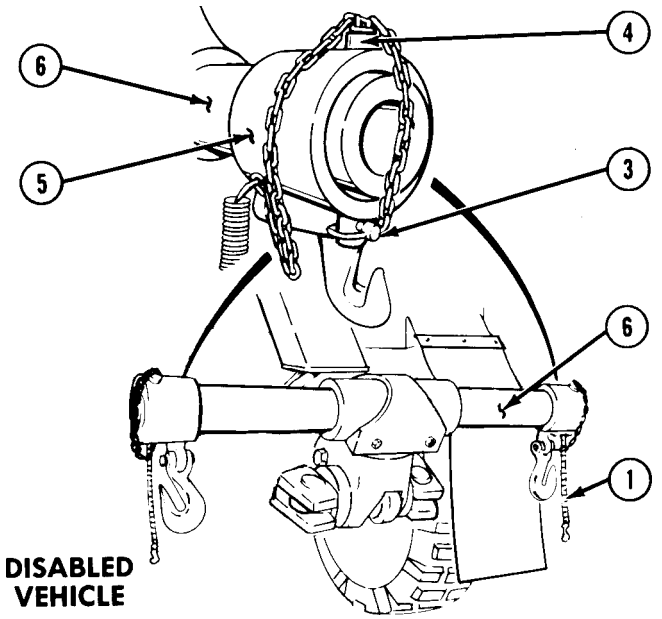


Figure 7.

6. Install two pins (4) and quick pins (3).
7. Wrap two springs (1) around cross tube (6) and secure.
8. Turn fairlead-tensioner (9) on disabled vehicle so hydraulic motor (10) is facing toward crane.

PREPARE DISABLED VEHICLE - Continued

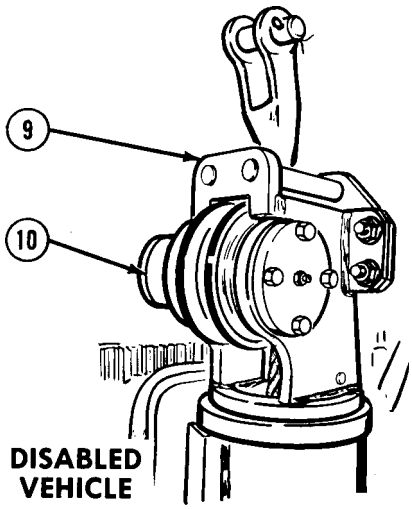


Figure 8.

9. Attach two springs (11) on tow cylinders (12) of recovery vehicle.

PREPARE DISABLED VEHICLE - Continued

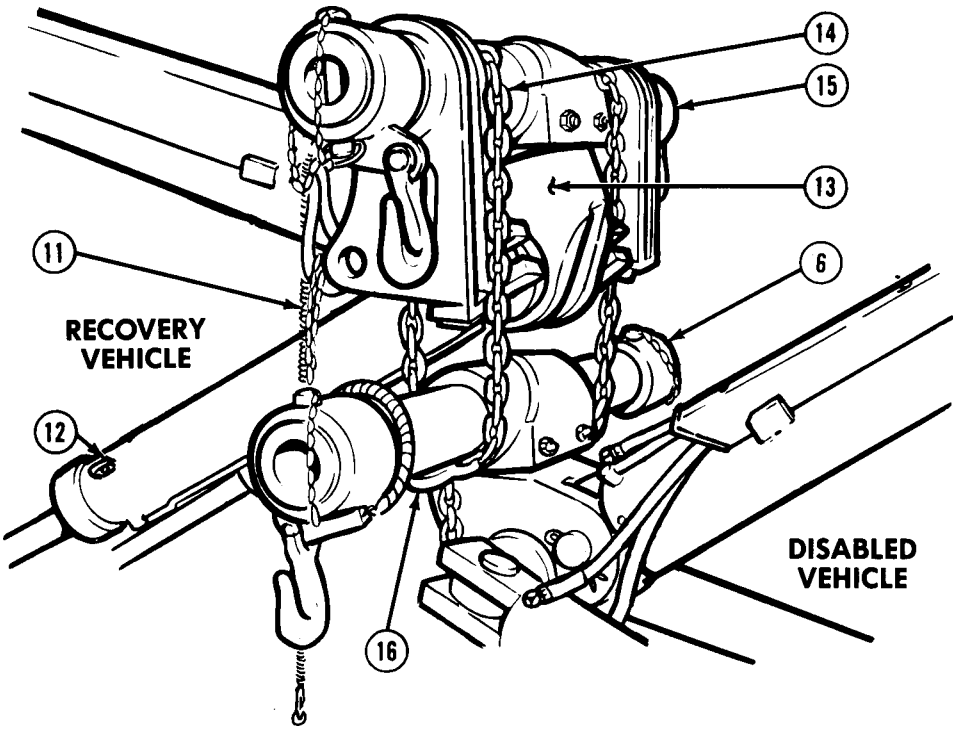


Figure 9.

10. Operate recovery vehicle retrieval system (WP 0059) so center assembly (13) is approximately 1 in. (25 mm) above and centered directly over disabled vehicle cross tube (6).
11. Remove one 12 ft. (3.6 m) chain (14) from recovery vehicle stowage.
12. Route one end of chain around cross tube of recovery vehicle (15) and around cross tube of disabled vehicle (6).
13. Connect grab hook (16) back into 12 ft. (3.6 m) chain (14) as tight as possible to secure that side of recovery vehicle cross tube (15) and disabled vehicle cross tube (6) together.
14. Repeat Steps (12) and (13) with free end of 12 ft. (3.6 m) chain (14) to secure opposite side of side of recovery vehicle cross tube (15) and disabled vehicle cross tube (6) together.
15. Operate retrieval system (WP 0059) and lift recovery vehicle cross tube (15) until 12 ft. (3.6 m) chain (14) is tight.

PREPARE DISABLED VEHICLE - Continued

NOTE

If required, use vehicle access ladder to reach upper screw.

16. Remove two screws (17) (bottom screw shown), lockwashers (18), and lift cylinder hose guard (19) from lift cylinder (20) of disabled vehicle.

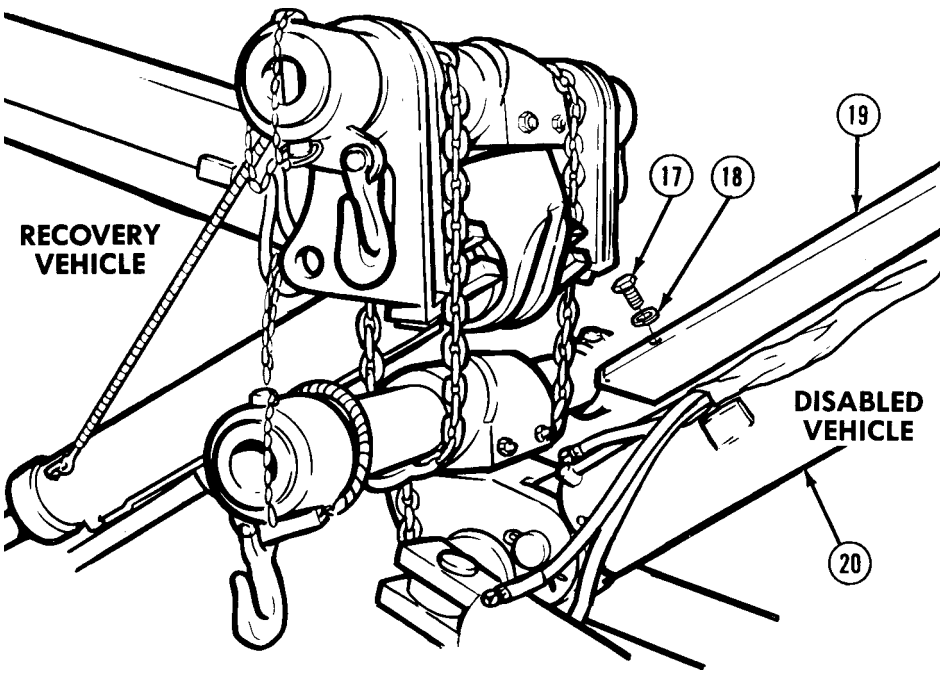


Figure 10.

17. Stow two screws (17), lockwashers (18), and lift cylinder hose guard (19) on disabled vehicle.
18. Prepare recovery vehicle crane for operation. (WP 0102)

CAUTION

Do not route chains over hydraulic hoses. Equipment damage will occur.

19. Remove 8 ft. (2.5 m) utility chain (21) from disabled vehicle stowage.
20. Route 8 ft. (2.5 m) utility chain (21) around lift cylinder (20) below hose guard mounting bracket (22) of disabled vehicle.

PREPARE DISABLED VEHICLE - Continued

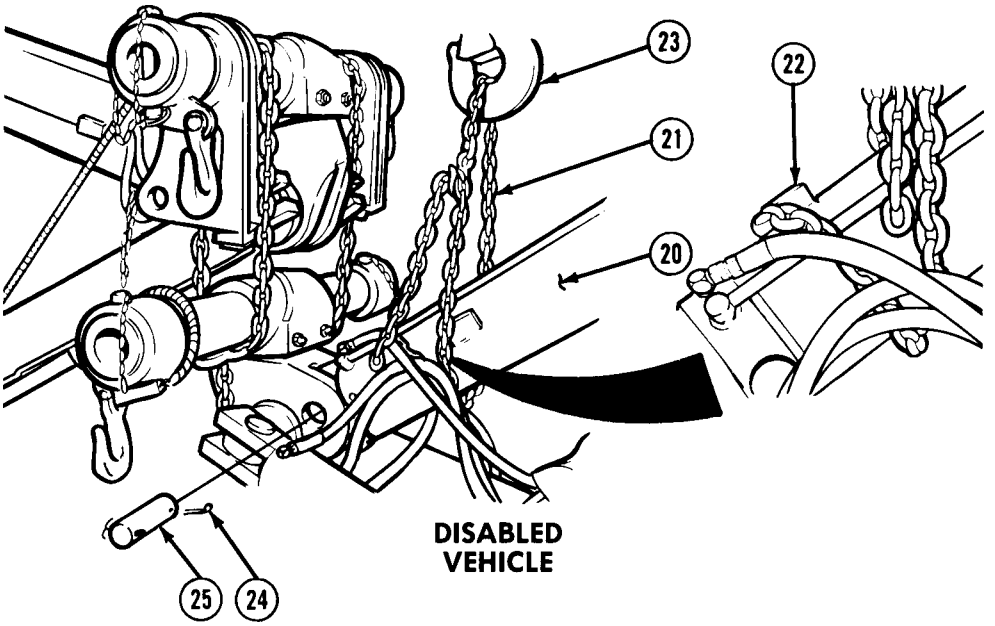
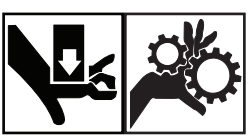


Figure 11.

21. Operate crane controls to lower crane load hook (23) until approximately 1 ft. (30 cm) above 8 ft. (2.5 m) utility chain (21).
22. Attach 8 ft. (2.5 m) utility chain (21) to crane load hook (23).
23. Operate crane controls until slack is removed from 8 ft. (2.5 m) utility chain (21).

WARNING



When cylinder mounting pin is removed, retrieval system may suddenly move up or down. Keep hands away from retrieval system. Failure to comply may result in injury or death to personnel.

24. Remove cotter pin (24) and lift cylinder mounting pin (25) and stow on disabled vehicle.
25. Operate retrieval system (WP 0059) while assistant operates crane controls to lower both cross tubes (6 and 15) and lift cylinder (20) until disabled vehicle lift cylinder (20) separates from center assembly (26).

PREPARE DISABLED VEHICLE - Continued

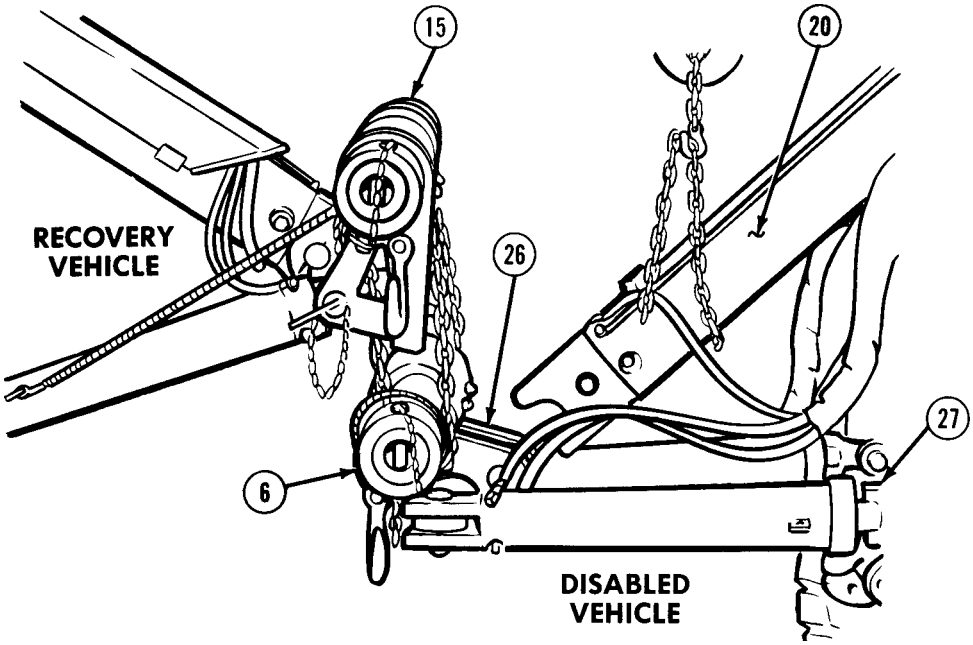
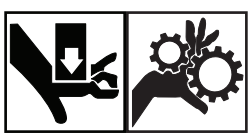


Figure 12.

WARNING



Keep hands away from tow cylinders when lowering lift cylinder and hydraulic lines. Failure to comply may result in injury or death to personnel.

CAUTION

Make sure hydraulic hoses are clear of lift cylinder or equipment may be damaged.

26. Operate crane controls (WP 0102) to lower lift cylinder (20) against rear crossmember (27) while assistant guides lift cylinder and hydraulic hoses.

27. Remove 8 ft. (2.5 m) utility chain (21) from recovery vehicle lift cylinder (20) and crane load hook (23).

PREPARE DISABLED VEHICLE - Continued

28. Route 8 ft. (2.5 m) utility chain around disabled vehicle cross tube (6) and attach to recovery vehicle crane load hook (23).
29. Operate crane controls (WP 0102) to raise load hook (23) until there is slack in the 12 ft. (3.6 m) chain (14).

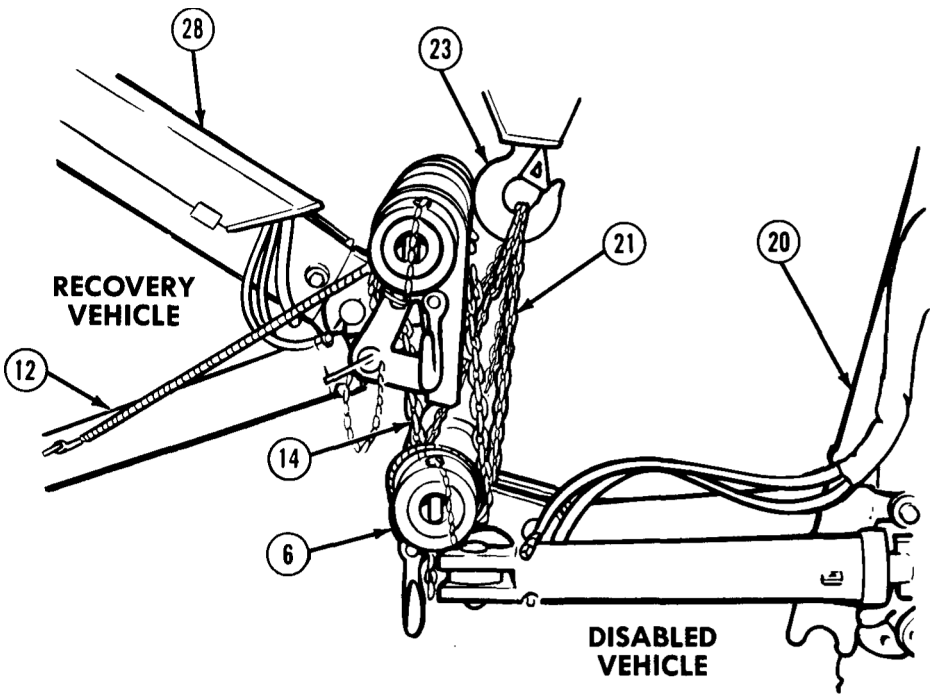


Figure 13.

30. Remove 12 ft. (3.6 m) chain (14) and return to recovery vehicle stowage.
31. Operate retrieval controls (WP 0058) to fully retract lift cylinder (28) and tow cylinders (12) of recovery vehicle.

PREPARE DISABLED VEHICLE - Continued

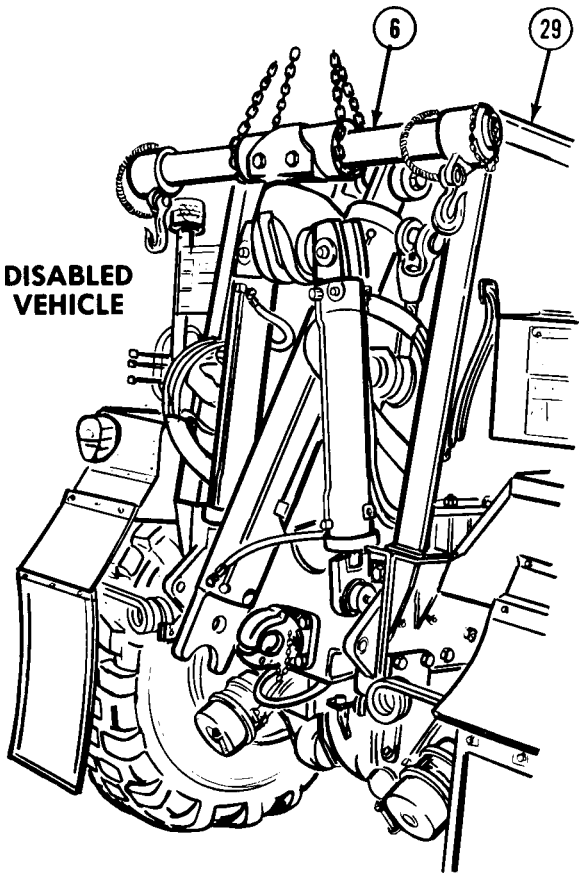


Figure 14.

CAUTION

Make sure hydraulic hoses are clear of tow and lift cylinders. Failure to comply may result in damage to equipment.

32. Operate crane controls (WP 0102) to raise disabled vehicle cross tube (6) to top of tow support assembly (29).

PREPARE DISABLED VEHICLE - Continued

WARNING

Use care when climbing on and off vehicle. Always face vehicle, use steps and grab handles, and maintain three points of contact with vehicle (two feet/one hand or two hands/one foot). Keep steps, grab handles, and walkways clean, and be extra careful in wet, icy, or muddy conditions. Failure to comply may result in injury or death to personnel.

33. Remove two straps (30) from disabled vehicle stowage, and route straps around cross tube (6) and through tow support assembly shackle hole (31).
34. Route one strap around disabled vehicle cross tube (6) and through tow support assembly shackle hole (31) as shown.

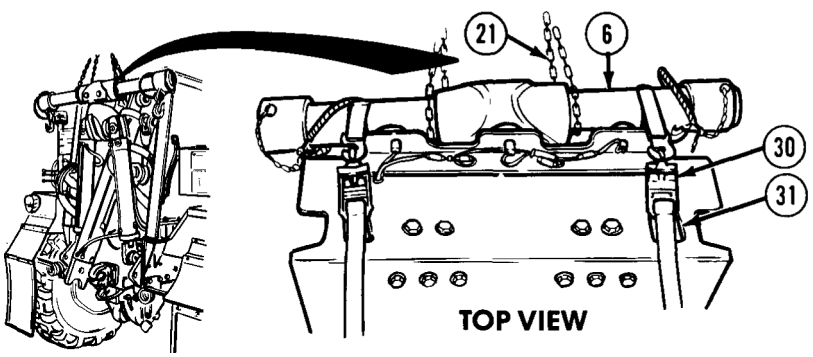


Figure 15.

35. Repeat step (34) for other side of disabled vehicle cross tube (6).
36. Pull two straps (30) tight.
37. Operate crane controls (WP 0102) until 8 ft. (2.5 m) utility chain (21) is slack.

NOTE

Loosen straps as required to remove chain.

38. Remove 8 ft. (2.5 m) utility chain (21), tighten straps (30) if loosened.

PREPARE DISABLED VEHICLE - Continued

NOTE

It is advisable to use chains from disabled vehicle stowage for Step (39). This will enable recovery vehicle to maintain full complement of chains in the event that disabled vehicle retrieval system is not returned to operating condition immediately after disconnect.

39. Install two 8 ft. (2.5 m) utility chains (21) around cross tube (6) and through tow support assembly shackle hole (31) two times, and attach grab hook to chain.

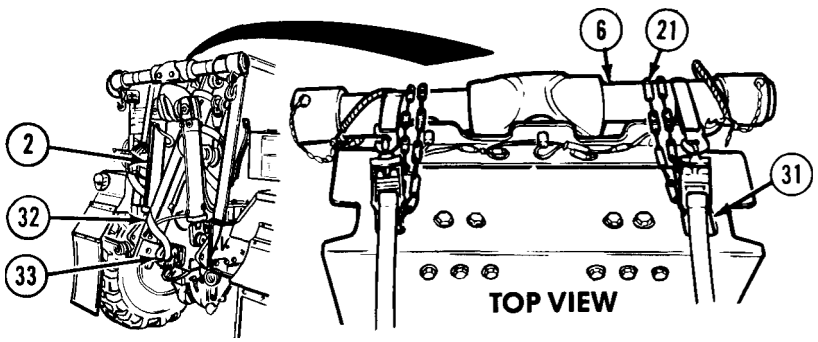


Figure 16.

40. Route strap (32) from towing pintle hook (33), around driver side tow cylinder (2), and tighten.

41. Stow crane (WP 0102) on recovery vehicle.

HOOKUP

1. Position recovery vehicle so that cross tube (1) is approximately 1 ft. (30 cm) from tow eyes of disabled vehicle and centered on disabled vehicle.

WARNING

When springs and end caps are removed, cross tube can swing in all directions and adapters may slide off and cause injury or death to personnel.

2. Remove two quick pins (2) and pins (3) from end caps (4).

HOOKUP - Continued

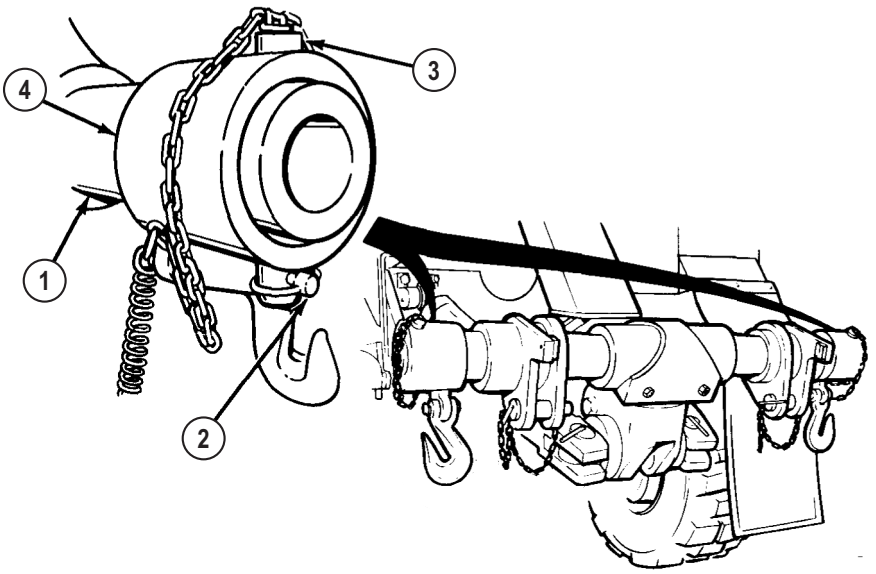


Figure 17.

3. Remove two end caps (4) from cross tube (1).
4. Remove two front adapters (5) from cross tube (1) and place on equipment body floor (6).

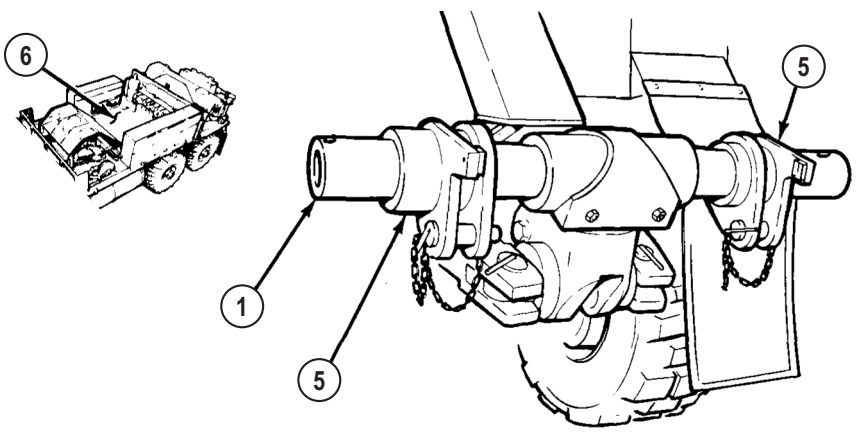


Figure 18.

HOOKUP - Continued

5. Remove lock handle (7), lock plate (8), and two rear tow adapters (9).

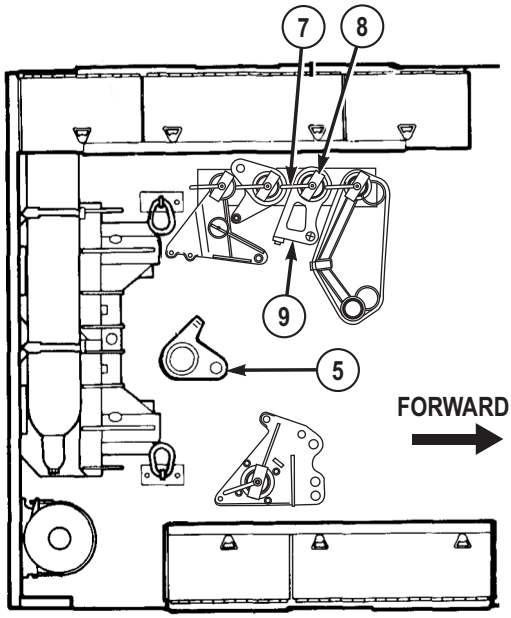
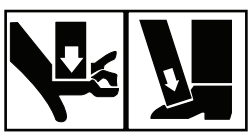


Figure 19.

6. Install two front adapters (5) removed from cross tube with lock plate (8) and lock handle (7).

WARNING



Adapters and end caps may slide off when installing and cause injury or death to personnel.

7. Install two rear tow adapters (9) on cross tube (1).

HOOKUP - Continued

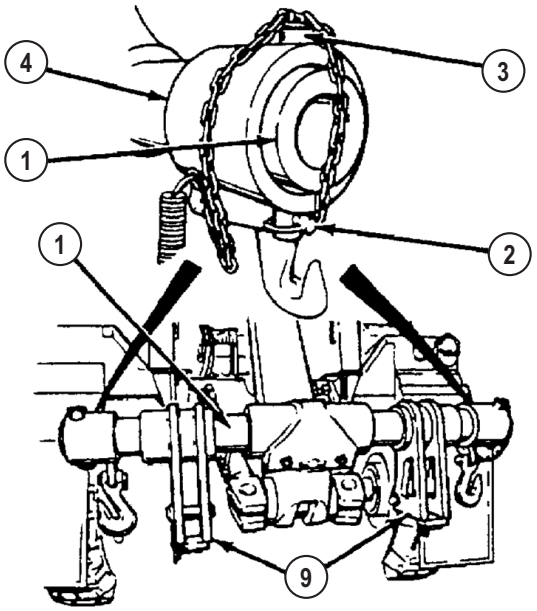


Figure 20.

8. Install two end caps (4) on cross tube (1).
9. Install two pins (3) and quick pins (2).
10. Remove two quick pins (10) and pins (11) from rear tow adapters (9).

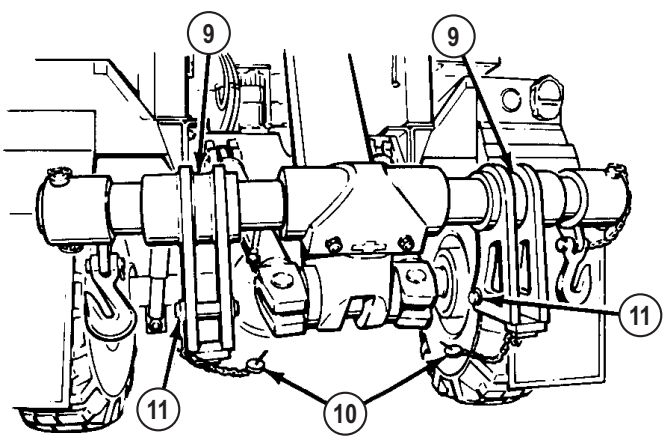


Figure 21.

HOOKUP - Continued

NOTE

If disabled vehicle has rear towing shackles installed, remove towing shackles and stow on disabled vehicle.

11. Attach two springs (12) on tow cylinders (13).

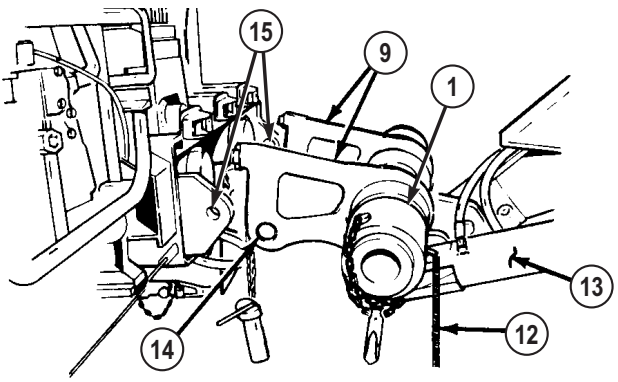


Figure 22.

WARNING

Adapters may need to be held in the upright position while moving cross tube. Failure to comply may result in injury or death to personnel.

12. Rotate two rear tow adapters (9) so mounting holes (14) are on top.

WARNING

Keep hands and fingers away from adapters and tow eyes when operating retriever controls. Failure to comply may result in injury or death to personnel.

HOOKUP - Continued

13. Operate retrieval system, and with aid of an assistant position cross tube (1) so two mounting holes (14) in rear tow adapters (9) align with rear tow eyes (15) on disabled vehicle.
14. Insert two pins (11) through rear tow adapters (9) and disabled vehicle rear tow eyes (15). Install two quick pins (10).

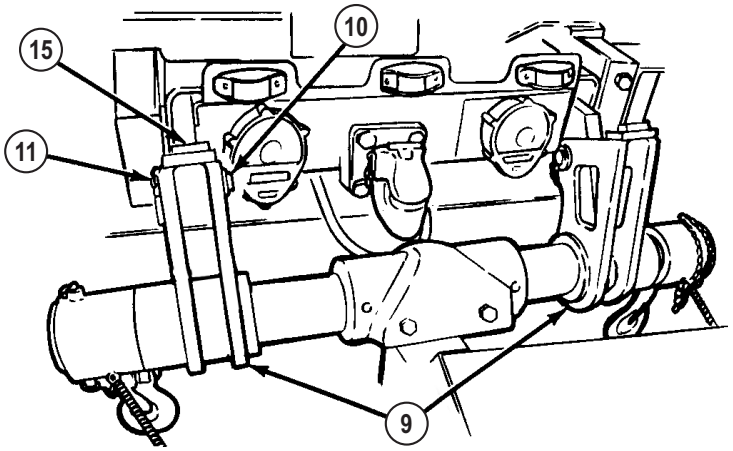


Figure 23.

NOTE

If disabled vehicle air system is inoperative, manually release spring brakes (WP 0129).

15. Push in PARKING BRAKE control (16) on disabled vehicle.

HOOKUP - Continued

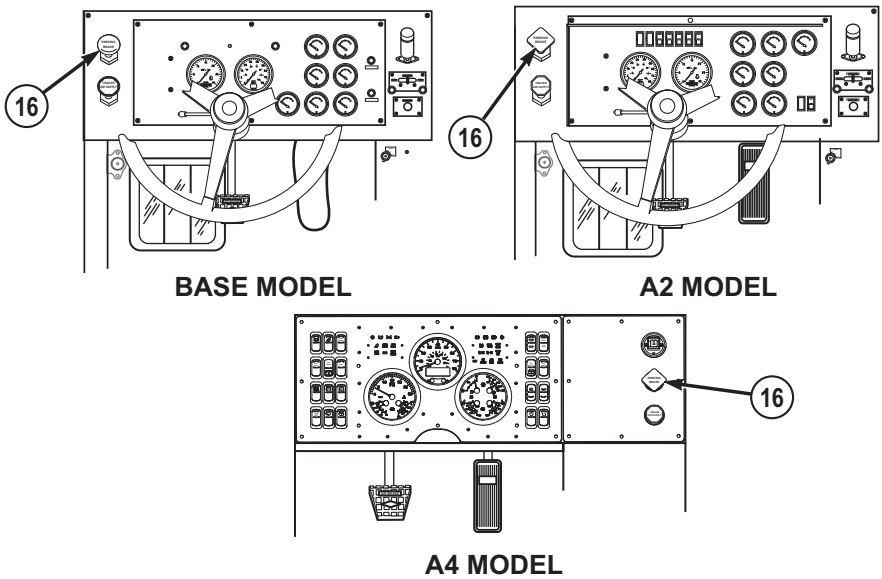


Figure 24.

NOTE

Two rear tow adapters must be resting against frame of disabled vehicle.

16. Operate retrieval system until tow cylinders (13) are fully retracted.

HOOKUP - Continued

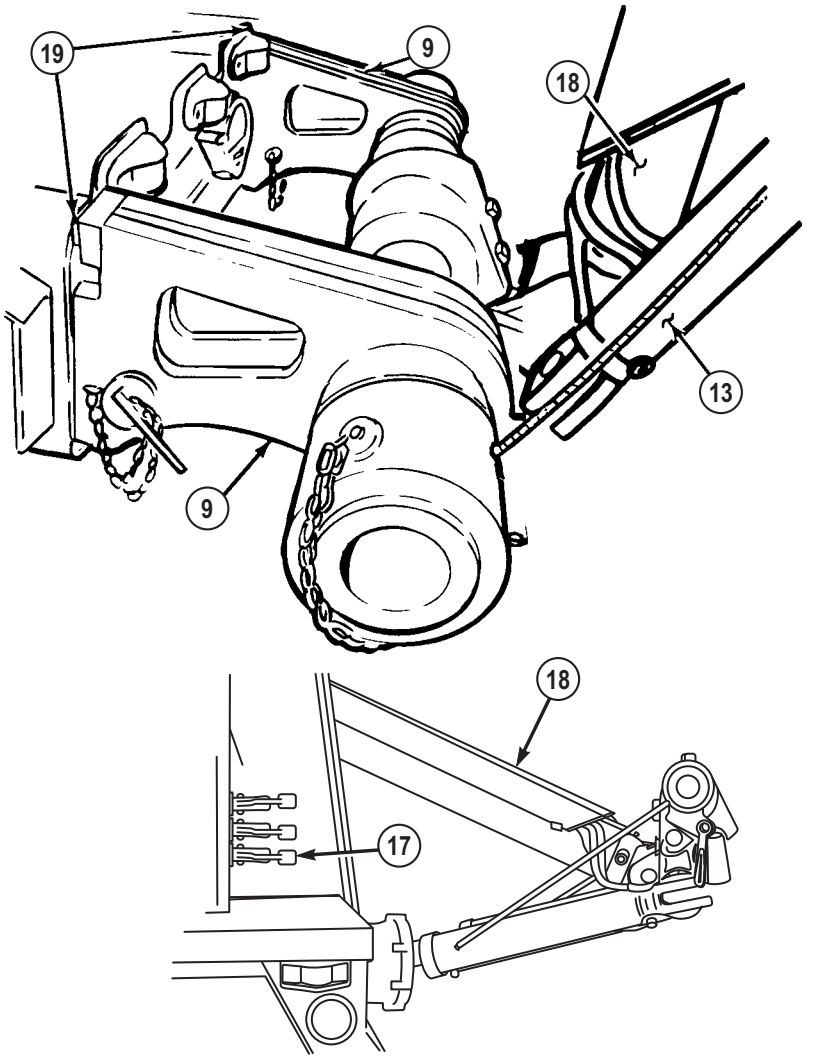


Figure 25.

17. Push in LIFT CYLINDER control lever (17) to retract lift cylinder (18) until two rear tow adapters (9) contact disabled vehicle frame (19).
18. Remove two 16 ft. (5 m) safety chains (20) from wrecker stowage.

HOOKUP - Continued

CAUTION

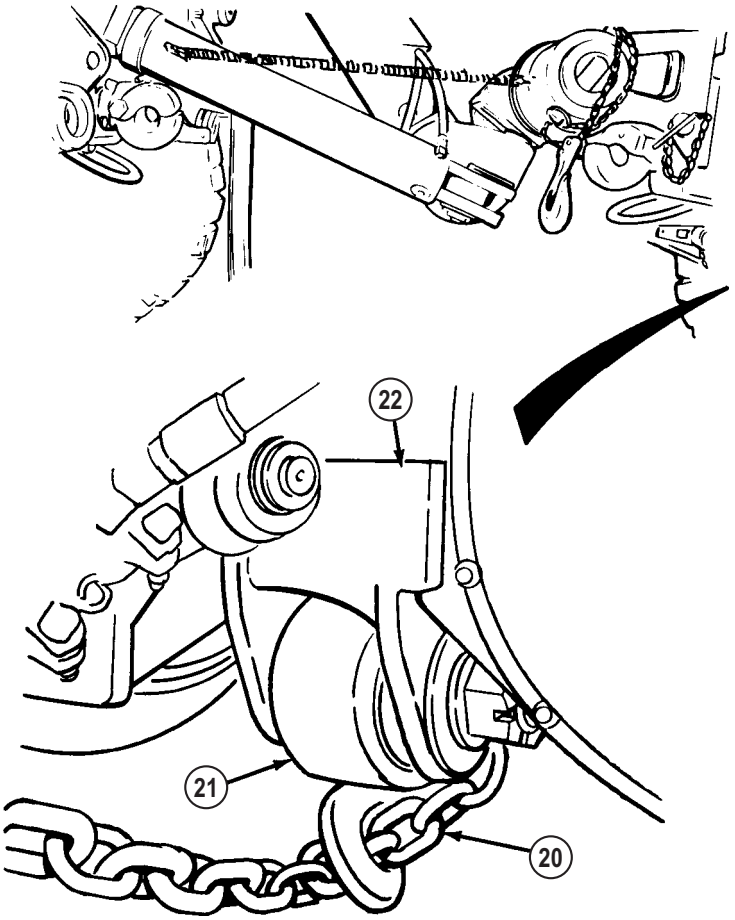
Care must be taken to identify which model of HEMTT series vehicle is being towed (refer to data plate on inside of driver side door). Safety chain attachment points depend on model of HEMTT series vehicle. Failure to comply may result in damage to equipment.

NOTE

- 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 (19).
- If disabled vehicle is an A4 model HEMTT series vehicle (refer to data plate on inside of driver side door), skip to Step (20).

19. Route one end (without safety shackle) of 16 ft. (5 m) safety chain (20) over walking beam (21) in front of No. 4 axle (22) on disabled vehicle, and hook 16 ft. (5 m) safety chain (20) back into itself under walking beam (21) as shown.

HOOKUP - Continued



BASE/A2 DISABLED VEHICLE

Figure 26.

CAUTION

Care must be taken to identify which model of HEMTT series vehicle is being towed (refer to data plate on inside of driver side door). Safety chain attachment points depend on model of vehicle. Failure to comply may result in damage to equipment.

NOTE

Complete Step (20) if disabled vehicle is an A4 model HEMTT series vehicle (refer to data plate on inside of driver side door).

HOOKUP - Continued

20. Route one end (without safety shackle) of 16 ft. (5 m) safety chain (20) through safety chain hoop (23) on disabled vehicle, and attach grab hook (24) back into 16 ft. (5 m) safety chain (20) as shown.

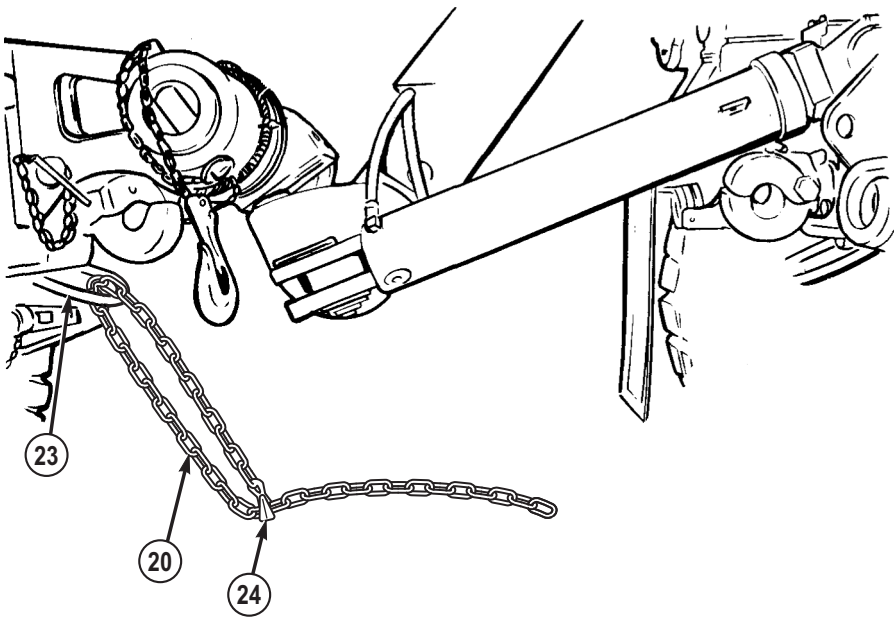


Figure 27.

21. Repeat Step (19) or (20) for other side of disabled vehicle (as applicable).

NOTE

Adjust chain slack so safety chains are approximately 6 in. (15 cm) above the ground.

22. Route two free ends of 16 ft. (5 m) safety chain (20) through safety chain hoop (25) on recovery vehicle, and secure grab hooks (26) back into 16 ft. (5 m) safety chain (20) as shown.

HOOKUP - Continued

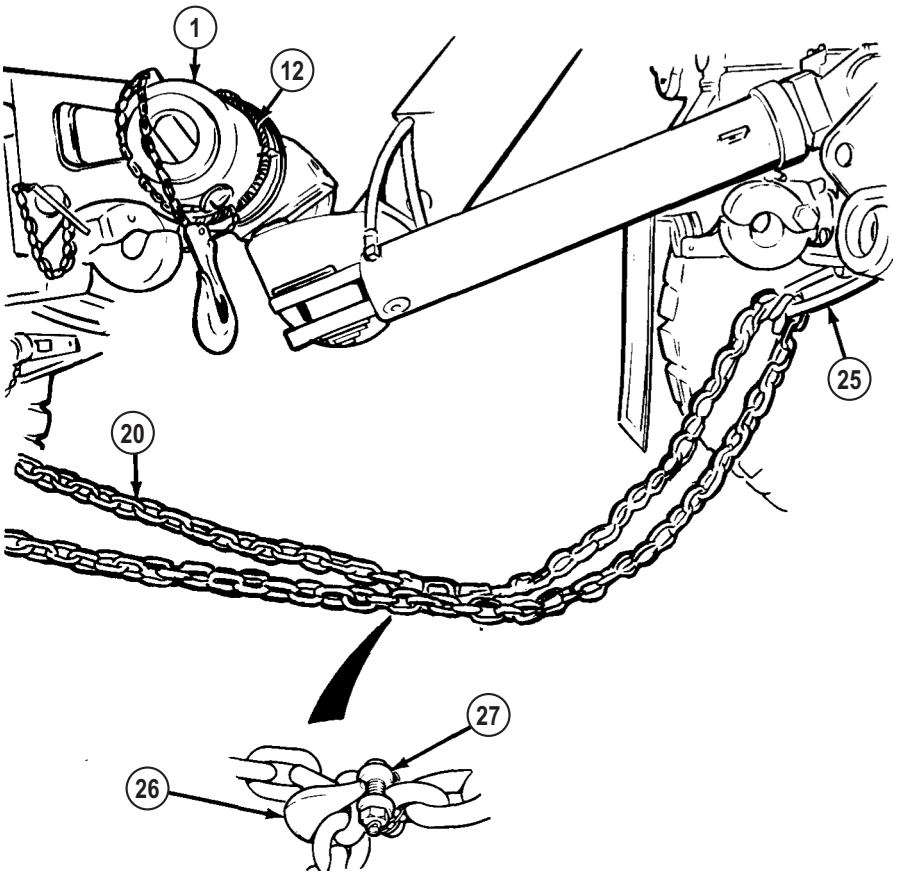


Figure 28.

23. Secure two grab hooks (26) with safety shackles (27).
24. Wrap two springs (12) around cross tube (1) and secure.
25. Prepare disabled vehicle for towing. (WP 0118)
26. Remove emergency tow lights (28) and two brackets (29) from stowage.

HOOKUP - Continued

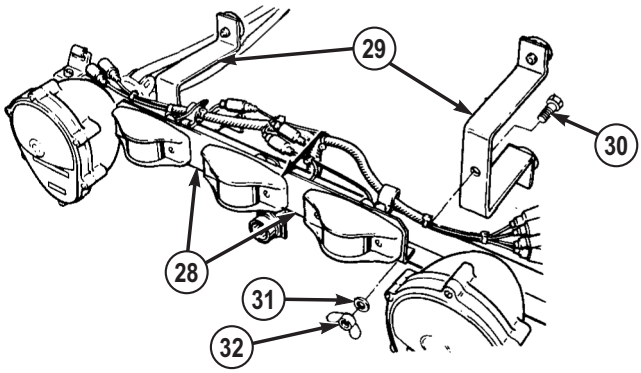


Figure 29.

27. Install two brackets (29) in outside holes of emergency tow lights (28) with two screws (30), washers (31), and nuts (32).

NOTE

Emergency tow lights are mounted the same regardless of HEMTT series vehicle model. BASE/A2 model shown.

28. Position emergency tow lights (28) on skid plate (33). Fasten top straps (34) to top of skid plate (33).

HOOKUP - Continued

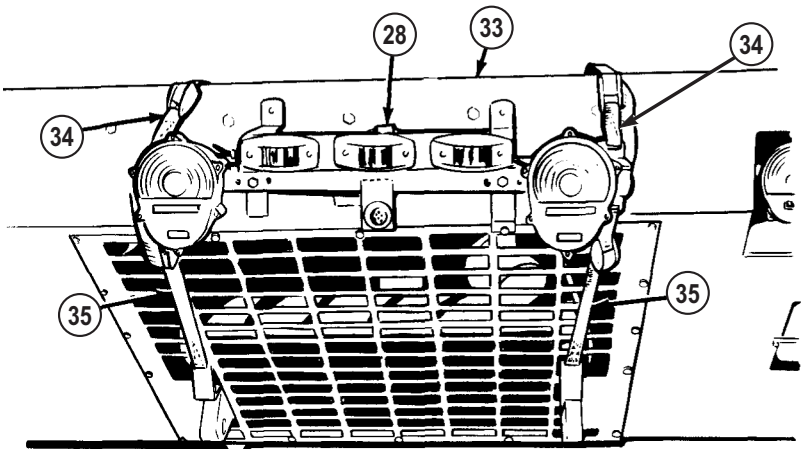


Figure 30.

29. Fasten bottom straps (35) to bottom of skid plate (33).
30. Remove tow light cable (36) from wrecker stowage and connect to rear electrical connector (37) on wrecker.

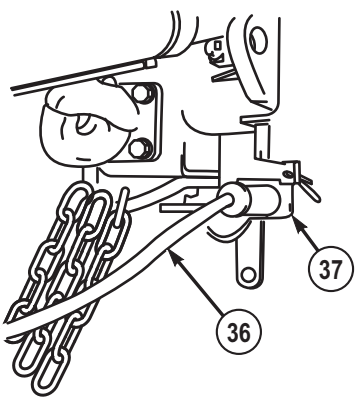


Figure 31.

CAUTION

Route cable so it does not drag on ground or interfere with turning tires or damage to equipment may result.

HOOKUP - Continued

31. Route other end of tow light cable (36) to emergency tow lights (28) on disabled vehicle, and plug in at connector (38).

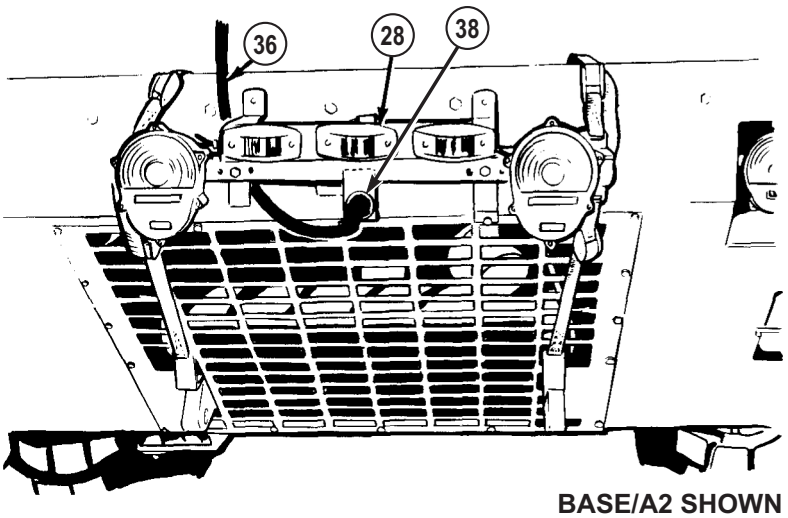


Figure 32.

CAUTION

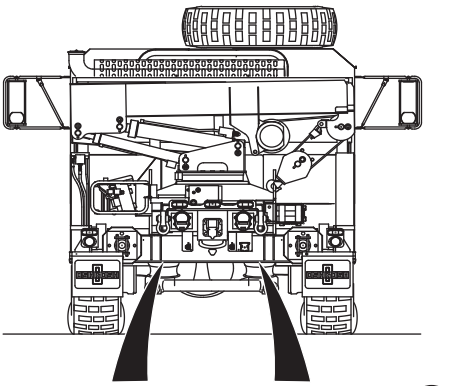
When lifting and towing an A4 HEMTT series vehicle (refer to data plate on inside of driver side door) special care must be taken to avoid causing damage to vehicle air suspension system. Always turn No. 4 axle air suspension ball valves OFF prior to lifting the A4 HEMTT series vehicle (refer to operate air suspension ball valves for more information on ball valve operation). Failure to comply may result in damage to equipment.

NOTE

- If disabled vehicle is A4 HEMTT series vehicle (refer to data plate on inside of driver side door), complete Step (32).
- If disabled vehicle is BASE or A2 HEMTT series vehicle (refer to data plate on inside of driver side door), skip to Step (33).

32. Position disabled vehicle No. 4 axle driver side and passenger side (shown) ball valve handles (39) OFF.

HOOKUP - Continued



BALL VALVE OFF

Figure 33.

33. Set POWER switch (40) to ON position.

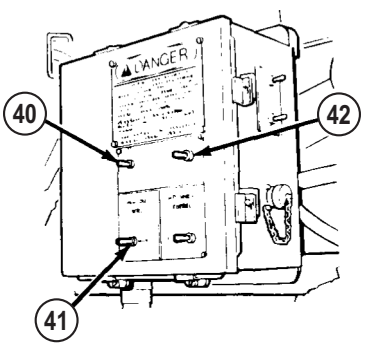


Figure 34.

34. Set HIGH IDLE switch (41) to CONTINUOUS.
35. Push and release LATCH switch (42). Engine speed will increase to approximately 1500 rpm.

HOOKUP - Continued

WARNING

Keep out from under retrieval system and disabled vehicle when raised off ground. Failure to comply may result in injury or death to personnel.

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

CAUTION

- Fully retract both tow cylinders before lifting disabled vehicle or damage to equipment may result.
- Make sure all rigging is secure. Loose rigging can become entangled and damage to equipment may result.

NOTE

Operator must allow wrecker air suspension system to completely adjust for added weight of disabled vehicle before raising disabled vehicle to final height of 1 ft. (30 cm).

36. Push LIFT CYLINDER control lever (17) to retract lift cylinder (18) and raise disabled vehicle approximately 3 in. (8 cm):
    a. Once wrecker air suspension system has adjusted for added weight of disabled vehicle, push LIFT CYLINDER control lever (17) to retract lift cylinder (18) and raise disabled vehicle to final height of 1 ft. (30 cm).

HOOKUP - Continued

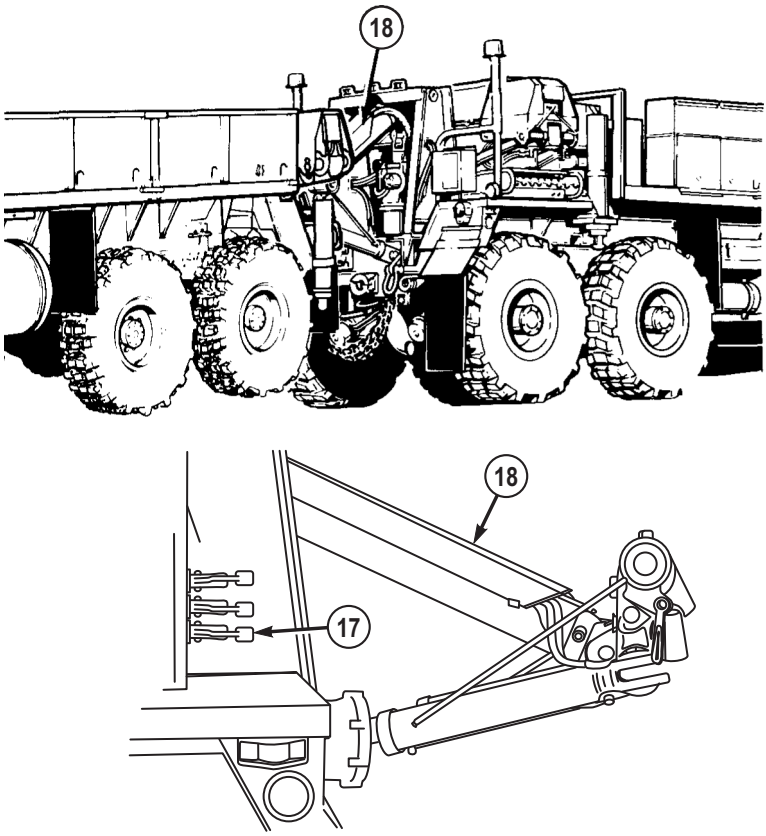


Figure 35.

37. Set POWER switch (40) to OFF position.

HOOKUP - Continued

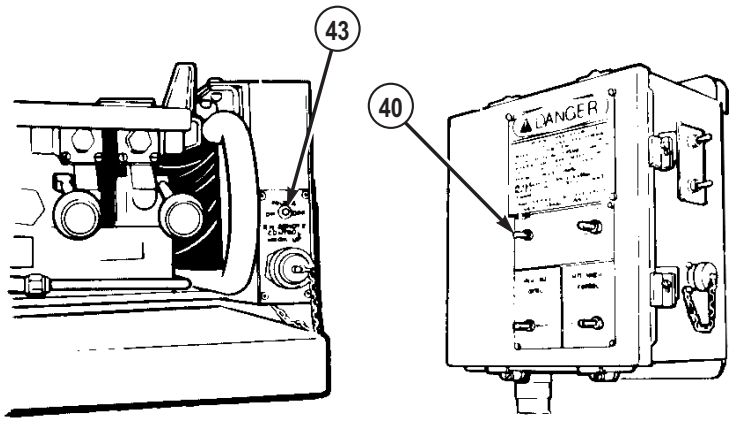


Figure 36.

38. Set POWER switch (43) to OFF position.

NOTE

- If disabled vehicle is BASE/A2 HEMTT series vehicle (refer to data plate on inside of driver side door), continue with Step (40).
- If disabled vehicle is A4 HEMTT series vehicle (refer to data plate on inside of driver side door), skip to Step (41).

39. Remove steering lock bracket (44) and four screws (45) from disabled vehicle stowage and install on disabled vehicle:

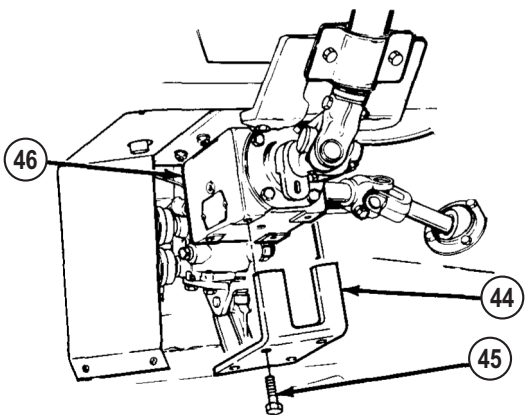


Figure 37.

HOOKUP - Continued

NOTE

If tires of disabled vehicle have to be straightened manually, drive wrecker forward (WP 0050) 20 to 30 ft. (6 to 9 m) while assistant straightens tires on disabled vehicle.

a. Straighten front wheels on disabled vehicle.

b. Remove steering lock bracket (44) and four screws (45) from stowage.

c. Install steering lock bracket (44) on 90 degree gearbox (46) with four screws (45).

NOTE

If disabled vehicle is A4 HEMTT series vehicle (refer to data plate on inside of driver side door), continue with Step (41).

40. Install steering lockpin (47) on disabled vehicle:

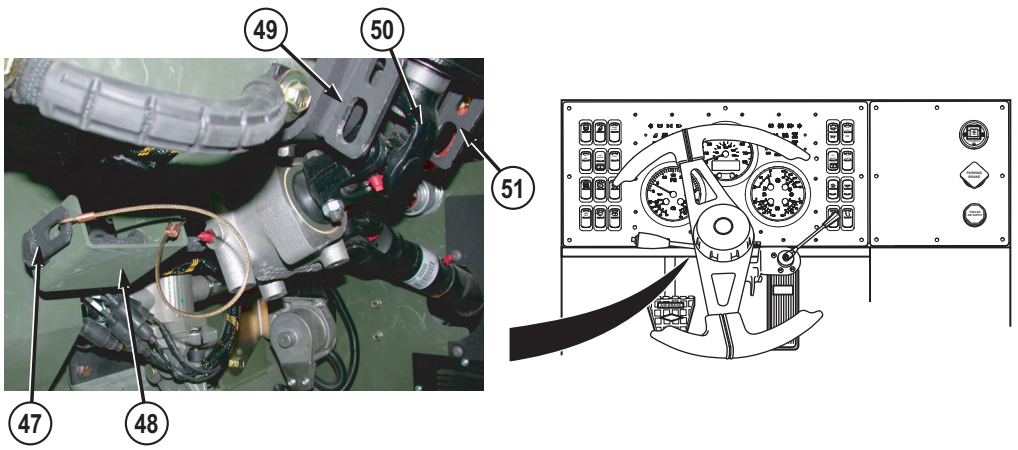


Figure 38.

NOTE

If tires of disabled vehicle have to be straightened manually, drive wrecker forward (WP 0050) 20 to 30 ft. (6 to 10 m) while assistant straightens tires on disabled vehicle.

a. Straighten front wheels on disabled vehicle.

b. Remove steering lockpin (47) from stowage bracket (48) under driver side dash panel.

HOOKUP - Continued

NOTE

It may be necessary to turn steering wheel to line up steering column yoke with holes in locking bracket.

c. Install steering lockpin (47) through left hole (49) of lock bracket, steering column yoke (50), and right hole (51) of lock bracket.

d. Rotate steering lockpin (47) to align hole in steering lockpin handle with hole in lock bracket, and install lock (52).

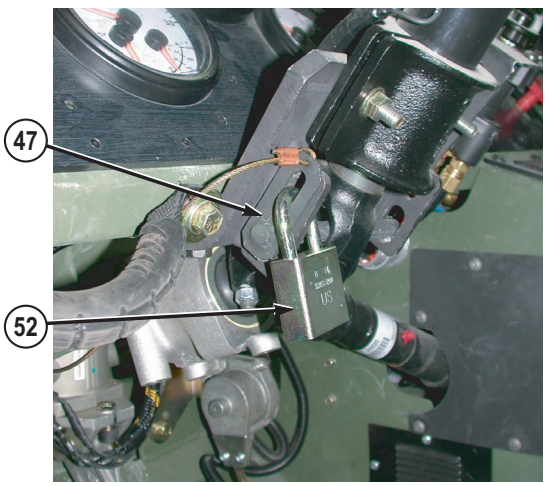


Figure 39.

41. Set HYD ENABLE switch (53) to off position. MAIN HYD ENABLE indicator (54) will go out.

HOOKUP - Continued

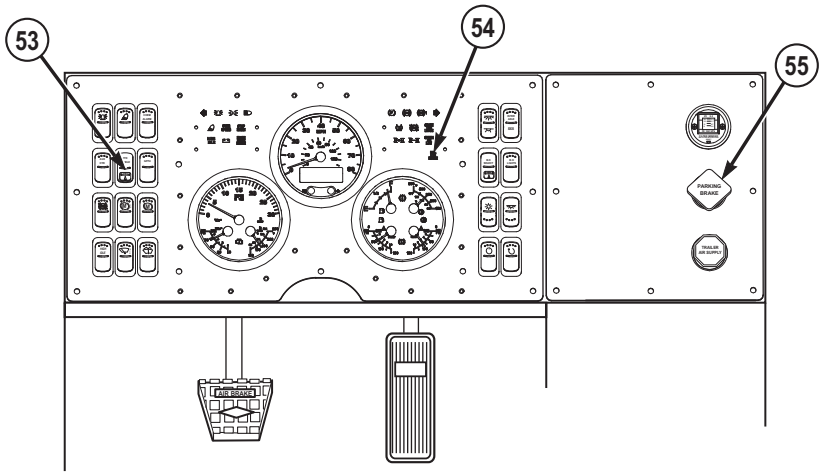


Figure 40.

42. Turn on wrecker service drive lights. (WP 0087)
43. Turn on wrecker emergency flashers. (WP 0096)
44. Turn on disabled vehicle emergency flashers (refer to operator's manual).

NOTE

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

45. Push in PARKING BRAKE control (55).

WARNING

The M984 Wrecker should not be operated at speeds over 15 MPH (24 km/hr) except on paved roads when the operator determines that the vehicle being towed and the terrain allow safe operation. Engine brake switch must ON for all towing operations. Speed in excess of the below table may result in loss of control, serious injury, or death to personnel.

46. Select desired gear (WP 0048) and transport disabled vehicle.

HOOKUP - Continued

Table 1. Maximum Towing Speed.

Terrain Condition	Maximum Speed Towed Load Up To 50,000 lbs (22 700 kg)	Maximum Speed Towed Load Above 50,000 lbs (22 700 kg)
On Road-Level	35 mph (56 km/hr)	30 mph (48 km/hr)
On Road-Hilly	30 mph (48 km/hr)	20 mph (32 km/hr)
Off-Road	15 mph (24 km/hr)	15 mph (24 km/hr)

DISCONNECT

NOTE

The procedures for disconnecting a HEMTT M984A wrecker match those of all other HEMTT series vehicles.

1. Refer to tow HEMTT-rear lift for disconnect procedures.

RETURN RETRIEVAL SYSTEM TO OPERATING CONDITION

1. Remove strap (1) from towing pintle (2) and left tow cylinder (3).

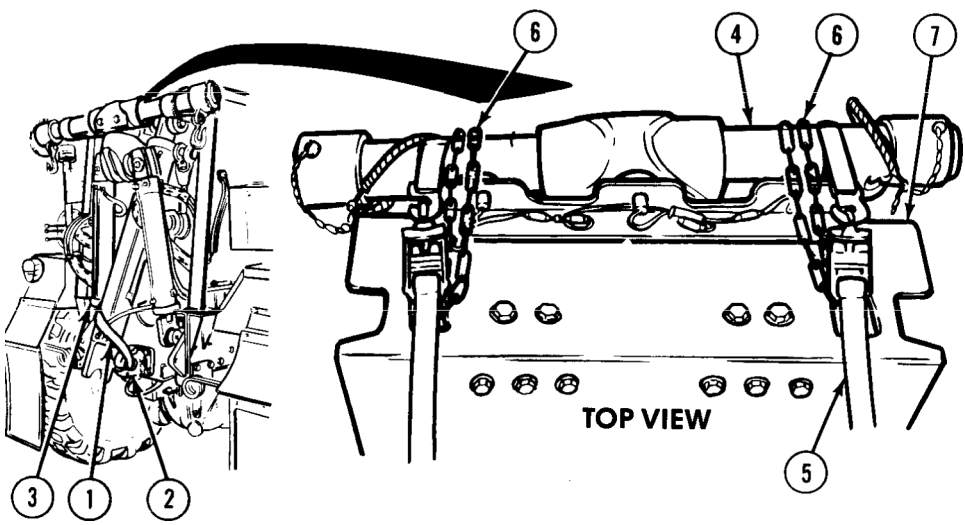


Figure 41.

RETURN RETRIEVAL SYSTEM TO OPERATING CONDITION - Continued

2. Support retrieval cross tube (4) with lifting device.

WARNING

Keep out from under cross tube and tow cylinders after removing strap. Cross tube and cylinders can fall. Failure to comply may result in injury or death to personnel.

3. Remove two straps (5) and 8 ft. (2.5 m) chains (6) that secure cross tube (4) to tow support assembly (7).
4. Lower cross tube (4).
5. Support cross tube (4) with 12 ft. (3.6 m) chain and retrieval system of recovery vehicle.

CAUTION

Make sure chain or sling of lifting device is clear of hydraulic lines. Failure to comply may result in damage to equipment.

6. Attach lifting device to lift cylinder (8).

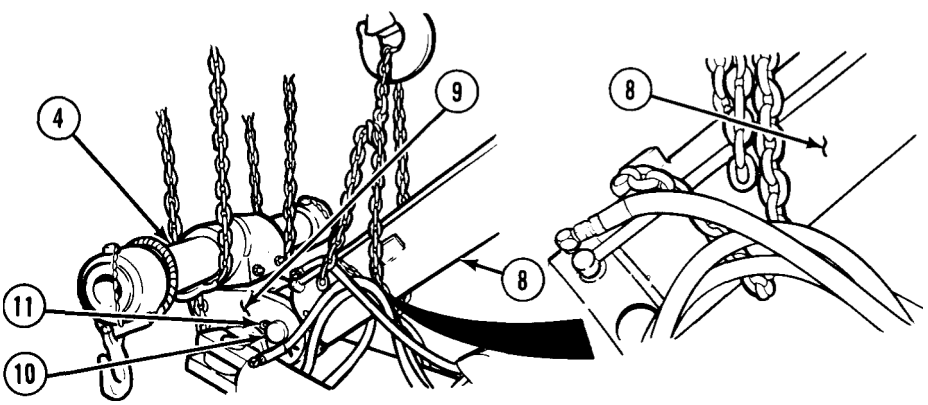


Figure 42.

7. Align lift cylinder (8) with center assembly (9).
8. Install pin (10) with cotter pin (11).

RETURN RETRIEVAL SYSTEM TO OPERATING CONDITION - Continued

9. Remove lifting device from cross tube (4) and lift cylinder (8).

NOTE

If required, use vehicle access ladder to reach upper screw.

10. Install cylinder hose guard (12) with two lockwashers (13) and screws (14).

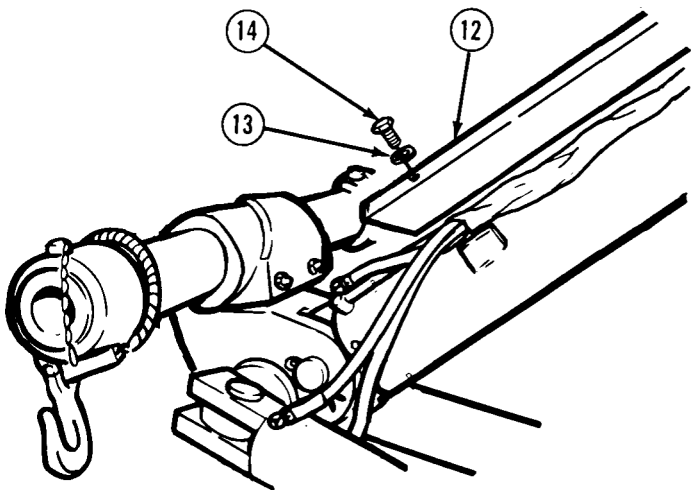


Figure 43.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
TOW M911 - FRONT LIFT

INITIAL SETUP:

Not Applicable

HOOKUP

NOTE

- Each recovery situation is unique and requires assessment to determine if the driveline is suitable for transport. When in doubt, consult with field level maintenance.
- This procedure is a two soldier task.

1. Review procedures for operating retrieval towing system (WP 0058) and prepare retrieval system for operation. (WP 0059)

WARNING

When springs and end caps are removed, cross tube can swing in all directions and adapters may slide off and cause injury or death to personnel.

2. Disconnect two springs (1) from tow cylinders (2).

HOOKUP - Continued

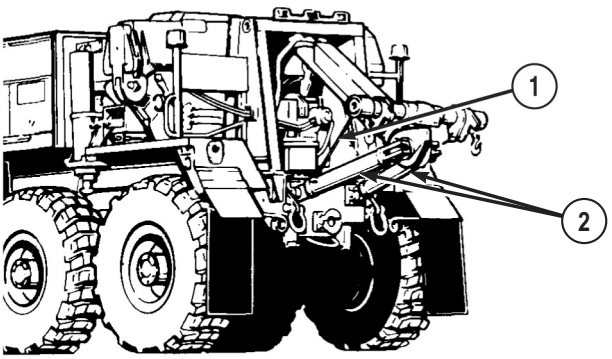


Figure 1.

CAUTION

Both rear towing shackles must be removed from rear tow eyes on wrecker before performing retrieval operations, or damage to tow cylinder may result.

NOTE

Driver side and passenger side towing shackles are removed the same way.

3. Remove two rear towing shackles from wrecker vehicle:

HOOKUP - Continued

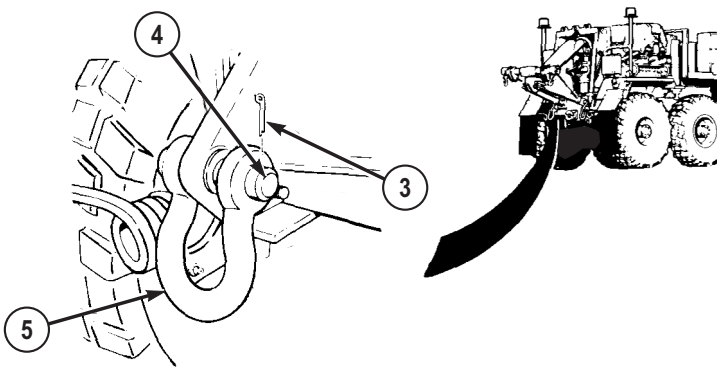


Figure 2.

a. Remove cotter pin (3), pin (4), and towing shackle (5).

b. Replace pin (4) in shackle (5), and cotter pin (3) in pin (4).

c. Repeat Steps (a) and (b) for opposite side towing shackle (5).

d. Stow two rear towing shackles on wrecker vehicle.

4. Pull LIFT CYLINDER control lever (6) to lower cross tube (7) to approximately 3 ft. (1 m) above ground.

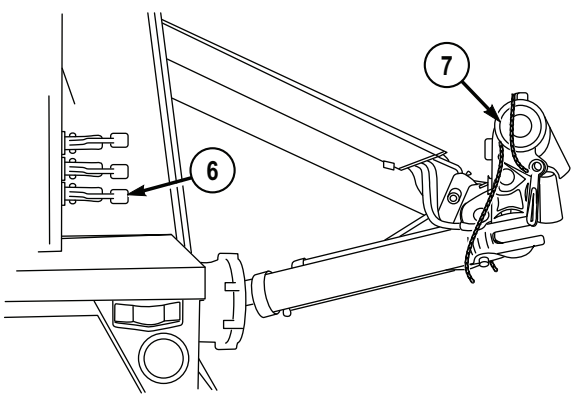


Figure 3.

5. Position wrecker so that cross tube (7) is approximately 1 ft. (30 cm) from tow eyes of disabled vehicle and centered on disabled vehicle.

HOOKUP - Continued

WARNING

When springs and end caps are removed, cross tube can swing in all directions and adapters may slide off and cause injury or death to personnel.

6. Remove quick pins (8) and pins (9) from end caps (10).

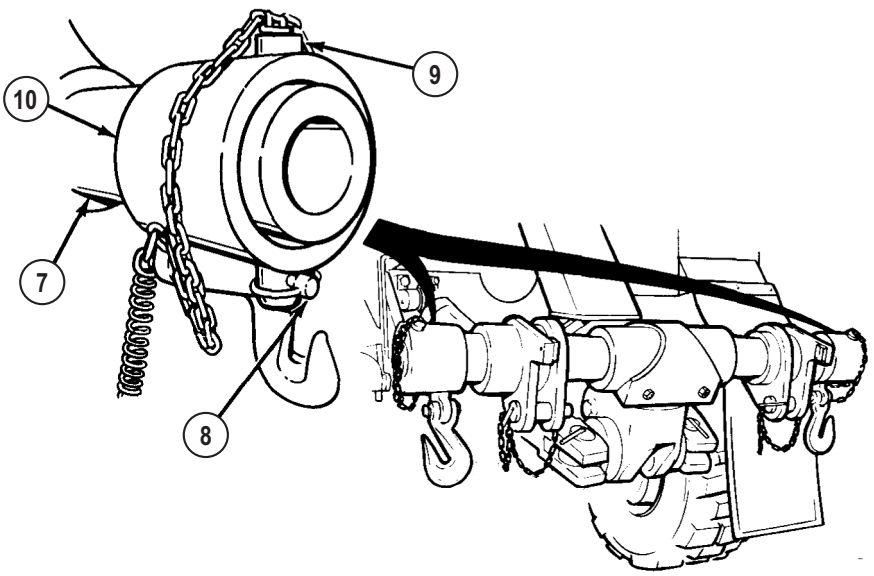


Figure 4.

7. Remove end caps (10) from cross tube (7).
8. Remove two front adapters (11) from cross tube (7) and place on equipment body floor (12).

HOOKUP - Continued

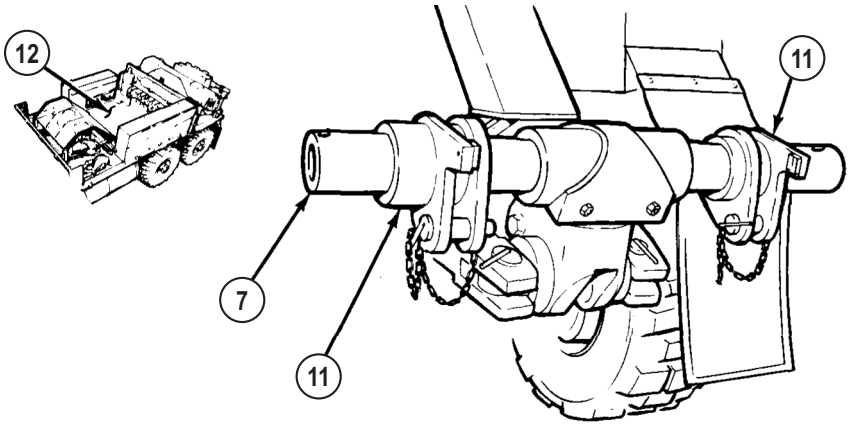


Figure 5.

9. Remove lock handle (13), lock plate (14), and two front tow adapters (15).

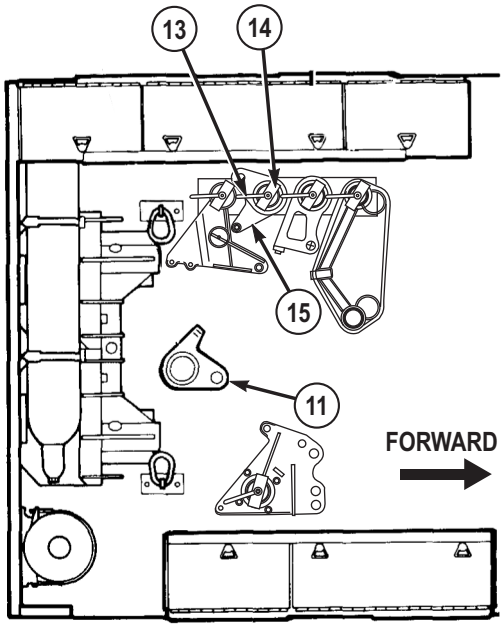


Figure 6.

10. Install two front adapters (11) removed from cross tube (7), lock plate (14), and lock handle (13).

HOOKUP - Continued

11. Install two front tow adapters (15) on cross tube (7).

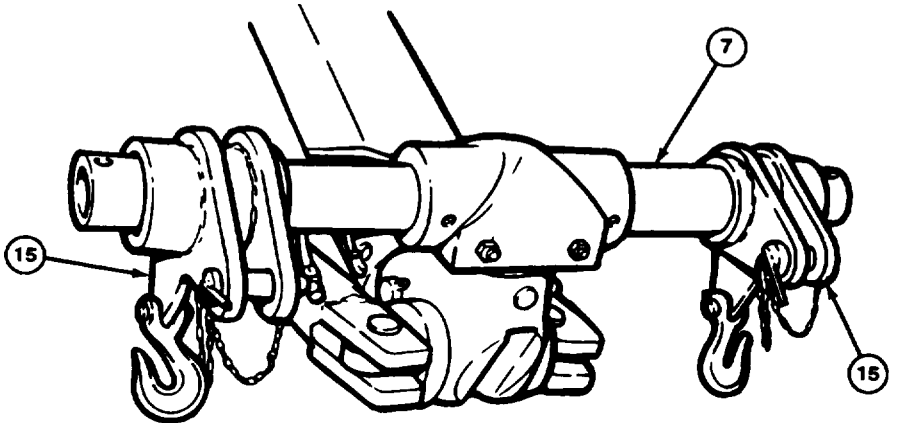


Figure 7.

NOTE

End caps will hang over end of cross tube for M911 adapters.

12. Install two end caps (10) on cross tube (7).

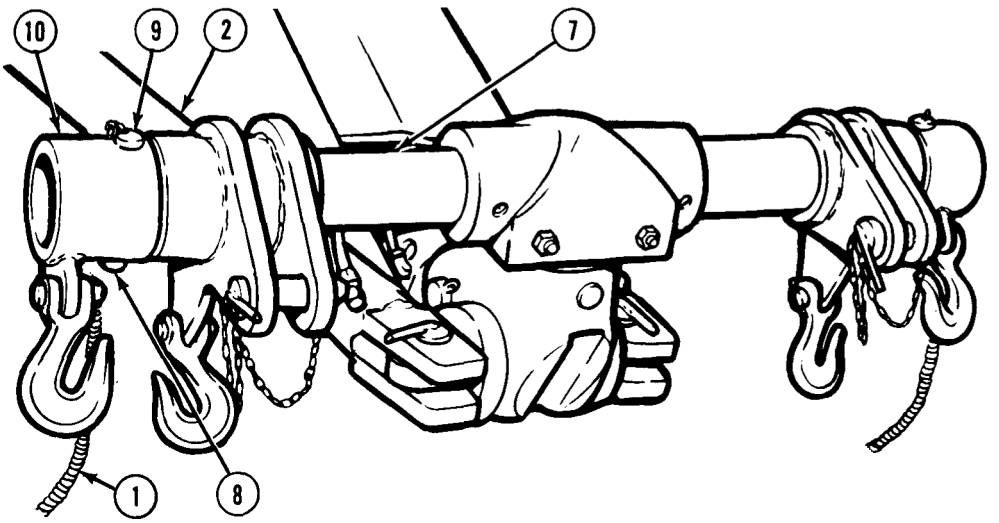


Figure 8.

HOOKUP - Continued

13. Install two pins (9) and quick pins (8).
14. Attach two springs (1) on tow cylinders (2).
15. Remove two quick pins (16) and pins (17) from adapters (15).

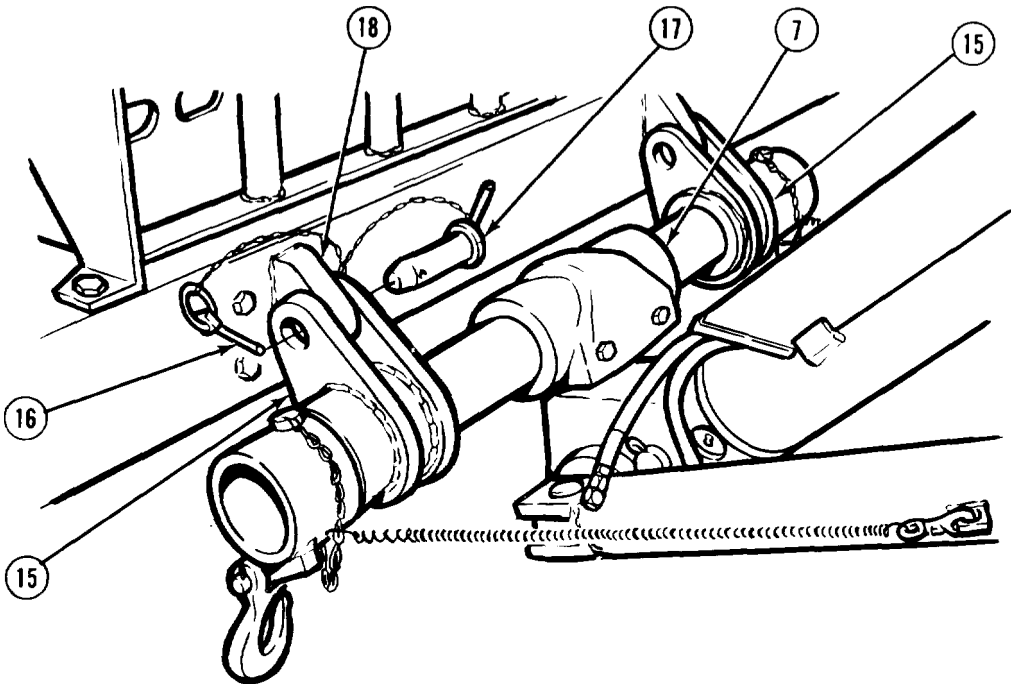


Figure 9.

WARNING

Keep hands and fingers away from adapters and tow eyes when operating retriever controls. Failure to comply may result in injury or death to personnel.

NOTE

If disabled vehicle has towing shackles installed, remove shackles and stow in disabled vehicle.

HOOKUP - Continued

16. Operate retrieval system (WP 0059) and with the aid of an assistant, position cross tube (7) so holes in adapters (15) align with front tow eyes (18).
17. Insert two pins (17) through adapters (15) and front tow eyes (18). Install quick pins (16) in pins (17).

NOTE

Passenger side grab hook is shown.

18. Alternately operate lift and tow cylinders to lower cross tube (7) until adapter grab hooks (19) are under front bumper (20).

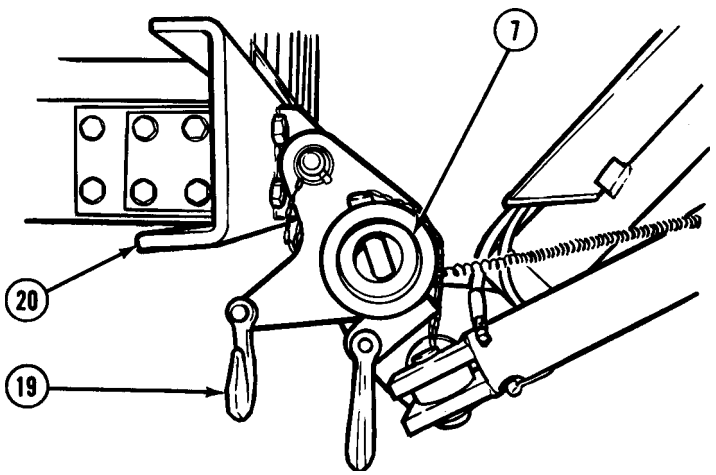


Figure 10.

19. Remove two 16 ft. (5 m) safety chains (21) from stowage.

HOOKUP - Continued

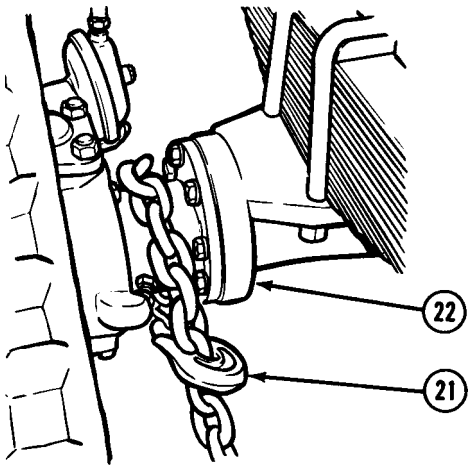


Figure 11.

20. Route one 16 ft. (5 m) safety chain (21) over front axle (22) on disabled vehicle.
21. Hook 16 ft. (5 m) safety chain (21) back into itself (shown) in front of axle (22).
22. Repeat Steps (20) and (21) for other side of disabled vehicle.
23. Pull 16 ft. (5 m) safety chain (21) tight and install chain on adapter grab hook (19).

HOOKUP - Continued

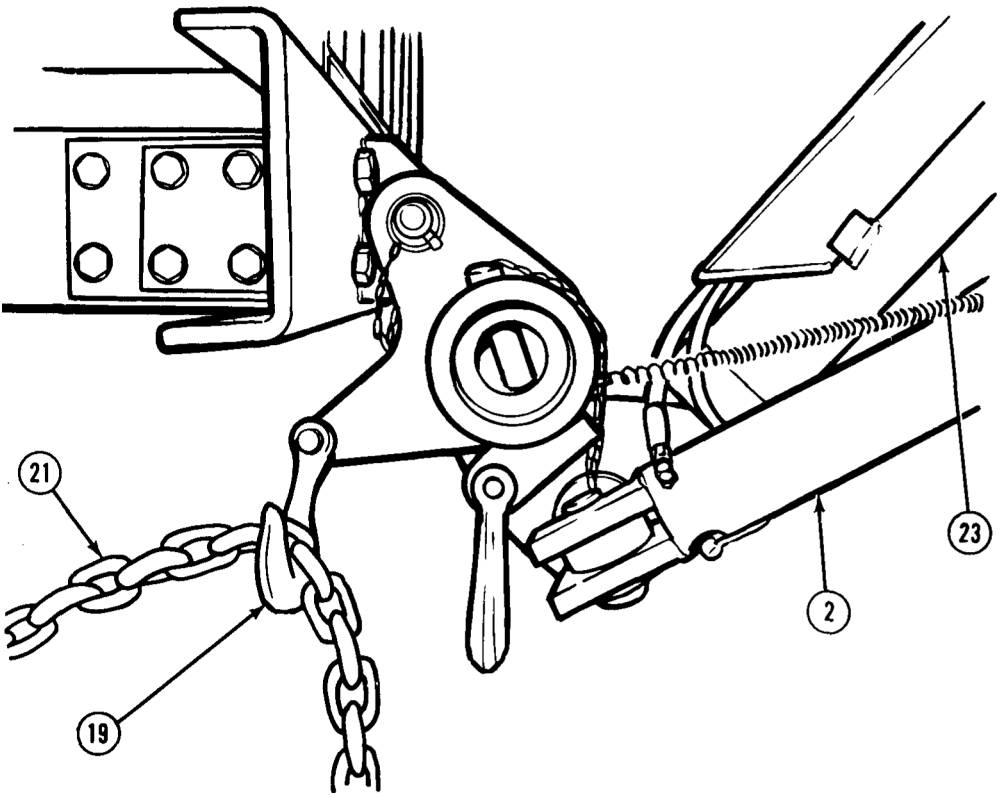


Figure 12.

24. Repeat step (23) for other side of disabled vehicle.
25. Release PARKING BRAKE on disabled vehicle (refer to M911 operator's manual).
26. Alternately, push in TOW and LIFT CYLINDER control levers until tow cylinders (2) are fully retracted.
27. Push in LIFT CYLINDER control lever to retract lift cylinder (23) until slack is removed from 16 ft. (5 m) safety chains (21).

NOTE

Adjust chain slack so safety chains just touch the ground.

28. Route two 16 ft. (5 m) safety chains (21) through safety chain hoop (24) on wrecker and secure grab hook (25) with safety shackle (26).

HOOKUP - Continued

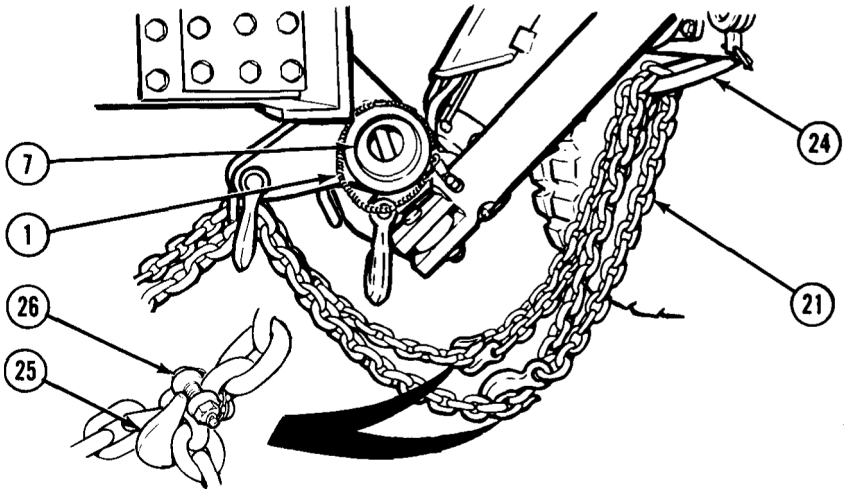


Figure 13.

29. Wrap two springs (1) around cross tube (7) and secure.
30. Remove two air lines (27) from stowage and attach to rear gladhands (28) on wrecker.

CAUTION

Do not route air lines between retrieval cylinders or damage to air lines may result.

NOTE

Rear emergency air line from wrecker must be connected to front emergency gladhand on disabled vehicle. Rear service air line from wrecker must be connected to front service gladhand on disabled vehicle.

31. Route two air lines (27) over cross tube (7) up through M911 grille, and attach to front gladhands (29) on disabled vehicle.

HOOKUP - Continued

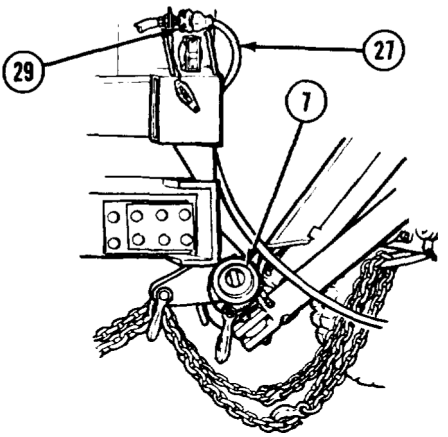


Figure 14.

32. Prepare disabled vehicle for towing (refer to M911 operator's manual).
33. Remove emergency tow lights (30) and tow brackets (31) from stowage.

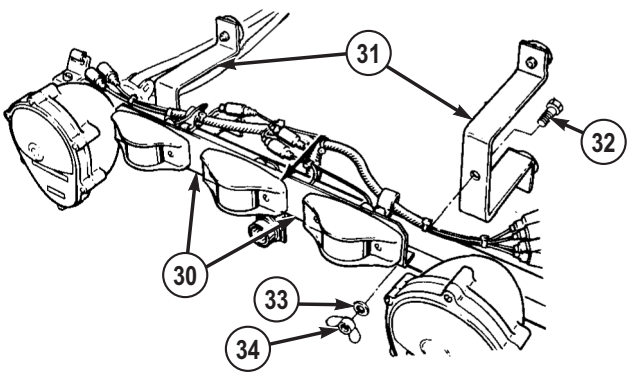


Figure 15.

34. Install two brackets (31) in center holes of emergency tow lights with two screws (32), washers (33), and nuts (34).
35. Install tow lights (30) on rear of disabled vehicle and fasten securely with straps (35).

HOOKUP - Continued

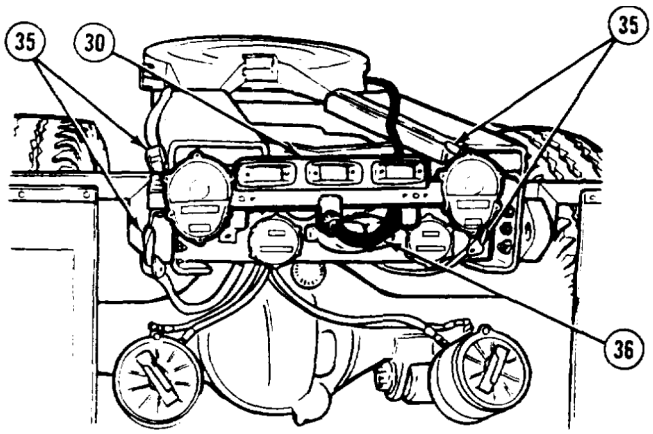


Figure 16.

36. Remove tow light cable (36) from stowage and connect to emergency tow lights (30).

CAUTION

Route cable so it does not drag on ground or interfere with turning tires. Failure to comply may result in damage to equipment.

37. Route other end of tow light cable (36) along disabled vehicle and connect to rear electrical connector (37) on wrecker.

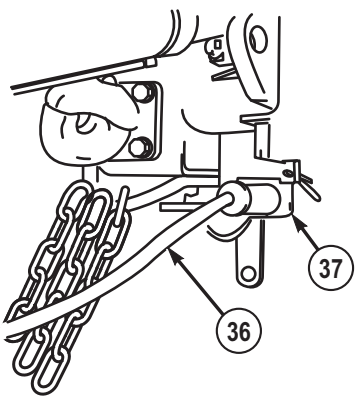


Figure 17.

HOOKUP - Continued

CAUTION

If disabled vehicle is to be towed with all tires in contact with road, this procedure can be accomplished on paved roads only. Failure to comply may result in damage to equipment.

NOTE

- If disabled vehicle is to be lifted and towed, skip to Step (39).
- Operator must allow wrecker air suspension system to completely adjust for added weight of disabled vehicle after vehicle has been raised. Wrecker air suspension system may overcompensate and raise disabled vehicle higher than desired.

38. If disabled vehicle will be towed with all tires in contact with road:
    a. Raise cross tube enough to partially unload disabled vehicle's front suspension.
    b. Keep front tires in firm contact with ground.
    c. Proceed to Step (45).
39. Lock disabled vehicles steering (refer to M911 operator's manual).
40. Set POWER switch (38) to ON position.

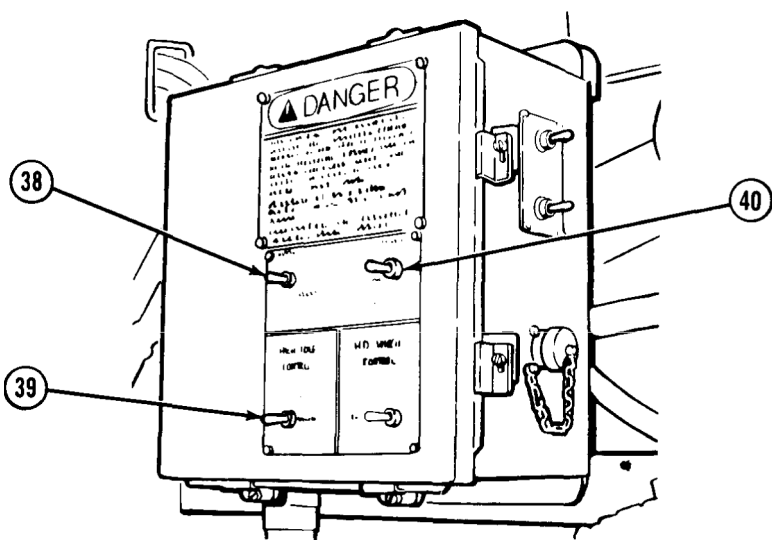


Figure 18.

41. Set HIGH IDLE switch (39) to CONTINUOUS.

HOOKUP - Continued

42. Push and release LATCH switch (40). Engine speed will increase to approximately 1500 rpm.

WARNING

Keep out from under retrieval system and disabled vehicle when raised off ground. Failure to comply may result in injury or death to personnel.

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

CAUTION

- Fully retract both tow cylinders before lifting disabled vehicle. Failure to comply may result in damage to equipment.
- Ensure all rigging is secure. Loose rigging can become entangled. Failure to comply may result in damage to equipment.

NOTE

Operator must allow wrecker air suspension system to completely adjust for added weight of disabled vehicle before raising disabled vehicle to final height of 1 ft. (30 cm).

43. Push LIFT CYLINDER control lever (6) to retract lift cylinder (23) and raise disabled vehicle approximately 3 in. (8 cm):
    a. Once wrecker air suspension system has adjusted for added weight of disabled vehicle, push LIFT CYLINDER control lever (6) to retract lift cylinder (23) and raise disabled vehicle to final height of 1 ft. (30 cm).

HOOKUP - Continued

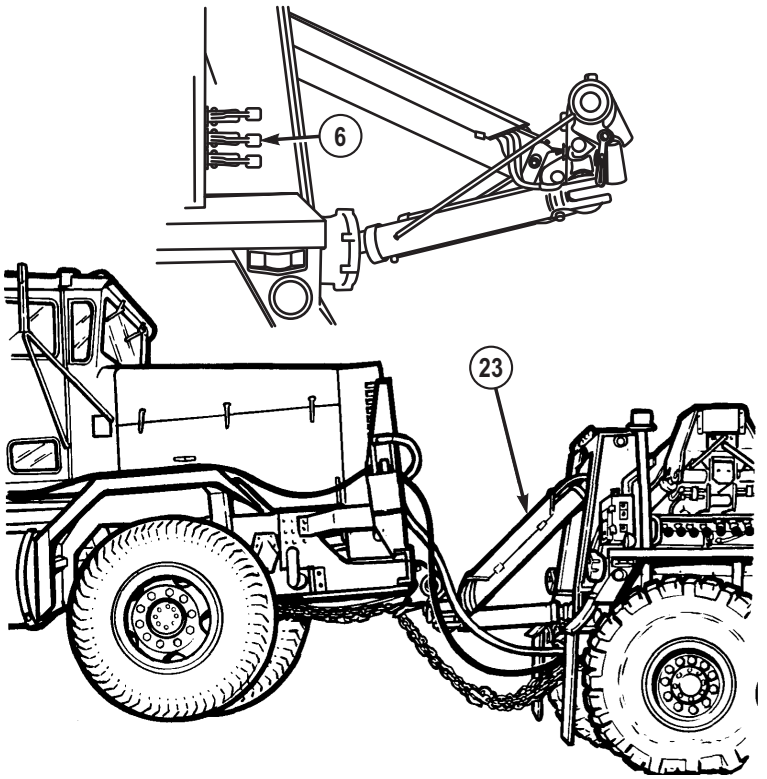


Figure 19.

44. Set POWER switch (38) to OFF position.

HOOKUP - Continued

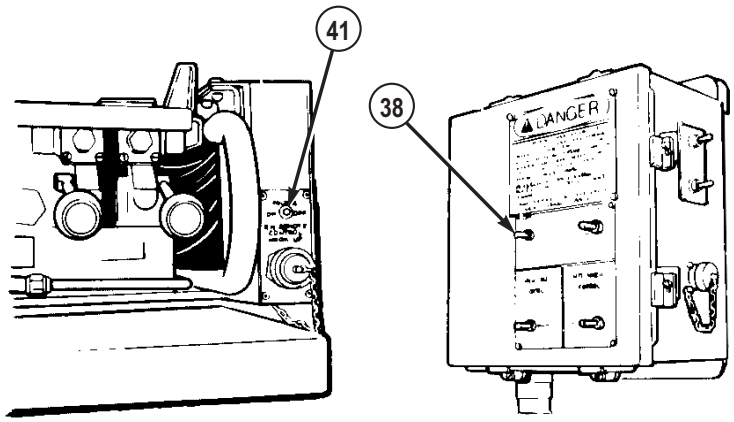


Figure 20.

45. Set POWER switch (41) to OFF position.
46. Set HYD ENABLE switch (42) to off position. MAIN HYD ENABLE indicator (43) will go out.

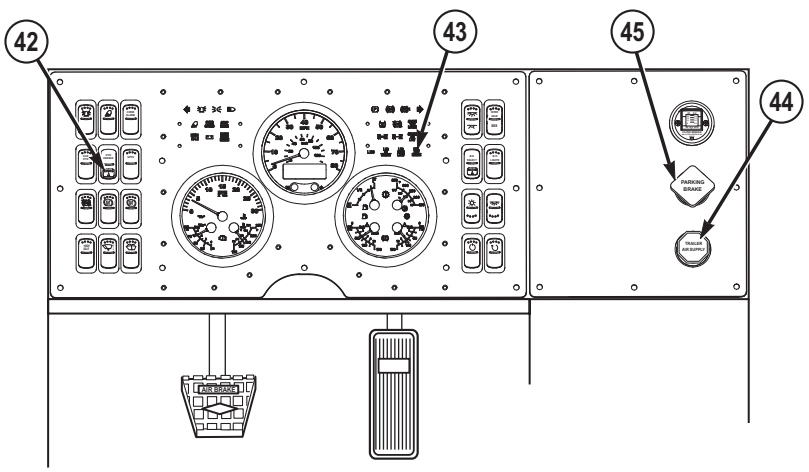


Figure 21.

47. Push in TRAILER AIR SUPPLY control (44).
48. Turn on wrecker service drive lights. (WP 0087)
49. Turn on wrecker emergency flashers (WP 0096) and disabled vehicle.

HOOKUP - Continued

50. Make sure disabled vehicle emergency flashers are turned on (refer to operator's manual).

NOTE

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

51. Push in PARKING BRAKE control (45).

WARNING

The M984 Wrecker should not be operated at speeds over 15 MPH (24 km/hr) except on paved roads when the operator determines that the vehicle being towed and the terrain allow safe operation. Engine brake switch must ON for all towing operations. Speed in excess of the below table may result in loss of control, serious injury, or death to personnel.

52. Select desired gear (WP 0048) and transport disabled vehicle.

Table 1. Maximum Towing Speed.

Terrain Condition	Maximum Speed Towed Load Up To 50,000 lbs (22 700 kg)	Maximum Speed Towed Load Above 50,000 lbs (22 700 kg)
On Road-Level	35 mph (56 km/hr)	30 mph (48 km/hr)
On Road-Hilly	30 mph (48 km/hr)	20 mph (32 km/hr)
Off-Road	15 mph (24 km/hr)	15 mph (24 km/hr)

DISCONNECT

NOTE

This procedure is a two soldier task.

1. Set transmission range selector (1) to N (neutral).

DISCONNECT - Continued

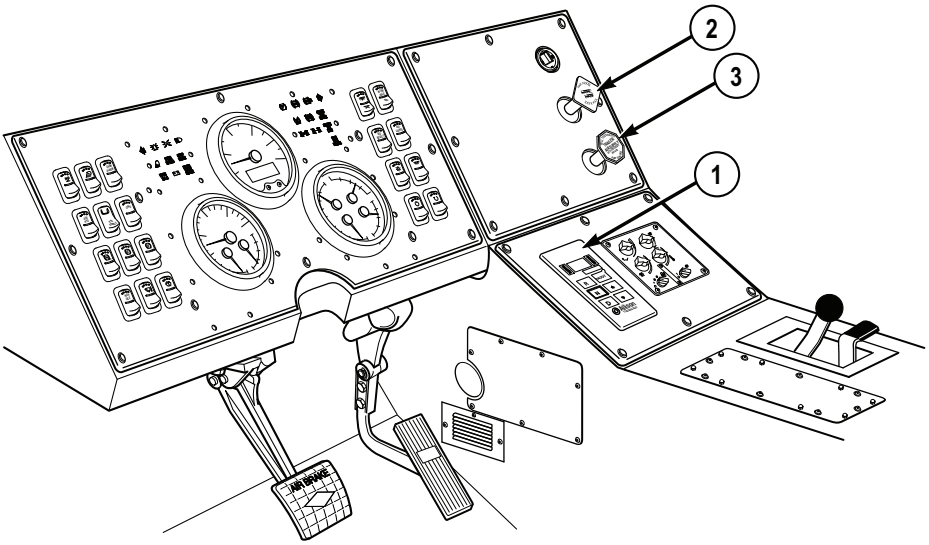


Figure 22.

NOTE

Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

2. Pull out PARKING BRAKE control (2).
3. Pull out TRAILER AIR SUPPLY control (3)

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

NOTE

- After lowering disabled vehicle, extend lift and tow cylinders approximately 2 to 4 inches (50 to 100 mm) to allow for adjustment when removing adapters.

DISCONNECT - Continued

- Expect wrecker air suspension system to deflate air springs to achieve normal ride height once weight of disabled vehicle is removed.

4. Prepare retrieval system for operation, and lower disabled vehicle to ground. (WP 0059)

WARNING

If disabled vehicle's parking brake is inoperative, chock wheels of disabled vehicle (refer to operator's manual). Failure to comply may result in injury or death to personnel.

NOTE

If disabled vehicle parking brake is inoperative; chock wheels.

5. Set PARKING BRAKE on disabled vehicle (refer to M911 operator's manual).
6. Remove tow light cable (4) from wrecker.

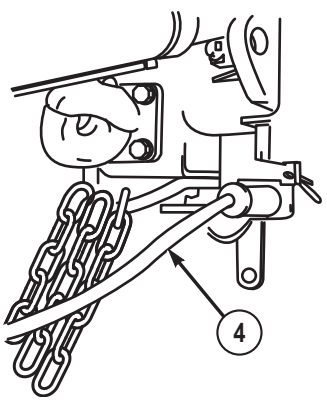


Figure 23.

7. Remove tow light cable (4) from emergency tow lights (5).

DISCONNECT - Continued

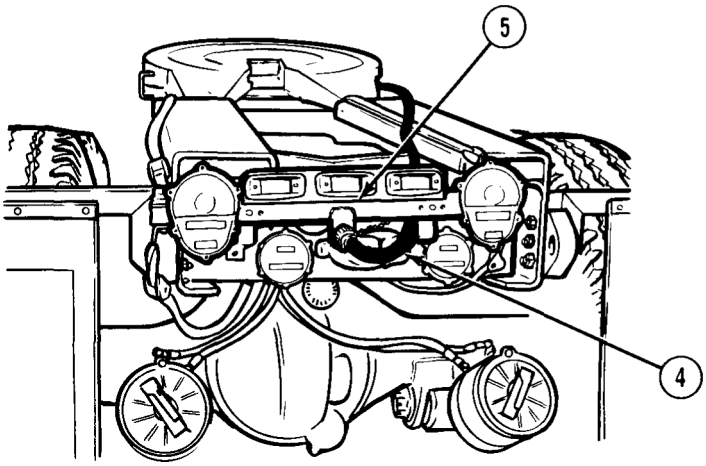


Figure 24.

8. Remove emergency tow lights (5) from disabled vehicle.
9. Remove two nuts (6), washers (7), screws (8), and brackets (9) from emergency tow lights (5). Stow emergency tow lights and brackets.

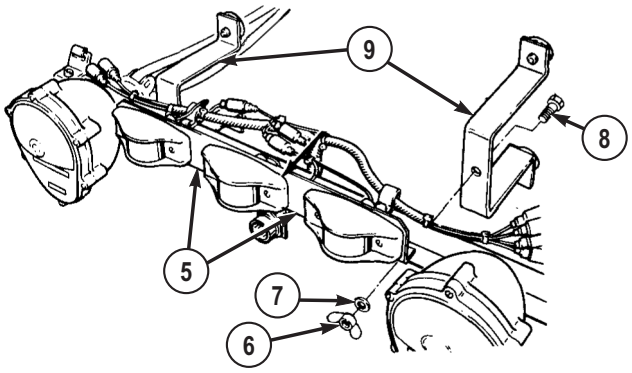


Figure 25.

10. Remove and stow two 16 ft. (5 m) safety chains (10) and air lines (11).

DISCONNECT - Continued

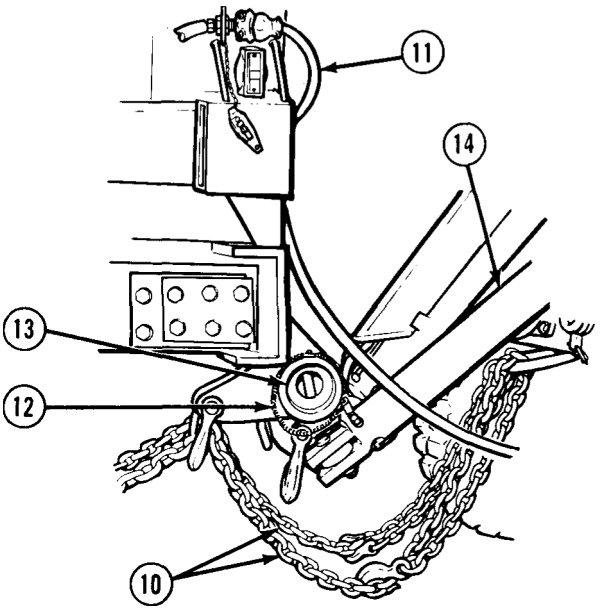


Figure 26.

11. Unwrap two springs (12) from cross tube (13) and connect to tow cylinders (14).
12. Remove two quick pins (15) and pins (16) from adapters (17).

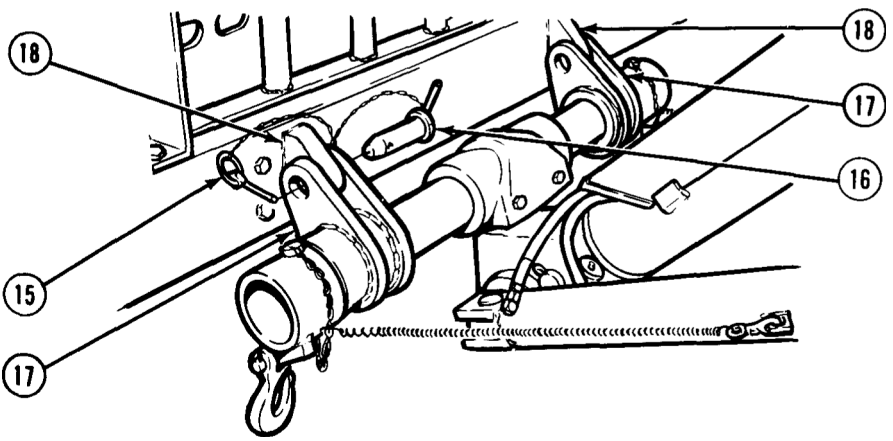


Figure 27.

13. Remove two adapters (17) from tow eyes (18) on disabled vehicle.

DISCONNECT - Continued

14. Install two pins (16) in adapters (17).
15. Install two quick pins (15) in pins (16).
16. Drive wrecker forward several feet (WP 0050) and park. (WP 0056)
17. Remove two springs (12) from tow cylinders (14).

WARNING

When springs and end caps are removed, cross tube can swing in all directions and adapters may slide off and cause injury or death to personnel.

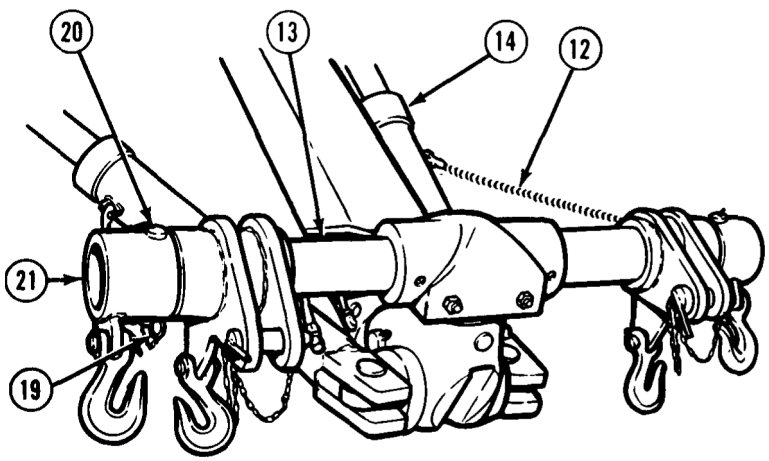


Figure 28.

18. Remove two quick pins (19) and pins (20) from end caps (21).
19. Remove two end caps (21) from cross tube (13).
20. Remove two adapters (17) from cross tube (13) and place on equipment body floor (22).

DISCONNECT - Continued

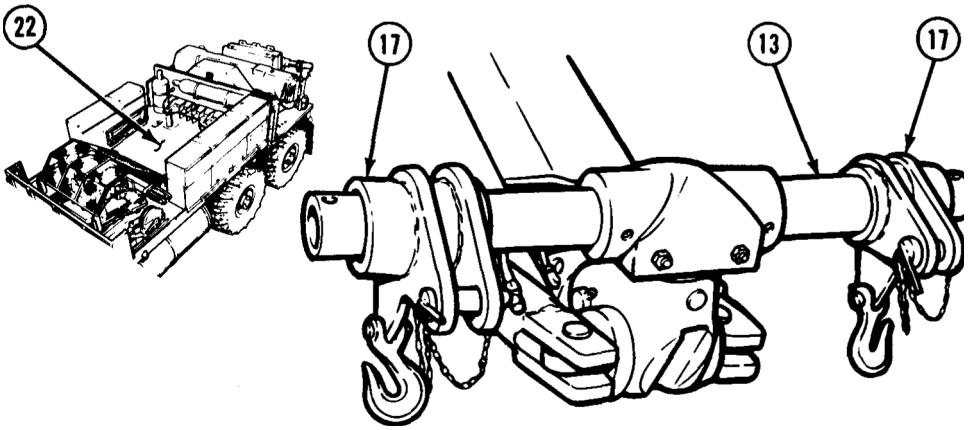


Figure 29.

21. Remove lock handle (23), lock plate (24), and two front tow adapters (25).

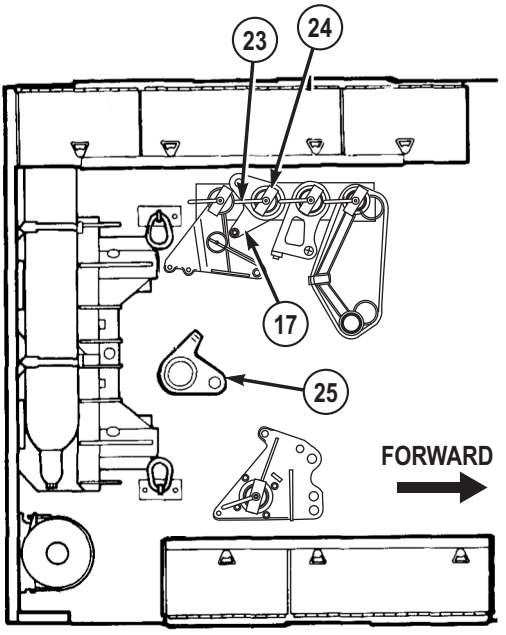


Figure 30.

22. Install two adapters (17) removed from cross tube (13), lock plate (24), and lock handle (23).

DISCONNECT - Continued

23. Install two front adapters (25) on cross tube (13).

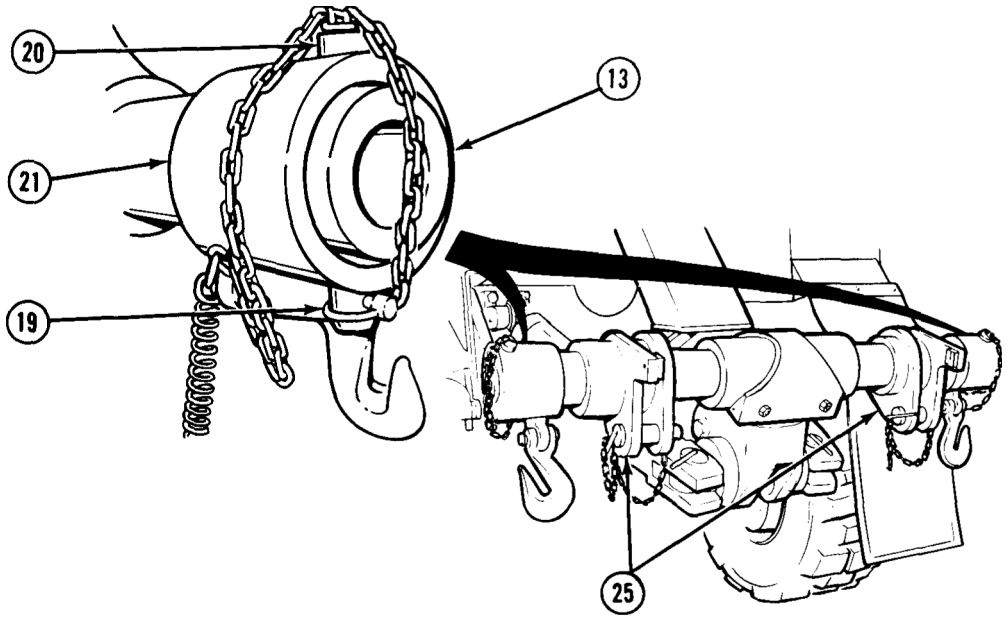


Figure 31.

24. Install two end caps (21) on cross tube (13). Install two pins (20) and quick pins (19).
25. Install two pins (20) and quick pins (19).
26. Install two springs (12) on tow cylinders (14).

DISCONNECT - Continued

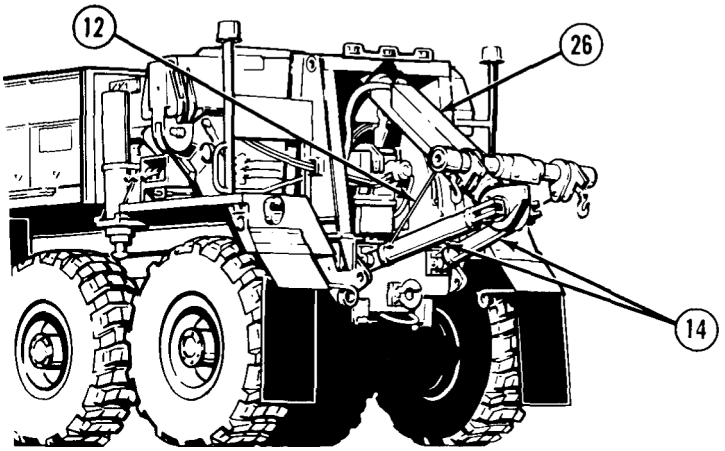


Figure 32.

27. Operate retrieval system (WP 0059) to fully retract lift cylinder (26) and tow cylinders (14).

NOTE

Driver side and passenger side towing shackles are installed the same way.

28. Install two towing shackles (27), pins (28), and cotter pins (29).

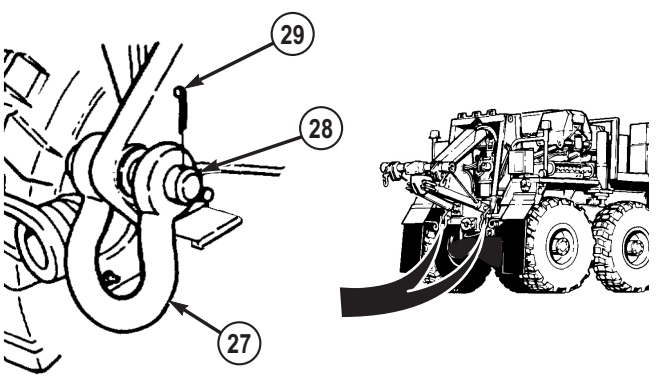


Figure 33.

29. Set POWER switch (30) to OFF position.

DISCONNECT - Continued

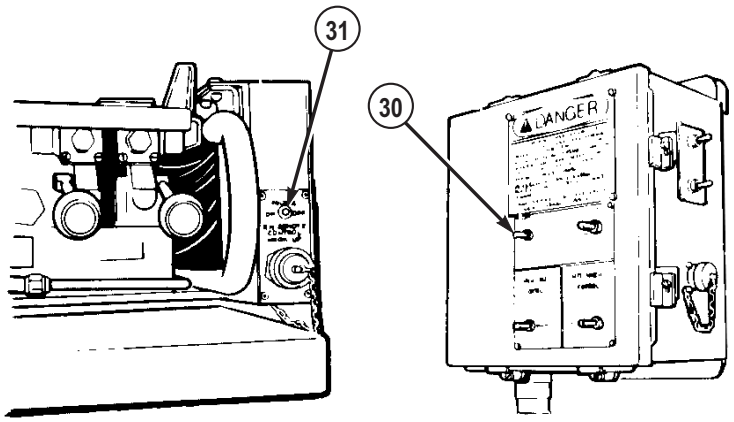


Figure 34.

30. Set POWER switch (31) to OFF position.
31. Turn off wrecker emergency flashers. (WP 0096)
32. Turn off wrecker service drive lights. (WP 0087)
33. Set HYD ENABLE switch (32) to off position. MAIN HYD ENABLE indicator (33) will go out.

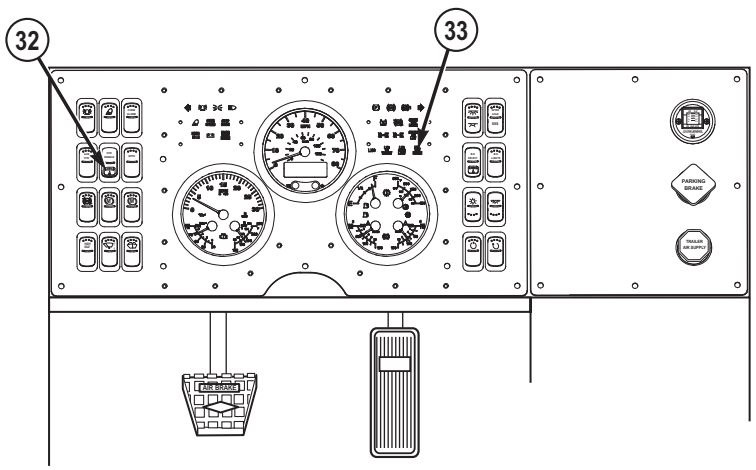


Figure 35.

34. Remove and stow portable beacon lights. (WP 0094)
35. Shut off engine. (WP 0057)

DISCONNECT - Continued

36. Turn off disabled vehicle emergency flashers and remove lock from steering column (refer to operator's manual).

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
TOW M915 - FRONT LIFT

INITIAL SETUP:

Not Applicable

HOOKUP

NOTE

- Each recovery situation is unique and requires assessment to determine if the driveline is suitable for transport. When in doubt, consult with field level maintenance.
- This procedure is a two soldier task.

1. Review procedures for operating retrieval towing system (WP 0058) and prepare retrieval system for operation. (WP 0059)

WARNING

When springs and end caps are removed, cross tube can swing in all directions and adapters may slide off and cause injury or death to personnel.

2. Disconnect two springs (1) from tow cylinders (2).

HOOKUP - Continued

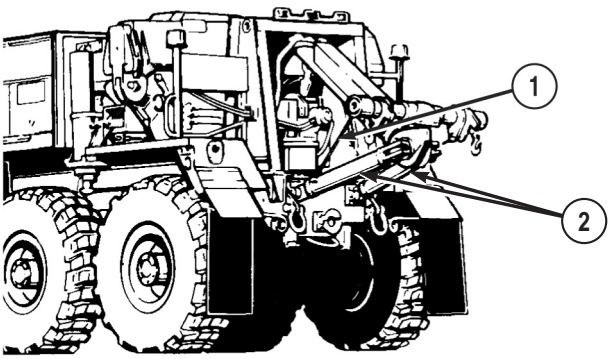


Figure 1.

CAUTION

Both rear towing shackles must be removed from rear tow eyes on wrecker before performing retrieval operations, or damage to tow cylinder may result.

NOTE

Driver side and passenger side towing shackles are removed the same way.

3. Remove two rear towing shackles from wrecker vehicle:

HOOKUP - Continued

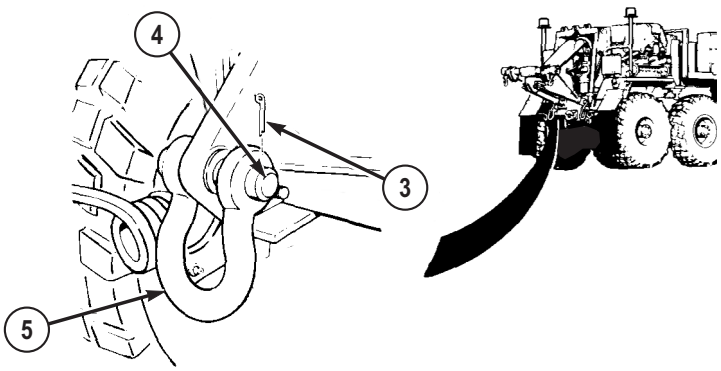


Figure 2.

a. Remove cotter pin (3), pin (4), and towing shackle (5).

b. Replace pin (4) in shackle (5), and cotter pin (3) in pin (4).

c. Repeat Steps (a) and (b) for opposite side towing shackle (5).

d. Stow two rear towing shackles on wrecker vehicle.

4. Pull LIFT CYLINDER control lever (6) to lower cross tube (7) to approximately 3 ft. (1 m) above ground.

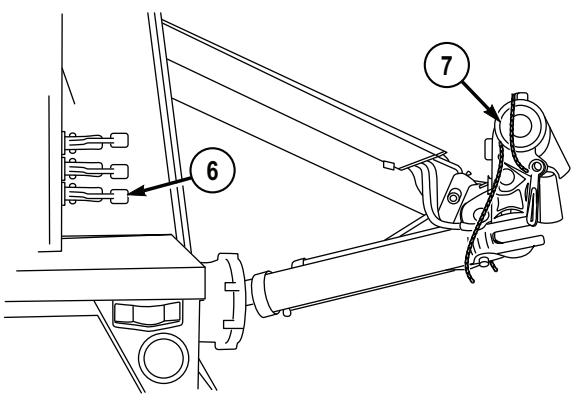


Figure 3.

5. Position wrecker so that cross tube (7) is approximately 1 ft. (30 cm) from tow eyes of disabled vehicle and centered on disabled vehicle.

HOOKUP - Continued

WARNING

When springs and end caps are removed, cross tube can swing in all directions and adapters may slide off and cause injury or death to personnel.

6. Remove two quick pins (8) and pins (9) from two end caps (10).

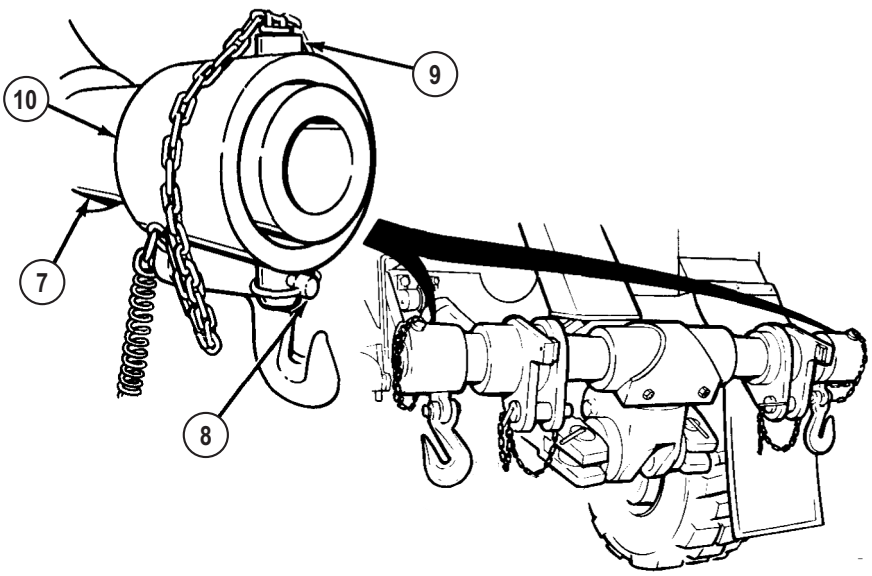


Figure 4.

7. Remove two end caps (10) from cross tube (7).
8. Remove two front adapters (11) from cross tube (7) and place on equipment body floor (12).

HOOKUP - Continued

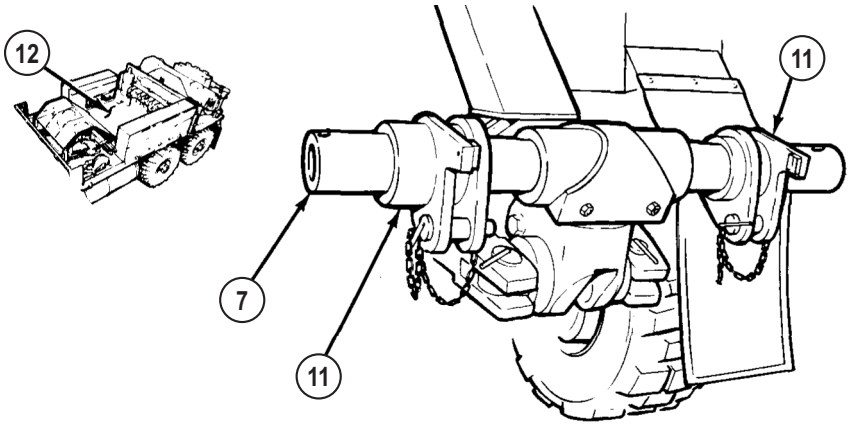


Figure 5.

9. Remove lock handle (13), lock plate (14), and two M915 front tow adapters (15).

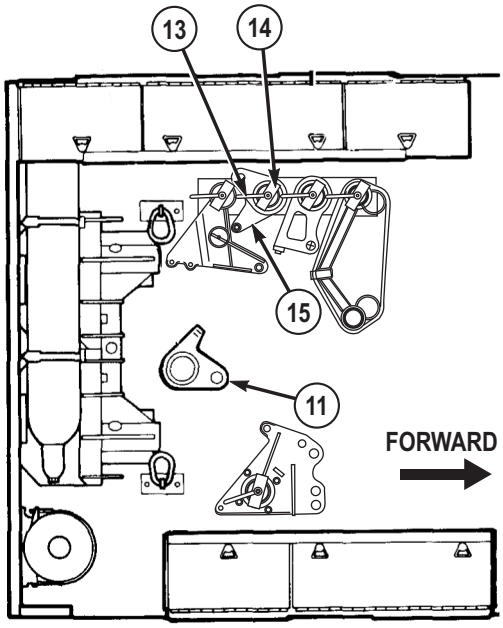


Figure 6.

10. Install two front adapters (11) removed from cross tube, lock plate (14), and lock handle (13).

HOOKUP - Continued

11. Remove two 5 in. (127 mm) spacers (16) from stowage.

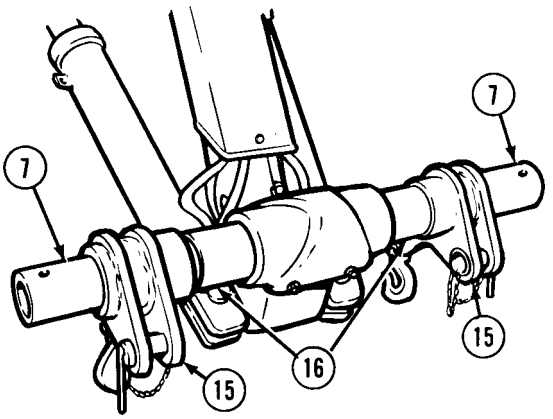
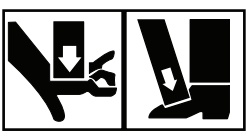


Figure 7.

12. Install two 5 in. (127 mm) spacers (16) on cross tube (7).

WARNING



Adapters and end caps may slide off when installing and cause injury or death to personnel.

13. Install two front tow adapters (15) on cross tube (7).

NOTE

End caps will hang over end of cross tube for M915 adapters.

14. Install two end caps (10) on cross tube (7).

HOOKUP - Continued

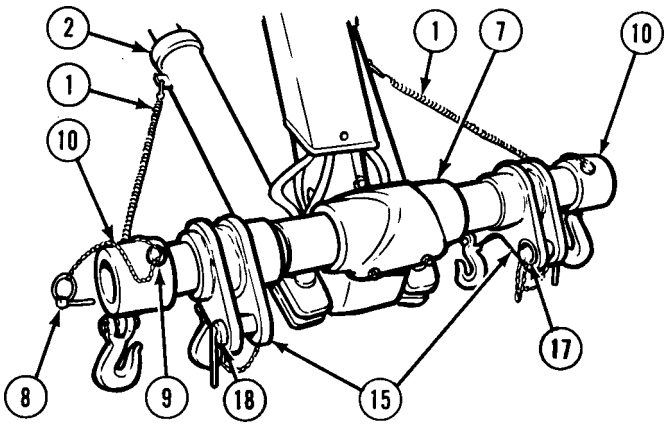


Figure 8.

15. Install pins (9) and quick pins (8).
16. Install two springs (1) on tow cylinders (2).
17. Remove two quick pins (17) and pins (18) from adapters (15).

WARNING

Keep hands and fingers away from adapters and tow eyes when operating retriever controls. Failure to comply may result in injury or death to personnel.

NOTE

If disabled vehicle has towing shackles installed, remove shackles and stow in disabled vehicle. Keep pins to connect adapters to tow eyes.

18. Operate the retrieval system (WP 0059) and with aid of an assistant, position cross tube (7) so holes in adapters (15) align with front tow eyes (19).

HOOKUP - Continued

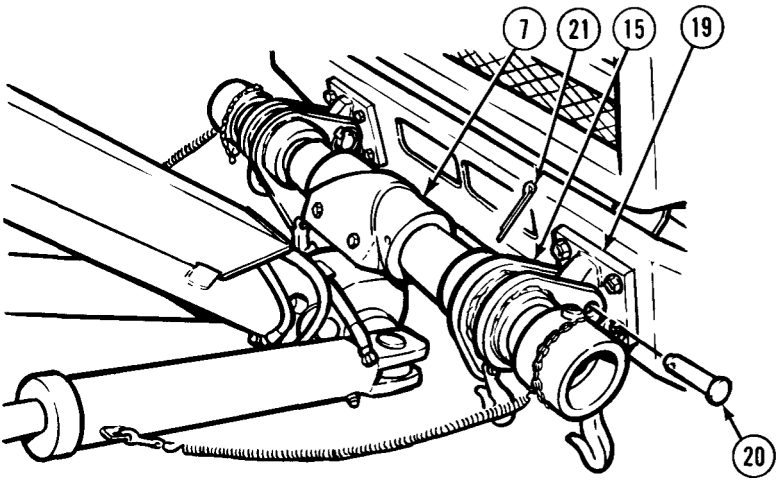


Figure 9.

19. Insert two shackle pins (20) through adapters (15) and front tow eyes (19). Install cotter pins (21) in pins (20).

NOTE

Refer to Figure below for correct angle of adapters.

20. Alternately operate lift and tow cylinder controls to lower cross tube (7) until top edge of adapters (15) are even with top edge of front tow eyes (19).

HOOKUP - Continued

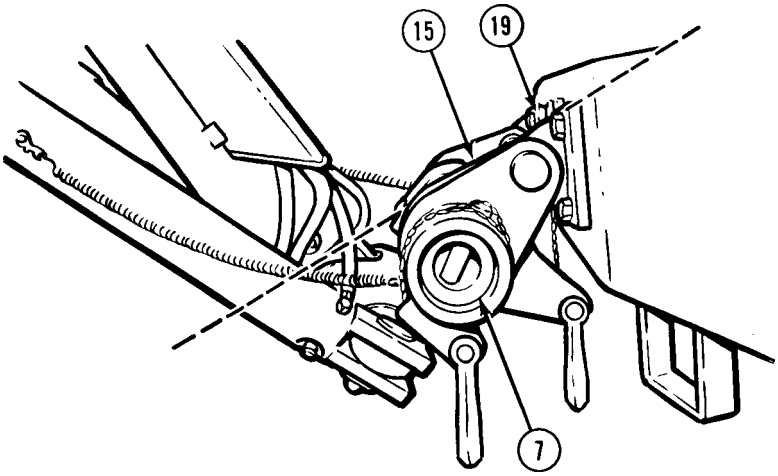


Figure 10.

21. Remove two 16 ft. (5 m) safety chains (22) from stowage.

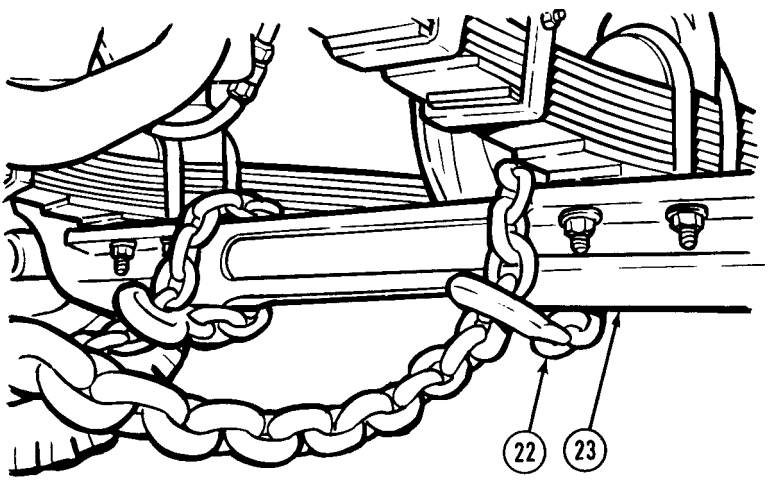


Figure 11.

22. Route one 16 ft. (5 m) safety chain (22) over front axle (23) on disabled vehicle.
23. Hook 16 ft. (5 m) safety chain (22) back into itself (as shown) in front of axle (23).
24. Repeat Steps (22) and (23) for other side of disabled vehicle.
25. Pull 16 ft. (5 m) safety chain (22) tight, and install on adapter grab hook (24).

HOOKUP - Continued

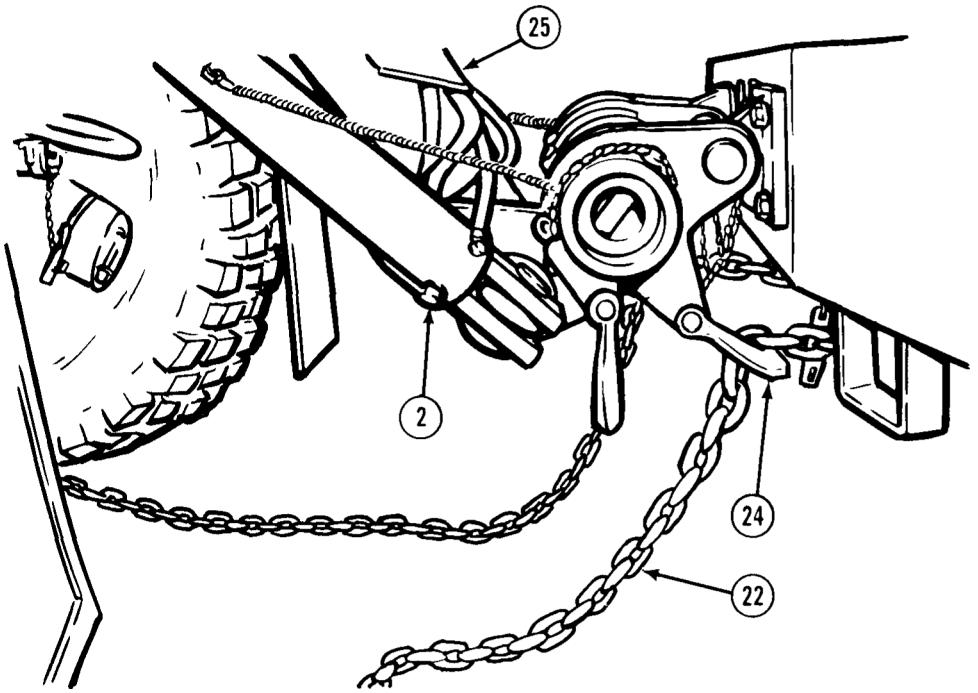


Figure 12.

26. Repeat Step (25) for other side of disabled vehicle.
27. Release PARKING BRAKE on disabled vehicle (refer to M915 operator's manual).

CAUTION

Do not let lift cylinder contact pintle hook, or damage to cylinder may result.

28. Operate retrieval system (WP 0059) until tow cylinders (2) are fully retracted.
29. Push in LIFT CYLINDER control lever to retract lift cylinder (25) until slack is removed from safety chains (22).

NOTE

Adjust chain slack so safety chains do not touch ground.

30. Route two 16 ft. (5 m) safety chains (22) through safety chain hoop (26) on wrecker and secure grab hook (27) with safety shackle (28).

HOOKUP - Continued

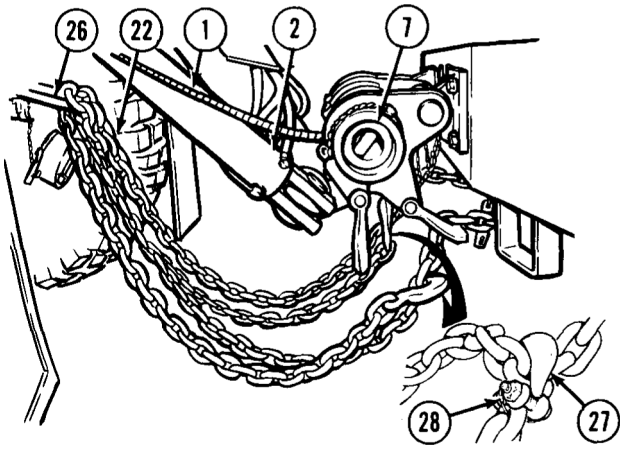


Figure 13.

31. Disconnect two springs (1) from tow cylinders (2) and wrap around cross tube (7).
32. Remove two air lines (29) from stowage and attach to rear gladhands (30) on wrecker.

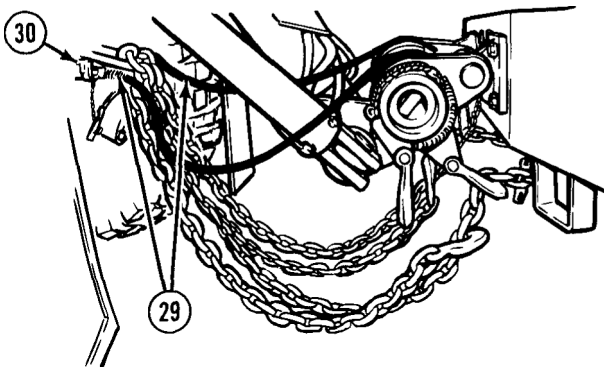


Figure 14.

CAUTION

Do not route air lines between retrieval cylinders or damage to air lines may result.

HOOKUP - Continued

NOTE

Rear emergency air lines from wrecker must be connected to front emergency gladhand on disabled vehicle. Rear service air lines from wrecker must be connected to front service gladhand on disabled vehicle.

33. Remove two air lines (29) over cross tube (7) and attach to front gladhands (31) on disabled vehicle.

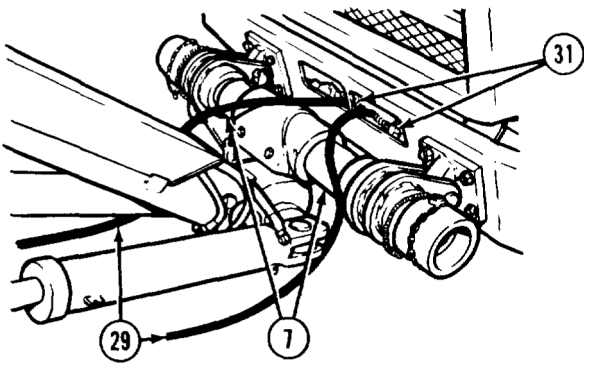


Figure 15.

34. Prepare disabled vehicle for towing (refer to M915 operator's manual).
35. Remove emergency tow lights (32) and two brackets (33) from stowage.

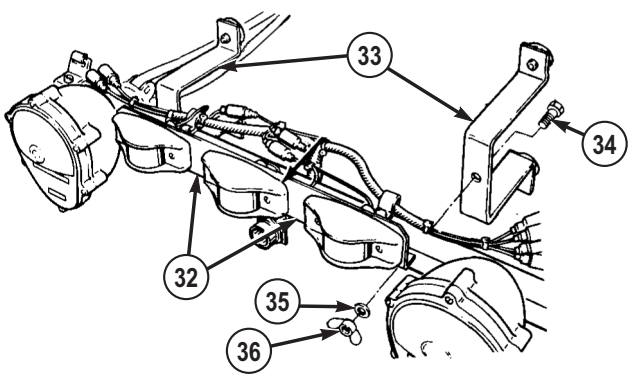


Figure 16.

HOOKUP - Continued

36. Install two brackets (33) in outer holes of emergency tow lights with two screws (34), washers (35), and nuts (36).

37. Install emergency tow lights (32) on rear of M915 and fasten securely with straps (37).

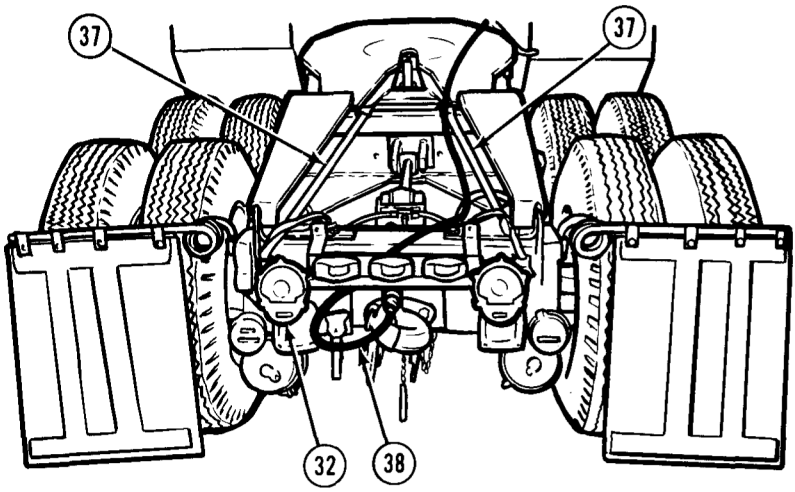


Figure 17.

38. Remove tow light cable (38) from stowage and connect to emergency tow lights (32).

CAUTION

Route cable so it does not drag on ground or interfere with turning tires. Failure to comply may result in damage to equipment.

39. Route other end of tow light cable (38) along disabled vehicle and connect to rear electrical connector (39) on wrecker.

HOOKUP - Continued

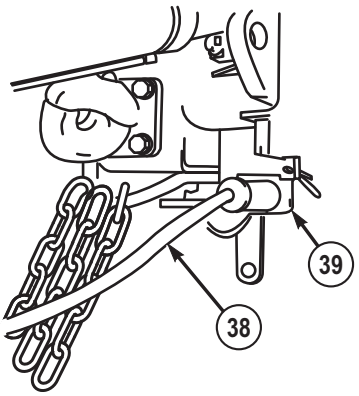


Figure 18.

CAUTION

If disabled vehicle is to be towed with all tires in contact with road, this procedure can be accomplished on paved roads only. Failure to comply may result in damage to equipment.

NOTE

- If disabled vehicle is to be lifted and towed, skip to Step (41).
- Operator must allow wrecker air suspension system to completely adjust for added weight of disabled vehicle after vehicle has been raised. Wrecker air suspension system may overcompensate and raise disabled vehicle higher than desired.

40. If disabled vehicle will be towed with all tires in contact with road:
    a. Raise cross tube enough to partially unload disabled vehicle's front suspension.
    b. Keep front tires in firm contact with ground.
    c. Proceed to Step (47).
41. Lock disabled vehicle's steering (refer to M915 operator's manual).
42. Set POWER switch (40) to ON position.

HOOKUP - Continued

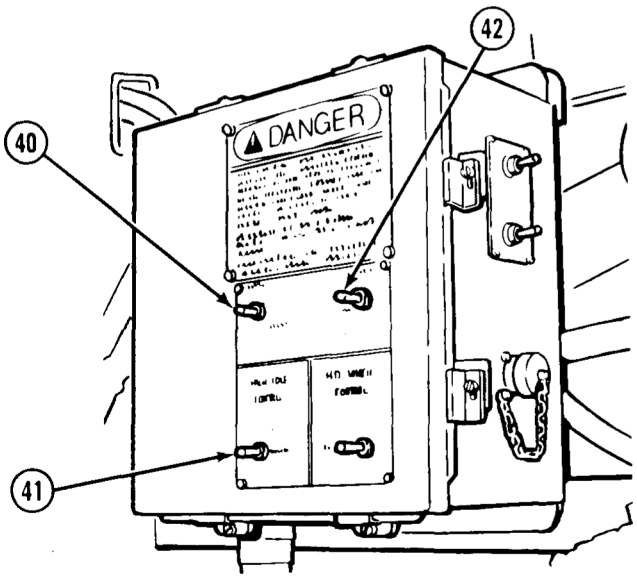


Figure 19.

43. Set HIGH IDLE switch (41) to CONTINUOUS.
44. Push and release LATCH switch (42). Engine speed will increase to approximately 1500 rpm.

WARNING

Keep out from under retrieval system and disabled vehicle when raised off ground. Failure to comply may result in injury or death to personnel.

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

HOOKUP - Continued

CAUTION

- Fully retract both tow cylinders before lifting disabled vehicle. Failure to comply may result in damage to equipment.
- Ensure all rigging is secure. Loose rigging can become entangled. Failure to comply may result in damage to equipment.

NOTE

Operator must allow wrecker air suspension system to completely adjust for added weight of disabled vehicle before raising disabled vehicle to final height of 1 ft. (30 cm).

45. Push LIFT CYLINDER control lever (6) to retract lift cylinder (25) and raise disabled vehicle approximately 3 in. (8 cm):
    a. Once wrecker air suspension system has adjusted for added weight of disabled vehicle, push LIFT CYLINDER control lever (6) to retract lift cylinder (25) and raise disabled vehicle to final height of 1 ft. (30 cm).

HOOKUP - Continued

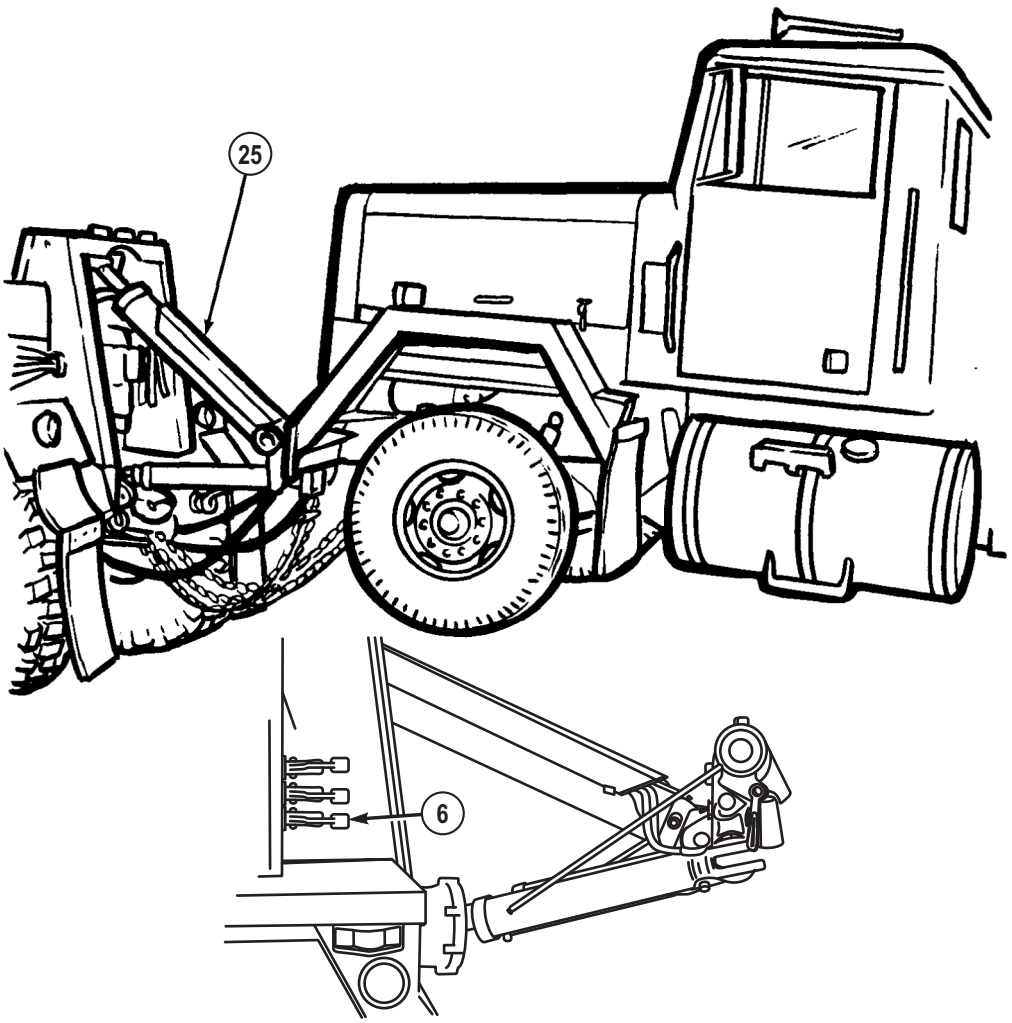


Figure 20.

46. Set POWER switch (40) to OFF position.

HOOKUP - Continued

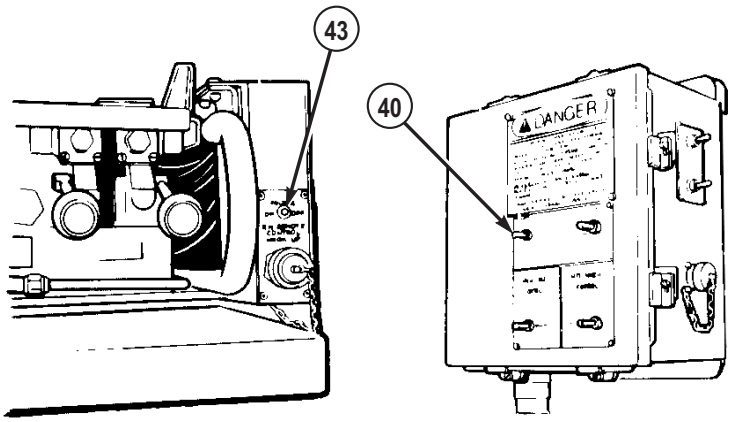


Figure 21.

47. Set POWER switch (43) to OFF position.
48. Set HYD ENABLE switch (44) to off position. MAIN HYD ENABLE indicator (45) will go out.

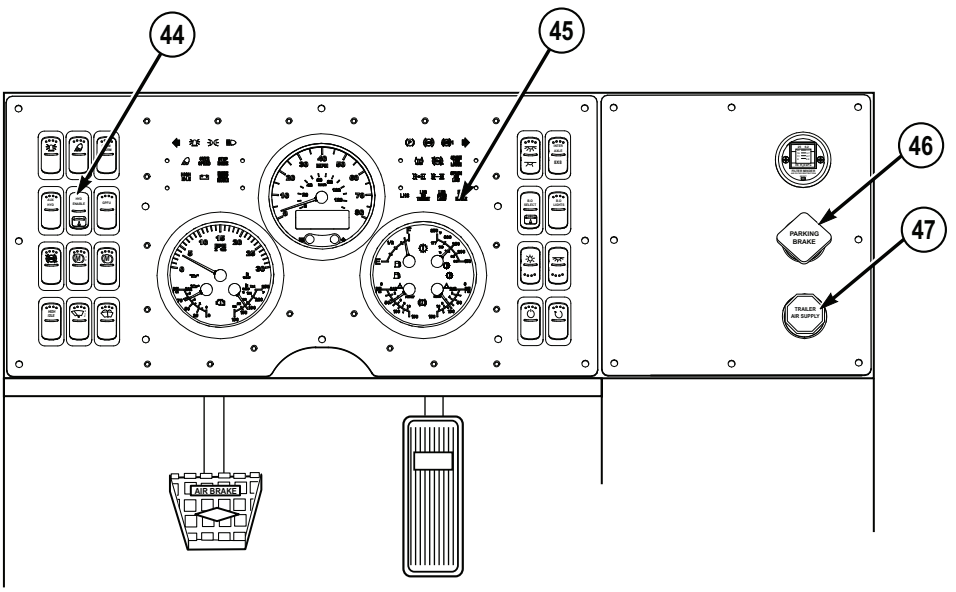


Figure 22.

49. Push in TRAILER AIR SUPPLY control (47).

HOOKUP - Continued

50. Turn on wrecker service drive lights. (WP 0087)
51. Turn on wrecker emergency flashers. (WP 0096)
52. Make sure disabled vehicle emergency flashers are turned on (refer to operator's manual).

NOTE

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

53. Push in PARKING BRAKE control (42).

WARNING

The M984 Wrecker should not be operated at speeds over 15 MPH (24 km/hr) except on paved roads when the operator determines that the vehicle being towed and the terrain allow safe operation. Engine brake switch must ON for all towing operations. Speed in excess of the below table may result in loss of control, serious injury, or death to personnel.

54. Select desired gear (WP 0048) and transport disabled vehicle.

Table 1. Maximum Towing Speed.

Terrain Condition	Maximum Speed Towed Load Up To 50,000 lbs (22 700 kg)	Maximum Speed Towed Load Above 50,000 lbs (22 700 kg)
On Road-Level	35 mph (56 km/hr)	30 mph (48 km/hr)
On Road-Hilly	30 mph (48 km/hr)	20 mph (32 km/hr)
Off-Road	15 mph (24 km/hr)	15 mph (24 km/hr)

DISCONNECT

NOTE

This procedure is a two soldier task.

1. Set transmission range selector (1) to N (neutral).

DISCONNECT - Continued

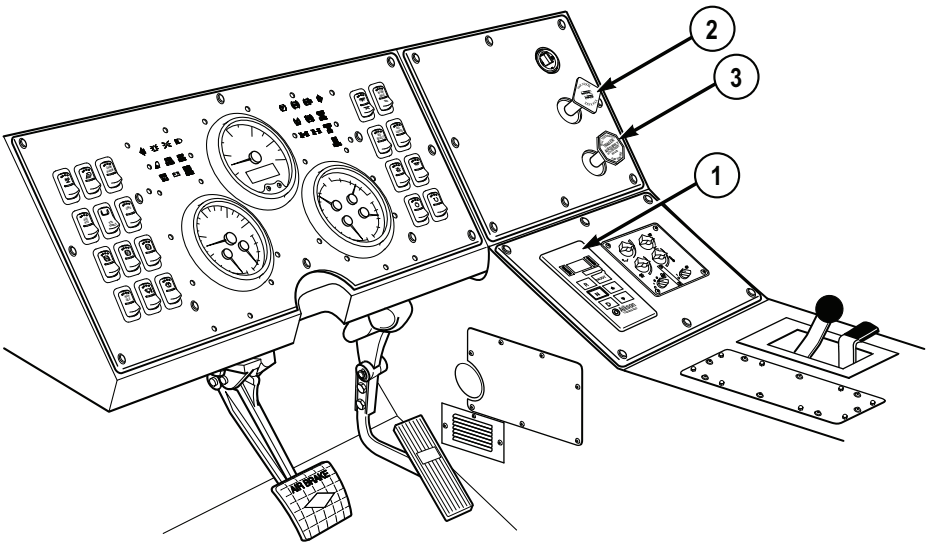


Figure 23.

NOTE

Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

2. Pull out PARKING BRAKE control (2).
3. Pull TRAILER AIR SUPPLY control (3).

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

NOTE

- After lowering disabled vehicle, extend lift and tow cylinders approximately 2 to 4 inches (50 to 100 mm) to allow for adjustment when removing adapters.

DISCONNECT - Continued

- Expect wrecker air suspension system to deflate air springs to achieve normal ride height once weight of disabled vehicle is removed.

4. Prepare retrieval system for operation, and lower disabled vehicle to ground (WP 0059) until safety chain at front axle is slack.

WARNING

If disabled vehicle's parking brake is inoperative, chock wheels of disabled vehicle (refer to operator's manual). Failure to comply may result in injury or death to personnel.

NOTE

If disabled vehicle parking brake is inoperative; install wheel chocks.

5. Set PARKING BRAKE on disabled vehicle (refer to M915 operator's manual).
6. Remove tow light cable (4) from wrecker.

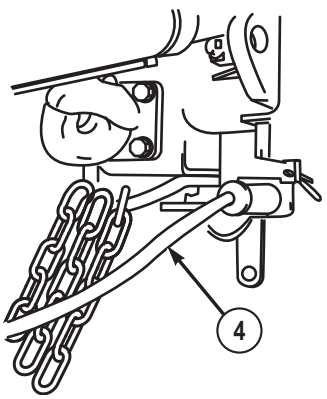


Figure 24.

7. Remove tow light cable (4) from emergency tow lights (5) and stow.

DISCONNECT - Continued

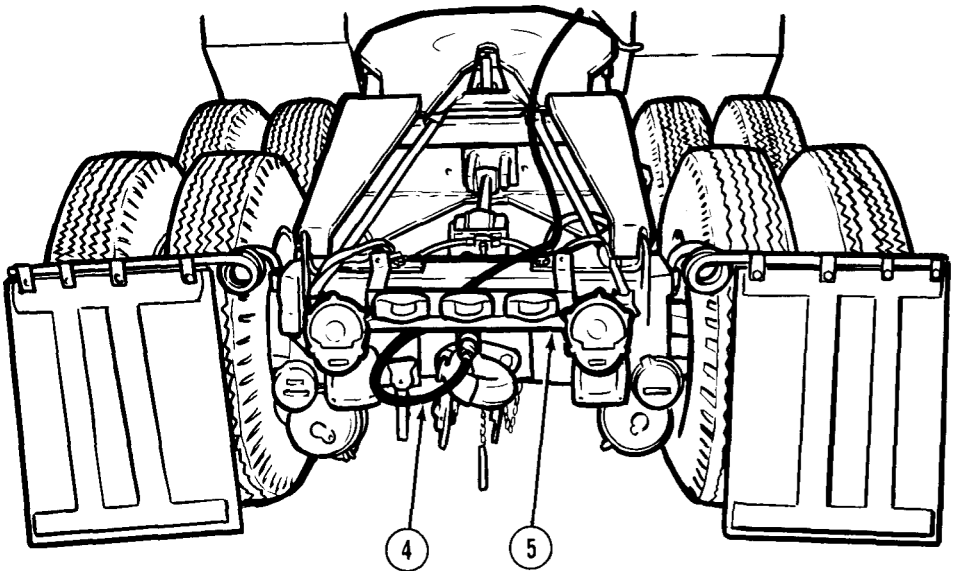


Figure 25.

8. Remove emergency tow lights (5) from disabled vehicle.
9. Remove two nuts (6), washers (7), screws (8), and brackets (9) from emergency tow lights (5). Stow emergency tow lights and brackets.

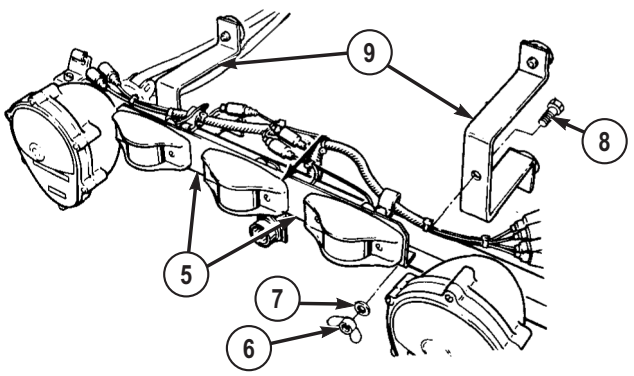


Figure 26.

10. Remove and stow safety chains (10) and air hoses (11).

DISCONNECT - Continued

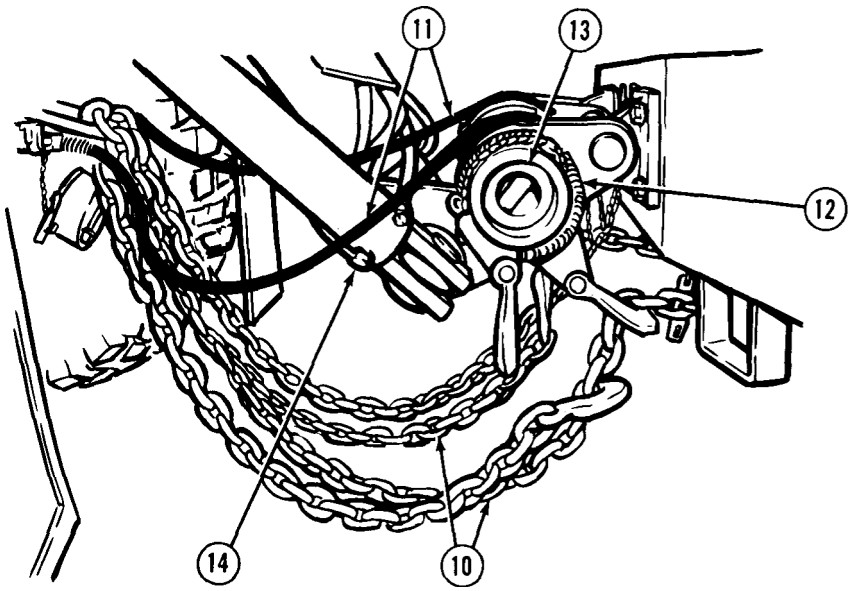


Figure 27.

11. Unwrap two springs (12) from cross tube (13) and connect to tow cylinders (4).

NOTE

Use retrieval controls to position cross tube to relieve tension from adapters.

12. Remove two cotter pins (15) and shackle pins (16) from M915 front adapters (17), and stow with shackles removed from disabled vehicle tow eyes.

DISCONNECT - Continued

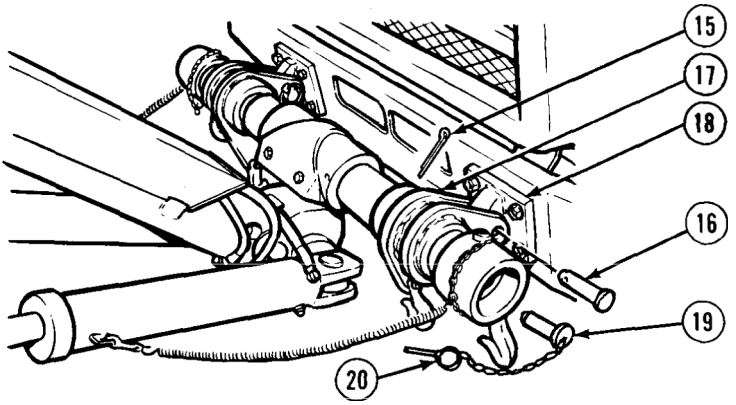


Figure 28.

13. Remove two M915 front adapters (17) from tow eyes (18) on disabled vehicle.
14. Install two pins (19) in M915 front adapters (17).
15. Install two quick pins (20) in adapter pins (19).
16. Drive wrecker forward several feet (WP 0050) and park. (WP 0056)

WARNING

When springs and end caps are removed, cross tube can swing in all directions and adapters may slide off and cause injury or death to personnel.

17. Remove two springs (12) from tow cylinders (14).

DISCONNECT - Continued

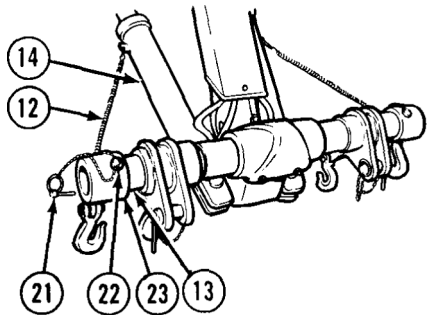


Figure 29.

18. Remove two quick pins (21) and pins (22) from end caps (23).
19. Remove two end caps (23) from cross tube (13).
20. Remove two front adapters (17) from cross tube (13) and place on equipment body floor (24).

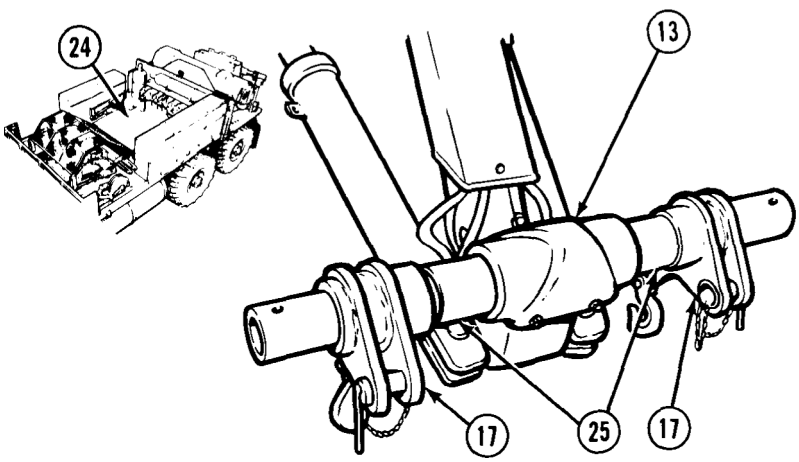


Figure 30.

21. Remove and stow two 5 in. (127 mm) spacers (25).
22. Remove lock handle (26), lock plate (27), and two front adapters (28).
23. Install two front adapters (17), lock plate (27), and lock handle (26).

DISCONNECT - Continued

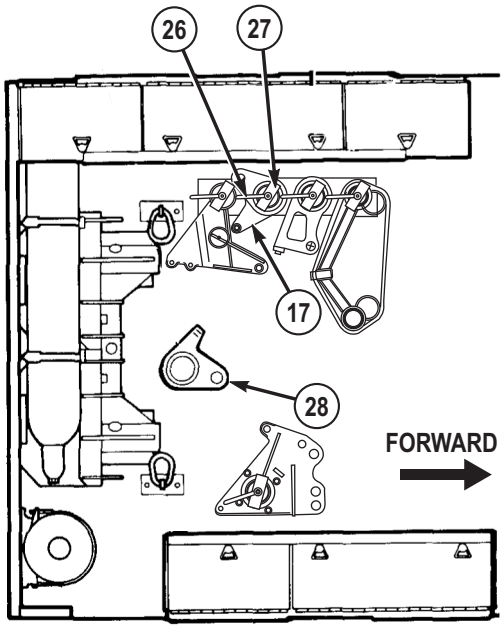


Figure 31.

24. Install two front adapters (28) on cross tube (13).

DISCONNECT - Continued

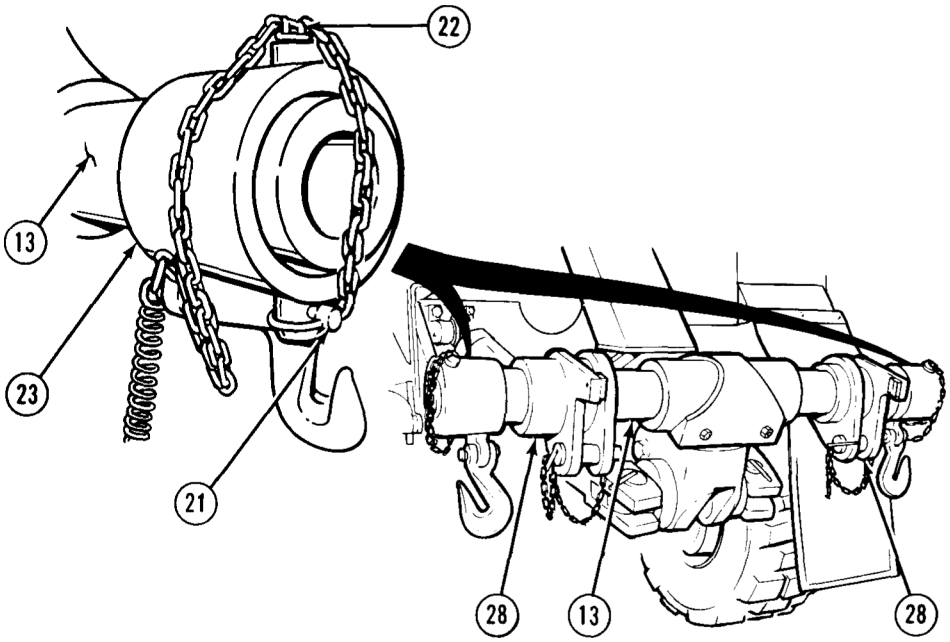


Figure 32.

25. Install two end caps (23) on cross tube (13). Install two pins (22) and quick pins (21).
26. Install two springs (12) on tow cylinders (14).

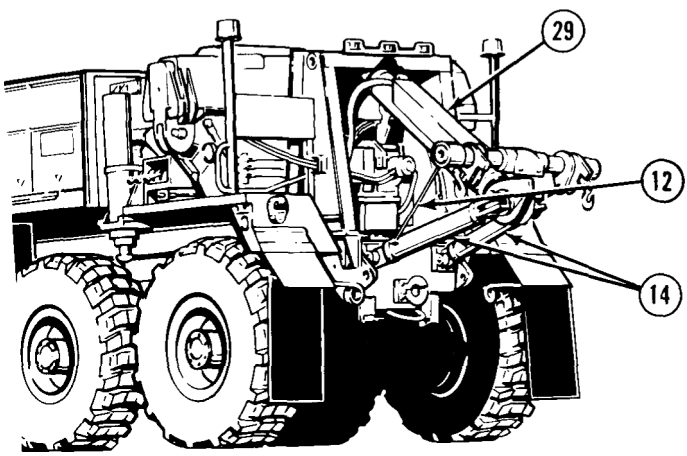


Figure 33.

DISCONNECT - Continued

27. Operate retrieval system (WP 0059) to fully retract lift cylinder (29) and tow cylinders (14).

NOTE

Driver side and passenger side towing shackles are installed the same way.

28. Install towing shackle (30), pin (31), and cotter pin (32).

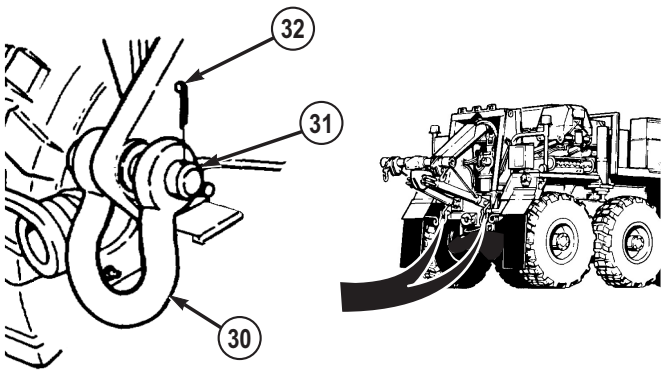


Figure 34.

29. Set POWER switch (33) to OFF position.

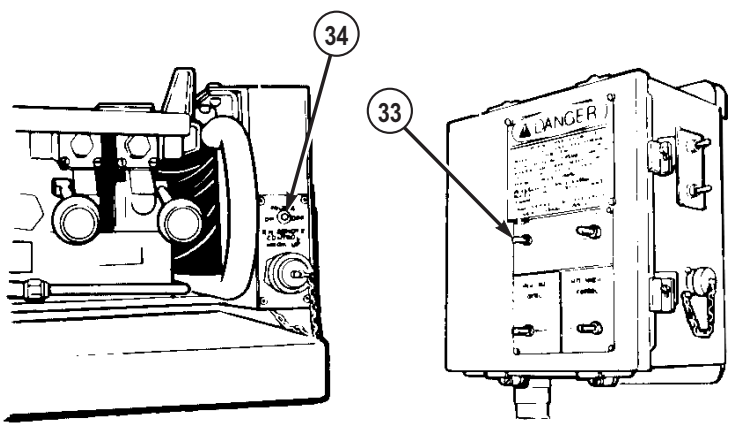


Figure 35.

30. Set POWER switch (34) to OFF position.

DISCONNECT - Continued

31. Turn off wrecker emergency flashers. (WP 0096)
32. Turn off wrecker service drive lights. (WP 0087)
33. Set HYD ENABLE switch (35) to off position. MAIN HYD ENABLE indicator (36) will go out.

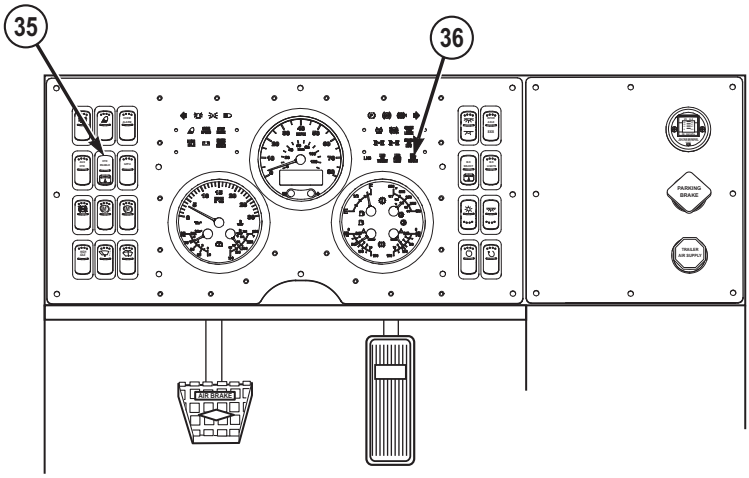


Figure 36.

34. Remove and stow portable beacon lights. (WP 0094)
35. Shut off engine. (WP 0057)
36. Turn off disabled vehicle emergency flashers, and remove lock from steering column (refer to operator's manual).

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
TOW M966 - FRONT LIFT

INITIAL SETUP:

Not Applicable

HOOKUP

NOTE

- Each recovery situation is unique and requires assessment to determine if the driveline is suitable for transport. When in doubt, consult with field level maintenance.
- This procedure is a two soldier task.

1. Review procedures for operating retrieval towing system (WP 0058) and prepare retrieval system for operation. (WP 0059)

WARNING

- Hold cross tube when removing springs, cross tube can swing in all directions and adapters may slide off. Failure to comply may result in injury or death to personnel.
- Intervehicular air lines are not connected when towing from rear. Disabled vehicle will not have braking. Use extreme care when transporting disabled vehicle using rear hookup. Failure to comply may result in injury or death to personnel.

2. Disconnect two springs (1) from tow cylinders (2).

HOOKUP - Continued

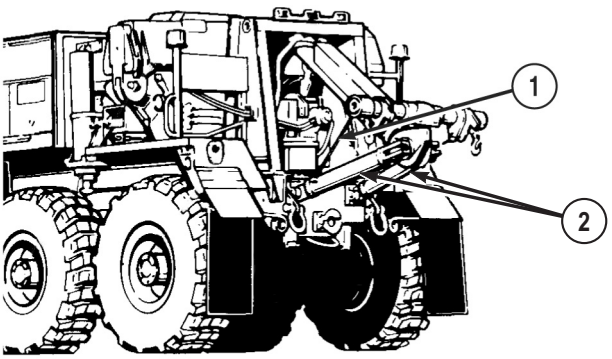


Figure 1.

CAUTION

Both rear towing shackles must be removed from rear tow eyes on wrecker before performing retrieval operations, or damage to tow cylinder may result.

NOTE

Driver side and passenger side towing shackles are removed the same way.

3. Remove two rear towing shackles from wrecker vehicle:

HOOKUP - Continued

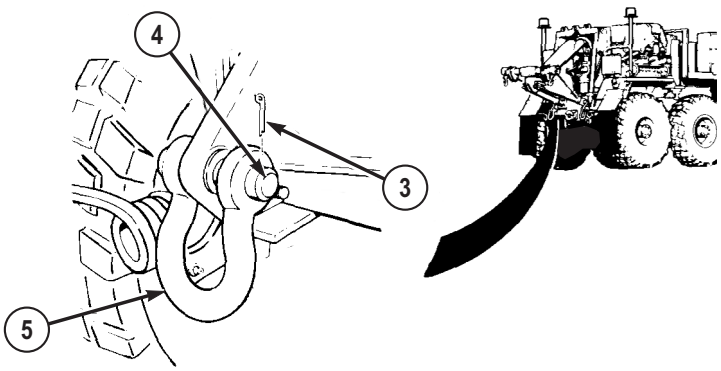


Figure 2.

a. Remove cotter pin (3), pin (4), and towing shackle (5).

b. Replace pin (4) in shackle (5), and cotter pin (3) in pin (4).

c. Repeat Steps (a) and (b) for opposite side towing shackle (5).

d. Stow two rear towing shackles on wrecker vehicle.

4. Pull LIFT CYLINDER control lever (6) to lower crosstube (7) to approximately 3 ft. (91 cm) above ground.

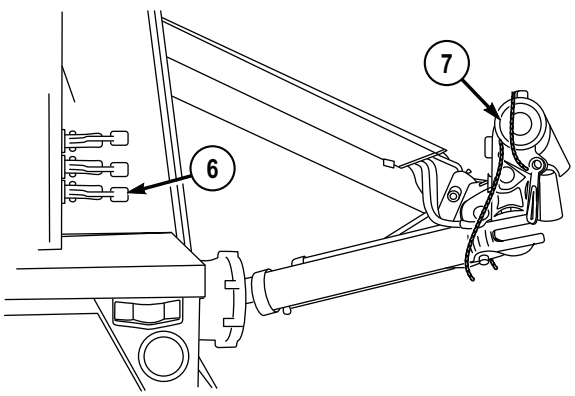


Figure 3.

5. Position wrecker so that crosstube (7) is approximately 1 ft. (30 cm) from tow eyes of disabled vehicle and centered on disabled vehicle.

HOOKUP - Continued

WARNING

When springs and end caps are removed, cross tube can swing in all directions and adapters may slide off and cause injury or death to personnel.

6. Remove two quick pins (8) and pins (9) from end caps (10).

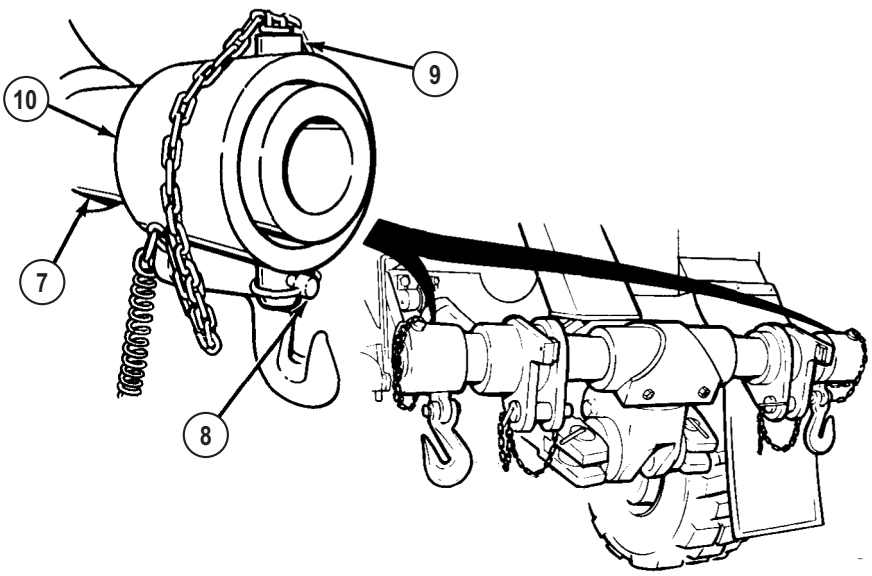


Figure 4.

7. Remove two end caps (10) from crosstube (7).
8. Remove two front adapters (11) from crosstube (7) and place on equipment body floor (12).

HOOKUP - Continued

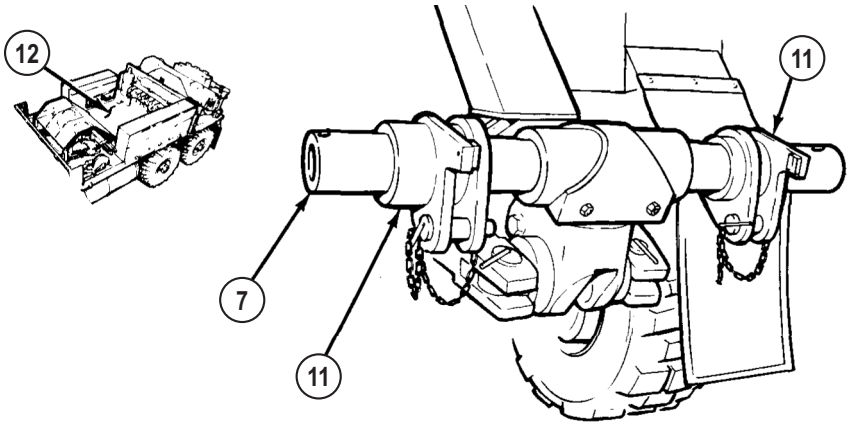


Figure 5.

9. Remove lock handle (13), lock plate (14), and two front tow adapters (15).

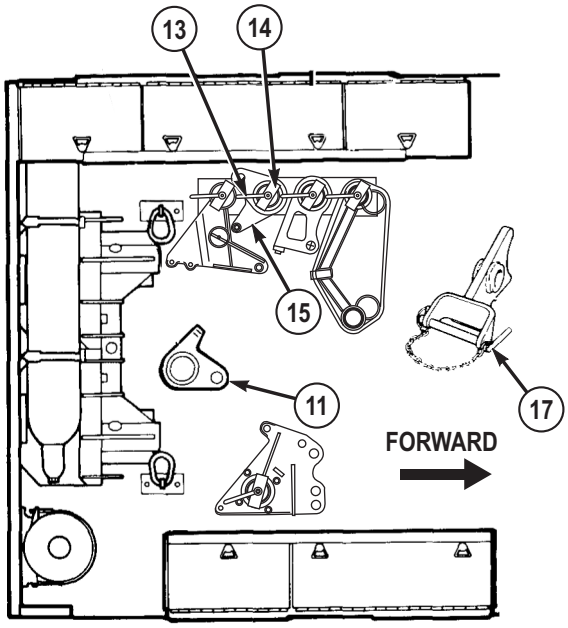


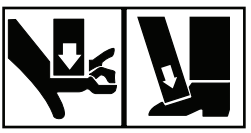
Figure 6.

10. Install two adapters (11) removed from crosstube (7), lock plate (14), and lock handle (13).

HOOKUP - Continued

11. Remove two extensions (17) from stowage.
12. Remove two 12 ft. (3.6 m) chains from stowage.

WARNING



Adapters and end caps may slide off when installing and cause injury or death to personnel.

13. Install two 5 in. (127 mm) spacers (16) on crosstube (7).

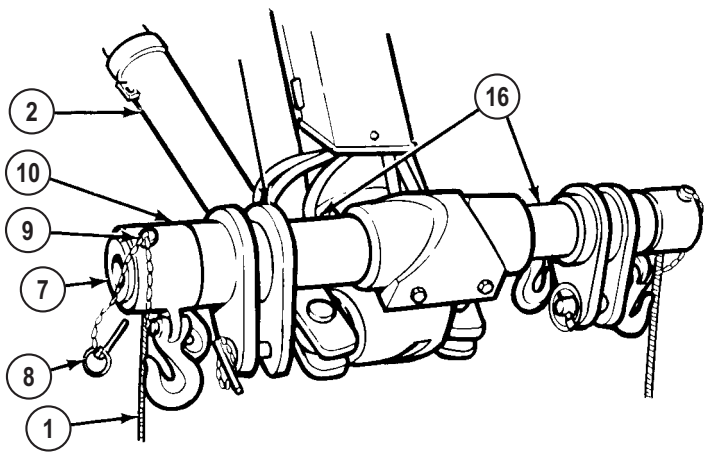


Figure 7.

14. Install two front tow adapters (15) on crosstube (7).
15. Install two end caps (10) on crosstube (7).
16. Install two pins (9) and quick pins (8).
17. Install two springs (1) on tow cylinders (2).
18. Remove two quick pins (18) and pins (19) from adapters (15).

HOOKUP - Continued

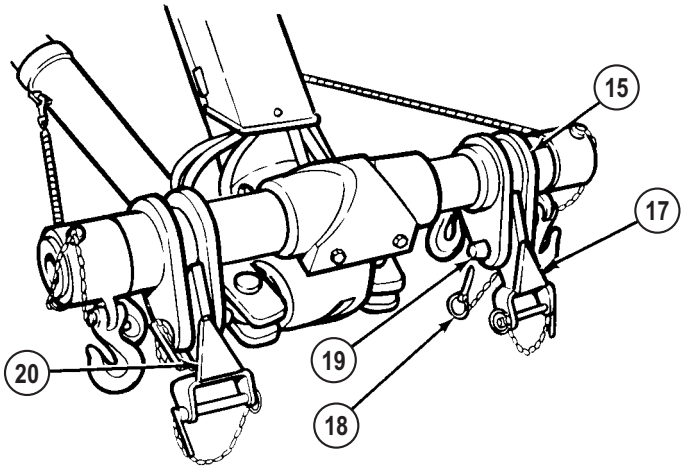


Figure 8.

