

**TECHNICAL MANUAL**

**OPERATION, INSTALLATION AND  
REFERENCE DATA**

**OPERATOR LEVEL**

**TRUCK, CARGO:**

**1-1/4-TON, 6x6, M561 (NSN 2320-00-873-5407)**

**TRUCK, AMBULANCE:**

**1-1/4-TON, 6x6, M792 (NSN 2310-00-832-9907)**

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**DEPARTMENTS OF THE ARMY AND THE AIR FORCE**

**SEPTEMBER 1980**





## WARNING

### EXHAUST GASES CAN BE DEADLY

Exposure to exhaust gases produces symptoms of headache, dizziness, loss of muscular control, apparent drowsiness, and coma. Permanent brain damage or death can result from severe exposure.

Carbon monoxide occurs in the exhaust fumes of fuel burning heaters and internal combustion engines, and becomes dangerously concentrated under conditions of inadequate ventilation. The following precautions must be observed to insure the safety of personnel whenever fuel burning heater(s) or engine of any vehicle is operated for maintenance purposes or tactical use.

Do not operate heater or engine of vehicle in an enclosed area unless it is adequately ventilated.

Do not idle engine for long periods without maintaining adequate ventilation in personnel compartments.

Do not drive any vehicle with inspection plates or cover plates removed unless necessary for maintenance purposes.

Be alert at all times during vehicle operation for exhaust odors and exposure symptoms. If either are present, immediately ventilate personnel compartments. If symptoms persist, remove affected personnel from vehicle and treat as follows: expose to fresh air; keep warm; do not permit physical exercise; if necessary, administer artificial respiration.

If exposed, seek prompt medical attention for possible delayed onset of acute lung congestion. Administer oxygen if available.

The best defense against exhaust gas poisoning is adequate ventilation.

## WARNING

Serious or fatal injury to personnel may result  
if the following instructions are not complied with.

Use extreme care when removing radiator cap, especially when temperature gage shows above 180°F.

Always wear leather gloves when handling winch cable. Never allow cable to slip through hands. Do not operate winch with less than four turns of cable on drum.

Do not drive truck until the low air pressure warning buzzer is silent and the air pressure gage shows at least 65 PSI. This is the minimum pressure required for safe braking action.

Do not use hand throttle to drive the vehicle.

Do not park truck with front transmission gearshift lever in gear.

If your vehicle class number is greater than the bridge class number, do not cross.

## WARNING

Do not place arms, legs, or objects between tractor and carrier. Any object hanging over this bulkhead may be crushed when truck articulates (turns at the joint).

Before backing up truck, make sure the rear and sides of the truck are clear of personnel and obstructions.

Deep fording may become a swimming operation due to increased water depth. Before fording, make sure that drain plugs are in place and bilge pump is working. Make sure all personnel have on life jackets.

Use extreme care while working in the area of the batteries. Grounding of the positive terminal to the truck frame can cause severe personnel injury and damage to equipment.

When used to carry flammables, explosives, or other hazardous material, equip truck with a fire extinguisher.



TECHNICAL MANUAL  
NO. 9-2320-242-10-1  
TECHNICAL ORDER  
NO. 36A12-1A-2051-1

DEPARTMENTS OF THE ARMY  
AND  
THE AIR FORCE  
Washington, DC, 30 September 1980

TECHNICAL MANUAL

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OPERATOR LEVEL

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1-1/4-TON, 6x6, M561 (NSN 2320-00-873-5407)

TRUCK, AMBULANCE:

1-1/4-TON, 6x6, M792 (NSN 2310-00-832-9907)

Current as of 1 February, 1980

REPORTING OF ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedure, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publication and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to: Commander, U.S. Army Tank Automotive Materiel Readiness Command, ATTN: DRSTA-MB, Warren, Michigan 48090. A reply will be furnished to you.

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\*This manual, together with TM 9-2320-242-10-2, 30 September 1980; -10-3, 30 September 1980 and -10-4, 30 September 1980 supersedes TM 9-2320-242-10, 4 March 1977.

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# CHAPTER 1

## INTRODUCTION

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1-1. **SCOPE.** This manual contains operating instructions for the M561, 1 1/4-ton 6x6 Cargo Truck (figure 1-1) and the M792, 1 1/4-ton 6x6 Ambulance Truck (figure 1-2) in accordance with the Maintenance Allocation Chart. The purpose of this manual is to give the operator the information he needs for safe, trouble-free operation of the equipment under usual and unusual conditions. Operating instructions for special purpose kits used with these trucks are also included.

1-2. **FORMS AND RECORDS.** Maintenance forms records and reports which are to be used by maintenance personnel at all levels are listed in and prescribed by TM 38-750.

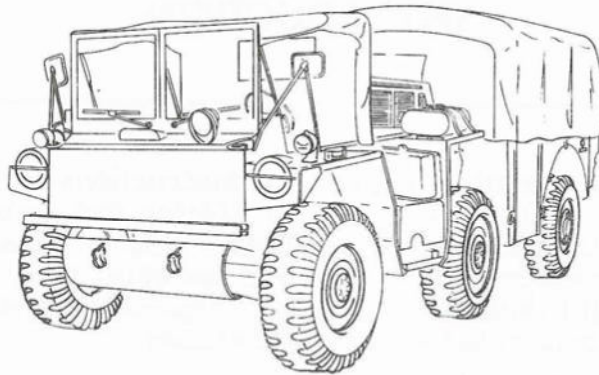
1-3. **EQUIPMENT IMPROVEMENT REPORT AND MAINTENANCE DIGEST (EIR MD) AND EQUIPMENT IMPROVEMENT REPORT AND MAINTENANCE SUMMARY (EIR MS).** The quarterly Equipment Improvement Report and Maintenance Digest, TB 43-0001-39 series, contains valuable field information on the equipment covered in this manual. The information in the TB 43-0001-39 series is compiled from some of the Equipment Improvement Reports that you prepared on the vehicles covered in this manual. Many of these articles result from comments, suggestions, and improvement recommendations that you submitted to the EIR program. The TB 43-0001-39 series contains information on equipment improvements, minor alterations, proposed Modification Work Orders (MWO's), warranties (if applicable), actions taken on some of your DA Form 2028's (Recommended Changes to Publications), and advance information on proposed changes that may affect this manual. In addition, the more maintenance significant articles, including minor alterations, field-fixes, etc, that have a more permanent and continuing need in the field are republished in the Equipment Improvement Report and Maintenance Summary (EIR MS) for TARCOM Equipment (TM 43-0143). Refer to both of these publications (TB 43-0001-39 series and TM 43-0143) periodically, especially the TB 43-0001-39 series, for the most current and authoritative information on your equipment. The information will help you in doing your job better and will help in keeping you advised of the latest changes to this manual. Also refer to DA Pam 310-4, Index of Technical Publications, and Appendix A, References, of this manual.

1-4. **REPORTING IMPROVEMENT RECOMMENDATIONS.** If your truck needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design. Tell us why a procedure is hard to perform. Put it on an SF 368 (Quality Deficiency Report). Mail it to us at: Commander, U.S. Army Tank Automotive Materiel Readiness Command, ATTN: DRSTA-MT, Warren, Michigan 48090. We'll send you a reply.

1-5. **METRIC SYSTEM.** The equipment/system described herein is nonmetric and does not require metric common or special tools. Therefore, metric units are not supplied. Tactical instructions, for sake of clarity, will also remain nonmetric.

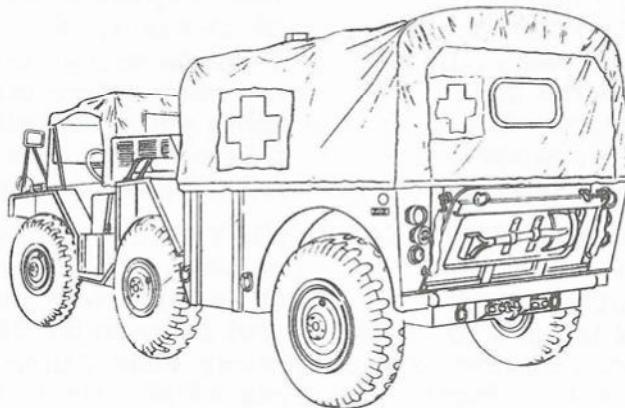
1-6. **DESTRUCTION TO PREVENT ENEMY USE.** Follow procedures given in TM 750-244-6 for destruction of Army materiel to prevent enemy use.





TA 053651

Figure 1-1. Typical 1 1/4-ton 6x6 Cargo Truck (M561).



TA 053652

Figure 1-2. Typical 1 1/4-ton 6x6 Ambulance Truck (M792).

1-7. **MANUAL ORGANIZATION.** This manual is divided into four volumes. Volumes are divided into chapters and sections depending on the amount of subject material. The content of each volume is as follows:

Volume 1. TM 9-2320-242-10-1, Operation, Installation, and Reference Data

Volume 2. TM 9-2320-242-10-2, Scheduled Maintenance

Volume 3. TM 9-2320-242-10-3, Troubleshooting

Volume 4. TM 9-2320-242-10-4, Maintenance

1-8. **VEHICLE/BRIDGE CLASSIFICATION.** Refer to table 1-1 and find your vehicle class number. Table columns are marked as follows:

E - Class number of vehicle with no payload.

C - Class number of vehicle with cross-country payload.

H - Class number of vehicle with highway payload.

a. Bridges along your route may be marked with a class number. The bridge class number shows the safe capacity of the bridge. If your vehicle class number is equal to or less than the bridge class number, the bridge will hold your vehicle. If your vehicle class number is greater than the bridge class number, your vehicle is too heavy for the bridge; DO NOT CROSS.

b. For more information refer to FM 5-36.

Table 1-1. Vehicle Class Information

Vehicle	Model	NSN	Class Number		
			E	C	H
Cargo	M561	2320-00-873-5407	3	4	4
Ambulance	M792	2310-00-832-9907	3	4	*

\*Information to be supplied by the Army when available.





## CHAPTER 2

### DESCRIPTION AND DATA

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#### Section I. FUNCTIONAL DESCRIPTION

2-1. **GENERAL.** The 1 1/4-ton, 6x6 M561 (Cargo) and M792 (Ambulance) trucks are tactical vehicles designed for use on all types of roads, highways, and cross-country terrain. They can ford streams up to 30 inches deep with a current no more than 6 mph (trotting speed) and swim in calm water using the wheels both for propulsion and as steering rudders. The cargo truck is used to move different types of cargo including weapons and ammunition. The ambulance carrier can hold three litter patients and an attendant; two litter patients, three ambulatory patients and an attendant; or eight ambulatory patients. The following paragraphs are provided to give the operator an overall understanding of the equipment and its main functions. The descriptive paragraphs are keyed to an overall equipment block diagram, which shows each functional group of the equipment as a block. Arrows are used to show the flow of power to and from each block on the diagram.

#### 2-2. OVERALL EQUIPMENT FUNCTIONAL DESCRIPTION. (See fig. 2-1.)

a. **Engine.** The engine functions to supply power to drive the truck and operate equipment and accessories.

b. **Clutch.** The clutch, by means of mechanical linkage, connects power produced by the engine to the transmission. The clutch also separates power from the transmission when not needed, or when shifting gears.

c. **Electrical System.** The electrical system supplies current to start the engine, operate lights, equipment, and accessories, and to charge the batteries.

d. **Fuel and Air Intake System.** The fuel and air intake system provides a correct mixture of fuel and air needed to start and run the engine. The system stores fuel in the tanks and delivers fuel to the engine as needed.

e. **Cooling System.** The cooling system keeps the engine running at normal operating temperature. The engine is cooled by liquid coolant moved through the engine by the water pump and by cooling air drawn in through the engine cover. The transfer case and transmission parts are also air cooled.

f. **Exhaust System.** The exhaust system collects and removes exhaust gases produced while the engine is operating.

g. **Transmission System.** The transmission system gives the operator a choice of four forward gear speeds, reverse and neutral positions for operating the truck correctly at all speeds, in all conditions.

h. **Transfer System.** The transfer system sends drive power from the transmission to the propeller shafts to drive the wheels. The transfer system also lets you pick high or low range and two or six-wheel drive.

i. Transfer Power Takeoff System. The transfer power takeoff system provides the power to drive the winch on trucks equipped with a winch kit.

j. Tractor and Carrier Propeller Shafts. The tractor propeller shaft sends power from the transfer case to the center differential. The carrier propeller shaft sends power from the center differential to the rear differential when the truck is in six-wheel drive.

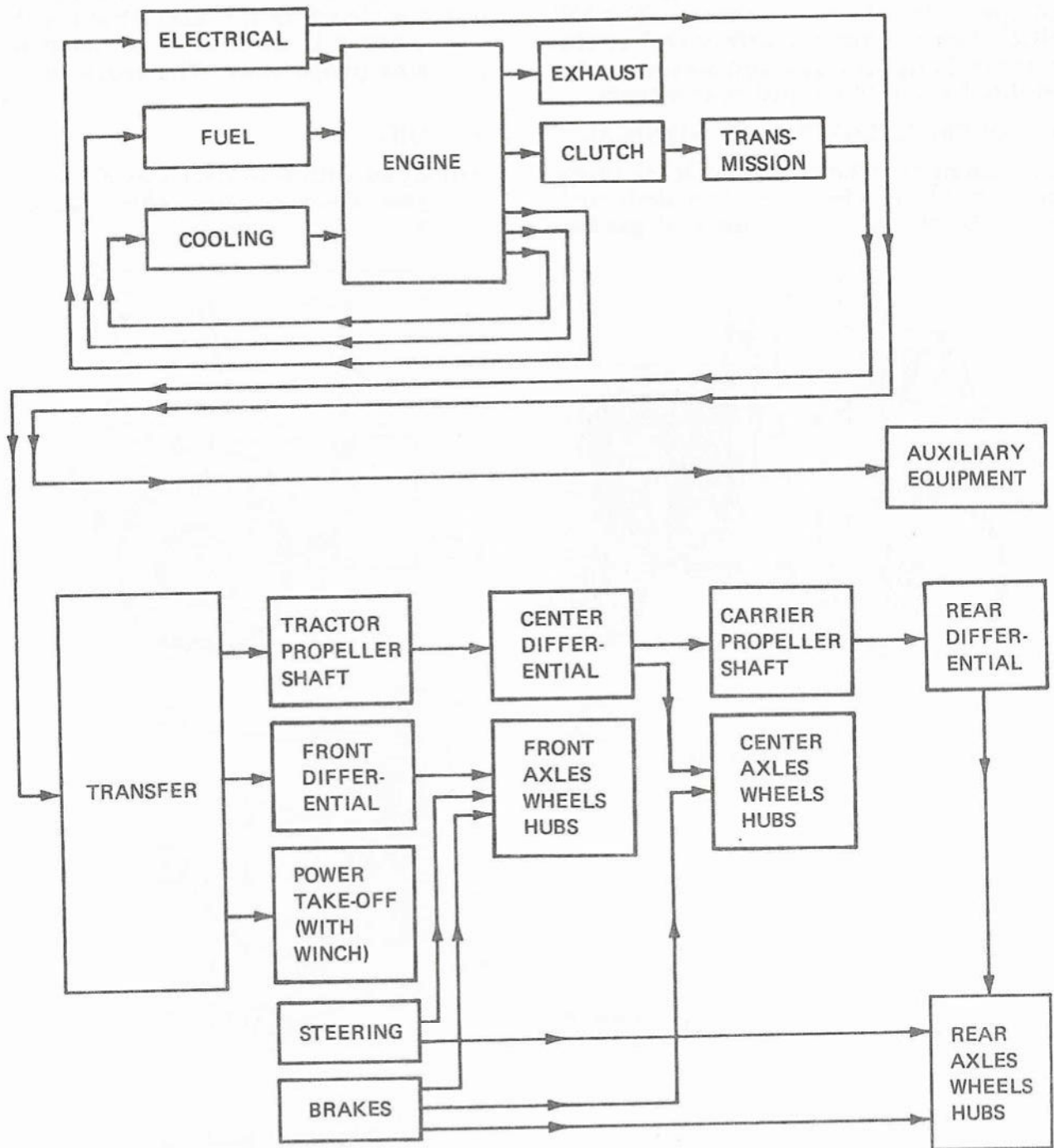
k. Differential System. The differential system consists of front, center and rear differentials. The front differential, driven directly from the transfer case gear train, sends power to the front drive axles. The center differential sends power from the tractor propeller shaft to the center drive axles and to the carrier propeller shaft. The rear differential sends power (when in six-wheel drive) from the carrier propeller shaft to the rear drive axles.

l. Steering System. The steering system is different from most trucks. Both the front and rear wheels are steerable. They turn in opposite directions to make the turning radius of the truck less.

m. Brake System. The truck has a sealed, pressurized hydraulic service brake system and a hand operated, mechanical parking brake. The brake system uses a dual chamber master cylinder with one cylinder chamber controlling the front and rear brakes and the other controlling the center brakes. When the operator steps on the service foot brake, the brake system slows down or stops the truck.

n. Axles, Wheels, and Hubs. The axles support the weight of the truck. The wheels are mounted on stub axles which are joined to the drive axle shafts. Turning power for the wheels is sent from the differentials through the drive axle shafts to the stub axles.

o. Auxiliary Equipment. Various kits such as a winch kit, winterization kit, surfing kit and a 100-ampere alternator kit are available for installation on both the cargo truck and ambulance. Weapon and ammunition stowage kits can also be installed on the cargo truck.



TA 053653

Figure 2-1. Overall Equipment Block Diagram

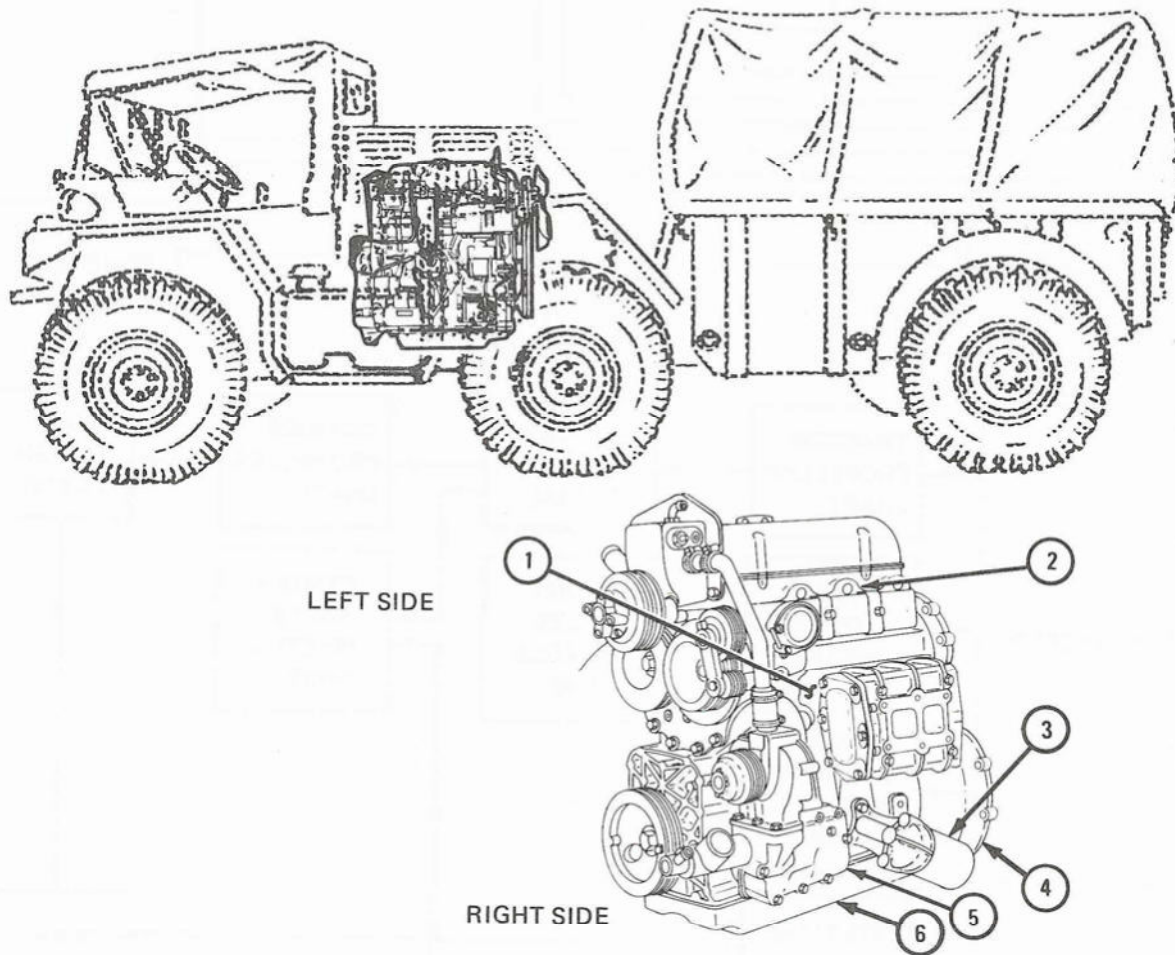


## Section II. PHYSICAL DESCRIPTION

2-3. GENERAL. The M561 Cargo Truck is a dual bodied (tractor and carrier), articulated (jointed), six-wheel truck. The M792 Ambulance Truck is the same truck with additional equipment for safety and comfort when the truck is used as an ambulance. The truck is lightweight and swims, using its wheels as propellers. The truck is steerable by the front and rear wheels.

## 2-4. OVERALL EQUIPMENT PHYSICAL DESCRIPTION.

a. Engine. The M561 and M792 trucks are equipped with a Detroit Diesel 3-53 series, three cylinder, liquid-cooled, in-line, two-cycle diesel engine. (See fig. 2-2.) Refer to LO 9-2320-242-12 for fuel grades to be used.

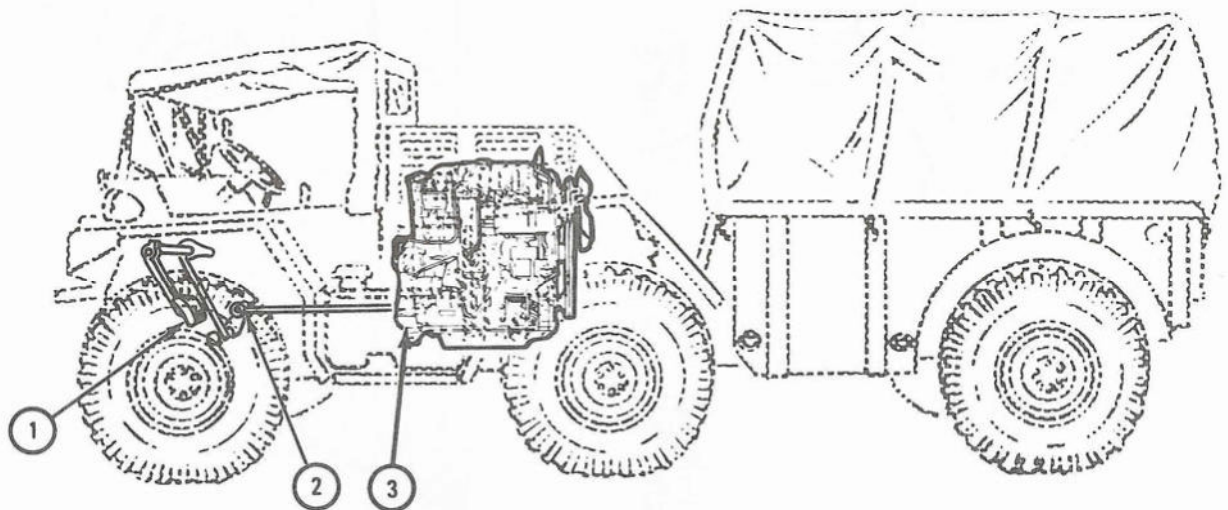


TA 053654

- |                  |                     |
|------------------|---------------------|
| 1. Block         | 4. Flywheel housing |
| 2. Cylinder head | 5. Crankcase        |
| 3. Oil filter    | 6. Oil pan          |

Figure 2-2. Engine Components Location

b. Clutch. The clutch assembly (fig. 2-3) consists of a pressure plate bolted to the flywheel of the engine and a clutch disk splined to the transmission. When the truck clutch pedal is pushed down, pressure on the clutch disk is removed and the disk moves away from the engine flywheel. When the clutch disk moves away from the flywheel, the transmission is disengaged from the engine, permitting changing of the transmission gears. When the clutch pedal is let back up a steady pressure is kept on the clutch disk. This pressure holds the disk against the engine flywheel connecting the engine and transmission.

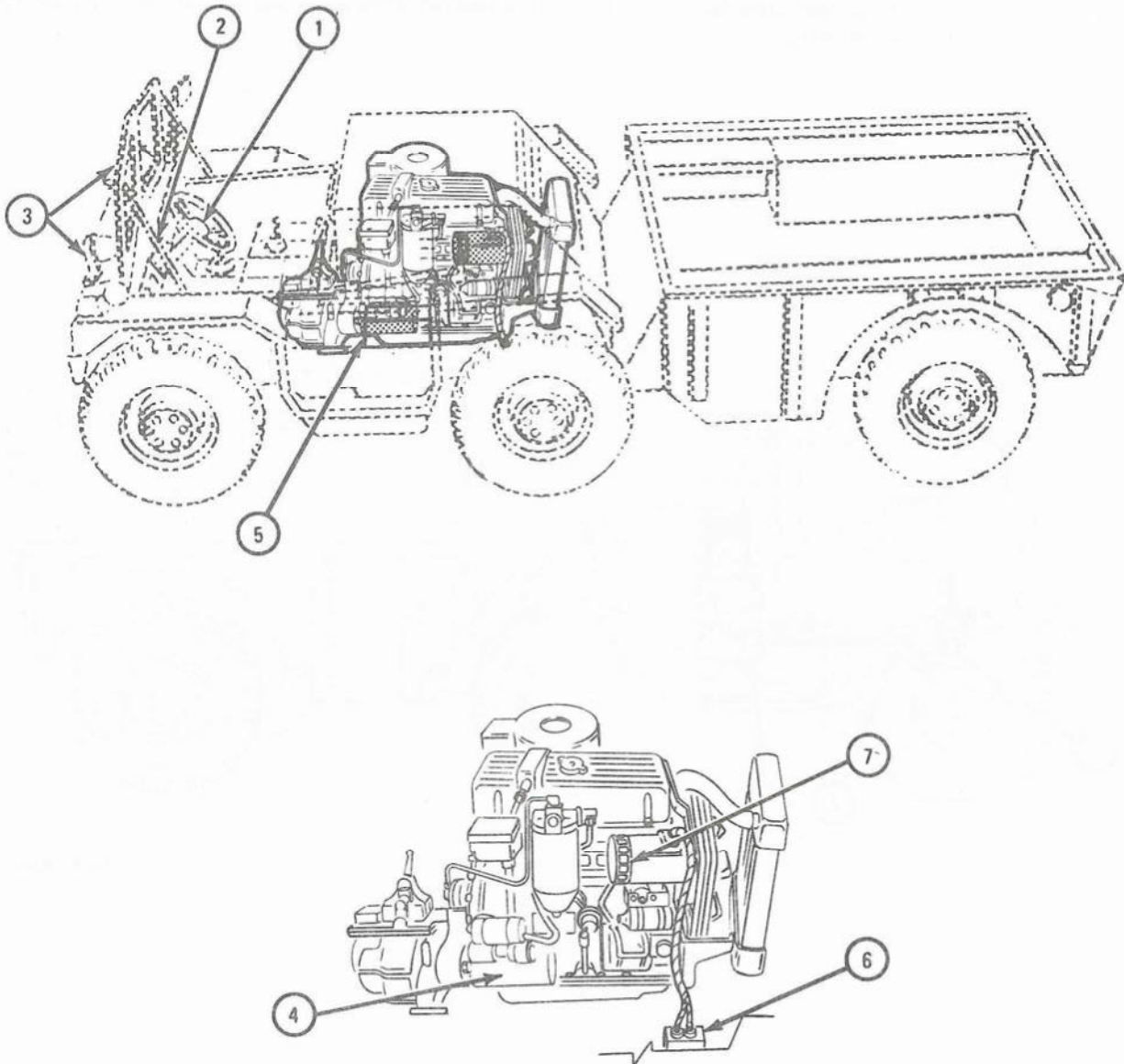


TA 053655

1. Clutch pedal
2. Clutch linkage
3. Clutch

Figure 2-3. Clutch Components Location.

c. Electrical System (Fig. 2-4). The truck is equipped with a 24-volt, negative ground electrical system. Two 12-volt, 100-ampere (amp) batteries are connected in series. A 24-volt, 60-amp, belt driven alternator charges the batteries during engine operation. Electrical components are connected by a multiple harness electrical system. The system is protected by automatically reset circuit breakers.



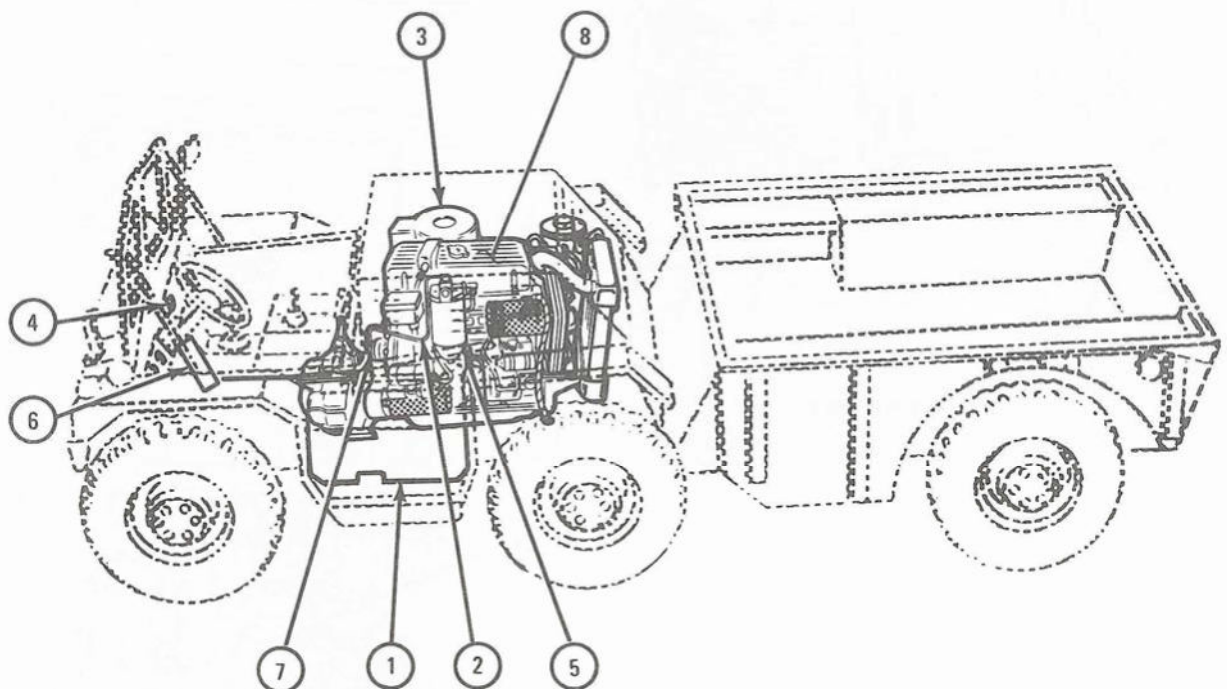
TA 053656

- |                |                             |               |
|----------------|-----------------------------|---------------|
| 1. Horn button | 4. Starter motor            | 6. Regulator  |
| 2. Gages       | 5. Battery (left and right) | 7. Alternator |
| 3. Lights      |                             |               |

Figure 2-4. Electrical Components Location.



d. Fuel and Air Intake Systems. The fuel and air intake system (fig. 2-5) is made up of air cleaner, two fuel tanks, fuel pump, primary and secondary fuel filters, fuel lines and fittings, fuel injectors, accelerator pedal and linkage, ENG STOP control, and hand THROTTLE control.