19. Install two extensions (17) so holes in adapter (15) align with holes in extension and triangular brace (20) is on top.
20. Insert two pins (19) through adapters (15) and extensions (17). Install two quick pins (18) in pins (19).
21. Remove two quick pins (21) and pins (22) from extensions (17).

HOOKUP - Continued

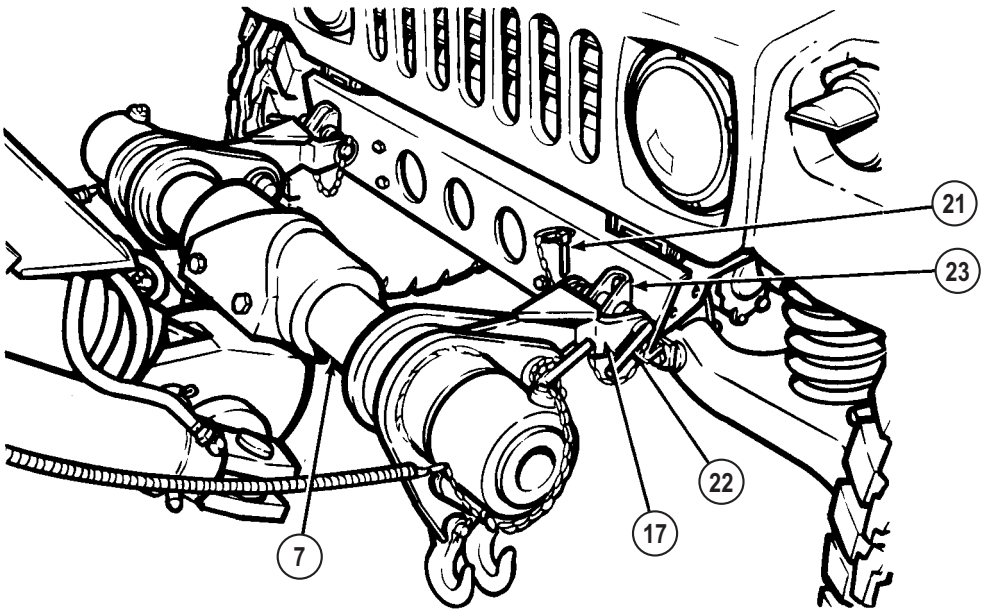


Figure 9.

WARNING

Keep hands and fingers away from adapters and tow eyes when operating retriever controls. Failure to comply may result in injury or death to personnel.

NOTE

If disabled vehicle has towing shackles installed, remove shackles and stow in disabled vehicle.

22. Operate retrieval system and with the aid of an assistant, position crosstube (7) so holes in extensions (17) align with front tow eyes (23).

23. Insert two pins (22) through extensions (17) and front tow eyes (23). Install two quick pins (21) in pins (22).

HOOKUP - Continued

CAUTION

Do not contact pintle hook with lift cylinder. Equipment damage could occur.

NOTE

Passenger side extension is shown.

24. Lower crosstube (7) until extensions (17) contact bottom edge of front tow eye (23).

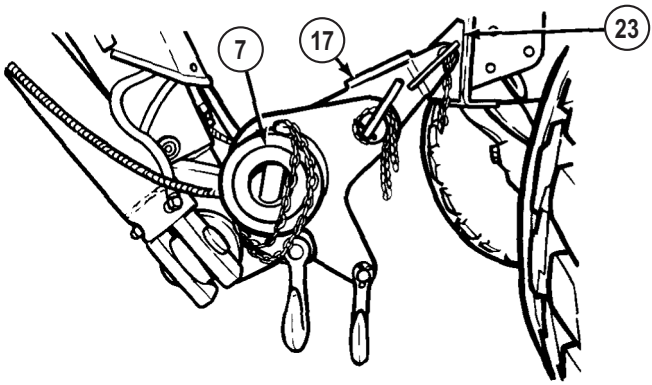


Figure 10.

25. Route one 12 ft. (3.6 m) chain (24) over front arm of A-frame (25) on disabled vehicle.

HOOKUP - Continued

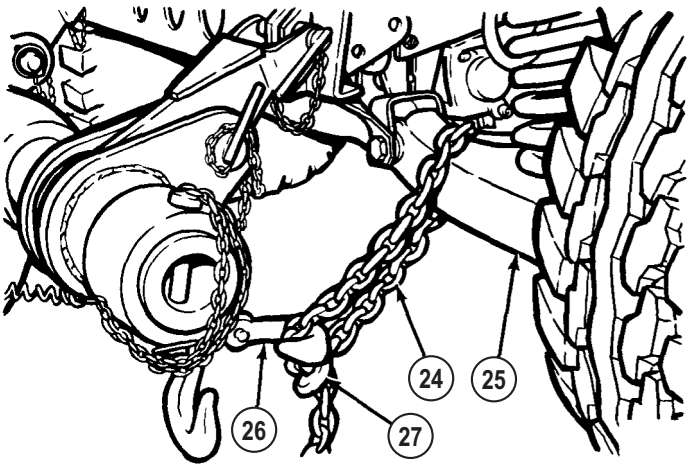


Figure 11.

26. Route 12 ft. (3.6 m) chain (24) through adapter grab hook (26). Pull chain tight and attach grab hook (27) to chain.
27. Repeat Steps (25) and (26) for other side of disabled vehicle.
28. Release PARKING BRAKE on disabled vehicle (refer to M966 operator's manual).
29. Operate retrieval system until tow cylinders (2) are fully retracted.

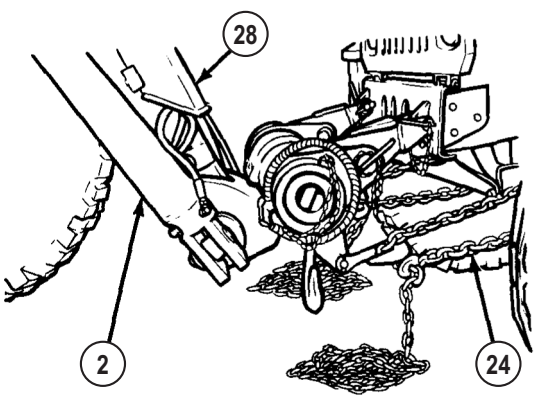


Figure 12.

30. Push in LIFT CYLINDER control lever to retract lift cylinder (28) until slack is removed from 12 ft. (3.6 m) chains (24).

HOOKUP - Continued

NOTE

Adjust chain slack so 12 ft. (3.6 m) chains just touch the ground.

31. Route two 12 ft. (3.6 m) chains (24) through safety chain hoop (29) on wrecker and secure grab hooks (30) with safety shackles (31).

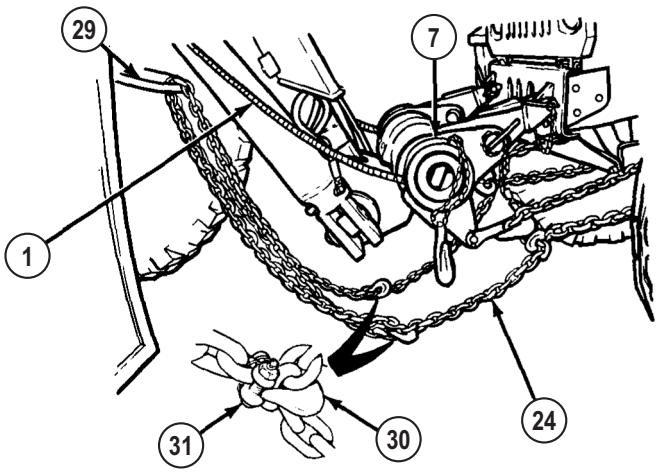


Figure 13.

32. Wrap two springs (1) around crosstube (7) and secure.
33. Prepare disabled vehicle for towing (refer to M966 operator's manual).
34. Remove emergency tow lights (32) and two brackets (33) from stowage.

HOOKUP - Continued

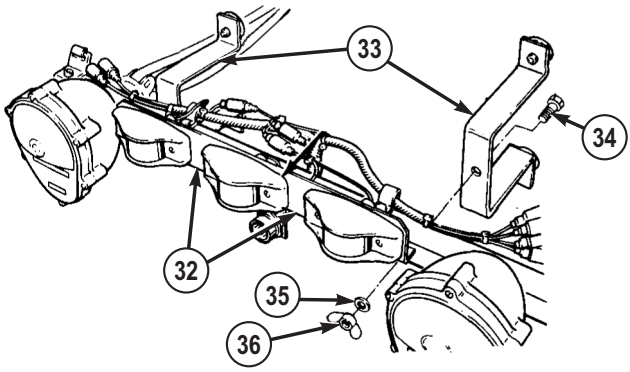


Figure 14.

35. Install two brackets (33) in center holes of emergency tow lights with two screws (34), washers (35), and nuts (36).

36. Install emergency tow lights (32) on rear of M966 and fasten securely with straps (37).

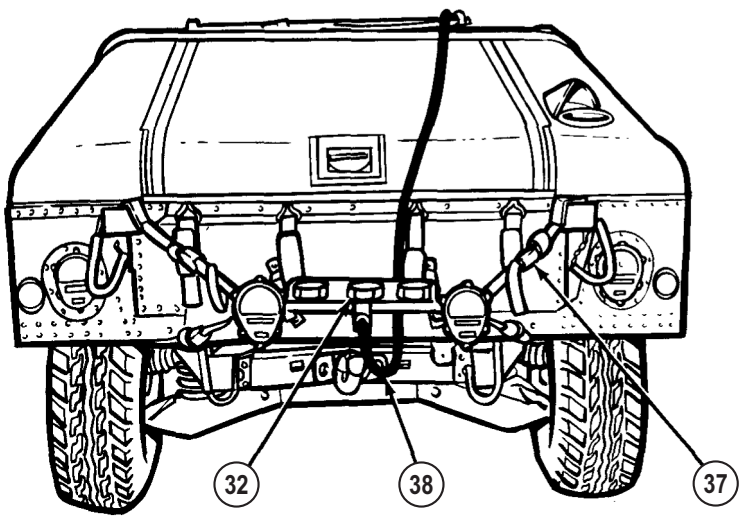


Figure 15.

37. Remove tow light cable (38) from stowage and connect to emergency tow lights (32).

HOOKUP - Continued

CAUTION

Route cable so it does not drag on ground or interfere with turning tires. Failure to comply may result in damage to equipment.

38. Route other end of tow light cable (38) along disabled vehicle and connect to rear electrical connector (39) on wrecker.

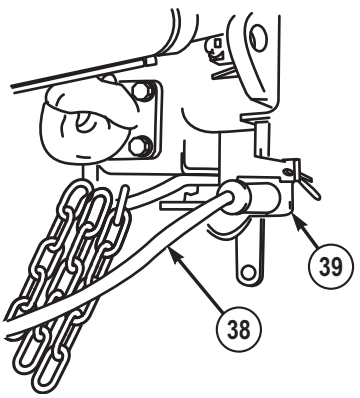


Figure 16.

39. Set POWER switch (40) to ON position.

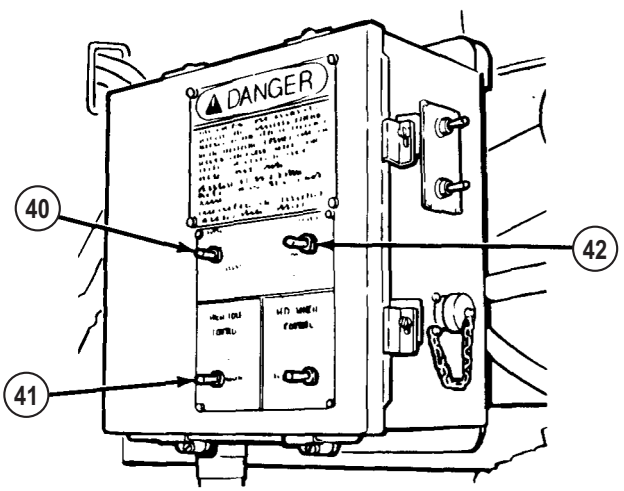


Figure 17.

HOOKUP - Continued

40. Set HIGH IDLE switch (41) to CONTINUOUS.
41. Push and release LATCH switch (42). Engine speed will increase to approximately 1500 rpm.

WARNING

Keep out from under retrieval system and disabled vehicle when raised off ground. Failure to comply may result in injury or death to personnel.

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

CAUTION

- Fully retract both tow cylinders before lifting disabled vehicle. Failure to comply may result in damage to equipment.
- Ensure all rigging is secure. Loose rigging can become entangled. Failure to comply may result in damage to equipment.

NOTE

Operator must allow wrecker air suspension system to completely adjust for added weight of disabled vehicle before raising disabled vehicle to final height of 1 ft. (30 cm).

42. Push LIFT CYLINDER control lever (6) to retract lift cylinder (28) and raise disabled vehicle approximately 3 in. (8 cm):
    a. Once wrecker air suspension system has adjusted for added weight of disabled vehicle, push LIFT CYLINDER control lever (6) to retract lift cylinder (28) and raise disabled vehicle to final height of 1 ft. (30 cm).

HOOKUP - Continued

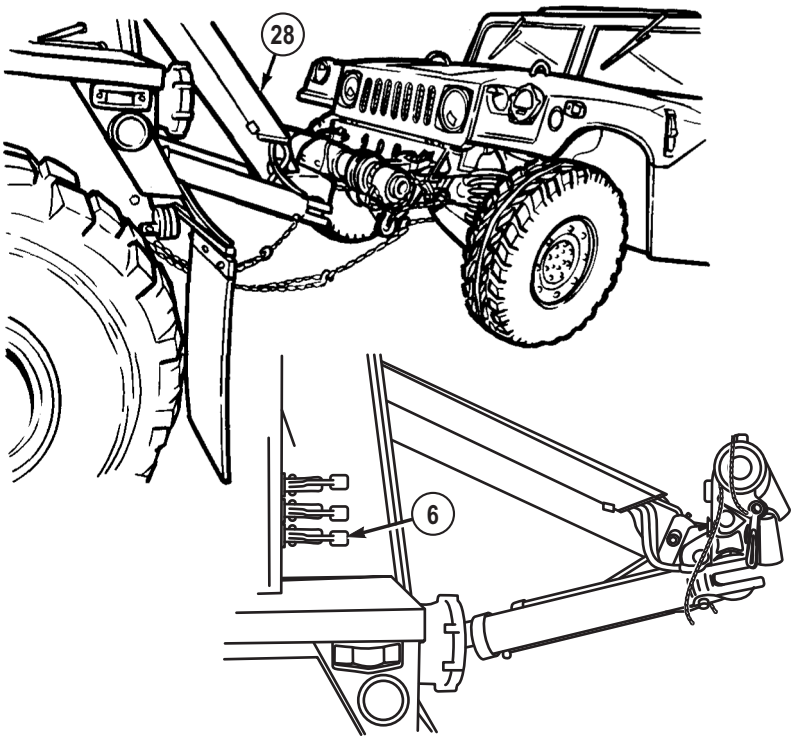


Figure 18.

43. Set POWER switch (40) to OFF position.

HOOKUP - Continued

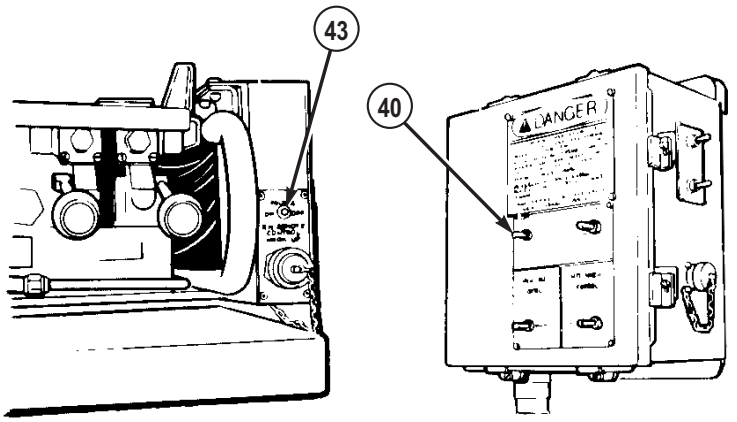


Figure 19.

44. Set POWER switch (43) to OFF position.
45. Set HYD ENABLE switch (44) to off position. MAIN HYD ENABLE indicator (45) will go out.

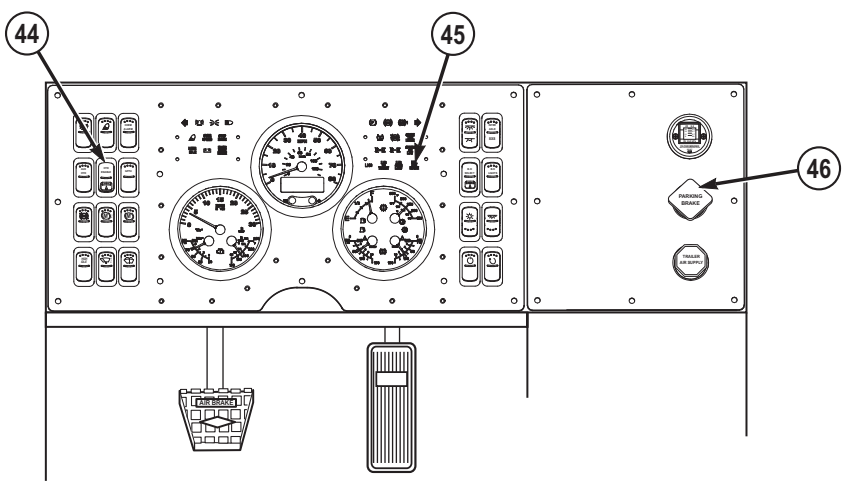


Figure 20.

46. Turn on wrecker service drive lights. (WP 0087)
47. Turn on wrecker emergency flashers. (WP 0096)
48. Ensure disabled vehicle emergency flashers are turned on (refer to operator's manual).

HOOKUP - Continued

WARNING

The M984 Wrecker should not be operated at speeds over 15 MPH (24 km/hr) except on paved roads when the operator determines that the vehicle being towed and the terrain allow safe operation. Engine brake switch must ON for all towing operations. Speed in excess of the below table may result in loss of control, serious injury, or death to personnel.

49. Select desired gear (WP 0048) and transport disabled vehicle.

Table 1. Maximum Towing Speed.

Terrain Condition	Maximum Speed Towed Load Up To 50,000 lbs (22 700 kg)	Maximum Speed Towed Load Above 50,000 lbs (22 700 kg)
On Road-Level	35 mph (56 km/hr)	30 mph (48 km/hr)
On Road-Hilly	30 mph (48 km/hr)	20 mph (32 km/hr)
Off-Road	15 mph (24 km/hr)	15 mph (24 km/hr)

DISCONNECT

NOTE

This procedure is a two soldier task.

1. Set transmission range selector (1) to N (neutral).

NOTE

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

2. Pull PARKING BRAKE control (2).

DISCONNECT - Continued

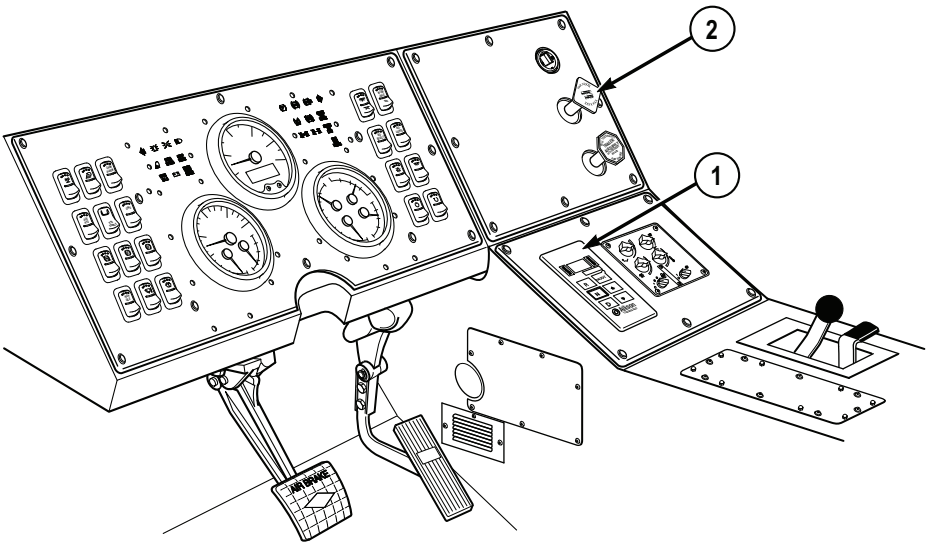


Figure 21.

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

NOTE

- After lowering disabled vehicle, extend lift and tow cylinders approximately 2 to 4 inches (50 to 100 mm) to allow for adjustment when removing adapters.
- Expect wrecker air suspension system to deflate air springs to achieve normal ride height once weight of disabled vehicle is removed.

3. Review procedures for operating retrieval towing system, (WP 0058) prepare retrieval system for operation, (WP 0059) and lower disabled vehicle to the ground.

DISCONNECT - Continued

WARNING

If disabled vehicle's parking brake is inoperative, chock wheels of disabled vehicle (refer to operator's manual). Failure to comply may result in injury or death to personnel.

NOTE

If disabled vehicle parking brake is inoperative; install wheel chocks.

4. Set PARKING BRAKE on disabled vehicle (refer to M966 operator's manual).
5. Remove tow light cable (3) from wrecker.

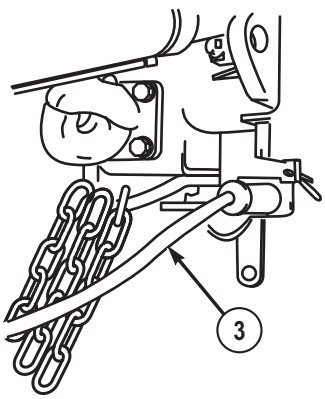


Figure 22.

6. Remove tow light cable (3) from emergency tow lights (4).

DISCONNECT - Continued

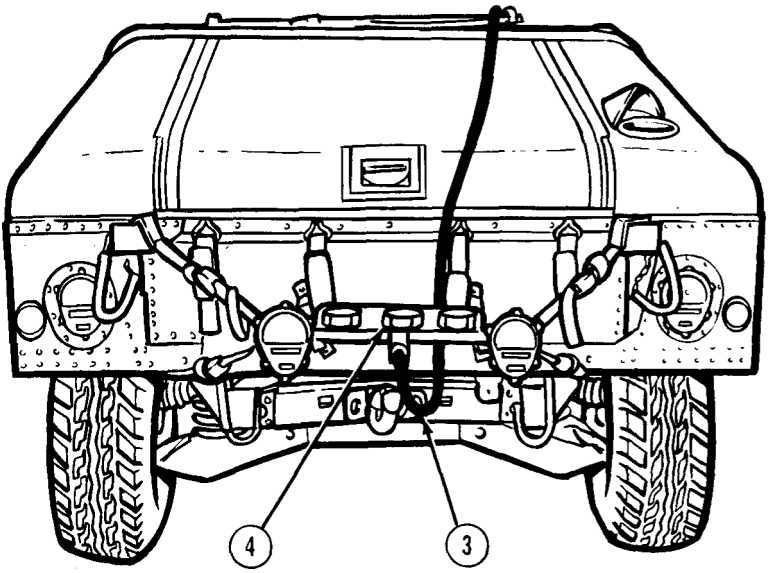


Figure 23.

7. Remove emergency tow lights (4) from disabled vehicle.
8. Remove two nuts (5), washers (6), screws (7), and brackets (8) from emergency tow lights (4). Stow emergency tow lights and brackets.

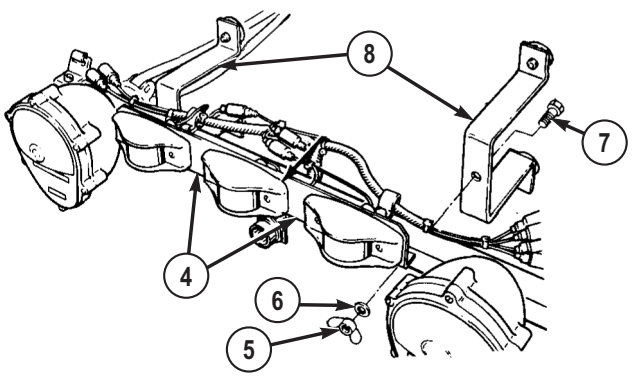


Figure 24.

9. Remove and stow two 12 ft. (3.6 m) chains (9).

DISCONNECT - Continued

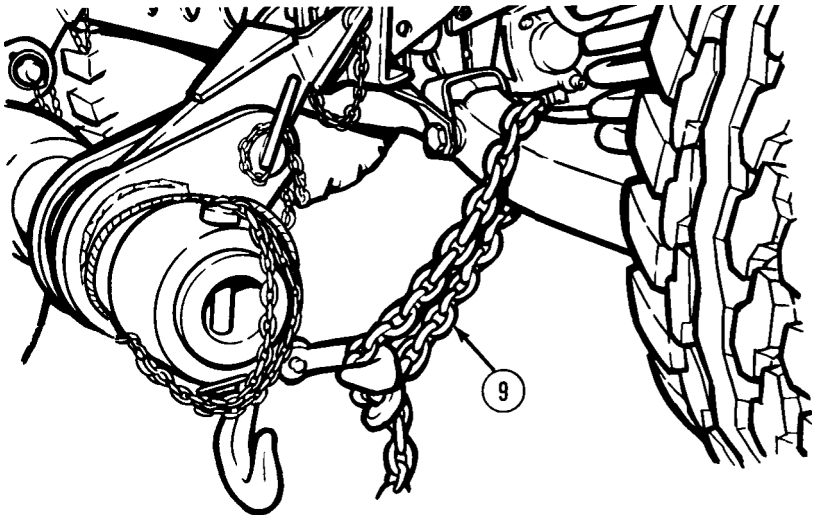


Figure 25.

10. Unwrap two springs (10) from crosstube (11) and connect to tow cylinders (12).

DISCONNECT - Continued

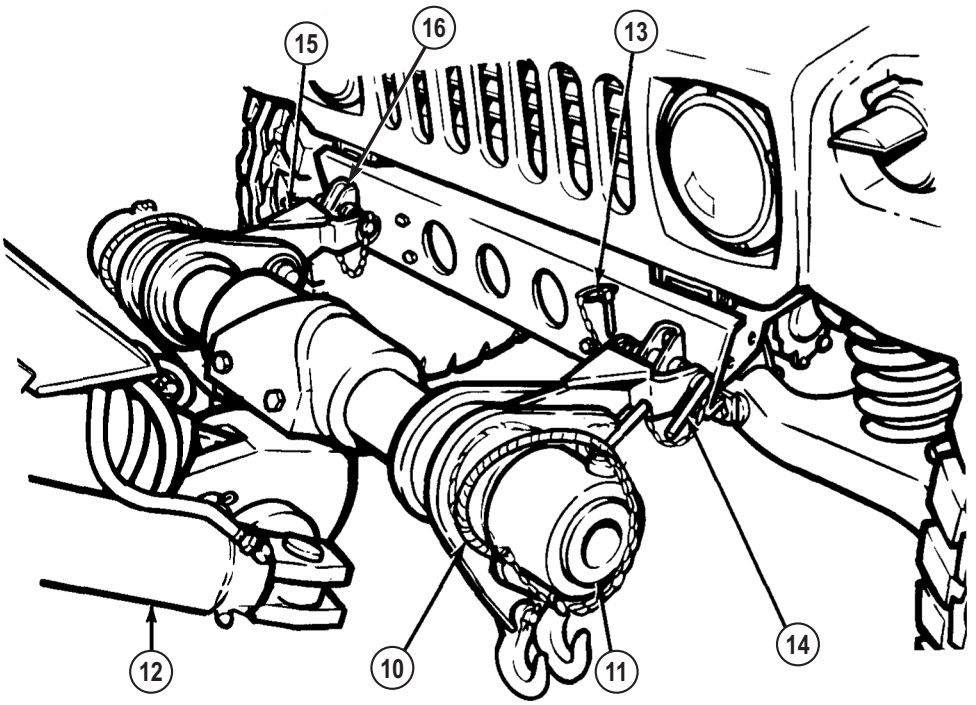
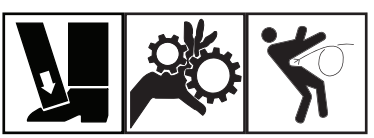


Figure 26.

WARNING



- Do not stand behind adapters when pins are being removed. Failure to comply may result in injury or death to personnel.
- Keep hands and fingers away from adapters and tow eyes when operating retrieval controls. Failure to comply may result in injury or death to personnel.

NOTE

Use retrieval controls to position crosstube to relieve tension from adapters.

11. Remove two quick pins (13) and pins (14) from extensions (15).

DISCONNECT - Continued

12. Remove two extensions (15) from tow eyes (16) on disabled vehicle.
13. Install two pins (14) in extensions (15).
14. Install two quick pins (13) in pins (14).
15. Drive wrecker forward several feet (WP 0050) and park. (WP 0056)
16. Remove two quick pins (17) and pin (18) from adapter (19).

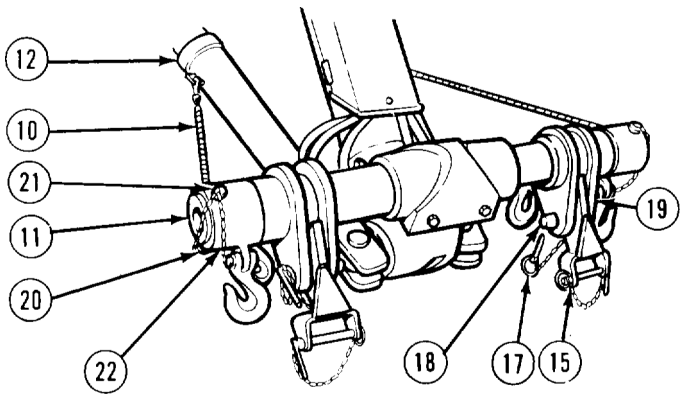


Figure 27.

17. Remove extensions (15) from adapters (19) and stow.
18. Install two pins (18) in adapters (19).
19. Install two quick pins (17) in pins (18).

WARNING

When springs and end caps are removed, cross tube can swing in all directions and adapters may slide off and cause injury or death to personnel.

20. Remove two springs (10) from tow cylinders (12).
21. Remove two quick pins (20) and pins (21) from end caps (22).
22. Remove two end caps (22) from crosstube (11).

DISCONNECT - Continued

23. Remove two adapters (19) from crosstube (11) and place on equipment body floor (23).

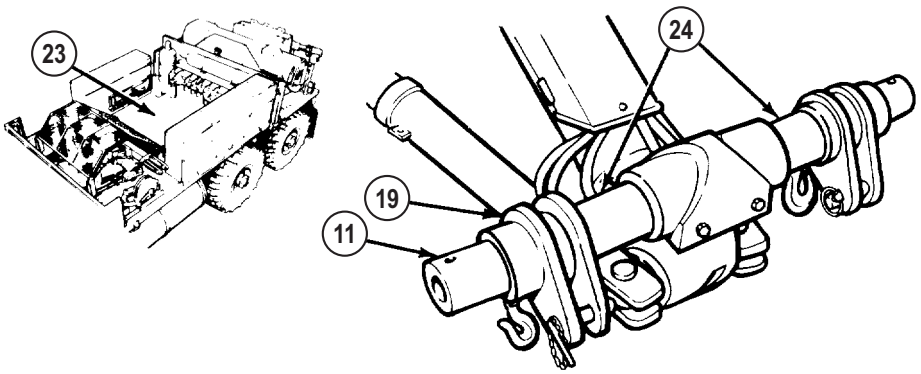


Figure 28.

24. Remove and stow two 5 in. (127 mm) spacers (24) from crosstube (11).
25. Remove lock handle (25), lock plate (26), and front adapters (27).

DISCONNECT - Continued

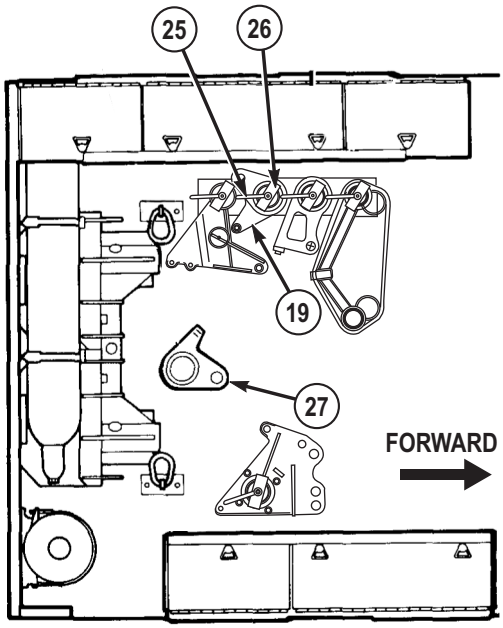


Figure 29.

26. Install two adapters (19) removed from crosstube, lock plate (26), and lock handles (25).

DISCONNECT - Continued

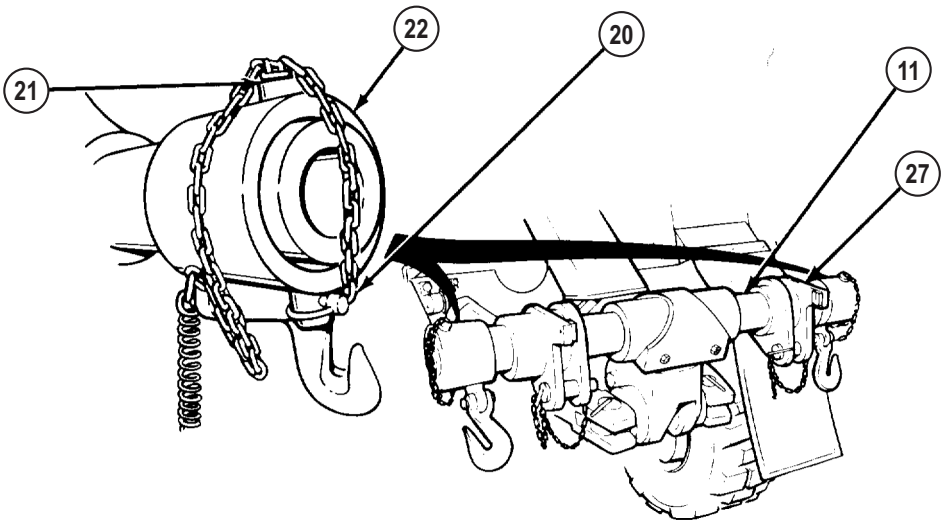


Figure 30.

27. Install two front adapters (27) on crosstube (11).
28. Install two end caps (22) on crosstube (11). Install two pins (21) and quick pins (20).
29. Install two springs (10) on tow cylinders (12).

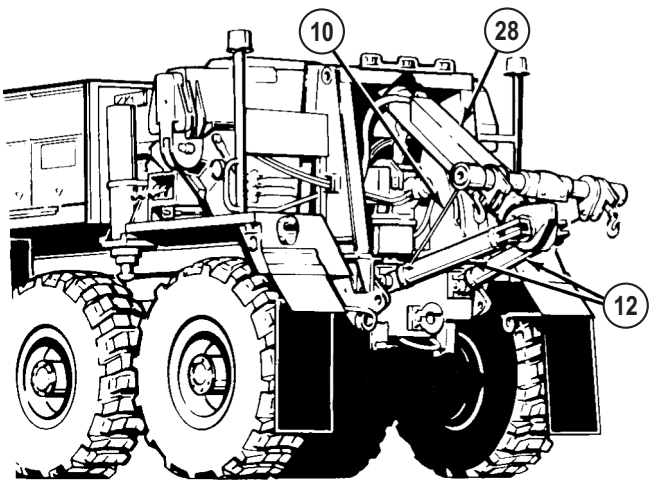


Figure 31.

DISCONNECT - Continued

30. Operate retrieval system (WP 0059) and fully retract lift cylinder (28) and tow cylinders (12).

NOTE

Driver side and passenger side towing shackles are installed the same way.

31. Install two towing shackles (29), pins (30), and cotter pins (31).

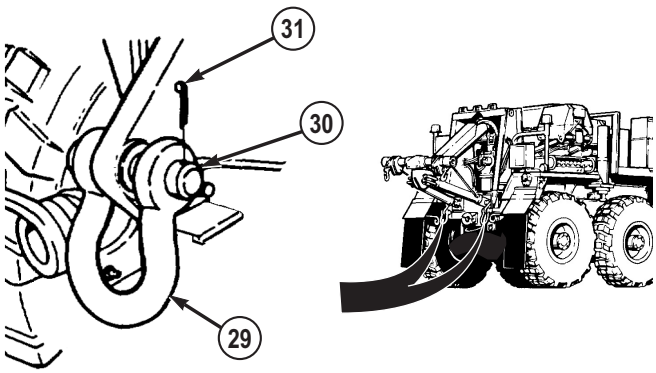


Figure 32.

32. Set POWER switch (32) to OFF position.

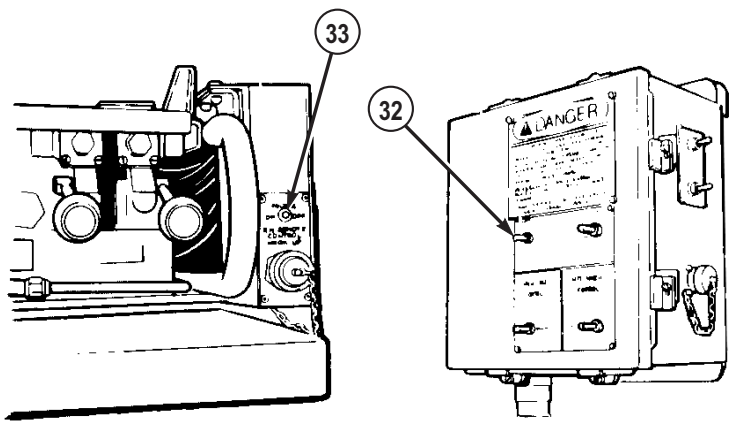


Figure 33.

33. Set POWER switch (33) to OFF position.

DISCONNECT - Continued

34. Turn off wrecker emergency flashers. (WP 0096)
35. Turn off wrecker service drive lights. (WP 0087)
36. Set HYD ENABLE switch (34) to off position. MAIN HYD ENABLE indicator (35) will go out.

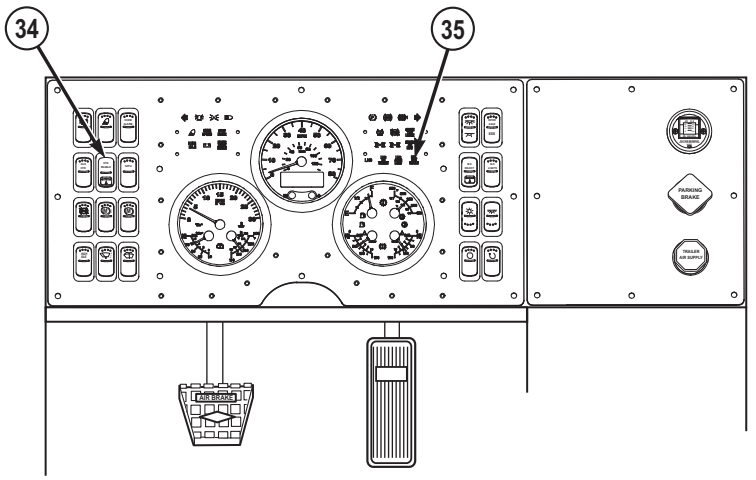


Figure 34.

37. Remove and stow portable beacon light. (WP 0094)
38. Shut off engine. (WP 0057)
39. Turn off disabled vehicle emergency flashers (refer to operator's manual).

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
TOW M1074/M1075 - REAR LIFT

INITIAL SETUP:

Not Applicable

HOOKUP

NOTE

- Each recovery situation is unique and requires assessment to determine if the driveline is suitable for transport. When in doubt, consult with field level maintenance.
- This procedure is a two soldier task.

1. Review procedures for operating retrieval towing system (WP 0058) and prepare retrieval system for operation. (WP 0059)

WARNING

- Hold cross tube when removing springs, cross tube can swing in all directions and adapters may slide off. Failure to comply may result in injury or death to personnel.
- Intervehicular air lines are not connected when towing from rear. Disabled vehicle will not have braking. Use extreme care when transporting disabled vehicle using rear hookup. Failure to comply may result in injury or death to personnel.

CAUTION

When lifting and towing a PLS (Palletized Load System) with an M1077 flatrack, the flatrack must be empty, or if stacked, no more than three high or damage to equipment may result.
When lifting and towing a PLS with an M1 flatrack, the flatrack must be empty with both end walls folded, or if stacked, no more than three high or damage to equipment may result.

HOOKUP - Continued

2. Disconnect two springs (1) from tow cylinders (2).

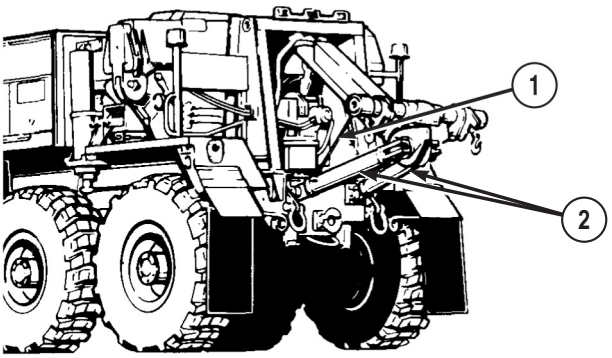


Figure 1.

CAUTION

Both rear towing shackles must be removed from rear tow eyes on wrecker before performing retrieval operations, or damage to tow cylinder may result.

NOTE

Driver side and passenger side towing shackles are removed the same way.

3. Remove two rear towing shackles from wrecker vehicle:

HOOKUP - Continued

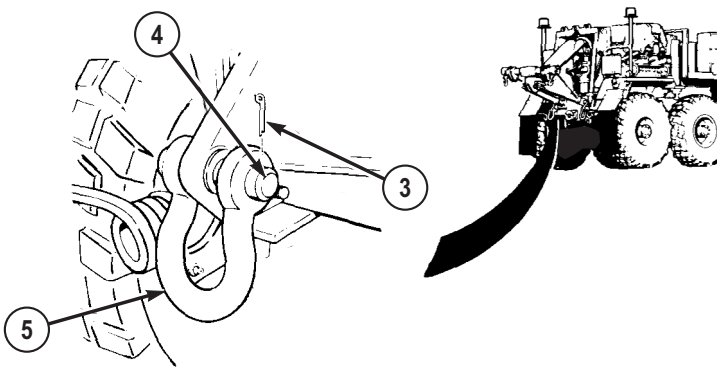


Figure 2.

a. Remove cotter pin (3), pin (4), and towing shackle (5).

b. Replace pin (4) in shackle (5), and cotter pin (3) in pin (4).

c. Repeat Steps (a) and (b) for opposite side towing shackle (5).

d. Stow two rear towing shackles on wrecker vehicle.

4. Pull LIFT CYLINDER control lever (6) to lower cross tube (7) to approximately 3 ft. (1 m) above ground.

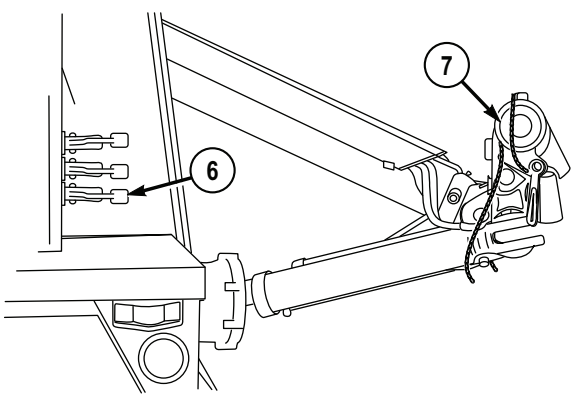


Figure 3.

5. Position wrecker so that cross tube (7) is approximately 1 ft. (30 cm) from tow eyes of disabled vehicle and centered on disabled vehicle.

HOOKUP - Continued

WARNING

When springs and end caps are removed, cross tube can swing in all directions and adapters may slide off and cause injury or death to personnel.

6. Remove two quick pins (8) and pins (9) from end caps (10).

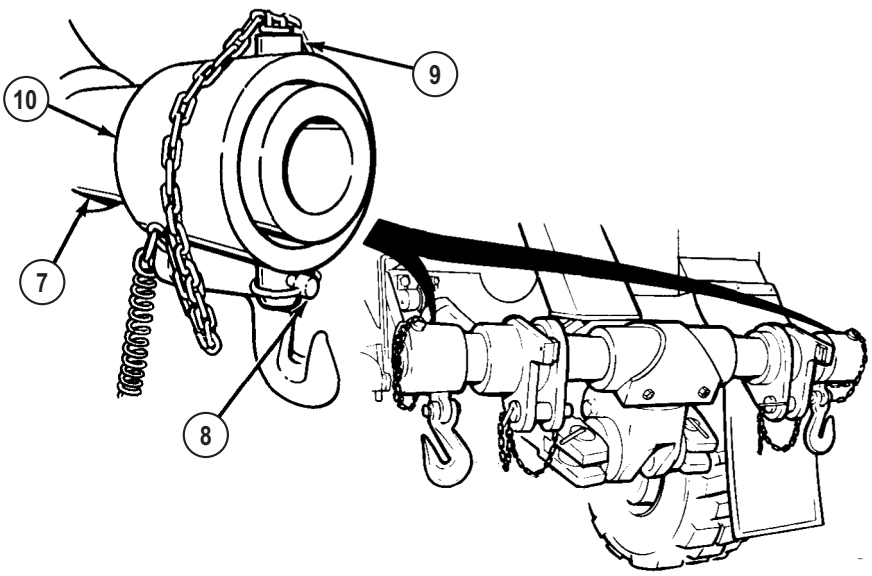


Figure 4.

7. Remove two end caps (10) from cross tube (7).
8. Remove two front adapters (11) from cross tube (7) and place on equipment body floor (12).

HOOKUP - Continued

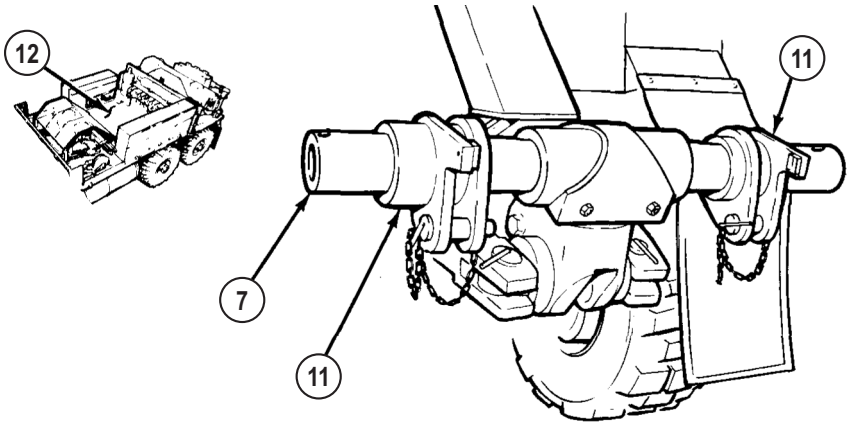


Figure 5.

9. Remove lock handle (13), lock plate (14), and two rear tow adapters (15).

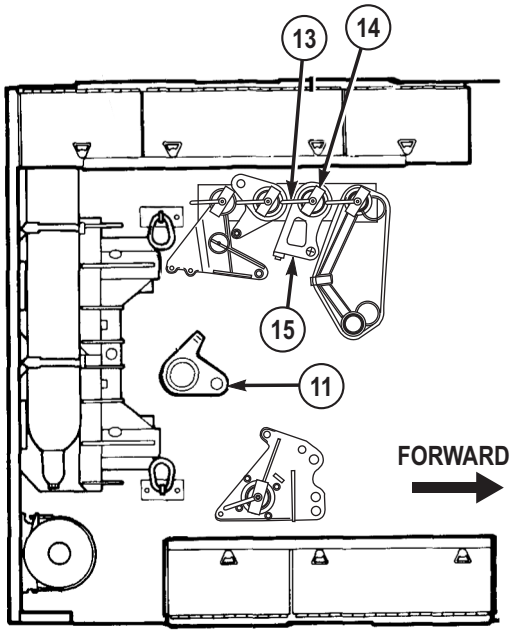


Figure 6.

10. Install two front adapters (11) removed from cross tube (7)with lock plate (14), and lock handle (13).

HOOKUP - Continued

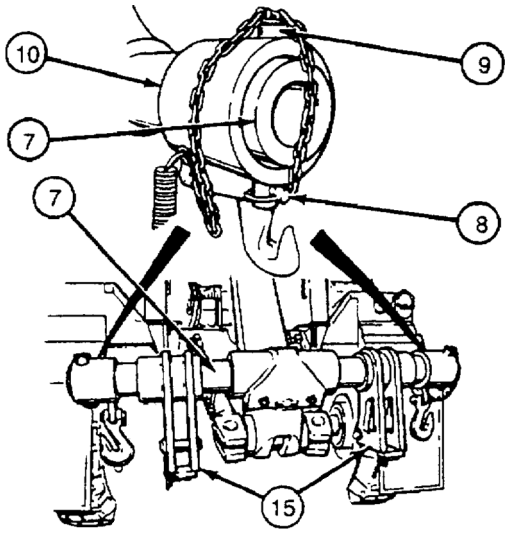
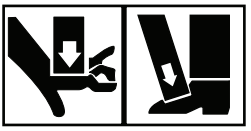


Figure 7.

WARNING



Adapters and end caps may slide off when installing and cause injury or death to personnel.

11. Install two rear tow adapters (15) on cross tube (7).
12. Install end caps (10) on cross tube (7).
13. Install pins (9) and quick pins (8).

NOTE

Driver side and passenger side towing shackles are removed the same way.

14. Remove two cotter pins (16), pins (17), and two rear towing shackles (18) from disabled vehicle. Stow shackles (18) on disabled vehicle.

HOOKUP - Continued

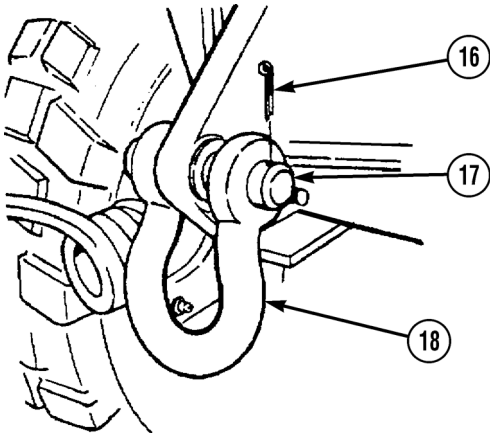


Figure 8.

15. Remove two quick pins (19) and pins (20) from adapters (15).

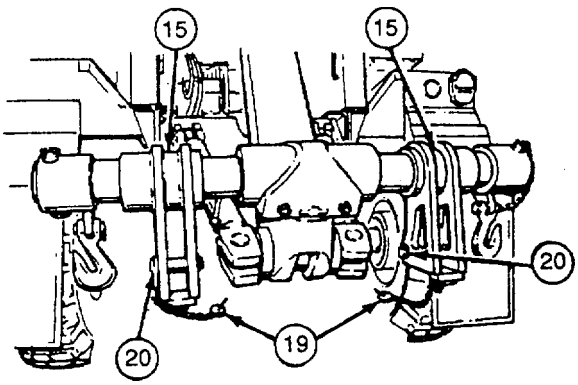


Figure 9.

16. Attach two springs (1) on tow cylinders (2).

HOOKUP - Continued

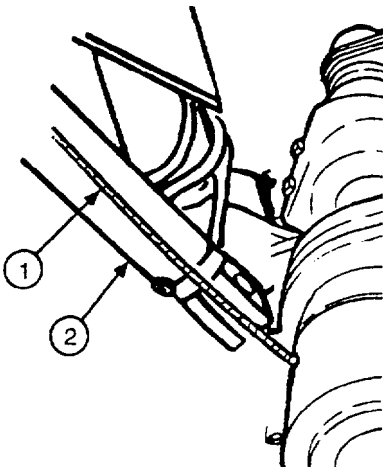
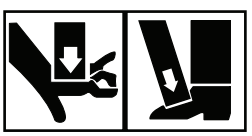


Figure 10.

WARNING



- Adapters may need to be held in the upright position while moving the cross tube. Failure to comply may result in injury or death to personnel.
- Keep hands and fingers away from adapters and tow eyes when operating retrieval controls. Failure to comply may result in injury or death to personnel.
- Adapters must be connected to lower holes of rear tow eyes or disabled vehicle may contact M984 Wrecker during towing operations. Failure to comply may result in injury or death to personnel and damage to equipment.

17. Operate retrieval system, and with aid of an assistant position cross tube (7) so holes in adapters (15) align with lower holes of rear tow eyes (21).

HOOKUP - Continued

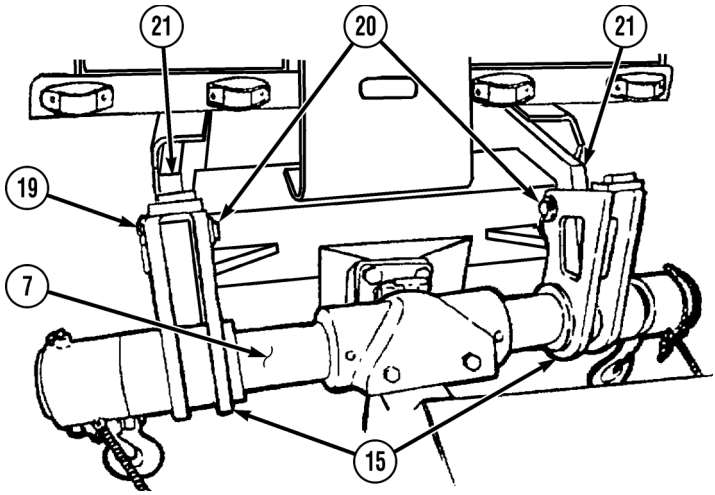


Figure 11.

18. Insert pins (20) through adapters (15), and lower holes of rear tow eyes (21). Install quick pins (19).

NOTE

If air system is inoperative, manually release spring brakes (refer to disabled vehicle operator's manual).

19. Push in PARKING BRAKE control (22) on disabled vehicle (refer to disabled vehicle operator's manual).

HOOKUP - Continued

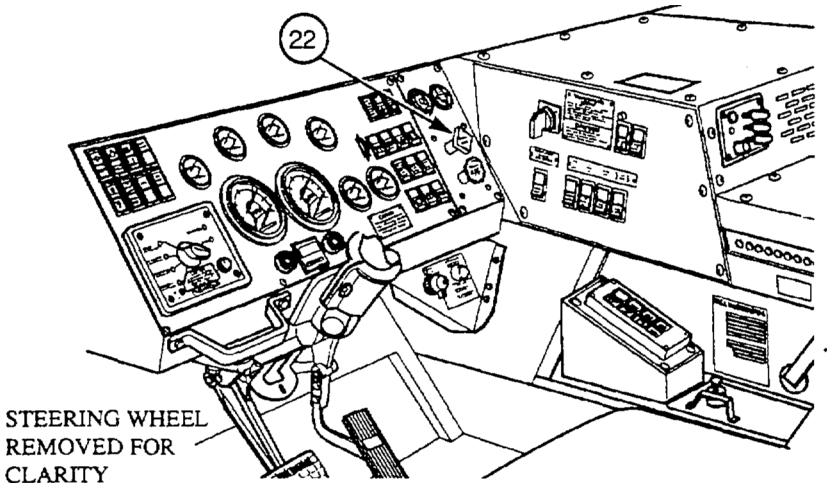


Figure 12.

NOTE

Two rear tow adapters must be resting against frame of disabled vehicle.

20. Operate retrieval system until tow cylinders (2) are fully retracted.

HOOKUP - Continued

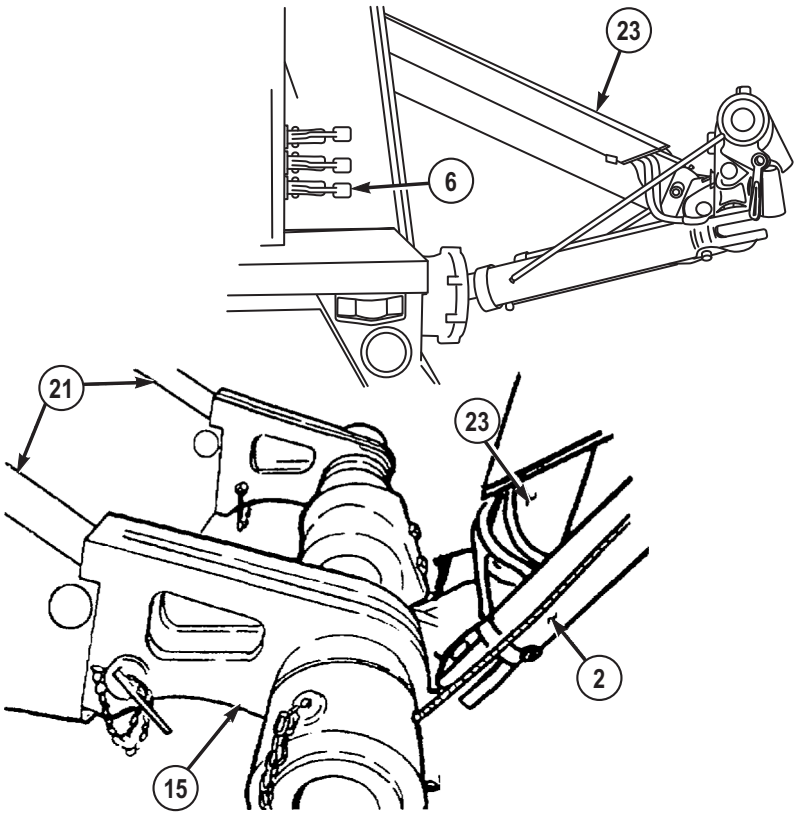


Figure 13.

21. Push in LIFT CYLINDER control lever (6) to retract lift cylinder (23) until adapters (15) contact tow eyes (21).
22. Remove two 16 ft. (5 m) safety chains (24) from wrecker stowage.

HOOKUP - Continued

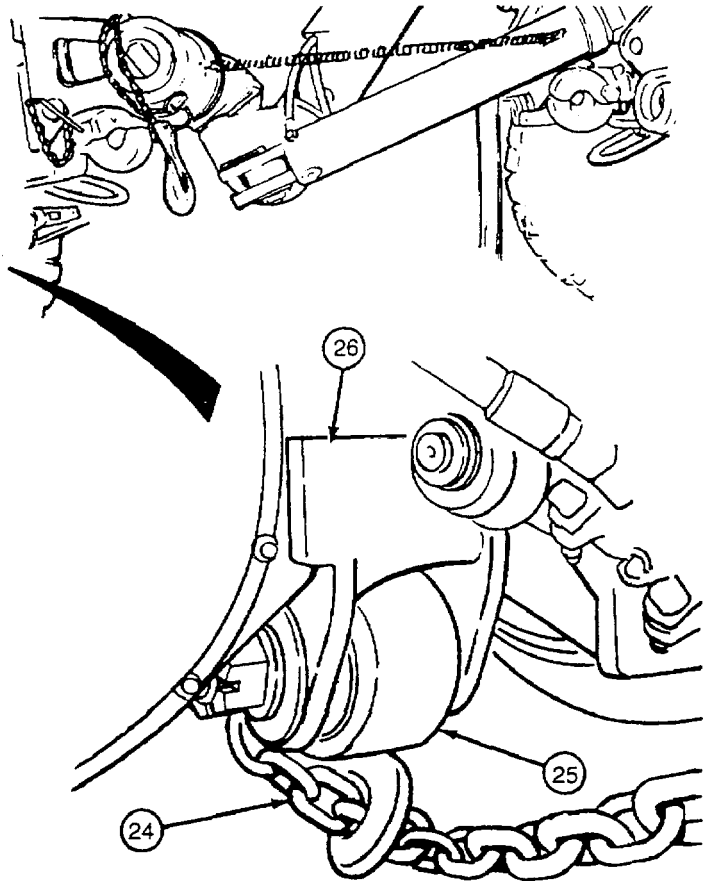


Figure 14.

23. Route one end (without safety shackle) of 16 ft. (5 m) safety chain (24) over walking beam (25) in front of No. 5 axle (26) on disabled vehicle.
24. Hook 16 ft. (5 m) safety chain (24) back into itself (shown) under walking beam (25).
25. Repeat Steps (23) and (24) for other side of disabled vehicle.

NOTE

Adjust chain slack so chains are approximately 6 in. (150 mm) above ground.

HOOKUP - Continued

26. Route two free ends of 16 ft. (5 m) safety chains (24) through safety chain hoop (26) on wrecker. Hook two 16 ft. (5 m) safety chains (24) back into themselves and secure grab hook (27) with safety shackles (28).

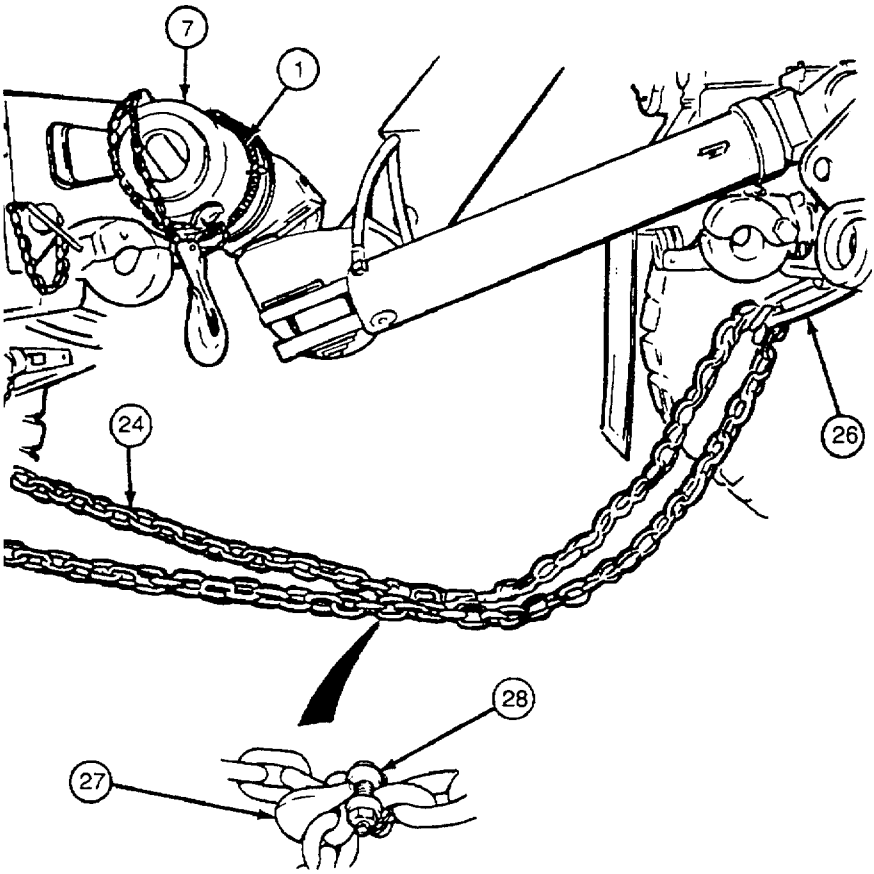


Figure 15.

27. Wrap two springs (1) around cross tube (7) and secure.

CAUTION

ensure all disabled vehicle cargo is secured prior to lifting and towing. Failure to comply may result in damage to cargo and equipment.

28. Prepare disabled vehicle for towing (refer to disabled vehicle operator's manual).

29. Remove emergency tow lights (29) and two brackets (30) from wrecker stowage.

HOOKUP - Continued

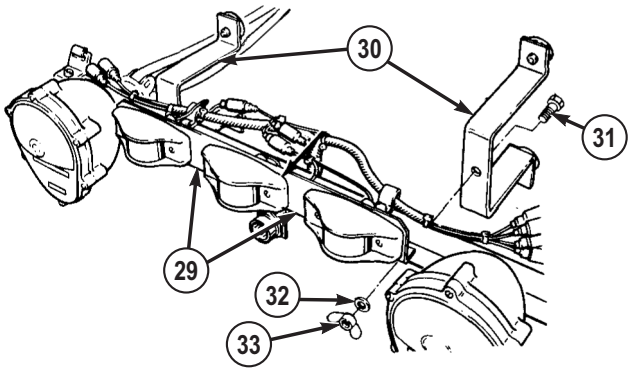


Figure 16.

30. Install two brackets (30) in outside holes of emergency tow lights (29) with two screws (31), washers (32), and nuts (33).

31. Position emergency tow lights (29) on skid plate (34). Fasten top straps (35) to top of skid plate (34).

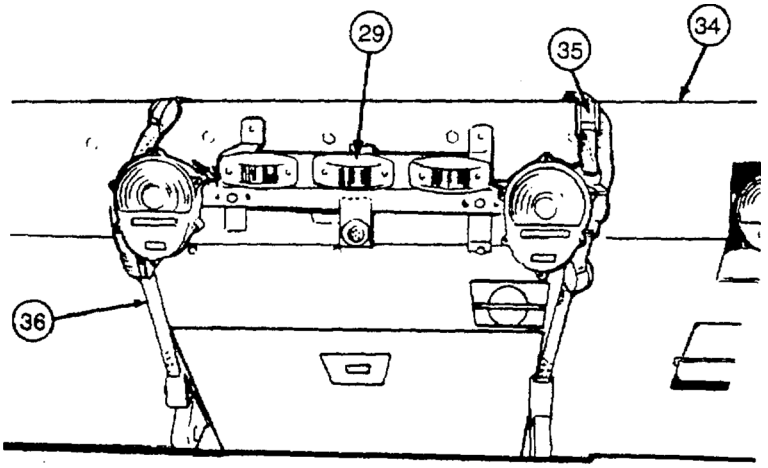


Figure 17.

32. Fasten bottom straps (36) to bottom of skid plate (34).

HOOKUP - Continued

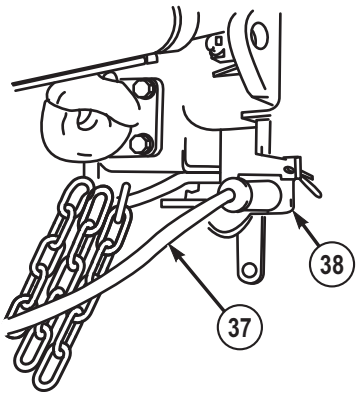


Figure 18.

33. Remove tow light cable (37) from wrecker stowage and connect to rear electrical connector (38) on wrecker.

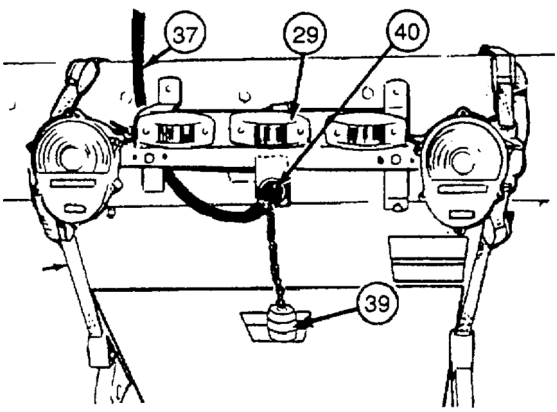


Figure 19.

CAUTION

Route cable so it does not drag on ground or interfere with turning tires. Failure to comply may result in damage to equipment.

34. Route other end of tow light cable (37) to emergency tow lights (29) on disabled vehicle, remove dust cover (39), and plug in at connector (40).

HOOKUP - Continued

WARNING

Driveshafts can weigh up to 100 lbs (45 kg). Properly support driveshafts when removing screws. After screws and brackets are removed, driveshaft can fall. Failure to comply may result in injury or death to personnel.

NOTE

- To remove driveshaft screws, use wrench located in PLS BII stowage box.
- Driveshaft ends at No. 2 axle and transfer case are removed the same way.

35. Support No. 2 axle driveshaft (41) while assistant removes four screws (42) and two brackets (43).

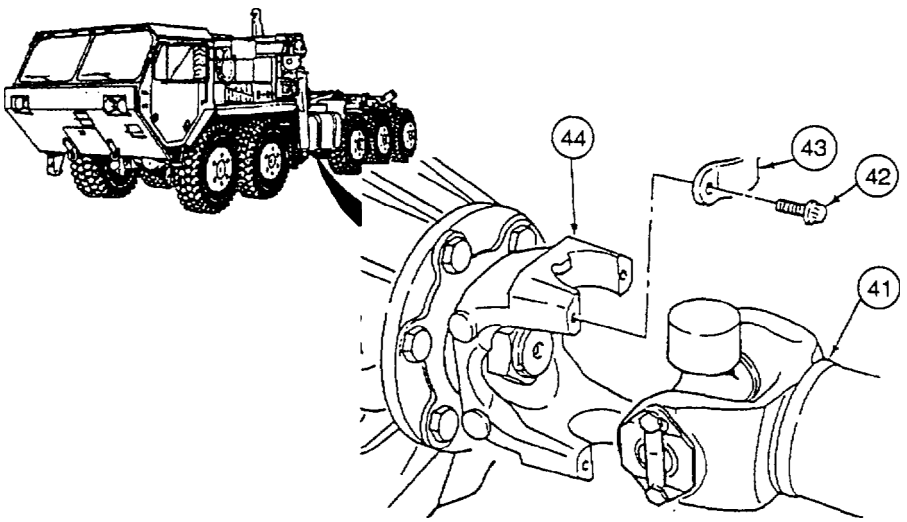


Figure 20.

36. Remove No. 2 axle driveshaft (41) from flange (44).
37. Turn steering axles straight forward, and install lock on steering column (refer to M1074/M1075 operator's manual).

HOOKUP - Continued

38. Set POWER switch (45) to ON position.

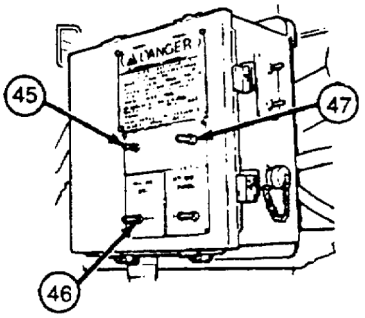


Figure 21.

39. Set HIGH IDLE switch (46) to CONTINUOUS.
40. Push and release LATCH switch (47). Engine speed will increase to approximately 1500 rpm.

WARNING

Keep out from under retrieval system and disabled vehicle when raised off ground. Failure to comply may result in injury or death to personnel.

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

CAUTION

- Fully retract both tow cylinders before lifting disabled vehicle. Failure to comply may result in damage to equipment.
- Ensure all rigging is secure. Loose rigging can become entangled. Failure to comply may result in damage to equipment.

HOOKUP - Continued

NOTE

Operator must allow wrecker air suspension system to completely adjust for added weight of disabled vehicle before raising disabled vehicle to final height of 1 ft. (30 cm).

41. Push LIFT CYLINDER control lever (6) to retract lift cylinder (23) and raise disabled vehicle approximately 3 in. (8 cm):

    a. Once wrecker air suspension system has adjusted for added weight of disabled vehicle, push LIFT CYLINDER control lever (6) to retract lift cylinder (23) and raise disabled vehicle to final height of 1 ft. (30 cm).

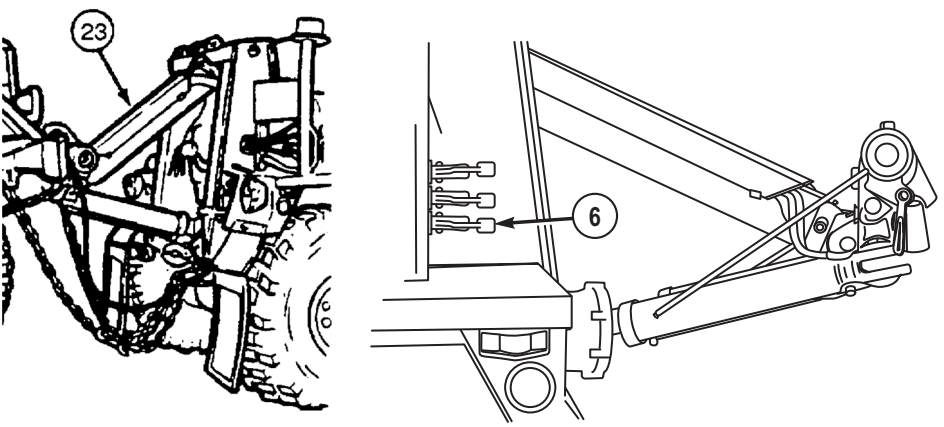


Figure 22.

42. Set POWER switch (45) to OFF position.

HOOKUP - Continued

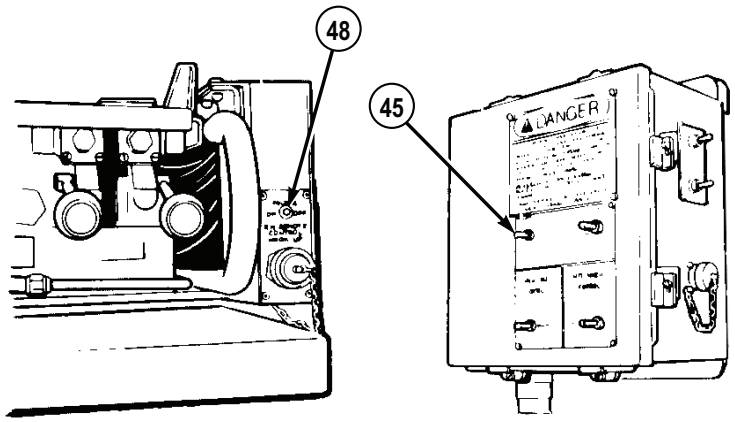


Figure 23.

43. Set POWER switch (48) to OFF position.
44. Set HYD ENABLE switch (49) to off position. MAIN HYD ENABLE indicator (50) will go out.

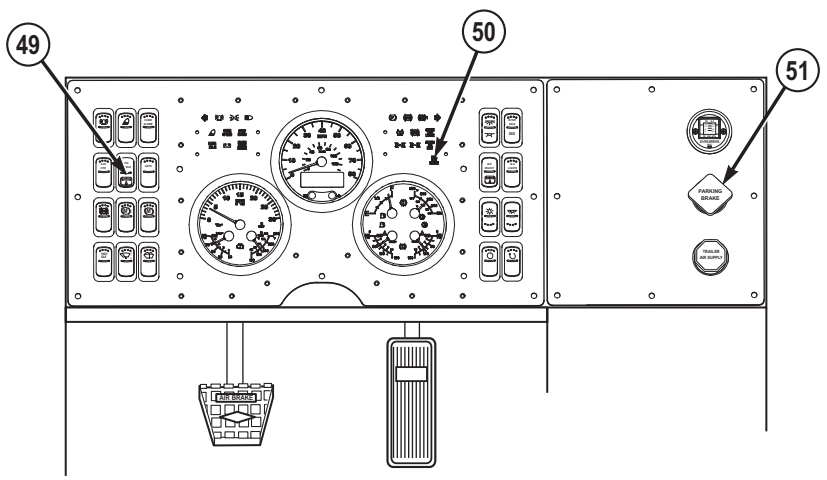


Figure 24.

45. Turn on wrecker service drive lights. (WP 0087)
46. Turn on wrecker emergency flashers. (WP 0096)
47. Turn on disabled vehicle emergency flashers (refer to operator's manual).

HOOKUP - Continued

NOTE

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

48. Push in PARKING BRAKE control (51).

WARNING

The M984 Wrecker should not be operated at speeds over 15 MPH (24 km/hr) except on paved roads when the operator determines that the vehicle being towed and the terrain allow safe operation. Engine brake switch must ON for all towing operations. Speed in excess of the below table may result in loss of control, serious injury, or death to personnel.

49. Select desired gear (WP 0048) and transport disabled vehicle.

Table 1. Maximum Towing Speed.

Terrain Condition	Maximum Speed Towed Load Up To 50,000 lbs (22 700 kg)	Maximum Speed Towed Load Above 50,000 lbs (22 700 kg)
On Road-Level	35 mph (56 km/hr)	30 mph (48 km/hr)
On Road-Hilly	30 mph (48 km/hr)	20 mph (32 km/hr)
Off-Road	15 mph (24 km/hr)	15 mph (24 km/hr)

REAR DISCONNECT

NOTE

This procedure is a two soldier task.

1. Set transmission range selector (1) to N (neutral).

REAR DISCONNECT - Continued

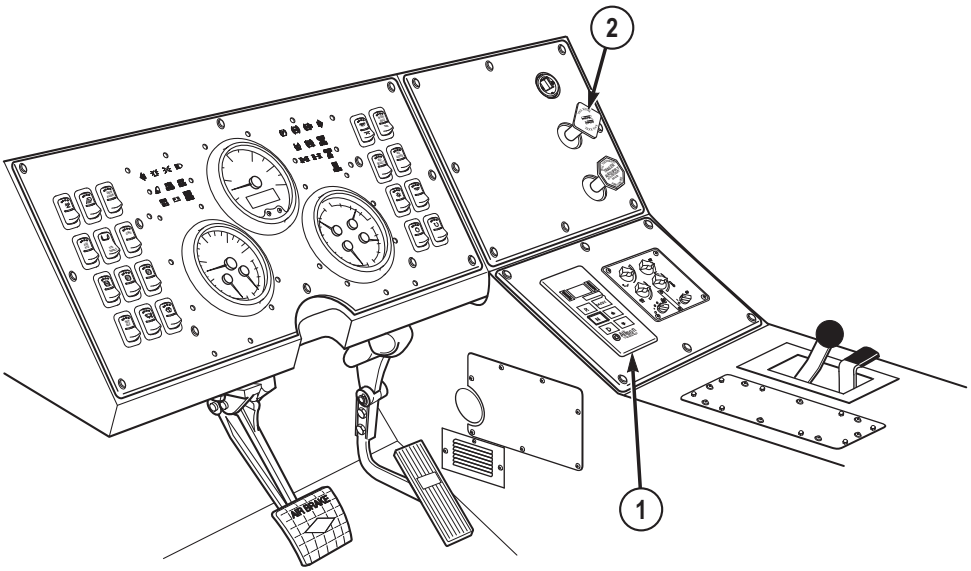


Figure 25.

NOTE

Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

2. Pull out PARKING BRAKE control (2).

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

NOTE

- After lowering disabled vehicle, extend lift and tow cylinders approximately 2 to 4 in. (50 to 100 mm) to allow for adjustment when removing adapters.

REAR DISCONNECT - Continued

- Expect wrecker air suspension system to deflate air springs to achieve normal ride height once weight of disabled vehicle is removed.

3. Review procedures for operating retrieval towing system (WP 0058) and prepare retrieval system for operation, (WP 0059) and lower disabled vehicle to the ground.

WARNING

If disabled vehicle's parking brake is inoperative, chock wheels of disabled vehicle (refer to operator's manual). Failure to comply may result in injury or death to personnel.

4. Pull out PARKING BRAKE control (3) on disabled vehicle.

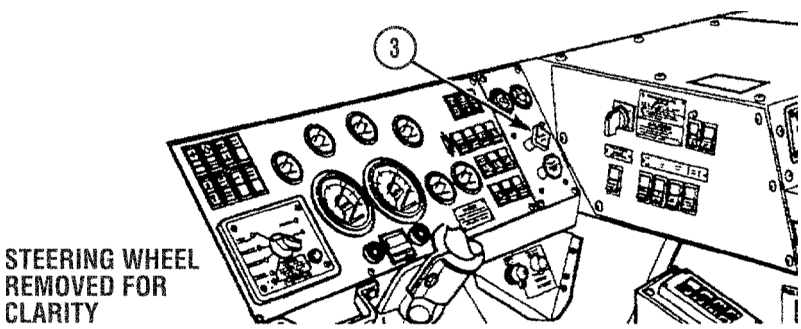


Figure 26.

5. Remove tow light cable (4) from wrecker.

REAR DISCONNECT - Continued

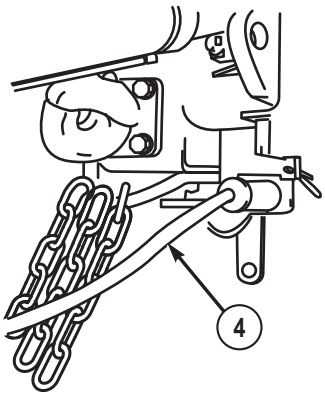


Figure 27.

6. Remove tow light cable (4) from emergency tow lights (5).

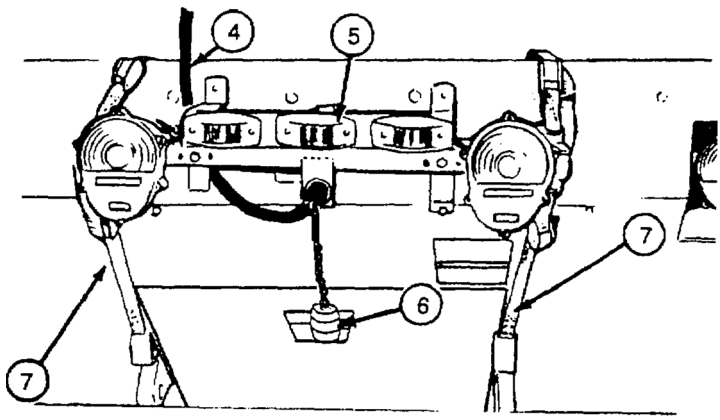


Figure 28.

7. Install dust cap (6) on tow light cable (4) and return to wrecker stowage.
8. Loosen straps (7), and remove emergency tow lights (5) from disabled vehicle.
9. Remove two nuts (8), washers (9), screws (10), and brackets (11) from emergency tow lights (5).
10. Return emergency tow lights (5) and two brackets (11) to wrecker stowage.

REAR DISCONNECT - Continued

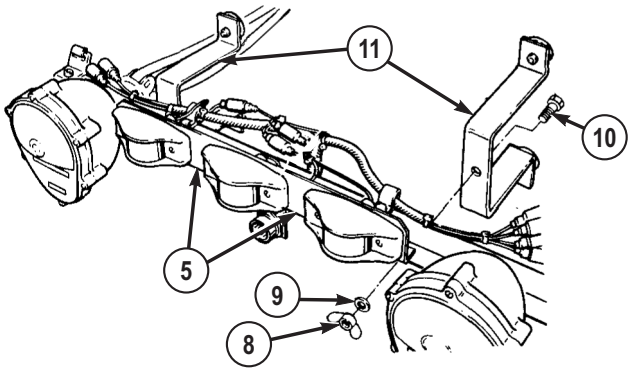


Figure 29.

11. Remove and stow two 16 ft. (5 m) safety chains (12).

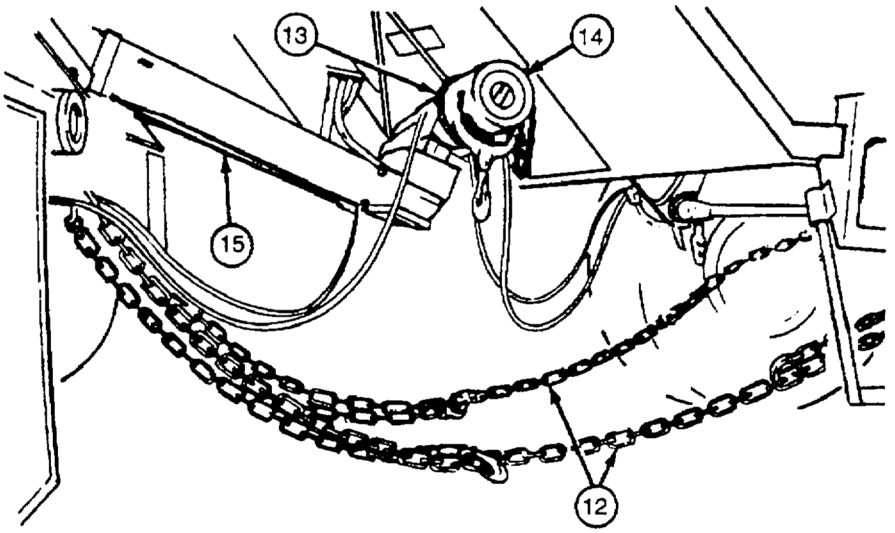
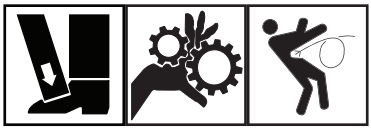


Figure 30.

12. Unwrap two springs (13) from cross tube (14) and connect two springs to tow cylinders (15).

REAR DISCONNECT - Continued

WARNING



- Do not stand behind adapters when pins are being removed. Failure to comply may result in injury or death to personnel.
- Keep hands and fingers away from adapters and tow eyes when operating retrieval controls. Failure to comply may result in injury or death to personnel.

NOTE

Use retrieval controls to position cross tube to relieve tension from adapters.

13. Remove two quick pins (16) and pins (17) from adapters (18).

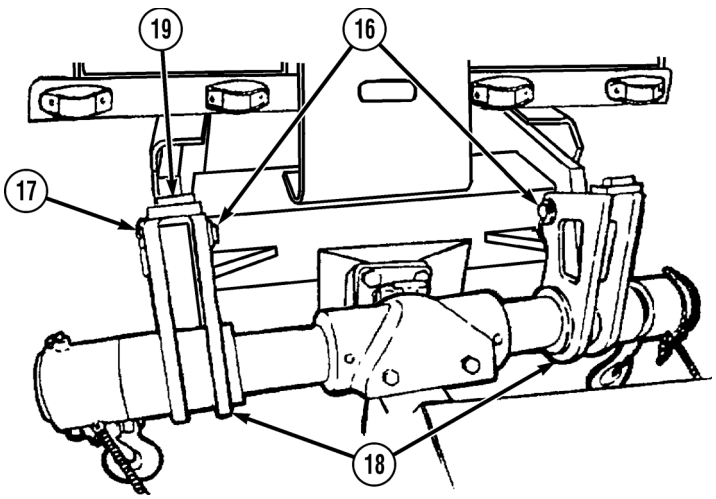


Figure 31.

14. Remove two adapters (18) from tow eyes (19) on disabled vehicle.
15. Install two pins (17) through adapters (18). Install two quick pins (16) in pins (17).
16. Drive wrecker forward (WP 0050) several feet and park. (WP 0056)
17. Remove two springs (13) from tow cylinders (15).

REAR DISCONNECT - Continued

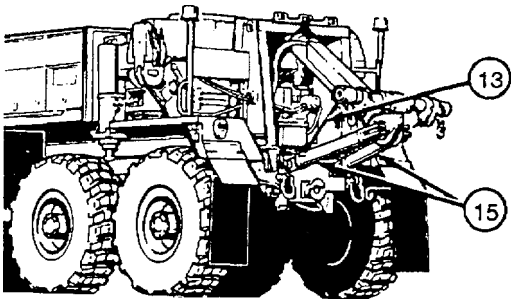


Figure 32.

18. Remove quick pins (20) and pins (21) from end caps (22).

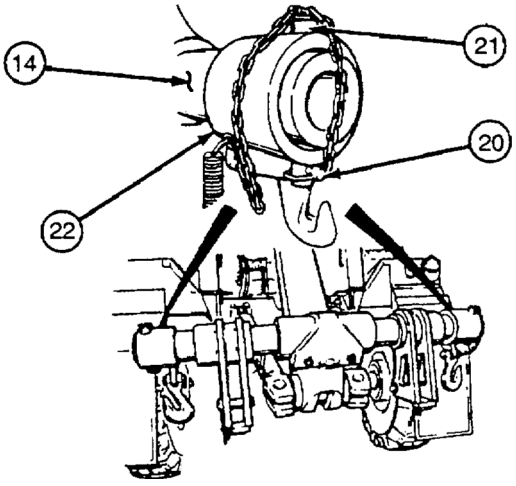


Figure 33.

19. Remove end caps (22) from cross tube (14).
20. Remove adapters (18) from cross tube (14) and place on equipment body floor (23).

REAR DISCONNECT - Continued

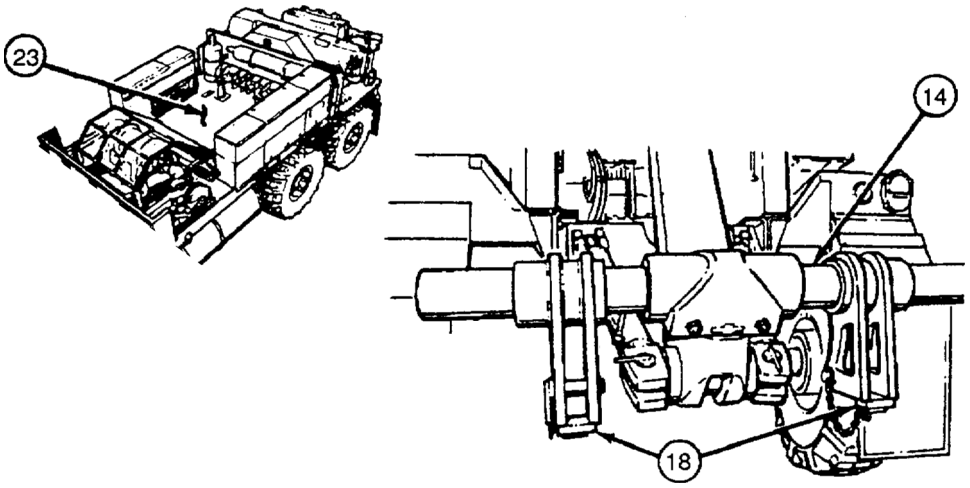


Figure 34.

21. Remove lock handle (24), lock plate (25), and two front adapters (26).
22. Install two rear adapters (18) with lock plate (25) and lock handle (24).

REAR DISCONNECT - Continued

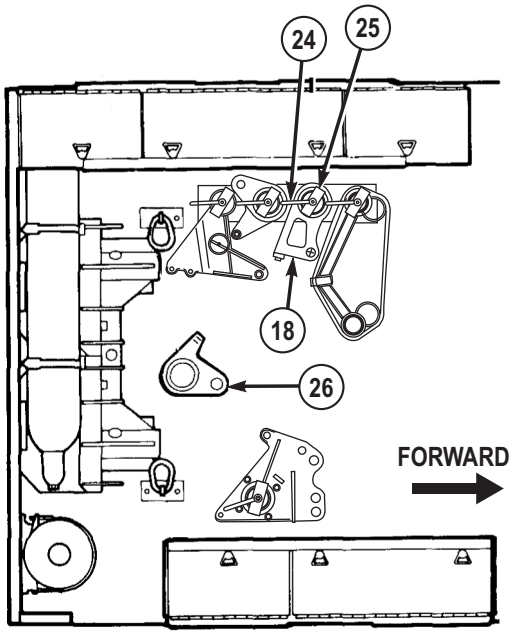


Figure 35.

23. Install two front adapters (26) on cross tube (14).

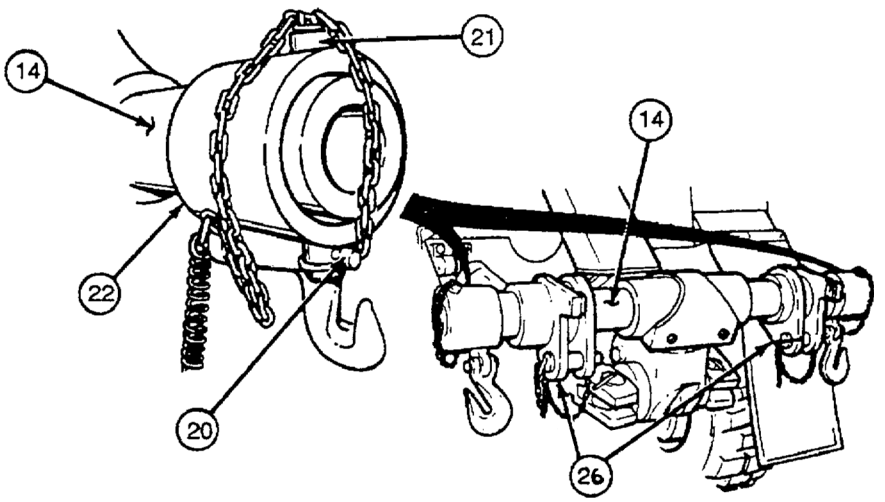


Figure 36.

REAR DISCONNECT - Continued

24. Install two end caps (22) on cross tube (14). Install two pins (21) and quick pins (20).
25. Install two springs (13) on tow cylinders (15).

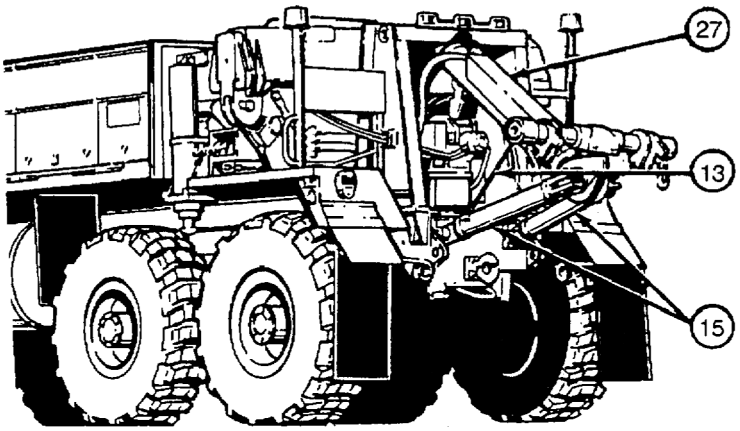


Figure 37.

26. Operate retrieval system, and fully retract lift cylinder (27) and tow cylinders (15).

NOTE

Driver side and passenger side towing shackles are installed the same way.

27. Install two towing shackles (28), pins (29), and cotter pins (30).

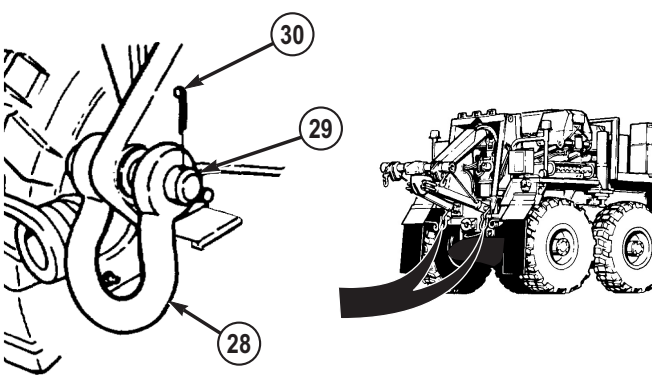


Figure 38.

REAR DISCONNECT - Continued

28. Set POWER switch (31) to OFF position.

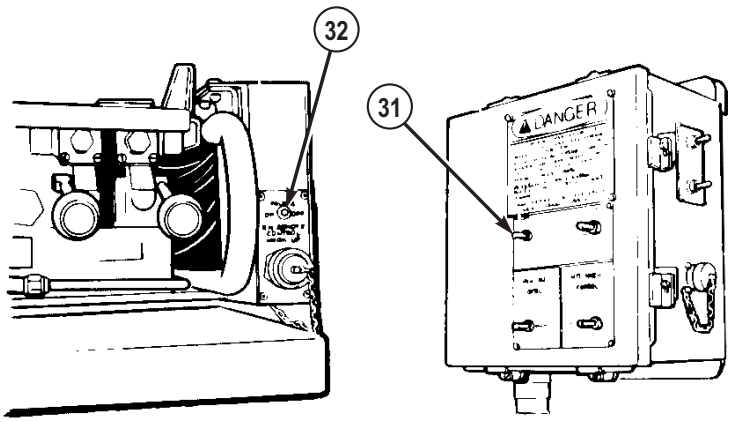


Figure 39.

29. Set POWER switch (32) to OFF position.
30. Turn off wrecker service drive lights. (WP 0087)
31. Turn off wrecker emergency flashers. (WP 0096)
32. Set HYD ENABLE switch (33) to off position. MAIN HYD ENABLE indicator (34) will go out.

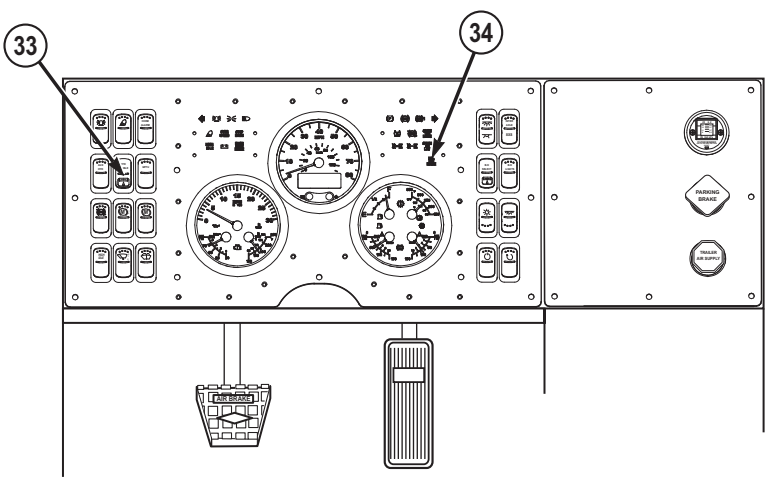


Figure 40.

REAR DISCONNECT - Continued

33. Shut off engine. (WP 0057)
34. Remove and stow portable beacon lights. (WP 0094)
35. Turn off disabled vehicle emergency flashers, and unlock steering column (refer to disabled vehicle operator's manual).

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
TOW M35 - REAR LIFT

INITIAL SETUP:

Not Applicable

HOOKUP

NOTE

- Each recovery situation is unique and requires assessment to determine if the driveline is suitable for transport. When in doubt, consult with field level maintenance.
- This procedure is a two soldier task.

1. Review procedures for operating retrieval towing system (WP 0058) and prepare retrieval system for operation. (WP 0059)

WARNING

When springs and end caps are removed, cross tube can swing in all directions and adapters may slide off and cause injury or death to personnel.

2. Disconnect two springs (1) from tow cylinders (2).

HOOKUP - Continued

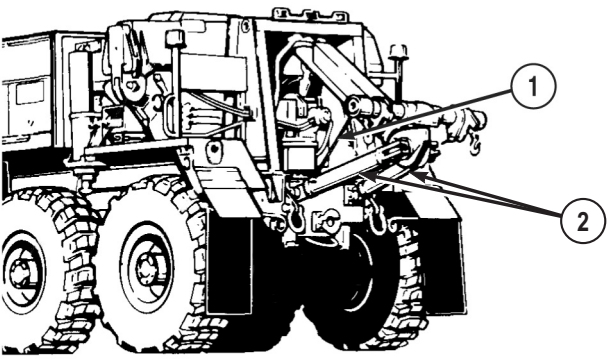


Figure 1.

CAUTION

Both rear towing shackles must be removed from rear tow eyes on wrecker before performing retrieval operations, or damage to tow cylinder may result.

NOTE

Driver side and passenger side towing shackles are removed the same way.

3. Remove two rear towing shackles from wrecker vehicle:

HOOKUP - Continued

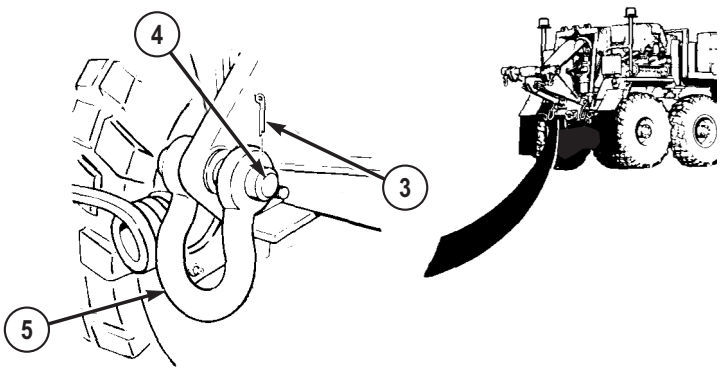


Figure 2.

a. Remove cotter pin (3), pin (4), and towing shackle (5).

b. Replace pin (4) in shackle (5), and cotter pin (3) in pin (4).

c. Repeat Steps (a) and (b) for opposite side towing shackle (5).

d. Stow two rear towing shackles on wrecker vehicle.

4. Pull LIFT CYLINDER control lever (6) to lower cross tube (7) to approximately 3 ft. (1 m) above ground.

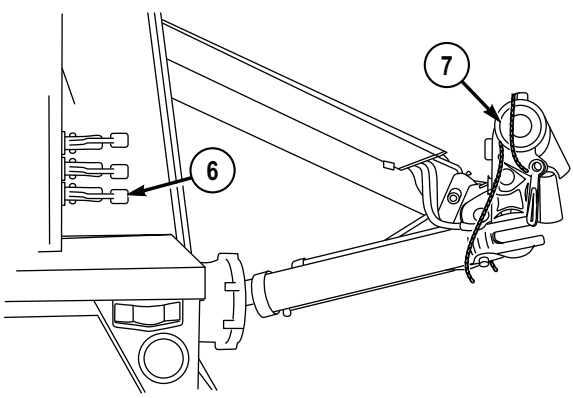


Figure 3.

5. Position wrecker so that cross tube (7) is approximately 1 ft. (30 cm) from, and centered on tow eyes of disabled vehicle.

HOOKUP - Continued

WARNING

When springs and end caps are removed, cross tube can swing in all directions and adapters may slide off and cause injury or death to personnel.

6. Remove two quick pins (8) and pins (9) from end caps (10).

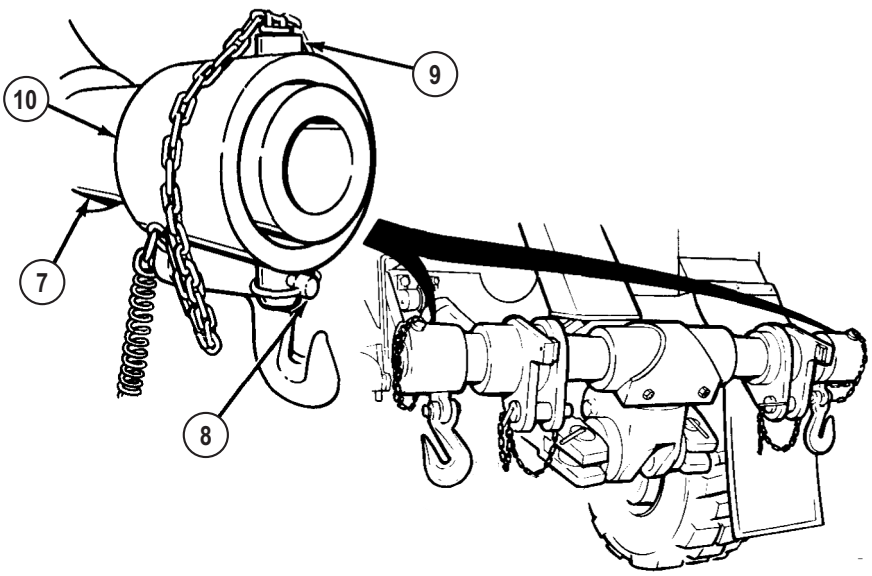


Figure 4.

7. Remove two end caps (10) from cross tube (7).
8. Remove two adapters (11) from cross tube (7) and place on equipment body floor (12).

HOOKUP - Continued

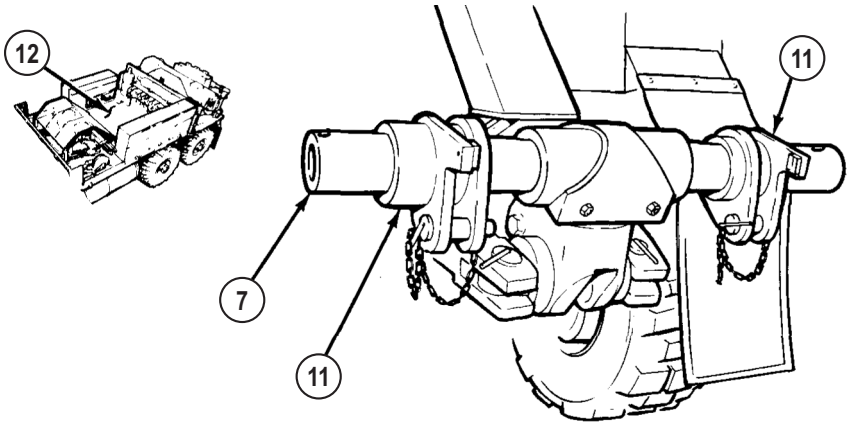


Figure 5.

9. Remove lock handle (13), lock plate (14), quick pin (15), pin (16), and two rear tow adapters (17).

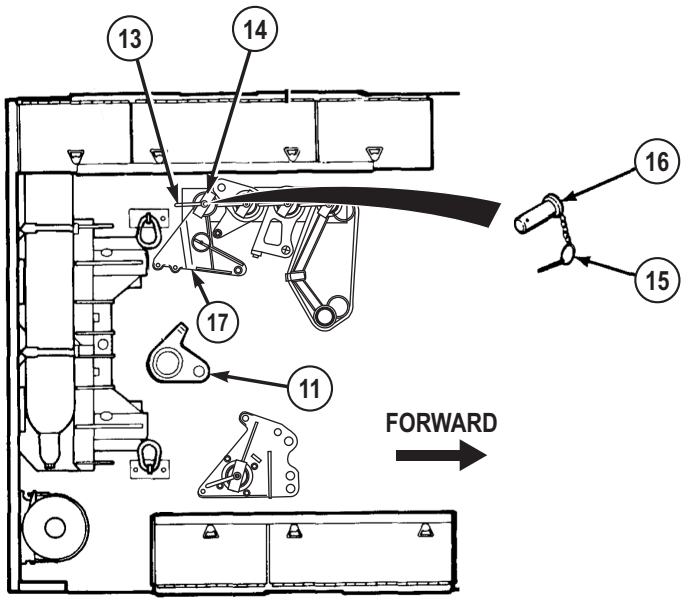


Figure 6.

10. Install two front adapters (11) removed from cross tube (7), lock plate (14), lock handle (13), pin (16), and quick pin (15).

HOOKUP - Continued

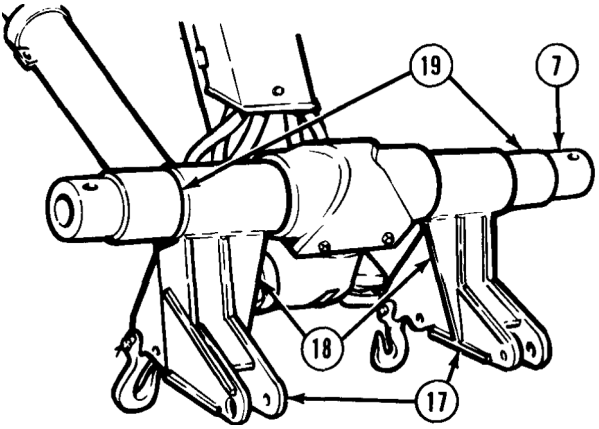
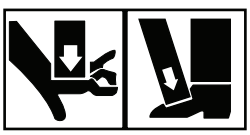


Figure 7.

11. Remove two 7/8 in. (22 mm) pins and two 5 in. (127 mm) spacers (19) from wrecker stowage.

WARNING



Adapters and end caps may slide off when installing and cause injury or death to personnel.

12. Install two rear tow adapters (17) on cross tube (7) with support brace (18) to inside.
13. Install two 5 in. (127 mm) spacers (19) on cross tube (7).
14. Install two end caps (10) on cross tube (7).

HOOKUP - Continued

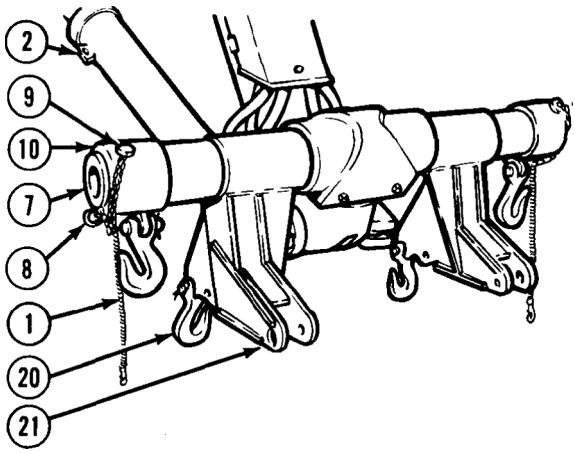


Figure 8.

15. Install two pins (9) and quick pins (8).

NOTE

Adapter grab hook may be installed in either hole. For M35, install grab hooks in hole farthest from towing pin holes.

16. Position adapter grab hooks (20) in hole farthest from pin holes (21).
17. Attach two springs (1) on tow cylinders (2).

NOTE

If disabled vehicle has towing shackles installed, remove shackles and stow in disabled vehicle.

18. Operate retrieval system, and with aid of an assistant position cross tube (7) so holes in adapters (17) align with rear tow eyes (22).

HOOKUP - Continued

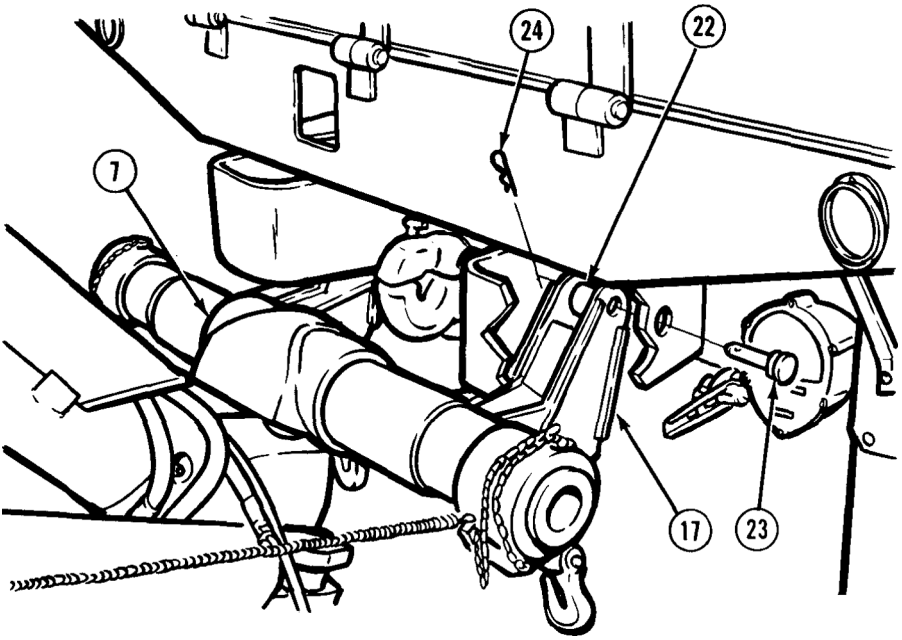


Figure 9.

WARNING

Keep hands and fingers away from adapters and tow eyes when operating retriever controls. Failure to comply may result in injury or death to personnel.

NOTE

When installing pins, turn pin hole vertical to allow for easier cotter hairpin installation.

19. Insert two 7/8 in. (22 mm) pins (23) through adapters (17) and rear tow eyes (22). Install two cotter hairpins (24) in pins.
20. Lower cross tube (7) until adapter grab hooks (20) are under rear tow eyes (22).

HOOKUP - Continued

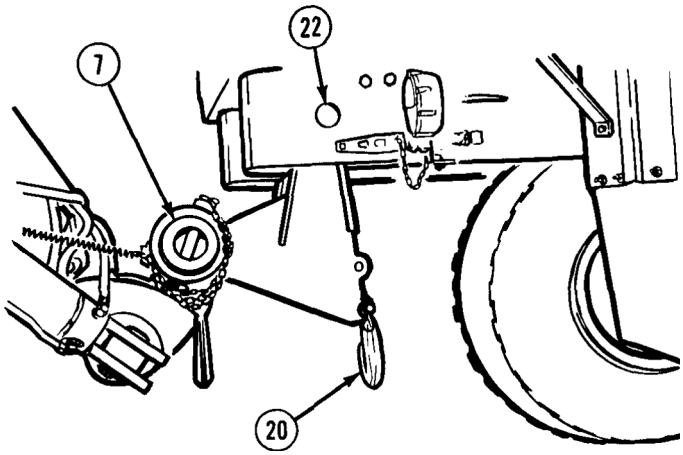


Figure 10.

21. Remove two 16 ft. (5 m) safety chains (25) from wrecker stowage.

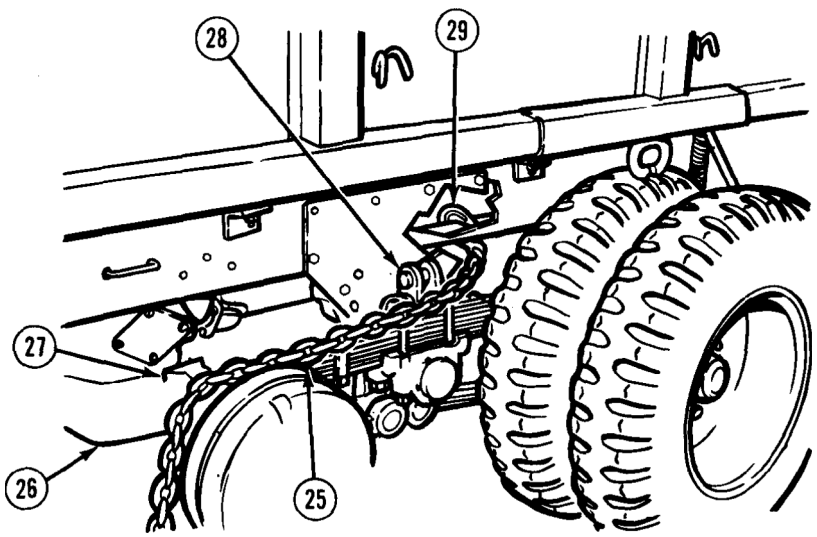


Figure 11.

22. Route one end (without safety shackle) of 16 ft. (5 m) safety chain (25) over rear axle (26) and outside axle stop (27).

23. Route 16 ft. (5 m) safety chain (25) around sling point (28), and attach grab hook (29) to bottom flange of frame rail.

HOOKUP - Continued

24. Repeat Steps (22) and (23) for other side of disabled vehicle.
25. Pull 16 ft. (5 m) safety chain (25) tight, and install on adapter grab hook (20).
26. Repeat Step (25) for other side of disabled vehicle.
27. Release PARKING BRAKE on disabled vehicle (refer to M35 operator's manual).
28. Operate retrieval system until tow cylinders (2) are fully retracted.

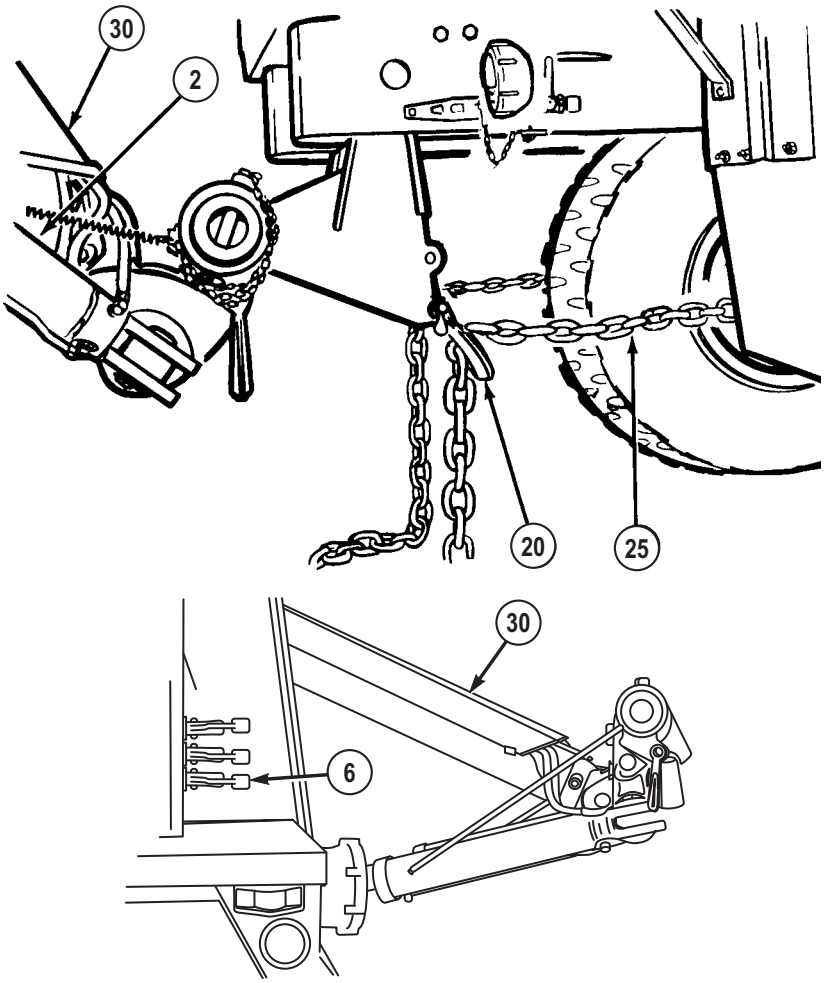


Figure 12.

HOOKUP - Continued

29. Push in LIFT CYLINDER control lever (6) to retract lift cylinder (30) until slack is removed from 16 ft. (5 m) safety chains (25).

NOTE

Adjust chain slack so 16 ft. (5 m) safety chains do not touch ground.

30. Route two 16 ft. (5 m) safety chains (25) through safety chain hoop (31) on wrecker, hook back into themselves, and secure grab hooks (32) with safety shackles (33).

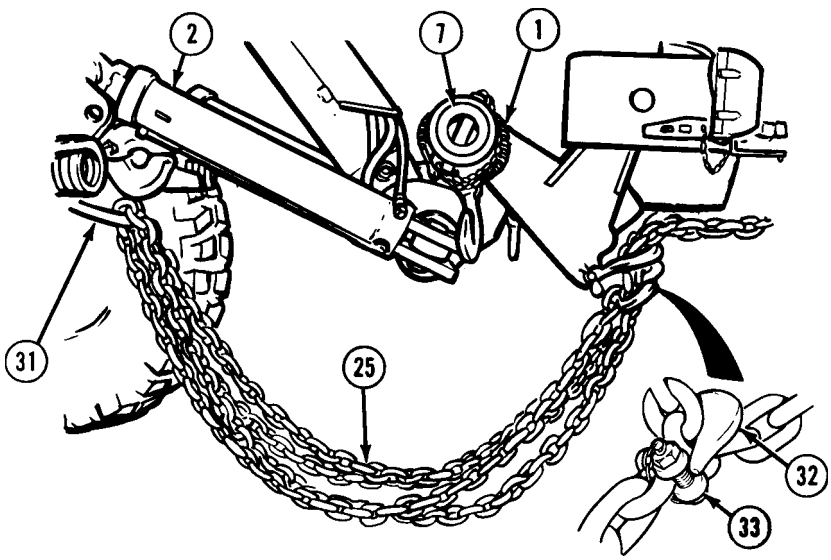


Figure 13.

31. Disconnect two springs (1) from tow cylinders (2), wrap around cross tube (7) and secure.

CAUTION

Make sure all cargo in bed of disabled vehicle is secured prior to lifting and towing. Failure to comply may result in damage to cargo and equipment.

32. Prepare disabled vehicle for towing (refer to M35 operator's manual).

33. Remove emergency tow lights (34) and two brackets (35) from wrecker stowage.

34. Install two brackets (35) in outside holes of emergency tow lights (34) with two screws (36), washers (37), and nuts (38).

HOOKUP - Continued

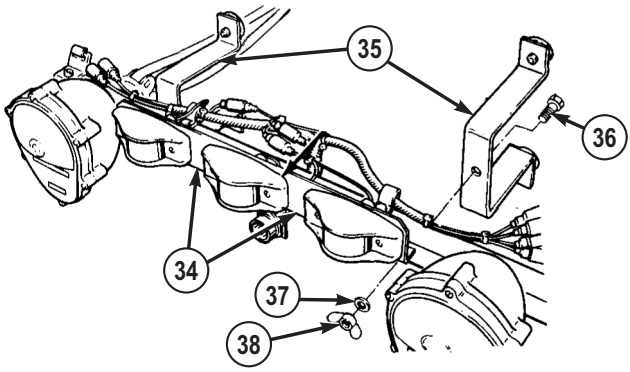


Figure 14.

35. Install emergency tow lights (34) on front of M35 and fasten securely with straps (39).

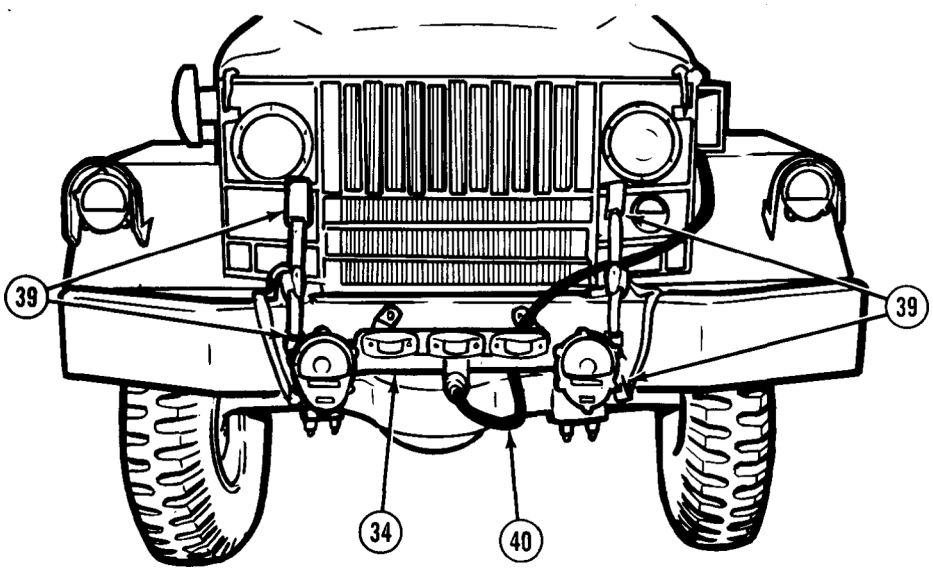


Figure 15.

36. Remove tow light cable (40) from wrecker stowage and connect to emergency tow light (34).

HOOKUP - Continued

CAUTION

Route cable so it does not drag on ground or interfere with turning tires. Failure to comply may result in damage to equipment.

37. Route other end of tow light cable (40) along disabled vehicle, and connect to rear electrical connector (41) on wrecker.

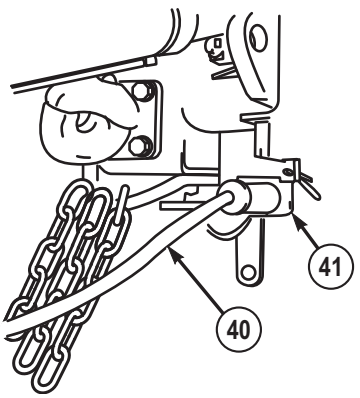


Figure 16.

38. Lock disabled vehicle's steering (refer to M35 operator's manual).
39. Set POWER switch (42) to ON position.

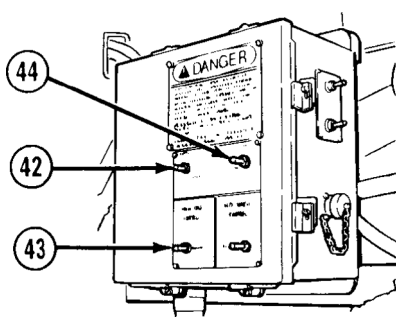


Figure 17.

40. Set HIGH IDLE switch (43) to CONTINUOUS.
41. Push and release LATCH switch (44). Engine speed will increase to approximately 1500 rpm.

HOOKUP - Continued

WARNING

Keep out from under retrieval system and disabled vehicle when raised off ground. Failure to comply may result in injury or death to personnel.

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

CAUTION

- Fully retract both tow cylinders before lifting disabled vehicle. Failure to comply may result in damage to equipment.
- Ensure all rigging is secure. Loose rigging can become entangled. Failure to comply may result in damage to equipment.

NOTE

Operator must allow wrecker air suspension system to completely adjust for added weight of disabled vehicle before raising disabled vehicle to final height of 1 ft. (30 cm).

42. Push LIFT CYLINDER control lever (6) to retract lift cylinder (30) and raise disabled vehicle approximately 3 in. (8 cm):
    a. Once wrecker air suspension system has adjusted for added weight of disabled vehicle, push LIFT CYLINDER control lever (6) to retract lift cylinder (30) and raise disabled vehicle to final height of 1 ft. (30 cm).

HOOKUP - Continued

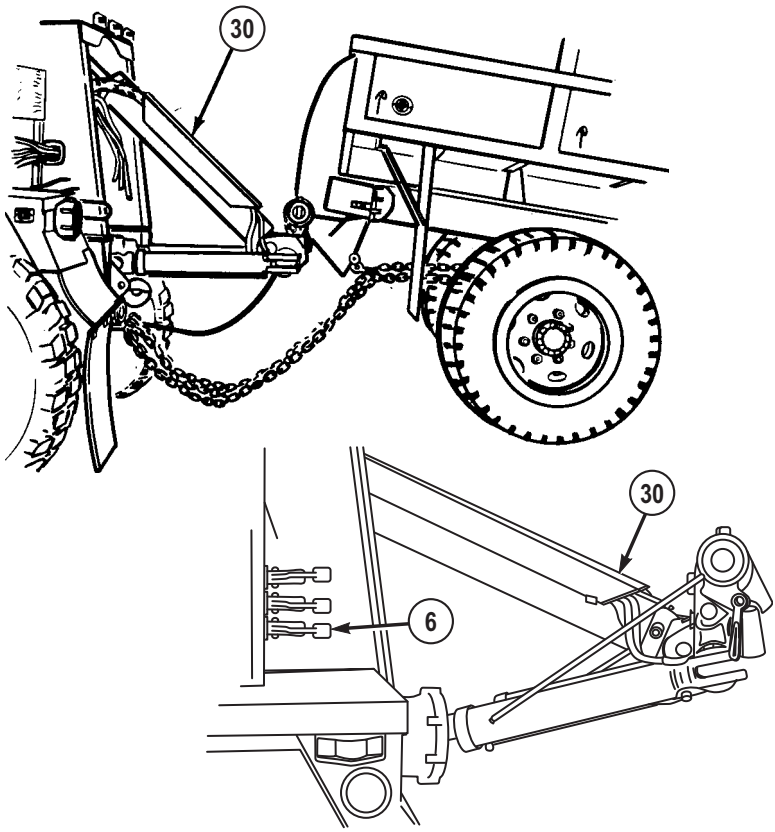


Figure 18.

43. Set POWER switch (42) to OFF position.

HOOKUP - Continued

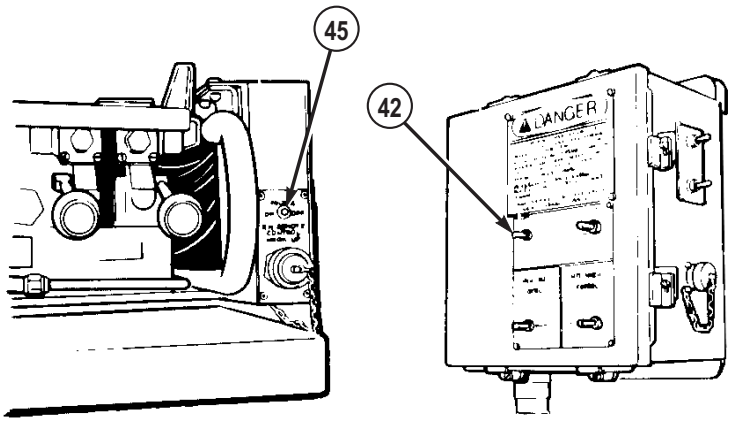


Figure 19.

44. Set POWER switch (45) to OFF position.
45. Set HYD ENABLE switch (46) to off position. MAIN HYD ENABLE indicator (47) will go out.

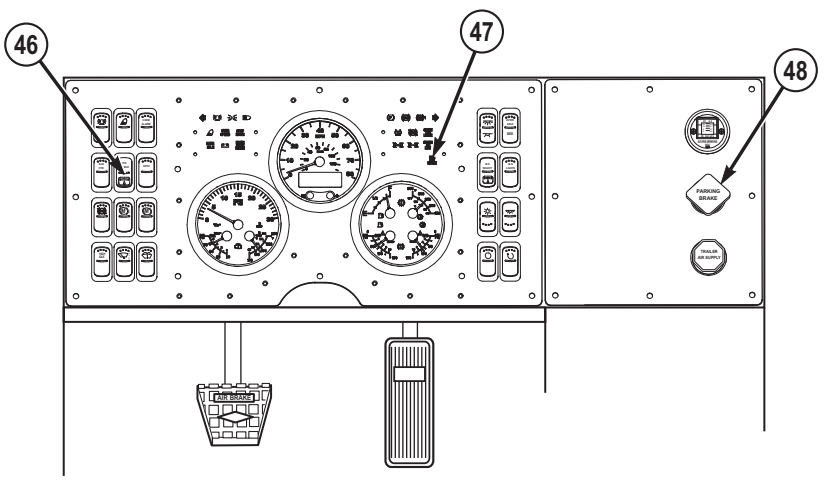


Figure 20.

46. Turn on wrecker service drive lights. (WP 0087)
47. Turn on wrecker emergency flashers. (WP 0096)
48. Turn on disabled vehicle emergency flashers (refer to operator's manual).

HOOKUP - Continued

NOTE

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

49. Push in PARKING BRAKE control (48).

WARNING

The M984 Wrecker should not be operated at speeds over 15 MPH (24 km/hr) except on paved roads when the operator determines that the vehicle being towed and the terrain allow safe operation. Engine brake switch must ON for all towing operations. Speed in excess of the below table may result in loss of control, serious injury, or death to personnel.

50. Select desired gear (WP 0048) and transport disabled vehicle.

Table 1. Maximum Towing Speed.

Terrain Condition	Maximum Speed Towed Load Up To 50,000 lbs (22 700 kg)	Maximum Speed Towed Load Above 50,000 lbs (22 700 kg)
On Road-Level	35 mph (56 km/hr)	30 mph (48 km/hr)
On Road-Hilly	30 mph (48 km/hr)	20 mph (32 km/hr)
Off-Road	15 mph (24 km/hr)	15 mph (24 km/hr)

REAR DISCONNECT

NOTE

This procedure is a two soldier task.

1. Set transmission range selector (1) to N (neutral).

REAR DISCONNECT - Continued

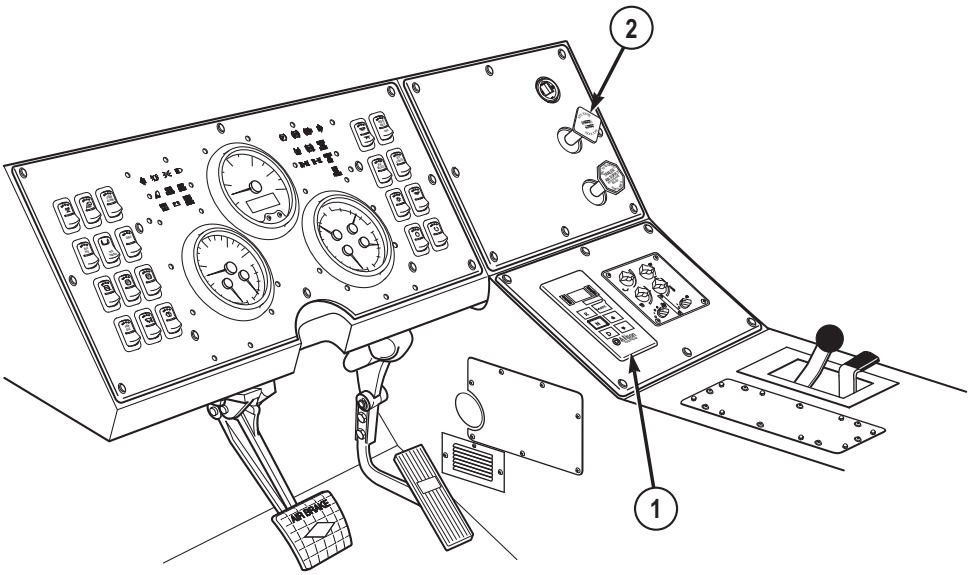


Figure 21.

NOTE

Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

2. Pull out PARKING BRAKE control (2).

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

NOTE

- After lowering disabled vehicle, extend lift and tow cylinders approximately 2 to 4 inches (50 to 100 mm) to allow for adjustment when removing adapters.

REAR DISCONNECT - Continued

- Expect wrecker air suspension system to deflate air springs to achieve normal ride height once weight of disabled vehicle is removed.

3. Review procedures for operating retrieval towing system, (WP 0058)prepare retrieval system for operation, (WP 0059) and lower disabled vehicle until 16 ft. (5 m) safety chains are slack at rear axle.

WARNING

If disabled vehicle's parking brake is inoperative, chock wheels of disabled vehicle (refer to operator's manual). Failure to comply may result in injury or death to personnel.

4. Set parking brake on disabled vehicle (refer to disabled vehicle operator's manual).
5. Remove tow light cable (3) from wrecker.

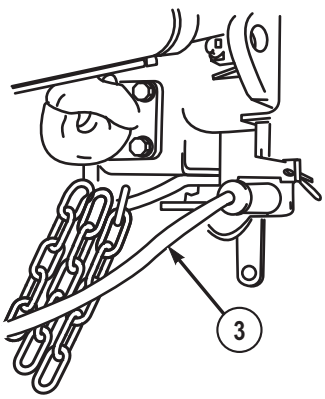


Figure 22.

6. Remove tow light cable (3) from emergency tow lights (4) and return to wrecker stowage.

REAR DISCONNECT - Continued

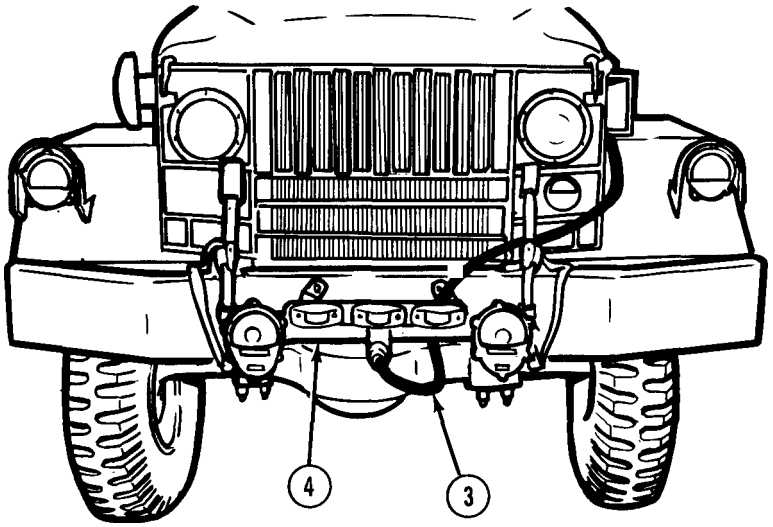


Figure 23.

7. Remove emergency tow lights (4) from disabled vehicle.
8. Remove two nuts (5), washers (6), screws (7), and brackets (8) from emergency tow lights (4). Return emergency tow lights and two brackets to wrecker stowage.

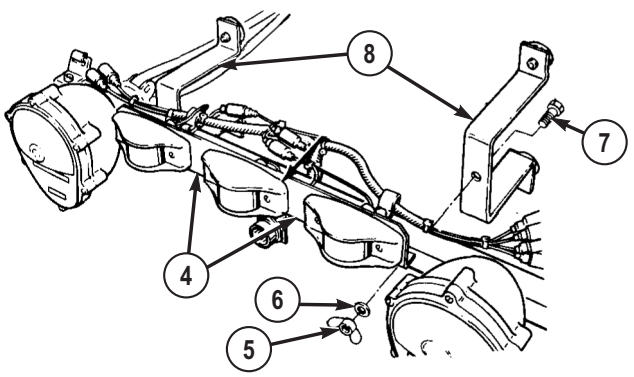


Figure 24.

9. Remove and stow two 16 ft. (5 m) safety chains (9).

REAR DISCONNECT - Continued

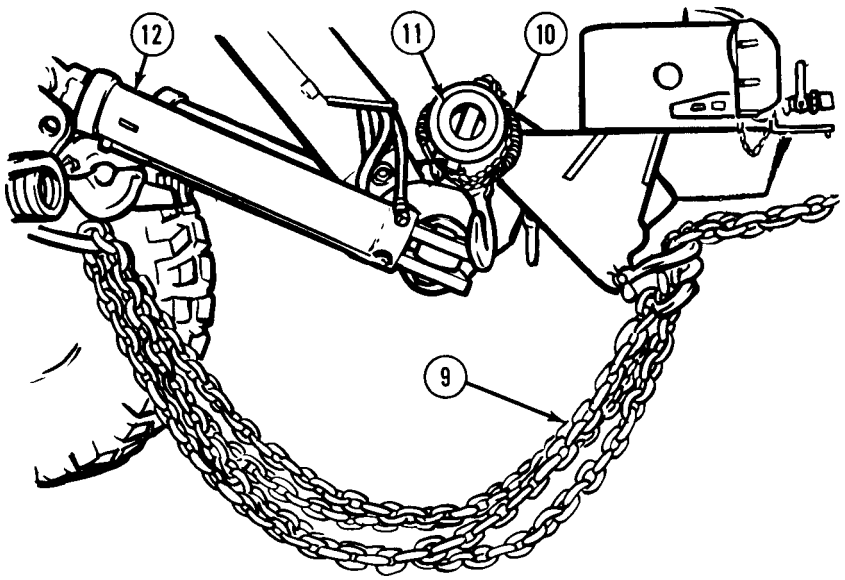
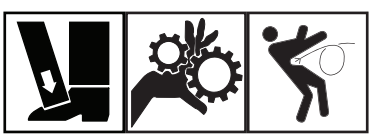


Figure 25.

10. Unwrap two springs (10) from cross tube (11) and connect to tow cylinders (12).

WARNING



- Do not stand behind adapters when pins are being removed. Failure to comply may result in injury or death to personnel.
- Keep hands and fingers away from adapters and tow eyes when operating retrieval controls. Failure to comply may result in injury or death to personnel.

NOTE

Use retrieval controls to position cross tube to relieve tension from adapters.

11. Remove two hairpins (13) and 7/8 in. (22 mm) pins (14) from adapters (15).

REAR DISCONNECT - Continued

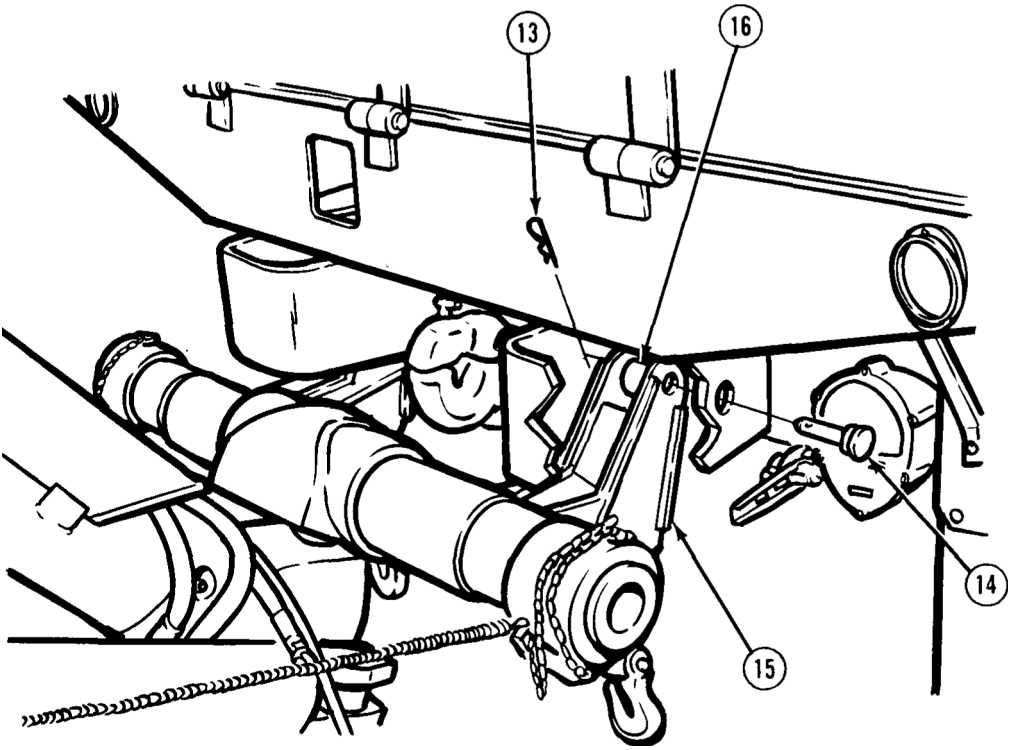


Figure 26.

12. Remove two adapters (15) from tow eyes (16) on disabled vehicle.
13. Install two hairpins (13) in 7/8 in. (22 mm) pins (14) and return to wrecker stowage.
14. Drive wrecker forward (WP 0050) several feet and park. (WP 0056)

WARNING

When springs and end caps are removed, cross tube can swing in all directions and adapters may slide off and cause injury or death to personnel.

15. Remove two springs (10) from tow cylinders (12).

REAR DISCONNECT - Continued

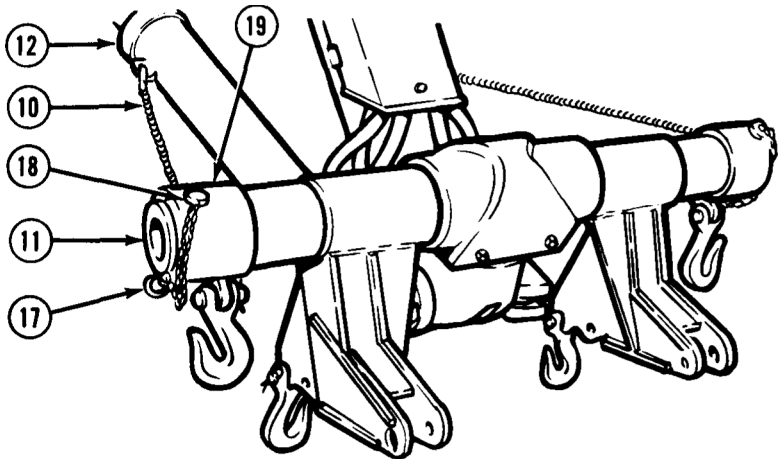


Figure 27.

16. Remove two quick pins (17) and pins (18) from end caps (19).
17. Remove two end caps (19) from cross tube (11).
18. Remove two 5 in. (127 mm) spacers (20) from cross tube (11) and return to wrecker stowage.
19. Remove two adapters (15) from cross tube (11) and place on equipment body floor (21).

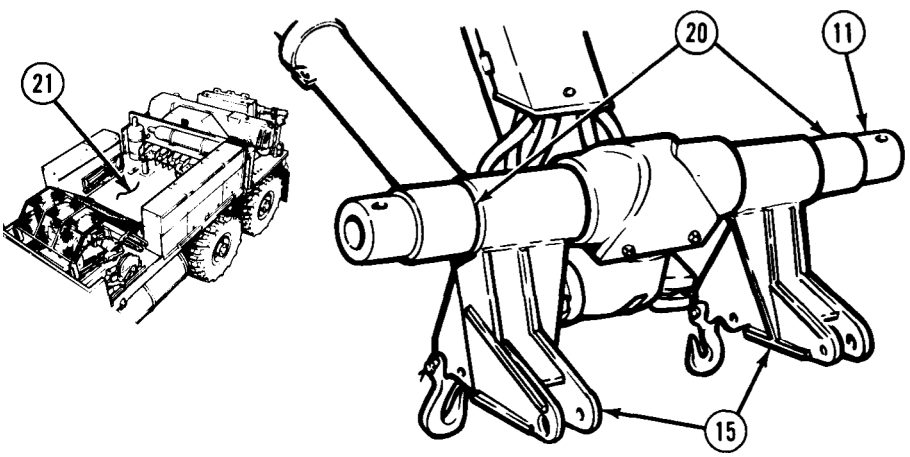


Figure 28.

REAR DISCONNECT - Continued

20. Remove lock handle (22), lock plate (23), quick pin (24), pin (25), and two front adapters (26).

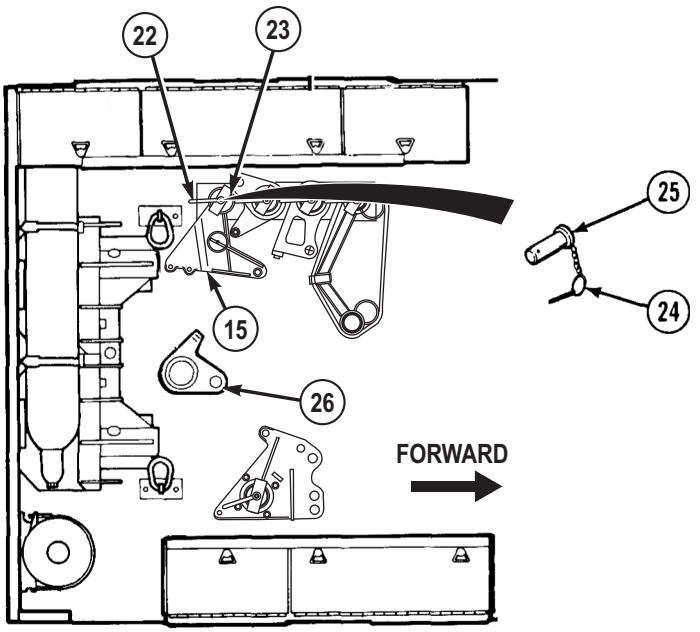


Figure 29.

21. Install two adapters (15) on body floor with pin (25), quick pin (24), lock plate (23), and lock handle (22).

22. Install two front adapters (26) on cross tube (11).

REAR DISCONNECT - Continued

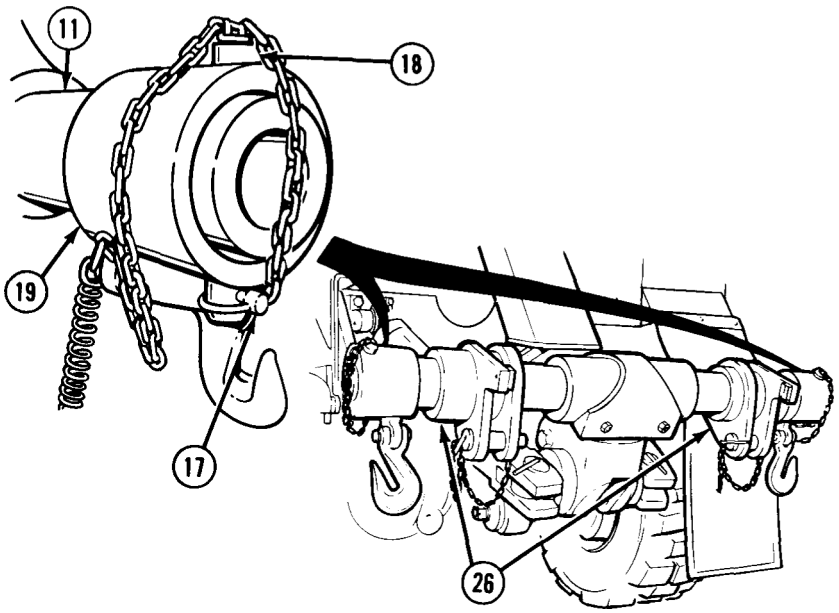


Figure 30.

23. Install two end caps (19) on cross tube (11).
24. Install two pins (18) and quick pins (17).
25. Install two springs (10) on tow cylinders (12).

REAR DISCONNECT - Continued

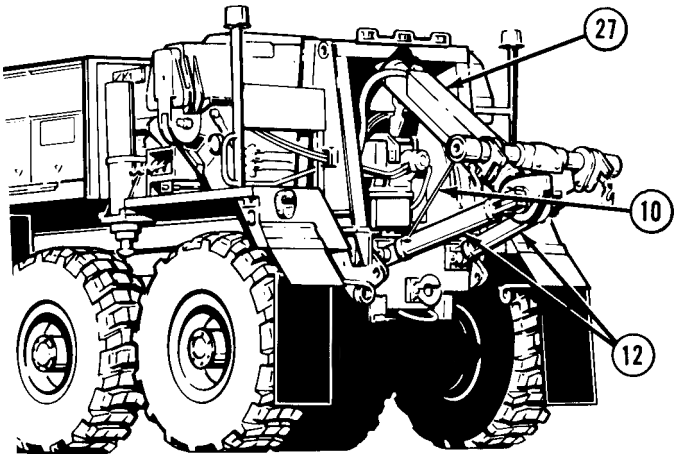


Figure 31.

26. Operate retrieval system, and fully retract lift cylinder (27) and tow cylinders (12).

NOTE

Driver side and passenger side towing shackles are installed the same way.

27. Install two rear towing shackles (28), pins (29), and cotter pins (30).

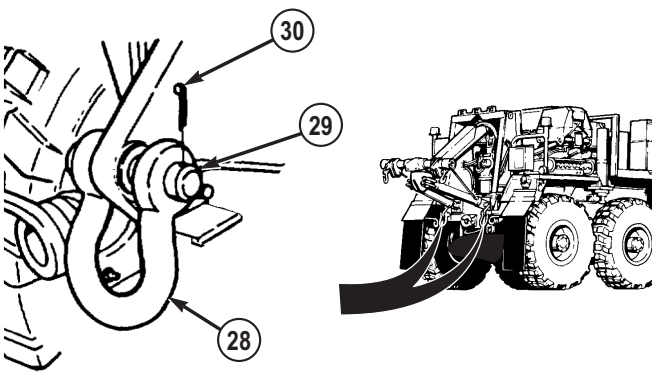


Figure 32.

28. Set POWER switch (31) to OFF position.

REAR DISCONNECT - Continued

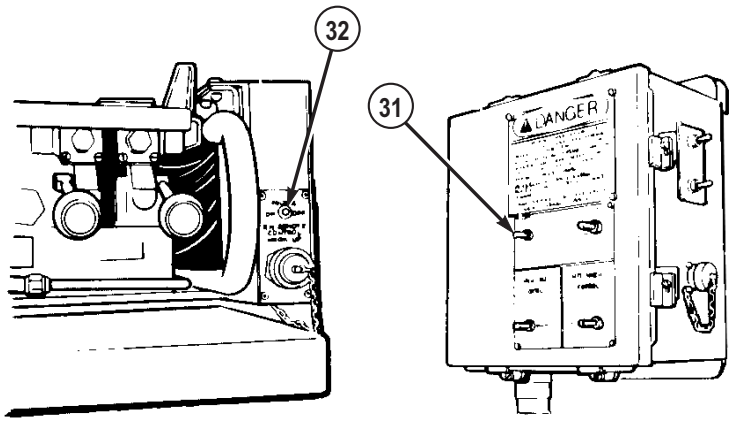


Figure 33.

29. Set POWER switch (32) to OFF position.
30. Turn off wrecker service drive lights. (WP 0087)
31. Turn off wrecker emergency flashers. (WP 0096)
32. Set HYD ENABLE switch (33) to off position. MAIN HYD ENABLE indicator (34) will go out.

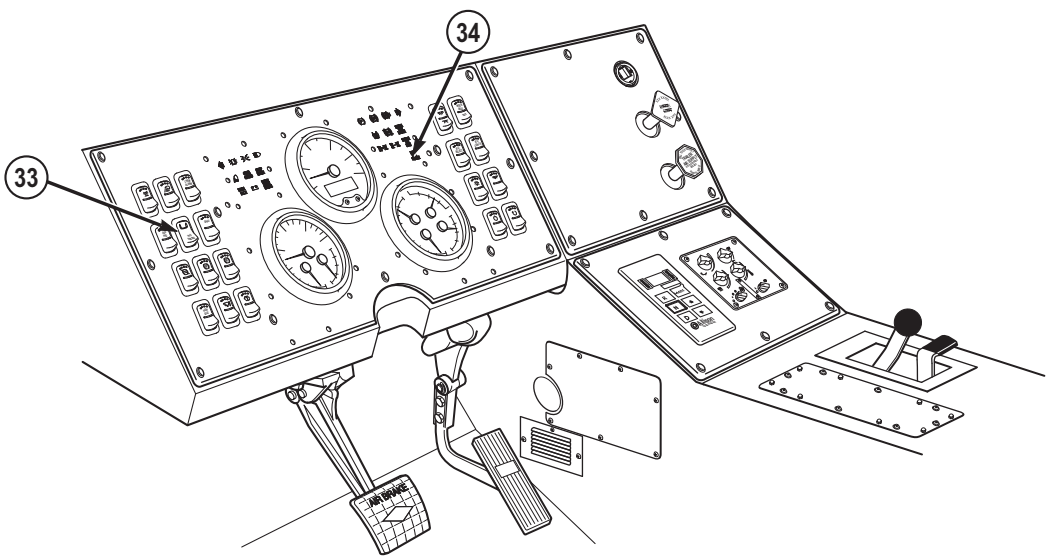


Figure 34.

REAR DISCONNECT - Continued

33. Shut off engine. (WP 0057)
34. Remove and stow portable beacon lights. (WP 0094)
35. Turn off disabled vehicle emergency flashers, and unlock steering column (refer to disabled vehicle operator's manual).

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
TOW M35 - FRONT LIFT USING MULTI-USE ADAPTER (MUA)

INITIAL SETUP:

Not Applicable

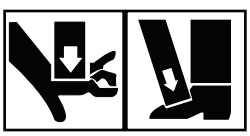
HOOKUP

NOTE

- Each recovery situation is unique and requires assessment to determine if the driveline is suitable for transport. When in doubt, consult with field level maintenance.
- This procedure is a two soldier task.

1. Review procedures for operating retrieval towing system (WP 0058) and prepare retrieval system for operation. (WP 0059)

WARNING



Hold cross tube when removing springs. Cross tube swings and may cause adapters to slide, resulting in injury to personnel.

2. Disconnect two springs (1) from two cylinders (2).

HOOKUP - Continued

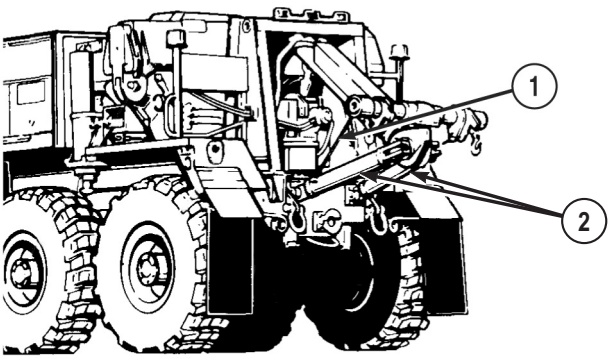


Figure 1.

CAUTION

Both rear towing shackles must be removed from rear tow eyes on wrecker before performing retrieval operations, or damage to tow cylinder may result.

NOTE

Driver side and passenger side towing shackles are removed the same way.

3. Remove two rear towing shackles from wrecker vehicle:

HOOKUP - Continued

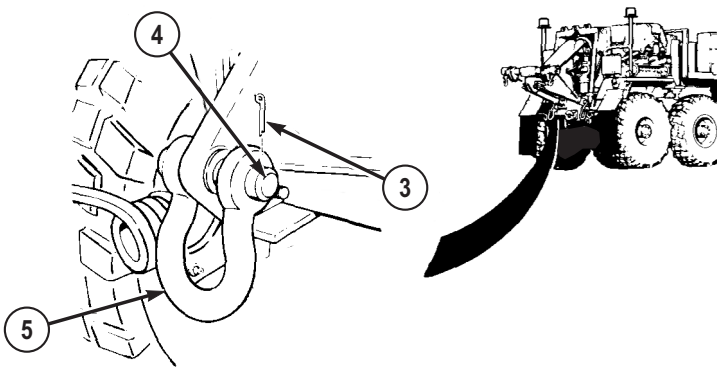


Figure 2.

a. Remove cotter pin (3), pin (4), and towing shackle (5).

b. Replace pin (4) in shackle (5), and cotter pin (3) in pin (4).

c. Repeat Steps (a) and (b) for opposite side towing shackle (5).

d. Stow two rear towing shackles on wrecker vehicle.

4. Pull LIFT CYLINDER control lever (6) to lower cross tube (7) to approximately 3ft. (1 m) above the ground.

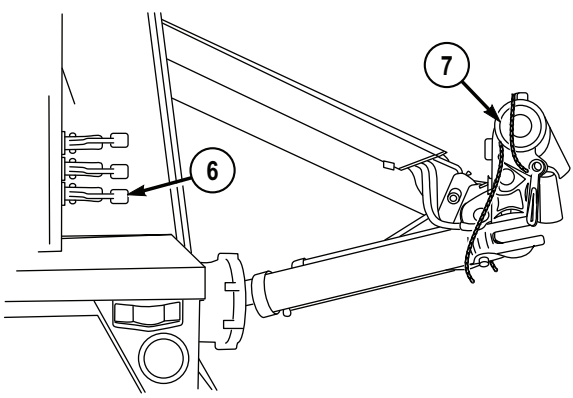
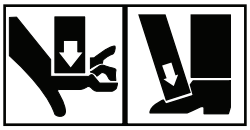


Figure 3.

5. Position wrecker so that cross tube (7) is approximately 1 ft. (30 cm) from tow eyes of disabled vehicle and centered on disabled vehicle.

HOOKUP - Continued

WARNING



When end caps are removed from cross tube, adapters may slide off resulting in injury to personnel.

6. Remove two quick pins (8) and pins (9) from end caps (10).

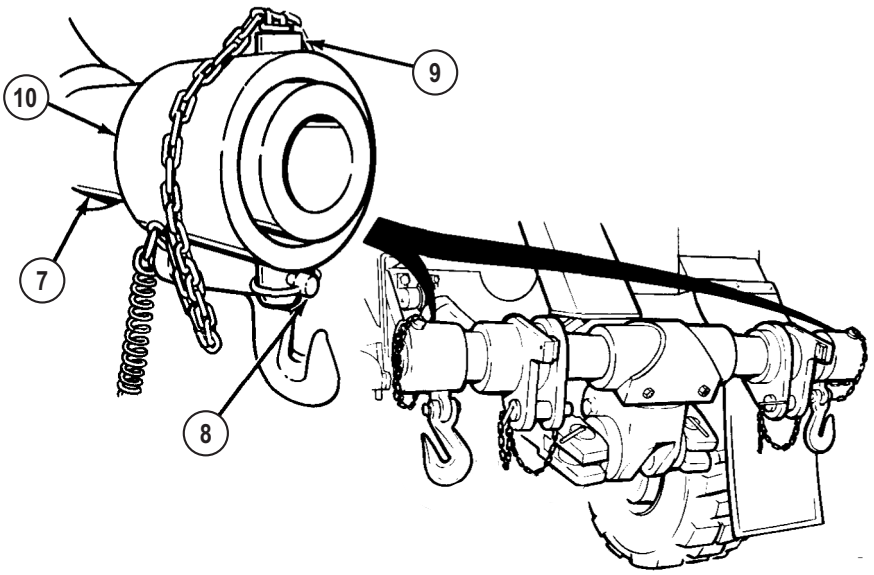


Figure 4.

7. Remove two end caps (10) from cross tube (7).
8. Remove two front adapters (11) from cross tube (7) and place on equipment body floor (12).

HOOKUP - Continued

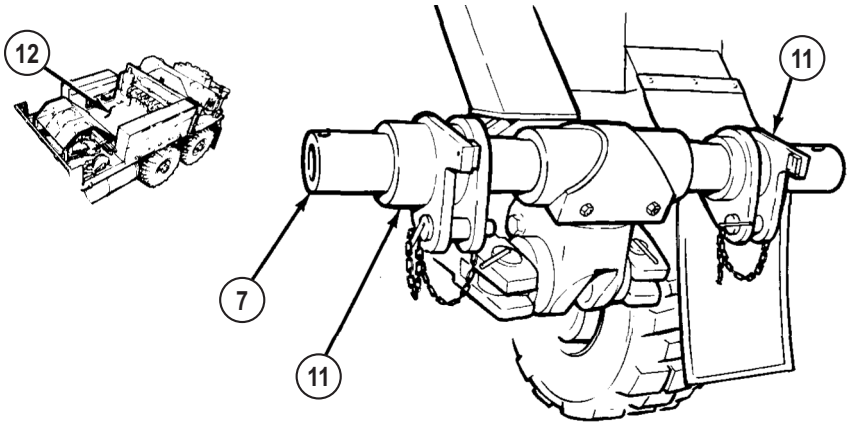


Figure 5.

9. Remove lock handle (13), lock plate (14), and two Multi-Use Adapters (MUAs) (15).

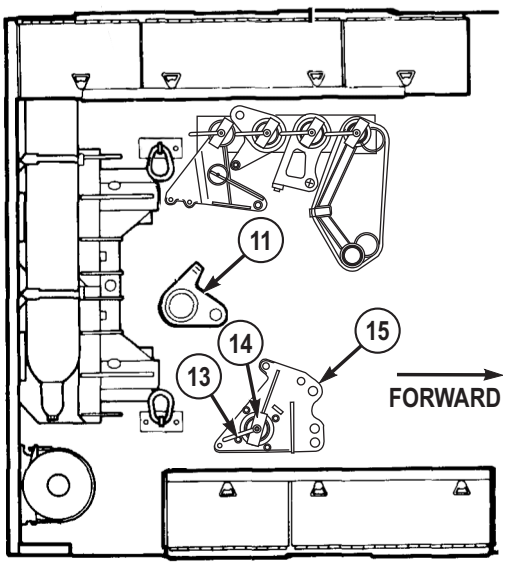


Figure 6.

10. Install two front adapters (11), lock plate (14), and lock handle (13).
11. Remove two 4 in. (102 mm) spacers (16) and two 1.5 in. (38 mm) spacers (17) from wrecker stowage.

HOOKUP - Continued

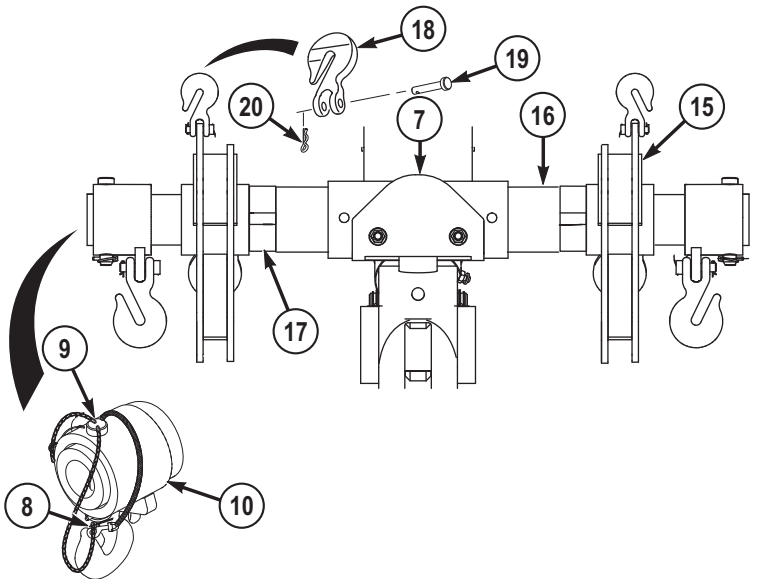


Figure 7.

12. Install two 4 in. (102 mm) spacers (16) on cross tube (7).
13. Install two 1.5 in. (38 mm) spacers (17) on cross tube (7).

WARNING

MUAs are heavy, handle carefully. Failure to comply may result in injury to personnel.

NOTE

MUAs must be positioned on cross tube with rounded ear of MUA toward center of cross tube.

14. Install two MUAs (15) on cross tube (7) with holes facing tow eyes of disabled vehicle.
15. Install two end caps (10) on cross tube (7).
16. Install two pins (9) and quick pins (8).
17. Install two lift clevises (18) in hole #1 of MUAs (15) with pins (19) and cotter pins (20).

HOOKUP - Continued

18. Attach two springs (1) on tow cylinders (2).

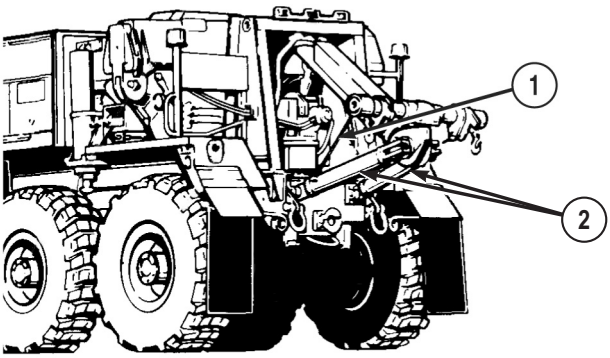


Figure 8.

19. Remove two pins (3483740) (21) from wrecker stowage.

HOOKUP - Continued

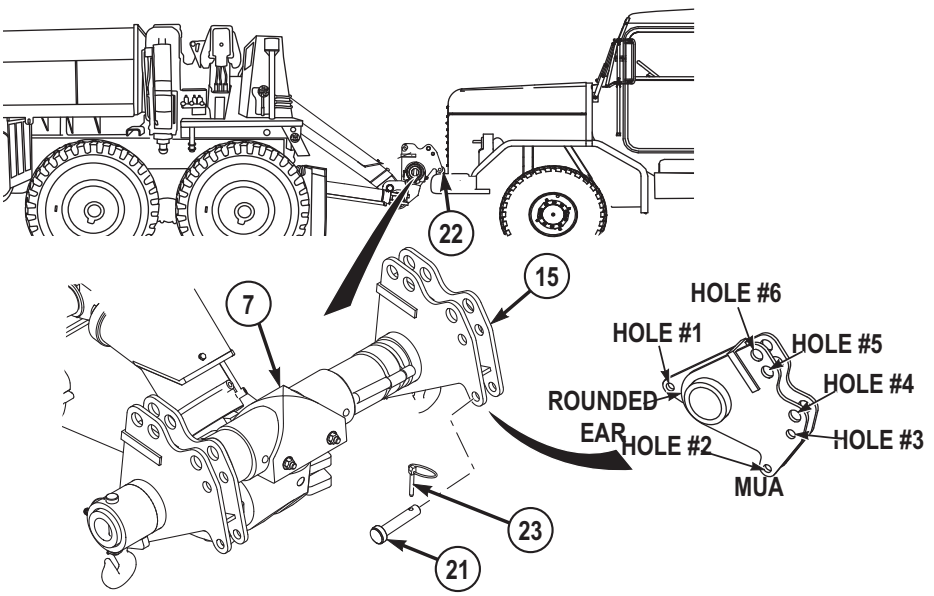


Figure 9.

WARNING

Keep hands and fingers away from adapters and tow eyes when operating retriever controls. Failure to comply may result in injury or death to personnel.

NOTE

If disabled vehicle has towing shackles installed, remove shackles and stow in disabled vehicle.

20. Operate retrieval system, and with aid of an assistant position cross tube (7) so hole #2 on MUAs (15) align with front tow eyes (22).
21. Insert two pins (21) through MUAs (15) and front tow eyes (22). Install quick pins (23) in pins (21).
22. Operate retrieval system (WP 0059) and lower cross tube (7) until MUAs (15) contact front bumper (24).

HOOKUP - Continued

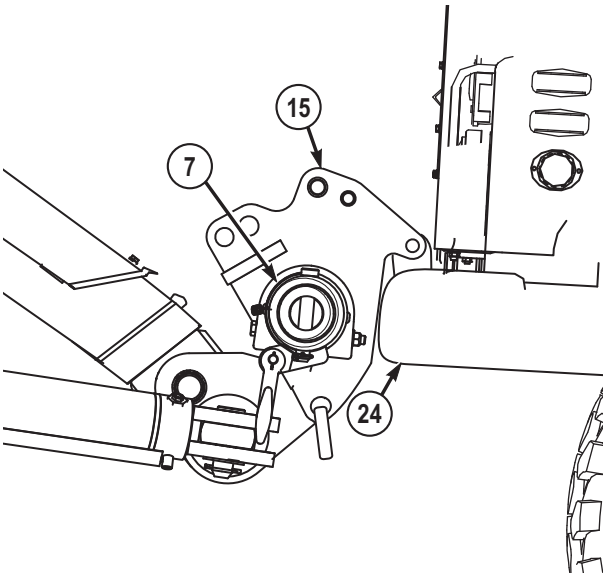


Figure 10.

NOTE

- Driver side shown.
- Brake line bracket is located on top rear of axle.

23. Remove screw (25), move brake line bracket (26) away from axle (27) and replace screw (25) in axle (27).

HOOKUP - Continued

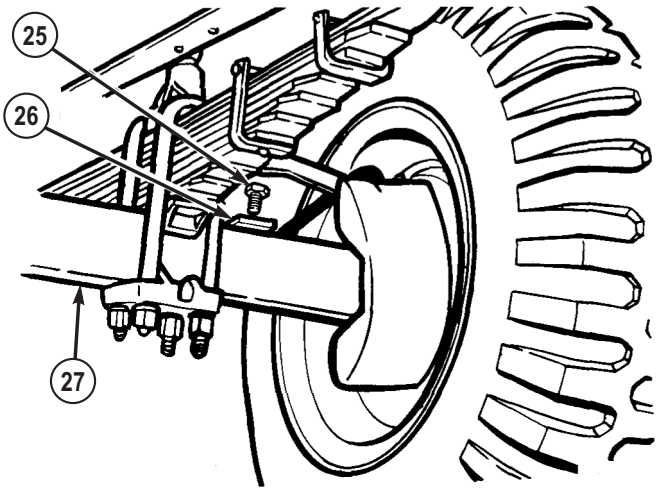


Figure 11.

24. Repeat Step (23) for other side of disabled vehicle.
25. Remove two 16 ft. (5 m) safety chains (28) from wrecker stowage.

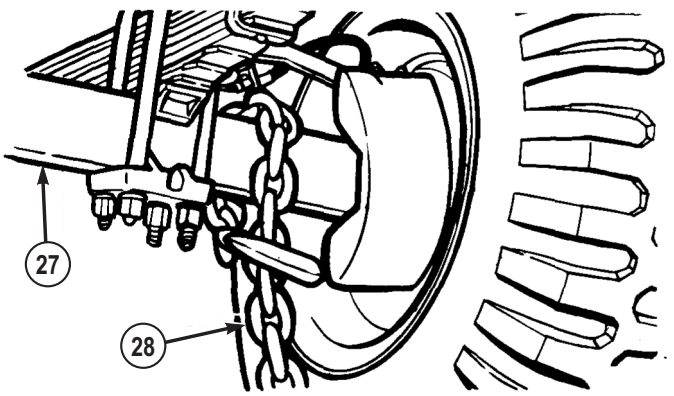


Figure 12.

CAUTION

Route chain between brake line and axle, or damage to brake line will result.

HOOKUP - Continued

26. Route one end of 16 ft. (5 m) safety chain (28) over front axle (27) of disabled vehicle.
27. Hook safety chain (28) together in front of axle (27).
28. Repeat Steps (26) and (27) for other side of disabled vehicle.

CAUTION

- If chains between axle and lift clevis are loose, then MUAs will rotate during transport and damage to equipment may result.
- When routing safety chain through lift clevis, keep chain as tight as possible between axle of disabled vehicle and lift clevis, or equipment damage may result.

29. Pull 16 ft. (5 m) safety chain (28) tight, and install 16 ft. (5 m) safety chain (28) on lift clevis (18) of MUA (15).

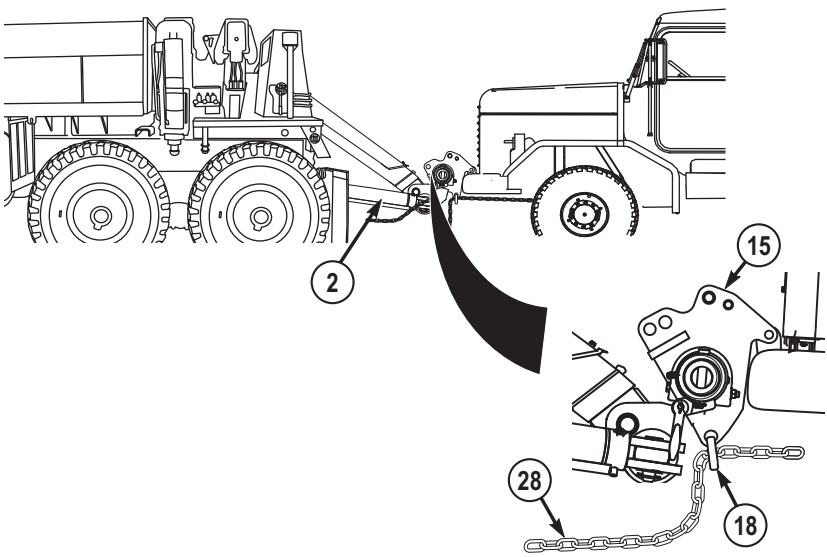


Figure 13.

30. Repeat Step (29) for other side of disabled vehicle.
31. Release PARKING BRAKE on disabled vehicle (refer to M35 operator's manual).

NOTE

Do not lift vehicle off ground when performing Step (32).

HOOKUP - Continued

32. Operate retrieval system until tow cylinders (2) are fully retracted.
33. Push in LIFT CYLINDER control lever to retract lift cylinder until slack is removed from safety chains (28).

NOTE

Adjust slack in 16 ft. (5 m) safety chains so they do not touch the ground.

34. Route two 16 ft. (5 m) safety chains (28) through safety chain hoop (29) on wrecker, hook 16 ft. (5 m) safety chains (28) back into themselves, and secure grab hook (30) with safety shackle (31).

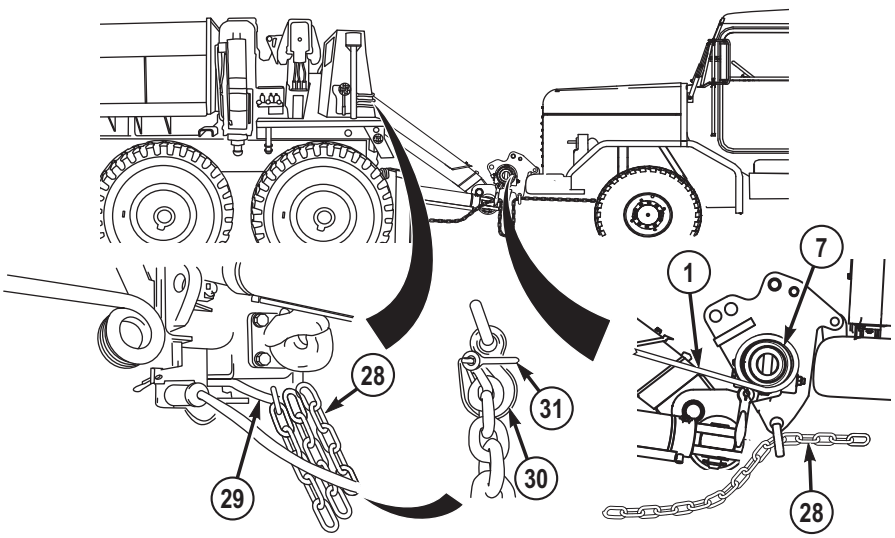


Figure 14.

35. Wrap two springs (1) around cross tube (7) and secure.

CAUTION

Make sure all cargo in bed of disabled vehicle is secured prior to lifting and towing. Failure to comply may result in damage to cargo and equipment.

36. Prepare disabled vehicle for towing (refer to M35 operator's manual).
37. Remove emergency tow lights (32) and two brackets (33) from wrecker stowage.

HOOKUP - Continued

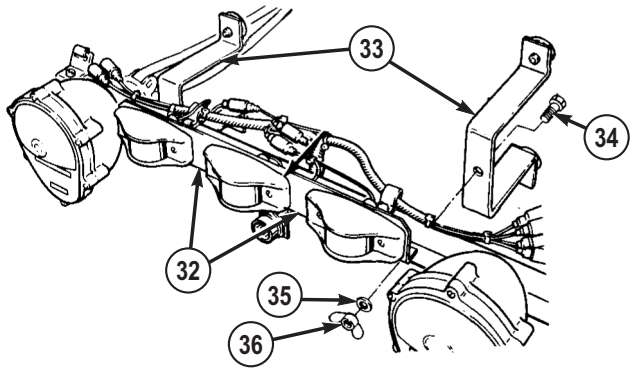


Figure 15.

38. Install two brackets (33) in center holes of emergency tow lights (32) with two screws (34), washers (35), and nuts (36).

39. Install emergency two lights (32) on rear of M35 and fasten securely with straps (37).

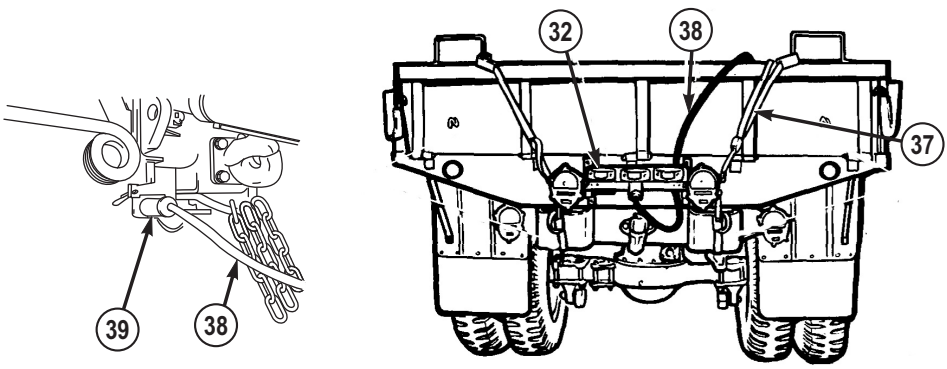


Figure 16.

40. Remove tow light cable (38) from stowage, and connect to emergency tow lights (32).

CAUTION

Route cable so it does not drag on ground or interfere with turning tires. Failure to comply may result in damage to equipment.

41. Route other end of tow light cable (38) along disabled vehicle and connect to rear electrical connector (39) on wrecker.

HOOKUP - Continued

42. Lock disabled vehicle's steering (refer to M35 operator's manual).
43. Set POWER switch (40) to ON position.

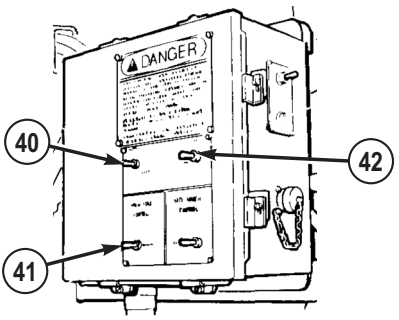


Figure 17.

44. Set HIGH IDLE switch (41) to CONTINUOUS.
45. Push and release LATCH switch (42). Engine speed will increase to approximately 1500 rpm.

WARNING

Keep out from under retrieval system and disabled vehicle when raised off ground. Failure to comply may result in injury or death to personnel.

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

CAUTION

- Fully retract both tow cylinders before lifting disabled vehicle. Failure to comply may result in damage to equipment.

HOOKUP - Continued

- Ensure all rigging is secure. Loose rigging can become entangled. Failure to comply may result in damage to equipment.

NOTE

Operator must allow wrecker air suspension system to completely adjust for added weight of disabled vehicle before raising disabled vehicle to final height of 1 ft. (30 cm).

46. Push in LIFT CYLINDER control lever (6) to retract lift cylinder (43) to raise disabled vehicle approximately 3 in. (8 cm) off ground.

    a. Once wrecker air suspension system has adjusted for added weight of disabled vehicle, push LIFT CYLINDER control lever (6) to retract lift cylinder (43) and raise disabled vehicle to final height of 1 ft. (30 cm).

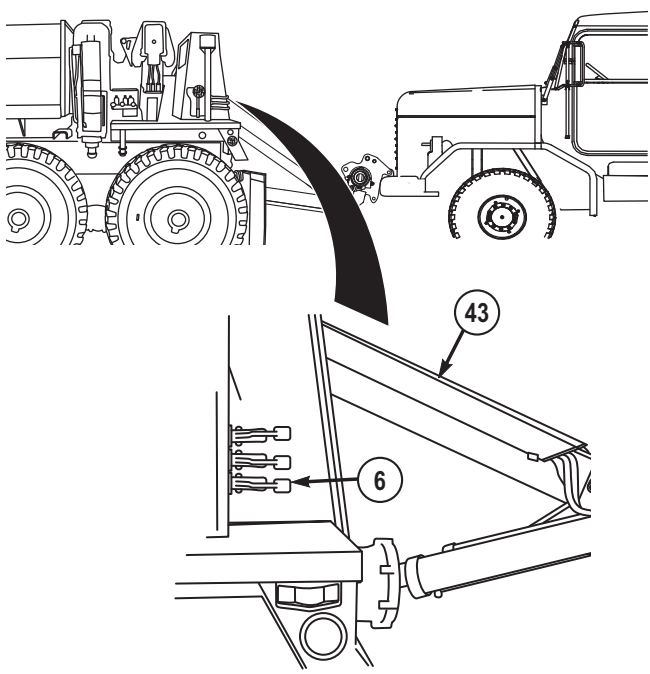


Figure 18.

47. Adjust slack in two 16 ft. (5 m) safety chains so lengths between cross tube and wrecker are approximately 1 ft. (30 cm) off ground.

48. Set POWER switch (42) to OFF position.

HOOKUP - Continued

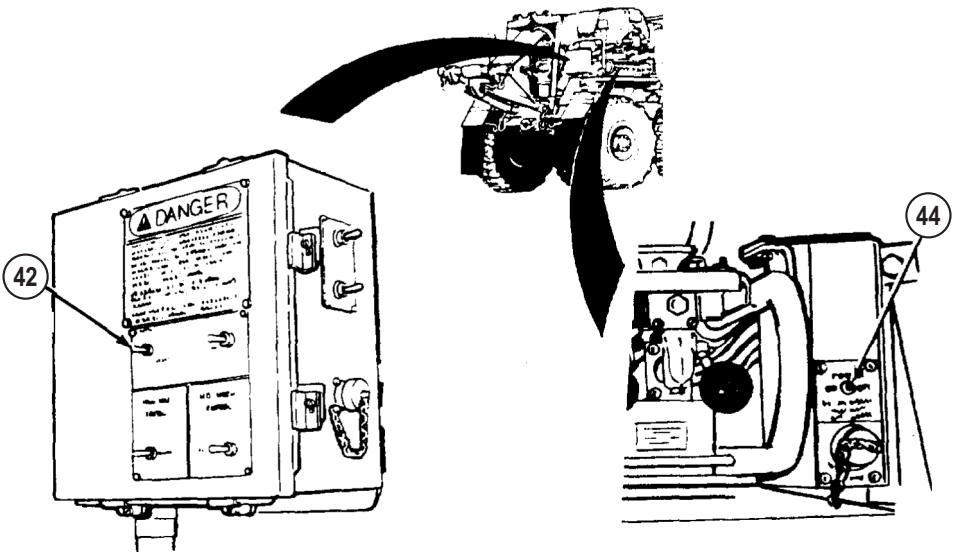


Figure 19.

49. Set POWER switch (44) to OFF position.
50. Set HYD ENABLE switch (45) to off position. MAIN HYD ENABLE indicator (46) will go out.

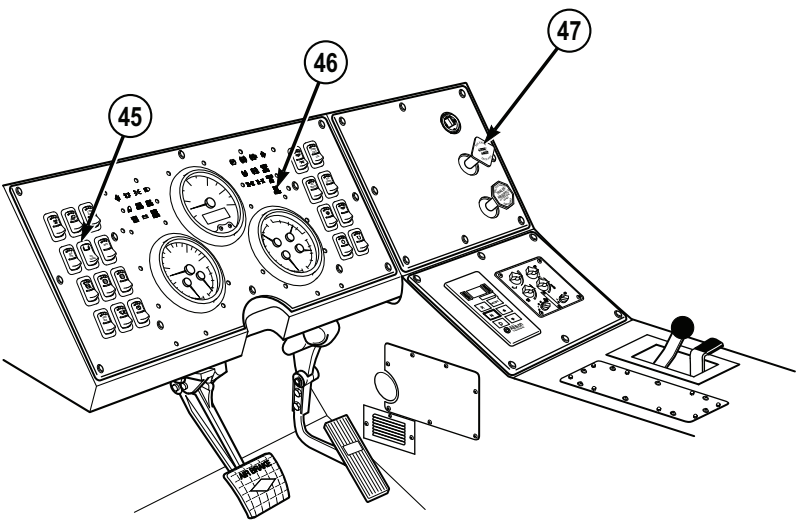


Figure 20.

HOOKUP - Continued

51. Turn on wrecker service drive lights. (WP 0087)
52. Turn on wrecker emergency flashers. (WP 0096)

NOTE

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

53. Push in PARKING BRAKE control (47).

WARNING

The M984 Wrecker should not be operated at speeds over 15 MPH (24 km/hr) except on paved roads when the operator determines that the vehicle being towed and the terrain allow safe operation. Engine brake switch must ON for all towing operations. Speed in excess of the below table may result in loss of control, serious injury, or death to personnel.

54. Select desired gear (WP 0048) and transport disabled vehicle.

Table 1. Maximum Towing Speed.

Terrain Condition	Maximum Speed Towed Load Up To 50,000 lbs (22 700 kg)	Maximum Speed Towed Load Above 50,000 lbs (22 700 kg)
On Road-Level	35 mph (56 km/hr)	30 mph (48 km/hr)
On Road-Hilly	30 mph (48 km/hr)	20 mph (32 km/hr)
Off-Road	15 mph (24 km/hr)	15 mph (24 km/hr)

DISCONNECT

NOTE

This procedure is a two soldier task.

1. Set transmission range selector (1) to N (neutral).

DISCONNECT - Continued

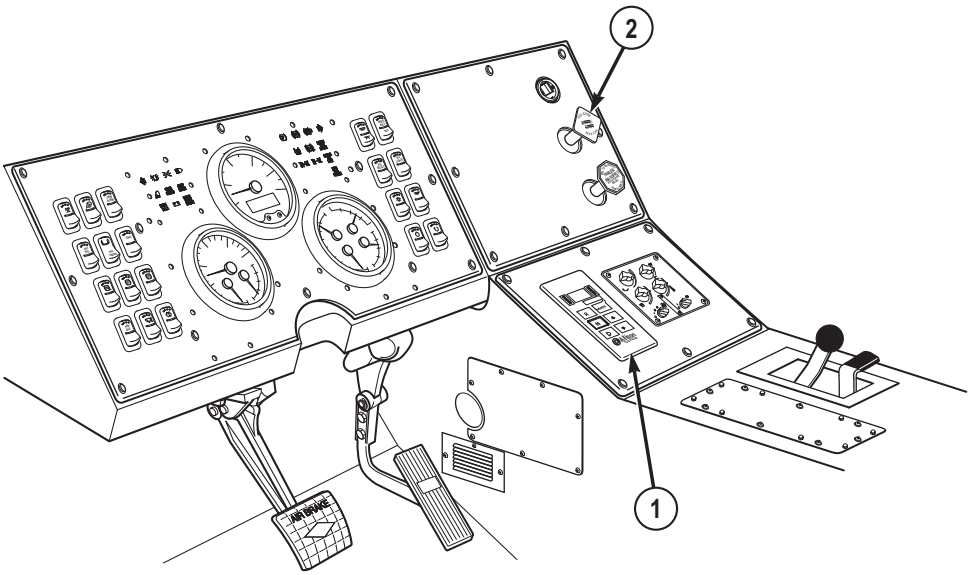


Figure 21.

NOTE

Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

2. Pull out PARKING BRAKE control (2).

WARNING

Keep out from under retrieval system and disabled vehicle when raised off ground. Failure to comply may result in injury or death to personnel.

DISCONNECT - Continued

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

3. Review procedures for operating retrieval towing system (WP 0058) and prepare retrieval system for operation. (WP 0059)

NOTE

- After lowering disabled vehicle, extend lift and tow cylinders approximately 2 to 4 inches (51 to 102 mm) to allow for adjustment when removing adapters.
- Expect wrecker air suspension system to deflate air springs to achieve normal ride height once weight of disabled vehicle is removed.

4. Pull LIFT CYLINDER control lever (3) to extend lift cylinder and lower disabled vehicle to the ground until tension is released between MUAs (4) and tow eyes (5).

DISCONNECT - Continued

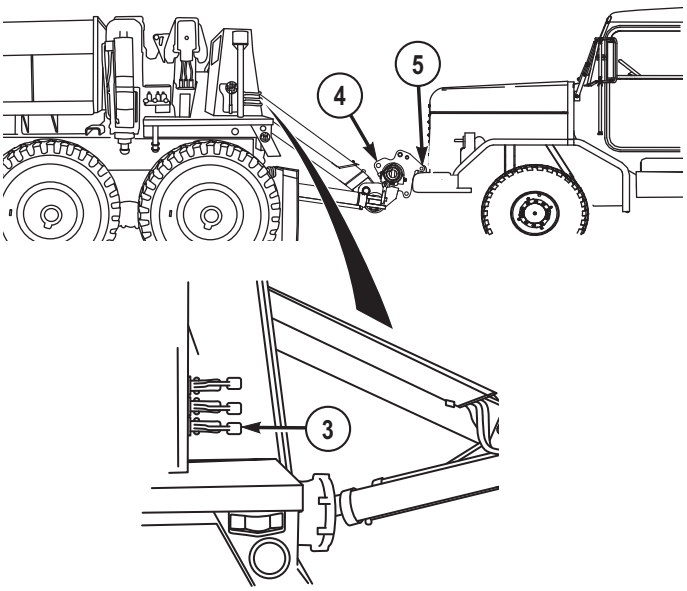


Figure 22.

WARNING

If disabled vehicle's parking brake is inoperative, chock wheels of disabled vehicle (refer to operator's manual). Failure to comply may result in injury or death to personnel.

5. Pull out PARKING BRAKE control on disabled vehicle (refer to M35 operator's manual). If parking brake on disabled vehicle is inoperable, install wheel chocks.
6. Remove tow light cable (6) from wrecker.

DISCONNECT - Continued

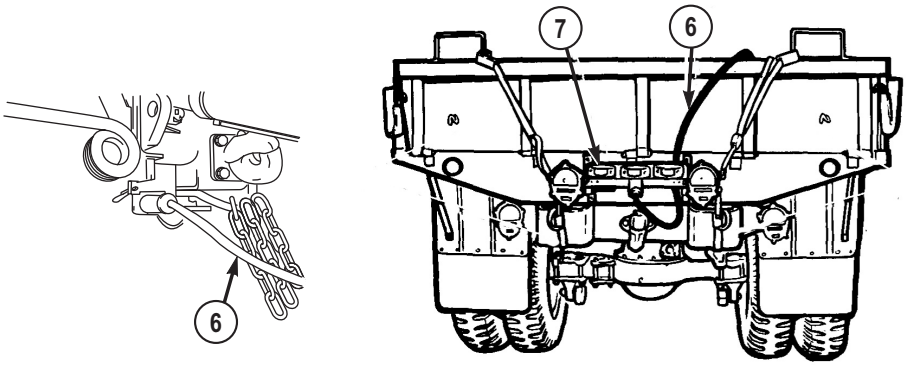


Figure 23.

7. Remove tow light cable (6) from emergency tow lights (7) and return to wrecker stowage.
8. Remove emergency tow lights (7) from disabled vehicle.
9. Remove two nuts (8), washers (9), screws (10), and brackets (11) from emergency tow lights (7). Stow emergency tow lights (7) and brackets (11).

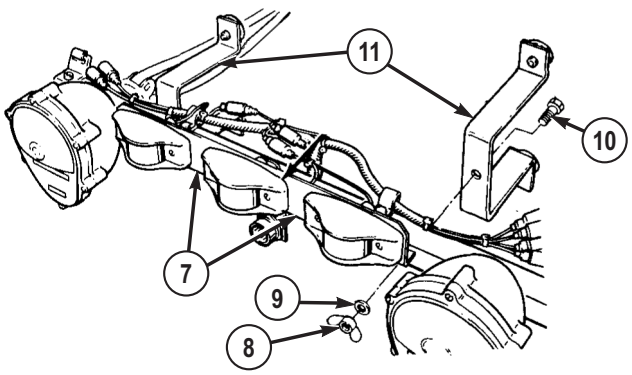


Figure 24.

CAUTION

When removing chains, make sure grab hooks do not catch on brake lines. Equipment damage may result.

10. Remove and stow two 16 ft. (5 m) safety chains (12).

DISCONNECT - Continued

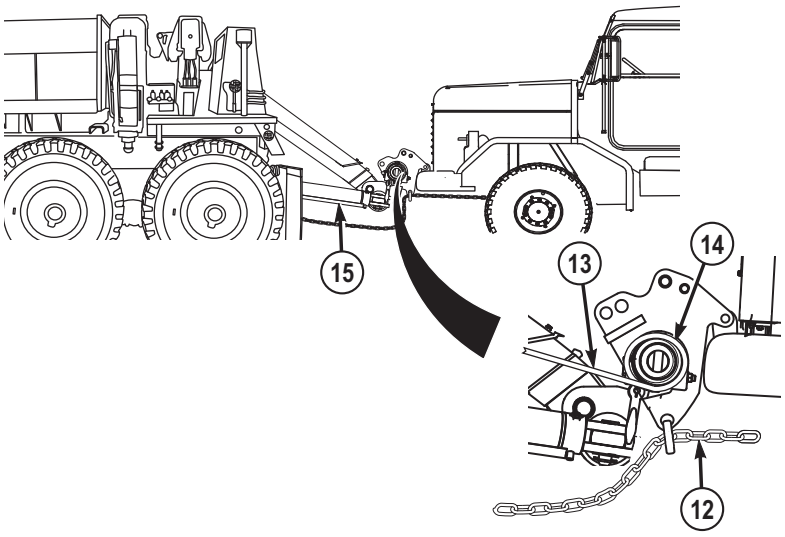


Figure 25.

11. Unwrap two springs (13) from cross tube (14) and connect to tow cylinders (15).

NOTE

- Driver side shown.
- Brake line bracket is located on top rear of axle.

12. Remove screw (16).

DISCONNECT - Continued

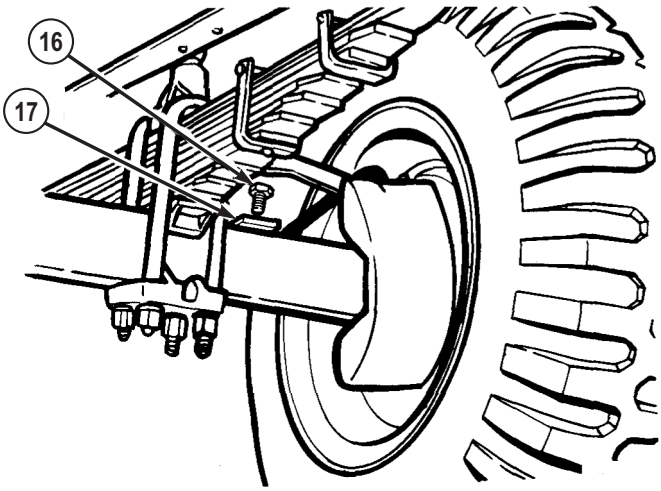


Figure 26.

13. Install brake line bracket (17) with screw (16).
14. Repeat Steps (12) and (13) for passenger side of disabled vehicle.

WARNING

Keep hands and fingers away from adapters and tow eyes when operating retriever controls. Failure to comply may result in injury or death to personnel.

NOTE

Use retrieval controls to position cross tube to relieve tension from adapters.

15. Remove two quick pins (18) and pins (19) from hole #2 on MUAs (4).

DISCONNECT - Continued

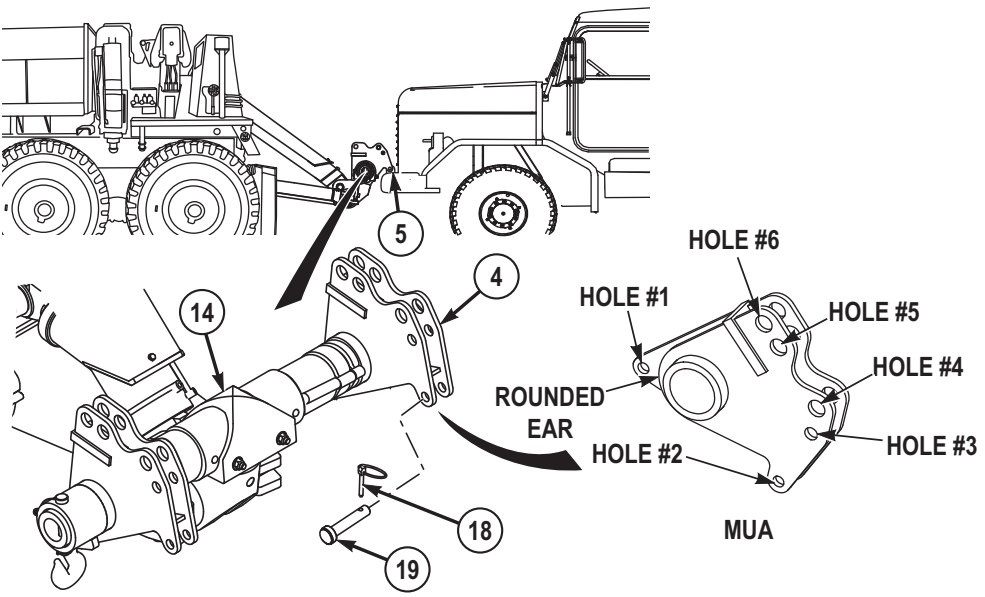


Figure 27.

16. Remove MUAs (4) from tow eyes (5) on disabled vehicle.
17. Operate retrieval system to extend lift cylinder and lower cross tube (14) until MUAs (14) are no longer supported by bumper of disabled vehicle.
18. Drive wrecker forward (WP 0050) several feet and park. (WP 0056)

WARNING

When springs and end caps are removed, cross tube can swing in all directions and adapters may slide off and cause injury or death to personnel.

19. Remove two springs (13) from tow cylinders (15).

DISCONNECT - Continued

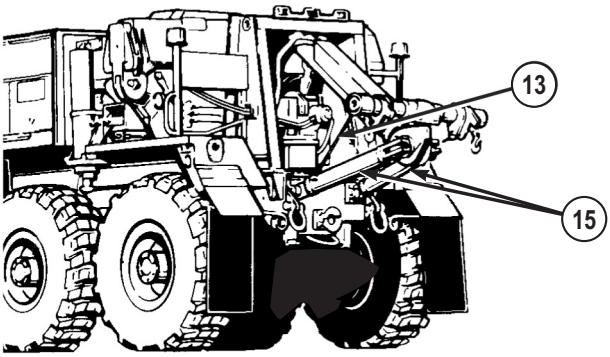


Figure 28.

20. Remove two quick pins (20) and pins (21) from end caps (22).

DISCONNECT - Continued

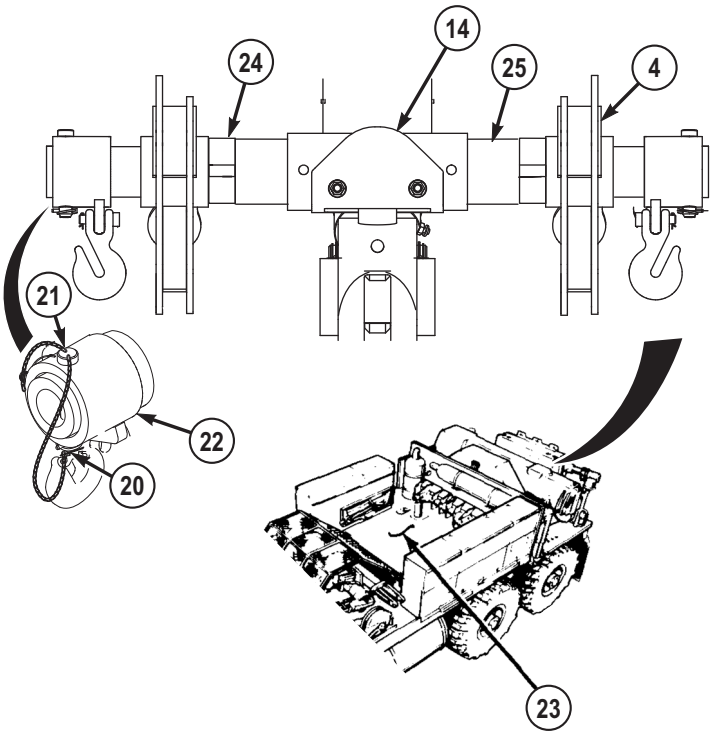


Figure 29.

21. Remove two end caps (22) from cross tube (14).

WARNING

MUAs are heavy, handle carefully. Failure to comply may result in injury to personnel.

22. Remove two MUAs (4) from cross tube (14) and place on equipment body floor (23).
23. Remove and stow 1.5 in. (38 mm) spacers (24).
24. Remove and stow 4 in. (102 mm) spacers (25).
25. Remove lock handle (26), lock plate (27), and front adapters (28).

DISCONNECT - Continued

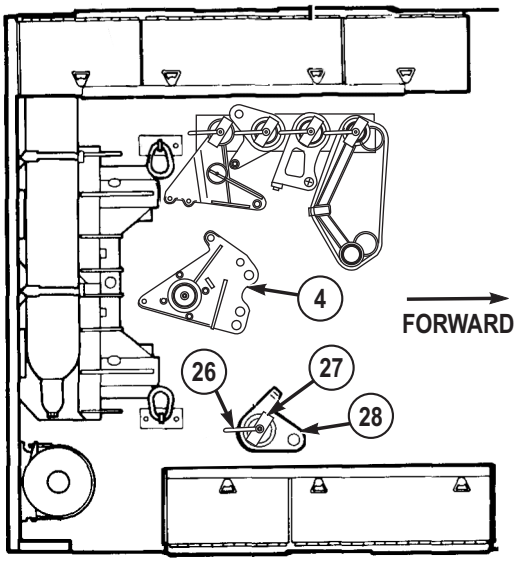


Figure 30.

26. Install two MUAs (4) removed from cross tube (14), with lock plate (27), and lock handle (26).
27. Install two front adapters (28) on cross tube (14).

DISCONNECT - Continued

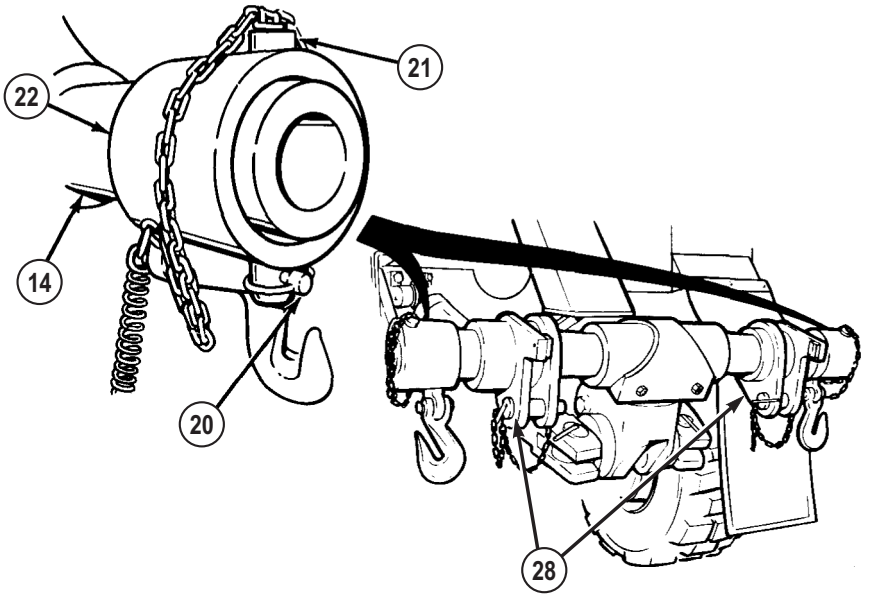


Figure 31.

28. Install two end caps (22) on cross tube (14). Install two pins (21) and quick pins (20).
29. Install tow springs (13) on tow cylinders (14).

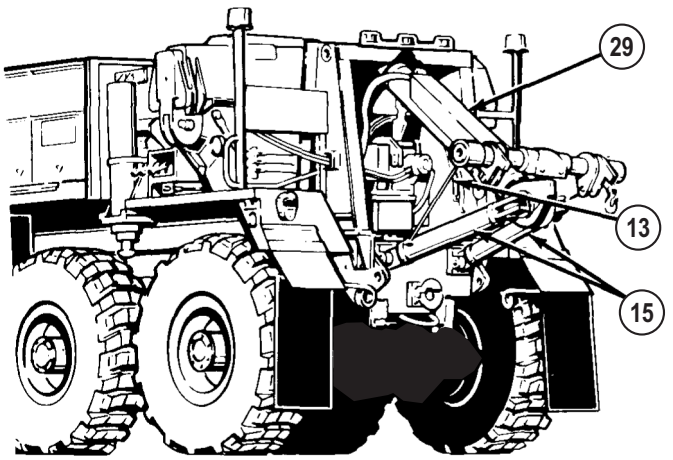


Figure 32.

DISCONNECT - Continued

30. Operate retrieval system and fully retract lift cylinder (29) and tow cylinders (15).

NOTE

Driver side and passenger side rear towing shackles are installed the same way.

31. Install two rear towing shackles (30), pins (31), and cotter pins (32).

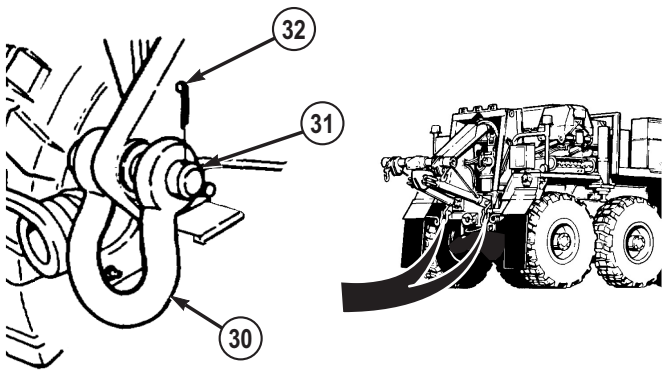


Figure 33.

32. Set POWER switch (33) to OFF position.

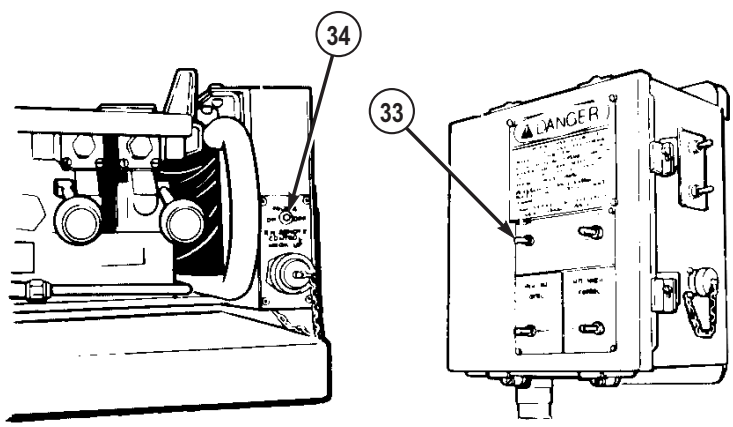


Figure 34.

33. Set POWER switch (34) to OFF position.
34. Turn off wrecker emergency flashers. (WP 0096)

DISCONNECT - Continued

35. Turn off wrecker service drive lights. (WP 0087)
36. Set HYD ENABLE switch (35) to off position. MAIN HYD ENABLE indicator (36) will go out.

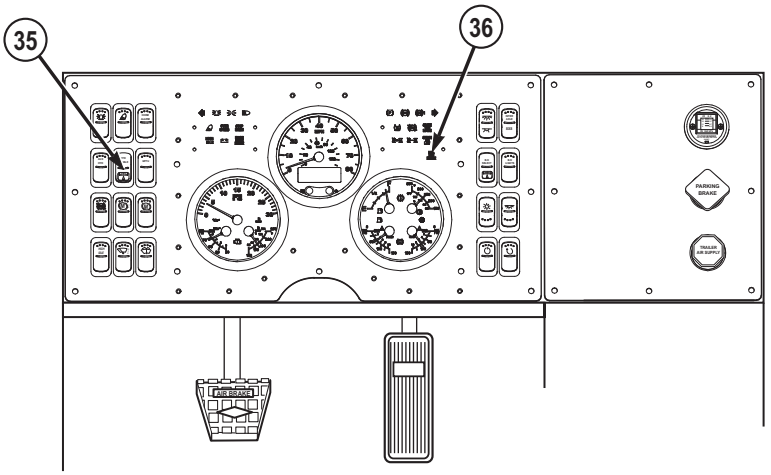


Figure 35.

37. Shut off engine. (WP 0057)
38. Remove and stow portable beacon lights. (WP 0094)
39. Turn off disabled vehicle emergency flashers and unlock steering column (refer to operator's manual).

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
TOW M939 - REAR LIFT

INITIAL SETUP:

Not Applicable

HOOKUP

NOTE

- Each recovery situation is unique and requires assessment to determine if the driveline is suitable for transport. When in doubt, consult with field level maintenance.
- This procedure is a two soldier task.

1. Review procedures for operating retrieval towing system (WP 0058) and prepare retrieval system for operation. (WP 0059)

WARNING

- Hold cross tube when removing springs, cross tube can swing in all directions and adapters may slide off. Failure to comply may result in injury or death to personnel.
- Intervehicular air lines are not connected when towing from rear. Disabled vehicle will not have braking. Use extreme care when transporting disabled vehicle using rear hookup. Failure to comply may result in injury or death to personnel.

2. Disconnect two springs (1) from tow cylinders (2).

HOOKUP - Continued

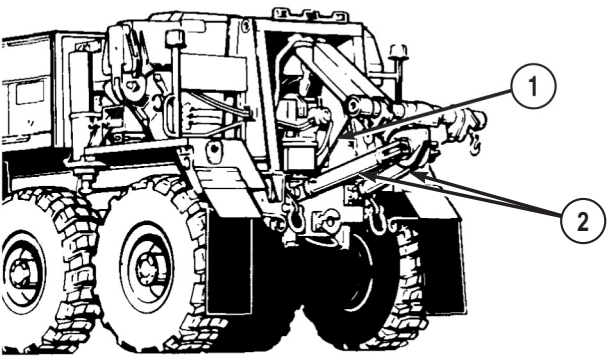


Figure 1.

CAUTION

Both rear towing shackles must be removed from rear tow eyes on wrecker before performing retrieval operations, or damage to tow cylinder may result.

NOTE

Driver side and passenger side towing shackles are removed the same way.

3. Remove two rear towing shackles from wrecker vehicle:

HOOKUP - Continued

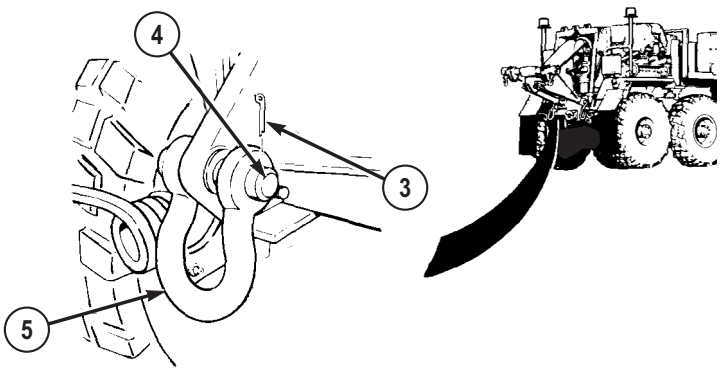


Figure 2.

a. Remove cotter pin (3), pin (4), and towing shackle (5).

b. Replace pin (4) in shackle (5), and cotter pin (3) in pin (4).

c. Repeat Steps (a) and (b) for opposite side towing shackle (5).

d. Stow two rear towing shackles on wrecker vehicle.

4. Pull LIFT CYLINDER control lever (6) to lower cross tube (7) to approximately 3 ft. (1 m) above ground.

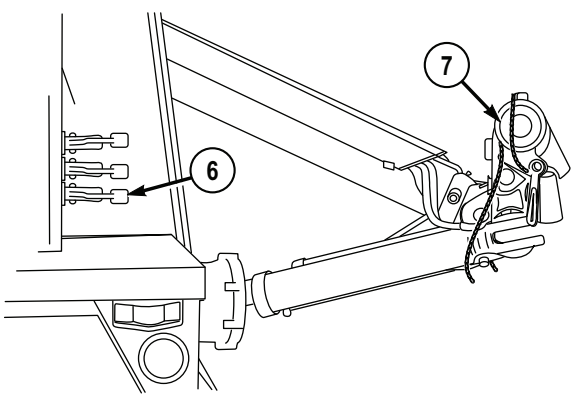


Figure 3.

5. Position wrecker so that cross tube (7) is centered and approximately 1 ft. (30 cm) from tow eyes of disabled vehicle.

HOOKUP - Continued

WARNING

When springs and end caps are removed, cross tube can swing in all directions and adapters may slide off and cause injury or death to personnel.

6. Remove two quick pins (8) and pins (9) from end caps (10).

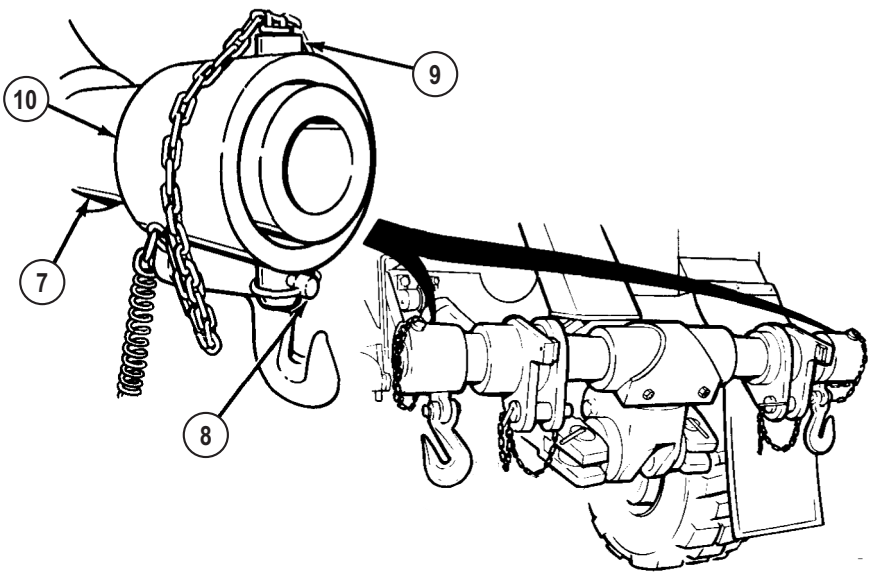


Figure 4.

7. Remove two end caps (10) from cross tube (7).
8. Remove two front adapters (11) from cross tube (7) and place on equipment body floor (12).

HOOKUP - Continued

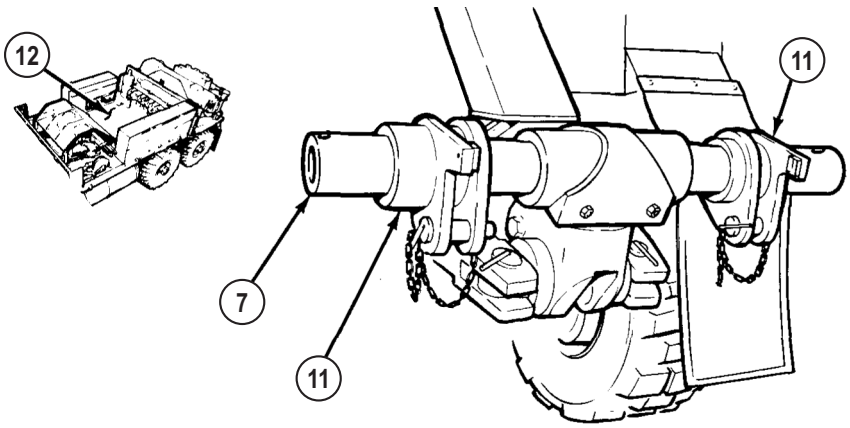


Figure 5.

9. Remove lock handle (13), lock plate (14), quick pin (15), pin (16), and two rear tow adapters (17).

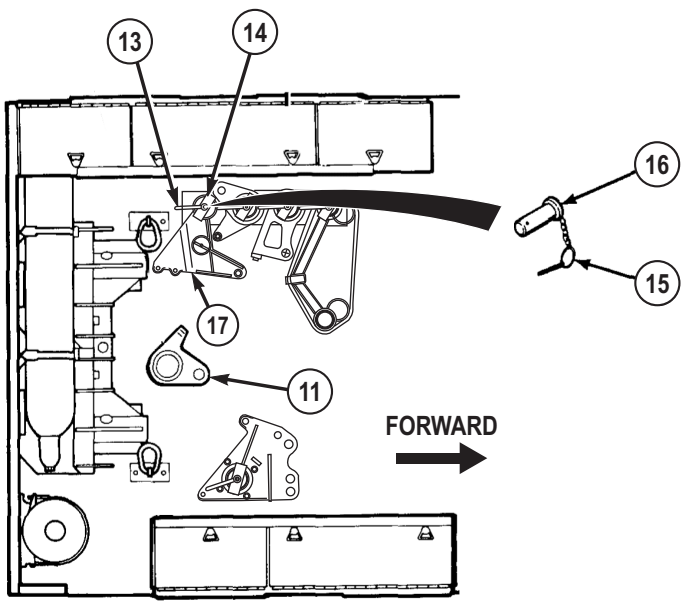


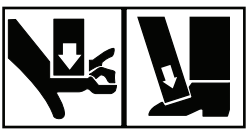
Figure 6.

10. Install two front adapters (11) removed from cross tube, lock plate (14), lock handle (13), pin (16), and quick pin (15).

HOOKUP - Continued

11. Remove two 7/8 in. (22 mm) pins and two 5 in. (127 mm) spacer tubes from wrecker stowage.

WARNING



Adapters and end caps may slide off when installing and cause injury or death to personnel.

12. Install two rear tow adapters (17) on cross tube (7) with support brace (18) to inside.

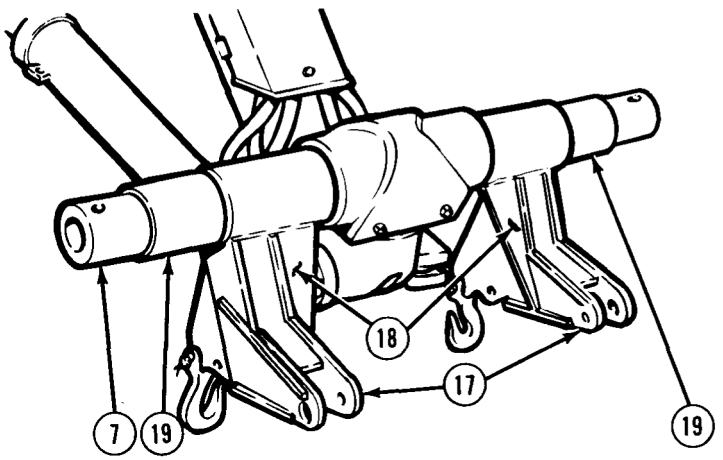


Figure 7.

13. Install two 5 in. (127 mm) spacers (19) on cross tube (7).
14. Install two end caps (10) on cross tube (7).

HOOKUP - Continued

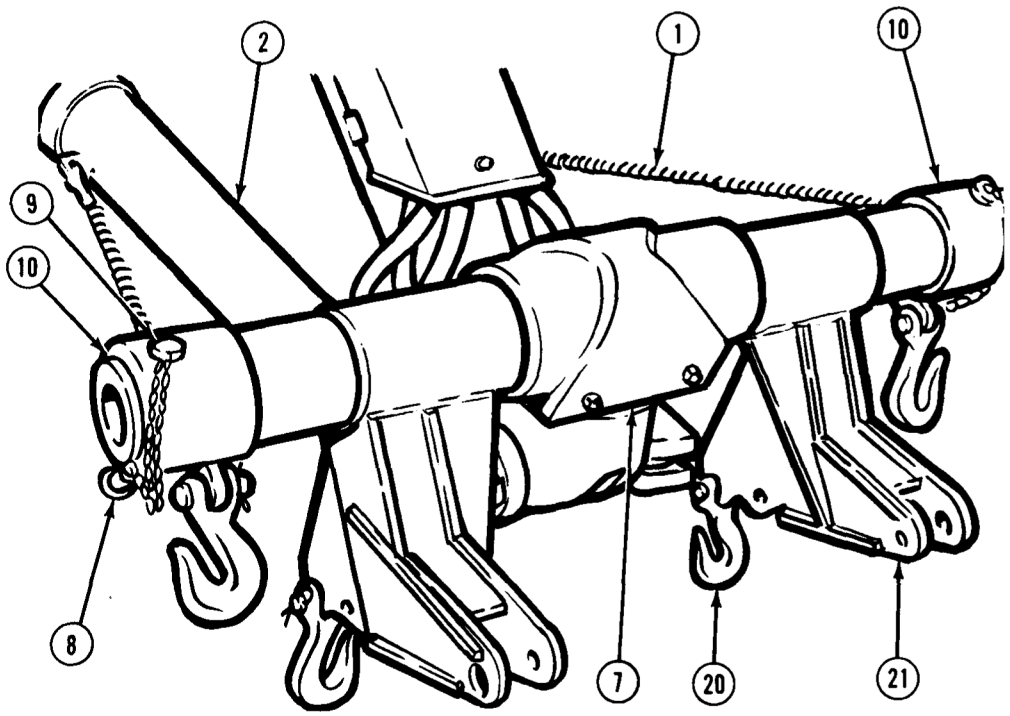


Figure 8.

15. Install two pins (9) and quick pins (8).

NOTE

Adapter grab hook may be installed in either hole. For M939, install grab hooks in hole farthest from towing pin holes.

16. Position adapter grab hooks (20) in hole farthest from pin holes (21).
17. Attach two springs (1) on tow cylinders (2).

NOTE

If disabled vehicle has towing shackles installed, remove shackles and stow in disabled vehicle.

18. Operate retrieval system (WP 0059) and with aid of an assistant position cross tube (7) so holes in adapters (17) align with rear tow eyes (22).

HOOKUP - Continued

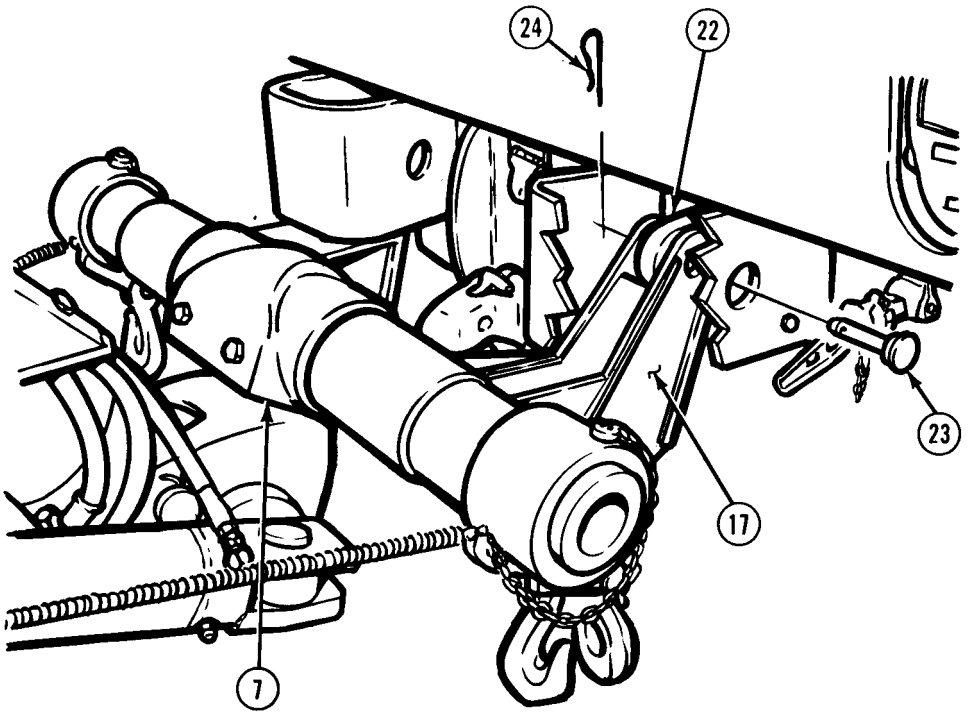


Figure 9.

WARNING

Keep hands and fingers away from adapters and tow eyes when operating retriever controls. Failure to comply may result in injury or death to personnel.

19. Insert two 7/8 in. (22 mm) pins (23) through adapters (17) and rear tow eyes (22).
20. Install two cotter pins (24) in 7/8 in. (22 mm) pins (23).
21. Lower cross tube (7) until adapters (17) contact rear crossmember (25) of disabled vehicle.

HOOKUP - Continued

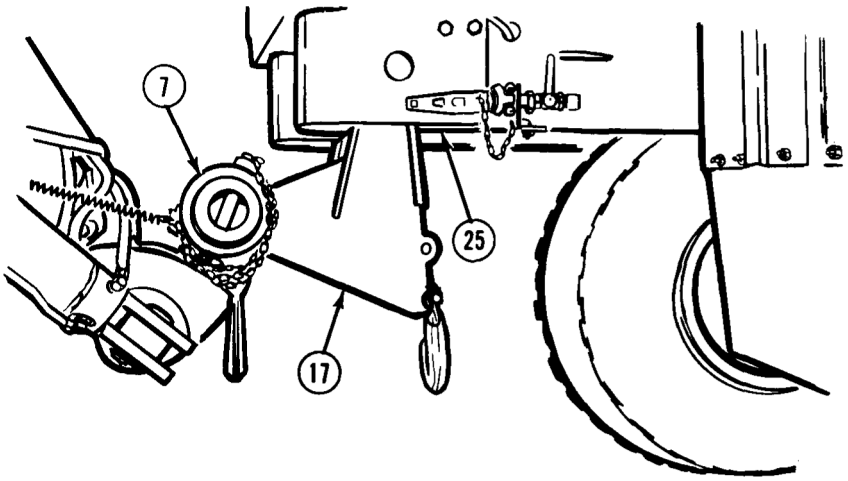


Figure 10.

22. Remove two 16 ft. (5 m) safety chains (26) from wrecker stowage.

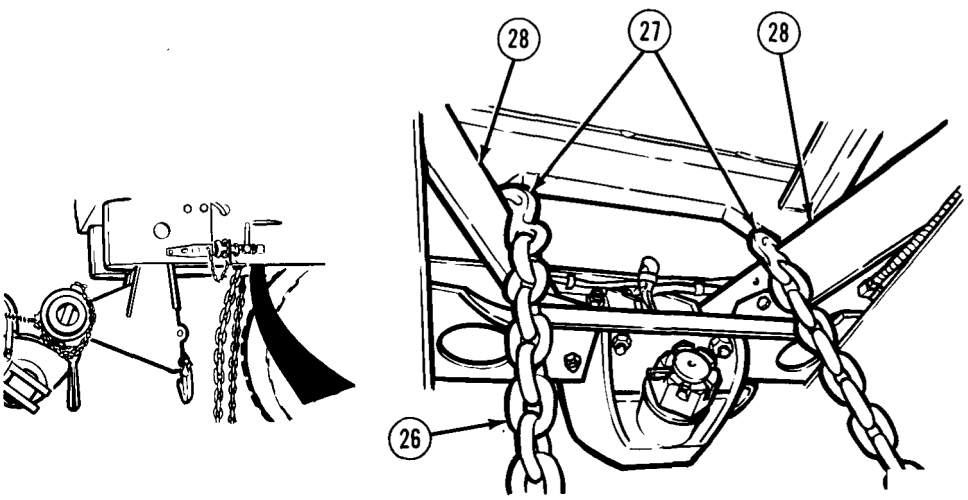


Figure 11.

23. Attach end (without safety shackle) of 16 ft. (5 m) safety chain grab hook (27) to support brace (28).

24. Repeat Step (23) for other side of disabled vehicle.

HOOKUP - Continued

25. Pull 16 ft. (5 m) safety chain (26) tight, and install 16 ft. (5 m) safety chain (26) on adapter grab hook (20).

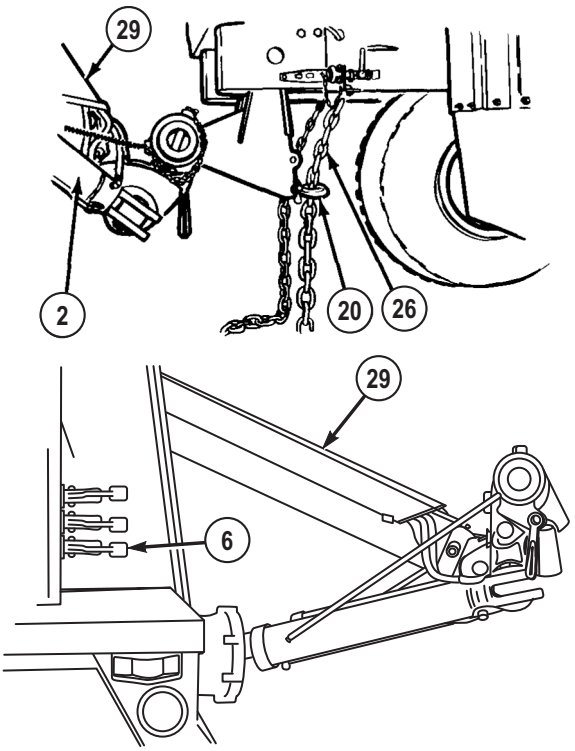


Figure 12.

26. Repeat Step (25) for other side of disabled vehicle.
27. Release PARKING BRAKE on disabled vehicle (refer to M939 operator's manual).
28. Operate retrieval system until tow cylinders (2) are fully retracted.
29. Push in LIFT CYLINDER control lever (6) to retract lift cylinder (29) until slack is removed from safety chains (26).

NOTE

Adjust chain slack so 16 ft. (5 m) safety chains do not touch ground.

30. Route two 16 ft. (5 m) safety chains (26) through safety chain hoop (30) on wrecker, hook back into themselves, and secure grab hooks (31) with safety shackles (32).

HOOKUP - Continued

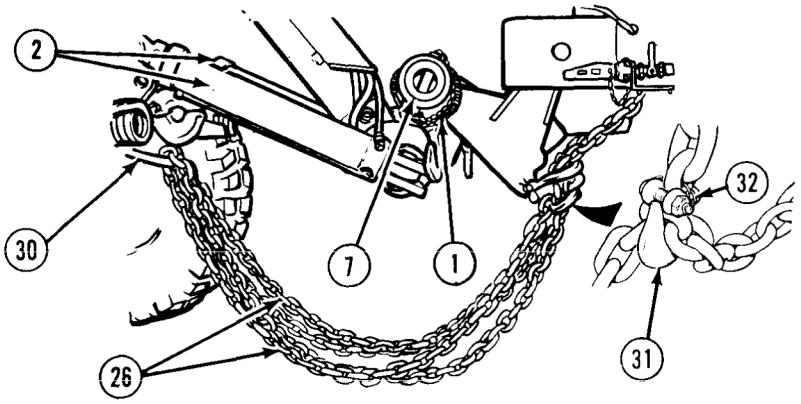


Figure 13.

31. Disconnect two springs (1) from tow cylinders (2), wrap around cross tube (7) and secure.

CAUTION

Ensure all cargo in bed of disabled vehicle is secured prior to lifting and towing. Failure to comply may result in damage to cargo and equipment.

32. Prepare disabled vehicle for towing (refer to M939 operator's manual).
33. Remove emergency tow lights (33) and two brackets (34) from wrecker stowage.

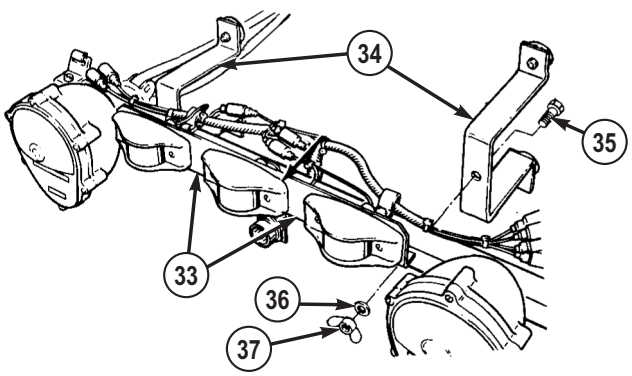


Figure 14.

HOOKUP - Continued

34. Install two brackets (34) in center holes of emergency tow lights (33) with two screws (35), washers (36), and nuts (37).
35. Install emergency tow lights (33) on front of M939 and fasten securely with straps (38).

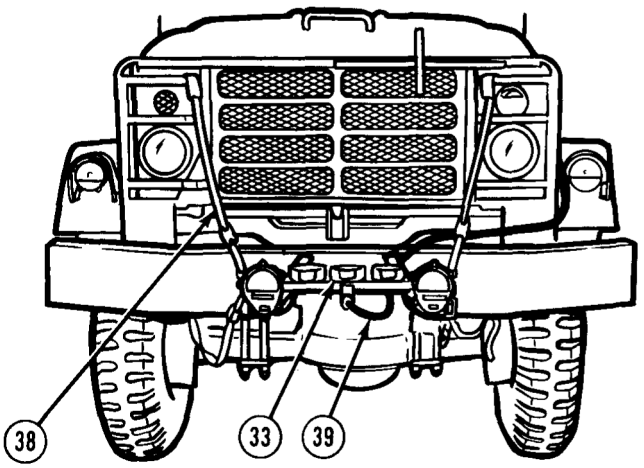


Figure 15.

36. Remove tow light cable (39) from wrecker stowage and connect to emergency tow lights (33).

CAUTION

Route cable so it does not drag on ground or interfere with turning tires. Failure to comply may result in damage to equipment.

37. Route free end of tow light cable (39) along disabled vehicle and connect to rear electrical connector (40) on wrecker.

HOOKUP - Continued

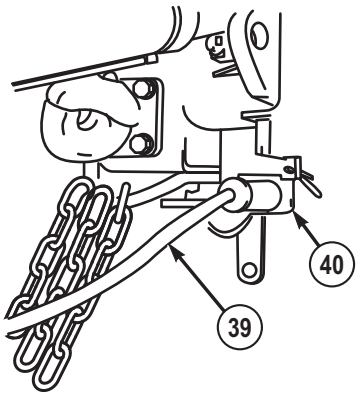


Figure 16.

38. Lock disabled vehicle's steering (refer to M939 operator's manual).
39. Set POWER switch (41) to ON position.

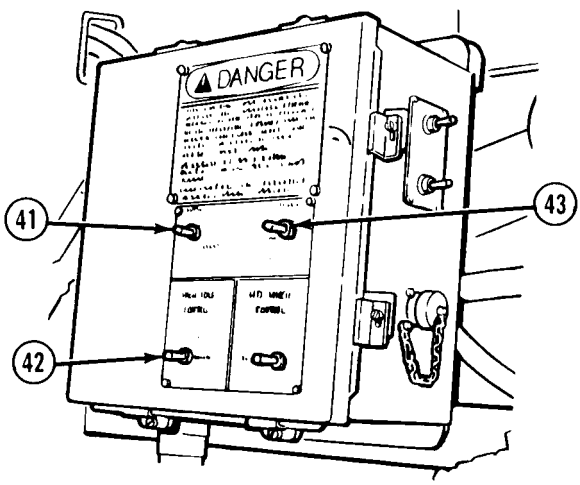


Figure 17.

40. Set HIGH IDLE switch (42) to CONTINUOUS.
41. Push and release LATCH switch (43). Engine speed will increase to approximately 1500 rpm.

HOOKUP - Continued

WARNING

Keep out from under retrieval system and disabled vehicle when raised off ground. Failure to comply may result in injury or death to personnel.

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

CAUTION

- Fully retract both tow cylinders before lifting disabled vehicle. Failure to comply may result in damage to equipment.
- Ensure all rigging is secure. Loose rigging can become entangled. Failure to comply may result in damage to equipment.

NOTE

Operator must allow wrecker air suspension system to completely adjust for added weight of disabled vehicle before raising disabled vehicle to final height of 1 ft. (30 cm).

42. Operate retrieval system to retract lift cylinder (29) and raise disabled vehicle approximately 3 in. (8 cm):
    a. Once wrecker air suspension system has adjusted for added weight of disabled vehicle, Operate retrieval system to retract lift cylinder (29) and raise disabled vehicle to final height of 1 ft. (30 cm).

HOOKUP - Continued

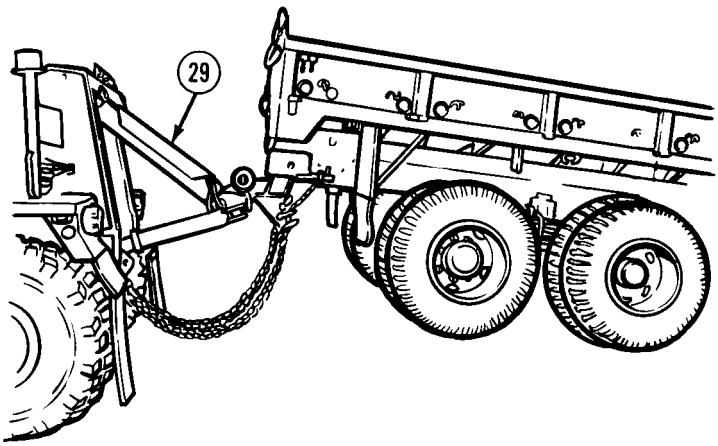


Figure 18.

43. Set POWER switch (41) to OFF position.

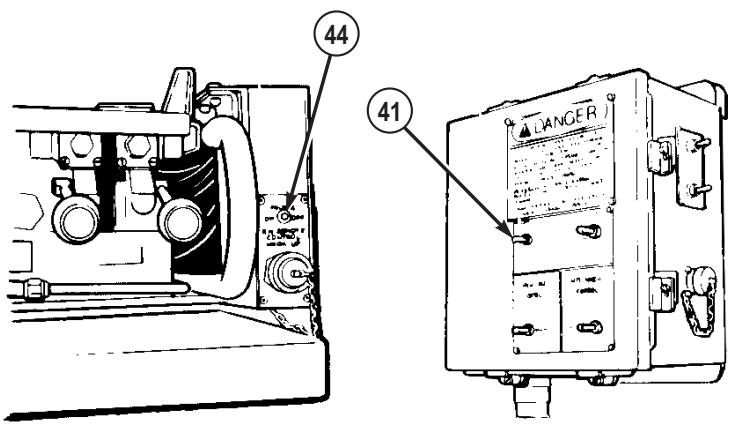


Figure 19.

44. Set POWER switch (44) to OFF position.
45. Set HYD ENABLE switch (45) to off position. MAIN HYD ENABLE indicator (46) will go out.

HOOKUP - Continued

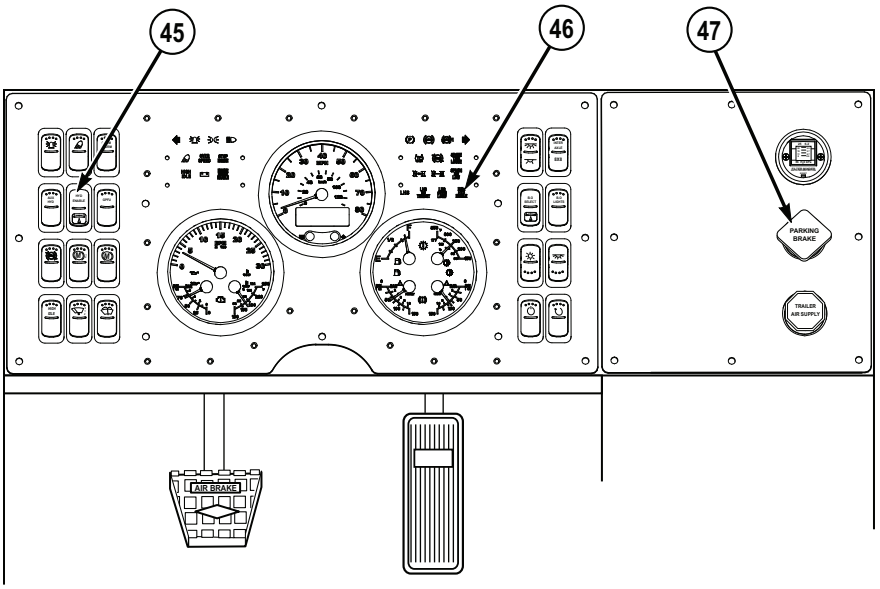


Figure 20.

46. Turn on wrecker service drive lights. (WP 0087)
47. Turn on wrecker emergency flashers. (WP 0096)
48. Turn on disabled vehicle emergency flashers (refer to operator's manual).

NOTE

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

49. Push in PARKING BRAKE control (47).

WARNING

The M984 Wrecker should not be operated at speeds over 15 MPH (24 km/hr) except on paved roads when the operator determines that the vehicle being towed and the terrain allow safe operation. Engine brake switch must ON for all towing operations. Speed in excess of the below table may result in loss of control, serious injury, or death to personnel.

HOOKUP - Continued

50. Select desired gear (WP 0048) and transport disabled vehicle.

Table 1. Maximum Towing Speed.

Terrain Condition	Maximum Speed Towed Load Up To 50,000 lbs (22 700 kg)	Maximum Speed Towed Load Above 50,000 lbs (22 700 kg)
On Road-Level	35 mph (56 km/hr)	30 mph (48 km/hr)
On Road-Hilly	30 mph (48 km/hr)	20 mph (32 km/hr)
Off-Road	15 mph (24 km/hr)	15 mph (24 km/hr)

DISCONNECT

NOTE

This procedure is a two soldier task.

1. Set transmission range selector (1) to N (neutral).

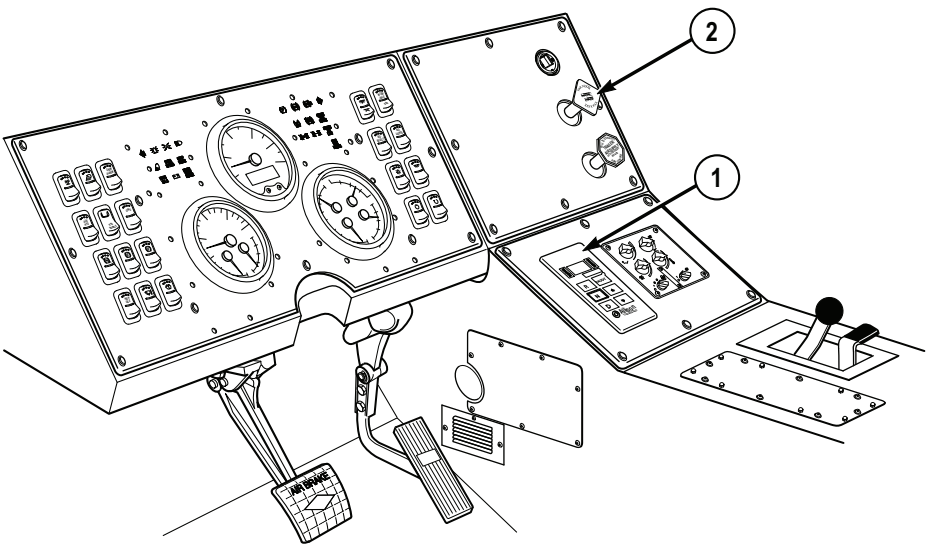


Figure 21.

DISCONNECT - Continued

NOTE

Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

2. Pull out PARKING BRAKE control (2).

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

NOTE

- After lowering disabled vehicle, extend lift and tow cylinders approximately 2 to 4 inches (50 to 100 mm) to allow for adjustment when removing adapters.
- Expect wrecker air suspension system to deflate air springs to achieve normal ride height once weight of disabled vehicle is removed.

3. Review procedures for operating retrieval towing system, (WP 0058)prepare retrieval system for operation, (WP 0059) and lower disabled vehicle until 16 ft. (5 m) safety chains are slack at rear of disabled vehicle.

WARNING

If disabled vehicle's parking brake is inoperative, chock wheels of disabled vehicle (refer to operator's manual). Failure to comply may result in injury or death to personnel.

4. Set parking brake on disabled vehicle (refer to disabled vehicle operator's manual).
5. Remove tow light cable (3) from wrecker.

DISCONNECT - Continued

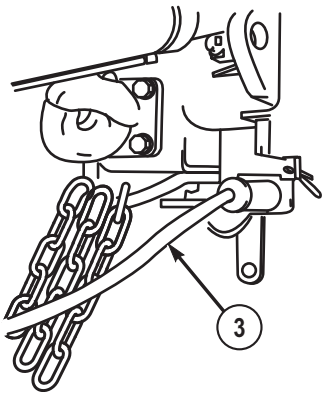


Figure 22.

6. Remove tow light cable (3) from emergency tow lights (4) and return to wrecker stowage.

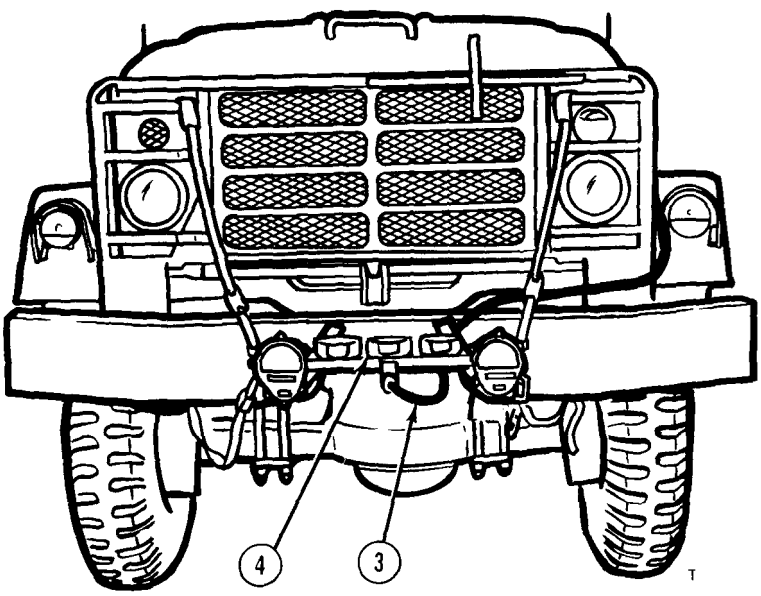


Figure 23.

7. Remove emergency tow lights (4) from disabled vehicle.

DISCONNECT - Continued

8. Remove two nuts (5), washers (6), screws (7), and brackets (8) from emergency tow lights (4). Return emergency tow lights and two brackets to wrecker stowage.

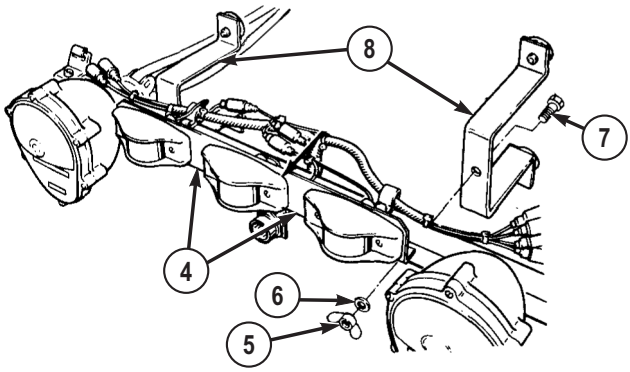


Figure 24.

9. Remove and stow two 16 ft. (5 m) safety chains (9).

DISCONNECT - Continued

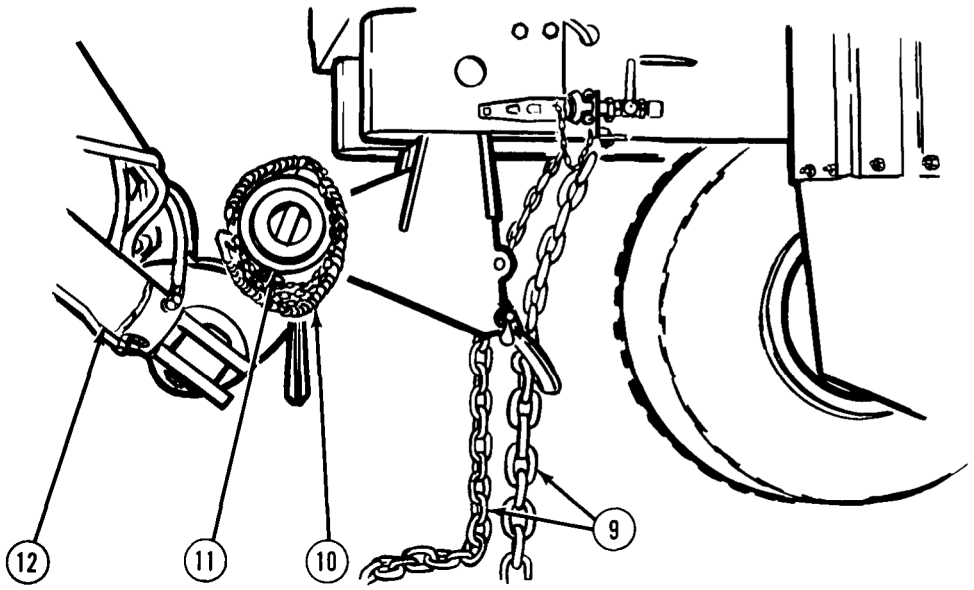
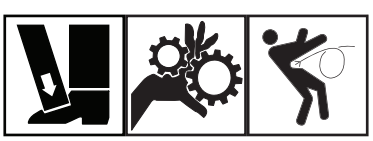


Figure 25.

10. Unwrap two springs (10) from cross tube (11) and connect to tow cylinders (12).

WARNING



- Do not stand behind adapters when pins are being removed. Failure to comply may result in injury or death to personnel.
- Keep hands and fingers away from adapters and tow eyes when operating retrieval controls. Failure to comply may result in injury or death to personnel.

DISCONNECT - Continued

NOTE

Use retrieval controls to position cross tube to relieve tension from adapters.

11. Remove two cotter pins (13) and 7/8 in. (22 mm) pins (14) from adapters (15).

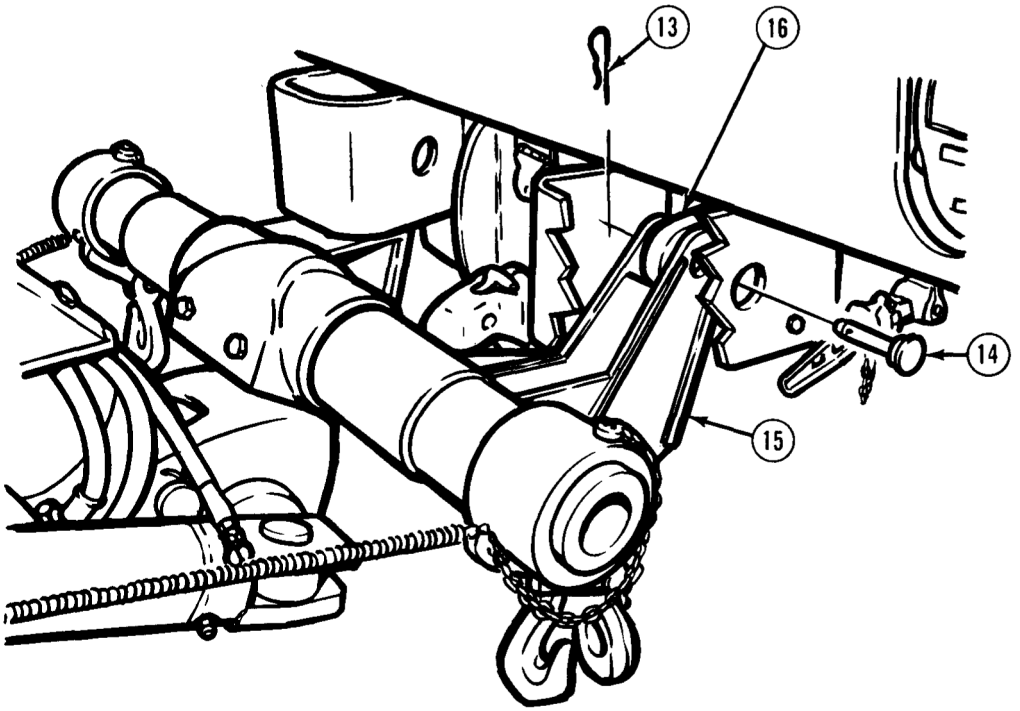


Figure 26.

12. Remove two adapters (15) from tow eyes (16) on disabled vehicle.
13. Install two cotter pins (13) in 7/8 in. (22 mm) pins (14) and return to wrecker stowage.
14. Drive wrecker forward (WP 0050) several feet and park. (WP 0056)

DISCONNECT - Continued

WARNING

When springs and end caps are removed, cross tube can swing in all directions and adapters may slide off and cause injury or death to personnel.

15. Remove two springs (10) from tow cylinders (12).

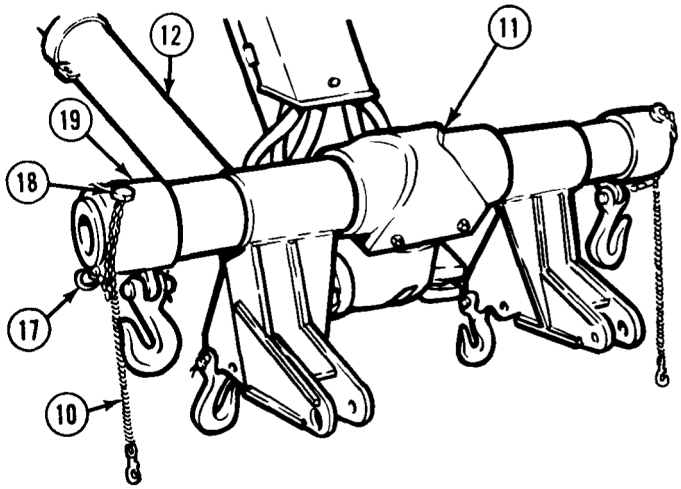


Figure 27.

16. Remove two quick pins (17) and pins (18) from end caps (19).
17. Remove two end caps (19) from cross tube (11).

DISCONNECT - Continued

18. Remove two 5 in. (127 mm) spacers (20) from cross tube (11) and return to wrecker stowage.

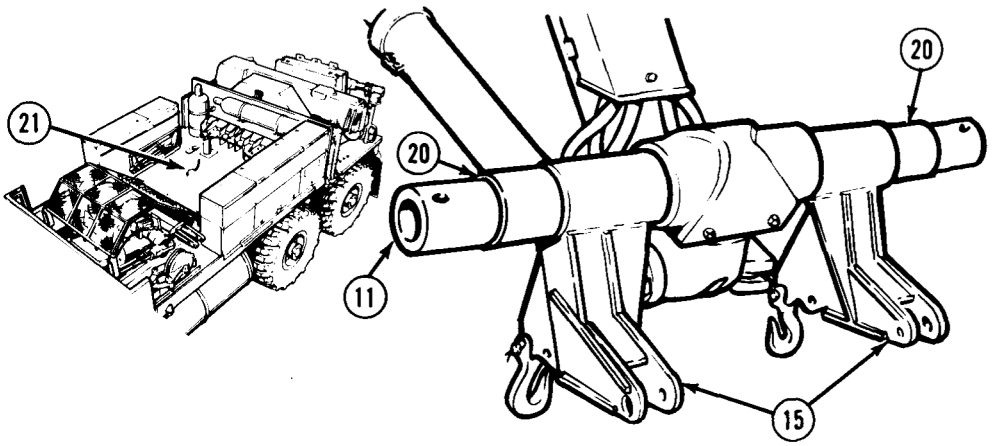


Figure 28.

19. Remove two adapters (15) from cross tube (11) and place on equipment body floor (21).
20. Remove lock handle (22), lock plate (23), quick pin (24), pin (25), and two front adapters (26).

DISCONNECT - Continued

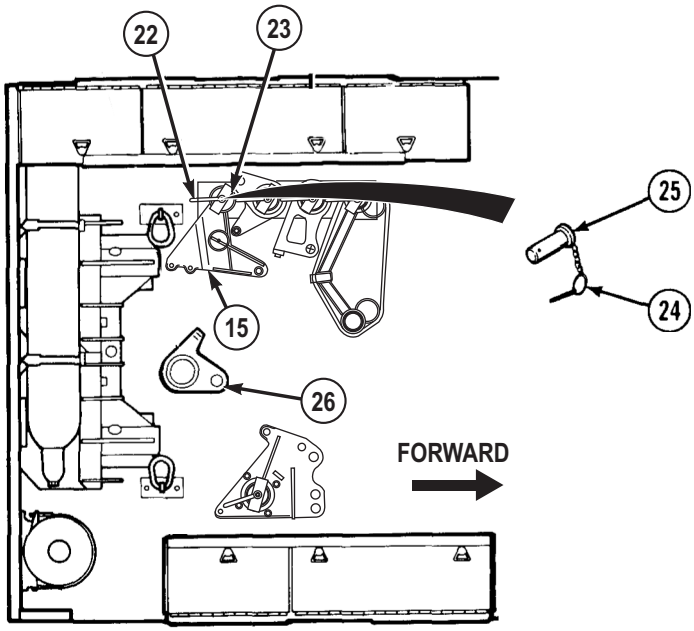


Figure 29.

21. Install two adapters (15) on body floor with pin (25), quick pin (24), lock plate (23), and lock handle (22).
22. Install two front adapters (26) on cross tube (11).

DISCONNECT - Continued

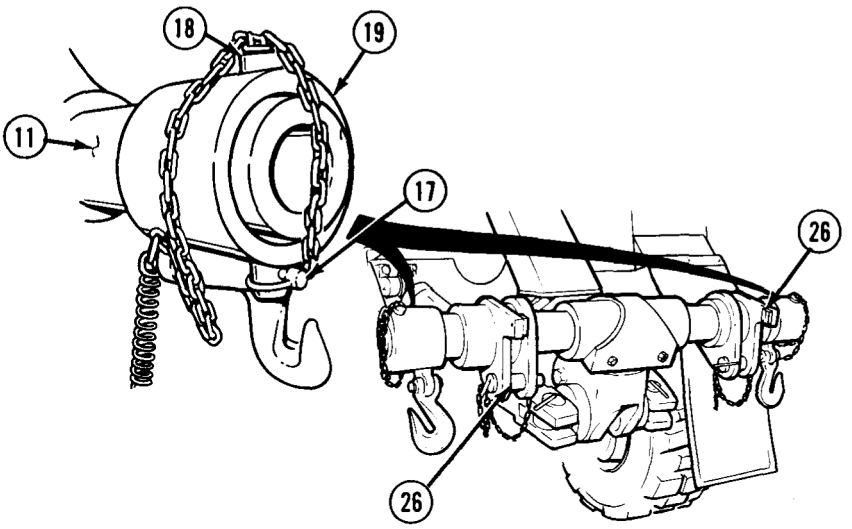


Figure 30.

23. Install two end caps (19) on cross tube (11).
24. Install two pins (18) and quick pins (17).
25. Install two springs (10) on tow cylinders (12).

DISCONNECT - Continued

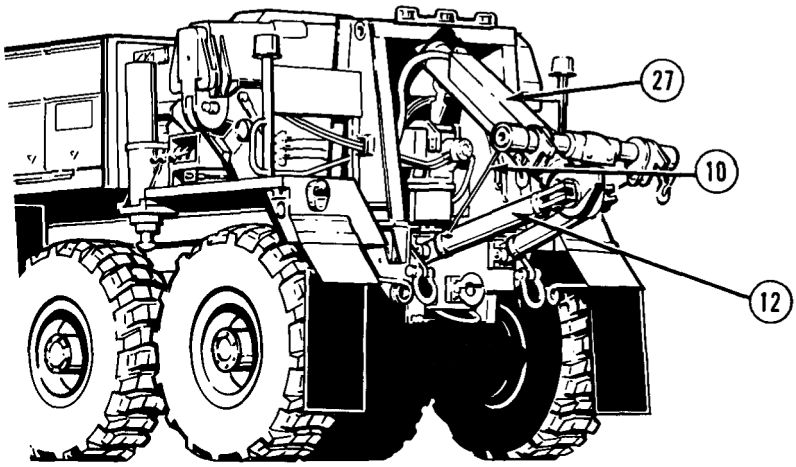


Figure 31.

26. Operate retrieval system, and fully retract lift cylinder (27) and tow cylinders (12).

NOTE

Driver side and passenger side towing shackles are installed the same way.

27. Install two rear towing shackles (28), pins (29), and cotter pins (30).

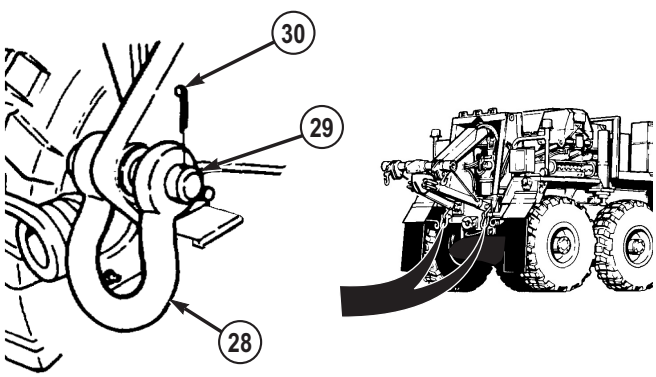


Figure 32.

28. Set POWER switch (31) to OFF position.

DISCONNECT - Continued

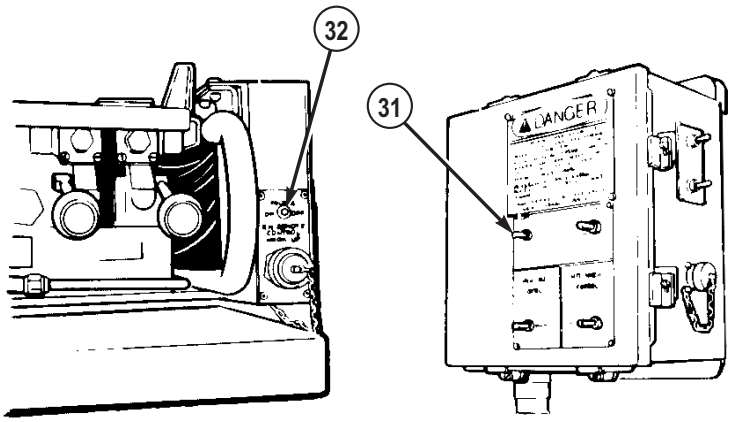


Figure 33.

29. Set POWER switch (32) to OFF position.
30. Turn off wrecker service drive lights. (WP 0087)
31. Turn off wrecker emergency flashers. (WP 0096)
32. Set HYD ENABLE switch (33) to off position. MAIN HYD ENABLE indicator (34) will go out.

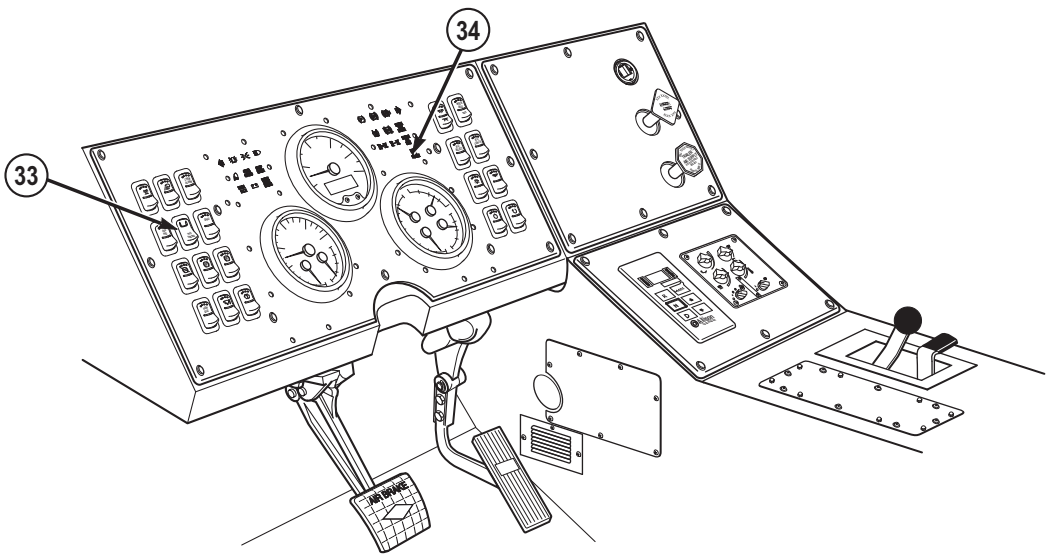


Figure 34.

DISCONNECT - Continued

33. Shut off engine. (WP 0057)
34. Remove and stow portable beacon lights. (WP 0094)
35. Turn off disabled vehicle emergency flashers, and unlock steering column (refer to disabled vehicle operator's manual).

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
TOW M939 - FRONT LIFT USING MULTI-USE ADAPTER (MUA)

INITIAL SETUP:

Not Applicable

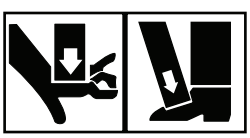
HOOKUP

NOTE

- Each recovery situation is unique and requires assessment to determine if the driveline is suitable for transport. When in doubt, consult with field level maintenance.
- This procedure is a two soldier task.

1. Review procedures for operating retrieval towing system (WP 0058) and prepare retrieval system for operation. (WP 0059)

WARNING



Hold cross tube when removing springs. Cross tube swings and may cause adapters to slide, resulting in injury to personnel.

2. Disconnect two springs (1) from tow cylinders (2).

HOOKUP - Continued

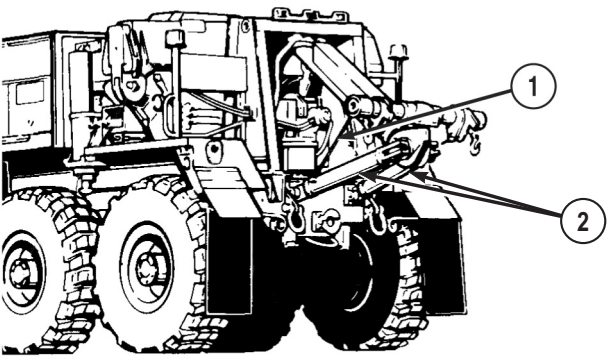


Figure 1.

CAUTION

Both rear towing shackles must be removed from rear tow eyes on wrecker before performing retrieval operations, or damage to tow cylinder may result.

NOTE

Driver side and passenger side towing shackles are removed the same way.

3. Remove two rear towing shackles from wrecker vehicle:

HOOKUP - Continued

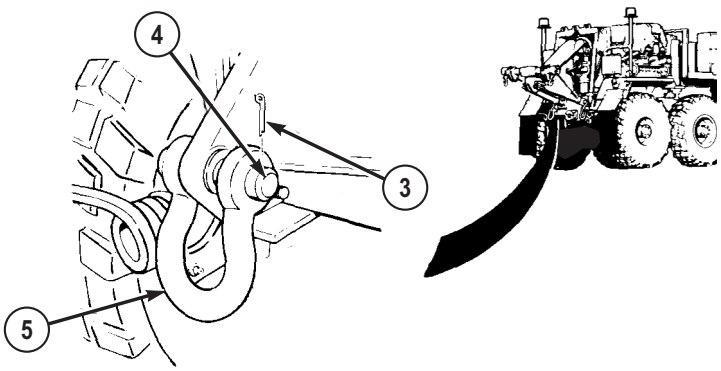


Figure 2.

a. Remove cotter pin (3), pin (4), and towing shackle (5).

b. Replace pin (4) in shackle (5), and cotter pin (3) in pin (4).

c. Repeat Steps (a) and (b) for opposite side towing shackle (5).

d. Stow two rear towing shackles on wrecker vehicle.

4. Pull LIFT CYLINDER control lever (6) to lower cross tube (7) to approximately 3 ft. (1 m) above the ground.

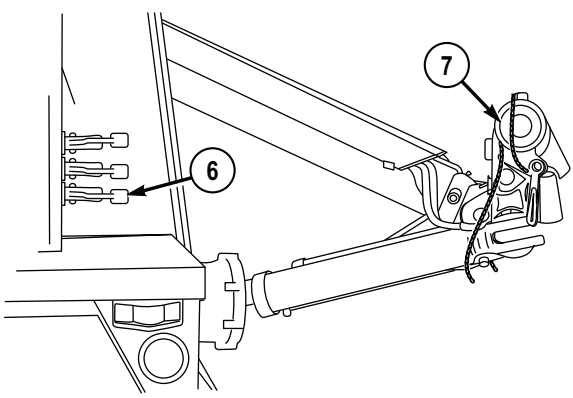
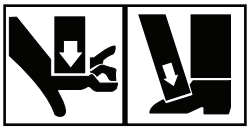


Figure 3.

5. Position wrecker so that cross tube (7) is approximately 1 ft. (30 cm) from tow eyes of disabled vehicle and centered on disabled vehicle.

HOOKUP - Continued

WARNING



When end caps are removed from cross tube, adapters may slide off resulting in injury to personnel.

6. Remove two quick pins (8) and pins (9) from end caps (10).

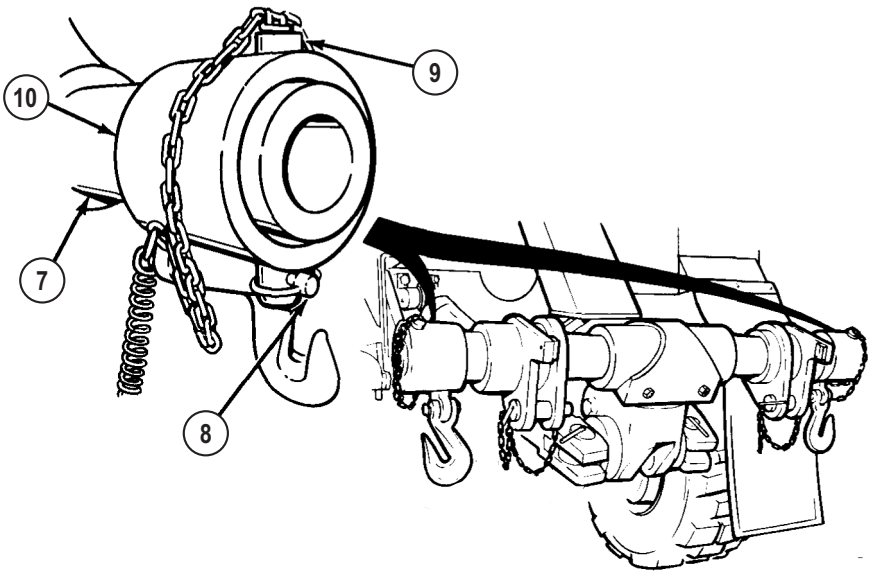


Figure 4.

7. Remove two end caps (10) from cross tube (7).
8. Remove two front adapters (11) from cross tube (7) and place on equipment body floor (12).

HOOKUP - Continued

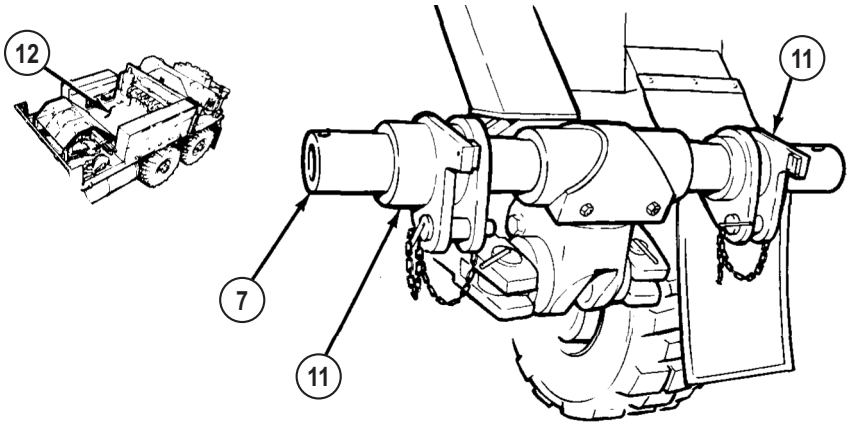


Figure 5.

9. Remove lock handle (13), lock plate (14), and two Multi-Use Adapters (MUAs) (15).

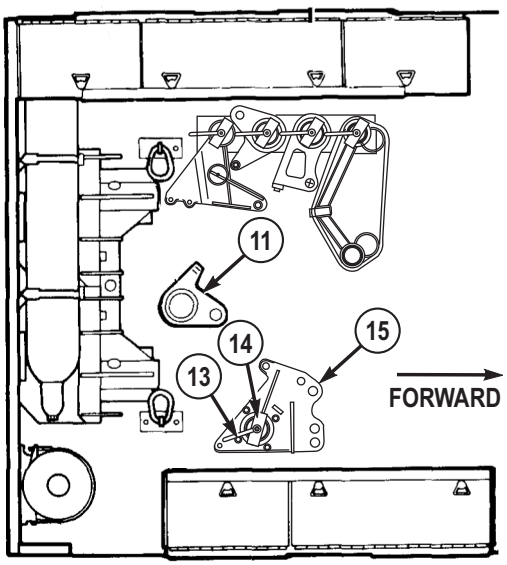


Figure 6.

10. Install two front adapters (11), lock plate (14), and lock handle (13).
11. Remove two 4 in. (102 mm) spacers (16) and two 1.5 in. (38 mm) spacers (17) from wrecker stowage.

HOOKUP - Continued

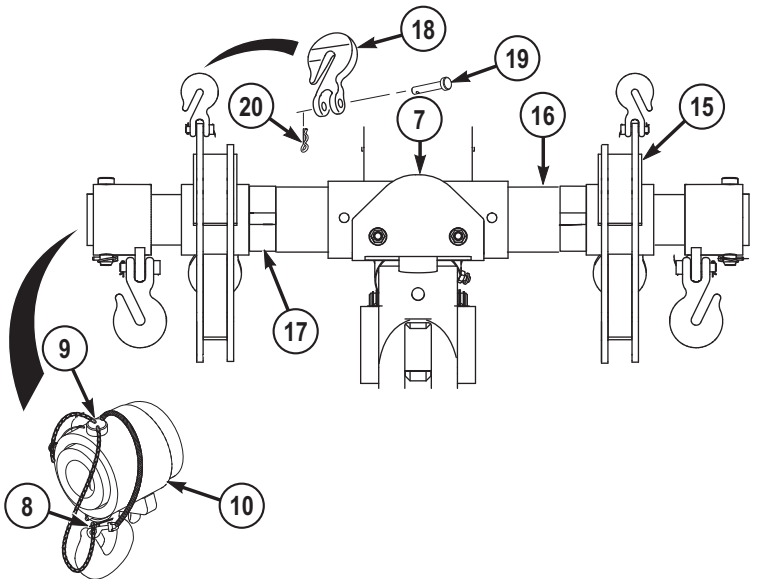


Figure 7.

12. Install two 4 in. (102 mm) spacers (16) on cross tube (7).
13. Install two 1.5 in. (38 mm) spacers (17) on cross tube (7).

WARNING

MUAs are heavy, handle carefully. Failure to comply may result in injury to personnel.

NOTE

MUAs must be positioned on cross tube with rounded ear of MUA toward center of cross tube.

14. Install two MUAs (15) on cross tube (7) with holes facing tow eyes of disabled vehicle.
15. Install two end caps (10) on cross tube (7).
16. Install two pins (9) and quick pins (8).
17. Install two lift clevises (18) in hole #1 of MUAs (15) with pins (19) and cotter pins (20).

HOOKUP - Continued

18. Attach two springs (1) on tow cylinders (2).

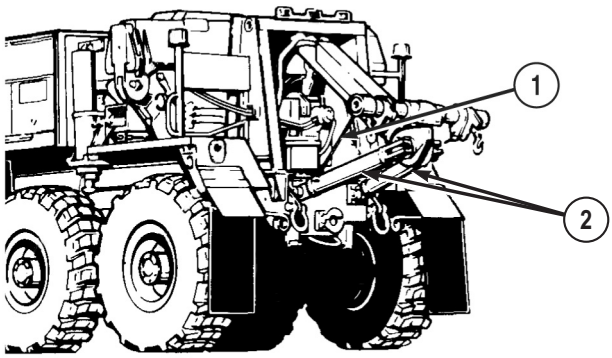


Figure 8.

19. Remove two 16 ft. (5 m) safety chains (25) from wrecker stowage.

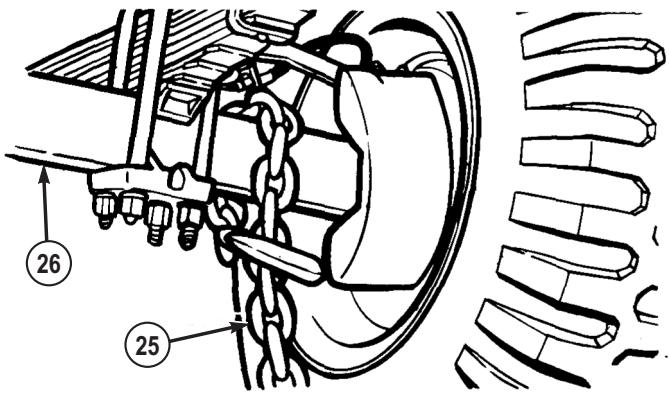


Figure 9.

20. Route one end (without safety shackle) 16 ft. (5 m) safety chains (25) over front axle (26) on disabled vehicle.

21. Hook 16 ft. (5 m) safety chain (25) back into itself (shown) in front of axle (26).

HOOKUP - Continued

22. Repeat Steps (20) and (21) for other side of disabled vehicle.

CAUTION

When routing 16 ft. (5 m) safety chain through lift clevis, keep chain as tight as possible between axle of disabled vehicle and lift clevis, or MUAs will rotate during transport. Failure to comply may result in damage to equipment.

23. Pull 16 ft. (5 m) safety chain (25) tight and install chain or lift clevis (27) on MUA (15).

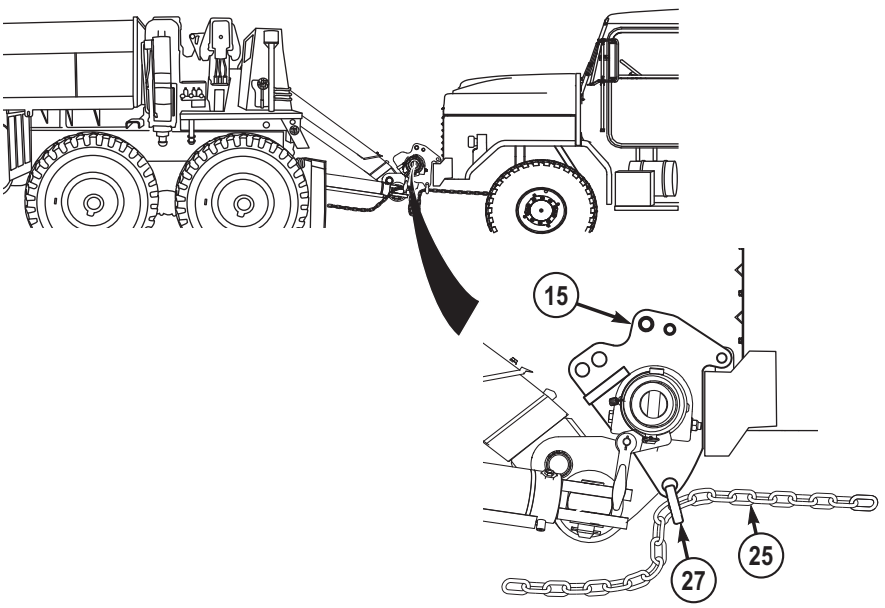


Figure 10.

24. Repeat Step (23) for other side of disabled vehicle.

NOTE

If disabled vehicle parking brakes do not release, cage brake chambers (refer to M939 operator's manual).

25. Release PARKING BRAKE CONTROL on disabled vehicle (refer to M939 operator's manual).

HOOKUP - Continued

NOTE

Do not lift vehicle off ground when performing Step (26).

26. Operate retrieval system until tow cylinders (2) are fully retracted.

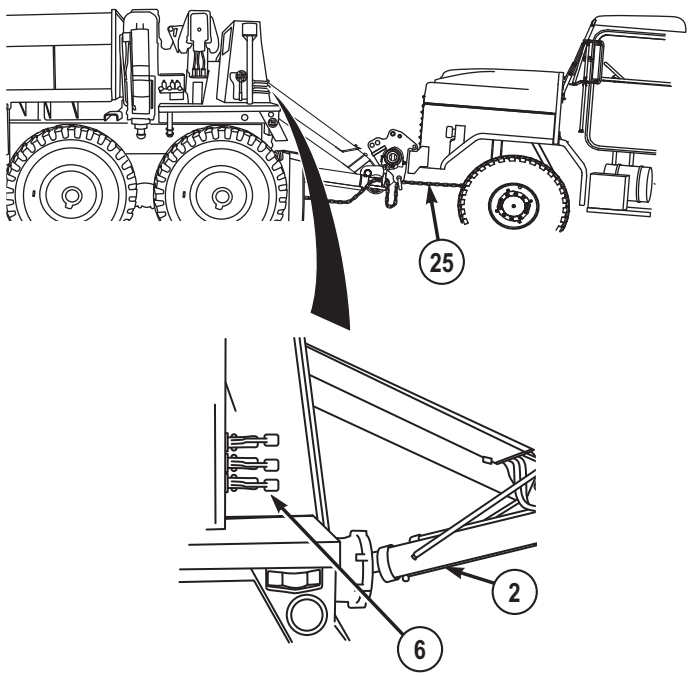


Figure 11.

27. Push in LIFT CYLINDER control lever (6) to retract lift cylinder until slack is removed from 16 ft. (5 m) safety chains (25).

28. Remove two pins (3483740) (21) from wrecker stowage.

HOOKUP - Continued

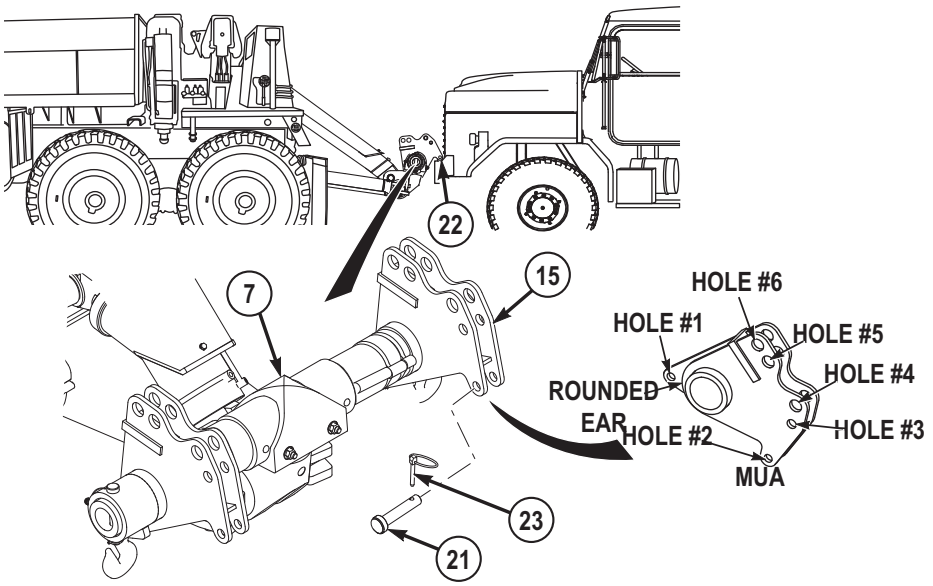


Figure 12.

WARNING

Keep out from under retrieval system and disabled vehicle when raised off ground. Failure to comply may result in injury or death to personnel.

NOTE

If disabled vehicle has towing shackles installed, remove shackles and stow in disabled vehicle.

29. Operate retrieval system, and with aid of an assistant position cross tube (7) so hole #2 on MUAs (15) align with front tow eyes (22).
30. Insert two pins (21) through MUAs (15) and front tow eyes (22). Install quick pins (23) in pins (21).
31. Operate retrieval system and lower cross tube (7) until MUAs (15) contact front bumper (24) of disabled vehicle.

HOOKUP - Continued

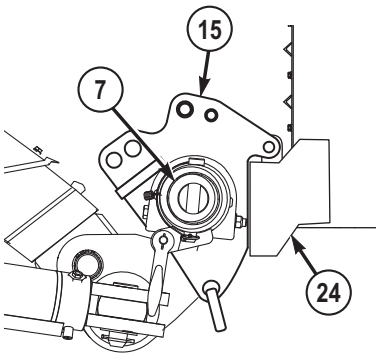


Figure 13.

NOTE

Adjust chain slack so 16 ft. (5 m) safety chains do not touch the ground.

32. 16 ft. (5 m) safety chains (25) through safety chain hoop (28) on wrecker, and secure grab hooks (29) with safety shackles (30).

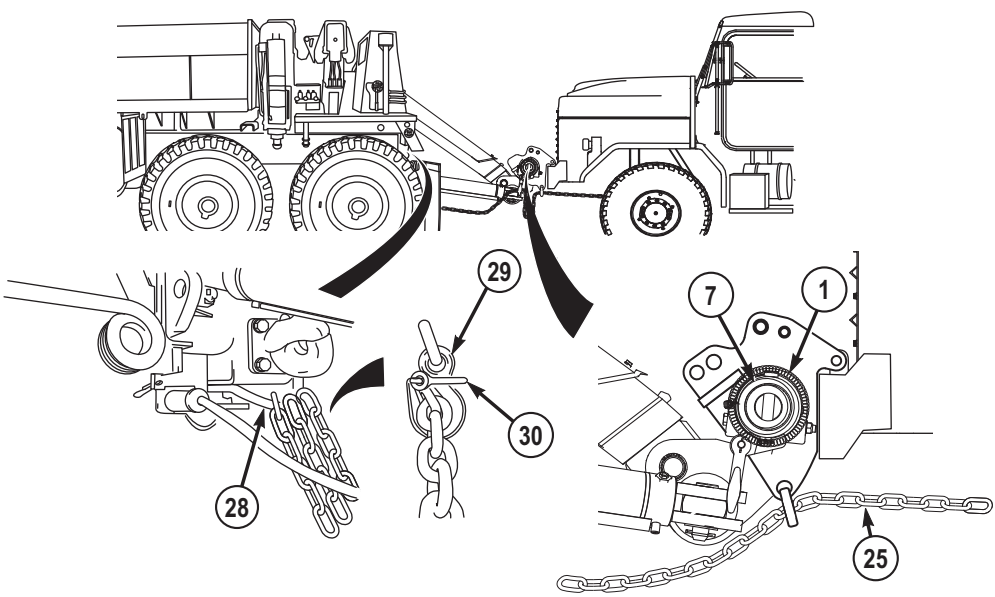


Figure 14.

HOOKUP - Continued

33. Wrap two springs (1) around cross tube (7) and secure.

CAUTION

Make sure all cargo in bed of disabled vehicle is secured prior to lifting and towing. Failure to comply may result in damage to cargo and equipment.

34. Prepare disabled vehicle for towing (refer to M939 operator's manual).

35. Remove two air lines (31) from stowage and attach to rear gladhands (32) of wrecker.

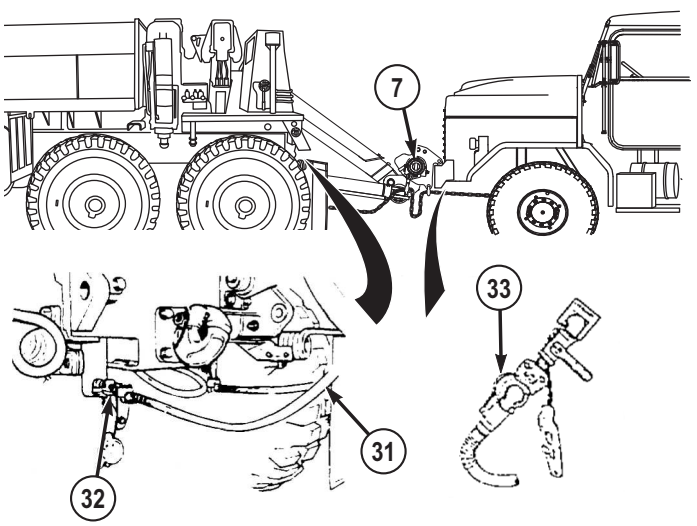


Figure 15.

NOTE

Rear emergency air hose from wrecker must be connected to the front emergency gladhand on the disabled vehicle. Rear service air hose from wrecker must be connected to the front service gladhand on the disabled vehicle.

36. Route two air lines (31) over cross tube (7) and attach to front gladhands (33) of disabled vehicle.

37. Remove emergency tow lights (34) and two brackets (35) from wrecker stowage.

HOOKUP - Continued

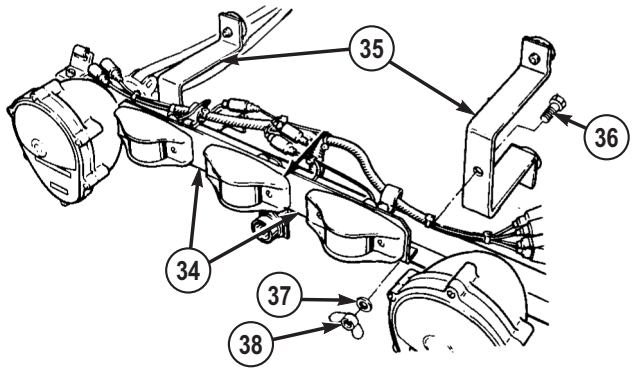


Figure 16.

38. Install two brackets (35) in center holes of emergency tow lights (34) with two screws (36), washers (37), and nuts (38).

39. Install emergency tow lights (34) on rear of M939 and secure with straps (39).

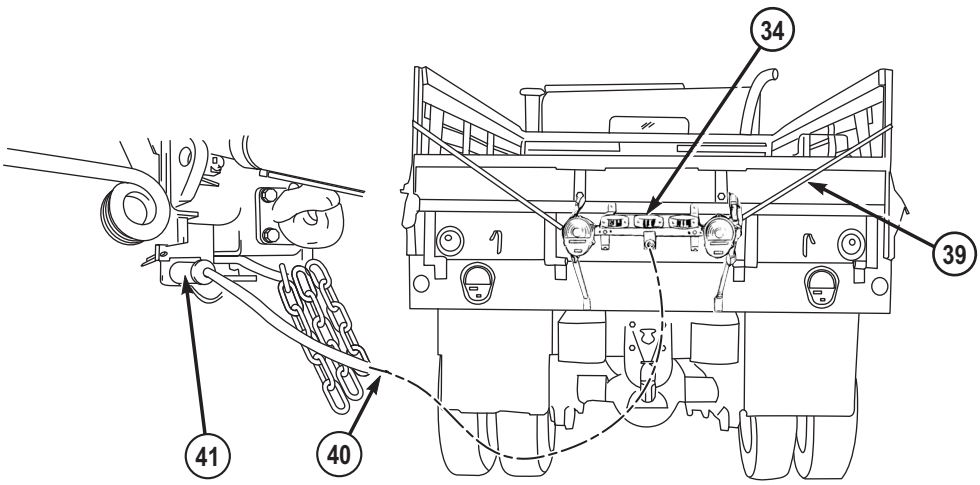


Figure 17.

40. Remove two light cable (40) from stowage and connect to emergency two lights (34).

HOOKUP - Continued

CAUTION

Route cable so it does not drag on ground or interfere with turning tires. Failure to comply may result in damage to equipment.

41. Route other end of tow light cable (40) along disabled vehicle and connect to rear electrical connector (41) on wrecker.
42. Lock disabled vehicle's steering (refer to M939 operator's manual).
43. Set POWER switch (42) to ON position.

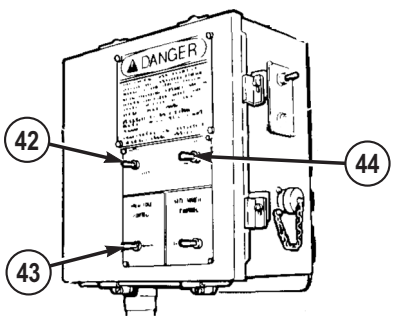


Figure 18.

44. Set HIGH IDLE switch (43) to CONTINUOUS.
45. Push and release LATCH switch (44). Engine speed will increase to approximately 1500 rpm.

WARNING

Keep out from under retrieval system and disabled vehicle when raised off ground. Failure to comply may result in injury or death to personnel.

HOOKUP - Continued

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

CAUTION

- Fully retract both tow cylinders before lifting disabled vehicle. Failure to comply may result in damage to equipment.
- Ensure all rigging is secure. Loose rigging can become entangled. Failure to comply may result in damage to equipment.

NOTE

Operator must allow wrecker air suspension system to completely adjust for added weight of disabled vehicle before raising disabled vehicle to final height of 1 ft. (30 cm).

46. Push in LIFT CYLINDER control lever (6) to retract lift cylinder (45) to raise disabled vehicle approximately 3 in. (8 cm) off ground.
    a. Once wrecker air suspension system has adjusted for added weight of disabled vehicle, push LIFT CYLINDER control lever (6) to retract lift cylinder (45) and raise disabled vehicle to final height of 1 ft. (30 cm).

HOOKUP - Continued

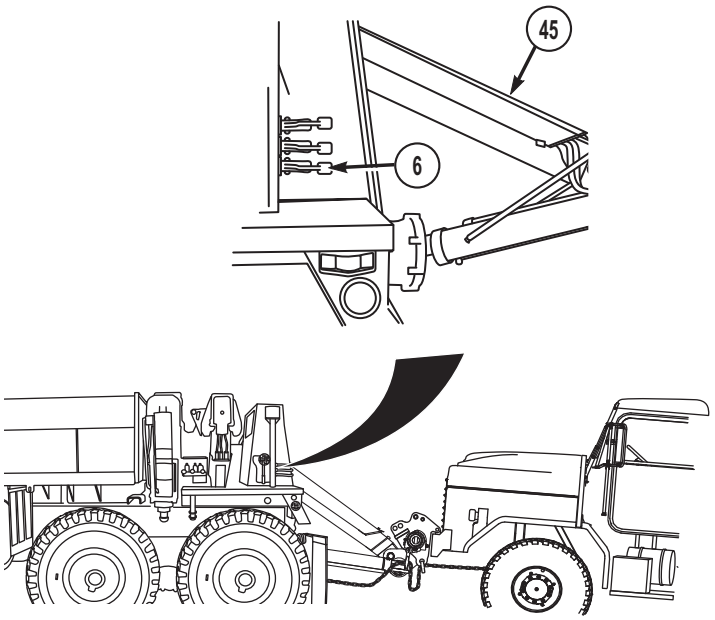


Figure 19.

47. Adjust slack in two 16 ft. (5 m) safety chains so lengths between cross tube and wrecker are approximately 1 ft. (30 cm) off ground.
48. Set POWER switch (42) to OFF position.

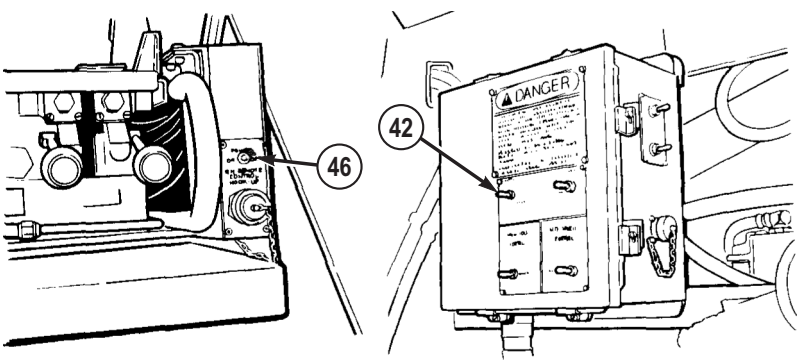


Figure 20.

49. Set POWER switch (46) to OFF position.

HOOKUP - Continued

50. Set HYD ENABLE switch (47) to off position. MAIN HYD ENABLE indicator (48) will go out.

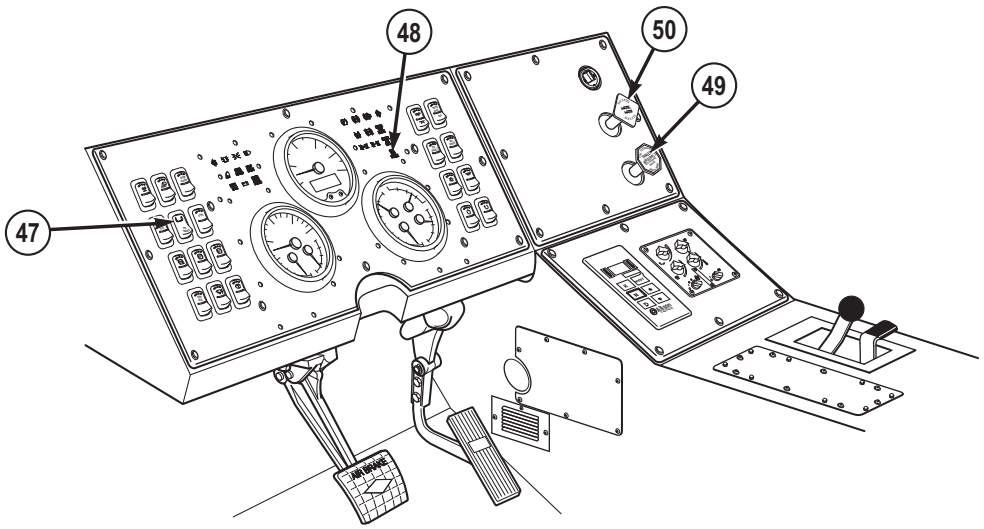


Figure 21.

51. Push in TRAILER AIR SUPPLY control (49).
52. Turn on wrecker service drive lights. (WP 0087)
53. Turn on wrecker emergency flashers. (WP 0096)
54. Make sure disabled vehicle emergency flashers are turned on (refer to operator's manual).

NOTE

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

55. Push in PARKING BRAKE control (50).

WARNING

The M984 Wrecker should not be operated at speeds over 15 MPH (24 km/hr) except on paved roads when the operator determines that the

HOOKUP - Continued

vehicle being towed and the terrain allow safe operation. Engine brake switch must ON for all towing operations. Speed in excess of the below table may result in loss of control, serious injury, or death to personnel.

56. Select desired gear (WP 0048) and transport disabled vehicle.

Table 1. Maximum Towing Speed.

Terrain Condition	Maximum Speed Towed Load Up To 50,000 lbs (22 700 kg)	Maximum Speed Towed Load Above 50,000 lbs (22 700 kg)
On Road-Level	35 mph (56 km/hr)	30 mph (48 km/hr)
On Road-Hilly	30 mph (48 km/hr)	20 mph (32 km/hr)
Off-Road	15 mph (24 km/hr)	15 mph (24 km/hr)

DISCONNECT

NOTE

This is a two-soldier task.

1. Set transmission range selector (1) to N (neutral).

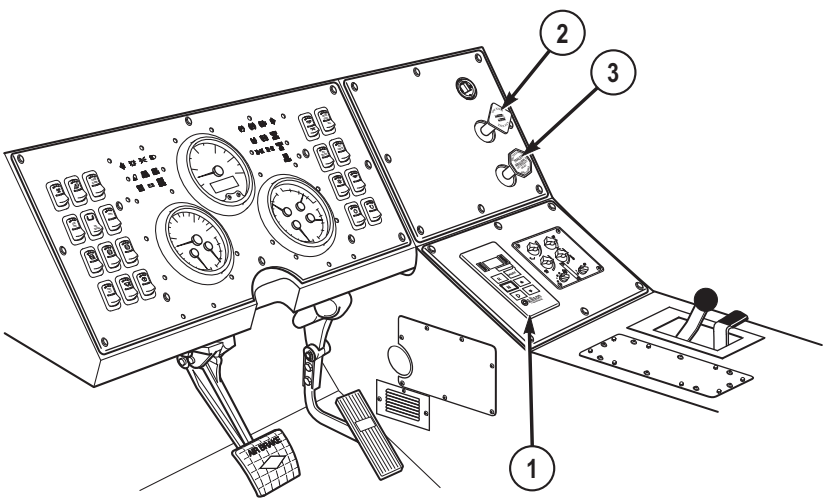


Figure 22.

DISCONNECT - Continued

NOTE

Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

2. Pull out PARKING BRAKE control (2).
3. Pull out TRAILER AIR SUPPLY control (3).

WARNING

Keep out from under retrieval system and disabled vehicle when raised off ground. Failure to comply may result in injury or death to personnel.

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

4. Review procedures for operating retrieval towing system (WP 0058) and prepare retrieval system for operation. (WP 0059)

NOTE

- After lowering disabled vehicle, extend lift and tow cylinders approximately 2 to 4 inches (51 to 102 mm) to allow for adjustment when removing adapters.
- Expect wrecker air suspension system to deflate air springs to achieve normal ride height once weight of disabled vehicle is removed.

5. Pull LIFT CYLINDER control lever (4) to extend lift cylinder and lower disabled vehicle to the ground until tension is released between MUAs (5) and tow eyes (6).

DISCONNECT - Continued

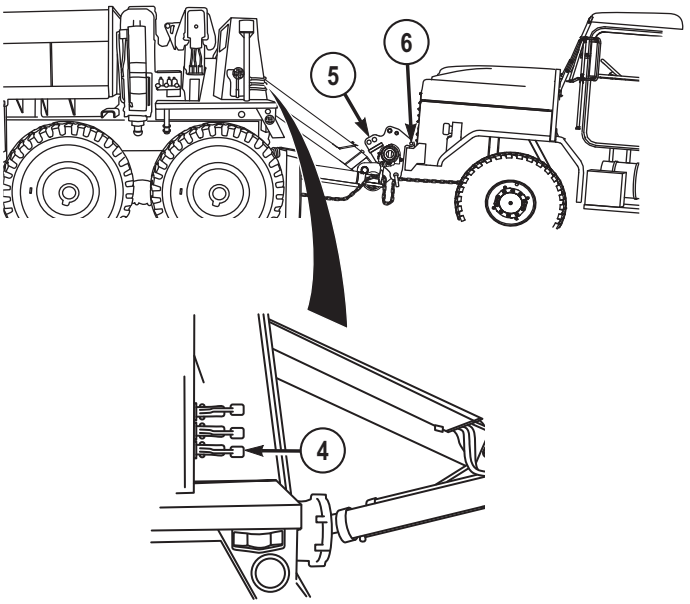


Figure 23.

WARNING

If disabled vehicle's parking brake is inoperative, chock wheels of disabled vehicle (refer to operator's manual). Failure to comply may result in injury or death to personnel.

6. Pull out PARKING BRAKE control on disabled vehicle (refer to M939 operator's manual). If parking brake on disabled vehicle is inoperable, install wheel chocks.
7. Remove and stow air lines (7).

DISCONNECT - Continued

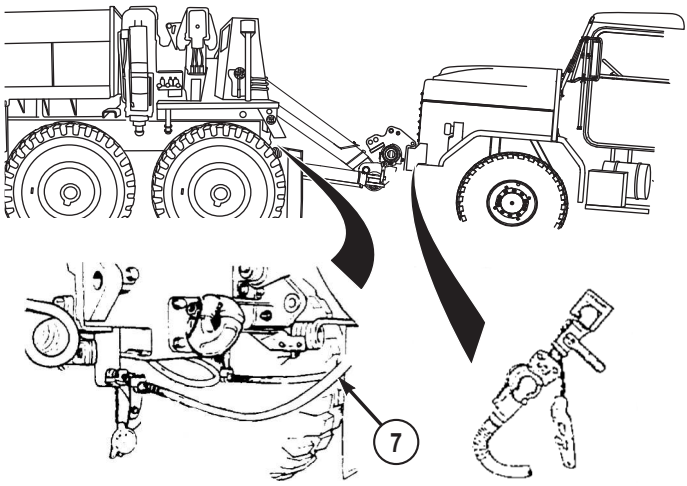


Figure 24.

8. Remove tow light cable (8) from wrecker.

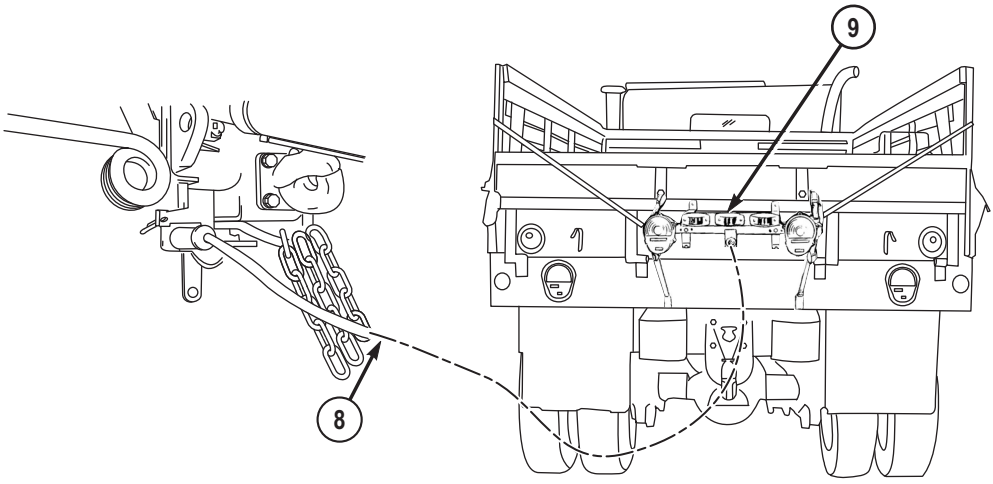


Figure 25.

9. Remove tow light cable (8) from emergency tow light (9) and return to wrecker stowage.

DISCONNECT - Continued

10. Remove emergency tow lights (9) from disabled vehicle.
11. Remove two nuts (10), washers (11), screws (12), and brackets (13) from emergency tow lights (9). Stow emergency tow lights (9) and brackets (13).

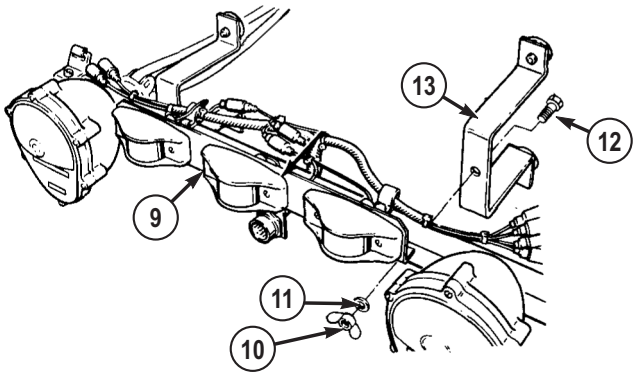


Figure 26.

12. Remove and stow 16 ft. (5 m) safety chains (14).

DISCONNECT - Continued

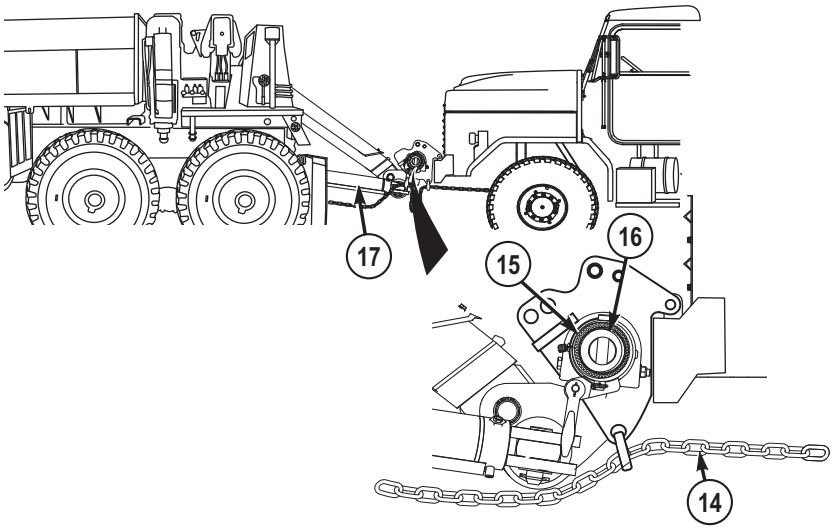


Figure 27.

13. Unwrap two springs (15) from cross tube (16) and connect to tow cylinders (17).

WARNING

Keep hands and fingers away from adapters and tow eyes when operating retriever controls. Failure to comply may result in injury or death to personnel.

NOTE

Use retrieval controls to position cross tube to relieve tension from adapters.

14. Remove two quick pins (18) and pins (19) from hole #2 on MUAs (5).

DISCONNECT - Continued

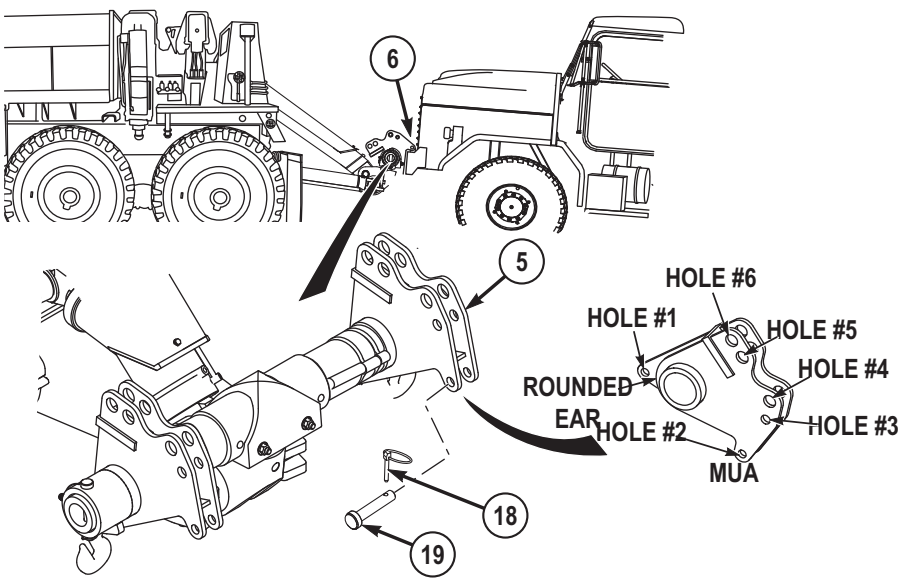


Figure 28.

15. Remove MUAs (5) from tow eyes (6) on disabled vehicle.
16. Operate retrieval system to extend lift cylinder and lower cross tube (16) until MUAs are no longer supported by bumper of disabled vehicle.
17. Drive wrecker forward (WP 0050) several feet and park. (WP 0056)

WARNING

When springs and end caps are removed, cross tube can swing in all directions and adapters may slide off and cause injury or death to personnel.

18. Remove two springs (15) from tow cylinders (17).

DISCONNECT - Continued

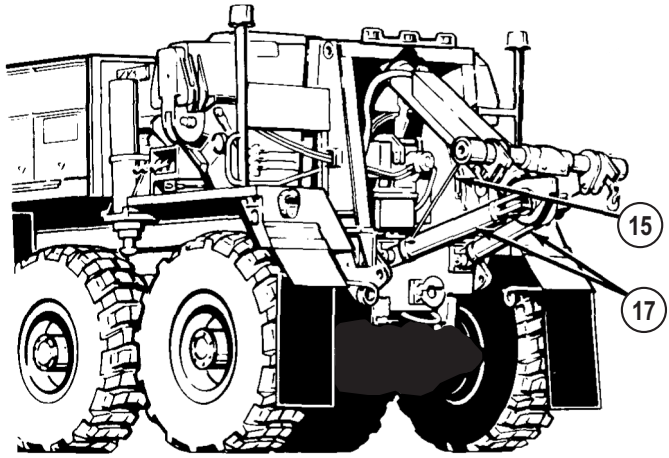


Figure 29.

19. Remove two quick pins (20) and pins (21) from end caps (22).

DISCONNECT - Continued

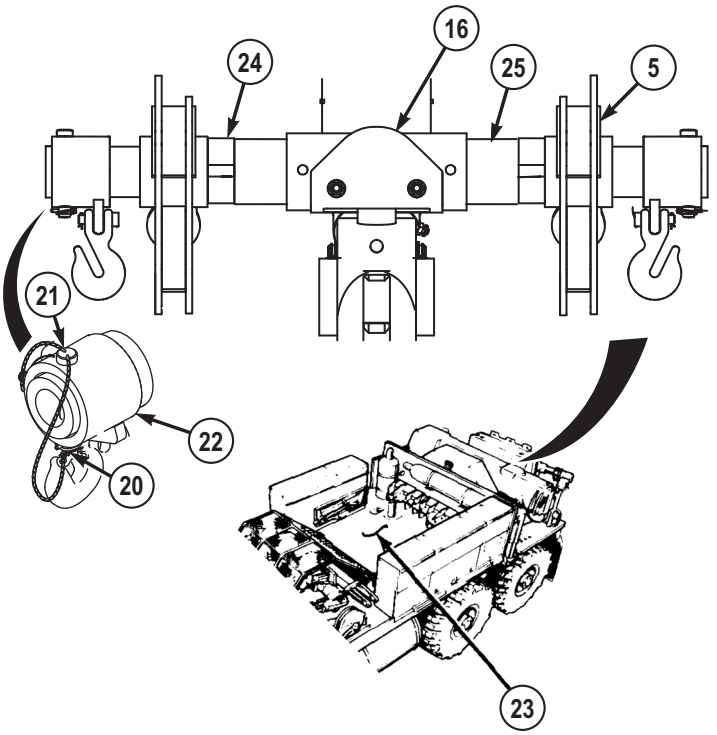


Figure 30.

20. Remove two end caps (22) from cross tube (16).

WARNING

MUAs are heavy, handle carefully. Failure to comply may result in injury to personnel.

21. Remove two MUAs (5) from cross tube (16) and place on equipment body floor (23).
22. Remove and stow two 1.5 in. (38 mm) spacers (24).
23. Remove and stow 4 in. (102 mm) spacers (25).
24. Remove lock handle (26), lock plate (27), and front adapters (28).

DISCONNECT - Continued

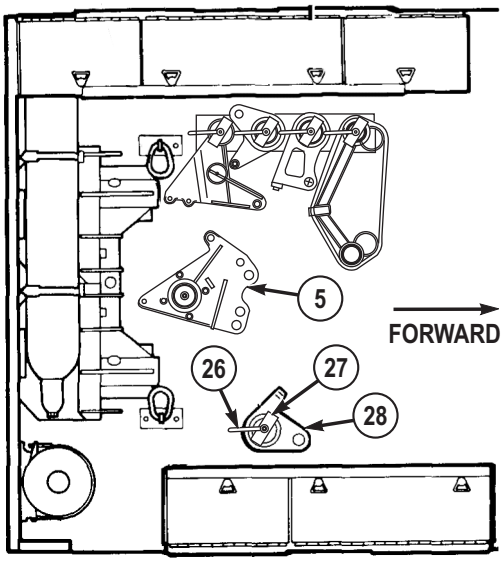


Figure 31.

25. Install two MUAs (5) removed from cross tube (16), with lock plate (27), and lock handle (26).
26. Install two front adapters (28) on cross tube (16).

DISCONNECT - Continued

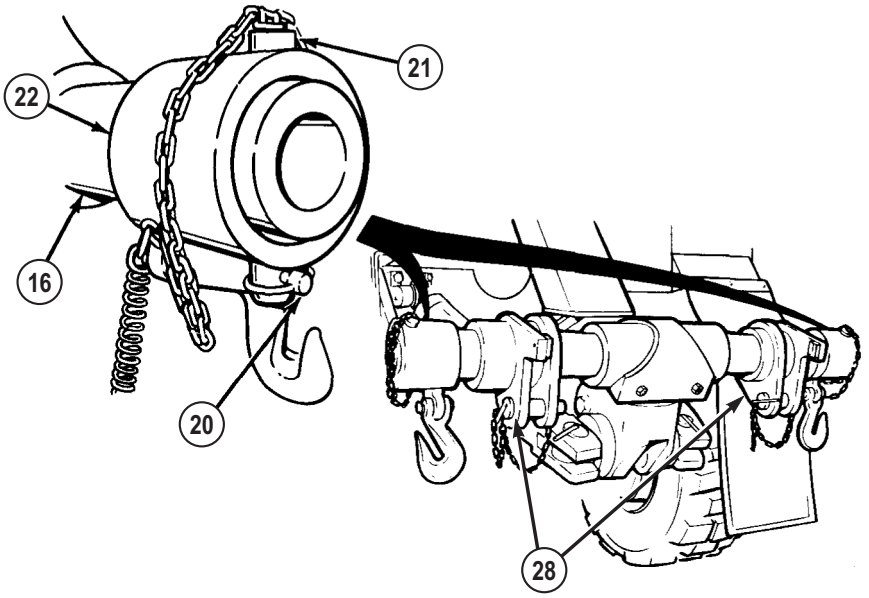


Figure 32.

27. Install two end caps (22) on cross tube (16). Install two pins (21) and quick pins (20).
28. Install two springs (15) on tow cylinders (17).

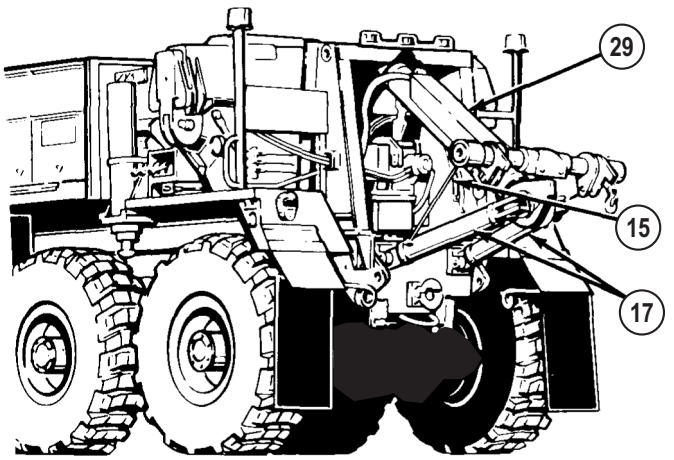


Figure 33.

DISCONNECT - Continued

29. Operate retrieval system and fully retract lift cylinder (29) and tow cylinders (17).

NOTE

Driver side and passenger side rear towing shackles are installed the same way.

30. Install two towing shackles (30), pins (31), and cotter pins (32).

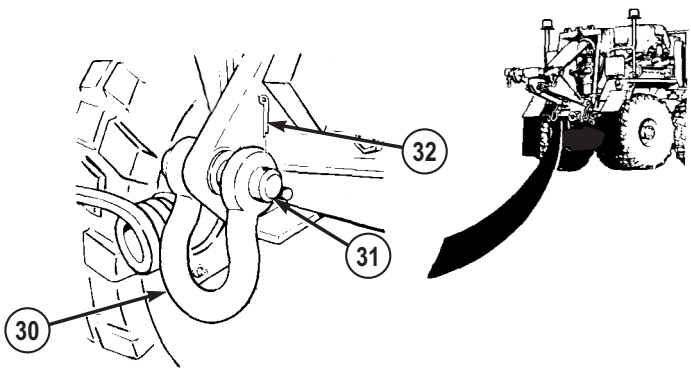


Figure 34.

31. Set POWER switch (33) to OFF position.

DISCONNECT - Continued

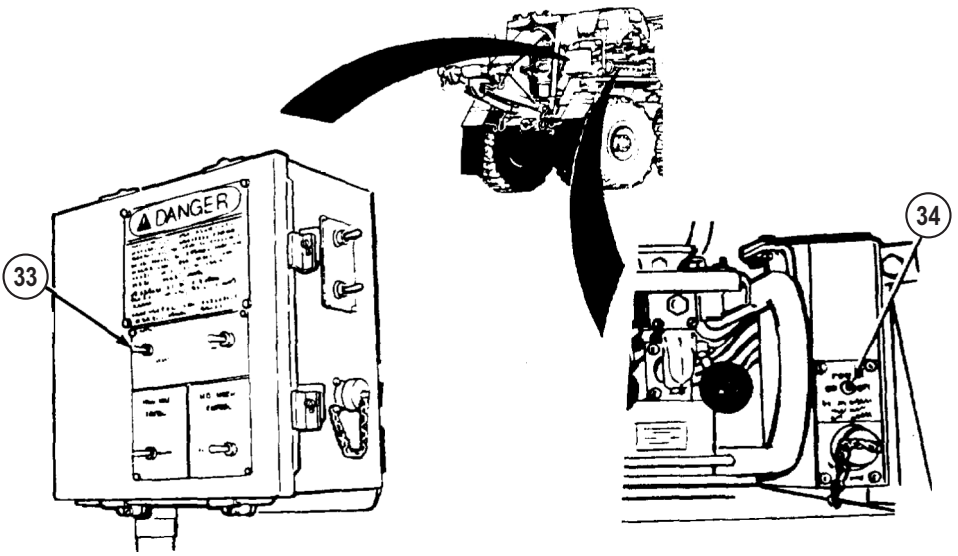


Figure 35.

32. Set POWER switch (34) to OFF position.
33. Turn off wrecker emergency flashers. (WP 0096)
34. Turn off wrecker service drive lights. (WP 0087)
35. Set HYD ENABLE switch (35) to off position. MAIN HYD ENABLE indicator (36) will go out.

DISCONNECT - Continued

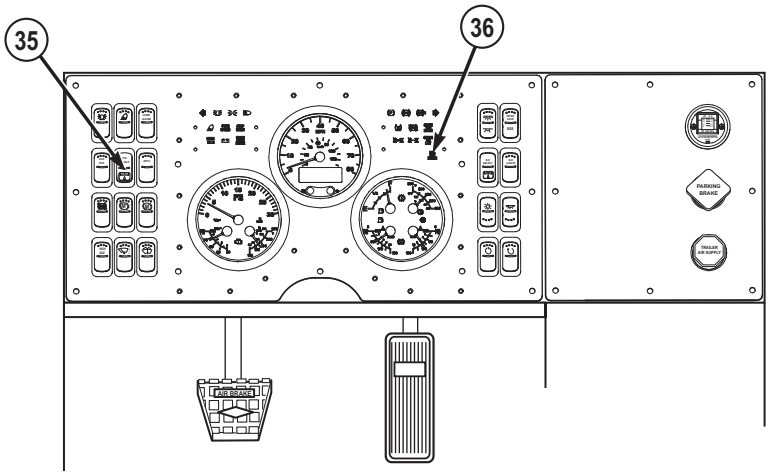


Figure 36.

36. Shut off engine. (WP 0057)
37. Remove and stow portable beacon lights. (WP 0094)
38. Turn off disabled vehicle emergency flashers, and unlock steering column (refer to operator's manual).

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
TOW MTVR - REAR LIFT USING MULTI-USE ADAPTER (MUA)

INITIAL SETUP:

Not Applicable

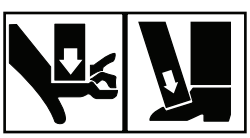
HOOKUP

NOTE

- Each recovery situation is unique and requires assessment to determine if the driveline is suitable for transport. When in doubt, consult with field level maintenance.
- This procedure is a two soldier task.

1. Review procedures for operating retrieval towing system (WP 0058) and prepare retrieval system for operation. (WP 0059)

WARNING



Hold cross tube when removing springs. Cross tube swings and may cause adapters to slide, resulting in injury to personnel.

2. Disconnect two springs (1) from two cylinders (2).

HOOKUP - Continued

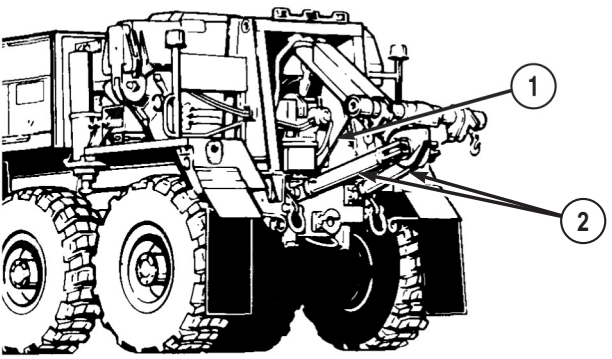


Figure 1.

CAUTION

Both rear towing shackles must be removed from rear tow eyes on wrecker before performing retrieval operations, or damage to tow cylinder may result.

NOTE

Driver side and passenger side towing shackles are removed the same way.

3. Remove two rear towing shackles from wrecker vehicle:

HOOKUP - Continued

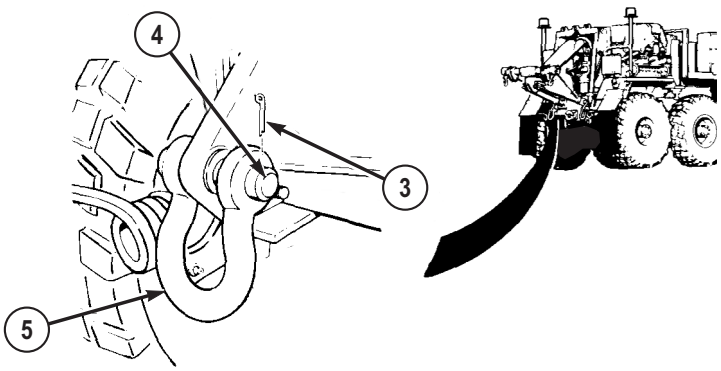


Figure 2.

a. Remove cotter pin (3), pin (4), and towing shackle (5).

b. Replace pin (4) in shackle (5), and cotter pin (3) in pin (4).

c. Repeat Steps (a) and (b) for opposite side towing shackle (5).

d. Stow two rear towing shackles on wrecker vehicle.

4. Pull LIFT CYLINDER control lever (6) to lower crosstube (7) to approximately 3 ft. (1 m) above the ground.

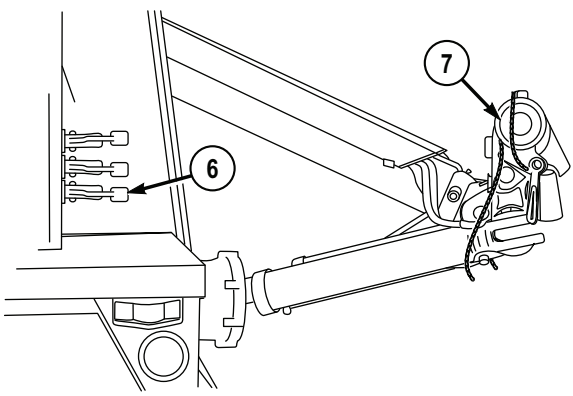
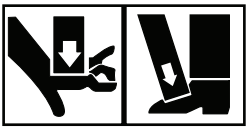


Figure 3.

5. Position wrecker so that crosstube (7) is approximately 1 ft. (30 cm) from tow eyes of disabled vehicle and centered on disabled vehicle.

HOOKUP - Continued

WARNING



When end caps are removed from cross tube, adapters may slide off resulting in injury to personnel.

6. Remove two quick pins (8) and pins (9) from end caps (10).

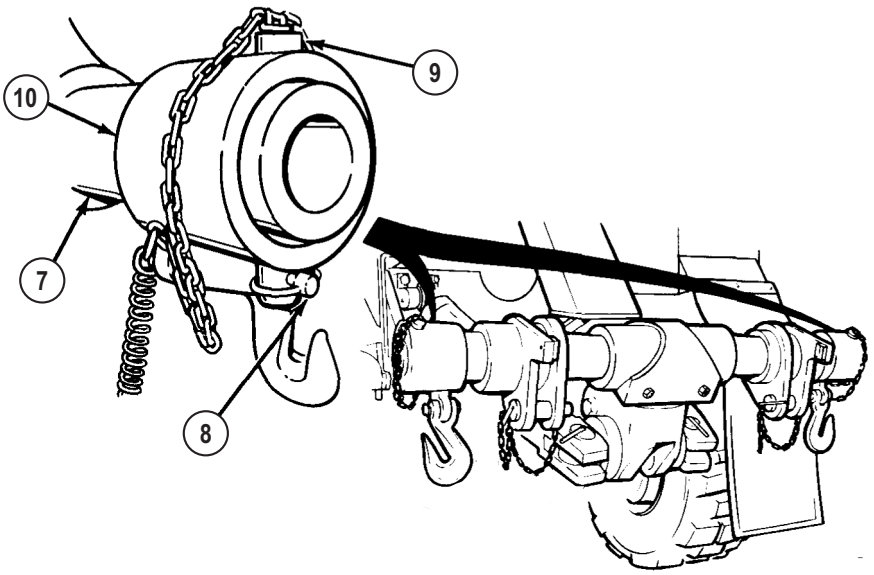


Figure 4.

7. Remove two end caps (10) from crosstube (7).
8. Remove two front adapters (11) from crosstube (7) and place on equipment body floor (12).

HOOKUP - Continued

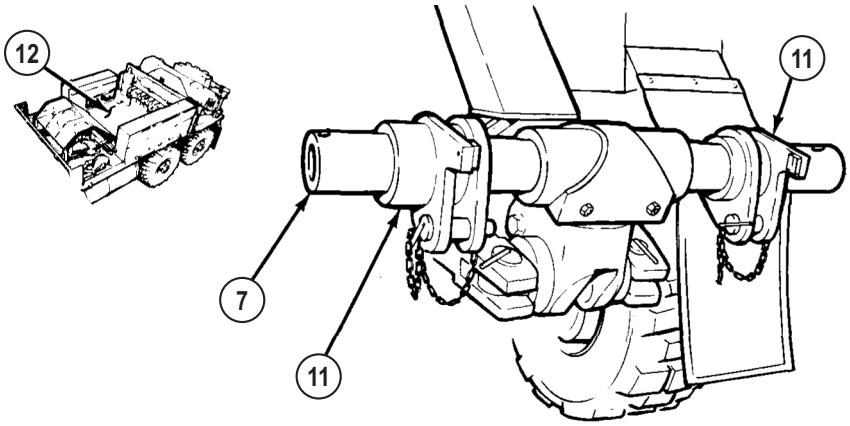


Figure 5.

9. Remove lock handle (13), lock plate (14), and two Multi-Use Adapters (MUAs) (15).

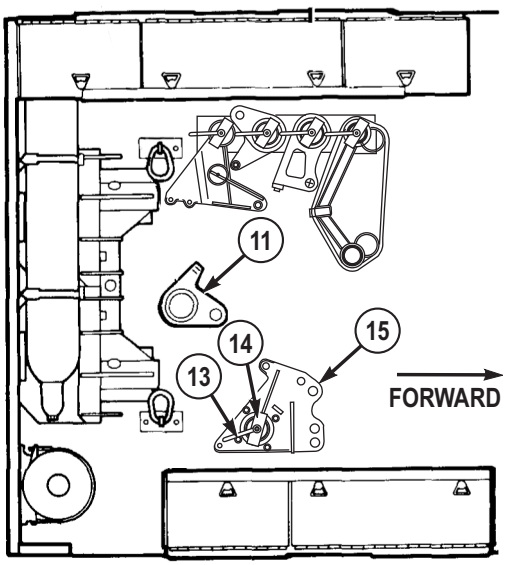


Figure 6.

10. Install two front adapters (11), lock plate (14), and lock handle (13).
11. Remove two 4 in. (102 mm) spacers (16) and two 3 in. (76 mm) spacers (17) from wrecker stowage.

HOOKUP - Continued

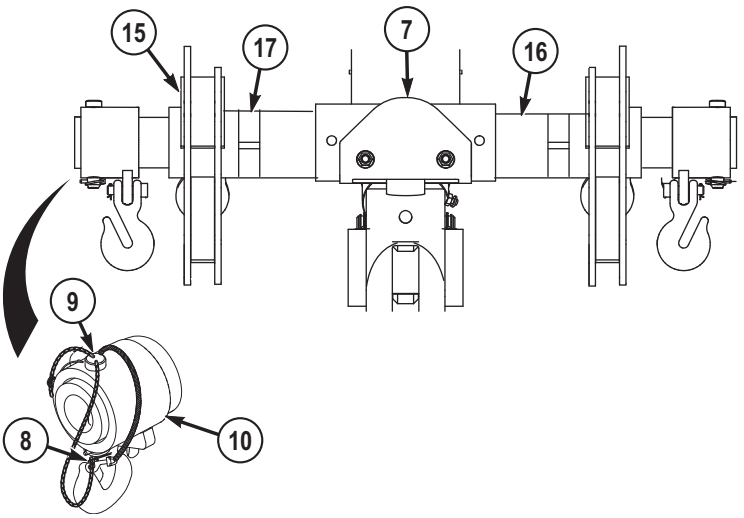


Figure 7.

12. Install two 4 in. (102 mm) spacers (16) on crosstube (7).
13. Install two 3 in. (76 mm) spacers (17) on crosstube (7).

WARNING

MUAs are heavy, handle carefully. Failure to comply may result in injury to personnel.

NOTE

MUAs must be positioned on crosstube with rounded ear of MUA toward center of crosstube.

14. Install two MUAs (15) on crosstube (7) with holes facing tow eyes of disabled vehicle.
15. Install two end caps (10) on crosstube (7).
16. Install two pins (9) and quick pins (8).
17. Attach two springs (1) on tow cylinders (2).

HOOKUP - Continued

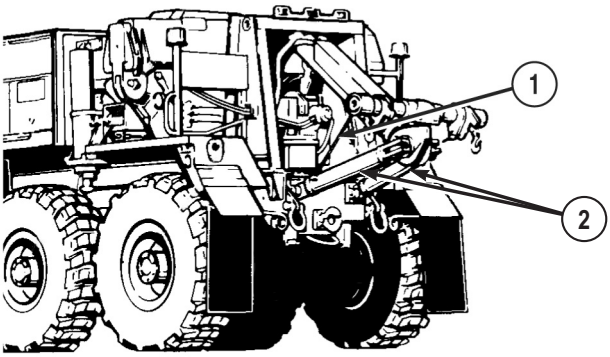


Figure 8.

18. Remove two pins (3483735) (18) from wrecker stowage.

HOOKUP - Continued

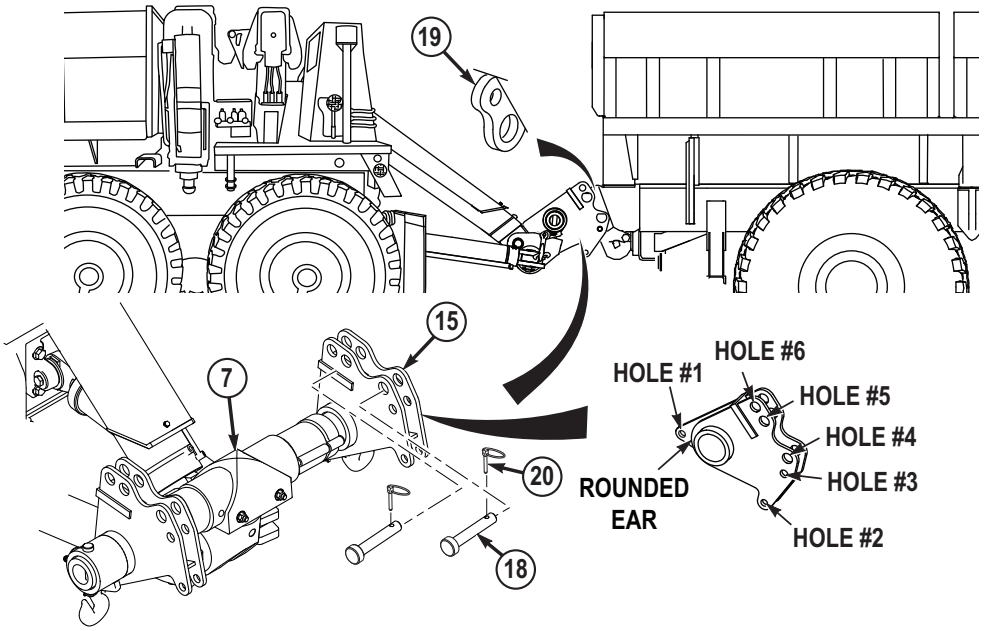


Figure 9.

WARNING

Keep hands and fingers away from adapters and tow eyes when operating retriever controls. Failure to comply may result in injury or death to personnel.

NOTE

If disabled vehicle has towing shackles installed, remove shackles and stow in disabled vehicle.

19. Operate retrieval system, and with aid of an assistant position crosstube (7) so hole #5 on MUAs (15) align front tow eyes (19).

20. Insert two pins (18) through MUAs (15) and front tow eyes (19). Install two quick pins (20) in pins (18).

HOOKUP - Continued

21. Operate retrieval system, and with aid of an assistant position crosstube (7) so hole #4 on MUAs (15) align front tow eyes (19).
22. Insert two pins (18) through MUAs (15) and front tow eyes (19). Install quick pins (20) in pins (18).
23. Push in PARKING BRAKE control, and remove chocks on disabled vehicle (refer to MTVR operator's manual).

NOTE

Do not lift vehicle off ground when performing Step (24).

24. Alternately push in RIGHT TOW CYLINDER (21), LEFT TOW CYLINDER (22), and LIFT CYLINDER control levers (6) until tow cylinders (2) are fully retracted.

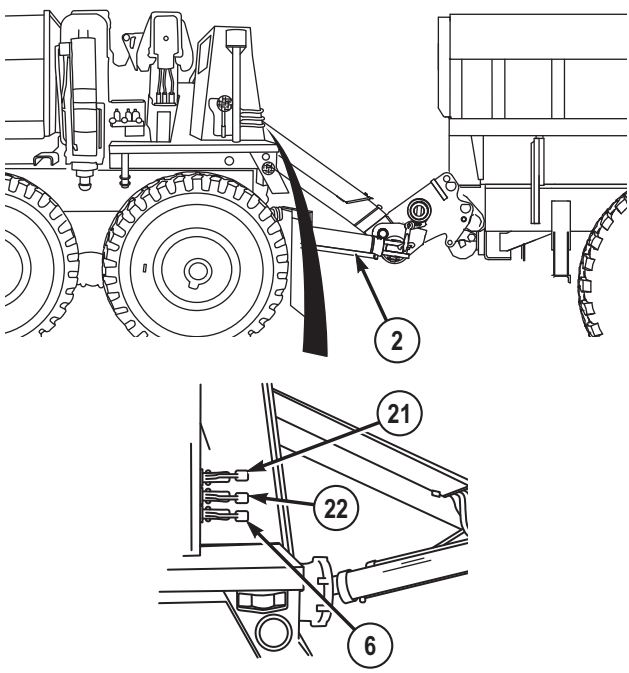


Figure 10.

25. Remove two 16 ft. (5 m) safety chains (23) from wrecker stowage.

HOOKUP - Continued

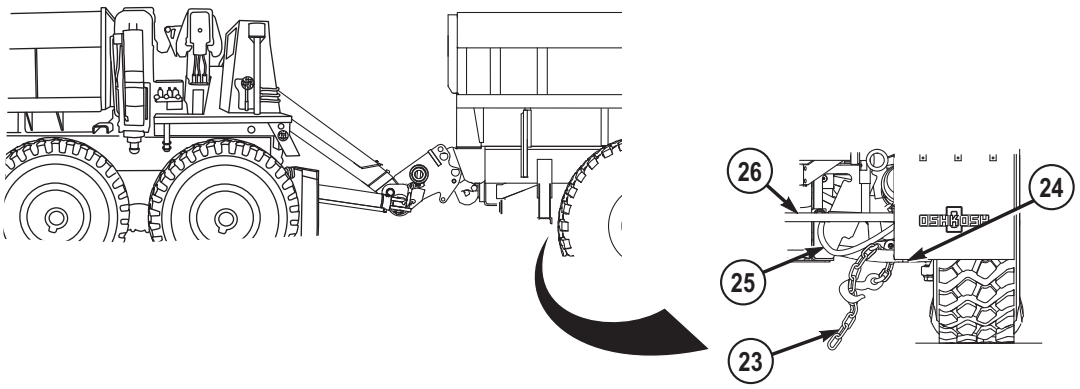


Figure 11.

CAUTION

Ensure 16 ft. (5 m) safety chain is routed below CTI air line and below under-ride bar of disabled vehicle, or damage to equipment may result.

26. Route one end (without safety shackle) of 16 ft. (5 m) safety chain (23) over passenger side lower control arm (24) of disabled vehicle, below CTI air line (25) and under-ride (26) of disabled vehicle.
27. Hook 16 ft. (5 m) safety chain (23) together in front of axle (24).
28. Repeat Steps (26) and (27) for driver side of disabled vehicle.

NOTE

Adjust chain slack so safety chains do not touch the ground.

29. Route two free ends of 16 ft. (5 m) safety chains (23) to end cap hooks (27) and through safety chain hoop (28) on wrecker. Hook 16 ft. (5 m) safety chains back into themselves, and secure with safety shackles (29).

HOOKUP - Continued

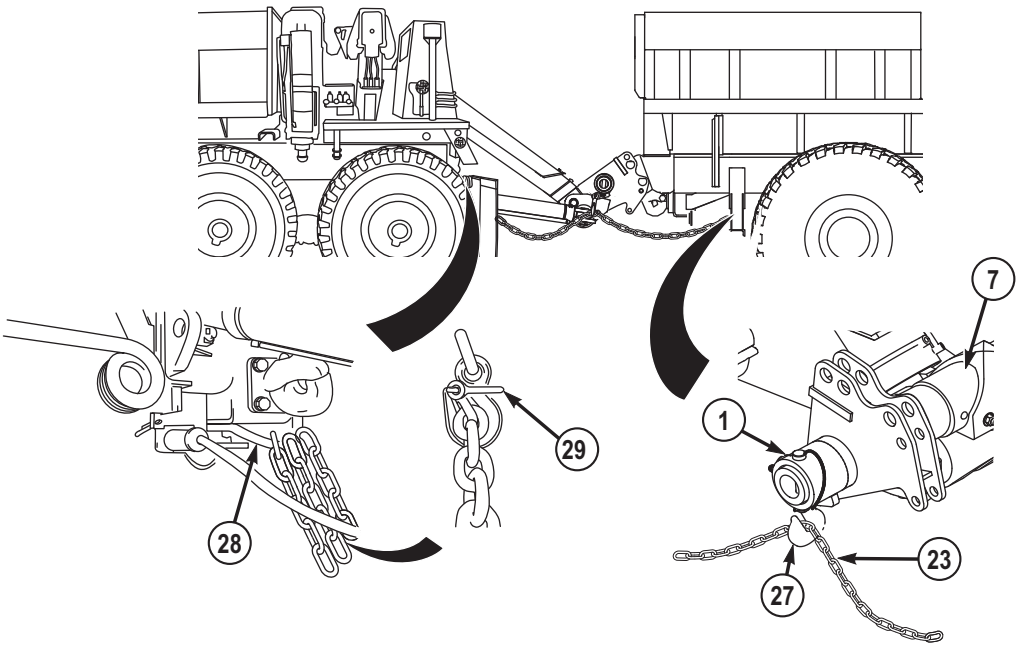


Figure 12.

30. Wrap two springs (1) around crosstube (7) and secure.

CAUTION

Make sure all cargo in bed of disabled vehicle is secured prior to lifting and towing. Failure to comply may result in damage to cargo and equipment.

NOTE

Rear emergency air line from wrecker must be connected to the front emergency glad hand on the disabled vehicle. Rear service air line from wrecker must be connected to the front service glad hand on the disabled vehicle.

31. Prepare disabled vehicle for towing (refer to MTVR operator's manual).
32. Remove emergency tow lights (30) and two brackets (31) from wrecker stowage.

HOOKUP - Continued

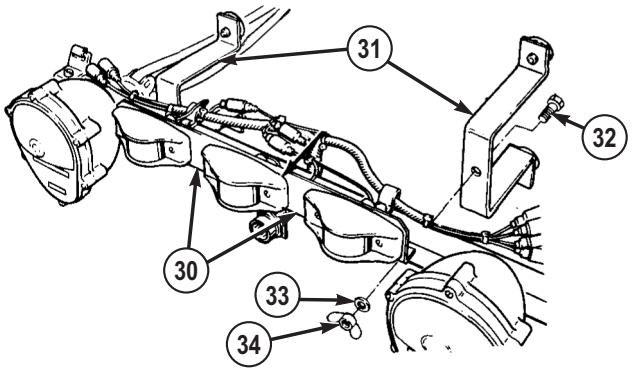


Figure 13.

33. Install two brackets (31) in center holes of emergency tow lights (30) with two screws (32), washers (33), and nuts (34).

34. Install emergency tow lights (30) on front of MTVR and fasten securely with straps (35).

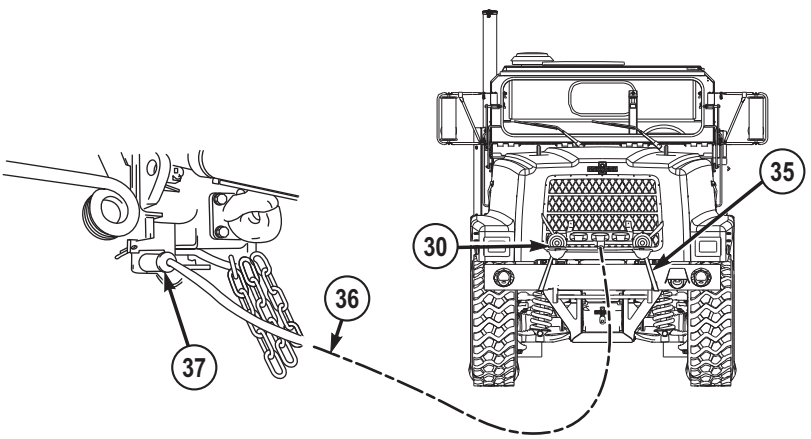


Figure 14.

35. Remove tow light cable (36) from wrecker stowage and connect to emergency tow lights (30).

HOOKUP - Continued

CAUTION

Route cable so it does not drag on ground or interfere with turning tires. Failure to comply may result in damage to equipment.

36. Route other end of tow light cable (36) along disabled vehicle and connect to rear electrical connector (37) on wrecker.
37. Lock disabled vehicle's steering (refer to MTVR operator's manual).
38. Set POWER switch (38) to ON position.

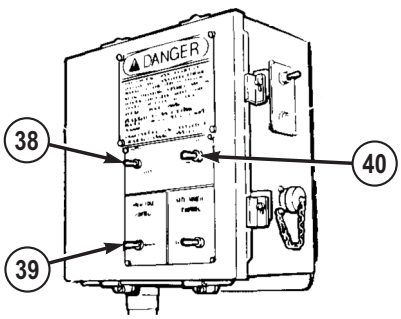


Figure 15.

39. Set HIGH IDLE switch (39) to CONTINUOUS.
40. Push and release LATCH switch (40). Engine speed will increase to approximately 1500 rpm.

WARNING

Keep out from under retrieval system and disabled vehicle when raised off ground. Failure to comply may result in injury or death to personnel.

HOOKUP - Continued

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

CAUTION

- Fully retract both tow cylinders before lifting disabled vehicle. Failure to comply may result in damage to equipment.
- Ensure all rigging is secure. Loose rigging can become entangled. Failure to comply may result in damage to equipment.

NOTE

Operator must allow wrecker air suspension system to completely adjust for added weight of disabled vehicle before raising disabled vehicle to final height of 1 ft. (30 cm).

41. Push in LIFT CYLINDER control lever (6) to retract lift cylinder (41) to raise disabled vehicle approximately 3 in. (8 cm) off ground.
    a. Once wrecker air suspension system has adjusted for added weight of disabled vehicle, push LIFT CYLINDER control lever (6) to retract lift cylinder (41) and raise disabled vehicle to final height of 1 ft. (30 cm).

HOOKUP - Continued

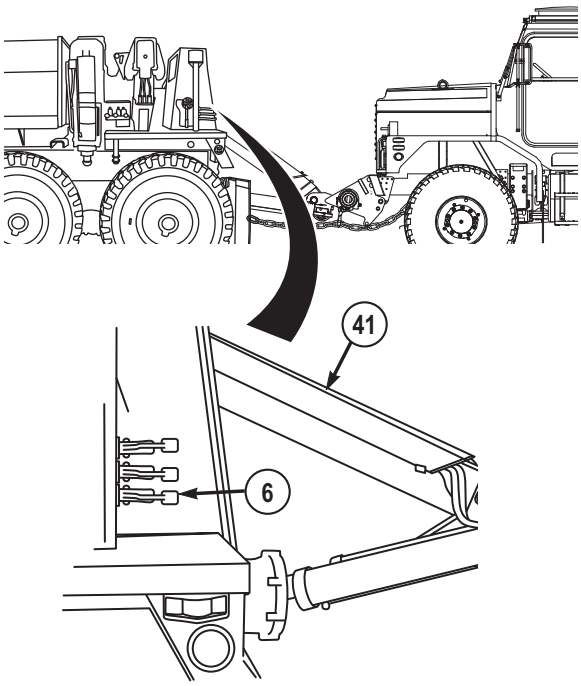


Figure 16.

42. Adjust slack in two 16 ft. (5 m) safety chains so lengths between crosstube (7) and wrecker are approximately 1 ft. (30 cm) off ground.

43. Set POWER switch (38) to OFF position.

HOOKUP - Continued

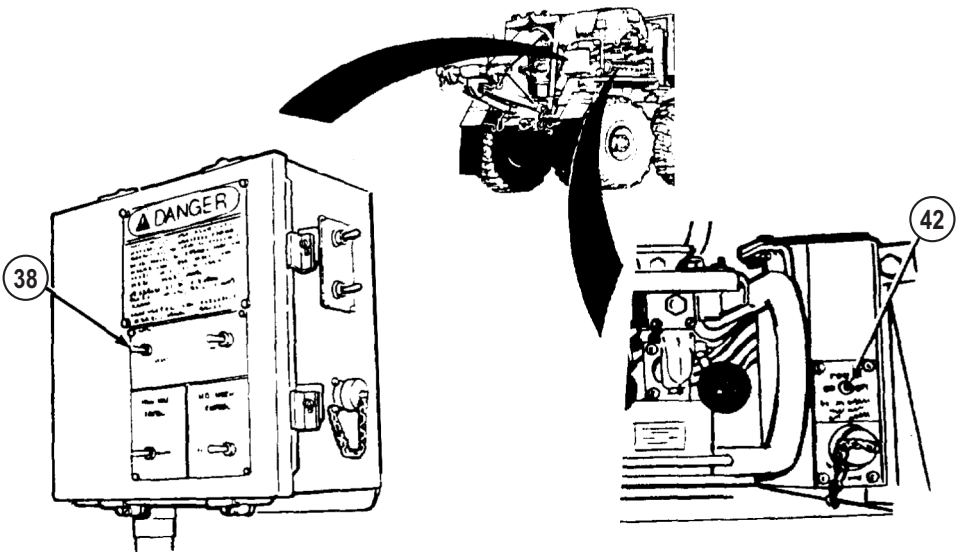


Figure 17.

44. Set POWER switch (42) to OFF position.
45. Set HYD ENABLE switch (43) to off position. MAIN HYD ENABLE indicator (44) will go out.

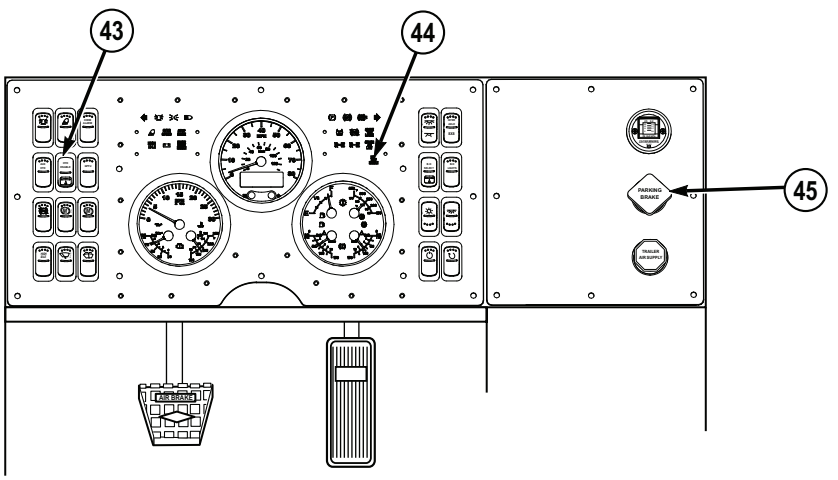


Figure 18.

46. Turn on wrecker service drive lights. (WP 0087)

HOOKUP - Continued

47. Turn on wrecker emergency flashers. (WP 0096)

NOTE

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

48. Push in PARKING BRAKE control (45).

WARNING

The M984 Wrecker should not be operated at speeds over 15 MPH (24 km/hr) except on paved roads when the operator determines that the vehicle being towed and the terrain allow safe operation. Engine brake switch must ON for all towing operations. Speed in excess of the below table may result in loss of control, serious injury, or death to personnel.

49. Select desired gear (WP 0048) and transport disabled vehicle.

Table 1. Maximum Towing Speed.

Terrain Condition	Maximum Speed Towed Load Up To 50,000 lbs (22 700 kg)	Maximum Speed Towed Load Above 50,000 lbs (22 700 kg)
On Road-Level	35 mph (56 km/hr)	30 mph (48 km/hr)
On Road-Hilly	30 mph (48 km/hr)	20 mph (32 km/hr)
Off-Road	15 mph (24 km/hr)	15 mph (24 km/hr)

DISCONNECT

NOTE

This procedure is a two soldier task.

1. Set transmission range selector (1) to N (neutral).

DISCONNECT - Continued

NOTE

Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

2. Pull out PARKING BRAKE control (2).

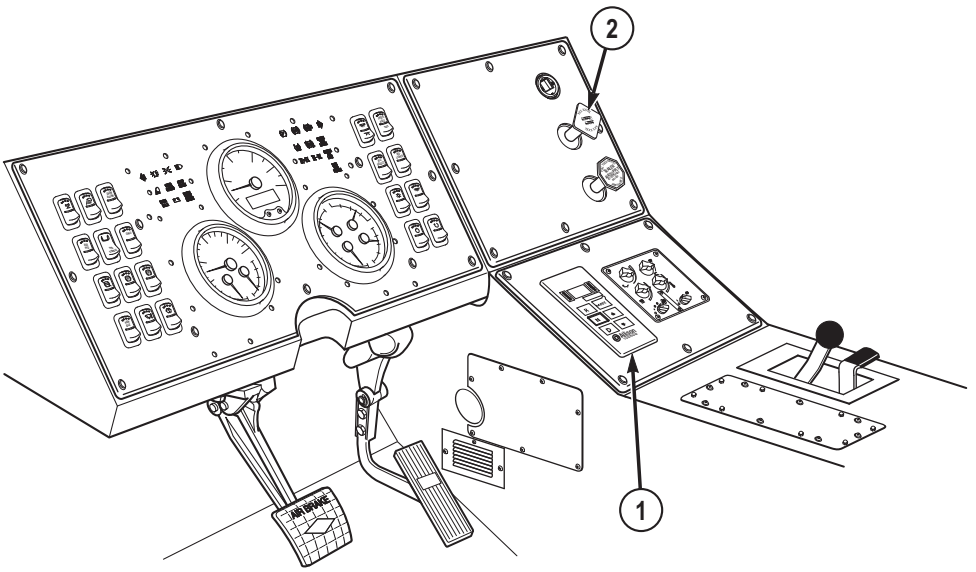


Figure 19.

NOTE

Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

3. Pull out TRAILER AIR SUPPLY control (2).

WARNING

Keep out from under retrieval system and disabled vehicle when raised off ground. Failure to comply may result in injury or death to personnel.

DISCONNECT - Continued

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

4. Review procedures for operating retrieval towing system (WP 0058) and prepare retrieval system for operation. (WP 0059)

NOTE

- After lowering disabled vehicle, extend lift and tow cylinders approximately 2 to 4 inches (51 to 102 mm) to allow for adjustment when removing adapters.
- Expect wrecker air suspension system to deflate air springs to achieve normal ride height once weight of disabled vehicle is removed.

5. Pull LIFT CYLINDER control lever (3) and lower disabled vehicle to the ground until tension is released between MUAs (4) and tow eyes (5).

DISCONNECT - Continued

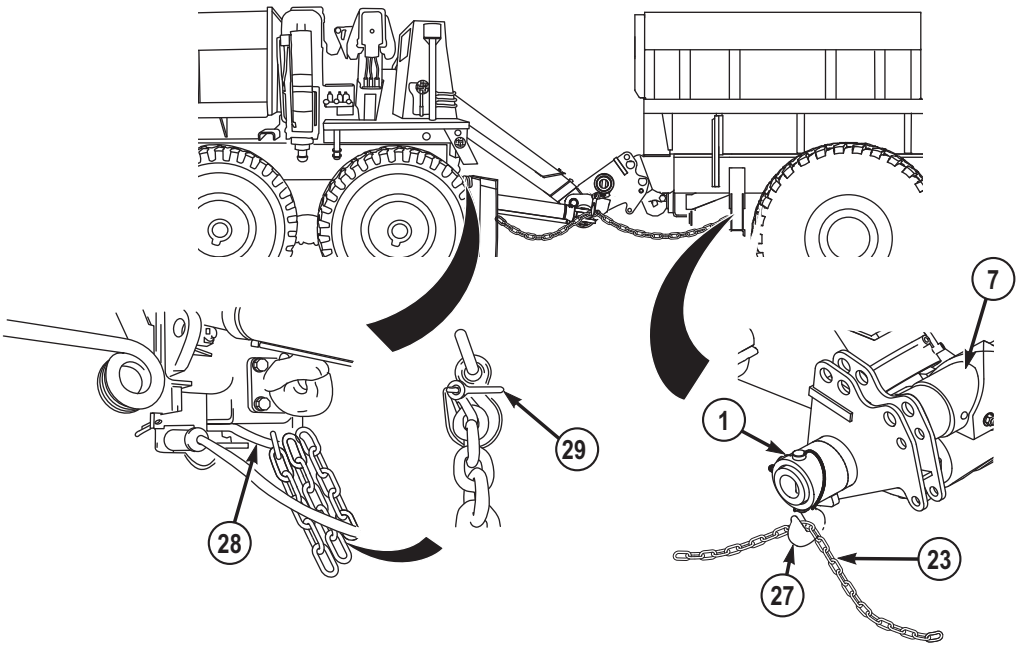


Figure 20.

WARNING

If disabled vehicle's parking brake is inoperative, chock wheels of disabled vehicle (refer to operator's manual). Failure to comply may result in injury or death to personnel.

6. Pull out PARKING BRAKE control on disabled vehicle (refer to MTVR operator's manual). If parking brake on disabled vehicle is inoperable, install wheel chocks.

DISCONNECT - Continued

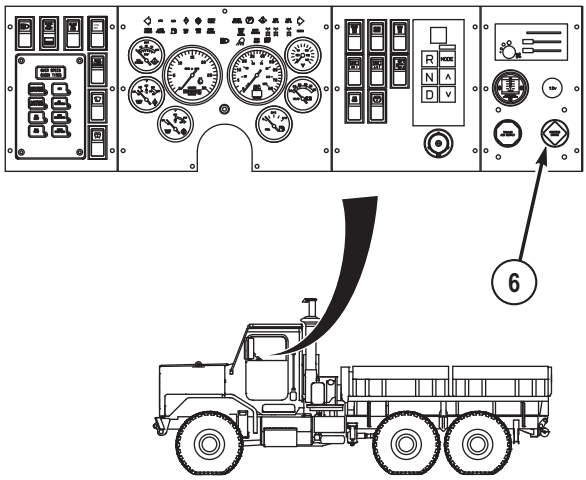


Figure 21.

7. Remove tow light cable (7) from wrecker.

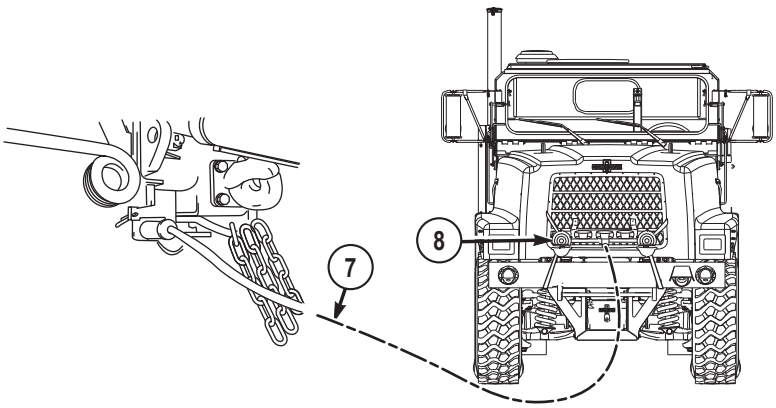


Figure 22.

8. Remove tow light cable (7) from emergency tow lights (8) and stow.
9. Remove emergency tow lights (8) from disabled vehicle.
10. Remove two nuts (9), washers (10), screws (11), and brackets (12) from emergency tow lights (8). Stow emergency tow lights (8) and brackets (12).

DISCONNECT - Continued

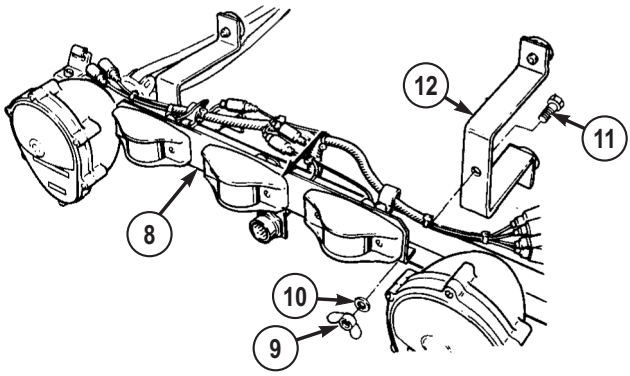


Figure 23.

11. Remove and stow two 16 ft. (5 m) safety chains (13).

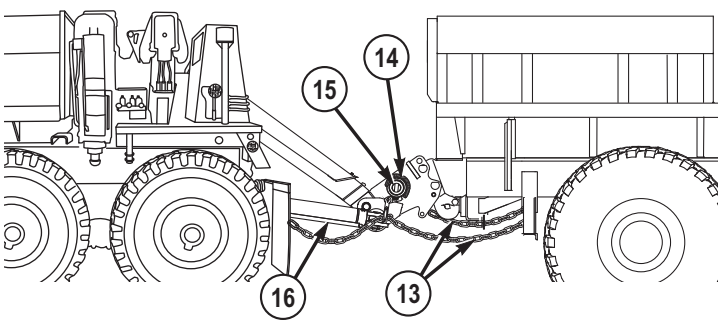


Figure 24.

12. Unwrap two springs (14) from crosstube (15) and connect to tow cylinders (16).

WARNING

Keep hands and fingers away from adapters and tow eyes when operating retriever controls. Failure to comply may result in injury or death to personnel.

DISCONNECT - Continued

NOTE

Use retrieval controls to position crosstube to relieve tension from adapters.

13. Remove two quick pins (17) and pins (18) from the hole #4 on MUAs (4).

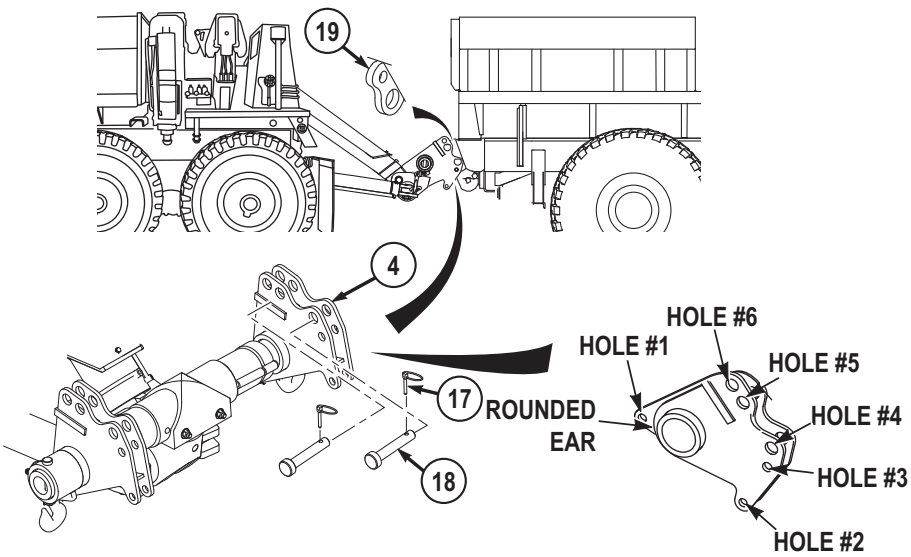


Figure 25.

14. Remove two quick pins (17) and pins (18) from the hole #5 on MUAs (4).
15. Remove MUAs (4) from two eyes (19) on disabled vehicle.
16. Drive wrecker forward (WP 0050) several feet and park. (WP 0056)

WARNING

When springs and end caps are removed, cross tube can swing in all directions and adapters may slide off and cause injury or death to personnel.

17. Remove two springs (14) from tow cylinders (16).

DISCONNECT - Continued

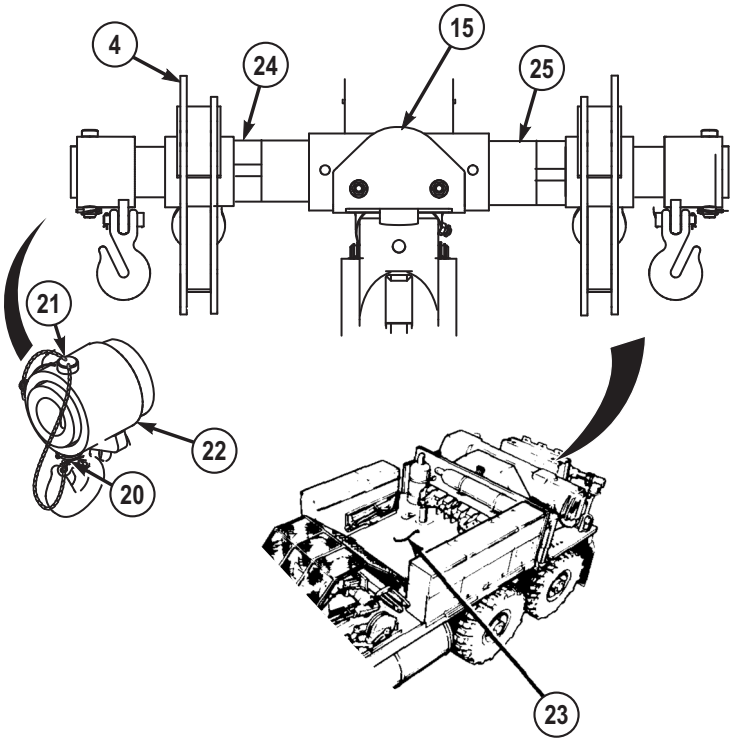


Figure 26.

18. Remove two quick pins (20) and pins (21) from end caps (22).
19. Remove two end caps (22) from crosstube (15).

WARNING

MUAs are heavy, handle carefully. Failure to comply may result in injury to personnel.

20. Remove two MUAs (4) from crosstube (15) and place on equipment body floor (23).
21. Remove and stow two 3 in. (76 mm) spacers (24).
22. Remove and stow two 4 in. (102 mm) spacers (25).

DISCONNECT - Continued

23. Remove lock handle (26), lock plate (27), and front adapters (28).

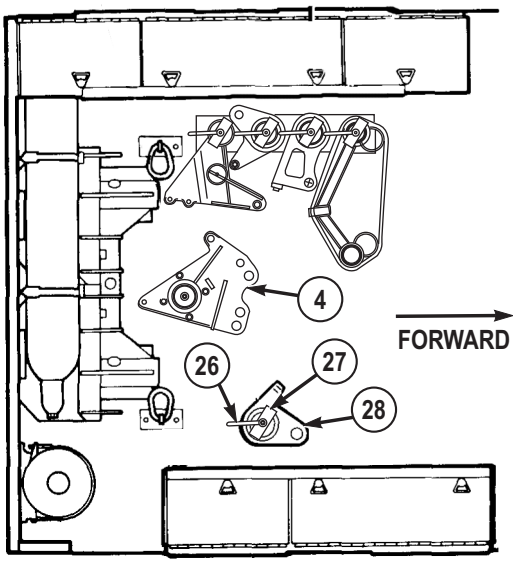


Figure 27.

24. Install two MUAs (4) removed from crosstube (15), with lock plate (27), and lock handle (26).

25. Install two front adapters (28) on crosstube (15).

DISCONNECT - Continued

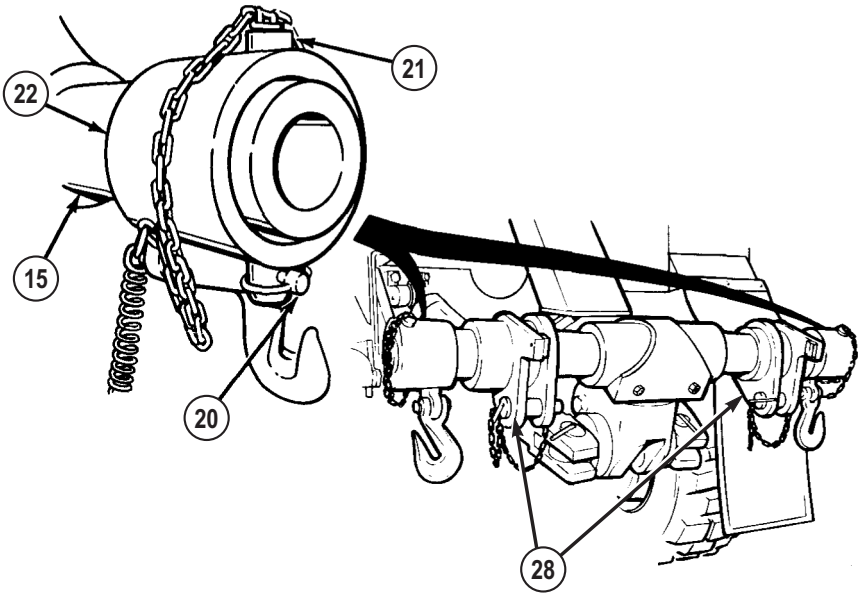


Figure 28.

26. Install two end caps (22) on crosstube (15). Install two pins (21) and quick pins (20).
27. Install two springs (14) on tow cylinders (16).

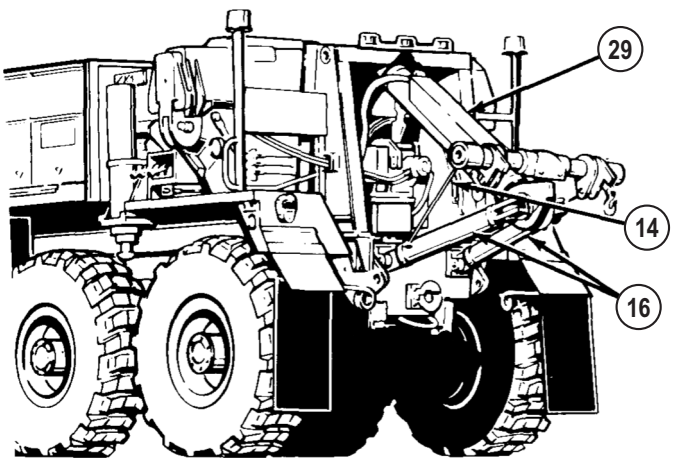


Figure 29.

DISCONNECT - Continued

28. Operate retrieval system and fully retract lift cylinders (29) and tow cylinders (16).

NOTE

Driver side and passenger side rear towing shackles are installed the same way.

29. Install two rear towing shackles (30), pins (31), and cotter pins (32).

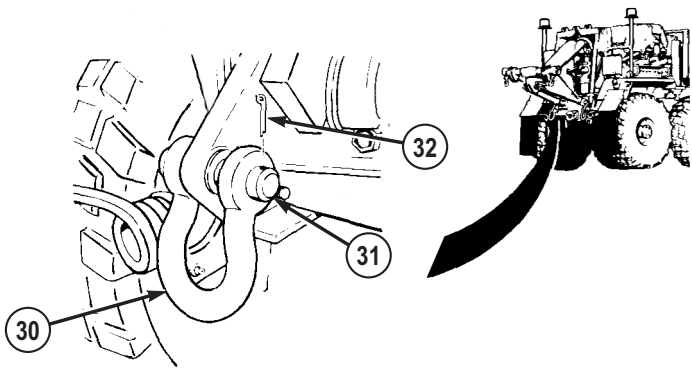


Figure 30.

30. Set POWER switch (33) to OFF position.

DISCONNECT - Continued

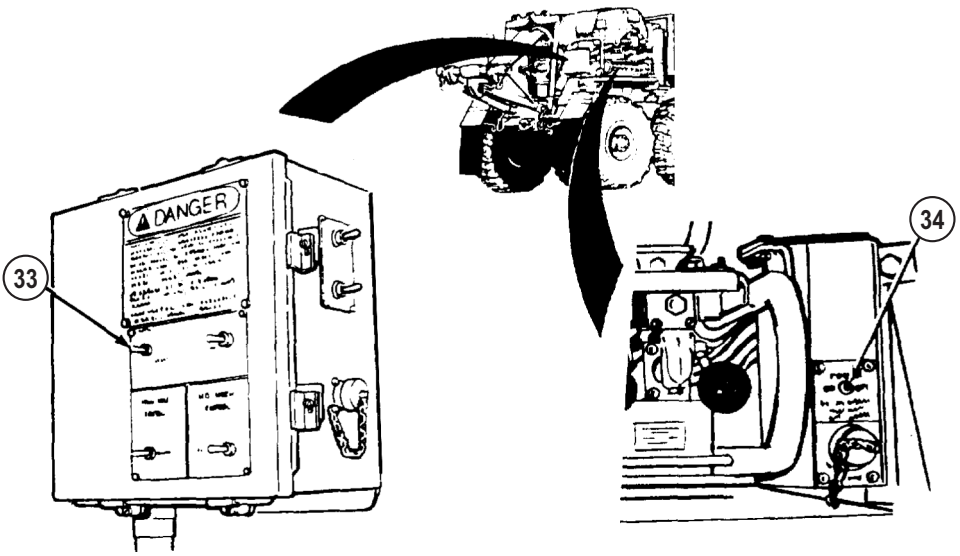


Figure 31.

31. Set POWER switch (34) to OFF position.
32. Turn off wrecker emergency flashers. (WP 0096)
33. Turn off wrecker service drive lights. (WP 0087)
34. Set HYD ENABLE switch (35) to off position. MAIN HYD ENABLE indicator (36) will go out.

DISCONNECT - Continued

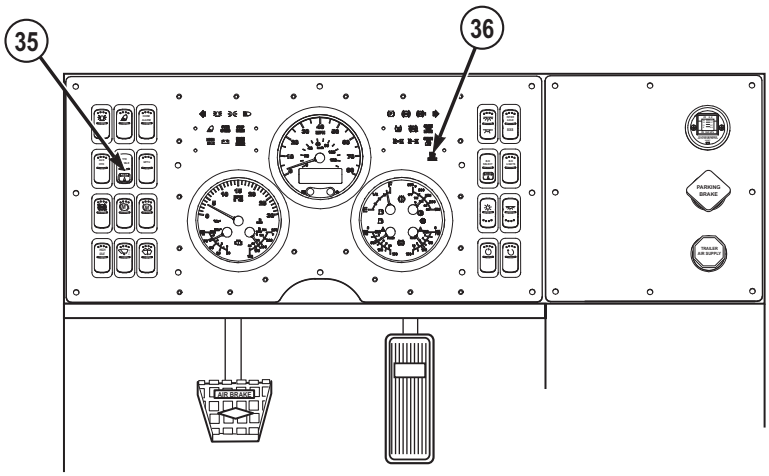


Figure 32.

35. Shut off engine. (WP 0057)
36. Remove and stow portable beacon lights. (WP 0094)
37. Turn off disabled vehicle emergency flashers and unlock steering column (refer to MTVR operator's manual).

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
TOW MTVR - FRONT LIFT USING MULTI-USE ADAPTER (MUA)

INITIAL SETUP:

Not Applicable

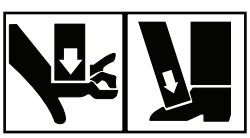
HOOKUP

NOTE

- Each recovery situation is unique and requires assessment to determine if the driveline is suitable for transport. When in doubt, consult with field level maintenance.
- This procedure is a two soldier task.

1. Review procedures for operating retrieval towing system (WP 0058) and prepare retrieval system for operation. (WP 0059)

WARNING



Hold cross tube when removing springs. Cross tube swings and may cause adapters to slide, resulting in injury to personnel.

2. Disconnect two springs (1) from tow cylinders (2).

HOOKUP - Continued

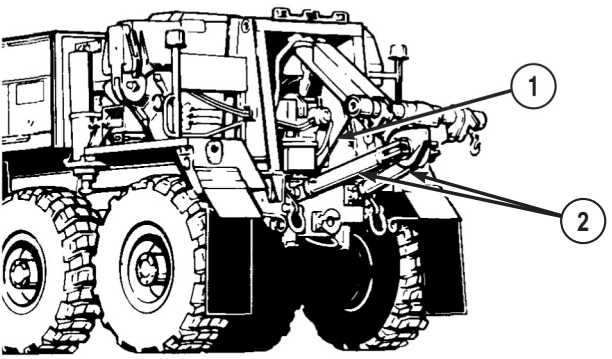


Figure 1.

CAUTION

Both rear towing shackles must be removed from rear tow eyes on wrecker before performing retrieval operations, or damage to tow cylinder may result.

NOTE

Driver side and passenger side towing shackles are removed the same way.

3. Remove two rear towing shackles from wrecker vehicle:

HOOKUP - Continued

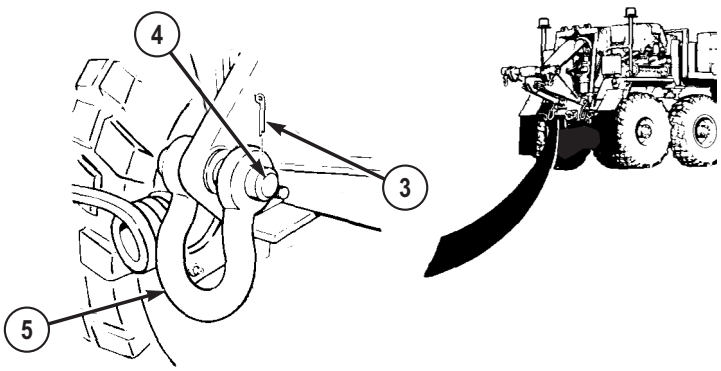


Figure 2.

a. Remove cotter pin (3), pin (4), and towing shackle (5).

b. Replace pin (4) in shackle (5), and cotter pin (3) in pin (4).

c. Repeat Steps (a) and (b) for opposite side towing shackle (5).

d. Stow two rear towing shackles on wrecker vehicle.