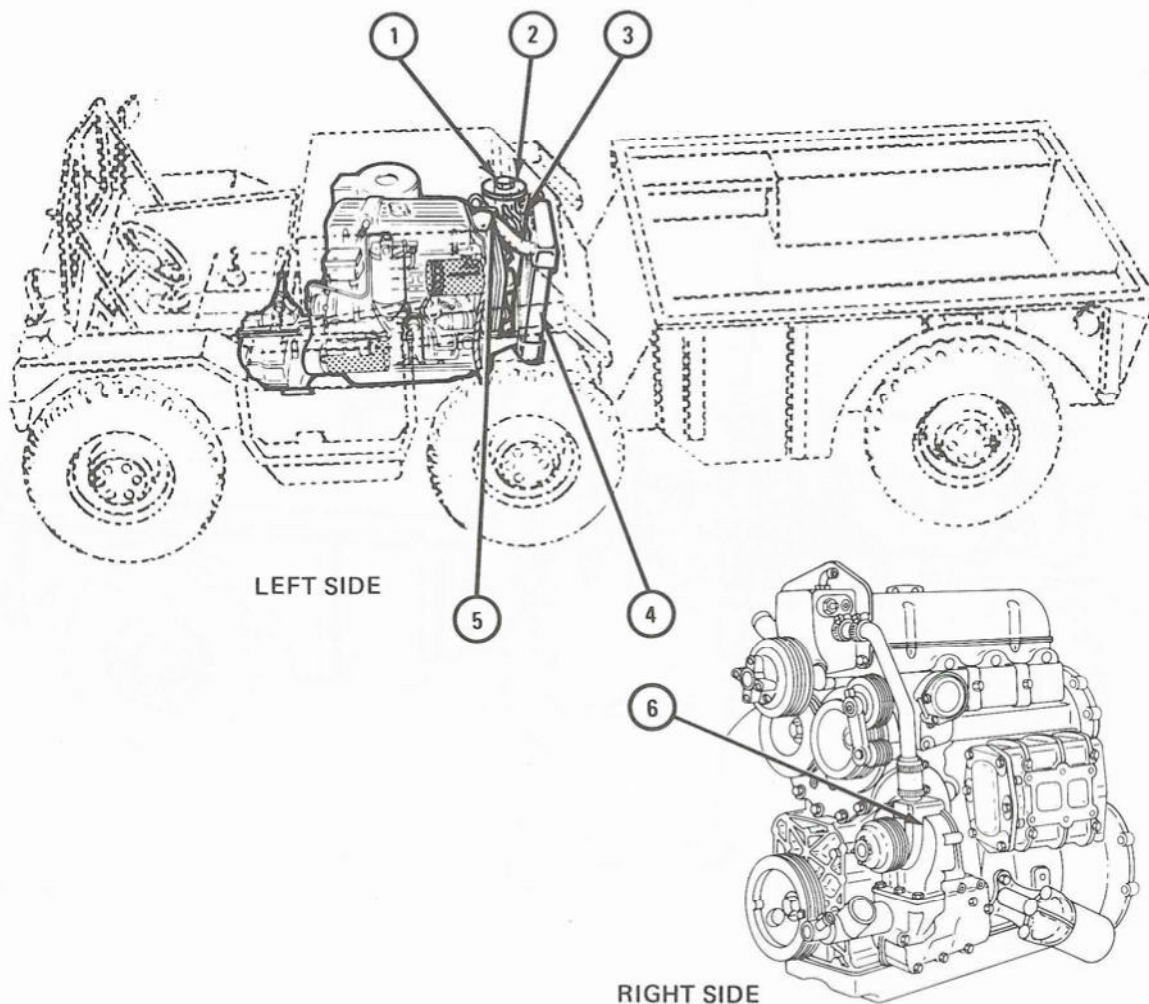


TA 053657

- |                                   |                                      |
|-----------------------------------|--------------------------------------|
| 1. Fuel tank (left and right)     | 5. Fuel filter                       |
| 2. Fuel lines                     | 6. Accelerator controls and linkages |
| 3. Air cleaner                    | 7. Fuel pump                         |
| 4. Throttle controls, engine stop | 8. Fuel injectors                    |

Figure 2-5. Fuel and Air Intake System Components Location.

e. Cooling System. The engine is cooled during operation by liquid coolant pumped through the radiator and the engine. The cooling system (fig. 2-6) is made up of a belt driven water pump, fan, thermostat, radiator and shroud, surge tank, and a pressure-relief type radiator filler cap.

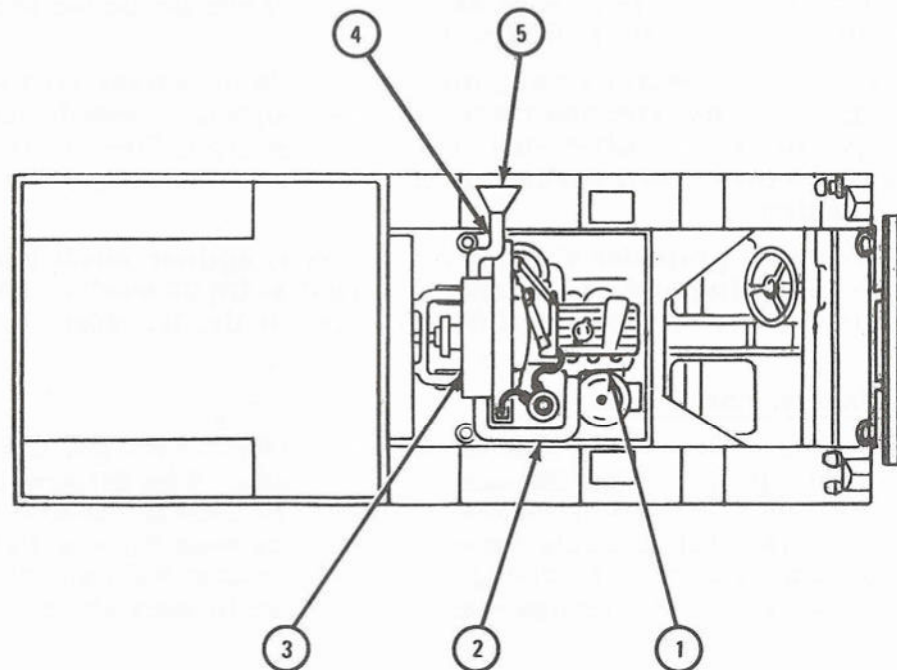


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- |                        |                        |
|------------------------|------------------------|
| 1. Radiator filler cap | 4. Radiator and shroud |
| 2. Surge tank          | 5. Thermostat          |
| 3. Fan                 | 6. Water pump          |

Figure 2-6. Cooling System Components Location.

f. Exhaust System. The exhaust system (fig. 2-7), ducts hot gases from the engine cylinders through the exhaust manifold to the muffler and then through the tail pipe. The exhaust system is made up of an exhaust manifold, exhaust pipe, muffler, tail pipe, and tail pipe diffuser.



TA 053659

- |                     |                       |
|---------------------|-----------------------|
| 1. Exhaust manifold | 4. Tail pipe          |
| 2. Exhaust pipe     | 5. Tail pipe diffuser |
| 3. Muffler          |                       |

Figure 2-7. Exhaust System Component Location.



g. Transmission System. The transmission has four forward and one reverse speeds. It has synchromesh action in all forward gears except first. The transmission is manually operated.

h. Transfer System. The transfer system delivers power from the transmission to the propeller shafts. High or low range and two or six wheel drive can be selected. Trucks with a winch have a power takeoff unit mounted on the transfer case.

i. Couplings and Propeller Shafts. (See fig. 2-8.)

(1) The transmission-to-transfer coupling is a double universal joint, separated by a coupling. The coupling assembly joins the transmission main output shaft to the transfer case input shaft.

(2) The tractor propeller shaft is joined to the transfer case output shaft and center differentials by a universal joint at each end of the propeller shaft. The shaft delivers drive force to the center differentials.

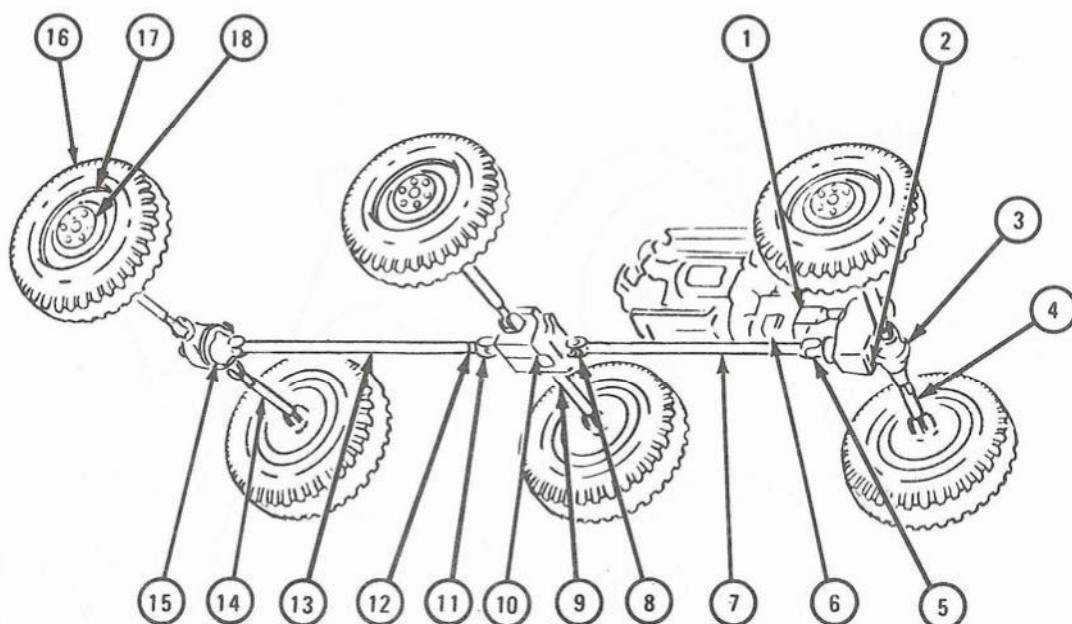
(3) The tractor-to-carrier coupling is a double universal joint which lets the carrier pitch and roll along with the tractor. The coupling assembly joins the center differential to the carrier propeller shaft and delivers drive force to the rear differential. The rear differential then sends the drive force to the rear axles and wheels when in six-wheel drive.

(4) The carrier propeller shaft is a two piece, splined shaft joined to the tractor-to-carrier coupling and to the rear differential input shaft. The propeller shaft delivers drive force to the rear differential when the transfer shift lever is in six-wheel drive.

j. Axles, Wheels, and Tires.

(1) The front, center and rear differentials (fig. 2-8), get drive force from the engine by way of the propeller shafts and transfer case. The differentials then deliver drive force to the drive and stub axle assemblies. The center differential has a shift control mechanism which can provide drive force to the rear differential. The front and rear drive axle assemblies are interchangeable. The center axle shafts are larger. The stub axles ride on roller bearings which are joined to each steering knuckle assembly.

(2) The vehicle has steel wheels joined to the service brake hub by eight lug nuts. The vehicle uses 11 x 18 tubeless tires. Each tire and wheel weighs about 100 pounds.

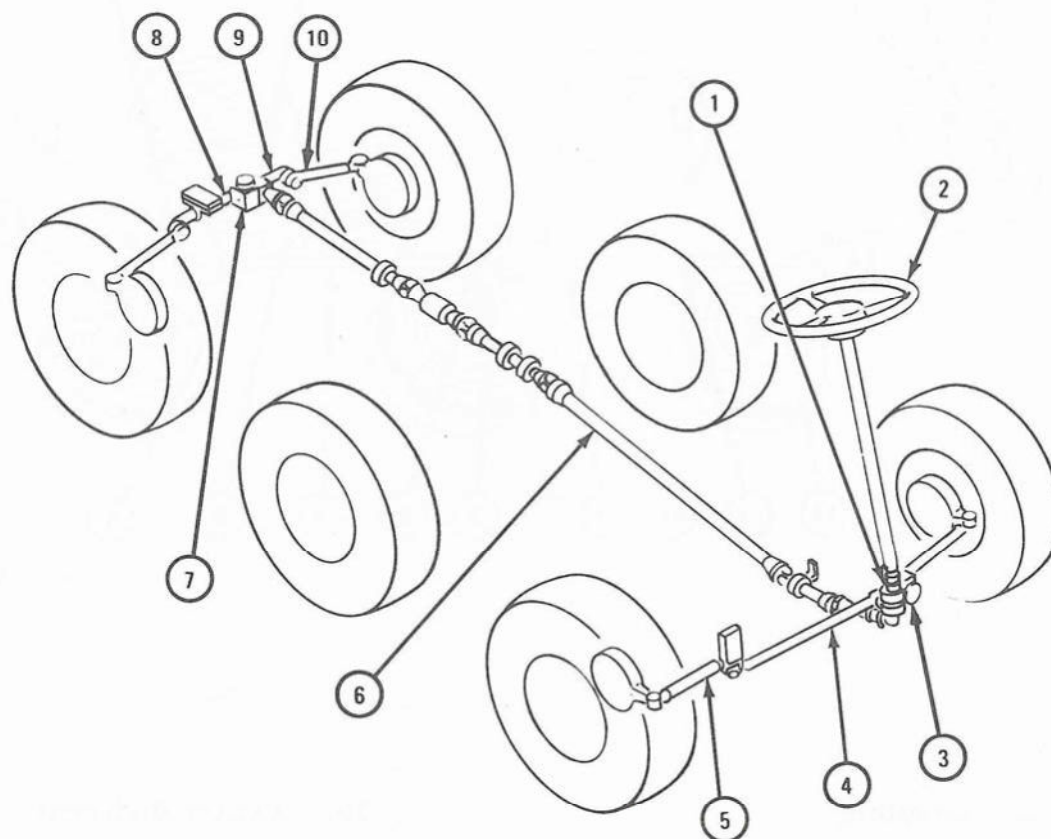


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- |                            |                             |
|----------------------------|-----------------------------|
| 1. Coupling                | 10. Center differential     |
| 2. Transfer case           | 11. Coupling                |
| 3. Front differential      | 12. Splined joint           |
| 4. Front axle assembly     | 13. Carrier propeller shaft |
| 5. Universal joint         | 14. Rear axle assembly      |
| 6. Transmission            | 15. Rear differential       |
| 7. Tractor propeller shaft | 16. Tire                    |
| 8. Universal joint         | 17. Wheel                   |
| 9. Center axle assembly    | 18. Hub (behind wheel)      |

Figure 2-8. Drive Train Components Location

k. Steering System. The truck has a tandem steering system (fig. 2-9) joined to the front and rear wheels and controlled from one steering wheel in the driver's compartment. The front and rear wheels turn in opposite directions to reduce the turning radius and improve driver control. The steering system consists of a steering wheel, torque tube front and rear steering gear boxes, front and rear pitman arms, front and rear tie rods, and intermediate tie rods. Turning motion applied to the steering wheel is sent through these components to steer the front and rear wheels.



TA 053661

- |                            |                           |
|----------------------------|---------------------------|
| 1. Front pitman arm        | 6. Torque tube            |
| 2. Steering wheel          | 7. Rear steering gear box |
| 3. Front steering gear box | 8. Rear intermediate rod  |
| 4. Front intermediate rod  | 9. Rear pitman arm        |
| 5. Front tie rod           | 10. Rear tie rod          |

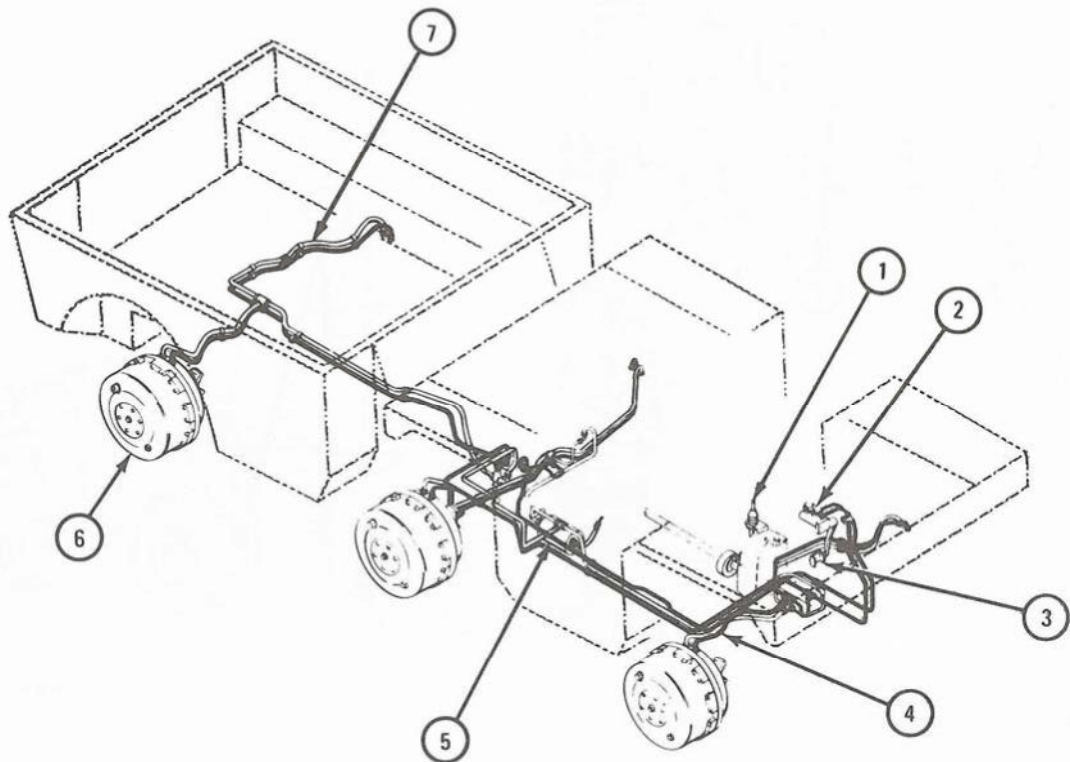
Figure 2-9. Steering System Component Location.



1. Brake System. The truck brake system (fig. 2-10) is made up of a sealed pressurized hydraulic service brake system and a hand operated mechanical handbrake.

(1) The service brake system is made up of a brake pedal, master cylinder with two pistons (one piston controls front and rear brakes, the other piston controls the center brakes), a wheel cylinder in each of the six wheels to operate the brake shoes, and air and hydraulic lines and fittings. The service brake assembly at the wheels has drum-type brake assemblies joined with spindle, stub axles, and wheel bearings. This unit is sealed from outside conditions and is pressurized to keep out contaminants.

(2) The handbrake assembly is made up of two expanding brake shoes and an operating mechanism. The handbrake lever is located to the right of the driver's seat.

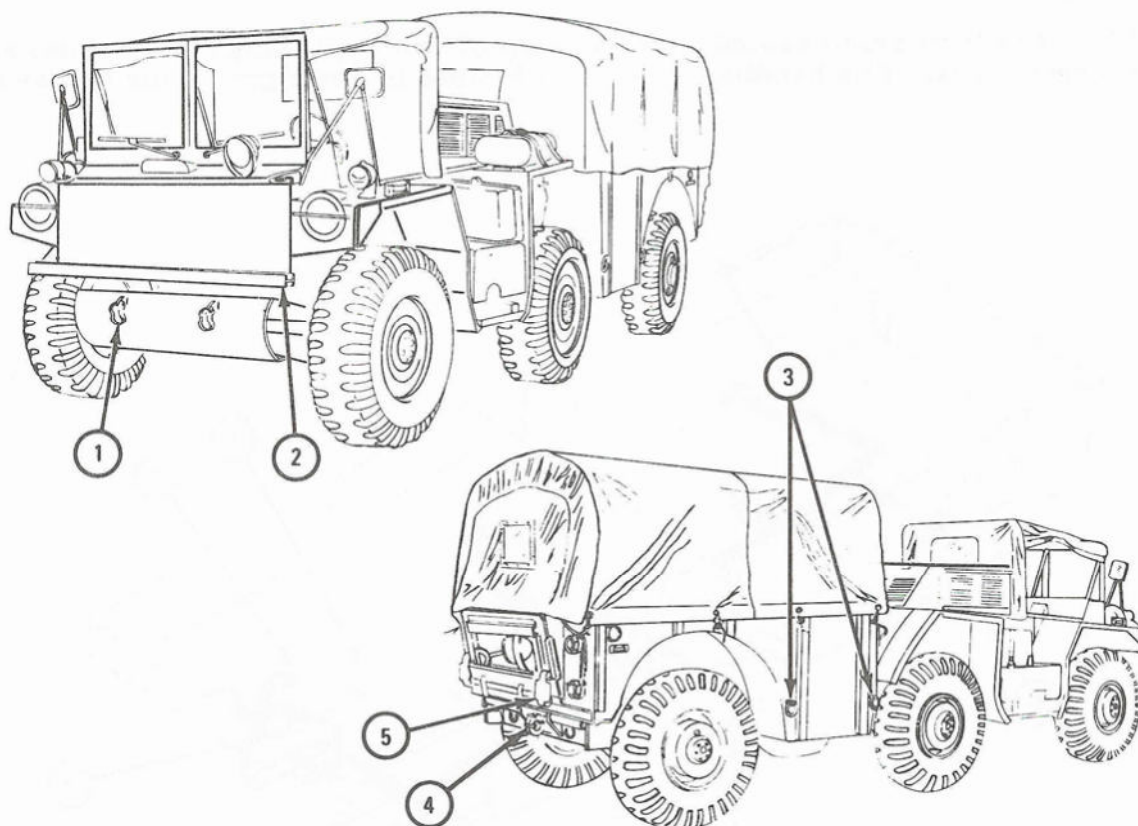


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- |                    |                      |
|--------------------|----------------------|
| 1. Handbrake       | 5. Air reservoir     |
| 2. Master cylinder | 6. Brake assembly    |
| 3. Brake pedal     | 7. Air pressure line |
| 4. Brakeline       |                      |

Figure 2-10. Brake System Component Location.

m. Tractor and Carrier Bodies. The tractor and carrier bodies (fig. 2-11) are equipped with tie-down shackles, towing shackles, towing pintle, and front and rear bumpers.

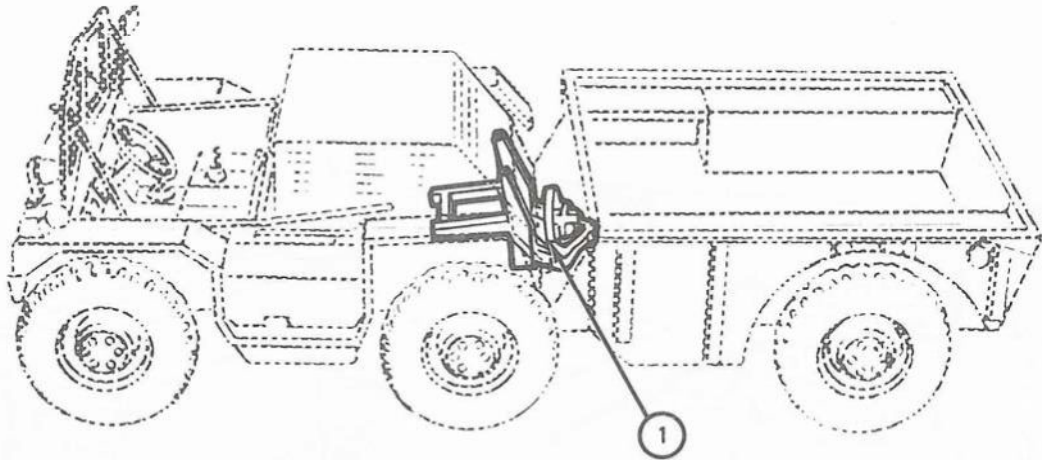


TA 053664

1. Towing shackles
2. Front bumper
3. Tie-down shackles
4. Towing pintle
5. Rear bumper

Figure 2-11. Tractor and Carrier Bodies.

n. Articulation Joint. The articulation joint assembly (fig. 2-12) connects the tractor and carrier bodies and lets them roll and pitch independently of each other. The articulation joint assembly is coupled in a way which will stop jackknifing.



TA 053665

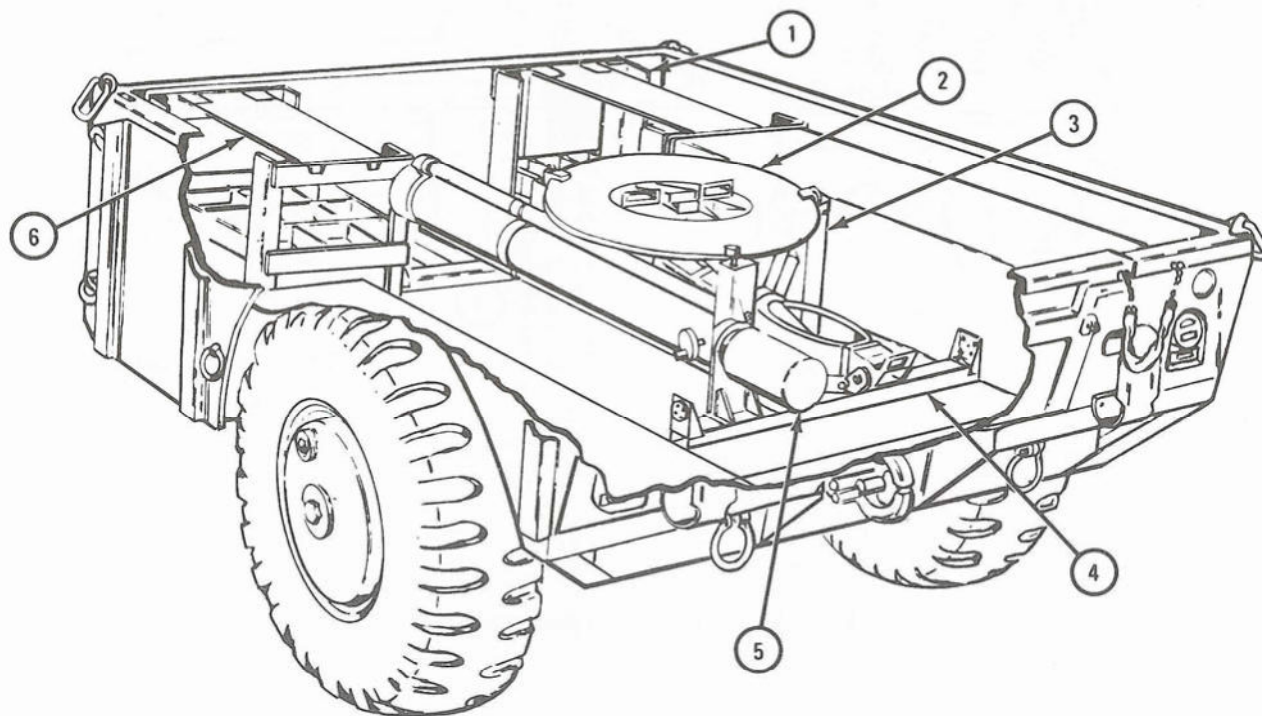
1. Articulation joint assembly

Figure 2-12. Articulation Joint Assembly.



o. Weapon and Ammunition Stowage.

(1) 4.2-inch Mortar Kit. The 4.2-inch mortar kit (fig. 2-13) is installed in the cargo truck carrier to provide stowage and transportation for the 4.2-inch mortar and mortar mount and 24 rounds of ammunition. The kit consists of a frame, two ammunition racks and brackets for mounting the frame and ammunition racks.

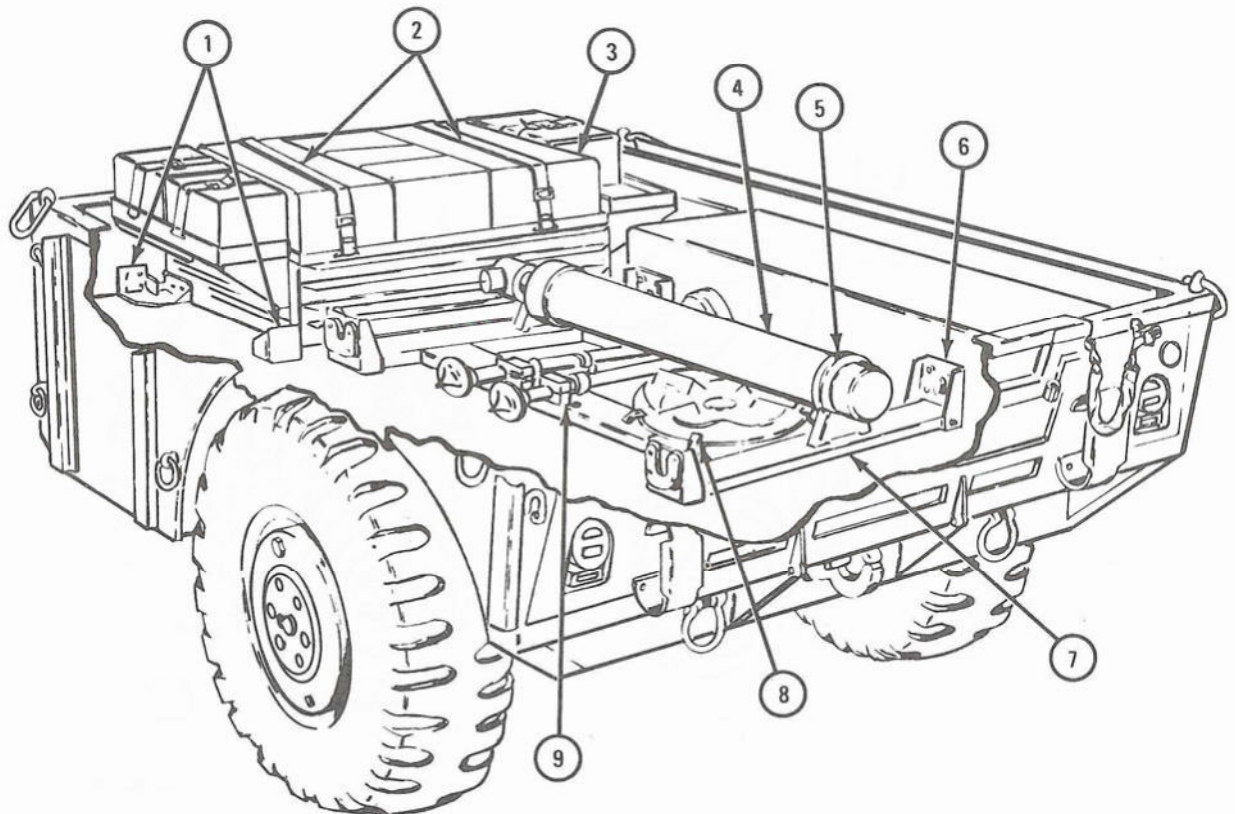


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- |                    |                             |
|--------------------|-----------------------------|
| 1. Retainer        | 4. Frame assembly           |
| 2. Baseplate       | 5. Mortar tube              |
| 3. Holder Assembly | 6. Ammunition rack assembly |

Figure 2-13. 4.2-inch Mortar Kit Location.

(2) 81-mm Mortar Kit. The 81-mm mortar kit (fig. 2-14) is installed in the cargo truck carrier to provide stowage and transportation for the 81-mm mortar cannon, and 81-mm mortar shells; and sighting and fire control equipment. The kit contains a frame assembly, ammunition box, and brackets and hardware.