4. Pull LIFT CYLINDER control lever (6) to lower cross tube (7) to approximately 3 ft. (1 m) above the ground.

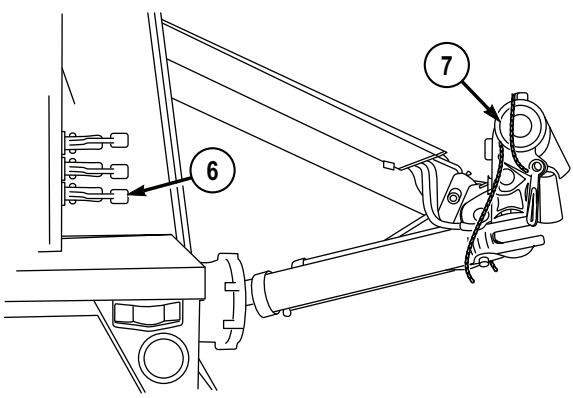
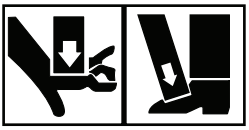


Figure 3.

5. Position wrecker so that cross tube (7) is approximately 1 ft. (30 cm) from tow eyes of disabled vehicle and centered on disabled vehicle.

HOOKUP - Continued

WARNING



When end caps are removed from cross tube, adapters may slide off resulting in injury to personnel.

6. Remove two quick pins (8) and pins (9) from end caps (10).

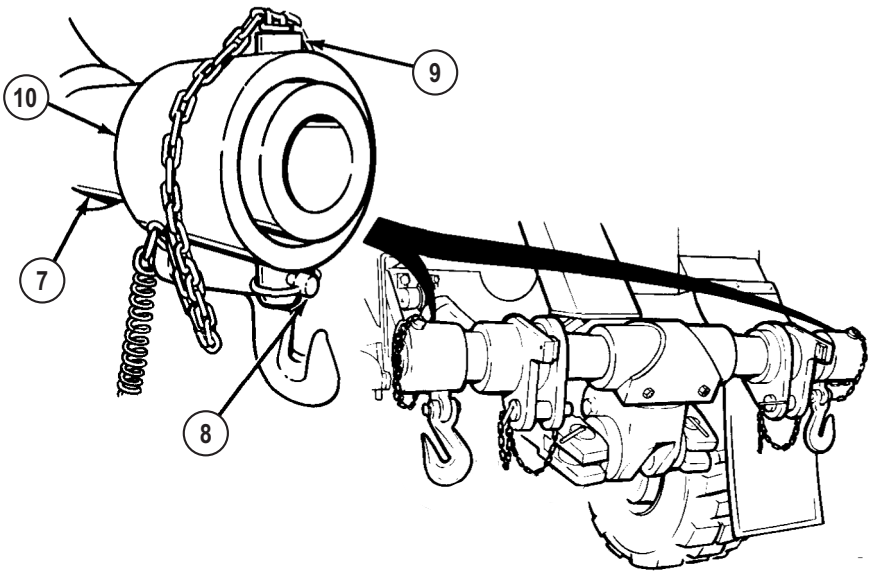


Figure 4.

7. Remove two end caps (10) from cross tube (7).
8. Remove two front adapters (11) from cross tube (7) and place on equipment body floor (12).

HOOKUP - Continued

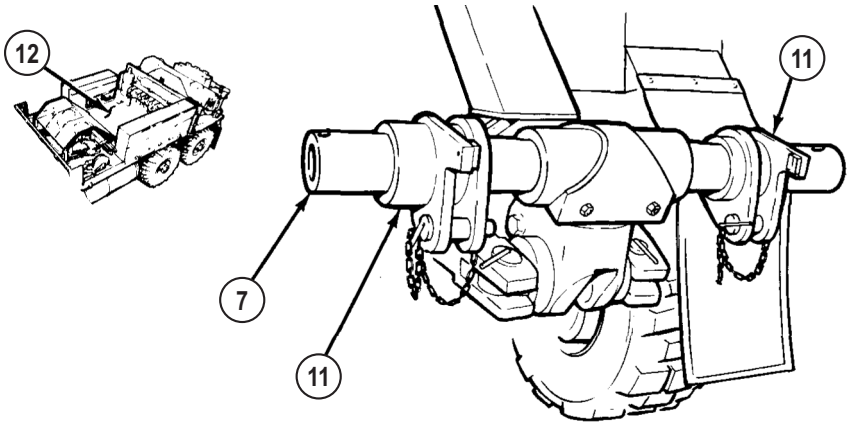


Figure 5.

9. Remove lock handle (13), lock plate (14), and two Multi-Use Adapters (MUAs) (15).

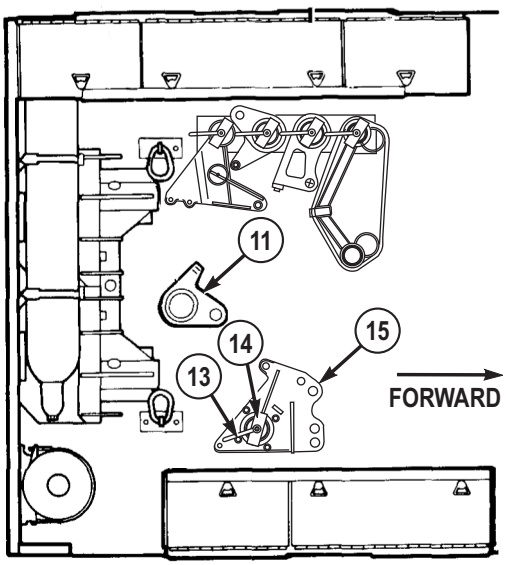


Figure 6.

10. Install two front adapters (11), lock plate (14), and lock handle (13).
11. Remove two 4 in. (102 mm) spacers (16), two 3 in. (76 mm) spacers (17), and two 1.5 in. (38 mm) spacers (18) from wrecker stowage.

HOOKUP - Continued

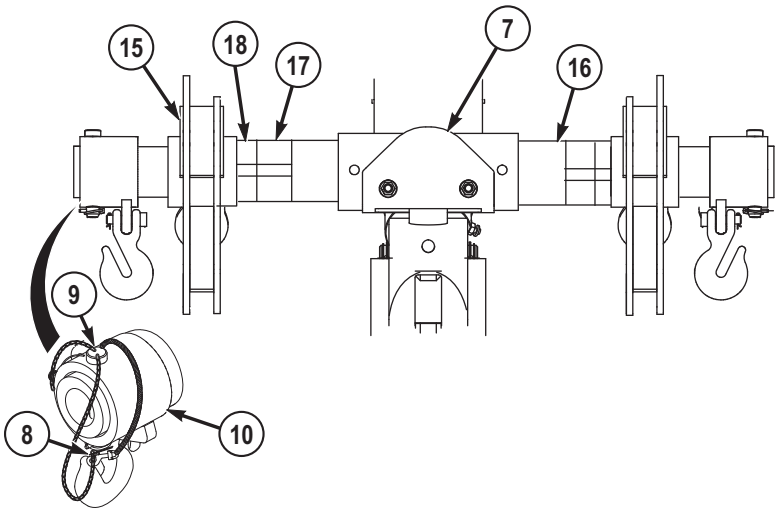


Figure 7.

12. Install two 4 in. (102 mm) spacers (16) on cross tube (7).
13. Install two 3 in. (76 mm) spacers (17) on cross tube (7).
14. Install two 1.5 in. (38 mm) spacers (18) on cross tube (7).

WARNING

MUAs are heavy, handle carefully. Failure to comply may result in injury to personnel.

NOTE

MUAs must be positioned on cross tube with rounded ear of MUA toward center of cross tube.

15. Install two MUAs (15) on cross tube (7) with holes facing tow eyes of disabled vehicle.
16. Install two end caps (10) on cross tube (7).
17. Install two pins (9) and quick pins (8).
18. Attach two springs (1) on tow cylinders (2).

HOOKUP - Continued

19. Remove two pins (3483735) (19) from wrecker stowage.

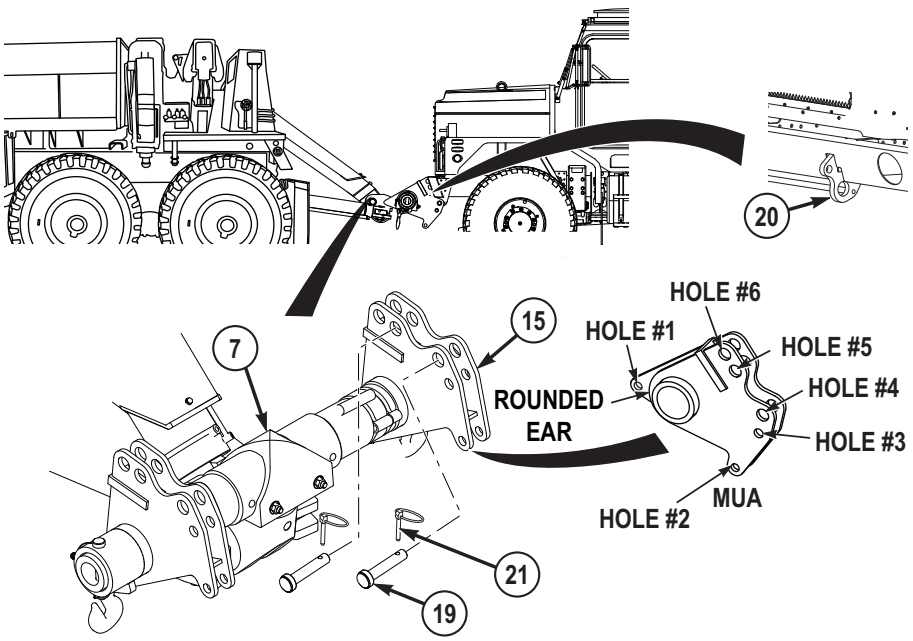


Figure 8.

WARNING

Keep hands and fingers away from adapters and tow eyes when operating retriever controls. Failure to comply may result in injury or death to personnel.

NOTE

If disabled vehicle has towing shackles installed, remove shackles and stow in disabled vehicle.

20. Operate retrieval system, and with aid of an assistant position cross tube (7) so hole #5 on MUAs (15) align front tow eyes (20).

HOOKUP - Continued

21. Insert two pins (19) through MUAs (15) and front tow eyes (20). Install two quick pins (21) in pins (19).
22. Operate retrieval system, and with aid of an assistant position cross tube (7) so hole #4 on MUAs (15) align front tow eyes (20).
23. Insert two pins (19) through MUAs (15) and front tow eyes (20). Install two quick pins (21) in pins (19).
24. Push in PARKING BRAKE control, and remove chocks on disabled vehicle (refer to MTVR operator's manual).

NOTE

Do not lift vehicle off ground when performing Step (25).

25. Alternately push in RIGHT TOW CYLINDER (22), LEFT TOW CYLINDER (23), and LIFT CYLINDER control levers (6) until tow cylinders (2) are fully retracted.

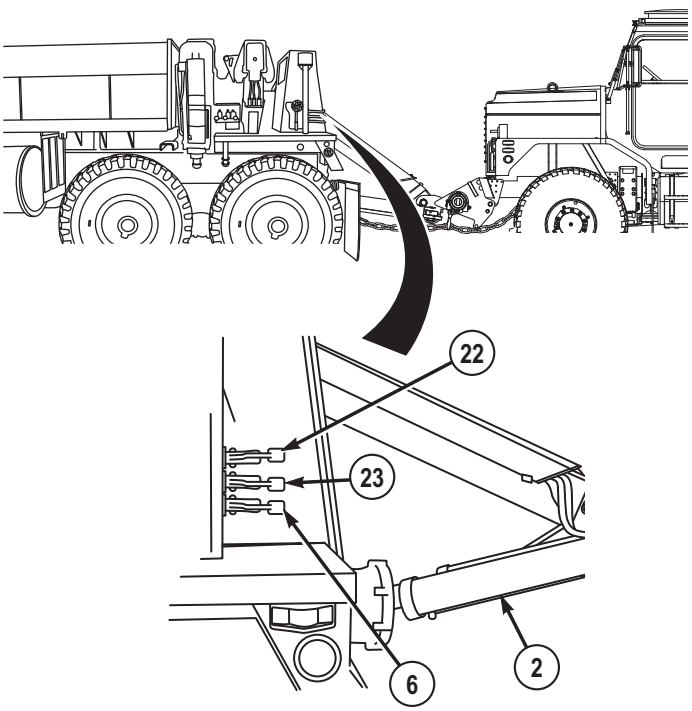


Figure 9.

26. Remove two 16 ft. (5 m) safety chains (24) from wrecker stowage.

HOOKUP - Continued

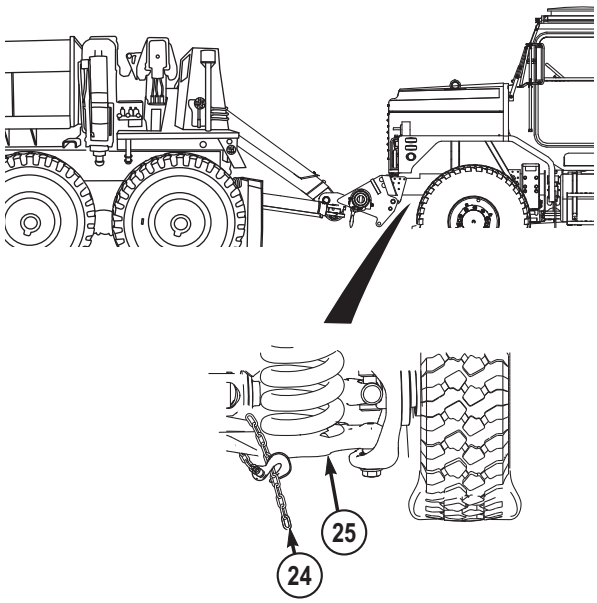


Figure 10.

27. Route one end (without safety shackles) of 16 ft. (5 m) safety chain (24) over front axle (25) of disabled vehicle.
28. Hook safety chain (24) back into itself (shown) in front of axle (25).
29. Repeat Steps (27) and (28) for other side of disabled vehicle.

NOTE

Adjust chain slack so safety chains do not touch the ground.

30. Route two free ends of 16 ft. (5 m) safety chains (24) to end cap hooks (26) and through safety chain hoop (27) on wrecker. Hook two 16 ft. (5 m) safety chains (24) back into themselves and secure with safety shackles (28).

HOOKUP - Continued

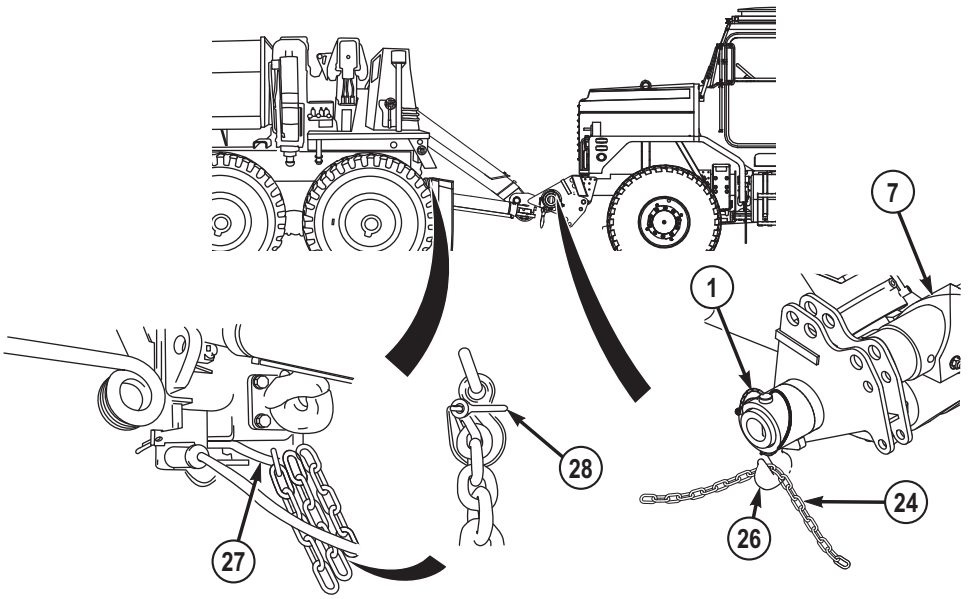


Figure 11.

31. Wrap two springs (1) around cross tube (7) and secure.

CAUTION

Make sure all cargo in bed of disabled vehicle is secured prior to lifting and towing. Failure to comply may result in damage to cargo and equipment.

NOTE

Rear emergency air line from wrecker must be connected to the front emergency gladhand on the disabled vehicle. Rear service air line from wrecker must be connected to the front service gladhand on the disabled vehicle.

32. Prepare disabled vehicle for towing (refer to MTVR operator's manual).
33. Remove two air lines (29) from stowage and attach to rear gladhands (30) of wrecker.

HOOKUP - Continued

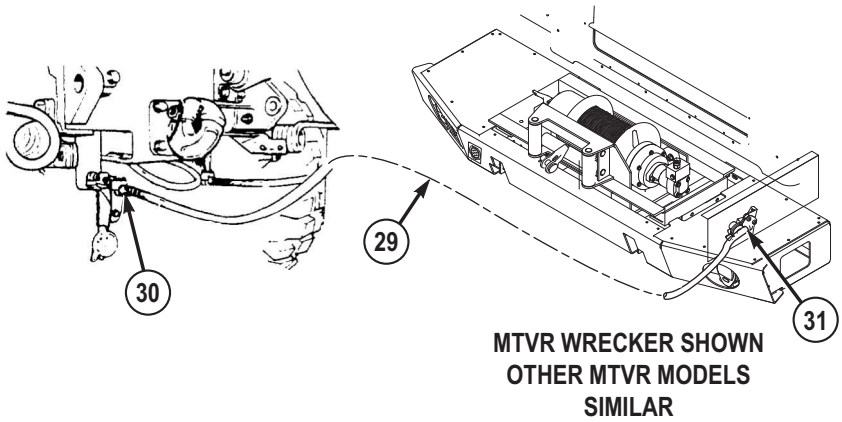


Figure 12.

34. Route two air lines (29) over cross tube (7) and attach to front gladhands (31) of disabled vehicle.

35. Remove electrical cable (32) from stowage and attach to rear electrical connector (33) on wrecker.

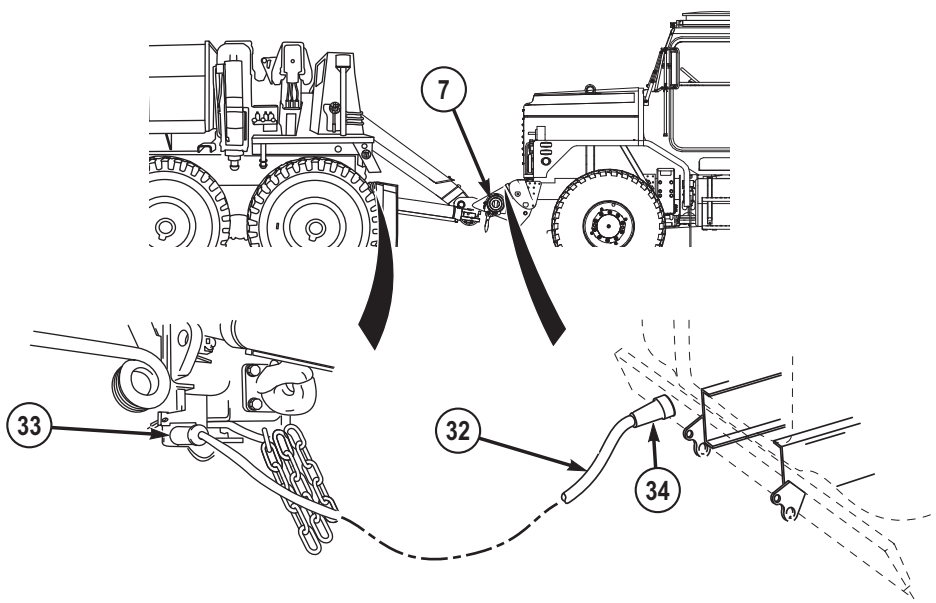


Figure 13.

HOOKUP - Continued

CAUTION

Route cable so it does not drag on ground or interfere with turning tires. Failure to comply may result in damage to equipment.

36. Route electrical cable (32) over cross tube (7) to electrical connector (34) on front of disabled vehicle.
37. Lock disabled vehicle's steering (refer to MTVR operator's manual).
38. Set POWER switch (35) to ON position.

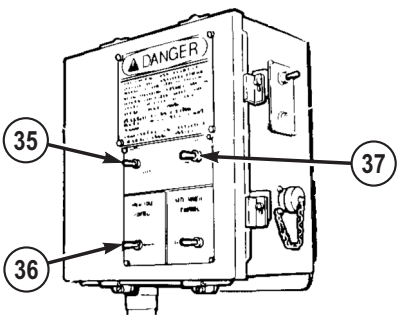


Figure 14.

39. Set HIGH IDLE switch (36) to CONTINUOUS.
40. Push and release LATCH switch (37). Engine speed will increase to approximately 1500 rpm.

WARNING

Keep out from under retrieval system and disabled vehicle when raised off ground. Failure to comply may result in injury or death to personnel.

HOOKUP - Continued

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

CAUTION

- Fully retract both tow cylinders before lifting disabled vehicle. Failure to comply may result in damage to equipment.
- Ensure all rigging is secure. Loose rigging can become entangled. Failure to comply may result in damage to equipment.

NOTE

Operator must allow wrecker air suspension system to completely adjust for added weight of disabled vehicle before raising disabled vehicle to final height of 1 ft. (30 cm).

41. Push in LIFT CYLINDER control lever (6) to retract lift cylinder (38) to raise disabled vehicle approximately 3 in. (8 cm) off ground.
    a. Once wrecker air suspension system has adjusted for added weight of disabled vehicle, push LIFT CYLINDER control lever (6) to retract lift cylinder (38) and raise disabled vehicle to final height of 1 ft. (30 cm).

HOOKUP - Continued

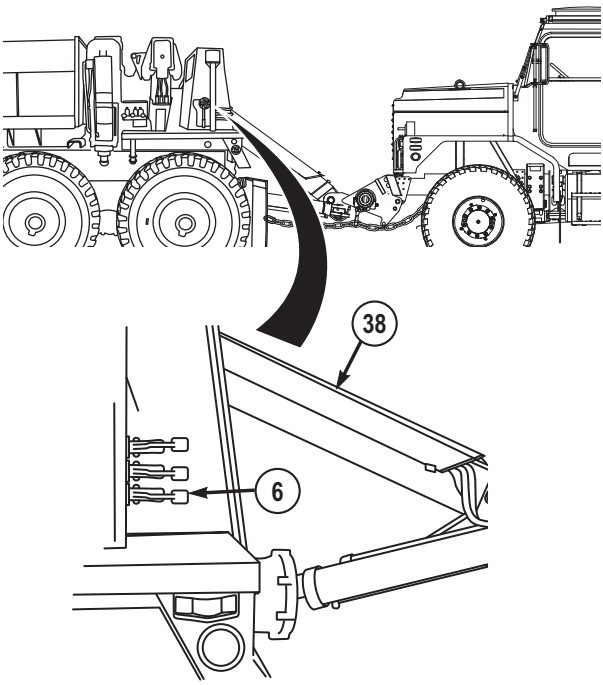


Figure 15.

NOTE

Adjust slack in two 16 ft. (5 m) safety chains so lengths between cross tube and wrecker are approximately 1 ft. (30 cm) off ground.

42. Set POWER switch (35) to OFF position.

HOOKUP - Continued

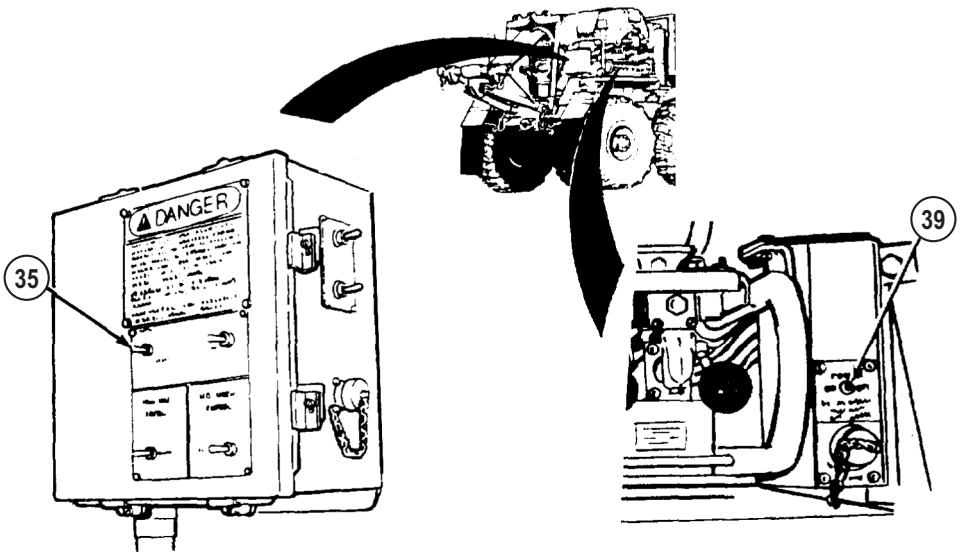


Figure 16.

43. Set POWER switch (39) to OFF position.
44. Set HYD ENABLE switch (40) to off position. MAIN HYD ENABLE indicator (41) will go out.

HOOKUP - Continued

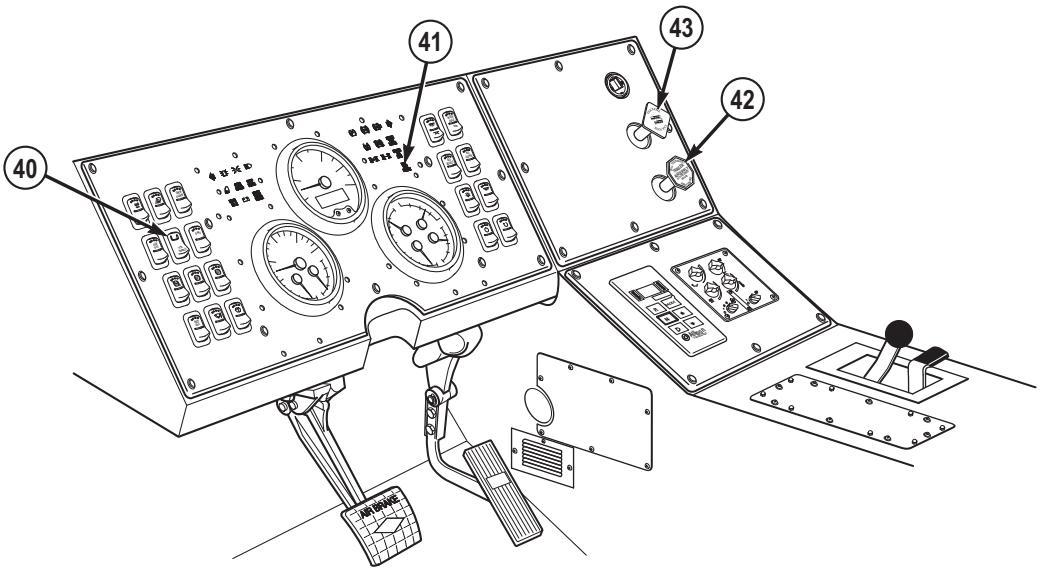


Figure 17.

45. Push in TRAILER AIR SUPPLY control (41).
46. Turn on wrecker service drive lights. (WP 0087)
47. Turn on wrecker emergency flashers. (WP 0096)

NOTE

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

48. Push in PARKING BRAKE control (43).

WARNING

The M984 Wrecker should not be operated at speeds over 15 MPH (24 km/hr) except on paved roads when the operator determines that the vehicle being towed and the terrain allow safe operation. Engine brake switch must ON for all towing operations. Speed in excess of the below table may result in loss of control, serious injury, or death to personnel.

HOOKUP - Continued

49. Select desired gear (WP 0048) and transport disabled vehicle.

Table 1. Maximum Towing Speed.

Terrain Condition	Maximum Speed Towed Load Up To 50,000 lbs (22 700 kg)	Maximum Speed Towed Load Above 50,000 lbs (22 700 kg)
On Road-Level	35 mph (56 km/hr)	30 mph (48 km/hr)
On Road-Hilly	30 mph (48 km/hr)	20 mph (32 km/hr)
Off-Road	15 mph (24 km/hr)	15 mph (24 km/hr)

DISCONNECT

NOTE

This procedure is a two soldier task.

1. Set transmission range selector (1) to N (neutral).

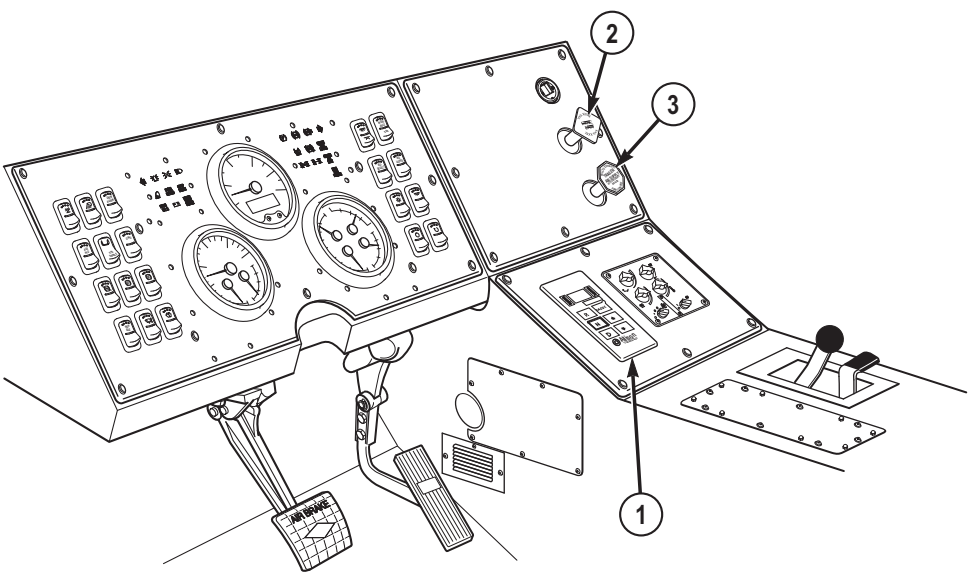


Figure 18.

DISCONNECT - Continued

NOTE

Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

2. Pull out PARKING BRAKE control (2).
3. Pull out TRAILER AIR SUPPLY control (3).

WARNING

Keep out from under retrieval system and disabled vehicle when raised off ground. Failure to comply may result in injury or death to personnel.

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

4. Review procedures for operating retrieval towing system (WP 0058) and prepare retrieval system for operation. (WP 0059)

NOTE

- After lowering disabled vehicle, extend lift and tow cylinders approximately 2 to 4 inches (51 to 102 mm) to allow for adjustment when removing adapters.
- Expect wrecker air suspension system to deflate air springs to achieve normal ride height once weight of disabled vehicle is removed.

5. Pull LIFT CYLINDER control lever (4) to extend lift cylinder (5) and lower disabled vehicle to the ground to release tension on MUAs (6) on tow eyes (7).

DISCONNECT - Continued

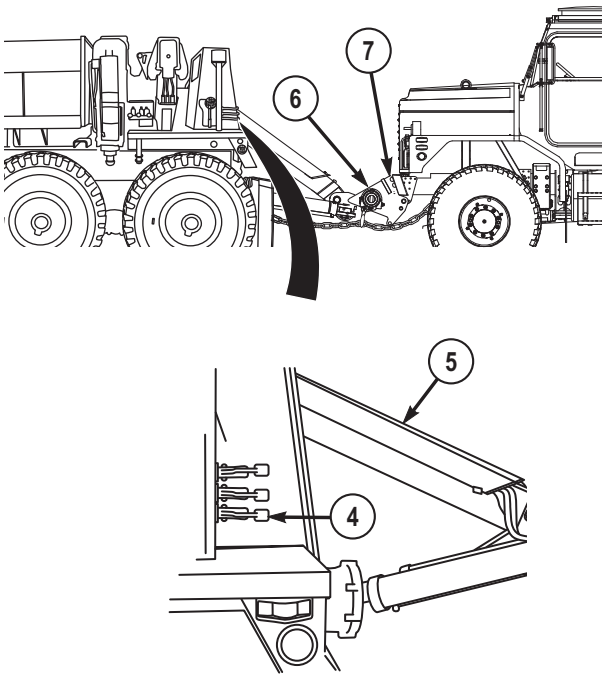
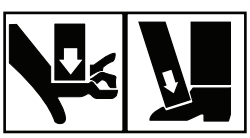


Figure 19.

WARNING



Do not allow MUAs to swing around. Failure to comply may result in injury to personnel.

6. Pull out PARKING BRAKE control (8) on disabled vehicle. If parking brake is inoperable, chock wheels on disabled vehicle (refer to MTVR operator's manual).

DISCONNECT - Continued

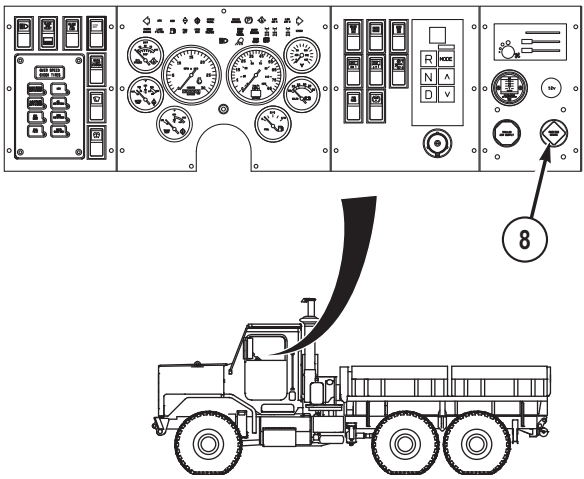
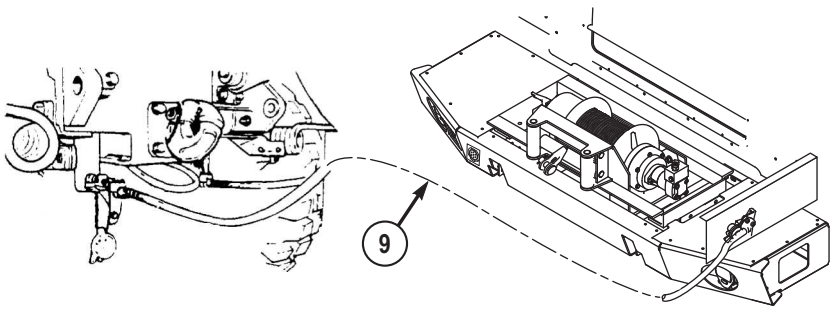


Figure 20.

7. Remove and stow air lines (9).



**MTVR WRECKER SHOWN
OTHER MTVR MODELS
SIMILAR**

Figure 21.

8. Remove and stow electrical cable (10).

DISCONNECT - Continued

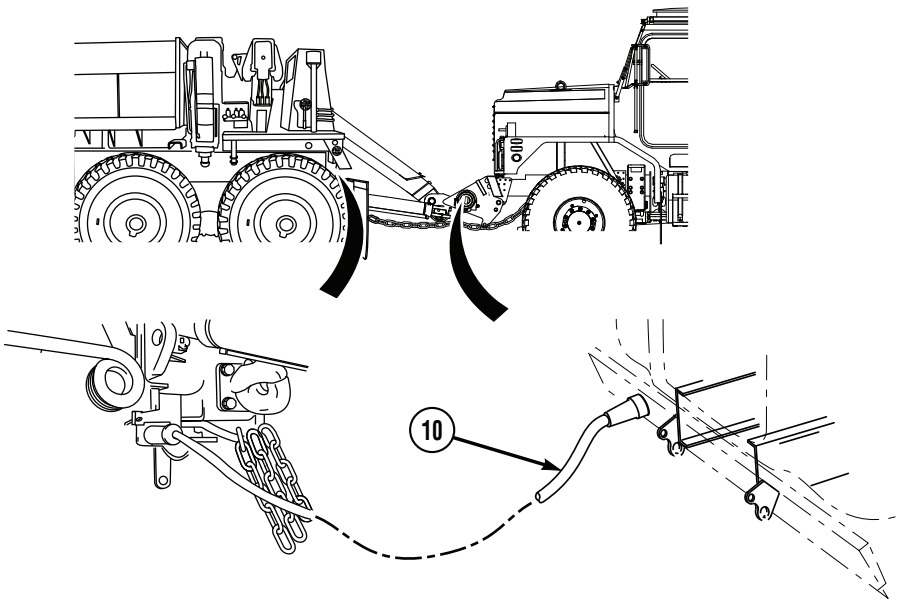


Figure 22.

9. Remove and stow two 16 ft. (5 m) safety chains (11).

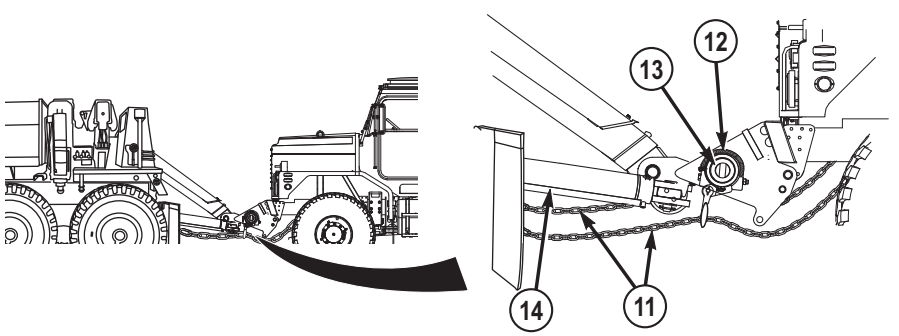


Figure 23.

10. Unwrap two springs (12) from cross tube (13) and connect to tow cylinders (14).

DISCONNECT - Continued

WARNING

Keep hands and fingers away from adapters and tow eyes when operating retriever controls. Failure to comply may result in injury or death to personnel.

NOTE

Use retrieval controls to position cross tube to relieve tension from adapters.

11. Remove two quick pins (15) and pins (16) from hole #4 on MUAs (6).

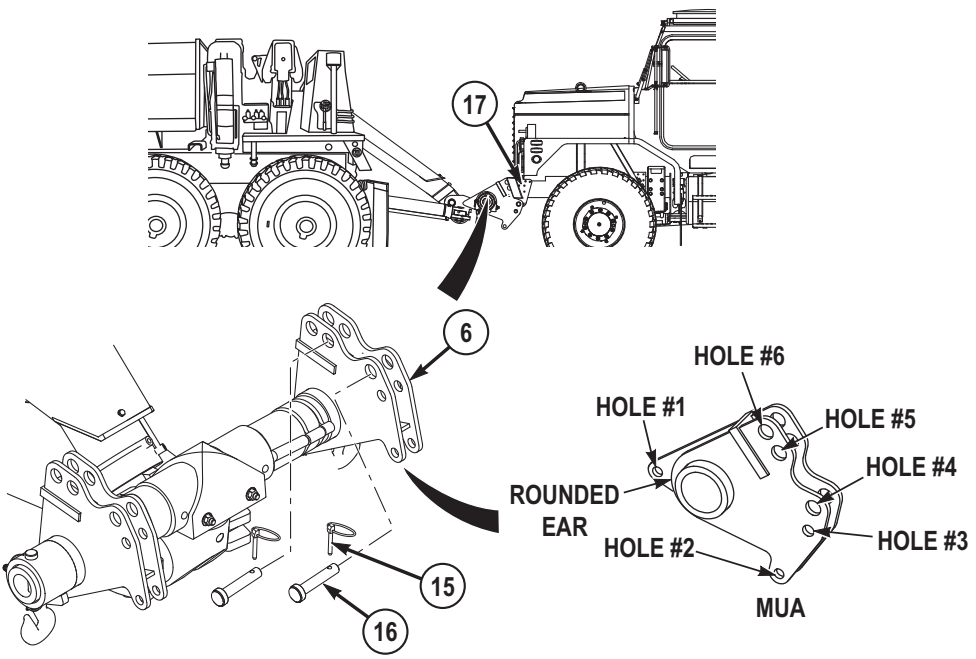


Figure 24.

12. Remove two quick pins (15) and pins (16) from hole #5 on MUAs (6).
13. Remove MUAs (6) from tow eyes (17) on disabled vehicle.

DISCONNECT - Continued

14. Drive wrecker forward (WP 0050) several feet and park. (WP 0056)

WARNING

When springs and end caps are removed, cross tube can swing in all directions and adapters may slide off and cause injury or death to personnel.

15. Remove two springs (12) from tow cylinders (14).
16. Remove two quick pins (18) and pins (19) from end caps (20).

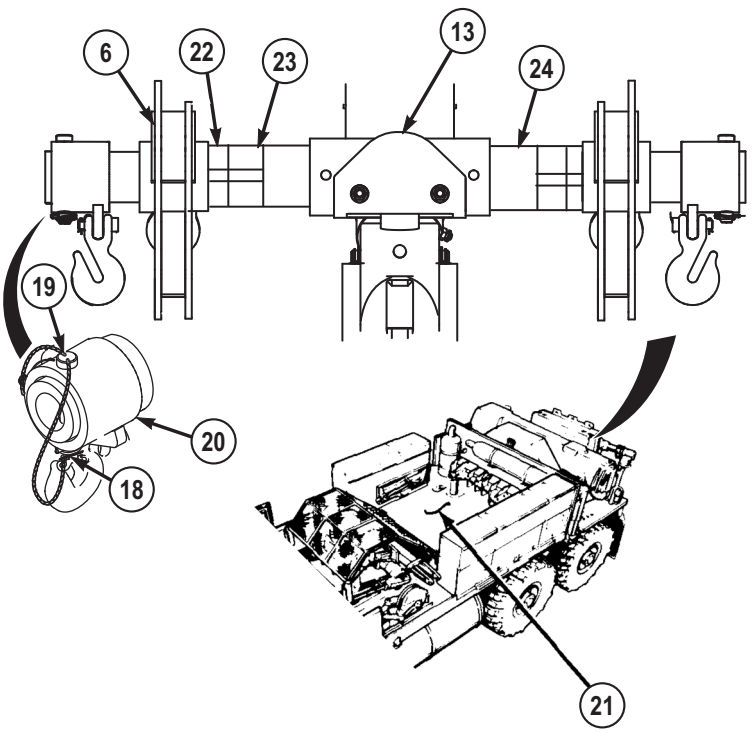


Figure 25.

17. Remove two end caps (20) from cross tube (13).

DISCONNECT - Continued

WARNING

MUAs are heavy, handle carefully. Failure to comply may result in injury to personnel.

18. Remove two MUAs (6) from cross tube (13) and place on equipment body floor (21).
19. Remove and stow two 1.5 in. (38 mm) spacers (22).
20. Remove and stow two 3 in. (76 mm) spacers (23).
21. Remove and stow 4 in. (102 mm) spacers (24).
22. Remove lock handle (25), lock plate (26), and front adapters (27).

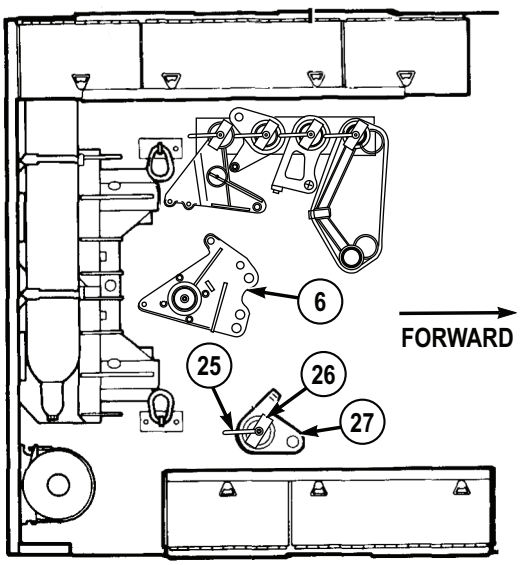


Figure 26.

23. Install two MUAs (6) removed from cross tube (13), with lock plate (26), and lock handle (25).
24. Install two front adapters (27) on cross tube (13).

DISCONNECT - Continued

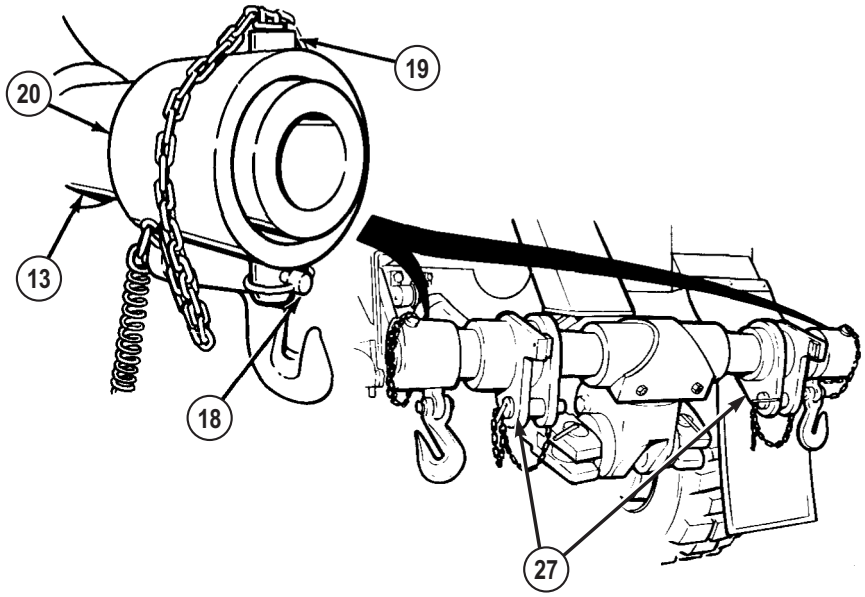


Figure 27.

25. Install two end caps (20) on cross tube (13). Install two pins (19) and quick pins (18).
26. Install two pins (12) and tow cylinders (14).

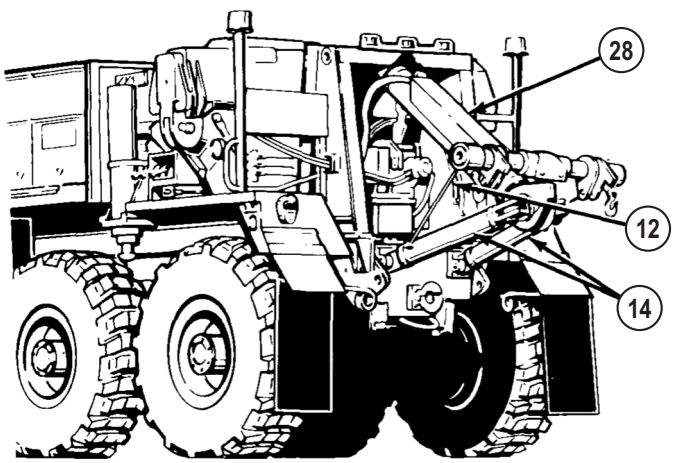


Figure 28.

DISCONNECT - Continued

27. Operate retrieval system and fully retract lift cylinders (28) and two cylinders (14).

NOTE

Driver side and passenger side rear towing shackles are installed the same way.

28. Install two towing shackles (29), pins (30), and cotter pins (31).

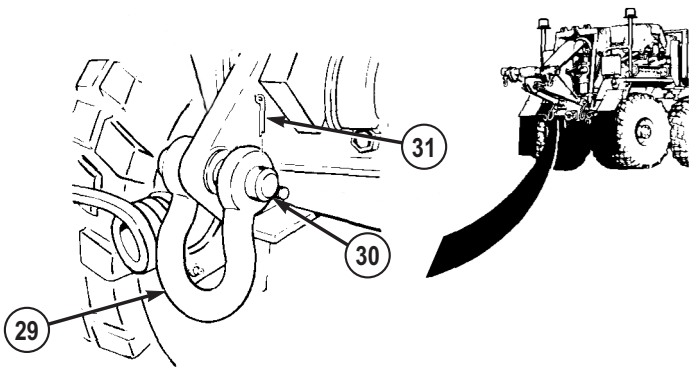


Figure 29.

29. Set POWER switch (32) to OFF position.

DISCONNECT - Continued

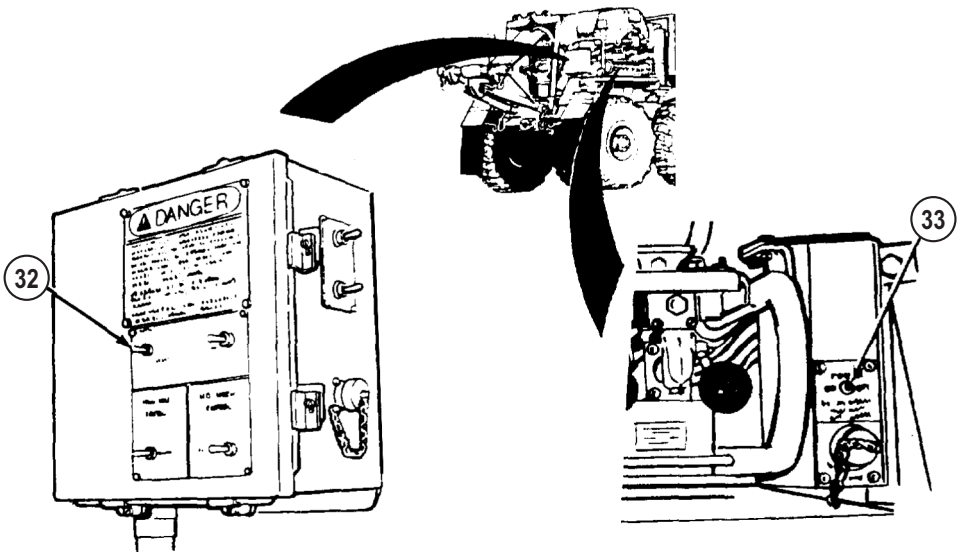


Figure 30.

30. Set POWER switch (33) to OFF position.
31. Turn off wrecker emergency flashers. (WP 0096)
32. Turn off wrecker service drive lights. (WP 0087)
33. Set HYD ENABLE switch (34) to off position. MAIN HYD ENABLE indicator (35) will go out.

DISCONNECT - Continued

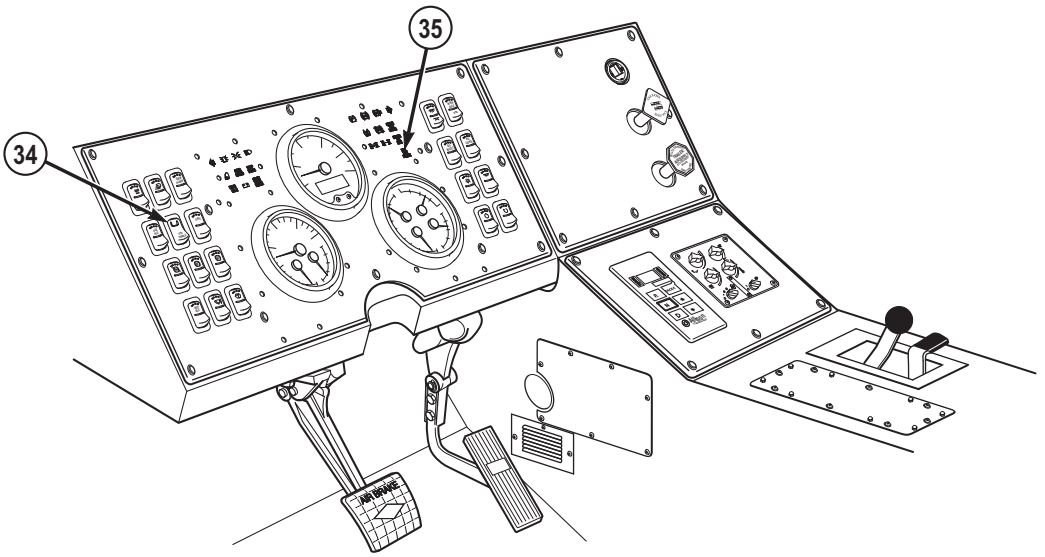


Figure 31.

34. Shut off engine. (WP 0057)
35. Remove and stow portable beacon lights. (WP 0094)
36. Turn off disabled vehicle emergency flashers and unlock steering column (refer to MTVR operator's manual).

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
TOW FMTV - FRONT LIFT USING MULTI-USE ADAPTER (MUA)

INITIAL SETUP:

Not Applicable

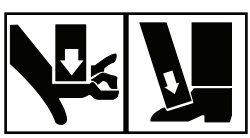
HOOKUP

NOTE

- Each recovery situation is unique and requires assessment to determine if the driveline is suitable for transport. When in doubt, consult with field level maintenance.
- This procedure is a two soldier task.
- The FMTV can only be towed from the front.

1. Review procedures for operating retrieval towing system (WP 0058) and prepare retrieval system for operation. (WP 0059)

WARNING



Hold cross tube when removing springs. Cross tube swings and may cause adapters to slide, resulting in injury to personnel.

2. Disconnect two springs (1) from tow cylinders (2).

HOOKUP - Continued

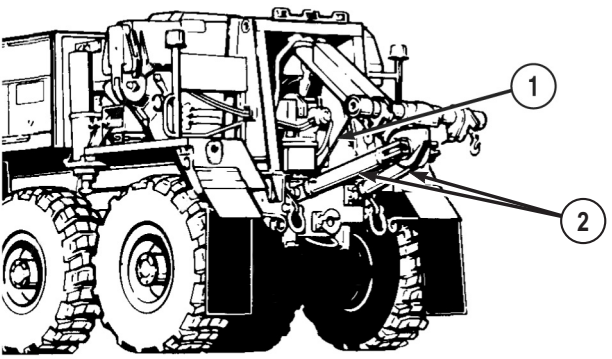


Figure 1.

CAUTION

Both rear towing shackles must be removed from rear tow eyes on wrecker before performing retrieval operations, or damage to tow cylinder may result.

NOTE

Driver side and passenger side towing shackles are removed the same way.

3. Remove two rear towing shackles from wrecker vehicle:

HOOKUP - Continued

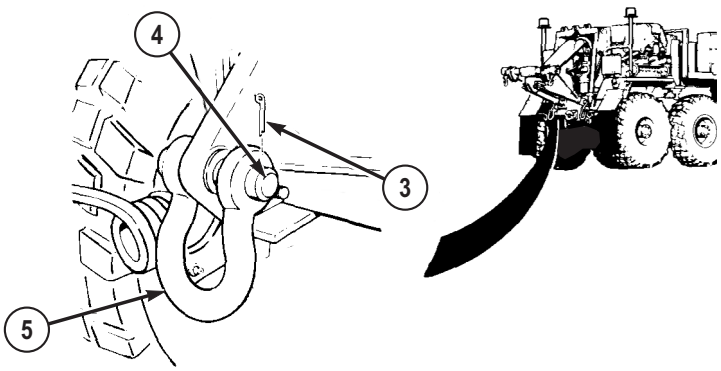


Figure 2.

a. Remove cotter pin (3), pin (4), and towing shackle (5).

b. Replace pin (4) in shackle (5), and cotter pin (3) in pin (4).

c. Repeat Steps (a) and (b) for opposite side towing shackle (5).

d. Stow two rear towing shackles on wrecker vehicle.

4. Pull LIFT CYLINDER control lever (6) to lower cross tube (7) to approximately 3 ft. (1 m) above the ground.

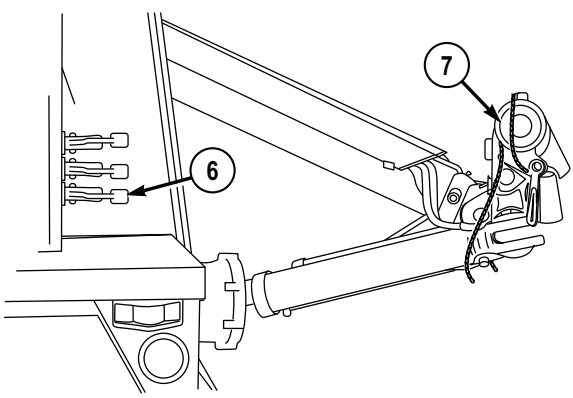
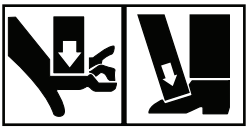


Figure 3.

5. Position wrecker so that cross tube (7) is approximately 1 ft. (30 cm) from tow eyes of disabled vehicle and centered on disabled vehicle.

HOOKUP - Continued

WARNING



When end caps are removed from cross tube, adapters may slide off resulting in injury to personnel.

6. Remove two quick pins (8) and pins (9) from end caps (10).

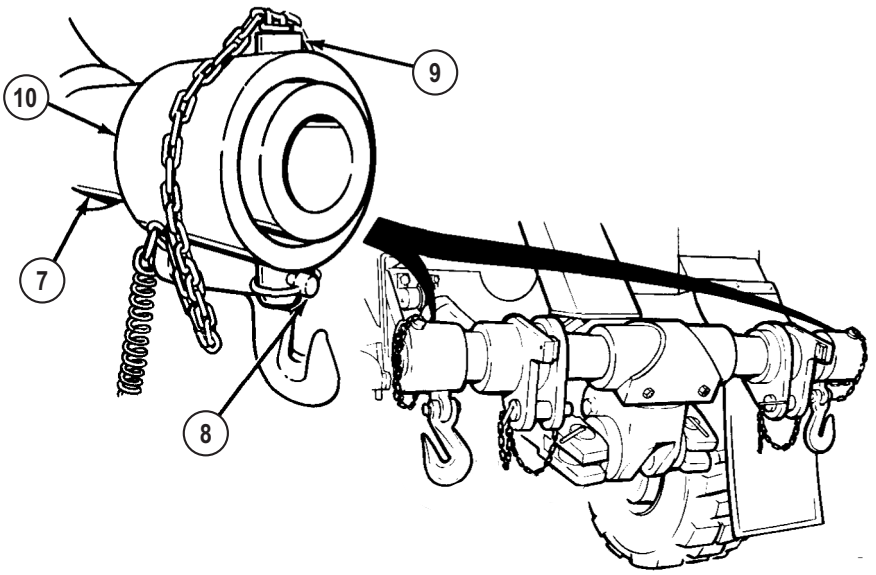


Figure 4.

7. Remove two end caps (10) from cross tube (7).
8. Remove two front adapters (11) from cross tube (7) and place on equipment body floor (12).

HOOKUP - Continued

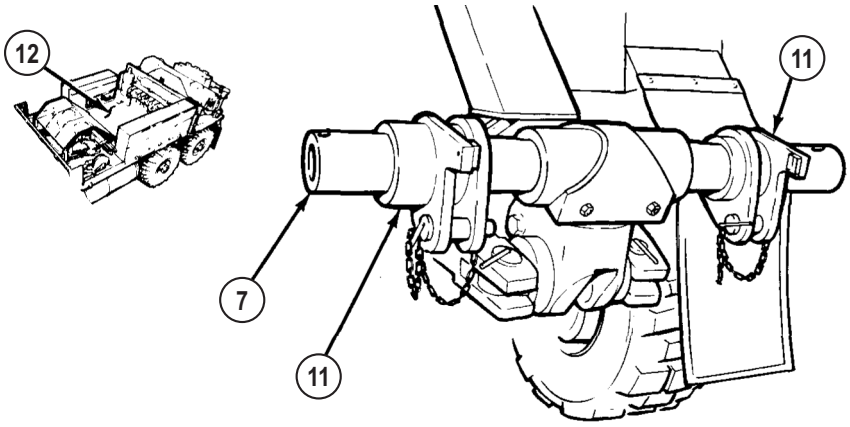


Figure 5.

9. Remove lock handle (13), lock plate (14), and two Multi-Use Adapters (MUAs) (15).

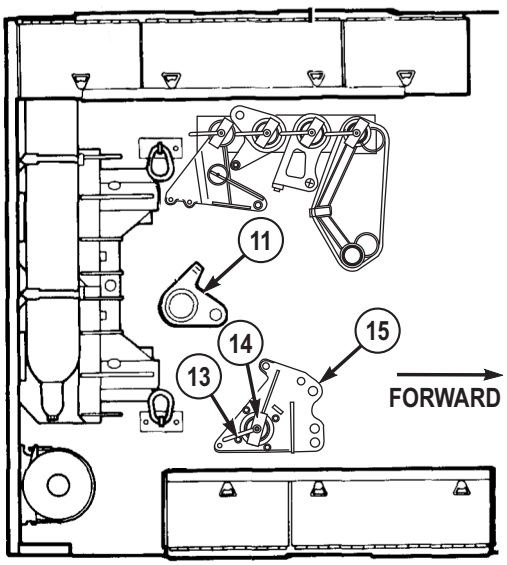


Figure 6.

10. Install two M977 front adapters (11), lock plate (14), and lock handle (13).
11. Remove two 4 in. (102 mm) spacers and two 1.5 in. (38 mm) spacers from wrecker stowage.

HOOKUP - Continued

12. Install two 4 in. (102 mm) spacers (16) on cross tube (7).

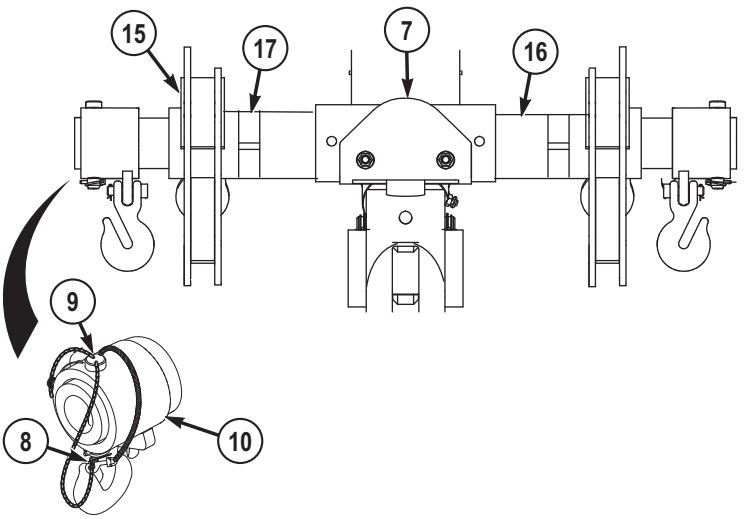


Figure 7.

13. Install two 1.5 in. (38 mm) spacers (17) on cross tube (7).

WARNING

MUAs are heavy, handle carefully. Failure to comply may result in injury to personnel.

NOTE

MUAs must be positioned on cross tube with rounded ear of MUA toward center of cross tube.

14. Install two MUAs (15) on cross tube (7) with holes facing tow eyes of disabled vehicle.
15. Install two end caps (10) on cross tube (7).
16. Install two pins (9) and quick pins (8).
17. Attach two springs (1) on tow cylinders (2).

HOOKUP - Continued

18. Remove two pins (3483740) (18) and two pins (3483739) (19) from wrecker stowage.

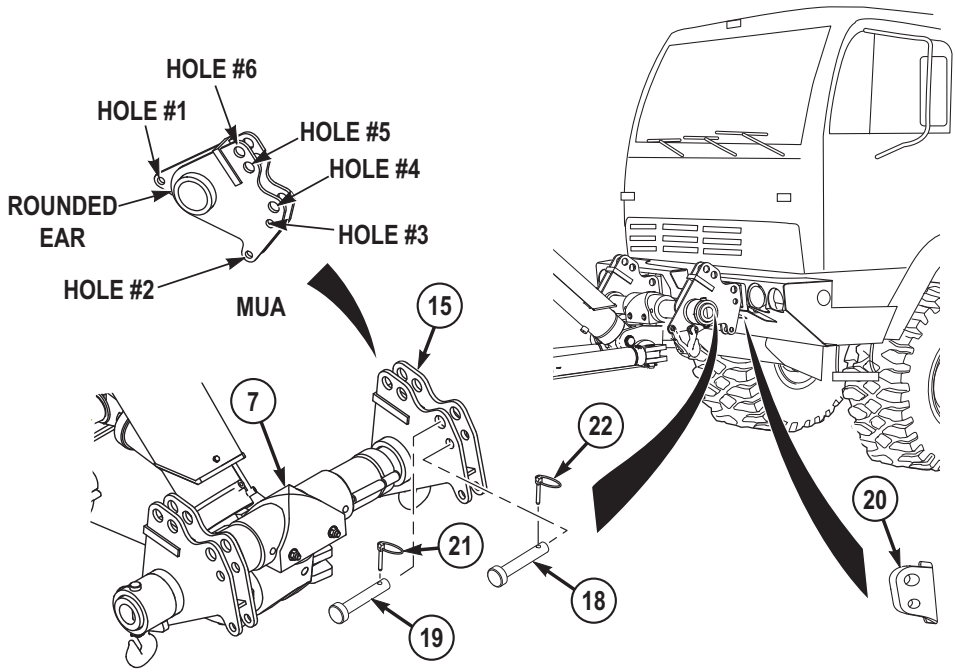


Figure 8.

WARNING

Keep hands and fingers away from adapters and tow eyes when operating retriever controls. Failure to comply may result in injury or death to personnel.

NOTE

If disabled vehicle has towing shackles installed, remove shackles and stow in disabled vehicle.

19. Operate retrieval system, and with aid of an assistant position cross tube (7) so hole #4 on MUAs (15) align front tow eyes (20).

HOOKUP - Continued

20. Insert two pins (19) through MUAs (15) and front tow eyes (20). Install quick pins (21) in pins (19).
21. Operate retrieval system, and with aid of an assistant position cross tube (7) so hole #3 on MUAs (15) align front tow eyes (20).
22. Insert two pins (18) through MUAs (15) and front tow eyes (20). Install quick pins (22) in pins (18).
23. Push in PARKING BRAKE control and remove chocks on disabled vehicle (refer to MTVR operator's manual).

NOTE

Do not lift vehicle off ground when performing Step (24).

24. Alternately push in RIGHT TOW CYLINDER (23), LEFT TOW CYLINDER (24), and LIFT CYLINDER control levers (6) until tow cylinders (2) are fully retracted.

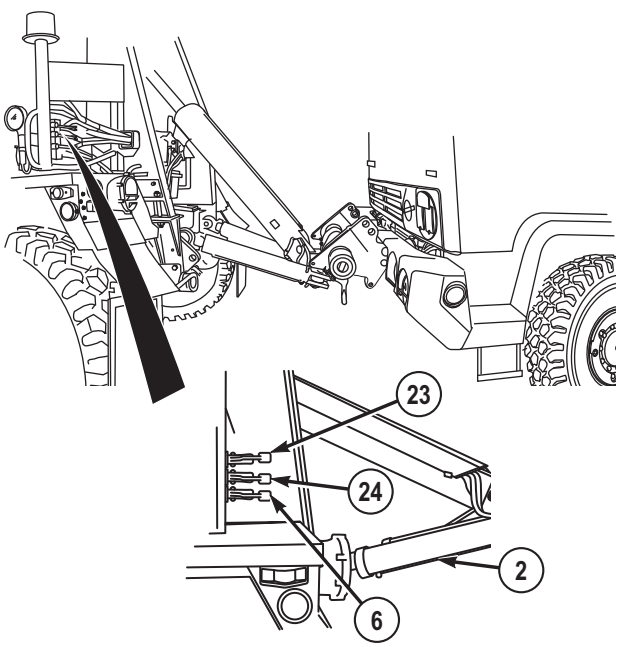


Figure 9.

25. Remove two 16 ft. (5 m) safety chains (25) from wrecker stowage.

HOOKUP - Continued

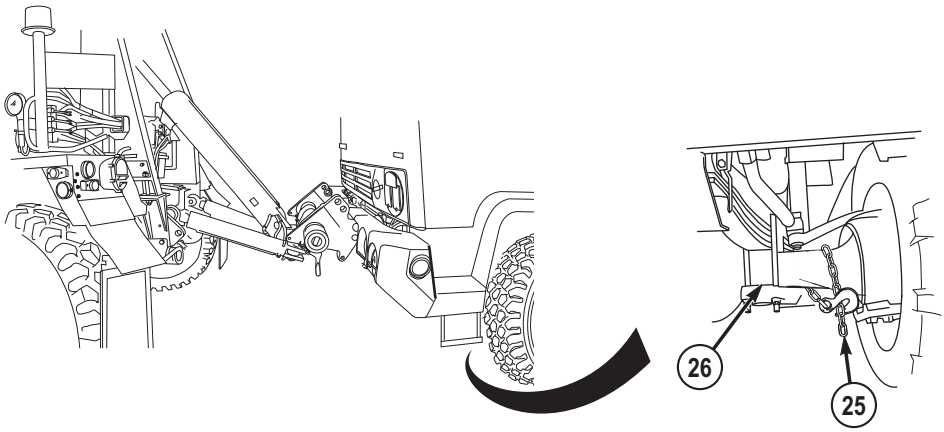


Figure 10.

26. Route one end (without safety shackle) of 16 ft. (5 m) safety chain (25) over front axle (26) of disabled vehicle.
27. Hook 16 ft. (5 m) safety chain (25) back into itself (shown) in front of axle (26).
28. Repeat Steps (26) and (27) for other side of disabled vehicle.

NOTE

Adjust chain slack so safety chains do not touch the ground.

29. Route two free ends of 16 ft. (5 m) safety chains (25) to end cap hooks (27) and through safety chain hoop (28) on wrecker. Hook two 16 ft. (5 m) safety chains (25) back into themselves and secure with safety shackles (29).

HOOKUP - Continued

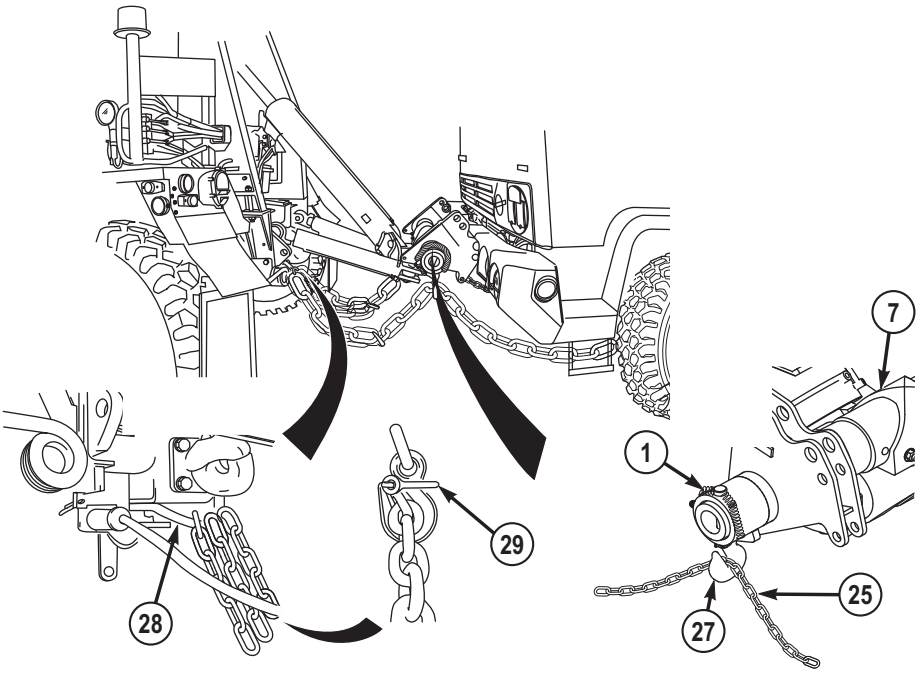


Figure 11.

30. Wrap two springs (1) around cross tube (7) and secure.

CAUTION

Make sure all cargo in disabled vehicle is secured prior to lifting and towing. Failure to comply may result in damage to cargo and equipment.

NOTE

Rear emergency air line from wrecker must be connected to the front emergency gladhand on the disabled vehicle. Refer service air line from wrecker must be connected to the front service gladhand on the disabled vehicle.

31. Prepare disabled vehicle for towing (refer to FMTV operator's manual).

HOOKUP - Continued

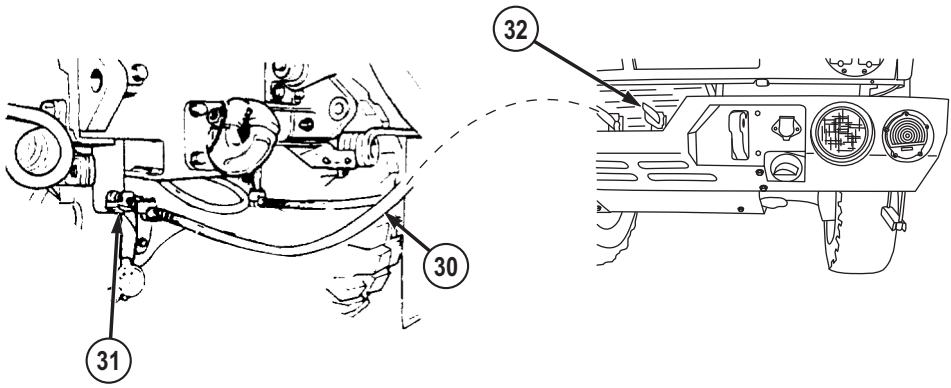


Figure 12.

32. Remove two air lines (30) from stowage and attach to rear gladhands (31) of wrecker.
33. Route two air lines (30) over cross tube and attach to front gladhands (32) of disabled vehicle.
34. Remove emergency tow lights (33) and two brackets (34) from wrecker stowage.

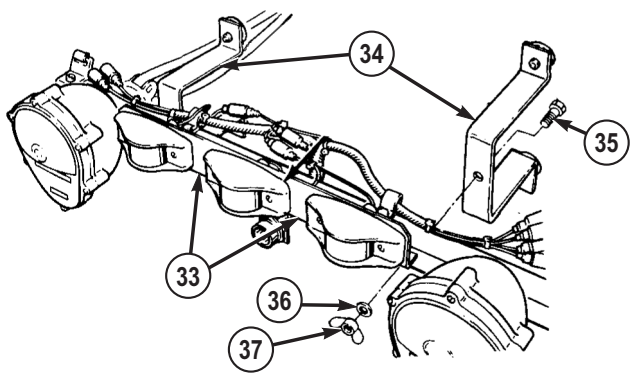


Figure 13.

35. Install two brackets (34) in center holes of emergency tow lights (33) with two screws (35), washers (36), and nuts (37).
36. Install emergency two lights (33) on rear FMTV and fasten securely with straps (38).

HOOKUP - Continued

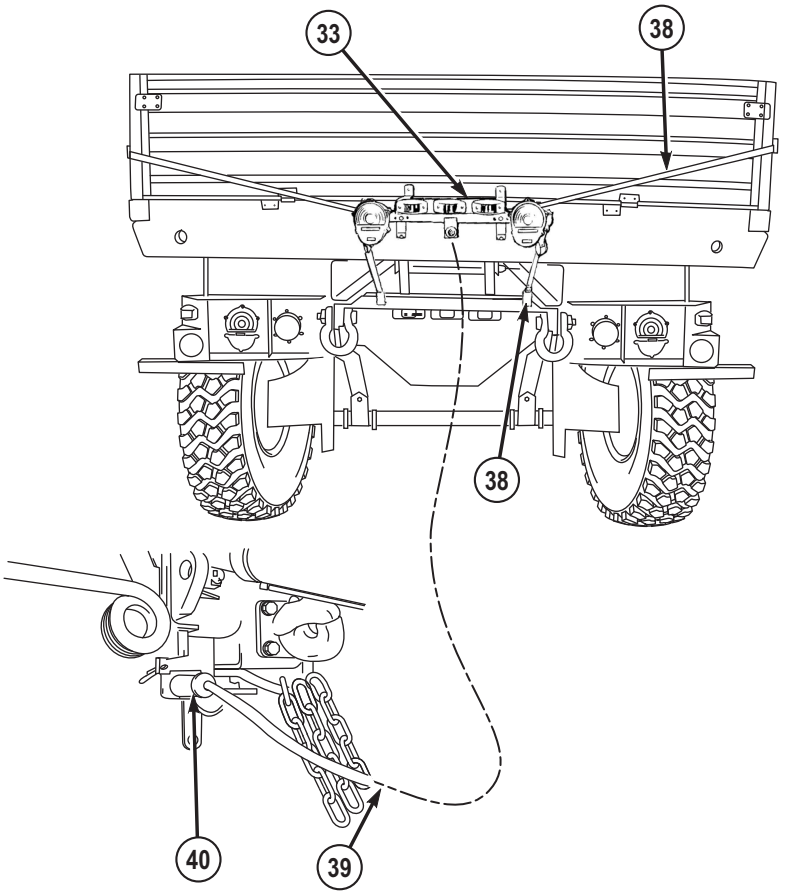


Figure 14.

37. Remove tow light cable (39) from stowage and connect to emergency tow lights (33).

CAUTION

Route cable so it does not drag on ground or interfere with turning tires. Failure to comply may result in damage to equipment.

38. Route other end of tow light cable (39) along disabled vehicle and connect to rear electrical connector (40) on wrecker.
39. Lock disabled vehicle's steering (refer to FMTV operator's manual).
40. Set POWER switch (41) to ON position.

HOOKUP - Continued

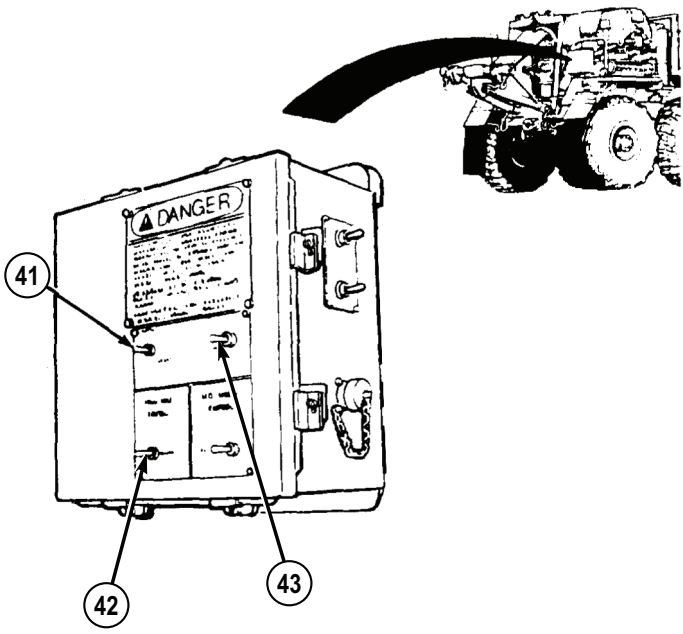


Figure 15.

41. Set HIGH IDLE switch (42) to CONTINUOUS.
42. Push and release LATCH switch (43). Engine speed will increase to approximately 1500 rpm.

WARNING

Keep out from under retrieval system and disabled vehicle when raised off ground. Failure to comply may result in injury or death to personnel.

HOOKUP - Continued

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

CAUTION

- Fully retract both tow cylinders before lifting disabled vehicle. Failure to comply may result in damage to equipment.
- Ensure all rigging is secure. Loose rigging can become entangled. Failure to comply may result in damage to equipment.

NOTE

Operator must allow wrecker air suspension system to completely adjust for added weight of disabled vehicle before raising disabled vehicle to final height of 1 ft. (30 cm).

43. Push in LIFT CYLINDER control lever (6) to retract lift cylinder (44) to raise disabled vehicle approximately 3 in. (8 cm) off ground.
    a. Once wrecker air suspension system has adjusted for added weight of disabled vehicle, push LIFT CYLINDER control lever (6) to retract lift cylinder (44) and raise disabled vehicle to final height of 1 ft. (30 cm).

HOOKUP - Continued

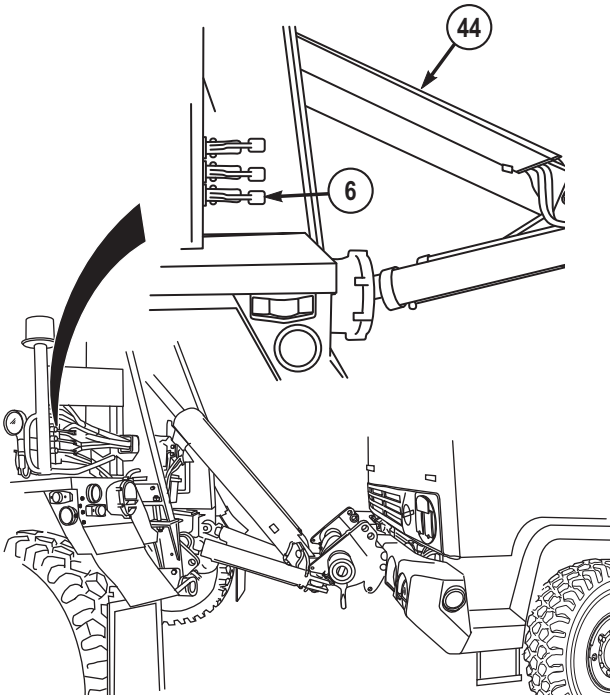


Figure 16.

44. Adjust slack in two 16 ft. (5 m) safety chains so chains between cross tube and wrecker are approximately 1 ft. (30 cm) off ground.

45. Set POWER switch (41) to OFF position.

HOOKUP - Continued

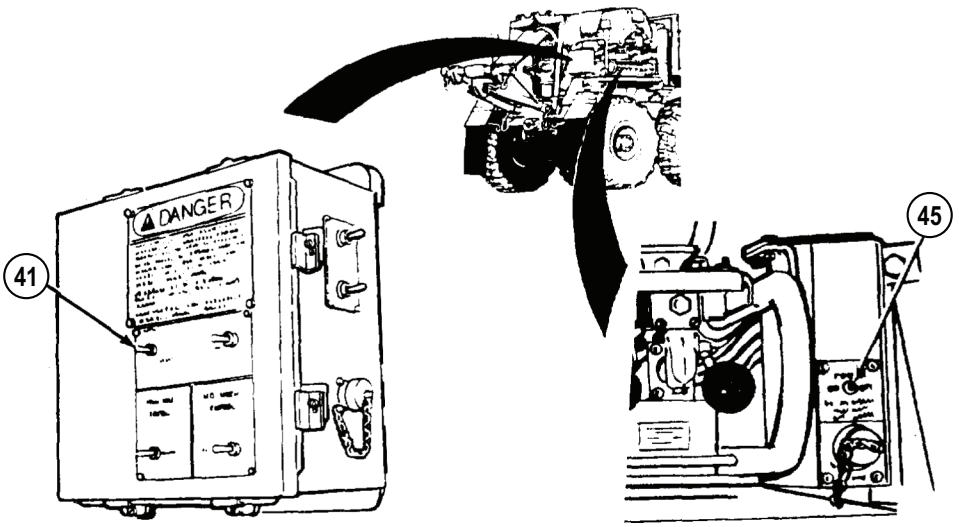


Figure 17.

46. Set POWER switch (45) to OFF position.
47. Set HYD ENABLE switch (46) to off position. MAIN HYD ENABLE indicator (47) will go out.

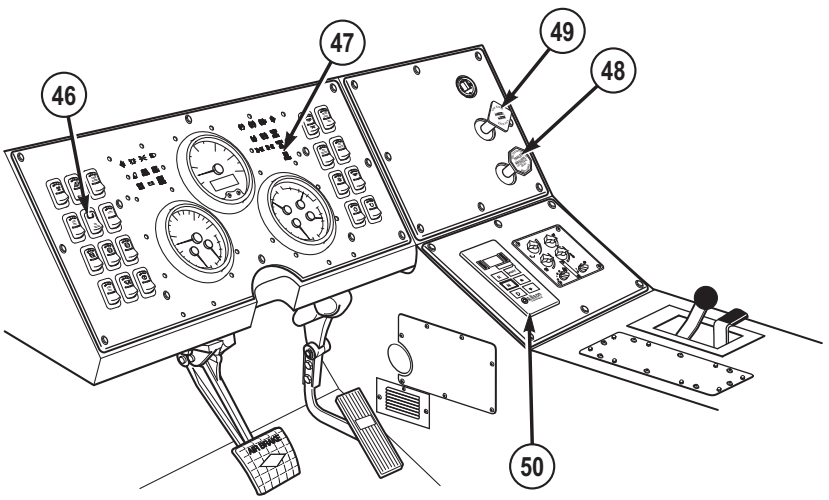


Figure 18.

48. Push in TRAILER AIR SUPPLY control (48).

HOOKUP - Continued

49. Turn on wrecker service drive lights. (WP 0087)

50. Turn on wrecker emergency flashers. (WP 0096)

NOTE

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

51. Push in PARKING BRAKE control (49).

WARNING

The M984 Wrecker should not be operated at speeds over 15 MPH (24 km/hr) except on paved roads when the operator determines that the vehicle being towed and the terrain allow safe operation. Engine brake switch must ON for all towing operations. Speed in excess of the below table may result in loss of control, serious injury, or death to personnel.

52. Select desired gear (WP 0048) and transport disabled vehicle.

Table 1. Maximum Towing Speed.

Terrain Condition	Maximum Speed Towed Load Up To 50,000 lbs (22 700 kg)	Maximum Speed Towed Load Above 50,000 lbs (22 700 kg)
On Road-Level	35 mph (56 km/hr)	30 mph (48 km/hr)
On Road-Hilly	30 mph (48 km/hr)	20 mph (32 km/hr)
Off-Road	15 mph (24 km/hr)	15 mph (24 km/hr)

DISCONNECT

NOTE

This procedure is a two soldier task.

1. Set transmission range selector (1) to N (neutral).

DISCONNECT - Continued

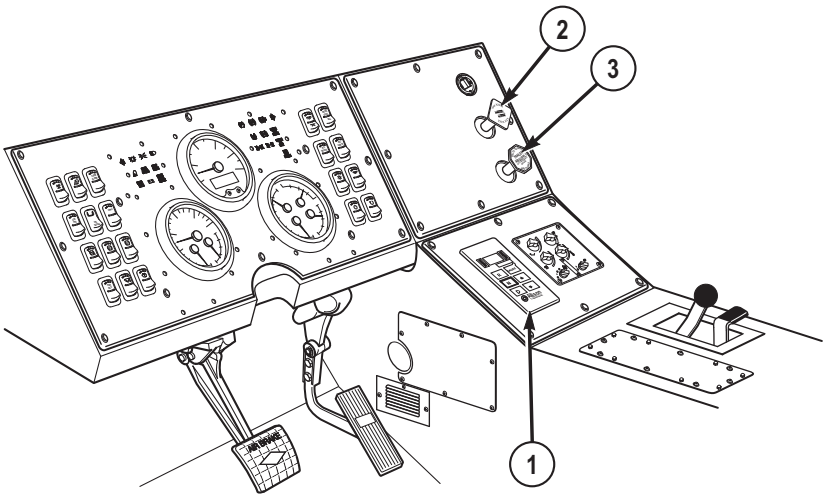


Figure 19.

NOTE

Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

2. Pull out PARKING BRAKE control (2).
3. Pull out TRAILER AIR SUPPLY control (3).

WARNING

Keep out from under retrieval system and disabled vehicle when raised off ground. Failure to comply may result in injury or death to personnel.

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

DISCONNECT - Continued

4. Prepare retrieval system for operation. (WP 0059)

NOTE

- After lowering disabled vehicle, extend lift and tow cylinders approximately 2 to 4 inches (51 to 102 mm) to allow for adjustment when removing adapters.
- Expect wrecker air suspension system to deflate air springs to achieve normal ride height once weight of disabled vehicle is removed.

5. Pull LIFT CYLINDER control lever (4) and lower disabled vehicle to the ground to release tension on MUAs (5) on tow eyes (6).

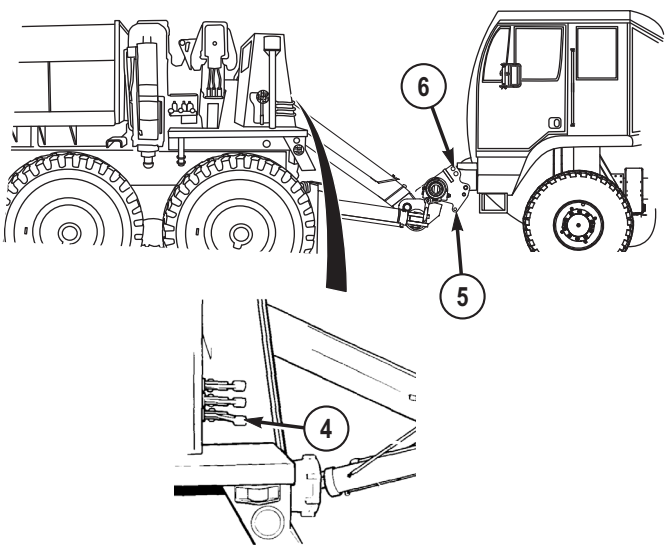
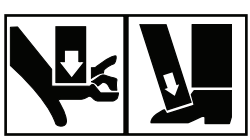


Figure 20.

WARNING



Do not allow MUAs to swing around. Failure to comply may result in injury to personnel.

DISCONNECT - Continued

6. Pull out PARKING BRAKE control (7) on disabled vehicle. If parking brake is inoperable, chock wheels on disabled vehicle (refer to FMTV operator's manual).

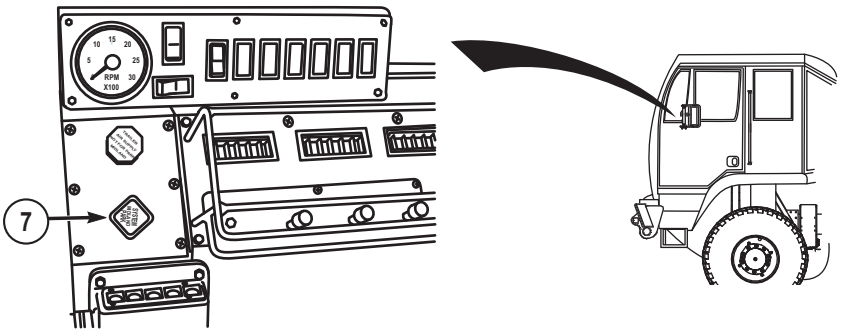


Figure 21.

7. Remove and stow air lines (8).

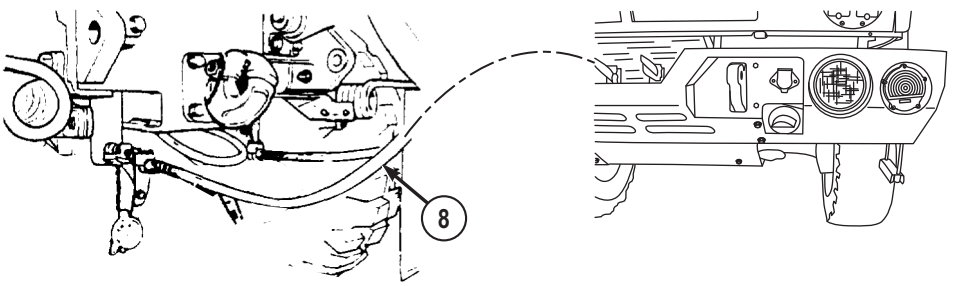


Figure 22.

8. Remove tow light cable (9) from wrecker.

DISCONNECT - Continued

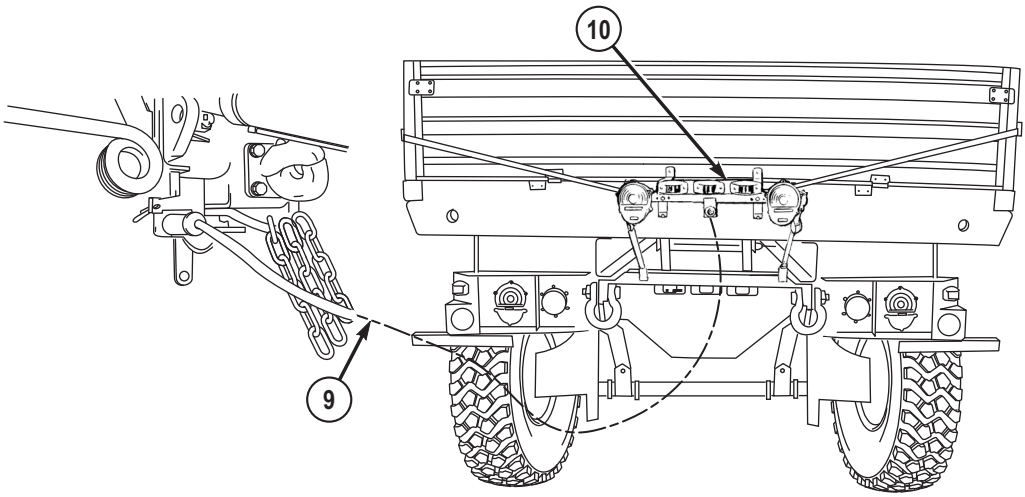


Figure 23.

9. Remove tow light cable (9) from emergency tow lights (10) and return to wrecker stowage.
10. Remove emergency tow lights (10) from disabled vehicle.
11. Remove two nuts (11), washers (12), screws (13), and brackets (14) from emergency tow lights (10). Stow emergency tow lights (10) and brackets (14).

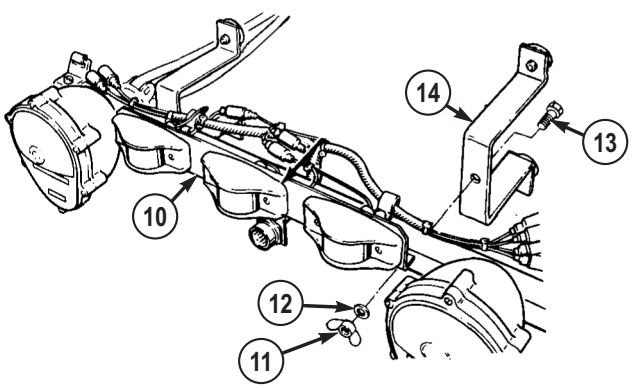


Figure 24.

12. Remove and stow two 16 ft. (5 m) safety chains (15).

DISCONNECT - Continued

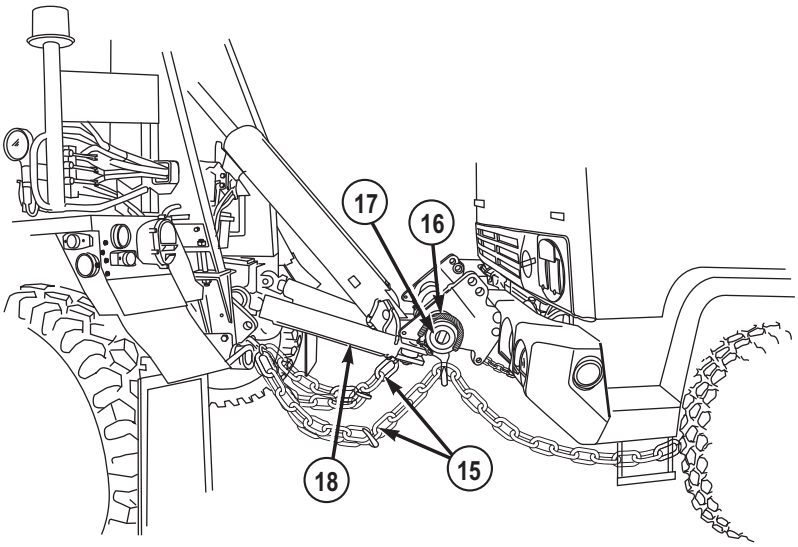


Figure 25.

13. Unwrap two springs (16) from cross tube (17) and connect to tow cylinders (18).

WARNING

Keep hands and fingers away from adapters and tow eyes when operating retriever controls. Failure to comply may result in injury or death to personnel.

NOTE

Use retrieval controls to position cross tube to relieve tension from adapters.

14. Remove two quick pins (19) and pins (20) from hole #3 on MUAs (5).

DISCONNECT - Continued

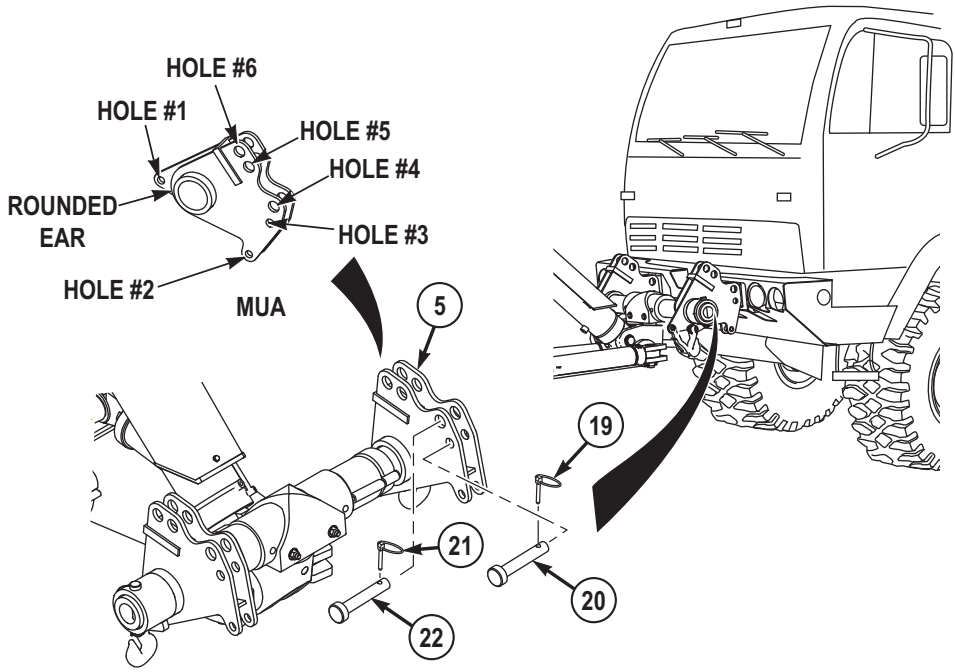


Figure 26.

15. Remove two quick pins (21) and pins (22) from hole #4 on MUAs (5).
16. Drive wrecker forward (WP 0050) several feet and park. (WP 0056)

WARNING

When springs and end caps are removed, cross tube can swing in all directions and adapters may slide off and cause injury or death to personnel.

17. Remove two springs (16) from tow cylinders (18).
18. Remove two quick pins (23) and pins (24) from end caps (25).

DISCONNECT - Continued

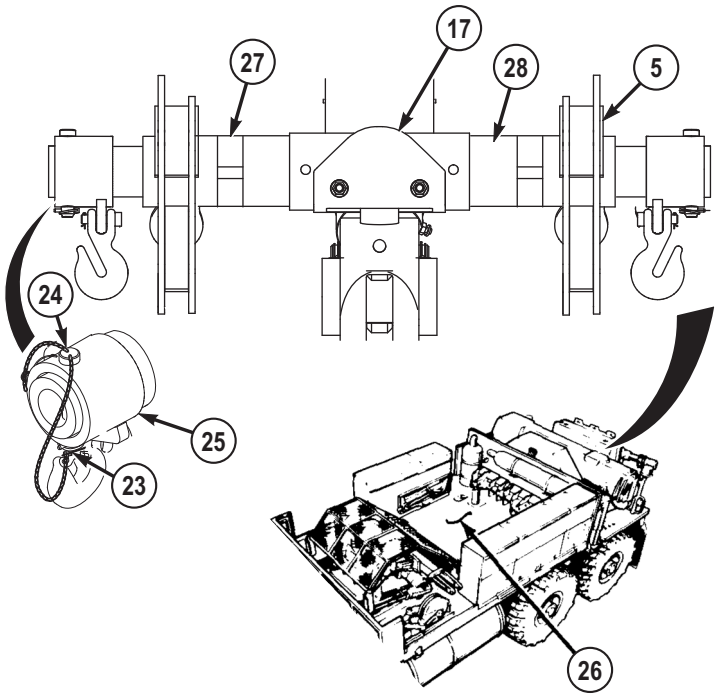


Figure 27.

19. Remove two end caps (25) from cross tube (17).

WARNING

MUAs are heavy, handle carefully. Failure to comply may result in injury to personnel.

20. Remove two MUAs (5) from cross tube (17) and place on equipment body floor (26).
21. Remove and stow 1.5 in. (38 mm) spacers (27).
22. Remove and stow 4 in. (102 mm) spacers (28).
23. Remove lock handle (29), lock plate (30), and front adapters (31).

DISCONNECT - Continued

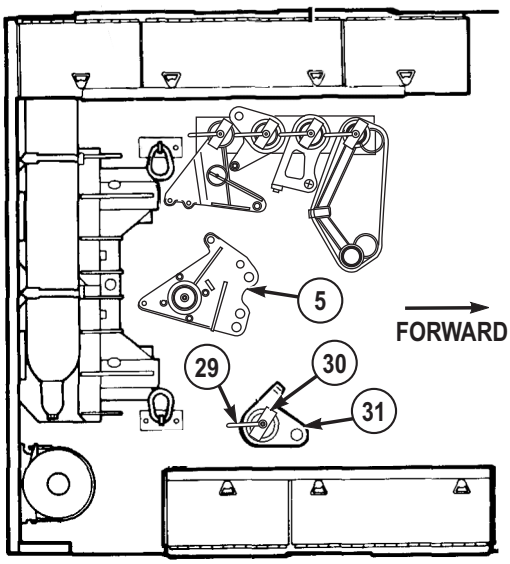


Figure 28.

24. Install two MUAs (5) removed from cross tube (17), with lock plate (30), and lock handle (29).
25. Install two front adapters (31) on cross tube (17).

DISCONNECT - Continued

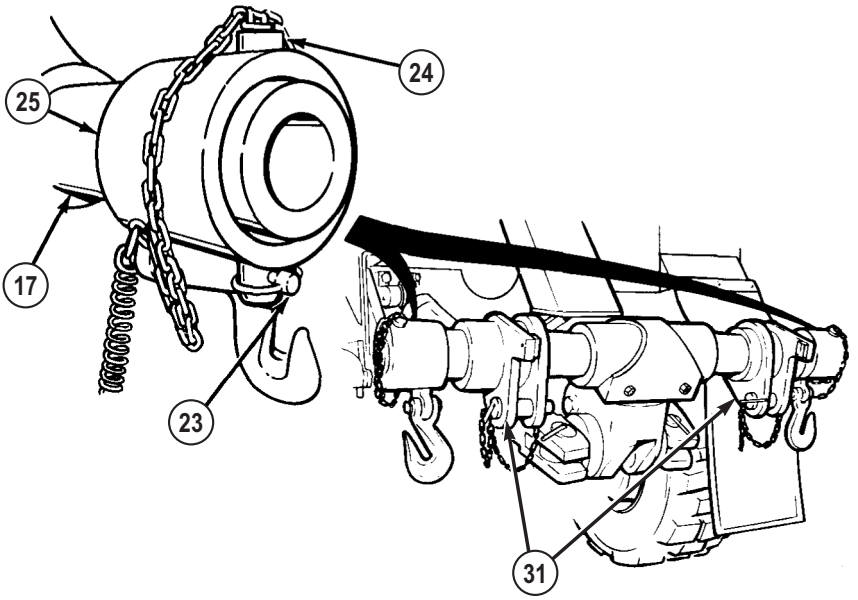


Figure 29.

26. Install two end caps (25) on cross tube (17).
27. Install two pins (24) and quick pins (23).
28. Install two springs (16) on two cylinders (18).

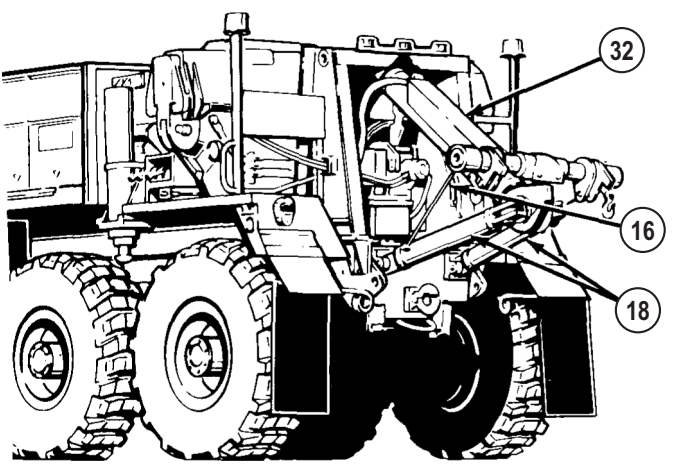


Figure 30.

DISCONNECT - Continued

29. Operate retrieval system and fully retract lift cylinder (32) and two cylinders (18).

NOTE

Driver side and passenger side rear towing shackles are installed the same way.

30. Install two towing shackles (33), pins (34), and cotter pins (35).

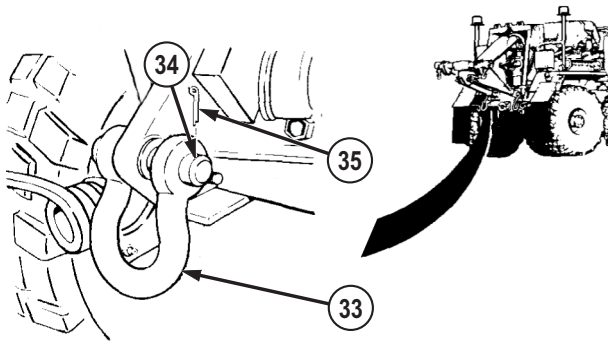


Figure 31.

31. Set POWER switch (36) to OFF position.

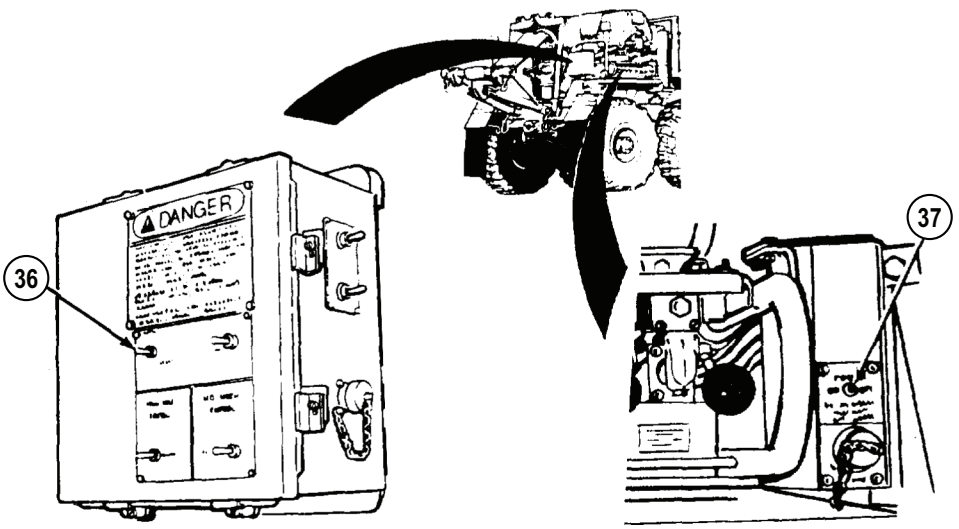


Figure 32.

DISCONNECT - Continued

32. Set POWER switch (37) to OFF position.
33. Turn off wrecker emergency flashers. (WP 0096)
34. Turn off wrecker service drive lights. (WP 0087)
35. Set HYD ENABLE switch (38) to off position. MAIN HYD ENABLE indicator (39) will go out.

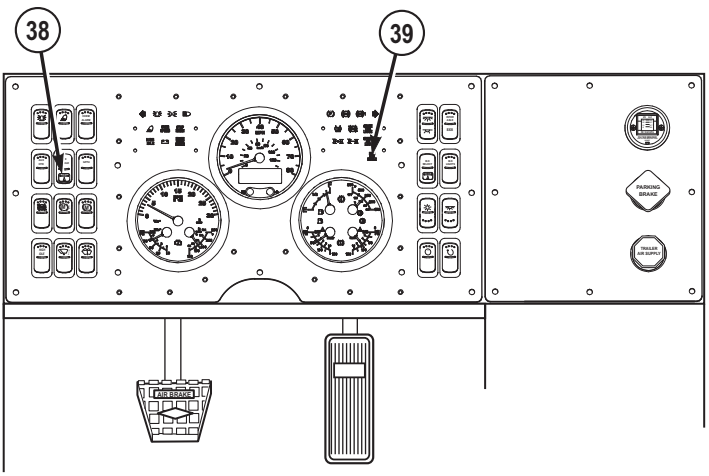


Figure 33.

36. Shut off engine. (WP 0057)
37. Remove and stow portable beacon lights. (WP 0094).
38. Turn off disabled vehicle emergency flashers, and unlock steering column (refer to MTVR operator's manual).

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
TOW M1008 - REAR LIFT

INITIAL SETUP:

Not Applicable

HOOKUP

NOTE

- Each recovery situation is unique and requires assessment to determine if the driveline is suitable for transport. When in doubt, consult with field level maintenance.
- This procedure is a two soldier task.

1. Review procedures for operating retrieval towing system (WP 0058) and prepare retrieval system for operation. (WP 0059)

WARNING

- Hold cross tube when removing springs, cross tube can swing in all directions and adapters may slide off. Failure to comply may result in injury or death to personnel.
- Intervehicular air lines are not connected when towing from rear. Disabled vehicle will not have braking. Use extreme care when transporting disabled vehicle using rear hookup. Failure to comply may result in injury or death to personnel.

2. Disconnect two springs (1) from tow cylinders (2).

HOOKUP - Continued

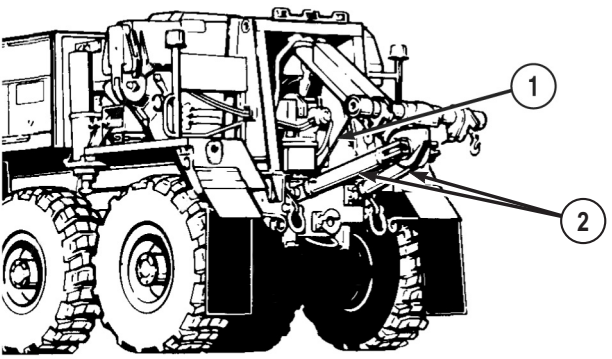


Figure 1.

CAUTION

Both rear towing shackles must be removed from rear tow eyes on wrecker before performing retrieval operations, or damage to tow cylinder may result.

NOTE

Driver side and passenger side towing shackles are removed the same way.

3. Remove two rear towing shackles from wrecker vehicle:

HOOKUP - Continued

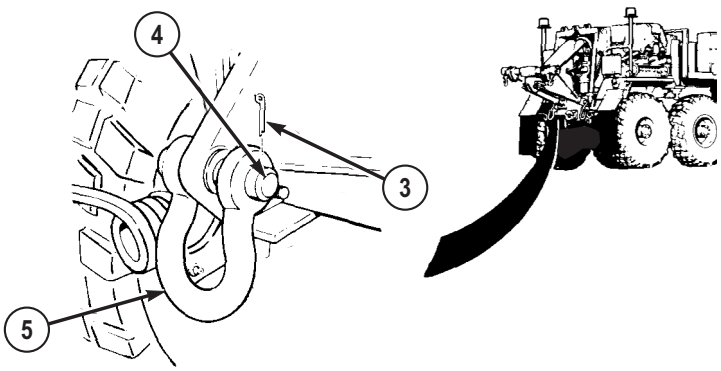


Figure 2.

a. Remove cotter pin (3), pin (4), and towing shackle (5).

b. Replace pin (4) in shackle (5), and cotter pin (3) in pin (4).

c. Repeat Steps (a) and (b) for opposite side towing shackle (5).

d. Stow two rear towing shackles on wrecker vehicle.

4. Pull LIFT CYLINDER control lever (6) to lower cross tube (7) to approximately 3 ft. (1 m) above ground.

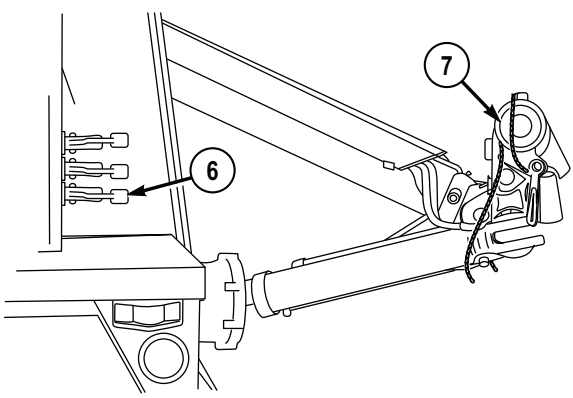


Figure 3.

5. Position wrecker so that cross tube (7) is centered and approximately 1 ft. (30 cm) from tow eyes of disabled vehicle.

HOOKUP - Continued

WARNING

When springs and end caps are removed, cross tube can swing in all directions and adapters may slide off and cause injury or death to personnel.

6. Remove two quick pins (8) and pins (9) from end caps (10).

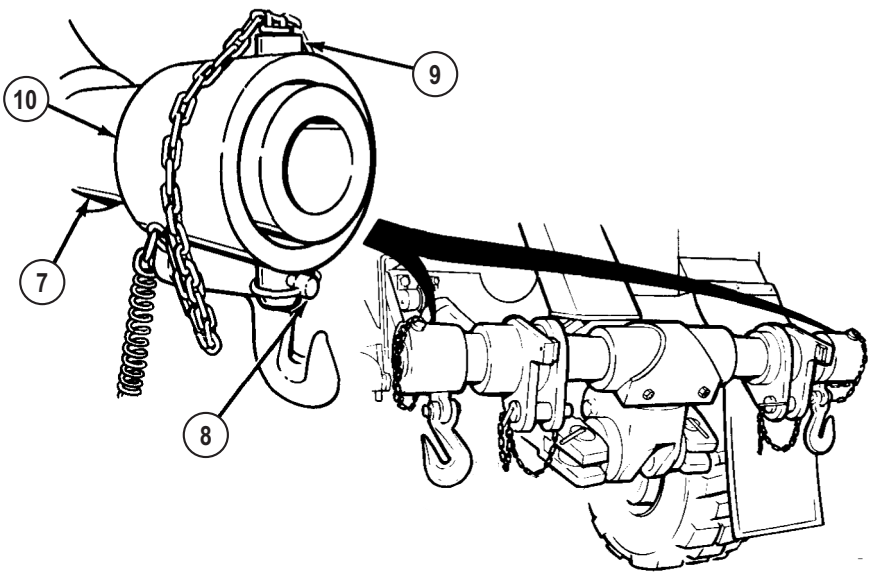


Figure 4.

7. Remove two end caps (10) from cross tube (7).
8. Remove two front adapters (11) from cross tube (7) and place on equipment body floor (12).

HOOKUP - Continued

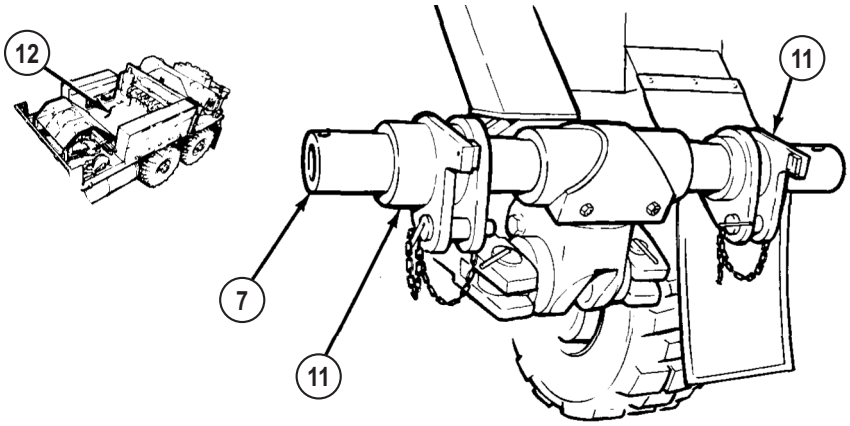


Figure 5.

9. Remove lock handle (13), lock plate (14), and two adapters (15).

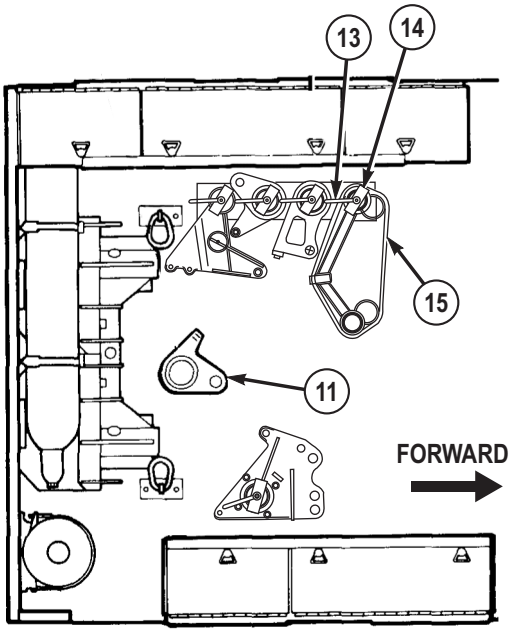


Figure 6.

10. Install two front adapters (11) removed from cross tube (7), with lock plate (14), and lock handle (13).

HOOKUP - Continued

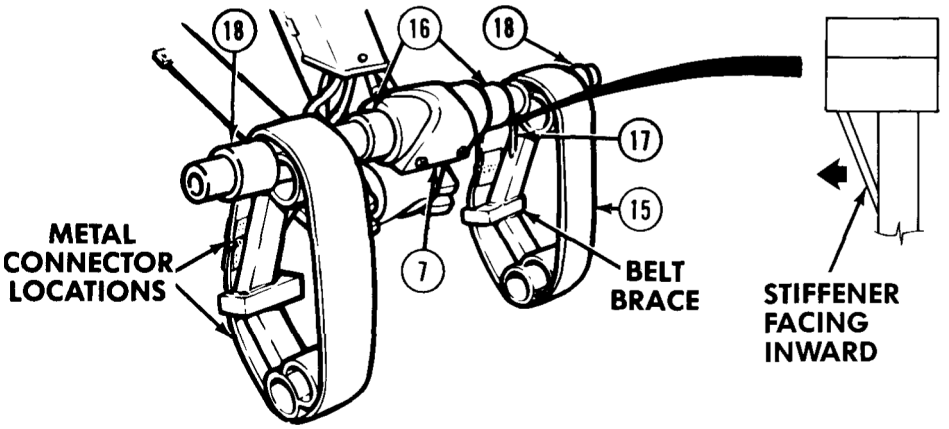


Figure 7.

11. Remove two 4 in. (102 mm) spacers (16) and two 5 in. (127 mm) spacers (18) from wrecker stowage.
12. Install two 4 in. (102 mm) spacers (16) on cross tube (7).

NOTE

Ensure metal connection is located on either side of belt brace and does not touch metal parts of adapters.

13. Install two adapters (15) on cross tube (7) with stiffener (17) facing inward.
14. Install two 5 in. (127 mm) spacers (18) on cross tube (7).

NOTE

End caps will hang over end of cross tube.

15. Install two end caps (10) on cross tube (7).

HOOKUP - Continued

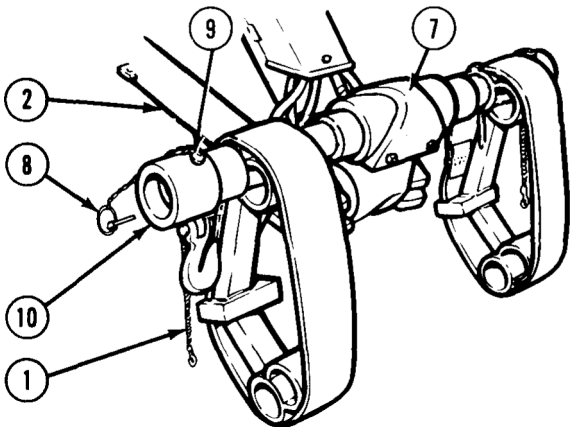


Figure 8.

16. Install two pins (9) and quick pins (8).
17. Attach two springs (1) on tow cylinders (2).
18. Operate retrieval system (WP 0059) to extend both tow cylinders (2) 2 in. (50 mm) and lower lift cylinder (19) until adapters (15) are approximately 6 in. (150 mm) from ground.

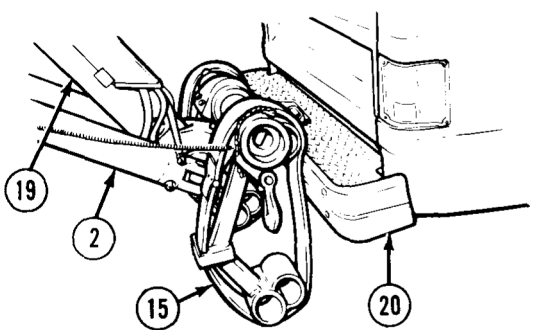


Figure 9.

NOTE

If disabled vehicle has towing shackles installed, remove shackles and stow in disabled vehicle.

19. Position wrecker so adapters (15) contact rear bumper (20) of disabled vehicle and are centered.

HOOKUP - Continued

WARNING

Keep hands and fingers away from adapters and tow eyes when operating retriever controls. Failure to comply may result in injury or death to personnel.

CAUTION

Do not contact pintle hook with lift cylinders. Failure to comply may result in damage to equipment.

20. Operate retrieval system, (WP 0059) and with aid of an assistant guide adapters (15) down and under disabled vehicle's rear bumper (20) until belt brace (21) aligns with rear edge of bumper (shown).

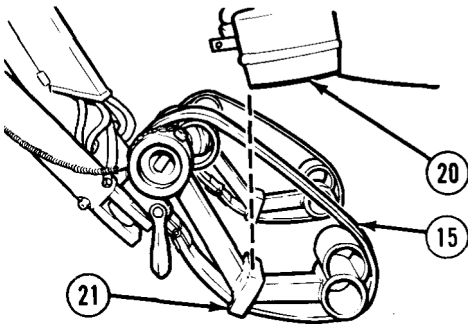


Figure 10.

NOTE

All four 12 ft. (3.6 m) chains are the same.

21. Remove four 12 ft. (3.6 m) chains (22) from wrecker stowage

HOOKUP - Continued

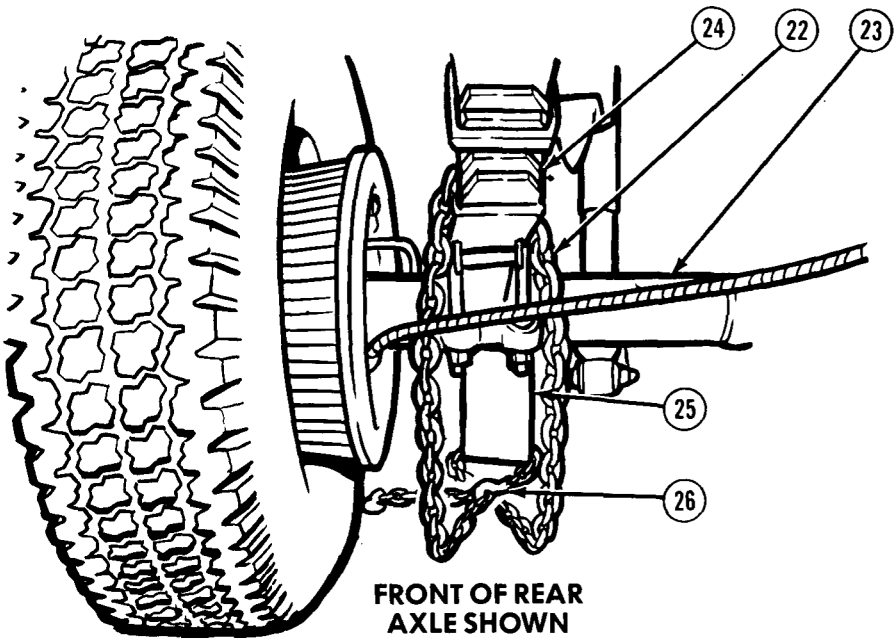


Figure 11.

CAUTION

Do not allow brake cable to become pinched by 12 ft. (3.6 m) tow chains. Failure to comply may result in damage to equipment.

NOTE

12 ft. (3.6 m) tow chains should be crossed and looped around rear leaf spring shackle bolts.

22. Route 12 ft. (3.6 m) tow chain (22) in front of rear axle (23) and loop over leaf spring (24) on disabled vehicle.
23. Route 12 ft. (3.6 m) tow chain (22) through lower adapter tube (25). Attach grab hook (26) to 12 ft. (3.6 m) tow chain (22) approximately 9 links from grab hook on other end of 12 ft. (3.6 m) tow chain (22).
24. Repeat Steps (22) and (23) for other side of disabled vehicle.
25. Release disabled vehicle's parking brake and place transmission in neutral (refer to M1008 operator's manual).

HOOKUP - Continued

26. Operate retrieval system (WP 0059) and retract tow cylinders (2) and lift cylinder (19) until adapters (15) are positioned tight against rear bumper (20) with tow eyes (27) between adapters and fully retracted tow cylinders (2).

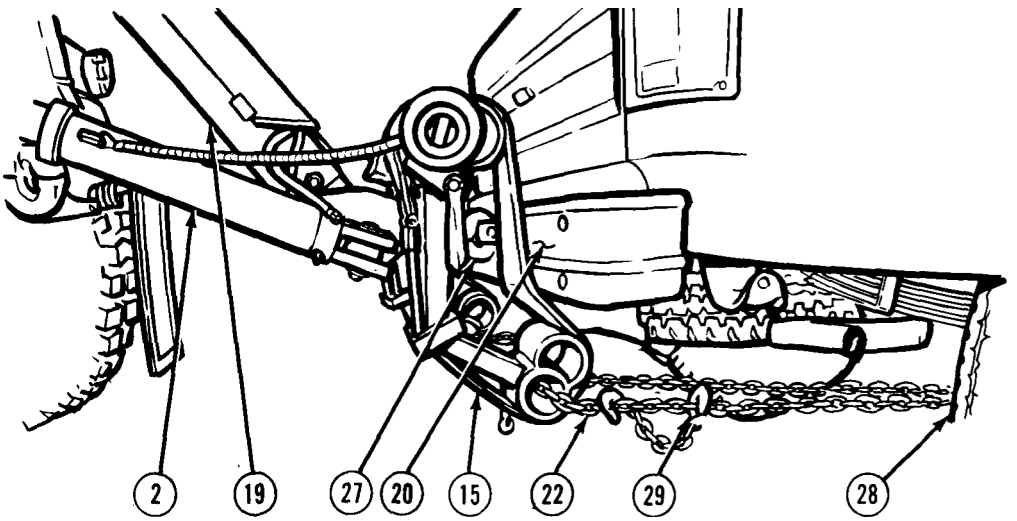


Figure 12.

CAUTION

Ensure tow chain does not contact rear leaf spring shackle bolts. Failure to comply may result in damage to equipment.

NOTE

12 ft. (3.6 m) tow chain should be adjusted to allow strap adapters to lift evenly.

27. Raise disabled vehicle until rear tires (28) are approximately 6 in. (150 mm) above ground.
28. Lower disabled vehicle until rear tires (28) contact ground, but 12 ft. (3.6 m) tow chains (22) remain tight.
29. Attach grab hooks (29) to 12 ft. (3.6 m) tow chains (22).

NOTE

Passenger side of disabled vehicle is opposite from passenger side of wrecker.

HOOKUP - Continued

30. Route 12 ft. (3.6 m) tow chain (30) through right adapter brace (18) and through right chain hole (31) on disabled vehicle.

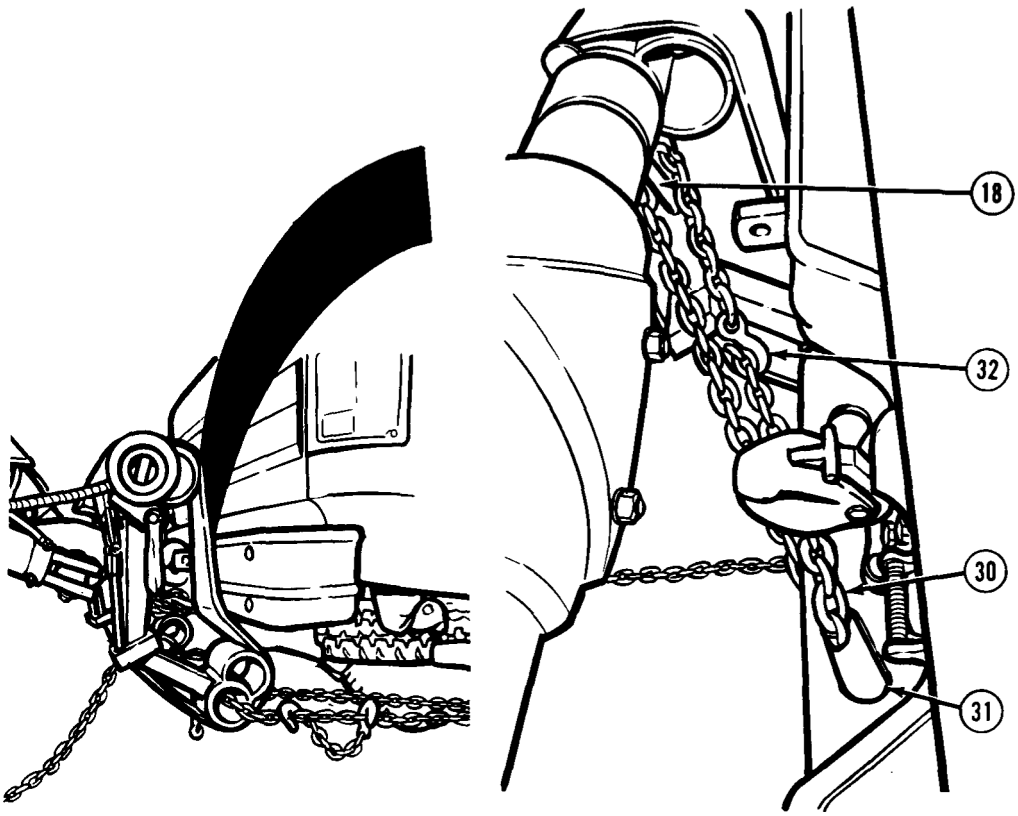


Figure 13.

31. Pull 12 ft. (3.6 m) tow chain (30) tight, and attach grab hook (32) to 12 ft. (3.6 m) tow chain (30).

32. Repeat Steps (30) and (31) for other side of disabled vehicle.

NOTE

- Adjust chain slack so cross chains just touch the ground.
- Cross chains will act as safety chains when connected to wrecker.

33. Route two 12 ft. (3.6 m) cross chains (30) through safety chain hoop (33) on wrecker and secure grab hooks (34) with safety shackle (35).

HOOKUP - Continued

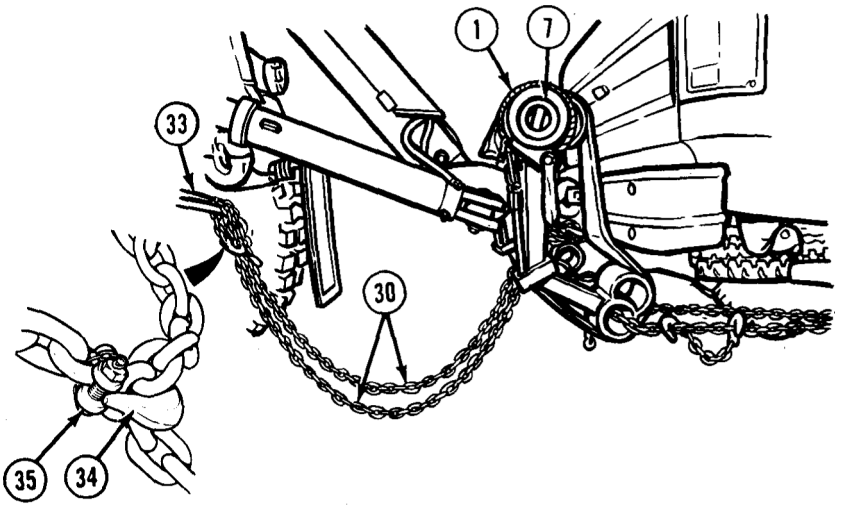


Figure 14.

34. Wrap two springs (1) around cross tube (7) and secure.
35. Prepare disabled vehicle for towing (refer to M1008 operator's manual).
36. Remove emergency tow lights (36) and two brackets (37) from wrecker stowage.

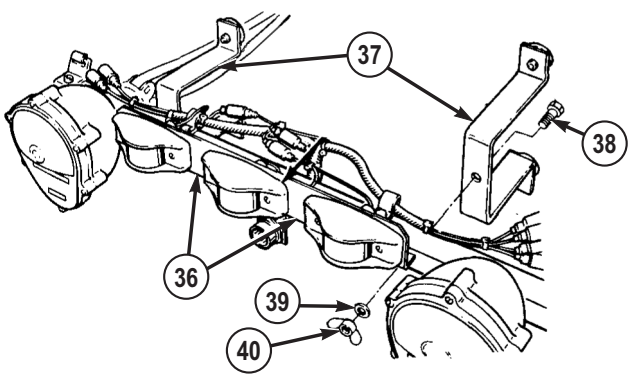


Figure 15.

37. Install two brackets (37) in center holes of emergency tow lights with two screws (38), washers (39), and nuts (40).

HOOKUP - Continued

38. Install emergency tow lights (36) on front of disabled vehicle and fasten securely with straps (41).

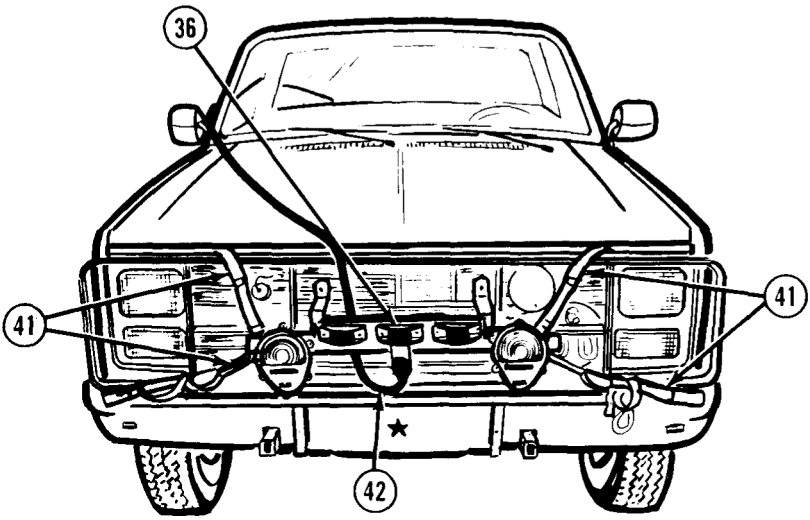


Figure 16.

39. Remove tow light cable (42) from wrecker stowage and connect to emergency tow lights (36).

CAUTION

Route cable so it does not drag on ground or interfere with turning tires. Failure to comply may result in damage to equipment.

40. Route free end of tow light cable (42) along disabled vehicle and connect to rear electrical connector (43) on wrecker.

HOOKUP - Continued

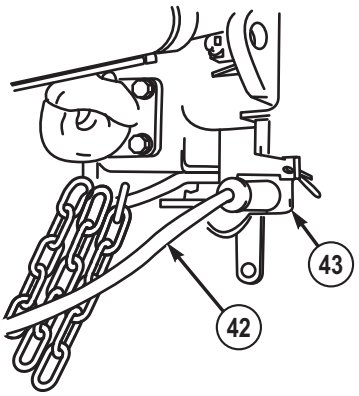


Figure 17.

41. Set POWER switch (44) to ON position.

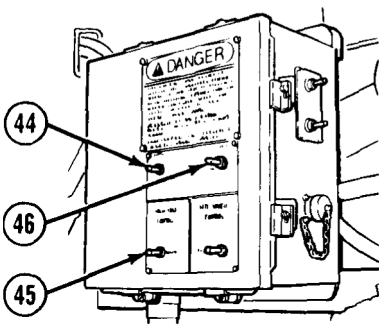


Figure 18.

42. Set HIGH IDLE switch (45) to CONTINUOUS.
43. Push and release LATCH switch (46). Engine speed will increase to approximately 1500 rpm.

WARNING

Keep out from under retrieval system and disabled vehicle when raised off ground. Failure to comply may result in injury or death to personnel.

HOOKUP - Continued

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

CAUTION

- Fully retract both tow cylinders before lifting disabled vehicle. Failure to comply may result in damage to equipment.
- Ensure all rigging is secure. Loose rigging can become entangled. Failure to comply may result in damage to equipment.

NOTE

Operator must allow wrecker air suspension system to completely adjust for added weight of disabled vehicle before raising disabled vehicle to final height of 1 ft. (30 cm).

44. Operate retrieval system (WP 0059) to retract lift cylinder (19) and raise disabled vehicle approximately 3 in. (8 cm):
    a. Once wrecker air suspension system has adjusted for added weight of disabled vehicle, Operate retrieval system (WP 0059) to retrieve lift cylinder (19) and raise disabled vehicle to final height of 1 ft. (30 cm).

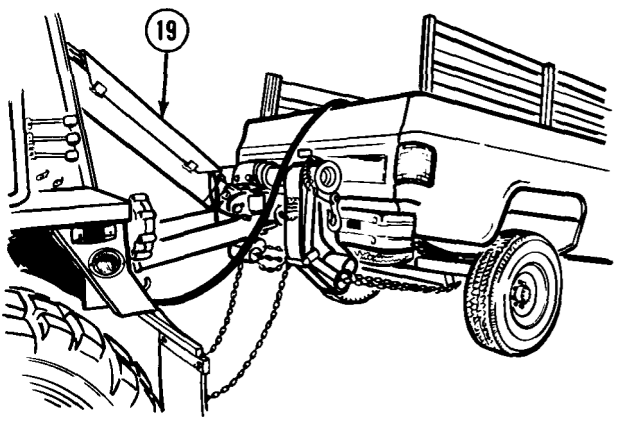


Figure 19.

HOOKUP - Continued

45. Set POWER switch (44) to OFF position.

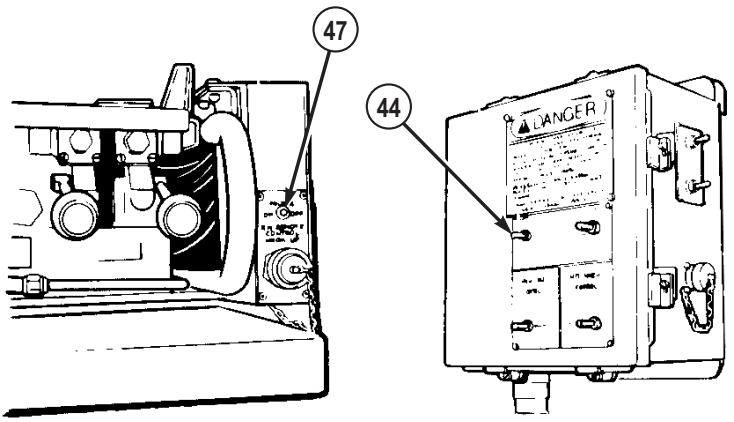


Figure 20.

46. Set POWER switch (47) to OFF position.
47. Set HYD ENABLE switch (48) to off position. MAIN HYD ENABLE indicator (49) will go out.

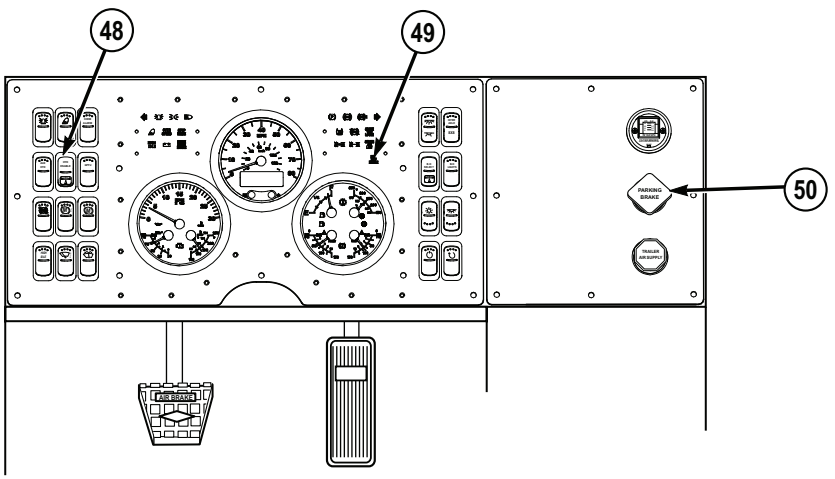


Figure 21.

48. Turn on wrecker service drive lights. (WP 0087)
49. Turn on wrecker emergency flashers. (WP 0096)

HOOKUP - Continued

50. Turn on disabled vehicle emergency flashers (refer to operator's manual).

NOTE

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

51. Push in PARKING BRAKE control (50).

WARNING

The M984 Wrecker should not be operated at speeds over 15 MPH (24 km/hr) except on paved roads when the operator determines that the vehicle being towed and the terrain allow safe operation. Engine brake switch must ON for all towing operations. Speed in excess of the below table may result in loss of control, serious injury, or death to personnel.

52. Select desired gear (WP 0048) and transport disabled vehicle.

Table 1. Maximum Towing Speed.

Terrain Condition	Maximum Speed Towed Load Up To 50,000 lbs (22 700 kg)	Maximum Speed Towed Load Above 50,000 lbs (22 700 kg)
On Road-Level	35 mph (56 km/hr)	30 mph (48 km/hr)
On Road-Hilly	30 mph (48 km/hr)	20 mph (32 km/hr)
Off-Road	15 mph (24 km/hr)	15 mph (24 km/hr)

DISCONNECT

NOTE

This procedure is a two soldier task.

1. Set transmission range selector (1) to N (neutral).

DISCONNECT - Continued

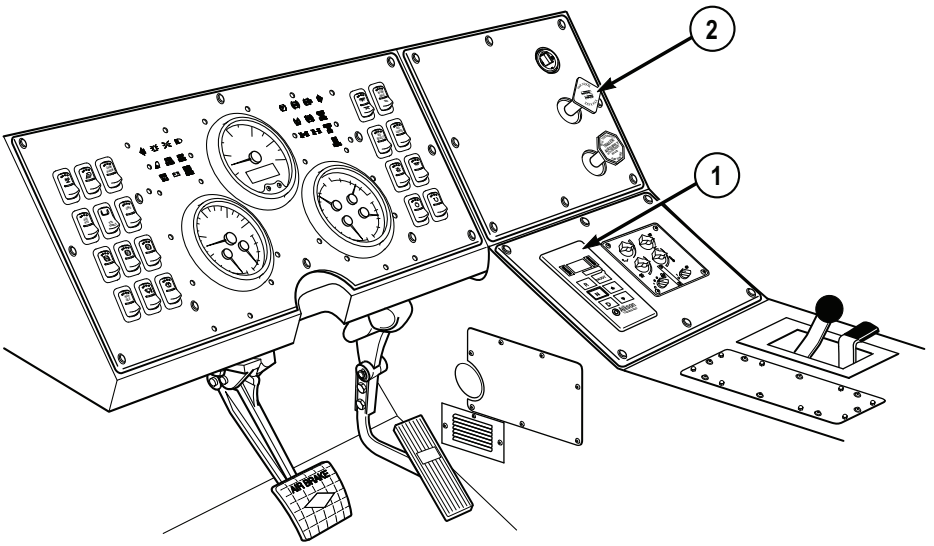


Figure 22.

NOTE

Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

2. Pull out PARKING BRAKE control (2).

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

NOTE

- After lowering disabled vehicle, extend lift and tow cylinders approximately 2 to 4 inches (50 to 100 mm) to allow for adjustment when removing adapters.
- Expect wrecker air suspension system to deflate air springs to achieve normal ride height once weight of disabled vehicle is removed.

DISCONNECT - Continued

3. Review procedures for operating retrieval towing system, (WP 0058)prepare retrieval system for operation, (WP 0059) and lower disabled vehicle to ground, but allowing 12 ft. (3.6 m) tow chains to remain tight.

WARNING

If disabled vehicle's parking brake is inoperative, chock wheels of disabled vehicle (refer to operator's manual). Failure to comply may result in injury or death to personnel.

4. Set parking brake on disabled vehicle (refer to disabled vehicle operator's manual).
5. Remove tow light cable (3) from wrecker.

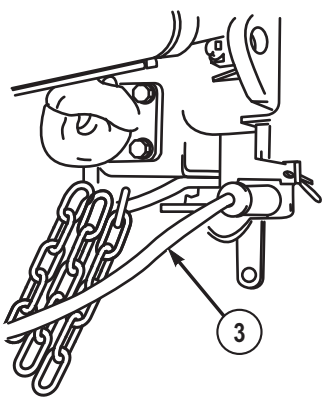


Figure 23.

6. Remove tow light cable (3) from emergency tow lights (4) and return to wrecker stowage.

DISCONNECT - Continued

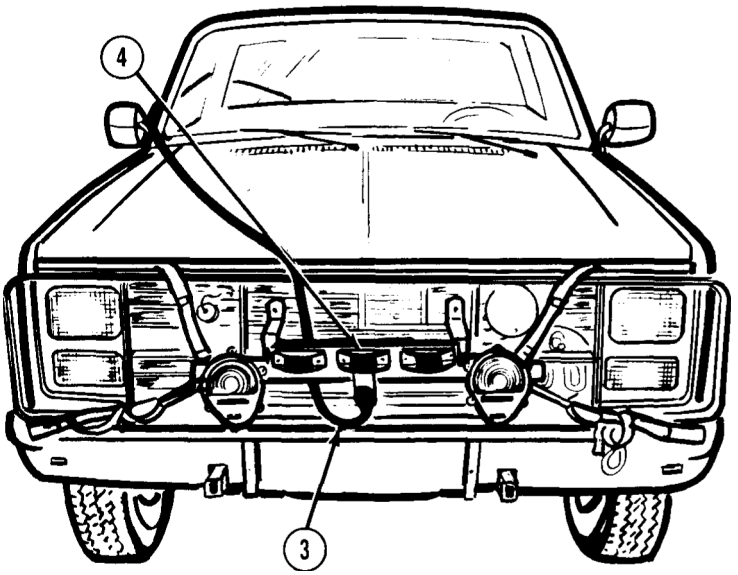


Figure 24.

7. Remove emergency tow lights (4) from disabled vehicle.
8. Remove two nuts (5), washers (6), screws (7), and brackets (8) from emergency tow lights (4). Return emergency tow lights and two brackets to wrecker stowage.

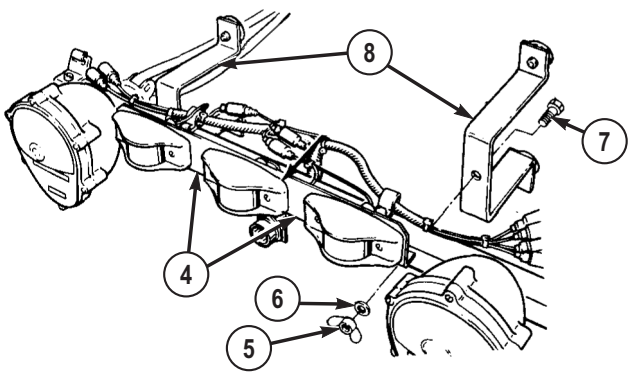


Figure 25.

9. Remove and stow two 12 ft. (3.6 m) tow chains (9).

DISCONNECT - Continued

10. Unwrap two springs (10) from cross tube (11) and connect to tow cylinders (12).

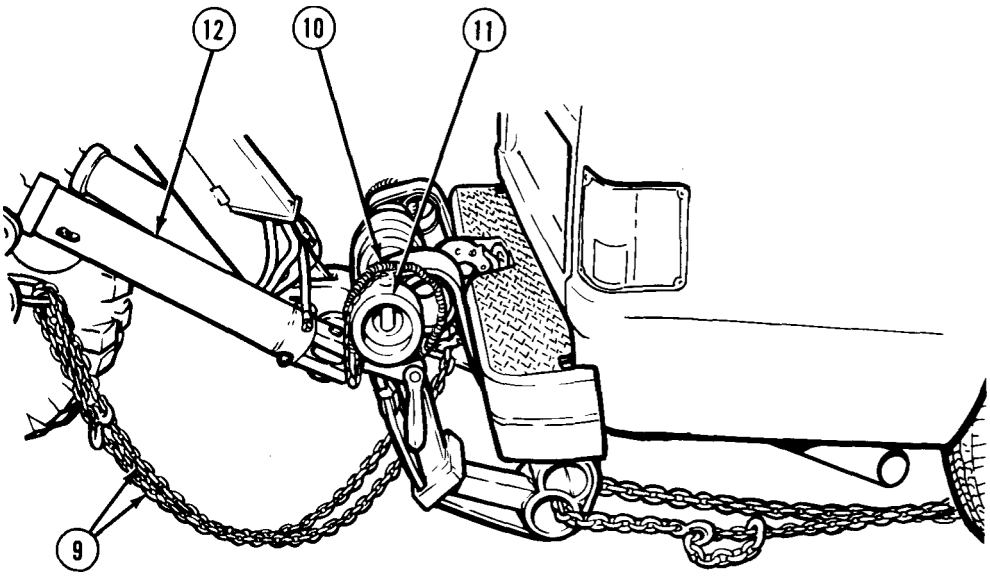


Figure 26.

CAUTION

Do not contact pintle hook with lift cylinder or damage to equipment could result.

11. Operate retrieval system to extend tow cylinders (12) and lift cylinder (13) until 12 ft. (3.6 m) tow chains (14) are slack and adapters (15) rest on ground.

DISCONNECT - Continued

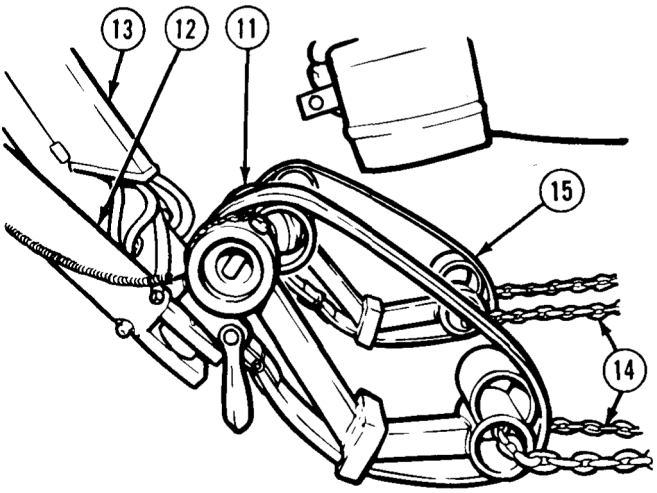


Figure 27.

12. Remove and stow two 12 ft. (3.6 m) tow chains (14).

CAUTION

Do not contact pintle hook with lift cylinder or damage to equipment could occur.

13. Operate retrieval system to fully retract tow cylinders (12) and retract lift cylinder (13) to raise cross tube (11) approximately 3 ft. (1 m) from ground.
14. Drive wrecker forward (WP 0050) several feet and park. (WP 0056)

WARNING

When springs and end caps are removed, cross tube can swing in all directions and adapters may slide off and cause injury or death to personnel.

15. Remove two springs (10) from tow cylinders (12).

DISCONNECT - Continued

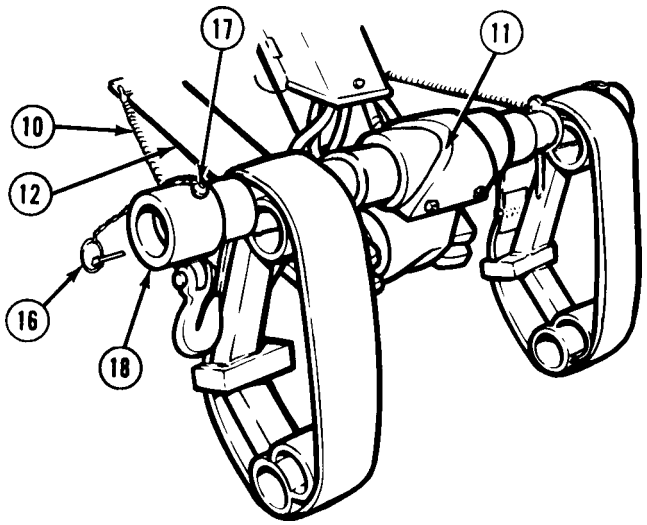


Figure 28.

16. Remove two quick pins (16) and pins (17) from end caps (18).
17. Remove two end caps (18) from cross tube (11).
18. Remove two 5 in. (127 mm) spacers (19) from cross tube (11) and return to wrecker stowage.

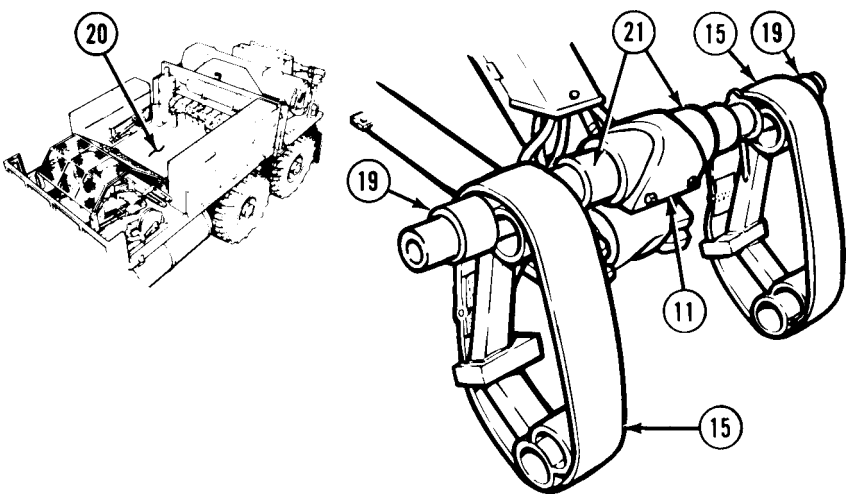


Figure 29.

DISCONNECT - Continued

19. Remove two adapters (15) from cross tube (11) and place on equipment body floor (20).
20. Remove two 4 in. (102 mm) spacers (21) from cross tube (11) and return to wrecker stowage.
21. Remove lock handle (22), lock plate (23), and two front adapters (24).

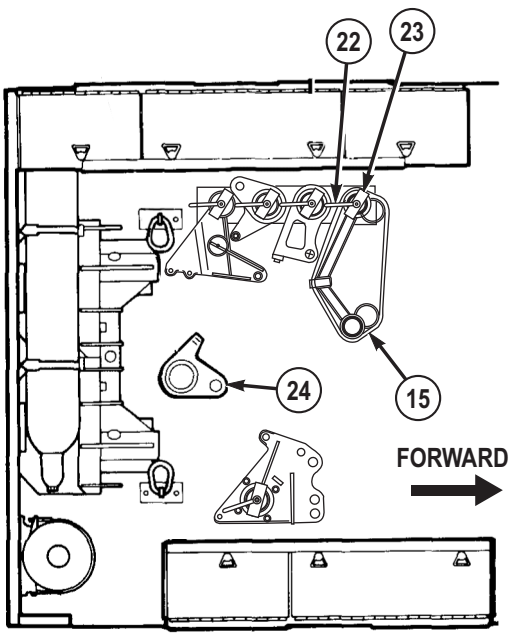


Figure 30.

22. Install two adapters (15) removed from cross tube (11), lock plate (23), and lock handle (22).

DISCONNECT - Continued

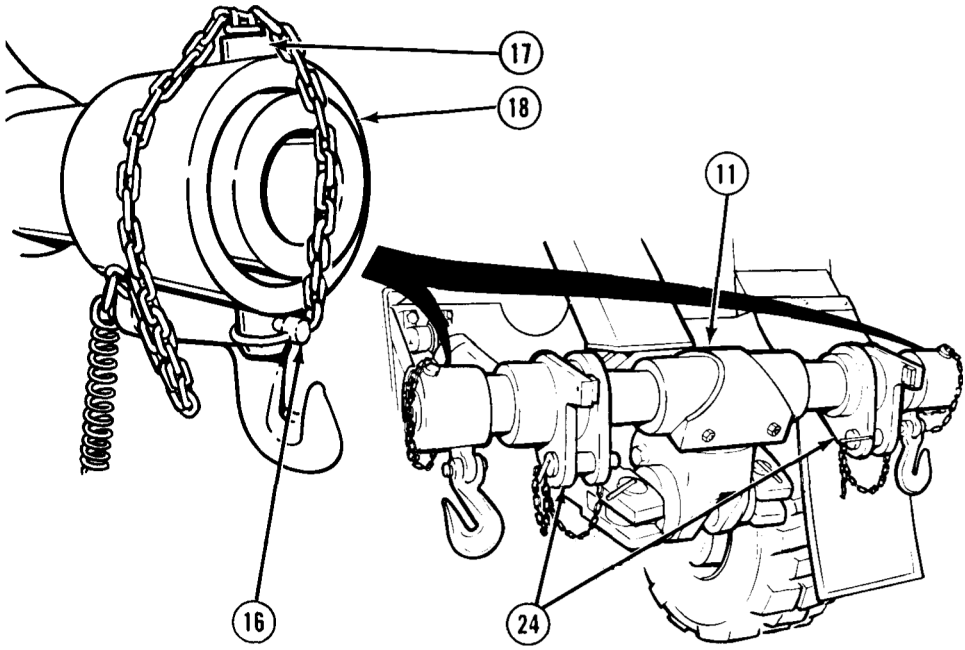


Figure 31.

23. Install two front adapters (24) on cross tube (11).
24. Install two end caps (18) on cross tube (11). Install two pins (17) and quick pins (16).
25. Install two springs (10) on tow cylinders (12).

DISCONNECT - Continued

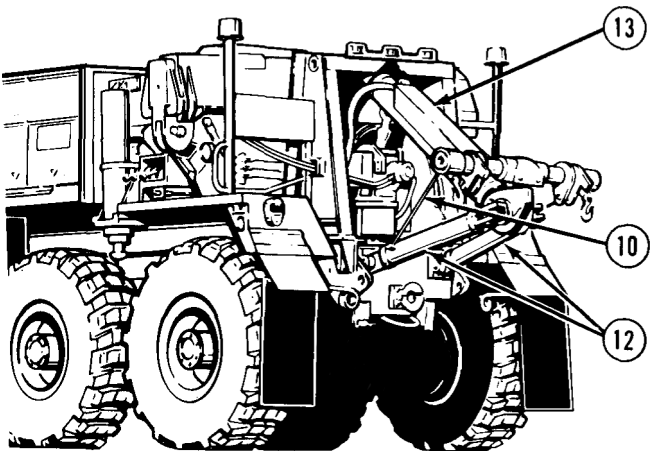


Figure 32.

26. Operate retrieval system and fully retract lift cylinder (13).

NOTE

Driver side and passenger side towing shackles are installed the same way.

27. Install two rear towing shackles (25), pins (26), and cotter pins (27).

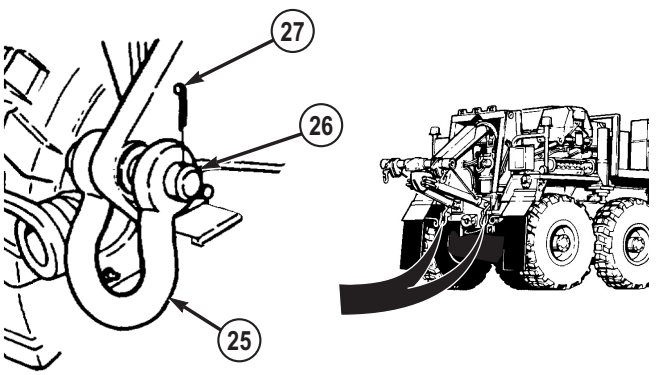


Figure 33.

28. Set POWER switch (28) to OFF position.

DISCONNECT - Continued

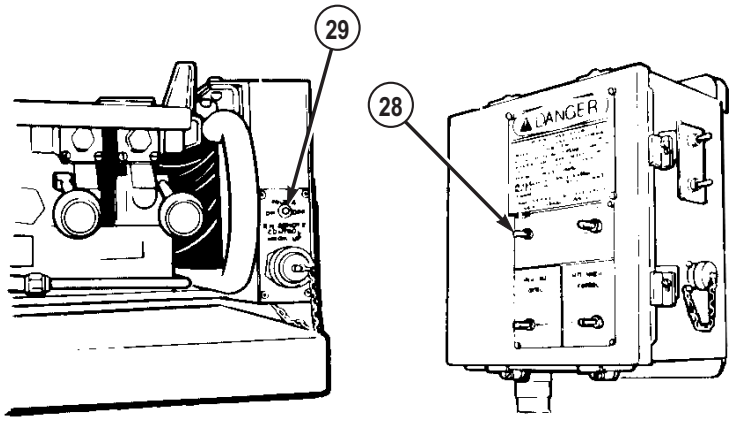


Figure 34.

29. Set POWER switch (29) to OFF position.
30. Turn off wrecker service drive lights. (WP 0087)
31. Turn off wrecker emergency flashers. (WP 0096)
32. Set HYD ENABLE switch (30) to off position. MAIN HYD ENABLE indicator (31) will go out.

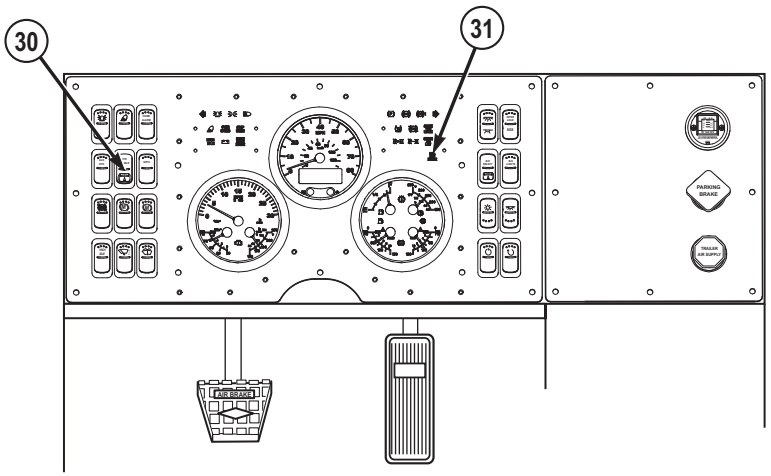


Figure 35.

33. Shut off engine. (WP 0057)

DISCONNECT - Continued

34. Remove and stow portable beacon lights. (WP 0094)
35. Turn off disabled vehicle emergency flashers, and unlock steering column (refer to disabled vehicle operator's manual).

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
TOW M1008 - FRONT LIFT USING MULTI-USE ADAPTER (MUA)

INITIAL SETUP:

Not Applicable

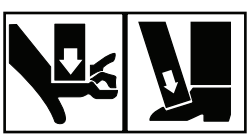
HOOKUP

NOTE

- Each recovery situation is unique and requires assessment to determine if the driveline is suitable for transport. When in doubt, consult with field level maintenance.
- This procedure is a two soldier task.

1. Review procedures for operating retrieval towing system (WP 0058) and prepare retrieval system for operation. (WP 0059)

WARNING



Hold cross tube when removing springs. Cross tube swings and may cause adapters to slide, resulting in injury to personnel.

2. Disconnect two springs (1) from tow cylinders (2).

HOOKUP - Continued

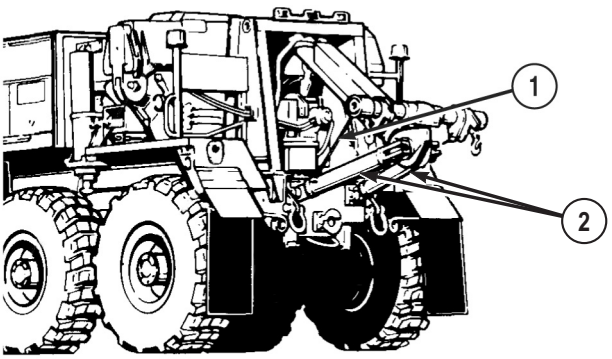


Figure 1.

CAUTION

Both rear towing shackles must be removed from rear tow eyes on wrecker before performing retrieval operations, or damage to tow cylinder may result.

NOTE

Driver side and passenger side towing shackles are removed the same way.

3. Remove two rear towing shackles from wrecker vehicle:

HOOKUP - Continued

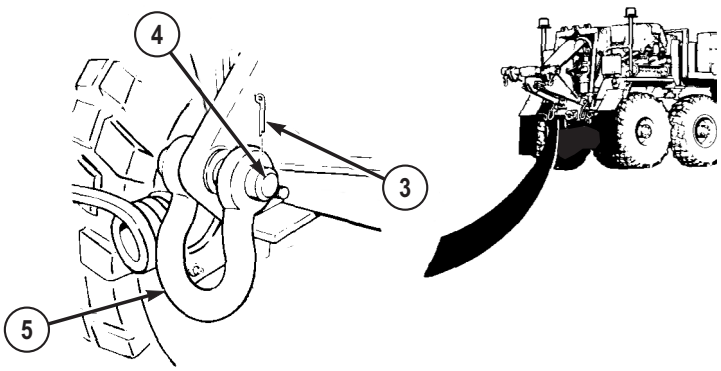


Figure 2.

a. Remove cotter pin (3), pin (4), and towing shackle (5).

b. Replace pin (4) in shackle (5), and cotter pin (3) in pin (4).

c. Repeat Steps (a) and (b) for opposite side towing shackle (5).

d. Stow two rear towing shackles on wrecker vehicle.

4. Pull LIFT CYLINDER control lever (6) to lower cross tube (7) to approximately 3 ft. (1 m) above the ground.

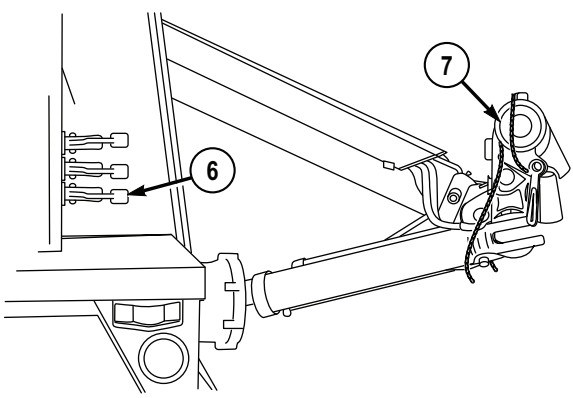
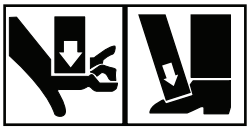


Figure 3.

5. Position wrecker so that cross tube (7) is approximately 1 ft. (30 cm) from tow eyes of disabled vehicle and centered on disabled vehicle.

HOOKUP - Continued

WARNING



When end caps are removed from cross tube, adapters may slide off resulting in injury to personnel.

6. Remove two quick pins (8) and pins (9) from end caps (10).

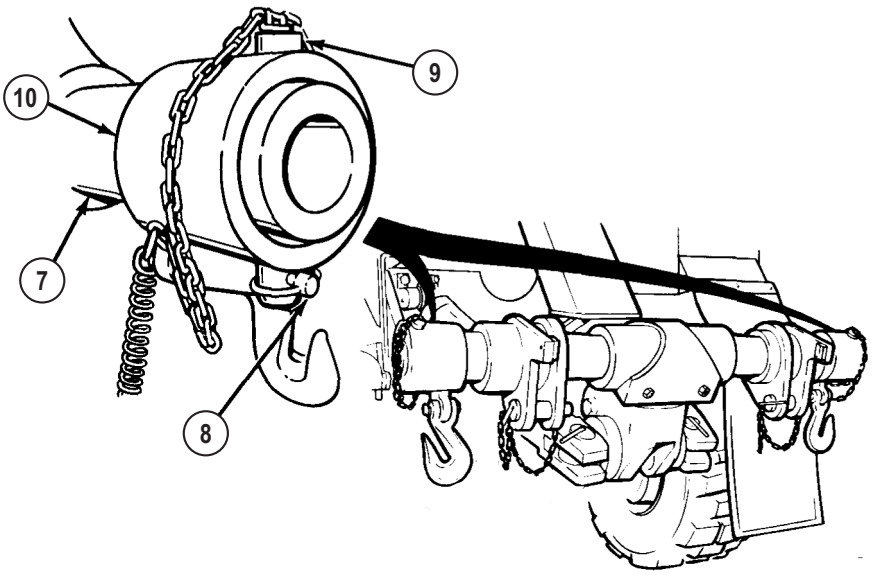


Figure 4.

7. Remove two end caps (10) from cross tube (7).
8. Remove two front adapters (11) from cross tube (7) and place on equipment body floor (12).

HOOKUP - Continued

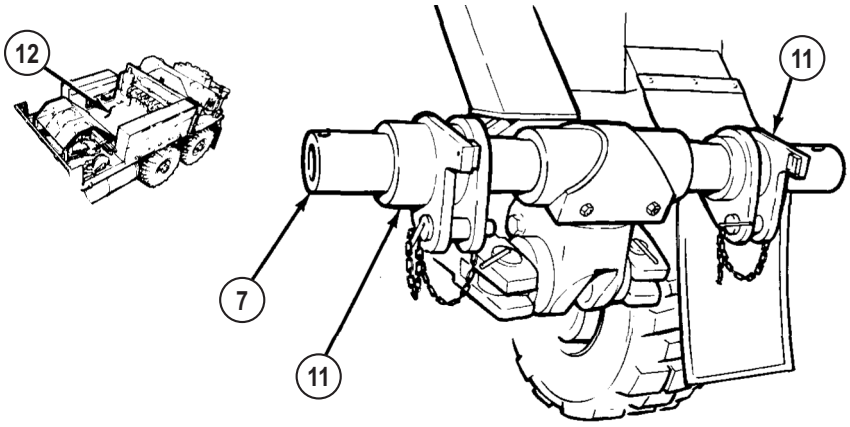


Figure 5.

9. Remove lock handle (13), lock plate (14), and two Multi-Use Adapters (MUAs) (15).

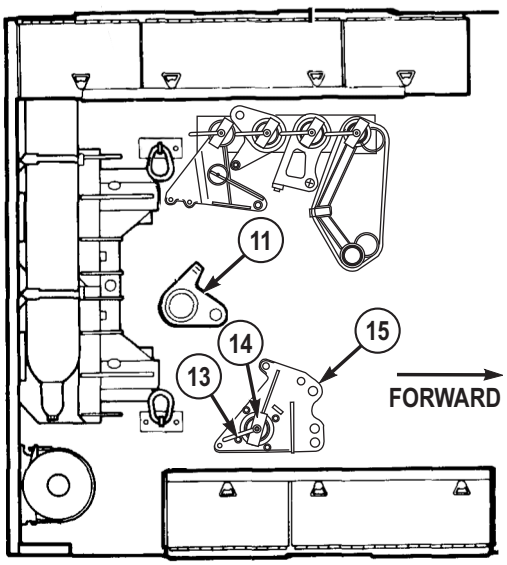


Figure 6.

10. Install two front adapters (11), lock plate (14), and lock handle (13).
11. Remove two 4 in. (102 mm) spacers (16) and two 1.5 in. (38 mm) spacers (17) from wrecker stowage.

HOOKUP - Continued

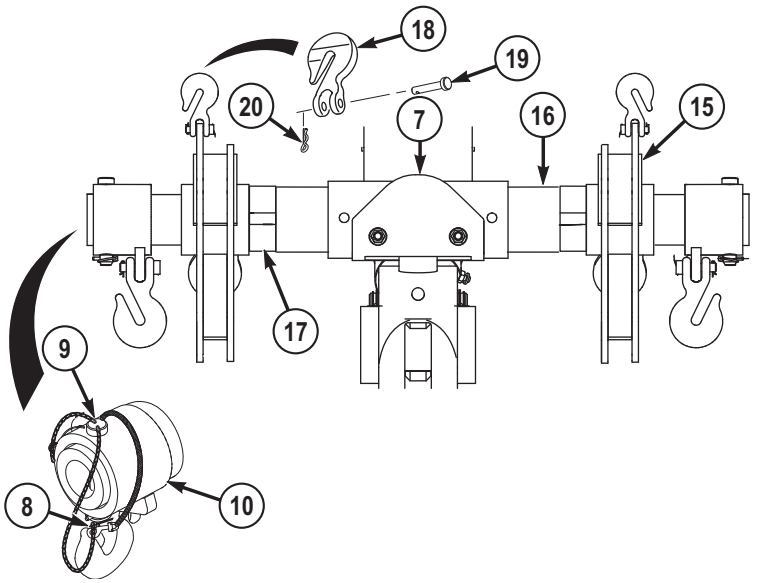


Figure 7.

12. Install two 4 in. (102 mm) spacers (16) on cross tube (7).
13. Install two 1.5 in. (38 mm) spacers (17) on cross tube (7).

WARNING

MUAs are heavy, handle carefully. Failure to comply may result in injury to personnel.

NOTE

MUAs must be positioned on cross tube with rounded ear of MUA toward center of cross tube.

14. Install two MUAs (15) on cross tube (7) with holes facing two eyes of disabled vehicle.
15. Install two end caps (10) on cross tube (7).
16. Install two pins (9) and quick pins (8).
17. Install two lift clevises (18) in hole #1 of MUAs (15) with pins (19) and cotter pins (20).

HOOKUP - Continued

18. Attach two springs (1) on tow cylinders (2).

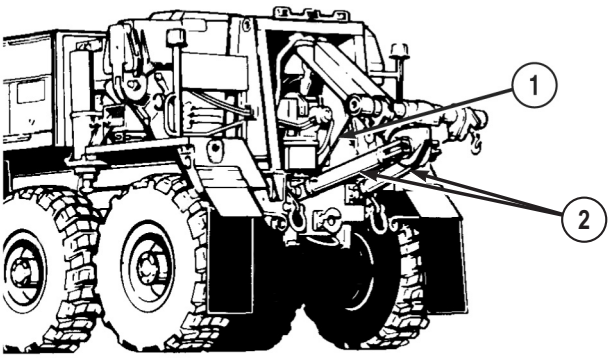


Figure 8.

19. Remove two pins (3483740) (21) from wrecker stowage.

HOOKUP - Continued

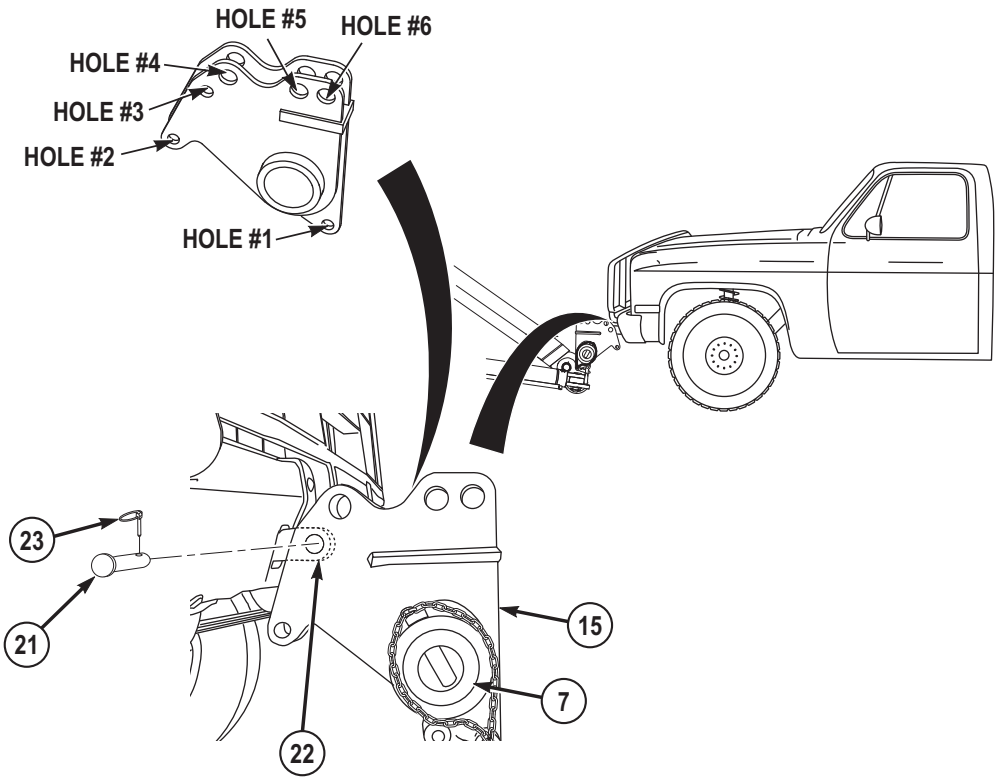


Figure 9.

WARNING

Keep hands and fingers away from adapters and tow eyes when operating retriever controls. Failure to comply may result in injury or death to personnel.

CAUTION

If disabled vehicle has towing shackles installed, remove shackles and stow in disabled vehicle.

HOOKUP - Continued

20. Operate retrieval system, and with aid of an assistant position cross tube (7) so hole #5 is directly above cross tube (7).
21. Insert two pins (21) through MUAs (15) and front tow eyes (22). Install quick pins (23) in pins (21).
22. Operate retrieval system to rotate MUAs (15) until hole #5 is directly above cross tube (7).
23. RELEASE PARKING BRAKE control and place transmission in NEUTRAL on disabled vehicle (refer to M1008 operator's manual).
24. Remove two 12 ft. (3.6 m) tow chains (24) from wrecker stowage.

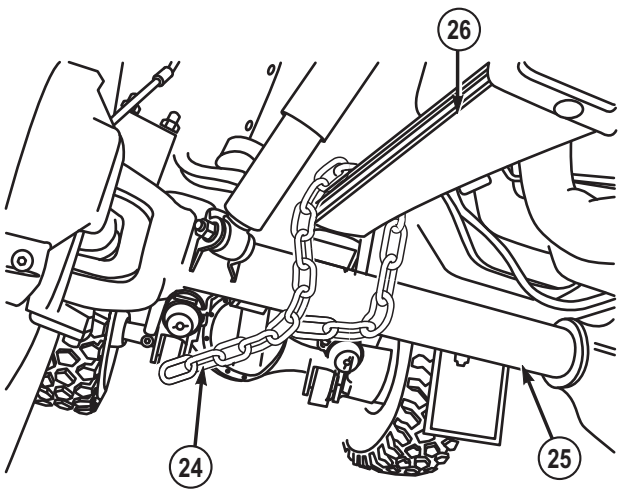


Figure 10.

25. Route one end of 12 ft. (3.6 m) tow chain (24) behind front axle (25), and loop over leaf spring (26) on disabled vehicle.
26. Route 12 ft. (3.6 m) tow chain (24) through lift clevis (18) on MUA (15).

HOOKUP - Continued

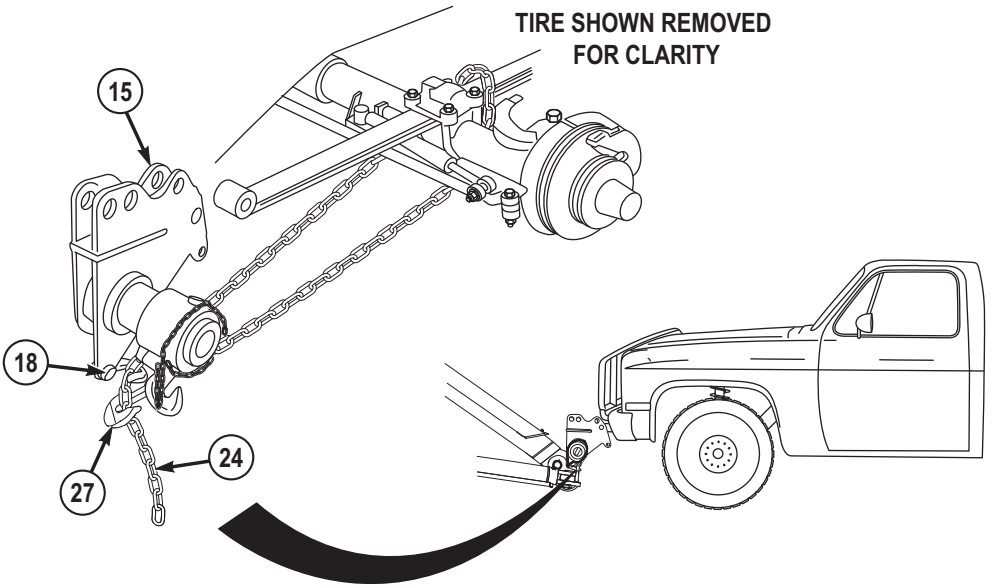


Figure 11.

27. Pull 12 ft. (3.6 m) tow chain (24) tight, and attach grab hook (27) to 12 ft. (3.6 m) tow chain (24) near lift clevis (18).
28. Repeat Steps (25) through (27) for other side of disabled vehicle.

NOTE

- Adjust chain slack so 12 ft. (3.6 m) tow chains do not touch the ground.
- 12 ft. (3.6 m) tow chains will act as safety chains when connected to wrecker.

29. Route two 12 ft. (3.6 m) tow chain (24) through safety chain hoop (28) on wrecker and secure grab hooks (29) with safety shackles (30).

HOOKUP - Continued

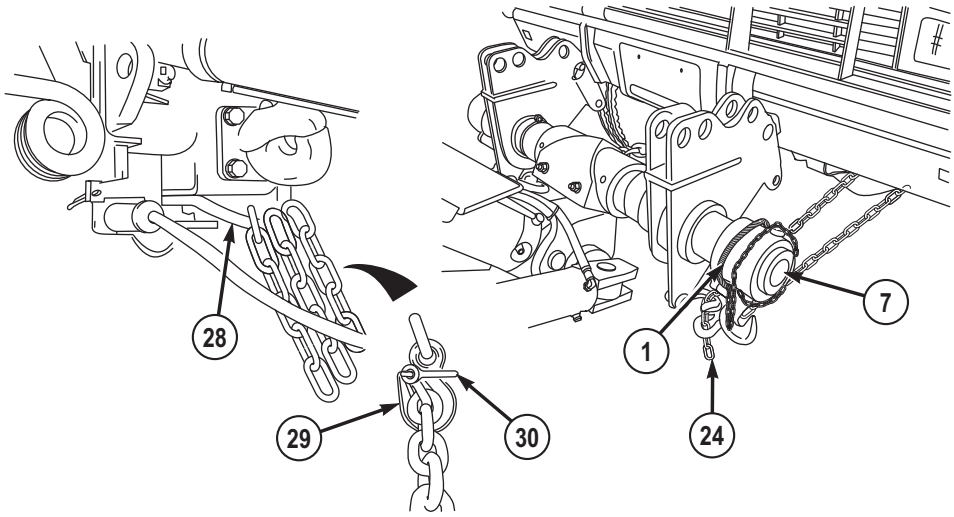


Figure 12.

30. Wrap two springs (1) around cross tube (7) and secure.

CAUTION

Make sure all cargo in bed of disabled vehicle is secured prior to lifting and towing. Failure to comply may result in damage to cargo and equipment.

31. Prepare disabled vehicle for towing (refer to M1008 operator's manual).
32. Remove emergency tow lights (31) and two brackets (32) from wrecker stowage.

HOOKUP - Continued

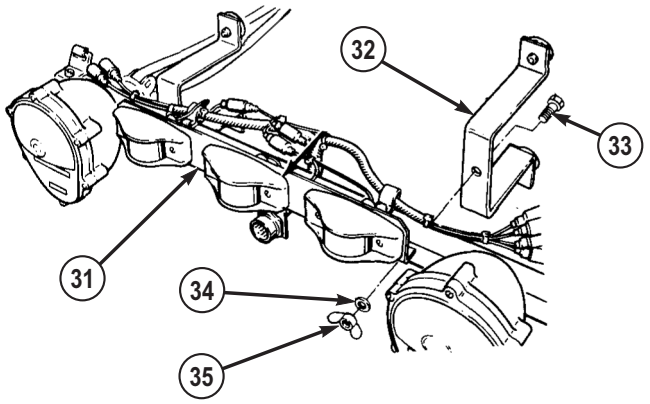


Figure 13.

33. Install two brackets (32) in center holes of emergency tow lights (31) with two screws (33), washers (34), and nuts (35).

34. Install emergency two lights (31) on rear of disabled vehicle and secure with straps (36).

HOOKUP - Continued

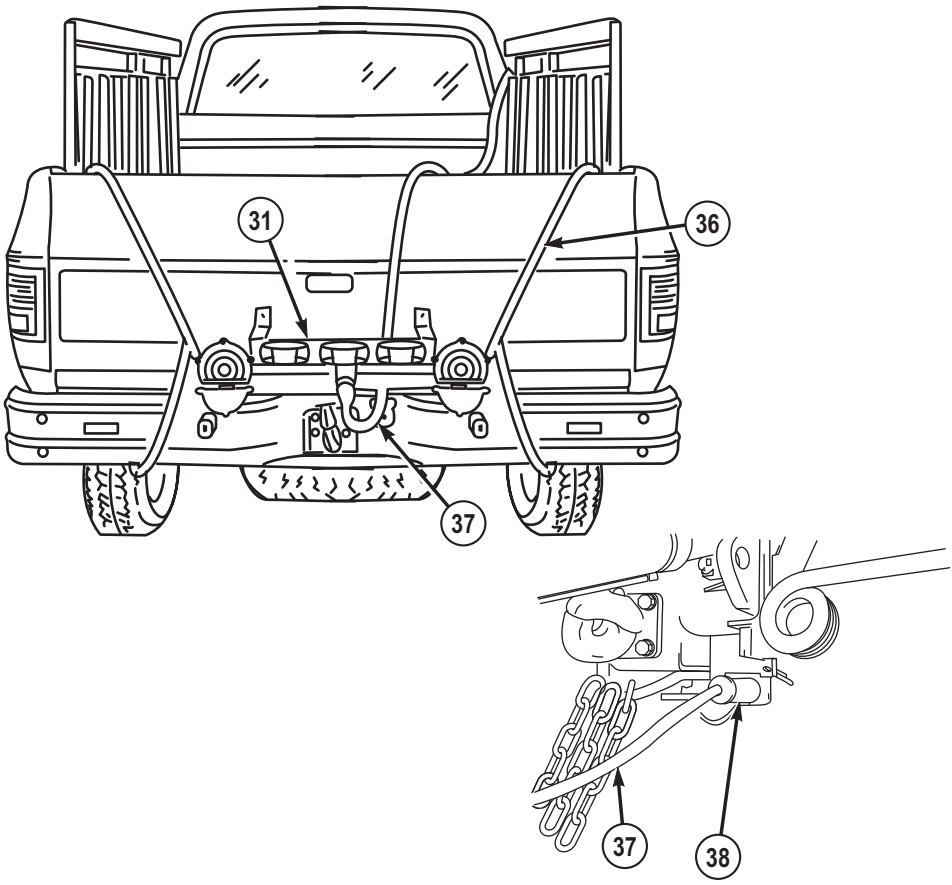


Figure 14.

35. Remove tow light cable (37) from stowage and connect to emergency two lights (31).

CAUTION

Route cable so it does not drag on ground or interfere with turning tires. Failure to comply may result in damage to equipment.

36. Route other end of tow light cable (37) along disabled vehicle and connect to rear electrical connector (38) on wrecker.
37. Lock disabled vehicle's steering (refer to M1008 operator's manual).
38. Set POWER switch (39) to ON position.

HOOKUP - Continued

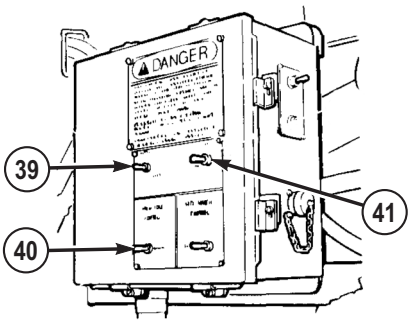


Figure 15.

39. Set HIGH IDLE switch (40) to continuous.
40. Push and release LATCH switch (41). Engine speed will increase to approximately 1500 rpm.

WARNING

Keep out from under retrieval system and disabled vehicle when raised off ground. Failure to comply may result in injury or death to personnel.

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

CAUTION

- Fully retract both tow cylinders before lifting disabled vehicle. Failure to comply may result in damage to equipment.
- Ensure all rigging is secure. Loose rigging can become entangled. Failure to comply may result in damage to equipment.

HOOKUP - Continued

NOTE

Operator must allow wrecker air suspension system to completely adjust for added weight of disabled vehicle before raising disabled vehicle to final height of 1 ft. (30 cm).

41. Push in LIFT CYLINDER control lever (6) to retract lift cylinder (42) to raise disabled vehicle approximately 3 in. (8 cm) off ground.

    a. Once wrecker air suspension system has adjusted for added weight of disabled vehicle, push LIFT CYLINDER control lever (6) to retract lift cylinder (42) and raise disabled vehicle to final height of 1 ft. (30 cm).

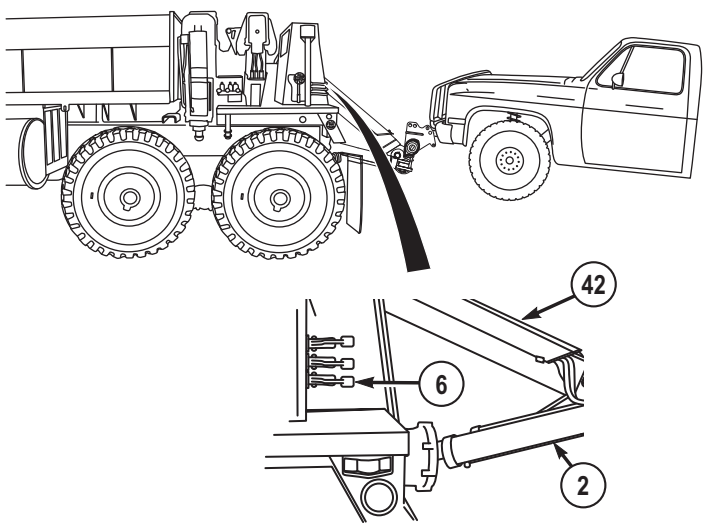


Figure 16.