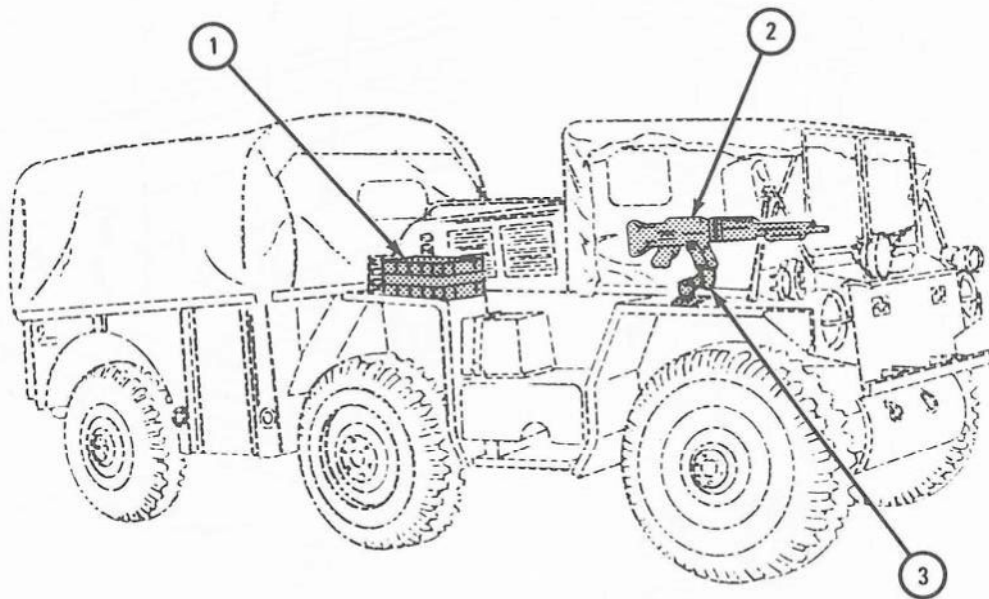


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- |                                     |                             |
|-------------------------------------|-----------------------------|
| 1. Ammunition box mounting brackets | 6. Support tie down bracket |
| 2. Ammunition retaining straps      | 7. Mortar support assembly  |
| 3. Ammunition box assembly          | 8. Baseplate clamp assembly |
| 4. Mortar tube                      | 9. Tripod clamp assembly    |
| 5. Mortar clamp assembly            |                             |

Figure 2-14. 81-mm Mortar Kit Location.

(3) 7.62-mm Machine Gun Kit. The 7.62-mm machine gun (fig. 2-15) is mounted on the right front fender of the cargo truck. The kit consists of the gun mount, ammunition storage box rack, and two spare barrel stowage securing straps. The kit can be used with the tractor windshield installed or removed.



TA 053668

1. Ammunition
2. 7.62-mm Machine gun
3. Offset gun mount

Figure 2-15. 7.62-mm Machine Gun Kit Location.



## Section III. DIFFERENCES IN MODELS.

2-5. The differences between the cargo truck and the ambulance are the added features required by the ambulance for comfort and safety. The ambulance has the following features not found on the cargo truck:

- a. A heater kit which contains a personnel heater, warm air ducting, exhaust ducting, a heater control box, a fuel filter, and a fuel pump.
- b. An insulated canopy for the carrier marked with the word "Ambulance" and two Red Cross emblems.
- c. An attendant's seat.
- d. Seat belts, seat cushions, and head pads.
- e. A surgical lamp and lamp support assembly.
- f. A dispenser bracket assembly.
- g. Bracket and straps for securing three litters in the carrier.
- h. Tailgate step.

## Section IV. TABULATED DATA

2-6. GENERAL. This section contains reference data, in table form, for use by the operator when using the equipment. Data is given for the following areas:

- a. Physical data
- b. Functional characteristics
- c. Capabilities and limitations
- d. Environmental characteristics

2-7. WEIGHT. Table 2-1 gives the weight of the truck under various conditions.

2-8. DIMENSIONS. Table 2-2 and figure 2-16 give the dimensions of the truck.

2-9. CAPACITIES. Table 2-3 gives the liquid capacities for various systems.

2-10. TIRE INFLATION DATA. Table 2-4 gives the tire inflation data for the truck.

2-11. ENVIRONMENTAL CHARACTERISTICS. Table 2-5 lists the fuel that can be used in the truck under various temperature conditions.

2-12. COMPONENTS OF END ITEM LIST. Integral components and basic issue items required for the M561 and M792, 1 1/4 ton, 6 x 6 cargo and ambulance trucks are listed in appendix B.

2-13. ADDITIONAL AUTHORIZATION LIST. Additional items authorized for the support of 1 1/4 ton, 6 x 6 trucks are listed in appendix C.

2-14. EXPENDABLE SUPPLIES AND MATERIALS LIST. Expendable supplies and materials needed to operate and maintain the 1 1/4 ton, 6 x 6 trucks are listed in appendix D.

Table 2-1. Truck Weights

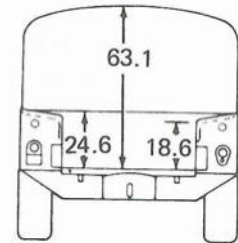
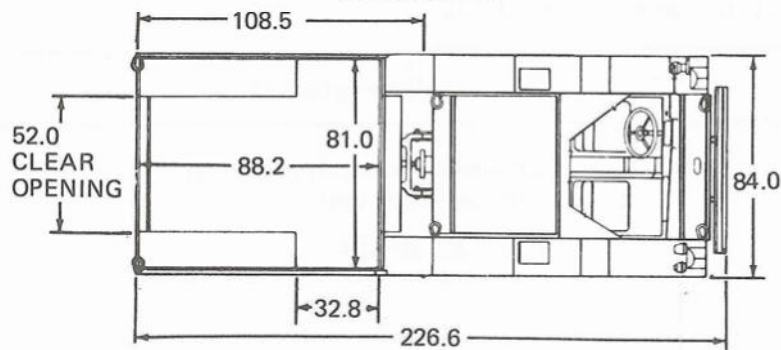
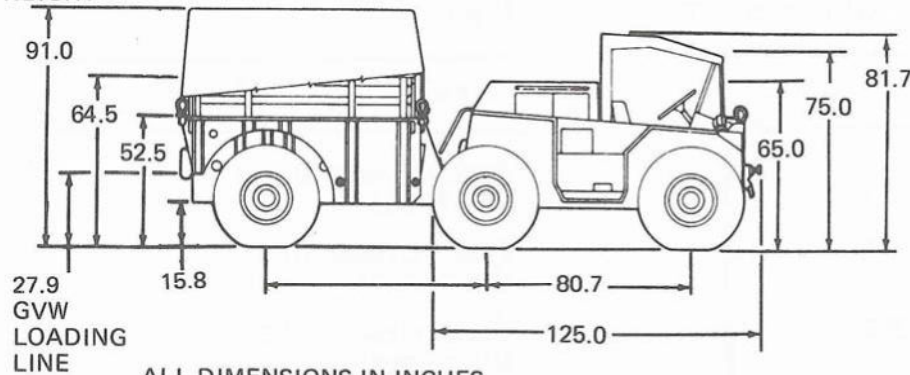
Model	Characteristic	Weight (Pounds)
M561 Cargo Truck	Curb Weight	7300
	Curb Weight w/winch	7710
	Payload	2900
	Gross Weight	10,200
	Front Axle (GVW)	2745
	Center Axle (GVW)	3900
	Rear Axle (GVW)	3555
M792 Ambulance	Curb Weight	7950
	Loaded - 3 litter 1 attendant	9300
	Loaded - 2 litter, 3 ambulatory 1 attendant	9910
	Loaded - 8 ambulatory 1 attendant	10,370

Table 2-2. Truck Dimensions

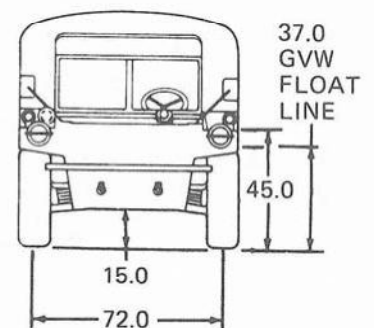
Characteristic	Dimension Inches
Length	226.6
Length w/winch	231.7
Width	84.0
Height w/o carrier heater	91.0
Height w/carrier heater	98.8
Height - M792 Ambulance	98.8
Reducible height	65.7
Tread	72.0
Ground Clearance	15.0

ALL HEIGHTS AT GVW

HITCH PIVOT

GVW MAX.  
HEIGHT

ALL DIMENSIONS IN INCHES



TA 053669

Figure 2-16. Vehicle Dimensions at Gross Vehicle Weight (GVW).



Table 2-3. Truck Capacities

Description	Capacity
Fuel Tank	40 gal. (2 tanks, 20 gal. each)
Cooling System	19 quarts
Differentials:	
Front	4 pints
Center	12 pints
Rear	5 pints
Transmission Lubricant	5.5 pints
Transfer Case Lubricant	4.5 pints
Engine Crankcase	12 quarts

Table 2-4. Tire Data

Tire	Characteristic
Type	Tubeless, nondirectional cross-country
Size	11 x 18, 6-ply
Pressure:	
Highway	22 psi
Cross-country	18 psi
Snow	12 psi

Table 2-5. Permissible Fuels

Temp Limits	Fuel
All temperatures	Diesel fuel (Grade DFA) (Spec VV-F-800)
Do not use below -10°F	Diesel fuel (Grade DF1) (Spec VV-F-800)
Do not use below +32°F	Diesel fuel (Grade DF2) (Spec VV-F-800)

Table 2-6. Performance Data\*

\*Information to be supplied by TARCOM when available.

## CHAPTER 3

### SERVICE UPON RECEIPT OF EQUIPMENT

---

3-1. GENERAL. When a new, used, or reconditioned truck is first received by the using organization, it is the responsibility of the using organization to see that the truck has been inspected and made ready for service by the supporting service unit. This will be shown on DA Forms 2408-5 and 2408-9, which are a record of all services and corrective maintenance. If not done before, the following services must be done before placing truck into service:

a. Lubricate the truck in accordance with Lubrication Order LO 9-2320-242-12, regardless of interval, except for gearcases and engine crankcase.

b. Check processing tag for gearcase and engine oil. If tag shows that engine oil is good for 500 miles of operation, and is the proper grade for local climate, check oil level but do not change oil.

c. Schedule a second S preventive maintenance service on DD Form 314 Preventive Maintenance Schedule and Record, and arrange for an oil change at 500 miles.

d. Services to be done by organizational maintenance personnel when trucks are received are listed in TM 9-2320-242-20. Whenever possible, the operator will help organizational maintenance personnel in doing these services.

#### 3-2. BREAK-IN OPERATION.

a. General. Before operating the truck, the operator must become familiar with the truck controls and operation as given in chapter 4.

b. Break-in. When break-in of a new or rebuilt vehicle is done in normal service, the operator is warned to take special care in doing all before-operation checks and inspections given in Preventive Maintenance Checks and Services, volume 2 of this manual. The following precautions must be taken during break-in:

(1) Do not go above the speed shown on the truck instruction and data plate, located on the instrument panel.

(2) Pick the best transmission position for driving conditions. Do not skip speeds when shifting gears.

(3) Avoid fast starts and stops.

(4) Avoid sudden stops (unless in an emergency).

(5) Avoid long runs in other than normal weather, or on rough terrain.

(6) Avoid sudden forced movement of an operating control.

(7) Avoid overheating the engine.

(8) Avoid operating the engine or the power train at full speed.

CAUTION

During road test, do not go faster than or operate the truck continuously at the maximum allowable speeds shown on the truck inspection and caution data plate.

c. Road test. All trucks received by the using organization must be road tested to check their operation and condition. For all new or reconditioned trucks, except those driven 50-miles or more during delivery, the road test will be a minimum of 50-miles. For used trucks driven 50 miles or more during delivery, the road test will be long enough to observe truck operation and condition. The operator will look at the instrument panel and gages as often as possible for signs of unsatisfactory performance. Stops will be made at least every 10-miles to give the operator a chance to inspect the truck for possible coolant, oil, fuel, or exhaust leaks and any signs that may show that the engine, transmission, wheel hubs, brake drums, axle differential, or transfer assemblies are overheated. The truck must be checked thoroughly for any control which is hard to operate and any instrument which is not operating properly. Unusual noises and vibrations will be noted. All unusual conditions will be reported to organizational maintenance unit.

d. After the Road Test. After the road test, fix any faulty condition which can be done at operator's maintenance level. Tell organizational maintenance unit about any other faulty conditions.



## CHAPTER 4

# OPERATING PROCEDURES

---

### Section I. DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS

4-1. GENERAL. Before trying to operate equipment, be sure you know where all controls and indicators are located, what each control does, and what information each indicator is giving.

#### WARNING

HEARING PROTECTION IS REQUIRED FOR  
DRIVER AND CO-DRIVER (Ref: TB MED 501)

#### NOTE

Controls and indicators described in this section are generally the same for both trucks covered in this manual, except where specifically noted.

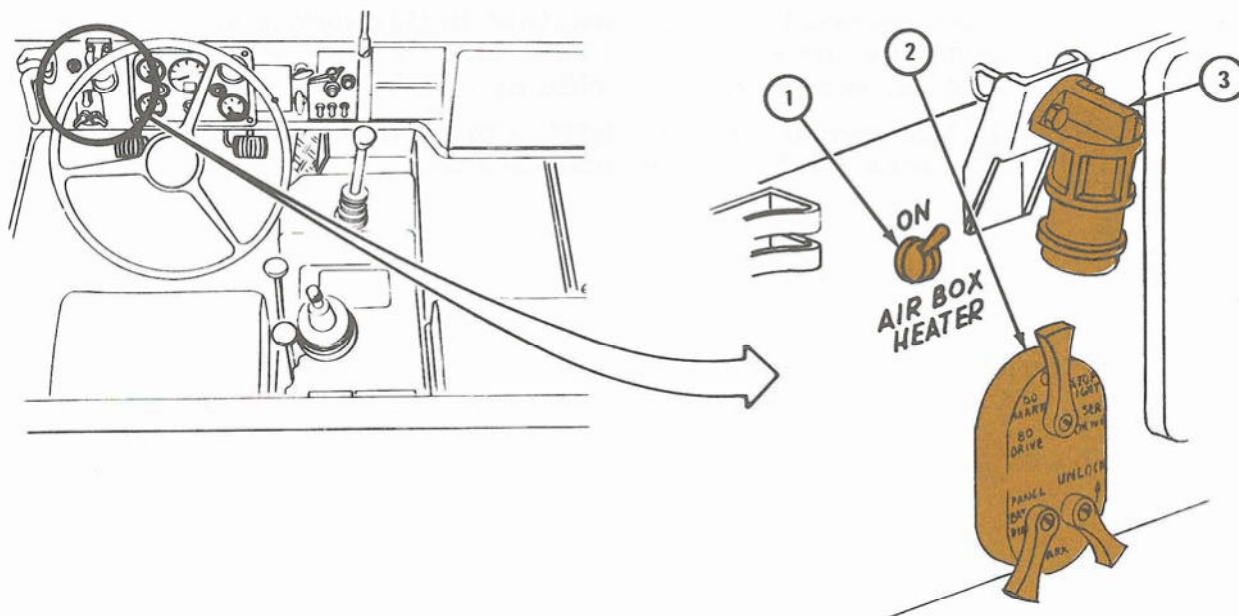
In this manual the term "left" is the driver's side.  
The term "right" is the opposite side.

## 4-2. CHASSIS CONTROLS AND INDICATORS.

### a. Instrument Panel Controls and Indicators.

#### INSTRUMENT PANEL LEFT SIDE

1. AIR BOX HEATER switch. This switch is used only during cold weather starting. When held in the ON position the switch activates the igniter in the air box heater.
2. Vehicle lights switch. Used to turn vehicle lights on and off.
3. Air cleaner restriction indicator. Red band shows in window when air cleaner element needs cleaning.

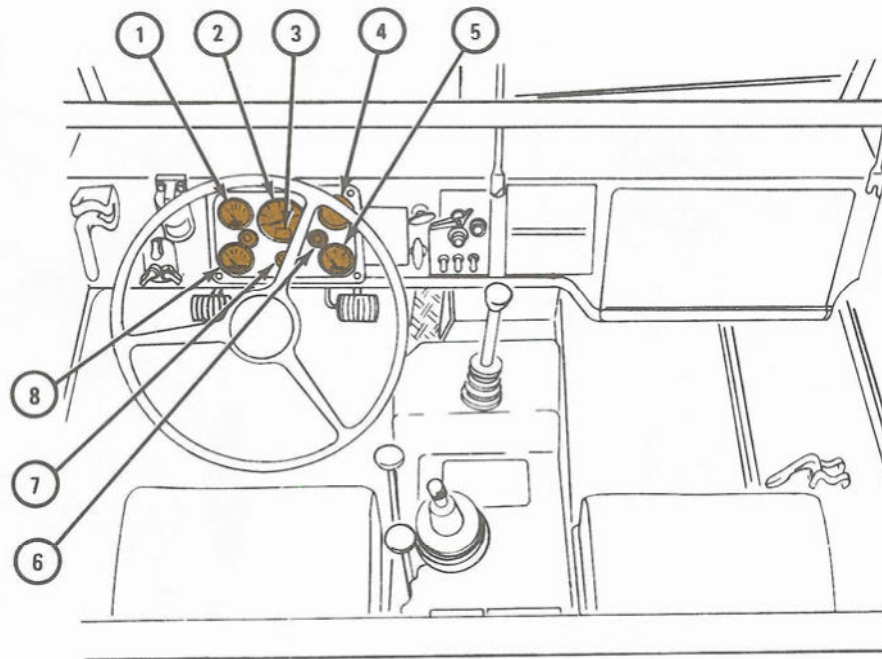


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a. Instrument Panel Controls and Indicators - Cont.

## INSTRUMENT PANEL CENTER

- |  |  |
|--|--|
| 1. Fuel level indicator. Shows how much fuel is left in fuel tanks.  | 5. Engine temperature indicator. Shows the temperature of engine coolant. Normal operating temperature is 160 to 200°F.  |
| 2. Speedometer. Shows truck road speed.  | 6. Instrument panel lights. These two lights help light up instrument panel.   |
| 3. Odometer. Shows total miles truck has traveled.   | 7. High beam indicator. Lights (red) when headlights are on high beam.   |
| 4. Battery-Generator Indicator. Indicator shows condition of battery. Indicator pointer will be in green area when battery is charging. If pointer is in yellow area, battery-generator voltage is low. If pointer is in red area, battery is discharging. | 8. Oil pressure indicator. Shows engine oil pressure while engine is operating. Normal oil pressure is about 18 to 30 pounds per square inch at idle speed, and about 40 to 60 psi at operating speed. |



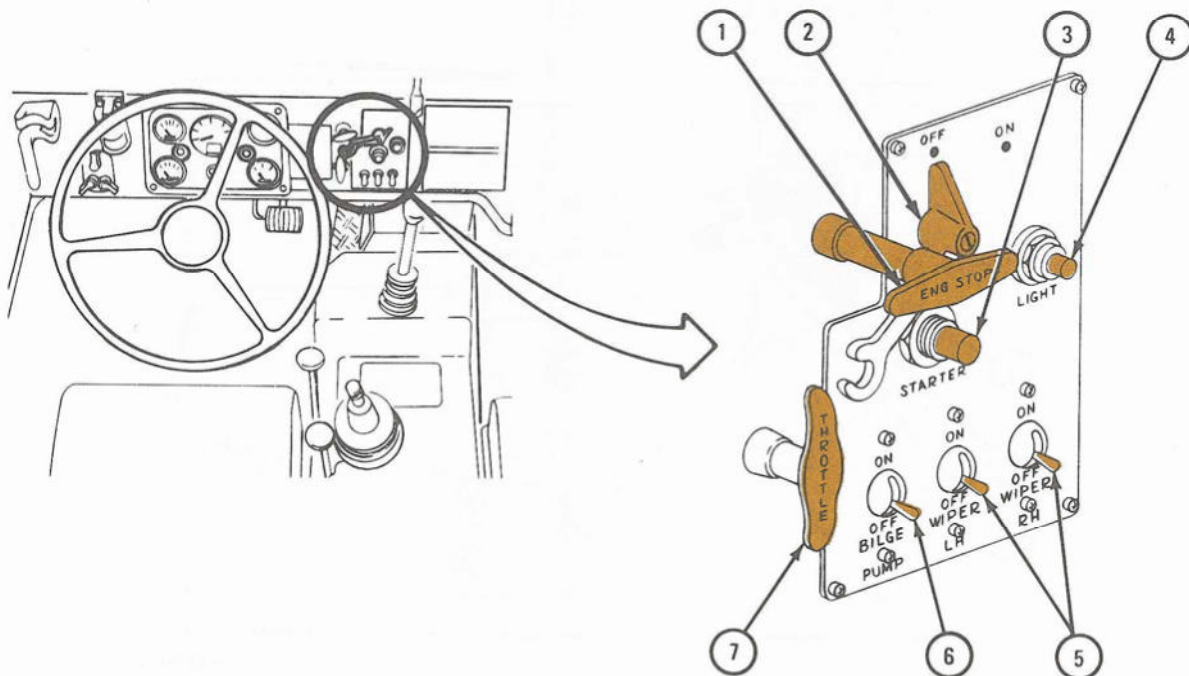
TA 053676



a. Instrument Panel Controls and Indicators - Cont.

INSTRUMENT PANEL RIGHT SIDE

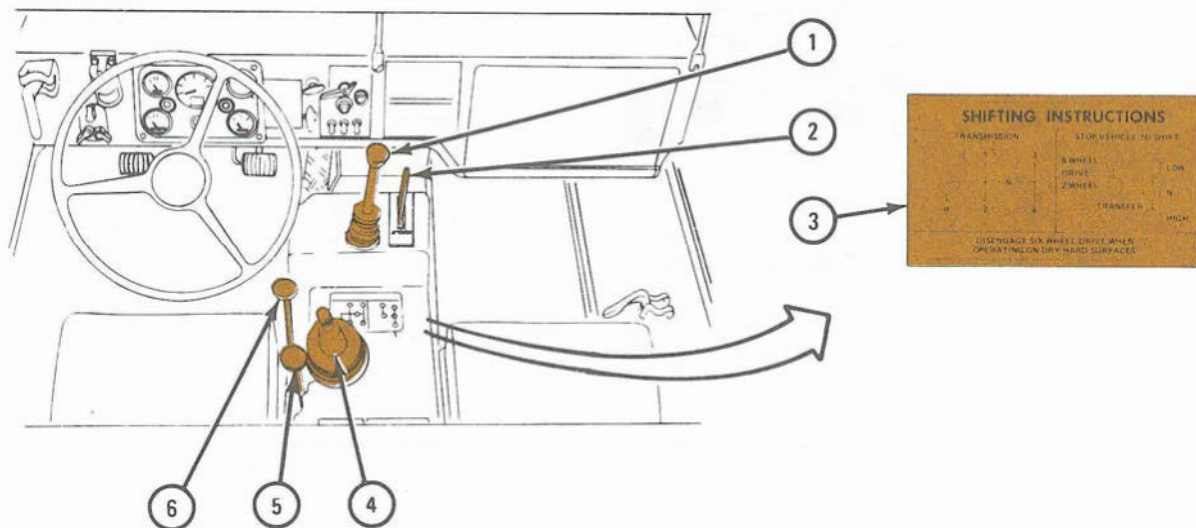
1. ENG. STOP control handle. When handle is pulled out, fuel flow to engine is shut off. (Handle can only be pulled out when MASTER SWITCH is in OFF position.)
2. MASTER SWITCH. When set to ON position controls STARTER switch and instrument panel gages.
3. Engine STARTER switch. With MASTER SWITCH in ON position, press this switch to crank engine.
4. Carrier STOP LIGHT. Lights when personnel in carrier want driver to stop truck.
5. Windshield WIPER switches, LH and RH. When set to ON position, turns left and right windshield wipers on.
6. BILGE PUMP switch. When set to ON position, turns on bilge pump for fording or swimming operation.
7. Hand THROTTLE control handle. This handle lets you control engine speed during warm-up, and set engine idle speed. When handle is pulled out engine speed is increased. Turning handle left or right unlocks it.



TA 053677

b. Driver's Compartment Controls and Indicators.

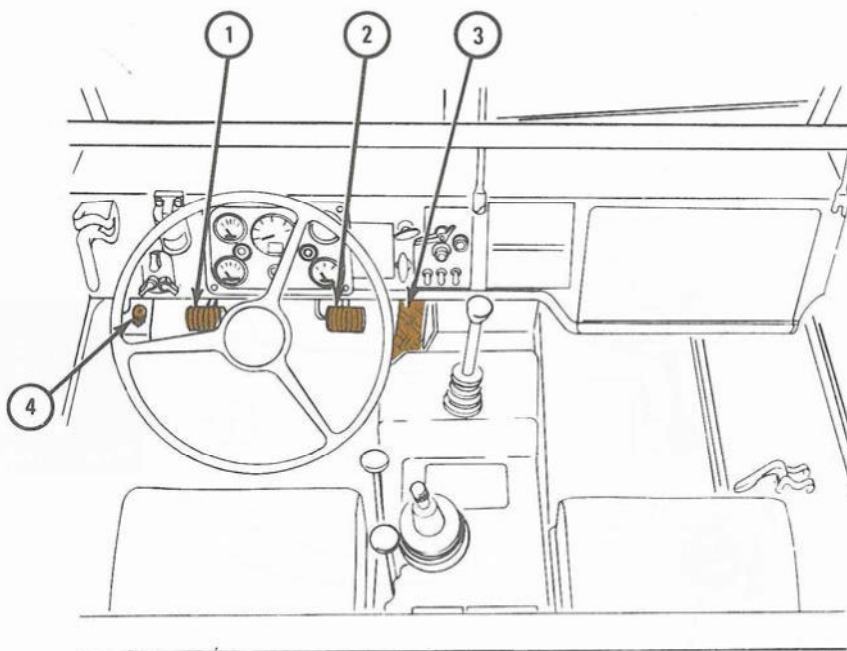
1. TRANSMISSION gear selector lever. Used to put transmission in any one of four forward gears (1, 2, 3, 4) reverse (R) or neutral (N).
2. Power takeoff lever (on vehicles with winch only). Push forward to engage power takeoff; pull back to release power takeoff for winch operation.
3. SHIFTING INSTRUCTIONS plate. Shows shifting pattern for TRANSMISSION gear selector lever, 2 WHEEL or 6 WHEEL DRIVE selector lever, and TRANSFER selector lever.
4. Handbrake control handle. This handle locks when you pull it up and back to brake-on position. The handle releases when you push it forward and down to brake-off position.
5. TRANSFER selector lever. Use this lever to select HIGH (for normal driving) or LOW (for heavy loads or rough terrain) range drive. In N (neutral) transfer case is disengaged from power drive but not from transmission.
6. 2 or 6 WHEEL DRIVE selector lever. Use this lever to select 2-wheel or 6-wheel drive.



TA 053678

b. Driver's Compartment Controls and Indicators - Cont.

- |  |  |
|--|--|
| 1. Clutch pedal. Is pressed down before shifting gears.          | 3. Accelerator pedal. Used to control engine speed.  |
| 2. Brake pedal. When pressed down slows or brings truck to stop. | 4. Headlight beam selector switch. Foot operated switch. When pressed down selects headlight high or low beam. |

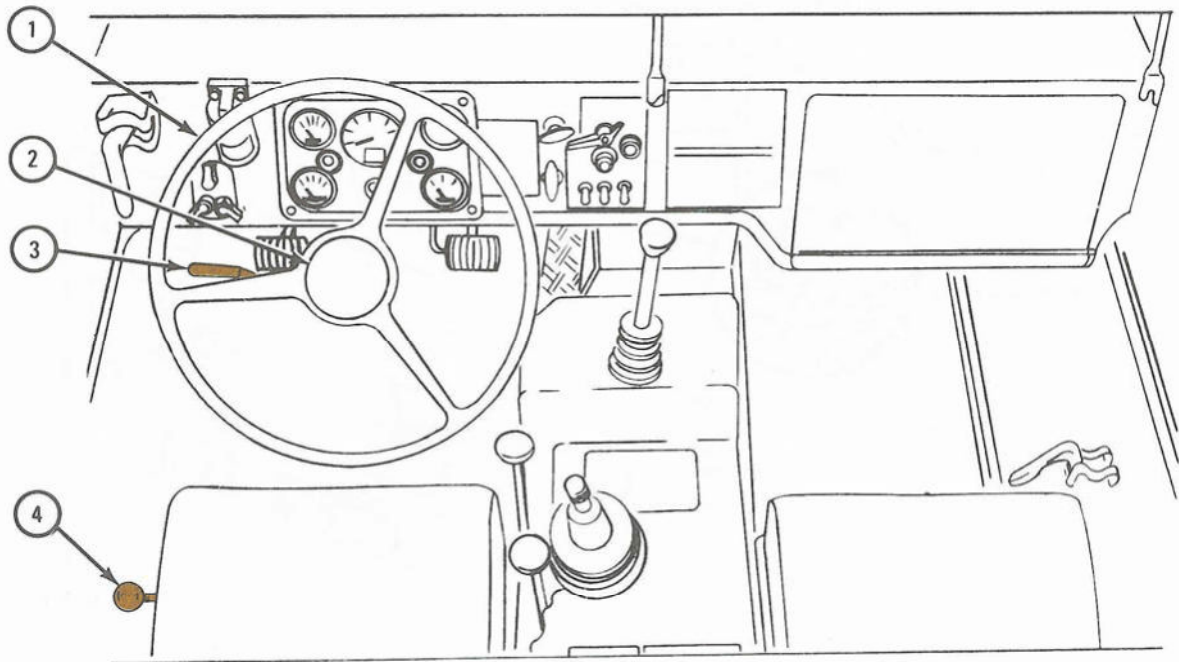


TA 053679



b. Driver's Compartment Controls and Indicators - Cont.

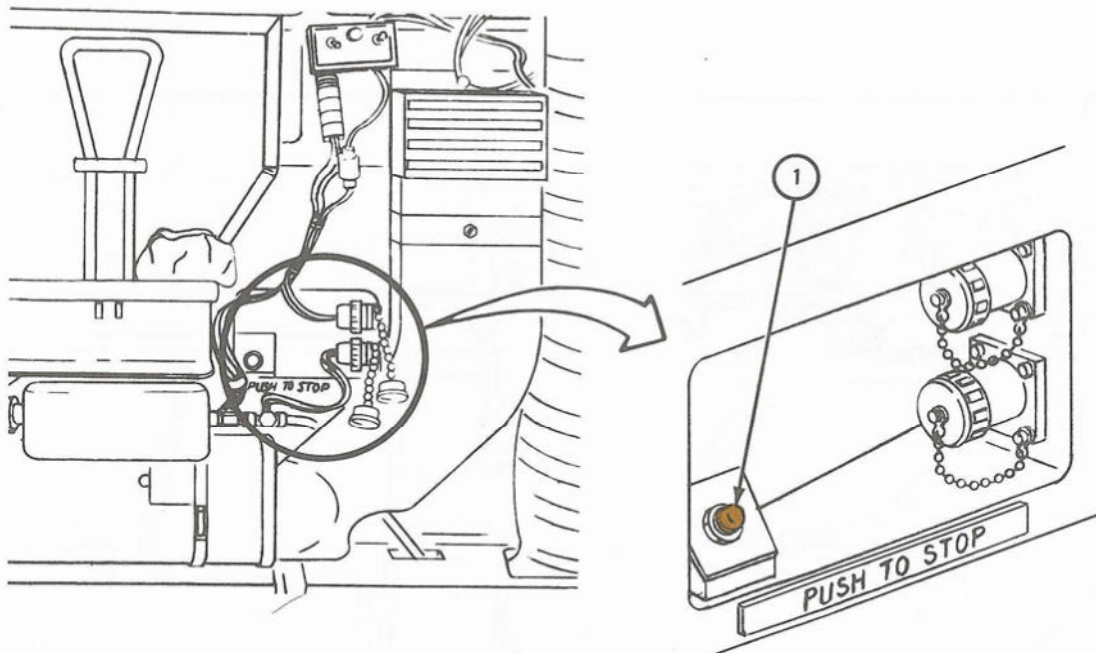
1. Steering wheel. Controls direction of vehicle in motion.
2. Horn button. When pressed in, sounds horn.
3. Turn signal light switch. When switch handle is moved down, turn signal lights on left side of vehicle flash. When handle is moved up, turn signal on right side of vehicle flash. In either up or down, green light on turn signal light switch handle also flashes. After you make a turn, lights keep flashing until you move the handle to center position.
4. Seat adjusting lever. When lever is pulled up, seat can be moved up or back to the position you want. When you push down on lever, seat will lock in place.



TA 053680

#### 4.3 CARRIER CONTROLS AND INDICATORS.

1. Carrier personnel PUSH-TO-STOP switch. This switch is mounted at the front of the carrier. If a passenger wants driver to stop he will press the PUSH TO STOP switch. The carrier STOP LIGHT on the instrument panel will light to warn the driver to stop.

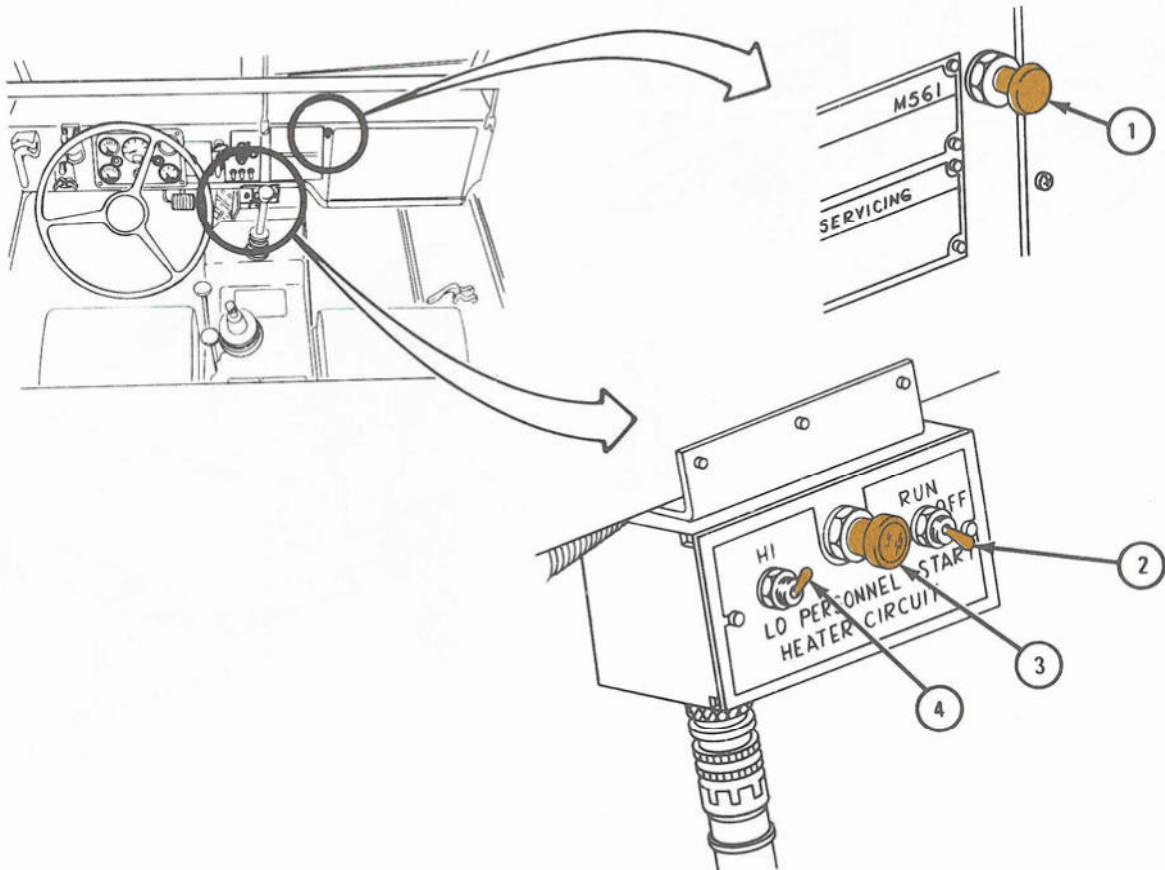


TA 053681

## 4-4. SPECIAL KITS CONTROLS AND INDICATORS.

a. Personnel Heater Controls and Indicators.

1. Control cable knob. Is pulled all the way out for windshield defrost. Push knob in for cab heat.
2. PERSONNEL HEATER CONTROL START-OFF-RUN switch. When set to START position, personnel heater operates and indicator (red) light comes on. In RUN position, heater will keep running until switch is set to OFF.
3. Indicator light. Light will come on (red) when heater is operating.
4. HI-LO switch. Controls amount of heat to cab. In LO position, heated air flows into cab. In HI position more heated air flows into cab.

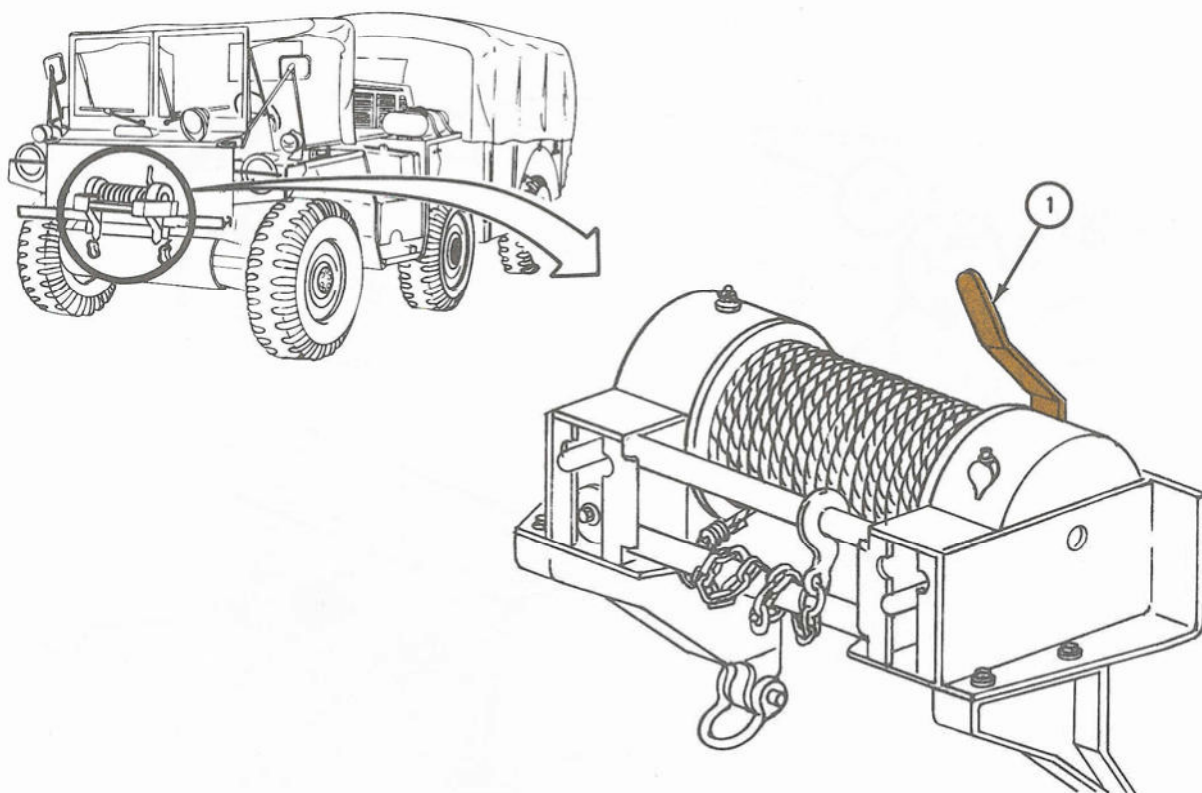


TA 053682



b. Winch Controls and Indicators.

1. Drum Clutch Lever. Push lever toward drum to disengage clutch. Pull lever away from drum to engage clutch for winch operation.



TA 053683

## Section II. OPERATION UNDER USUAL CONDITIONS

4.5 SCOPE. This section gives general operating procedures for the M561 Cargo Truck and M792 Ambulance Truck. Operating procedures that are for only one of the truck models will be so noted. Each frame gives step by step instructions with detailed illustrations to cover all operating controls. These instructions are for operation of the trucks in moderate temperatures and humidities and over normal terrain.

### 4.6 GENERAL OPERATING PROCEDURES.

#### NOTE

Before starting engine, make sure that you know where all controls, instruments and indicators are, the purpose of each one and what it does. Refer to section I, make sure that all "Before Operation" preventive maintenance checks and services (PMCS) were done. Refer to PMCS, volume 2, chapter 1.

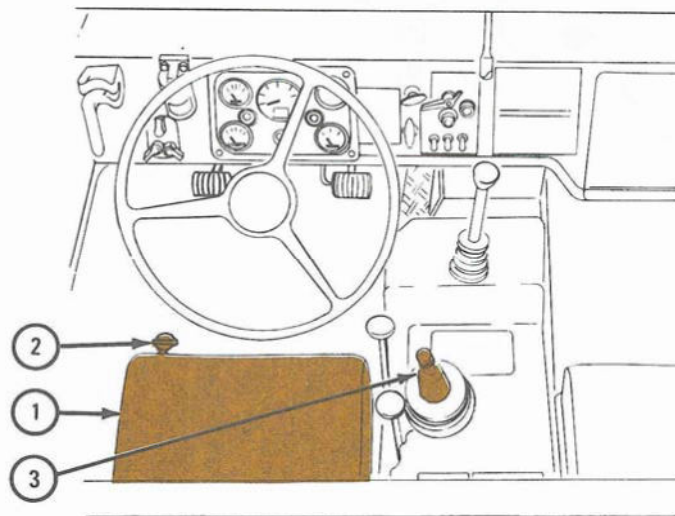
Lock up truck whenever you leave it. Refer to Security of Tactical Wheeled Vehicles, TB 9-2320-422-20.

#### a. Before Engine Startup.

##### FRAME 1

1. Sit in driver's seat (1), and pull up on seat adjusting lever (2).
2. Hold lever (2) up, pull yourself forward or push back to get seat position you want. Let go of lever.
3. Pull handbrake control handle (3) up to brake-on position.

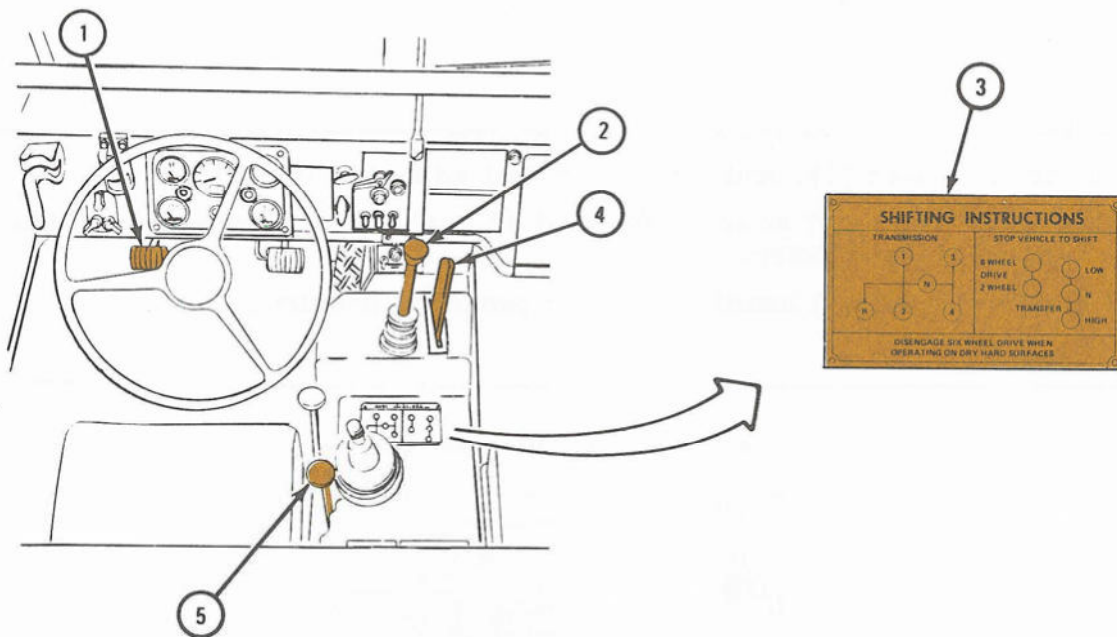
GO TO FRAME 2



TA 053684

## FRAME 2

1. Press clutch pedal (1) down, all the way, and place the TRANSMISSION gear selector lever (2) in N position. See SHIFTING INSTRUCTION plate (3). Let clutch pedal come up.
2. On trucks with winch, set power take-off lever (4) to center position.
3. Set TRANSFER selector lever (5) to N position. See plate (3).



TA 053685



b. Starting the Engine Above +32°F.

## FRAME 1

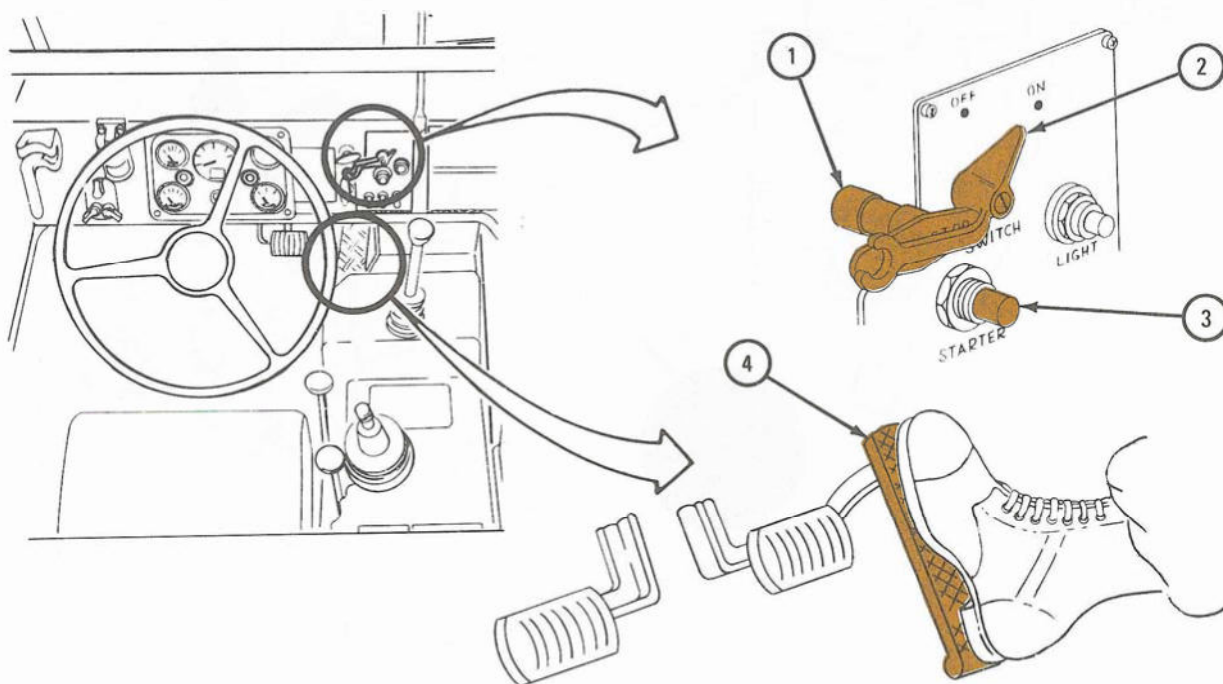
1. Push ENG. STOP control handle (1) all the way in.
2. Set MASTER SWITCH (2) to ON position.

CAUTION

Do not hold engine STARTER switch in for more than 15 or 20 seconds at a time. If engine does not start, set MASTER SWITCH to OFF and wait 20 to 30 seconds before you try again.

3. Press engine STARTER switch (3), and press down lightly on accelerator pedal (4) until engine starts.

GO TO FRAME 2



TA 053686

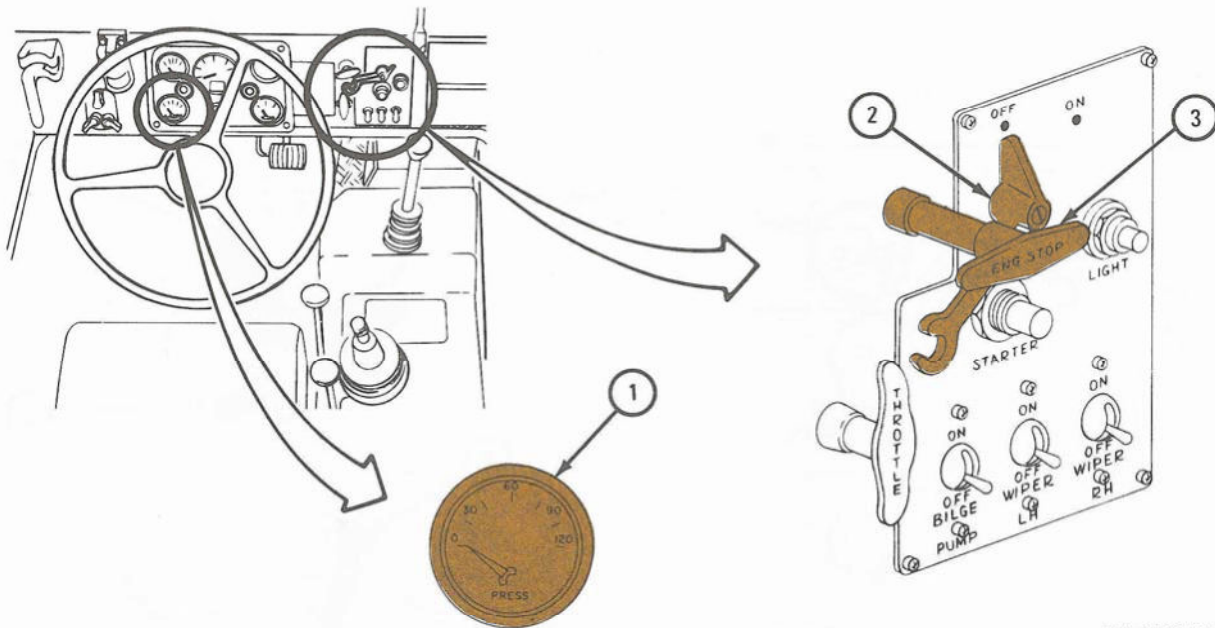
## FRAME 2

## CAUTION

If oil pressure indicator (1) does not show correct pressure within 10 seconds after starting, stop engine. Set MASTER SWITCH (2) to OFF and pull ENG. STOP control handle (3).

1. After engine starts, let it run at least three to five minutes to warm up.
2. Look at oil pressure indicator (1). It should read 18 to 30 psi with engine idling. If it does not, stop engine and tell organizational maintenance.

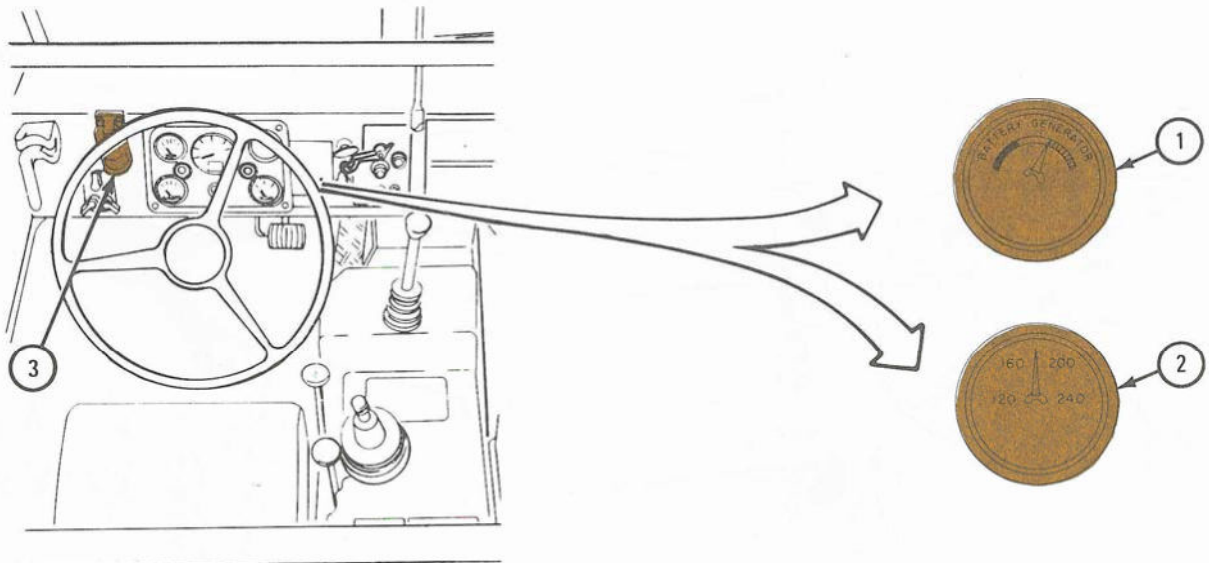
GO TO FRAME 3



TA 053687

## FRAME 3

1. Look at battery-generator indicator (1). Indicator pointer should be in green area. If pointer stops in yellow or red area, stop engine, and tell organizational maintenance.
2. Look at engine temperature indicator (2). Indicator should read 160 to 200°F. If indicator reads over 220°F, stop engine.
3. Check air cleaner restriction indicator (3). If one-half of red band can be seen in indicator window, the air cleaner element needs to be serviced.



TA 053688

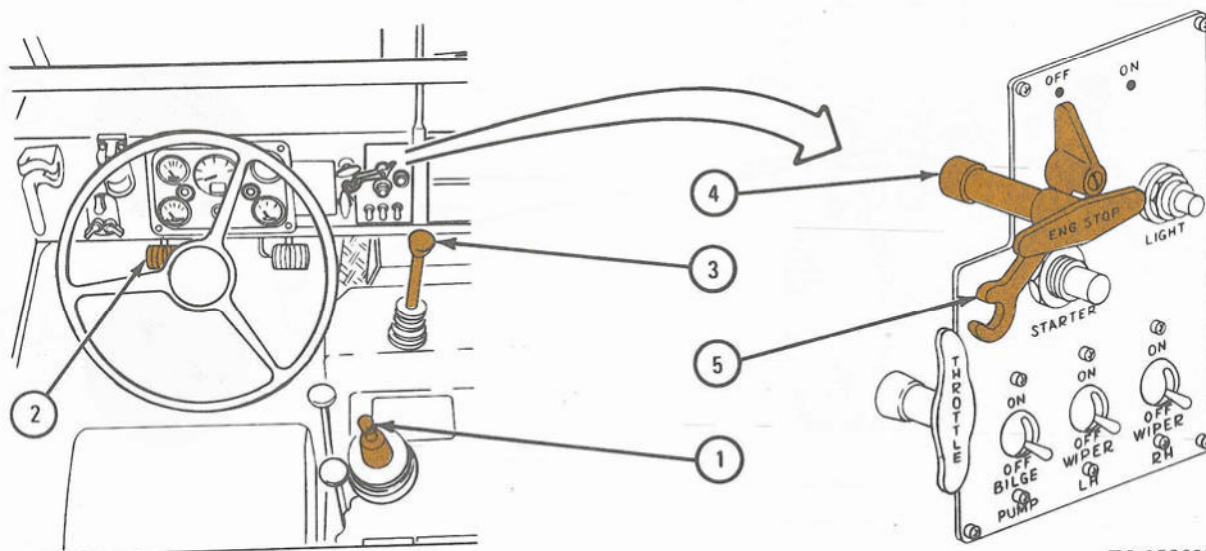


c. Starting Engine Below +32°F.

FRAME 1

1. Pull handbrake control handle (1) up and back (brake-on position).
2. Press clutch pedal (2) all the way down and hold it down.
3. Place TRANSMISSION gear selector lever (3) in N (neutral) position.
4. Push ENG. STOP control handle (4) all the way in and set MASTER SWITCH (5) to ON position.

GO TO FRAME 2



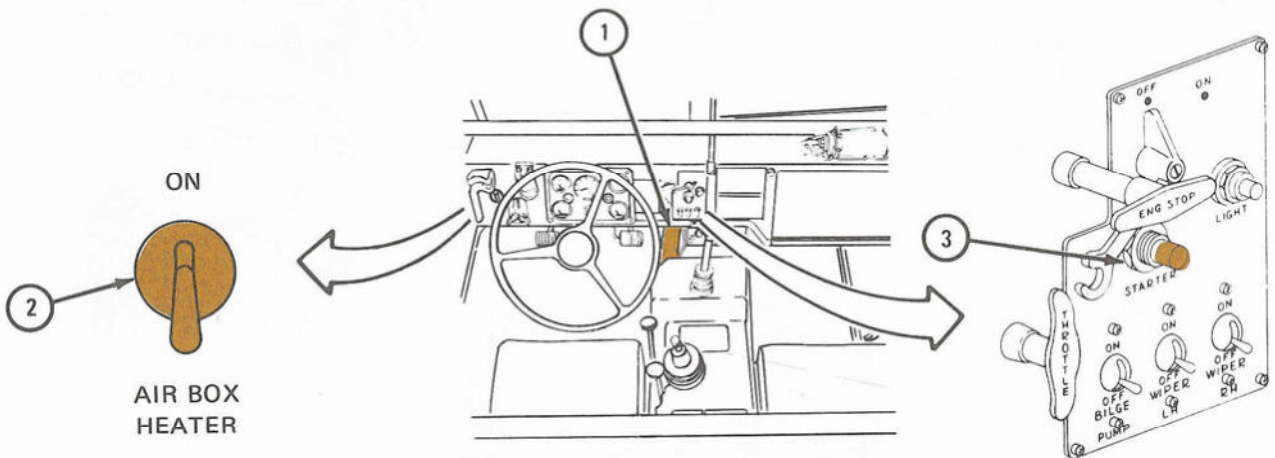
TA 053689

## FRAME 2

## NOTE

Use AIR BOX HEATER switch to help start engine when temperature is below +32°F.

1. Without pressing down on accelerator pedal (1), set and hold AIR BOX HEATER switch (2) in ON position. Press engine STARTER switch (3) button.
2. If engine does not start in about 15 seconds, do the following:
  - (a) Hold engine STARTER switch (3) button in.
  - (b) Let go of AIR BOX HEATER switch (2).
  - (c) Push accelerator pedal (1) about halfway down.
3. If engine does not start after 45 seconds of cranking, let go of STARTER switch (3) button and wait about 30 seconds.
4. After 30 seconds wait, do the following:
  - (a) Press engine STARTER switch (3) button.
  - (b) Set AIR BOX HEATER switch (2) to ON position for four to six seconds, then let go of switch for two or three seconds. Do this five times.
5. If engine does not start, tell organizational maintenance.



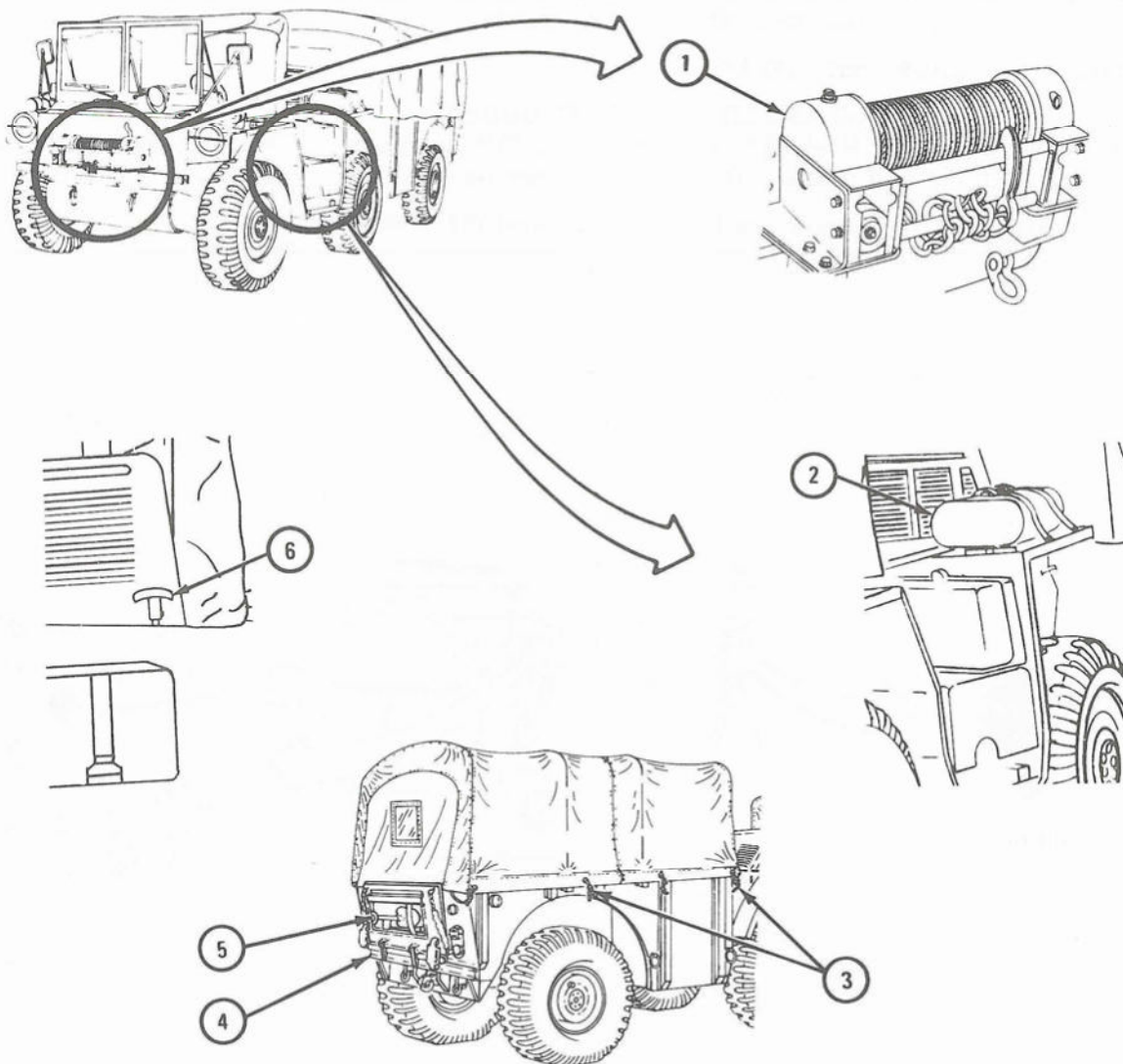
TA 053690

d. Placing and Keeping Truck in Motion.

FRAME 1

1. Make sure the following items are secure for travel: Winch (1), if installed and external equipment (2).
2. Make sure canopy tie downs (3), tailgate (4), pioneer tools (5), and engine cover latches (6) are made fast.

GO TO FRAME 2



TA 053691



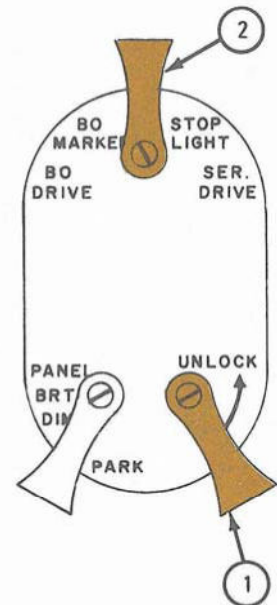
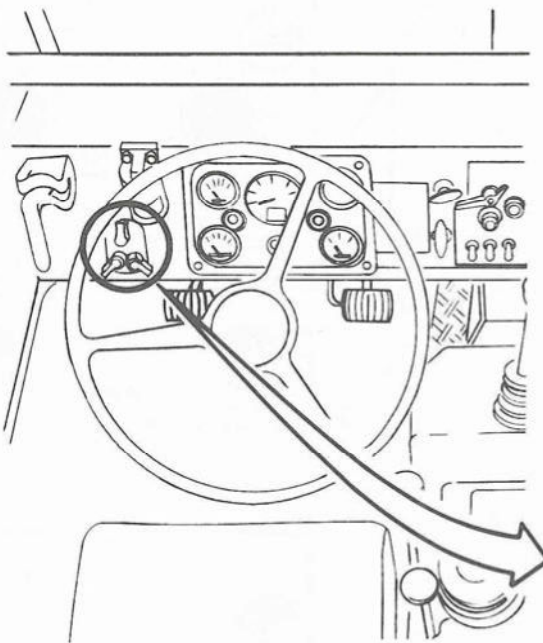
## FRAME 2

1. Start engine. Refer to para 4-6a, b and c.
2. Using thumb, lift up and hold UNLOCK lever (1).
3. Using forefinger, pull down main switch (2) to STOP LIGHT position for day operation or to SER. DRIVE position for night operation. Let go of UNLOCK lever (1).
4. Refer to table 4-1 for light switch positions.