NOTE

Adjust slack in two 12 ft. (3.6 m) tow chains so lengths between cross tube and wrecker are approximately 1 ft. (30 cm) off ground.

42. Set POWER switch (39) to OFF position.

HOOKUP - Continued

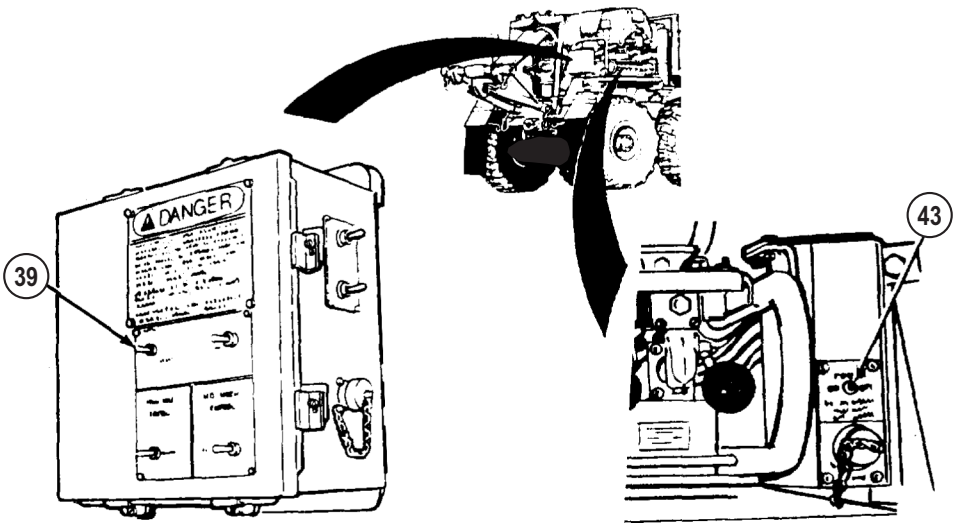


Figure 17.

43. Set POWER switch (43) to OFF position.
44. Set HYD ENABLE switch (44) to off position. MAIN HYD ENABLE indicator (45) will go out.

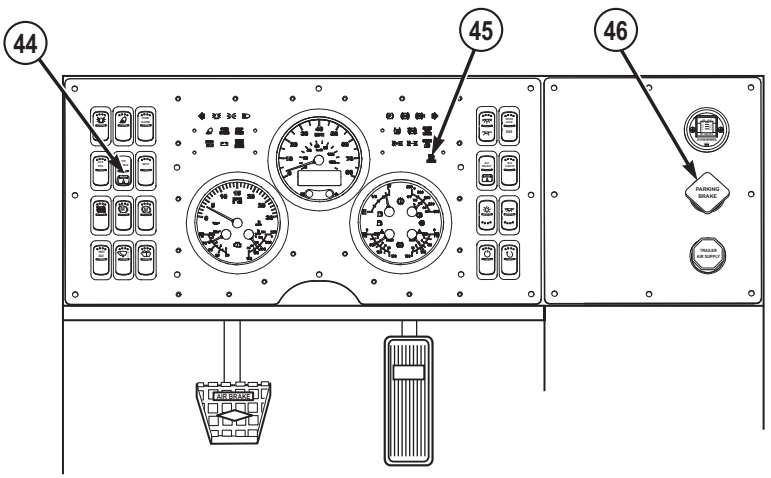


Figure 18.

45. Turn on wrecker service drive lights. (WP 0087)

HOOKUP - Continued

46. Turn on wrecker emergency flashers. (WP 0096)
47. Make sure disabled vehicle emergency flashers are turned on (refer to operator's manual).

NOTE

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

48. Push in PARKING BRAKE control (46).

WARNING

The M984 Wrecker should not be operated at speeds over 15 MPH (24 km/hr) except on paved roads when the operator determines that the vehicle being towed and the terrain allow safe operation. Engine brake switch must ON for all towing operations. Speed in excess of the below table may result in loss of control, serious injury, or death to personnel.

49. Select desired gear (WP 0048) and transport disabled vehicle.

Table 1. Maximum Towing Speed.

Terrain Condition	Maximum Speed Towed Load Up To 50,000 lbs (22 700 kg)	Maximum Speed Towed Load Above 50,000 lbs (22 700 kg)
On Road-Level	35 mph (56 km/hr)	30 mph (48 km/hr)
On Road-Hilly	30 mph (48 km/hr)	20 mph (32 km/hr)
Off-Road	15 mph (24 km/hr)	15 mph (24 km/hr)

DISCONNECT

NOTE

This procedure is a two soldier task.

1. Set transmission range selector (1) to N (neutral).

DISCONNECT - Continued

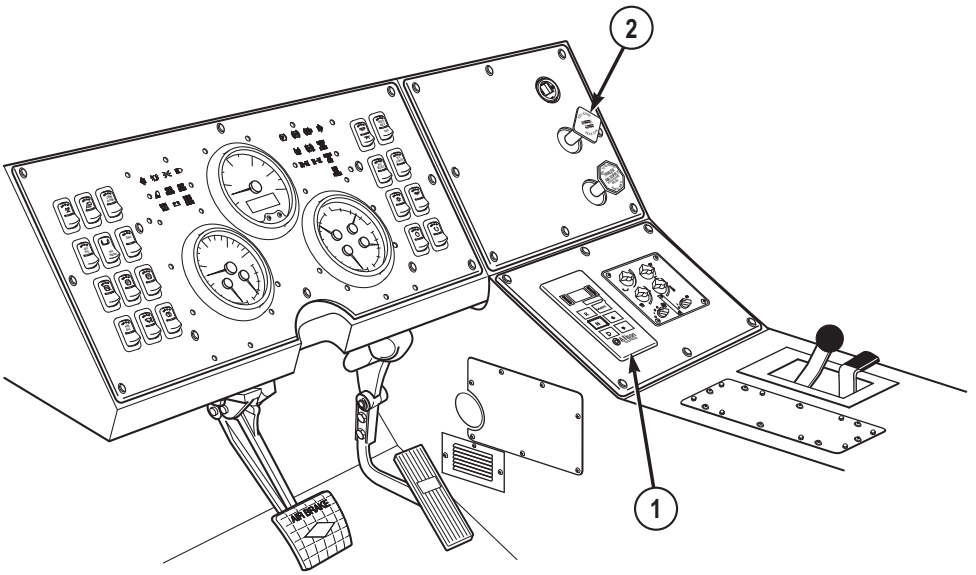


Figure 19.

NOTE

Dashboard parking brake indicator will illuminate when PARKING BRAKE control (2) is applied.

2. Pull out PARKING BRAKE control (2).

WARNING

Keep out from under retrieval system and disabled vehicle when raised off ground. Failure to comply may result in injury or death to personnel.

DISCONNECT - Continued

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

3. Remove 12 ft. (3.6 m) tow chains (3) from safety chain hoop (4).

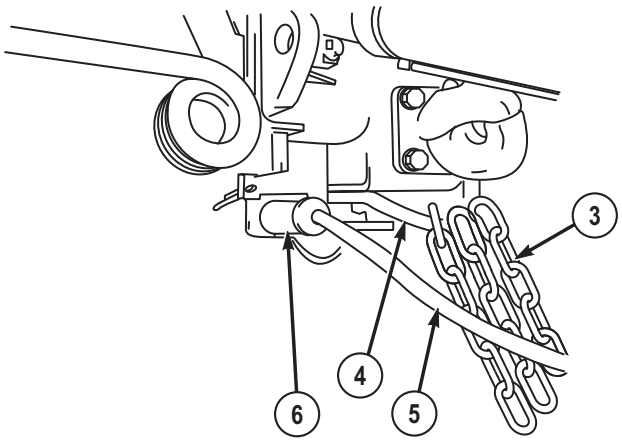


Figure 20.

4. Remove tow light cable (5) from electrical connector (6).

WARNING

Keep out from under retrieval system and disabled vehicle when raised off ground. Failure to comply may result in injury or death to personnel.

DISCONNECT - Continued

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

5. Prepare retrieval system for operation. (WP 0059)
6. Push LIFT CYLINDER control lever (7) to retract lift cylinder (8) until tow cylinders (9) are even with ground.

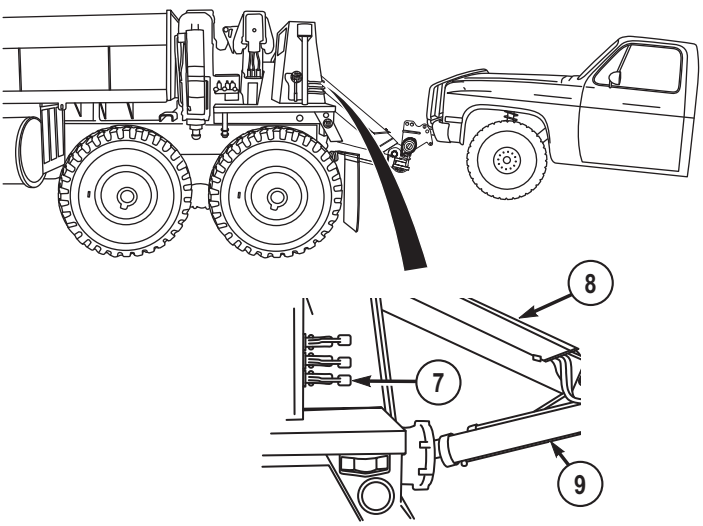


Figure 21.

NOTE

Tow cylinders should remain parallel with ground during Step (7).

7. Operate retrieval system until tow cylinders (9) are extended approximately 10 in. (25 cm).

CAUTION

Do not contact pintle hook with lift cylinder or equipment damage may result.

DISCONNECT - Continued

NOTE

Expect wrecker air suspension system to deflate air springs to achieve normal ride height once weight of disabled vehicle is removed.

8. Operate retrieval system and lower disabled vehicle to ground until 12 ft. (3.6 m) tow chains at front axle are slack.

WARNING

If disabled vehicle's parking brake is inoperative, chock wheels of disabled vehicle (refer to operator's manual). Failure to comply may result in injury or death to personnel.

9. Pull out PARKING BRAKE control on disabled vehicle (refer to M1008 operator's manual). If parking brake on disabled vehicle is inoperable, install wheel chocks.

10. Remove tow light cable (5) from emergency tow lights (10) and return to wrecker stowage.

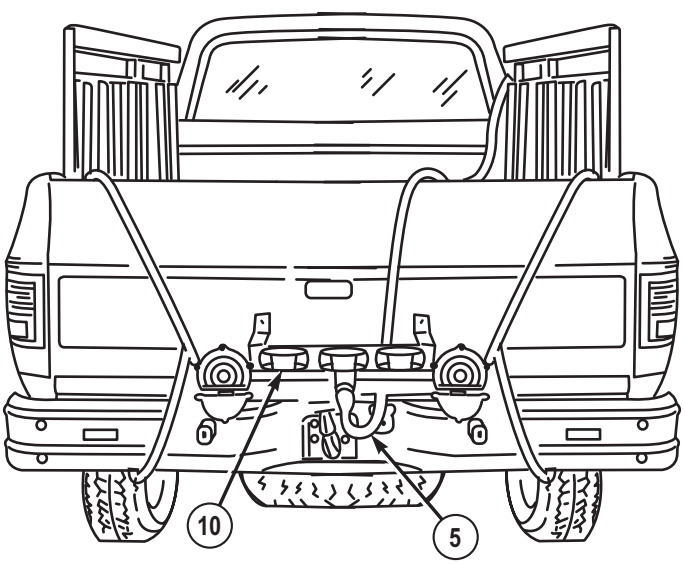


Figure 22.

DISCONNECT - Continued

11. Remove two nuts (11), washers (12), screws (13), and brackets (14) from emergency tow lights (10). Stow emergency two lights (10) and brackets (14).

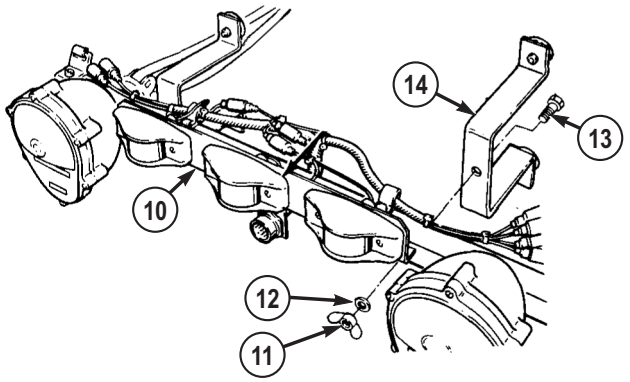


Figure 23.

12. Remove and stow two 12 ft. (3.6 m) tow chains (3).

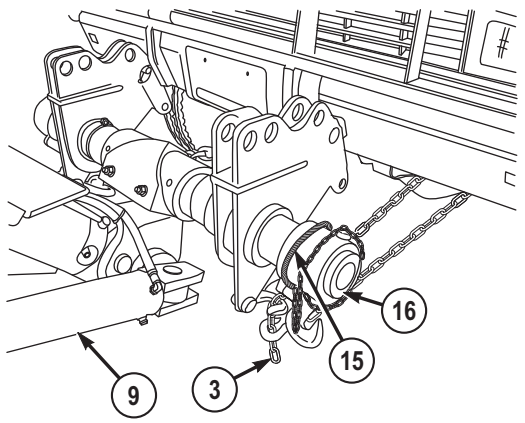
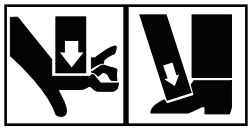


Figure 24.

13. Unwrap two springs (15) from cross tube (16) and connect to tow cylinders (9).

DISCONNECT - Continued

WARNING



Do not allow MUAs to swing around. Failure to comply may result in injury to personnel.

NOTE

Use retrieval controls to position cross tube to relieve tension from adapters.

14. Remove two quick pins (17) and pins (18) from hole #2 on MUAs (19).

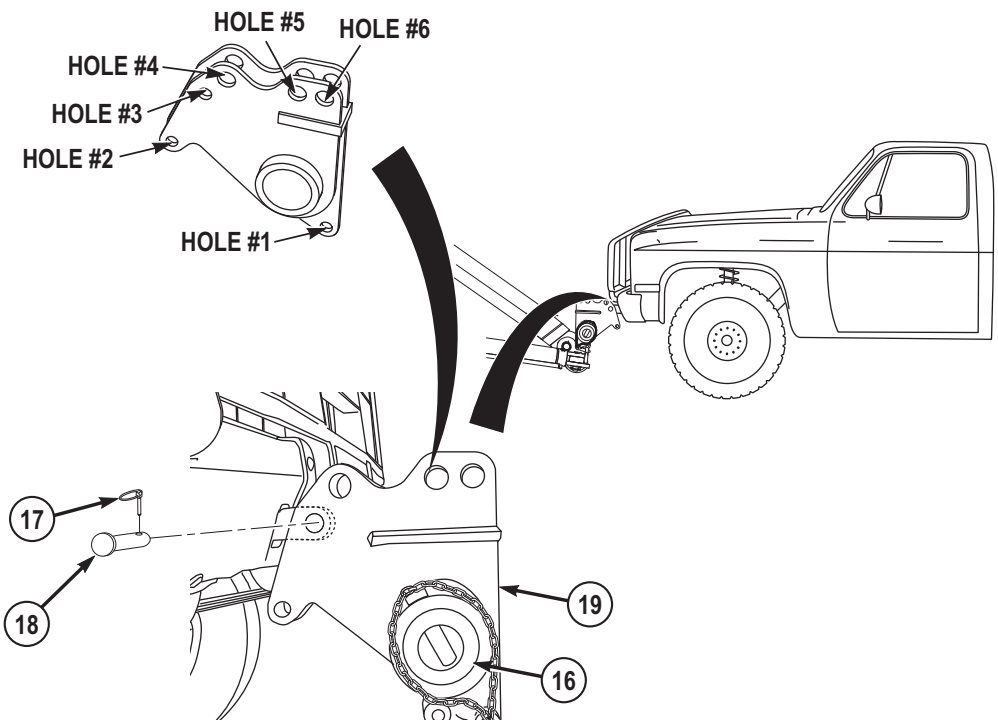


Figure 25.

DISCONNECT - Continued

CAUTION

Do not contact pintle hook with lift cylinder. Equipment damage may result.

15. Operate retrieval system to extend lift cylinder and lower cross tube (16) until MUAs (19) are no longer supported by bumper of disabled vehicle.
16. Drive wrecker forward (WP 0050) several feet and park. (WP 0056)

WARNING

When springs and end caps are removed, cross tube can swing in all directions and adapters may slide off and cause injury or death to personnel.

17. Remove two springs (15) from tow cylinders (9).

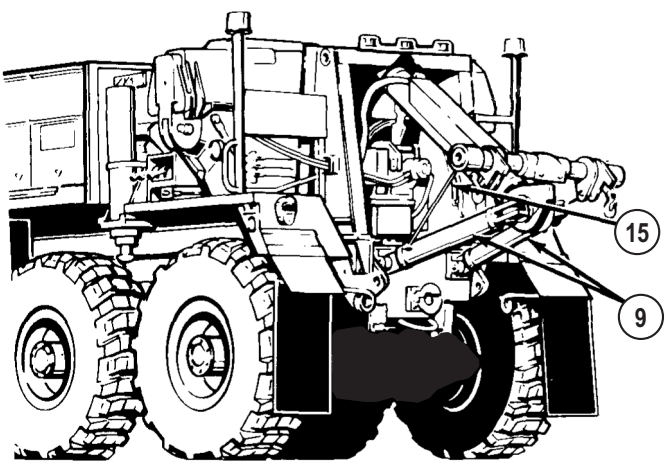


Figure 26.

18. Remove two quick pins (20) and pins (21) from end caps (22).

DISCONNECT - Continued

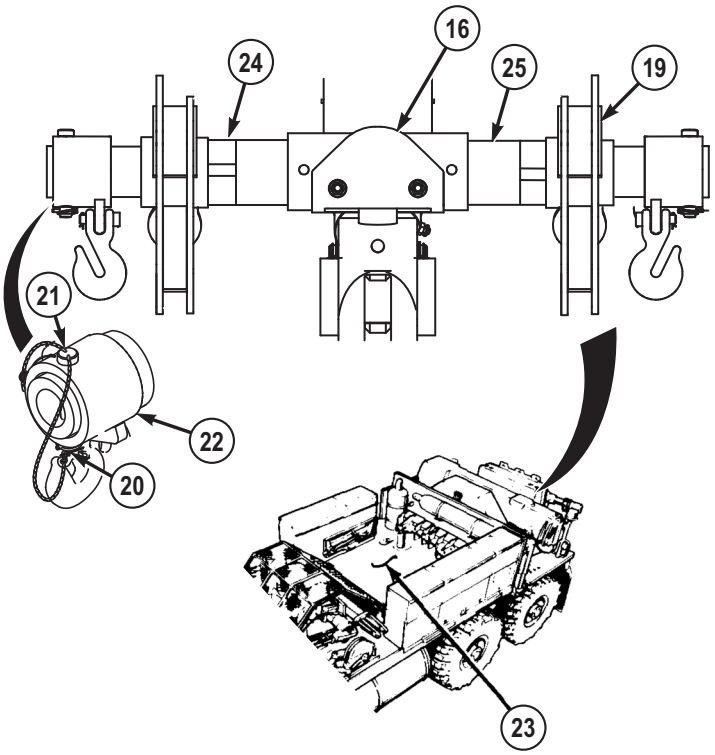


Figure 27.

WARNING

MUAs are heavy, handle carefully. Failure to comply may result in injury to personnel.

19. Remove two MUAs (19) from cross tube (16) and place on equipment body floor (23).
20. Remove and stow two 1.5 in. (38 mm) spacers (24).
21. Remove and stow two 4 in. (102 mm) spacers (25).
22. Remove lock handle (26), lock plate (27), and front adapters (28).

DISCONNECT - Continued

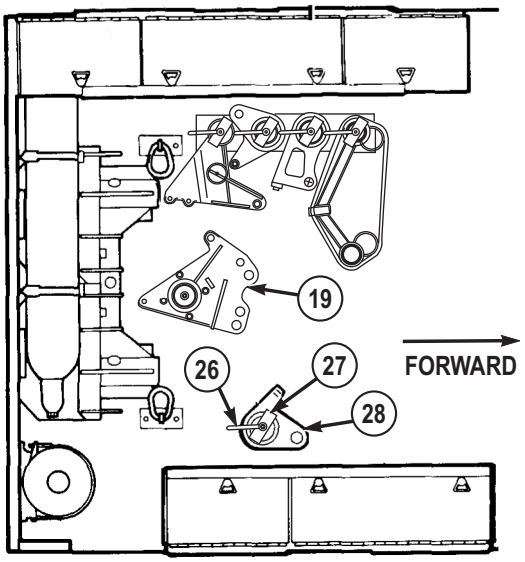


Figure 28.

23. Install two MUAs (19) removed from cross tube (16), with lock plate (27), and lock handle (26).
24. Install two front adapters (28) on cross tube (16).

DISCONNECT - Continued

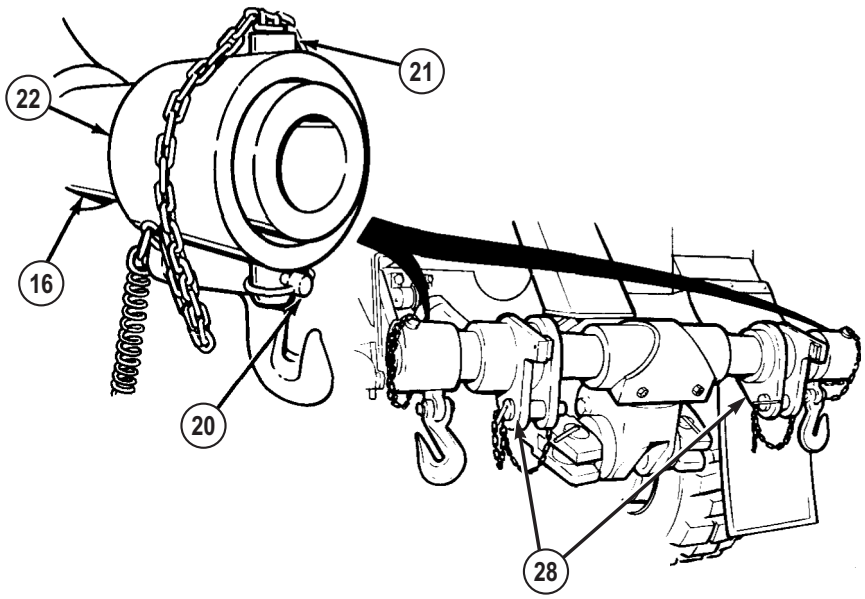


Figure 29.

25. Install two end caps (22) on cross tube (16). Install two pins (21) and quick pins (20).
26. Install two springs (15) on two cylinders (9).

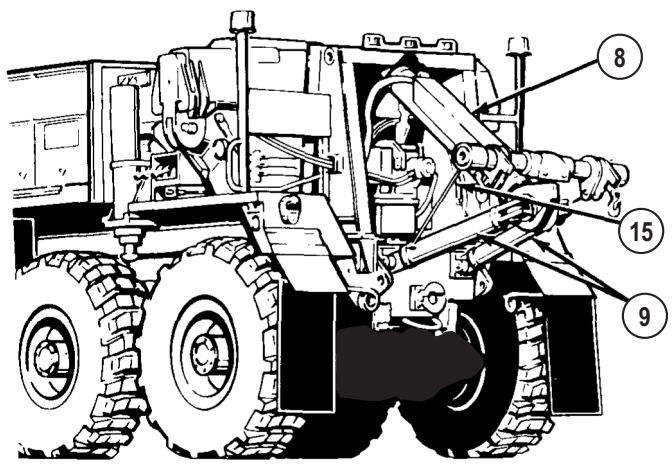


Figure 30.

DISCONNECT - Continued

27. Operate retrieval system and fully retract lift cylinder (8) and tow cylinders (9).

NOTE

Driver side and passenger side rear towing shackles are installed the same way.

28. Install two rear towing shackles (29), pins (30), and cotter pins (31).

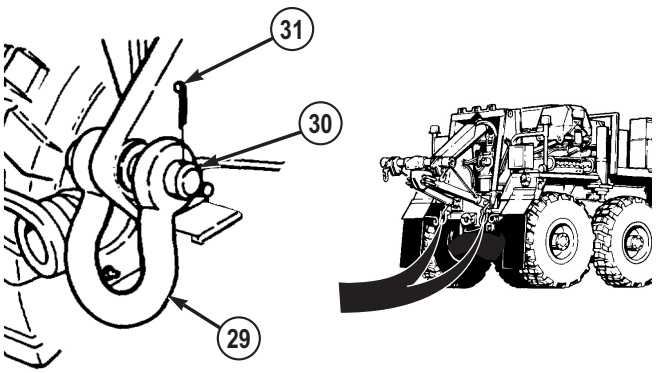


Figure 31.

29. Set POWER switch (32) to OFF position.

DISCONNECT - Continued

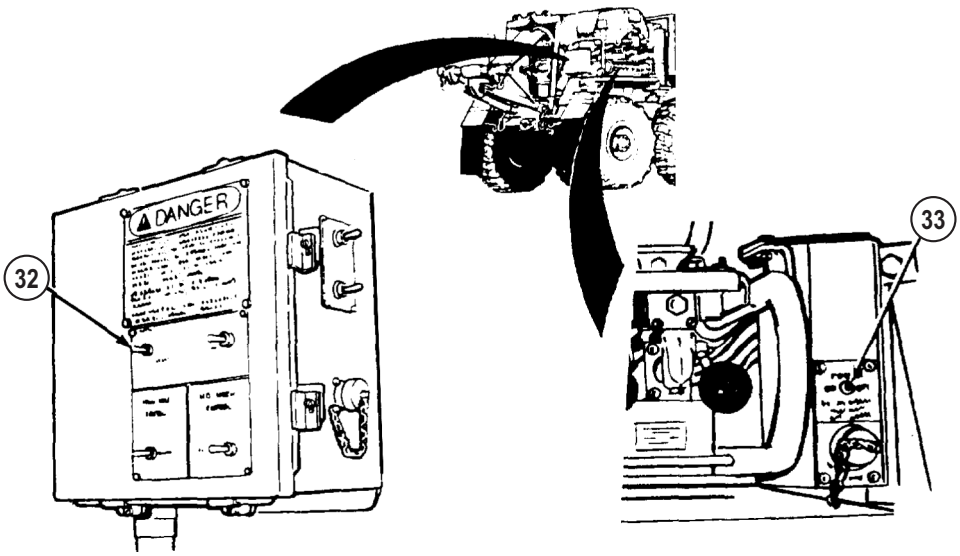


Figure 32.

30. Set POWER switch (33) to OFF position.
31. Turn off wrecker emergency flashers. (WP 0096)
32. Turn off wrecker service drive lights. (WP 0087)
33. Set HYD ENABLE switch (34) to off position. MAIN HYD ENABLE indicator (35) will go out.

DISCONNECT - Continued

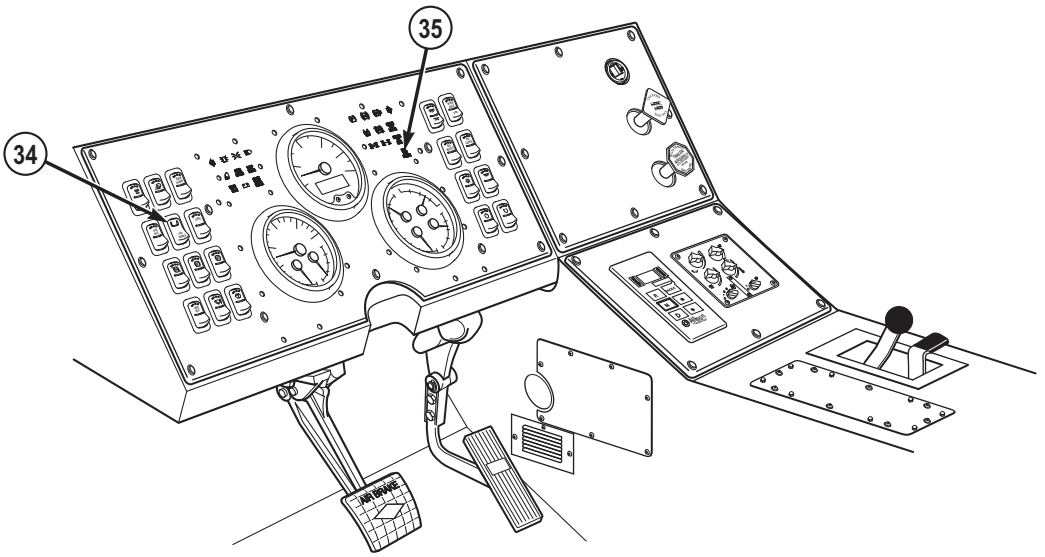


Figure 33.

34. Shut off engine. (WP 0057)
35. Remove and stow portable beacon lights. (WP 0094)
36. Turn off disabled vehicle emergency flashers, and unlock steering column (refer to operator's manual).

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
TOW M966 - REAR LIFT

INITIAL SETUP:

Not Applicable

HOOKUP

NOTE

- Each recovery situation is unique and requires assessment to determine if the driveline is suitable for transport. When in doubt, consult with field level maintenance.
- This procedure is a two soldier task.

1. Review procedures for operating retrieval towing system (WP 0058) and prepare retrieval system for operation. (WP 0059)

WARNING

- Hold cross tube when removing springs, cross tube can swing in all directions and adapters may slide off. Failure to comply may result in injury or death to personnel.
- Intervehicular air lines are not connected when towing from rear. Disabled vehicle will not have braking. Use extreme care when transporting disabled vehicle using rear hookup. Failure to comply may result in injury or death to personnel.

2. Disconnect two springs (1) from tow cylinders (2).

HOOKUP - Continued

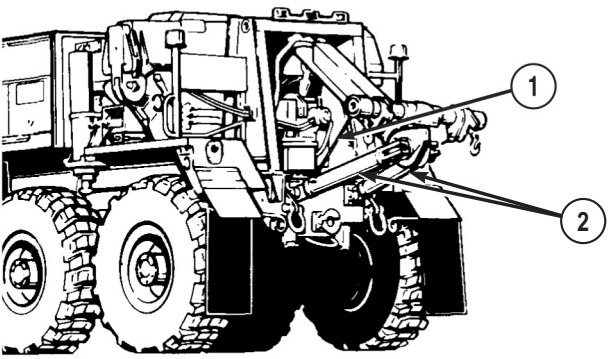


Figure 1.

CAUTION

Both rear towing shackles must be removed from rear tow eyes on wrecker before performing retrieval operations, or damage to tow cylinder may result.

NOTE

Driver side and passenger side towing shackles are removed the same way.

3. Remove two rear towing shackles from wrecker vehicle:

HOOKUP - Continued

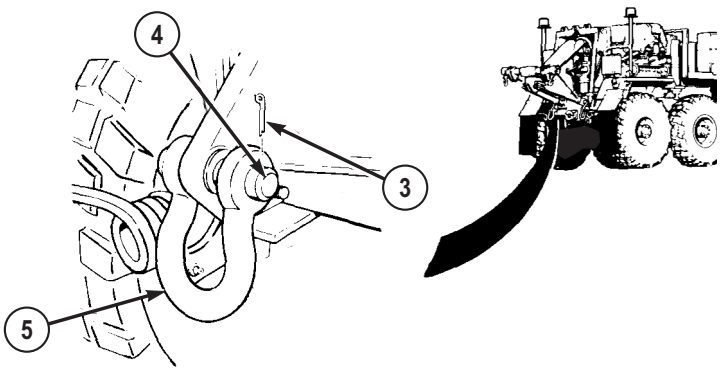


Figure 2.

a. Remove cotter pin (3), pin (4), and towing shackle (5).

b. Replace pin (4) in shackle (5), and cotter pin (3) in pin (4).

c. Repeat Steps (a) and (b) for opposite side towing shackle (5).

d. Stow two rear towing shackles on wrecker vehicle.

4. Pull LIFT CYLINDER control lever (6) to lower cross tube (7) to approximately 3 ft. (1 m) above ground.

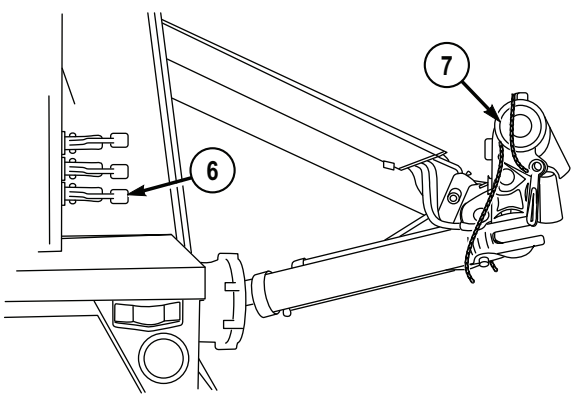


Figure 3.

5. Position wrecker so that cross tube (7) is centered and approximately 1 ft. (30 cm) from tow eyes of disabled vehicle.

HOOKUP - Continued

WARNING

When springs and end caps are removed, cross tube can swing in all directions and adapters may slide off and cause injury or death to personnel.

6. Remove two quick pins (8) and pins (9) from end caps (10).

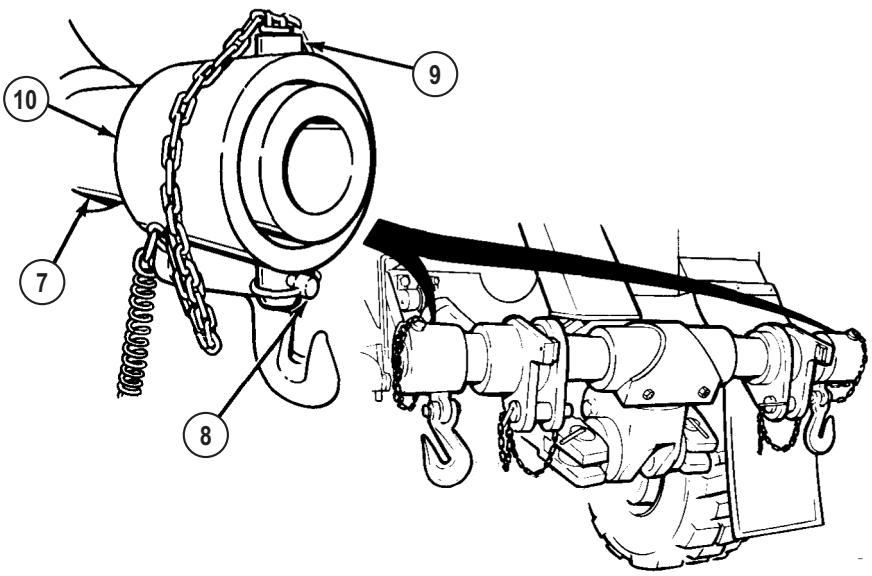


Figure 4.

7. Remove two end caps (10) from cross tube (7).
8. Remove two front adapters (11) from cross tube (7) and place on equipment body floor (12).

HOOKUP - Continued

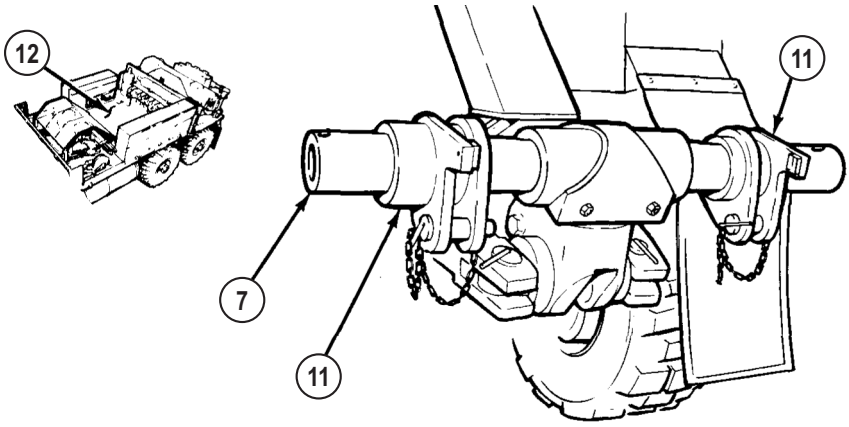


Figure 5.

9. Remove lock handle (13), lock plate (14), and two M966 rear tow adapters (15).

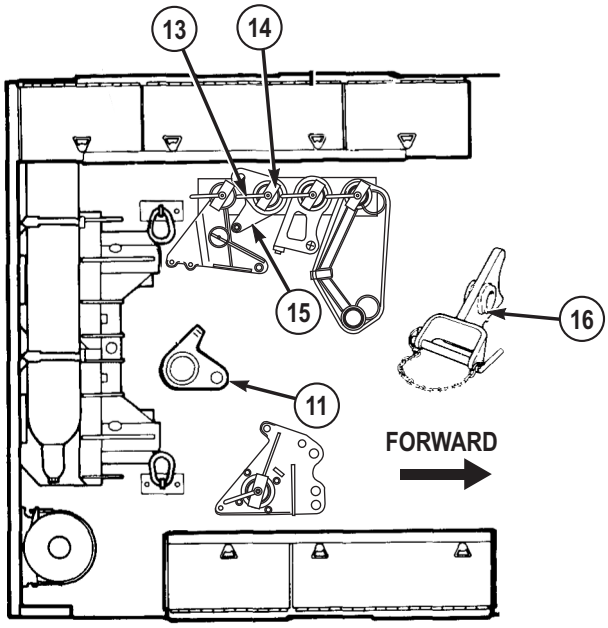


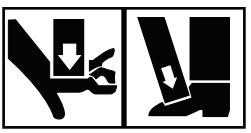
Figure 6.

10. Install two front adapters (11), lock plate (14), and lock handle (13).

HOOKUP - Continued

11. Remove two extensions (16) from wrecker stowage.

WARNING



Adapters and end caps may slide off when installing and cause injury or death to personnel.

12. Install two 5 in. (127 mm) spacers (17) on cross tube (7).

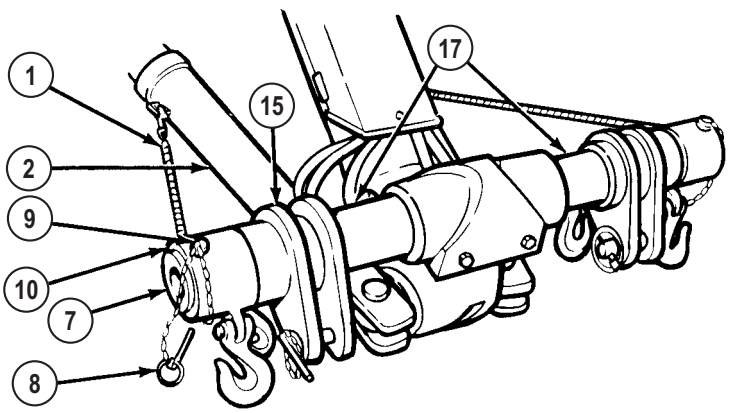


Figure 7.

13. Install two rear tow adapters (15) on cross tube (7).
14. Install two end caps (10) on cross tube (7).
15. Install two pins (9) and quick pins (8).
16. Attach two springs (1) on tow cylinders (2).
17. Remove two quick pins (18) and pins (19) from adapters (15).

HOOKUP - Continued

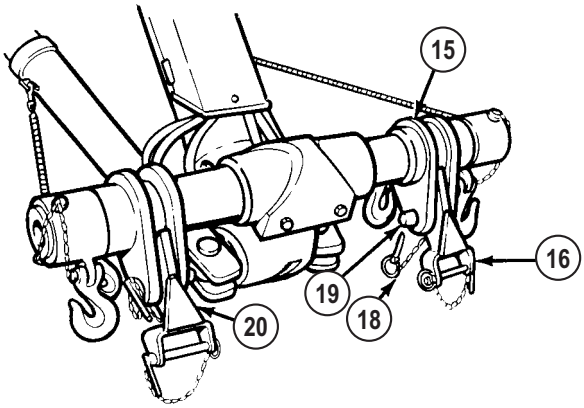


Figure 8.

18. Install extensions (16) so holes in adapter (15) align with holes in extension and triangular brace (20) is on top.
19. Insert two pins (19) through adapters (15) and extensions (16).
20. Install two quick pins (18) in pins (19).
21. Remove two quick pins (21) and pins (22) from extensions (16).

HOOKUP - Continued

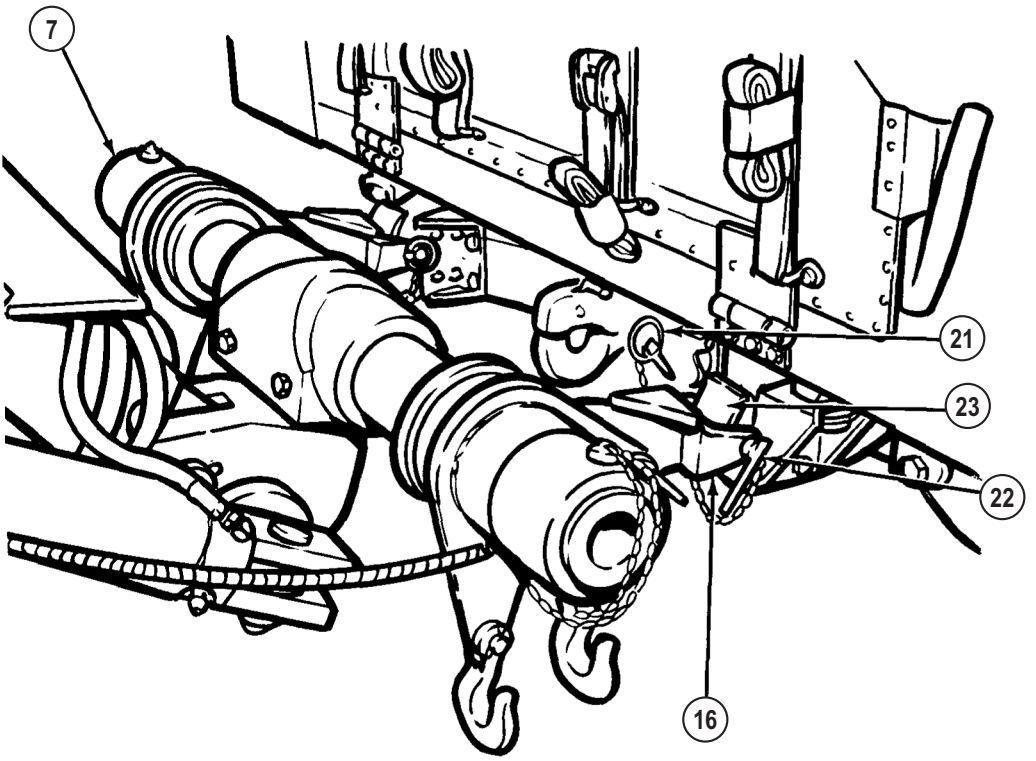


Figure 9.

WARNING

Keep hands and fingers away from adapters and tow eyes when operating retriever controls. Failure to comply may result in injury or death to personnel.

NOTE

If disabled vehicle has towing shackles installed, remove shackles and stow in disabled vehicle.

22. Operate retrieval system, and with aid of an assistant, position cross tube (7) so holes in extensions (16) align with rear tow eyes (23).

HOOKUP - Continued

23. Insert two pins (22) through extensions (16) and rear tow eyes (23). Install two quick pins (21) in pins (22).
24. Lower cross tube (7) until adapter grab hooks (24) are directly underneath adapter pins (19).

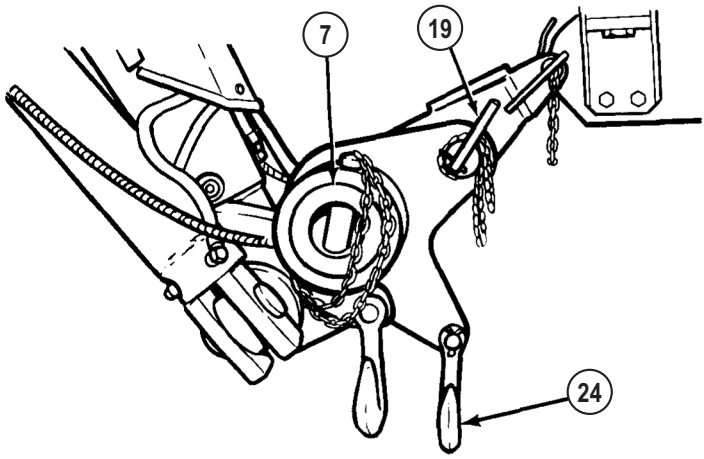


Figure 10.

25. Remove two 12 ft. (3.6 m) safety chains (25) from wrecker stowage.

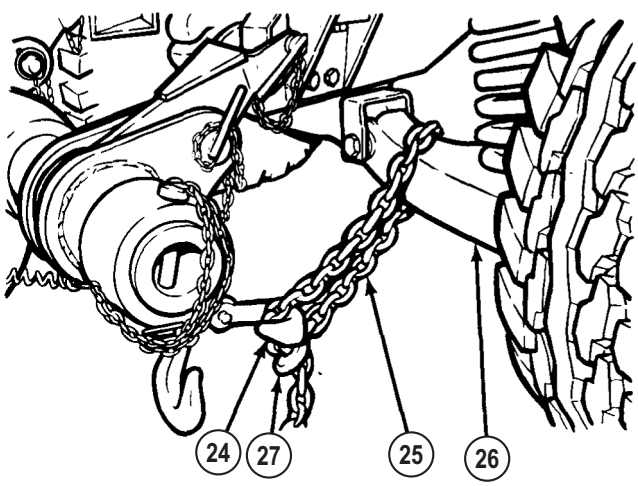


Figure 11.

HOOKUP - Continued

26. Route end of 12 ft. (3.6 m) safety chain (25) over rear arm of A-frame (26) on disabled vehicle.
27. Route 12 ft. (3.6 m) safety chain (25) through adapter grab hook (24). Pull safety chain (25) tight and attach grab hook (27) to 12 ft. (3.6 m) safety chain (25).
28. Repeat Steps (26) and (27) for other side of disabled vehicle.
29. Release PARKING BRAKE on disabled vehicle (refer to M966 operator's manual).

CAUTION

Do not allow lift cylinder to touch pintle hook. Equipment may be damaged.

30. Operate retrieval system until tow cylinders (2) are fully retracted.

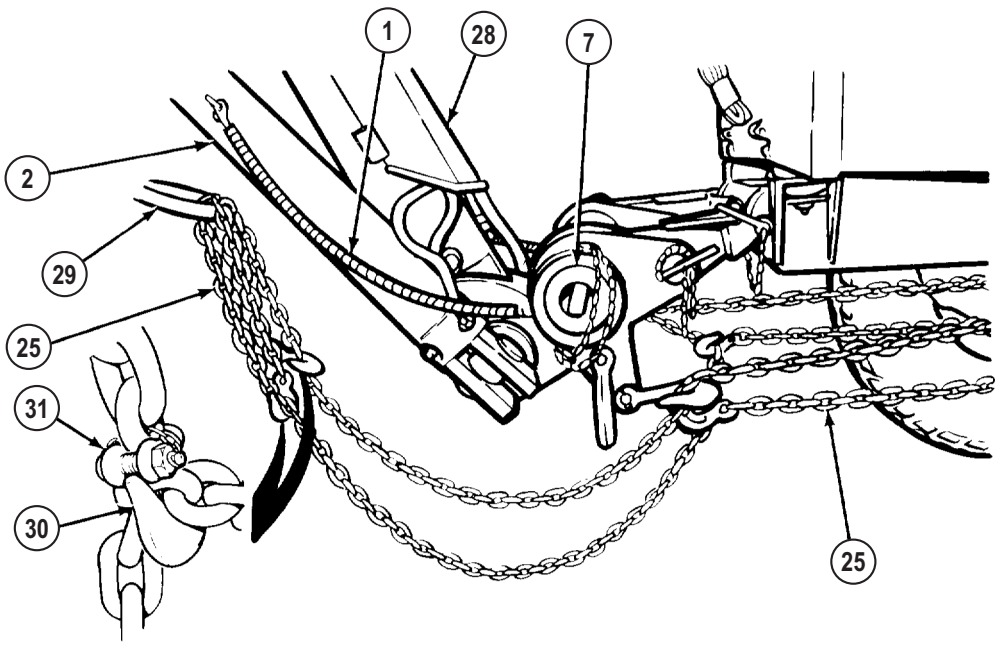


Figure 12.

31. Operate retrieval system to retract lift cylinder (28) until slack is removed from 12 ft. (3.6 m) safety chains (25).

HOOKUP - Continued

NOTE

Adjust 12 ft. (3.6 m) safety chain slack so 12 ft. (3.6 m) safety chains just touch the ground.

32. Route two free ends of 12 ft. (3.6 m) safety chains (25) through safety chain hoop (29) on wrecker and secure grab hooks (30) with safety shackles (31).

33. Wrap two springs (1) around cross tube (7) and secure.

CAUTION

Ensure all disabled vehicle cargo is secured prior to lifting and towing. Failure to comply may result in damage to cargo and equipment.

34. Prepare disabled vehicle for towing (refer to M966 operators manual).

35. Remove emergency tow lights (33) and two brackets (34) from wrecker stowage.

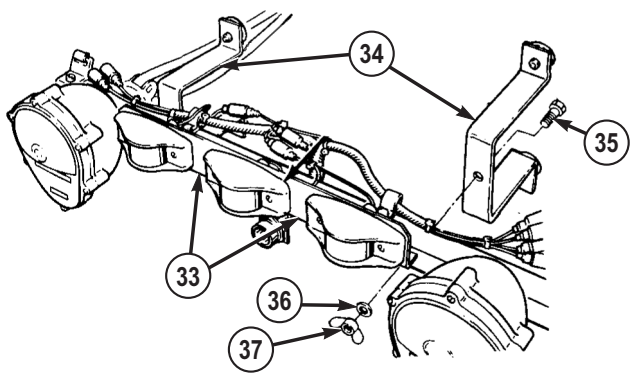


Figure 13.

36. Install two brackets (34) in center holes of emergency tow lights (33) with two screws (35), washers (36), and nuts (37).

37. Install emergency tow lights (33) on front of M966 and fasten securely with straps (38).

HOOKUP - Continued

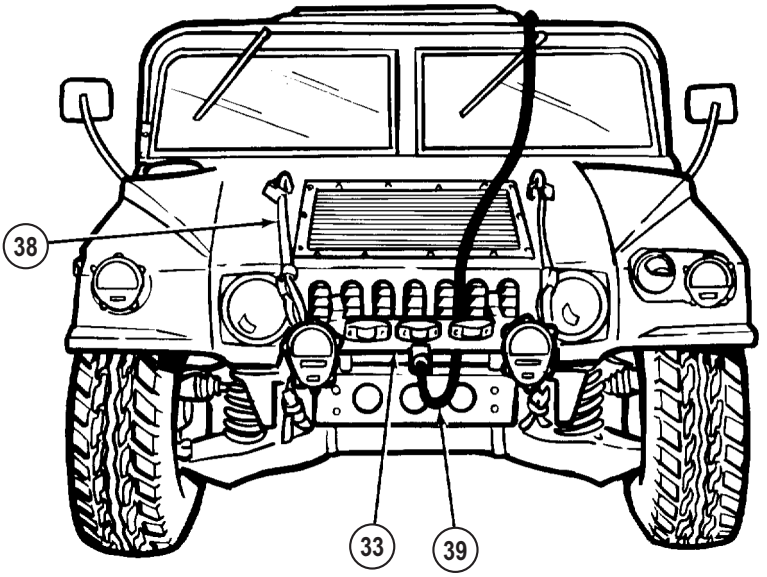


Figure 14.

38. Remove tow light cable (39) from wrecker stowage and connect to emergency tow lights (33).

CAUTION

Route cable so it does not drag on ground or interfere with turning tires. Failure to comply may result in damage to equipment.

39. Route other end of tow light cable (39) along disabled vehicle and connect to rear electrical connector (40) on wrecker.

HOOKUP - Continued

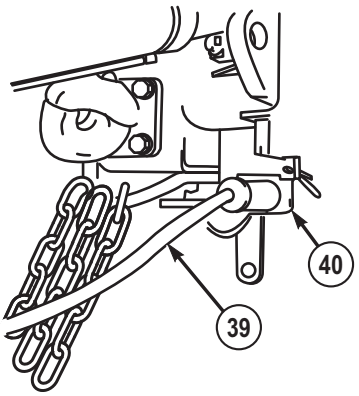


Figure 15.

NOTE

If disabled vehicle is equipped with built-in steering lock assembly, lock disabled vehicles steering (refer to M966 operator's manual).

40. Set POWER switch (41) to ON position.

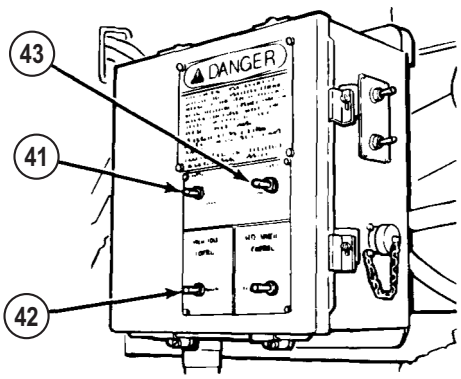


Figure 16.

41. Set HIGH IDLE switch (42) to CONTINUOUS.
42. Push and release LATCH switch (43). Engine speed will increase to approximately 1500 rpm.

HOOKUP - Continued

WARNING

Keep out from under retrieval system and disabled vehicle when raised off ground. Failure to comply may result in injury or death to personnel.

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

CAUTION

- Fully retract both tow cylinders before lifting disabled vehicle. Failure to comply may result in damage to equipment.
- Ensure all rigging is secure. Loose rigging can become entangled. Failure to comply may result in damage to equipment.

NOTE

Operator must allow wrecker air suspension system to completely adjust for added weight of disabled vehicle before raising disabled vehicle to final height of 1 ft. (30 cm).

43. Operate retrieval system to retract lift cylinder (28) and raise disabled vehicle approximately 3 in. (8 cm):

    a. Once wrecker air suspension system has adjusted for added weight of disabled vehicle, Operate retrieval system to retract lift cylinder (28) and raise disabled vehicle to final height of 1 ft. (30 cm).

HOOKUP - Continued

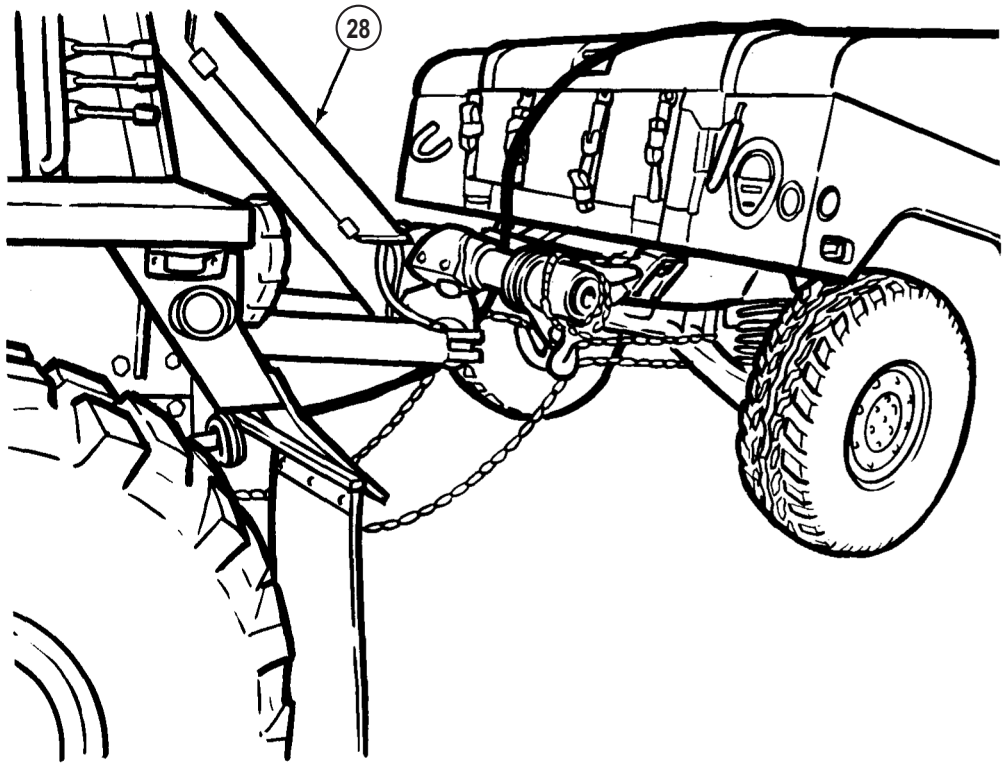


Figure 17.

44. Set POWER switch (41) to OFF position.

HOOKUP - Continued

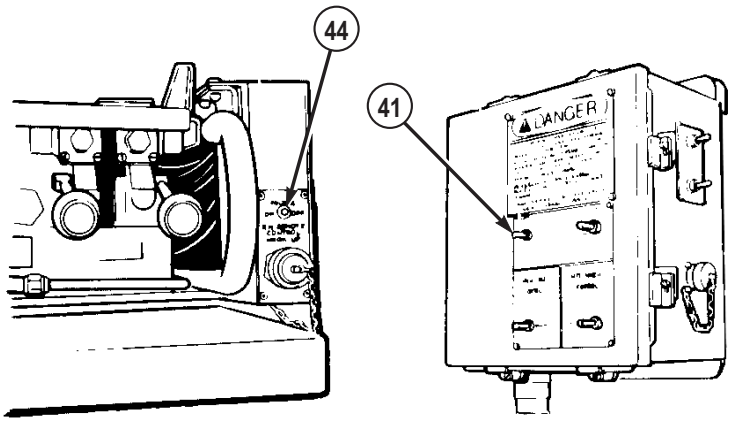


Figure 18.

45. Set POWER switch (44) to OFF position.
46. Set HYD ENABLE switch (45) to off position. MAIN HYD ENABLE indicator (46) will go out.

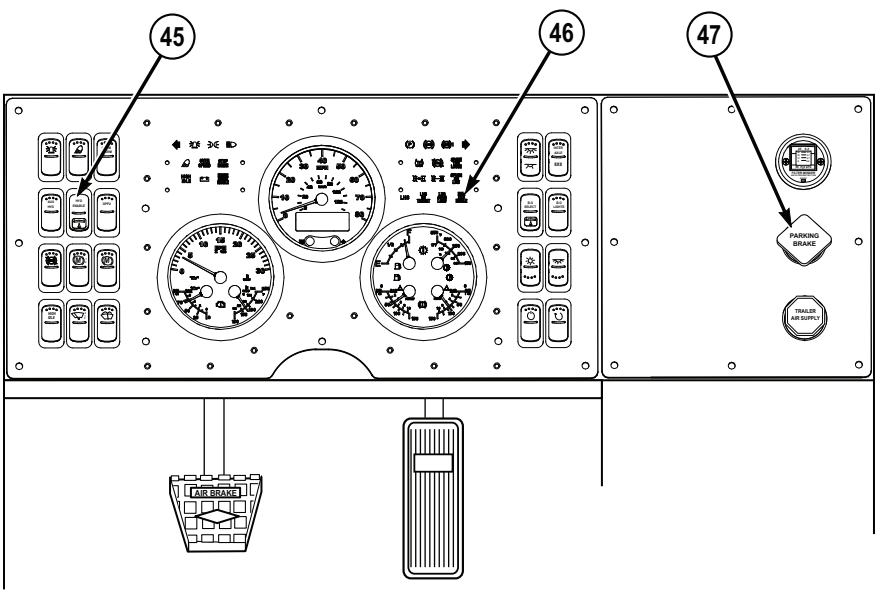


Figure 19.

47. Turn on wrecker service drive lights. (WP 0087)

HOOKUP - Continued

48. Turn on wrecker emergency flashers. (WP 0096)
49. Turn on disabled vehicle emergency flashers (refer to operator's manual).

NOTE

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

50. Push in PARKING BRAKE control (47).

WARNING

The M984 Wrecker should not be operated at speeds over 15 MPH (24 km/hr) except on paved roads when the operator determines that the vehicle being towed and the terrain allow safe operation. Engine brake switch must ON for all towing operations. Speed in excess of the below table may result in loss of control, serious injury, or death to personnel.

51. Select desired gear (WP 0048) and transport disabled vehicle.

Table 1. Maximum Towing Speed.

Terrain Condition	Maximum Speed Towed Load Up To 50,000 lbs (22 700 kg)	Maximum Speed Towed Load Above 50,000 lbs (22 700 kg)
On Road-Level	35 mph (56 km/hr)	30 mph (48 km/hr)
On Road-Hilly	30 mph (48 km/hr)	20 mph (32 km/hr)
Off-Road	15 mph (24 km/hr)	15 mph (24 km/hr)

DISCONNECT

NOTE

This procedure is a two soldier task.

1. Set transmission range selector (1) to N (neutral).

DISCONNECT - Continued

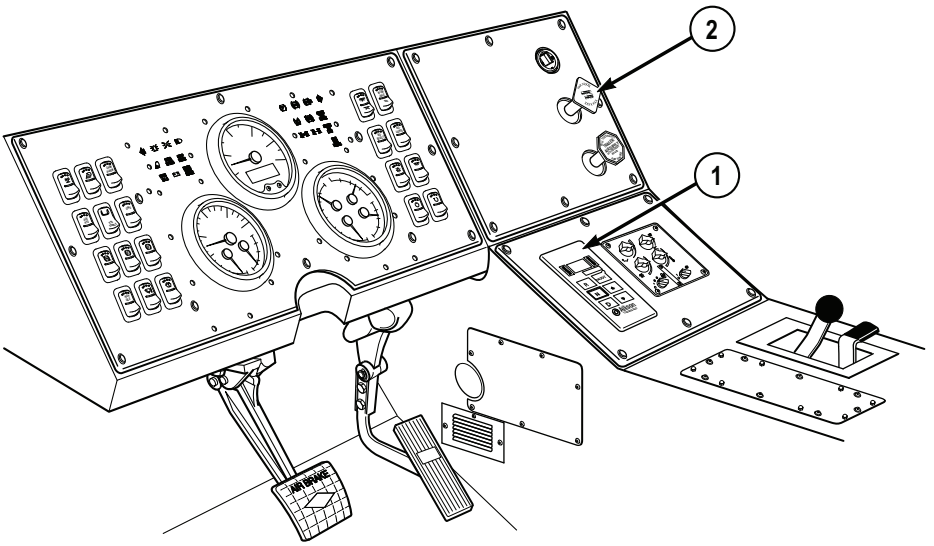


Figure 20.

NOTE

Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

2. Pull out PARKING BRAKE control (2).
3. Review procedures for operating retrieval towing system (WP 0058) and prepare retrieval system for operation. (WP 0059)

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

CAUTION

Do not contact pintle hook with lift cylinder. Equipment damage could result.

DISCONNECT - Continued

NOTE

- After lowering disabled vehicle, extend lift and tow cylinders approximately 2 to 4 in. (50 to 100 mm) to allow for adjustment when removing adapters.
- Expect wrecker air suspension system to deflate air springs to achieve normal ride height once weight of disabled vehicle is removed.

4. Operate retrieval system, and lower disabled vehicle to ground until 12 ft. (3.6 m) safety chains at front A-frames are slack.

WARNING

If disabled vehicle's parking brake is inoperative, chock wheels of disabled vehicle (refer to operator's manual). Failure to comply may result in injury or death to personnel.

5. Set parking brake on disabled vehicle (refer to disabled vehicle operator's manual).
6. Remove tow light cable (3) from wrecker.

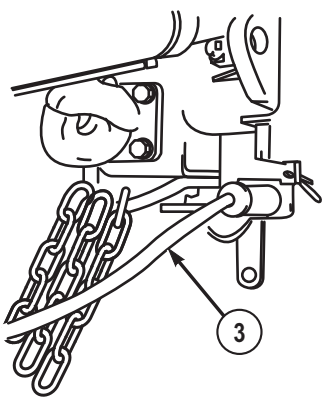


Figure 21.

7. Remove tow light cable (3) from emergency tow lights (4) and return to wrecker stowage.

DISCONNECT - Continued

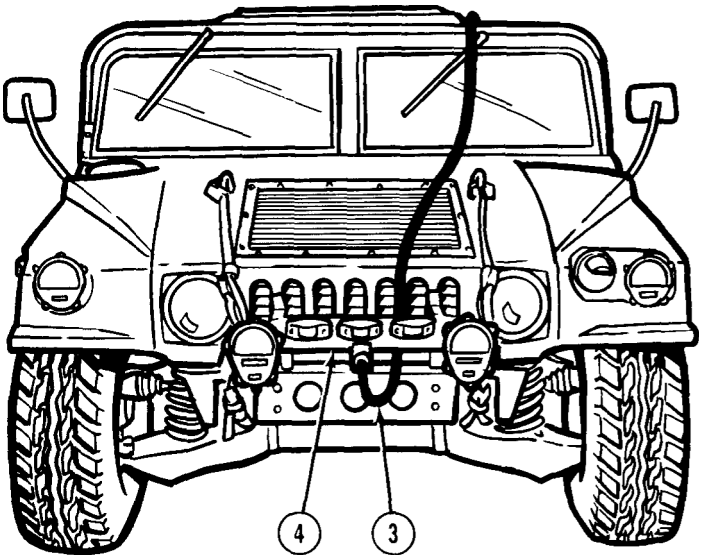


Figure 22.

8. Remove emergency tow lights (4) from disabled vehicle.
9. Remove two nuts (5), washers (6), screws (7), and brackets (8) from emergency tow lights (4). Return emergency tow lights and brackets to wrecker stowage.

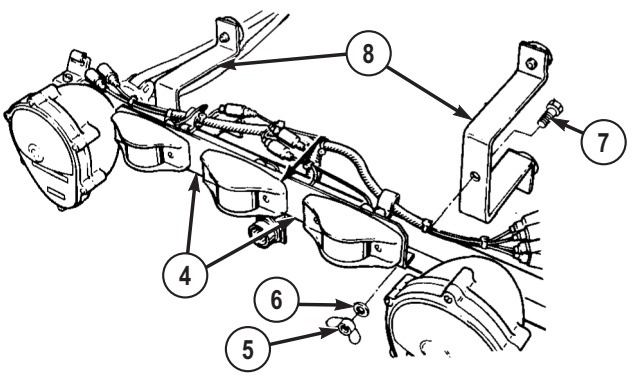


Figure 23.

10. Remove and stow two 12 ft. (3.6 m) safety chains (9).

DISCONNECT - Continued

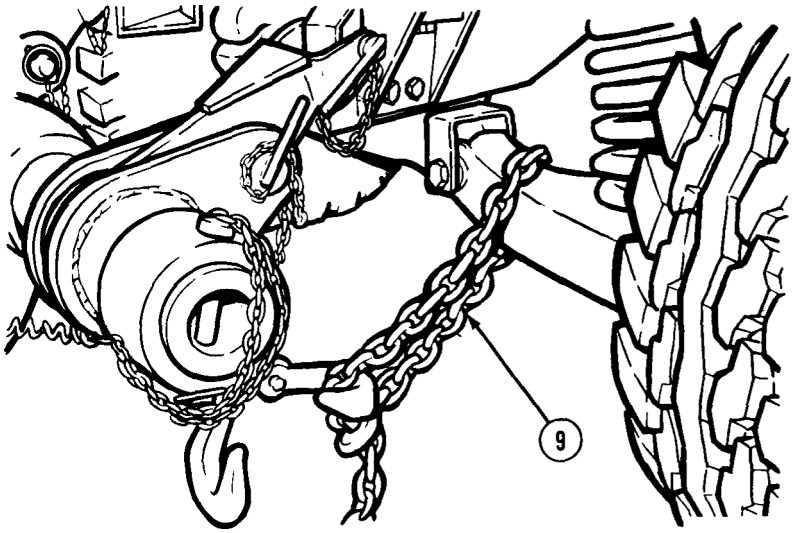


Figure 24.

11. Unwrap two springs (10) from cross tube (11) and connect to tow cylinders (12).

DISCONNECT - Continued

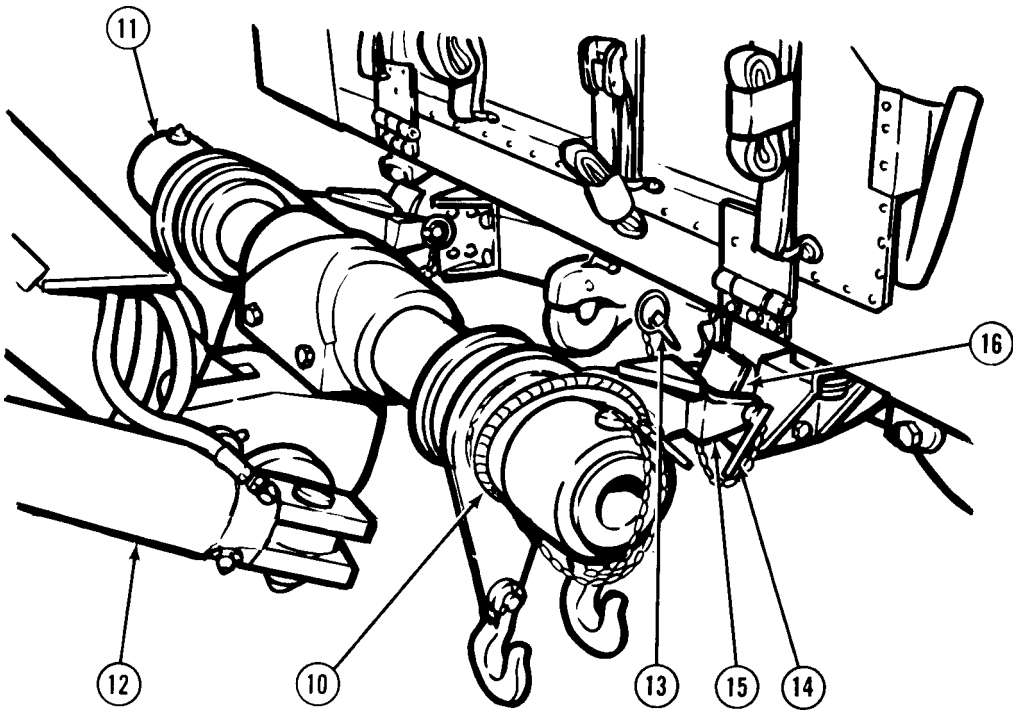
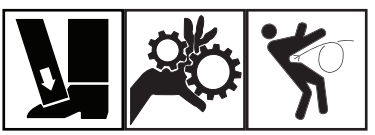


Figure 25.

WARNING



- Do not stand behind adapters when pins are being removed. Failure to comply may result in injury or death to personnel.
- Keep hands and fingers away from adapters and tow eyes when operating retrieval controls. Failure to comply may result in injury or death to personnel.

NOTE

Use retrieval controls to position cross tube to relieve tension from adapters.

12. Remove two quick pins (13) and pins (14) from extensions (15).

DISCONNECT - Continued

13. Remove two extensions (15) from tow eyes (16) on disabled vehicle.
14. Install two pins (14) in extensions (15).
15. Install two quick pins (13) in pins (14).
16. Drive wrecker forward (WP 0050) several feet and park. (WP 0056)
17. Remove two quick pins (17) and pins (18) from adapters (19).

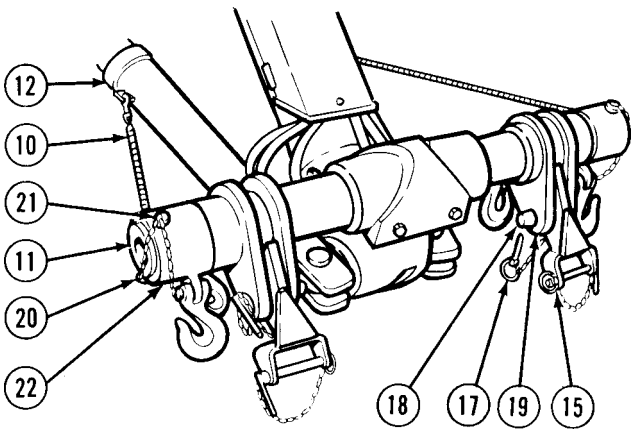


Figure 26.

18. Remove two extensions (15) from adapters (19) and return to wrecker stowage.
19. Install two pins (18) in adapters (19).
20. Install two quick pins (17) in pins (18).

WARNING

When springs and end caps are removed, cross tube can swing in all directions and adapters may slide off and cause injury or death to personnel.

21. Remove two springs (10) from tow cylinders (12).
22. Remove two quick pins (20) and pins (21) from end caps (22).
23. Remove two end caps (22) from cross tube (11).

DISCONNECT - Continued

24. Remove two adapters (19) from cross tube (11) and place on equipment body floor (23).

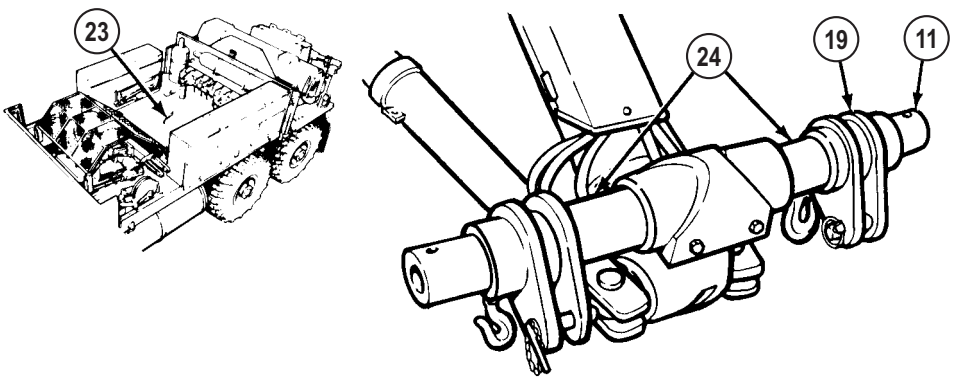


Figure 27.

25. Remove and stow two 5 in. (127 mm) spacers (24) from cross tube (11).
26. Remove lock handle (25), lock plate (26), and two front adapters (27).

DISCONNECT - Continued

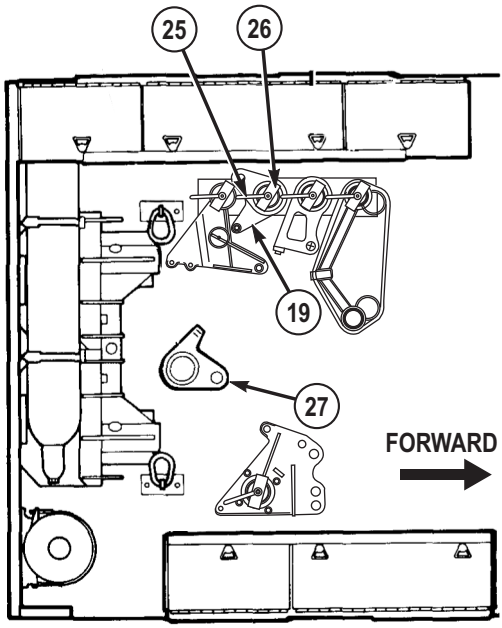


Figure 28.

27. Install two adapters (19) removed from cross tube (11), lock plate (26), and lock handle (25).

DISCONNECT - Continued

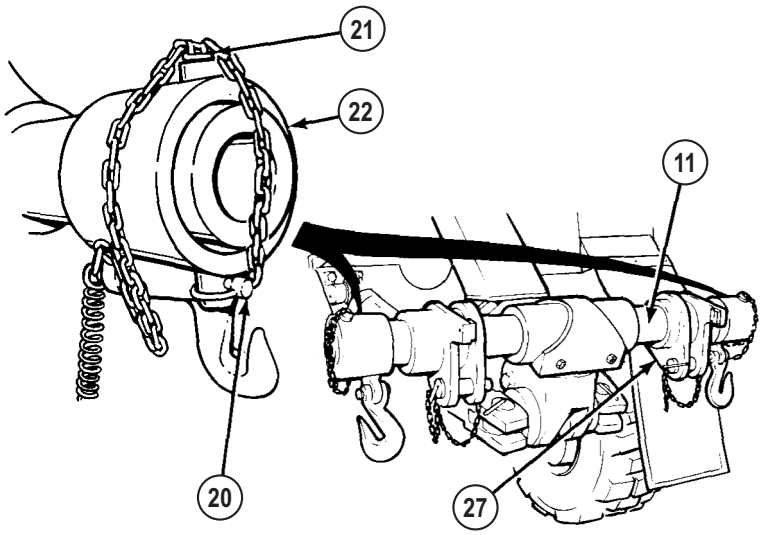


Figure 29.

28. Install two front adapters (27) on cross tube (11).
29. Install two end caps (22) on cross tube (11).
30. Install two pins (21) and quick pins (20).
31. Install two springs (10) on tow cylinders (12).

DISCONNECT - Continued

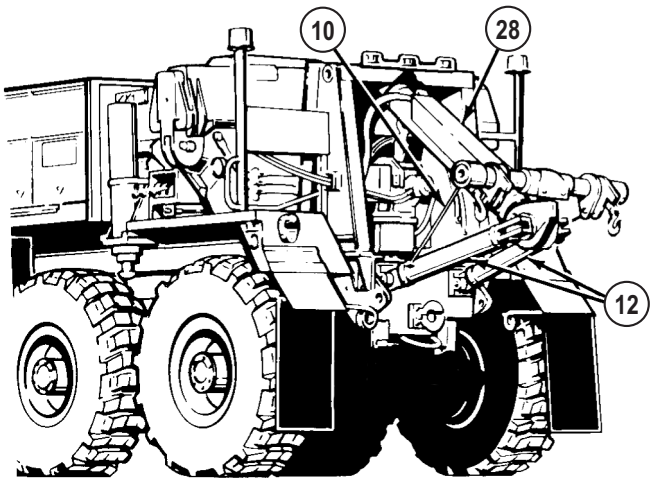


Figure 30.

32. Operate retrieval system and fully retract lift cylinder (28) and tow cylinders (12).

NOTE

Driver side and passenger side towing shackles are installed the same way.

33. Install two rear towing shackles (29), pins (30), and cotter pins (31).

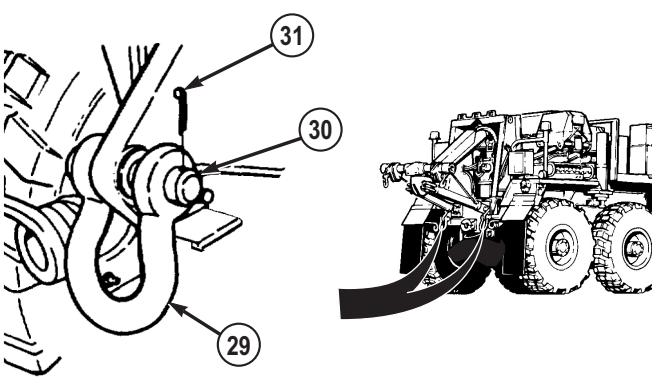


Figure 31.

34. Set POWER switch (32) to OFF position.

DISCONNECT - Continued

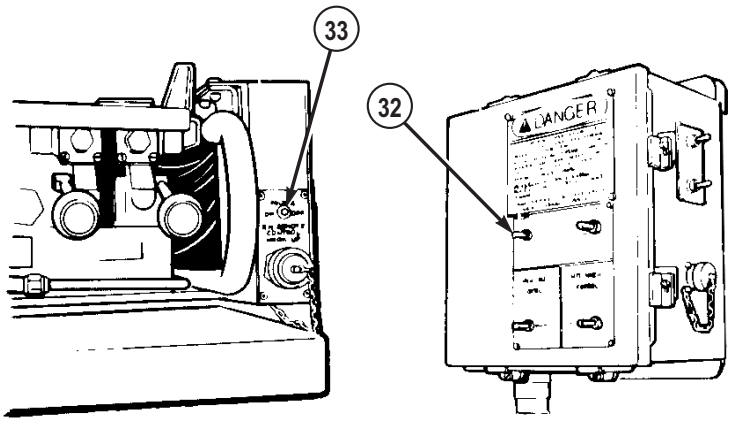


Figure 32.

35. Set POWER switch (33) to OFF position.
36. Turn off wrecker service drive lights. (WP 0087)
37. Turn off wrecker emergency flashers. (WP 0096)
38. Set HYD ENABLE switch (34) to OFF position. MAIN HYD ENABLE indicator light (35) will go out.

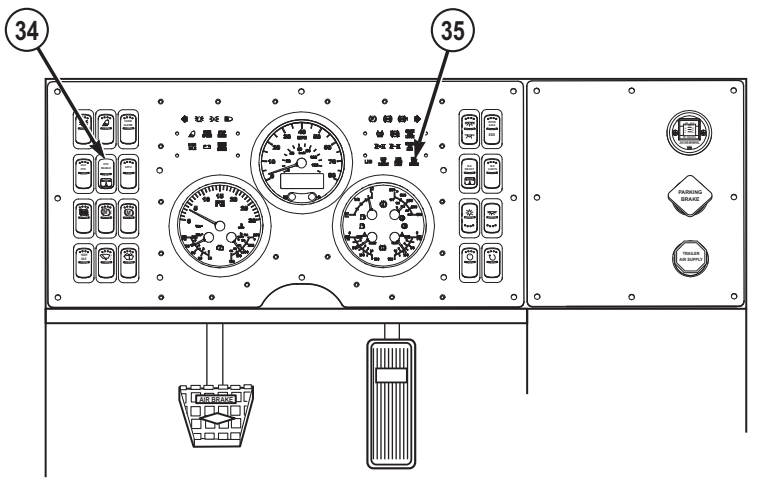


Figure 33.

39. Shut off engine. (WP 0057)

DISCONNECT - Continued

40. Remove and stow portable beacon lights. (WP 0094)
41. Turn off disabled vehicle emergency flashers, and unlock steering column (refer to disabled vehicle operator's manual).

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
TOW M915 - REAR LIFT

INITIAL SETUP:

Not Applicable

HOOKUP

NOTE

- Each recovery situation is unique and requires assessment to determine if the driveline is suitable for transport. When in doubt, consult with field level maintenance.
- This procedure is a two soldier task.

1. Review procedures for operating retrieval towing system (WP 0058) and prepare retrieval system for operation. (WP 0059)

WARNING

- Hold cross tube when removing springs, cross tube can swing in all directions and adapters may slide off. Failure to comply may result in injury or death to personnel.
- Intervehicular air lines are not connected when towing from rear. Disabled vehicle will not have braking. Use extreme care when transporting disabled vehicle using rear hookup. Failure to comply may result in injury or death to personnel.

2. Disconnect two springs (1) from tow cylinders (2).

HOOKUP - Continued

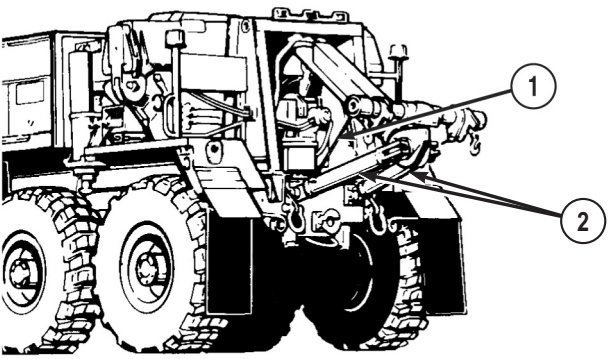


Figure 1.

CAUTION

Both rear towing shackles must be removed from rear tow eyes on wrecker before performing retrieval operations, or damage to tow cylinder may result.

NOTE

Driver side and passenger side towing shackles are removed the same way.

3. Remove two rear towing shackles from wrecker vehicle:

HOOKUP - Continued

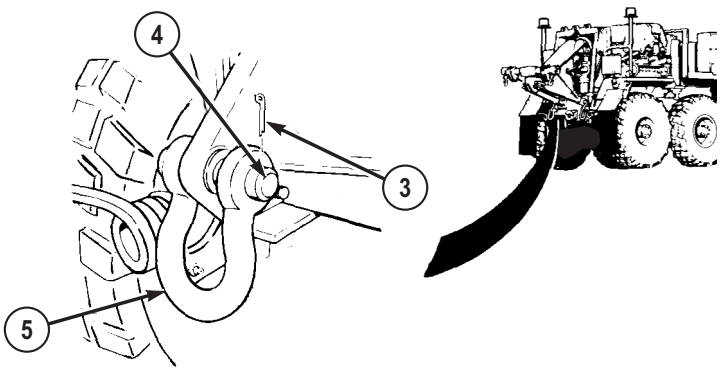


Figure 2.

a. Remove cotter pin (3), pin (4), and towing shackle (5).

b. Replace pin (4) in shackle (5), and cotter pin (3) in pin (4).

c. Repeat Steps (a) and (b) for opposite side towing shackle (5).

d. Stow two rear towing shackles on wrecker vehicle.

4. Pull LIFT CYLINDER control lever (6) to lower cross tube (7) to approximately 3 ft. (1 m) above ground.

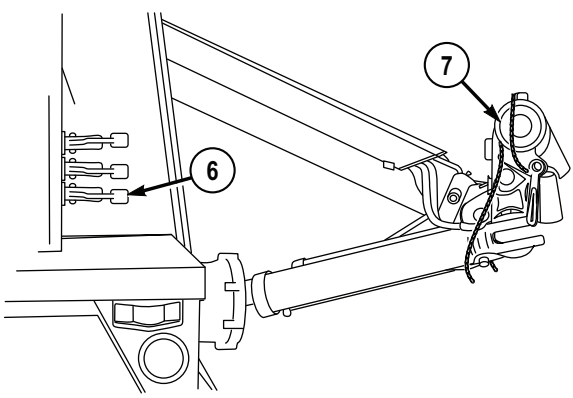


Figure 3.

5. Position wrecker so that cross tube (7) is approximately 1 ft. (30 cm) from tow eyes of disabled vehicle and centered on disabled vehicle.

HOOKUP - Continued

WARNING

When springs and end caps are removed, cross tube can swing in all directions and adapters may slide off and cause injury or death to personnel.

6. Remove quick pins (8) and pins (9) from end caps (10).

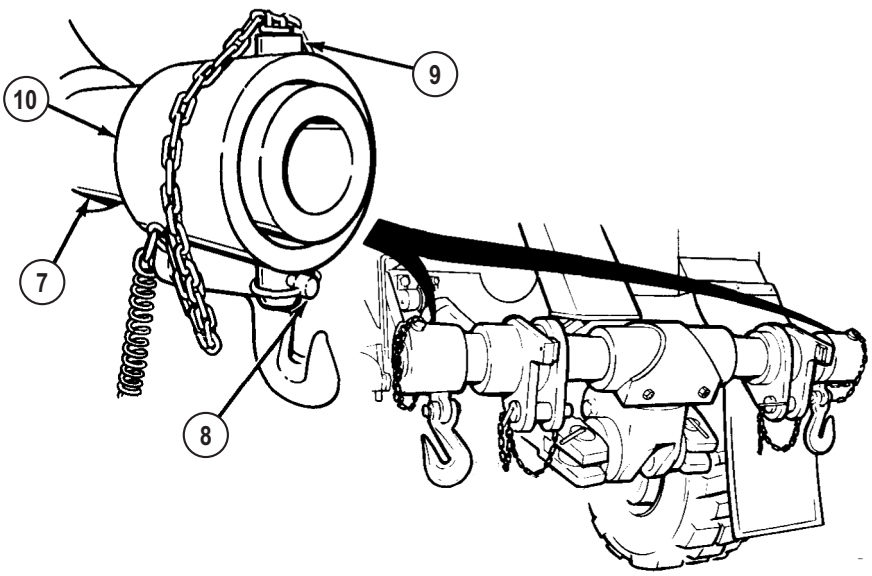


Figure 4.

7. Remove end caps (10) from cross tube (7).
8. Remove two front adapters (11) from cross tube (7) and place on equipment body floor (12).

HOOKUP - Continued

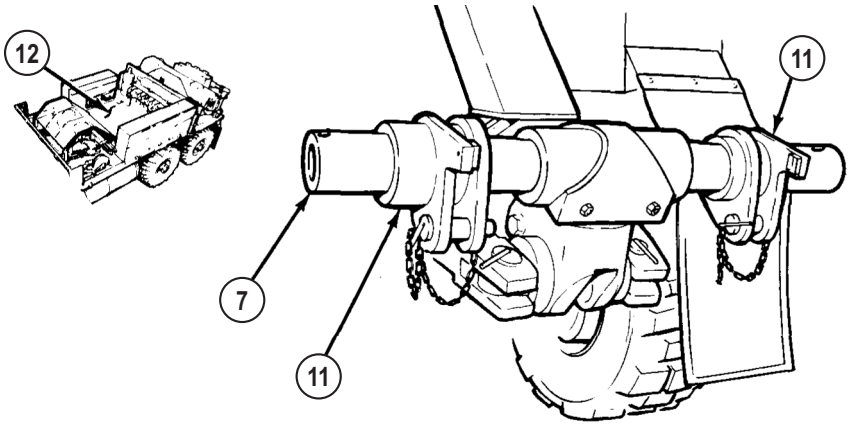


Figure 5.

9. Remove lock handle (13), lock plate (14), quick pin (15), pin (16), and two rear tow adapters (17).

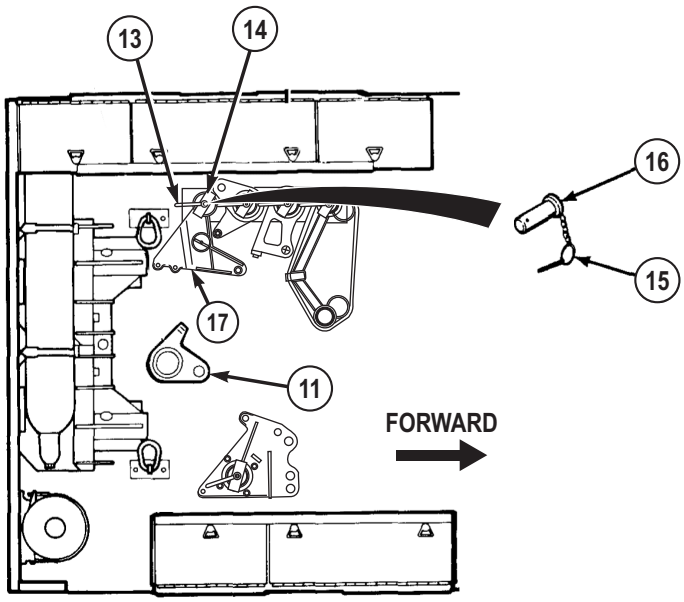


Figure 6.

10. Install two front adapters (11) removed from cross tube (7), pin (16), and quick pin (15), lock plate (14), and lock handle (13).

HOOKUP - Continued

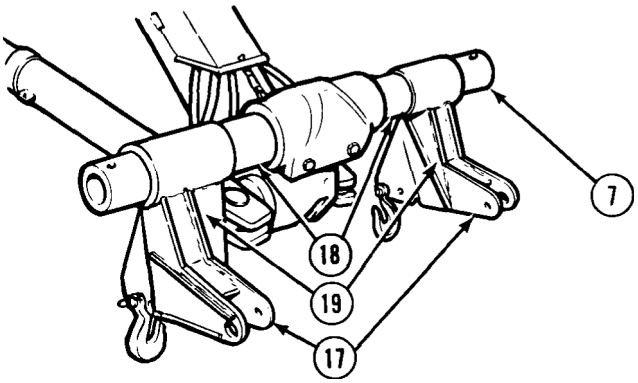
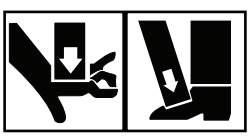


Figure 7.

11. Remove two 1 7/16 in. (38 mm) pins and two 5 in. (127 mm) spacers (18) from stowage.

WARNING



Adapters and end caps may slide off when installing and cause injury or death to personnel.

12. Install two 5 in. (127 mm) spacers (18) on cross tube (7).
13. Install two rear tow adapters (17) on cross tube (7) with support brace (19) to inside.
14. Install two end caps (10) on cross tube (7).

HOOKUP - Continued

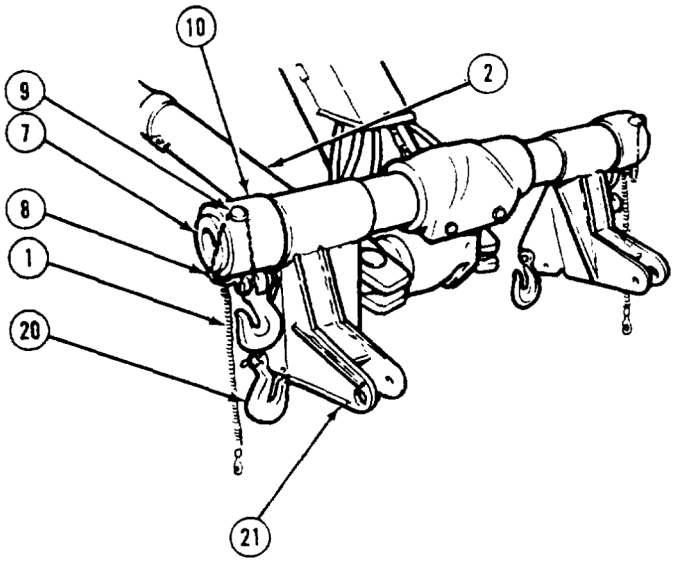


Figure 8.

15. Install two pins (9) and quick pins (8).

NOTE

Complete Step (16) if two rear adapter grab hooks are located in holes other than those farthest from towing pin holes, otherwise skip to Step (17).

16. Position adapter grab hooks (20) in hole farthest away from towing eye pin holes (21).
17. Attach two springs (1) on tow cylinders (2).

WARNING

Keep hands and fingers away from adapters and tow eyes when operating retriever controls. Failure to comply may result in injury or death to personnel.

HOOKUP - Continued

NOTE

If disabled vehicle has towing shackles installed, remove shackles and stow on disabled vehicle.

18. Operate retrieval system, and with aid of an assistant position cross tube (7) so holes in adapters (17) align with rear tow eyes (22).

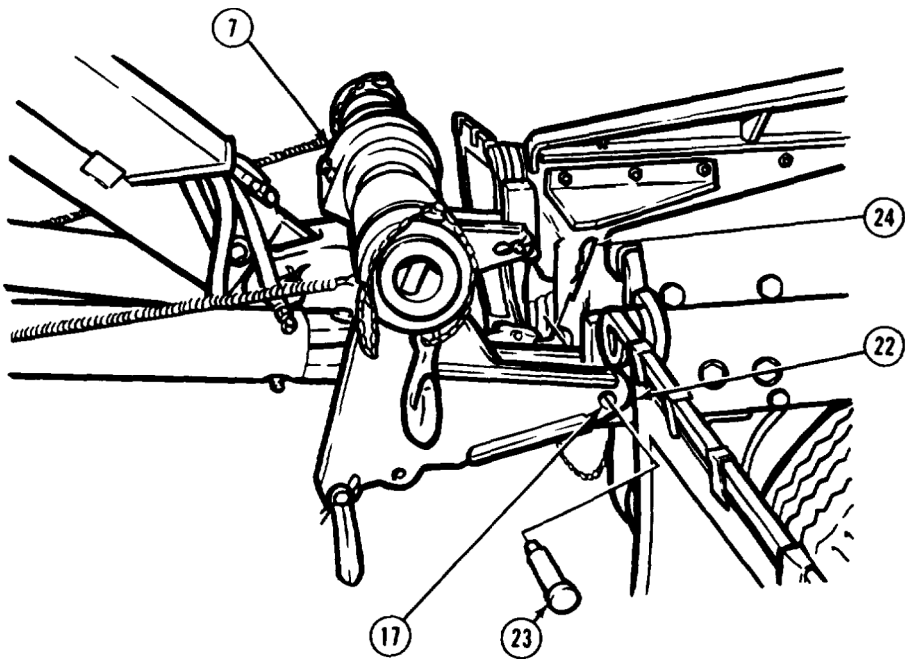


Figure 9.

19. Insert two 1 7/16 in. (38 mm) pins (23) through adapters (17) and rear tow eyes (22).
20. Install two cotter pins (24) in pins.

CAUTION

Do not allow adapters to come in contact with blackout lights. Failure to comply may result in damage to equipment.

21. Lower cross tube (7) until adapter grab hooks (20) are under rear tow eyes (22) and adapter (17) is approximately 1 in. (25 mm) from blackout lights (25).

HOOKUP - Continued

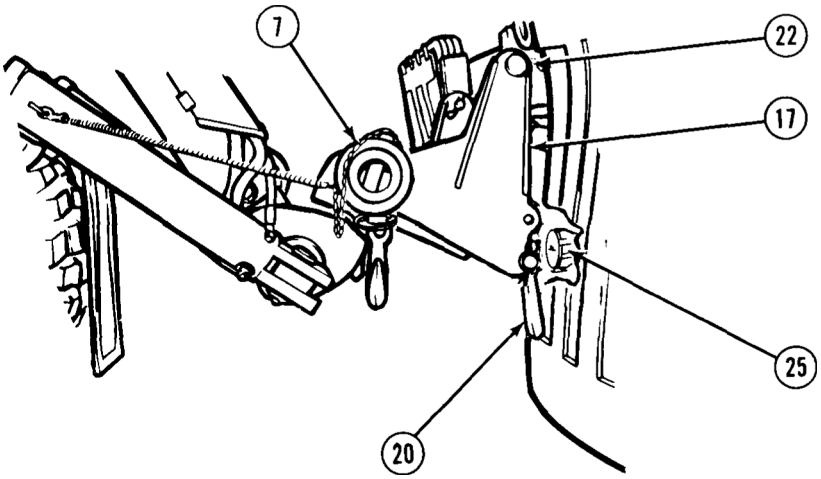


Figure 10.

22. Remove two 16 ft. (5 m) safety chains (26) from wrecker stowage.

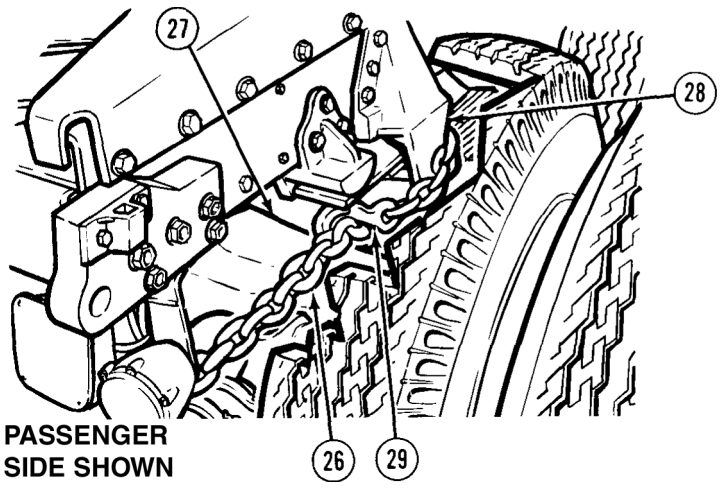


Figure 11.

23. Route end (without safety shackle) of 16 ft. (5 m) safety chain (26) over rear axle (27) and around rear leaf spring shackle (28) of disabled vehicle.

24. Hook 16 ft. (5 m) safety chain (26) back into itself so grab hook (29) is just touching rear axle (27).

HOOKUP - Continued

25. Repeat Steps (23) and (24) for other side of disabled vehicle.

CAUTION

After attaching 16 ft. (5 m) safety chain to grab hook, remove 16 ft. (5 m) safety chain from grab hook and increase chain slack between grab hook and rear leaf spring shackle by two links. This will prevent damage to air brake chambers of disabled vehicle.

26. Pull 16 ft. (5 m) safety chain (26) tight and install on adapter grab hook (20).

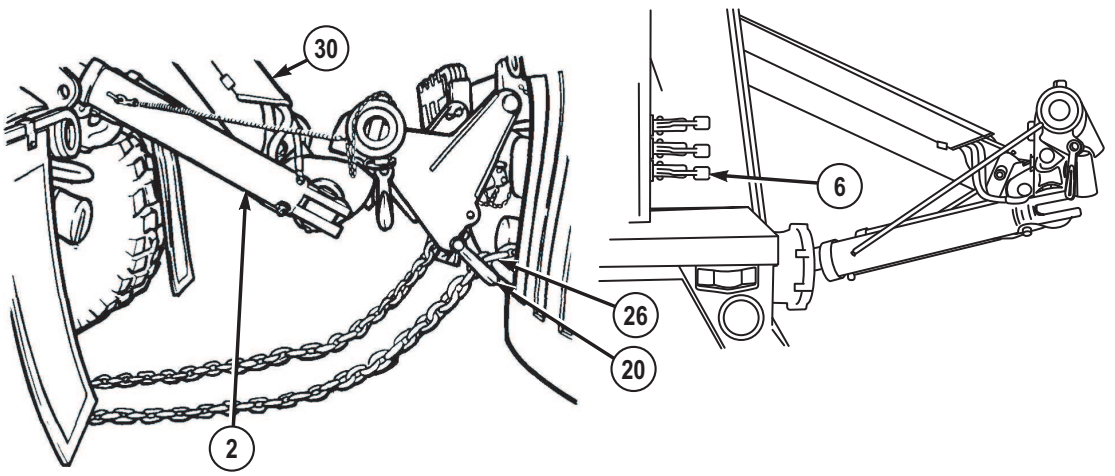


Figure 12.

27. Repeat Step (26) for other side of disabled vehicle.
28. Release PARKING BRAKE on disabled vehicle (refer to M915 operator's manual).

CAUTION

Do not allow adapters to come in contact with blackout lights. Lights may be damaged.

29. Operate retrieval system until tow cylinders (2) are fully retracted.

CAUTION

16 ft. (5 m) safety chains must not hit rear brake chambers or blackout lights. Adjust position of adapters if needed to center safety chains between blackout lights and rear brake chambers. Failure to provide clearance may result in damage to equipment.

HOOKUP - Continued

30. Push in LIFT CYLINDER control lever (6) to retract lift cylinder (30) until slack is removed from 16 ft. (5 m) safety chains (26).

NOTE

Adjust 16 ft. (5 m) safety chain slack so 16 ft. (5 m) safety chains just touch the ground.

31. Route two free ends of 16 ft. (5 m) safety chains (26) through safety chain hoop (31) on wrecker, hook 16 ft. (5 m) safety chains (26) back into themselves (as shown), and secure grab hooks (32) with safety shackles (33).

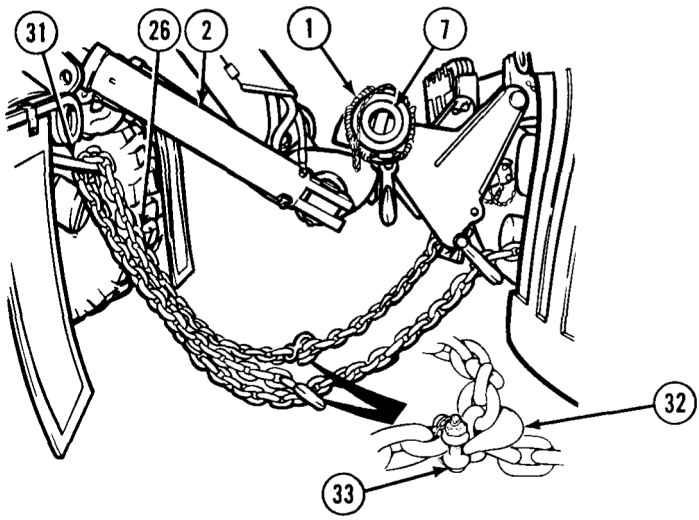


Figure 13.

32. Disconnect two springs (1) from tow cylinders (2), wrap springs around cross tube (7) and secure.

CAUTION

Ensure all disabled vehicle cargo is secured prior to lifting and towing. Failure to comply may result in damage to cargo and equipment.

33. Prepare disabled vehicle for towing (refer to M915 operator's manual).

34. Remove emergency tow lights (34) and two brackets (35) from wrecker stowage.

HOOKUP - Continued

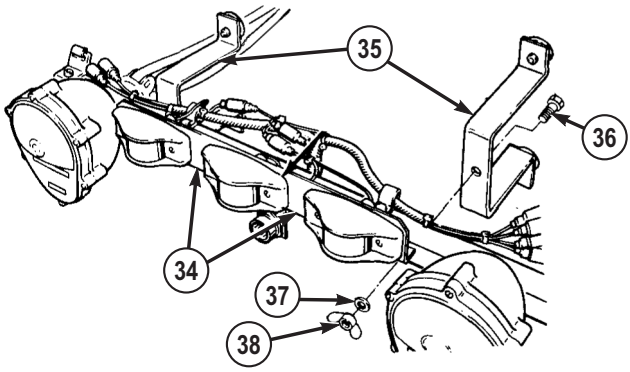


Figure 14.

35. Install two brackets (35) in center holes of emergency tow lights (34) with two screws (36), washers (37), and nuts (38).

36. Install emergency tow lights (34) on front of M915 and fasten securely with straps (39).

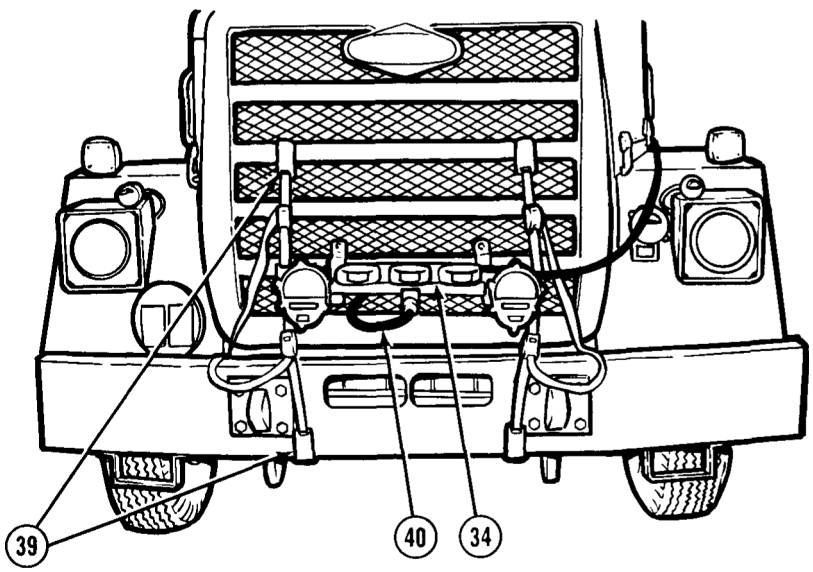


Figure 15.

37. Remove tow light cable (40) from stowage and connect to emergency tow lights (34).

HOOKUP - Continued

CAUTION

Route cable so it does not drag on ground or interfere with turning tires. Failure to comply may result in damage to equipment.

38. Route free end of tow light cable (40) along disabled vehicle and connect to rear electrical connector (41) on wrecker.

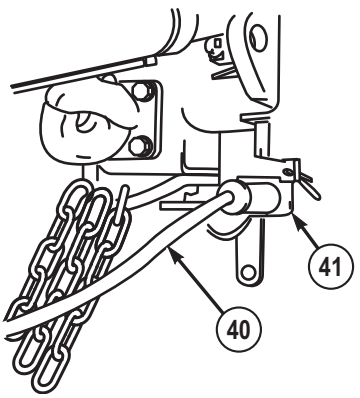


Figure 16.

39. Lock disabled vehicle steering (refer to M915 operator's manual).
40. Set POWER switch (42) to ON position.

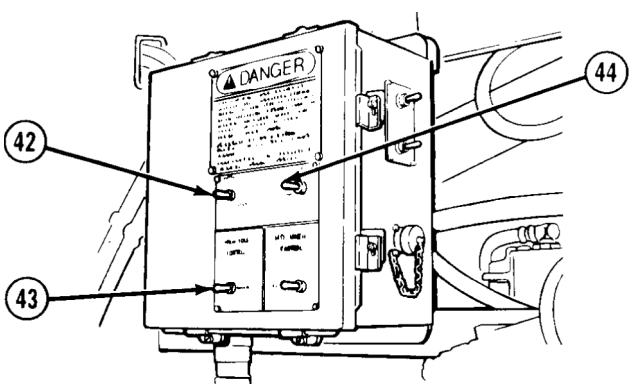


Figure 17.

41. Set HIGH IDLE switch (43) to CONTINUOUS.

HOOKUP - Continued

42. Push and release LATCH switch (44). Engine speed will increase to approximately 1500 rpm.

WARNING

Keep out from under retrieval system and disabled vehicle when raised off ground. Failure to comply may result in injury or death to personnel.

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

CAUTION

- Fully retract both tow cylinders before lifting disabled vehicle. Failure to comply may result in damage to equipment.
- Ensure all rigging is secure. Loose rigging can become entangled. Failure to comply may result in damage to equipment.

NOTE

Operator must allow wrecker air suspension system to completely adjust for added weight of disabled vehicle before raising disabled vehicle to final height of 1 ft. (30 cm).

43. Operate retrieval system to retract lift cylinder (30), and raise disabled vehicle approximately 3 in. (8 cm):
    a. Once wrecker air suspension system has adjusted for added weight of disabled vehicle, Operate retrieval system to retract lift cylinder (30), and raise disabled vehicle to final height of 1 ft. (30 cm).

HOOKUP - Continued

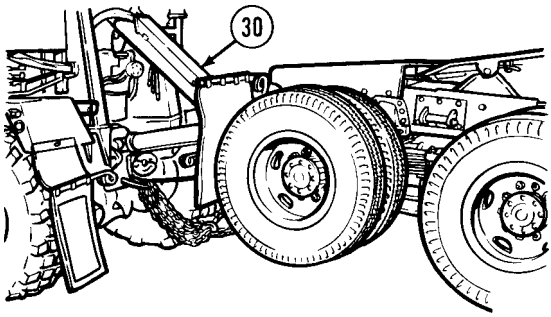


Figure 18.

44. Set POWER switch (42) to OFF position.

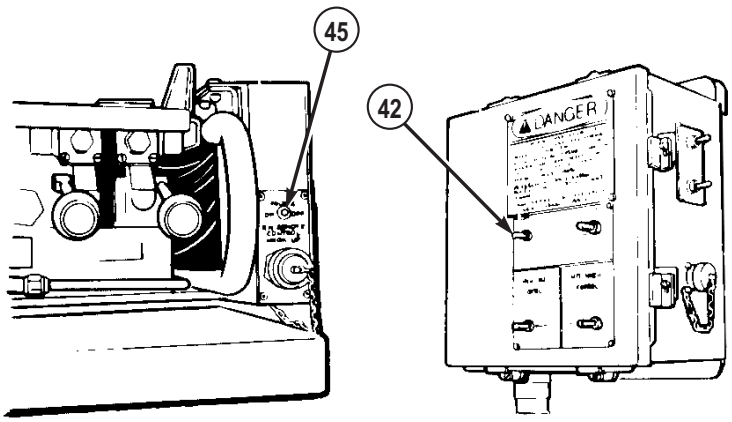


Figure 19.

45. Set POWER switch (45) to OFF position.
46. Set HYD ENABLE switch (46) to off position. MAIN HYD ENABLE indicator (47) will go out.

HOOKUP - Continued

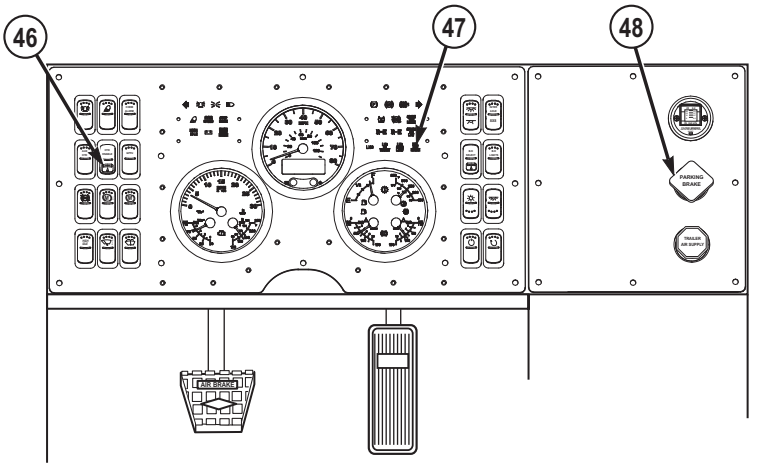


Figure 20.

47. Turn on wrecker service drive lights. (WP 0087)
48. Turn on wrecker emergency flashers. (WP 0096)
49. Turn on disabled vehicle emergency flashers (refer to operator's manual).

NOTE

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

50. Push in PARKING BRAKE control (48).

WARNING

The M984 Wrecker should not be operated at speeds over 15 MPH (24 km/hr) except on paved roads when the operator determines that the vehicle being towed and the terrain allow safe operation. Engine brake switch must ON for all towing operations. Speed in excess of the below table may result in loss of control, serious injury, or death to personnel.

51. Select desired gear (WP 0048) and transport disabled vehicle.

HOOKUP - Continued

Table 1. Maximum Towing Speed.

Terrain Condition	Maximum Speed Towed Load Up To 50,000 lbs (22 700 kg)	Maximum Speed Towed Load Above 50,000 lbs (22 700 kg)
On Road-Level	35 mph (56 km/hr)	30 mph (48 km/hr)
On Road-Hilly	30 mph (48 km/hr)	20 mph (32 km/hr)
Off-Road	15 mph (24 km/hr)	15 mph (24 km/hr)

DISCONNECT

NOTE

This procedure is a two soldier task.

1. Set transmission range selector (1) to N (neutral).

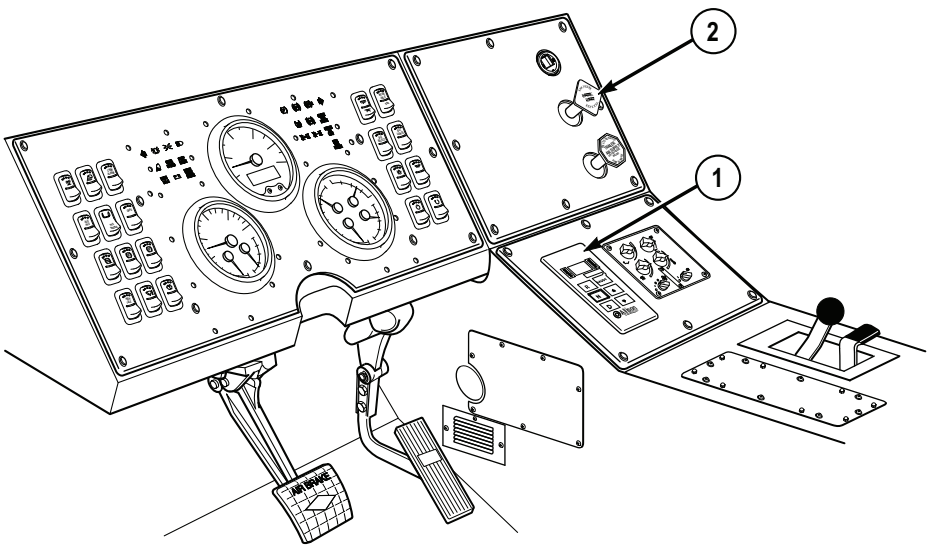


Figure 21.

NOTE

Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

DISCONNECT - Continued

2. Pull out PARKING BRAKE control (2).

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

NOTE

- After lowering disabled vehicle, extend lift and tow cylinders approximately 2 inches (50 mm) to allow for adjustment when removing adapters.
- Expect wrecker air suspension system to deflate air springs to achieve normal ride height once weight of disabled vehicle is removed.

3. Review procedures for operating retrieval towing system, (WP 0058)prepare retrieval system for operation, (WP 0059) and lower disabled vehicle to the ground.

WARNING

If disabled vehicle's parking brake is inoperative, chock wheels of disabled vehicle (refer to operator's manual). Failure to comply may result in injury or death to personnel.

4. Set parking brake on disabled vehicle (refer to disabled vehicle operator's manual).
5. Remove tow light cable (3) from wrecker.

DISCONNECT - Continued

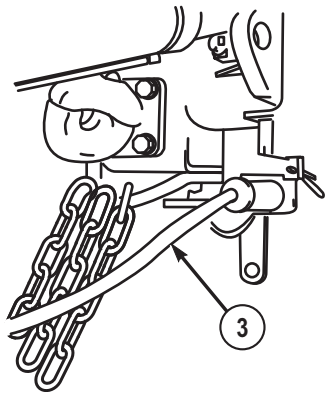


Figure 22.

6. Remove tow light cable (3) from emergency tow lights (4) and return to wrecker stowage.

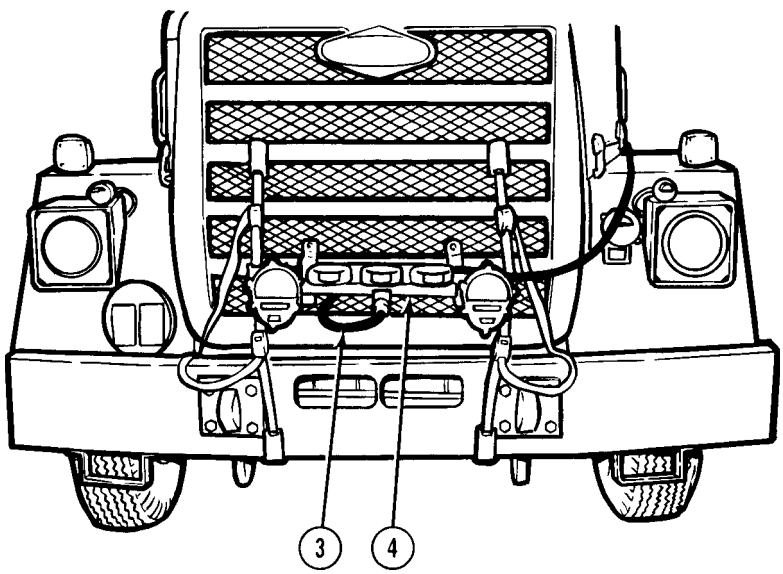


Figure 23.

7. Remove emergency tow lights (4) from disabled vehicle.
8. Remove two nuts (5), washers (6), screws (7), and brackets (8) from emergency tow lights (4). Return emergency tow lights and brackets to wrecker stowage.

DISCONNECT - Continued

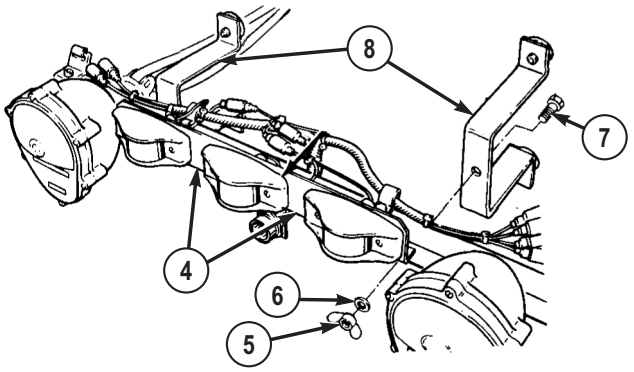


Figure 24.

9. Remove and stow two 16 ft. (5 m) safety chains (9).

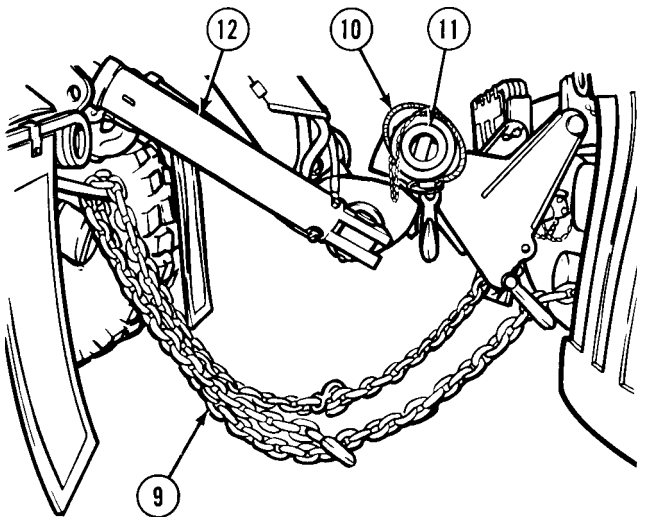


Figure 25.

10. Unwrap two springs (10) from cross tube (11) and connect to tow cylinders (12).

DISCONNECT - Continued

WARNING

If disabled vehicle's parking brake is inoperative, chock wheels of disabled vehicle (refer to operator's manual). Failure to comply may result in injury or death to personnel.

CAUTION

Adapters will swing down and can hit blackout lights causing equipment damage.

NOTE

Use retrieval controls to position cross tube to relieve tension from adapters.

11. Remove two cotter pins (13) and 1 7/16 in. (38 mm) pins (14) from adapters (15).

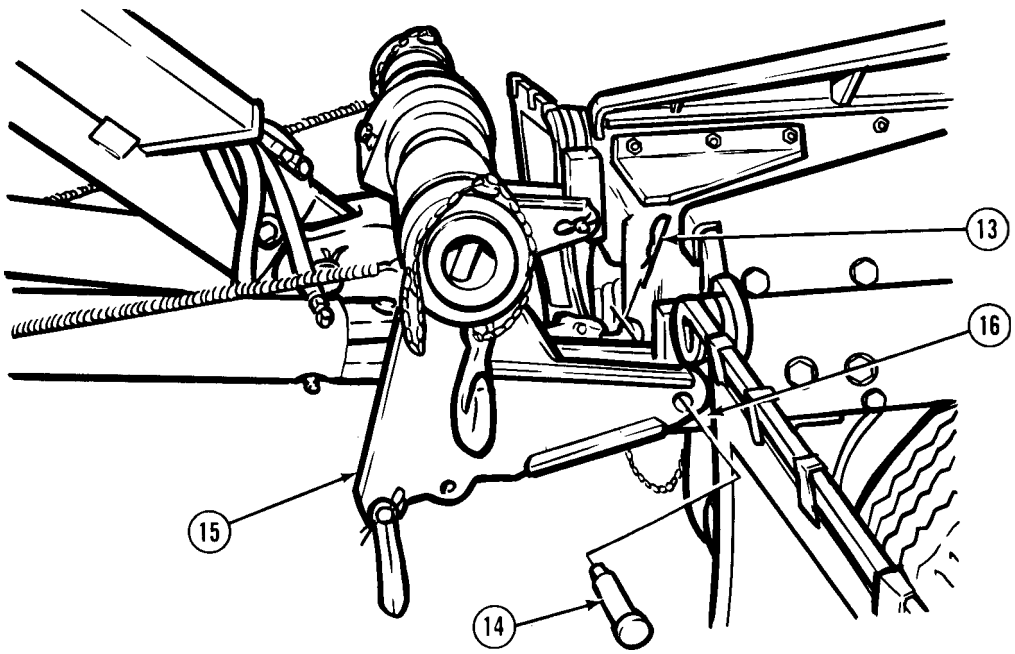


Figure 26.

DISCONNECT - Continued

12. Remove two adapters (15) from tow eyes (16) on disabled vehicle.
13. Install two cotter pins (13) in 1 7/16 in. (38 mm) pins (14), and return to wrecker stowage.
14. Drive wrecker forward (WP 0050) several feet and park. (WP 0056)

WARNING

When springs and end caps are removed, cross tube can swing in all directions and adapters may slide off and cause injury or death to personnel.

15. Remove two springs (10) from tow cylinders (12).

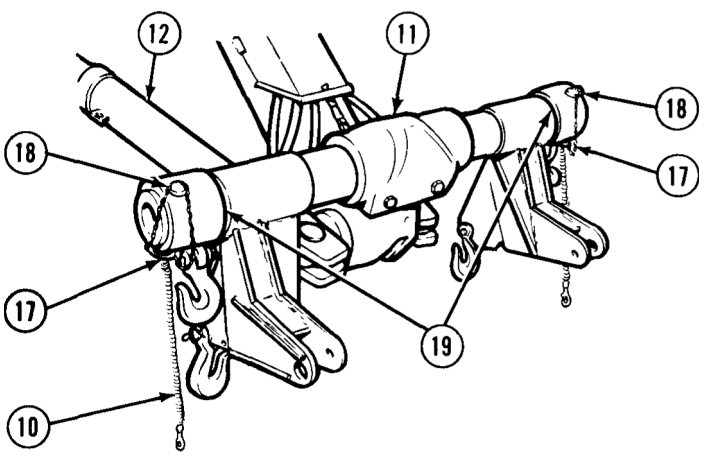


Figure 27.

16. Remove two quick pins (17) and pins (18) from end caps (19).
17. Remove two end caps (19) from cross tube (11).
18. Remove two adapters (15) from cross tube (11) and place on equipment body floor (20).

DISCONNECT - Continued

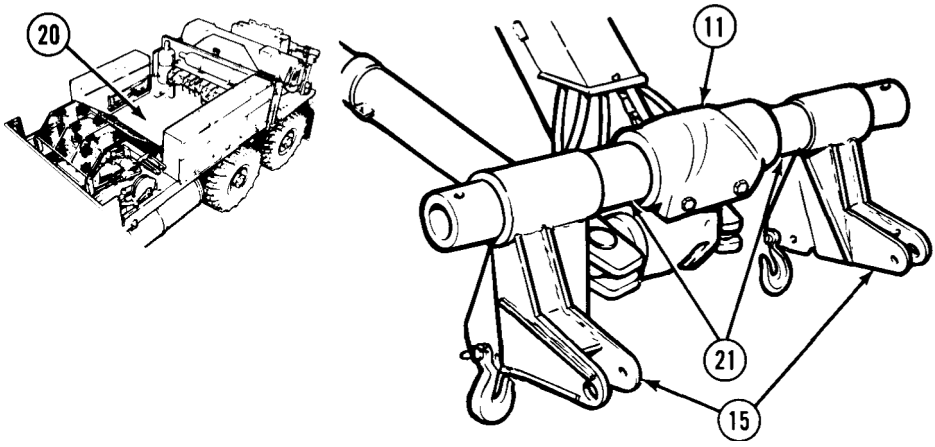


Figure 28.

19. Remove two 5 in. (127 mm) spacers (21) from cross tube (11) and return to wrecker stowage.
20. Remove lock handle (22), lock plate (23), quick pin (24), pin (25), and two front adapters (26).

DISCONNECT - Continued

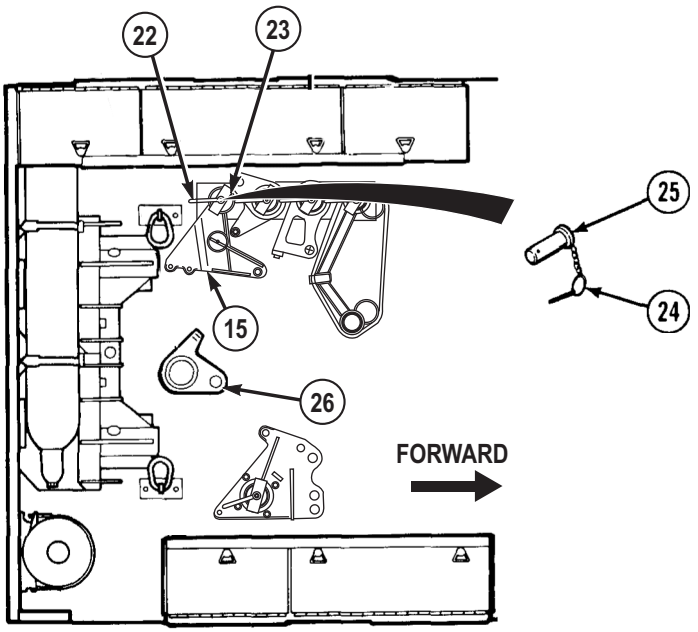


Figure 29.

21. Install two adapters (15) removed from cross tube (11), pin (25), quick pin (24), lock plate (23), and lock handle (22).

DISCONNECT - Continued

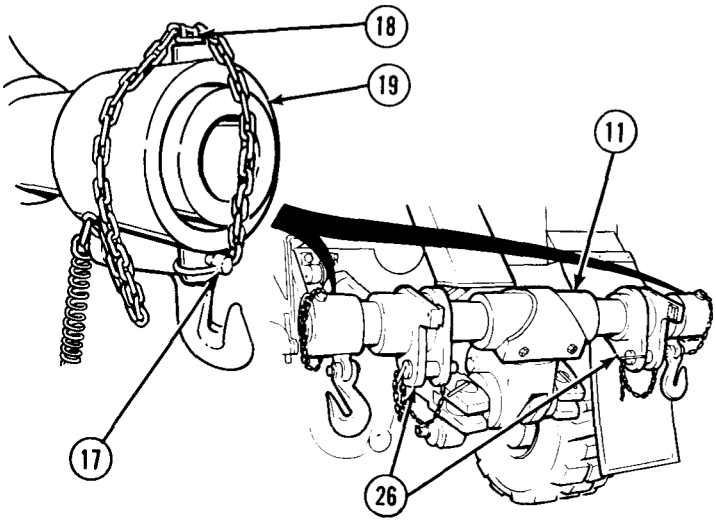


Figure 30.

22. Install front adapters (26) on cross tube (11).
23. Install two end caps (19) on cross tube (11).
24. Install two pins (18) and quick pins (17).
25. Install two springs (10) on tow cylinders (12).

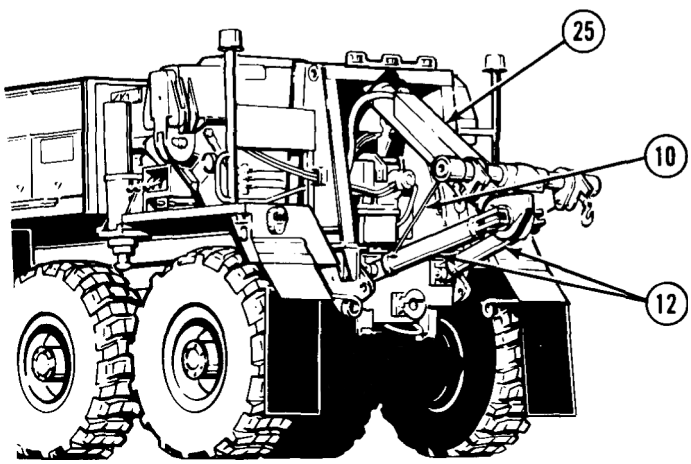


Figure 31.

DISCONNECT - Continued

26. Operate retrieval system and fully retract lift cylinder (25) and tow cylinders (12).

NOTE

Driver side and passenger side towing shackles are installed the same way.

27. Install two rear towing shackles (27), pins (28), and cotter pins (29).

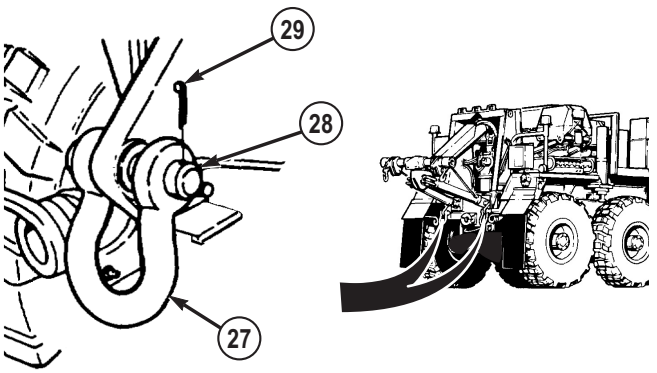


Figure 32.

28. Set POWER switch (30) to OFF position.

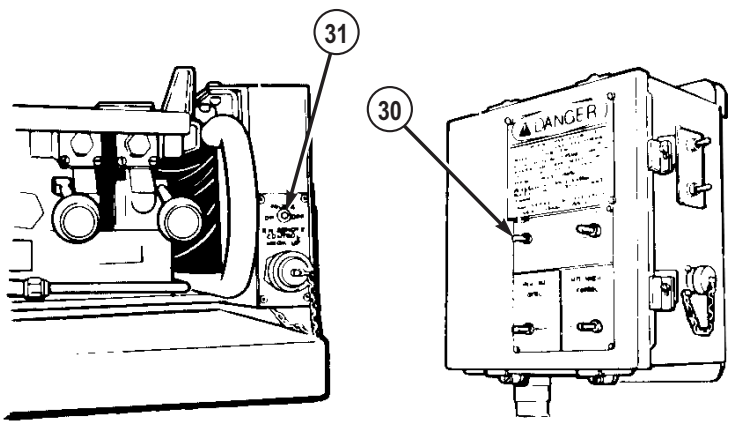


Figure 33.

29. Set POWER switch (31) to OFF position.
30. Turn off wrecker service drive lights. (WP 0087)

DISCONNECT - Continued

31. Turn off wrecker emergency flashers. (WP 0096)
32. Set HYD ENABLE switch (32) to off position. MAIN HYD ENABLE indicator (33) will go out.

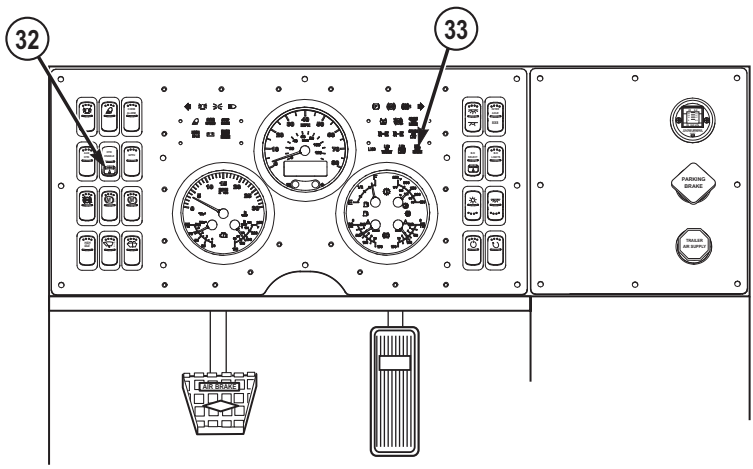


Figure 34.

33. Shut off engine. (WP 0057)
34. Remove and stow portable beacon lights. (WP 0094)
35. Turn off disabled vehicle emergency flashers, and unlock steering column (refer to disabled vehicle operator's manual).

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
TOW M1070 - REAR LIFT

INITIAL SETUP:

Not Applicable

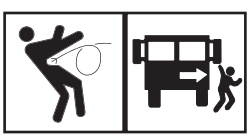
HOOKUP

NOTE

- Each recovery situation is unique and requires assessment to determine if the driveline is suitable for transport. When in doubt, consult with field level maintenance.
- This procedure is a two soldier task.

1. Review procedures for operating retrieval towing system (WP 0058) and prepare retrieval system for operation. (WP 0059)

WARNING



- Do not conduct lift and tow operations on side slopes in excess of 25%. Vehicle may roll over. Failure to comply may result in vehicle rollover and or death to personnel and damage to equipment.
- Air suspension system may still be pressurized even though air gauge reads 0 psi (0 kPa). Air suspension will drop when air line is removed. Remove air line slowly to allow air to escape. Stay clear of suspension. Failure to comply may result in injury or death to personnel.

2. Set PARKING BRAKE and chock wheels on disabled vehicle (refer to disabled vehicle's operator's manual).

NOTE

- Disabled vehicle air suspension is drained and lowered to gain extra axle to ground clearance when rear of vehicle is lifted.

HOOKUP - Continued

- Any one of the six rear air bag air lines may be removed to drain air system.

3. Remove air line (1) from fitting (2) on air spring (3).

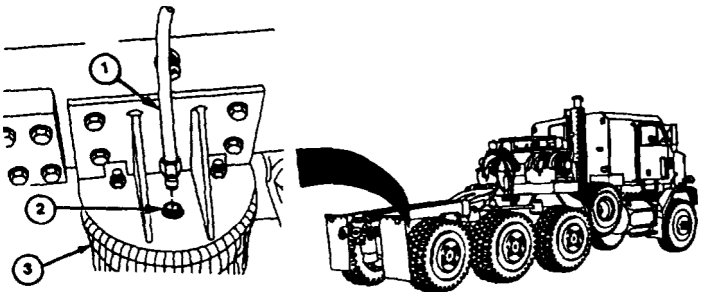


Figure 1.

4. Install air line (1) on fitting (2) after air suspension has settled.

CAUTION

- All three rear axles must be secured with chains to prevent distortion of suspension air springs. Failure to comply may result in damage to equipment.
- Use caution when routing chains near air lines, wiring, steering components, etc. Failure to comply may result in damage to equipment.

NOTE

- Two 12 ft. (3.6 m) chains are used to secure No. 2 axle.
- For maximum ground clearance, chains should be installed as tight as possible.

5. Route and secure 12 ft. (3.6 m) chain (4) over driver side frame rail (5) behind winch platform (6), in front of No. 2 axle (7), and under suspension arm (8).

HOOKUP - Continued

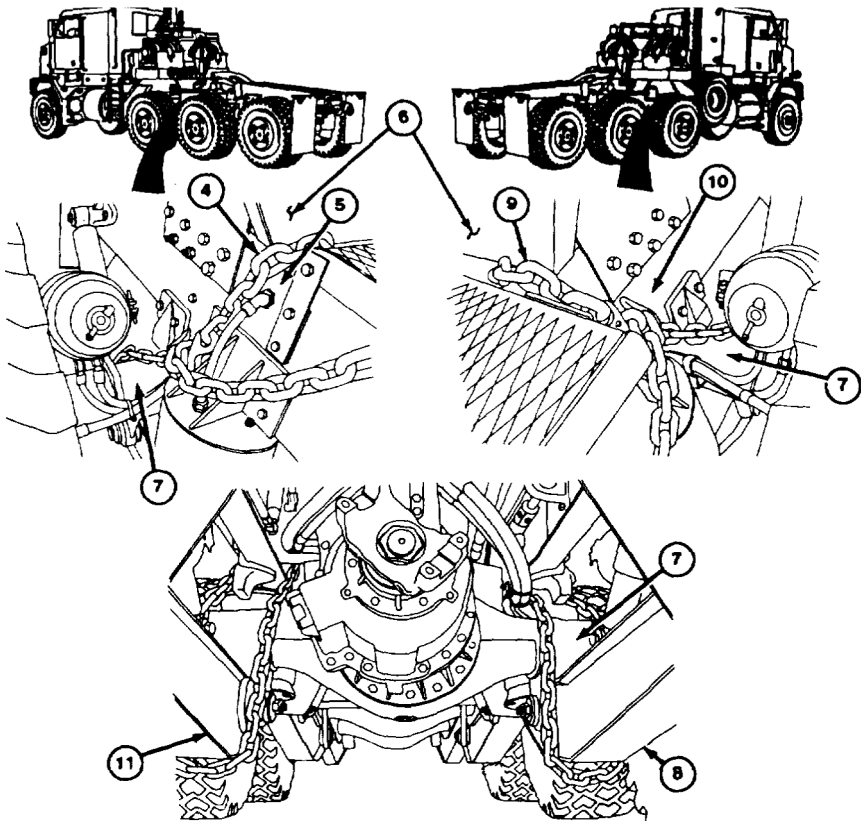


Figure 2.

6. Route and secure 12 ft. (3.6 m) chain (9) over passenger side frame rail (10) behind winch platform (6), in front of No. 2 axle (7), and under suspension arm (11).

NOTE

- One 16 ft. (5 m) safety chain is used to secure No. 3 axle.
- One 16 ft. (5 m) safety chain is used to secure No. 4 axle.
- For maximum ground clearance, chains should be installed as tight as possible.
- Both No. 3 and No. 4 axles are secured in similar manner, No. 3 axle is shown.

7. Route and secure 16 ft. (5 m) safety chain (12) over both frame rails (5 and 10), in front of No. 3 axle (13) and under suspension arms (14).

HOOKUP - Continued

8. Repeat step (7) for No. 4 axle.
9. Prepare retrieval system for operation. (WP 0059)

WARNING

- Hold cross tube when removing springs, cross tube can swing in all directions and adapters may slide off. Failure to comply may result in injury or death to personnel.
- Intervehicular air lines are not connected when towing from rear. Disabled vehicle will not have braking. Use extreme care when transporting disabled vehicle using rear hookup. Failure to comply may result in injury or death to personnel.

10. Disconnect two springs (15) from tow cylinders (16).

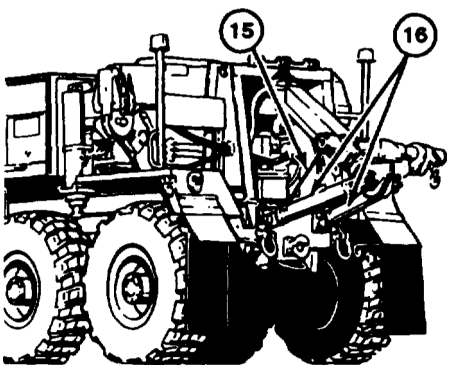


Figure 3.

CAUTION

Both rear towing shackles must be removed from rear tow eyes on wrecker before performing retrieval operations, or damage to tow cylinder may result.

NOTE

Driver side and passenger side towing shackles are removed the same way.

HOOKUP - Continued

11. Remove two rear towing shackles from wrecker vehicle:

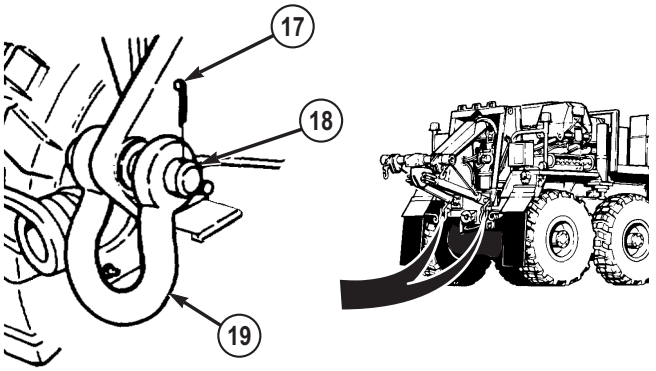


Figure 4.

a. Remove cotter pin (17), pin (18), and towing shackle (19).

b. Replace pin (17) in shackle (19), and cotter pin (17) in pin (18).

c. Repeat Steps (a) and (b) for opposite side towing shackle (19).

d. Stow two rear towing shackles on wrecker vehicle.

12. Pull LIFT CYLINDER control lever (20) to lower cross tube (21) to approximately 3 ft. (1 m) above the ground.

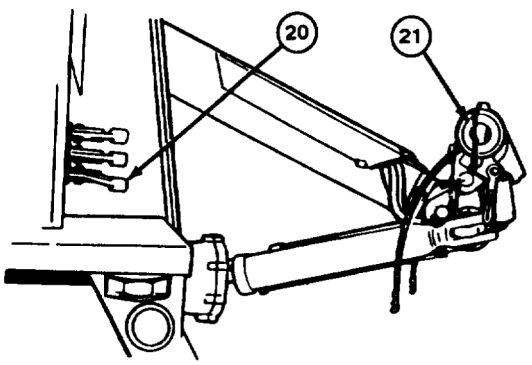


Figure 5.

13. Position wrecker so that cross tube (21) is approximately 1 ft. (30 cm) from tow eyes of disabled vehicle and centered on disabled vehicle.

HOOKUP - Continued

WARNING

When springs and end caps are removed, cross tube can swing in all directions and adapters may slide off and cause injury or death to personnel.

14. Remove two quick pins (22) and pins (23) from end caps (24).

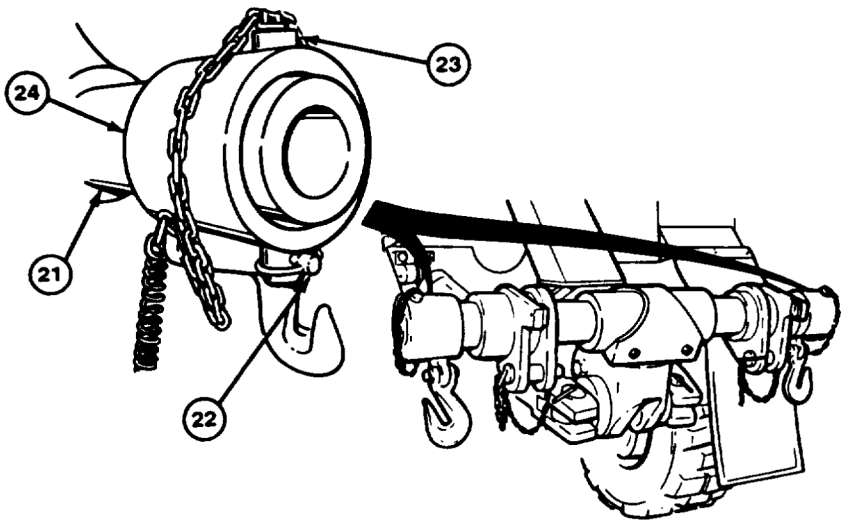


Figure 6.

15. Remove two end caps (24) from cross tube (21).
16. Remove two front adapters (25) from cross tube (21) and place on equipment body floor (26).

HOOKUP - Continued

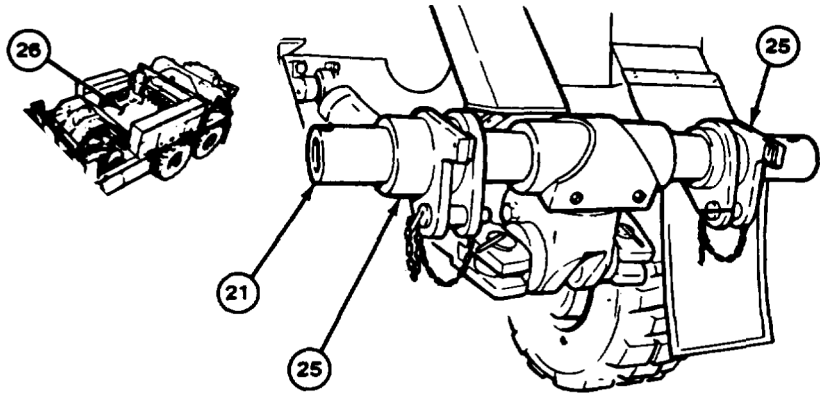


Figure 7.

17. Remove lock handle (27), lock plate (28), and two rear tow adapters (1497260W and 1497250W) (29) from equipment body floor (26).

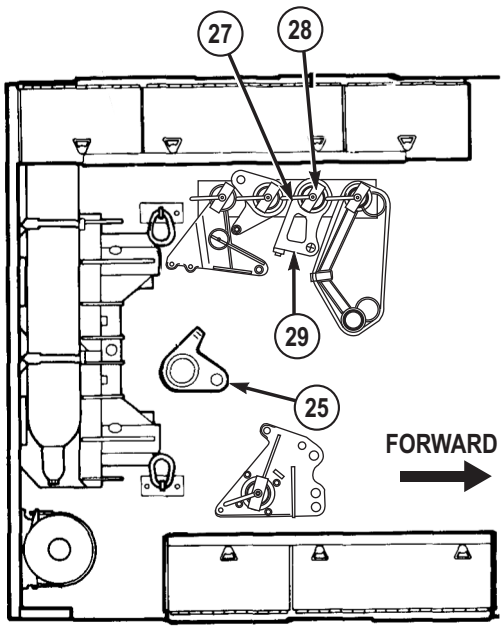


Figure 8.

18. Install two front adapters (25) on equipment body floor (26) with lockplate (28) and lock handle (27).

HOOKUP - Continued

19. Install two rear tow adapters (29) on cross tube (21).

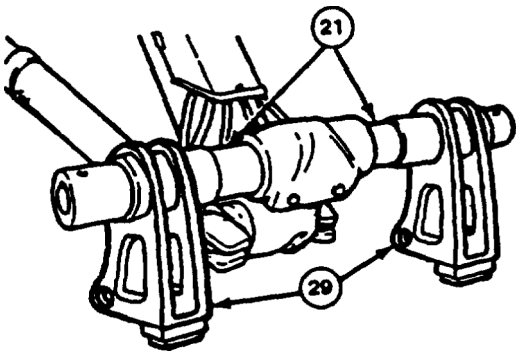


Figure 9.

20. Install two end caps (24) on cross tube (21) with two pins (23) and quick pins (22).

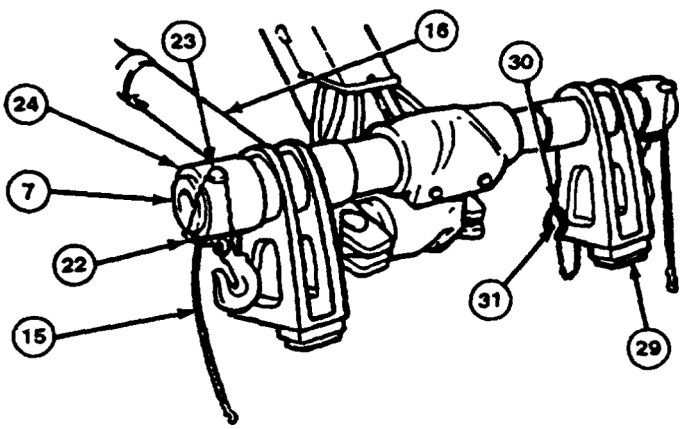


Figure 10.

21. Attach two springs (15) on tow cylinders (16).
22. Remove two quick pins (30) and pins (31) from adapters (29).

HOOKUP - Continued

WARNING

Keep hands and fingers away from adapters and tow eyes when operating retriever controls. Failure to comply may result in injury or death to personnel.

23. Operate retrieval system (WP 0059) and with aid of an assistant, position cross tube (21) so holes in adapters (29) align with holes in rear tow eyes (32).

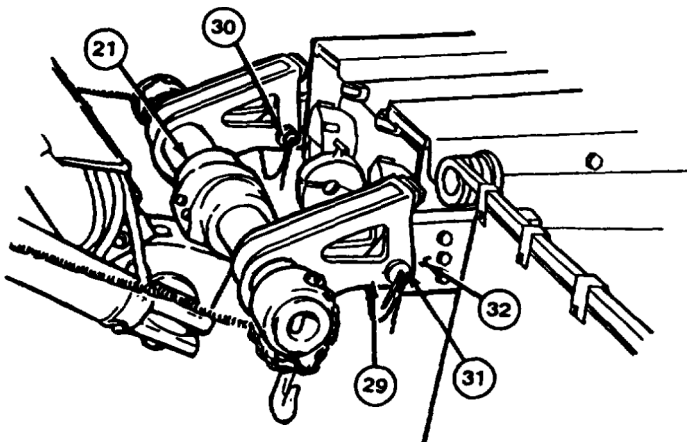


Figure 11.

24. Install two pins (31) through adapters (29) and rear tow eyes (32) with two quick pins (30).

25. Remove two 16 ft. (5 m) safety chains (33) from wrecker stowage.

HOOKUP - Continued

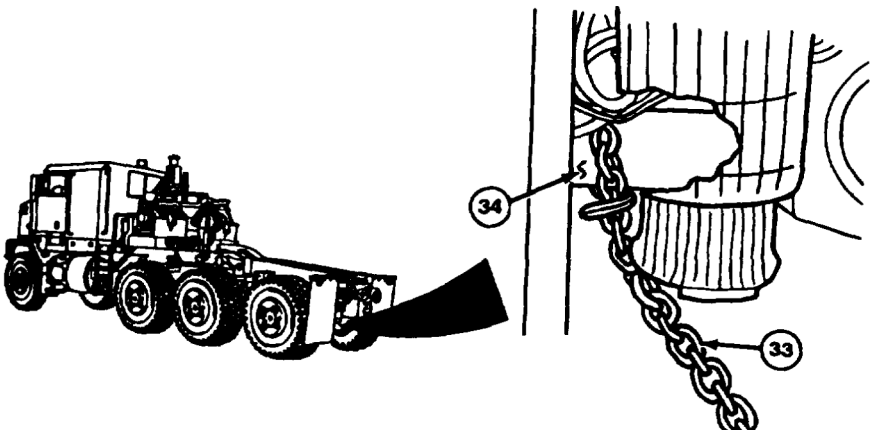


Figure 12.

26. Route one end (without safety shackle) of 16 ft. (5 m) safety chain (33) over No. 4 axle (34) of disabled vehicle.
27. Hook 16 ft. (5 m) safety chain (33) together toward rear on disabled vehicle.
28. Repeat Steps (26) and (27) for other side of disabled vehicle No. 4 axle (34).
29. Route two free ends of 16 ft. (5 m) safety chains (33) through safety chain hoop (35) on wrecker and secure grab hooks (36) with safety shackles (37).

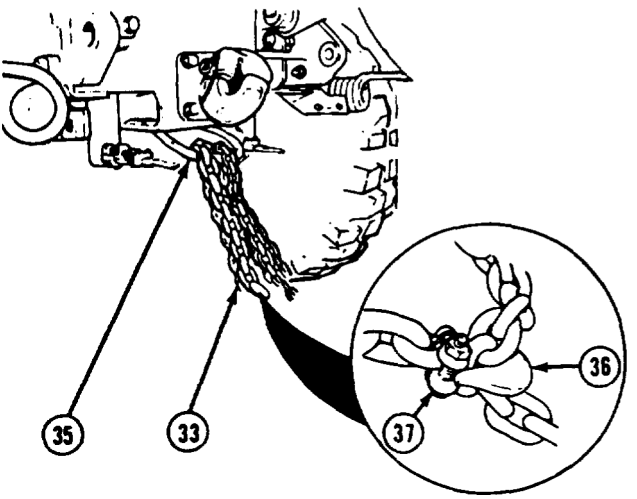


Figure 13.

HOOKUP - Continued

30. Position 16 ft. (5 m) safety chains (33) on grab hooks of end caps (24).

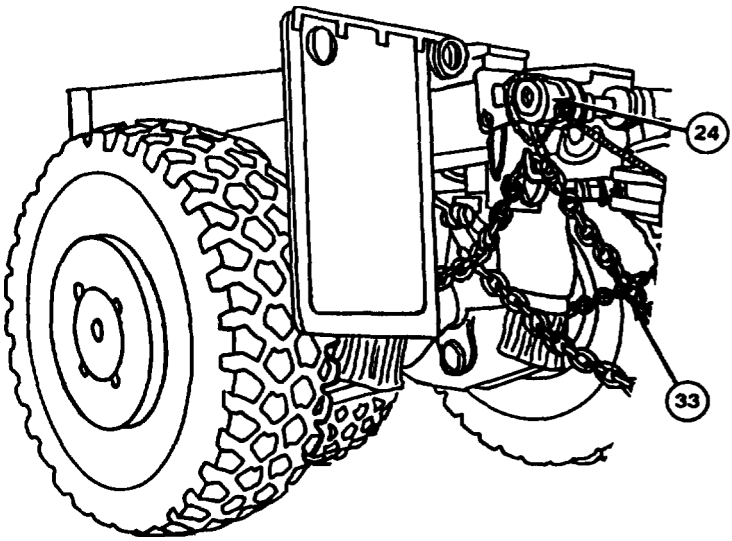


Figure 14.

CAUTION

Ensure all disabled vehicle cargo is secured prior to lifting and towing. Failure to comply may result in damage to cargo and equipment.

31. Prepare disabled vehicle for towing (refer to disabled vehicle operator's manual).
32. Remove emergency tow lights (38) and two brackets (39) from wrecker stowage.

HOOKUP - Continued

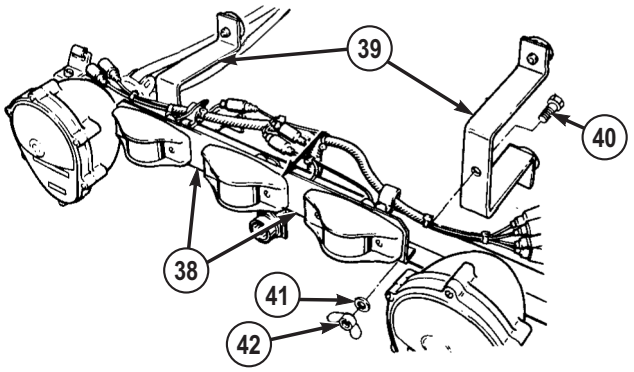


Figure 15.

33. Install two brackets (39) on emergency tow lights (38) with two screws (40), washers (41), and nuts (42).
34. Install emergency tow lights (38) on front of disabled vehicle and fasten securely with straps (43).

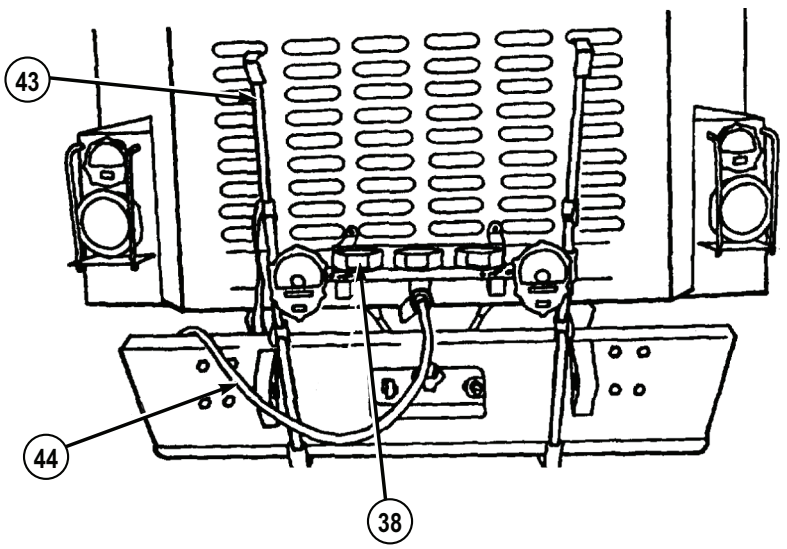


Figure 16.

35. Remove tow light cable (44) from wrecker stowage and connect to emergency tow lights (38).

HOOKUP - Continued

CAUTION

Route cable so it does not drag on ground or interfere with turning tires. Failure to comply may result in damage to equipment.

36. Route free end of tow light cable (44) along disabled vehicle and connect to rear electrical connector (45) on wrecker.

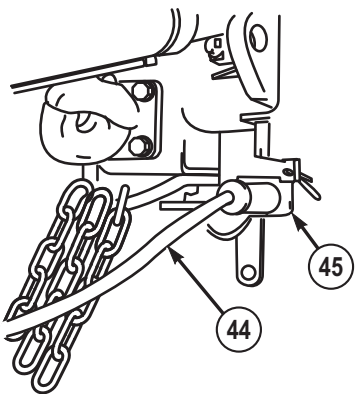


Figure 17.

37. Lock disabled vehicle's steering (refer to disabled vehicle operator's manual).
38. Set POWER switch (46) to ON position.

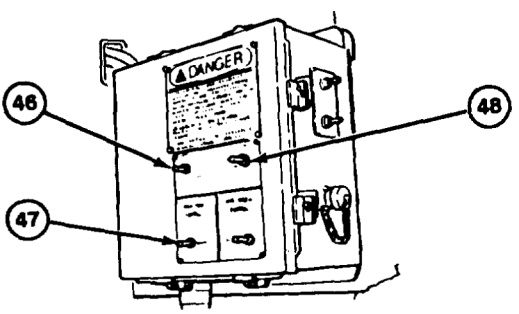


Figure 18.

39. Set HIGH IDLE switch (47) to CONTINUOUS.
40. Push and release LATCH switch (48). Engine speed will increase to approximately 1500 rpm.

HOOKUP - Continued

WARNING

Keep out from under retrieval system and disabled vehicle when raised off ground. Failure to comply may result in injury or death to personnel.

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

CAUTION

- Fully retract both tow cylinders before lifting disabled vehicle. Failure to comply may result in damage to equipment.
- Ensure all rigging is secure. Loose rigging can become entangled. Failure to comply may result in damage to equipment.

NOTE

Operator must allow wrecker air suspension system to completely adjust for added weight of disabled vehicle before raising disabled vehicle to final height of 1 ft. (30 cm).

41. Push LIFT CYLINDER control lever (20) to retract lift cylinder (49) and raise disabled vehicle approximately 3 in. (8 cm):
    a. Once wrecker air suspension system has adjusted for added weight of disabled vehicle, push LIFT CYLINDER control lever (20) to retract lift cylinder (49) and raise disabled vehicle to final height of 1 ft. (30 cm).

HOOKUP - Continued

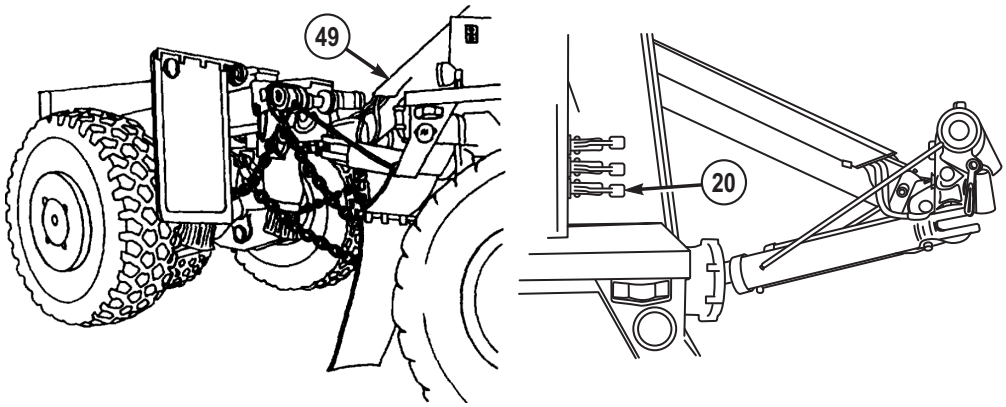


Figure 19.

42. Set POWER switch (46) to OFF position.

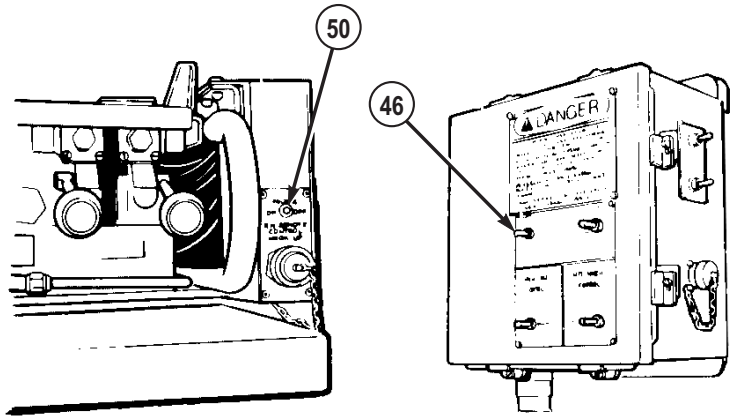


Figure 20.

43. Set POWER switch (50) to OFF position.
44. Set HYD ENABLE switch (52) to off position. MAIN HYD ENABLE indicator (53) will go out.

HOOKUP - Continued

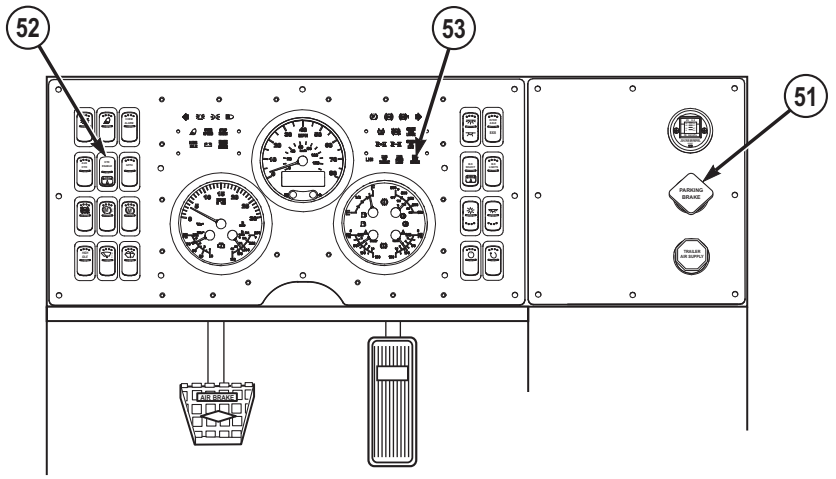


Figure 21.

45. Turn on wrecker service drive lights. (WP 0087)
46. Turn on wrecker emergency flashers. (WP 0096)
47. Turn on disabled vehicle emergency flashers (refer to operator's manual).

NOTE

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

48. Push in PARKING BRAKE control (51).

WARNING

The M984 Wrecker should not be operated at speeds over 15 MPH (24 km/hr) except on paved roads when the operator determines that the vehicle being towed and the terrain allow safe operation. Engine brake switch must ON for all towing operations. Speed in excess of the below table may result in loss of control, serious injury, or death to personnel.

49. Select desired gear (WP 0048) and transport disabled vehicle.

HOOKUP - Continued

Table 1. Maximum Towing Speed.

Terrain Condition	Maximum Speed Towed Load Up To 50,000 lbs (22 700 kg)	Maximum Speed Towed Load Above 50,000 lbs (22 700 kg)
On Road-Level	35 mph (56 km/hr)	30 mph (48 km/hr)
On Road-Hilly	30 mph (48 km/hr)	20 mph (32 km/hr)
Off-Road	15 mph (24 km/hr)	15 mph (24 km/hr)

DISCONNECT

NOTE

This procedure is a two soldier task.

1. Set transmission range selector (1) to N (neutral).

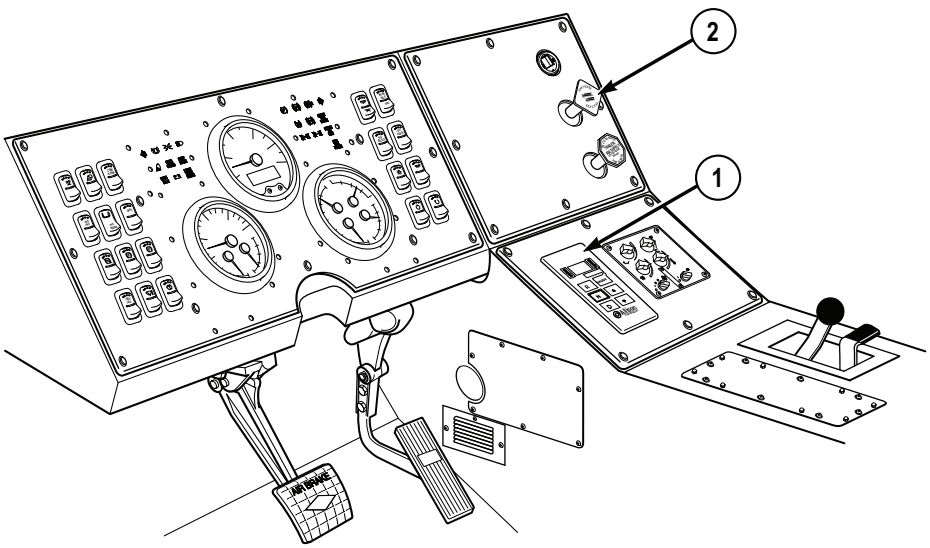


Figure 22.

NOTE

Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

DISCONNECT - Continued

2. Pull out PARKING BRAKE control (2).

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

NOTE

- After lowering disabled vehicle, extend lift and tow cylinders approximately 2 to 4 inches (50 to 100 mm) to allow for adjustment when removing adapters.
- Expect wrecker air suspension system to deflate air springs to achieve normal ride height once weight of disabled vehicle is removed.

3. Review procedures for operating retrieval towing system, (WP 0058)prepare retrieval system for operation, (WP 0059) and lower disabled vehicle to the ground.

WARNING

If disabled vehicle's parking brake is inoperative, chock wheels of disabled vehicle (refer to operator's manual). Failure to comply may result in injury or death to personnel.

4. Set parking brake on disabled vehicle (refer to disabled vehicle operator's manual).
5. Remove tow light cable (3) from wrecker.

DISCONNECT - Continued

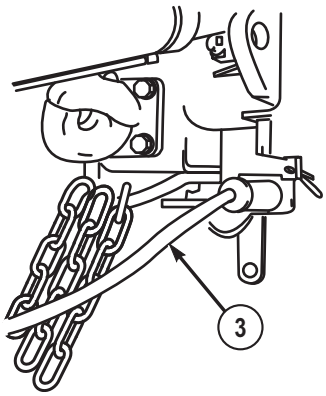


Figure 23.

6. Remove tow light cable (3) from emergency tow lights (4) and return to wrecker stowage.

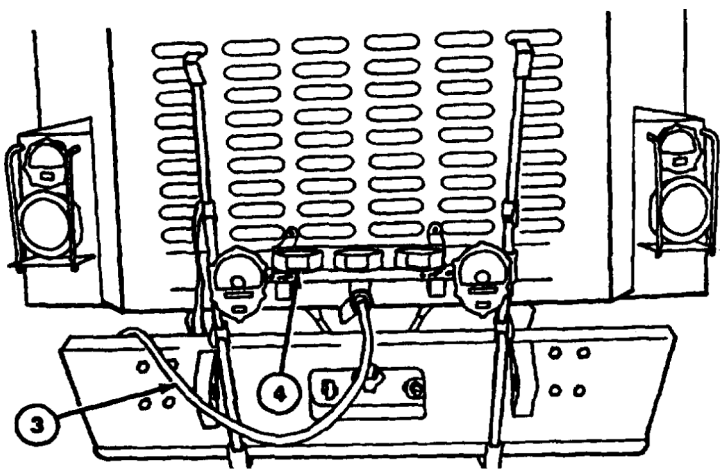


Figure 24.

7. Remove emergency tow lights (4) from disabled vehicle.
8. Remove two nuts (5), washers (6), screws (7), and brackets (8) from emergency tow lights (4). Return emergency tow lights and brackets to wrecker stowage.

DISCONNECT - Continued

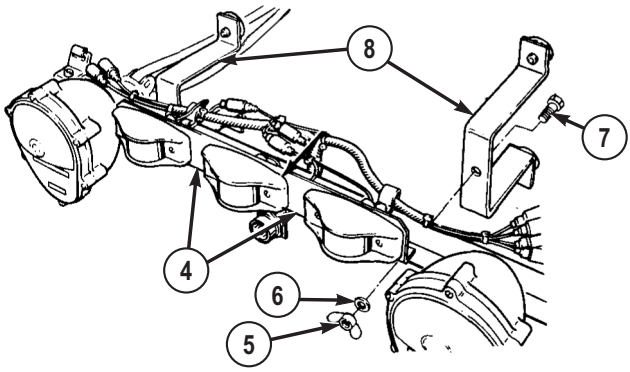


Figure 25.

9. Remove and stow two 16 ft. (5 m) safety chains (9).

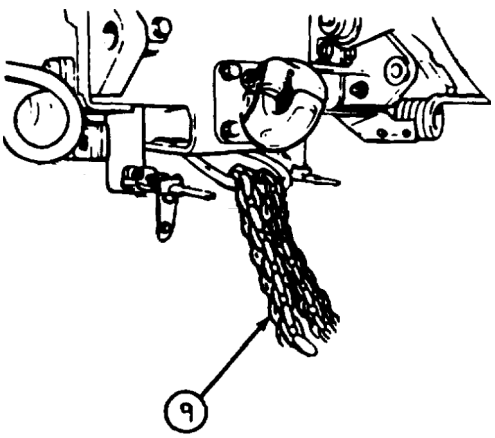


Figure 26.

10. Remove two quick pins (10) and pins (11) from adapters (12).

DISCONNECT - Continued

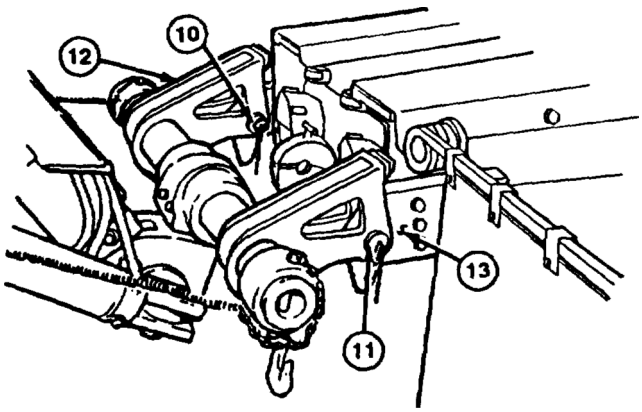


Figure 27.

11. Remove two adapters (12) from tow eyes (13).
12. Install two pins (11) in adapters (12).
13. Install two quick pins (10) in pins (11).
14. Drive wrecker forward (WP 0050) several feet and park. (WP 0056)

WARNING

When springs and end caps are removed, cross tube can swing in all directions and adapters may slide off and cause injury or death to personnel.

15. Remove two springs (14) from tow cylinders (15).

DISCONNECT - Continued

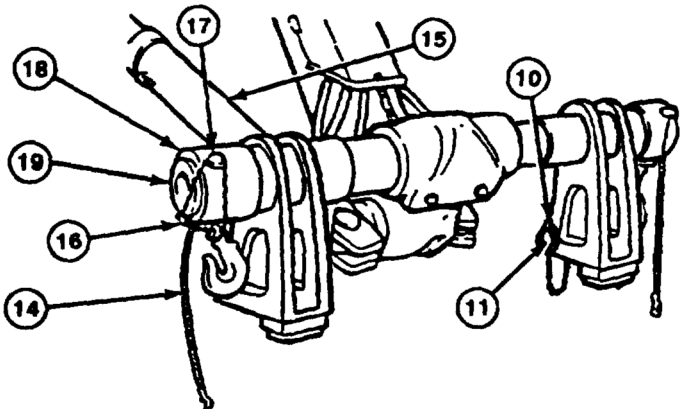


Figure 28.

16. Remove two quick pins (16) and pins (17) from end caps (18).
17. Remove two end caps (18) from cross tube (19).
18. Remove two adapters (12) from cross tube (19) and place on equipment body floor (20).

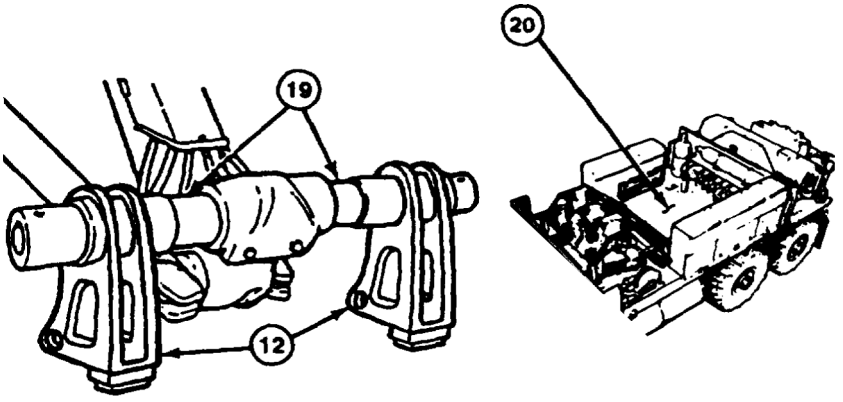


Figure 29.

19. Remove lock handle (21), lock plate (22), and two front tow adapters (23).

DISCONNECT - Continued

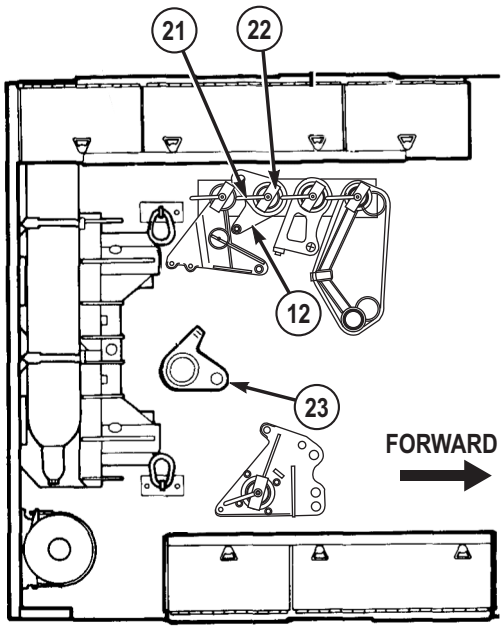


Figure 30.

20. Install two adapters (12) on body floor with lock plate (22) and lock handle (21).
21. Install two adapters (23) on cross tube (19).

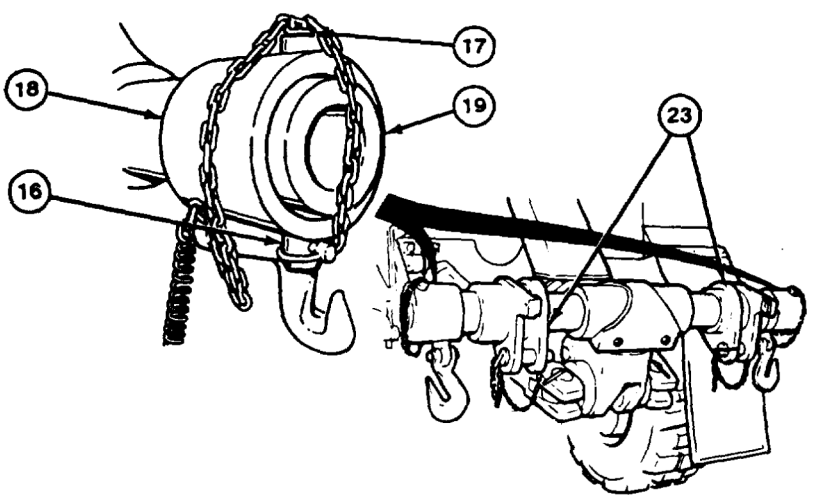


Figure 31.

DISCONNECT - Continued

22. Install two end caps (18) on cross tube (19) with two pins (17) and two quick pins (16).
23. Install two springs (14) on tow cylinders (15).

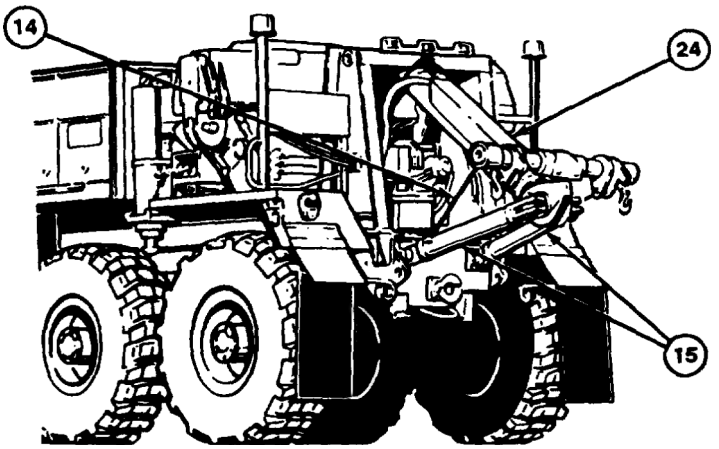


Figure 32.

24. Operate retrieval system to fully retract lift cylinder (24) and tow cylinders (15).

NOTE

Driver side and passenger side towing shackles are installed the same way.

25. Install two rear towing shackles (25), pins (26), and cotter pins (27).

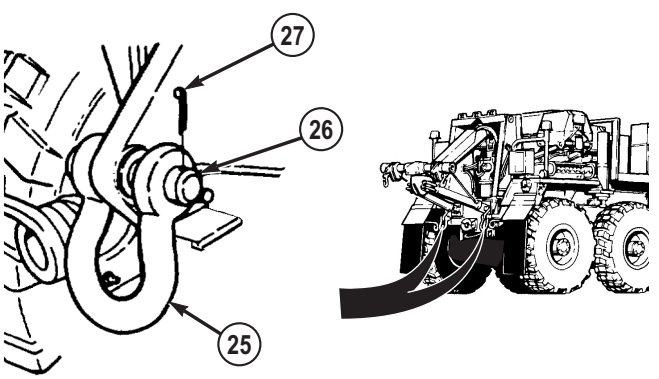


Figure 33.

DISCONNECT - Continued

26. Set POWER switch (28) to OFF position.

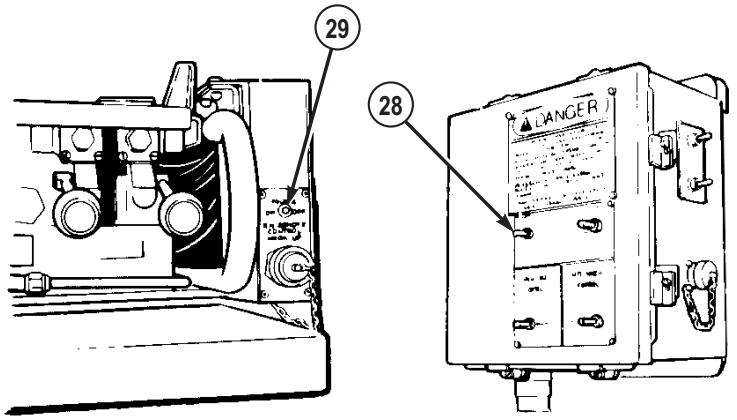


Figure 34.

27. Set POWER switch (29) to OFF position.
28. Turn off wrecker service drive lights. (WP 0087)
29. Turn off wrecker emergency flashers. (WP 0096)
30. Set HYD ENABLE switch (30) to off position. MAIN HYD ENABLE indicator (31) will go out.

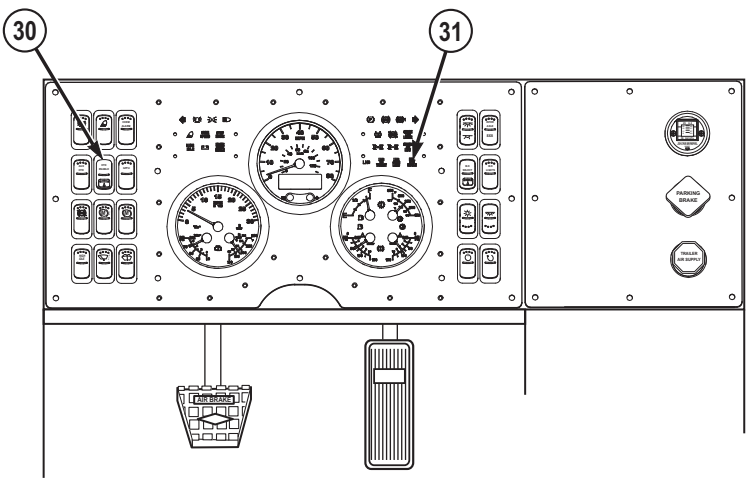


Figure 35.

DISCONNECT - Continued

31. Shut off engine. (WP 0057)
32. Remove and stow portable beacon lights. (WP 0094)
33. Turn off disabled vehicle emergency flashers, and unlock steering column (refer to disabled vehicle operator's manual).

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
TOW M911 - REAR LIFT

INITIAL SETUP:

Not Applicable

HOOKUP

NOTE

- Each recovery situation is unique and requires assessment to determine if the driveline is suitable for transport. When in doubt, consult with field level maintenance.
- This procedure is a two soldier task.

1. Review procedures for operating retrieval towing system (WP 0058) and prepare retrieval system for operation. (WP 0059)

WARNING

- Hold cross tube when removing springs, cross tube can swing in all directions and adapters may slide off. Failure to comply may result in injury or death to personnel.
- Intervehicular air lines are not connected when towing from rear. Disabled vehicle will not have braking. Use extreme care when transporting disabled vehicle using rear hookup. Failure to comply may result in injury or death to personnel.

2. Disconnect two springs (1) from tow cylinders (2).

HOOKUP - Continued

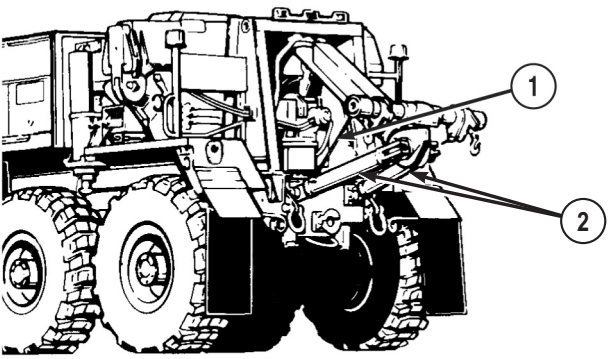


Figure 1.

CAUTION

Both rear towing shackles must be removed from rear tow eyes on wrecker before performing retrieval operations, or damage to tow cylinder may result.

NOTE

Driver side and passenger side towing shackles are removed the same way.

3. Remove two rear towing shackles from wrecker vehicle:

HOOKUP - Continued

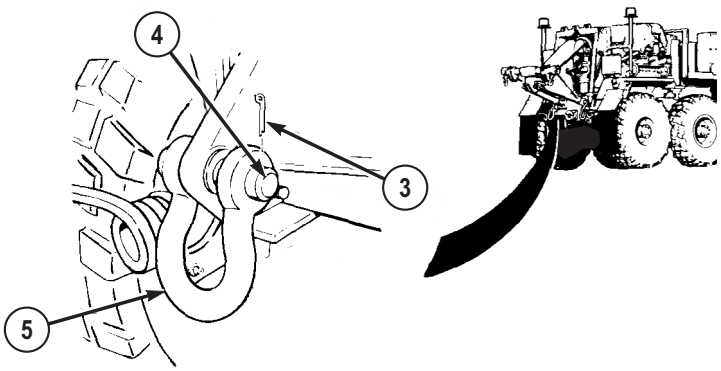


Figure 2.

a. Remove cotter pin (3), pin (4), and towing shackle (5).

b. Replace pin (4) in shackle (5), and cotter pin (3) in pin (4).

c. Repeat Steps (a) and (b) for opposite side towing shackle (5).

d. Stow two rear towing shackles on wrecker vehicle.

4. Pull LIFT CYLINDER control lever (6) to lower cross tube (7) to approximately 3 ft. (1 m) above ground.

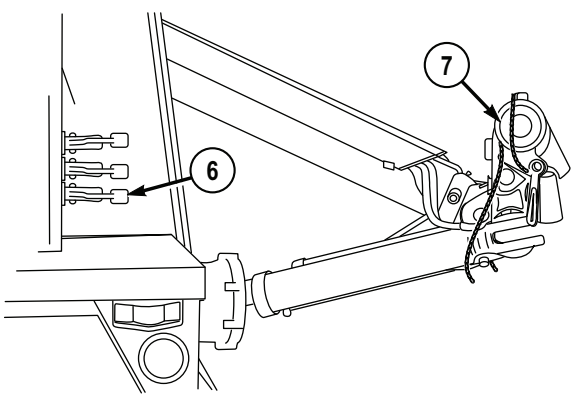


Figure 3.

5. Position wrecker so that cross tube (7) is approximately 1 ft. (30 cm) from tow eyes of disabled vehicle and centered on disabled vehicle.

HOOKUP - Continued

WARNING

When springs and end caps are removed, cross tube can swing in all directions and adapters may slide off and cause injury or death to personnel.

6. Remove quick pins (8) and pins (9) from end caps (10).

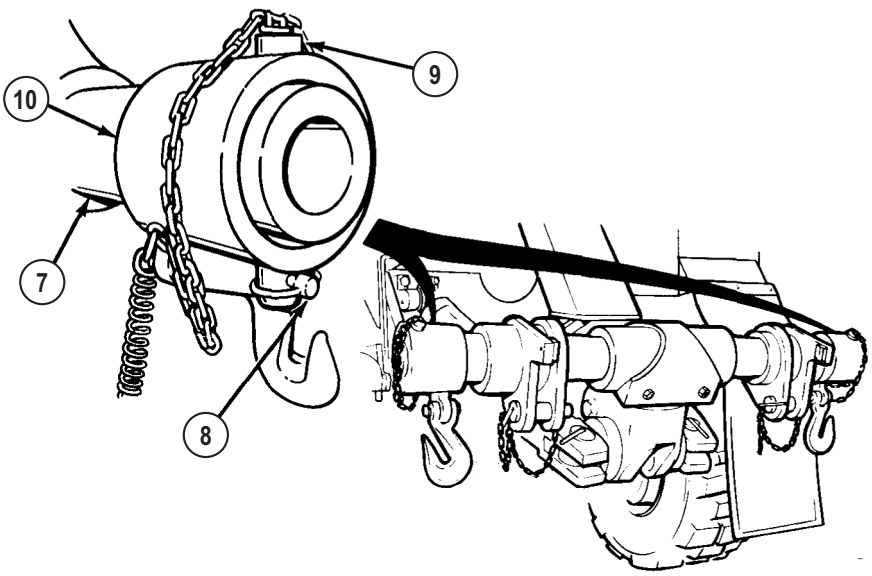


Figure 4.

7. Remove two end caps (10) from cross tube (7).
8. Remove two front adapters (11) from cross tube (7) and place on equipment body floor (12).

HOOKUP - Continued

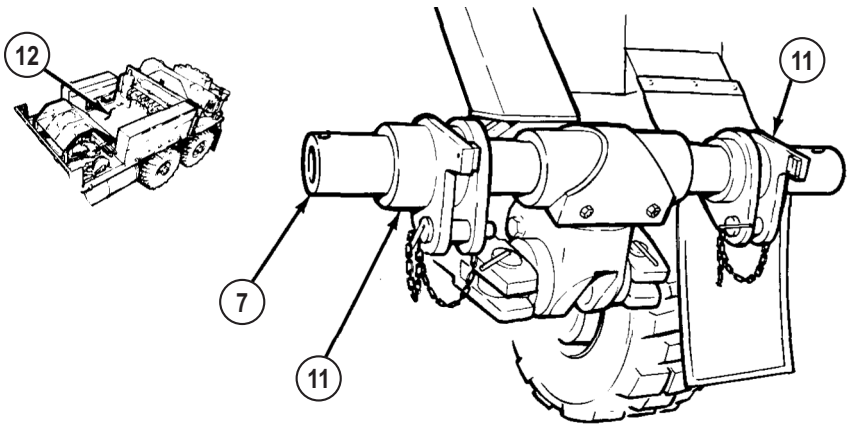


Figure 5.