## NOTE

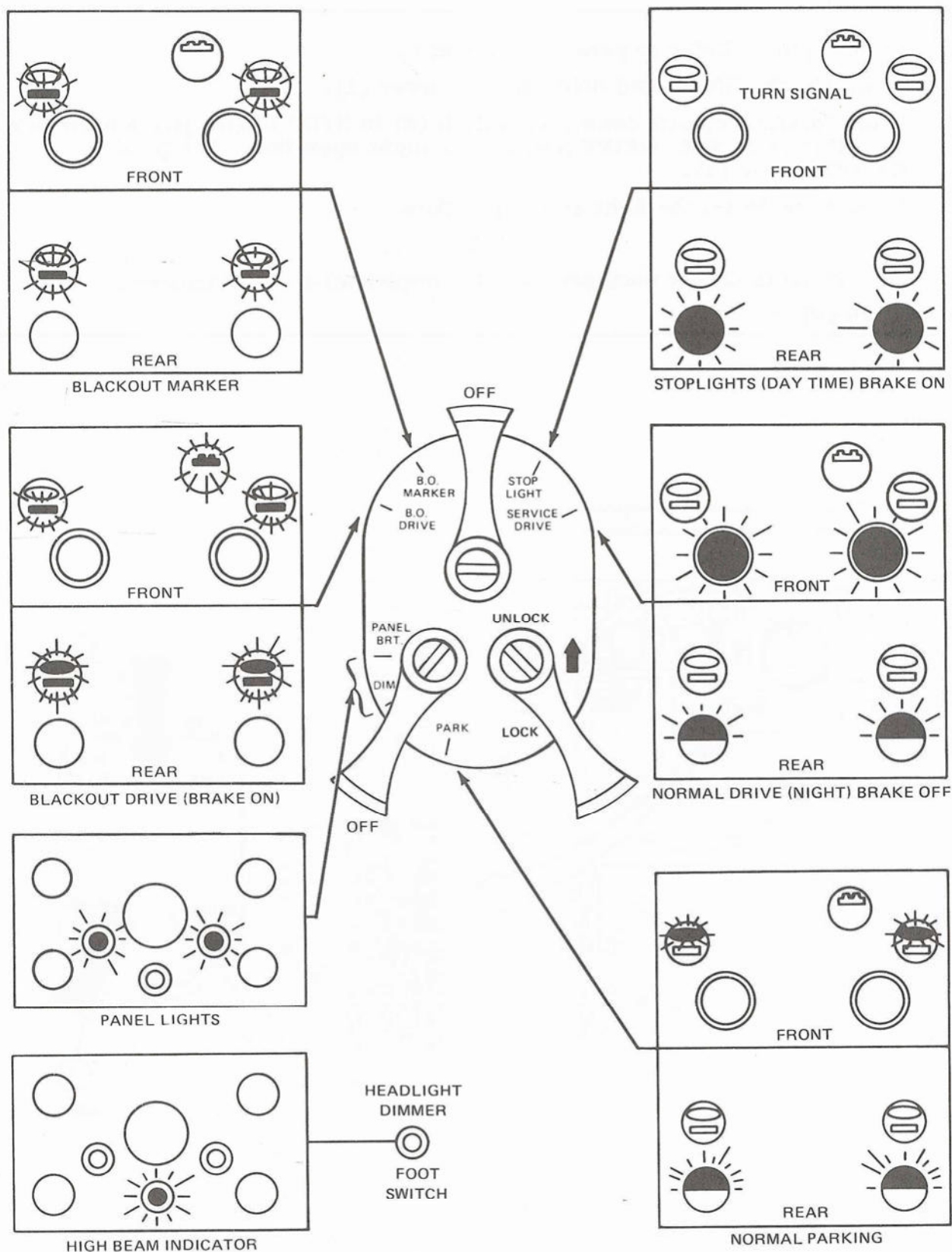
If lights do not work properly tell organizational maintenance.

GO TO FRAME 3



TA 053692

Table 4-1. Truck Lights Chart



TA 053693

## FRAME 3

1. With engine idling, press clutch pedal (1) all the way down.
2. Shift 2 WHEEL, 6 WHEEL DRIVE selector lever (2) to 2 WHEEL or 6 WHEEL DRIVE position as needed. See SHIFTING INSTRUCTIONS plate (3).
3. Shift TRANSFER selector lever (4) to LOW or HIGH position, as needed.

## NOTE

In 6 WHEEL DRIVE you can use either the LOW or HIGH TRANSFER range. In 2 WHEEL DRIVE you can use only the HIGH TRANSFER range.

The two selector levers are set up so that when you place DRIVE selector lever in 2 WHEEL DRIVE you also shift the TRANSFER lever to HIGH range.

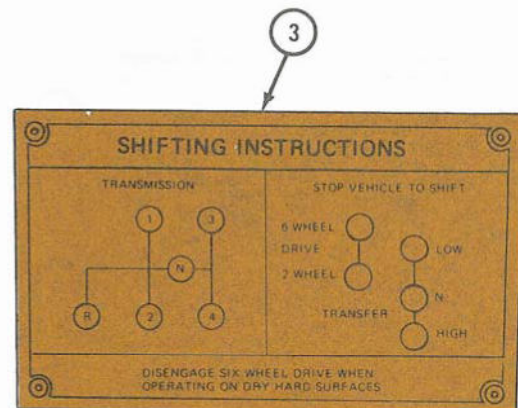
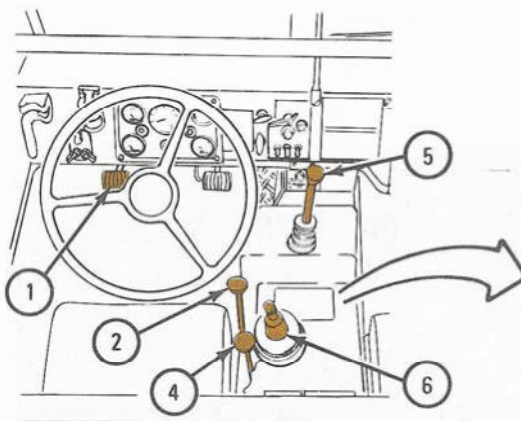
4. Place TRANSMISSION gear selector lever (5) in first gear position 1.

## NOTE

Never start truck in any forward gear except first gear.

5. Place handbrake control handle (6) in down (brake-off) position.

GO TO FRAME 4



TA 053694



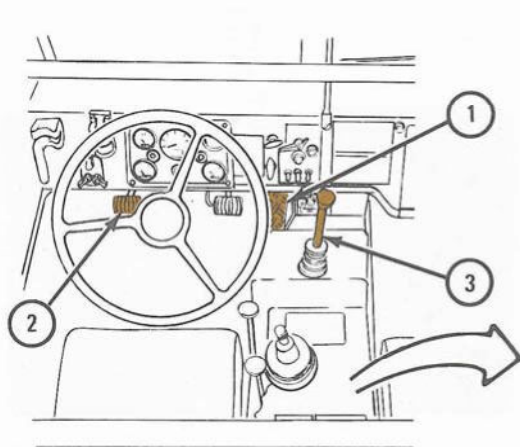
## FRAME 4

1. Press down on accelerator pedal (1) lightly.
2. Slowly let up on clutch pedal (2) until it is all the way up.
3. Bring up truck speed in low gear (position 1) to about four miles per hour.

CAUTION

Let clutch pedal (2) come up all the way in each gear. Do not skip gears when shifting. Shift gears just under top speed shown on CAUTION plate (4) for each gear.

4. Push down on clutch pedal (2) and move TRANSMISSION gear selector lever (3) into position 2. Let clutch pedal come up. At the same time press down accelerator pedal (1).
5. After proper speed has been reached as shown on CAUTION plate (4), push down on clutch pedal (2) and move TRANSMISSION gear selector lever (3) into position 3. Let clutch pedal come up. At same time press down on accelerator pedal (1).
6. After proper speed has been reached as shown on CAUTION plate (4), push down on clutch pedal (2) and move TRANSMISSION gear selector lever (3) into position 4. Let clutch pedal come up. At same time press down on accelerator pedal (1).



4

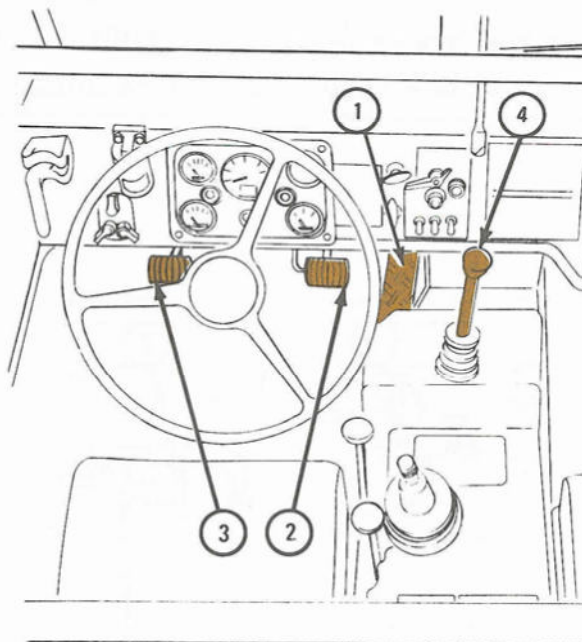
CAUTION			
MAXIMUM PERMISSIBLE ROAD SPEEDS IN THE FOLLOWING GEAR PROPORTIONS			
TRANSFER CASE IN		HIGH RANGE	LOW RANGE
4	(HIGH)	55 MPH	32 MPH
3		32 MPH	19 MPH
2		15 MPH	9 MPH
1	(LOW)	8 MPH	4 MPH
0		8 MPH	4 MPH
TOWING - TOW IN HIGH TRANSFER AND 2 WHEEL DRIVE WITH TRANSMISSION IN NEUTRAL			
FORDING OR SWIMMING - INSTALL HULL DRAIN PLUGS			

TA 053695

e. Stopping the Truck.

## FRAME 1

1. Take foot off accelerator pedal (1).
2. Step down on brake pedal (2) slowly and evenly.
3. Step down on clutch pedal (3) and hold it down.
4. Place TRANSMISSION gear selector lever (4) in N position. Let up clutch pedal (3).
5. Step down on brake pedal (2) until truck comes to a full stop.



TA 053696

f. Reversing the Truck.

FRAME 1

WARNING

Before placing truck in reverse, have someone guide you in backing. Make sure areas to sides and rear of truck are clear of personnel and obstructions.

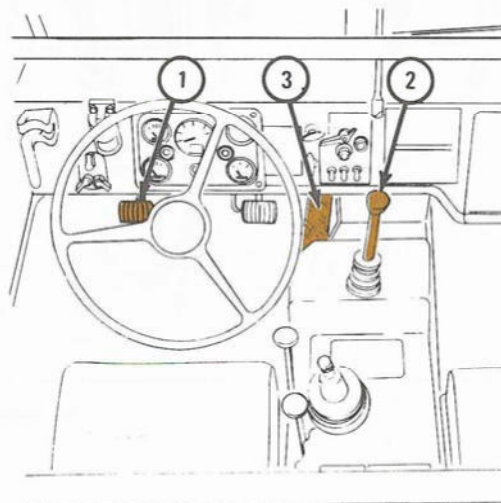
CAUTION

Before going in reverse you must bring truck to a full stop.

NOTE

The rear wheels of your truck steer with the front wheels. For this reason steering in reverse gear is not like that of a semitrailer. Steering in reverse is the same as when reversing a regular 4 x 4 vehicle.

1. With engine idling, press in clutch pedal (1).
2. Place TRANSMISSION gear selector lever (2) in R position.
3. Press down lightly on accelerator pedal (3) to build up engine speed.
4. Let up on clutch pedal (1) at a steady, even rate until pedal is all the way up.



TA 053697



g. Parking the Truck.

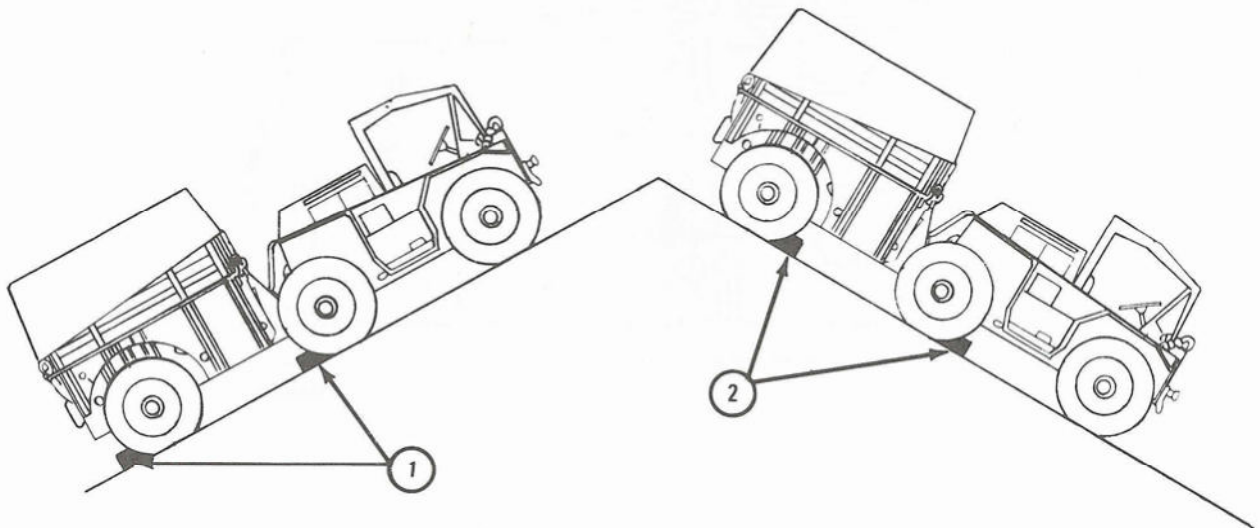
## FRAME 1

1. Select a hard, dry, level and sheltered area whenever possible.
2. Try not to park in mud or water when temperature is near or below freezing.
3. When parking, make sure that truck hulls will not be resting on rocks or frozen mud ruts.
4. Do not park on steep grades unless at least two wheels on each side of vehicle are blocked. Park as shown upgrade (1), downgrade (2).

CAUTION

Do not park your vehicle with the right side lower than the left side. Unless fuel tanks are about half full, stalling after start up can result.

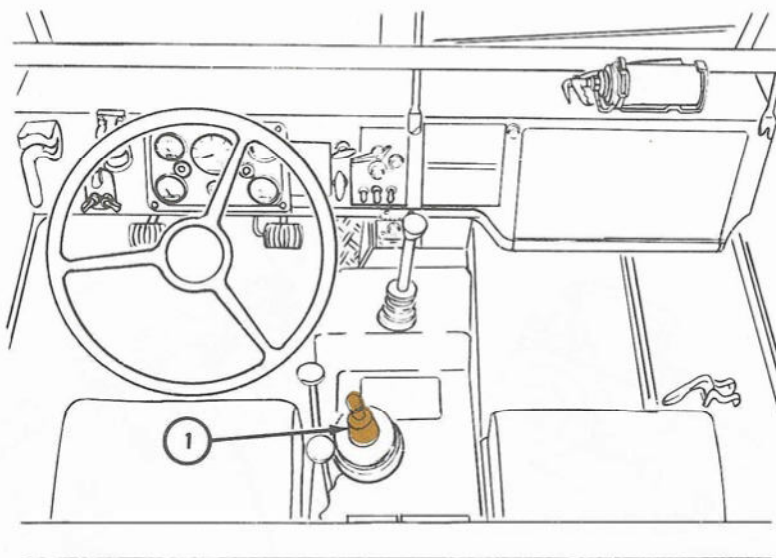
GO TO FRAME 2



TA 053698

FRAME 2

1. Stop the truck. Refer to para 4-6e.
2. Stop the engine. Refer to para 4-6h.
3. Set handbrake control handle (1) to up (brake-on) position.
4. If operations for day are finished, do your after-operation PMCS. Refer to vol 2, chapter 1, table 1-1.



TA 053699

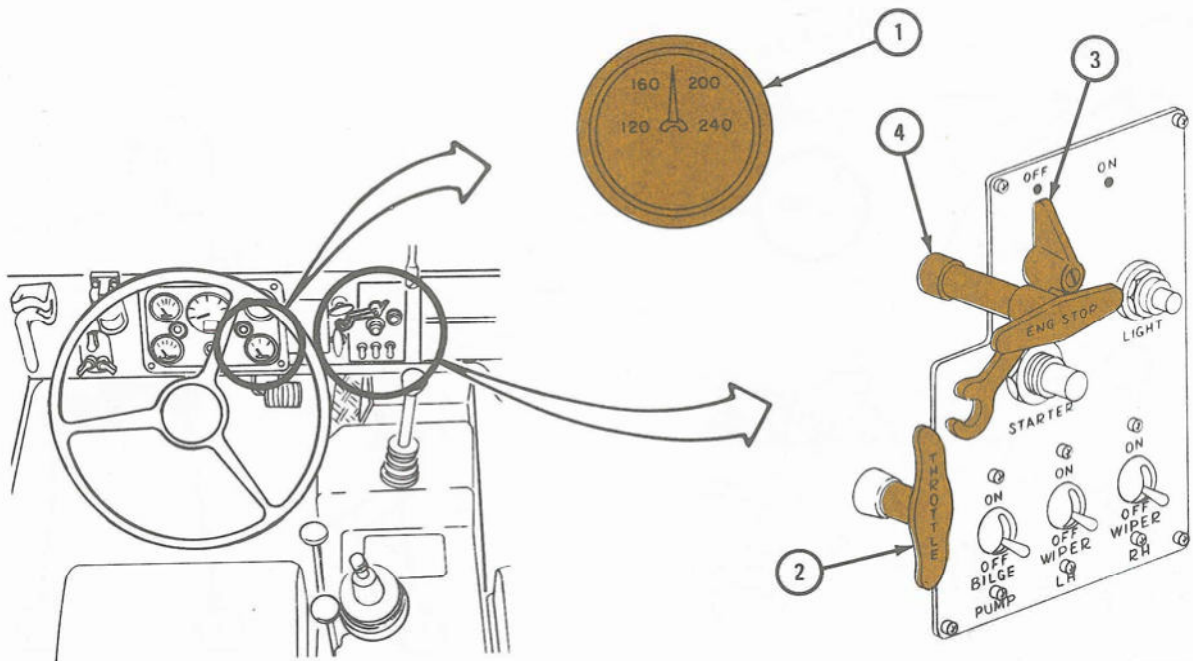
h. Stopping the Engine.

## FRAME 1

1. If engine temperature is above normal, let engine run at fast idle until engine temperature indicator (1) reads 180°F.
2. Turn hand THROTTLE control handle (2) to left to unlock it and let it go.
3. Set MASTER SWITCH (3) to OFF position.
4. Pull ENG. STOP control handle (4) all the way out.

CAUTION

Do not push ENG. STOP control handle (4) in until engine is to be started again. Raw fuel can fill an engine cylinder and prevent engine starting.



TA 053700



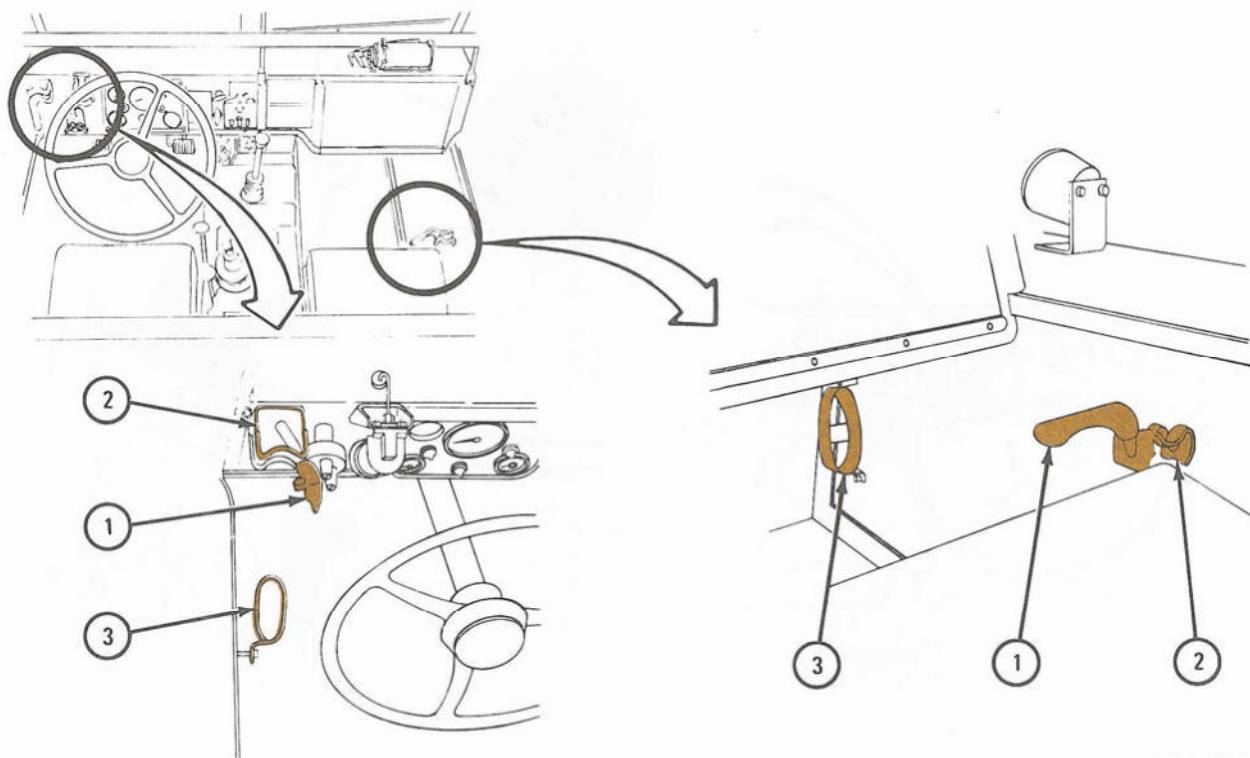
## 4-7. RIFLE MOUNTING BRACKETS.

a. General. M14 rifle mounting brackets are located in the tractor cab of truck. One set of brackets holds a rifle just to the left of the steering wheel. The other set of brackets are on the right side wall.

b. Operation.

## FRAME 1

1. Pull out the stock holder catch (1) and turn it 90° to the right or left.
2. Lift rifle out of stock holder (2) and butt holder (3).
3. To put rifle back in bracket, place butt of rifle in butt holder (3) and barrel of rifle in stock holder (2).
4. Pull out stock holder catch (1) and turn it 90° so that it clamps the barrel in place.

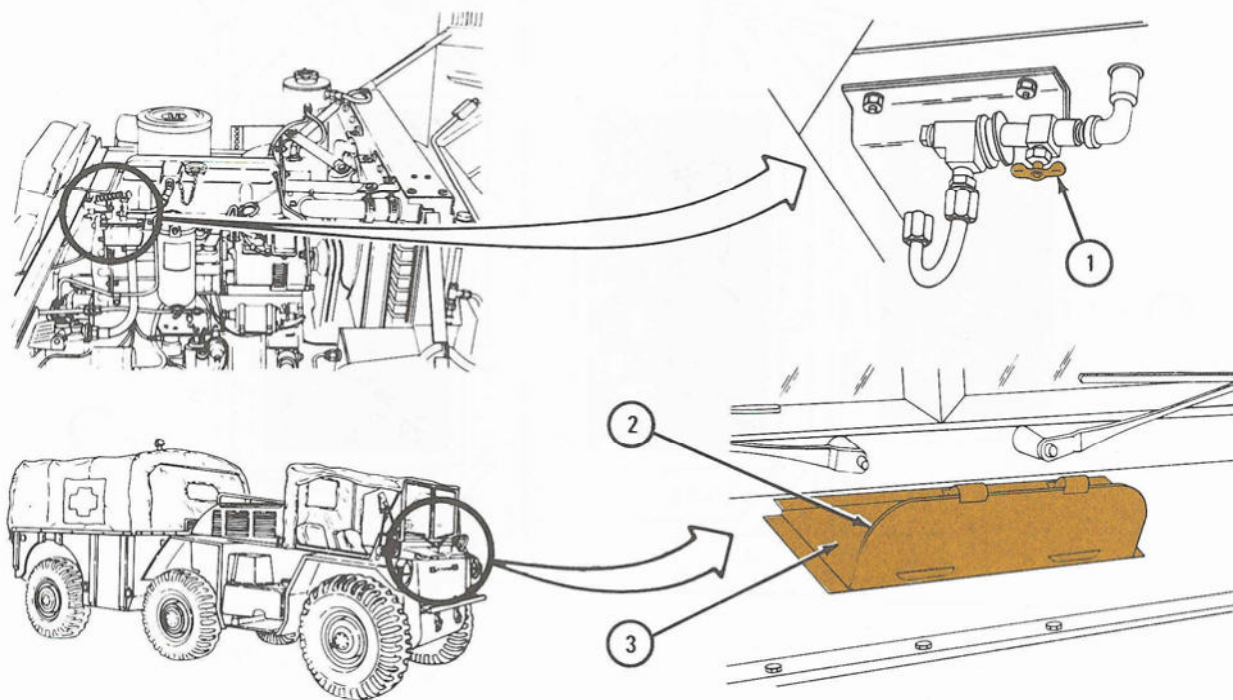


## 4-8. PERSONNEL HEATER OPERATION.

a. Before Starting Heater.

## FRAME 1

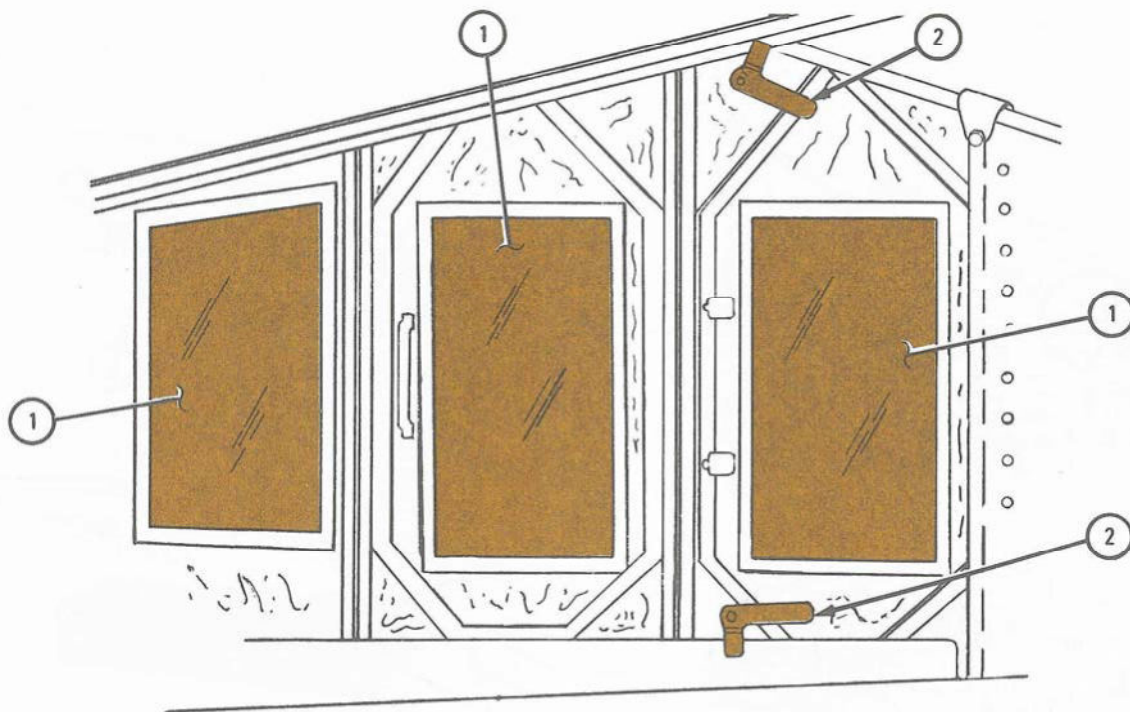
1. Open the right shutoff cock (1) on the fuel pump and filter assembly.
  2. Make sure cooling tower cover (2) is installed on the air inlet (3).
- GO TO FRAME 2



TA 053726

FRAME 2

1. Close winterization doors (1) and secure doors with door clamps (2).
2. Start engine. Refer to para 4-6a, b and c.



TA 053727



b. Starting the Heater.

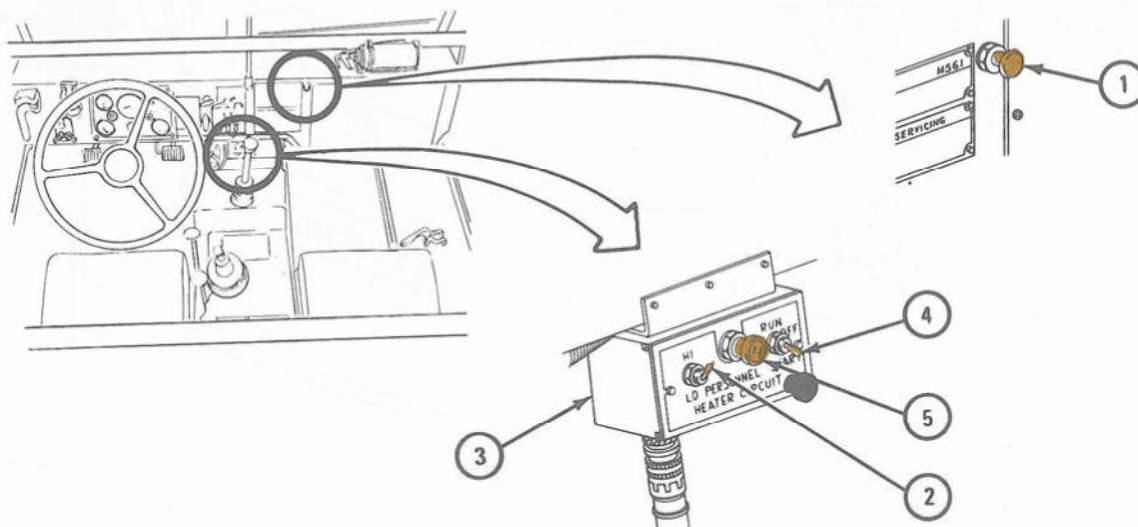
## FRAME 1

1. Push defroster control (1) all the way in.
2. Turn HI-LO switch (2) on heater control box (3) to either HI or LO.
3. Hold PERSONNEL HEATER START-OFF-RUN switch (4) in START position until indicator light (5) goes on. The indicator light should go on and ignition should happen in less than three minutes.
4. When indicator light (5) goes on, quickly flip START-OFF-RUN switch (4) to RUN position.

## NOTE

The flame in the combustion chamber will be put out if the START-OFF-RUN switch is moved to the RUN position before indicator light goes on.

5. If heater does not start, place START-OFF-RUN switch (4) in OFF position and make sure all steps in para 4-8a were done. Try to restart heater. If heater does not start after several tries, tell organizational maintenance.



TA 053728

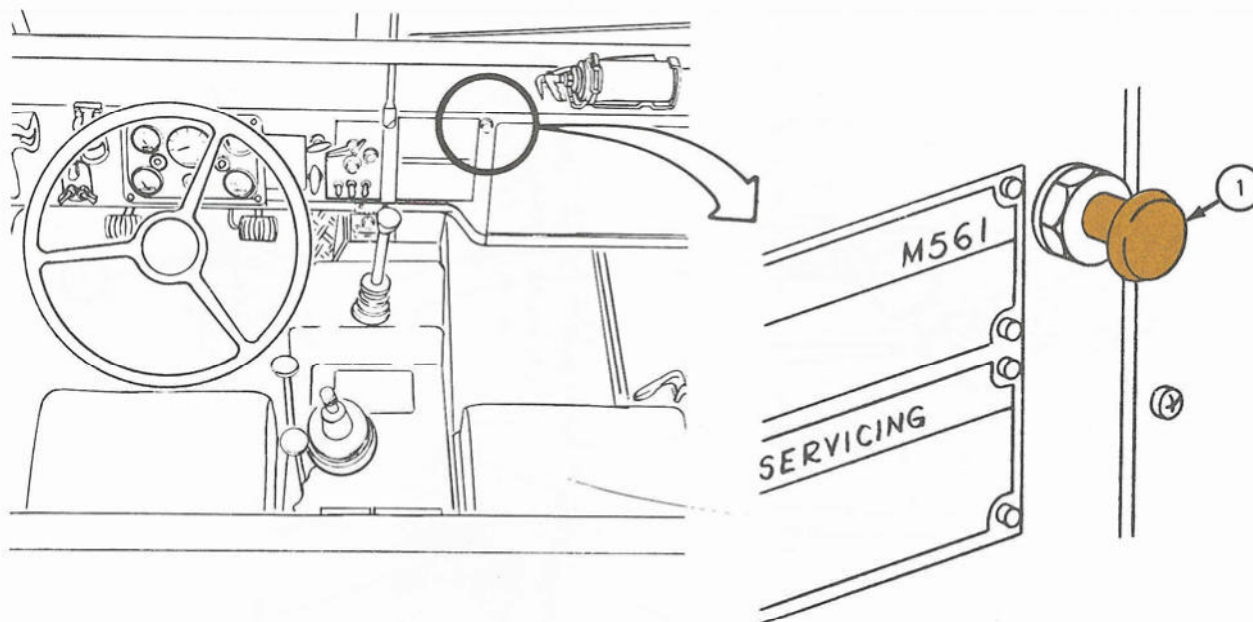
c. Selecting Cab Heat or Windshield Defrost.

FRAME 1

CAUTION

Warm the cab before defrosting the windshield to prevent damage to glass caused by the sudden temperature changes.

1. Push defroster control knob (1) all the way in for cab heat.
2. Pull defroster control knob (1) all the way out for windshield defrost.

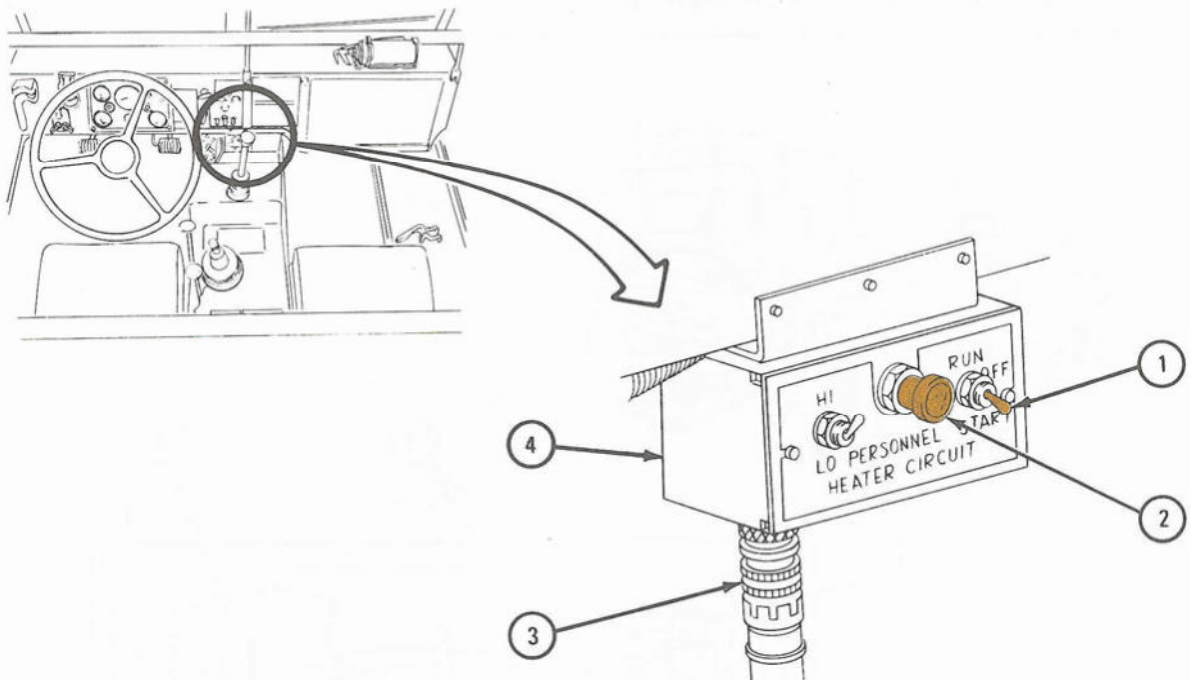


TA 053729

d. Stopping the Heater.

## FRAME 1

1. Place START-OFF-RUN switch (1) in OFF position. The heater will run for about three more minutes. The indicator light (2) will turn off when heater goes off.
2. In case of emergency, the heater may be shut down by unscrewing and taking off cable assembly (3) from heater control box (4).
3. Stop engine. Refer to para 4-6h.



TA 053730



#### 4-9. PIONEER KIT OPERATION.

a. General. The pioneer kit is mounted on tailgate of truck. Tools which are part of the kit are especially useful in emergencies where truck may be bogged down but not disabled. The kit contains the following tools:

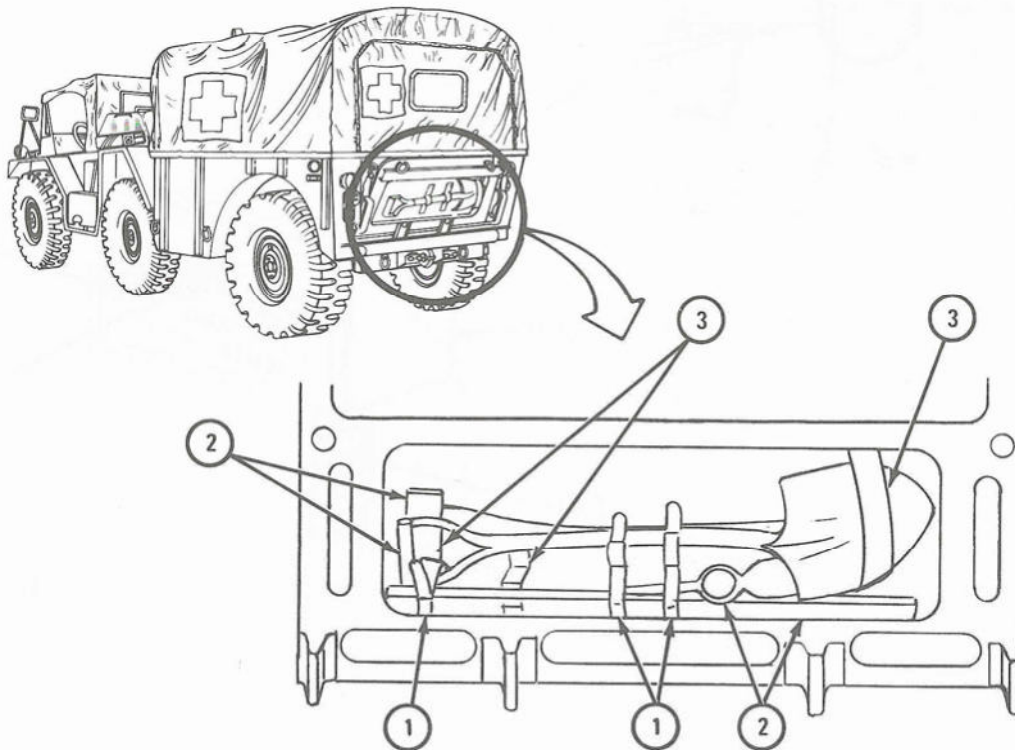
- (1) Ax, with single bit, 4-pound, with 36-inch handle.
- (2) Mattock, pick type, 5-pound, without handle.
- (3) Mattock handle, 36-inches long.
- (4) Shovel, hand, round point, D-handle, short, size 2.

b. Stowage.

- (1) Removal of tools.

#### FRAME 1

1. Loosen straps (1) holding tools (2) in place.
2. Lift tools (2) from brackets (3). Note the position of the tools in the brackets so they go back in right place.

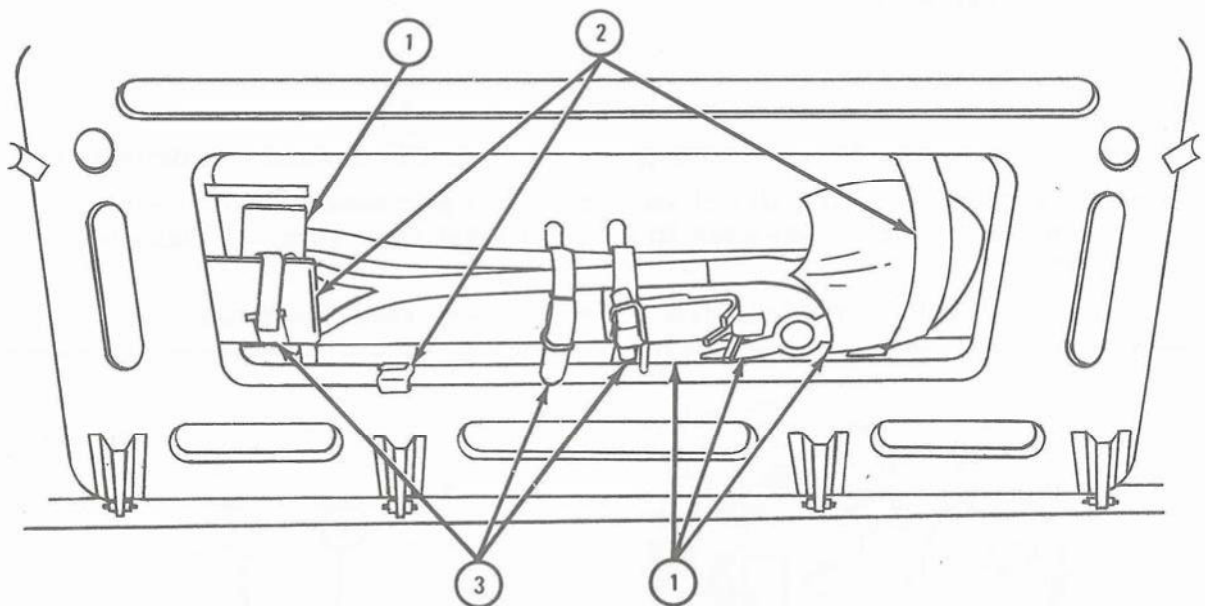


TA 053731

## (2) Replacement of tools.

## FRAME 1

1. Put tools (1) in place in brackets (2), as shown.
2. Tighten straps (3) around tools (1).



TA 053732

#### 4-10. WINCH KIT.

a. General. Winch kit is mounted to the front of tractor, where it is joined to towing support brackets. Winch is used to aid in the recovery of disabled trucks or equipment, to move loads, or to aid truck in its own recovery. Winch kit is made up of winch assembly, power takeoff assembly, drive shaft assembly, cable assembly, and a snatch block assembly. Position of truck is important during winching. Do not winch at an angle unless needed. When getting ready to winch, engine may be left running if transmission and transfer gears are in N (neutral) position and handbrake is in up (brake on) position.

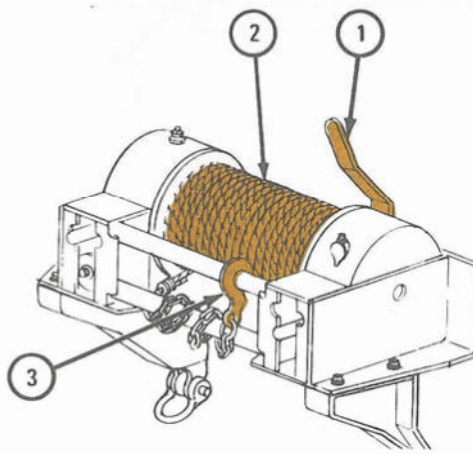
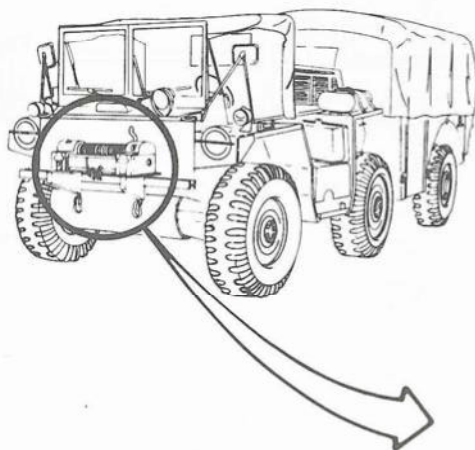
#### b. Unwinding Cable from Winch Drum.

##### FRAME 1

#### WARNING

Always wear gloves when handling winch cable. Broken or rusty cable strands can cause serious injury to personnel.

1. Set the drum clutch free by moving clutch lever (1) toward the drum (2).
2. Grasp the hook (3) and pull out as much cable as needed, while walking away from the vehicle. Be sure to leave at least four turns of cable on the drum.
3. Set drum clutch by moving clutch lever (1) away from the drum.



TA 053733



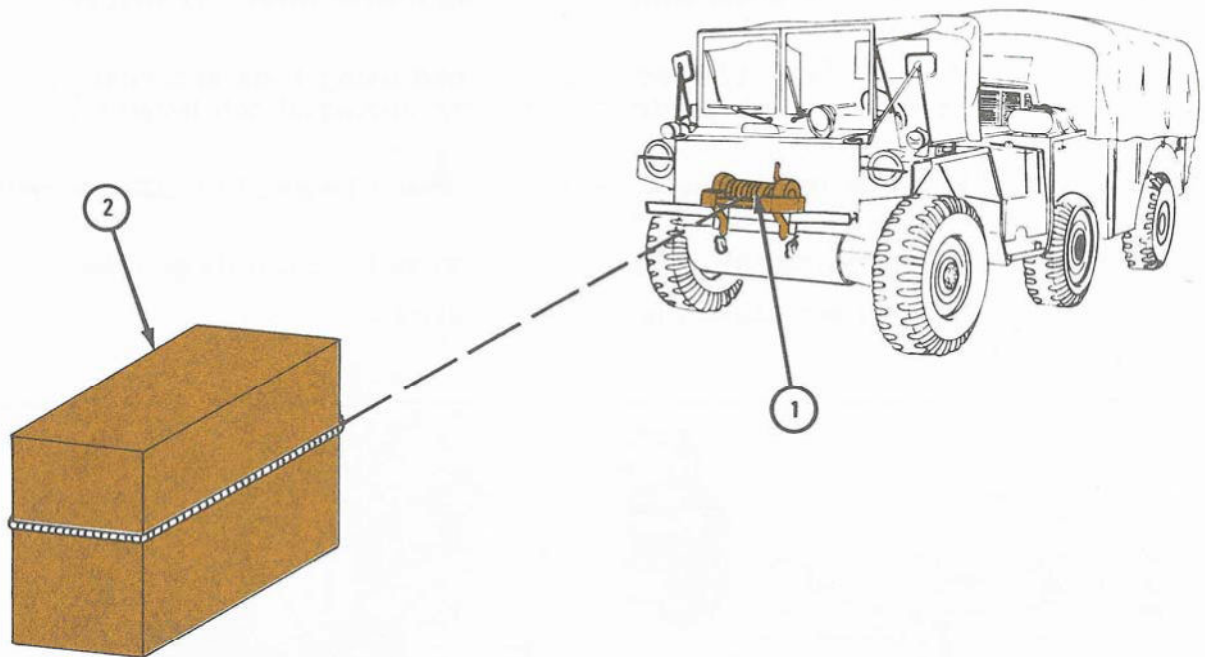
c. Hoisting or Pulling with the Truck Stationary.

PERSONNEL: Two

## FRAME 1

- Soldier A
1. Start engine. Refer to para 4-6a, b, c.
  2. Place truck so that front winch (1) is in a direct line with object to be pulled (2).

GO TO FRAME 2



TA 053734

## FRAME 2

Soldier B:

WARNING

Stand at least 5 feet from front winch, while guiding cable on drum, to prevent hands and clothing from being snagged and pulled onto the drum.

All personnel must stand clear of winch line and load during winching. A snapped winch cable or shifting load is dangerous. If load shifts to a dangerous position, stop and even out load. If any part of winch fails, stop operation and tell organizational maintenance.

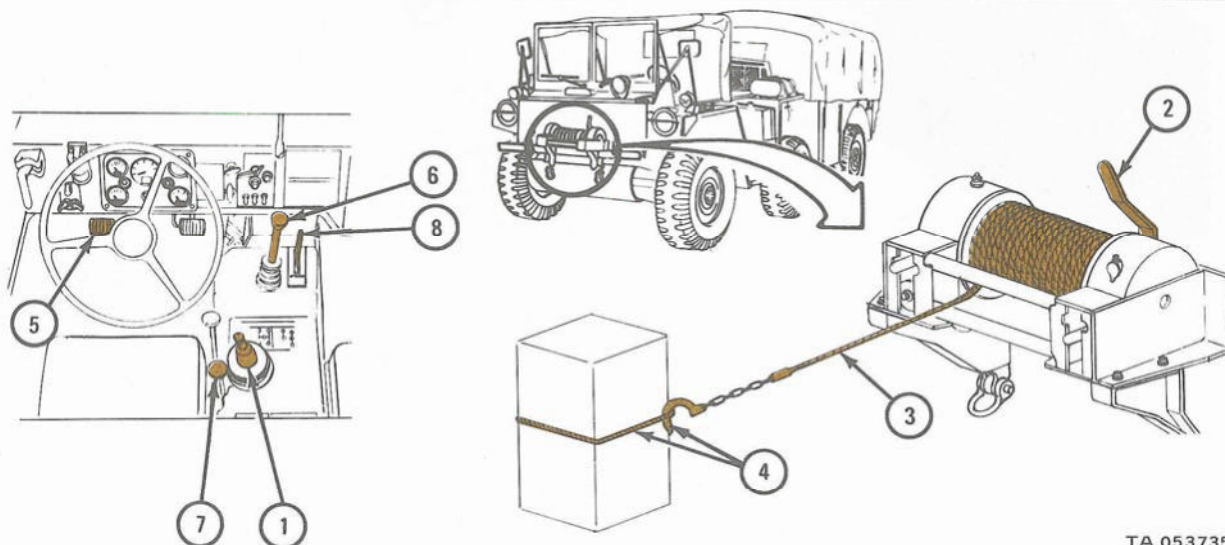
Always wear gloves when handling winch cable. Broken or rusty cable strands can cause serious injury to personnel.

NOTE

Never try to pull more than weight of truck.

- Soldier A: 1. Put handbrake (1) in up (brake on) position.
- Soldier B: 2. Release the drum clutch by moving clutch lever (2) toward the drum.
3. Pull out cable (3) and attach to load using hook and chain (4) as shown. Set the drum clutch by moving clutch lever (2) away from drum.
- Soldier A: 4. Press in truck clutch pedal (5). Place TRANSMISSION gearshift lever (6) in position 1.
5. Place TRANSFER selector lever (7) in N (neutral) position.
6. Move power takeoff lever (8) forward.

GO TO FRAME 3



TA 053735

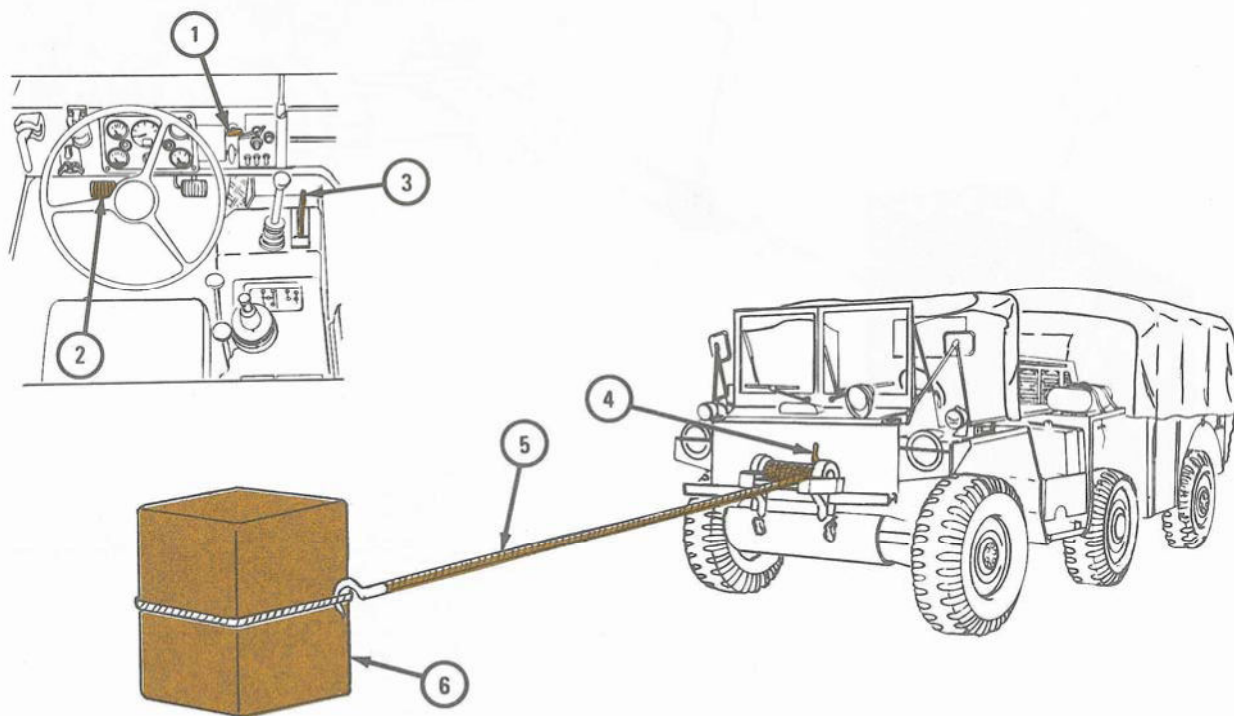
## FRAME 3

CAUTION

Always use hand THROTTLE to control engine speed when operating winch. Avoid sudden changes in speed or high speed.

- Soldier A
1. Set hand THROTTLE control handle (1) for drum speed needed. Do not set it faster than fast idle speed. Operation at a higher speed may overload the winch.
  2. Slowly let out truck clutch pedal (2). As winch starts to operate, set hand THROTTLE (1) for smooth operation.
  3. When load is moved into position, or to stop winch, press down on clutch pedal (2) and pull back power takeoff lever (3). Winch drum will be braked automatically.
- Soldier B
4. Set drum clutch free by moving clutch lever (4) toward the drum. Unhook cable (5) from load (6).

GO TO FRAME 4



TA 053736

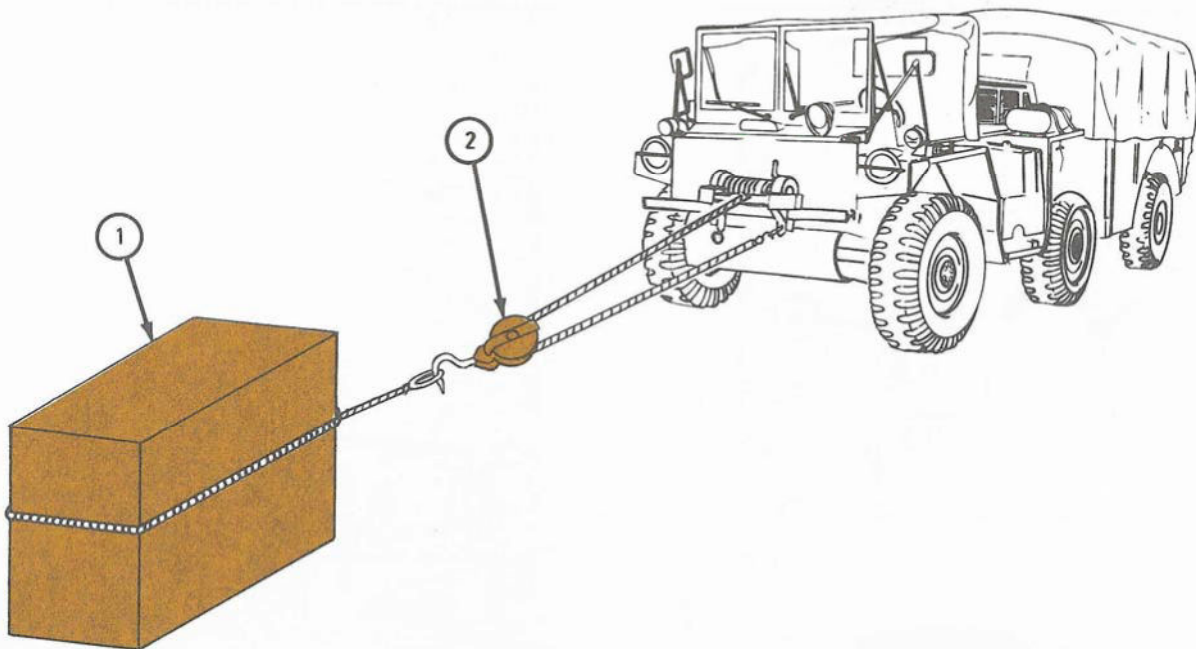
FRAME 4

1. For very heavy loads (1), always use a snatch block (2) as shown.

NOTE

Truck's brakes will hold under load only as much as shear pin will hold. Always use a snatch block for very heavy loads. Never anchor truck to tree or other object.

GO TO FRAME 5



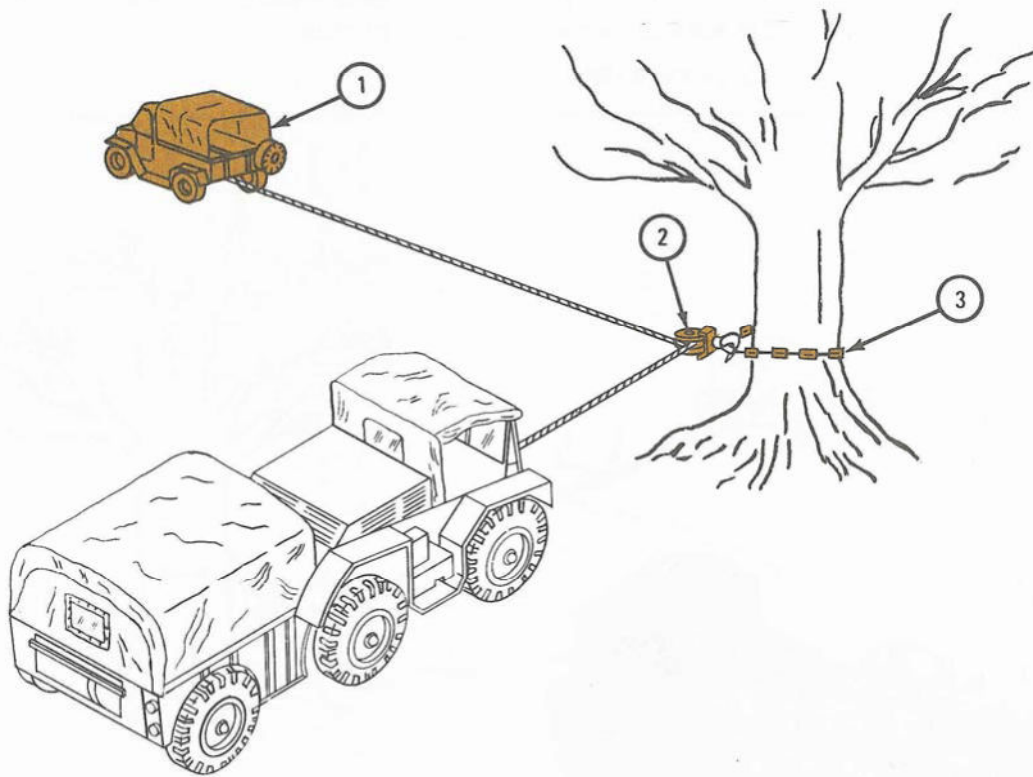
TA 053738



## FRAME 5

1. To pull object (1) that is not in a straight line (directional pull), use snatch block (2) and utility chain (3) as shown.

GO TO FRAME 6



TA 053739

## FRAME 6

WARNING

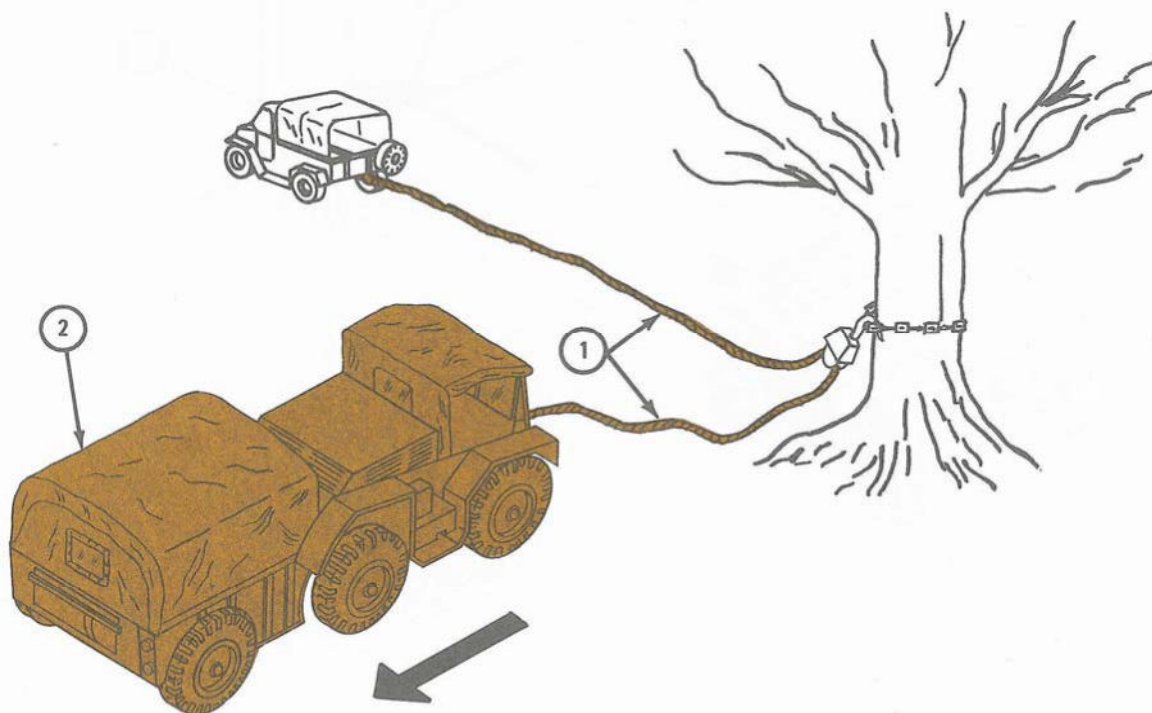
During all winch operations, the instant that slack in winch line is taken up is critical. Tell all personnel to stand clear of winch line and load. Snapped line or shifting load can cause serious injury to personnel. If load shifts, stop winch and spread load.

1. Take up slack in winch line (1) by backing up truck (2) slowly if there is room behind truck.
2. If there is no room to back up, take up slack in cable with winch.

NOTE

Never use winch clutch lever to control winch. Always use power takeoff lever and engine clutch.

3. Stop engine. Refer to para 4-6h.



TA 053737

d. Lowering the Load.

PERSONNEL: Two

- (1) Preliminary procedure. Hook winch cable to load. Refer to para 4-10c.
- (2) Lowering the load.

## FRAME 1

Soldier B

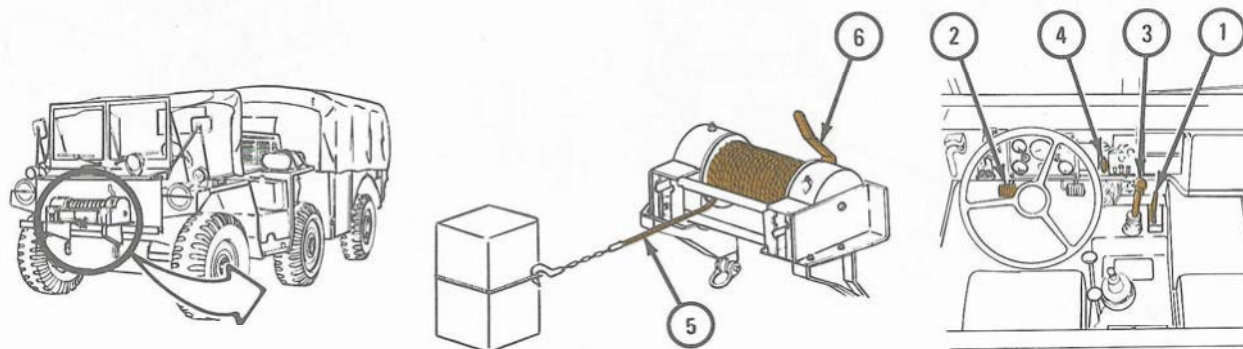
WARNING

Stand at least 5 feet from front winch, while guiding cable on drum, to prevent hands and clothing from being snagged and pulled onto the drum.