9. Remove lock handle (13), lock plate (14), quick pin (15), pin (16), and two rear tow adapters (17).

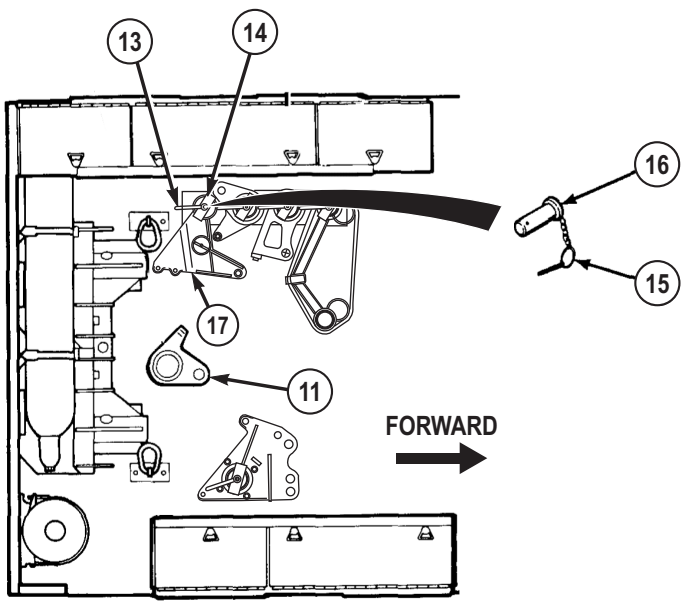


Figure 6.

10. Install two front adapters (11) removed from cross tube (7), pin (16), quick pin (15), lock plate (14), and lock handle (13).

HOOKUP - Continued

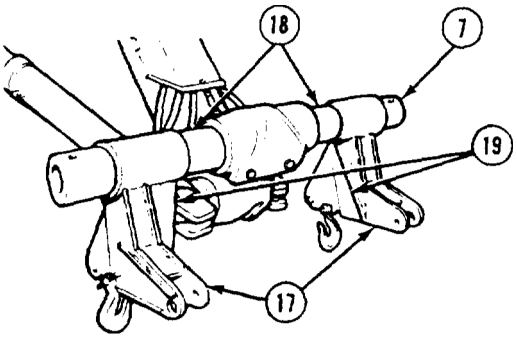
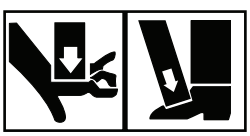


Figure 7.

11. Remove two 1 7/16 in. (37 mm) pins and two 5 in. (127 mm) spacers (18) from wrecker stowage.

WARNING



Adapters and end caps may slide off when installing and cause injury or death to personnel.

12. Install two 5 in. (127 mm) spacers (18) on cross tube (7).
13. Install two rear tow adapters (17) on cross tube (7) with support brace (19) to inside.
14. Install two end caps (10) on cross tube (7).

HOOKUP - Continued

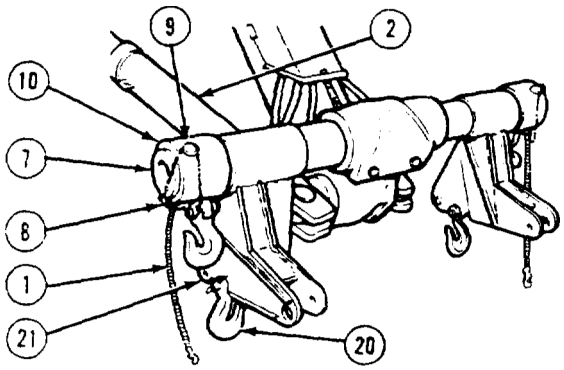


Figure 8.

15. Install two pins (9) and quick pins (8).

NOTE

Complete Step (16) if two rear adapter grab hooks are located in holes other than those closest to towing pin holes, otherwise skip to Step (17).

16. Install adapter grab hooks (20) in hole closest to pin holes (21).
17. Attach two springs (1) on tow cylinders (2).
18. Operate retrieval system, and with aid of an assistant, position cross tube (7) so holes in adapters (17) align with rear tow eyes (22).

HOOKUP - Continued

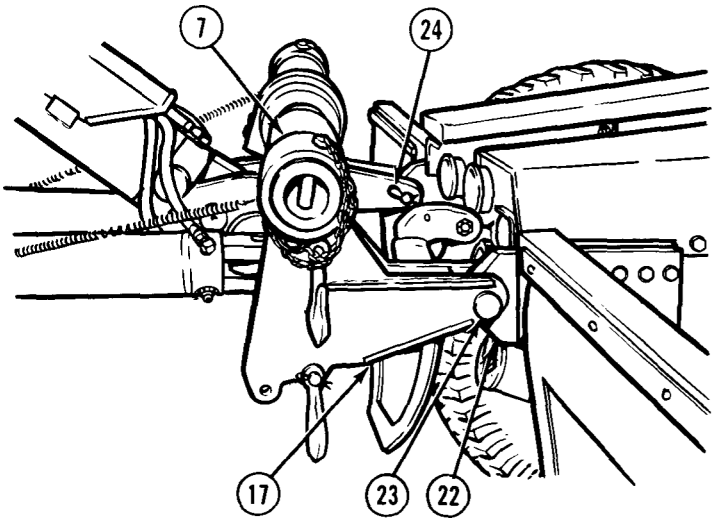


Figure 9.

19. Insert two 1 7/16 in. (37 mm) pins (23) through adapters (17) and rear tow eyes (22). Install two cotter pins (24) in pins (23).
20. Install two cotter pins (24) in pins (23).
21. Operate retrieval system (7) until adapter grab hooks (20) are under rear tow eyes (22).

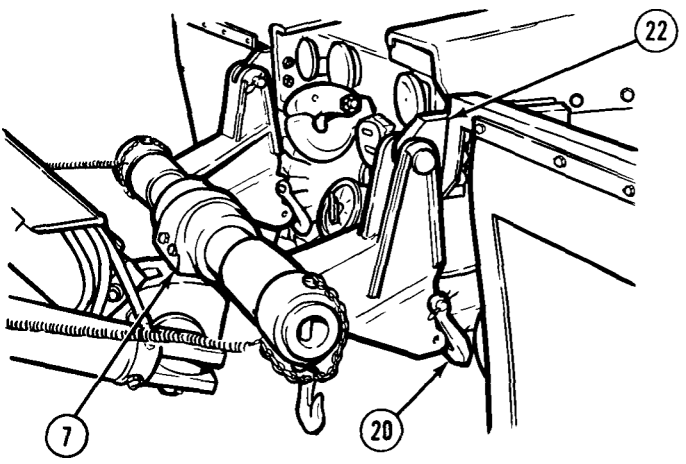


Figure 10.

HOOKUP - Continued

22. Remove two 16 ft. (5 m) safety chains (25) from wrecker stowage.

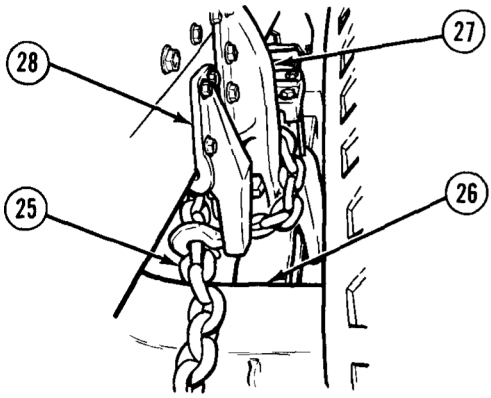


Figure 11.

23. Route end (without safety shackle) of 16 ft. (5 m) safety chain (25) over rear axle (26) on disabled vehicle.
24. Route 16 ft. (5 m) safety chains (25) around rear leaf spring shackle (27).
25. Hook 16 ft. (5 m) safety chain (25) back into itself between rear leaf spring shackle (27) and axle stop (28).
26. Repeat Steps (23) through (25) for other side of disabled vehicle.
27. Pull 16 ft. (5 m) safety chain (25) tight, and install chain on adapter grab hook (20).

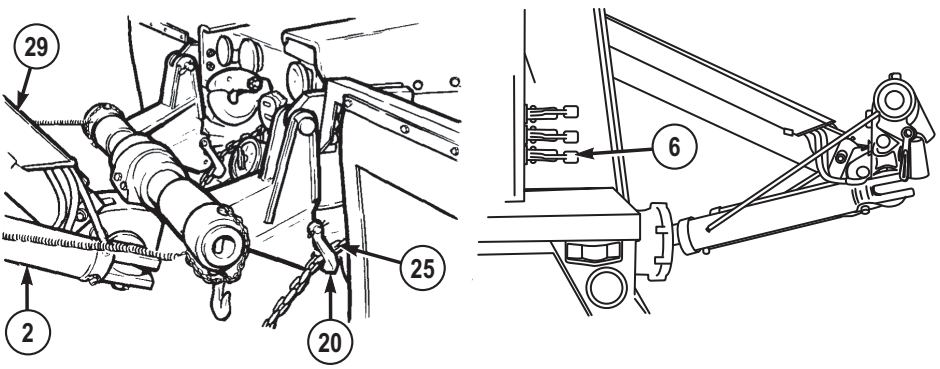


Figure 12.

28. Repeat step (27) for other side of disabled vehicle.

HOOKUP - Continued

29. Release PARKING BRAKE on disabled vehicle (refer to M911 operator's manual).
30. Operate retrieval system until tow cylinders (2) are fully retracted.
31. Push in LIFT CYLINDER control lever (6) to retract lift cylinder (29) until slack is removed from 16 ft. (5 m) safety chains (25).

NOTE

Adjust chain slack so safety chains do not touch the ground.

32. Route two free ends of 16 ft. (5 m) safety chains (25) through safety chain hoop (30) on wrecker, and secure grab hooks (31) with safety shackles (32).

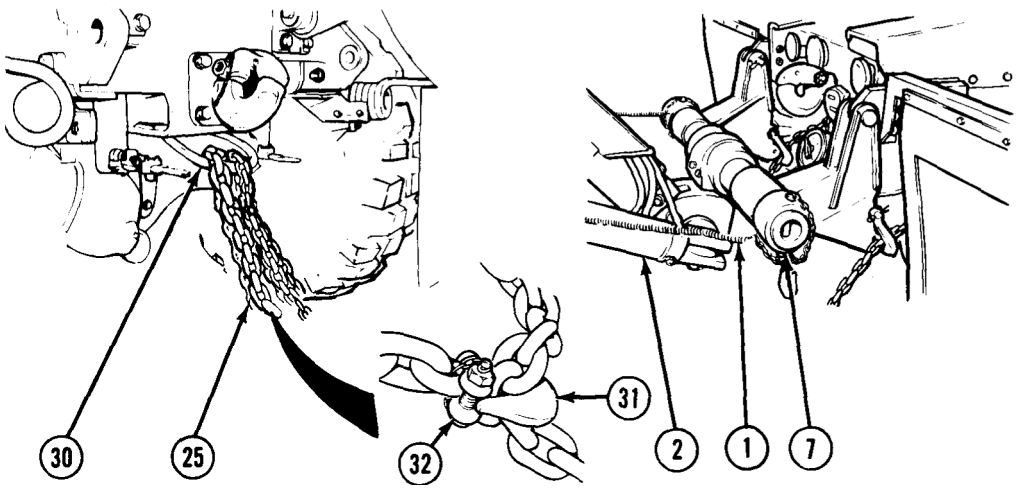


Figure 13.

33. Disconnect two springs (1) from tow cylinders (2), wrap around cross tube (7) and secure.

CAUTION

Ensure all disabled vehicle cargo is secured prior to lifting and towing. Failure to comply may result in damage to cargo and equipment.

34. Prepare disabled vehicle for towing (refer to M911 operator's manual).
35. Remove emergency tow lights (33) and two brackets (34) from wrecker stowage.

HOOKUP - Continued

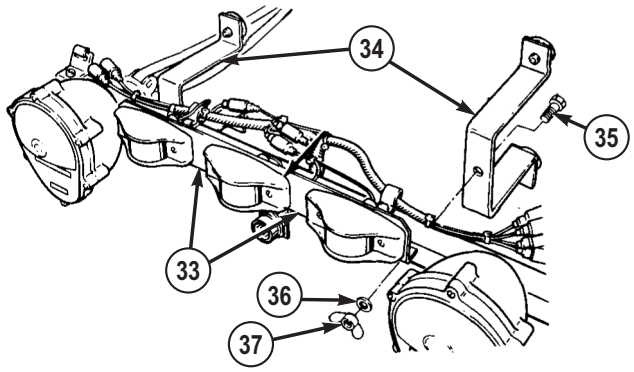


Figure 14.

36. Install two brackets (34) on emergency tow lights (33) with two screws (35), washers (36), and nuts (37).

37. Install emergency tow lights (33) on front of M911 and fasten securely with straps (38).

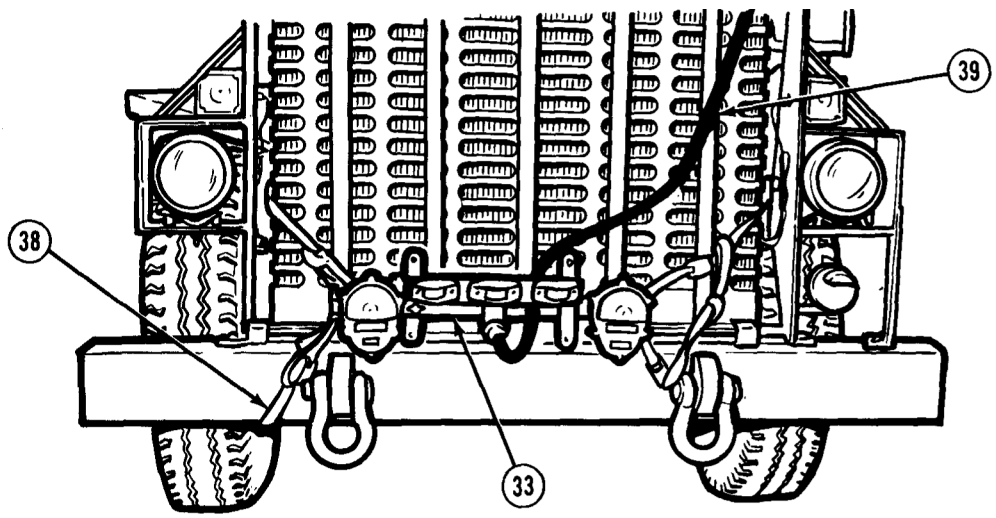


Figure 15.

38. Remove tow light cable (39) from wrecker stowage and connect to emergency tow lights (33).

HOOKUP - Continued

CAUTION

Route cable so it does not drag on ground or interfere with turning tires. Failure to comply may result in damage to equipment.

39. Route free end of tow light cable (39) along disabled vehicle and connect to rear electrical connector (40) on wrecker.

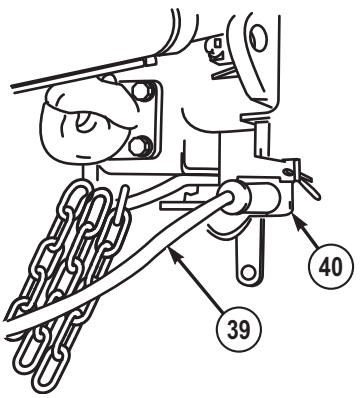


Figure 16.

40. Lock disabled vehicles steering (refer to M911 operator's manual).
41. Set POWER switch (41) to ON position.

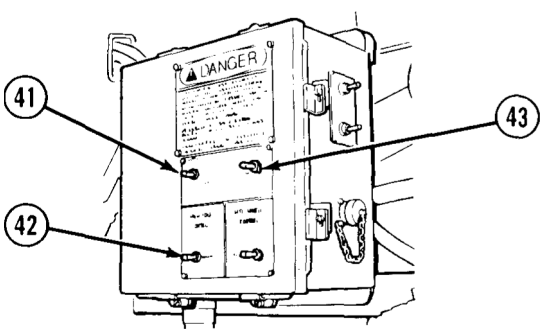


Figure 17.

42. Set HIGH IDLE switch (42) to CONTINUOUS.
43. Push and release LATCH switch (43). Engine speed will increase to approximately 1500 rpm.

HOOKUP - Continued

WARNING

Keep out from under retrieval system and disabled vehicle when raised off ground. Failure to comply may result in injury or death to personnel.

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

CAUTION

- Fully retract both tow cylinders before lifting disabled vehicle. Failure to comply may result in damage to equipment.
- Ensure all rigging is secure. Loose rigging can become entangled. Failure to comply may result in damage to equipment.

NOTE

Operator must allow wrecker air suspension system to completely adjust for added weight of disabled vehicle before raising disabled vehicle to final height of 1 ft. (30 cm).

44. Operate retrieval system to retract lift cylinder (29) and raise disabled vehicle approximately 3 in. (8 cm):
    a. Once wrecker air suspension system has adjusted for added weight of disabled vehicle, Operate retrieval system to retract lift cylinder (29) and raise disabled vehicle to final height of 1 ft. (30 cm).

HOOKUP - Continued

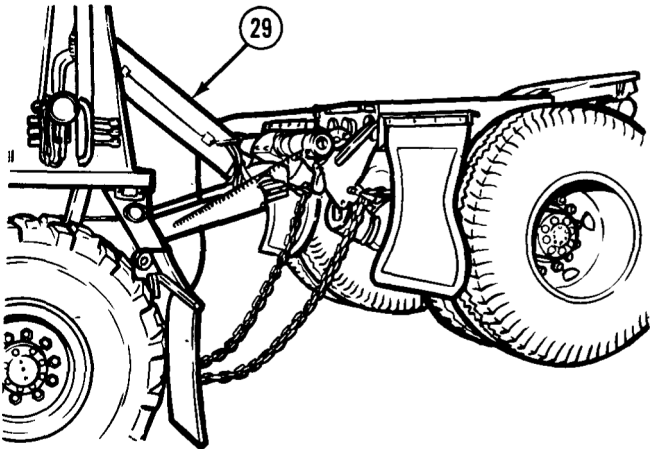


Figure 18.

NOTE

Ensure there is sufficient clearance between tires of pusher axle and ground (refer to M911 operator's manual).

45. Set POWER switch (41) to OFF position.

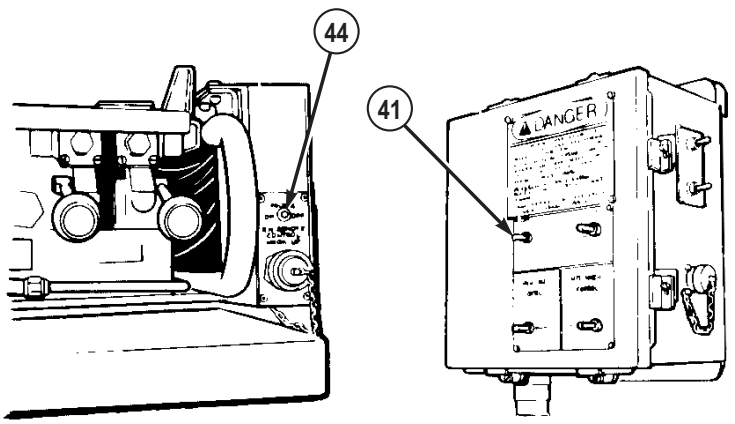


Figure 19.

46. Set POWER switch (44) to OFF position.
47. Set HYD ENABLE switch (45) to off position. MAIN HYD ENABLE indicator (46) will go out.

HOOKUP - Continued

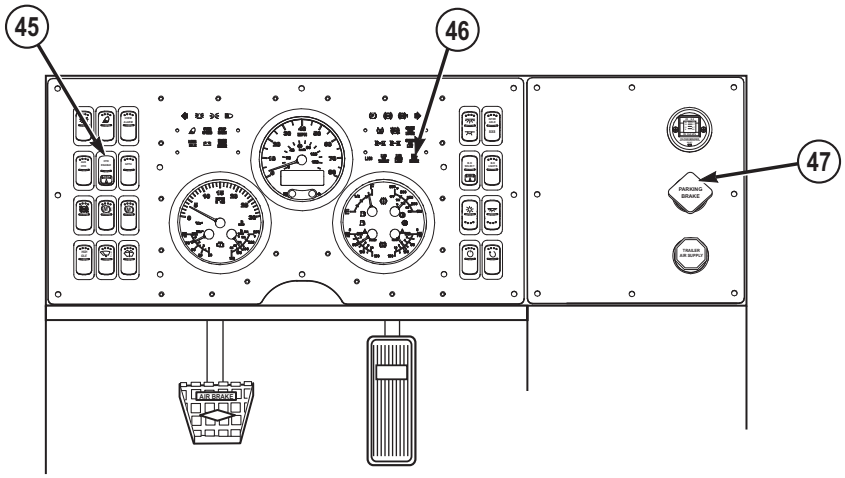


Figure 20.

48. Turn on wrecker service drive lights. (WP 0087)
49. Turn on wrecker emergency flashers. (WP 0096)
50. Turn on disabled vehicle emergency flashers (refer to operator's manual).

NOTE

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

51. Push in PARKING BRAKE control (47).

WARNING

The M984 Wrecker should not be operated at speeds over 15 MPH (24 km/hr) except on paved roads when the operator determines that the vehicle being towed and the terrain allow safe operation. Engine brake switch must ON for all towing operations. Speed in excess of the below table may result in loss of control, serious injury, or death to personnel.

52. Select desired gear (WP 0048) and transport disabled vehicle.

HOOKUP - Continued

Table 1. Maximum Towing Speed.

Terrain Condition	Maximum Speed Towed Load Up To 50,000 lbs (22 700 kg)	Maximum Speed Towed Load Above 50,000 lbs (22 700 kg)
On Road-Level	35 mph (56 km/hr)	30 mph (48 km/hr)
On Road-Hilly	30 mph (48 km/hr)	20 mph (32 km/hr)
Off-Road	15 mph (24 km/hr)	15 mph (24 km/hr)

DISCONNECT

NOTE

This procedure is a two soldier task.

1. Set transmission range selector (1) to N (neutral).

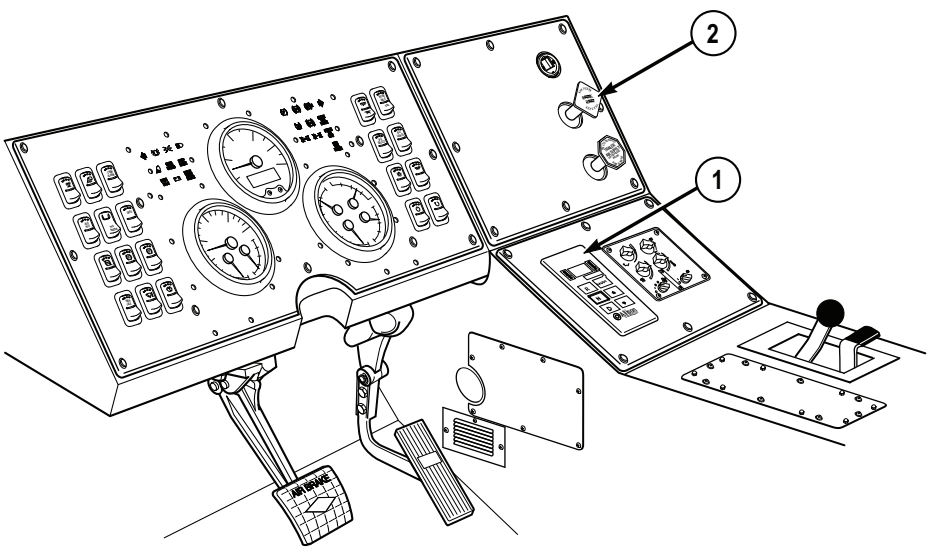


Figure 21.

NOTE

Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

DISCONNECT - Continued

2. Pull out PARKING BRAKE control (2).

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

NOTE

- After lowering disabled vehicle, extend lift and tow cylinders approximately 2 inches (50 mm) to allow for adjustment when removing adapters.
- Expect wrecker air suspension system to deflate air springs to achieve normal ride height once weight of disabled vehicle is removed.

3. Review procedures for operating retrieval towing system, (WP 0058) prepare retrieval system for operation, (WP 0059) and lower disabled vehicle to the ground.

WARNING

If disabled vehicle's parking brake is inoperative, chock wheels of disabled vehicle (refer to operator's manual). Failure to comply may result in injury or death to personnel.

4. Set parking brake on disabled vehicle (refer to disabled vehicle operator's manual).
5. Remove tow light cable (3) from wrecker.

DISCONNECT - Continued

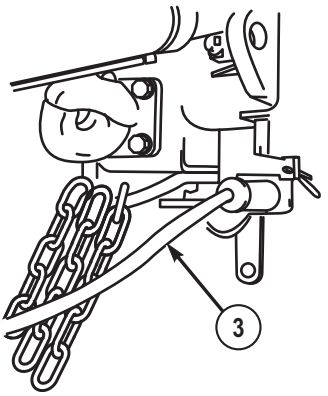


Figure 22.

6. Remove tow light cable (3) from emergency tow lights (4) and stow.

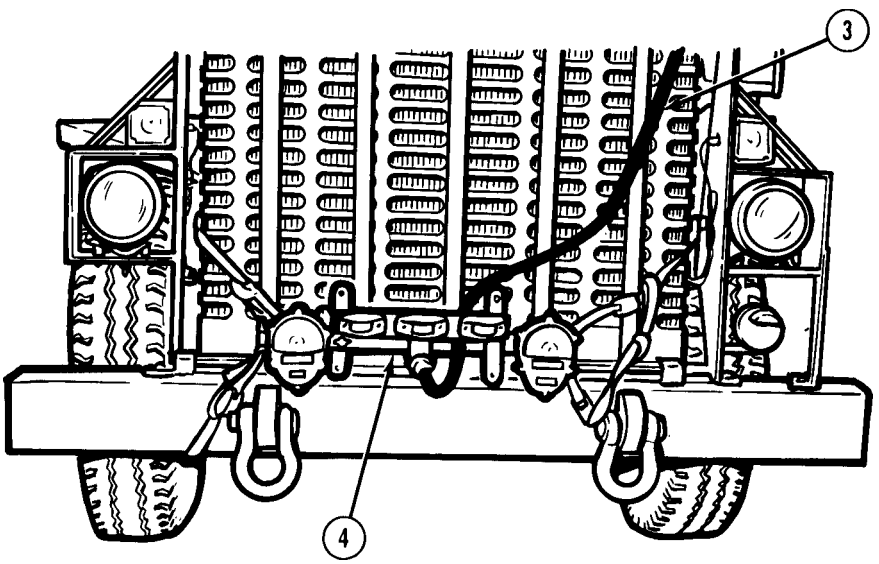


Figure 23.

7. Remove emergency tow lights (4) from disabled vehicle.
8. Remove two nuts (5), washers (6), screws (7), and brackets (8) from emergency tow lights (4). Return emergency tow lights and brackets to wrecker stowage.

DISCONNECT - Continued

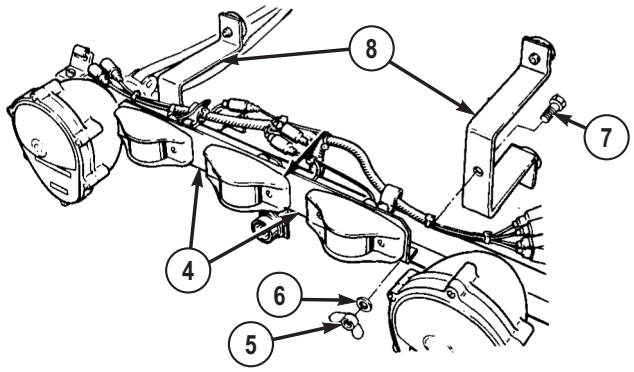


Figure 24.

9. Remove and stow two 16 ft. (5 m) safety chains (9).

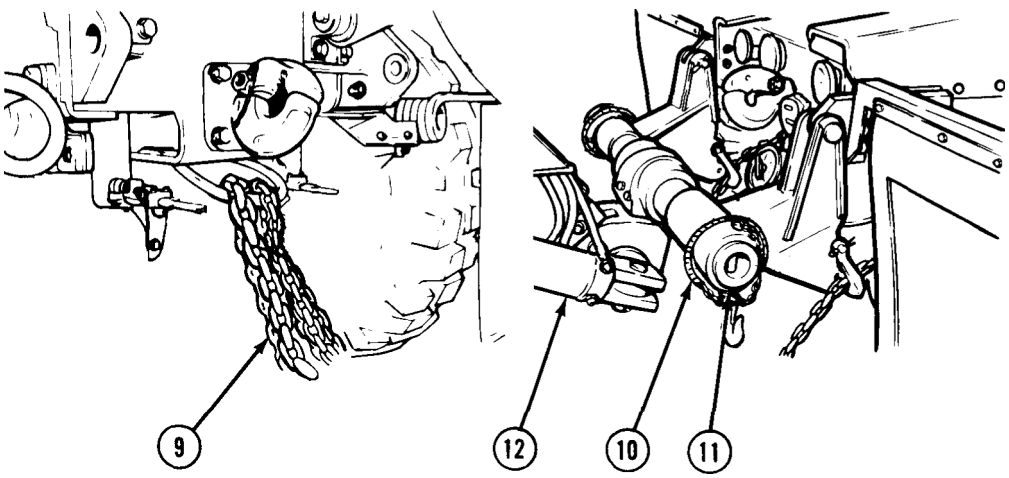
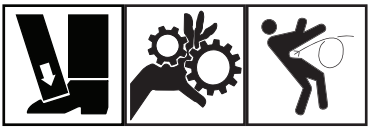


Figure 25.

10. Unwrap two springs (10) from cross tube (11) and connect to tow cylinders (12).

DISCONNECT - Continued

WARNING



- Do not stand behind adapters when pins are being removed. Failure to comply may result in injury or death to personnel.
- Keep hands and fingers away from adapters and tow eyes when operating retrieval controls. Failure to comply may result in injury or death to personnel.

NOTE

Use retrieval controls to position cross tube to relieve tension from adapters.

11. Remove two cotter pins (13) and 1 7/16 in. (37 mm) pins (14) from adapters (15).

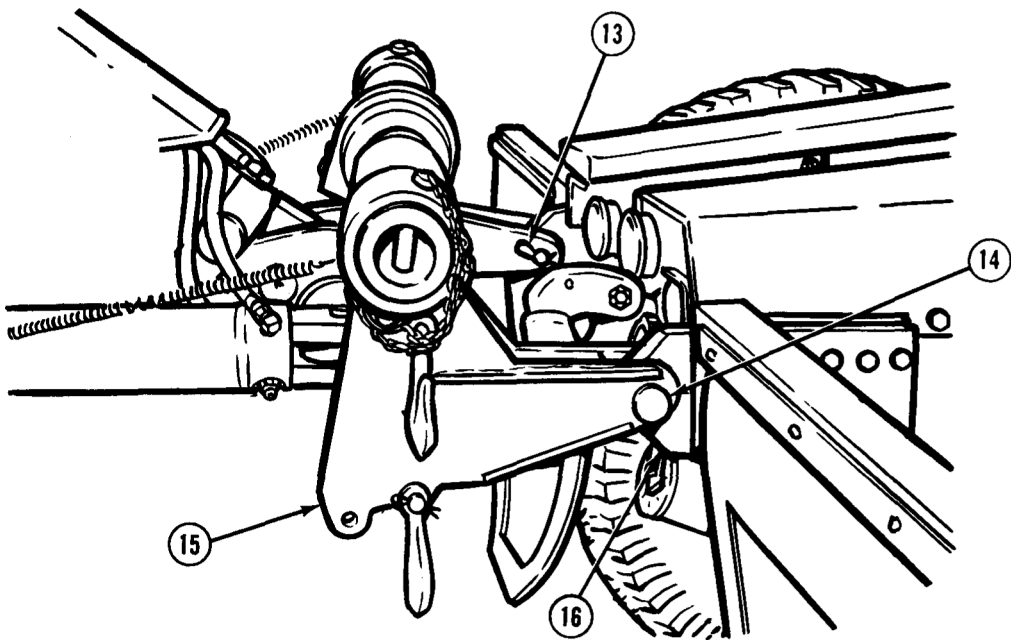


Figure 26.

12. Remove two adapters (15) from tow eyes (16) on disabled vehicle.

DISCONNECT - Continued

13. Install two cotter pins (13) in 1 7/16 in. (37 mm) pins (14) and return to wrecker stowage.
14. Drive wrecker forward (WP 0050) several feet and park. (WP 0056)

WARNING

When springs and end caps are removed, cross tube can swing in all directions and adapters may slide off and cause injury or death to personnel.

15. Remove two springs (10) from tow cylinders (12).

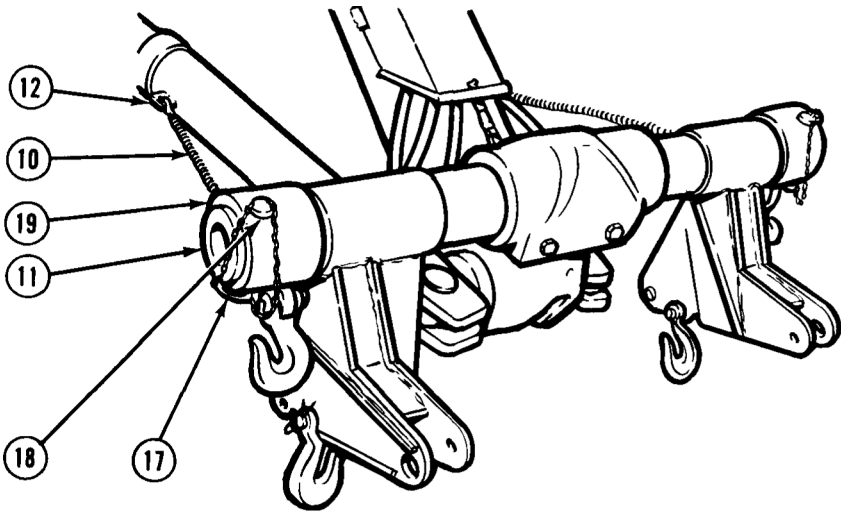


Figure 27.

16. Remove two quick pins (17) and pins (18) from end caps (19).
17. Remove two end caps (19) from cross tube (11).
18. Remove two rear adapters (15) from cross tube (11) and place on equipment body floor (20).

DISCONNECT - Continued

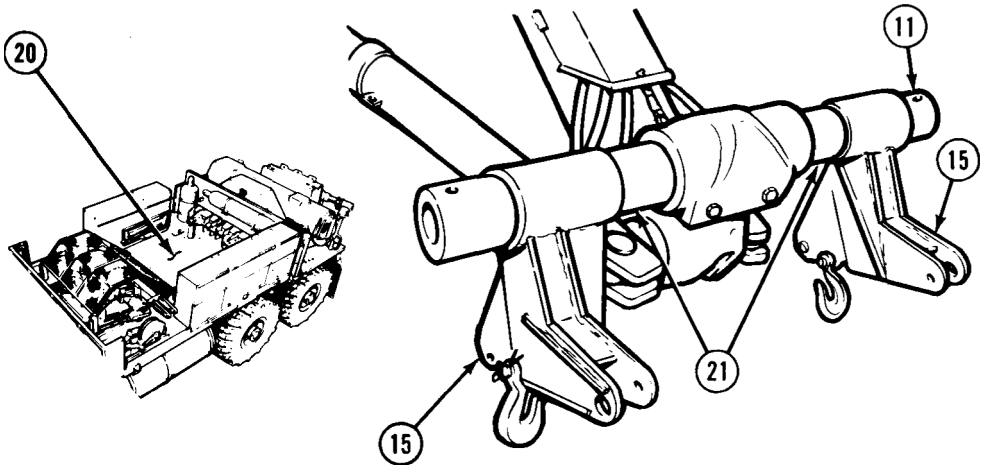


Figure 28.

19. Remove two 5 in. (127 mm) spacer tubes (21) from cross tube (11) and return to wrecker stowage.
20. Remove lock handle (22), lock plate (23), quick pin (24), pin (25), and two front adapters (26).

DISCONNECT - Continued

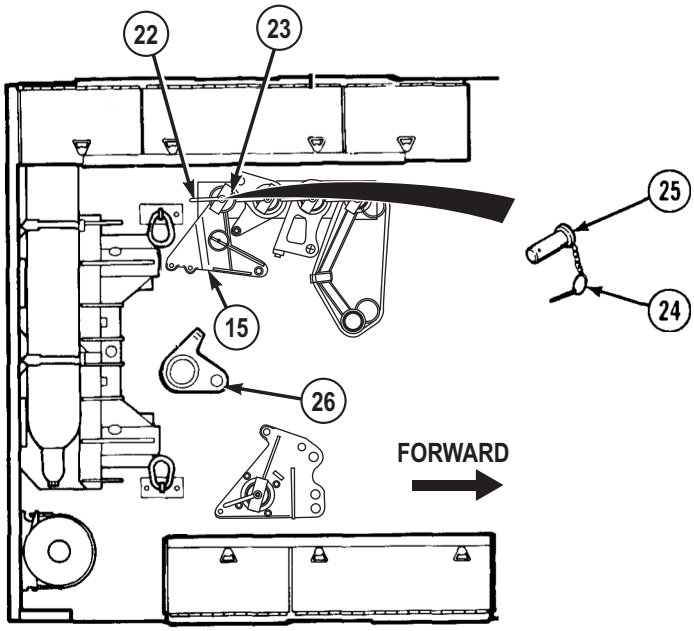


Figure 29.

21. Install two rear adapters (15) removed from cross tube (11), pin (25), quick pin (24), lock plate (23), and lock handle (22).

DISCONNECT - Continued

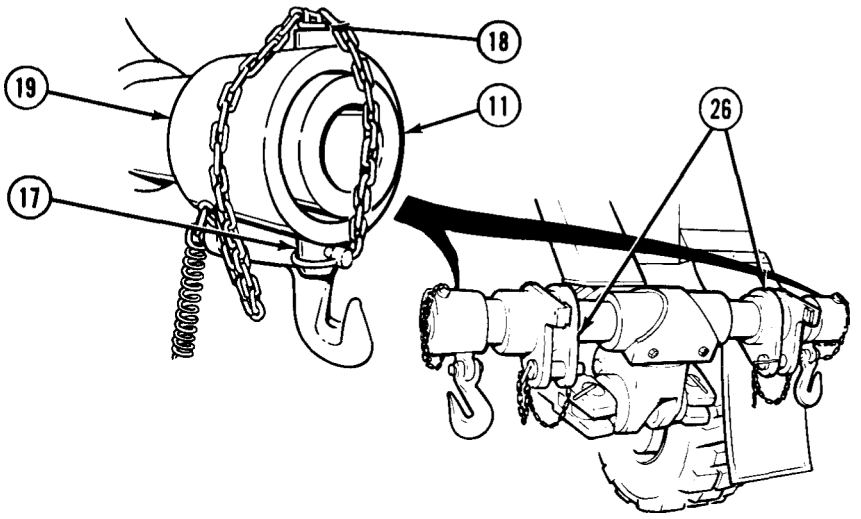


Figure 30.

22. Install two front adapters (26) on cross tube (11).
23. Install two end caps (19) on cross tube (11).
24. Install two pins (18) and quick pins (17).
25. Install two springs (10) on tow cylinders (12).

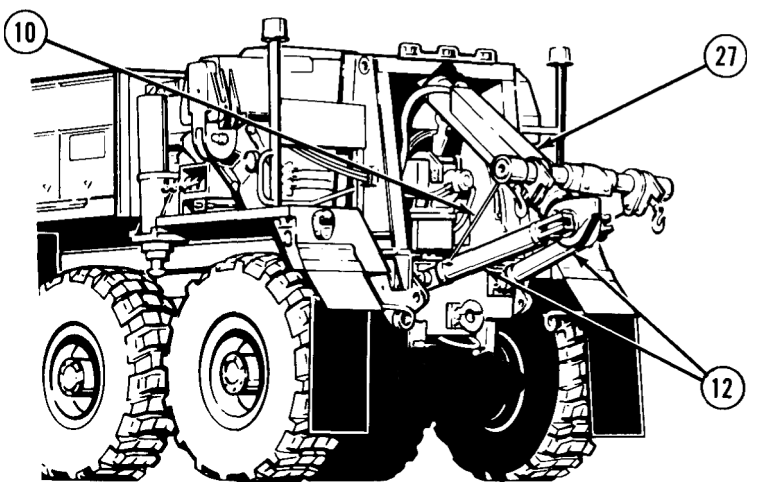


Figure 31.

DISCONNECT - Continued

26. Operate retrieval system to fully retract lift cylinder (27) and tow cylinders (12).

NOTE

Driver side and passenger side towing shackles are installed the same way.

27. Install two rear towing shackles (28), pins (29), and cotter pins (30).

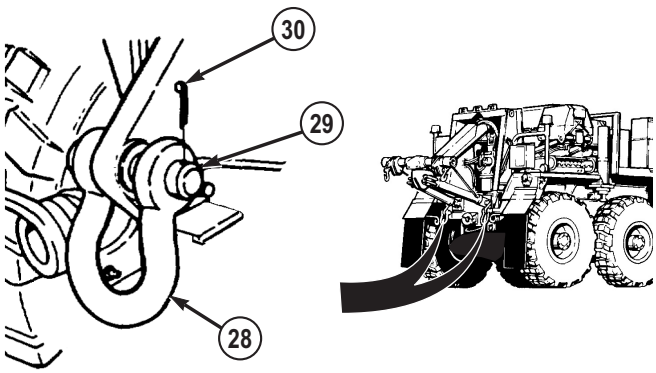


Figure 32.

28. Set POWER switch (31) to OFF position.

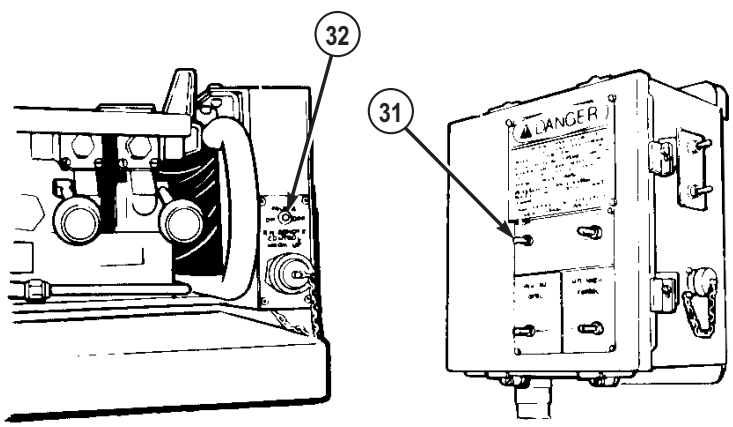


Figure 33.

29. Set POWER switch (32) to OFF position.
30. Turn off wrecker service drive lights. (WP 0087)

DISCONNECT - Continued

31. Turn off wrecker emergency flashers. (WP 0096)
32. Set HYD ENABLE switch (33) to off position. MAIN HYD ENABLE indicator (34) will go out.

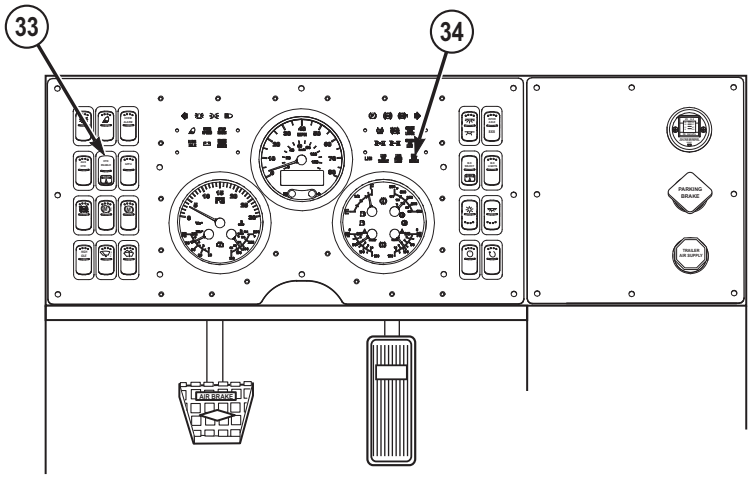


Figure 34.

33. Shut off engine. (WP 0057)
34. Remove and stow portable beacon lights. (WP 0094)
35. Turn off disabled vehicle emergency flashers, and unlock steering column (refer to disabled vehicle operator's manual).

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
TOW HEMTT - REAR LIFT

INITIAL SETUP:

Not Applicable

HOOKUP

NOTE

- This procedure is a two soldier task.
- The following rear lift procedures apply to all models HEMTT series vehicle EXCEPT M984A wrecker. If performing a rear-lift procedure to another HEMTT M984A wrecker, refer to Tow HEMTT M984 - Rear Lift. (WP 0063)

1. Review procedures for operating retrieval towing system (WP 0058) and prepare retrieval system for operation. (WP 0059)

WARNING

- Hold cross tube when removing springs, cross tube can swing in all directions and adapters may slide off. Failure to comply may result in injury or death to personnel.
- Intervehicular air lines are not connected when towing from rear. Disabled vehicle will not have braking. Use extreme care when transporting disabled vehicle using rear hookup. Failure to comply may result in injury or death to personnel.

2. Disconnect two springs (1) from tow cylinders (2).

HOOKUP - Continued

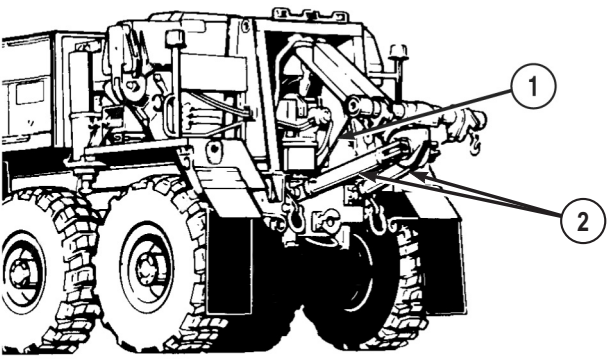


Figure 1.

CAUTION

Both rear towing shackles must be removed from rear tow eyes on wrecker before performing retrieval operations, or damage to tow cylinder may result.

NOTE

Driver side and passenger side towing shackles are removed the same way.

3. Remove two rear towing shackles from wrecker vehicle:

HOOKUP - Continued

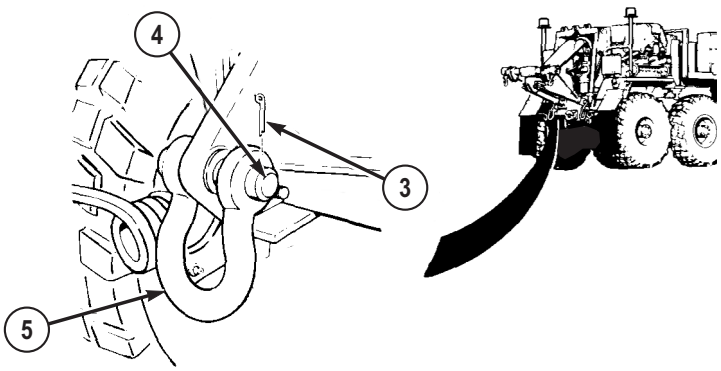


Figure 2.

a. Remove cotter pin (3), pin (4), and towing shackle (5).

b. Replace pin (4) in shackle (5), and cotter pin (3) in pin (4).

c. Repeat Steps (a) and (b) for opposite side towing shackle (5).

d. Stow two rear towing shackles on wrecker vehicle.

4. Pull LIFT CYLINDER control lever (6) to lower cross tube (7) to approximately 3 ft. (1 m) above ground.

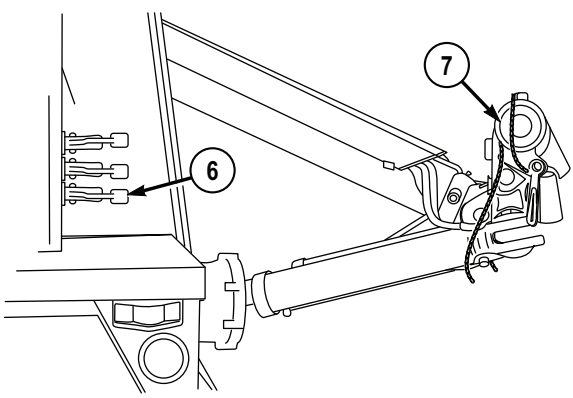


Figure 3.

5. Position wrecker so that cross tube (7) is approximately 1 ft. (30 cm) from tow eyes of disabled vehicle and centered on disabled vehicle.

HOOKUP - Continued

WARNING

When springs and end caps are removed, cross tube can swing in all directions and adapters may slide off and cause injury or death to personnel.

6. Remove two quick pins (8) and pins (9) from end caps (10).

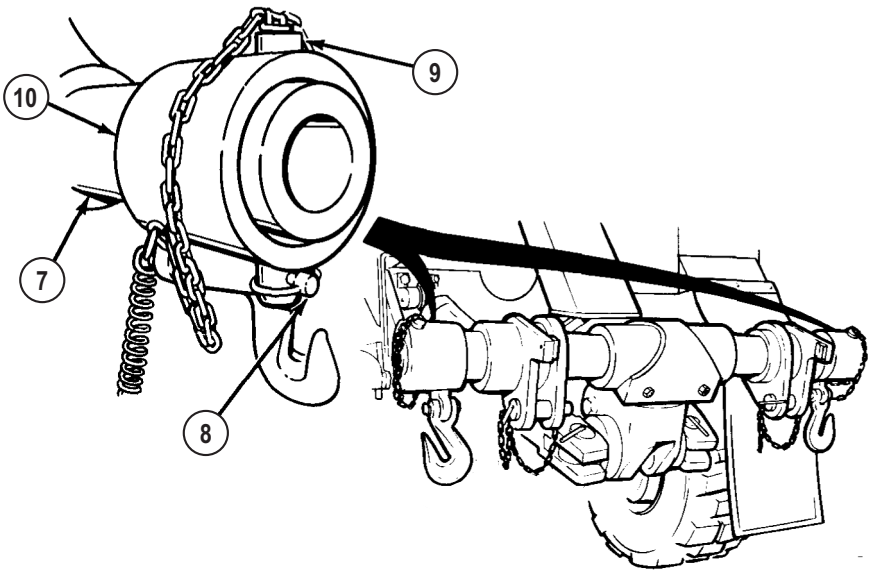


Figure 4.

7. Remove two end caps (10) from cross tube (7).
8. Remove two front adapters (11) from cross tube (7) and place on equipment body floor (12).

HOOKUP - Continued

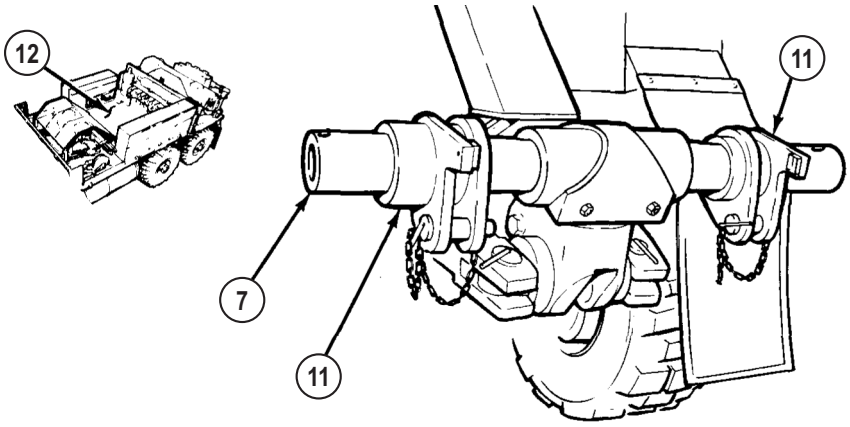


Figure 5.

9. Remove lock handle (13), lock plate (14), and two rear tow adapters (15).

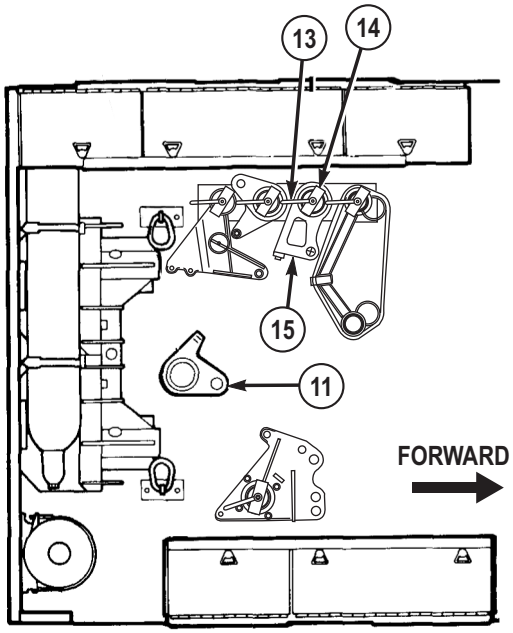


Figure 6.

10. Install two front adapters (11) removed from cross tube (7) with lock plate (14) and lock handle (13).

HOOKUP - Continued

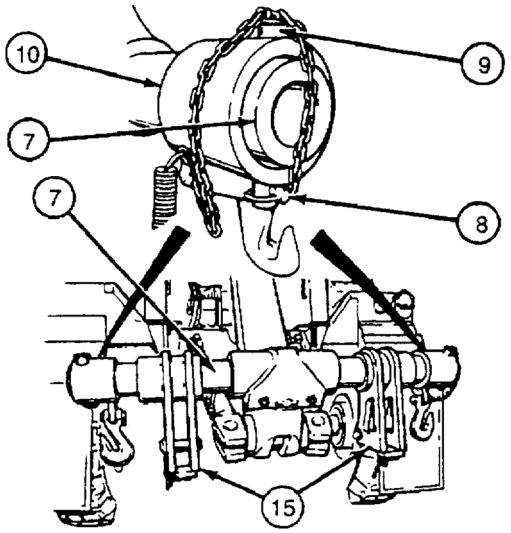
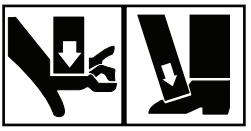


Figure 7.

WARNING



Adapters and end caps may slide off when installing and cause injury or death to personnel.

11. Install two rear tow adapters (15) on cross tube (7).
12. Install two end caps (10) on cross tube (7).
13. Install two pins (9) and quick pins (8).
14. Remove two quick pins (16) and pins (17) from rear tow adapters (15).

HOOKUP - Continued

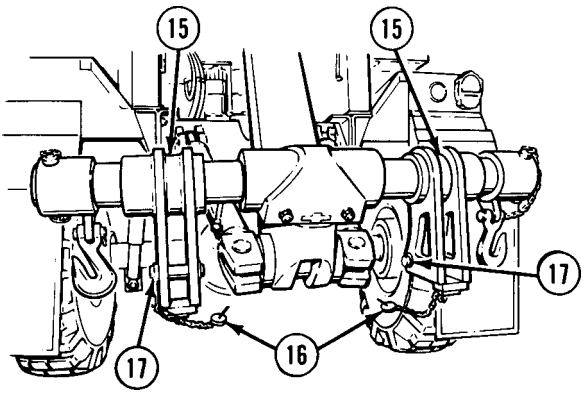


Figure 8.

NOTE

If disabled vehicle has rear towing shackles installed, remove towing shackles and stow on disabled vehicle.

15. Attach two springs (1) on tow cylinders (2).

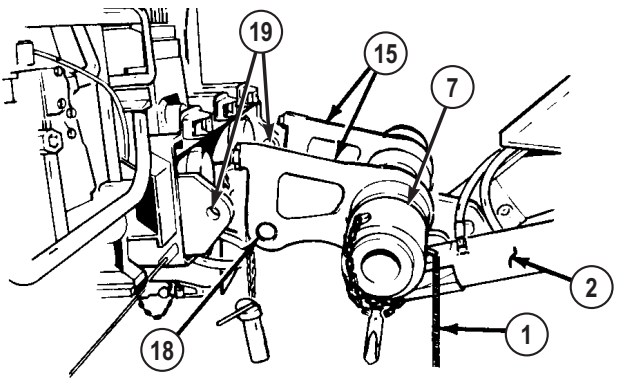


Figure 9.

HOOKUP - Continued

WARNING

Adapters may need to be held in the upright position while moving cross tube. Failure to comply may result in injury or death to personnel.

16. Rotate two rear tow adapters (15) so mounting holes (18) are on top.

WARNING

Keep hands and fingers away from adapters and tow eyes when operating retriever controls. Failure to comply may result in injury or death to personnel.

17. Operate retrieval system, and with aid of an assistant position cross tube (7) so two mounting holes (18) in rear tow adapters (15) align with rear tow eyes (19) on disabled vehicle.

18. Insert two pins (17) through rear tow adapters (15) and disabled vehicle rear tow eyes (19). Install two quick pins (16).

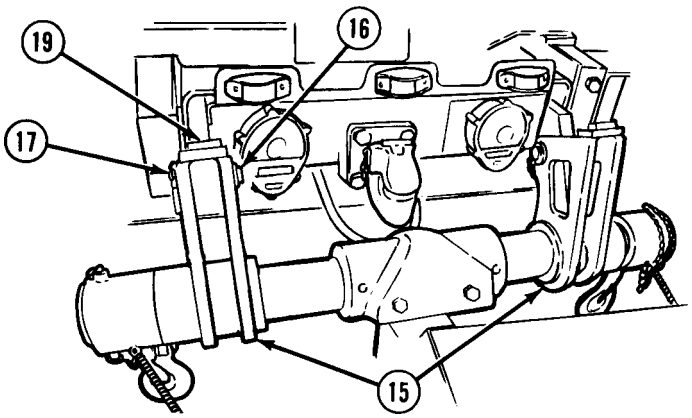


Figure 10.

HOOKUP - Continued

NOTE

If disabled vehicle air system is inoperative, manually release spring brakes (WP 0129).

19. Push in PARKING BRAKE control (20) on disabled vehicle.

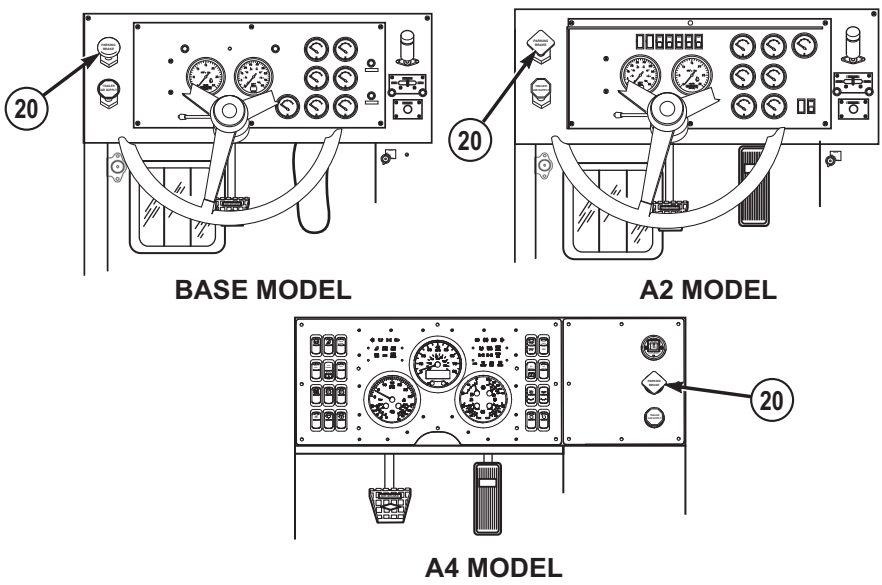


Figure 11.

NOTE

Two rear tow adapters must be resting against frame of disabled vehicle.

20. Operate retrieval system until tow cylinders (2) are fully retracted.

HOOKUP - Continued

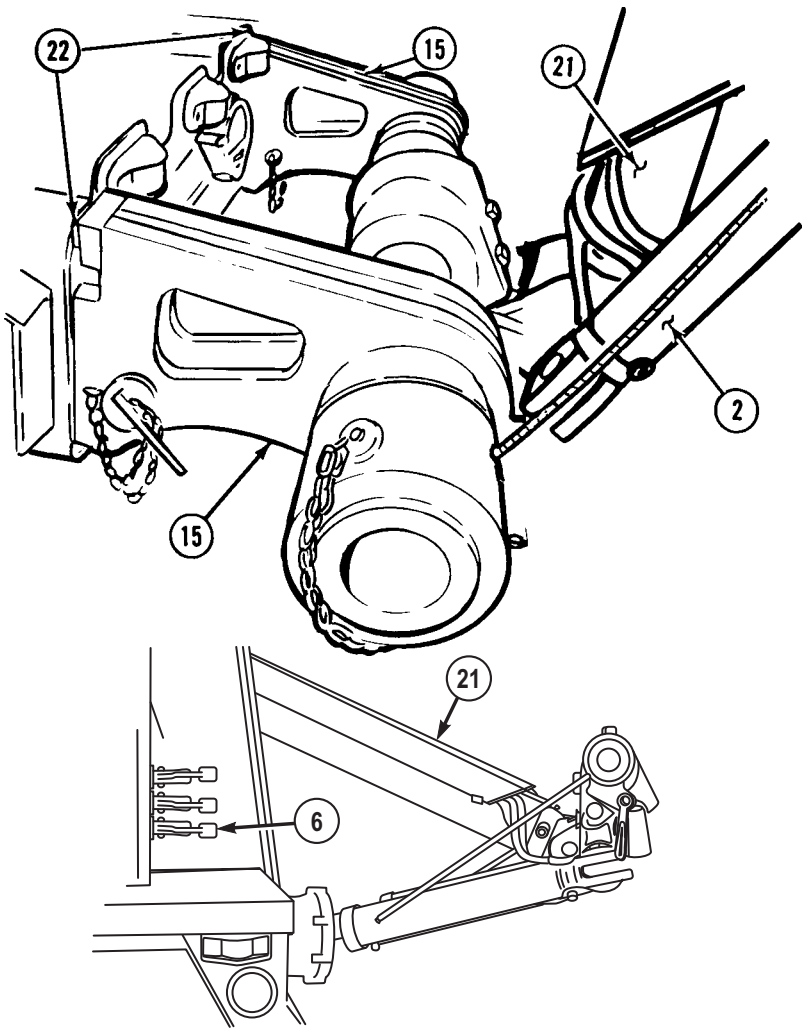


Figure 12.

21. Push in LIFT CYLINDER control lever (6) to retract lift cylinder (21) until two rear tow adapters (15) contact disabled vehicle frame (22).

22. Remove two 16 ft. (5 m) safety chains (23) from wrecker stowage.

CAUTION

Care must be taken to identify which model of HEMTT series vehicle is being towed (refer to data plate on inside of driver side door). Safety chain

HOOKUP - Continued

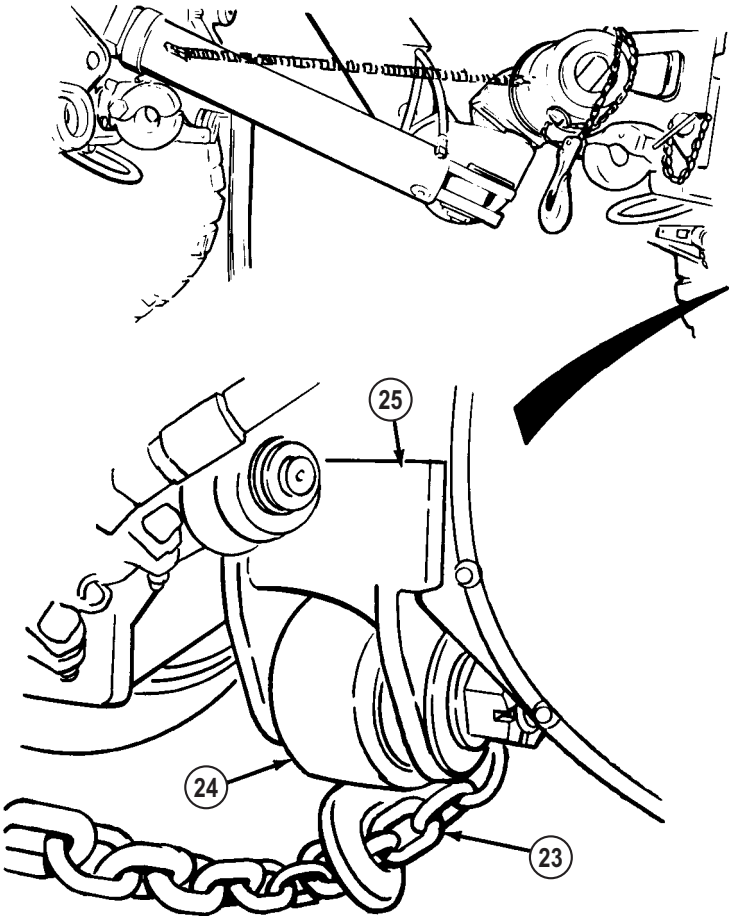
attachment points depend on model of HEMTT series vehicle. Failure to comply may result in damage to equipment.

NOTE

- 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 (23).
- If disabled vehicle is an A4 model HEMTT series vehicle (refer to data plate on inside of driver side door), skip to Step (24).

23. Route one end (without safety shackle) of 16 ft. (5 m) safety chain (23) over walking beam (24) in front of No. 4 axle (25) on disabled vehicle, and hook 16 ft. (5 m) safety chain (23) back into itself under walking beam (24) as shown.

HOOKUP - Continued



BASE/A2 DISABLED VEHICLE

Figure 13.

CAUTION

Care must be taken to identify which model of HEMTT series vehicle is being towed (refer to data plate on inside of driver side door). Safety chain attachment points depend on model of vehicle. Failure to comply may result in damage to equipment.

NOTE

Complete Step (24) if disabled vehicle is an A4 model HEMTT series vehicle (refer to data plate on inside of driver side door).

HOOKUP - Continued

24. Route one end (without safety shackle) of 16 ft. (5 m) safety chain (23) through safety chain hoop (26) on disabled vehicle, and attach grab hook (27) back into 16 ft. (5 m) safety chain (23) as shown.

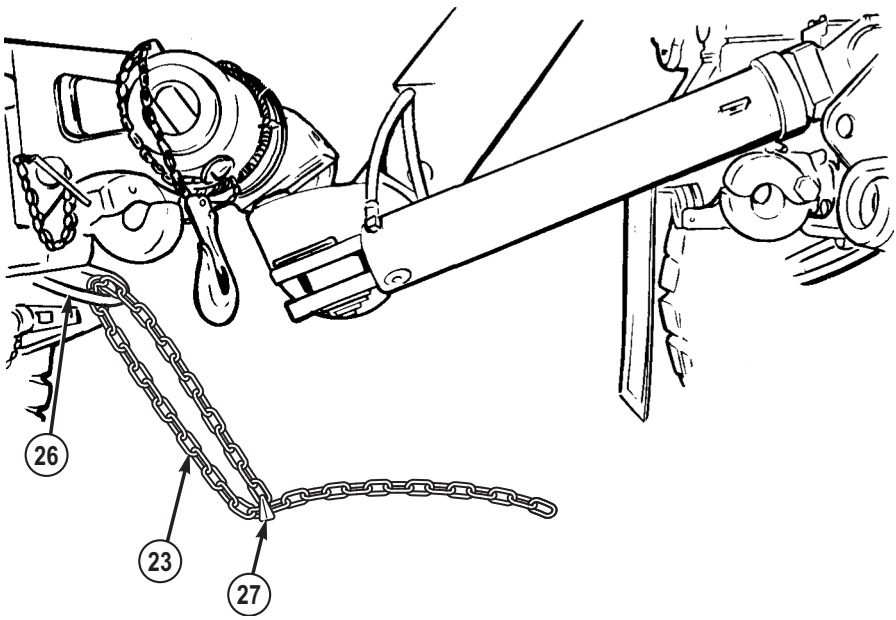


Figure 14.

25. Repeat Step (23) or (24) for other side of disabled vehicle (as applicable).

NOTE

- Safety chains can be routed to towing shackles or safety chain hoop. Towing shackles can be used only after tow cylinders are extended.
- Adjust chain slack so safety chains are approximately 6 in. (15 cm) above the ground.

26. Route two free ends of 16 ft. (5 m) safety chain (23) through safety chain hoop (28) on wrecker and secure grab hooks (29) back into 16 ft. (5 m) safety chain (23) as shown.

HOOKUP - Continued

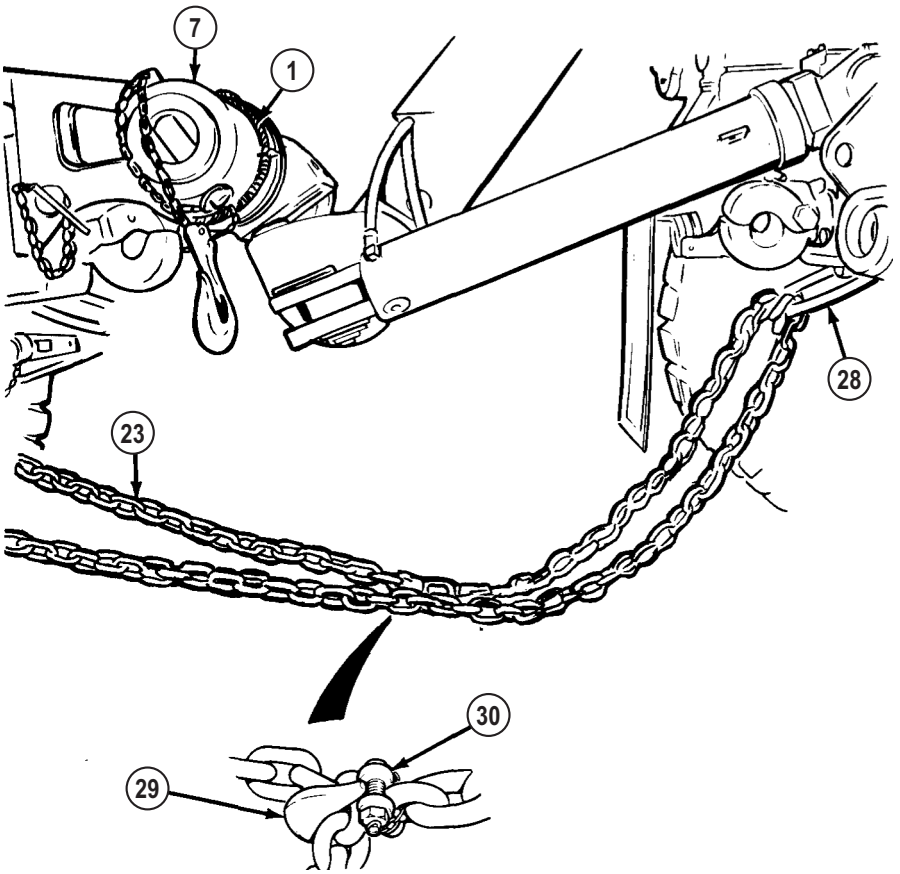


Figure 15.

27. Secure two grab hooks (29) with safety shackles (30).
28. Wrap two springs (1) around cross tube (7) and secure.
29. Prepare disabled vehicle for towing. (WP 0118)
30. Remove emergency tow lights (31) and two brackets (32) from stowage.

HOOKUP - Continued

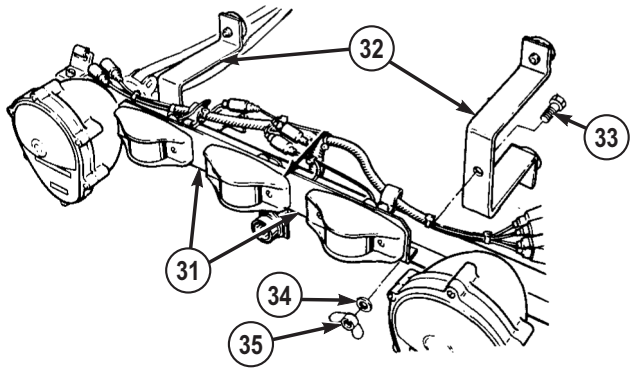


Figure 16.

31. Install two brackets (32) in outside holes of emergency tow lights (31) with two screws (33), washers (34), and nuts (35).

NOTE

Emergency tow lights are mounted the same regardless of HEMTT series vehicle model. BASE/A2 model shown.

32. Position emergency tow lights (31) on skid plate (36). Fasten top straps (37) to top of skid plate (36).

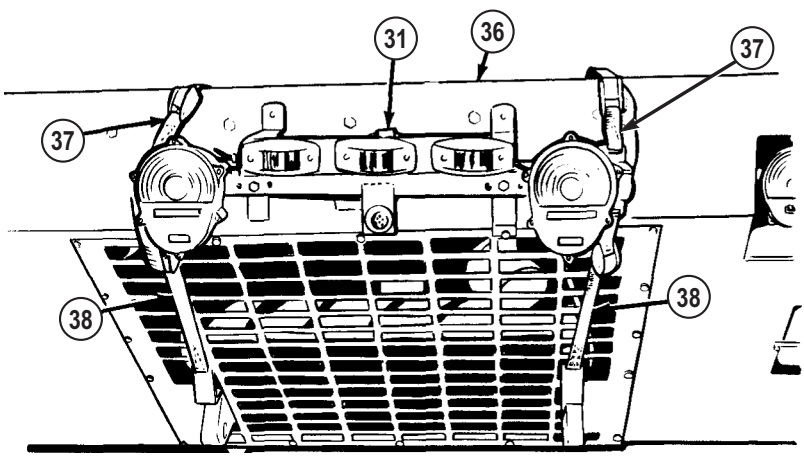


Figure 17.

HOOKUP - Continued

33. Fasten bottom straps (38) to bottom of skid plate (36).
34. Remove tow light cable (39) from wrecker stowage and connect to rear electrical connector (40) on wrecker.

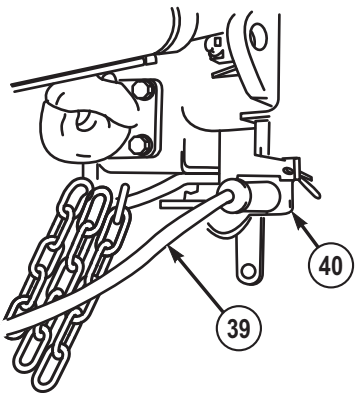


Figure 18.

CAUTION

Route cable so it does not drag on ground or interfere with turning tires. Failure to comply may result in damage to equipment.

35. Route other end of tow light cable (39) to emergency tow lights (31) on disabled vehicle, and plug in at connector (41).

HOOKUP - Continued

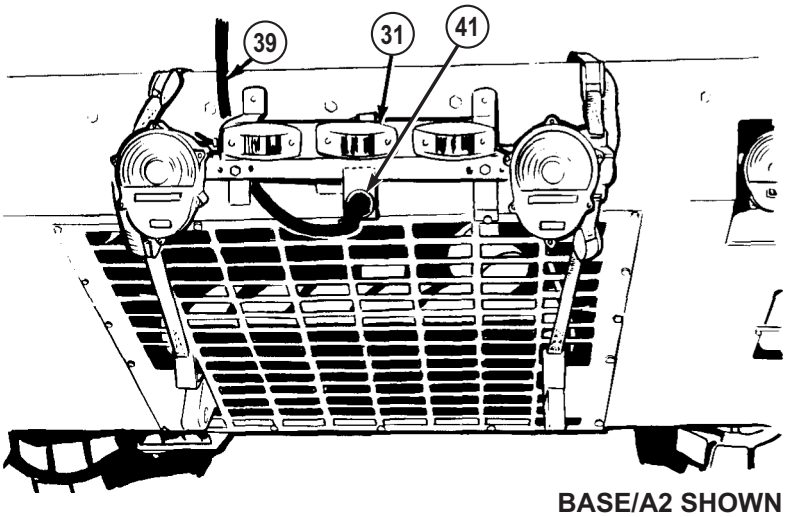


Figure 19.

CAUTION

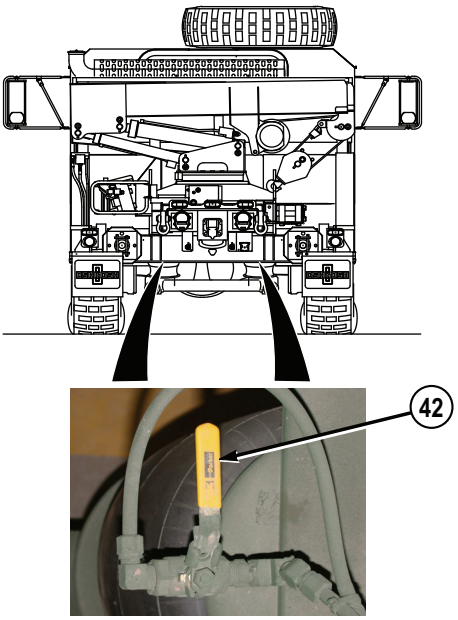
When lifting and towing an A4 HEMTT series vehicle (refer to data plate on inside of driver side door), special care must be taken to avoid causing damage to vehicle air suspension system. Always turn No. 4 axle air suspension ball valves OFF prior to lifting the A4 HEMTT series vehicle (refer to operate air suspension ball valves for more information on ball valve operation). Failure to comply may result in damage to equipment.

NOTE

- If disabled vehicle is an A4 HEMTT series vehicle (refer to data plate on inside of driver side door), complete Step (36).
- If disabled vehicle is an BASE or A2 HEMTT series vehicle (refer to data plate on inside of driver side door), skip to Step (37).

36. Position disabled vehicle No. 4 axle driver side and passenger side (shown) ball valve handle (42) OFF.

HOOKUP - Continued



BALL VALVE OFF

Figure 20.

37. Set POWER switch (43) to ON position.

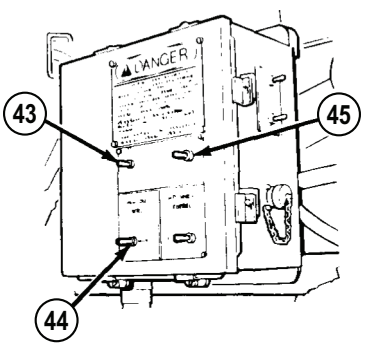


Figure 21.

38. Set HIGH IDLE switch (44) to CONTINUOUS.
39. Push and release LATCH switch (45). Engine speed will increase to approximately 1500 rpm.

HOOKUP - Continued

WARNING

Keep out from under retrieval system and disabled vehicle when raised off ground. Failure to comply may result in injury or death to personnel.

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

CAUTION

- Fully retract both tow cylinders before lifting disabled vehicle. Failure to comply may result in damage to equipment.
- Ensure all rigging is secure. Loose rigging can become entangled. Failure to comply may result in damage to equipment.

NOTE

Operator must allow wrecker air suspension system to completely adjust for added weight of disabled vehicle before raising disabled vehicle to final height of 1 ft. (30 cm).

40. Push LIFT CYLINDER control lever (6) to retract lift cylinder (21) and raise disabled vehicle approximately 3 in. (8 cm):
    a. Once wrecker air suspension system has adjusted for added weight of disabled vehicle, push LIFT CYLINDER control lever (6) to retract lift cylinder (21) and raise disabled vehicle to final height of 1 ft. (30 cm).

HOOKUP - Continued

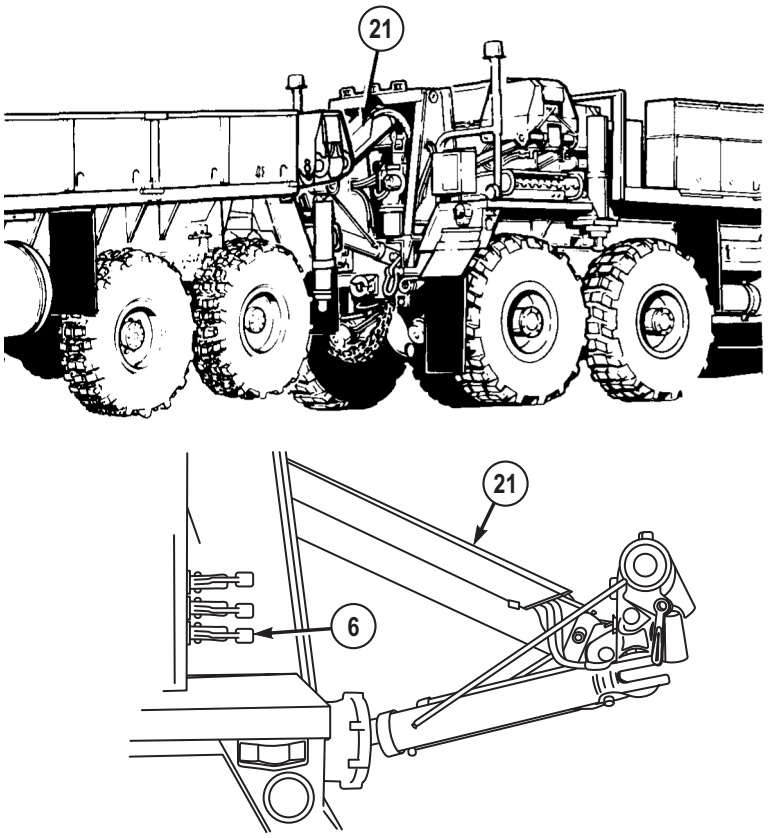


Figure 22.

41. Set POWER switch (43) to OFF position.

HOOKUP - Continued

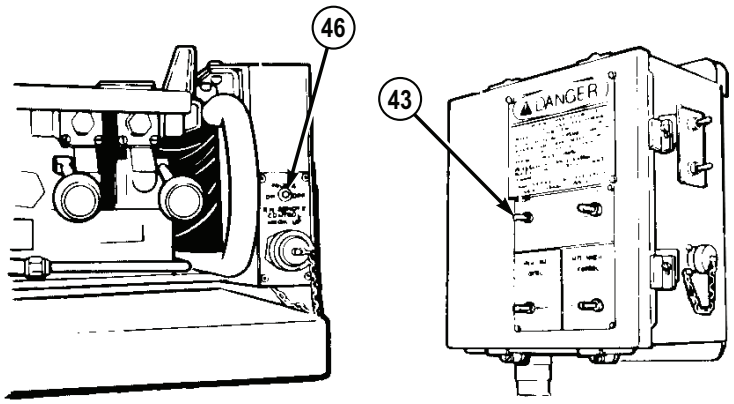


Figure 23.

42. Set POWER switch (46) to OFF position.
43. Remove steering lock bracket (47) and four screws (48) from stowage.

NOTE

- If disabled vehicle is BASE/A2 HEMTT series vehicle (refer to data plate on inside of driver side door), continue with Step (44).
- If disabled vehicle is A4 HEMTT series vehicle (refer to data plate on inside of driver side door), skip to Step (45).

44. Install steering lock bracket (47) on disabled vehicle:

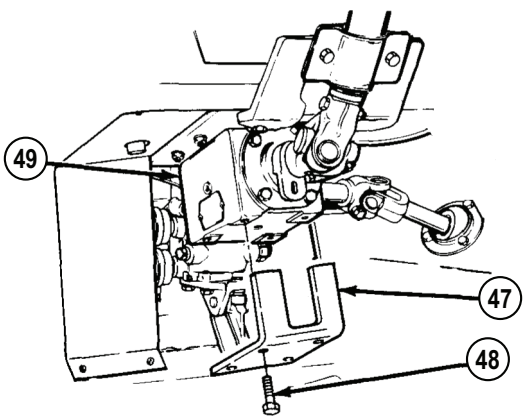


Figure 24.

HOOKUP - Continued

NOTE

If tires of disabled vehicle have to be straightened manually, drive wrecker forward (WP 0050) 20 to 30 ft. (6 to 10 m) while assistant straightens tires on disabled vehicle.

a. Straighten front wheels on disabled vehicle.

b. Remove steering lock bracket (47) and four screws (48) from stowage.

c. Install steering lock bracket (47) on 90 degree gearbox (49) with four screws (48).

NOTE

If disabled vehicle is A4 HEMTT series vehicle (refer to data plate on inside of driver side door), continue with Step (45).

45. Install steering lockpin (50) on disabled vehicle:

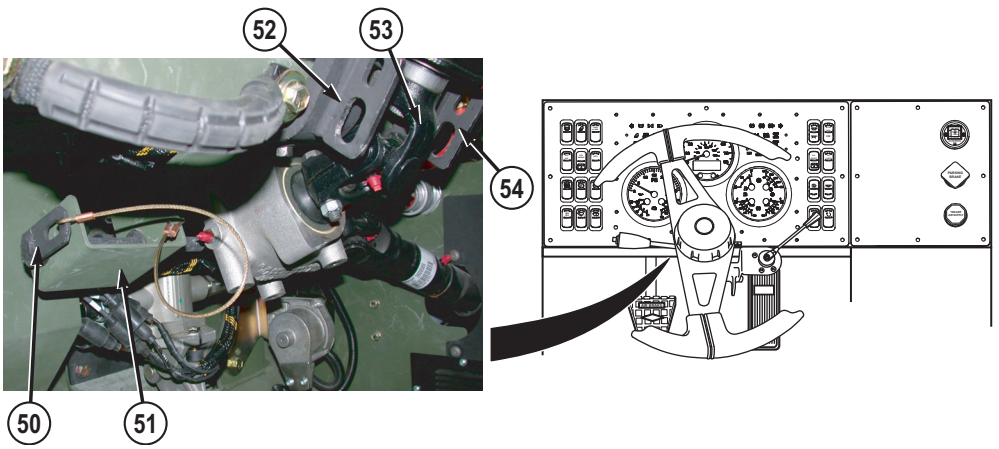


Figure 25.

NOTE

If tires of disabled vehicle have to be straightened manually, drive wrecker forward (WP 0050) 20 to 30 ft. (6 to 10 m) while assistant straightens tires on disabled vehicle.

a. Straighten front wheels on disabled vehicle.

b. Remove steering lockpin (50) from stowage bracket (51) under driver side dash panel.

HOOKUP - Continued

NOTE

It may be necessary to turn steering wheel to line up steering column yoke with holes in locking bracket.

c. Install steering lockpin (50) through left hole (52) of lock bracket, steering column yoke (53), and right hole (54) of lock bracket.

d. Rotate steering lockpin (50) to align hole in steering lockpin handle with hole in lock bracket, and install lock (55).

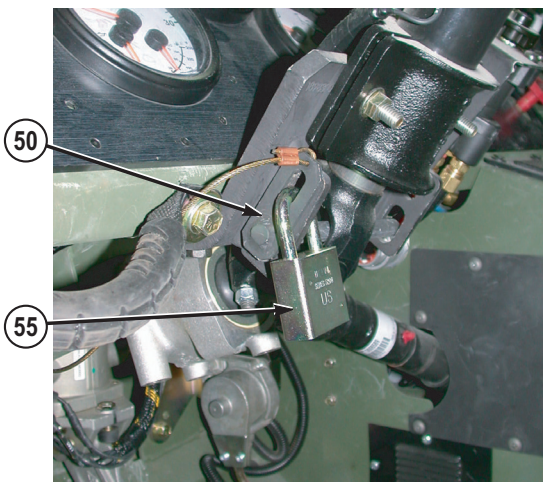


Figure 26.

46. Set HYD ENABLE switch (56) to off position. MAIN HYD ENABLE indicator (57) will go out.

HOOKUP - Continued

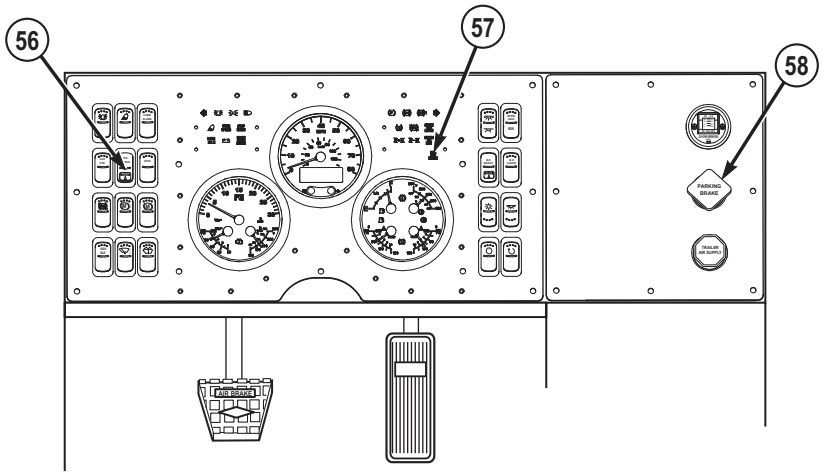


Figure 27.

47. Turn on wrecker service drive lights. (WP 0087)
48. Turn on wrecker emergency flashers. (WP 0096)
49. Turn on disabled vehicle emergency flashers (refer to operator's manual).

NOTE

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

50. Push in PARKING BRAKE control (58).

WARNING

The M984 Wrecker should not be operated at speeds over 15 MPH (24 km/hr) except on paved roads when the operator determines that the vehicle being towed and the terrain allow safe operation. Engine brake switch must ON for all towing operations. Speed in excess of the below table may result in loss of control, serious injury, or death to personnel.

51. Select desired gear (WP 0048) and transport disabled vehicle.

HOOKUP - Continued

Table 1. Maximum Towing Speed.

Terrain Condition	Maximum Speed Towed Load Up To 50,000 lbs (22 700 kg)	Maximum Speed Towed Load Above 50,000 lbs (22 700 kg)
On Road-Level	35 mph (56 km/hr)	30 mph (48 km/hr)
On Road-Hilly	30 mph (48 km/hr)	20 mph (32 km/hr)
Off-Road	15 mph (24 km/hr)	15 mph (24 km/hr)

DISCONNECT

NOTE

This procedure is a two soldier task.

1. Set transmission range selector (1) to N (neutral).

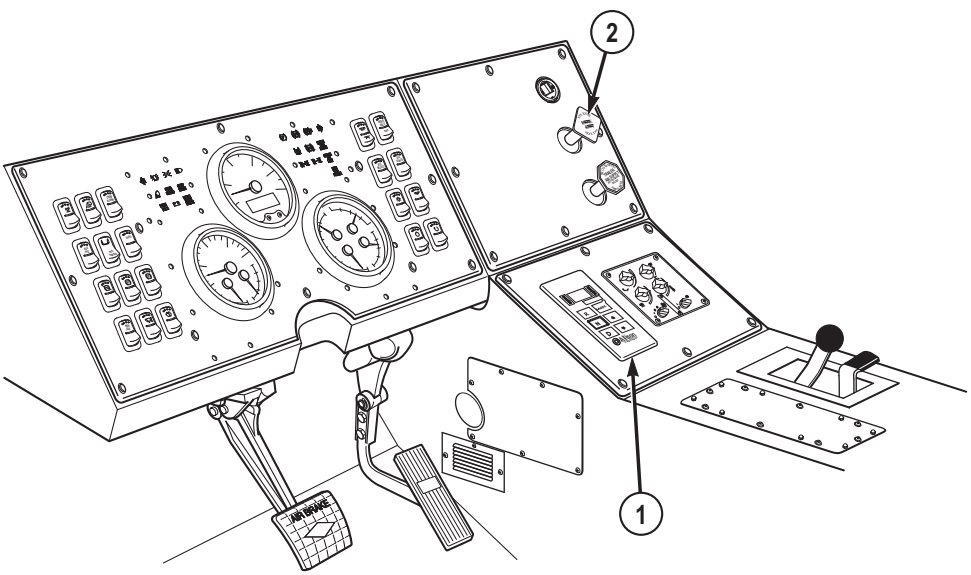


Figure 28.

DISCONNECT - Continued

NOTE

Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

2. Pull out PARKING BRAKE control (2).

WARNING

Do not stand between vehicles while disabled vehicle is raised off ground. Failure to comply may result in injury or death to personnel.

NOTE

- After lowering disabled vehicle, extend lift and tow cylinders approximately 2 to 4 inches (50 to 100 mm) to allow for adjustment when removing adapters.
- Expect wrecker air suspension system to deflate air springs to achieve normal ride height once weight of disabled vehicle is removed.

3. Review procedures for operating retrieval towing system, (WP 0058)prepare retrieval system for operation, (WP 0059) and pull LIFT CYLINDER control lever (3) to extend lift cylinder (4) and lower disabled vehicle to ground.

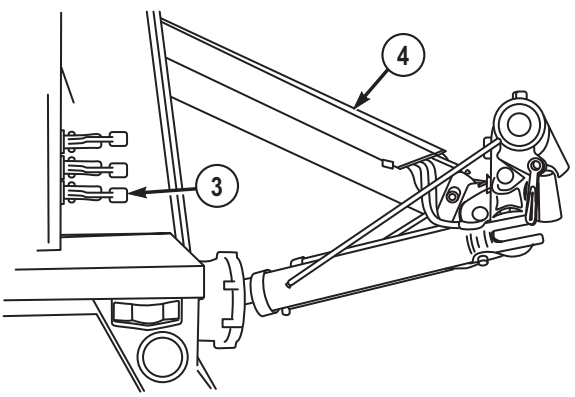


Figure 29.

DISCONNECT - Continued

WARNING

If disabled vehicle's parking brake is inoperative, chock wheels of disabled vehicle (refer to operator's manual). Failure to comply may result in injury or death to personnel.

4. Pull out PARKING BRAKE control (5) on disabled vehicle.

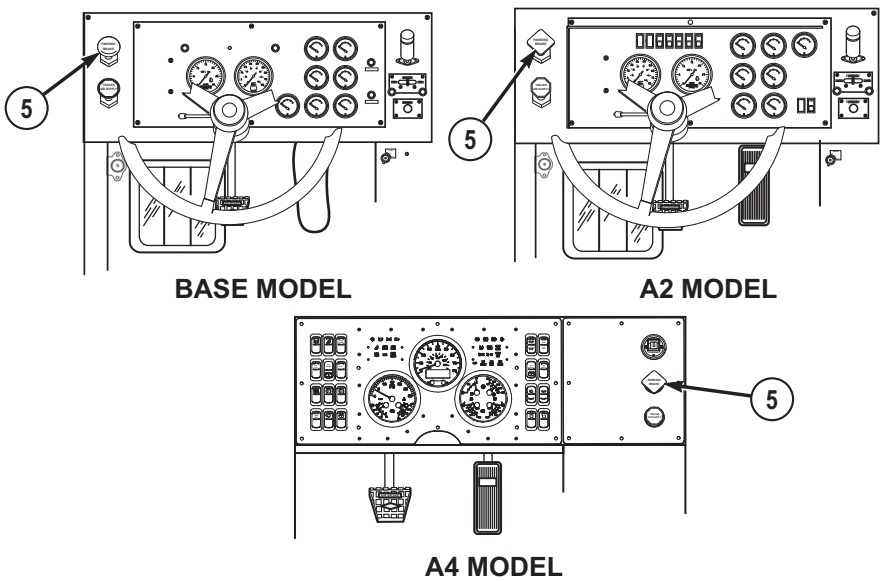


Figure 30.

5. Remove tow light cable (6) from rear electrical connector (7) on wrecker.

DISCONNECT - Continued

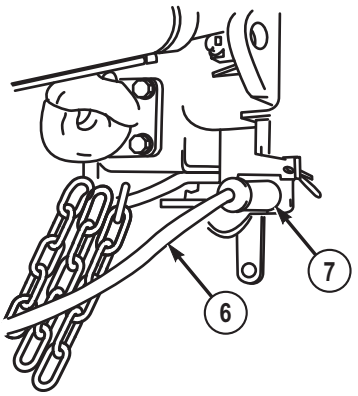
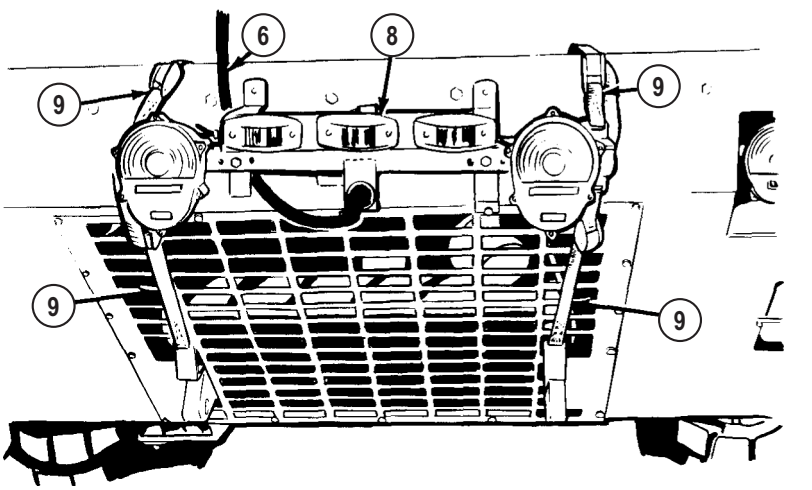


Figure 31.

6. Remove tow light cable (6) from emergency tow lights (8) and return to wrecker stowage.



BASE/A2 SHOWN

Figure 32.

7. Loosen straps (9) and remove emergency tow lights (8) from disabled vehicle.
8. Remove two nuts (10), washers (11), screws (12), and brackets (13) from emergency tow lights (8).

DISCONNECT - Continued

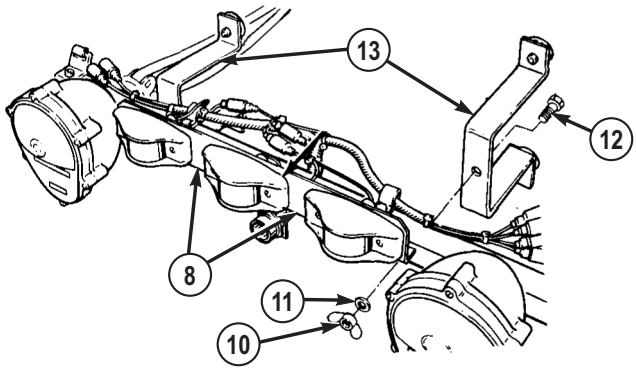


Figure 33.

9. Return emergency tow lights (8) and brackets (13) to wrecker stowage.
10. Remove two 16 ft. (5 m) safety chains (14) from wrecker and disabled vehicle. Return two 16 ft. (5 m) safety chains to wrecker stowage.

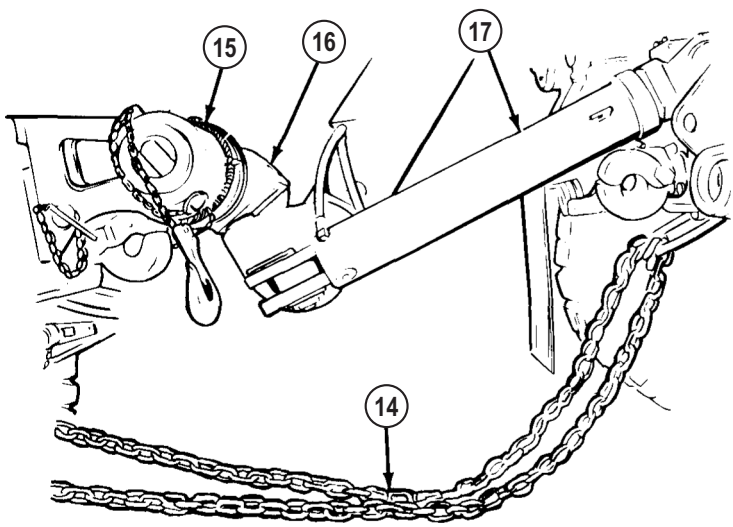
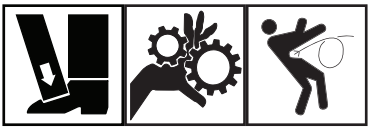


Figure 34.

11. Unwrap two springs (15) from cross tube (16) and connect two springs to tow cylinders (17).

DISCONNECT - Continued

WARNING



- Do not stand behind adapters when pins are being removed. Failure to comply may result in injury or death to personnel.
- Keep hands and fingers away from adapters and tow eyes when operating retrieval controls. Failure to comply may result in injury or death to personnel.

NOTE

Use retrieval controls to position cross tube to relieve tension from adapters.

12. Remove two quick pins (18) and pins (19) from rear tow adapters (20).

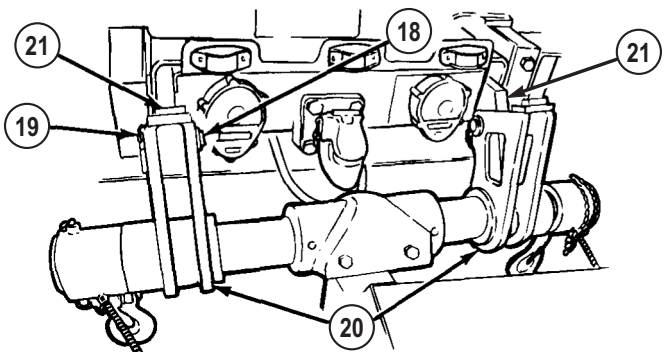


Figure 35.

13. Remove two rear tow adapters (20) from tow eyes (21) on disabled vehicle.
14. Install two pins (19) and quick pins (18) through rear tow adapters (20).
15. Drive wrecker forward (WP 0050) several feet and park. (WP 0056)
16. Remove two springs (15) from tow cylinders (17).

DISCONNECT - Continued

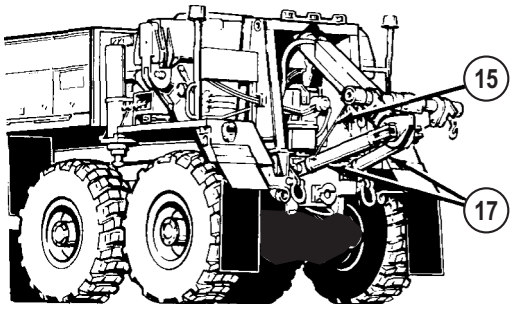


Figure 36.

17. Remove two quick pins (22) and pins (23) from end caps (24).

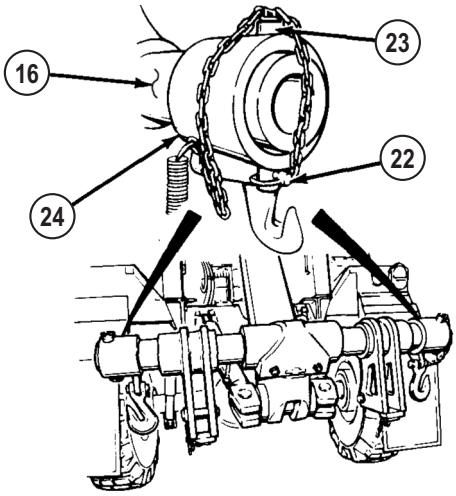


Figure 37.

18. Remove two end caps (24) from cross tube (16).
19. Remove two rear tow adapters (20) from cross tube (16) and place on equipment body floor (25).

DISCONNECT - Continued

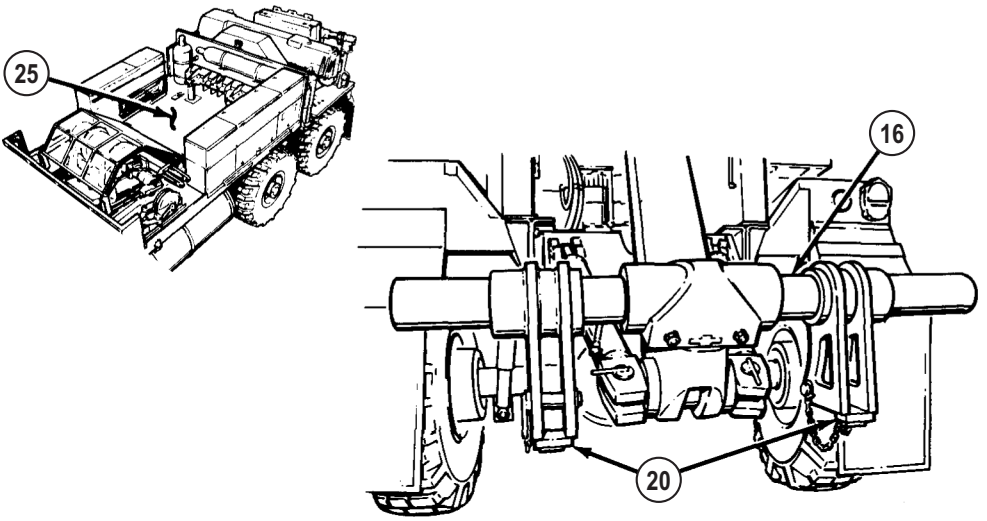


Figure 38.

20. Remove lock handle (26), lock plate (27), and two front adapters (28).

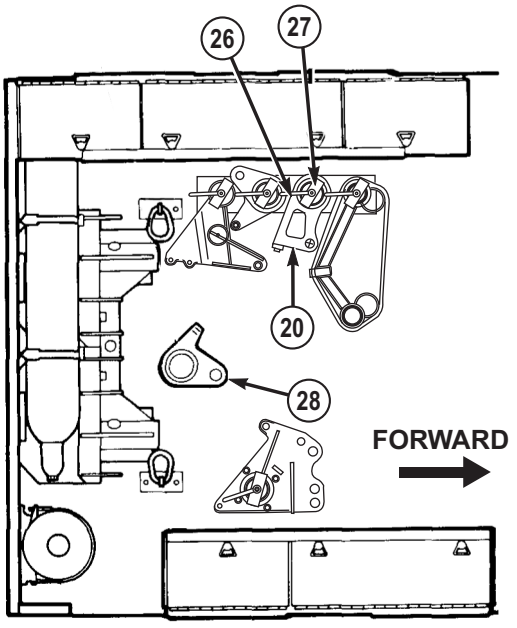


Figure 39.

DISCONNECT - Continued

21. Install two rear two adapters (20) with lock plate (27) and lock handle (26).
22. Install two front adapters (28) on cross tube (16).

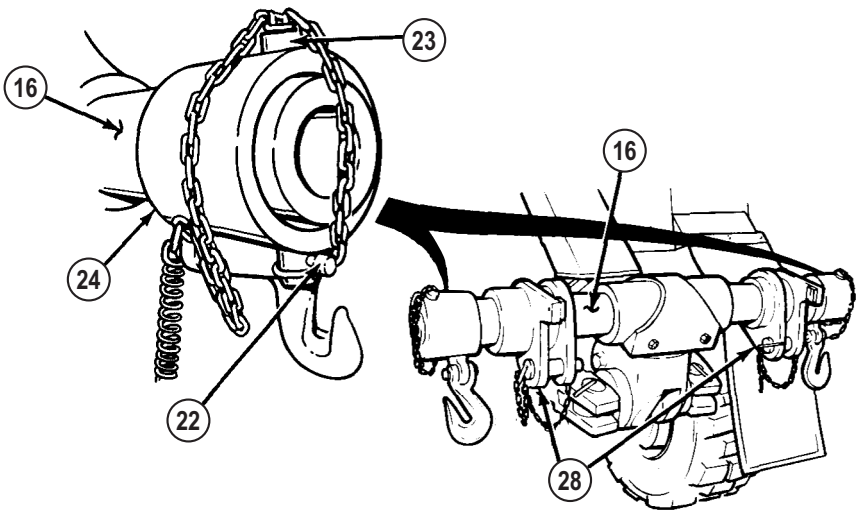


Figure 40.

23. Install two end caps (24), pins (23), and quick pins (22) on cross tube (16).
24. Install two springs (15) on tow cylinders (17).

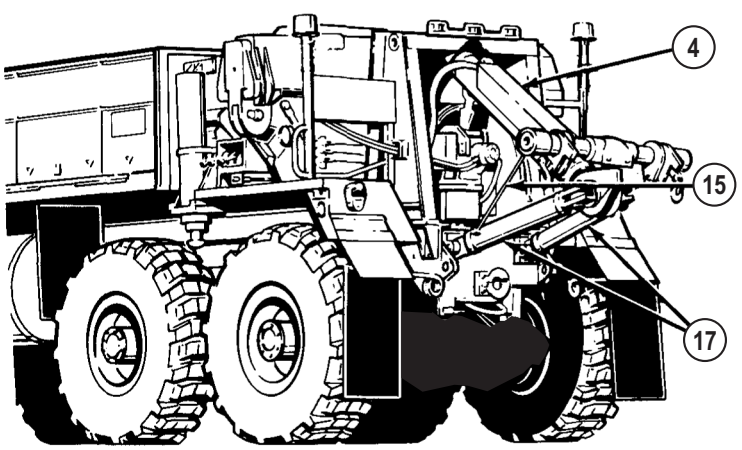


Figure 41.

DISCONNECT - Continued

25. Operate retrieval system to fully retract lift cylinder (4) and tow cylinders (17).

NOTE

Driver side and passenger side towing shackles are installed the same way.

26. Install two rear towing shackles (29), pins (30), and cotter pins (31).

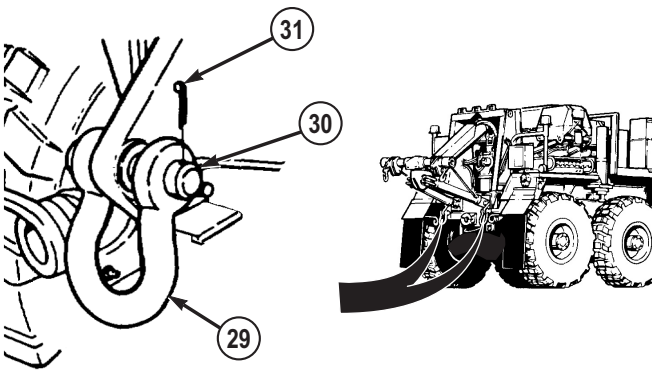


Figure 42.

27. Set POWER switch (32) to OFF position.

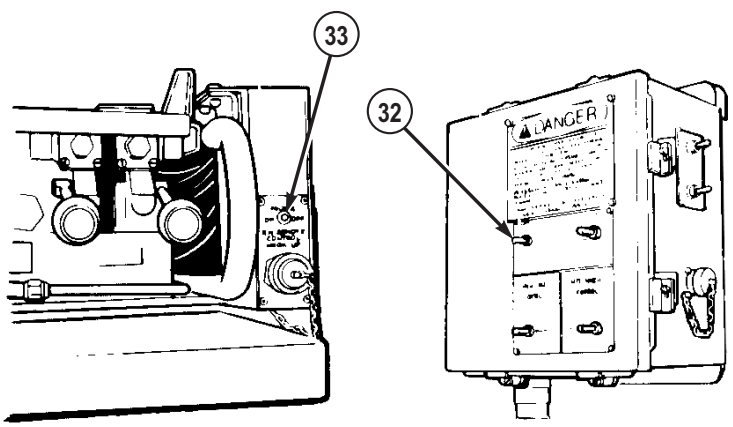


Figure 43.

28. Set POWER switch (33) to OFF position.
29. Turn off wrecker service drive lights. (WP 0087)

DISCONNECT - Continued

30. Turn off wrecker emergency flashers. (WP 0096)
31. Set HYD ENABLE switch (34) to off position. MAIN HYD ENABLE indicator (35) will go out.

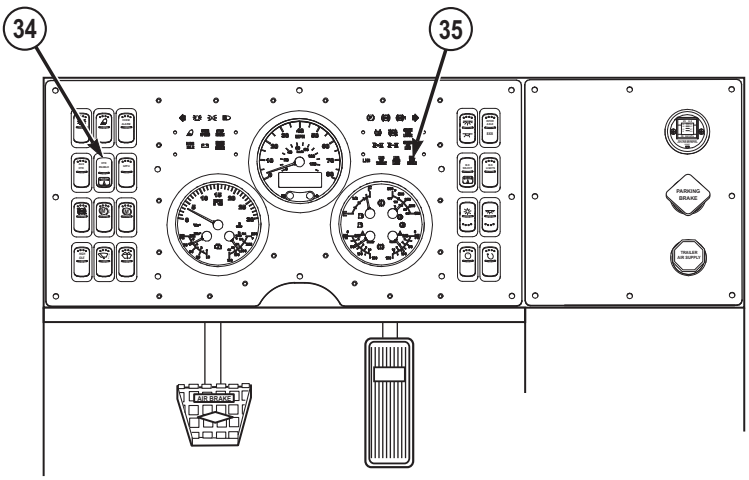


Figure 44.

32. Remove and stow portable beacon lights. (WP 0094)
33. Shut off wrecker engine. (WP 0057)

NOTE

- 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 (34).
- If disabled vehicle is an A4 model HEMTT series vehicle (refer to data plate on inside of driver side door), skip to Step (35).

34. Perform the following on BASE or A2 model HEMTT series disabled vehicle:
    a. Turn off disabled vehicle emergency flashers (refer to operator's manual). (WP 0096)
    b. Remove four screws (36) and steering lock bracket (37) from 90 degree gearbox (38) and return to wrecker stowage.

DISCONNECT - Continued

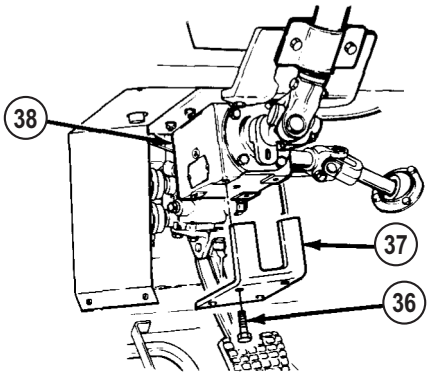


Figure 45.

NOTE

If disabled vehicle is an A4 model HEMTT series vehicle (refer to data plate on inside of driver side door), complete Step (35).

35. Perform the following on A4 model HEMTT series disabled vehicle:

    a. Turn off disabled vehicle emergency flashers (refer to operator's manual). (WP 0096)

    b. Remove lock (39) and steering lockpin (40).

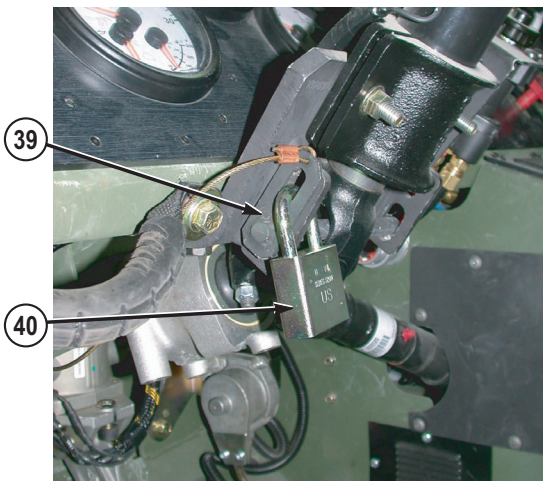


Figure 46.

DISCONNECT - Continued

c. Install steering lockpin (40) in stowage bracket (41) located under driver side dash panel.

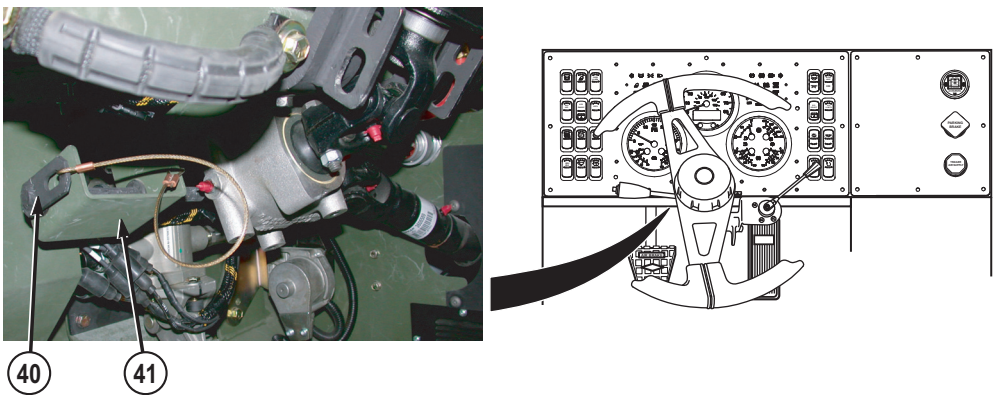


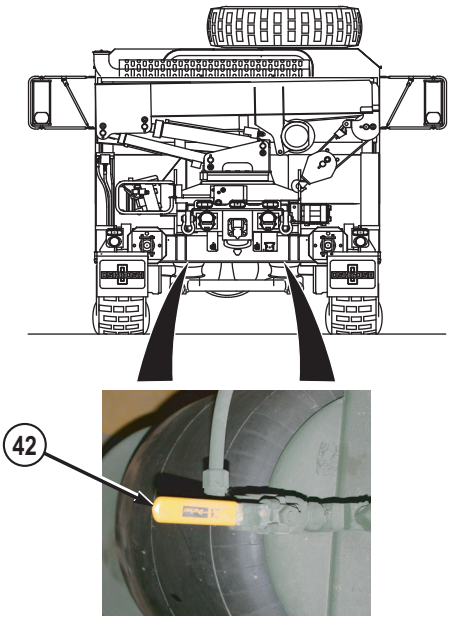
Figure 47.

CAUTION

When lifting and towing an A4 HEMTT series vehicle (refer to data plate on inside of driver side door), special care must be taken to avoid causing damage to the vehicle air suspension system. Always turn No. 1 axle air suspension ball valves ON before abandoning disabled A4 HEMTT series vehicle (refer to operate air suspension ball valves (WP 0043) for more information on ball valve operation). Failure to comply may result in damage to equipment.

d. Position disabled vehicle No. 4 axle driver side (shown) and passenger side ball valve handles (42) ON. (WP 0043)

DISCONNECT - Continued



BALL VALVE ON

Figure 48.

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.

STOW RIFLE IN STOWAGE MOUNT - Continued

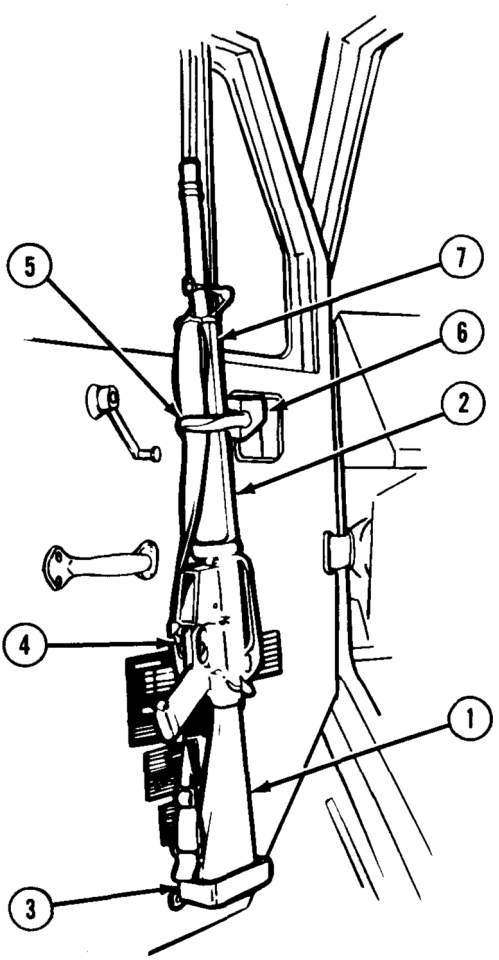


Figure 1.

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.

REMOVE RIFLE FROM STOWAGE MOUNT - Continued

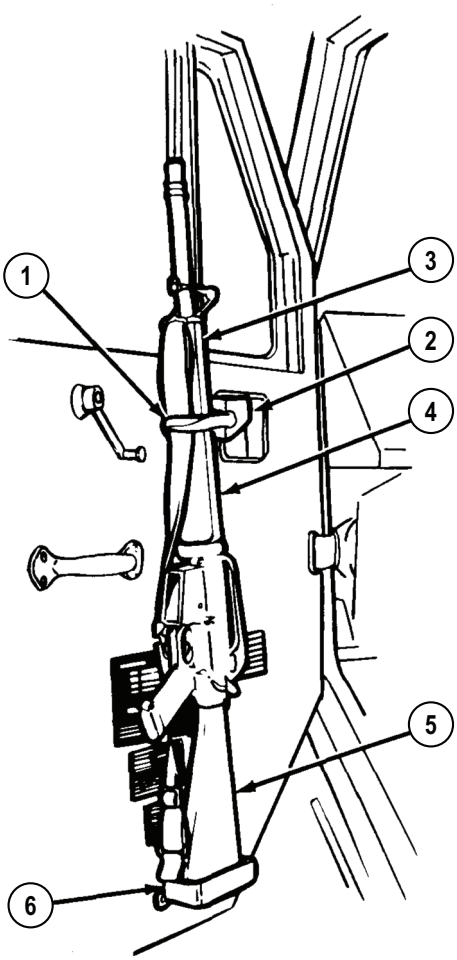


Figure 2.

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
PORTABLE WORK LAMP OPERATION

INITIAL SETUP:

Not Applicable

INSTALL/OPERATE/REMOVE PORTABLE WORK LAMP

NOTE

Ensure that 24V battery disconnect switch is ON (WP 0099) before operating work lamp.

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

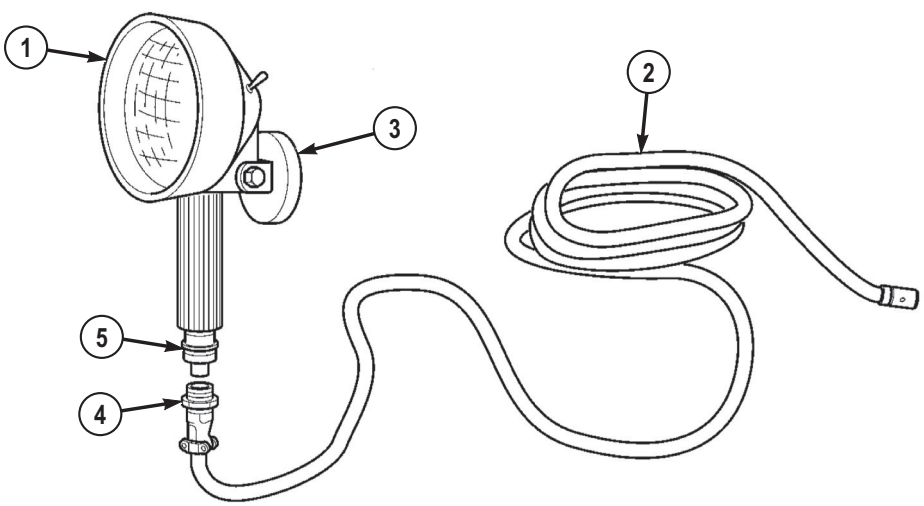


Figure 1.

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).

INSTALL/OPERATE/REMOVE PORTABLE WORK LAMP - Continued

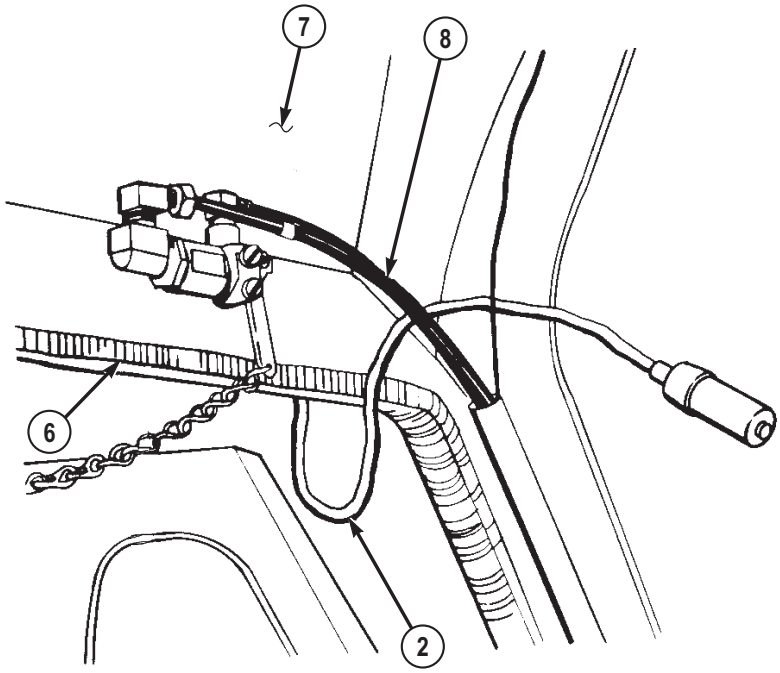


Figure 2.

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

INSTALL/OPERATE/REMOVE PORTABLE WORK LAMP - Continued

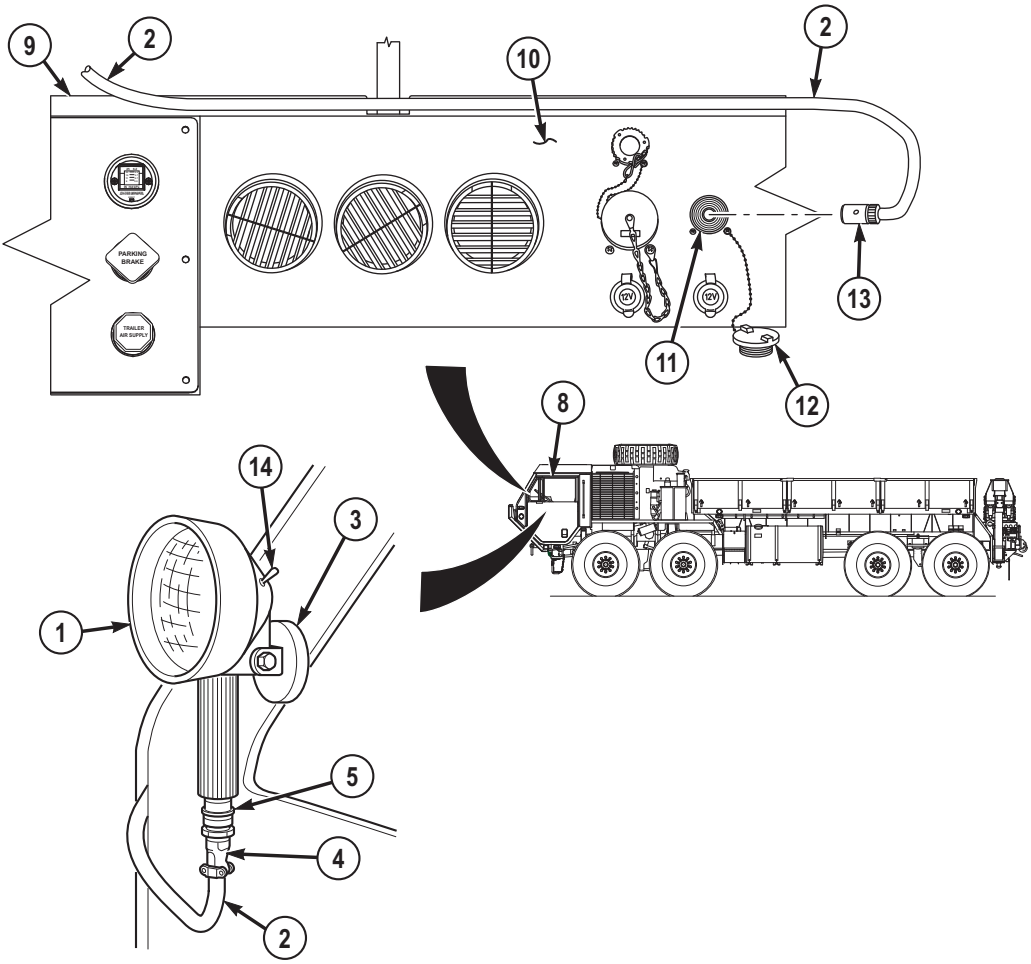


Figure 3.

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).

INSTALL/OPERATE/REMOVE PORTABLE WORK LAMP - Continued

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 0099) before operating lights.

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

TURN DOME LIGHT ON/OFF - Continued

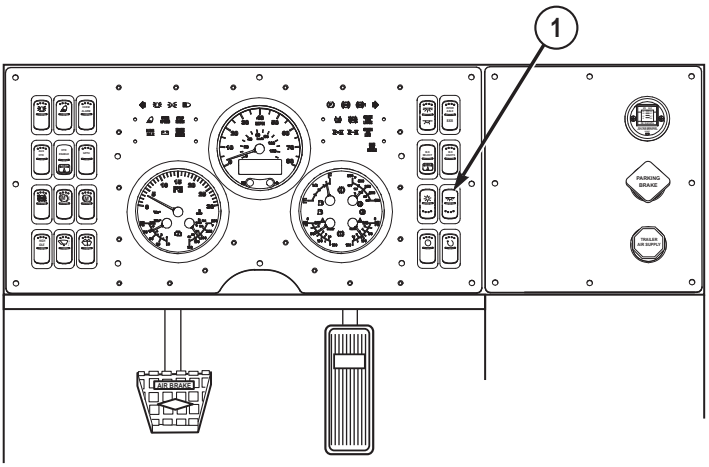


Figure 1.

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 0099) before operating lights.

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

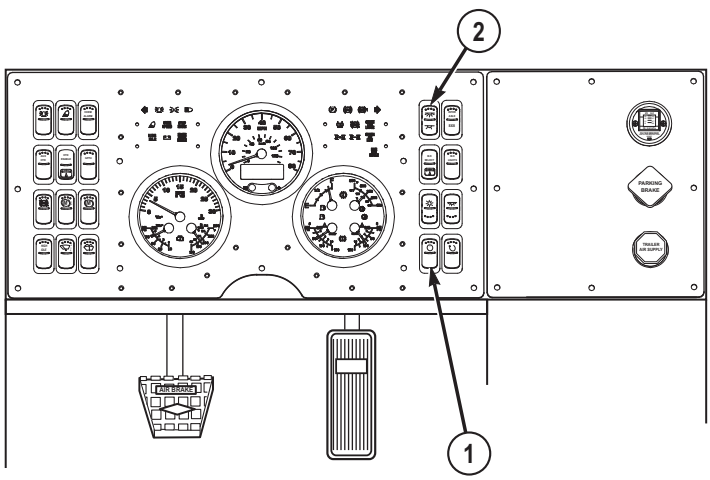


Figure 1.

TURN PANEL LIGHTS ON/OFF - Continued

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 0099) 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.

TURN PARKING LIGHTS ON/OFF - Continued

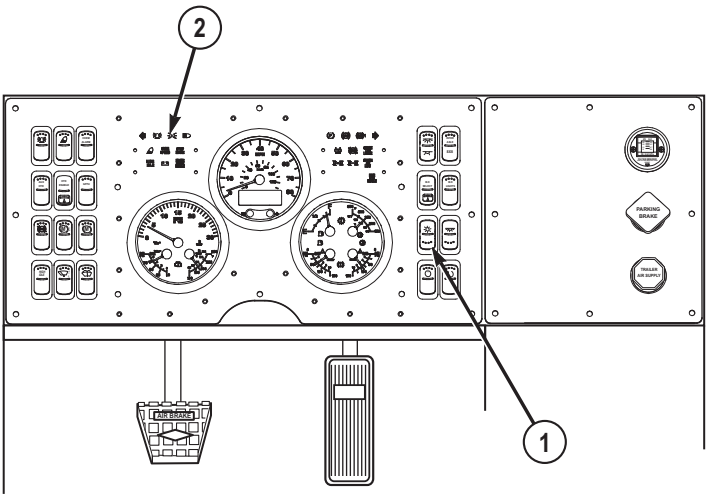


Figure 1.

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 0099) before operating lights.
- For full explanation of clearance lights, go to operate clearance lights . (WP 0089)
- 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.

TURN SERVICE DRIVE LIGHTS ON/OFF - Continued

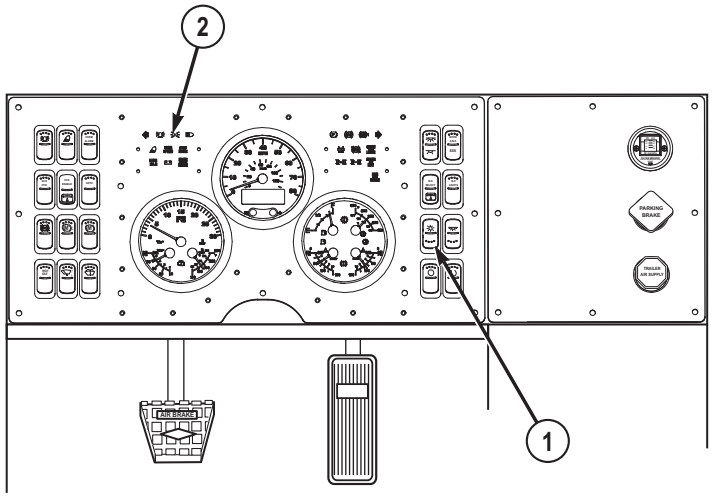


Figure 1.

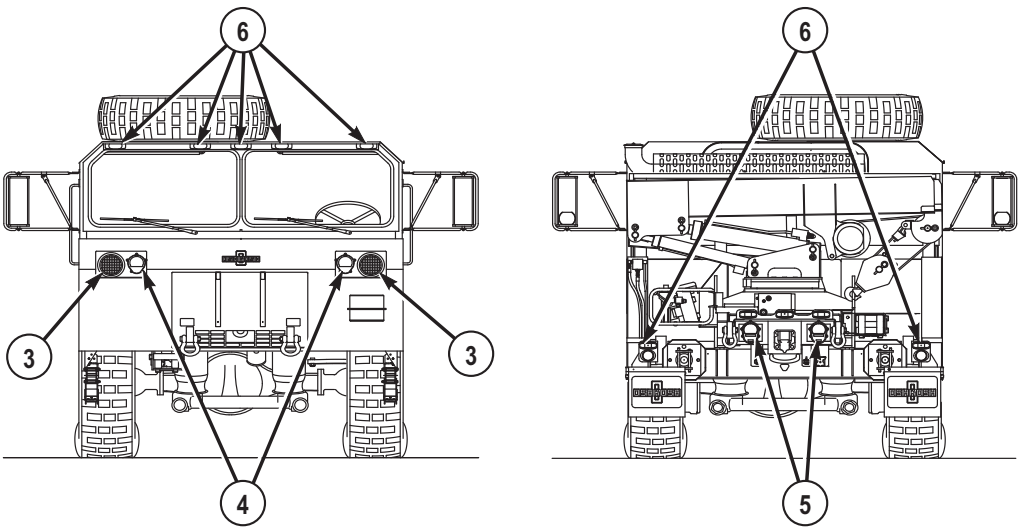


Figure 2.

NOTE

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

TURN SERVICE DRIVE LIGHTS ON/OFF - Continued

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.

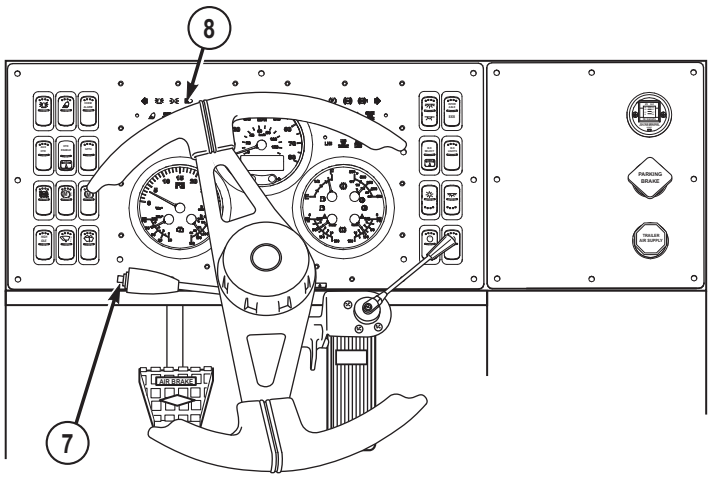


Figure 3.

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.

TURN SERVICE DRIVE LIGHTS ON/OFF - Continued

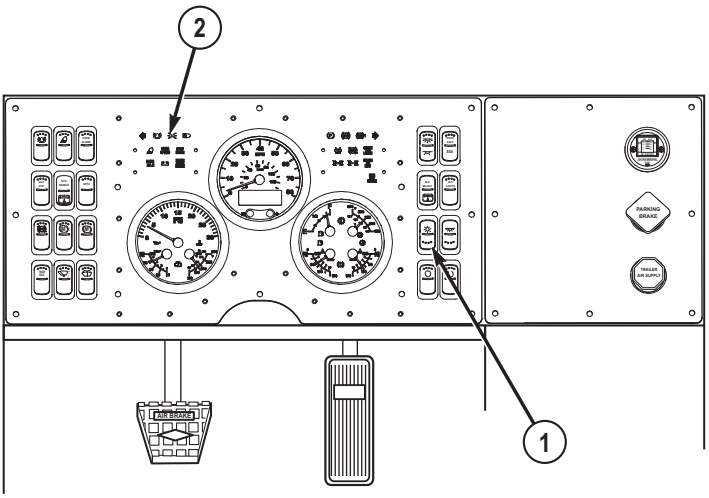


Figure 4.

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 0099) before operating lights.

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

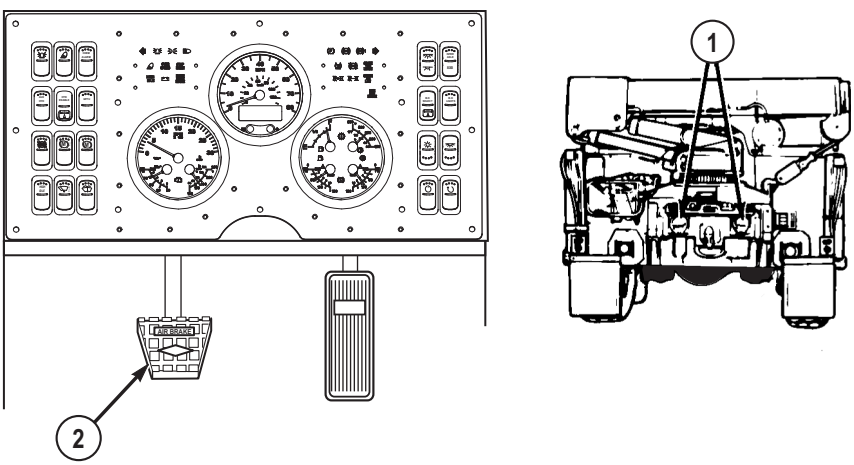


Figure 1.

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 0099) 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.

TURN CLEARANCE LIGHTS ON/OFF - Continued

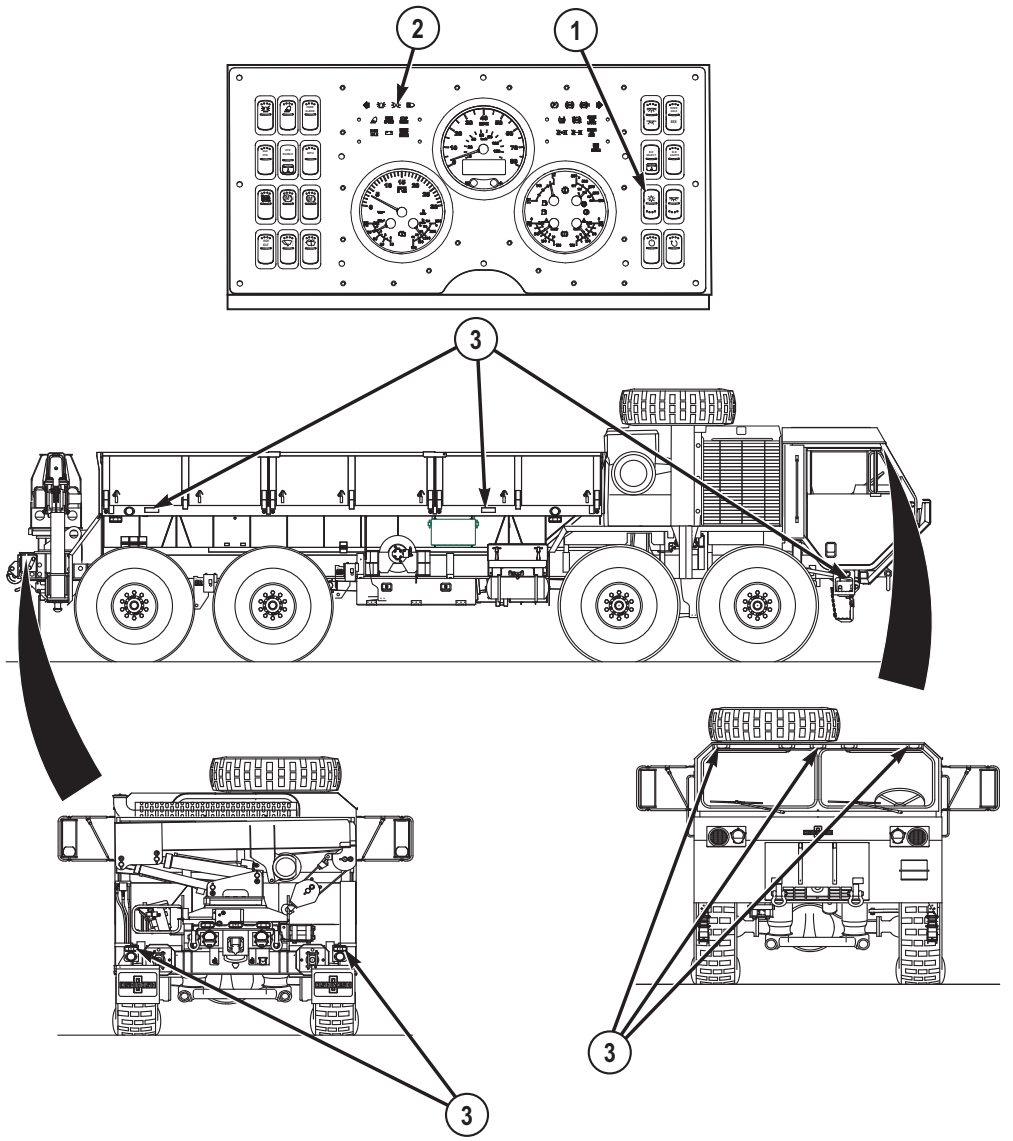


Figure 1.

NOTE

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

TURN CLEARANCE LIGHTS ON/OFF - Continued

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 0099) 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.

TURN BLACKOUT DRIVE LIGHT ON/OFF - Continued

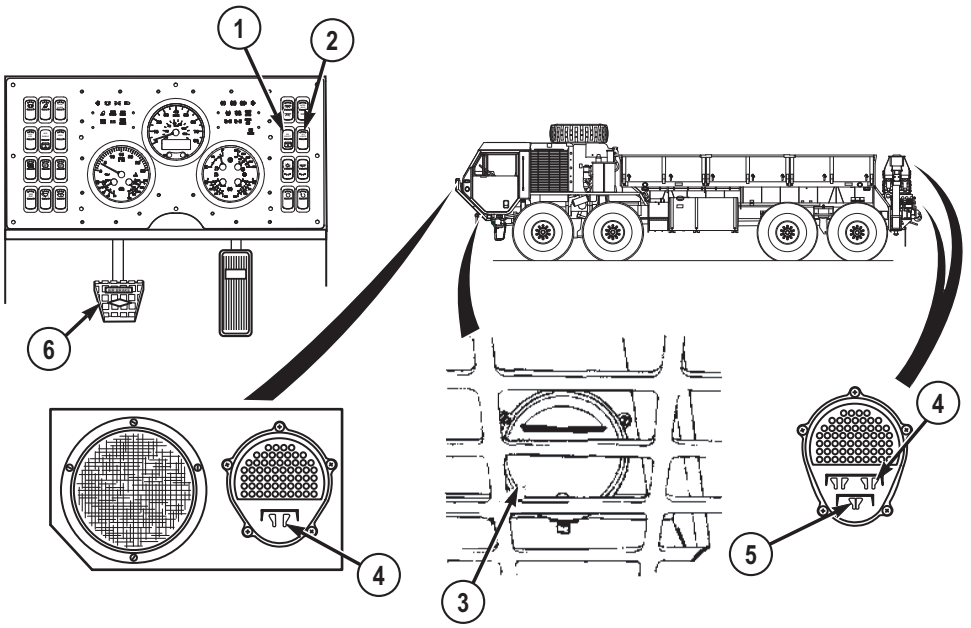


Figure 1.

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 0099) 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.

TURN BLACKOUT MARKERS ON/OFF - Continued

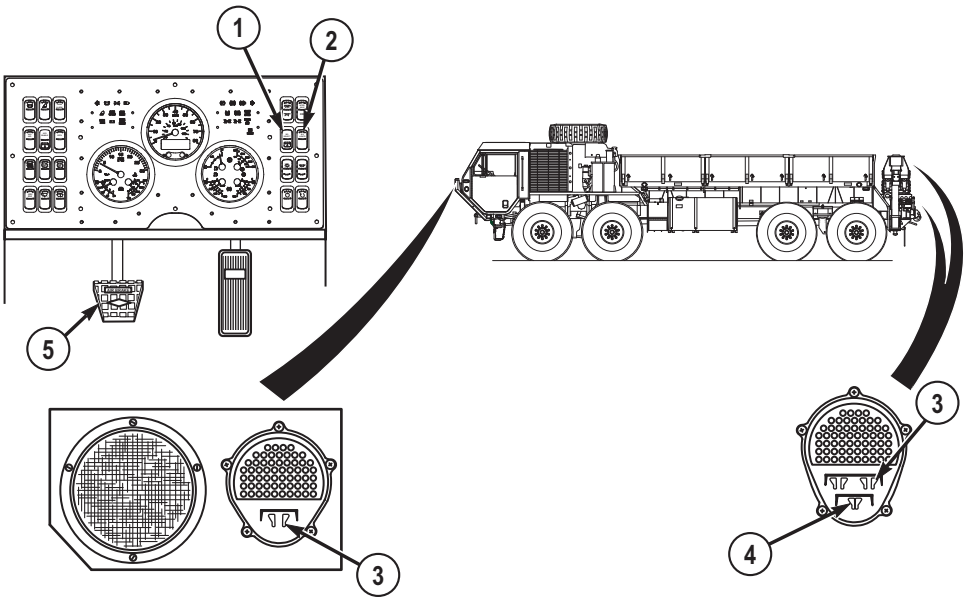


Figure 1.

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

TURN WORK 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

- Work light switch is disabled whenever blackout lights are selected on light control switch.
- Ensure that the 24V battery disconnect switch is set to ON position (WP 0099) before operating lights.

1. Set work light switch (1) to on position, work light indicator (2) will illuminate.

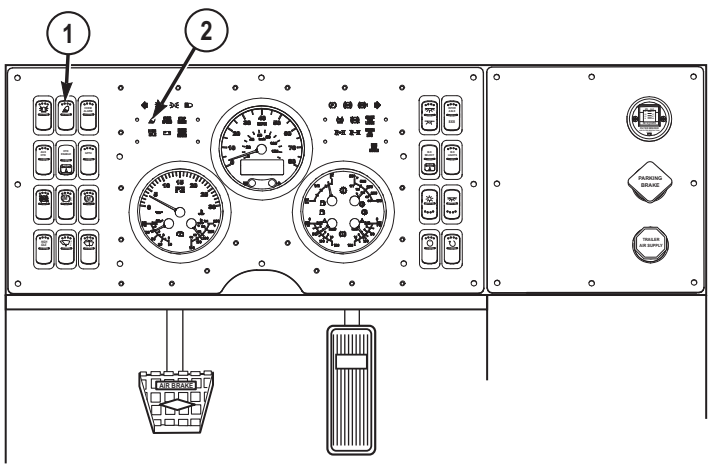


Figure 1.

TURN WORK LIGHTS ON/OFF - Continued

2. Set WORK LIGHTS switch (3) on power distribution box to ON position. Stationary work lights (4) located on the retrieval assembly will illuminate.

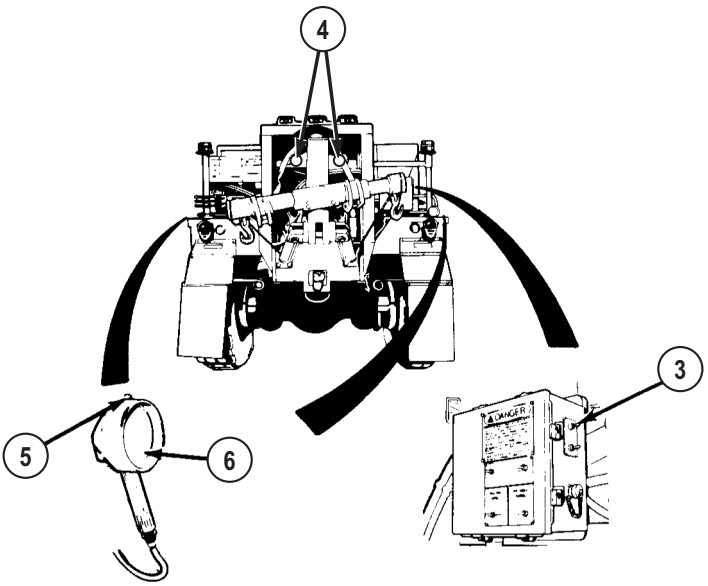


Figure 2.

NOTE

- Both driver side and passenger side portable work lights are removed and operated in the same way.
- Perform Steps (3) through (6) if use of portable work lights is required.

3. Set switch (5), located on portable work light (6), to on position.
4. Pull quick pin (7) from portable work light (6).

TURN WORK LIGHTS ON/OFF - Continued

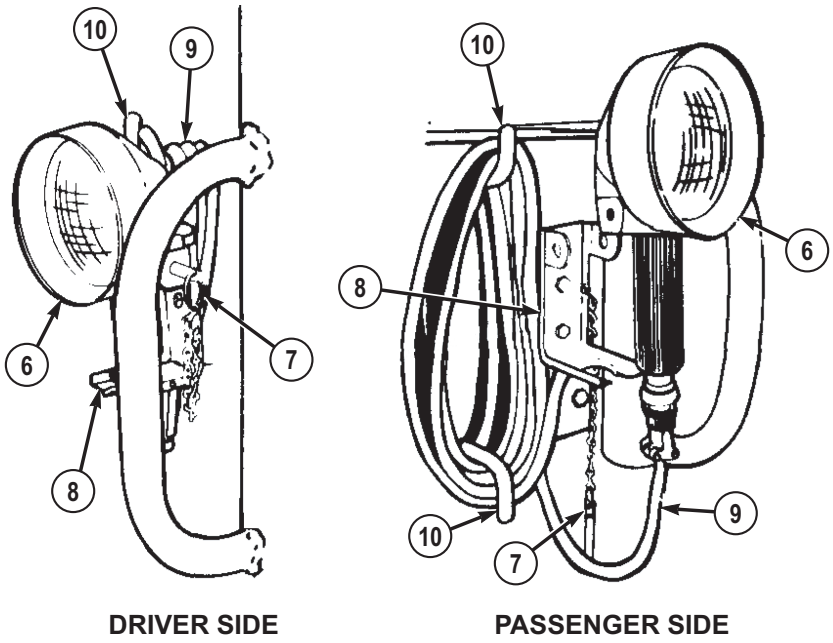


Figure 3.

5. Lift portable work light (6) from bracket (8).
6. Unwrap cord (9) from stowage hooks (10).

NOTE

If a longer cord is needed for portable work lights, complete Steps (7) through (9).

7. Remove worklamp harness from stowage.
8. Disconnect cord (9) from portable work light (6).

TURN WORK LIGHTS ON/OFF - Continued

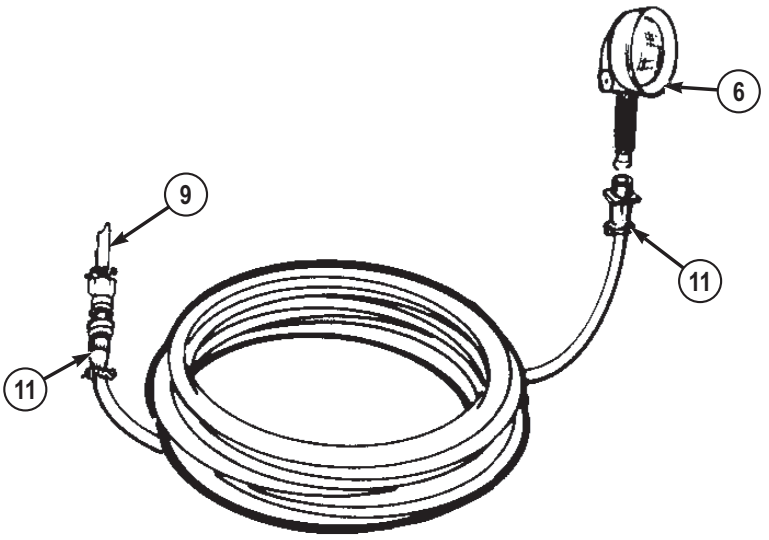


Figure 4.

9. Connect worklamp harness connectors (11) to portable work light (6) and cord (9).

NOTE

- Both driver side and passenger side portable work lights are operated and installed the same way.
- Perform Steps (10) through (14) if use of portable work lights are no longer required.

10. Set switch (5), located on portable work light (6), to off position.

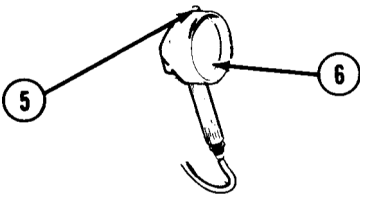


Figure 5.

11. Disconnect worklamp harness connectors (11) from portable work light (6) and cord (9).

TURN WORK LIGHTS ON/OFF - Continued

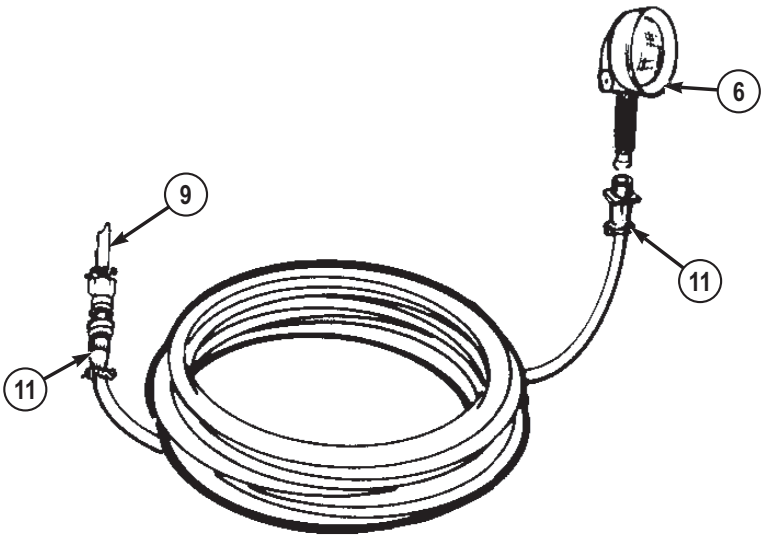


Figure 6.

12. Connect portable work light (6) to cord (9) and wrap cord (9) on stowage hooks (10) as required.

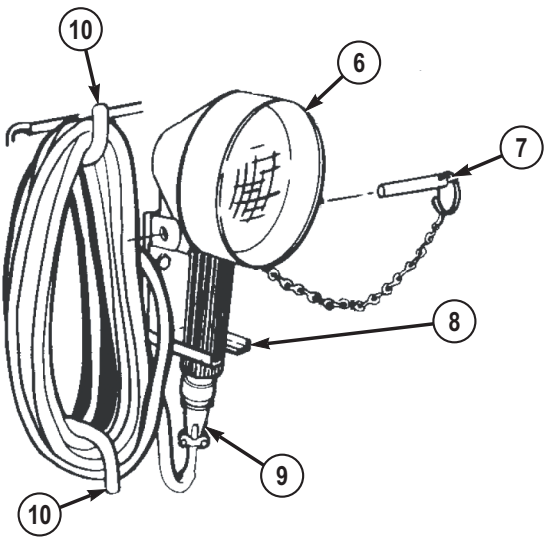


Figure 7.

TURN WORK LIGHTS ON/OFF - Continued

13. Install portable work light (6) in bracket (8) and install quick pin (7) through both bracket (8) and portable work light (6).
14. Return worklamp harness to stowage.

NOTE

Perform Steps (15) and (16) when use of all work lights is no longer required.

15. Set WORK LIGHTS switch (3) on power distribution box to OFF position. All work lights will go out.

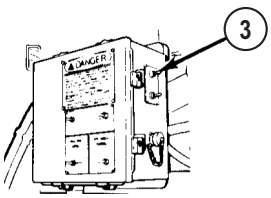


Figure 8.

16. Set work light switch (1) to off position, work light indicator (2) will go out.

TURN WORK LIGHTS ON/OFF - Continued

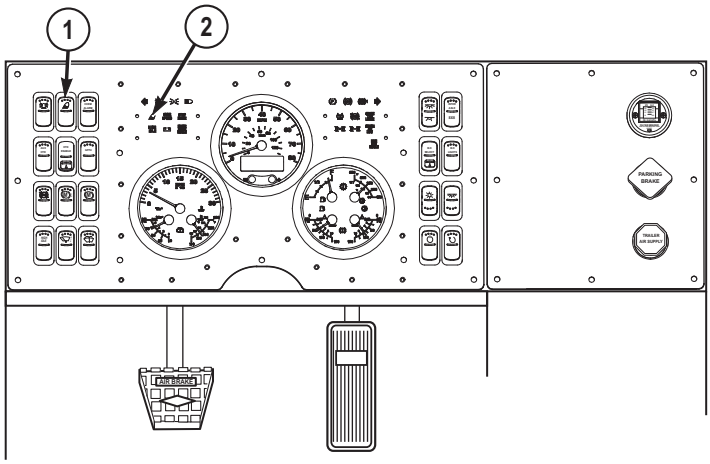


Figure 9.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
REAR BEACON LIGHT OPERATION

INITIAL SETUP:

Not Applicable

SET UP REAR BEACON LIGHTS

NOTE

- Beacon lights should remain in raised position except for crane operations.
- Driver side and passenger side beacon lights are set up in the same way.

1. Remove two nuts (1), lockwashers (2), washers (3), and screws (4) from support bracket (5).

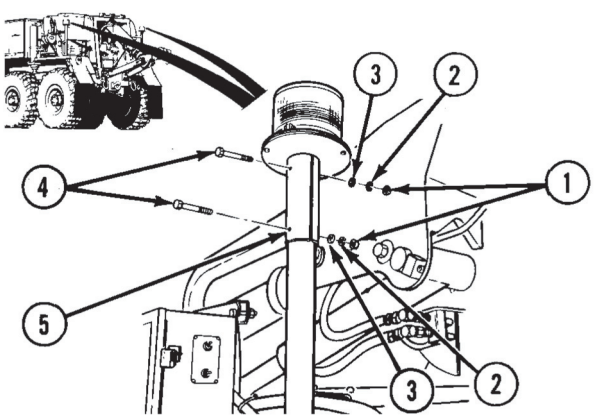


Figure 1.

CAUTION

Do not let beacon drop when raising it to operating position. Damage to beacon can result.

2. Raise beacon support tube (6) until lower set of holes in beacon support tube align with holes in support bracket (5).

SET UP REAR BEACON LIGHTS - Continued

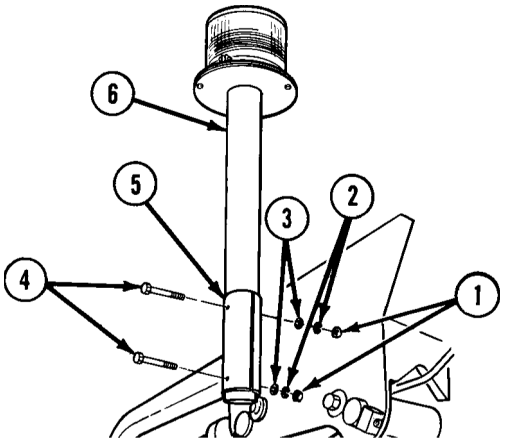


Figure 2.

3. Install two screws (4) through holes in support bracket (5) and beacon support tube (6).
4. Install two washers (3), lockwashers (2), and nuts (1).
5. Repeat Steps (1) through (4) for opposite rear beacon light.

TURN REAR BEACON LIGHTS ON/OFF

NOTE

Ensure that the 24V battery disconnect switch is set to ON position (WP 0099) before operating rear beacon lights.

1. Set beacon light switch (1) to on position. Indicator light (2) will illuminate.

TURN REAR BEACON LIGHTS ON/OFF - Continued

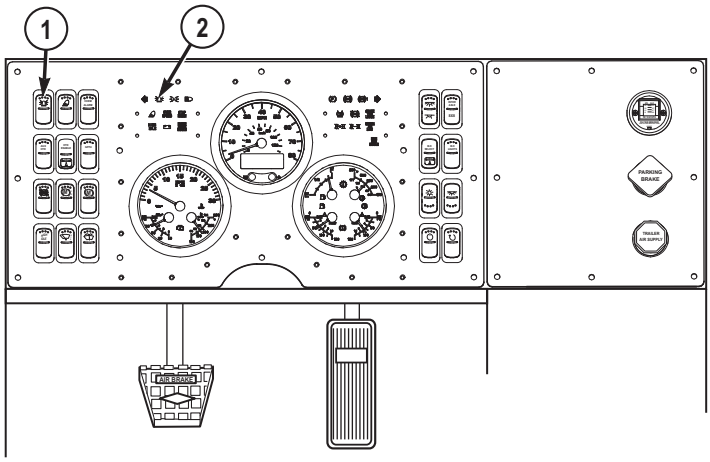


Figure 3.

2. Set BEACON LIGHT switch (3) located on power distribution box (4) to ON position. Rear beacon lights (5) will illuminate.

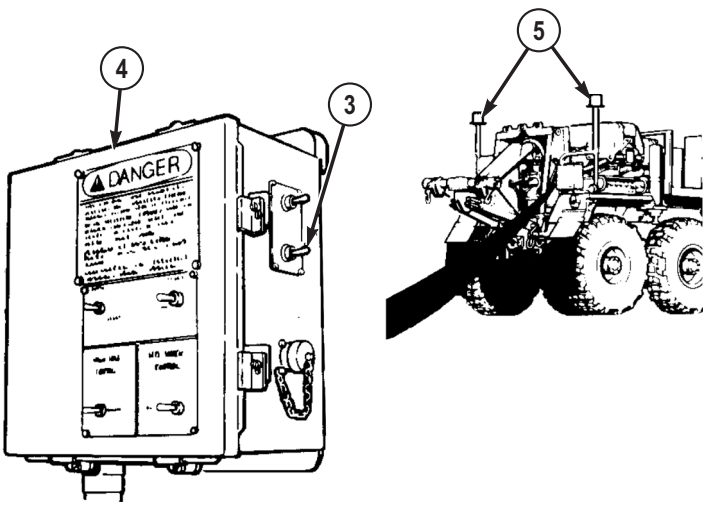


Figure 4.

NOTE

Perform Steps (3) and (4) when use of rear beacon lights are no longer required.

TURN REAR BEACON LIGHTS ON/OFF - Continued

3. Set BEACON LIGHT switch (3) to OFF position. Rear beacon lights (5) will go out.
4. Set beacon light switch (1) to off position. Indicator light (2) will go out.

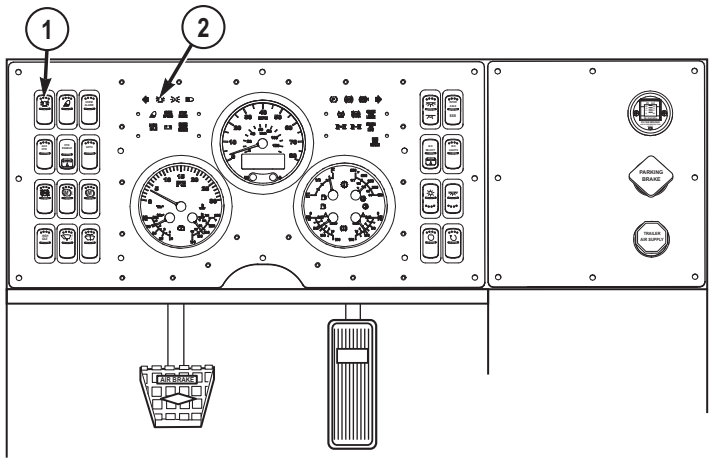


Figure 5.

STOW REAR BEACON LIGHTS

CAUTION

Do not let beacon drop when removing screws. Damage to beacon can result.

NOTE

Driver side and passenger side beacon lights are stowed in the same way.

1. Remove two nuts (1), lockwashers (2), washers (3), and screws (4) from support bracket (5).

STOW REAR BEACON LIGHTS - Continued

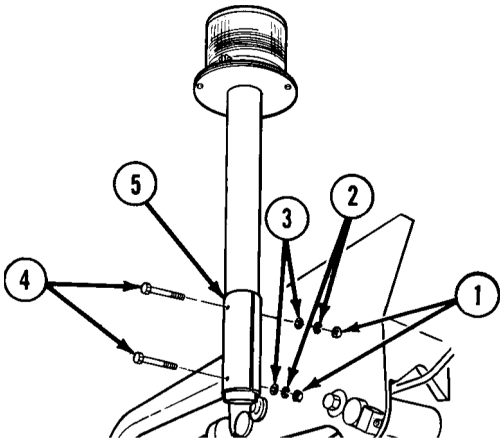


Figure 6.

2. Lower beacon support tube (6) until upper set of holes in beacon support tube align with holes in support bracket (5).

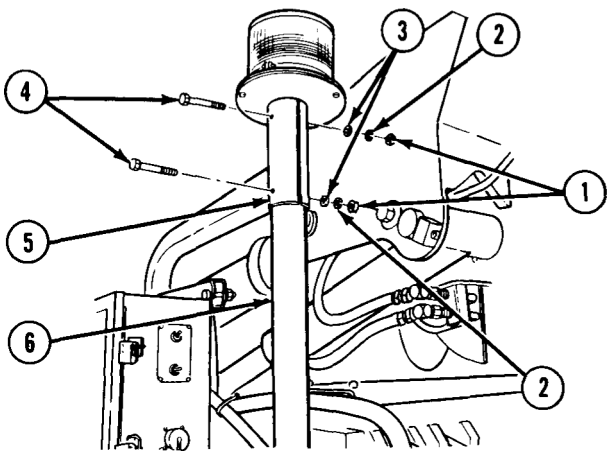


Figure 7.

3. Install two screws (4) through holes in support bracket (5) and beacon support tube (6).
4. Install two washers (3), lockwashers (2), and nuts (1).

STOW REAR BEACON LIGHTS - Continued

5. Repeat Steps (1) through (4) for opposite rear beacon light.

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 0099) before operating lights.

1. Remove beacon light (1) from stowage and unwind cord (2).

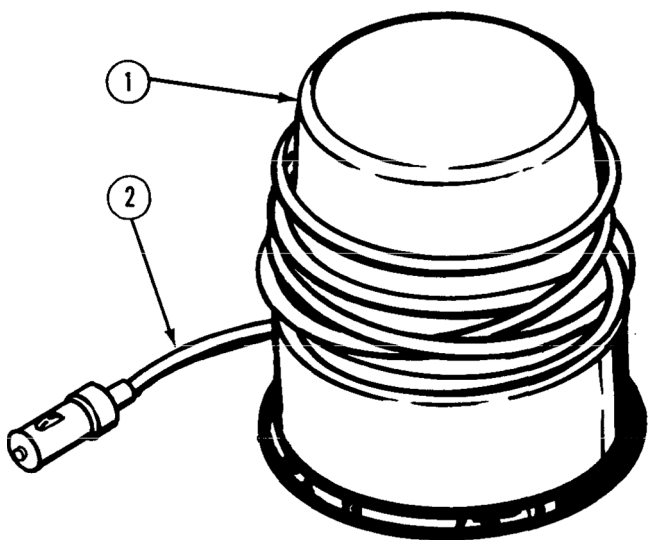


Figure 1.

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.

INSTALL/REMOVE PORTABLE BEACON LIGHT - Continued

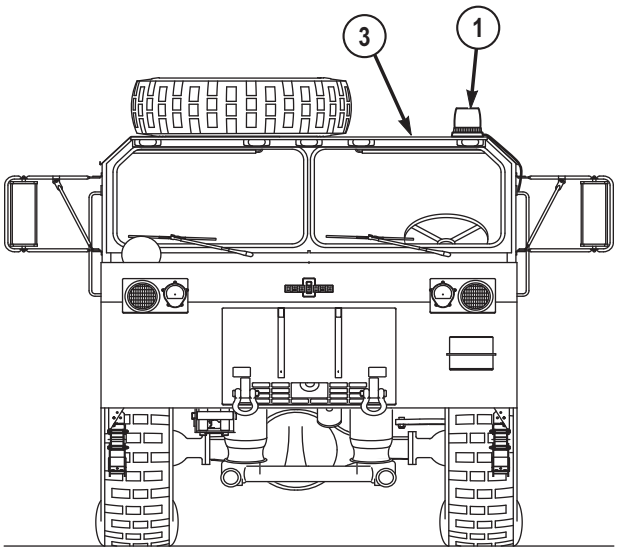


Figure 2.

3. Route beacon cord (2) through driver side door opening (4) and between inside of cab roof (3) and air horn valve hoses (5).

INSTALL/REMOVE PORTABLE BEACON LIGHT - Continued

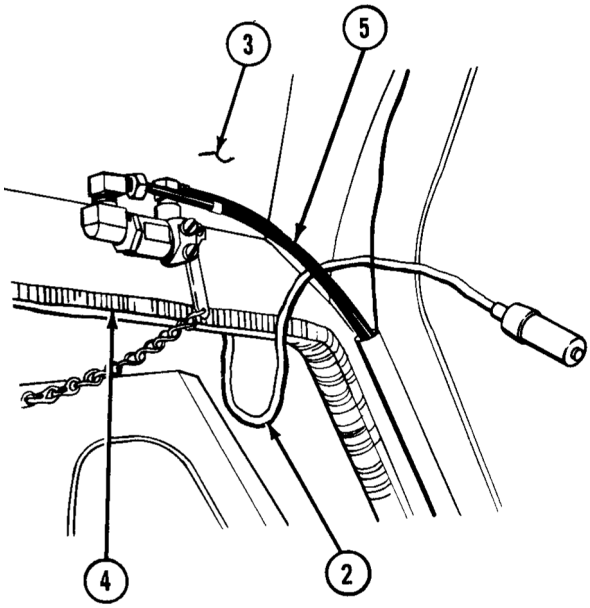


Figure 3.

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).

INSTALL/REMOVE PORTABLE BEACON LIGHT - Continued

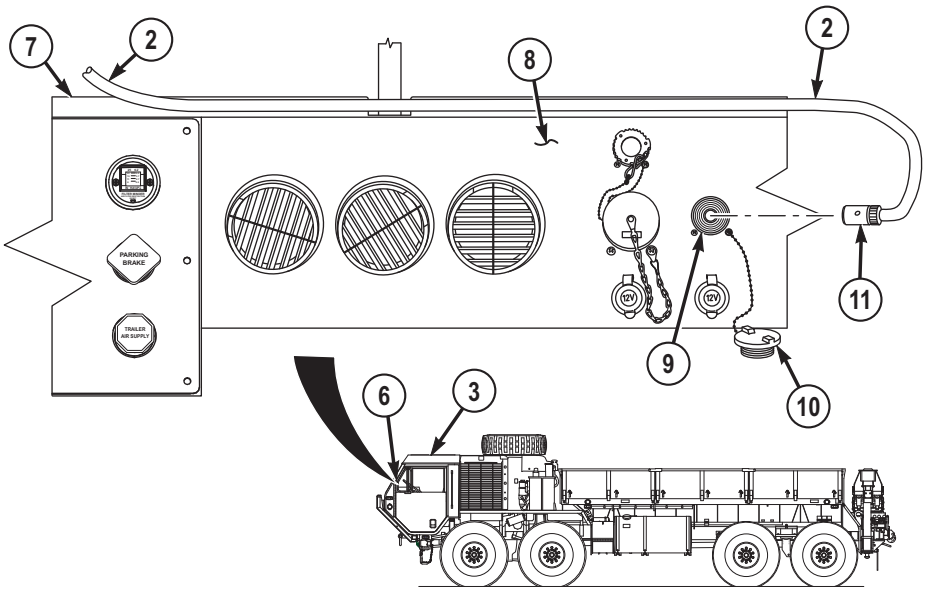


Figure 4.

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.

INSTALL/REMOVE PORTABLE BEACON LIGHT - Continued

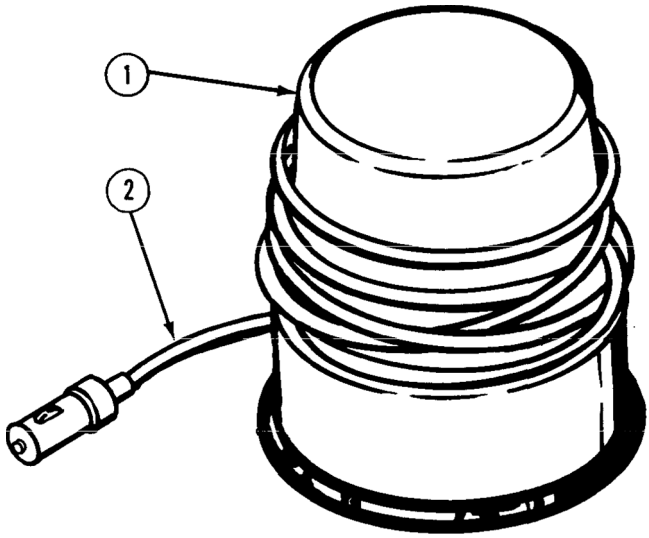


Figure 5.

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 0099) 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.

SET TURN SIGNAL ON/OFF - Continued

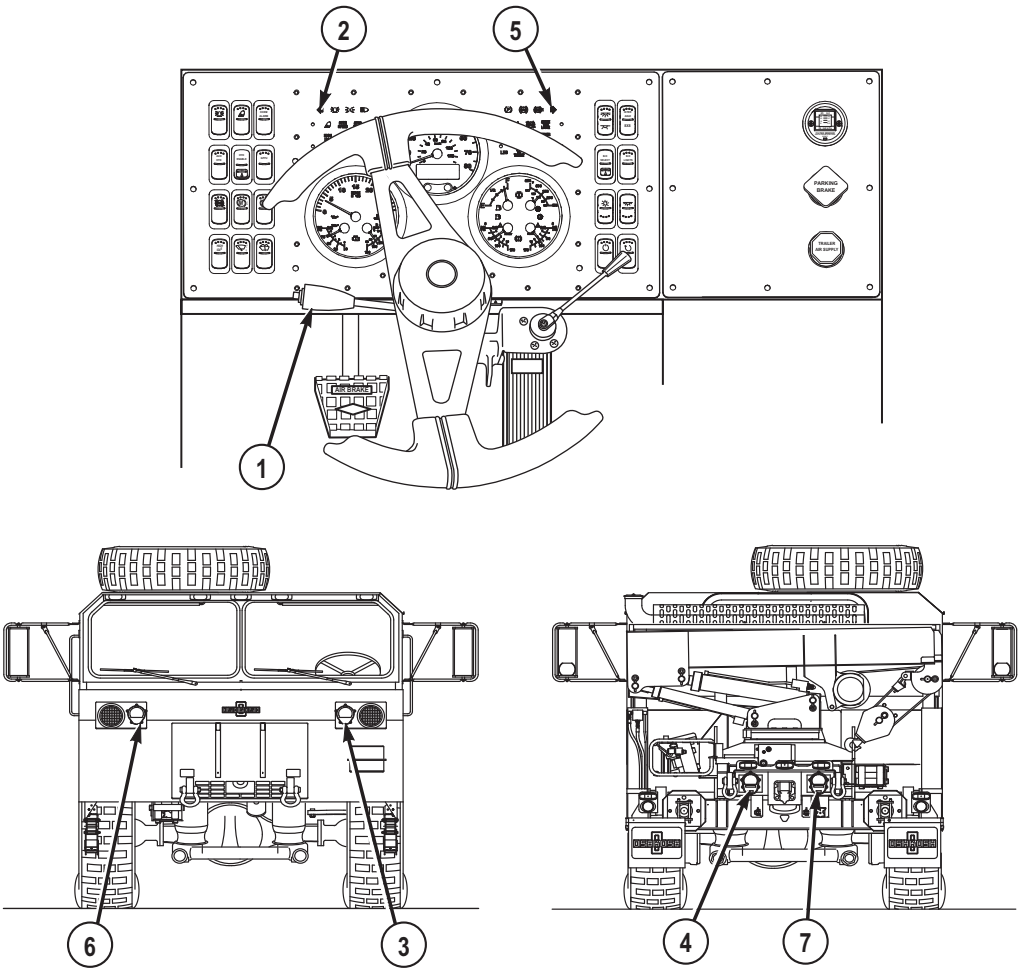


Figure 1.

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.

SET TURN SIGNAL ON/OFF - Continued

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 0099) before operating emergency flashers.
- Highway Emergency Marker Kit (WP 0128) 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.

TURN EMERGENCY FLASHERS ON/OFF - Continued

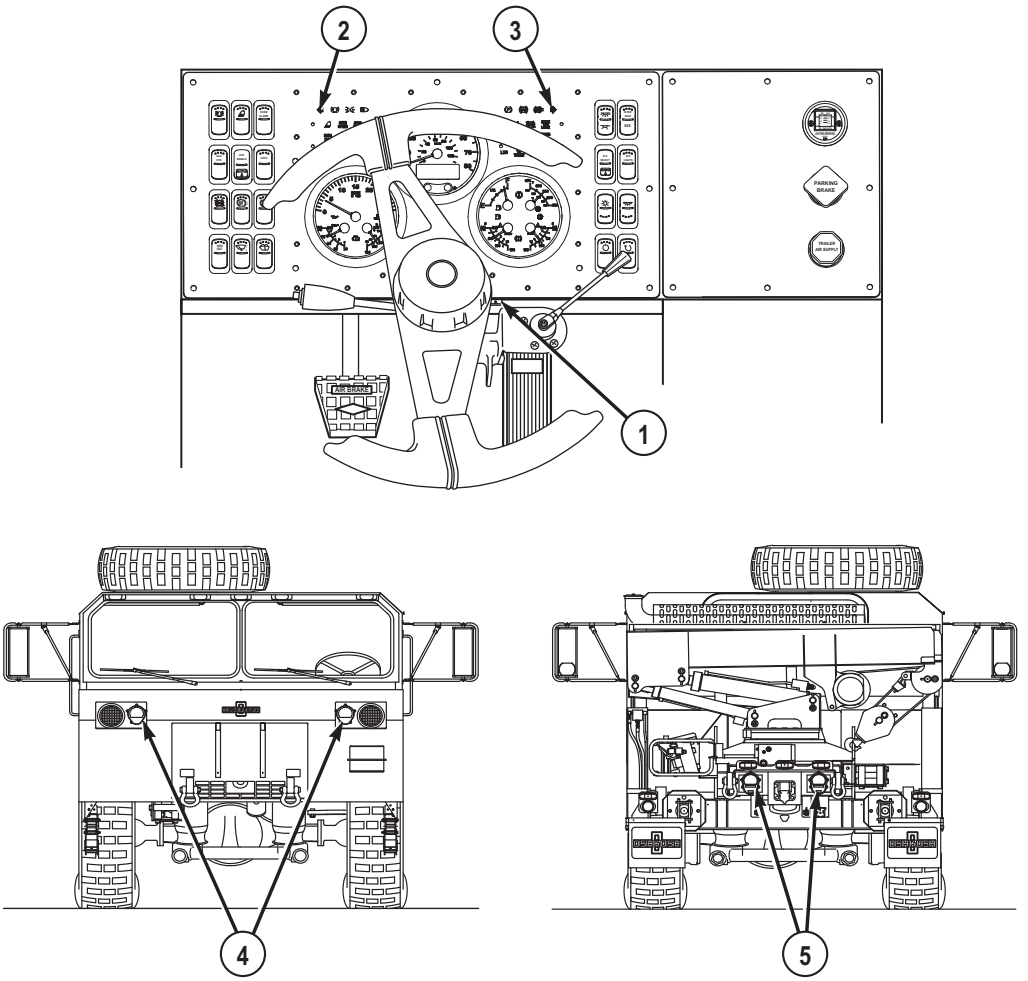


Figure 1.

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.

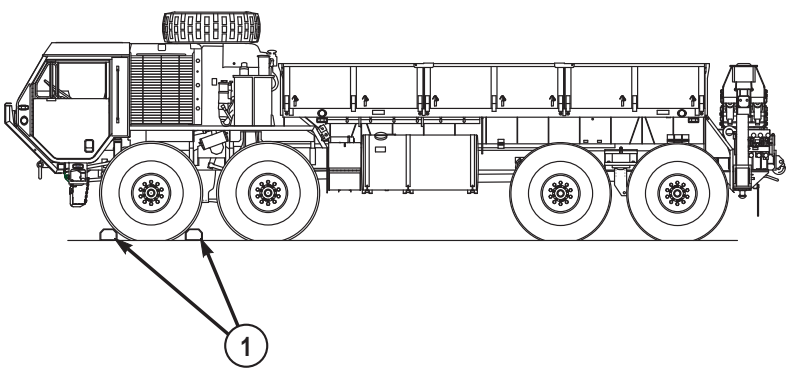


Figure 1.

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.

REMOVE WHEEL CHOCKS - Continued

- 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).

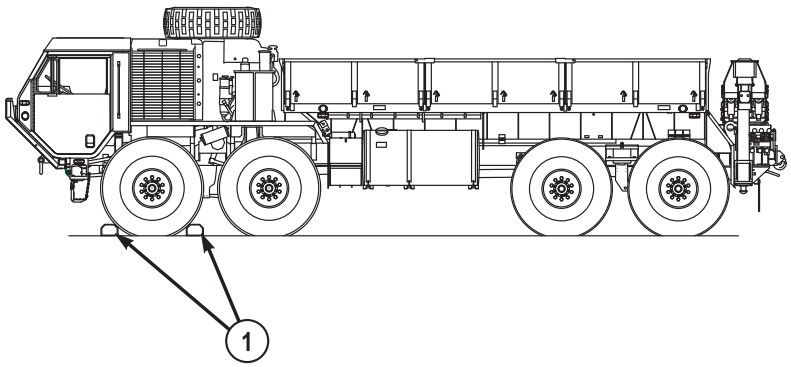


Figure 2.

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).

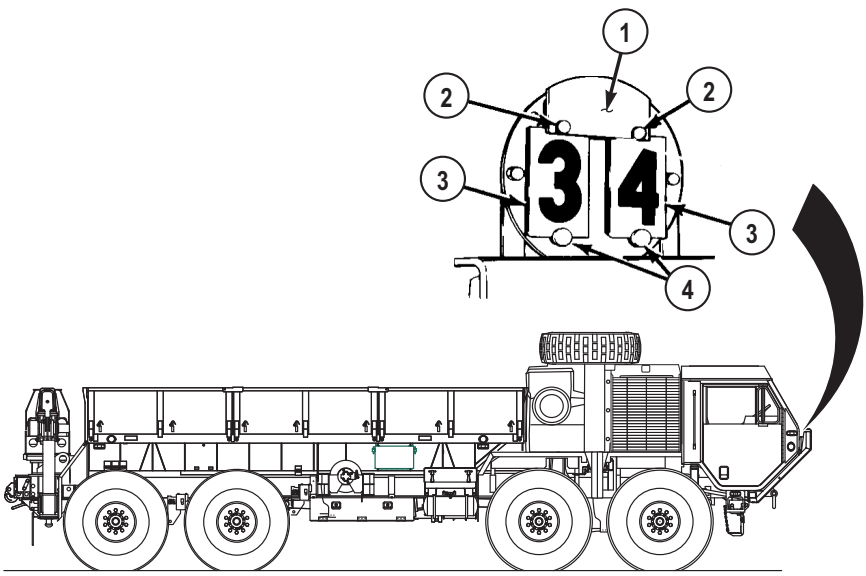


Figure 1.

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).

CHANGE VEHICLE WEIGHT INDICATOR - Continued

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.

OPERATE 24V BATTERY DISCONNECT SWITCH - Continued

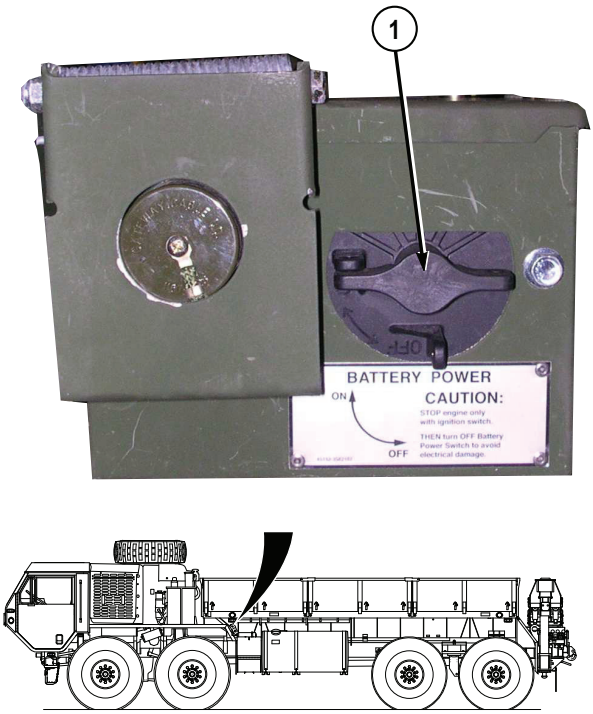


Figure 1.

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.

ADJUST AIR-RIDE SEAT - Continued

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 0056) and perform Steps (7) through (10) to free seat.

7. Push in knob (1) to decrease seat ride firmness.

ADJUST AIR-RIDE SEAT - Continued

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.

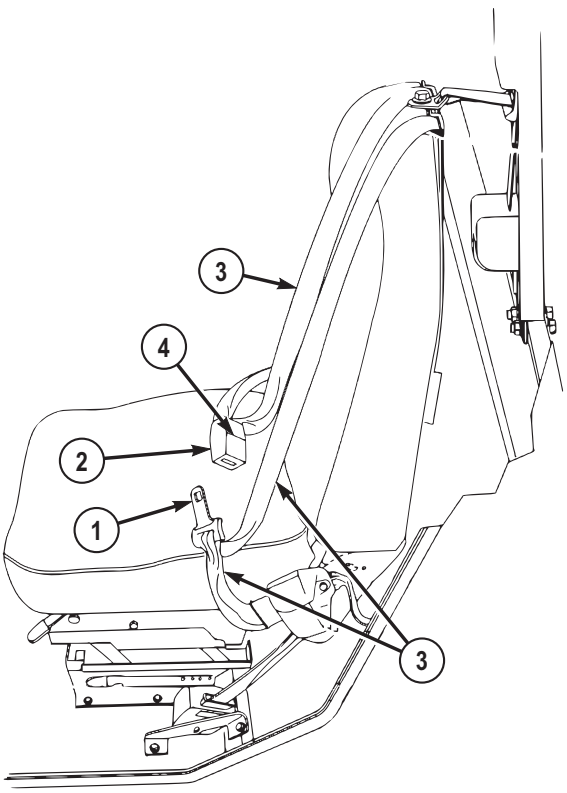


Figure 1.

OPERATE FOUR-POINT SEATBELT - Continued

2. To release seatbelt (3), push in button (4) on buckle (2).

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
GROVE CRANE OPERATION (MANUAL CONTROL)

INITIAL SETUP:

Not Applicable

PREPARE CRANE FOR OPERATION

WARNING

- Do not operate crane unless outriggers are firmly in place or vehicle could roll over. Failure to comply may result in injury or death to personnel.
- If operator cannot see load during operation, operate crane from REMOTE CONTROL UNIT. Failure to comply may result in injury or death to personnel.
- When using crane on any vehicle, park vehicle clear of all overhead electrical lines. Keep boom clear of all electrical lines and other obstacles while operating crane. Failure to comply may result in injury or death to personnel.
- 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 when it is running. Failure to comply may result in injury or death to personnel. Seek medical aid should you suspect a hearing problem. Failure to comply may result in injury or death to personnel.

CAUTION

Rear beacon lights must be in lower (stowed) position before operating crane or damage to lights may result.

PREPARE CRANE FOR OPERATION - Continued

NOTE

- Failure of hydraulic system will stop crane operation and lock crane in place. If hydraulic system fails during crane operation, refer to perform immediate action for loss of hydraulic system. (WP 0131)
- If electrical system fails during crane operation, refer to perform emergency hydraulic operation when grove crane electrical power fails. (WP 0132)

1. Lower rear beacon lights to stowed position. (WP 0093)
2. Start engine. (WP 0044)

NOTE

Grove crane can operate on up to 5 degree side slope.

3. Position vehicle on level ground so all loading and unloading can be done from one position.
4. Set transmission range selector (1) to N (neutral).

NOTE

Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

5. Pull out PARKING BRAKE control (2).

PREPARE CRANE FOR OPERATION - Continued

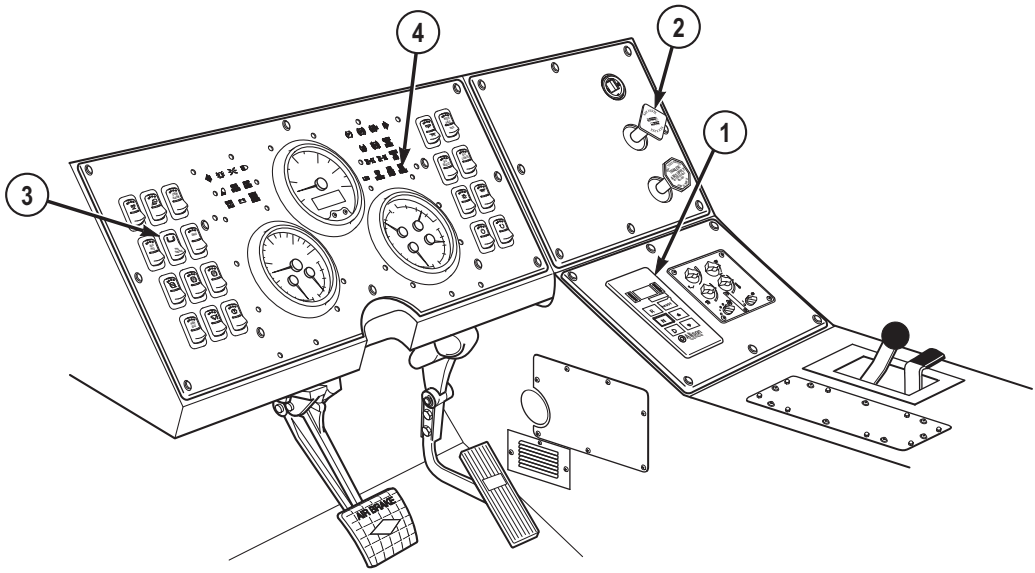


Figure 1.

6. Set HYD ENABLE switch (3) to on position. MAIN HYD ENABLE indicator (4) will illuminate.
7. Push in FRONT BRAKE APPLICATION control (5).

PREPARE CRANE FOR OPERATION - Continued

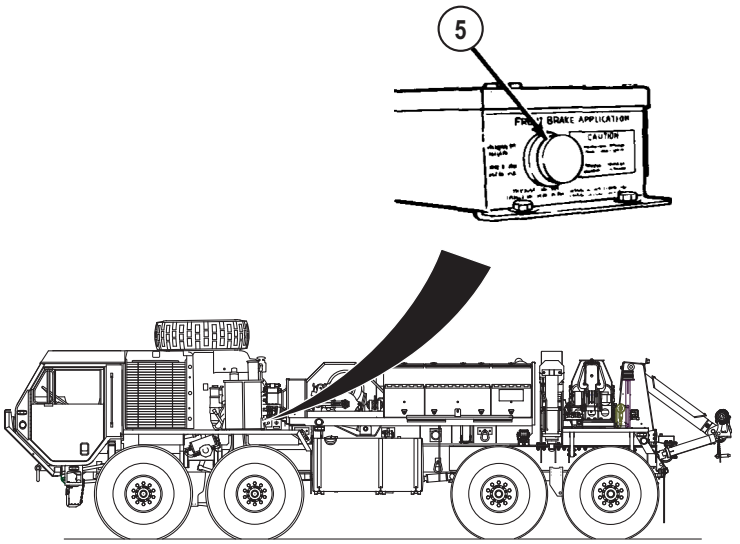


Figure 2.

8. Set POWER switch (6) to ON position.

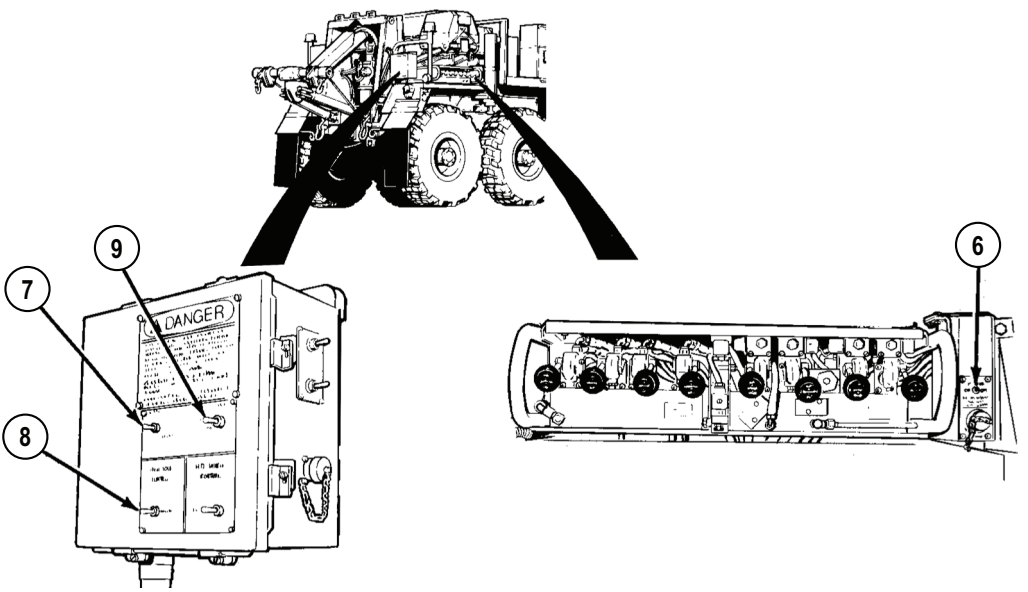


Figure 3.

PREPARE CRANE FOR OPERATION - Continued

9. Set POWER switch (7) to ON position.
10. Set HIGH IDLE CONTROL switch (8) to CRANE position.
11. Push and release LATCH switch (9). Engine speed will increase to approximately 1500 rpm.

SETUP OUTRIGGERS

WARNING

- Chock front wheels when using outriggers to prevent vehicle from rolling. Failure to comply may result in injury or death to personnel.
- Stand clear of outrigger beams while operating lever. Failure to comply may result in injury or death to personnel.

NOTE

- Always operate control levers with light, even pressure.
- Outrigger beams can only be extended/retracted from controls on same side of vehicle.
- Outrigger beams will come out slower with light pressure on lever. Pushing lever to full travel will cause faster movement.
- Either right or left outrigger may be extended first, for the purposes of this procedure; the right side is extended first.

1. Move O/R EXT control lever (1) to IN position briefly and lift and turn right outrigger lockpin (2) to unlock position.

SETUP OUTRIGGERS - Continued

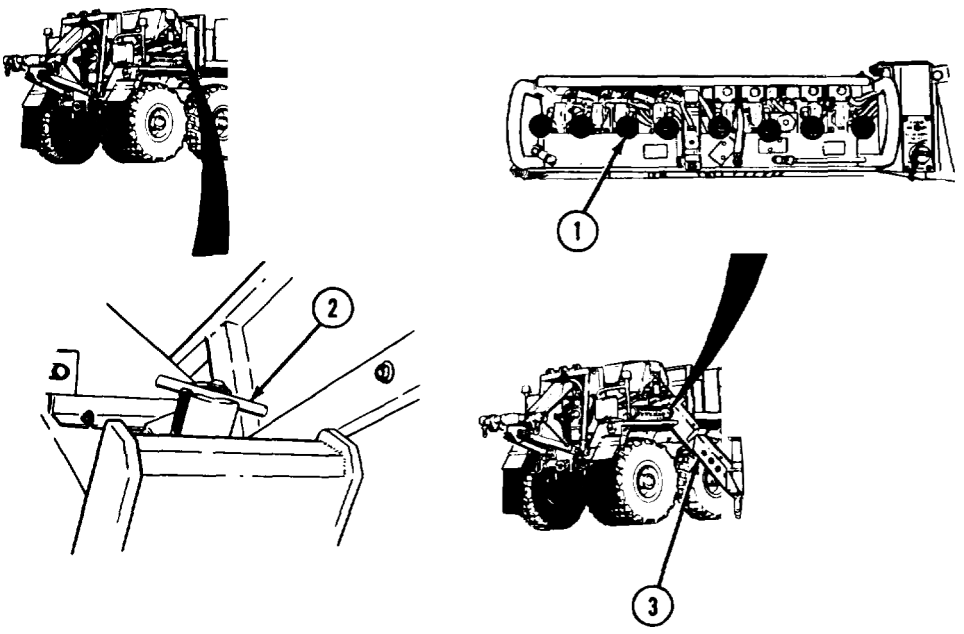


Figure 4.

2. Move O/R EXT control lever (1) to OUT position until right outrigger beam (3) is fully extended.

WARNING

Use care when removing outrigger pads from stowed position. Failure to comply may result in injury or death to personnel.

3. Remove two safety pins (4) and remove outrigger pad (5) from studs (6) on outrigger jack cylinder (7).

SETUP OUTRIGGERS - Continued

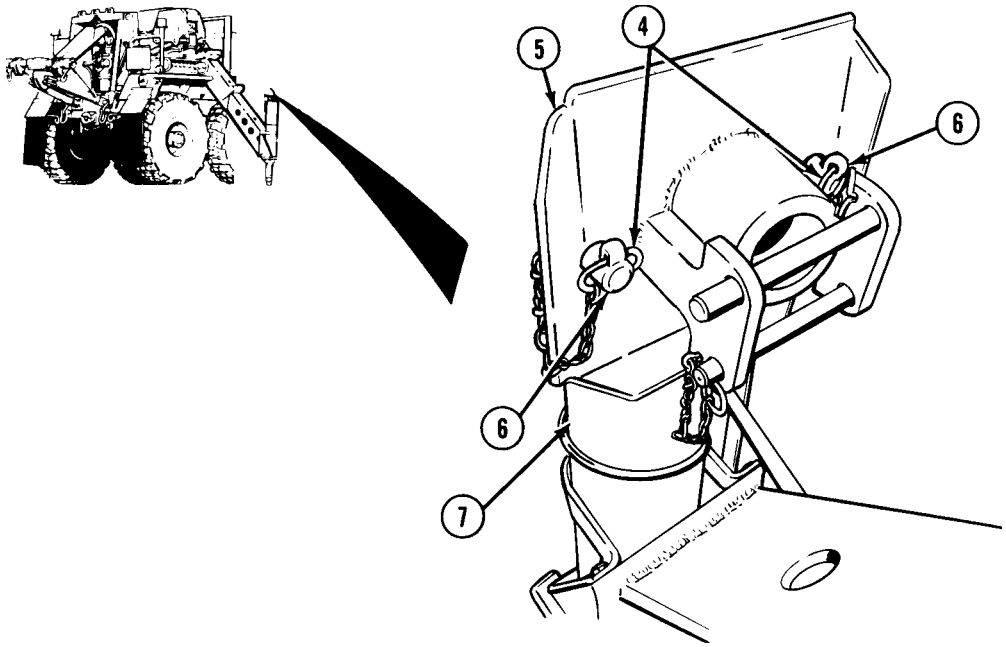


Figure 5.

4. Remove two retaining pins (8).

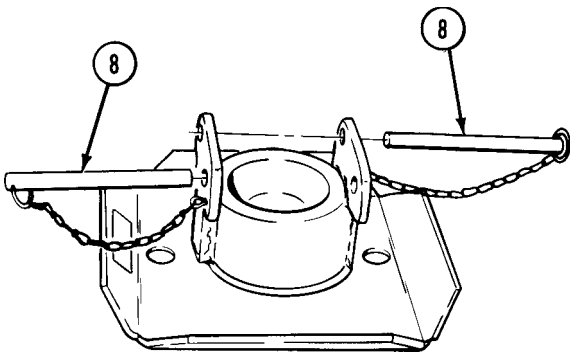


Figure 6.

5. Clean all foreign material from socket (9) in outrigger pad (5) and from rod end of outrigger jack cylinder (7).

SETUP OUTRIGGERS - Continued

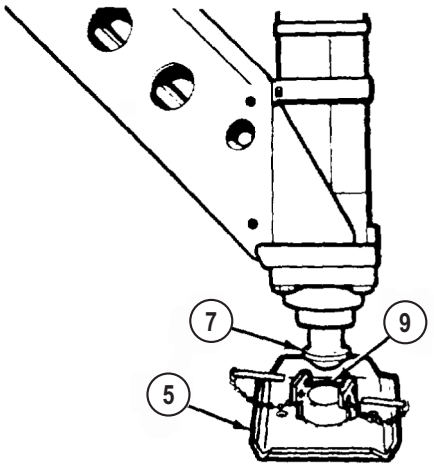


Figure 7.

NOTE

It may be necessary to retract outrigger slightly to fit pad under jack cylinder.

6. Position outrigger pad (5) directly below outrigger jack cylinder (7).

WARNING

- Lockring could pinch hands and fingers when snapped into position. Do not allow hands or fingers to get between lockring and lockring groove when installing lockring. Failure to comply may result in injury or death to personnel.
- Raised notch on lockring must face away from wheel or lockring will not seat properly in lockring groove, causing lockring to unseat. Failure to comply may result in injury or death to personnel.
- Cracked, broken, bent, or otherwise damaged rim components shall not be reworked, welded, brazed, or otherwise heated. Failure to comply may result in injury or death to personnel.
- Do not apply heat to a multi-piece wheel or wheel component. Failure to comply may result in injury or death to personnel.

SETUP OUTRIGGERS - Continued

NOTE

Adjust outrigger pad position as required so rod end will lower into pad socket.

7. Move right outrigger jack (RH O/R JACK) control lever (10) to DOWN position and lower outrigger jack cylinder (7) until rod end is seated in socket (9) of outrigger pad (5).

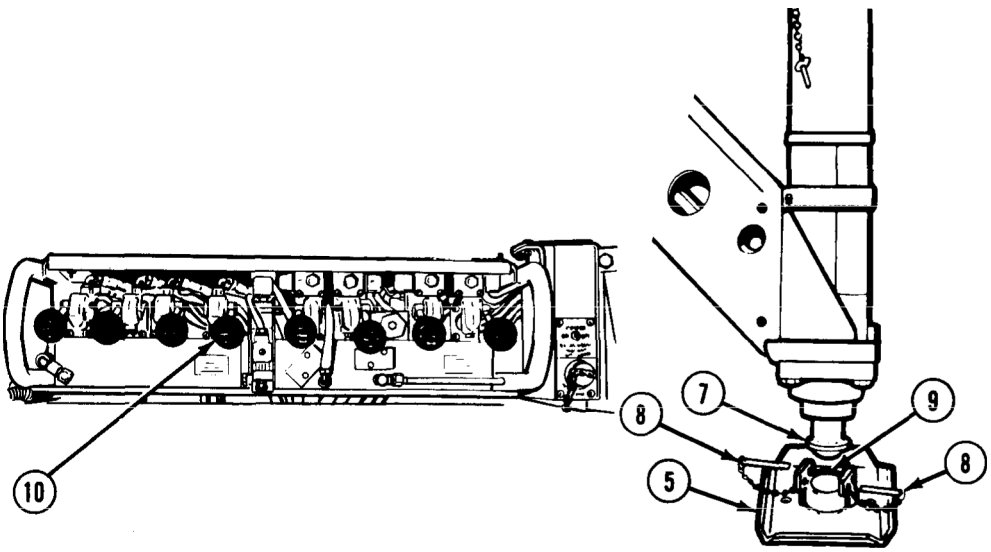


Figure 8.

8. Install retaining pins (8).
9. Move O/R EXT control lever (11) to IN position briefly and lift and turn left outrigger lockpin (12) to unlock position.

SETUP OUTRIGGERS - Continued

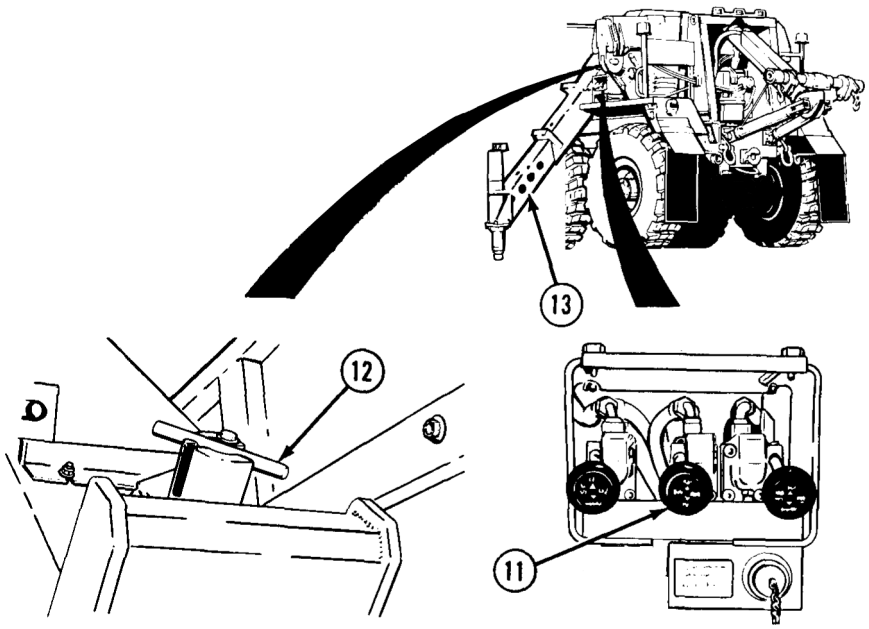


Figure 9.

10. Move O/R EXT control lever (11) to OUT position until left outrigger beam (13) is fully extended.

WARNING

Use care when removing outrigger pads from stowed position. Failure to comply may result in injury or death to personnel.

11. Remove two safety pins (14) and remove outrigger pad (15) from studs (16) on outrigger jack cylinder (17).

SETUP OUTRIGGERS - Continued

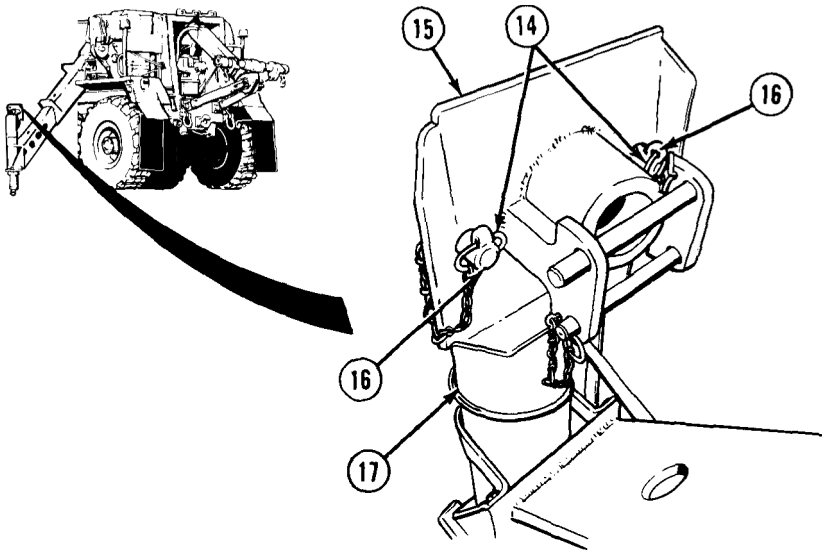


Figure 10.

12. Remove two retaining pins (18).

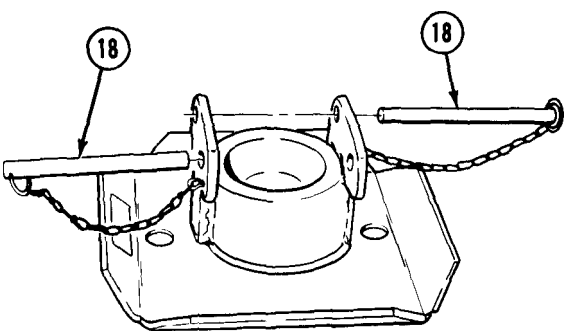


Figure 11.

13. Clean all foreign material from socket (19) in outrigger pad (15) and from rod end of outrigger jack cylinder (17).

SETUP OUTRIGGERS - Continued

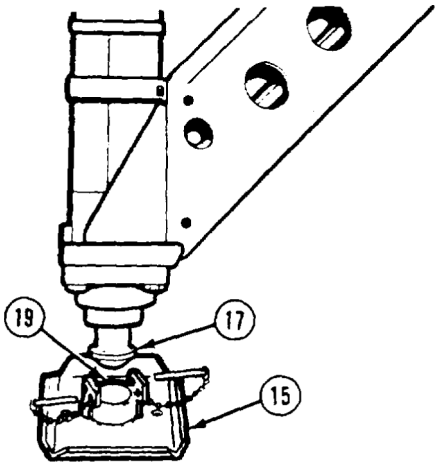


Figure 12.

NOTE

It may be necessary to retract outrigger slightly to fit pad under jack cylinder.

14. Position outrigger pad (15) directly below outrigger jack cylinder (17).

WARNING

- Lockring could pinch hands and fingers when snapped into position. Do not allow hands or fingers to get between lockring and lockring groove when installing lockring. Failure to comply may result in injury or death to personnel.
- Raised notch on lockring must face away from wheel or lockring will not seat properly in lockring groove, causing lockring to unseat. Failure to comply may result in injury or death to personnel.
- Cracked, broken, bent, or otherwise damaged rim components shall not be reworked, welded, brazed, or otherwise heated. Failure to comply may result in injury or death to personnel.
- Do not apply heat to a multi-piece wheel or wheel component. Failure to comply may result in injury or death to personnel.

SETUP OUTRIGGERS - Continued

NOTE

Adjust outrigger pad position as required so rod end will lower into pad socket.

15. Move left outrigger jack (LH O/ R JACK) control lever (20) to DOWN position and lower outrigger jack cylinder (17) until rod end is seated in socket (19) of outrigger pad (15).

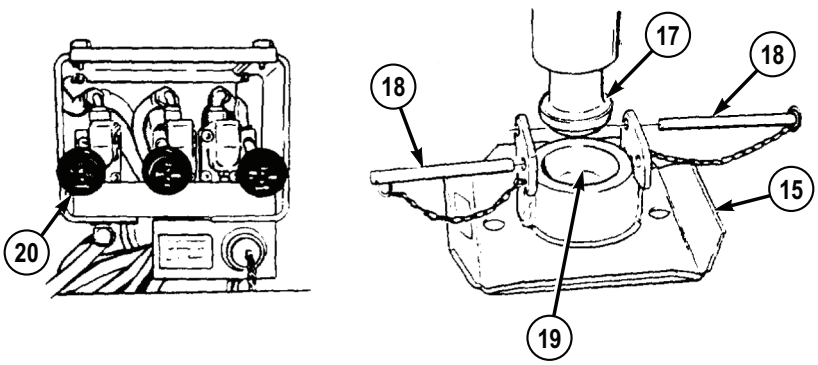


Figure 13.

16. Install retaining pins (18) in outrigger pad (15).

JACK OUTRIGGERS

WARNING

- Do not raise vehicle tires off ground with outrigger jack cylinders. Vehicle could roll over. Always chock front wheels when using outriggers. Failure to comply may result in injury or death to personnel.
- Crane must be level from side to side. Use of crane in unlevel position can cause vehicle to turn. Failure to comply may result in injury or death to personnel.

NOTE

- Both left and right outrigger jacks can be operated from driver side or passenger side control panels.

JACK OUTRIGGERS - Continued

- Operate left and right outrigger jack (LH O/R JACK and RH O/R JACK) control levers at the same time.
- Crane movement from one lever may be slower than the other when operating two levers together.

1. Simultaneously move LH O/R JACK (1) and RH O/R JACK (2) control levers to DOWN position.

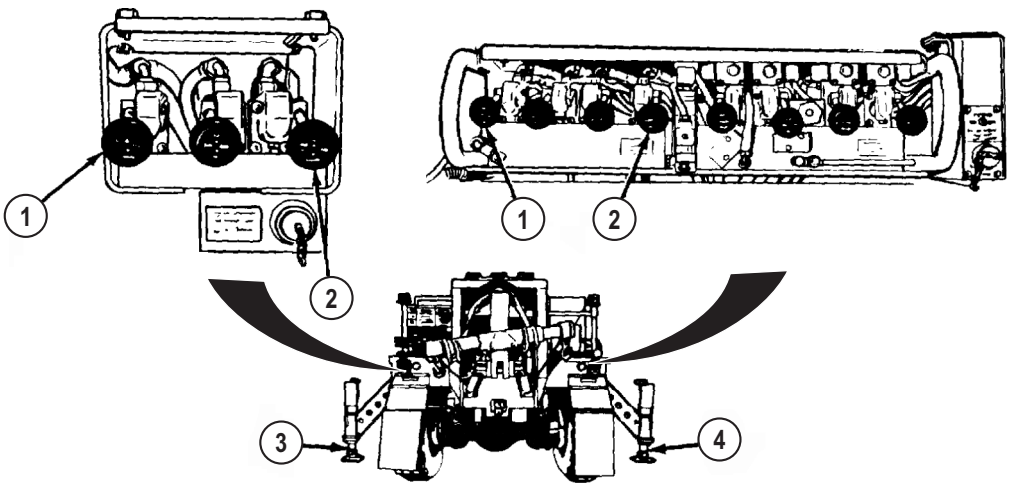


Figure 14.

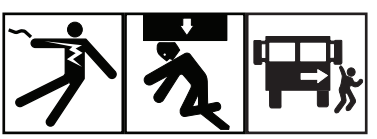
NOTE

Vehicle weight should be off No. 4 axle just enough so tires still have firm contact with ground but no longer bulge from weight of vehicle.

2. Lower left hand (3) and right hand (4) outrigger jack cylinders until vehicle weight is off rear tires.

RAISE BOOM TO OPERATING POSITION

WARNING



- Stand clear of outrigger beams while operating levers. Failure to comply may result in injury or death to personnel.

RAISE BOOM TO OPERATING POSITION - Continued

- Do not operate crane unless outriggers are firmly in place or vehicle could turn over. Failure to comply may result in injury or death to personnel.
- Keep boom clear of all electrical lines and other obstacles while operating crane. Failure to comply may result in injury or death to personnel.

CAUTION

- Do not let cable unwind and become slack or cable may get tangled on drum.
- Do not operate crane with lockpin in lock position, damage to equipment may result.
- Use caution when removing slack from cable. Ensure that hook block does not catch on hook block stowage guide or damage to fender or hook block stowage guide may result.

1. Move HOIST control lever (1) to DOWN position until hook block (2) rests either on fender (3) or hook block stowage guide (4) as applicable to relieve tension on cable.

RAISE BOOM TO OPERATING POSITION - Continued

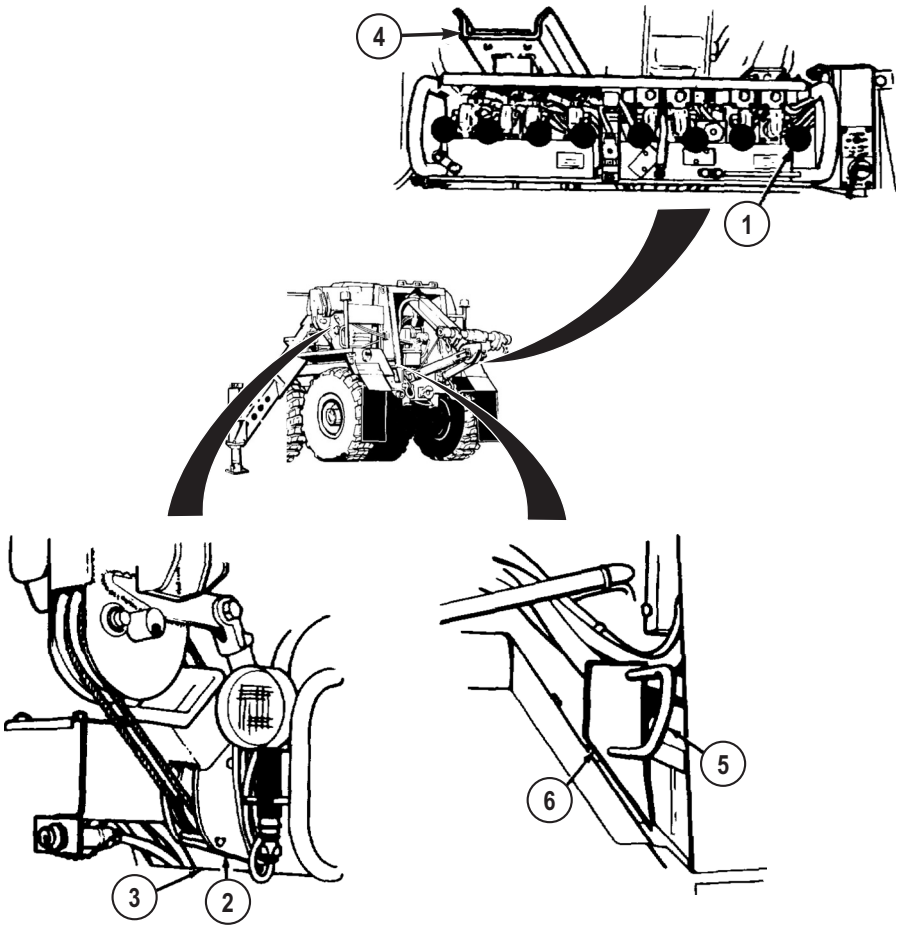


Figure 15.

2. Pull and turn lockpin handle (5) so handle end rests on bracket (6).

WARNING

When using crane on any vehicle, park vehicle clear of all overhead electrical lines. Keep boom clear of all electrical lines and other obstacles

RAISE BOOM TO OPERATING POSITION - Continued

while operating crane. Failure to comply may result in injury or death to personnel.

3. Move BOOM control lever (7) to UP position until hook (8) is 5 to 6 ft. (1.5 to 1.8 m) above driver side rear fender (9), and boom (10) is approximately 45° above horizontal.

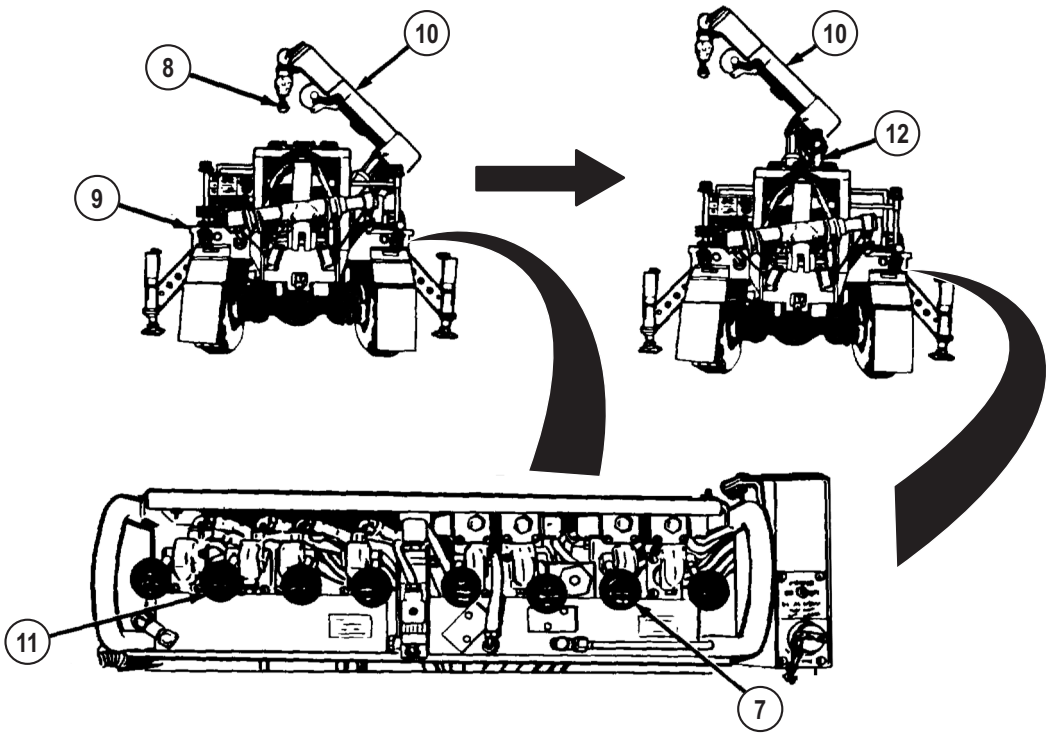


Figure 16.

NOTE

Move BOOM control lever to UP position simultaneously with MAST control lever (as required) to maintain the boom at approximately 45° above horizontal until the mast is fully erect.

4. Move MAST control lever (11) to UP position until the mast (12) is fully erect and the cylinders are fully extended.
5. Hold the MAST control lever (11) to UP position for two to three seconds after mast (12) is fully erect to ensure cylinders are fully filled with oil.
6. Operate crane with manual controls or remote-control unit. (WP 0103)

ROTATE AND TELESCOPE BOOM

WARNING

- When using crane on any vehicle, park vehicle clear of all overhead electrical lines. Keep boom clear of all electrical lines and other obstacles while operating crane. Failure to comply may result in injury or death to personnel.
- Ensure area is clear of personnel prior to moving SWING control lever. Boom should be swung slowly enough so crane operator has complete control. If operator cannot see load during operation, operate crane from REMOTE CONTROL UNIT. Failure to comply may result in injury or death to personnel.
- Operator must keep control of load at all times. If necessary, attach cargo tiedowns to load for control. Failure to comply may result in injury or death to personnel.
- If electrical power fails during crane operation, move switch on REMOTE CONTROL UNIT to SHUTDOWN position. Failure to comply may result in injury or death to personnel.

CAUTION

Boom must be above vehicle sides for clearance. Hitting side of vehicle with boom may cause damage to boom or vehicle. Material handling crane/boom will strike outrigger framework and tow A-frame during crane operations if the boom is depressed below horizontal.

NOTE

Operate control levers with light, even pressure. Moving lever slightly will cause slow movement of crane. Moving lever to full travel will cause faster movement of crane.

1. Move SWING control lever (1) to CW position to move boom (2) clockwise.

ROTATE AND TELESCOPE BOOM - Continued

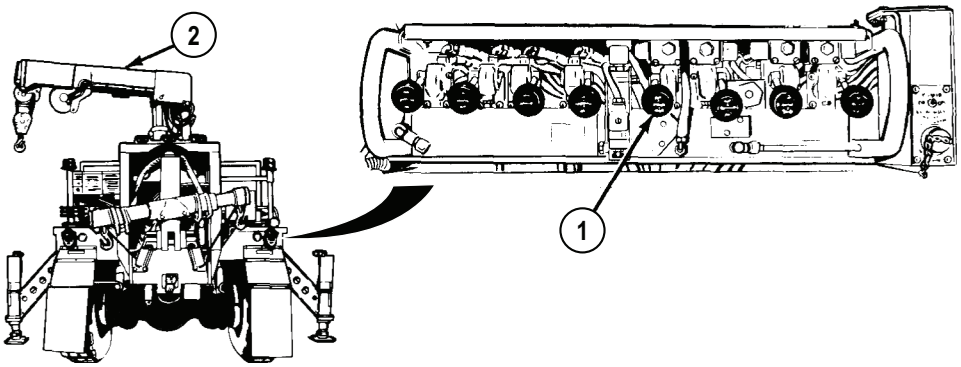


Figure 17.

2. Move SWING control lever (1) to CCW position to move boom (2) counterclockwise.

CAUTION

Keep hook block at least 1 ft. (30 cm) from end of boom. If hook block hits end of boom, it may damage cable or hook block and crane will lose power. Wait six seconds for power to return and check crane for damage.

NOTE

- When crane is overloaded, M984A overload system will automatically shut off power to telescope boom out, raise or lower boom, or hoist load any higher. Overload condition can be corrected by lowering load to ground or other supporting surface. All crane functions will be restored in approximately six seconds.
- When telescoping (extending) the boom, the TELESCOPE and HOIST control levers should be operated at same time.
- Crane movement from one lever may be slower than other when operating two levers together.

3. Move TELESCOPE control lever (3) to OUT position to extend boom (2) and move HOIST control lever (4) to DOWN position to pay out cable (5).

ROTATE AND TELESCOPE BOOM - Continued

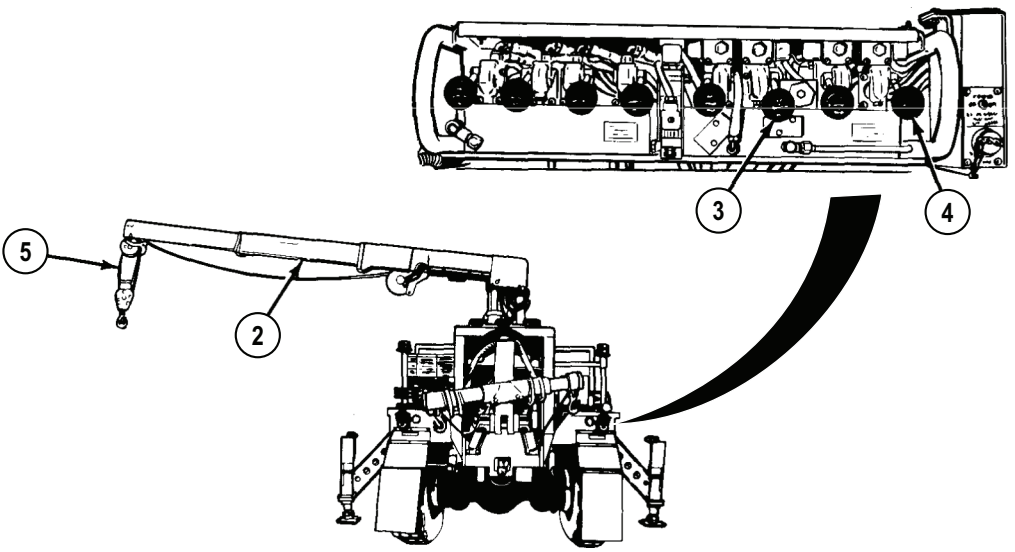


Figure 18.

CAUTION

Do not go over maximum load rating as shown on RANGE DIAGRAM. Going over load ratings will cause damage to equipment.

4. Refer to RANGE DIAGRAMS (6) on equipment body (7) to raise boom (2) to correct angle before connecting to load.

ROTATE AND TELESCOPE BOOM - Continued

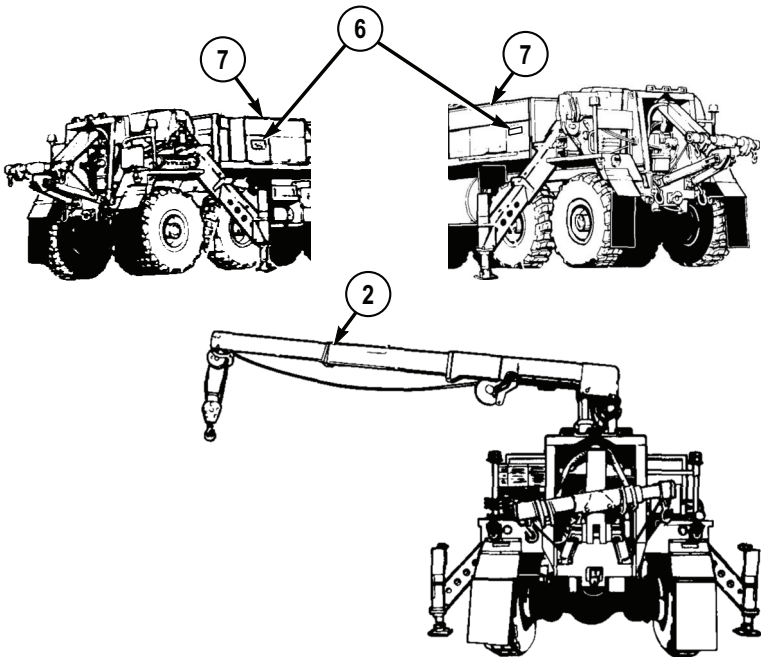


Figure 19.

RAISE AND LOWER LOAD

WARNING

Ensure area is clear of personnel prior to moving SWING lever. Boom should be swung slowly enough so crane operator has complete control. Failure to comply may result in injury or death to personnel.

CAUTION

- Do not let cable become slack or cable may get tangled on drum.
- Do not drag load sideways on ground or damage to crane may result.

1. Operate SWING control lever (1) and center end of boom (2) directly over load.

RAISE AND LOWER LOAD - Continued

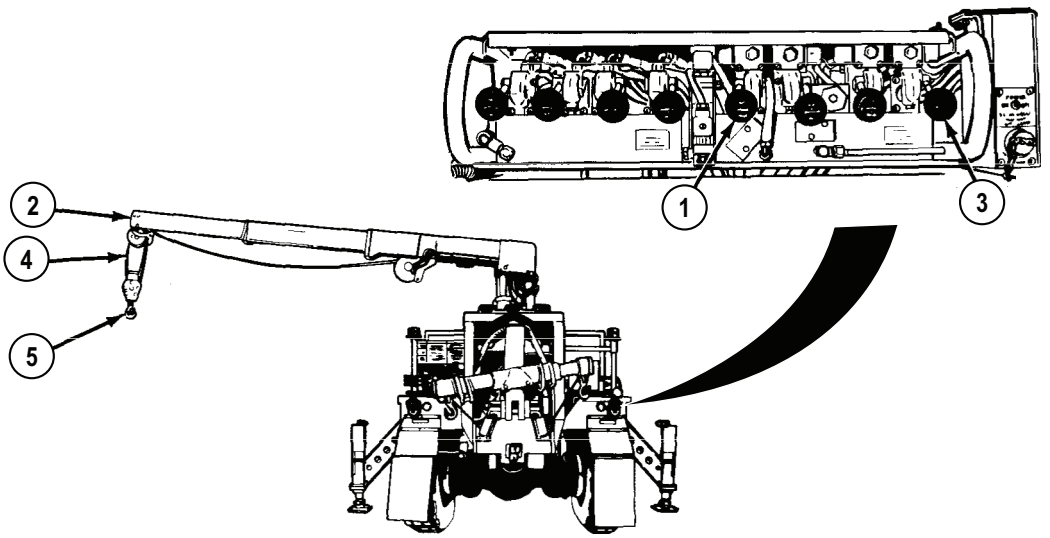


Figure 20.

CAUTION

Release hook lock before connecting to load to avoid damage to hook lock.

2. Operate HOIST control lever (3) to raise or lower cable (4) and connect load hook (5) to load.

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.

CAUTION

- Do not jerk HOIST control lever or load will bounce causing possible damage to crane or load.

RAISE AND LOWER LOAD - Continued

- Do not operate crane with boom below horizontal when there is a load on hook.

6,000 lbs at 18 ft. 2 in. Radius (2 700 kg at 5.5 m)

8,000 lbs at 16 ft. 5 in. Radius (3 600 kg at 5.0 m)

12,000 lbs at 11 ft. 10 in. Radius (5 400 kg at 3.6 m)

14,000 lbs at 9 ft. 0 in. Radius (6 300 kg at 2.7 m)

NOTE

When crane is overloaded, M984A overload system will automatically shut off power to telescope boom out, raise or lower boom, or hoist load any higher. Overload condition can be corrected by lowering load to ground or other supporting surface. All crane functions will be restored in approximately six seconds.

3. Move HOIST control lever (3) TO UP position to lift load. Move BOOM control lever (6) in UP position to raise load higher.

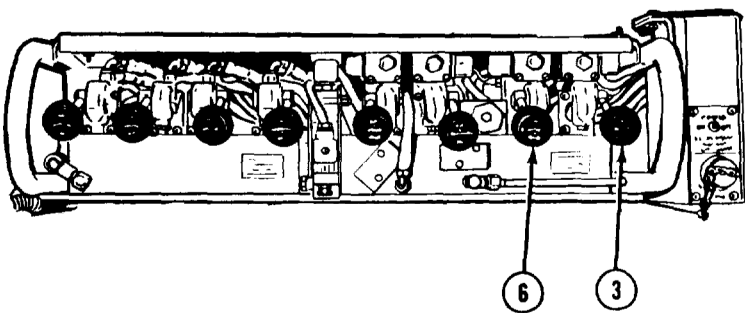


Figure 21.

4. Move HOIST control lever (3) TO DOWN position to lower load. Move BOOM control lever (6) in DOWN position to lower load further.
5. Shut down crane.

SHUT DOWN CRANE

CAUTION

- Leave about 1 ft. (30 cm) of cable between boom sheave and hook block when reeling in cable or damage to equipment may result.

SHUT DOWN CRANE - Continued

- Do not let cable unwind and become slack or cable may get tangled on drum.
- Crane should be stowed using remote control to allow operator visibility during stowing or damage to equipment may result.

NOTE

- Operate control levers with light, even pressure.
- TELESCOPE and HOIST control levers should be operated at same time.
- Crane movement from one lever may be slower than the other when operating two levers together.

1. Move TELESCOPE control lever (1) to IN position to pull boom extensions (2) in and move HOIST control lever (3) to UP position to reel in cable (4) until boom extensions (2) are fully retracted.

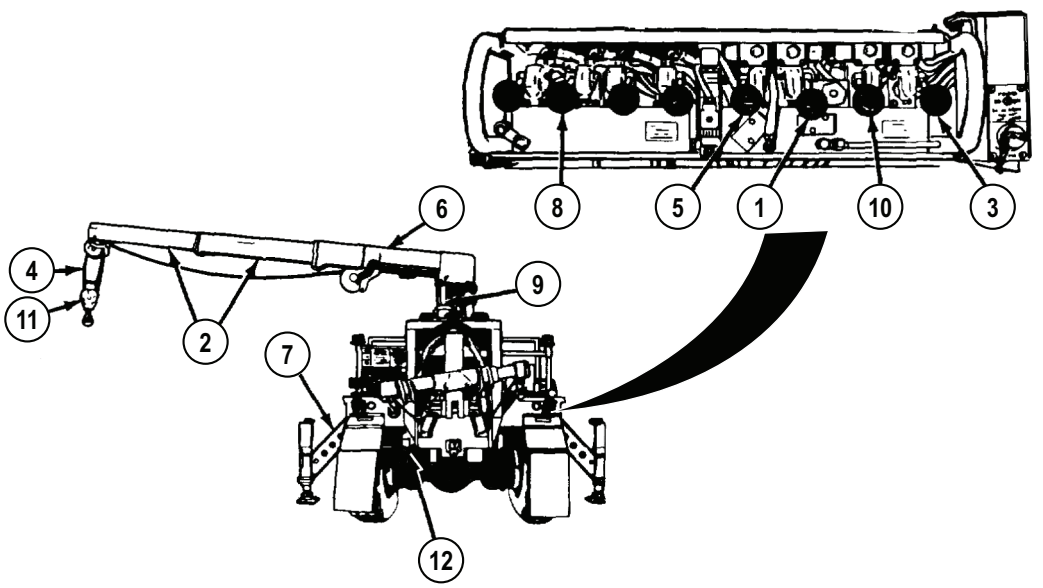


Figure 22.

2. Operate SWING control lever (5) to position boom (6) parallel with outrigger beam (7) on driver side of vehicle.
3. Move MAST control lever (8) to DOWN position to lower mast (9) until mast is completely folded down.

SHUT DOWN CRANE - Continued

4. Move BOOM control lever (10) in concert with MAST control lever (8) as required to maintain boom (6) at approximately 45° above horizontal until mast is completely folded down.
5. Move BOOM control lever (10) to DOWN position until hook block (11) is directly above vehicle left frame rail (12).

NOTE

Trucks with hook block stowage guide, perform Step (6). Trucks without hook block stowage guide, perform Step (7).

6. Move HOIST control lever (3) to DOWN position to lower hook block (11) until load hook (13) fits into hook block stowage guide (18).
7. Move HOIST control lever (3) to DOWN position to lower hook block (11) until load hook (13) fits into stowage bracket (14).

NOTE

Be sure lockpin is fully engaged in hook and stowage bracket.

8. Pull lockpin handle (15), turn and release handle so lockpin (16) slides through load hook (13).

SHUT DOWN CRANE - Continued

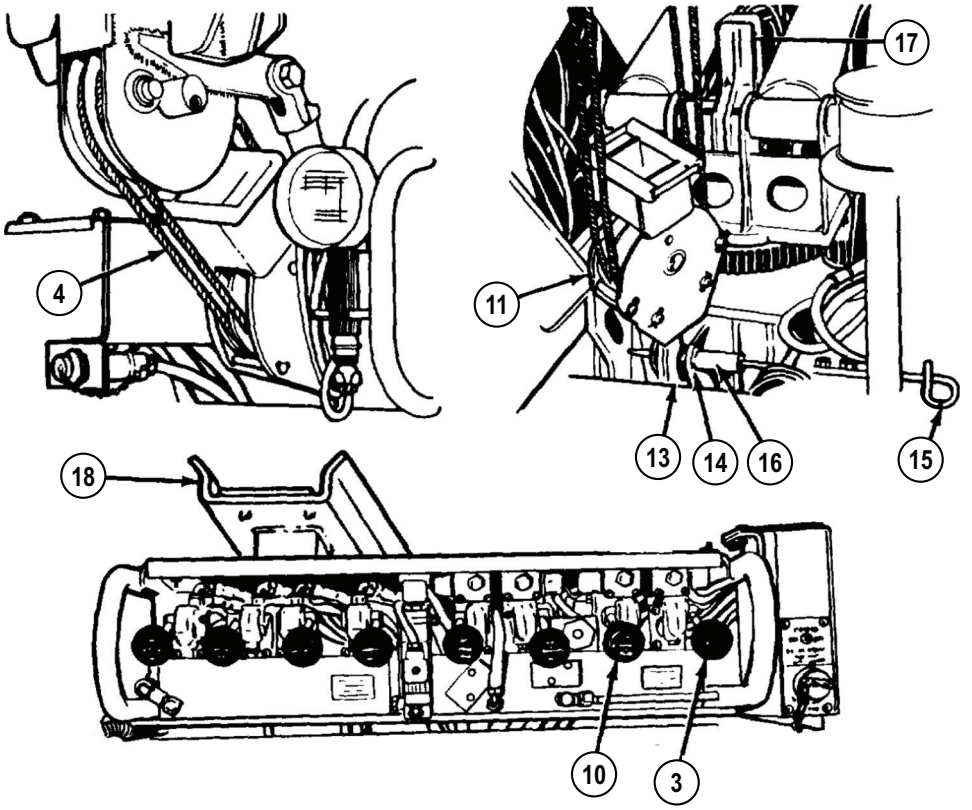


Figure 23.

NOTE

- Operate BOOM and HOIST control levers at the same time.
- Crane movement from one lever may be slower than the other when operating two levers together.

9. Move BOOM control lever (10) to DOWN position until boom rests on mast pad (17) and move HOIST control lever (3) to UP position to remove slack from cable (4).

STOW OUTRIGGERS

1. Remove two retaining pins (1) from each outrigger pad (2).

STOW OUTRIGGERS - Continued

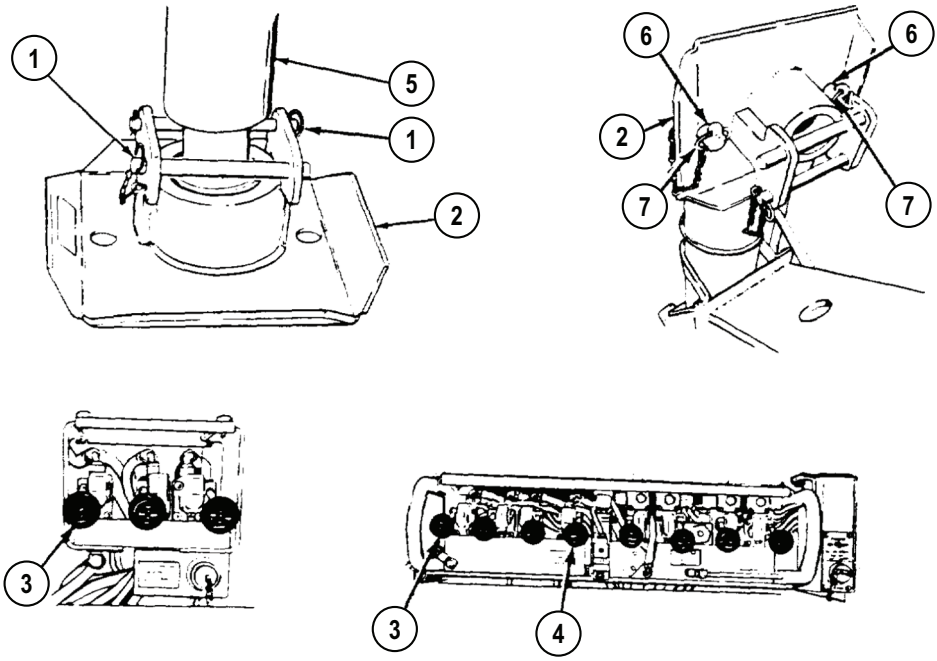


Figure 24.

NOTE

Operate left and right outrigger jack (LH O/R JACK and RH O/R JACK) control levers at the time until both outrigger jack cylinders are out of pads.

2. Move left outrigger jack (LH O/R JACK) and right outrigger jack (RH O/R JACK) control levers (3 and 4) to UP position to retract outrigger jack cylinder (5) completely.
3. Install two retaining pins (1) into each outrigger pad (2).
4. Stow each outrigger pad (2) on appropriate stud (6).
5. Install safety pins (7) through each stud (6).

WARNING

Stand clear of outrigger beams while operating lever. Failure to comply may result in injury or death to personnel.

STOW OUTRIGGERS - Continued

6. Move right outrigger extension (O/R EXT) control lever (8) to IN position to retract outrigger beam (9) completely.

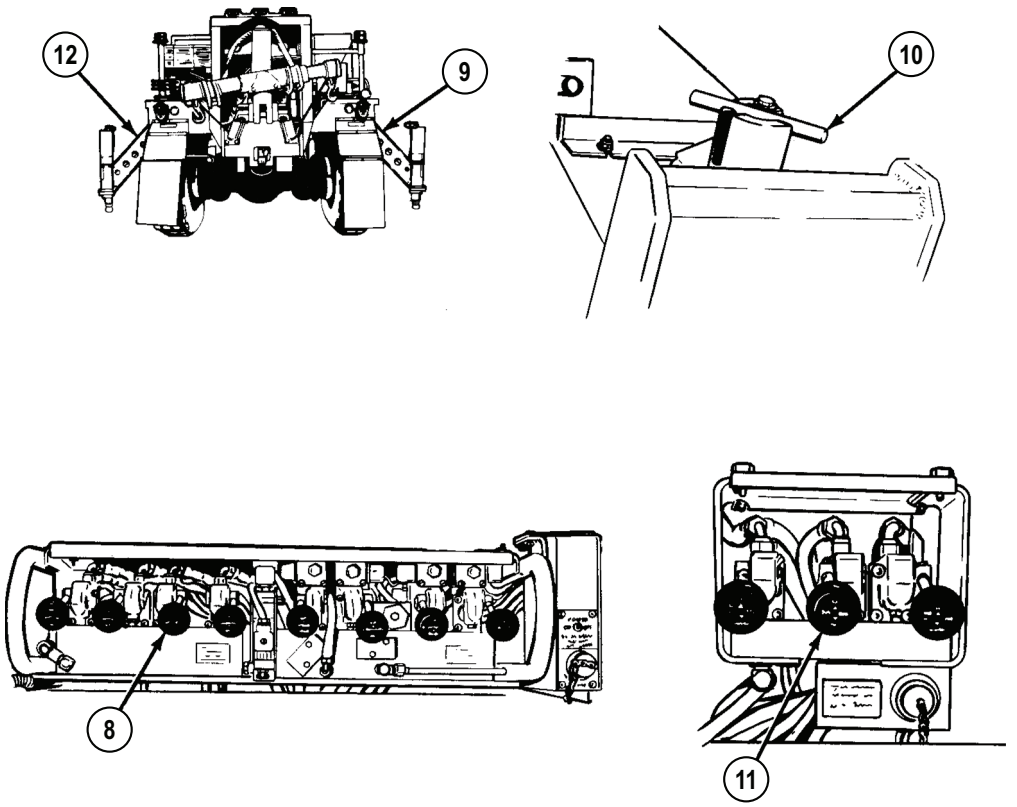


Figure 25.

7. Turn and push down outrigger lockpin (10) until lockpin is seated in outrigger beam.
8. Move left outrigger extension (O/R EXT) control lever (11) to IN position to retract outrigger beam (12) completely.
9. Turn and push down outrigger lockpin (10) until lockpin is seated in outrigger beam.
10. Set POWER switch (13) to OFF position.

STOW OUTRIGGERS - Continued

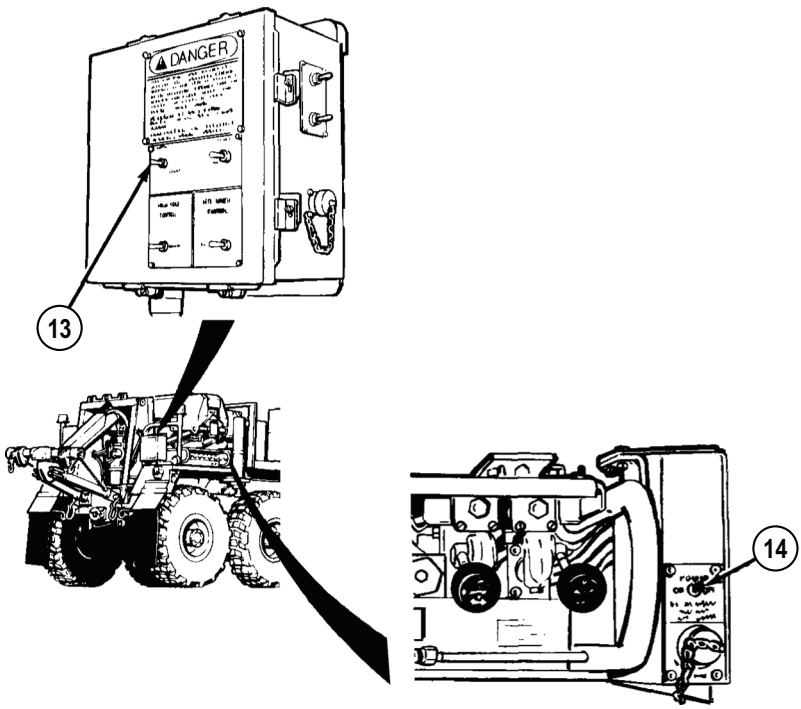


Figure 26.

11. Set ON/OFF POWER switch (14) to OFF position.
12. Set HYD ENABLE switch (15) to off position. MAIN HYD ENABLE indicator (16) will go out.

STOW OUTRIGGERS - Continued

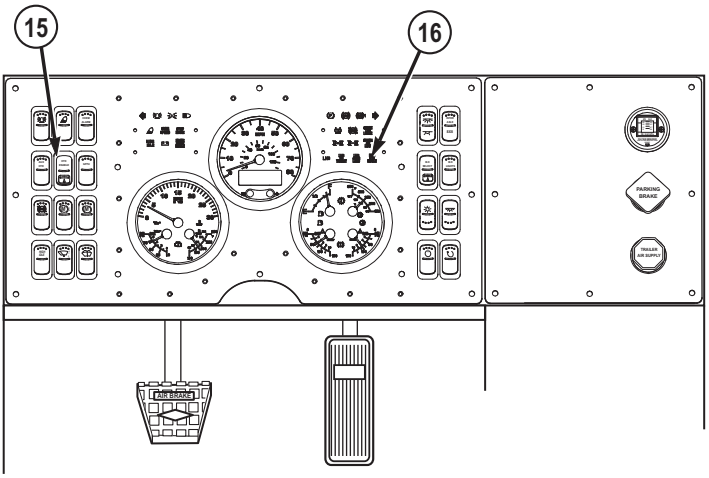


Figure 27.

13. Shut off engine. (WP 0057)

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
GROVE CRANE OPERATION (REMOTE CONTROL)

INITIAL SETUP:

Not Applicable

SET UP REMOTE CONTROL UNIT

WARNING

- Do not operate crane unless outriggers are firmly in place or vehicle could roll over. Failure to comply may result in injury or death to personnel.
- If operator cannot see load during operation, operate crane from REMOTE CONTROL UNIT. Failure to comply may result in injury or death to personnel.
- When using crane on any vehicle, park vehicle clear of all overhead electrical lines. Keep boom clear of all electrical lines and other obstacles while operating crane. Failure to comply may result in injury or death to personnel.
- 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 when it is running. Failure to comply may result in injury or death to personnel. Seek medical aid should you suspect a hearing problem. Failure to comply may result in injury or death to personnel.

1. Prepare crane for use. (WP 0102)
2. Set up outriggers. (WP 0102)
3. Jack outriggers. (WP 0102)
4. Raise boom and mast to operating position. (WP 0102)
5. Remove REMOTE CONTROL UNIT (1) and cable (2) from stowage box (3).

SET UP REMOTE CONTROL UNIT - Continued

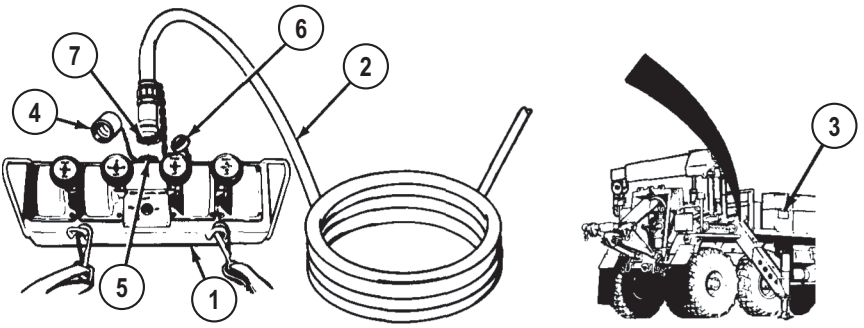


Figure 1.

6. Remove cover (4) and clean any dirt or water from REMOTE CONTROL UNIT receptacle (5).
7. Remove cover (6) and clean any dirt or water from cable plug (7).
8. Connect cable plug (7) to REMOTE CONTROL UNIT receptacle (5).

CONNECT REMOTE CONTROL UNIT TO PASSENGER SIDE OUTLET

1. Remove cover (1) and clean any dirt or water from passenger side REMOTE CONTROL CONNECTOR outlet (2).

CONNECT REMOTE CONTROL UNIT TO PASSENGER SIDE OUTLET - Continued

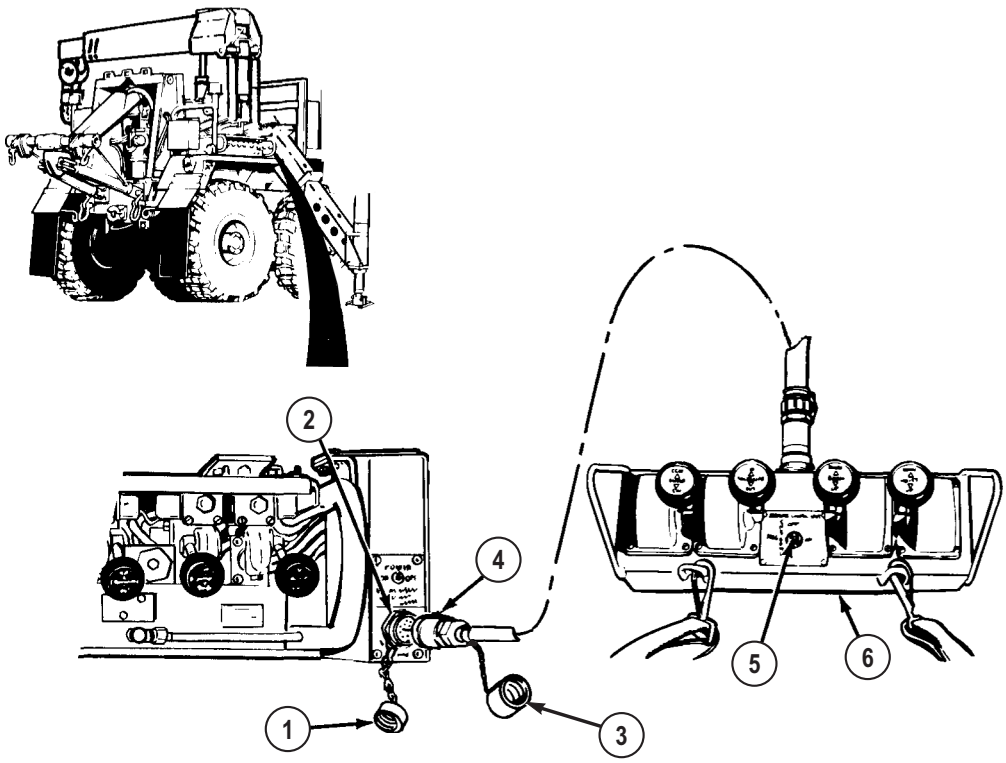


Figure 2.

2. Remove cover (3) and clean any dirt or water from cable plug (4).

WARNING

Ensure ON/OFF/MHC-SHUTDOWN power switch is in OFF position prior to connecting REMOTE CONTROL UNIT. Failure to comply may result in injury or death to personnel.

3. Set ON/OFF/MHC-SHUTDOWN power switch (5) on REMOTE CONTROL UNIT (6) to OFF position.
4. Connect cable plug (4) to passenger side REMOTE CONTROL CONNECTOR outlet (2).

CONNECT REMOTE CONTROL UNIT TO PASSENGER SIDE OUTLET - Continued

5. Set ON/OFF/MHC-SHUTDOWN power switch (5) on REMOTE CONTROL UNIT (6) to ON position.
6. Operate crane.

CONNECT REMOTE CONTROL UNIT TO DRIVER SIDE OUTLET

1. Remove cover (1) and clean any dirt or water from driver side REMOTE CONTROL CONNECTOR outlet (2).

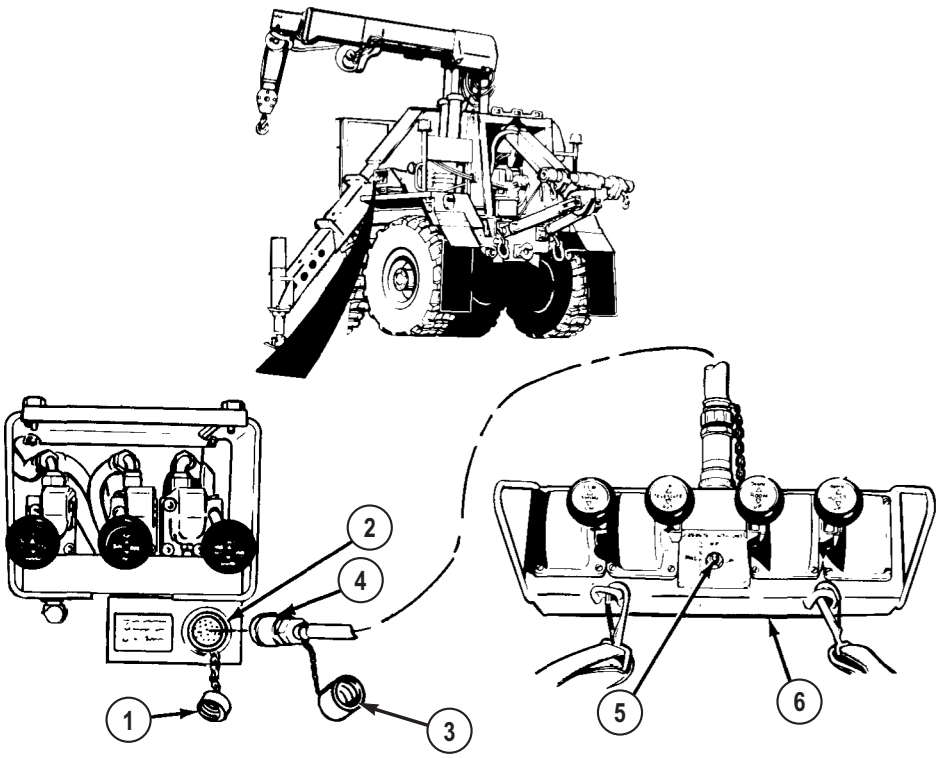


Figure 3.

2. Remove cover (3) and clean any dirt or water from cable plug (4).

CONNECT REMOTE CONTROL UNIT TO DRIVER SIDE OUTLET - Continued

WARNING

Ensure ON/OFF/MHC-SHUTDOWN power switch is in OFF position prior to connecting REMOTE CONTROL UNIT. Failure to comply may result in injury or death to personnel.

3. Set ON/OFF/MHC-SHUTDOWN power switch (5) on REMOTE CONTROL UNIT (6) to OFF position.
4. Connect cable plug (4) to driver side REMOTE CONTROL CONNECTOR outlet (2).
5. Set ON/OFF/MHC-SHUTDOWN power switch (5) on REMOTE CONTROL UNIT (6) to ON position.
6. Operate crane.

ROTATE AND TELESCOPE BOOM

WARNING

- When using crane on any vehicle, park vehicle clear of all overhead electrical lines. Keep boom clear of all electrical lines and other obstacles while operating crane. Failure to comply may result in injury or death to personnel.
- Ensure area is clear of personnel prior to moving SWING control lever. Boom should be swung slowly enough so crane operator has complete control. If operator cannot see load during operation, operate crane from REMOTE CONTROL UNIT. Failure to comply may result in injury or death to personnel.
- Operator must keep control of load at all times. If necessary, attach cargo tiedowns to load for control. Failure to comply may result in injury or death to personnel.
- If electrical power fails during crane operation, move switch on REMOTE CONTROL UNIT to SHUTDOWN position. Failure to comply may result in injury or death to personnel.

ROTATE AND TELESCOPE BOOM - Continued

CAUTION

Boom must be above vehicle sides for clearance. Hitting side of vehicle with boom may cause damage to boom or vehicle. Material handling crane/boom will strike outrigger framework and tow A-frame during crane operations if the boom is depressed below horizontal.

NOTE

Operate control levers with light, even pressure. Moving lever slightly will cause slow movement of crane. Moving lever to full travel will cause faster movement of crane.

1. Move SWING control lever (1) to CW position to move boom (2) clockwise.

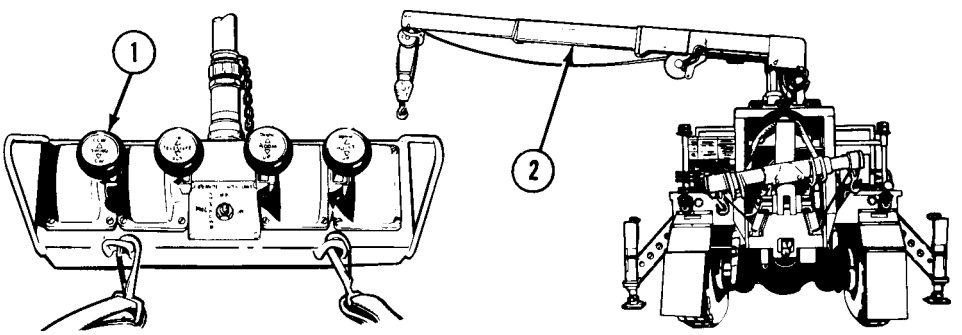


Figure 4.

2. Move SWING control lever (1) to CCW position to move boom (2) counterclockwise.

CAUTION

Keep hook block at least 1 ft. (30 cm) from end of boom. If hook block hits end of boom it may damage cable or hook block and crane will lose power. Wait six seconds for power to return and check crane for damage.

NOTE

- When crane is overloaded, M984A overload system will automatically shut off power to telescope boom out, raise or lower boom, or hoist load any higher. Overload condition can be corrected by lowering load to ground or other supporting surface. All crane functions will be restored in approximately six seconds.
- When telescoping (extending) the boom, the TELESCOPE and HOIST control levers should be operated at the same time.

ROTATE AND TELESCOPE BOOM - Continued

- Crane movement from one lever may be slower than the other when operating two levers together.

3. Move TELESCOPE control lever (3) to OUT position to extend boom (2) and move HOIST control lever (4) to DOWN position to pay out cable (5).

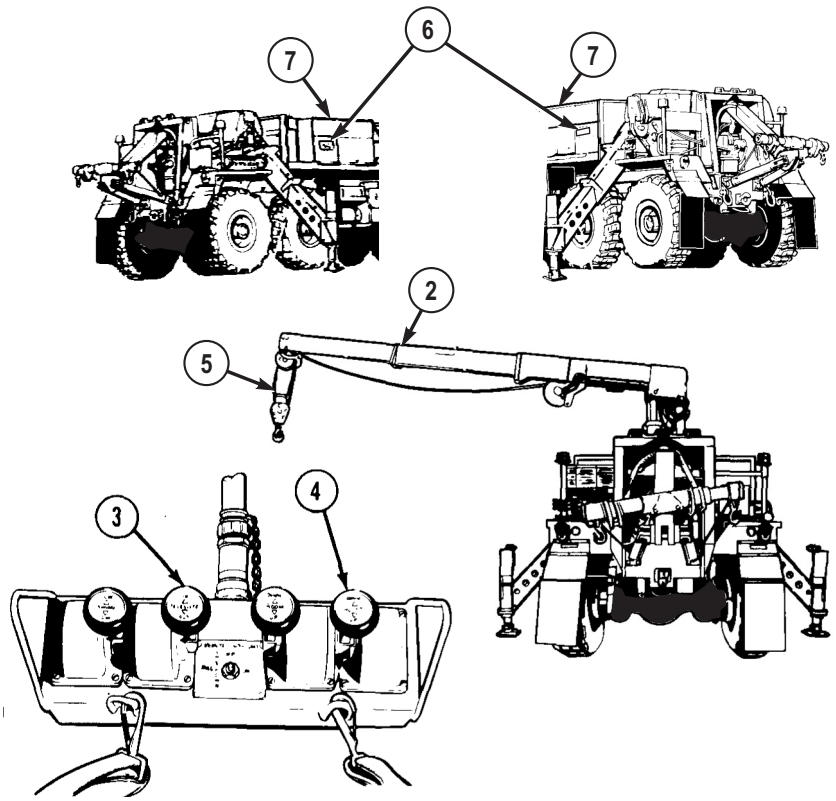


Figure 5.

CAUTION

Do not go over maximum load rating as shown on RANGE DIAGRAM. Going over load ratings could cause damage to equipment.

4. Refer to RANGE DIAGRAM (6) on equipment body (7) to raise boom (2) to correct angle before connecting to load.

RAISE AND LOWER LOAD

WARNING

Ensure area is clear of personnel prior to moving SWING lever. Boom should be swung slowly enough so crane operator has complete control. Failure to comply may result in injury or death to personnel.

CAUTION

- Do not let cable become slack. Cable may get tangled on drum and damage cable.
- Do not drag load sideways on ground. Dragging load could cause damage to crane.

1. Operate SWING control lever (1) and center end of boom (2) directly over load.

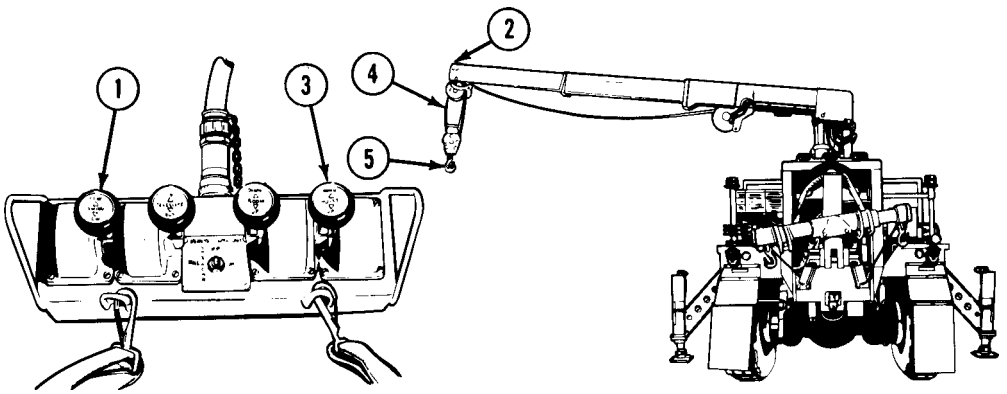


Figure 6.

CAUTION

Release hook lock before connecting load to avoid damage to hook lock.

2. Operate HOIST control lever (3) to raise or lower cable (4) and connect load hook (5) to load.

RAISE AND LOWER LOAD - Continued

WARNING

Be sure there are at least two wraps of cable on hoist drum at all times. Serious injury or death may result if cable comes off hoist drum while lifting load.

CAUTION

- Do not jerk HOIST control lever, or load will bounce causing possible damage to crane or load.
- Do not operate crane with boom below horizontal when there is a load on hook. Failure to comply may result in damage to equipment.

6,000 lbs at 18 ft. 2 in. radius (2 700 kg at 5.5 m)

8,000 lbs at 16 ft. 5 in. radius (3 600 kg at 5.0 m)

12,000 lbs at 11 ft. 10 in. radius (5 400 kg at 3.6 m)

14,000 lbs at 9 ft. 0 in. radius (6 300 kg at 2.7 m)

- Do not go over maximum load limit. Going over maximum load limit will cause electrical shutdown for six seconds or until load is lowered.

3. Move HOIST control lever (3) to UP position to lift load. Move BOOM control lever (6) to UP position to raise load higher.

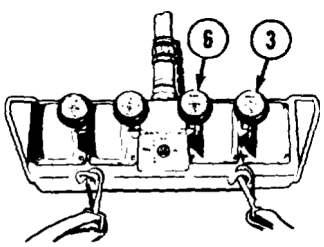


Figure 7.

4. Move HOIST control lever (3) to DOWN position to lower load. Move BOOM control lever (6) to DOWN position to lower load farther.

SHUT OFF SWITCHES

1. Set ON/OFF/MHC-SHUTDOWN power switch (1) to OFF position.

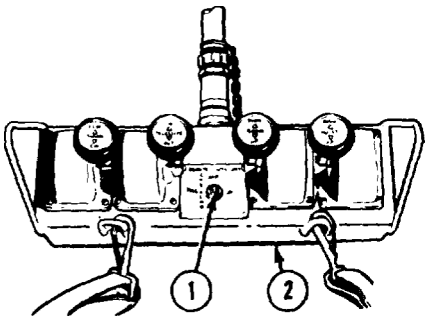


Figure 8.

2. Disconnect REMOTE CONTROL UNIT (2) from right or left remote control station.

DISCONNECT REMOTE CONTROL UNIT FROM PASSENGER SIDE OUTLET

1. Disconnect cable plug (1) from passenger side REMOTE CONTROL CONNECTOR outlet (2) and install cover (3).

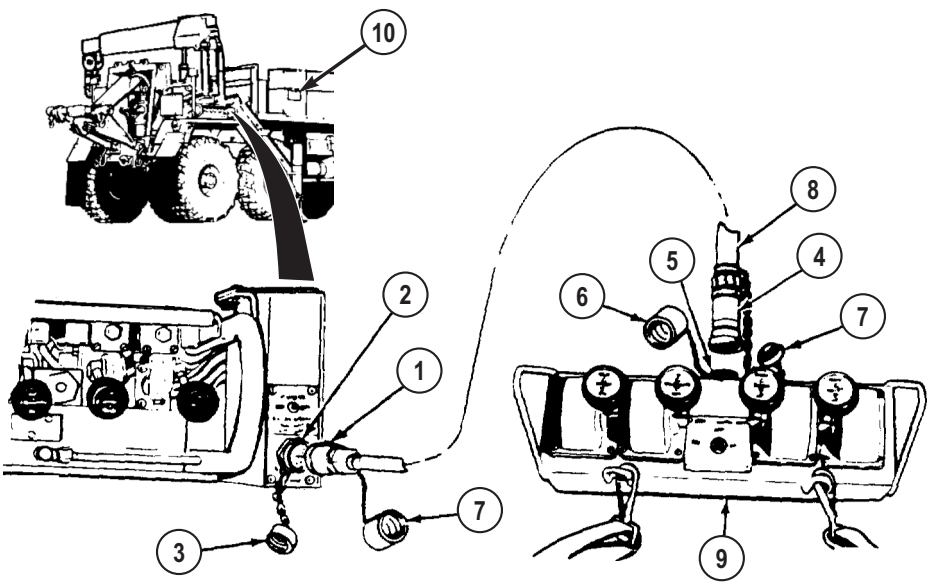


Figure 9.

DISCONNECT REMOTE CONTROL UNIT FROM PASSENGER SIDE OUTLET - Continued

2. Disconnect cable plug (4) from REMOTE CONTROL UNIT receptacle (5) and install cover (6).
3. Install covers (7) on both ends of cable (8), and coil cable (8) for stowage.
4. Return REMOTE CONTROL UNIT (9) and cable (8) to stowage box (10).
5. Shut down crane. (WP 0102)
6. Stow outriggers. (WP 0102)

DISCONNECT REMOTE CONTROL UNIT FROM DRIVER SIDE OUTLET

1. Disconnect cable plug (1) from driver side REMOTE CONTROL CONNECTOR outlet (2) and install cover (3).

DISCONNECT REMOTE CONTROL UNIT FROM DRIVER SIDE OUTLET - Continued

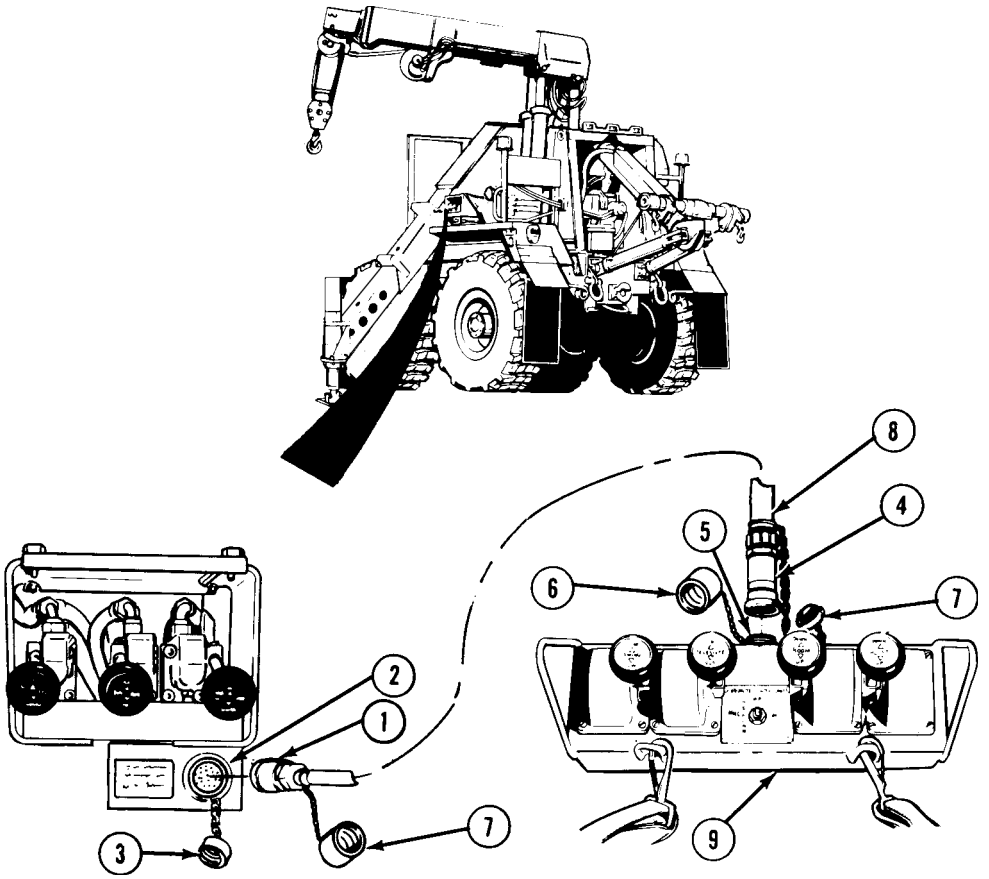


Figure 10.

2. Disconnect cable plug (4) from REMOTE CONTROL UNIT receptacle (5) and install cover (6).
3. Install covers (7) on cable (8), and coil cable (8) for stowage.
4. Return REMOTE CONTROL UNIT (9) and cable (8) to stowage box (10).

DISCONNECT REMOTE CONTROL UNIT FROM DRIVER SIDE OUTLET - Continued

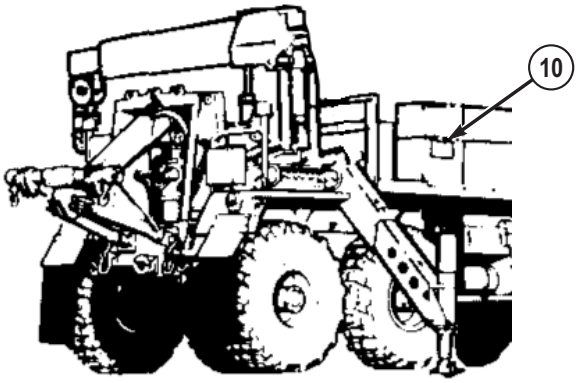


Figure 11.

5. Shut down crane. (WP 0102)
6. Stow outriggers. (WP 0102)

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
TOW SPADE INSTALLATION/REMOVAL

INITIAL SETUP:

Not Applicable

SET UP TOW SPADES

NOTE

This procedure is a two soldier task.

1. Prepare crane for operation with remote controls. (WP 0103)
2. Remove two extension adapters (1) from stowage.

SET UP TOW SPADES - Continued

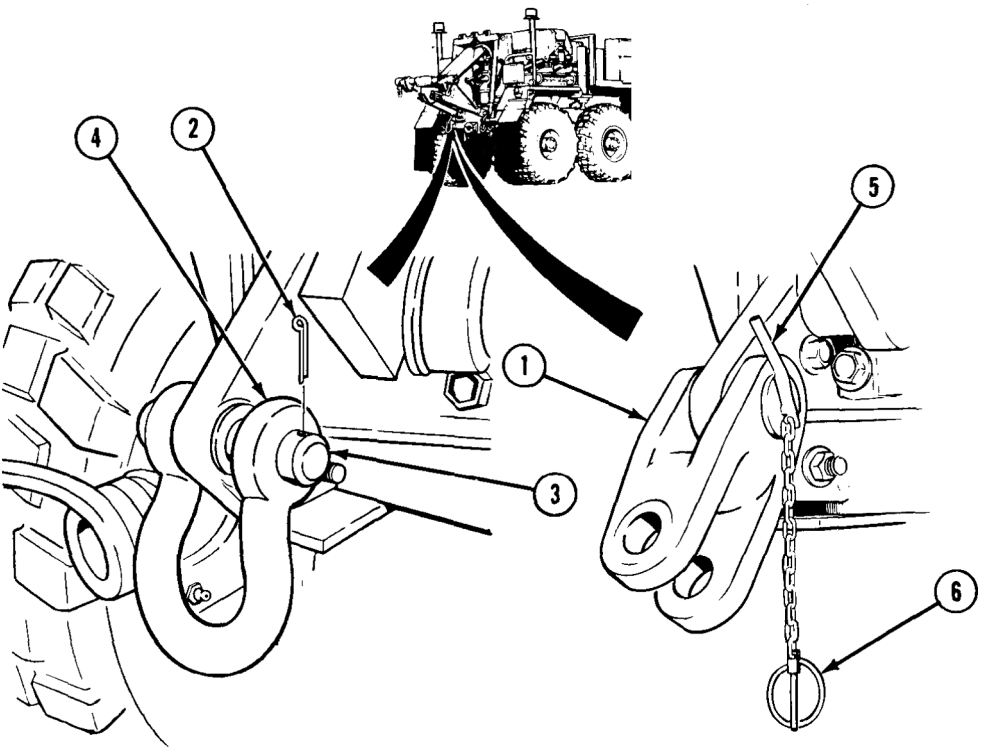


Figure 1.

NOTE

Driver side and passenger side towing shackles are removed the same way.

3. Remove cotter pin (2), pin (3), and towing shackle (4).

NOTE

Driver side and passenger side extension adapters are installed the same way.

4. Install extension adapters (1) with pins (5) and quick pins (6).
5. Release two holddowns (7) on heavy-duty winch protective screen (8) and raise heavy-duty winch protective screen.

SET UP TOW SPADES - Continued

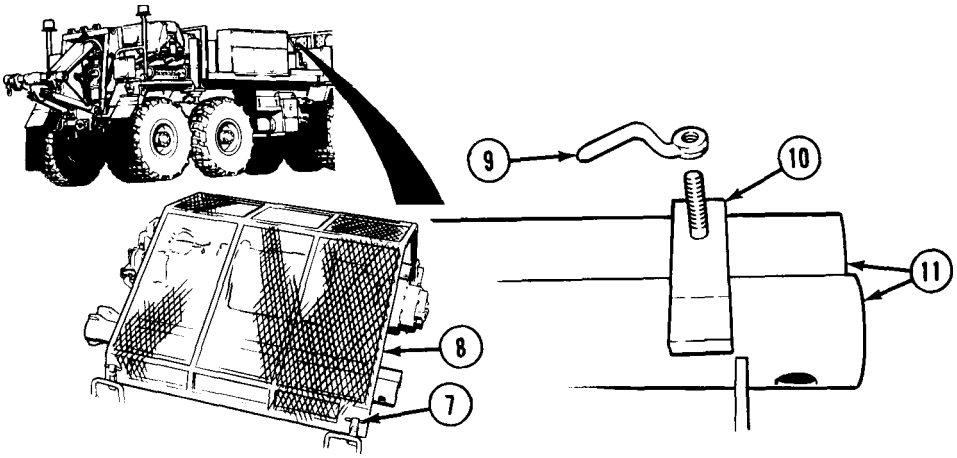


Figure 2.

6. Remove two handle locks (9) and lockplates (10) from extension bars (11).
7. Remove 8 ft. (2.5 m) chain (12) from stowage.

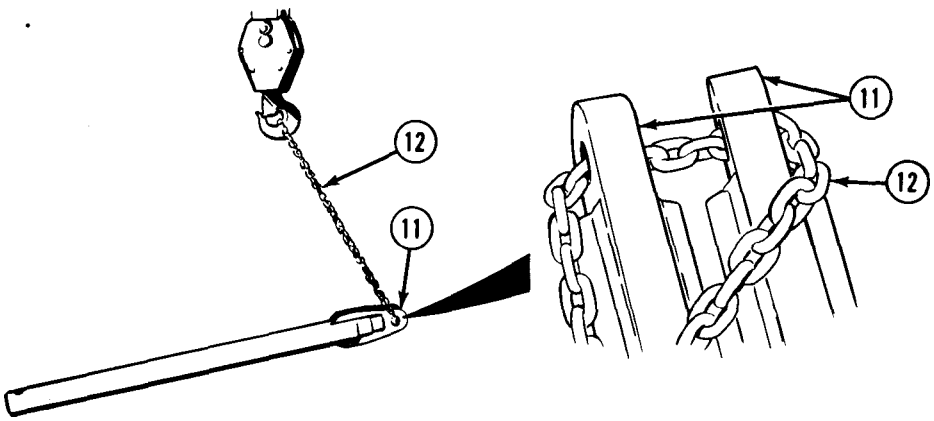


Figure 3.

8. Thread chain (12) through eyelets on flat end of extension bars (11).
9. Using crane, remove extension bars (11) and lower extension bars behind vehicle.
10. Remove chain (12) from extension bars (11).
11. Lower heavy-duty winch protective screen (8) and secure with two holddowns (7).

SET UP TOW SPADES - Continued

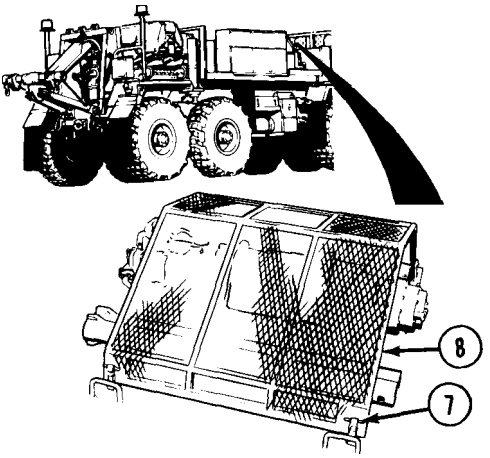


Figure 4.

NOTE

Driver side and passenger side extension bars are installed the same way.

12. Lift and hold extension bar (11) in place while assistant installs pin (13) and quick pin (14).

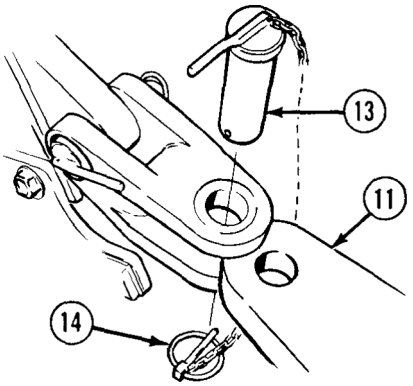


Figure 5.

13. Install two towing shackles (4) on tow spades (15) with pins (3) and cotter pins (2).

SET UP TOW SPADES - Continued

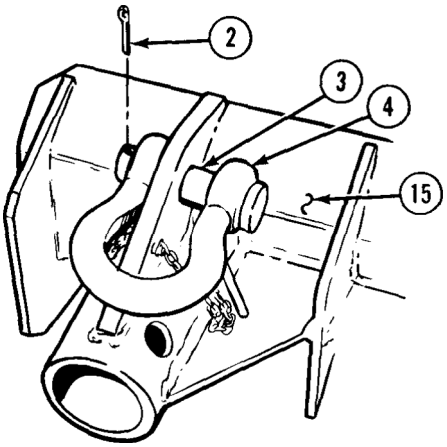


Figure 6.

14. Remove two quick pins (16) and pins (17) from tow spades (15).

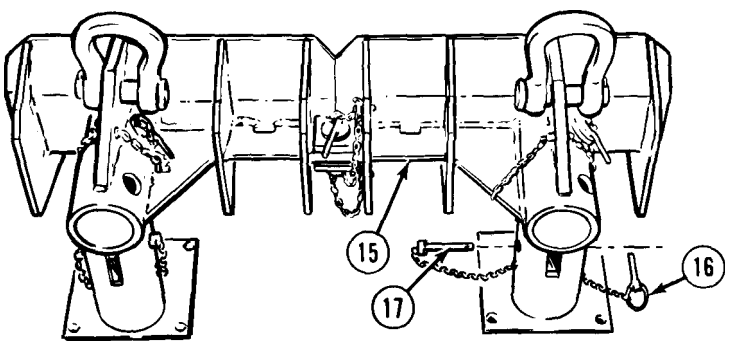


Figure 7.

15. Install 8 ft. (2.5 m) chain (12) through two towing shackles (4).

SET UP TOW SPADES - Continued

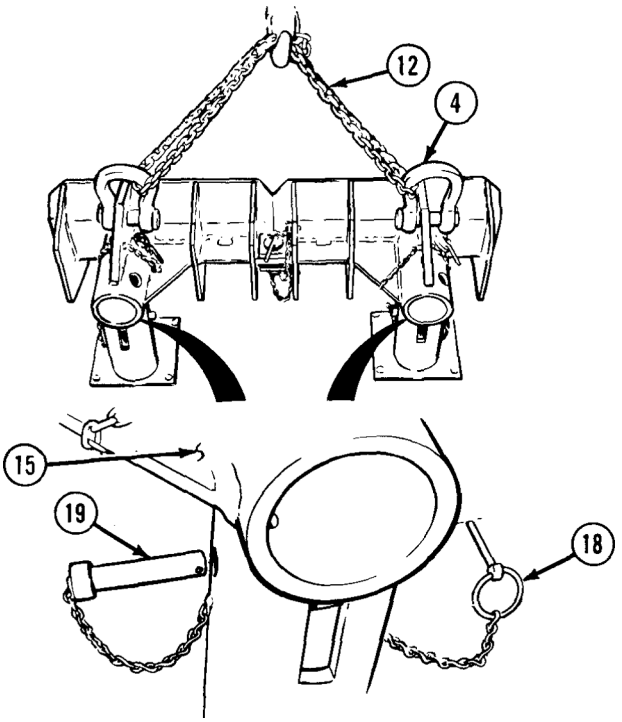


Figure 8.

WARNING

Do not hit oxygen tank when moving tow spades. Oxygen tank may explode. Failure to comply may result in injury or death to personnel.

16. Using crane, remove tow spades (15) and lower tow spades behind vehicle.
17. Remove two quick pins (18) and pins (19) from tow spades (15).

NOTE

Use pry bar to help position tow spades.

18. Operate crane while assistant installs tow spades (15) on extension bars (11).

SET UP TOW SPADES - Continued

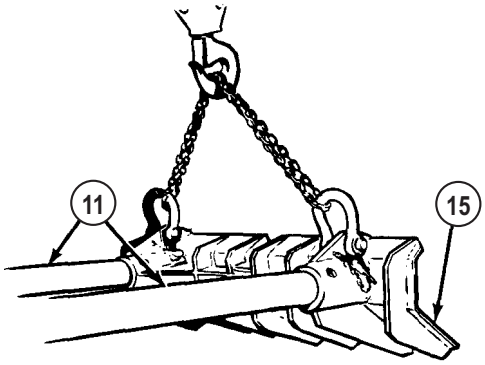


Figure 9.

19. Position tow spades (15) for type of pull being made and install pins (19) and quick pins (18).

SET UP TOW SPADES - Continued

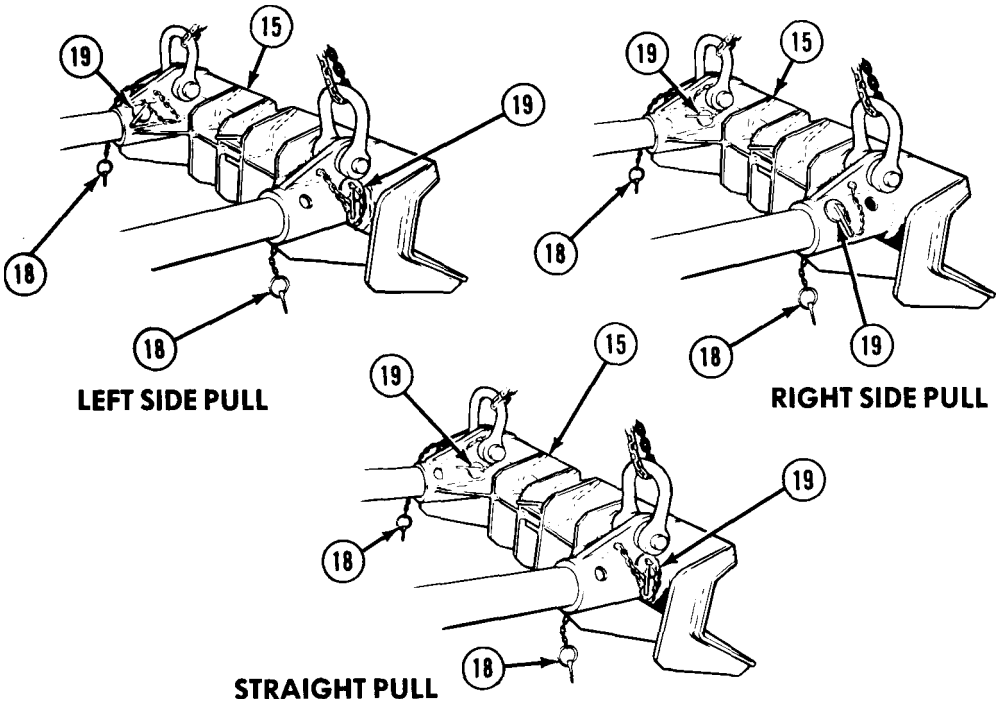


Figure 10.

20. Remove 8 ft. (2.5 m) chain (12) from two towing shackles (4).

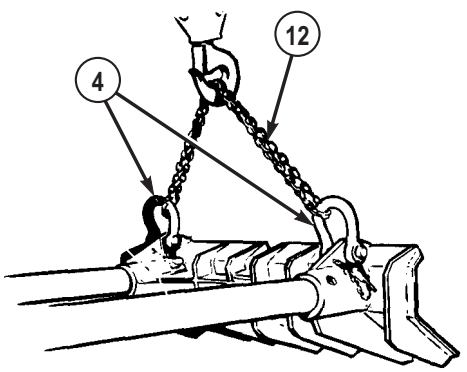


Figure 11.

SET UP TOW SPADES - Continued

21. Return crane to stowed position. (WP 0102)
22. Push RIGHT TOW CYLINDER control lever (20) and LEFT TOW CYLINDER control lever (21) to retract right tow cylinder (22) and left tow cylinder (23).

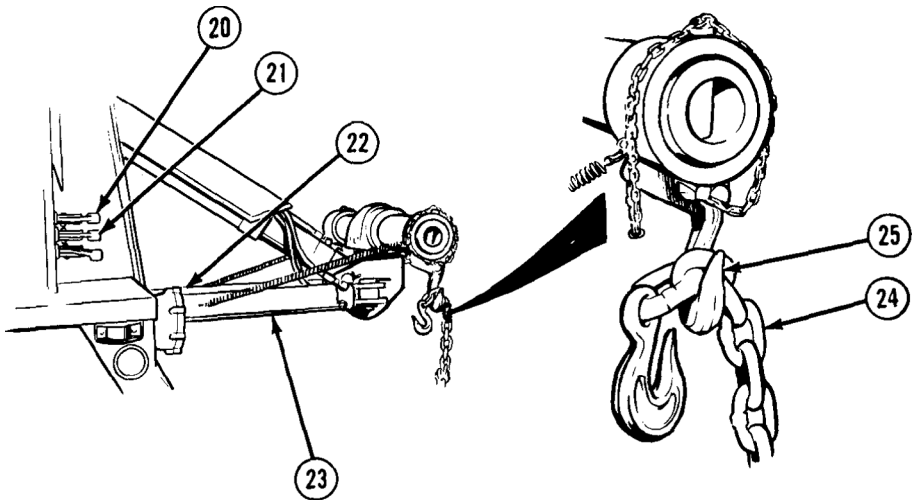


Figure 12.

23. Remove two 16 ft. (5 m) safety chains (24) from stowage.
24. Hook one end of safety chain (24) on crosstube hook (25) with one link showing.
25. Thread end of safety chain (24) through towing shackle (4).

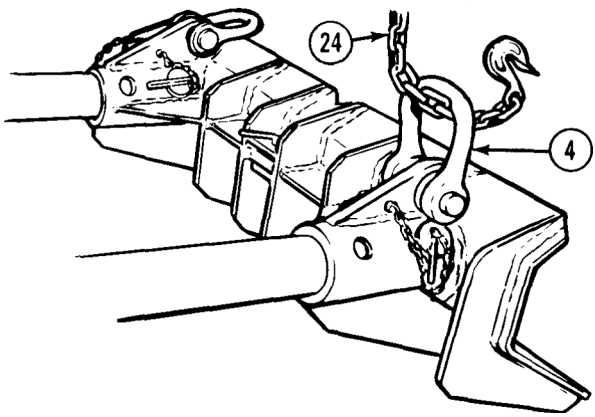


Figure 13.

SET UP TOW SPADES - Continued

26. Hook safety chain (24) together below crosstube hook (25).

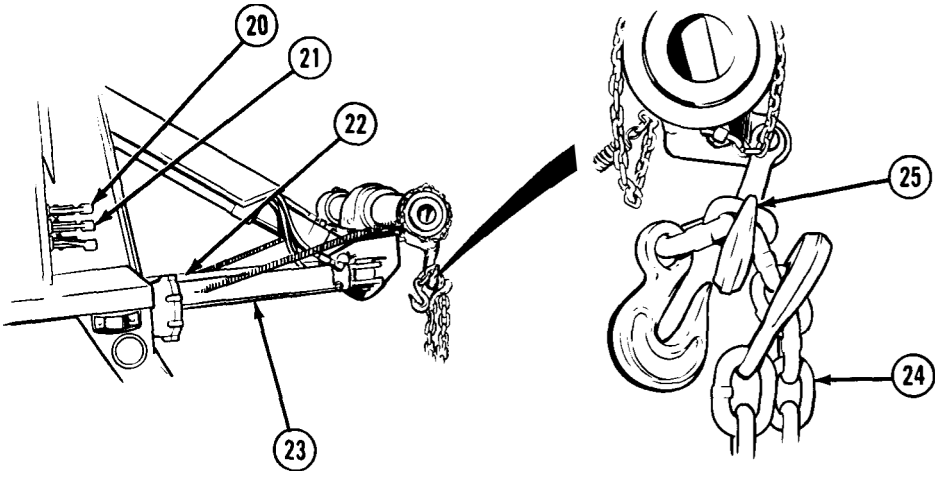


Figure 14.

27. Repeat Steps (24) through (26) for other side.
28. Pull RIGHT TOW CYLINDER control lever (20) and LEFT TOW CYLINDER control lever (21) to extend right tow cylinder (22) and left tow cylinder (23).
29. Continue operation of heavy-duty winch (WP 0039).

REMOVE AND STOW TOW SPADES

NOTE

This procedure is a two soldier task.

1. Set HIGH IDLE CONTROL switch (1) to OFF.

REMOVE AND STOW TOW SPADES - Continued

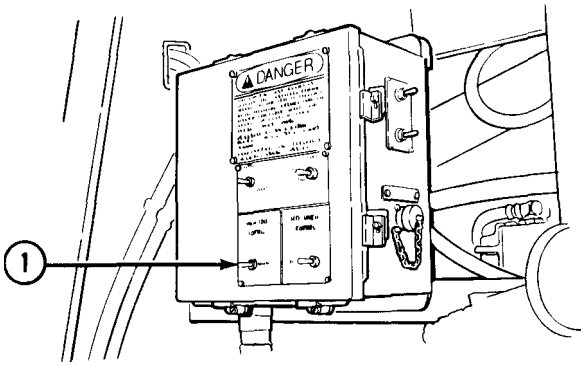


Figure 15.

2. Pull FRONT BRAKE APPLICATION knob (2) to release front brakes.

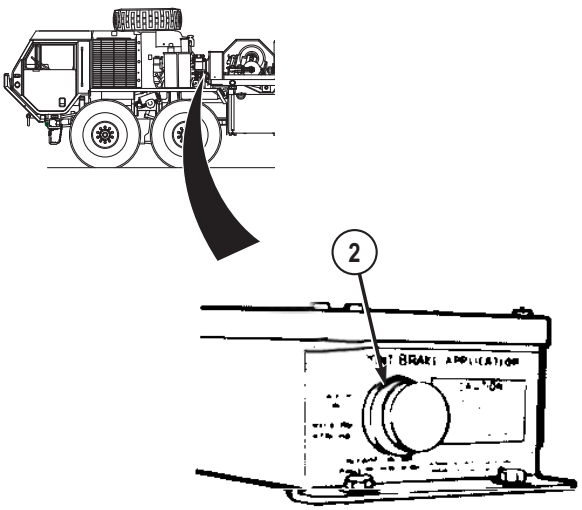


Figure 16.

3. Drive vehicle forward approximately 10 ft. (3 m) (WP 0050).
4. Set HIGH IDLE CONTROL switch (1) to CONTINUOUS.

REMOVE AND STOW TOW SPADES - Continued

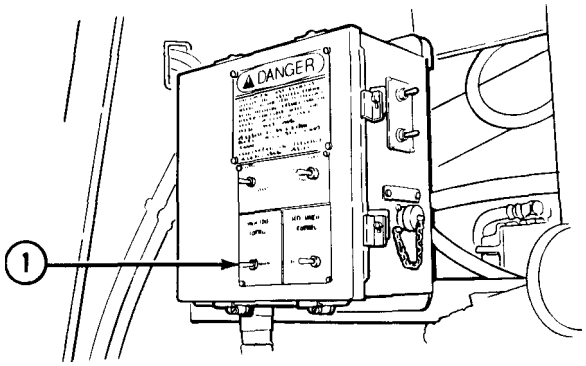


Figure 17.

5. Push RIGHT TOW CYLINDER control lever (3) and LEFT TOW CYLINDER control lever (4) to retract right tow cylinder (5) and left tow cylinder (6).

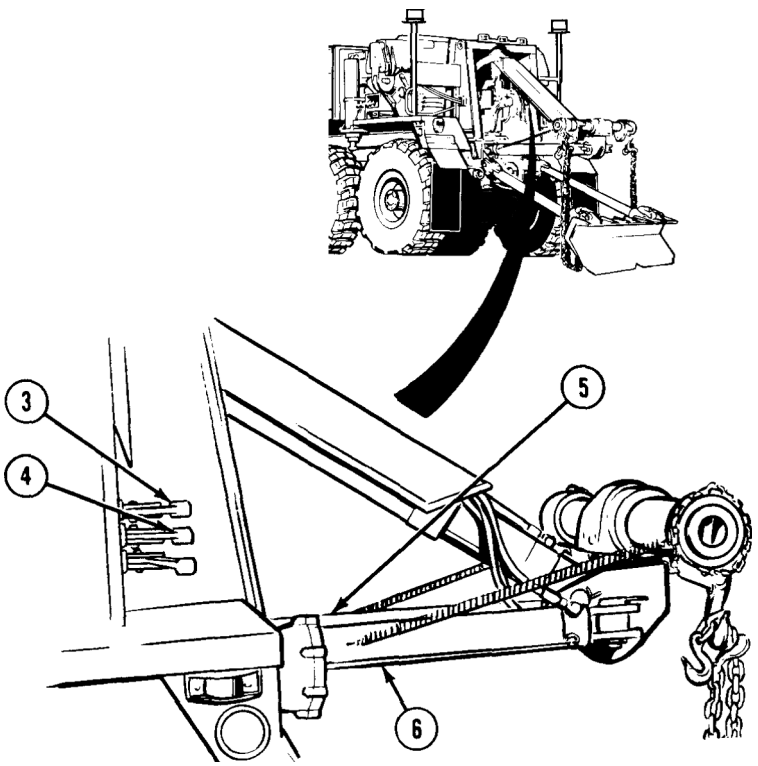


Figure 18.

REMOVE AND STOW TOW SPADES - Continued

6. Remove two 16 ft. (5 m) safety chains (7) and return safety chains to stowage.

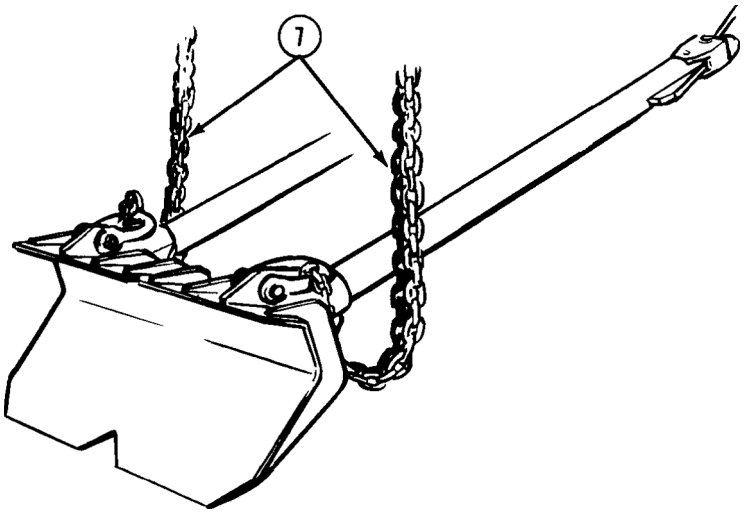


Figure 19.

7. Remove two quick pins (8) and pins (9) from tow spades (10).

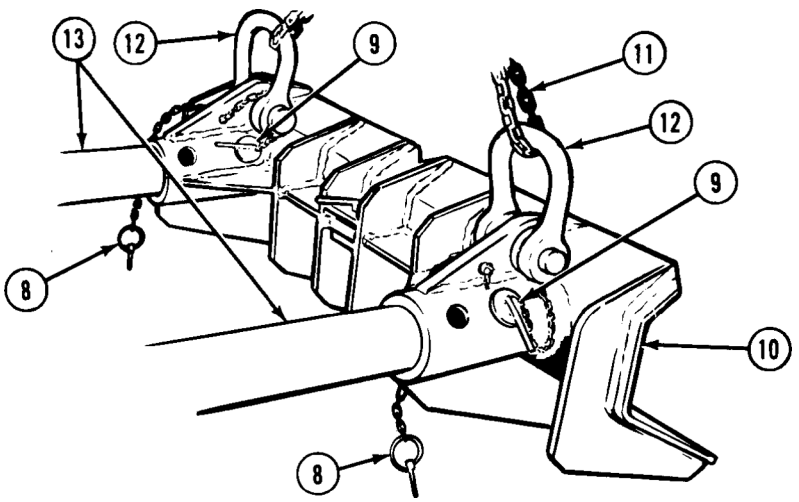


Figure 20.

8. Install 8 ft. (2.5 m) chain (11) on two towing shackles (12).

REMOVE AND STOW TOW SPADES - Continued

9. Set up crane for remote operation (WP 0103).

NOTE

Use pry bar to help remove tow spades.

10. Hold left and right extension bars (13) while assistant removes tow spades (10) from extension bars.
11. Install two pins (9) and quick pins (8) in tow spades (10).

WARNING

Do not hit oxygen tank when moving tow spades. Oxygen tank may explode. Failure to comply may result in injury or death to personnel.

12. Using crane, install tow spades (10) into equipment body (14) and install pins (15) and quick pins (16).

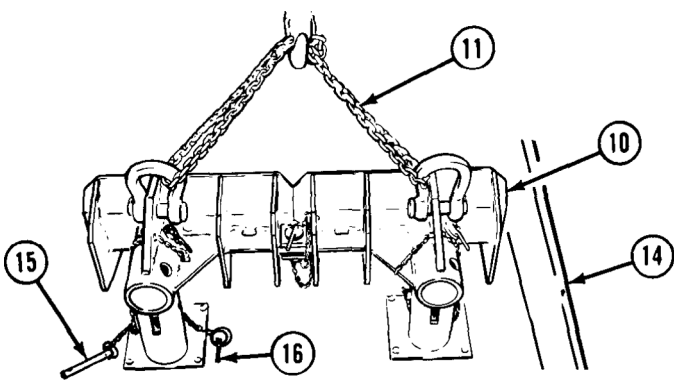


Figure 21.

13. Disconnect crane from 8 ft. (2.5 m) chain (11) and remove chain from tow spades (10).
14. Remove two cotter pins (17), pins (18), and towing shackles (12) from tow spades (10).

REMOVE AND STOW TOW SPADES - Continued

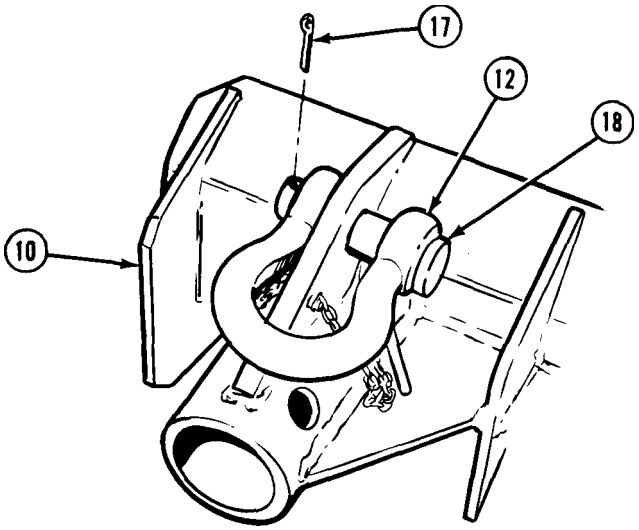


Figure 22.

NOTE

Driver side and passenger side extension bars are removed the same way.

15. Hold extension bar (13) in place while assistant removes quick pin (19) and pin (20).

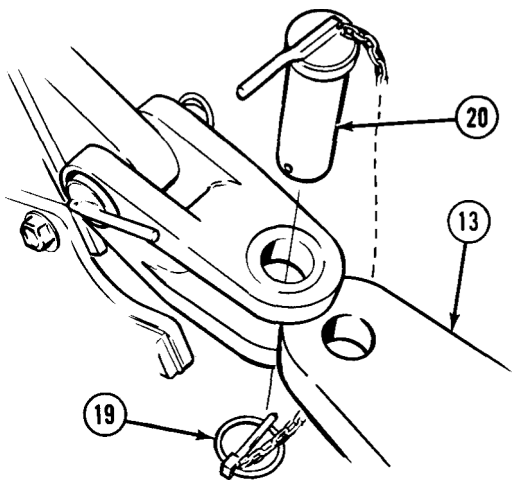


Figure 23.

REMOVE AND STOW TOW SPADES - Continued

16. Thread 8 ft. (2.5 m) chain (11) through flat end of extension bars (13).

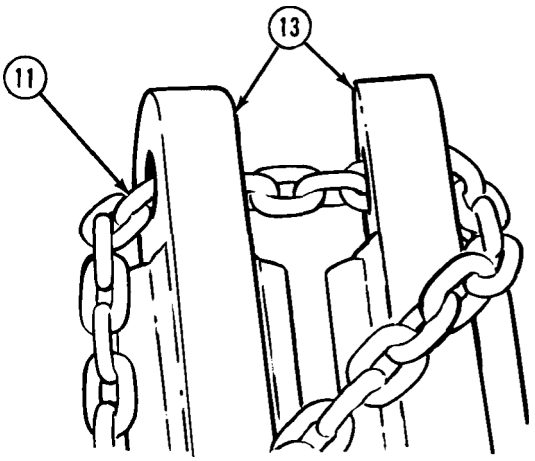


Figure 24.

17. Release two holddowns (21) on heavy-duty winch protective screen (22) and raise heavy-duty winch protective screen.

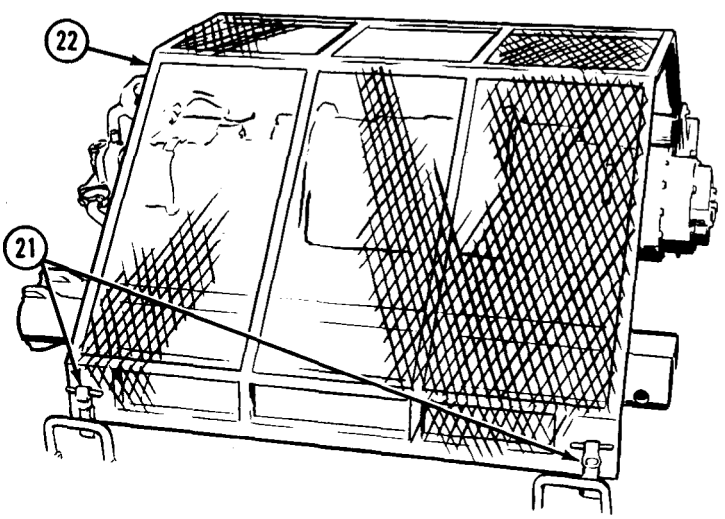


Figure 25.

18. Using crane, install extension bars (13) into equipment body (14).

REMOVE AND STOW TOW SPADES - Continued

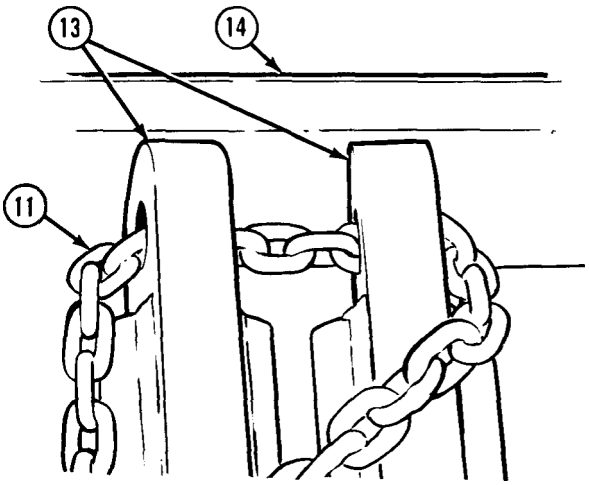


Figure 26.

19. Remove 8 ft. (2.5 m) chain (11) from extension bars (13) and put chain in stowage.
20. Return crane to stowed position (WP 0102).
21. Install two lockplates (23) and lock handles (24) onto extension bars (13).

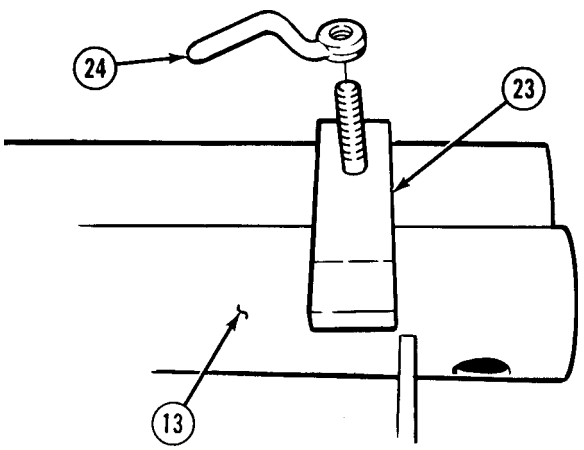


Figure 27.

22. Close heavy-duty winch protective screen (22) and latch holddowns (21).

REMOVE AND STOW TOW SPADES - Continued

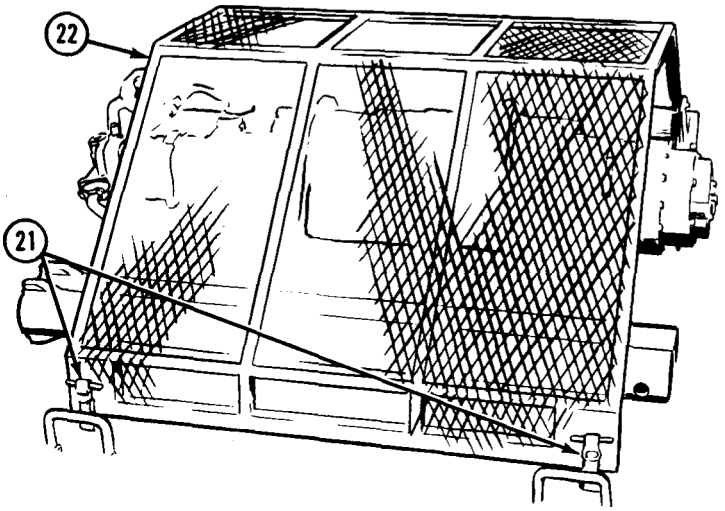


Figure 28.

NOTE

Driver side and passenger side extension adapters are removed the same way.

23. Remove quick pin (25), pin (26), and extension adapter (27).

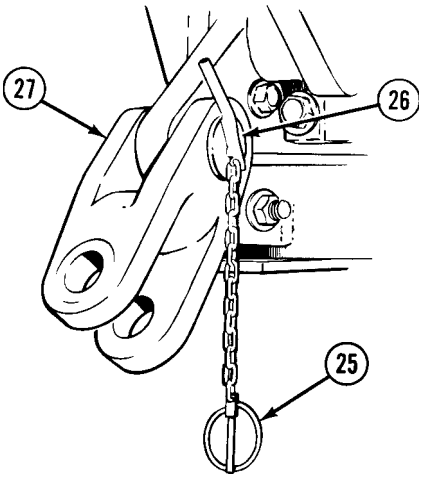


Figure 29.

REMOVE AND STOW TOW SPADES - Continued

24. Return extension adapters (27) to stowage.
25. Continue stowage of heavy-duty winch (WP 0039).

NOTE

Driver side and passenger side towing shackles are installed the same way.

26. Install two towing shackles (12) with pins (18) and cotter pins (17).

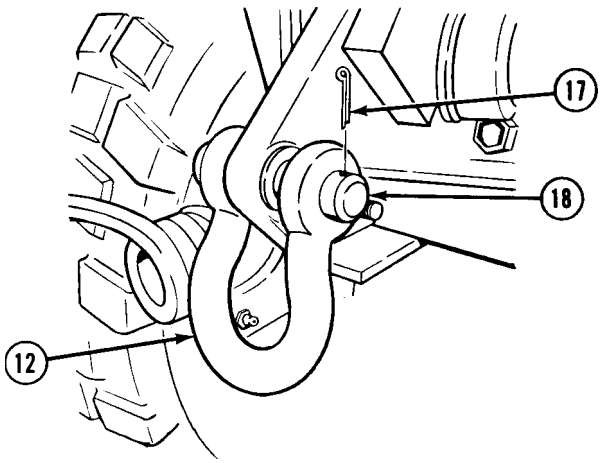


Figure 30.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
60-TON TACKLE BLOCK INSTALLATION/REMOVAL

INITIAL SETUP:

Not Applicable

SET UP 60-TON TACKLE BLOCK

NOTE

This procedure is a two soldier task.

1. Remove handle lock (1) and lock bracket (2).

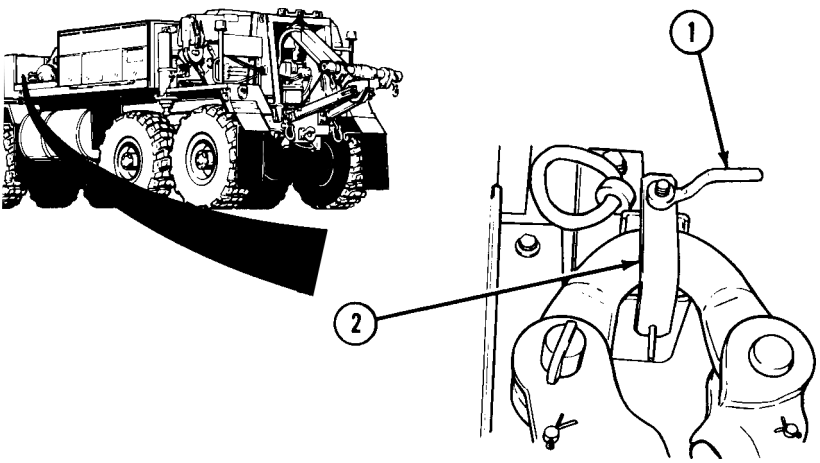


Figure 1.

2. Remove 8 ft. (2.5 m) chain (3) from stowage and attach chain to 60-ton tackle block (4).

SET UP 60-TON TACKLE BLOCK - Continued

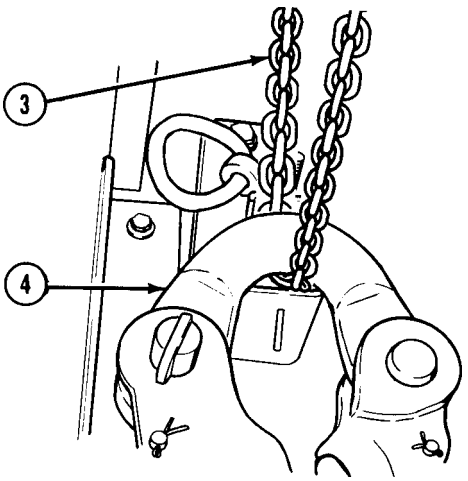


Figure 2.

3. Set up crane for remote operation. (WP 0103)
4. Using crane, remove 60-ton tackle block (4) from vehicle.

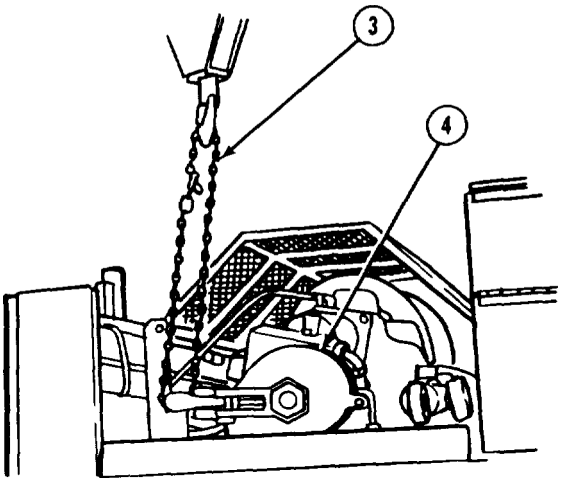


Figure 3.

5. Remove 8 ft. (2.5 m) chain (3) from 60-ton tackle block (4).
6. Return crane to stowed position. (WP 0103)

SET UP 60-TON TACKLE BLOCK - Continued

7. With aid of an assistant, carry 60-ton tackle block (4) by handles (5) to mired vehicle.

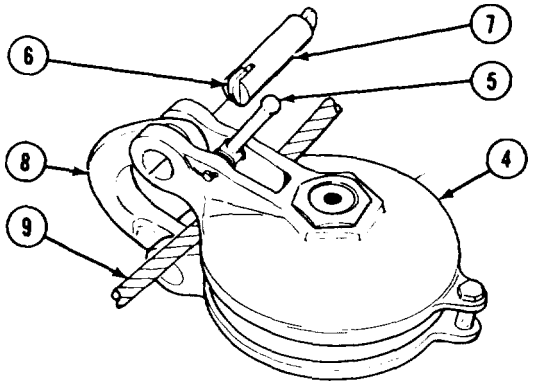


Figure 4.

8. Turn keyway (6) on pin (7) and remove pin from 60-ton tackle block (4).

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.

9. Open hook (8) and place winch cable (9) in 60-ton tackle block (4).
10. Close hook (8) and install pin (7) in 60-ton tackle block (4). Turn keyway (6) to secure pin.
11. Attach 60-ton tackle block (4) to mired vehicle(refer to FM 4-30.31). (Volume 2, WP 0200)
12. Continue with heavy-duty winch operation. (WP 0039)

REMOVE AND STOW 60-TON TACKLE BLOCK

NOTE

This procedure is a two soldier task.

1. Detach 60-ton tackle block (1) from mired vehicle.

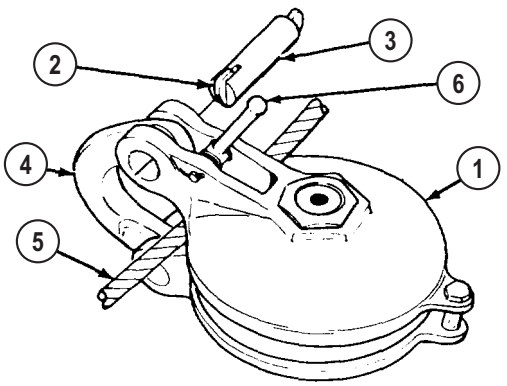


Figure 5.

2. Turn keyway (2) on pin (3) and remove pin from 60-ton tackle block (1).

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.

3. Open hook (4) and remove winch cable (5) from 60-ton tackle block (1).
4. Close hook (4) and install pin (3) in 60-ton tackle block (1). Turn keyway (2) to secure pin.
5. With aid of an assistant, lift 60-ton tackle block (1) by handles (6) and move within reach of crane.
6. Attach 8 ft. (2.5 m) chain (7) to 60-ton tackle block (1).

REMOVE AND STOW 60-TON TACKLE BLOCK - Continued

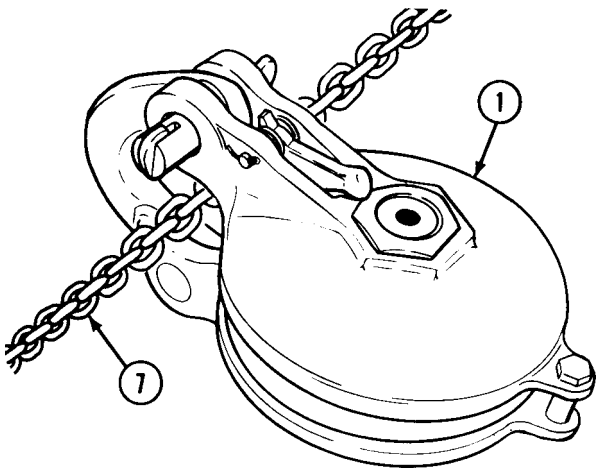


Figure 6.

7. Set up crane for remote operation. (WP 0103)
8. Using crane, place 60-ton tackle block (1) on vehicle so that hook rests in mounting bracket (8).

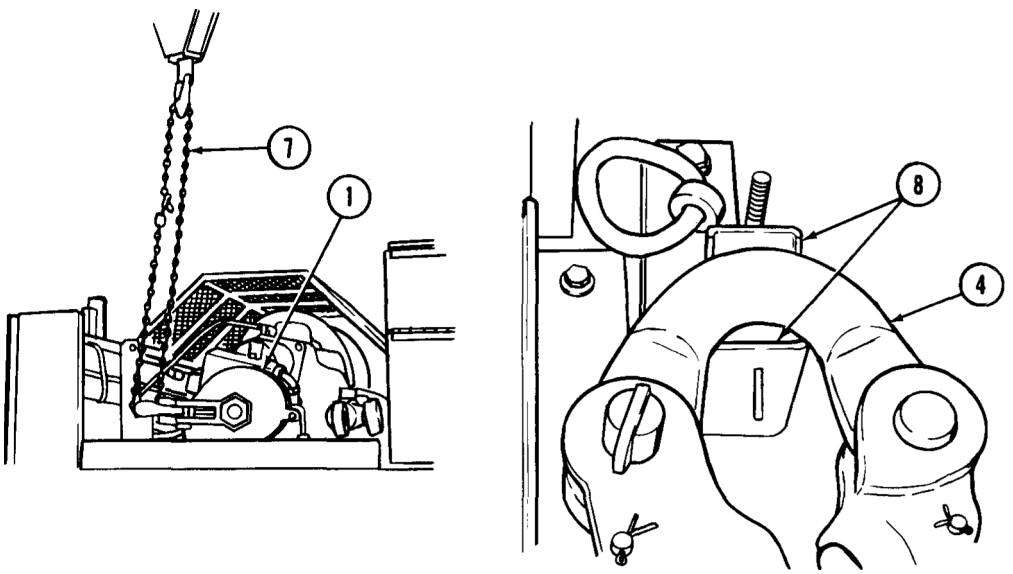


Figure 7.

REMOVE AND STOW 60-TON TACKLE BLOCK - Continued

9. Remove 8 ft. (2.5 m) chain (7) and return chain to stowage.
10. Return crane to stowed position. (WP 0103)
11. Install lock bracket (9) and handle lock (10).

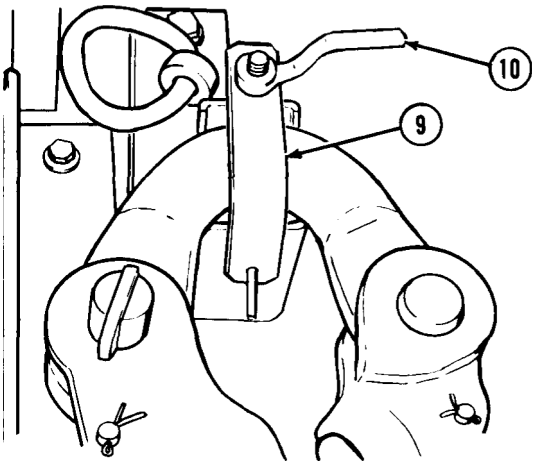


Figure 8.

12. Continue stowage of heavy-duty winch. (WP 0039)

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
VISE OPERATION

INITIAL SETUP:

Not Applicable

PREPARE VISE FOR OPERATION

1. Loosen lockscrew (1).
2. Remove quick pin (2) and pin (3).

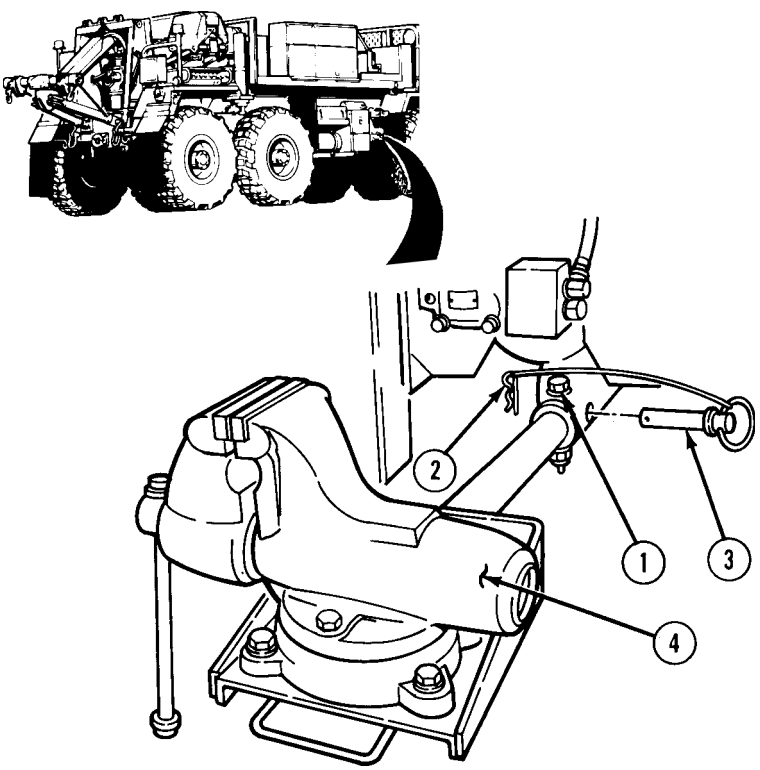


Figure 1.

3. Pull vise (4) out, and align holes.

PREPARE VISE FOR OPERATION - Continued

4. Install pin (3) and quick pin (2).

RETURN VISE TO STOWED POSITION

1. Remove quick pin (2) and pin (3).
2. Push vise (4) into stowed position.

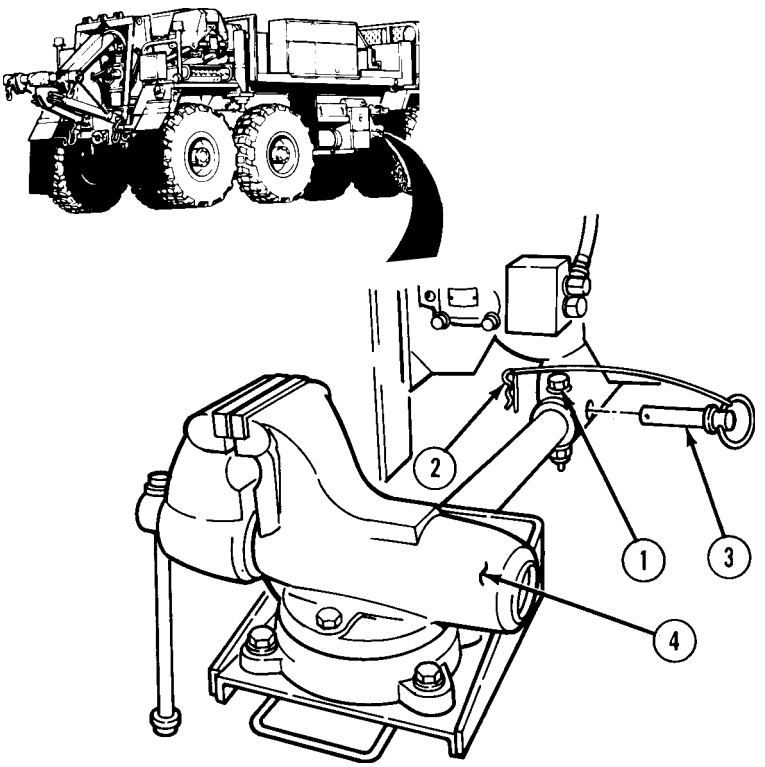


Figure 2.

3. Align holes and install pin (3) and quick pin (2).
4. Tighten lockscrew (1).

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
POWER PLANT REMOVAL/INSTALLATION

INITIAL SETUP:

Not Applicable

VEHICLE AND TECHNICAL MANUAL LIST

1. The M984A4 wrecker can be used to remove and install power plants for various tracked and wheeled vehicles and vehicle series.
2. Refer to the following list of vehicles and corresponding technical manuals when removing and installing power plants:

Table 1. Technical Manual Listing.

Type Vehicle	Technical Manual
M1	TM 9-2350-255-20-(series)
M2/M3	TM 9-2350-252-20-(series)
M35	TM 9-2320-209-34-(series)
M60A3	TM 9-2350-253-20-(series)
M88A1	TM 9-2350-256-20-(series)
M911	TM 9-2320-270-34-(series)
M915	TM 9-2320-273-34
M939	TM 9-2320-272-24-(series)
M998	TM 9-2320-280-34
M977	TM 9-2320-315-14&P
M1008	TM 9-2320-283-34-(series)

REMOVE POWER PLANT

WARNING

Wrecker must be on level ground when removing power plant. Failure to comply may result in injury or death to personnel.

WARNING

Attach guide rope to sling to prevent uncontrolled movement while positioning crane. Failure to comply may result in injury or death to personnel.

1. See applicable technical manual (Table 1) for sling or special tool required for power plant removal.

NOTE

- Retrieval system may be lowered to assist in getting closer to vehicle.
- Position wrecker as close as possible to disabled vehicle, without making contact.
- Refer to applicable vehicle technical manual to connect lifting sling to power plant.

2. Position rear of wrecker directly in line with power plant (1) and as close to vehicle as possible without making contact.

REMOVE POWER PLANT - Continued

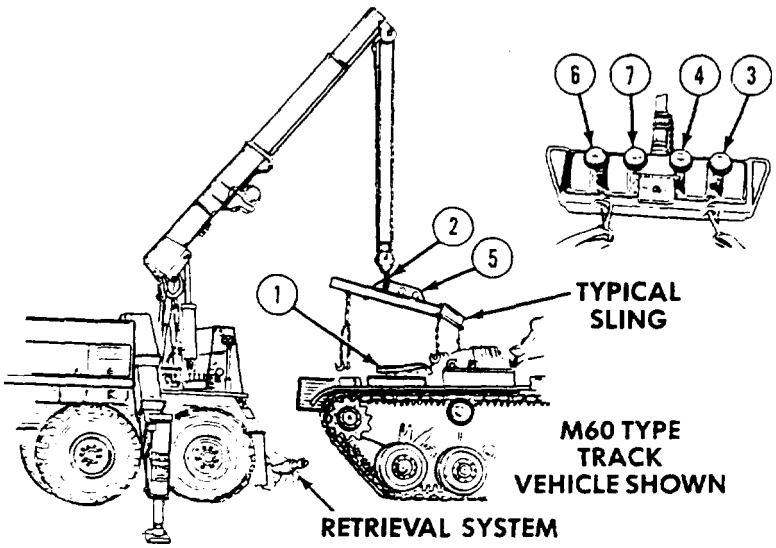


Figure 1.

3. Set up crane for operation (configure for use of remote-control unit). (WP 0103)
4. Attach sling or special tool to crane load hook (2).
5. Move HOIST control lever (3) and BOOM control lever (4) to UP position to lift sling (5), and operate SWING control lever (6) and TELESCOPE control lever (7) to position sling over power plant (1).
6. Operate HOIST control lever (3) to lower sling (5) to allow sling chains to be connected to power plant (1).

WARNING

Keep out from under power plant. Power plant can slip or fall. Failure to comply may result in injury or death to personnel.

REMOVE POWER PLANT - Continued

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.

CAUTION

- Refer to applicable vehicle technical manual to prepare vehicle for power plant removal to prevent equipment damage.
- Do not jerk HOIST control lever or load will bounce, possibly causing damage to crane or load.
- Maximum crane load limit and radius swing is:

6,000 lbs at 18 ft. 2 in. radius (2 700 kg at 5.5 m)

8,000 lbs at 16 ft. 5 in. radius (3 600 kg at 5.0 m)

12,000 lbs at 11 ft. 10 in. radius (5 400 kg at 3.6 m)

14,000 lbs at 9 ft. radius (6 300 kg at 2.7 m)

- Make sure you refer to RANGE DIAGRAM located on either side of equipment body to prevent equipment damage.
- Do not go over maximum load limit. Going over maximum load limit will cause electrical shutdown for six seconds, or until load is lowered.
- Do not allow power plant to swing and come in contact with vehicle. Power plant may be damaged.

NOTE

Chains are available on the wrecker which can be used to guide the power plant during removal.

7. Operate HOIST control lever (3) and BOOM control lever (4) to lift power plant (1) free of vehicle.

REMOVE POWER PLANT - Continued

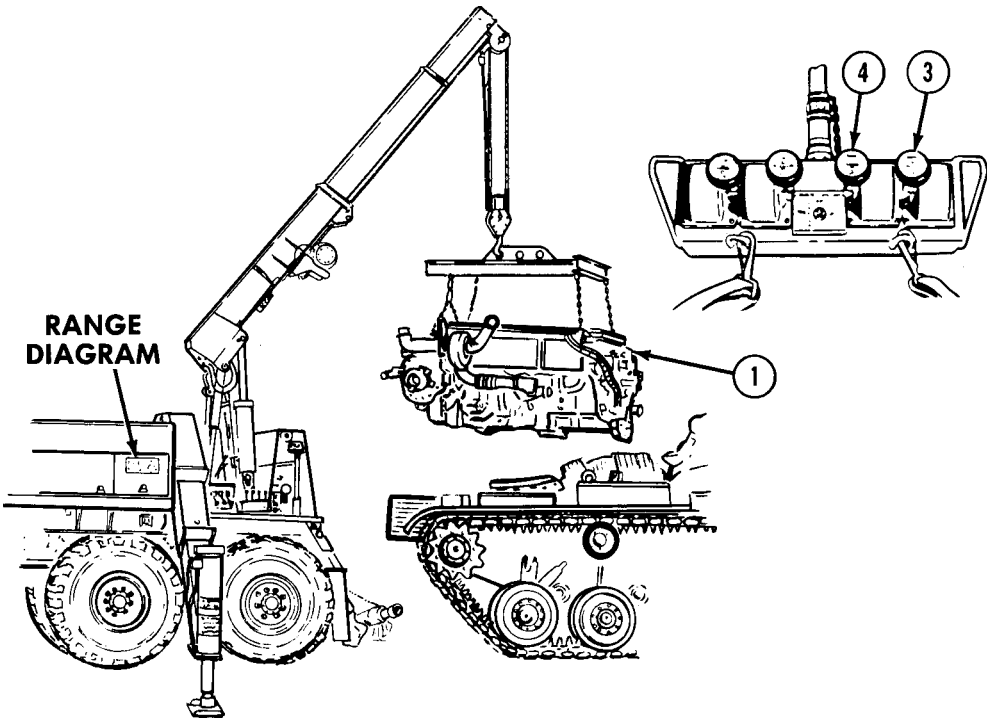


Figure 2.

8. Position power plant (1) directly behind wrecker.
9. Stow outriggers (WP 0102).

CAUTION

Drive wrecker forward at walking speed (less than 5 mph). If driven faster and power plant starts to swing, equipment can be damaged.

10. Drive vehicle forward (WP 0050) (less than 5 mph) until power plant (1) is clear of vehicle.

NOTE

- If retrieval system was lowered to assist in power plant removal, raise retrieval system to stowed position.
- Chains may be attached to shackles on rear of wrecker and power plant to prevent power plant from swinging.

REMOVE POWER PLANT - Continued

11. Operate TELESCOPE control lever (7) and HOIST control lever (3) to position power plant (1) approximately 3 ft. (1 m) behind crosstube (8), and 2 ft. (60 cm) above ground.

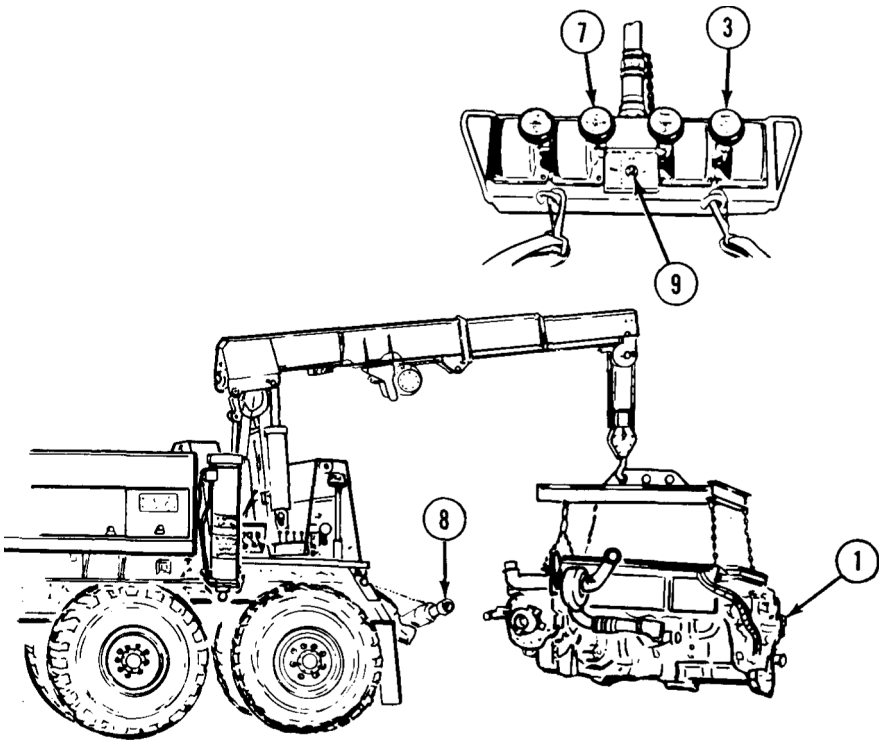


Figure 3.

12. Shut off REMOTE CONTROL UNIT switch (9).
13. Stow REMOTE CONTROL UNIT on wrecker.

CAUTION

Drive wrecker forward at walking speed (less than 5 mph). If driven faster and power plant starts to swing, equipment can be damaged.

14. Transport power plant to required destination.
15. Set up crane for operation (configure for use of remote-control unit). (WP 0103)
16. Operate remote control (10) to position power plant on supports (refer to applicable vehicle technical manual (Table 1) for power plant supports).

REMOVE POWER PLANT - Continued

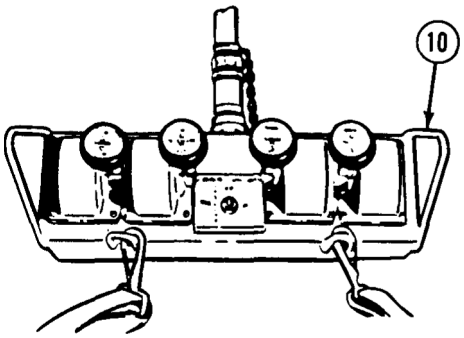


Figure 4.

17. Remove sling (5) from power plant.

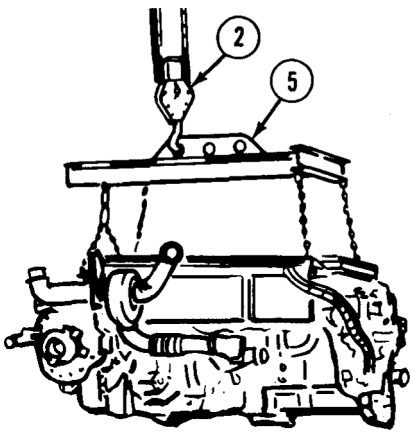


Figure 5.

NOTE

If sling is not to be used for further operation use crane to stow sling.

18. Remove load hook (2) from sling (5).
19. Shut off switches, disconnect remote-control unit, (WP 0102) and return remote-control unit to wrecker stowage.
20. Shut down crane. (WP 0102)

INSTALL POWER PLANT

WARNING

Wrecker must be on level ground when removing power plant. Failure to comply may result in injury or death to personnel.

1. See applicable vehicle technical manual (Table 1) for sling or special tool required for power plant installation.
2. Position wrecker as close to power plant (1) as possible.

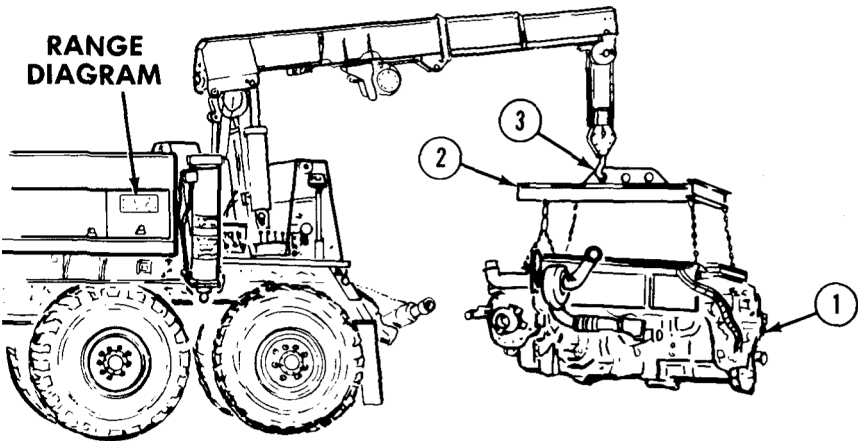


Figure 6.

3. Set up crane for operation (configure for use of remote-control unit). (WP 0103)
4. Operate crane, and attach sling (2) to crane hook block (3).
5. Attach sling (2) to power plant (1) (refer to applicable vehicle technical manual (Table 1) to connect lifting sling to power plant).

INSTALL POWER PLANT - Continued

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.

CAUTION

- Refer to applicable vehicle technical manual to prepare vehicle for power plant removal to prevent equipment damage.
- Do not jerk HOIST control lever or load will bounce, possibly causing damage to crane or load.
- Maximum crane load limit and radius swing is:
  6,000 lbs at 18 ft. 2 in. radius (2 700 kg at 5.5 m)
  8,000 lbs at 16 ft. 5 in. radius (3 600 kg at 5.0 m)
  12,000 lbs at 11 ft. 10 in. radius (5 400 kg at 3.6 m)
  14,000 lbs at 9 ft. radius (6 300 kg at 2.7 m)
- Make sure you refer to RANGE DIAGRAM located on either side of equipment body to prevent equipment damage.
- Do not go over maximum load limit. Going over maximum load limit will cause electrical shutdown for six seconds, or until load is lowered.
- Do not allow power plant to swing and come in contact with vehicle. Power plant may be damaged.

NOTE

Chains are available on the M984A which can be used to guide the power plant during removal.

6. Operate HOIST control lever (4) and TELESCOPE control lever (5) to position power plant (1) approximately 2 ft. (61 cm) above ground and 3 ft. (1 m) directly behind crosstube (6).

INSTALL POWER PLANT - Continued

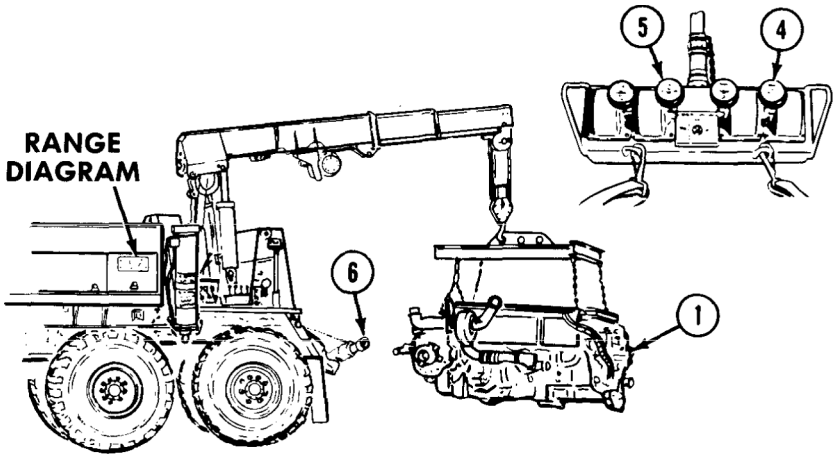


Figure 7.

7. Stow outriggers. (WP 0102)
8. Stow REMOTE CONTROL UNIT on wrecker.

CAUTION

Drive wrecker forward at walking speed (less than 5 mph). If driven faster and power plant starts to swing, equipment can be damaged.

9. Drive vehicle forward (WP 0050) (less than 5 mph) and transport power plant (1) to vehicle for installation.

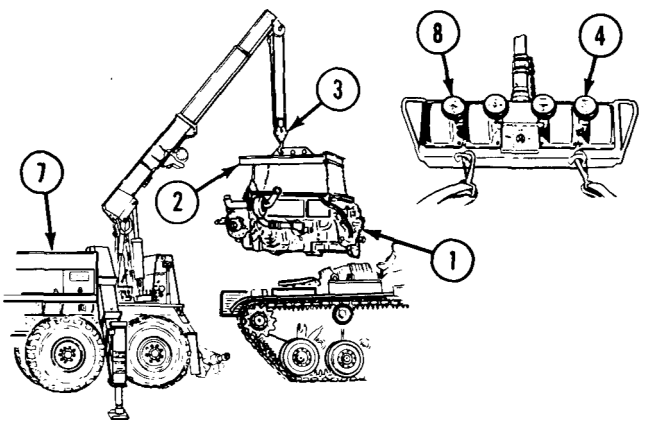


Figure 8.

INSTALL POWER PLANT - Continued

CAUTION

- Refer to applicable technical manual to prepare vehicle for power plant installation to prevent equipment damage.
- Do not allow power plant to swing and come in contact with vehicle. Power plant or vehicle may be damaged.

NOTE

- Retrieval system may be lowered to assist in getting closer to vehicle.
- Position wrecker for best access to install power plant.

10. Position rear of wrecker (7) in line with vehicle.
11. Operate HOIST control lever (4), and raise power plant high enough to clear vehicle for installation.
12. Drive wrecker slowly backward as close to vehicle without making contact to position power plant for installation.
13. Operate HOIST control lever (4), and SWING control lever (8) to position power plant for installation.
14. Setup outriggers. (WP 0102)
15. Install power plant (1) (refer to applicable vehicle technical manual). (Table 1)
16. Remove sling (2) from power plant (1).
17. Remove sling (2) from load hook (3).
18. Shut off switches, disconnect remote-control unit, (WP 0102) and return remote-control unit to wrecker stowage.
19. Shut down crane and stow outriggers. (WP 0102)

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).

INSTALL LIMP HOME SETUP ON NO. 1 AND NO. 2 AXLE TIRES - Continued

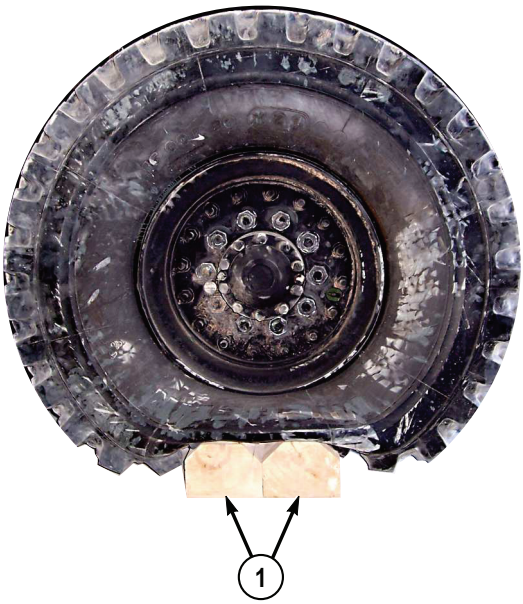


Figure 1.

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).

INSTALL LIMP HOME SETUP ON NO. 1 AND NO. 2 AXLE TIRES - Continued

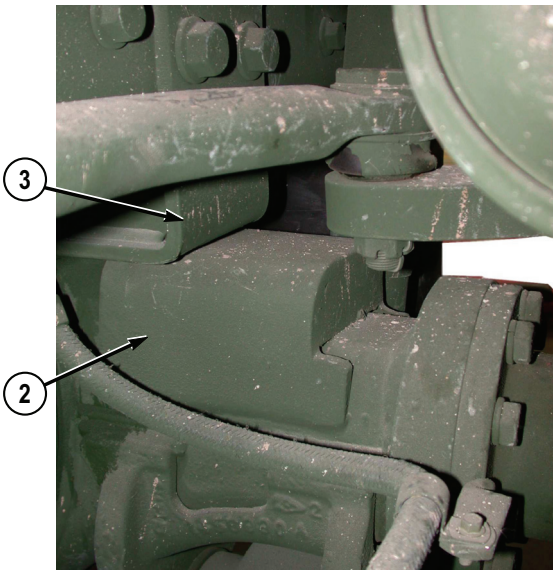


Figure 2.

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.

INSTALL LIMP HOME SETUP ON NO. 1 AND NO. 2 AXLE TIRES - Continued

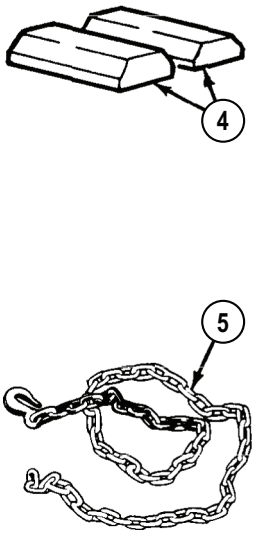


Figure 3.

5. Install two wheel chocks (WP 0097) (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).

INSTALL LIMP HOME SETUP ON NO. 1 AND NO. 2 AXLE TIRES - Continued

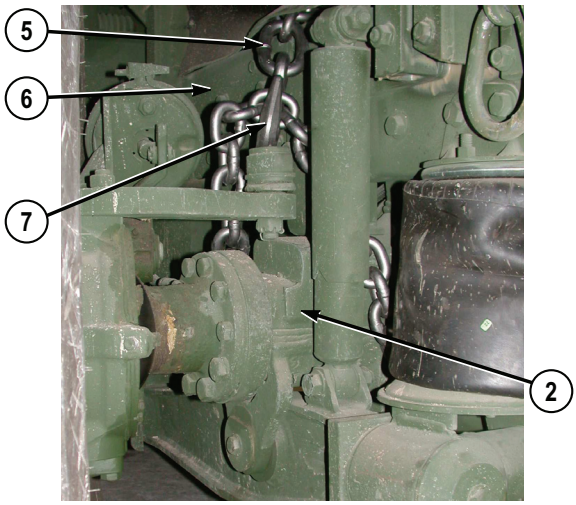


Figure 4.

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.

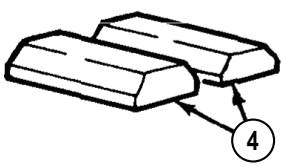


Figure 5.

10. Drive vehicle off two wheel chocks (1) and return wheel chocks (1) to vehicle stowage.

INSTALL LIMP HOME SETUP ON NO. 1 AND NO. 2 AXLE TIRES - Continued

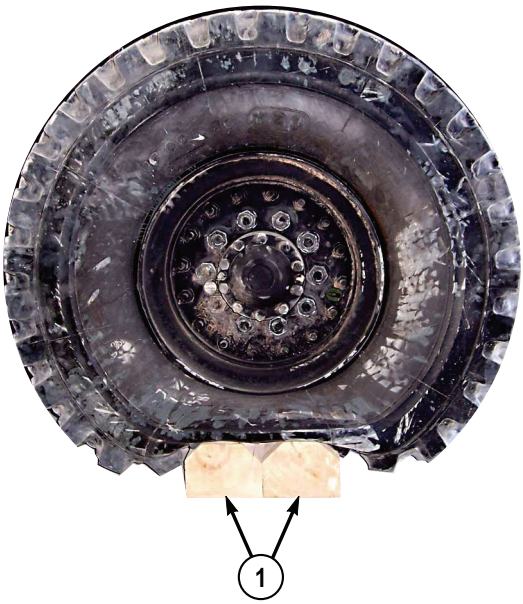


Figure 6.

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).

REMOVE LIMP HOME FROM NO. 1 AND NO. 2 AXLE TIRES - Continued

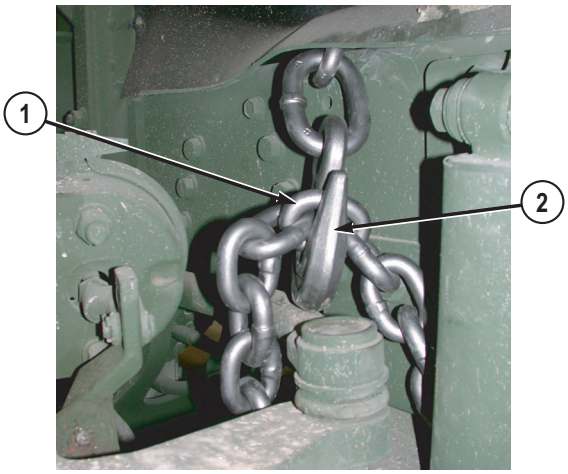


Figure 7.

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).

REMOVE LIMP HOME FROM NO. 1 AND NO. 2 AXLE TIRES - Continued

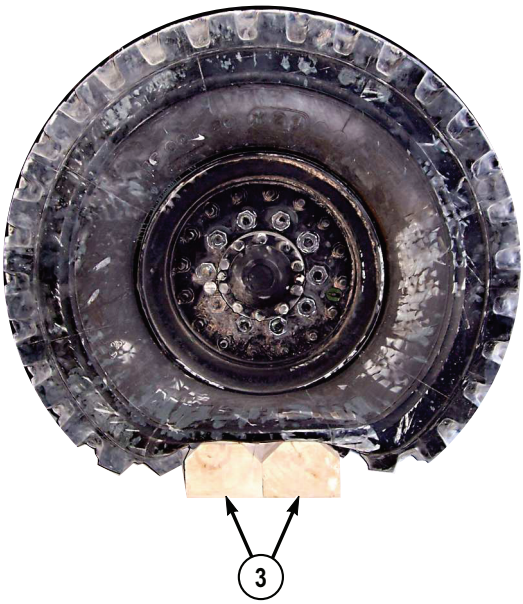


Figure 8.

4. Install two wheel chocks (WP 0097) (4) in front of and behind tire across (on same axle) from tire in which limp home setup is being removed.

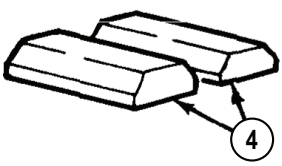


Figure 9.

5. Unhook 7 ft. (2.1 m) chain (1) and remove from around frame rail (5) and axle (6).

REMOVE LIMP HOME FROM NO. 1 AND NO. 2 AXLE TIRES - Continued

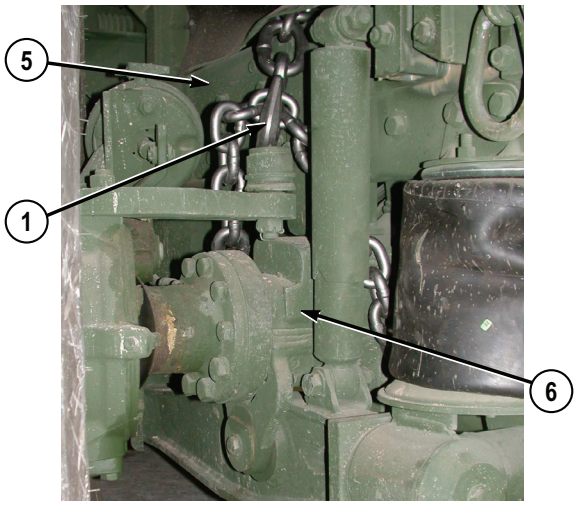


Figure 10.

6. Return 7 ft. (2.1 m) chain (1) to stowage.

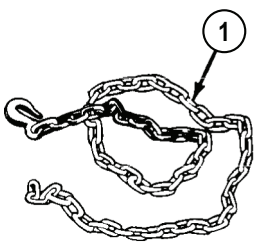


Figure 11.

7. Service (inflate) air suspension.
8. Drive vehicle off two wheel chocks (3) and return wheel chocks (3) to vehicle stowage.

REMOVE LIMP HOME FROM NO. 1 AND NO. 2 AXLE TIRES - Continued

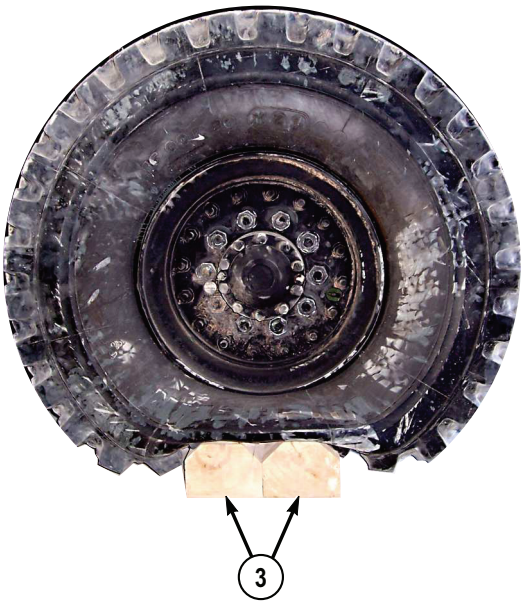


Figure 12.

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.

INSTALL LIMP HOME SETUP ON NO. 3 AND NO. 4 AXLE TIRES - Continued

1. Drive flat/shredded tire onto two wheel chocks (1).

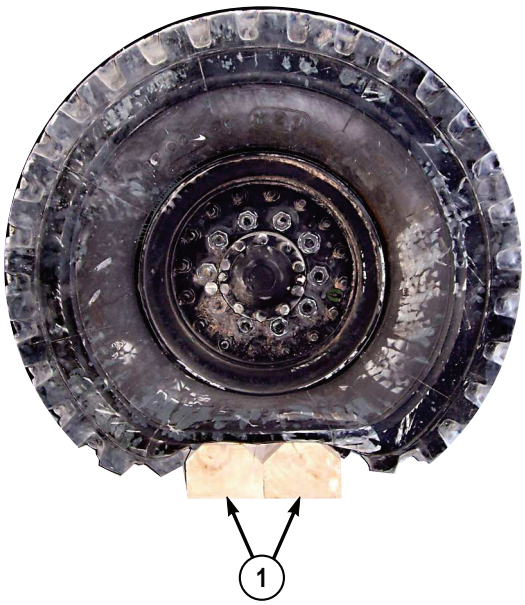


Figure 13.

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).

INSTALL LIMP HOME SETUP ON NO. 3 AND NO. 4 AXLE TIRES - Continued

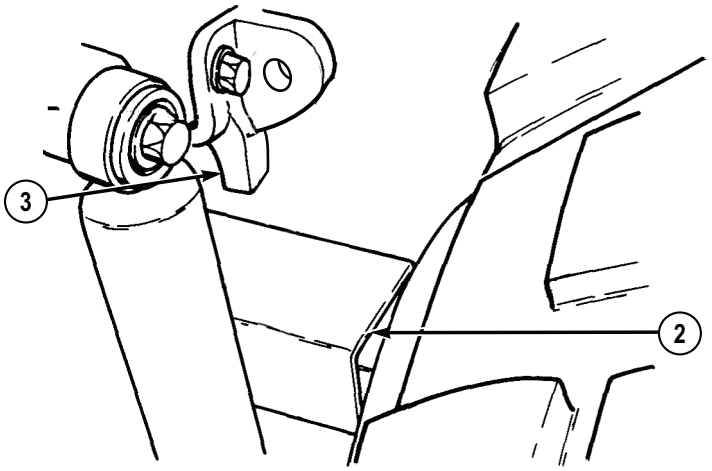


Figure 14.

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.

INSTALL LIMP HOME SETUP ON NO. 3 AND NO. 4 AXLE TIRES - Continued

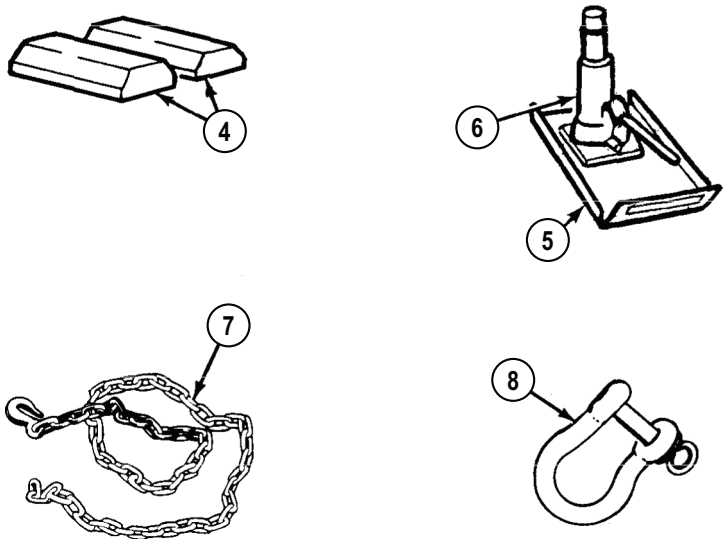


Figure 15.

5. Install two wheel chocks (WP 0097) (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).

INSTALL LIMP HOME SETUP ON NO. 3 AND NO. 4 AXLE TIRES - Continued

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).

INSTALL LIMP HOME SETUP ON NO. 3 AND NO. 4 AXLE TIRES - Continued

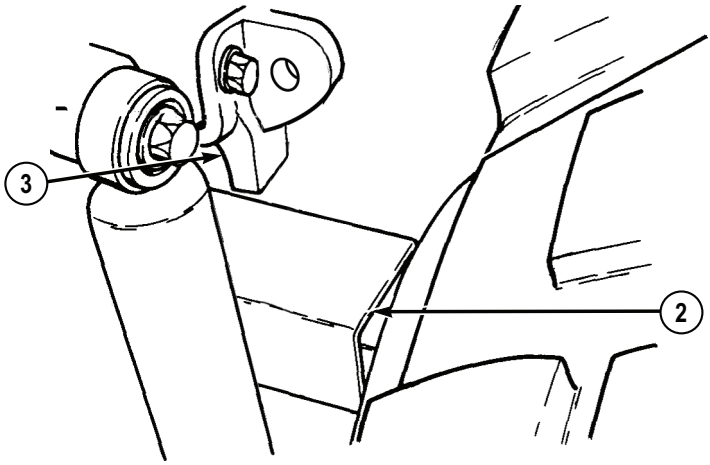


Figure 17.

9. Install shackle (8) on axle stop (3) with pin (11).

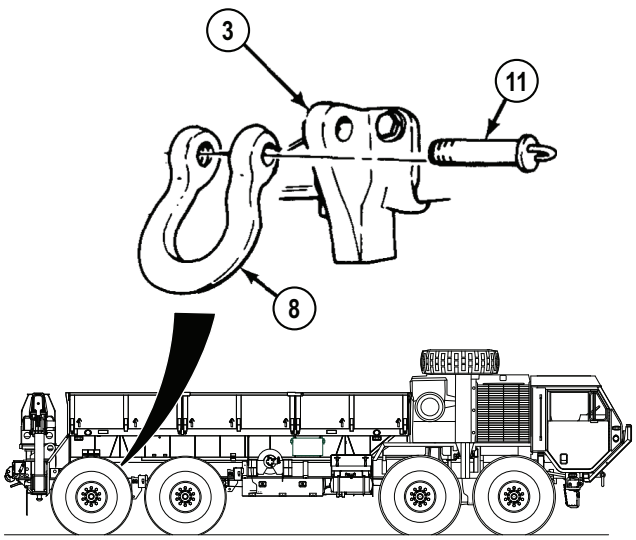


Figure 18.

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)

INSTALL LIMP HOME SETUP ON NO. 3 AND NO. 4 AXLE TIRES - Continued

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).

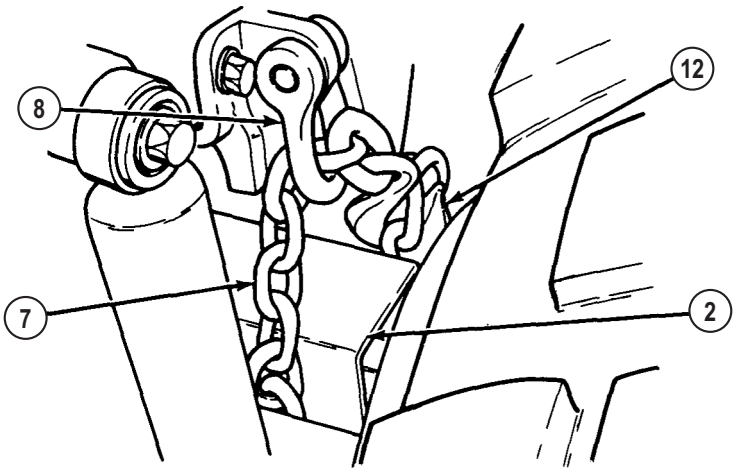


Figure 19.

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.

INSTALL LIMP HOME SETUP ON NO. 3 AND NO. 4 AXLE TIRES - Continued

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 0097) (4) from in front of and behind tire across (on same axle) from tire in which limp home setup was installed.

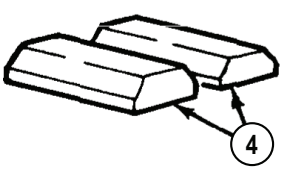


Figure 21.

17. Drive vehicle off two wheel chocks (1) and return wheel chocks (1) to vehicle stowage.

INSTALL LIMP HOME SETUP ON NO. 3 AND NO. 4 AXLE TIRES - Continued

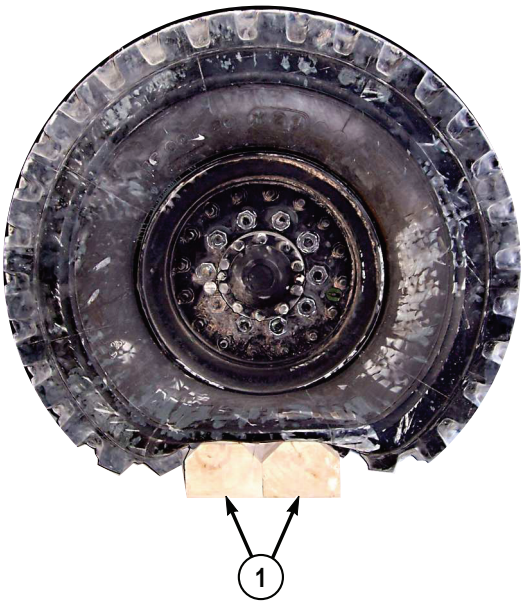


Figure 22.

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).

REMOVE LIMP HOME SETUP FROM NO. 3 AND NO. 4 AXLE TIRES - Continued

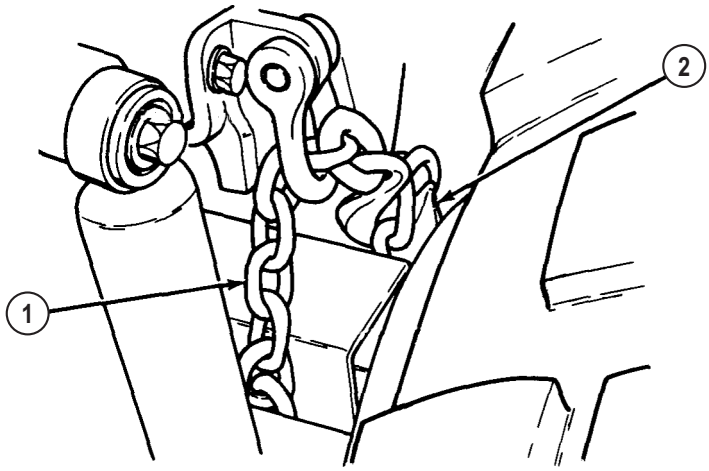


Figure 23.

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).

REMOVE LIMP HOME SETUP FROM NO. 3 AND NO. 4 AXLE TIRES - Continued

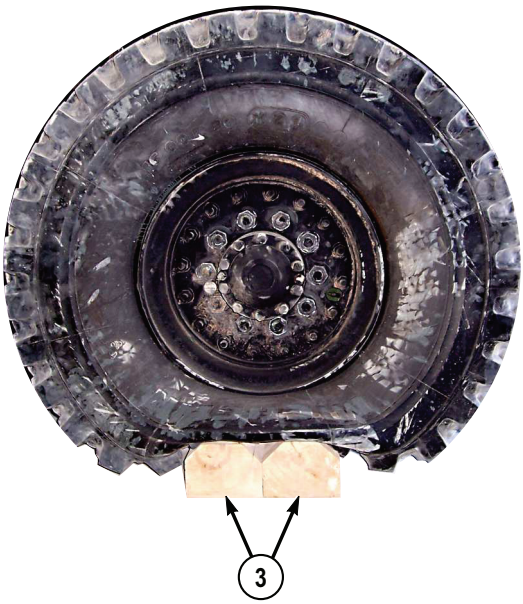


Figure 24.

4. Check to see if 7 ft. (2.1 m) chain (1) can be disconnected from grab hook (2).

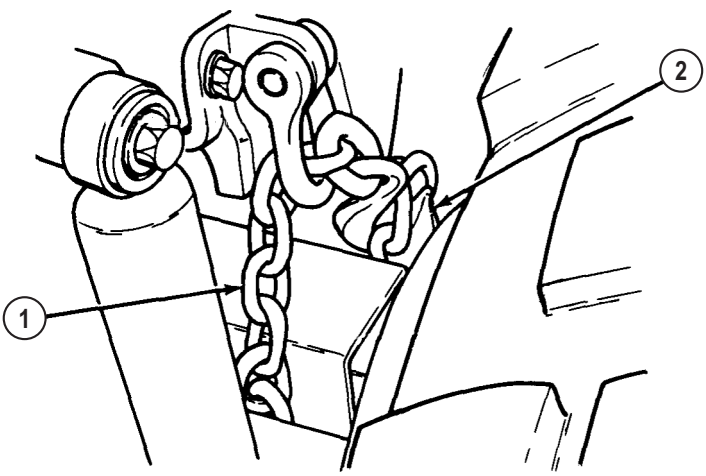


Figure 25.

REMOVE LIMP HOME SETUP FROM NO. 3 AND NO. 4 AXLE TIRES - Continued

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.

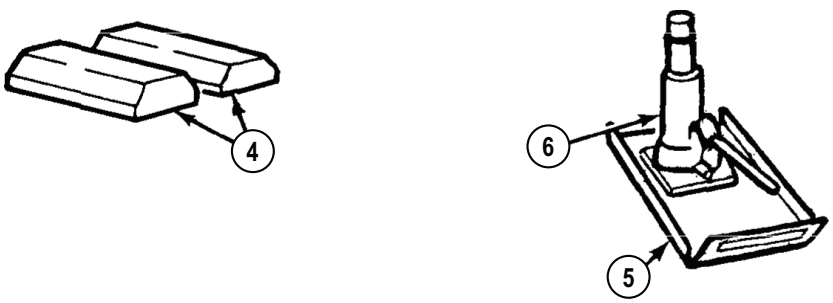


Figure 26.

6. Install two wheel chocks (WP 0097) (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).

REMOVE LIMP HOME SETUP FROM NO. 3 AND NO. 4 AXLE TIRES - Continued

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).

REMOVE LIMP HOME SETUP FROM NO. 3 AND NO. 4 AXLE TIRES - Continued

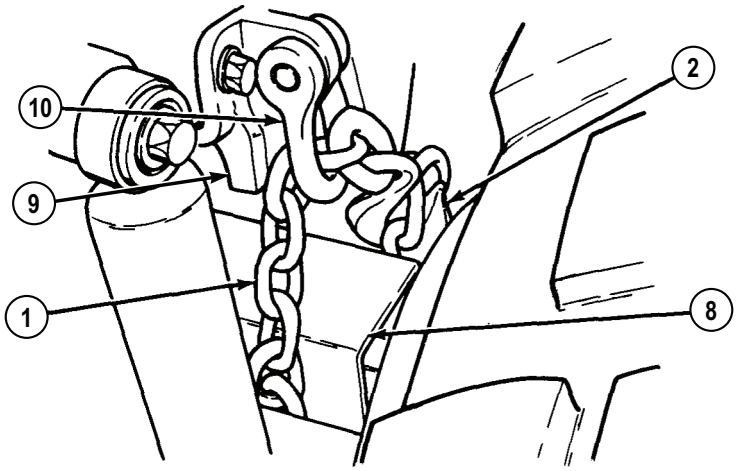


Figure 28.

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).

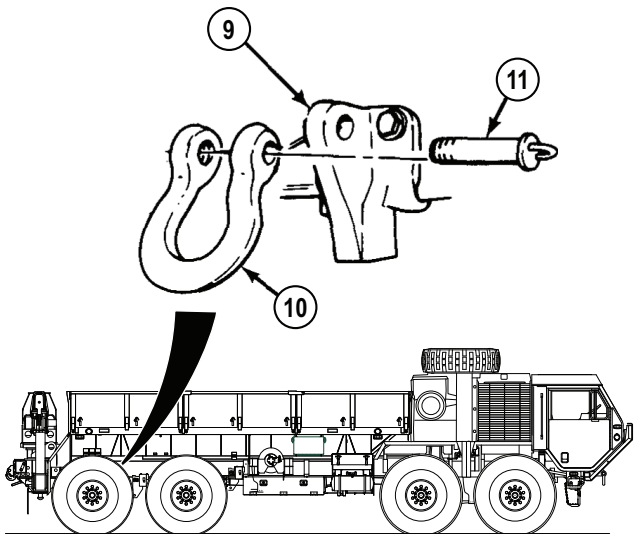


Figure 29.

REMOVE LIMP HOME SETUP FROM NO. 3 AND NO. 4 AXLE TIRES - Continued

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.

REMOVE LIMP HOME SETUP FROM NO. 3 AND NO. 4 AXLE TIRES - Continued

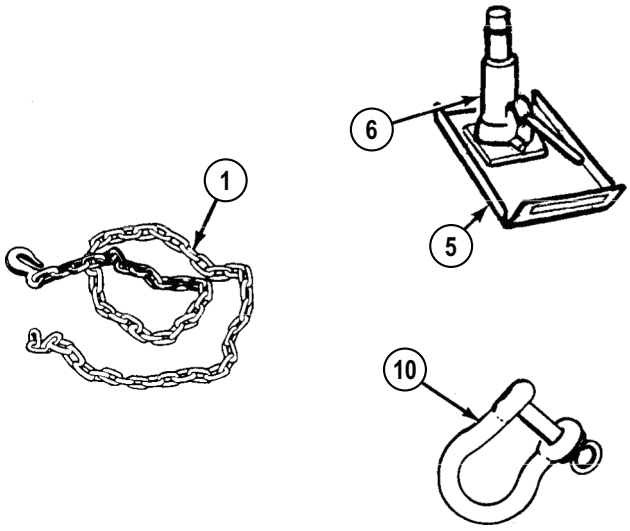


Figure 31.

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.

REMOVE LIMP HOME SETUP FROM NO. 3 AND NO. 4 AXLE TIRES - Continued

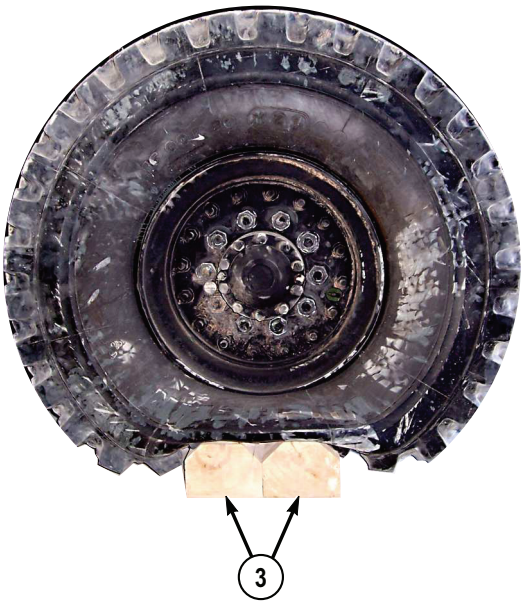


Figure 32.

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.

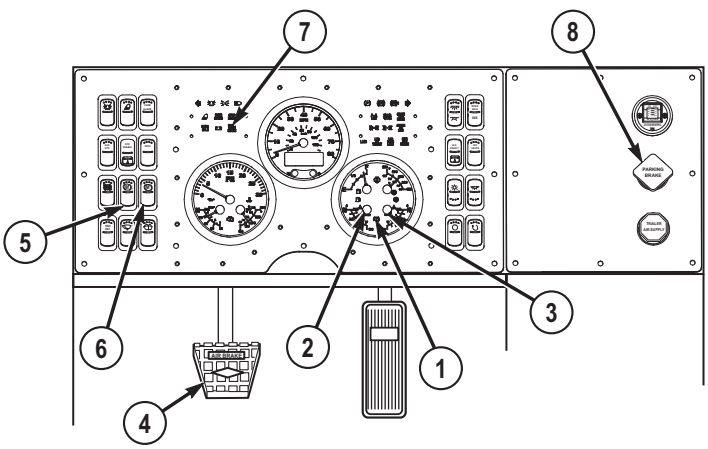


Figure 1.

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.

PERFORM PROCEDURE - Continued

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.

PERFORM PROCEDURE - Continued

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.

INSTALL TIRE CHAINS - Continued

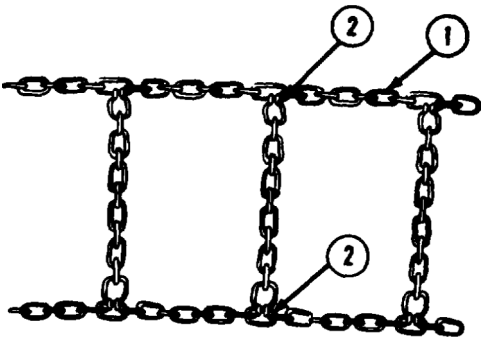


Figure 1.

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.

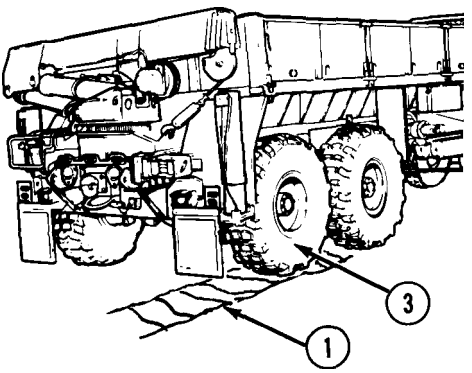


Figure 2.

NOTE

Ensure only tire in contact with tire chains is tire being equipped.

3. Park vehicle. (WP 0056)
4. With aid of an assistant, wrap tire chain (1) around tire (3).

INSTALL TIRE CHAINS - Continued

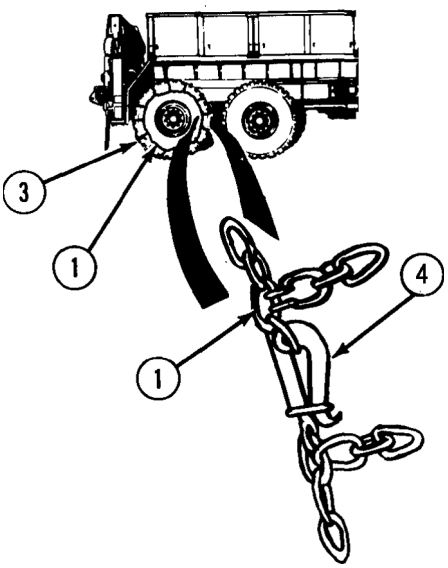


Figure 3.