All personnel must stand clear of winch line and load. Snapped cable or shifting load can cause serious injury to personnel.

Always wear gloves when handling winch cable. Broken or rusty cable strands can cause serious injury to personnel.

- Soldier A
1. Start engine. Refer to para 4-6a, b, c.
  2. Pull back power takeoff lever (1).
  3. Press down on clutch pedal (2).
  4. Place TRANSMISSION gearshift lever (3) in R (reverse) position.
  5. Move power takeoff lever (1) forward.
  6. Let up clutch pedal (2). Set hand THROTTLE control handle (4) for drum speed wanted. Lower the load.
  7. When load is in position, press in clutch pedal (2). Pull back power takeoff lever (1) so cable (5) stops unwinding.
  8. Stop engine. Refer to para 4-6h.
- Soldier B
9. Set drum clutch free by moving clutch lever (6) toward drum. Unhook cable from load.



TA 053740



e. Winching Truck for Self Recovery.

PERSONNEL: Two

FRAME 1

Soldier B

WARNING

Stand at least 5-feet from front winch, while guiding cable on drum, to prevent hands and clothing from being snagged and pulled onto the drum.

Always wear gloves when handling winch cable. Broken or rusty cable strands can cause serious injury to personnel.

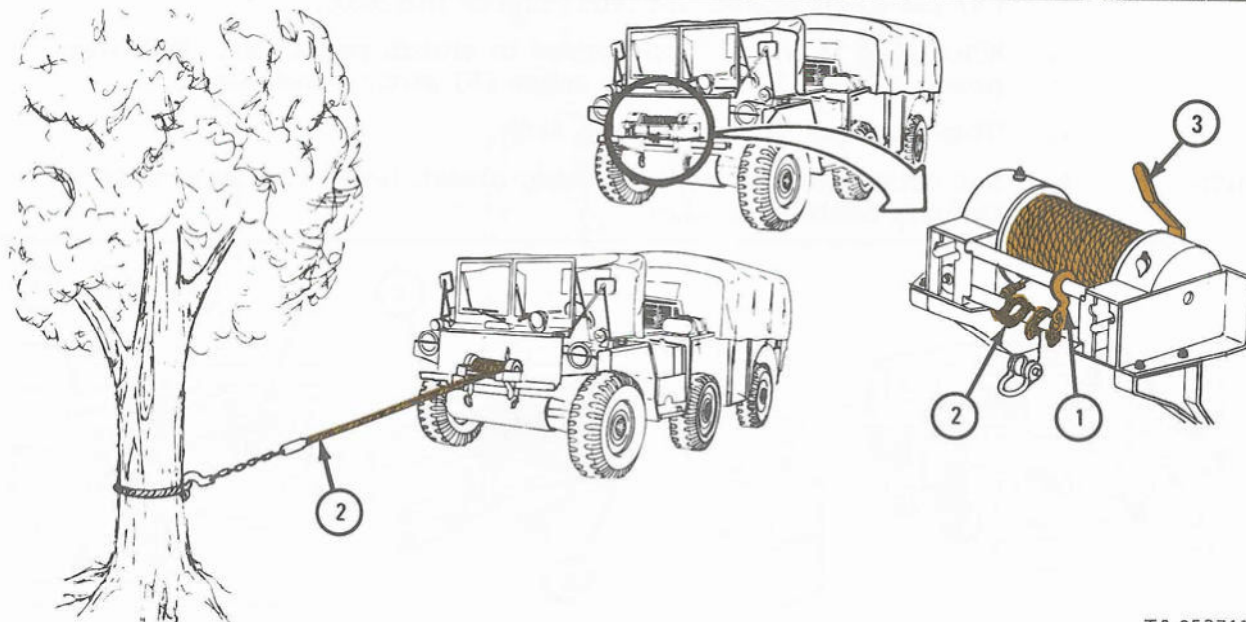
Soldier A

CAUTION

Do not move truck at fast speeds during winch-assisted operation. If truck wheels have traction, fast forward speed could tangle cable and damage truck and winch.

- Soldier B
1. Grasp hook (1) and pull out as much cable (2) as needed while walking away from truck. Be sure to leave at least four turns of cable on the drum.
  2. Choose a good anchor, such as a tree. Hook up cable (2) directly or use snatch block to get a straight pull. Refer to para 4-10c.
  3. Set drum clutch by moving clutch lever (3) away from drum.

GO TO FRAME 2

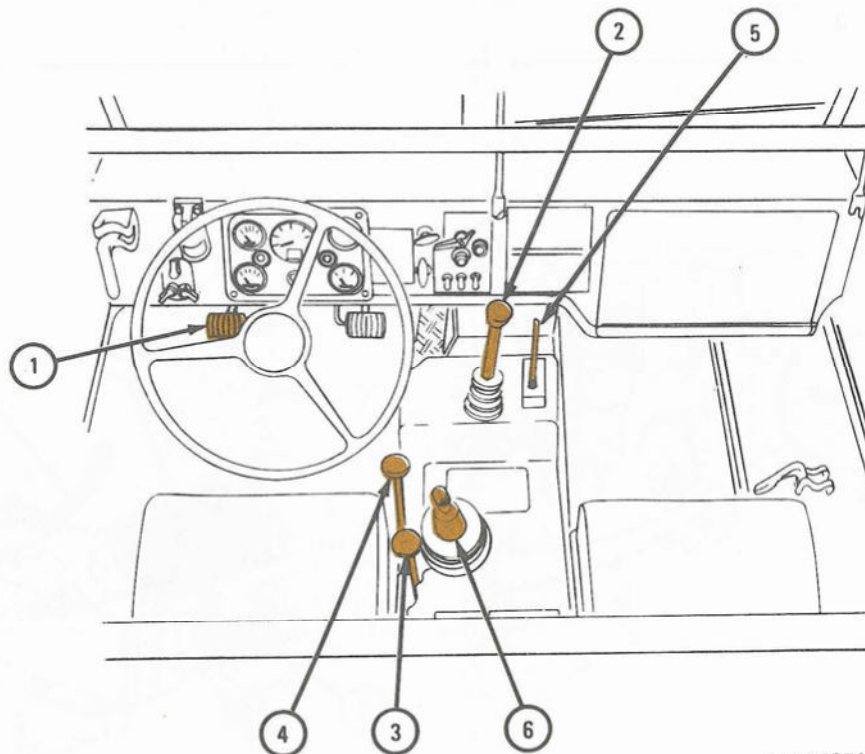


TA 053741



## FRAME 2

- Soldier A
1. Start engine. Refer to para 4-6a, b, c. Press in clutch pedal (1).
  2. Put TRANSMISSION gearshift lever (2) to position 1.
  3. Place TRANSFER selector lever (3) to LOW position.
  4. Put TWO or SIX-WHEEL DRIVE selector lever (4) in SIX-WHEEL DRIVE position.
  5. Push power takeoff lever (5) forward.
  6. Put handbrake (6) in down (brake off) position. Move truck forward slowly.
- Soldier B
7. When truck is free, unhook winch cable from anchor used.
- Soldier A
8. Stop engine. Refer to para 4-6h.



TA 053742

f. Rewinding Cable.

PERSONNEL: Two

FRAME 1

Soldier A

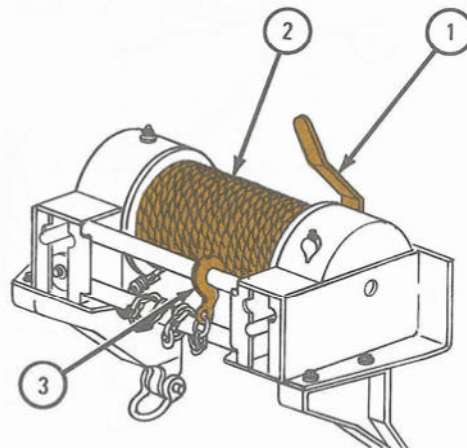
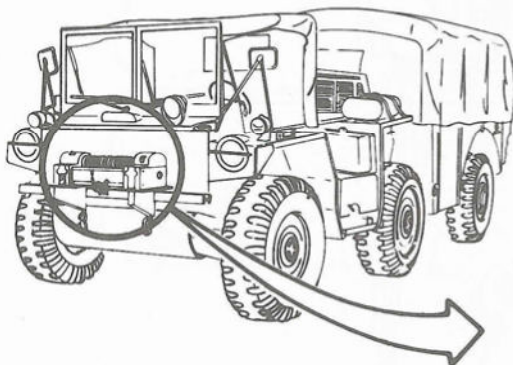
WARNING

Stand at least 5 feet from front winch, while guiding cable on drum, to prevent hands and clothing from being snagged and pulled onto the drum.

Always wear leather gloves when handling the winch cable. Do not let cable slip through hands. Rusty or broken cable strands can cause serious injury.

1. Move clutch lever (1) toward drum (2), releasing clutch.
2. Grasp hook (3) and pull all cable off drum (2) while walking away from truck.
3. Do preventive maintenance checks and service on winch and cable. Refer to PMCS, vol 2, chapter 4, table 4-1.

GO TO FRAME 2

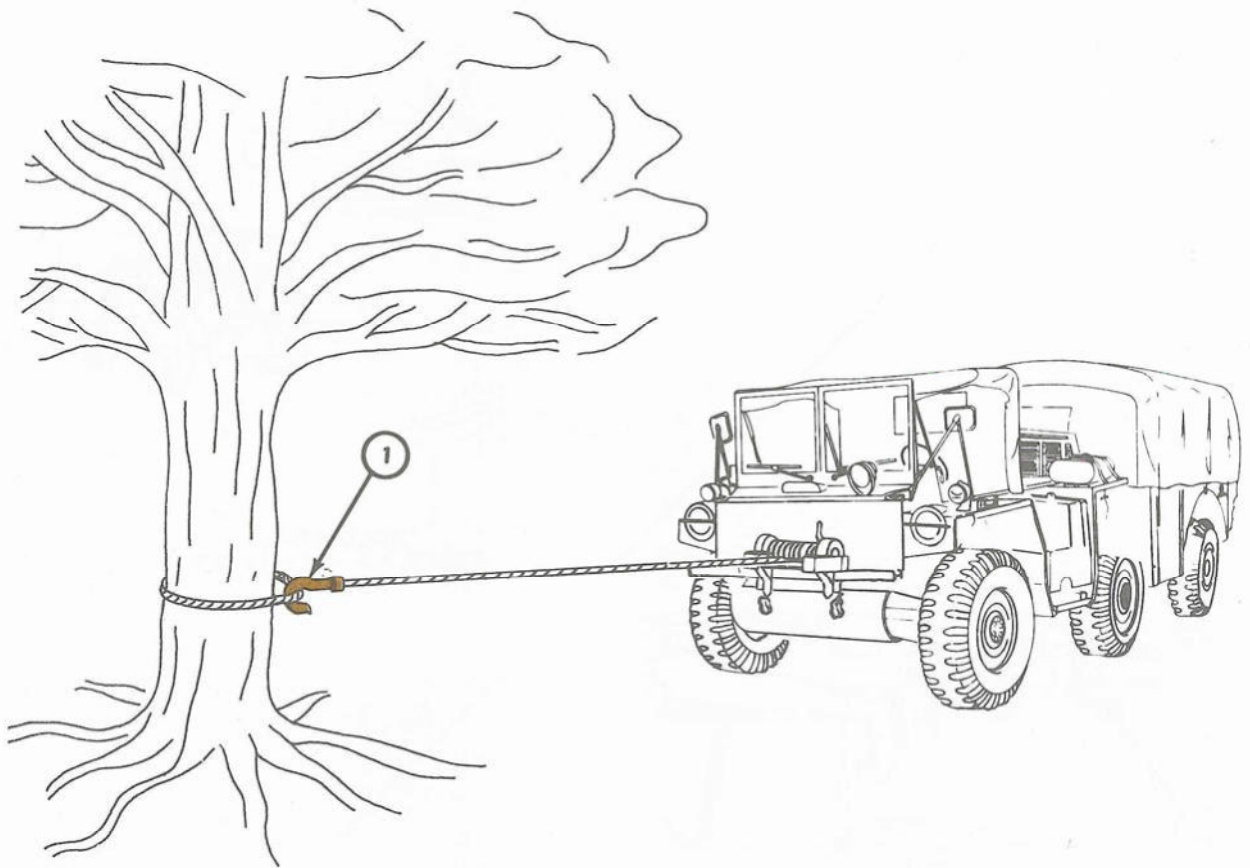


TA 053743

## FRAME 2

1. Hook a load to end of winch cable (1). If no load is handy, choose a good anchor, such as a tree.

GO TO FRAME 3



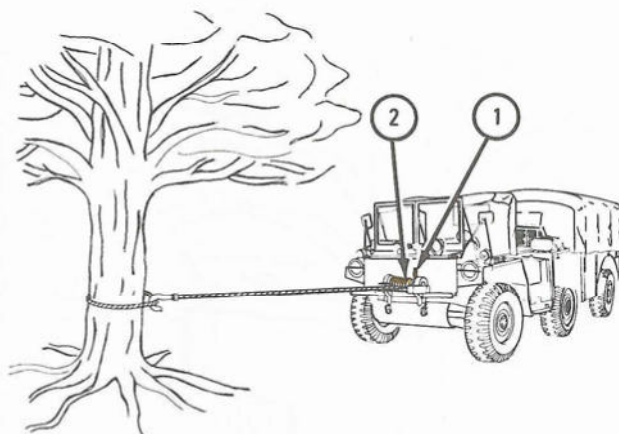
TA 053744



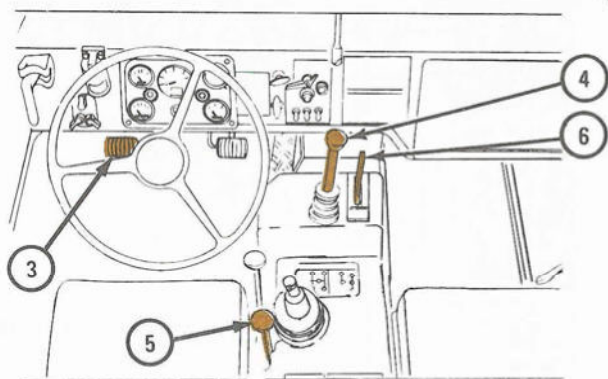
FRAME 3

- Soldier A 1. Set drum clutch by moving clutch lever (1) away from drum (2).
- Soldier B 2. Start engine. Refer to para 4-6a, b, c. Press in the clutch pedal (3).
3. Shift TRANSMISSION gearshift lever (4) to position 1.
4. Place TRANSFER selector lever (5) in N position.
5. Push power takeoff lever (6) forward.

GO TO FRAME 4



SOLDIER A



SOLDIER B

TA 053745

## FRAME 4

- Soldier B
1. Put handbrake (1) in down (brake off) position. Let out clutch pedal (2).
  2. Lightly push down accelerator pedal (3).
  3. If cable is anchored, truck will move forward. Press brake pedal (4) lightly to get a tight wind.

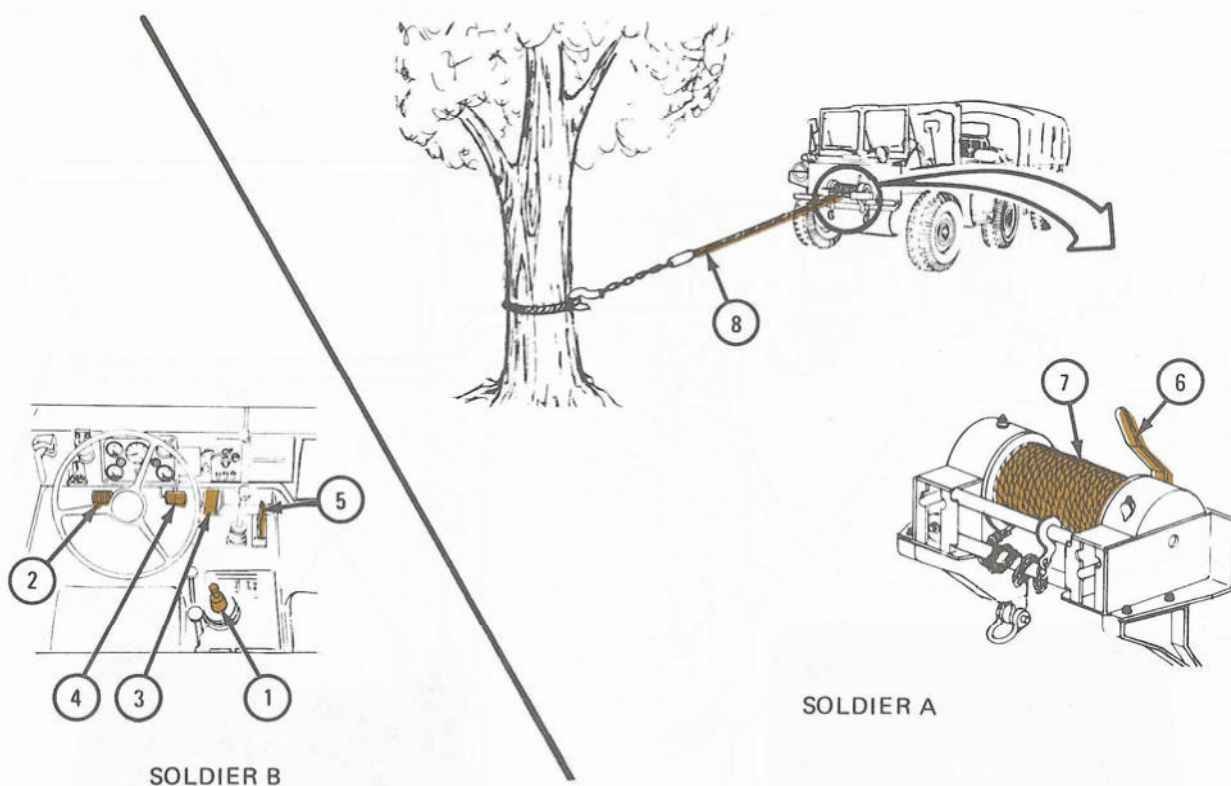
Soldier A

## NOTE

Make sure cable winds on the drum properly. Use a block of wood to guide the cable.

- Soldier B
4. When cable is fully wound, press in clutch pedal (2). Pull back power takeoff lever (5). Let up clutch pedal. Stop engine. Refer to para 4-6h.

- Soldier A
5. Set drum clutch by moving clutch lever (6) away from drum (7). Unhook end of cable (8) and lock end of cable to winch with chain and hook as shown.



TA 053746

#### 4-11. TRACTOR CANOPY AND FRAME REMOVAL AND REPLACEMENT.

TOOLS: Slip-joint pliers

SUPPLIES: None

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

##### a. Removal.

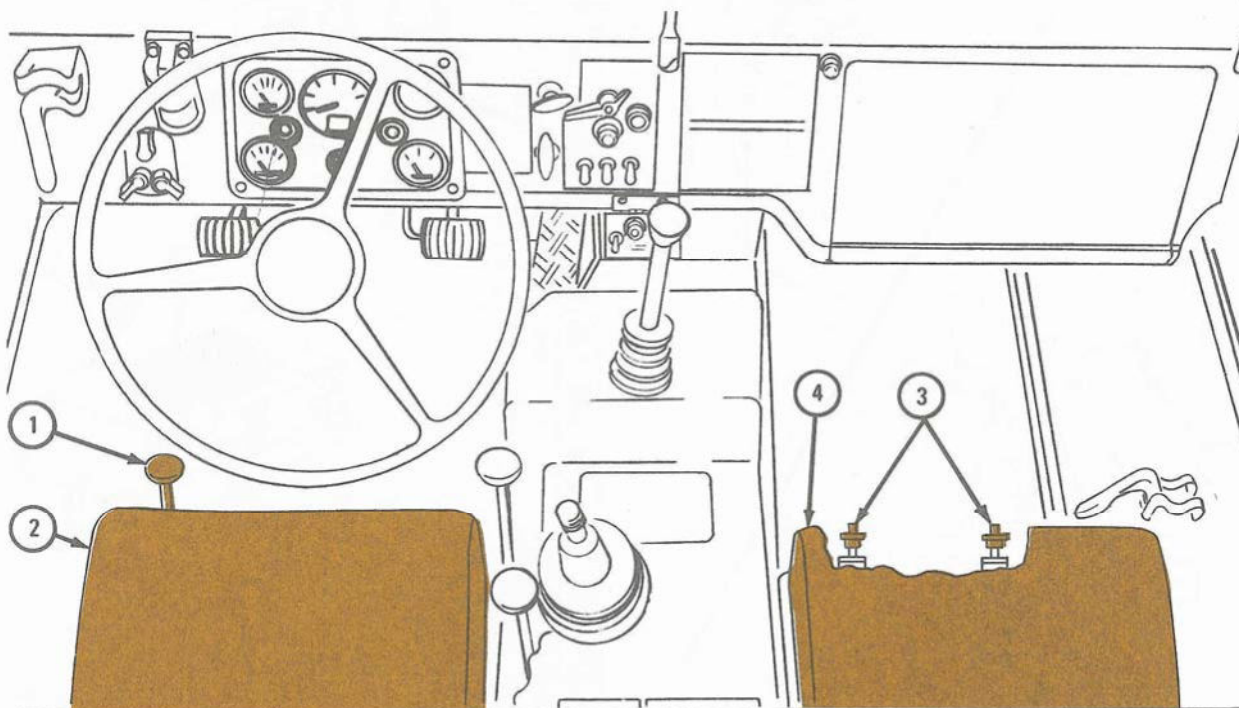
#### FRAME 1

1. Pull up on adjusting lever (1) of drivers seat (2) and slide seat forward.
2. Pull quick release pins (3) on passenger seat (4). Lift front of seat and slide seat forward.

#### NOTE

Seats have to be moved forward enough to be able to reach behind seats to get to canopy studs.

GO TO FRAME 2

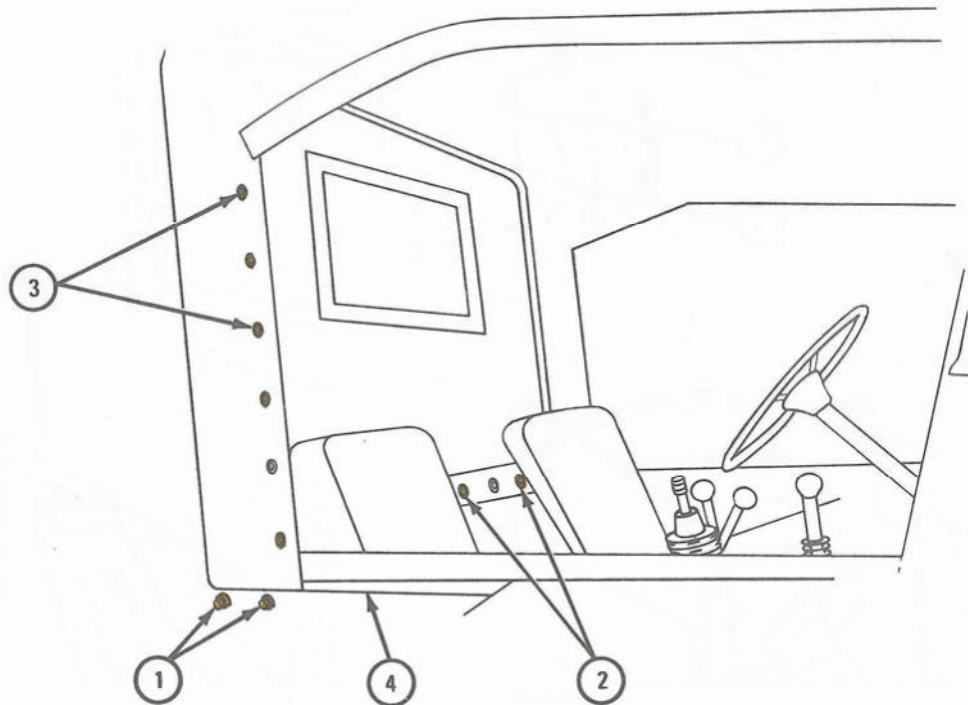


TA 053757

## FRAME 2

1. Unfasten two studs (1) joining rear side of canopy to tractor body.
2. Unfasten 11 studs (2) joining back of canopy to tractor body at rear of cab.
3. Unfasten 15 studs (3) joining canopy to frame assembly (4).
4. Do steps 1 and 3 again for other side of truck.

GO TO FRAME 3



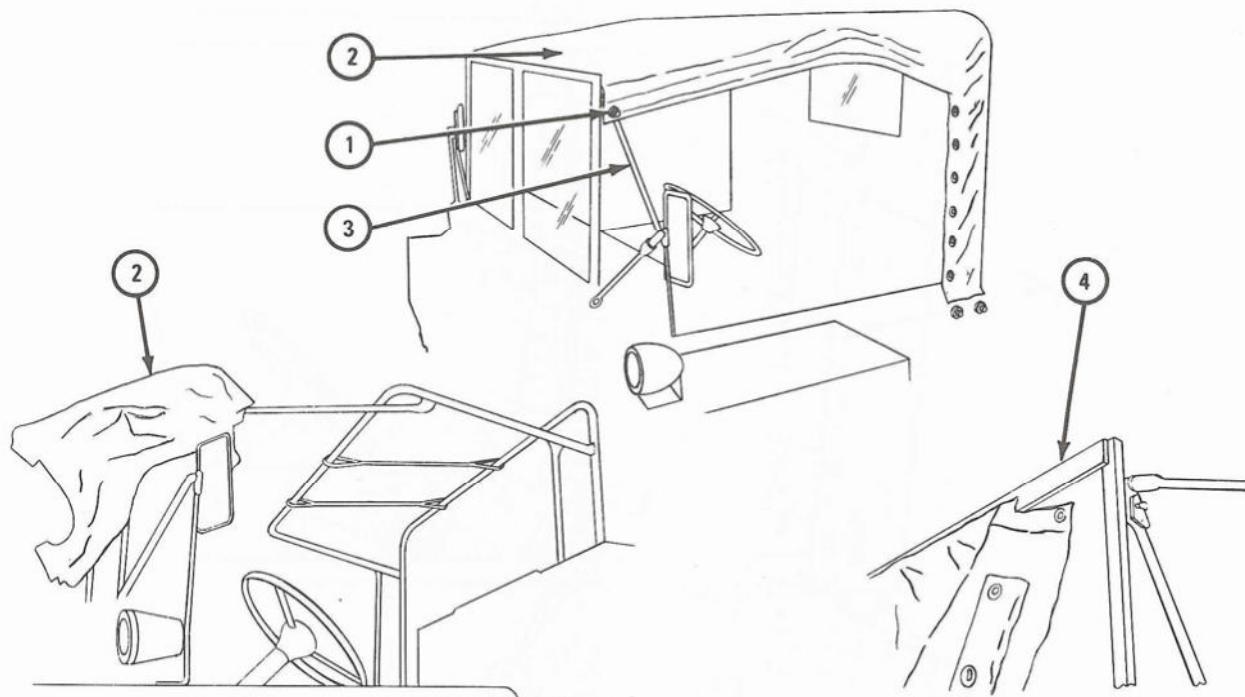
TA 053758



FRAME 3

1. Unlock one stud (1) joining canopy (2) to windshield stanchion (3).
2. Fold canopy (2) up and over windshield. Slide canopy out of the slotted tube (4).
3. Neatly fold canopy (2).

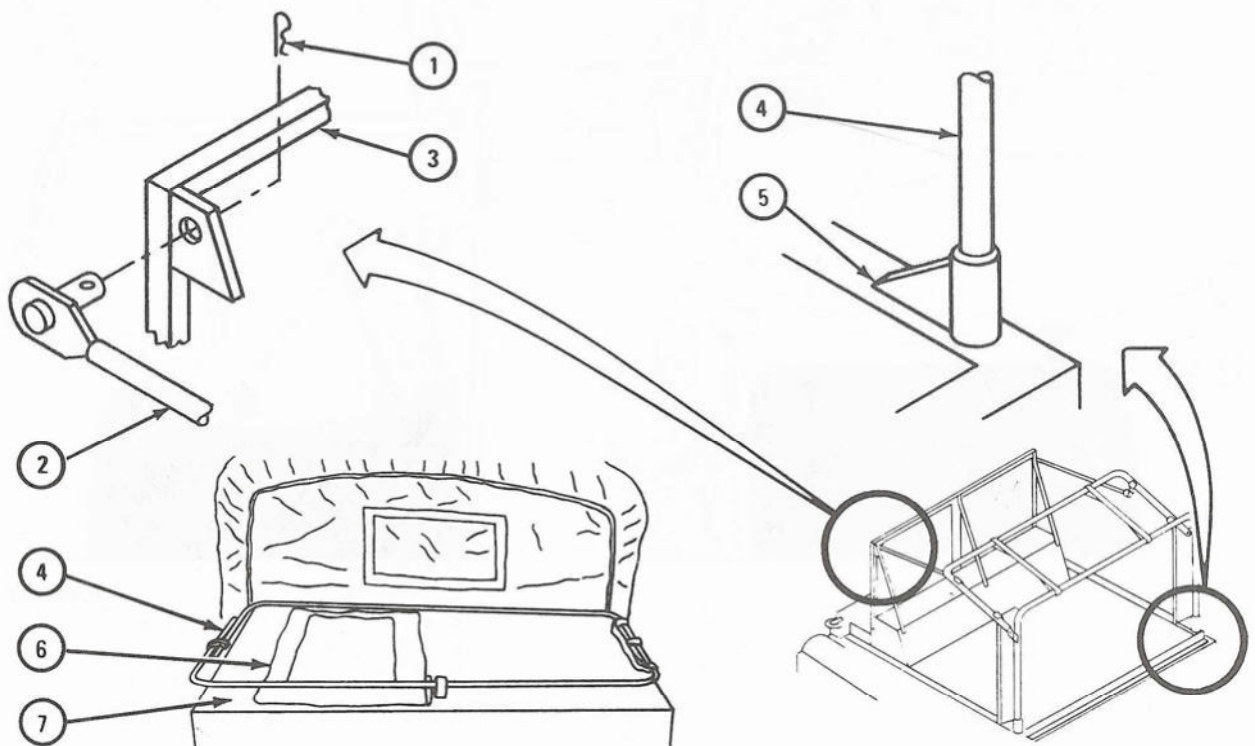
GO TO FRAME 4



TA 053759

## FRAME 4

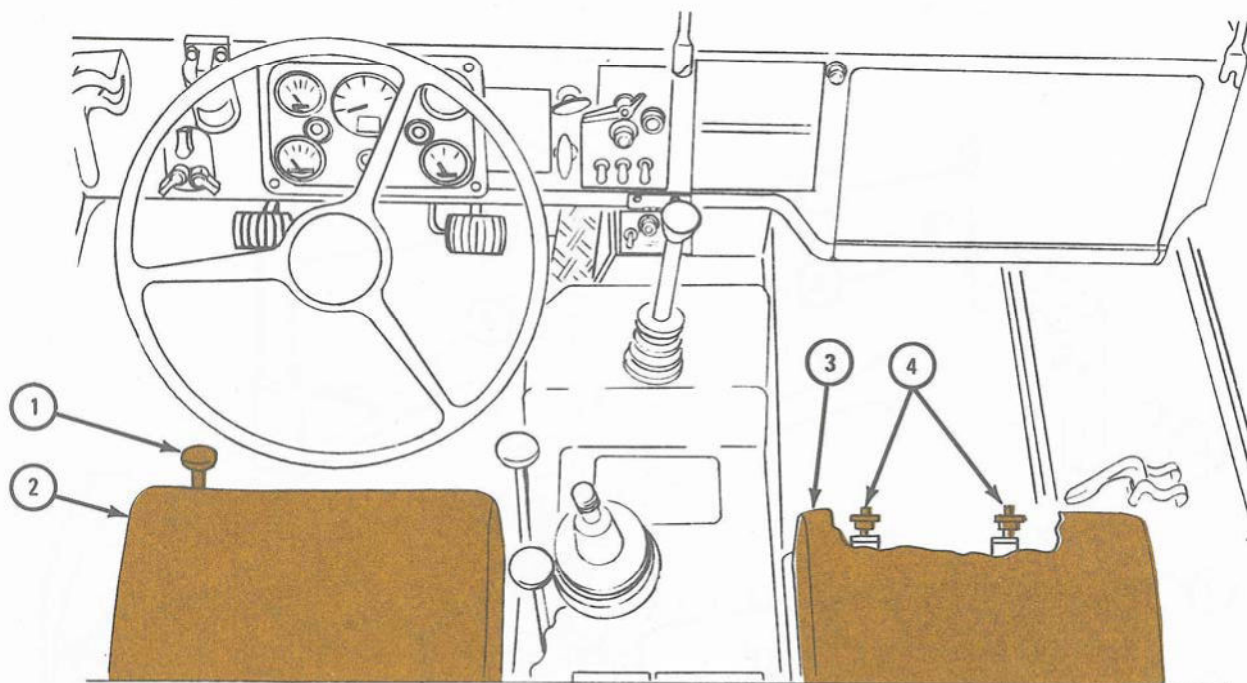
1. Using pliers, pull out two clips (1) from rods (2).
  2. Take rods (2) out of windshield frame (3).
  3. Put clips (1) in rods (2) so they will not be lost.
  4. Lift frame assembly (4) from receptacles (5).
  5. Fold frame assembly (4) flat and stow with canopy (6) on engine cover (7).
- GO TO FRAME 5



TA 053760

FRAME 5

1. Pull up on adjust lever (1) of drivers seat (2) and slide seat back.
2. Slide passengers seat (3) back and put in quick release pins (4).