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 0050) about 15 ft. (4.6 m) and then drive vehicle in reverse (WP 0051) about 15 ft. (4.6 m) as guided by assistant.
8. Park vehicle. (WP 0056)

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).

INSTALL TIRE CHAINS - Continued

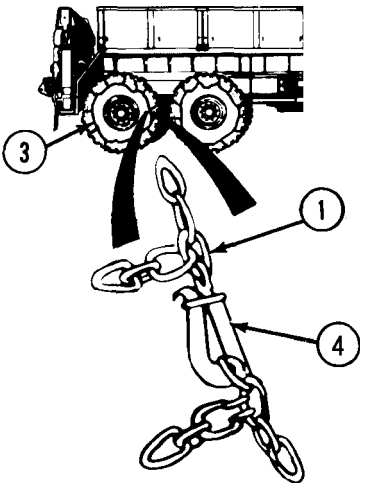


Figure 4.

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.

REMOVE TIRE CHAINS - Continued

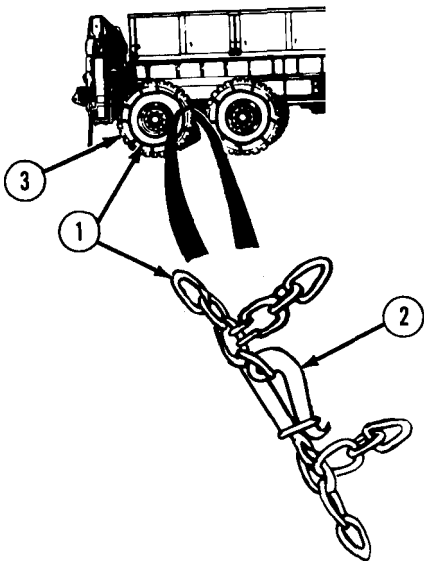


Figure 5.

2. Park vehicle. (WP 0056)
3. With aid of an assistant, disconnect inside and outside clamps (2) of tire chain (1).

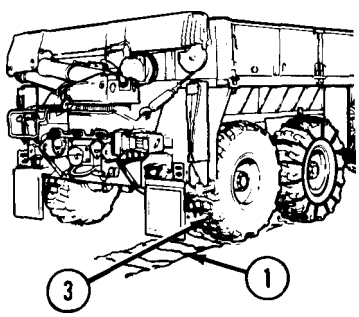


Figure 6.

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 0050) off tire chain (1) while assistant guides vehicle.
6. With aid of an assistant, repeat Steps (2) through (5) for opposite side tire.

REMOVE TIRE CHAINS - Continued

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.

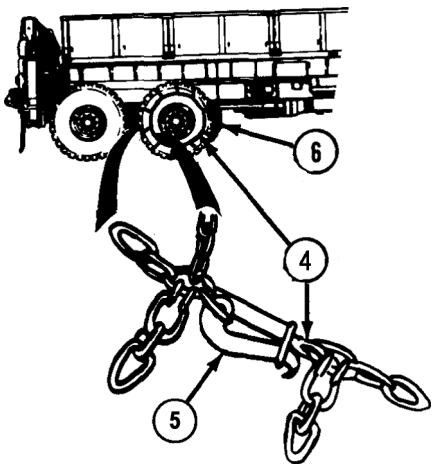


Figure 7.

8. Park vehicle. (WP 0056)
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.

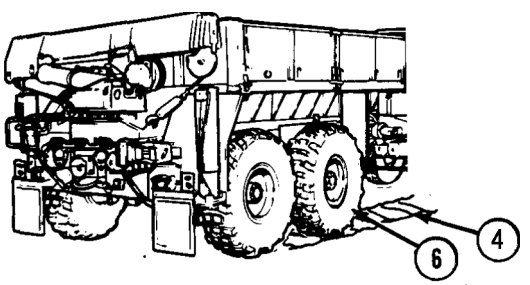


Figure 8.

11. Drive vehicle forward (WP 0050) off tire chain (4) while assistant guides vehicle.

REMOVE TIRE CHAINS - Continued

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 (Volume 2, WP 0186) 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.

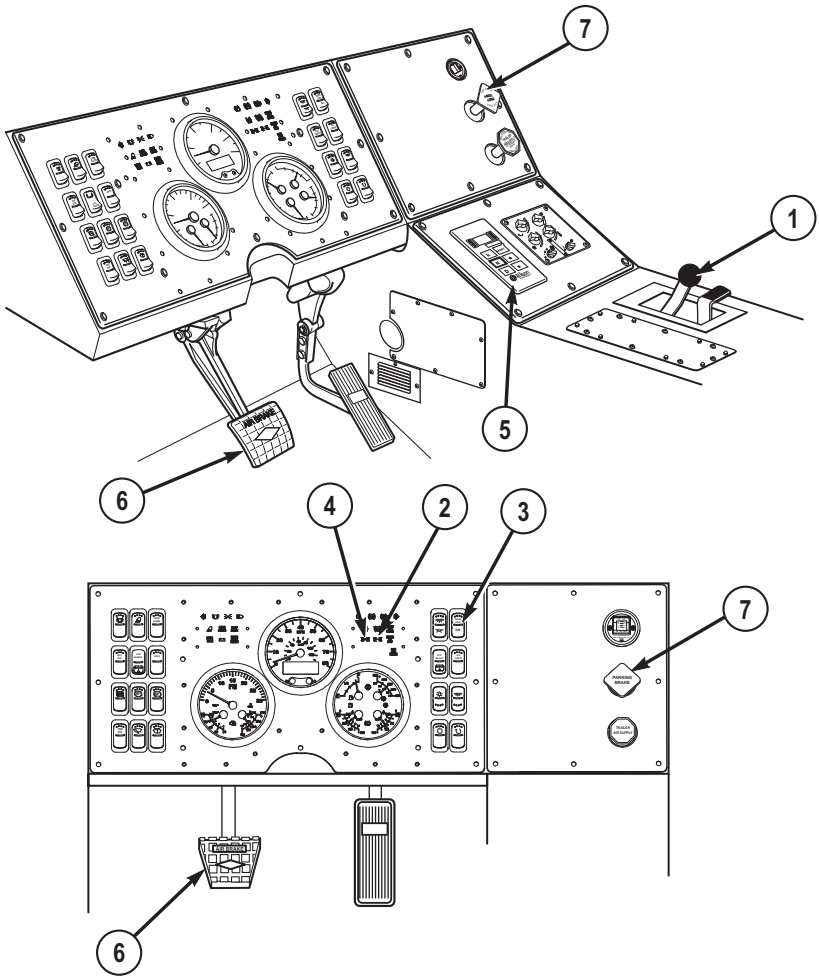


Figure 1.

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 0045) (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 (Volume 2, WP 0200) 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. (Volume 2, WP 0200)

   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

INTRODUCTION AND PROCEDURES - Continued

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 (Volume 2, WP 0200) and FM 3-11.4. (Volume 2, WP 0200)

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 0040) 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).

LOWER TIRE CARRIER - Continued

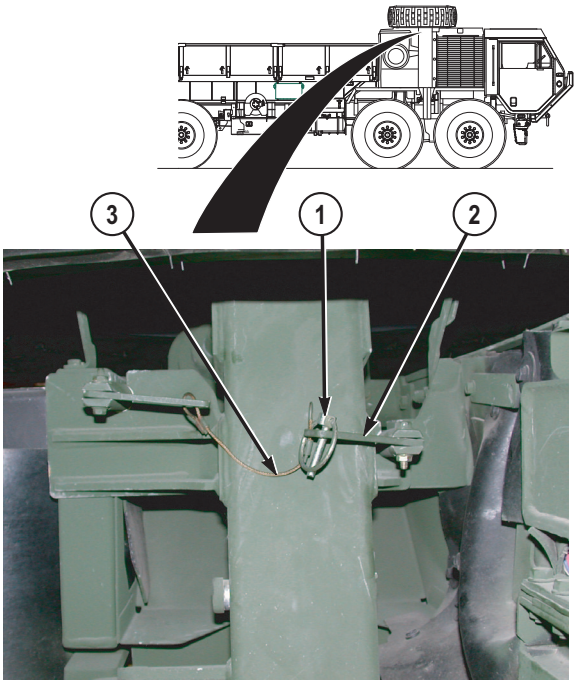


Figure 1.

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).

LOWER TIRE CARRIER - Continued

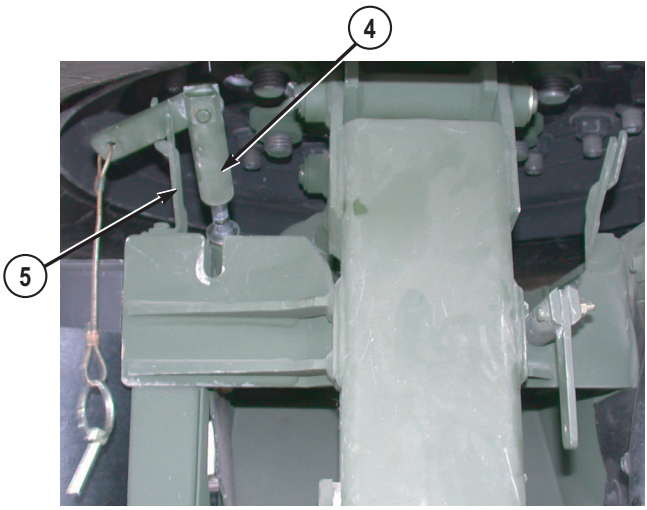


Figure 2.

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).

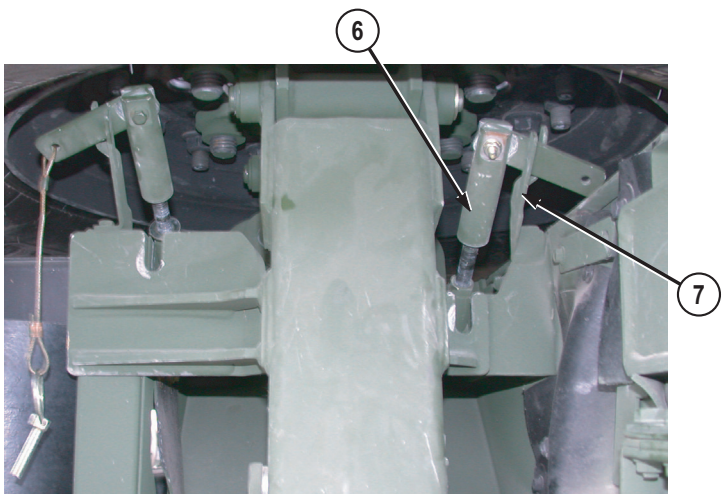


Figure 3.

LOWER TIRE CARRIER - Continued

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.

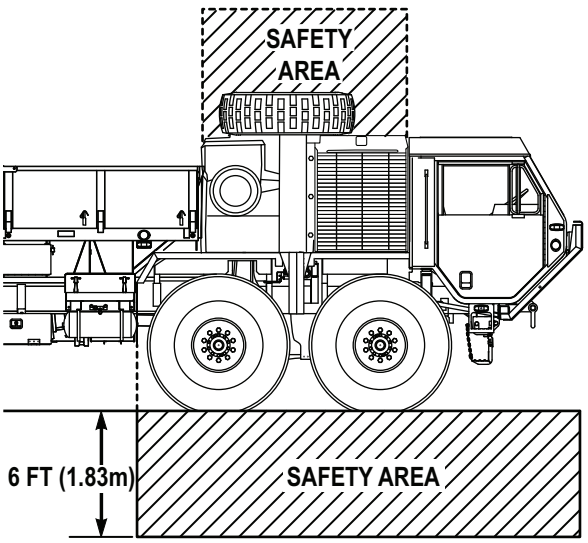


Figure 4.

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

LOWER TIRE CARRIER - Continued

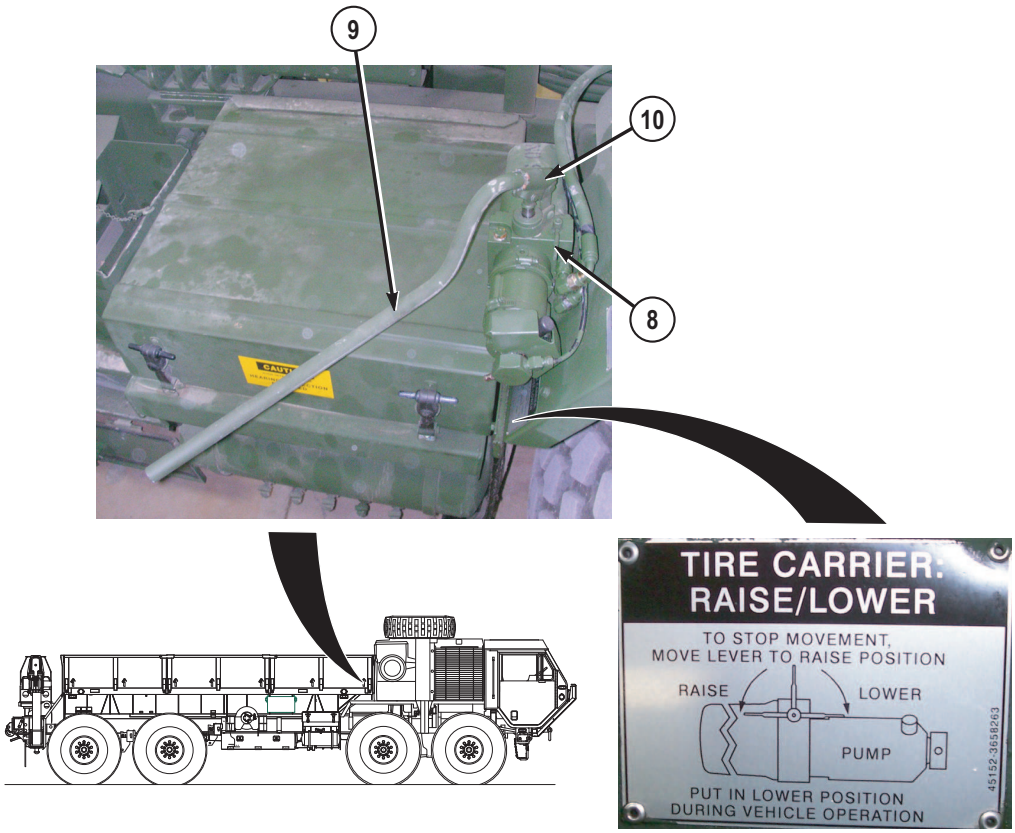


Figure 5.

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.

LOWER TIRE CARRIER - Continued

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. .

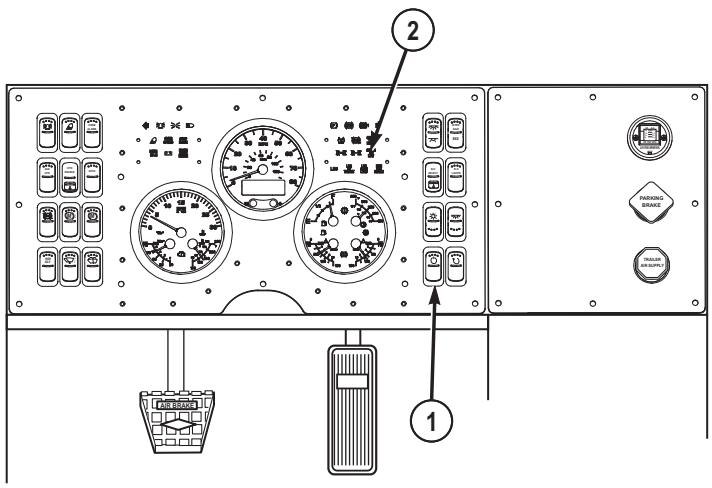


Figure 6.

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

RAISE TIRE CARRIER - Continued

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).

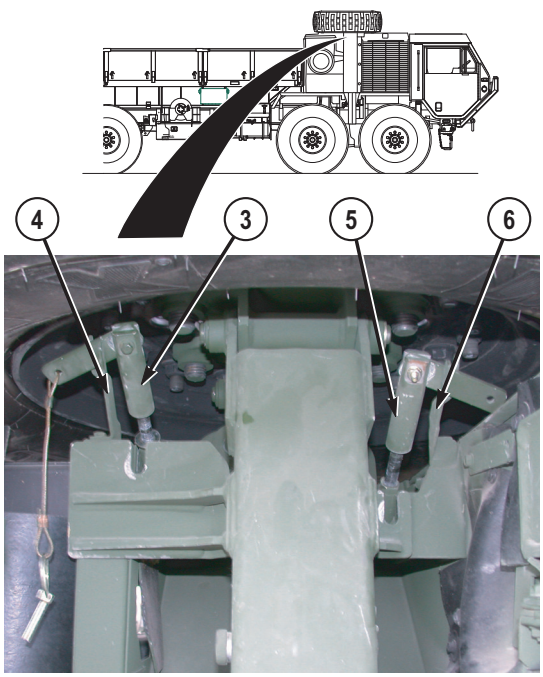


Figure 7.

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

RAISE TIRE CARRIER - Continued

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.

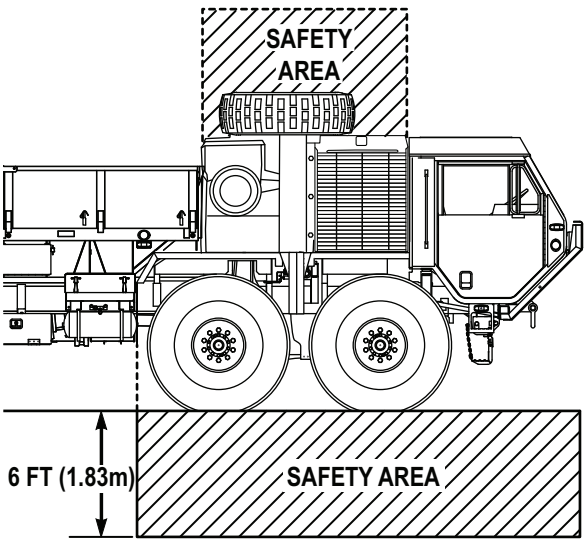


Figure 8.

7. Set directional control lever (7) to RAISE position.

RAISE TIRE CARRIER - Continued

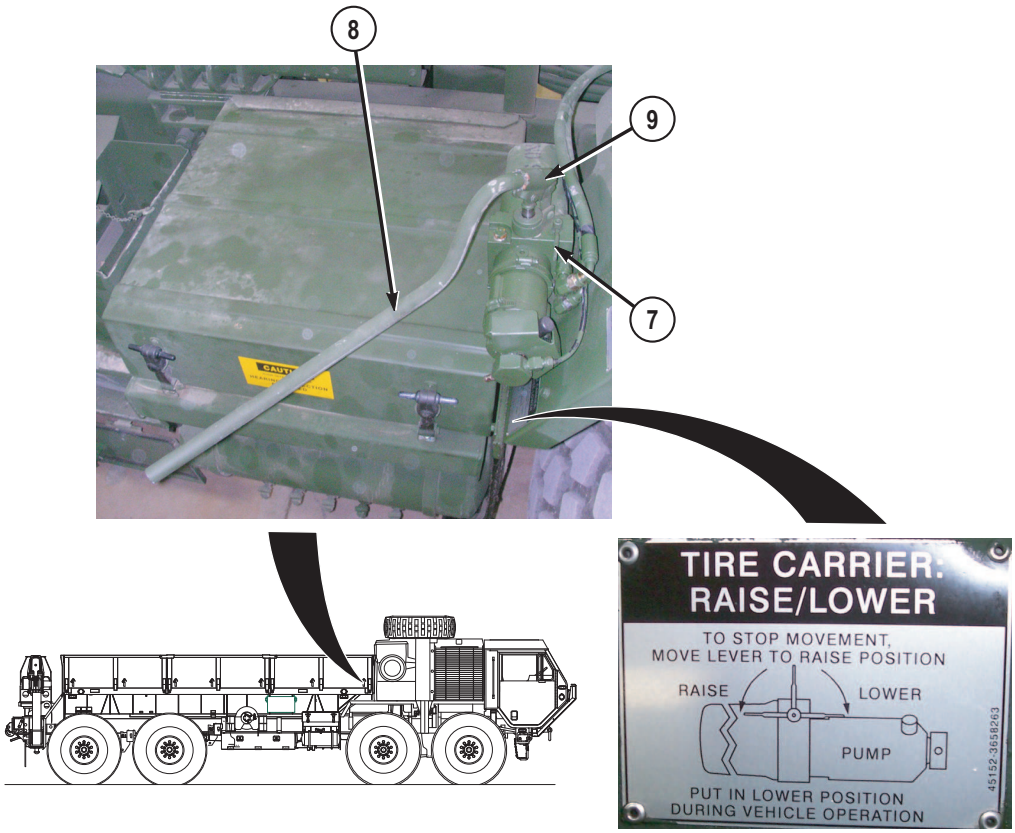


Figure 9.

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.

RAISE TIRE CARRIER - Continued

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).

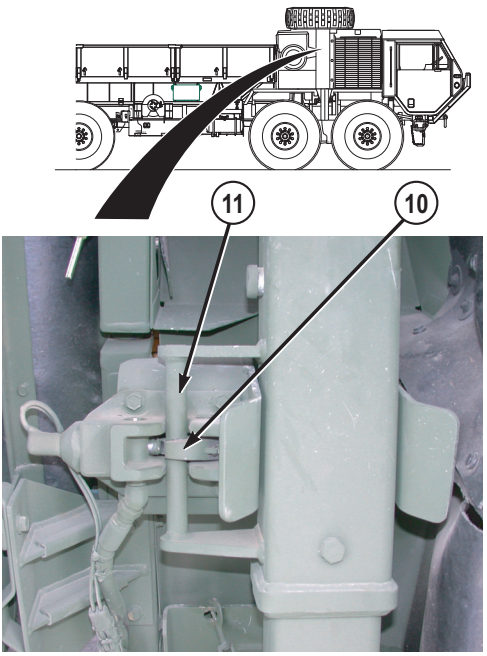


Figure 10.

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.

RAISE TIRE CARRIER - Continued

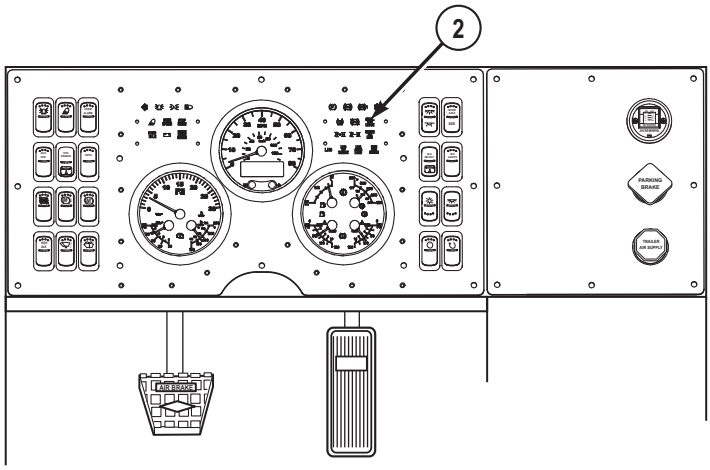


Figure 11.

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.

RAISE TIRE CARRIER - Continued

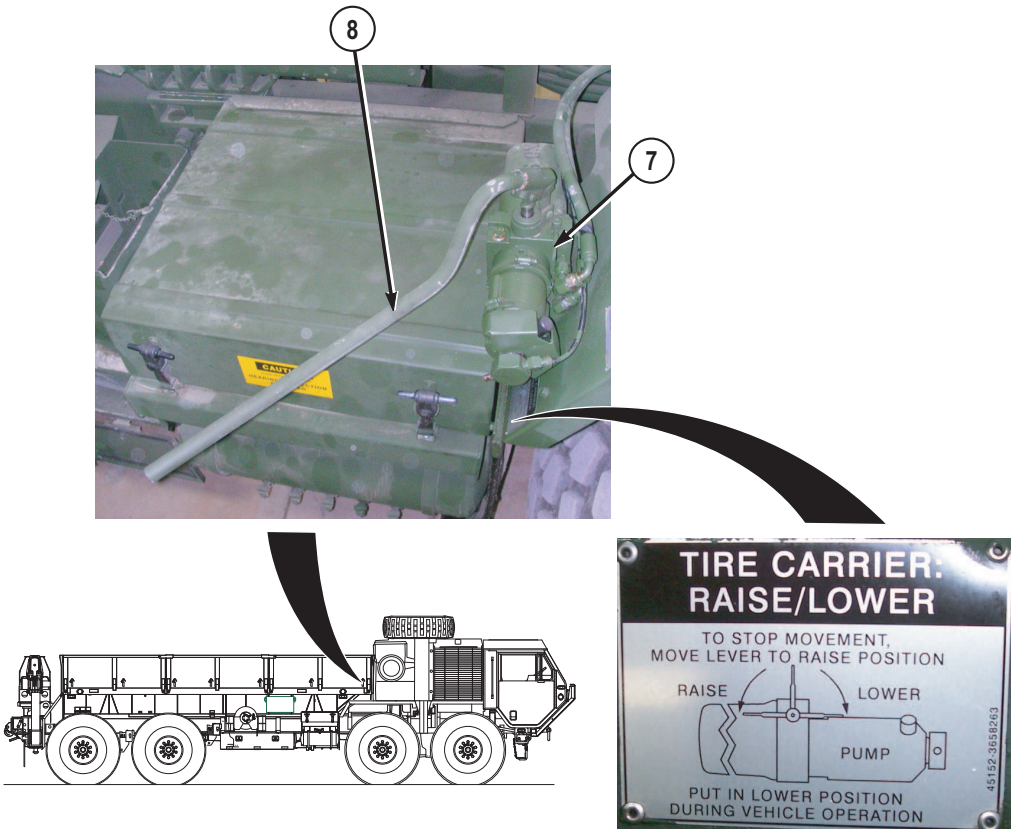


Figure 12.

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).

RAISE TIRE CARRIER - Continued

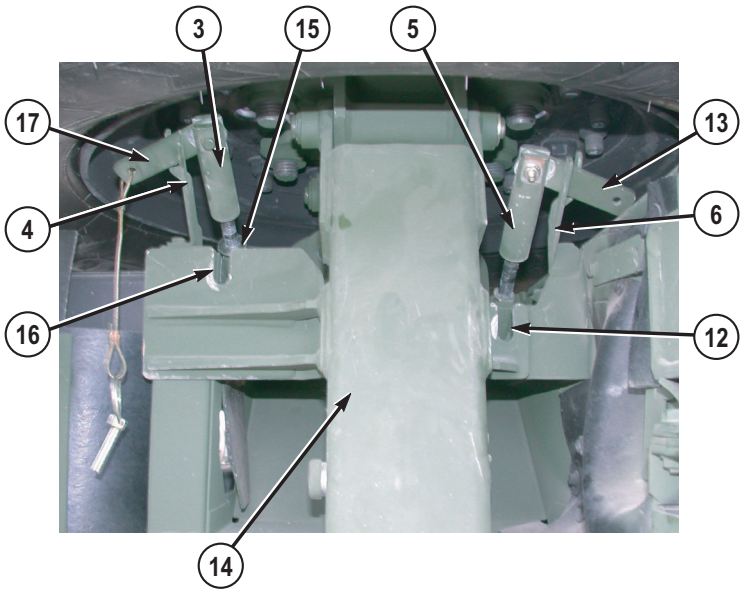


Figure 13.

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).

RAISE TIRE CARRIER - Continued

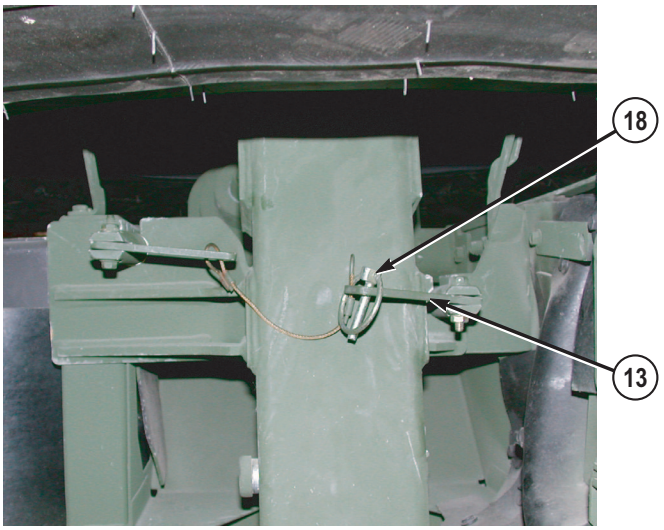


Figure 14.

NOTE

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

18. Set directional control lever (7) to LOWER position.

RAISE TIRE CARRIER - Continued

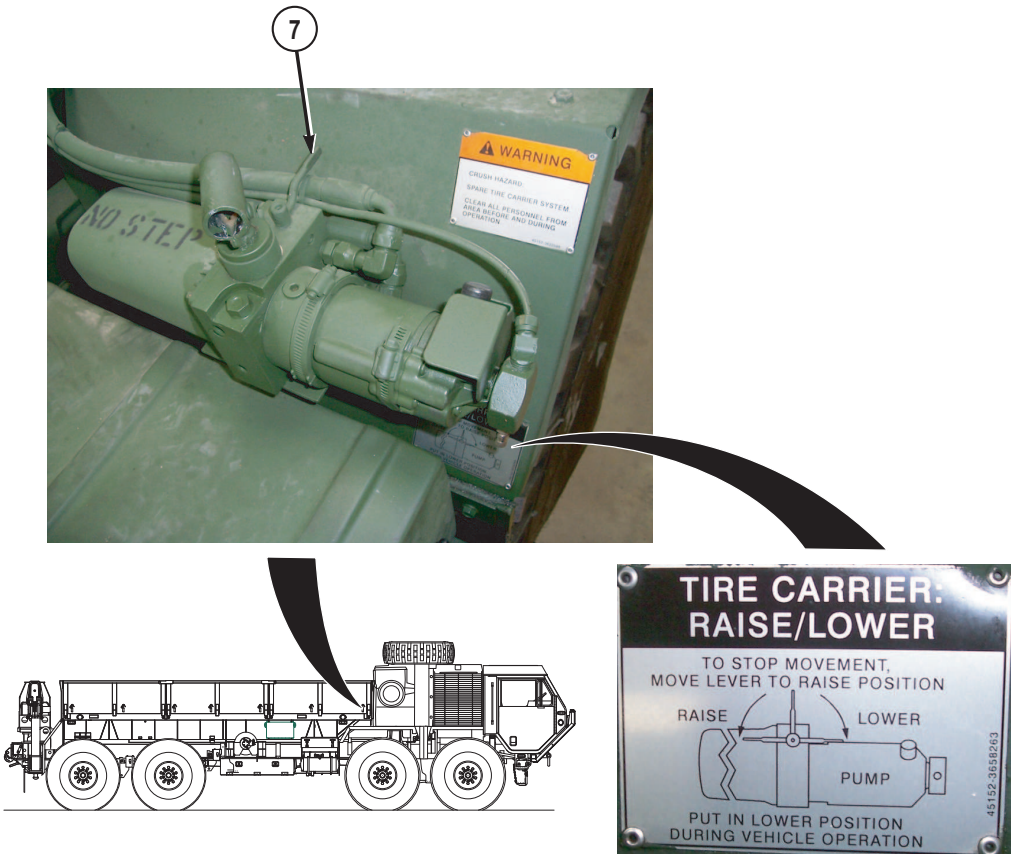


Figure 15.

19. Shut off engine (WP 0057) or set ignition switch (1) to off position (as applicable).

RAISE TIRE CARRIER - Continued

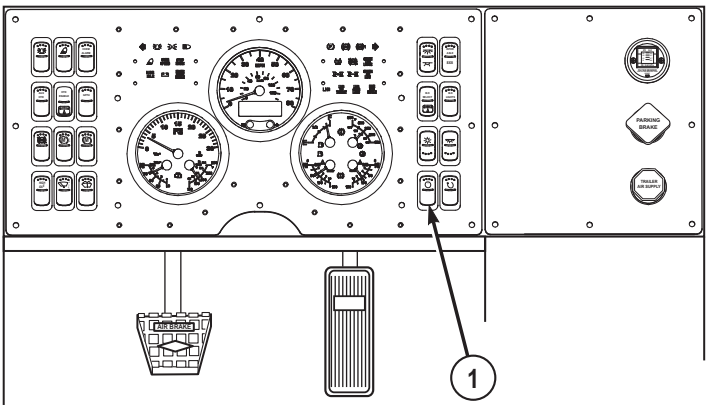


Figure 16.

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 0040) 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).

LOWER TIRE CARRIER - Continued

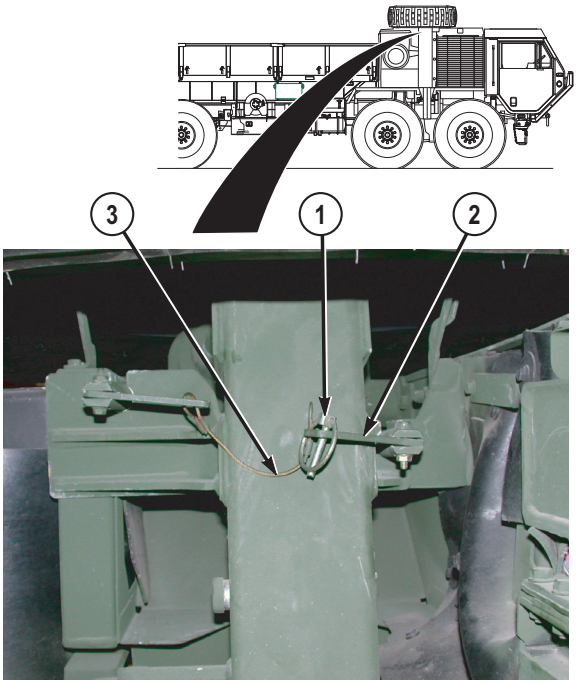


Figure 1.

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).

LOWER TIRE CARRIER - Continued

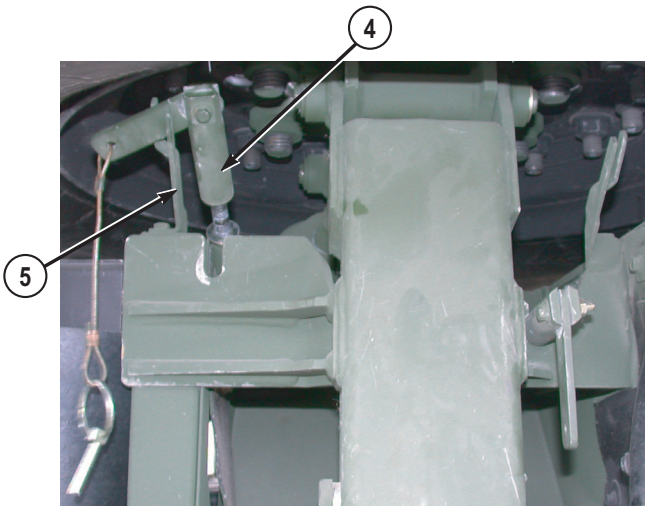


Figure 2.

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).

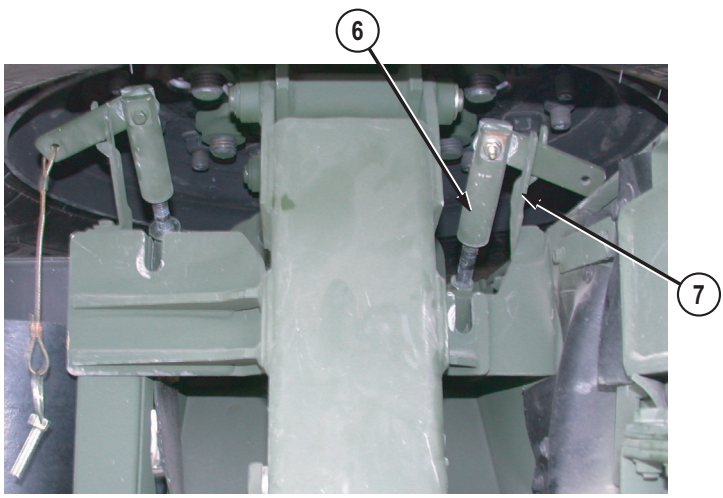


Figure 3.

LOWER TIRE CARRIER - Continued

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.

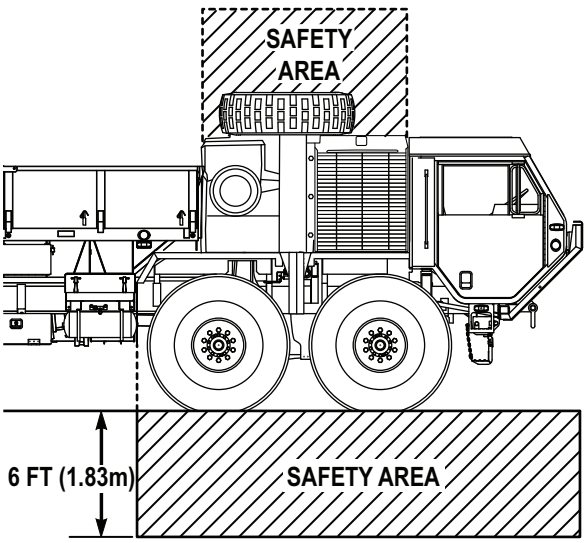


Figure 4.

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

LOWER TIRE CARRIER - Continued

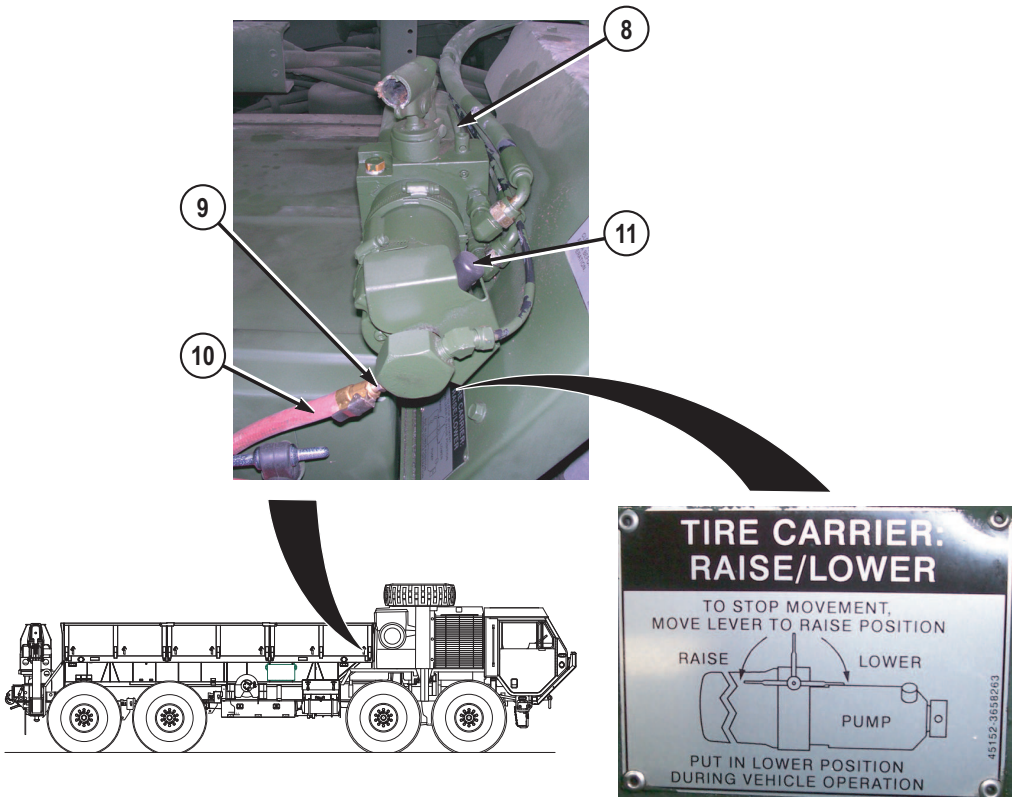


Figure 5.

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.

LOWER TIRE CARRIER - Continued

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.

RAISE TIRE CARRIER - Continued

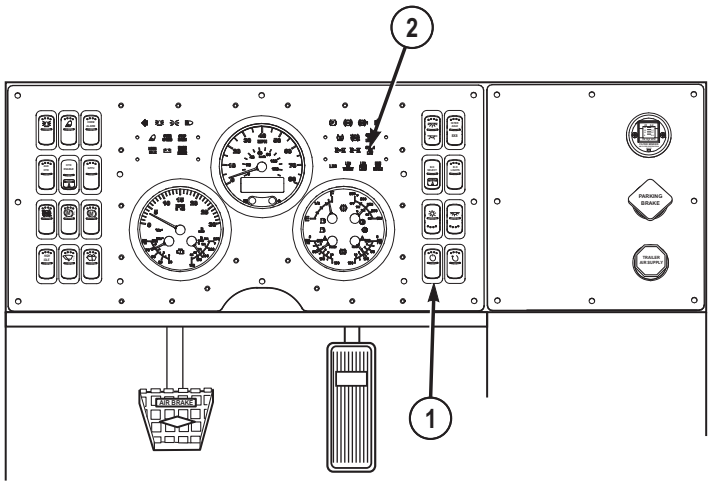


Figure 6.

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).

RAISE TIRE CARRIER - Continued

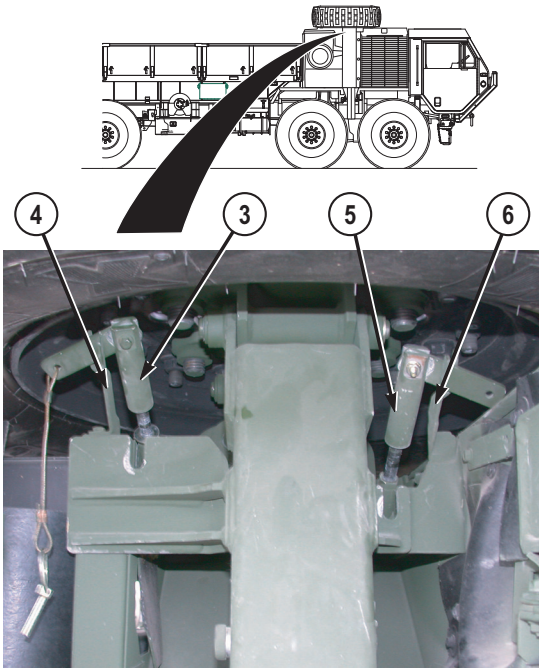


Figure 7.

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.

RAISE TIRE CARRIER - Continued

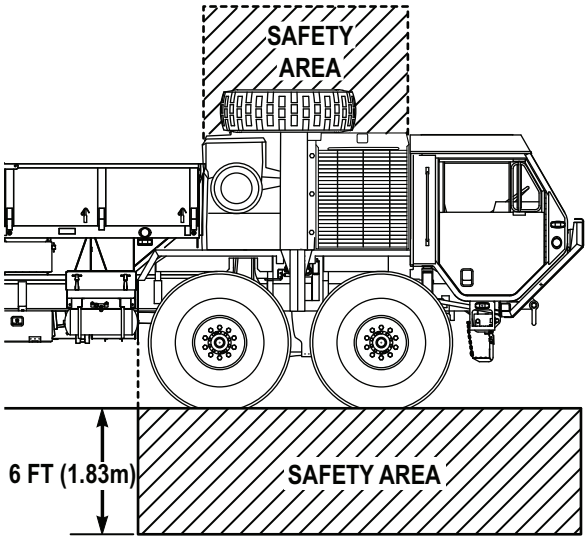


Figure 8.

7. Set directional control lever (7) to RAISE position.

RAISE TIRE CARRIER - Continued

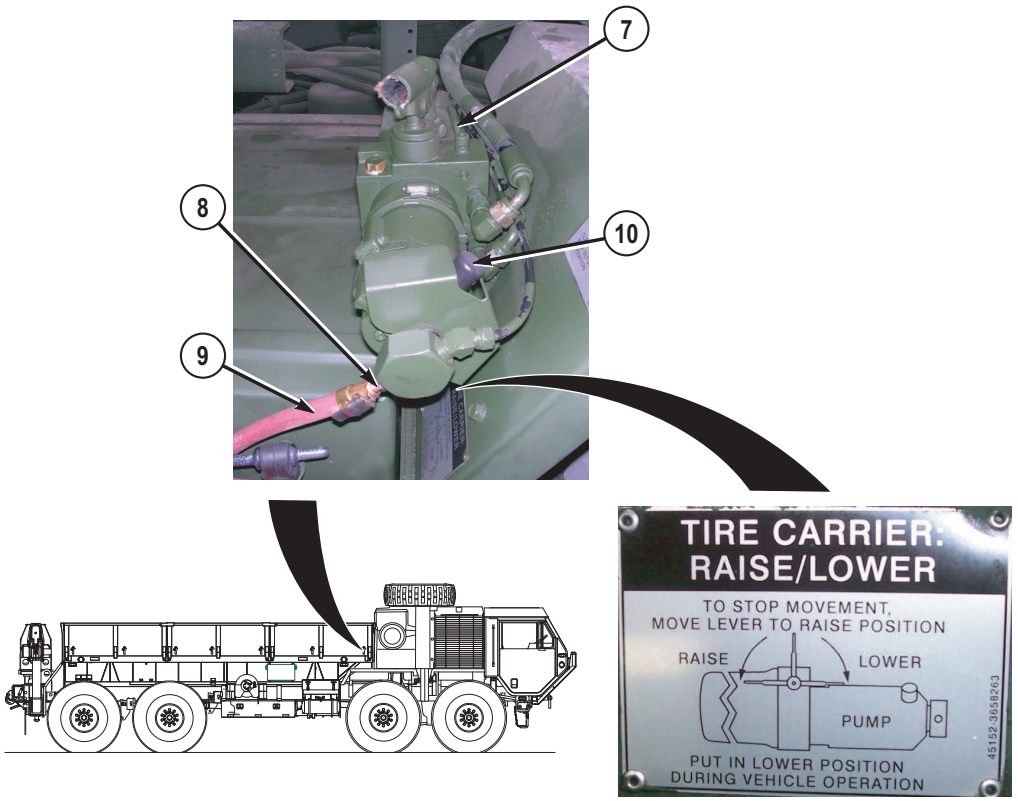


Figure 9.

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).

RAISE TIRE CARRIER - Continued

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).

RAISE TIRE CARRIER - Continued

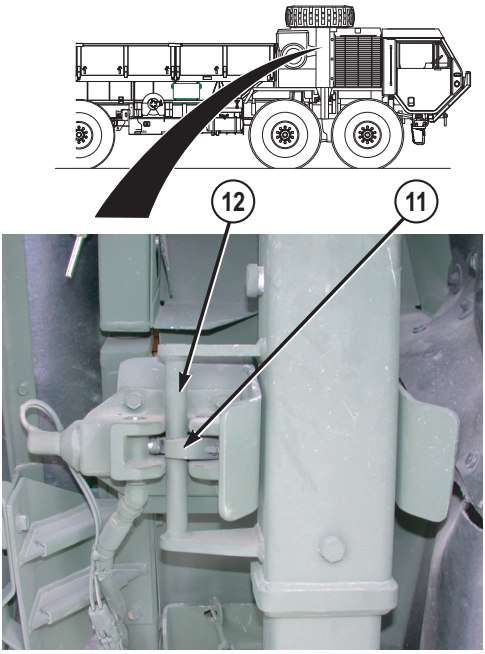


Figure 10.

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.

RAISE TIRE CARRIER - Continued

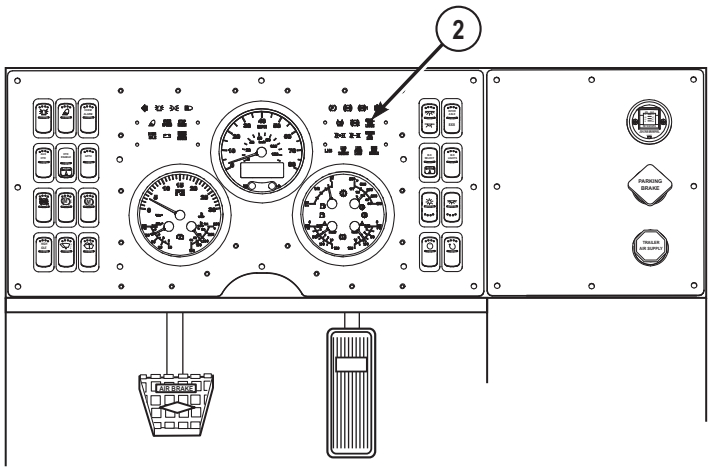


Figure 11.

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.

RAISE TIRE CARRIER - Continued

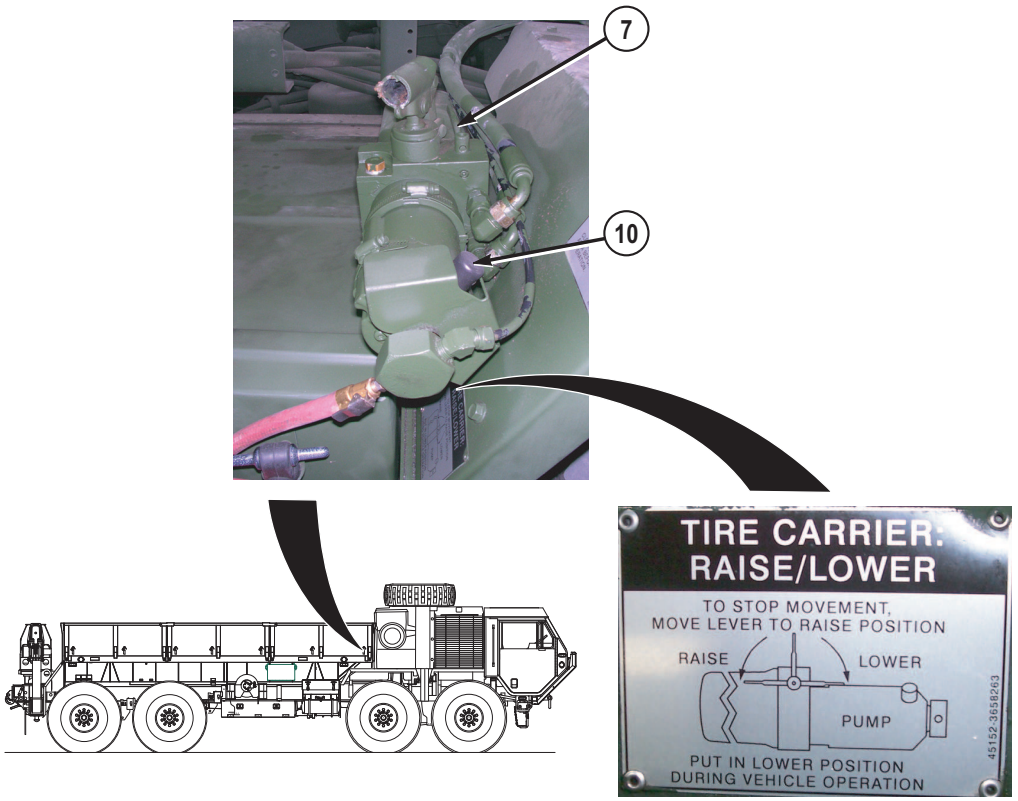


Figure 12.

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).

RAISE TIRE CARRIER - Continued

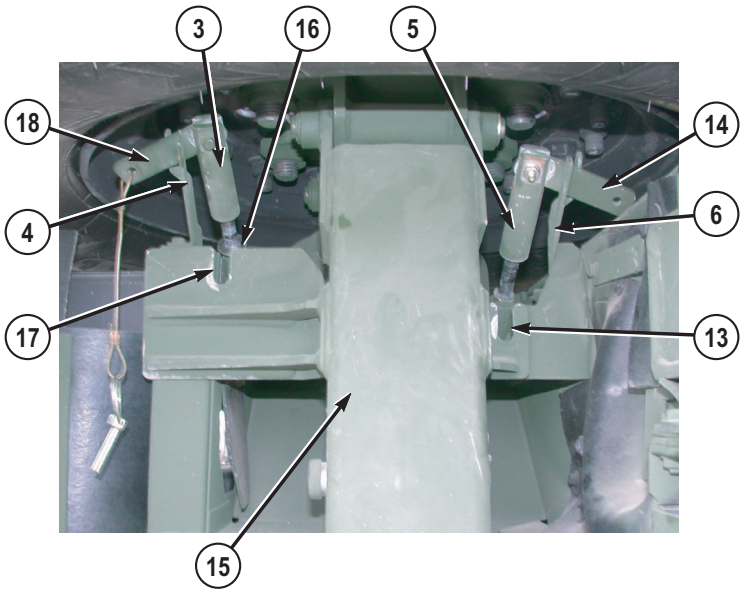


Figure 13.

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).

RAISE TIRE CARRIER - Continued

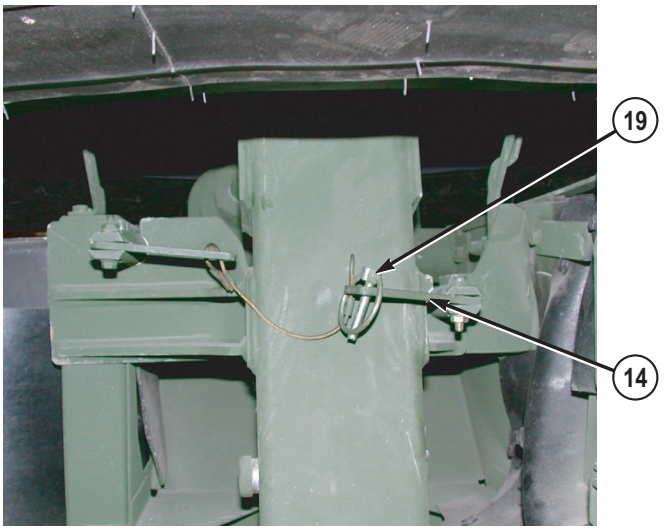


Figure 14.

NOTE

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

20. Set directional control lever (7) to LOWER position.

RAISE TIRE CARRIER - Continued

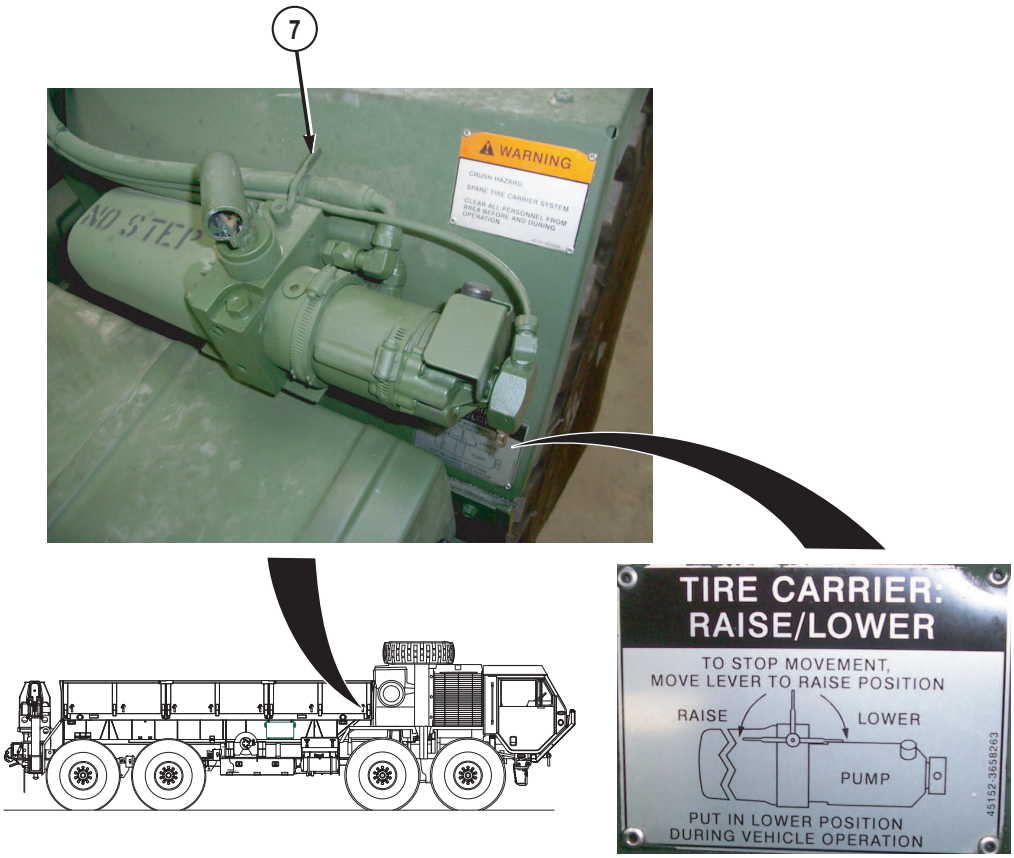


Figure 15.

21. Shut off engine (WP 0057) or set ignition switch (1) to off position (as applicable).

RAISE TIRE CARRIER - Continued

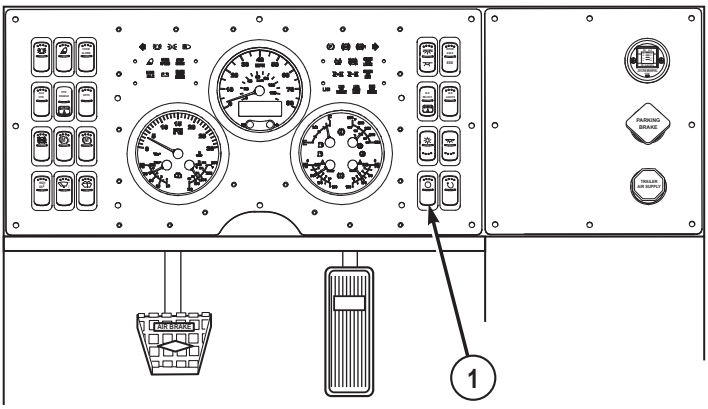


Figure 16.

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. (Volume 2, WP 0200)
- Vehicle self-recovery is a two soldier task. Soldiers must communicate by hand signals.

1. Shut off engine. (WP 0057)
2. Adjust mirror (1) so assistant can be clearly seen during procedure.

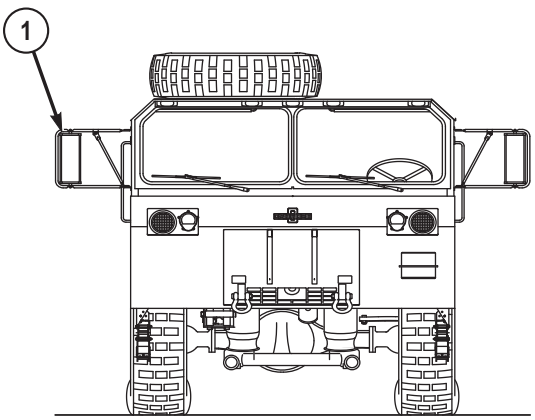


Figure 1.

3. Start engine. (WP 0044)
4. Set HYD ENABLE switch (2) to on position. MAIN HYD ENABLE indicator (3) will illuminate.

WINCH MIRED VEHICLE FORWARD - Continued

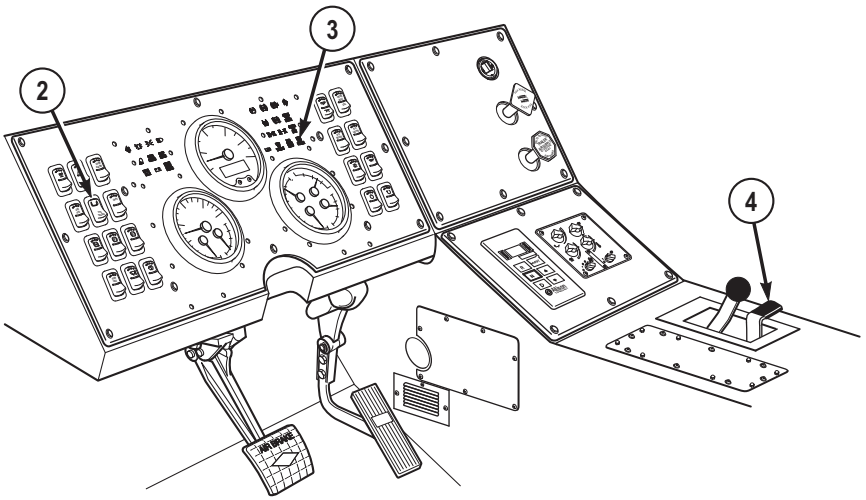


Figure 2.

5. Move winch shift lever (4) to OUT position to pay out small amount of cable.
6. Release winch shift lever (4) to center position.
7. Set HYD ENABLE switch (2) to off position. MAIN HYD ENABLE indicator (3) will go out.
8. Remove cotter pin (5) from pin (6).

WINCH MIRED VEHICLE FORWARD - Continued

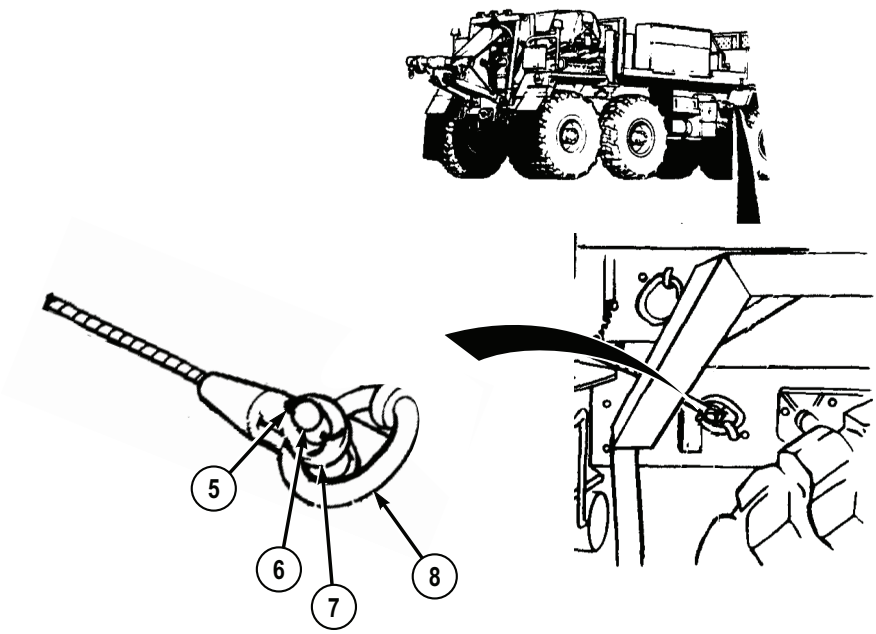


Figure 3.

9. Remove pin (6) from clevis (7) and disconnect clevis (7) from tiedown ring (8).
10. Set HYD ENABLE switch (2) to on position. MAIN HYD ENABLE indicator (3) will illuminate.

WINCH MIRED VEHICLE FORWARD - Continued

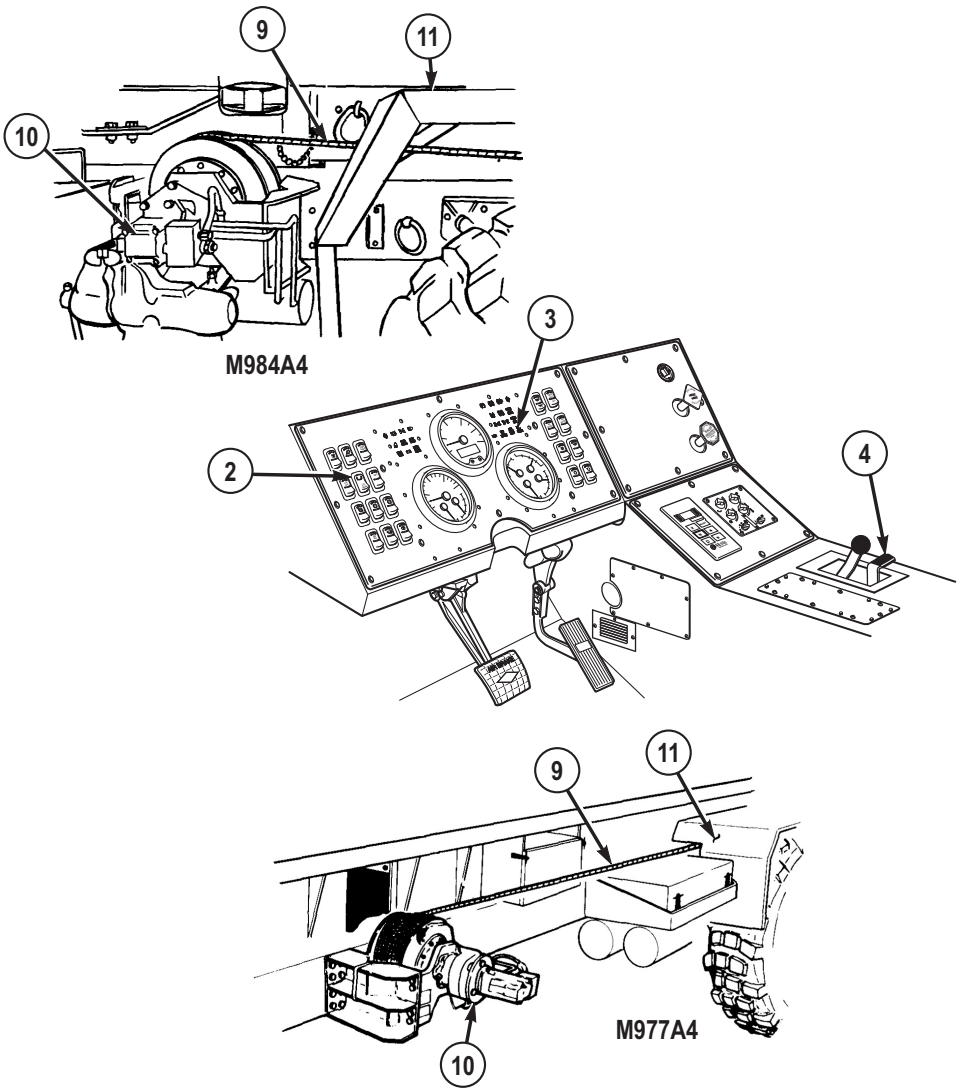


Figure 4.

11. 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.

WINCH MIRED VEHICLE FORWARD - Continued

- When pulling cable through tensioning device, push sheave towards frame rail to allow clevis to pass through.

12. 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).

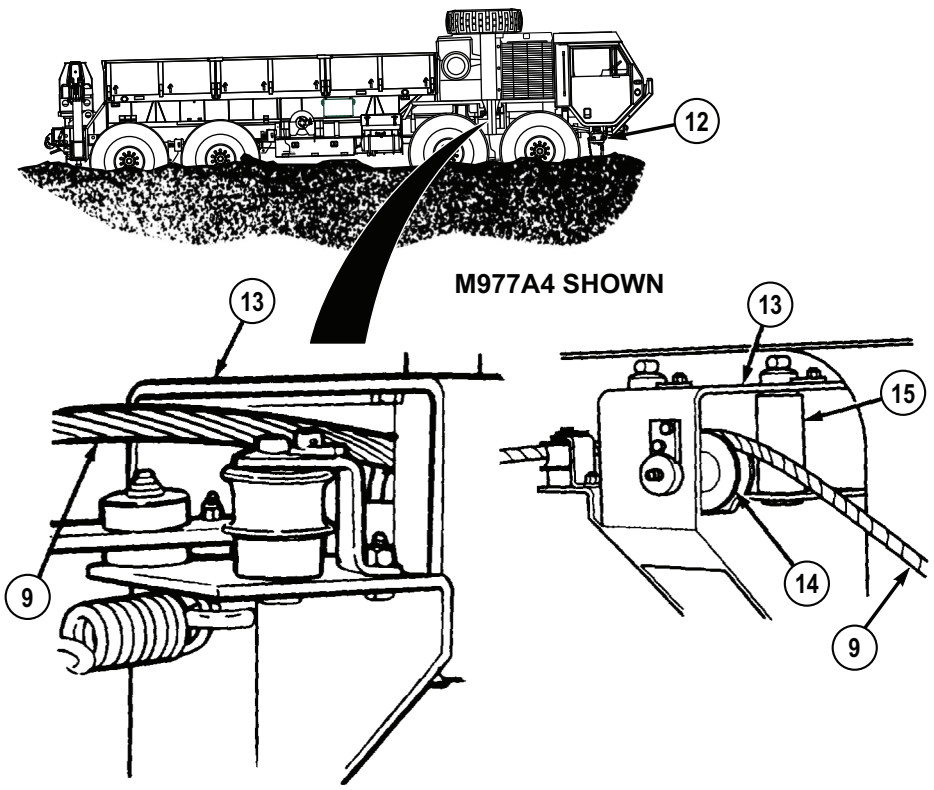


Figure 5.

13. Stop paying out cable (9).
14. Assistant routes cable (9) through cable guide (13), over sheave (14), between roller (15), and side of cable guide (13).
15. Pay out winch cable (10) as assistant routes cable over first axle and 1 ft. (30 cm) past front roller guide assembly (12).

WINCH MIRED VEHICLE FORWARD - Continued

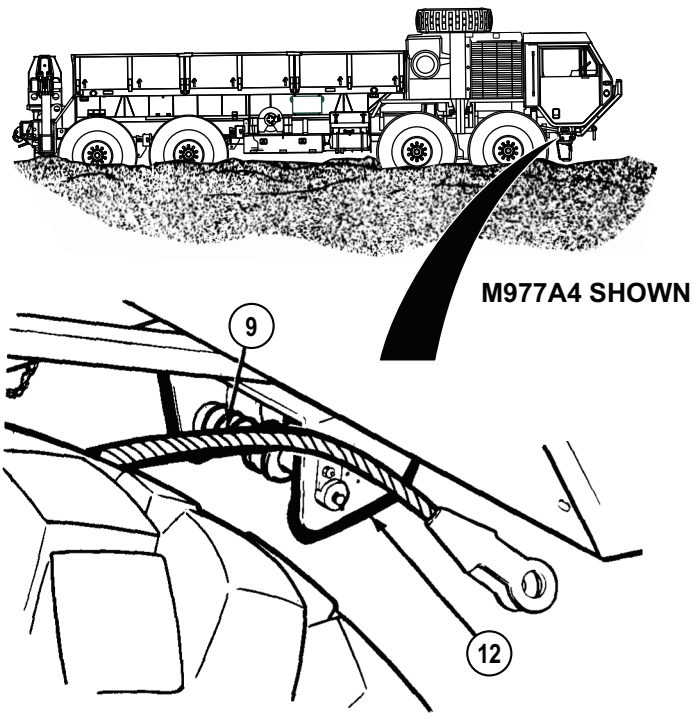


Figure 6.

16. Release winch shift lever (4) to center position.

WINCH MIRED VEHICLE FORWARD - Continued

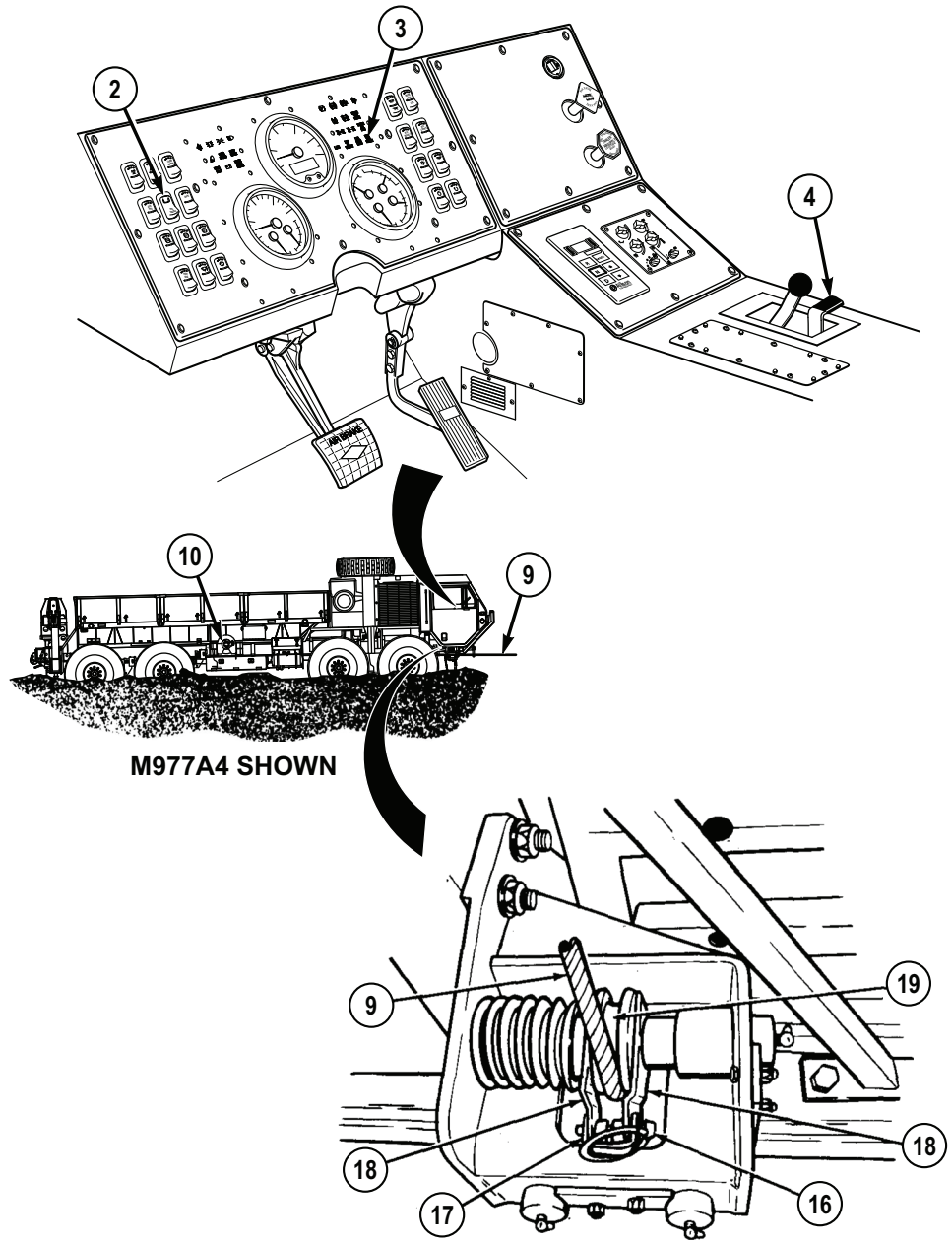


Figure 7.

WINCH MIRED VEHICLE FORWARD - Continued

17. Set HYD ENABLE switch (2) to off position. MAIN HYD ENABLE indicator (3) will go out.
18. 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).
19. Move cable guide brackets (18) together and install guide bracket (17) and quick release pin (16).
20. Set HYD ENABLE switch (2) to on position. MAIN HYD ENABLE indicator (3) will illuminate.
21. Move winch shift lever (4) to OUT and pay out winch cable (9) while assistant pulls cable to tree, another heavy vehicle (WP 0117), or another heavy object refer to FM 4-30.31. (Volume 2, WP 0200)
22. When winch cable (9) is let out to heavy object, release winch shift lever (4) to center position.
23. Set HYD ENABLE switch (2) to off position. MAIN HYD ENABLE indicator (3) will go out.
24. If snatch block must be used for self-recovery operation, attach self-recovery winch cable (9) to snatch block (WP 0116) and connect end of self-recovery winch cable to mired vehicle left front towing eye. (WP 0117) Attach snatch block to tree, another vehicle, or heavy object refer to FM 4-30.31. (Volume 2, WP 0200)

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.

25. 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.

26. 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 (Volume 2, WP 0200) 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.

WINCH MIRED VEHICLE FORWARD - Continued

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 (Volume 2, WP 0200) or Connect/Disconnect Self-Recovery Winch Cable to Another Vehicle (WP 0117) for connecting procedures.

27. If it is determined using self-recovery winch (10) will not go over winch pull capacity, connect winch cable (9) to heavy object.
28. Ensure winch shift lever (4) is at center position.
29. 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.

30. Pull back and hold tension pulley lever (20).

WINCH MIRED VEHICLE FORWARD - Continued

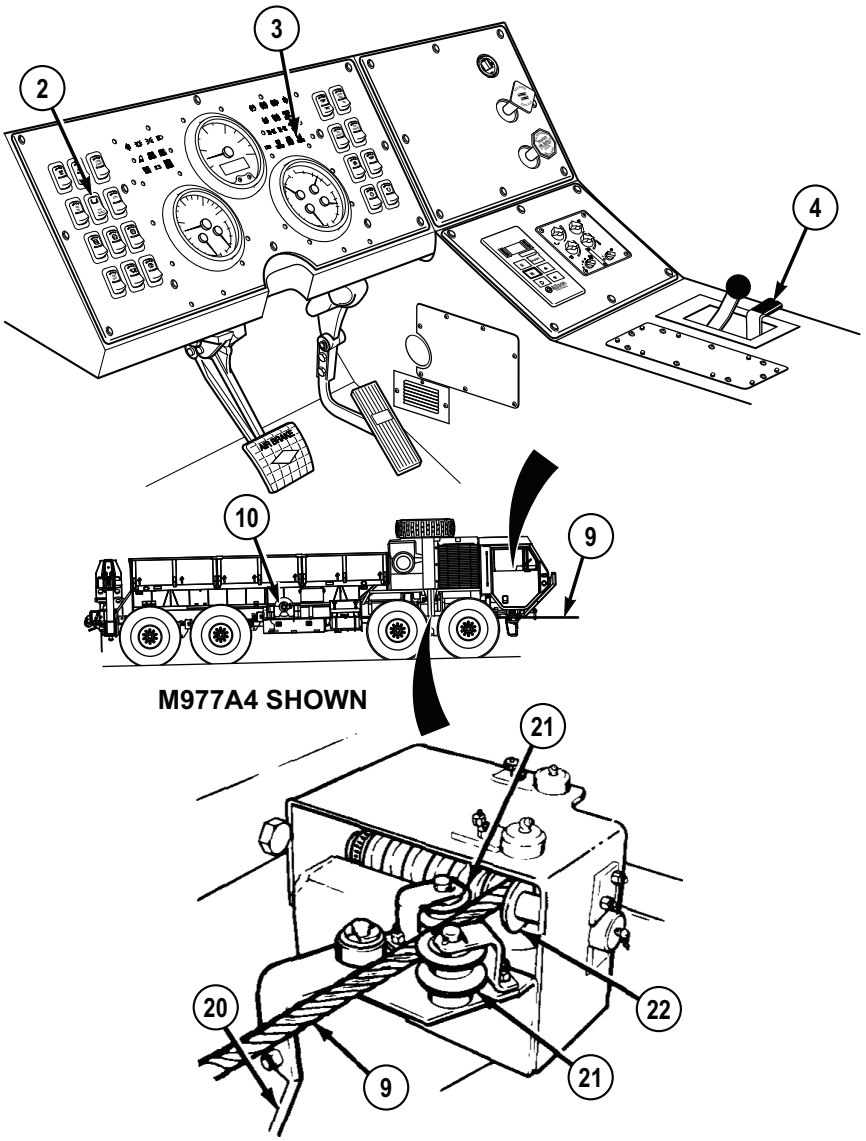


Figure 8.

31. Put winch cable (9) between tensioning device pulleys (21).
32. Release tension pulley lever (20).

WINCH MIRED VEHICLE FORWARD - Continued

33. Check that winch cable (9) rests inside grooves of both tensioning device pulleys (21) and sheave (22).
34. 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.

35. Ensure all personnel are clear of self-recovery winch (10) and winch cable (9).
36. Set HYD ENABLE switch (2) to on position. MAIN HYD ENABLE indicator (3) will illuminate.
37. Move winch shift lever (4) to IN until slack is out of cable.
38. Release winch shift lever (4) to center position.

WARNING

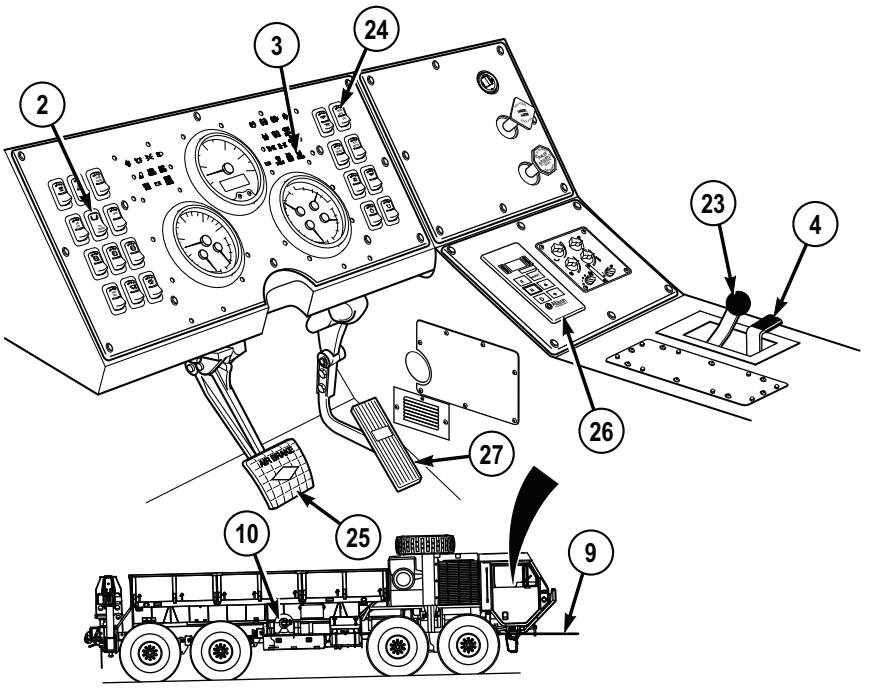
Keep all personnel clear of area near winch cable when tension is on cable. Failure to comply may result in injury or death to personnel.

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.

39. Ensure TRANSFER CASE shift lever (23) is set to LO.

WINCH MIRED VEHICLE FORWARD - Continued



M977A4 SHOWN

Figure 9.

40. Ensure traction control switch (24) is set to INTER AXLE.
41. Apply service brake pedal (25).
42. Set transmission range selector (26) to 1 (1st gear range).
43. Release service brake pedal (25).
44. 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.

45. Adjust position of throttle pedal (27) to change engine speed as needed to keep winch cable (9) tight and vehicle moving.
46. When mired vehicle is on solid ground, release winch shift lever (4) to center position.
47. Park vehicle. (WP 0056)

WINCH MIRED VEHICLE FORWARD - Continued

48. Set winch shift lever (4) to OUT and pay out winch cable (9) until all tension is off cable.
49. When all tension is off winch cable (9), release winch shift lever (4) to center position.
50. 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 0117) for disconnecting procedures.

51. Disconnect winch cable (9) from heavy object.
52. 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. (Volume 2, WP 0200)
53. Set HYD ENABLE switch (2) to on position. MAIN HYD ENABLE indicator (3) will illuminate.
54. 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.

55. 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).
56. When end of cable (9) is near front of vehicle, release winch shift lever (4) to center position.
57. Set HYD ENABLE switch (2) to off position. MAIN HYD ENABLE indicator (3) will go out.
58. 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).

WINCH MIRED VEHICLE FORWARD - Continued

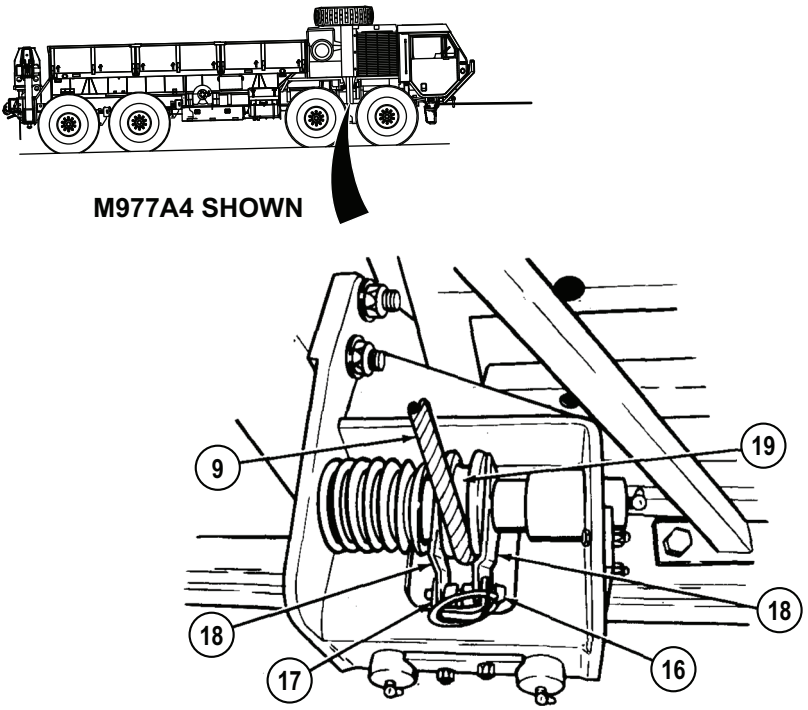


Figure 10.

59. Move cable guide bracket (18) together. Install guide bracket (17) and quick release pin (16).

60. Pull back and hold tension pulley lever (20).

WINCH MIRED VEHICLE FORWARD - Continued

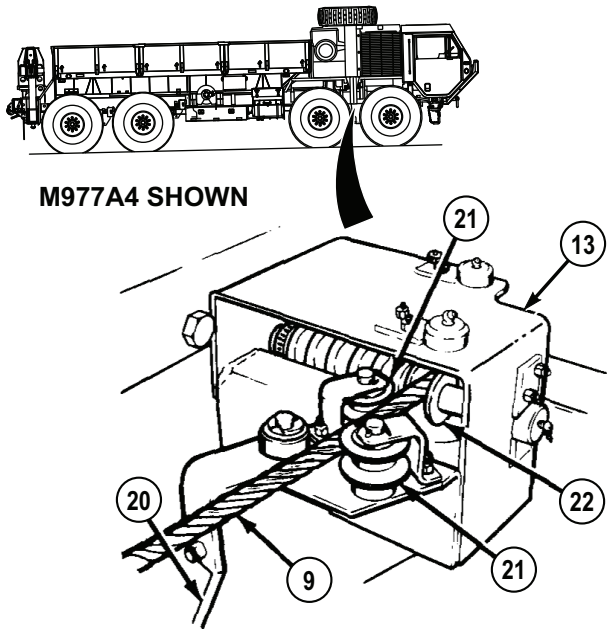


Figure 11.

61. Lift winch cable (9) out of tensioning device pulleys (21).
62. Release tension pulley lever (20).
63. Pull winch cable (9) back and out of cable guide (13).
64. Set HYD ENABLE switch (2) to on position. MAIN HYD ENABLE indicator (3) will illuminate.

WINCH MIRED VEHICLE FORWARD - Continued

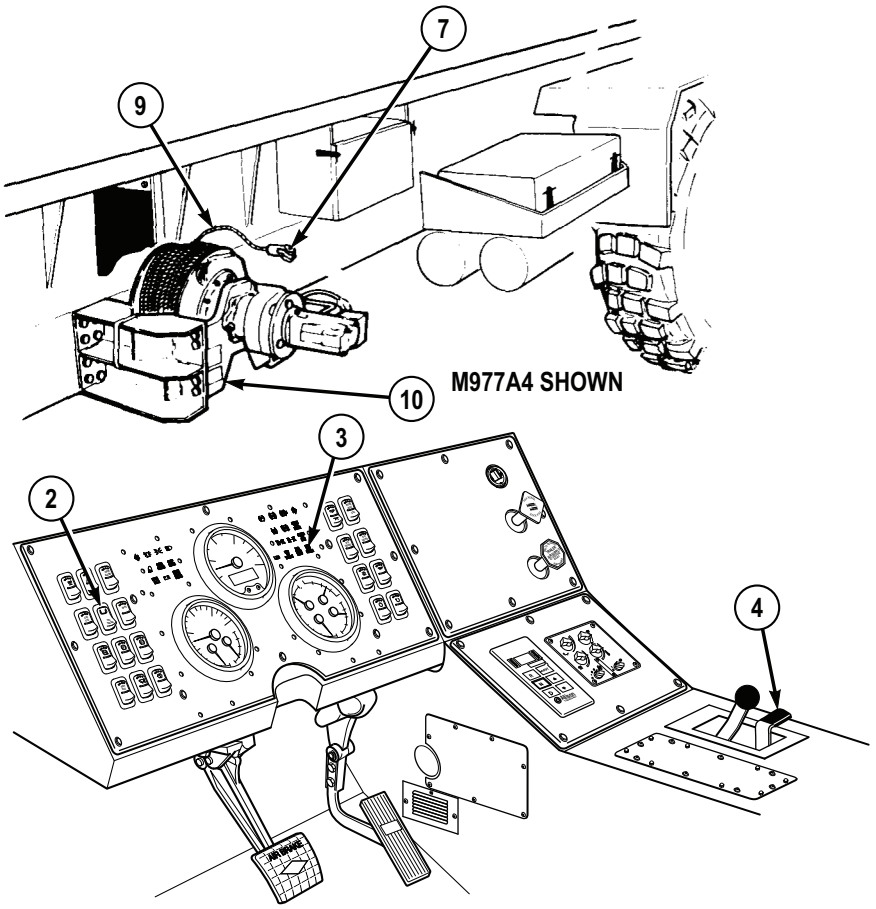


Figure 12.

65. While assistant guides winch cable (9), move winch shift lever (4) to IN.
66. When clevis (7) is approximately 2 ft. (61 cm) from winch (10), release winch shift lever (4) to center position.
67. Set HYD ENABLE switch (2) to off position. MAIN HYD ENABLE indicator (3) will go out.
68. Assistant connects clevis (7) at end of winch cable (9) to tiedown ring (8) with pin (6) and cotter pin (5).

WINCH MIRED VEHICLE FORWARD - Continued

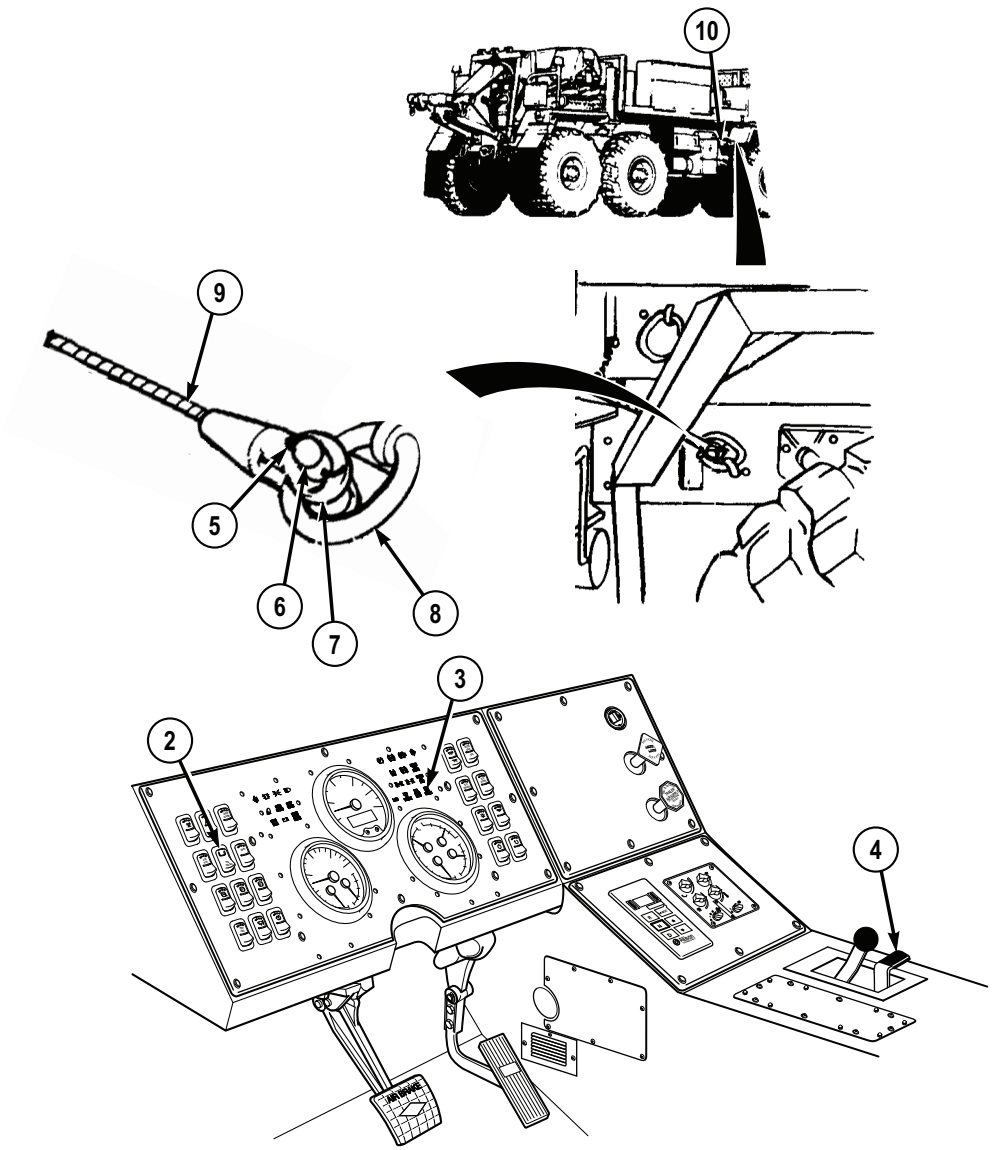


Figure 13.

69. Set HYD ENABLE switch (2) to on position. MAIN HYD ENABLE indicator (3) will illuminate.

WINCH MIRED VEHICLE FORWARD - Continued

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.

70. 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.

71. 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).
72. When winch cable (9) is tight, release winch shift lever (4) to center position.
73. Set HYD ENABLE switch (2) to off position. MAIN HYD ENABLE indicator (3) will go out.
74. Shut off engine. (WP 0057)
75. Adjust mirror (1) for driving.

WINCH MIRED VEHICLE FORWARD - Continued

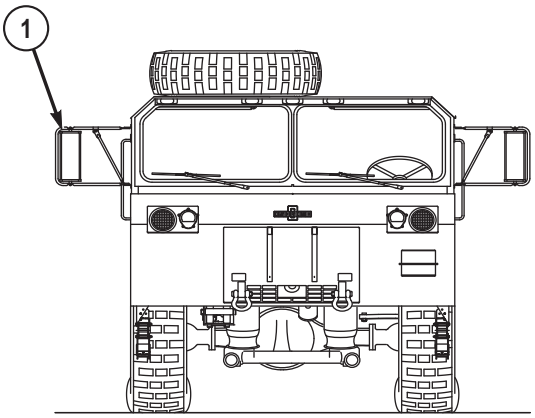


Figure 14.

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.

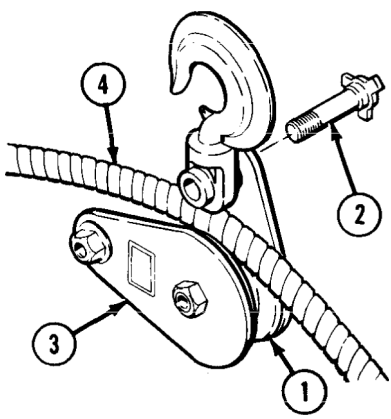


Figure 1.

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 0115).

REMOVE SNATCH BLOCK FROM SELF-RECOVERY WINCH CABLE

1. Check that there is enough slack in winch cable (1).

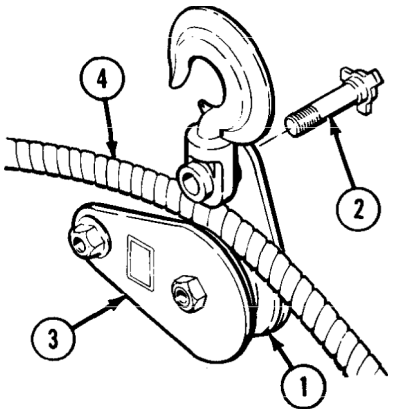


Figure 2.

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 0115).

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).

CONNECT CABLE TO VEHICLE - Continued

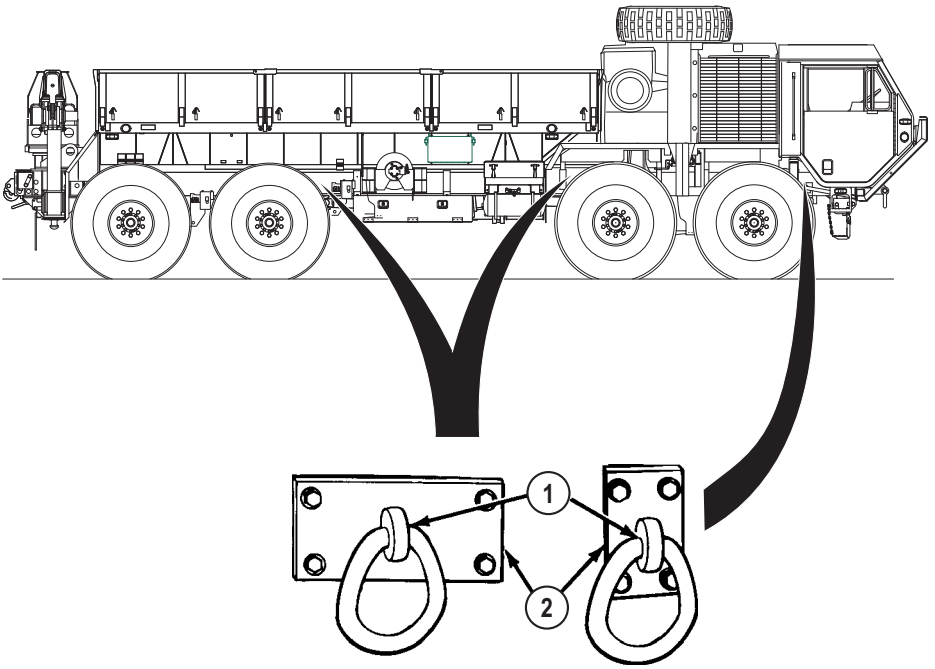


Figure 1.

2. Remove lifting shackle (3) from stowage.

CONNECT CABLE TO VEHICLE - Continued

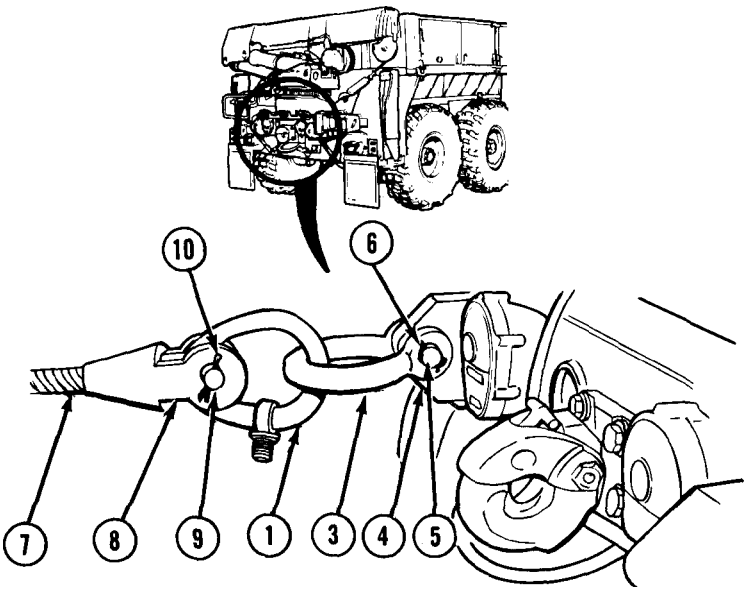


Figure 2.

3. Insert lifting shackle (3) through tiedown ring (1).
4. Connect lifting shackle (3) to left front of left rear tow eye (4) with pin (5).
5. Install cotter pin (6).
6. Connect self-recovery winch cable (7) with clevis (8) to tiedown ring (1) with pin (9).
7. Install cotter pin (10).
8. Continue with self-recovery winch operation. (WP 0115)

DISCONNECT CABLE FROM VEHICLE

1. Ensure there is enough slack in winch cable (1).

DISCONNECT CABLE FROM VEHICLE - Continued

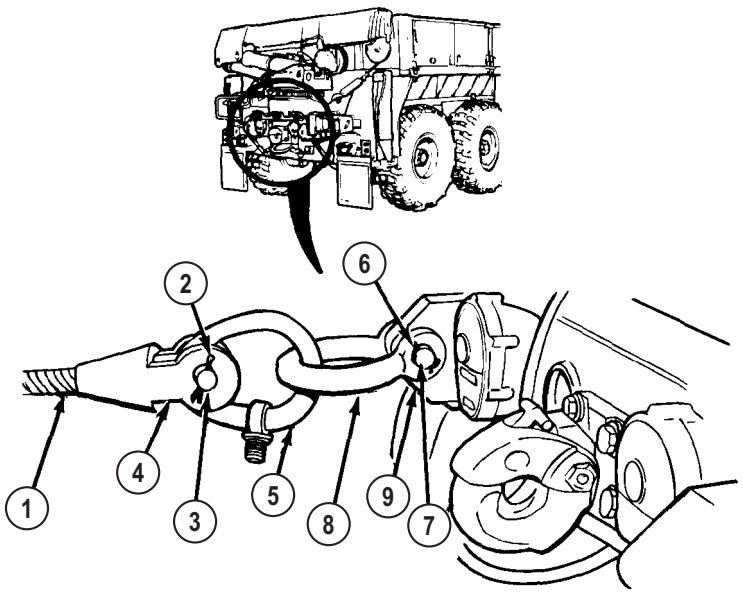


Figure 3.

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).

DISCONNECT CABLE FROM VEHICLE - Continued

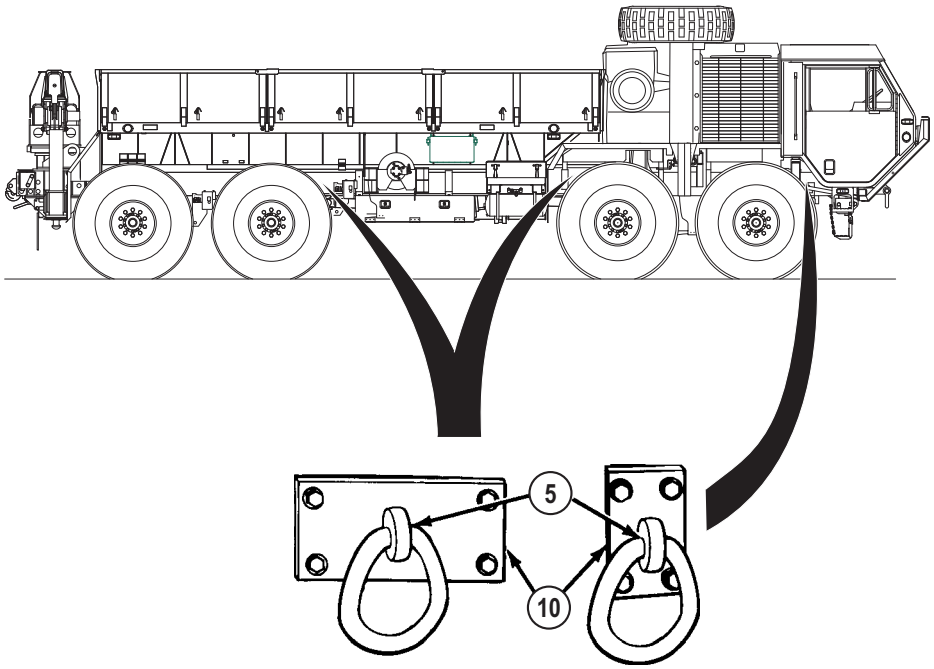


Figure 4.

9. Continue with self-recovery winch operation. (WP 0115)

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 0129) as part of preparing disabled vehicle for towing.

1. Install and operate portable beacon lights. (WP 0094)
2. Set TRANSFER CASE shift lever (1) to NEUT (neutral) position.
3. Set traction control switch (2) to off (center) position.

TOW DISABLED VEHICLE - Continued

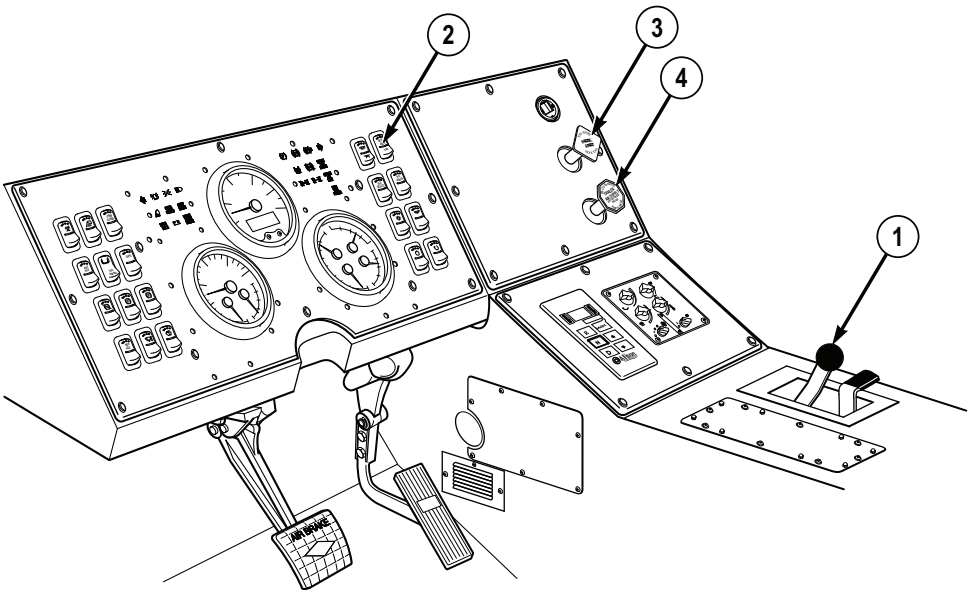


Figure 1.

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.

CONNECT TOW BAR - Continued

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.

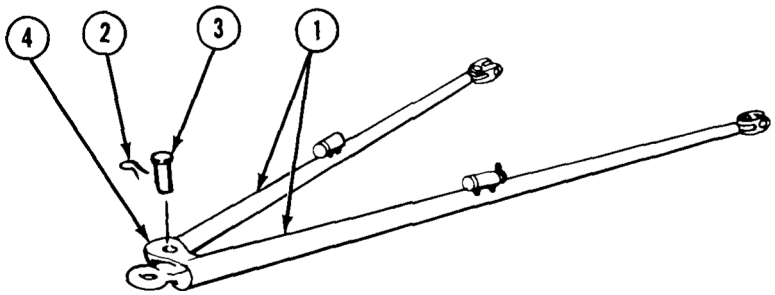


Figure 1.

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.

CONNECT TOW BAR - Continued

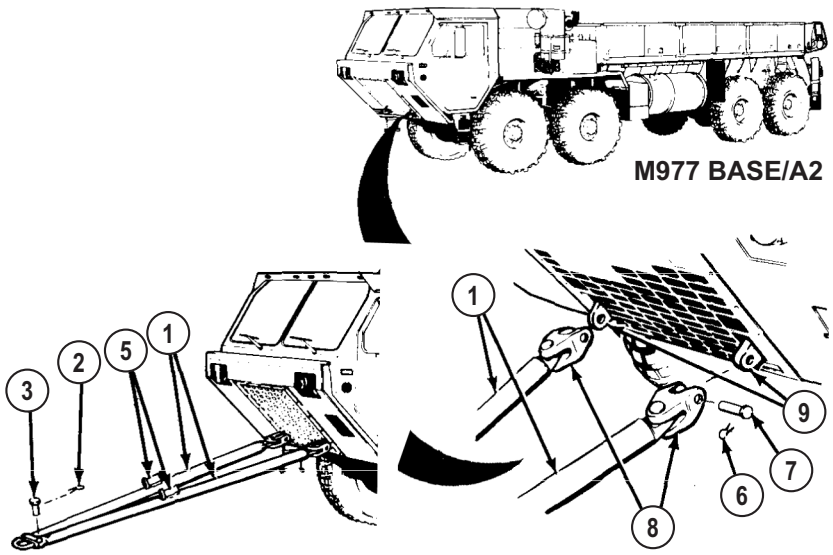


Figure 2.

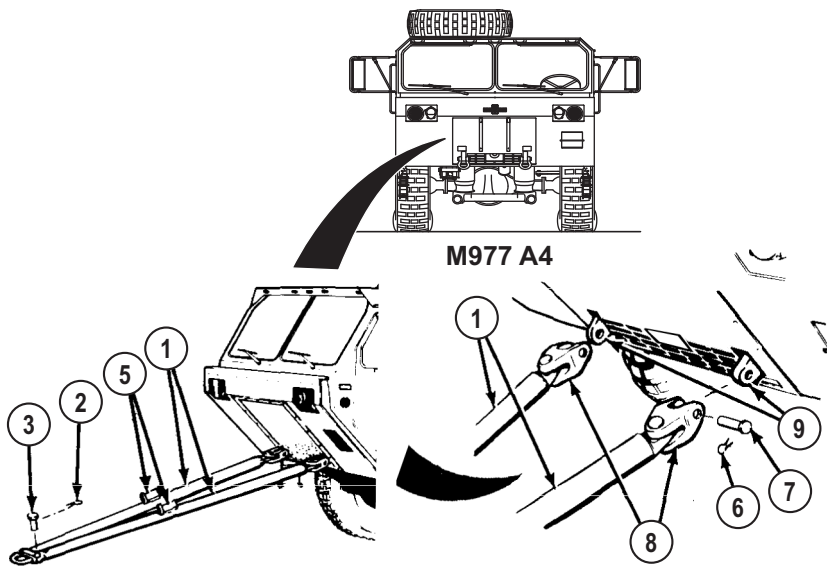


Figure 3.

6. Remove two cotter hairpins (6) and pins (7) from tow bar shackles (8).

CONNECT TOW BAR - Continued

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 (11) is aligned with tow bar lunette eye (13).
11. Remove cotter pin (10) from pintle hook (11).

CONNECT TOW BAR - Continued

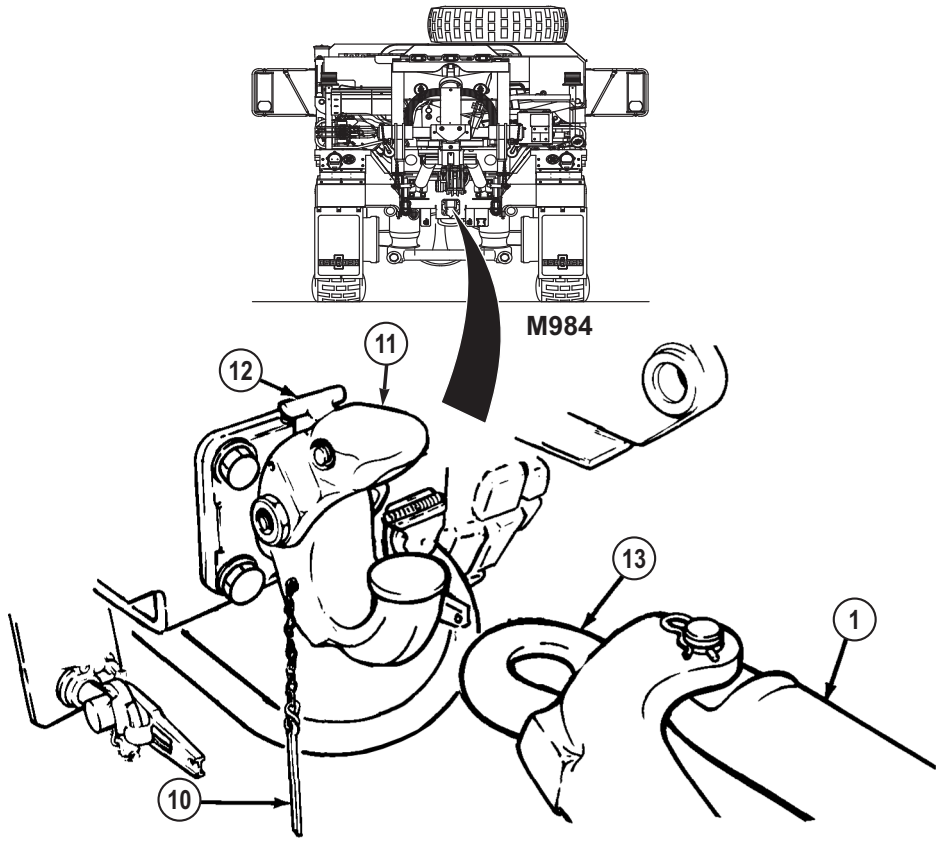


Figure 4.

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.

CONNECT TOW BAR - Continued

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 0129) and skip to Step (20).

17. Remove two intervehicular air lines (14) from stowage.

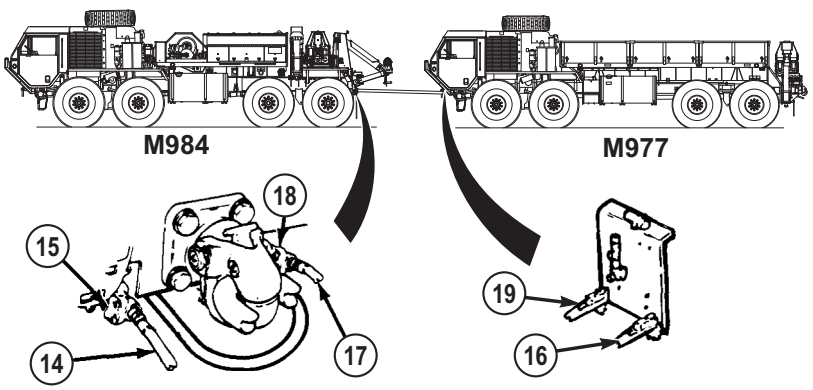


Figure 5.

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.

CONNECT TOW BAR - Continued

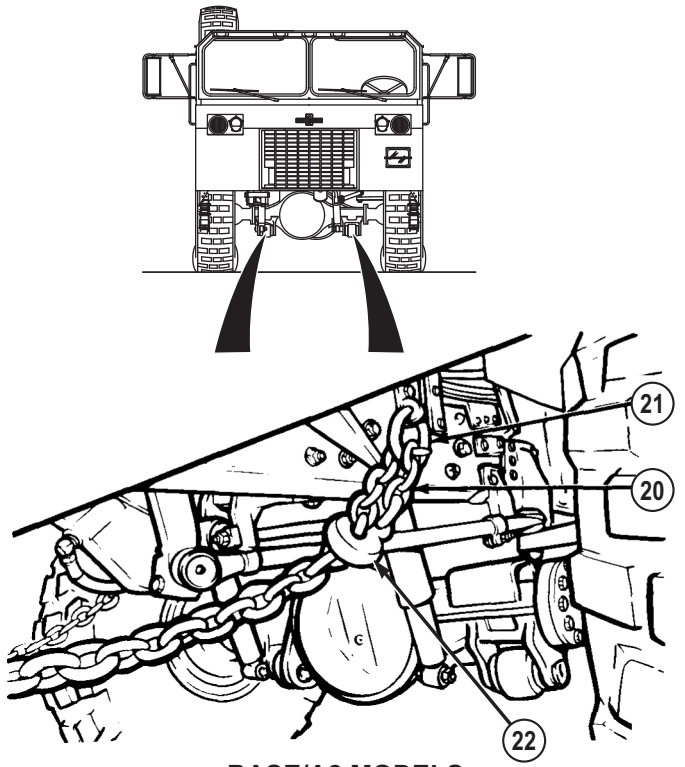
19. Connect second intervehicular air line (17) to passenger side rear gladhand (18) of towing vehicle and passenger side front gladhand (19) of disabled vehicle.
20. Remove two 16 ft. (5 m) safety chains (20) from stowage.

NOTE

- Both driver side and passenger side tiedown rings 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 driver side door), complete Step (21). If disabled vehicle is an A4 model HEMTT series vehicle (refer to data plate on inside of driver side door), skip to Step (22).

21. Connect 16 ft. (5 m) safety chain (20) to disabled vehicle tiedown ring (21):
    a. Route end (without safety shackle) of 16 ft. (5 m) safety chain (20) through tiedown ring (21).

CONNECT TOW BAR - Continued



BASE/A2 MODELS

Figure 6.

b. Attach grab hook (22) back into 16 ft. (5 m) safety chain (20).

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 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 (21):

CONNECT TOW BAR - Continued

a. Route end (without safety shackle) of 16 ft. (5 m) safety chain (20) through tiedown ring (21) from inboard to outboard until grab hook (22) hangs just below bottom of air spring (23).

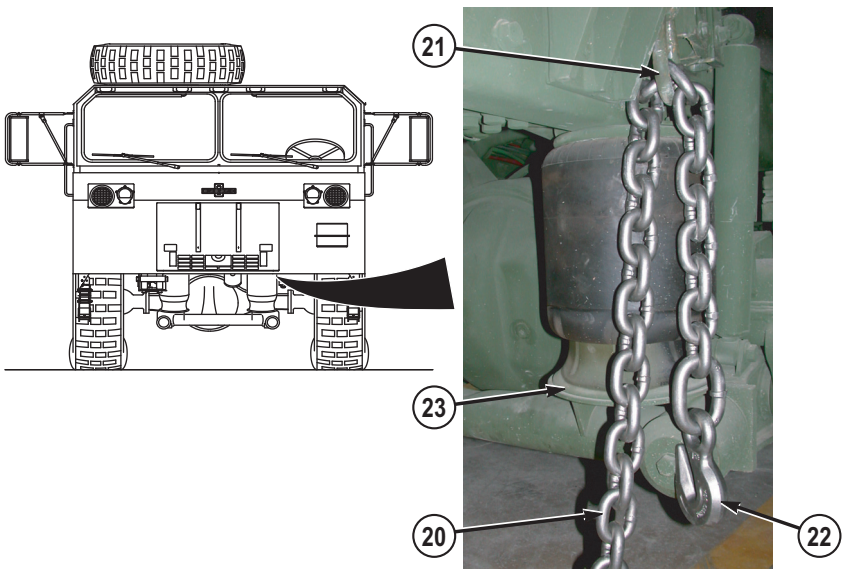


Figure 7.

b. Hook 16 ft. (5 m) safety chain (20) back to itself. Grab hook (22) should open towards ground (shown) when tension is applied to 16 ft. (5 m) safety chain (20).

CONNECT TOW BAR - Continued

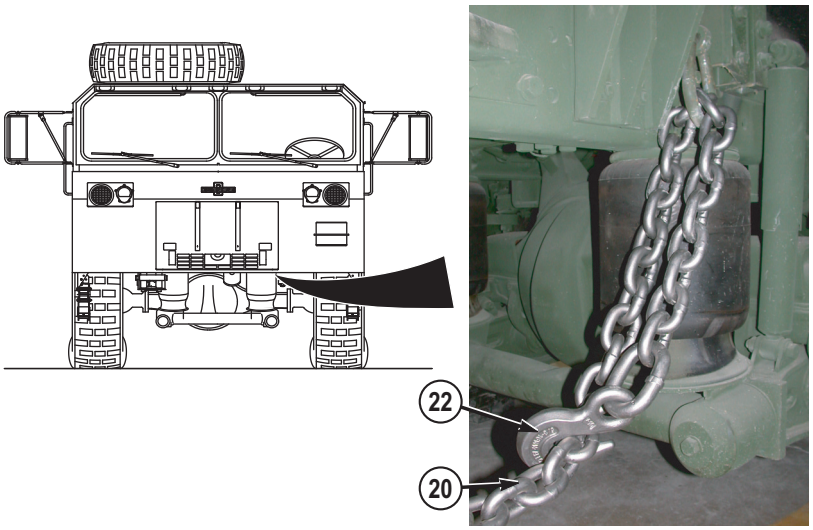


Figure 8.

23. Repeat Step (21) or (22) for other side of disabled vehicle (as applicable).

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 chains (20) through safety chain loop (24) on towing vehicle and attach each 16 ft. (5 m) safety chain (20) back into itself as shown.

CONNECT TOW BAR - Continued

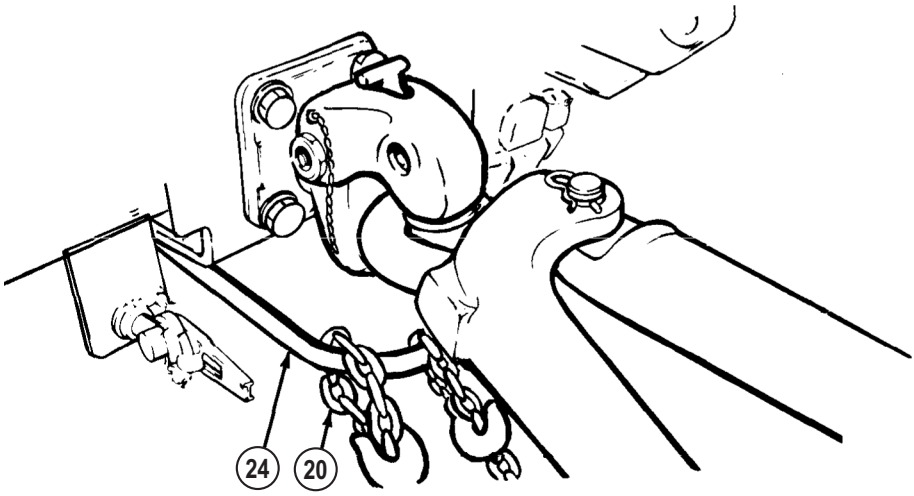


Figure 9.

25. Tow disabled vehicle. (WP 0118)

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 0056)
2. Pull out TRAILER AIR SUPPLY control (1) on towing vehicle.

DISCONNECT TOW BAR - Continued

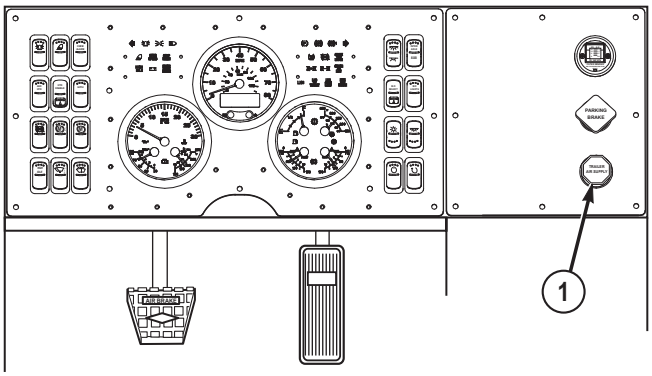


Figure 10.

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.

DISCONNECT TOW BAR - Continued

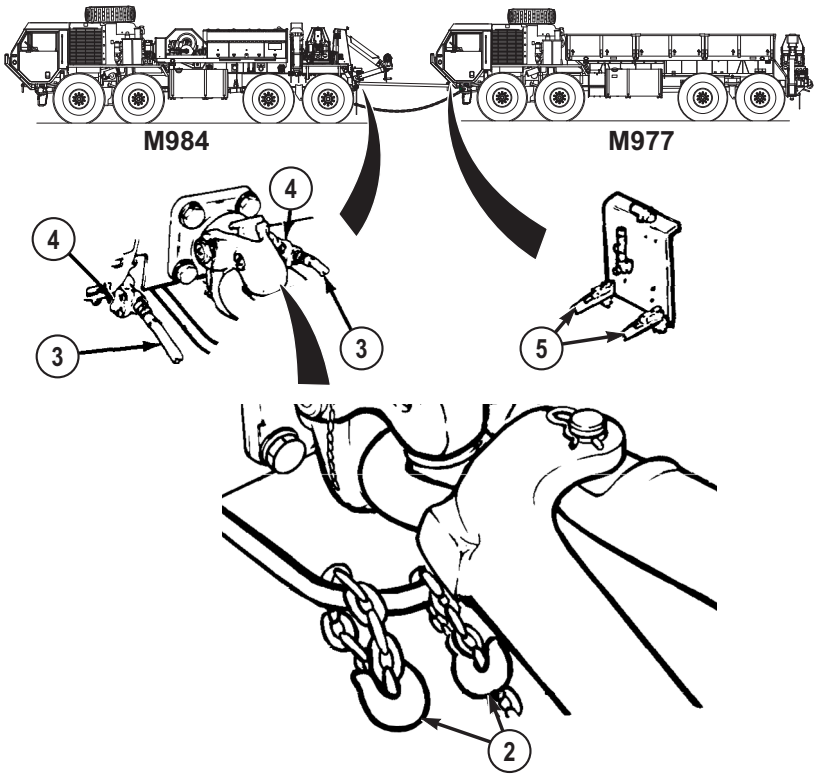


Figure 11.

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).

DISCONNECT TOW BAR - Continued

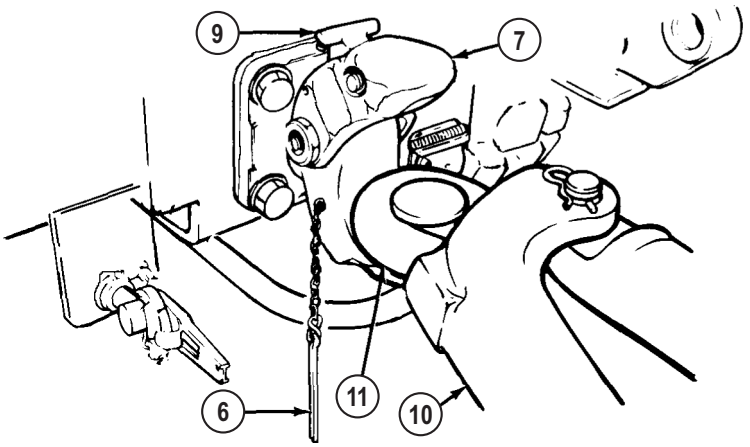


Figure 12.

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 (WP 0050) approximately 15 ft. (4.6 m).
10. As assistants lower tow bar (10) to the ground, park towing vehicle. (WP 0056)
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).

DISCONNECT TOW BAR - Continued

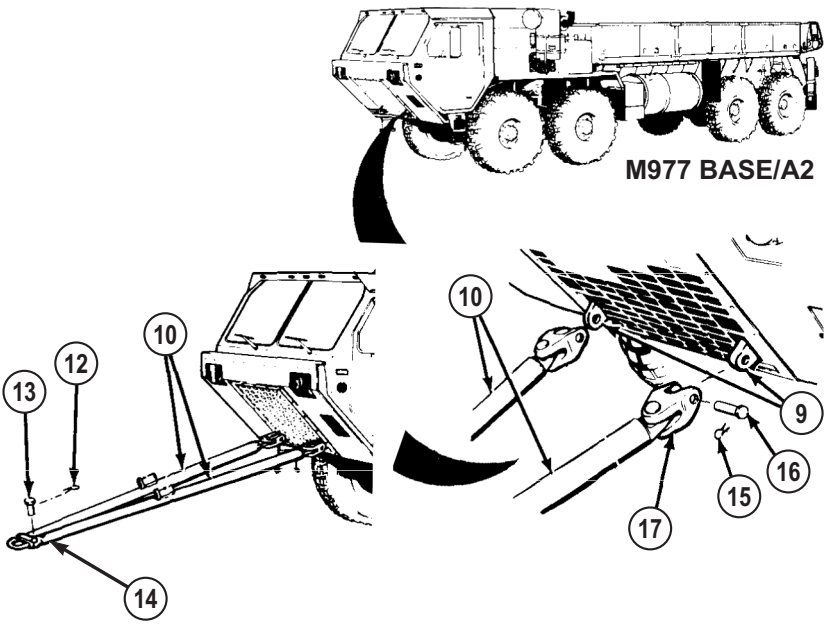


Figure 13.

DISCONNECT TOW BAR - Continued

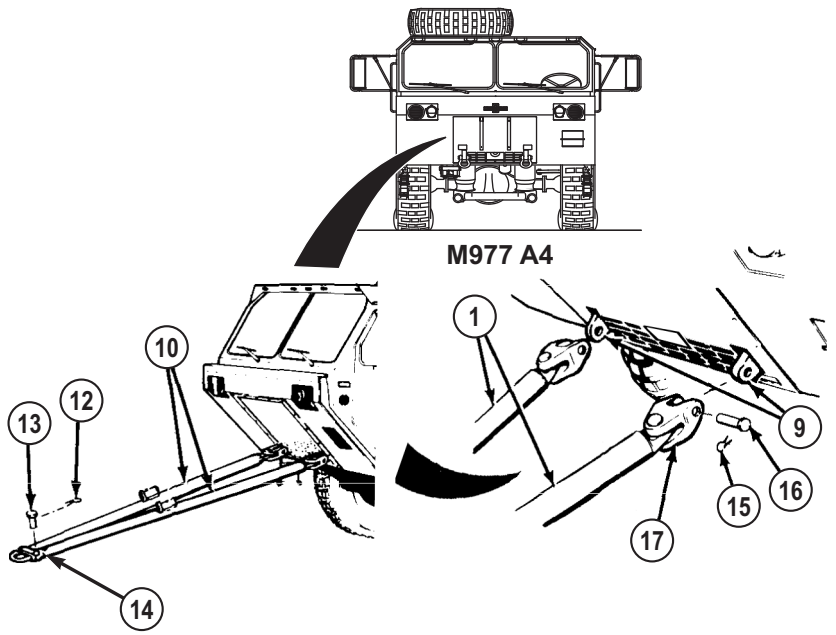


Figure 14.

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.

DISCONNECT TOW BAR - Continued

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 0056)

EXTREME HEAT OPERATION - Continued

(2) Shut off engine. (WP 0057)

(3) Notify field level maintenance.

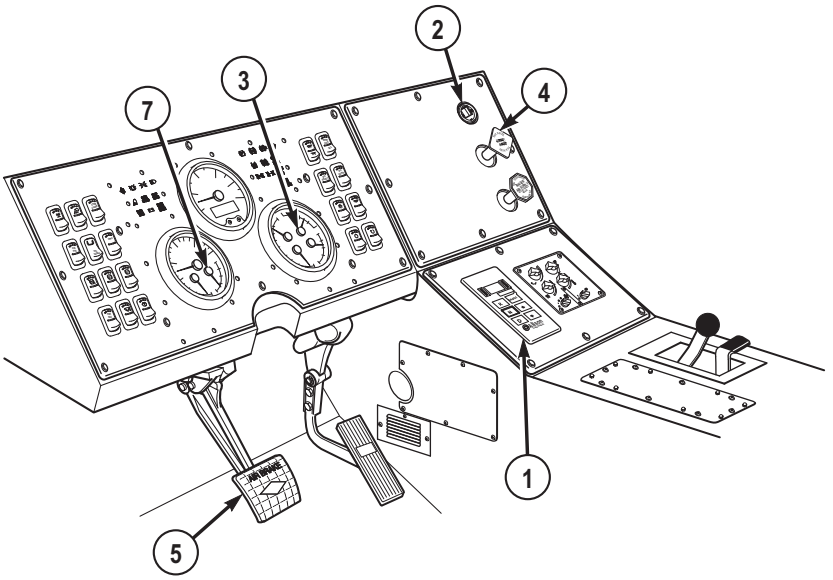


Figure 1.

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).

EXTREME HEAT OPERATION - Continued

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:

EXTREME HEAT OPERATION - Continued

(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 0056) 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.

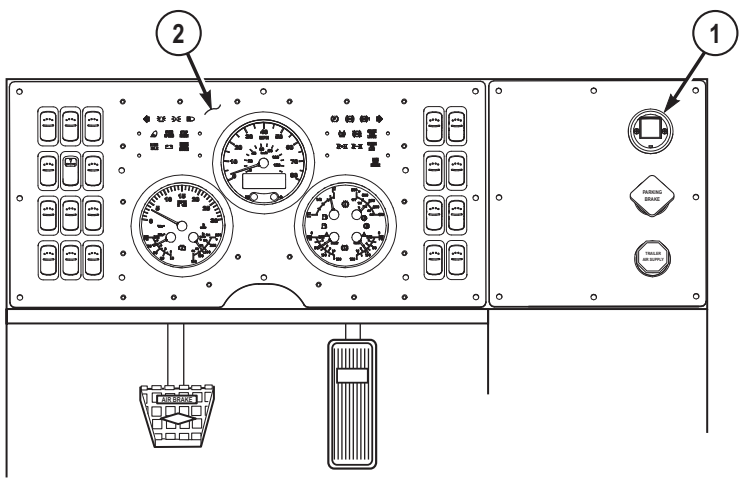


Figure 1.

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).

OPERATE VEHICLE IN EXTREME DUST - Continued

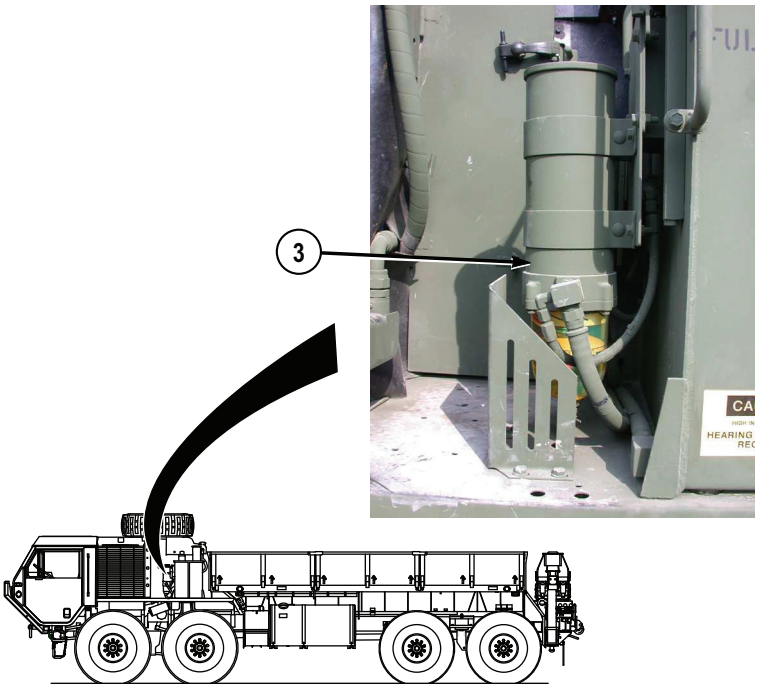


Figure 2.

6. When possible, park vehicle so it does not face into wind.

OPERATE GROVE CRANE IN EXTREME DUST

NOTE

Lubricate outrigger bottom plate, boom wear pads, and exposed rotation gears often when cranes are operating in dusty environment (refer to PMCS - Semiannual procedures (Volume 2, WP 0184) for more information).

1. When operating the grove crane in a blowing dust environment, perform the following:
   a. Check gear teeth of rotation gear bearing and pinion for an accumulation of dust within the lubricant.

OPERATE GROVE CRANE IN EXTREME DUST - Continued

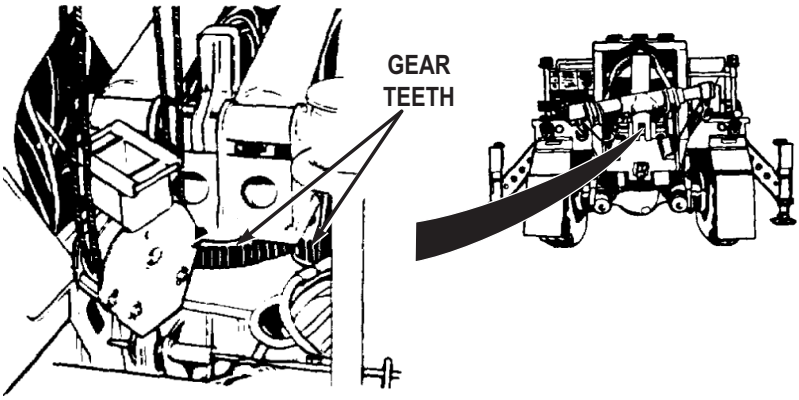


Figure 3.

b. If level of dust prevents rotation of crane, notify field level maintenance and have lubricant removed.

c. If necessary, notify field level maintenance to apply a light coating of wax to gear teeth for rust prevention.

d. Refer to appropriate PMCS for proper lubrication of gear teeth when returning to normal operating conditions.

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.

OPERATE VEHICLE IN SAND OR MUD - Continued

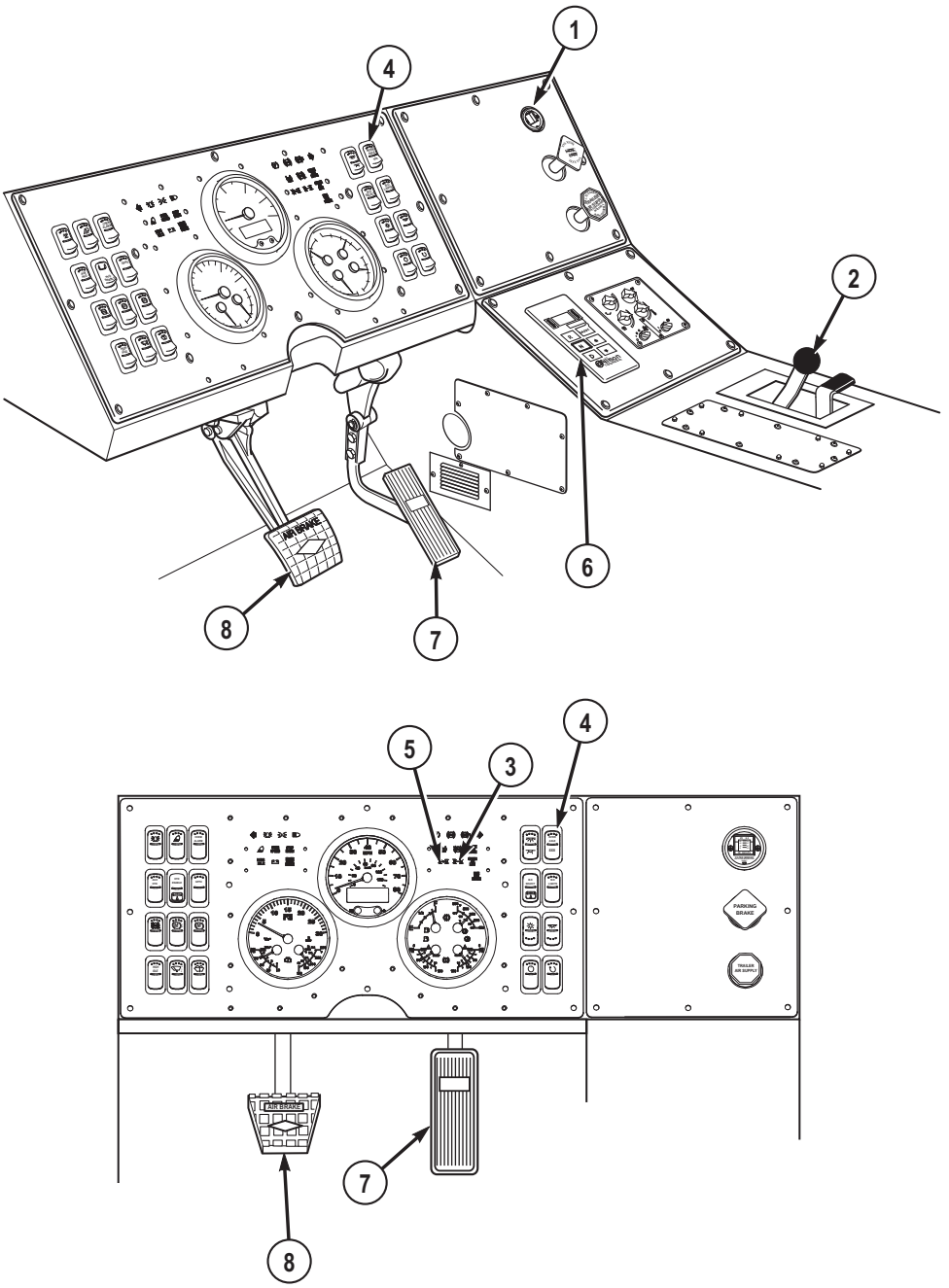


Figure 1.

OPERATE VEHICLE IN SAND OR MUD - Continued

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.

OPERATE GROVE CRANE IN SAND OR MUD

CAUTION

Take necessary precautions to ensure a firm footing for the crane outriggers by using a field-expedient blocking underneath the outrigger pads. Refer to FM 4-30.31 for additional information on vehicle recovery operations.

NOTE

Lubricate outrigger bottom plate, boom wear pads, and exposed rotation gears often when cranes are operating in dusty environment (refer to PMCS - Semiannual procedures (Volume 2, WP 0184) for more information).

1. When operating a grove crane in a blowing sand environment, perform the following:
2. Check gear teeth of rotation gear bearing and pinion for an accumulation of sand within the lubricant.

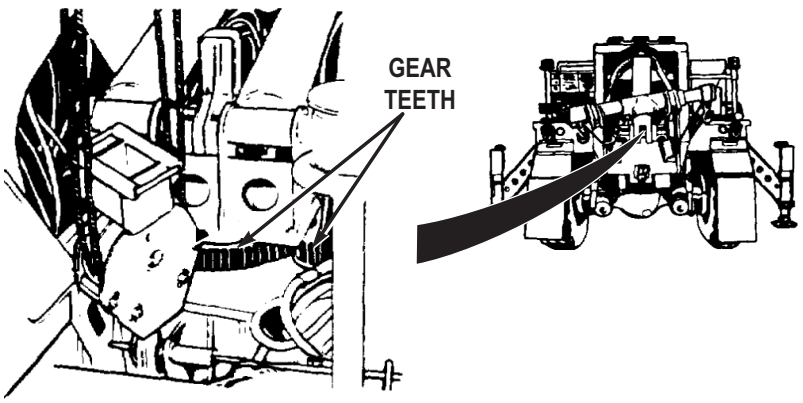


Figure 2.

3. If level of sand prevents rotation of crane, notify field level maintenance and have lubricant removed.
4. If necessary, notify field level maintenance to apply a light coating of wax to gear teeth for rust prevention.
5. Refer to PMCS for proper lubrication of gear teeth when returning to normal operating conditions.

PARK VEHICLE

1. Park vehicle as follows:

PARK VEHICLE - Continued

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 0120) and extreme dust (WP 0121), sand, or mud (WP 0122) 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

OPERATE VEHICLE IN COLD ENVIRONMENT - Continued

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 0110) (as needed).
2. Start engine (WP 0044) 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.

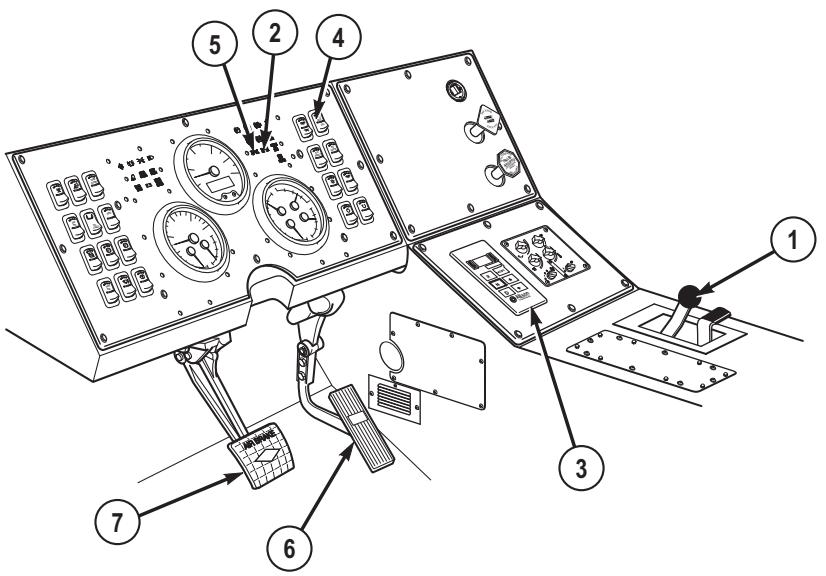


Figure 1.

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.

OPERATE VEHICLE IN COLD ENVIRONMENT - Continued

- 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.

OPERATE VEHICLE IN COLD ENVIRONMENT - Continued

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.

OPERATE VEHICLE IN COLD ENVIRONMENT - Continued

(4) If another vehicle is not available, self-recover vehicle using self-recovery winch. (WP 0115)

6. Park vehicle (WP 0056) 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.

OPERATE VEHICLE IN EXTREME COLD ENVIRONMENT (-26°F[-32°C] to -65°F[-54°C]) - Continued

- 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 0124) 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 GROVE CRANE 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.

OPERATE GROVE CRANE IN EXTREME COLD ENVIRONMENT (-26°F[-32°C] to -65°F [-54°C]) - Continued

1. Before operating crane, perform warm-up as follows:
   a. Start engine. (WP 0044)
   b. Properly warm up vehicle.
   c. Set HYD ENABLE switch (1) to on position. MAIN HYD ENABLE indicator (2) will illuminate.

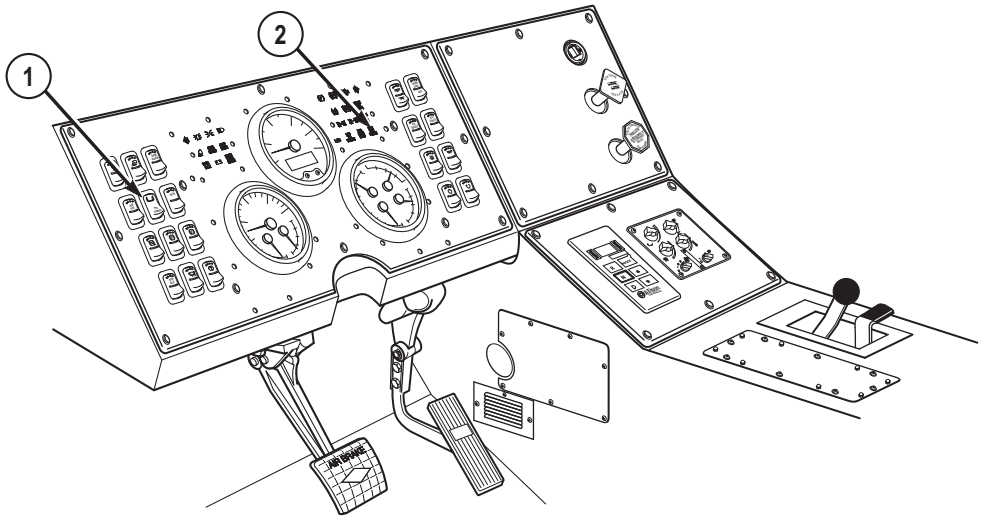


Figure 1.

   d. While engine is at low idle, fully exercise all functions of crane for at least 5 minutes.
   e. With engine at high idle, fully exercise all functions of crane for at least 10 minutes.
2. Continue with operation of crane.

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.

OPERATE VEHICLE IN FOREST OR ROCKY TERRAIN - Continued

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 0096)
2. Remove emergency marker kit (1) from stowage brackets (2).

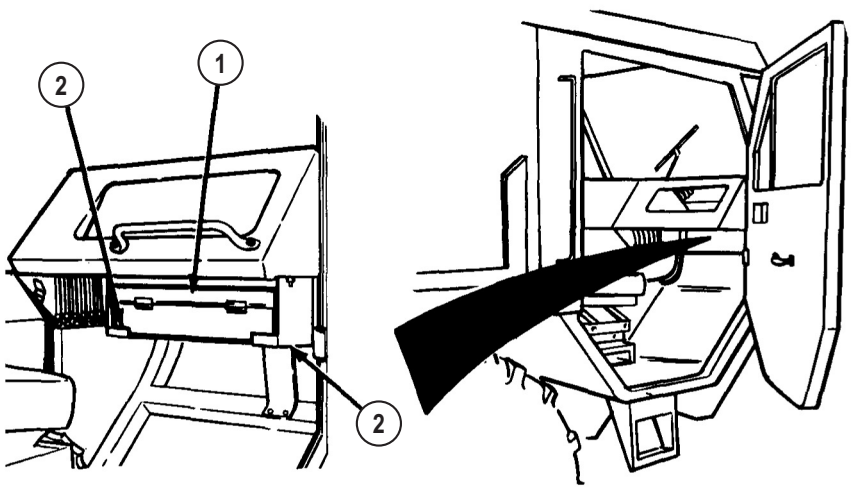


Figure 1.

3. Remove markers (3) from case.

PREPARE VEHICLE/MARKERS FOR USE - Continued

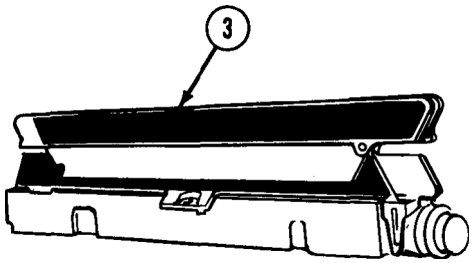


Figure 2.

4. Raise arms (4).

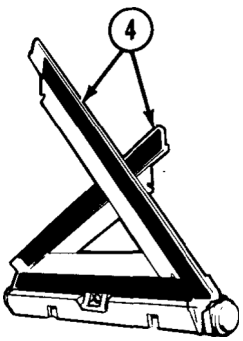


Figure 3.

5. Snap pin (5) into slot (6).

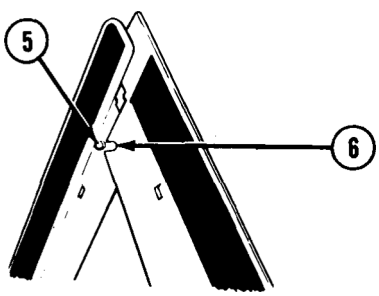


Figure 4.

6. Rotate marker (3) about ¼ turn on base (7) until it stops.

PREPARE VEHICLE/MARKERS FOR USE - Continued

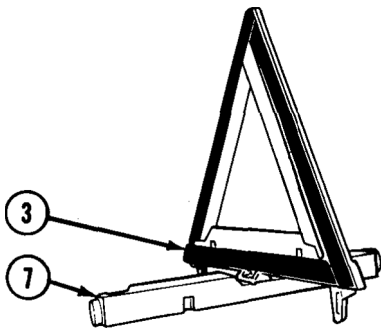


Figure 5.

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.

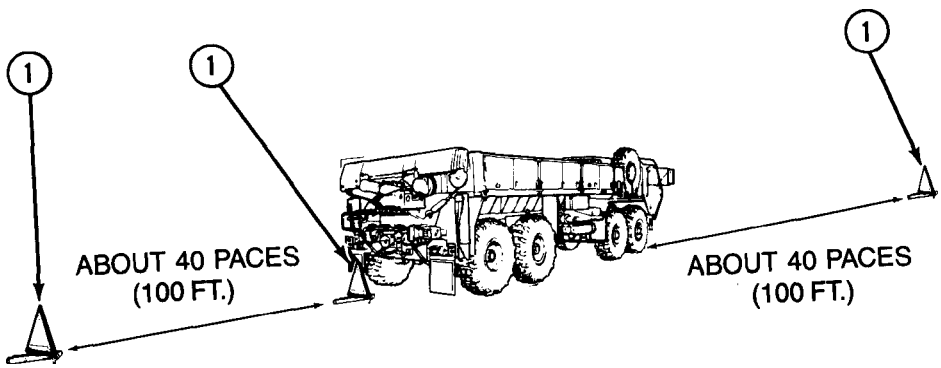


Figure 6.

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.

PLACE MARKERS ON DIVIDED HIGHWAY - Continued

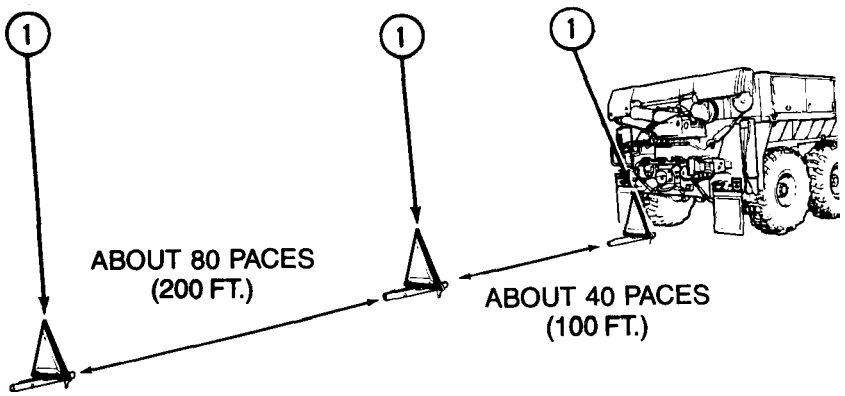


Figure 7.

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).

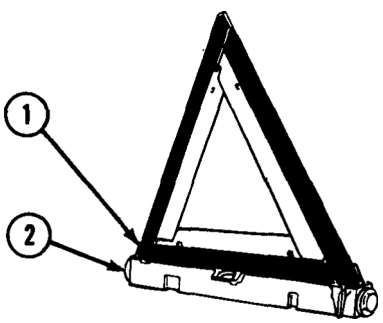


Figure 8.

2. Separate arms (3).

SECURE MARKERS - Continued

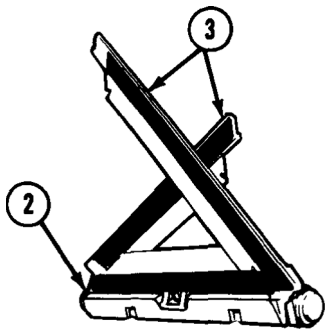


Figure 9.

3. Fold arms (3) down onto base (2).

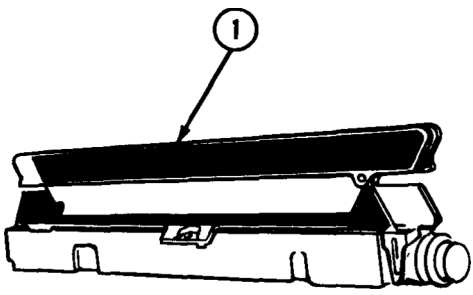


Figure 10.

4. Put markers (1) in case.
5. Put emergency marker kit (4) in stowage brackets (5).

SECURE MARKERS - Continued

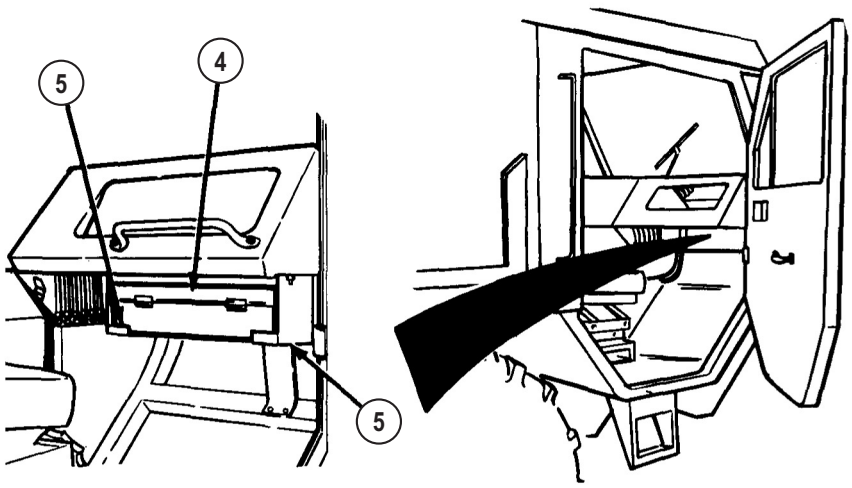


Figure 11.

6. Turn vehicle emergency flashers off. (WP 0096)

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.

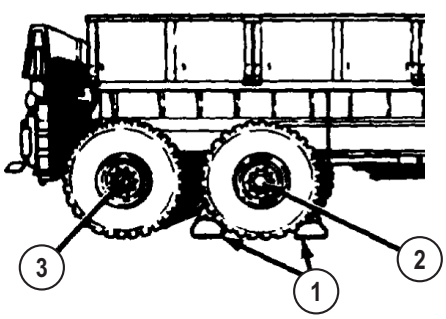
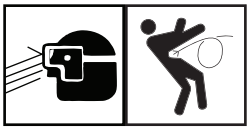


Figure 1.

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).

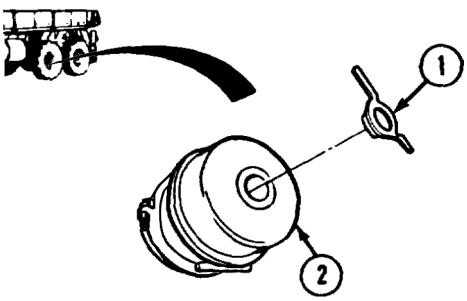


Figure 2.

2. Remove nut (3), washer (4), and release-bolt (5) from bracket (6).

RELEASE BRAKES - Continued

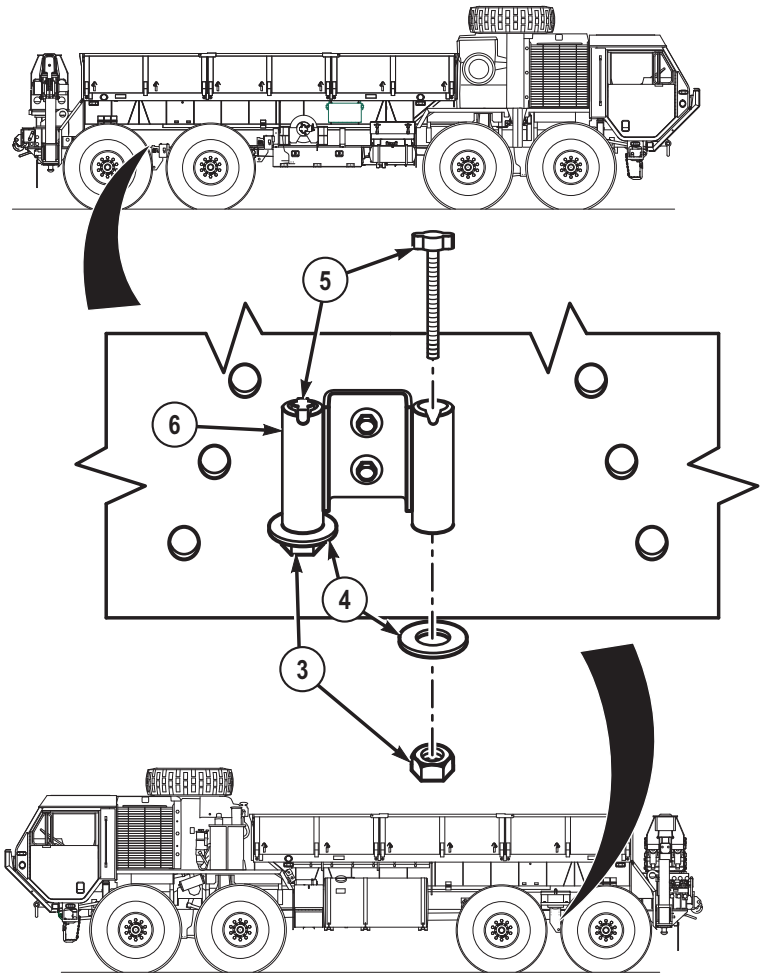


Figure 3.

3. Insert release-bolt (5) into brake chamber (2).

RELEASE BRAKES - Continued

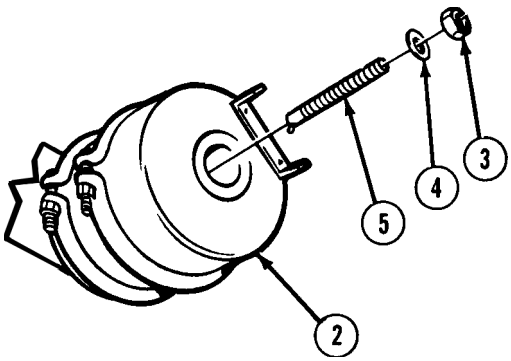


Figure 4.

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).

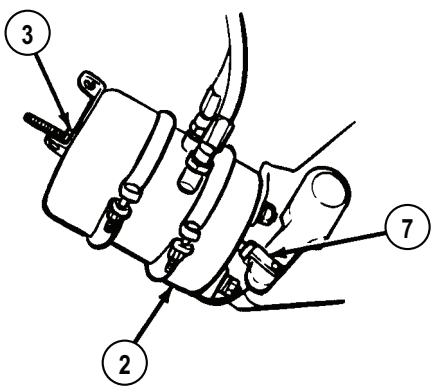


Figure 5.

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.

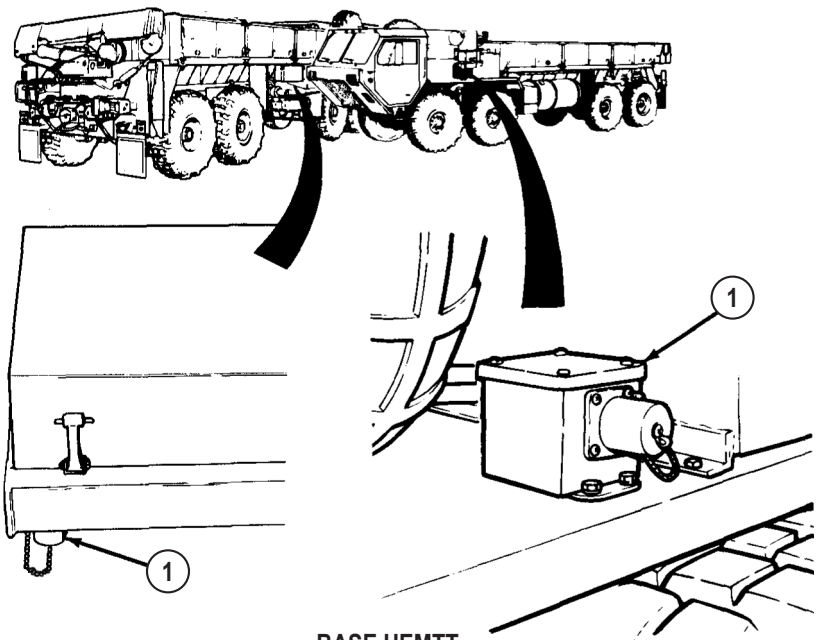
1. Start engine of assist vehicle. (WP 0044)

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.

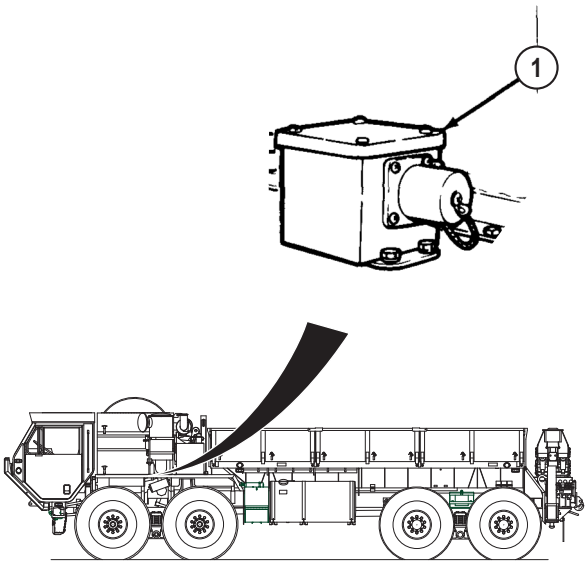
PREPARE ASSIST VEHICLE - Continued



BASE HEMTT

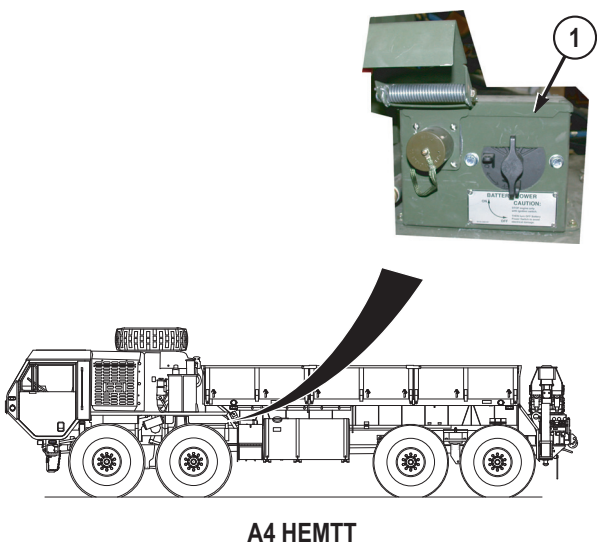
Figure 1.

PREPARE ASSIST VEHICLE - Continued



A2 HEMTT

Figure 2.



A4 HEMTT

Figure 3.

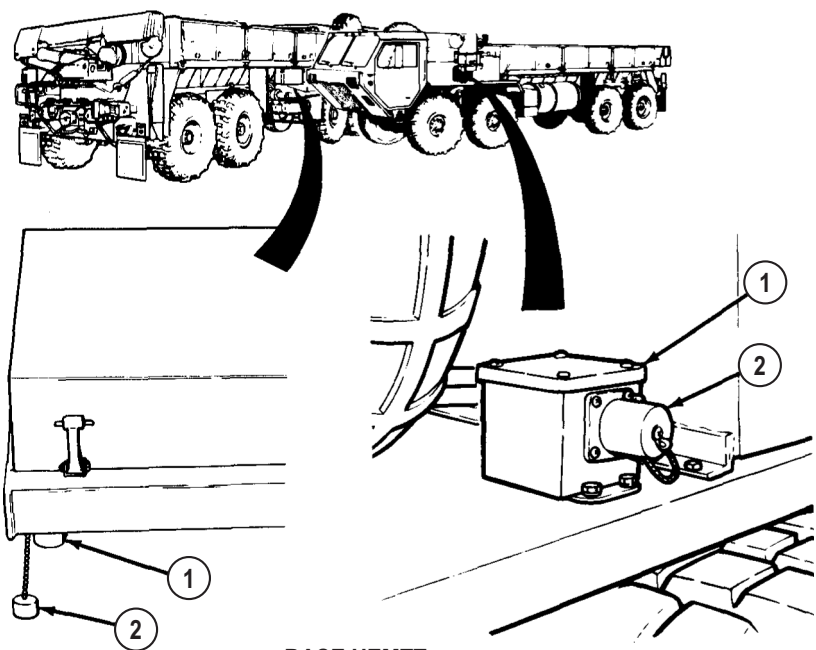
3. Shut off engine of assist vehicle. (WP 0057)

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.

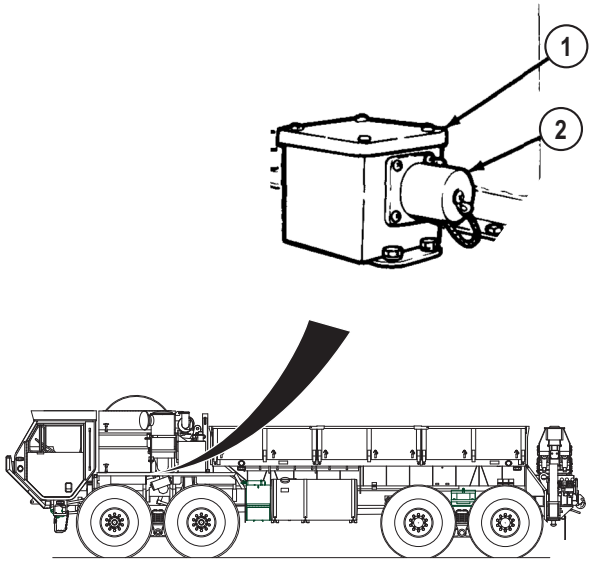
1. Remove caps (2) from slave receptacles (1) on both vehicles.



BASE HEMTT

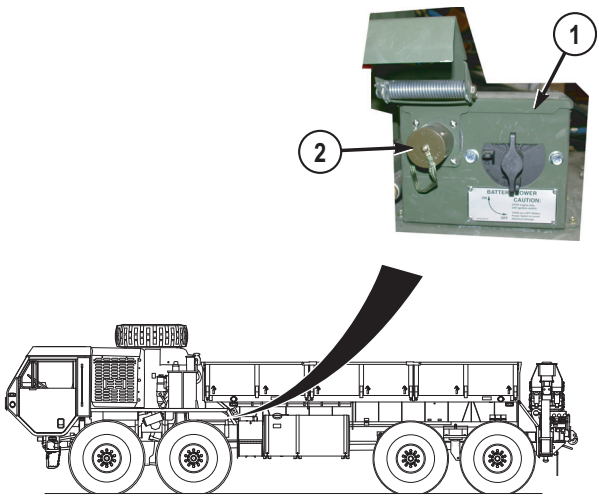
Figure 4.

SLAVE START DISABLED VEHICLE - Continued



A2 HEMTT

Figure 5.

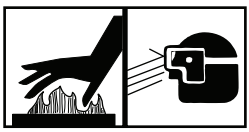


A4 HEMTT

Figure 6.

SLAVE START DISABLED VEHICLE - Continued

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.

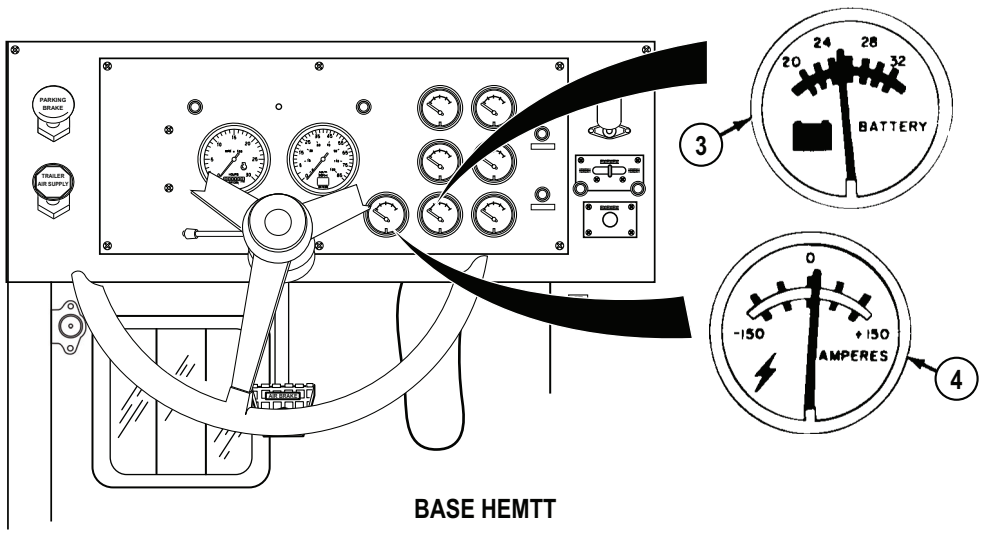
2. Remove NATO slave cable from stowage and plug into slave receptacles of both vehicles.
3. Start engine of assist vehicle. (WP 0044)
4. Using the throttle pedal, increase assist vehicle engine speed to more than 1000 rpm, while assistant starts engine of disabled vehicle. (WP 0044)
5. As soon as disabled 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 0050)
8. Shut off engine of assist vehicle. (WP 0057)

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.

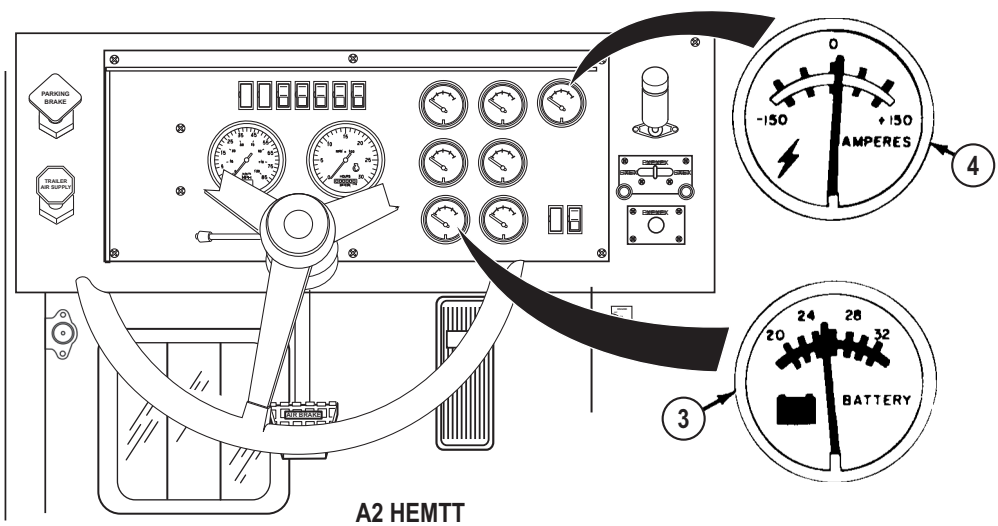
9. Check BATTERY gauge (3) of disabled vehicle. If BATTERY gauge (3) shows less than 24 volts, notify field level maintenance. If BATTERY gauge (3) shows 24 volts or more, continue with Step (11).

SLAVE START DISABLED VEHICLE - Continued



BASE HEMTT

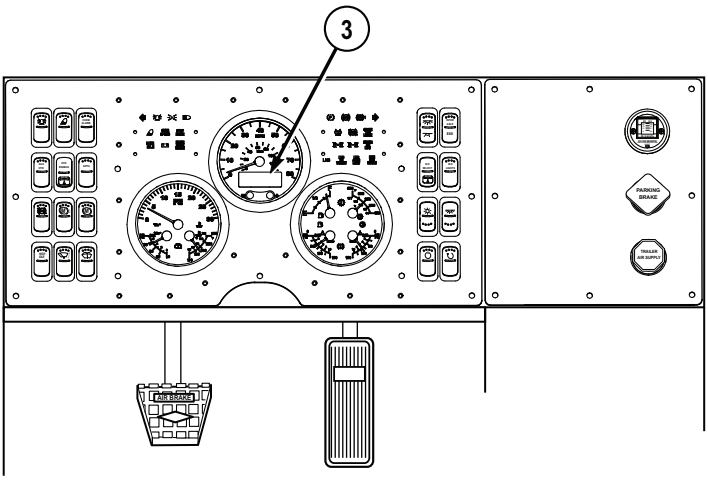
Figure 7.



A2 HEMTT

Figure 8.

SLAVE START DISABLED VEHICLE - Continued



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. Notify field level maintenance.

END OF TASK

END OF WORK PACKAGE

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OPERATOR MAINTENANCE
PERFORM EMERGENCY HYDRAULIC OPERATION WHEN GROVE CRANE ELECTRICAL POWER FAILS

INITIAL SETUP:

Not Applicable

NOTE

- If crane electrical power systems fails during crane operation, crane will be locked in position it was in at time of failure.
- Do not try to operate any electrical equipment on vehicle or crane.
- Do not try to repair electrical system.
- This procedure will provide emergency hydraulic power to lower crane and load when electrical power has failed.
- Screwdriver can be put in slot in front of solenoid valve button to hold button in while operating controls.

1. Push up and hold solenoid valve button (1).
2. Shut down crane.

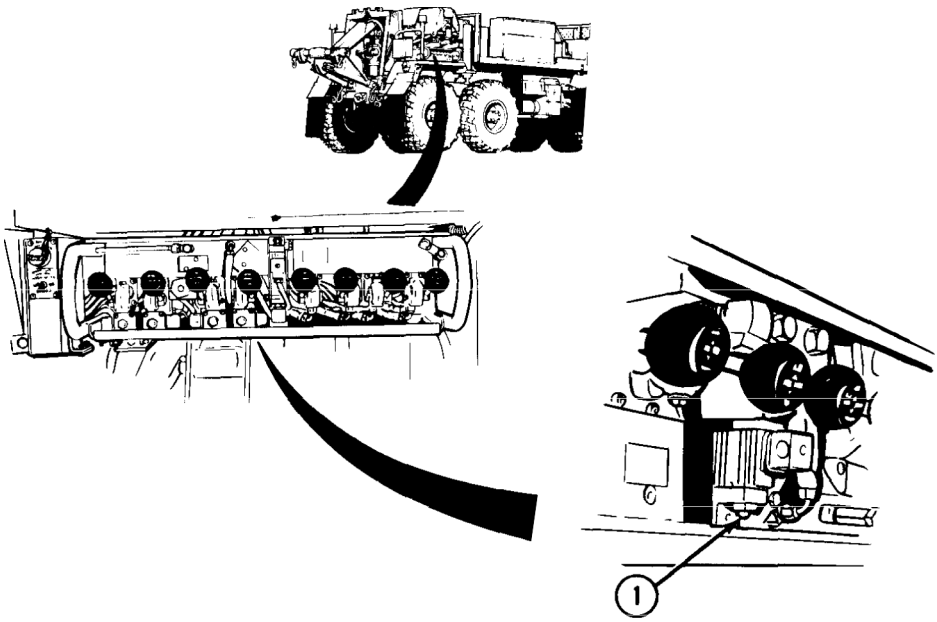


Figure 1.

3. Notify field level maintenance.

END OF TASK

END OF WORK PACKAGE

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.

TRANSMISSION WILL NOT SHIFT INTO OR OUT OF GEAR (CHECK TRANSMISSION INDICATOR ILLUMINATED) - Continued

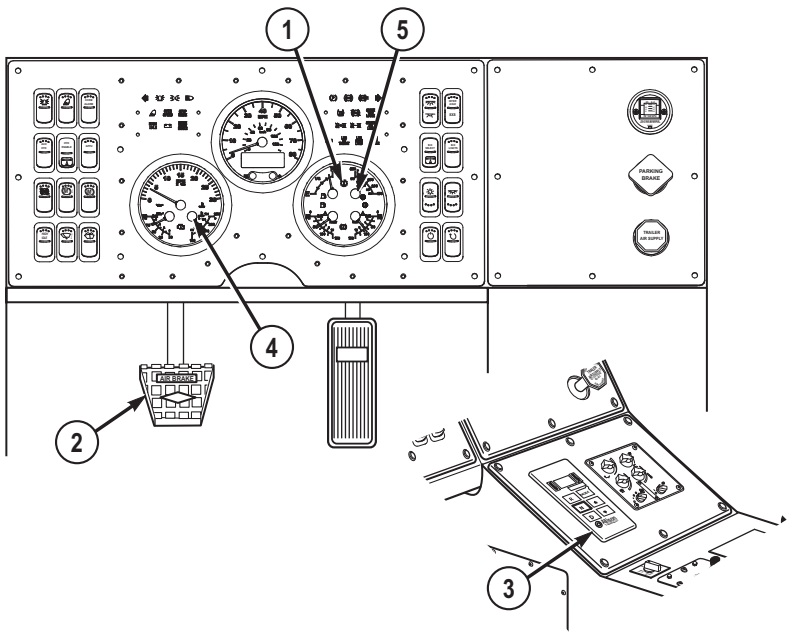


Figure 1.

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.

TRANSMISSION WILL NOT SHIFT INTO OR OUT OF GEAR (CHECK TRANSMISSION INDICATOR ILLUMINATED) - Continued

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 0054)

(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).

TRANSMISSION WILL NOT SHIFT INTO OR OUT OF GEAR (CHECK TRANSMISSION INDICATOR ILLUMINATED) - Continued

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

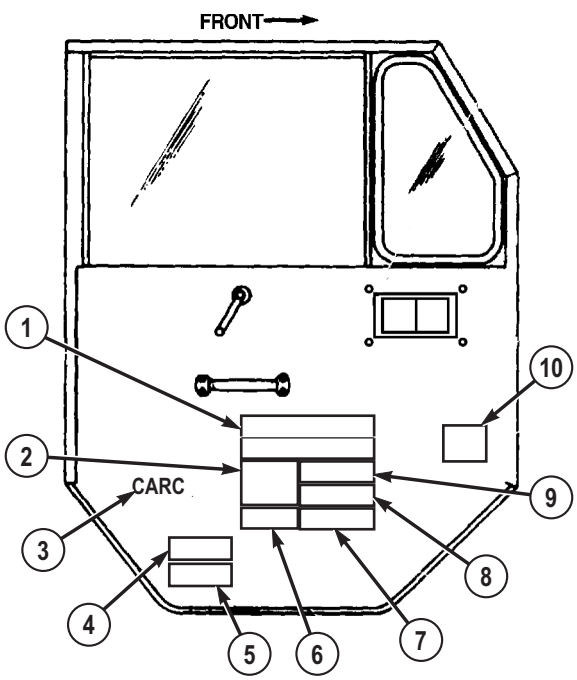
Scope

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. (Volume 2, WP 0201)

Table 1. Inside Driver Side Door.



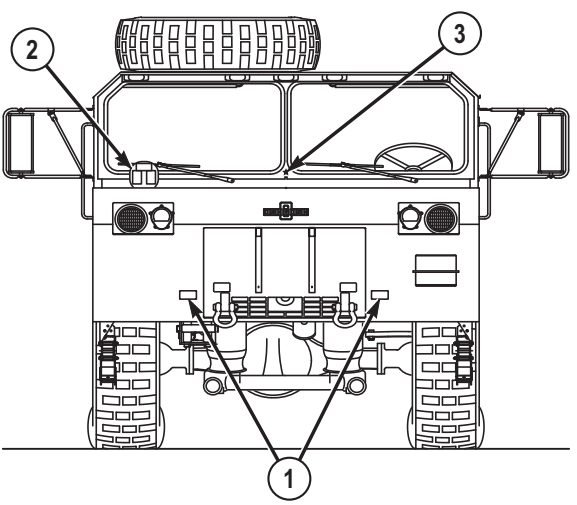
INDEX	DECAL/PLATE/STENCIL

General - Continued

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.

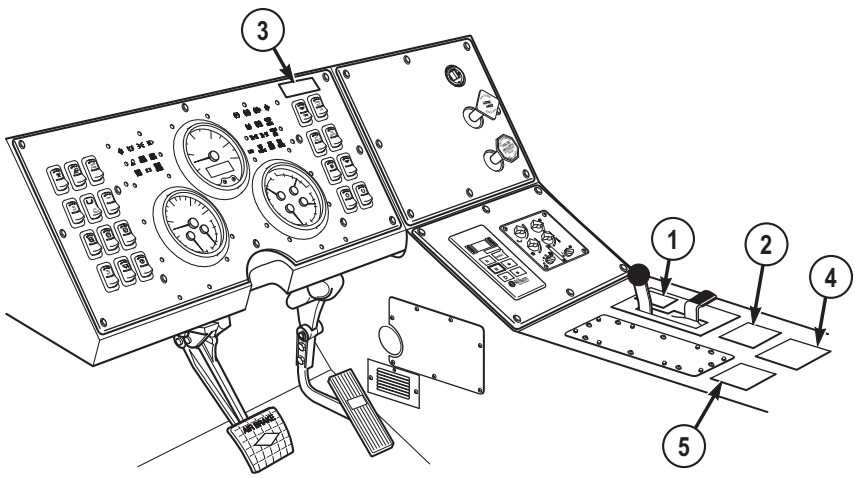


General - Continued

Table 2. Front Exterior. - Continued

INDEX	PLACARD/STENCIL
1	"TIEDOWN" Stencil
2	Sign Kit/Weight Indicator
3	US Army Star Stencil

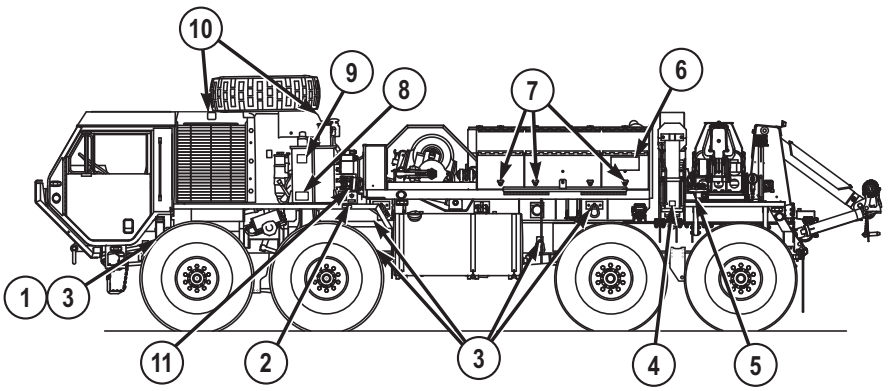
Table 3. M984A4 Wrecker Cabin.



INDEX	DECAL/PLATE
1	Transfer Case Data Plate
2	Self-Recovery Winch Data Plate
3	Traction Control Data Decal
4	Heavy-Duty Winch Data Plate
5	Crane Data Plate

General - Continued

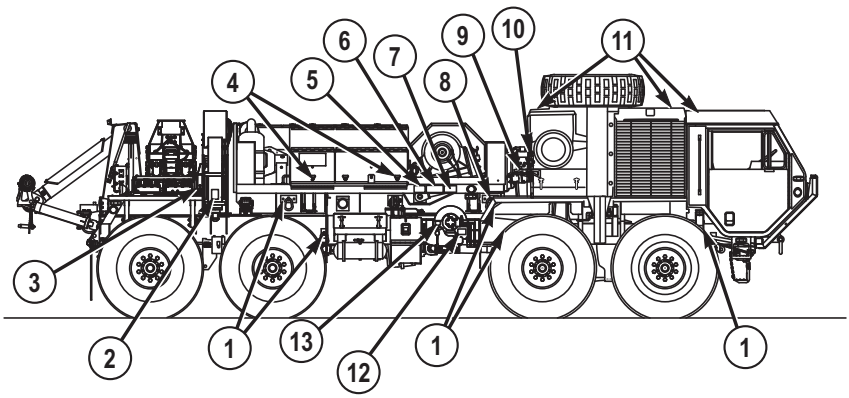
Table 4. M984A4 Wrecker Driver Side Exterior.



INDEX	DECAL/PLACARD/PLATE/STENCIL
1	Vehicle Identification Number (VIN) Placard
2	"24V" Stencil
3	"TIEDOWN" Stencil
4	Outrigger Instruction Placard
5	L.H. REMOTE CONTROL HOOKUP Placard
6	Crane Range Diagram Plate
7	"CAUTION: SPRING LOADED DOOR" Stencil
8	CAUTION Decal (hearing protection required)
9	"FULL COLD" Stencil
10	"NO STEP" Stencil (multiple on exhaust and engine access panels)
11	FRONT BRAKE APPLICATION Placard

General - Continued

Table 5. M984A4 Wrecker Passenger Side Exterior.



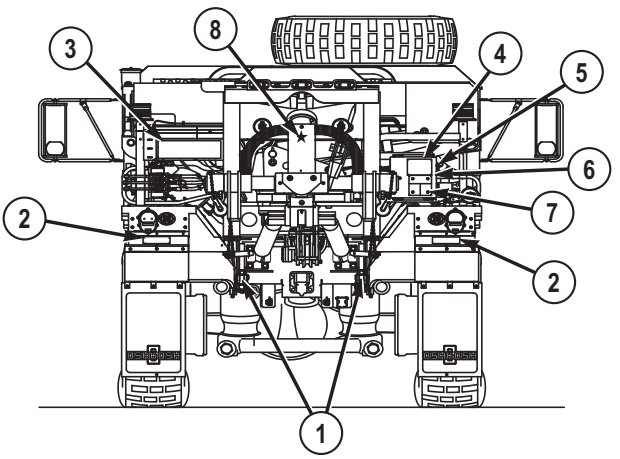
INDEX	DECAL/PLACARD/PLATE/STENCIL
1	"TIEDOWN" Stencil
2	Outrigger Instruction Placard
3	R.H. REMOTE CONTROL HOOKUP Placard
4	"CAUTION: SPRING LOADED DOOR" Stencil
5	Shipping Data Placard
6	CAUTION Decal
7	CAUTION Decal (hearing protection required)
8	WARNING and Instructions for Tire Carrier Pump (2 placards total)
9	Heavy-Duty Winch HIGH IDLE Placard
10	SUSPENSION DUMP VALVE Placard
11	"NO STEP" Stencil (multiple on exhaust and engine access panels)

General - Continued

Table 5. M984A4 Wrecker Passenger Side Exterior. - Continued

12	Self-Recovery Winch Data Plate
13	WARNING (self-recovery winch) Plate

Table 6. M984A4 Wrecker Rear Exterior.



INDEX	PLACARD/PLATE/STENCIL
1	"SLING POINT" and "TIEDOWN" Stencils (one each per side)
2	WARNING Placard
3	Retrieval System and Crane Instruction Plate
4	DANGER Placard
5	Work Lights and Work Beacon Plate
6	Winch Control Placard
7	Power Distribution Box Data Placards

General - Continued

Table 6. M984A4 Wrecker Rear Exterior. - Continued

8	US Army Star Stencil

Table 7. M984A4 Miscellaneous Decals/Placards/Plates/Stencils.

LOCATION	QUANTITY
Axle Housing	4
Carrier	4
Transfer Case	1
Engine	1
Transmission	1
Heavy-Duty Winch	1
Total	12

END OF WORK PACKAGE

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS **For use of this form, see AR 310-1; the proponent agency is the US Army Adjutant General Center.**	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)*	**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 NO.	PAGE NO.	PARA-GRAPH	LINE NO.*	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON *(Exact wording of recommended change must be given)*

** Reference to line numbers within the paragraph or subparagraph.*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

DA FORM 1 FEB 74 **2028** REPLACES DA FORM 2028, 1 DEC 68, WHICH WILL BE USED.

TO: *(Forward to proponent of publication or form) (Include ZIP Code)*	FROM: *(Activity and location) (Include ZIP Code)*	DATE

PART II- REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION/FORM NUMBER	DATE	TITLE

PAGE NO.	COLM NO.	LINE NO.	FEDERAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPROTED	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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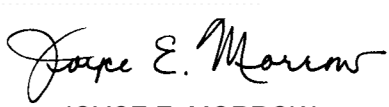
By Order of the Secretary of the Army:

GEORGE W. CASEY, JR.
General, United States Army
Chief of Staff

Official:



JOYCE E. MORROW
Administrative Assistant to the
Secretary of the Army
0809919

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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
Metric Tons	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