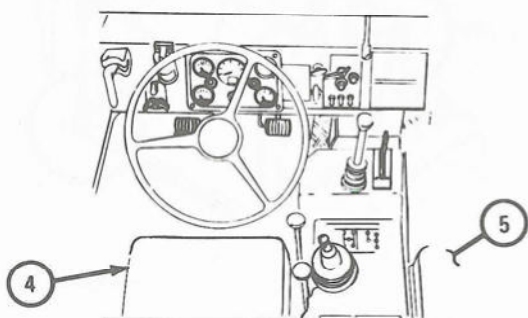
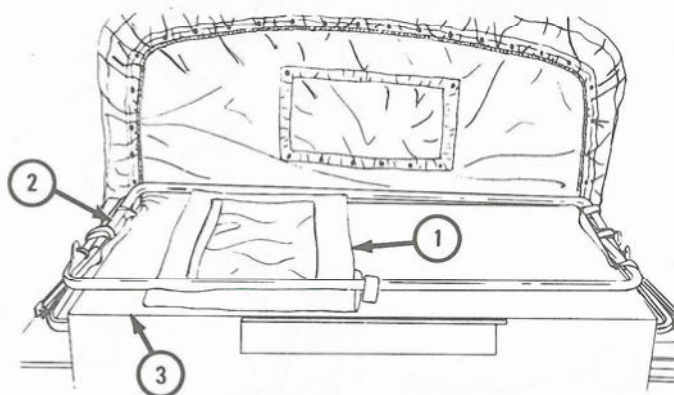
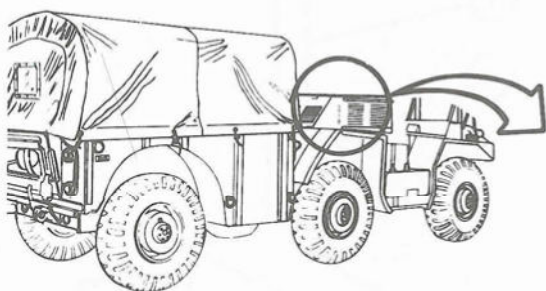
TA 053784

b. Replacement.

## FRAME 1

1. Take canopy (1) and frame assembly (2) from stowage on engine cover (3).
2. Move drivers seat (4) and passenger seat (5) forward. Refer to para 4-11a, frame 1.

GO TO FRAME 2



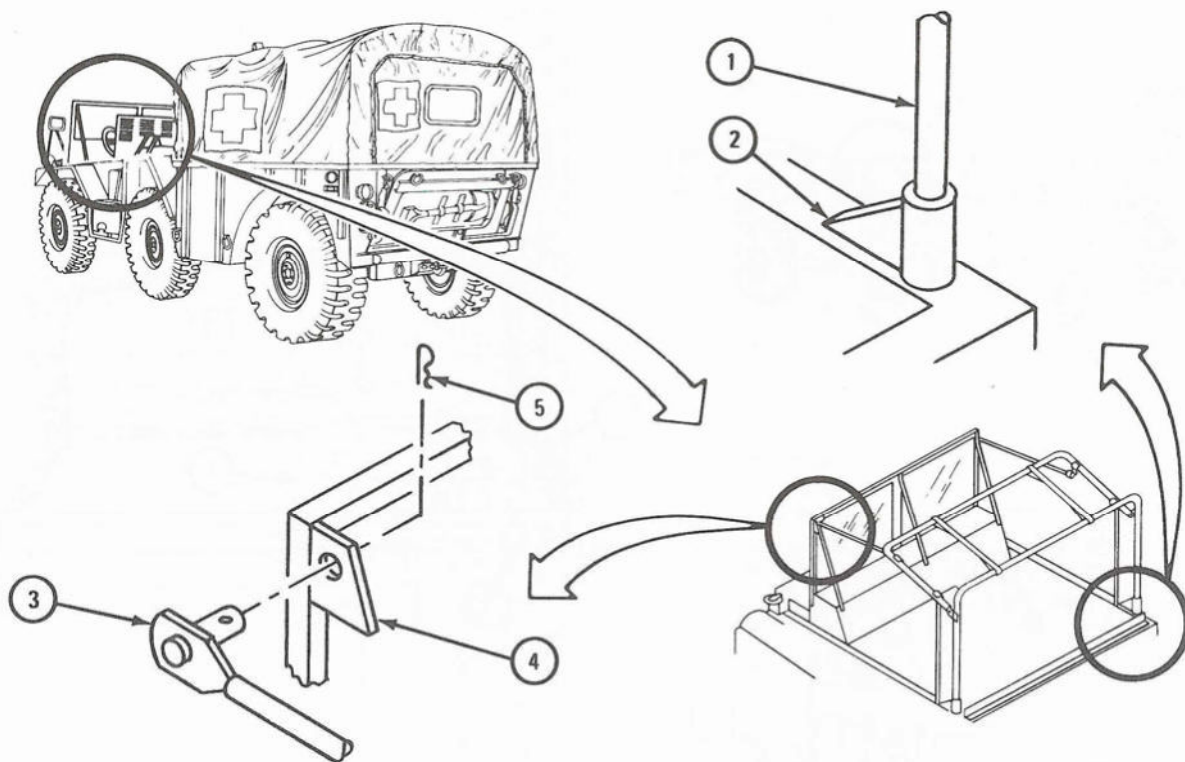
TA 053761



FRAME 2

1. Put frame assembly (1) in canopy receptacles (2) at the rear corners of cab.
2. Put two rods (3) into holes in windshield frame (4).
3. Using pliers, put two clips (5) into holes in rods (3).

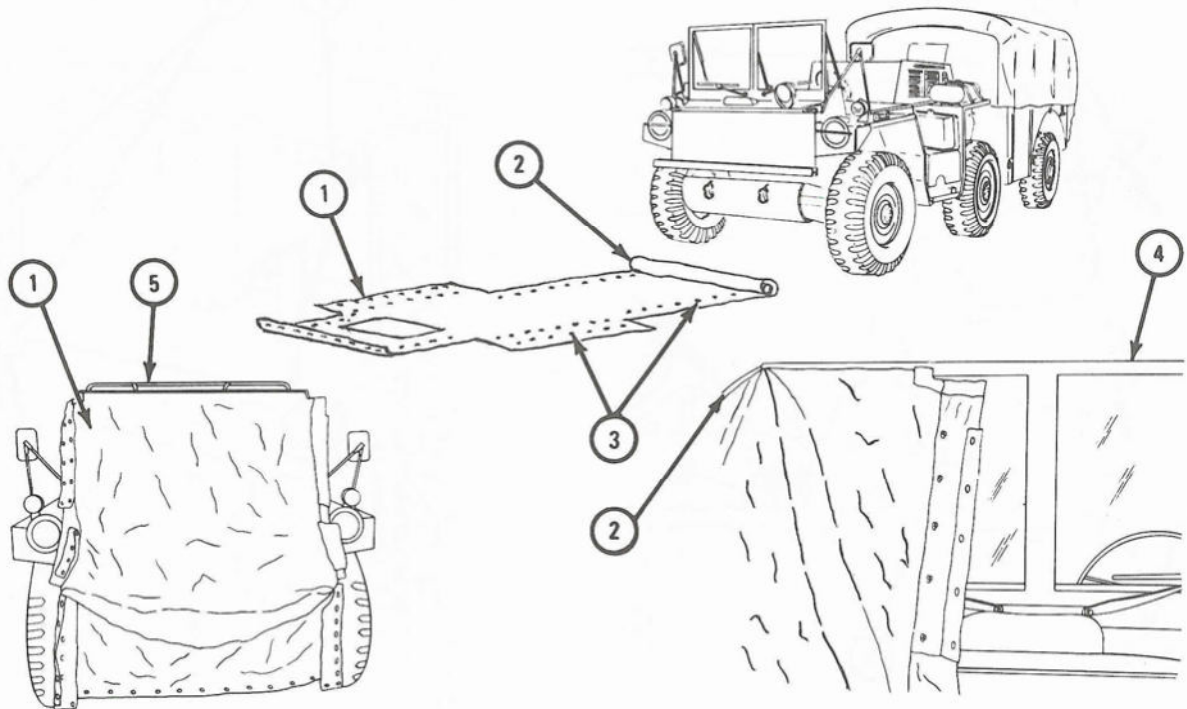
GO TO FRAME 3



TA 053762

## FRAME 3

1. Unfold canopy (1) in front of truck with rolled edge of canopy (2) toward windshield, and studs and stud flaps (3) facing upward.
  2. Feed rolled edge (2) into slotted tube on top of windshield (4). Center canopy (1) on windshield (5). Make sure all of rolled edge is within slotted tube on windshield (4).
  3. Lift canopy (1) over windshield (5) and pull all the way down to rear of cab.
- GO TO FRAME 4

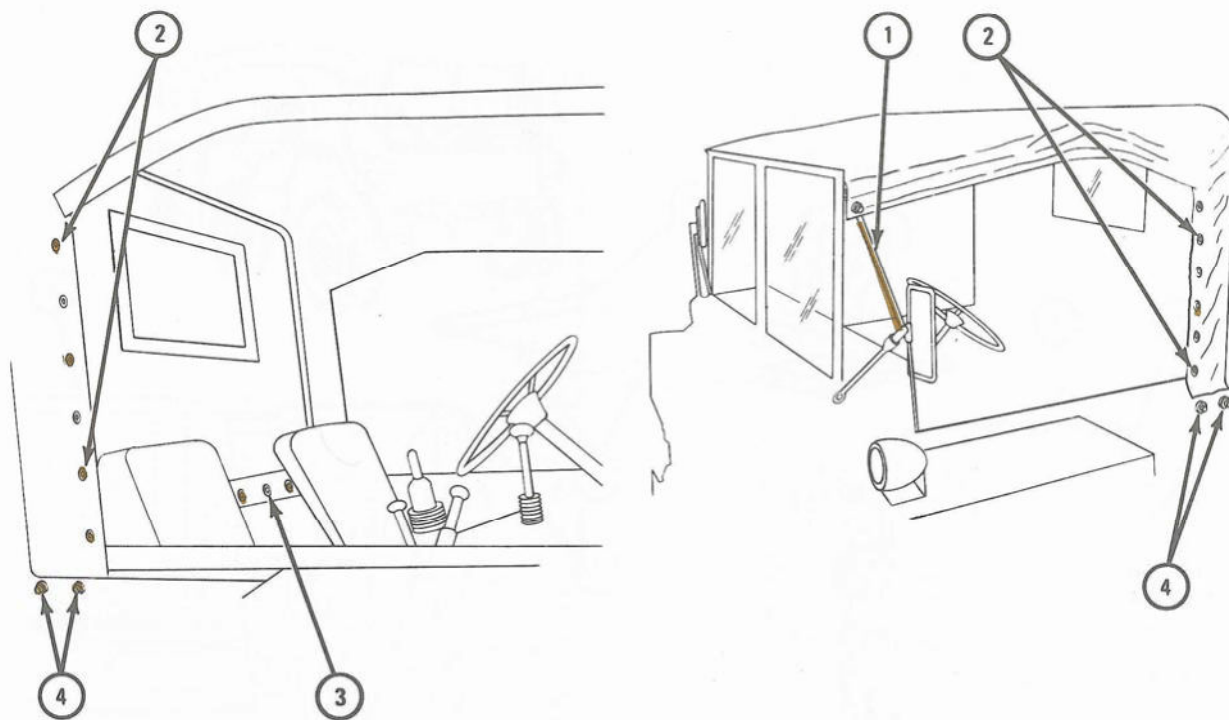


TA 053763

FRAME 4

1. Join canopy to stud at each windshield stanchion (1). Lock 30 studs (2) joining canopy to frame assembly.
2. Lock 11 studs (3) joining canopy to rear of cab. Lock two studs (4) joining rear side of canopy to tractor body.

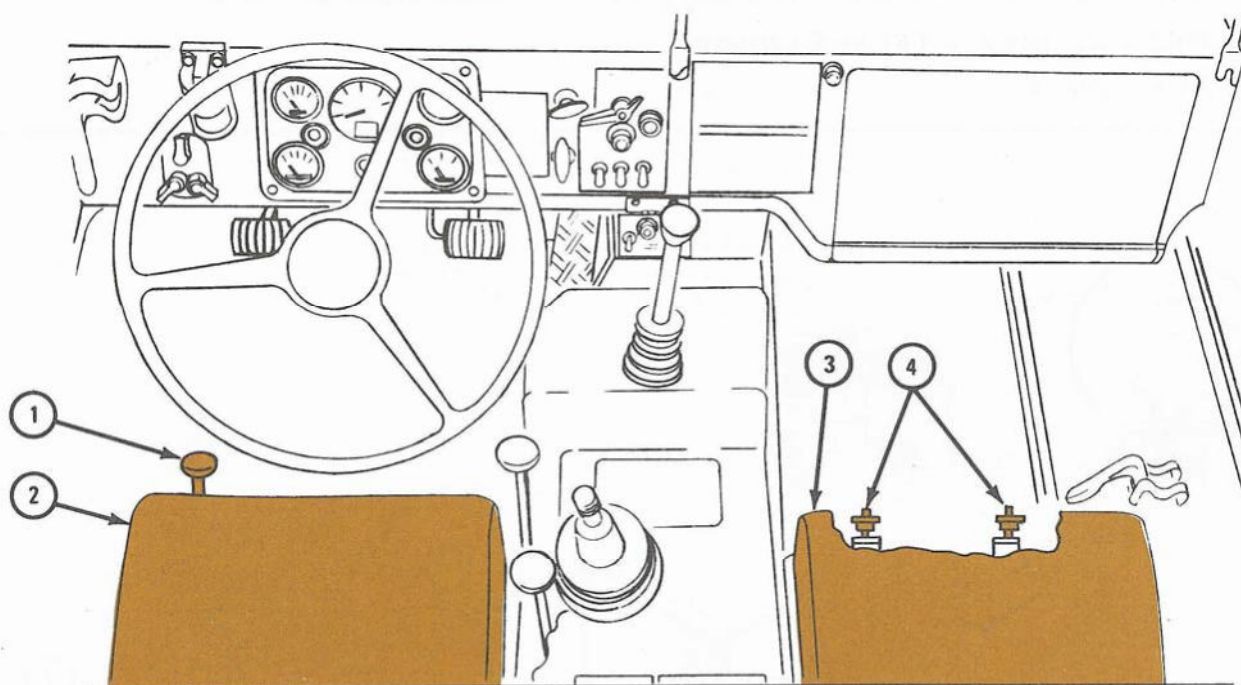
GO TO FRAME 5



TA 053764

## FRAME 5

1. Pull up on adjust lever (1) of drivers seat (2) and slide seat back.
2. Slide passengers seat (3) back and put in quick release pins (4).



TA 053784



# 4-12. CARRIER (M561) CANOPY AND TOP BOWS REMOVAL AND REPLACEMENT.

TOOLS: None

SUPPLIES: None

PERSONNEL: One

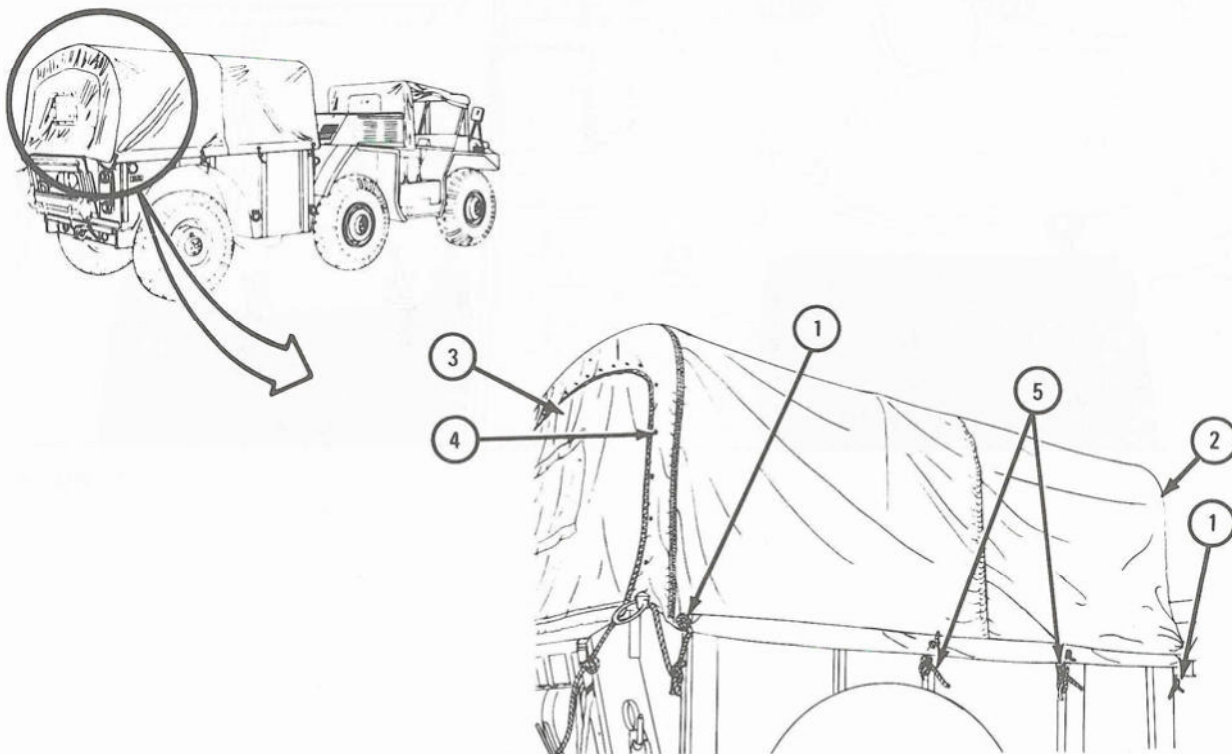
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

## FRAME 1

1. Untie ropes (1) at front and rear of carrier canopy (2) on both sides of truck.
2. Take off rear and front end curtains (3) by unlocking fasteners (4).
3. Untie ropes (5) and take off canopy (2) from both sides of truck.
4. Fold end curtains (3) and canopy (2).

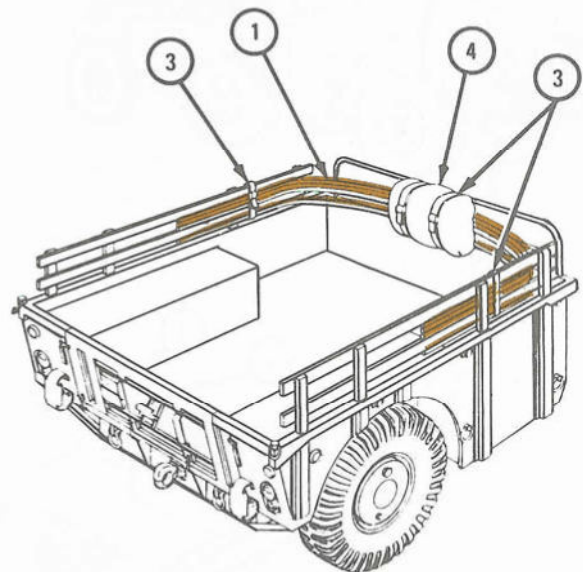
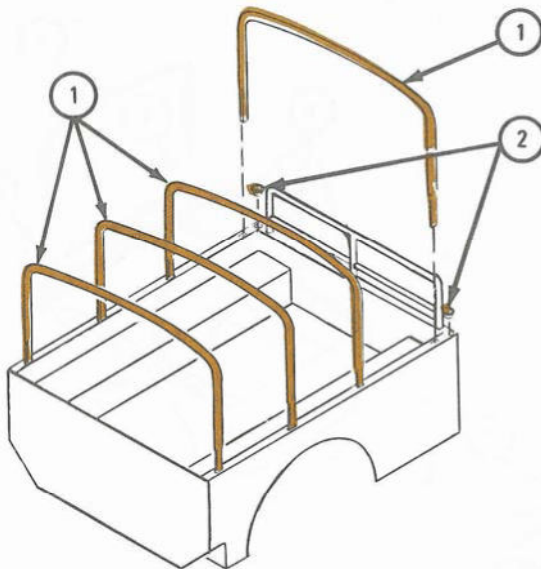
GO TO FRAME 2



TA 053765

## FRAME 2

1. Lift bows (1) from mounting sockets (2).
2. Stow bows (1) at front of carrier and tie down with straps (3) as shown.
3. Stow folded canopy and curtains (4) at front of carrier and tie down with straps (3) as shown.



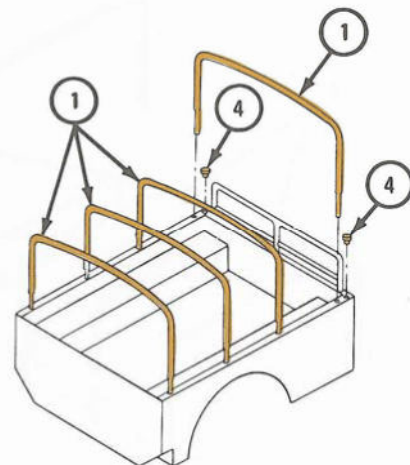
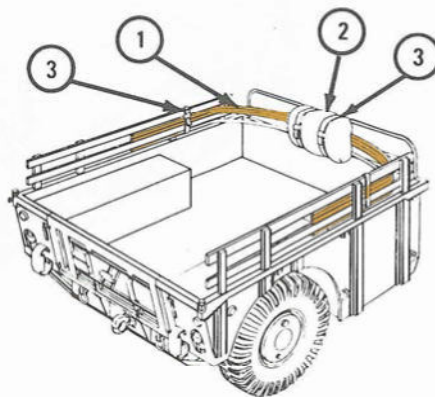
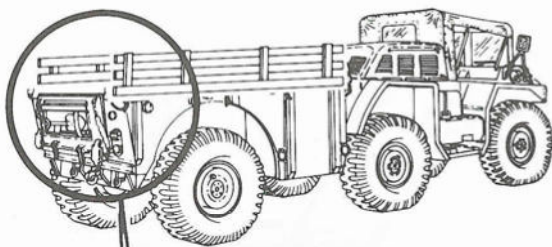
TA 053766

b. Replacement.

FRAME 1

1. Take bows (1) and canopy (2) from stowed position by loosening straps (3).
2. Put bows (1) into mounting sockets (4).

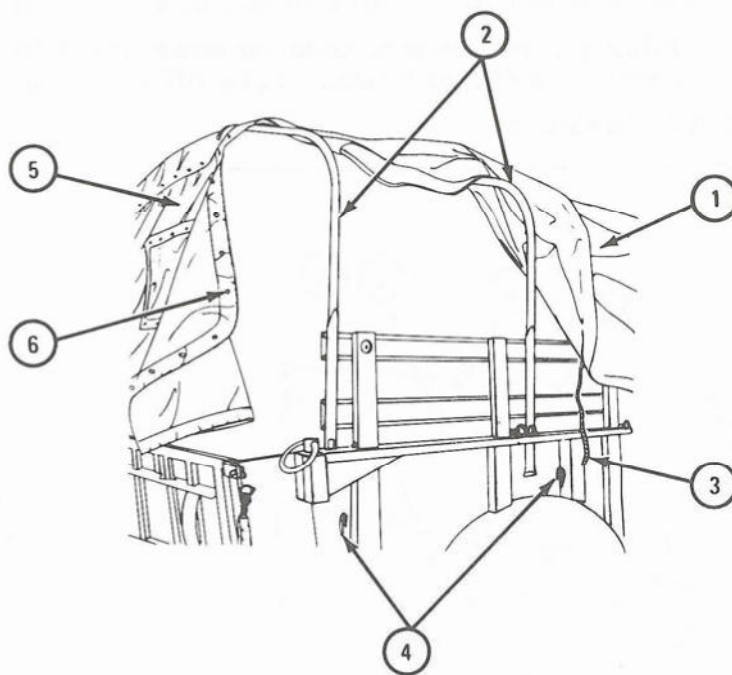
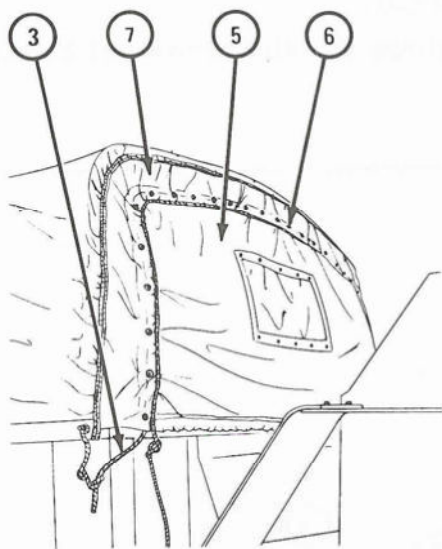
GO TO FRAME 2



TA 053767

## FRAME 2

1. Unfold canopy (1) and place it on bows (2) so that tie down ropes (3) align with hooks on carrier body (4). Tie ropes.
2. Place end curtains (5) at front and rear of canopy (1) and lock fasteners (6).
3. Tie down end curtains (5) and end facings (7) with tie down ropes (3) as shown.



TA 053768



#### 4-13. WINDSHIELD REMOVAL AND INSTALLATION WITH CANOPY AND FRAME ASSEMBLY REMOVED.

TOOLS: Slip-joint pliers

SUPPLIES: None

PERSONNEL: One

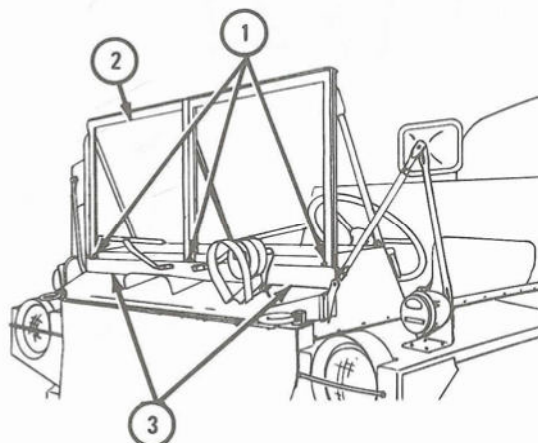
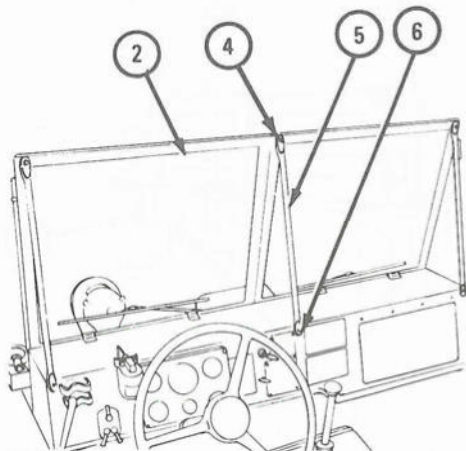
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

##### a. Removal.

#### FRAME 1

1. Using pliers, loosen, then unscrew and take off three thumb screws (1) holding windshield (2) to lower support channel (3).
2. Using pliers, loosen, then unscrew and take off three thumb screws (4) holding stanchions (5) to top of windshield (2).
3. Lift windshield (2) up and out of support channel (3).
4. Using pliers, loosen, then unscrew and take off three thumb screws (6) holding stanchions (5) to truck. Take off stanchions.

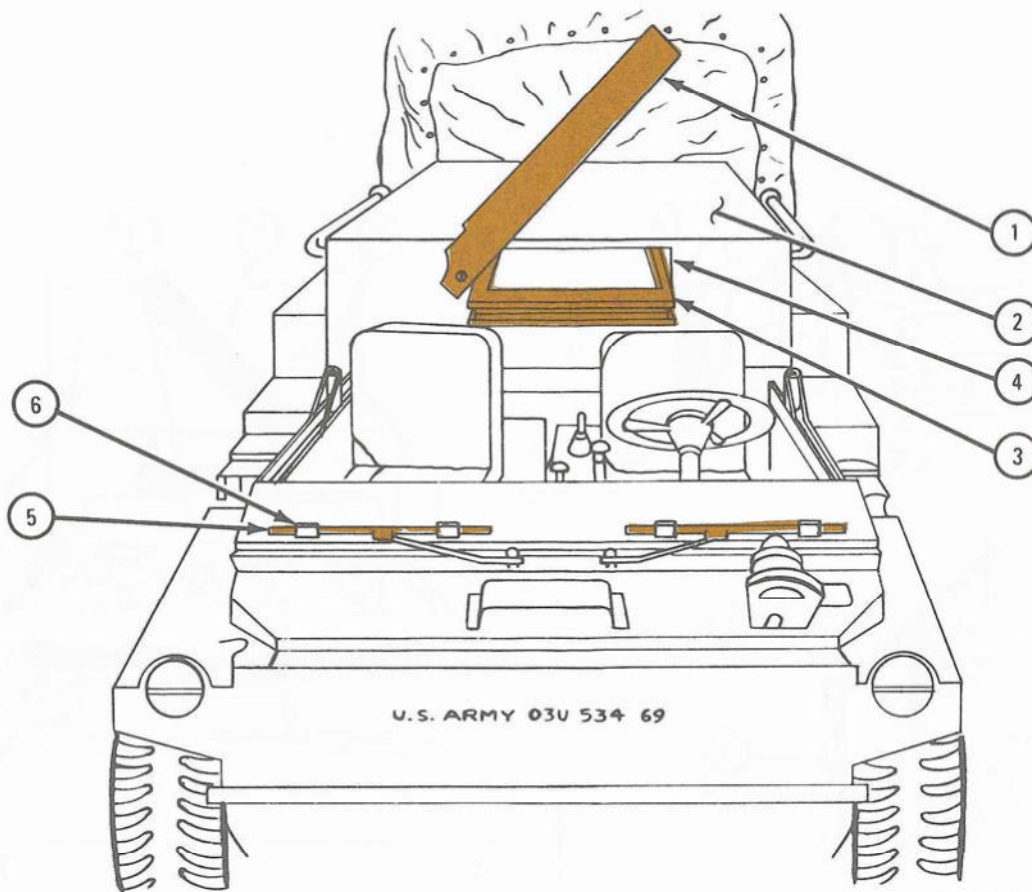
GO TO FRAME 2



TA 053769

## FRAME 2

1. Open stowage compartment door (1) on engine cover (2). Fold and stow windshield and stanchions (3) in stowage compartment (4). Close compartment door.
2. Latch windshield wiper blades (5) in brackets (6).



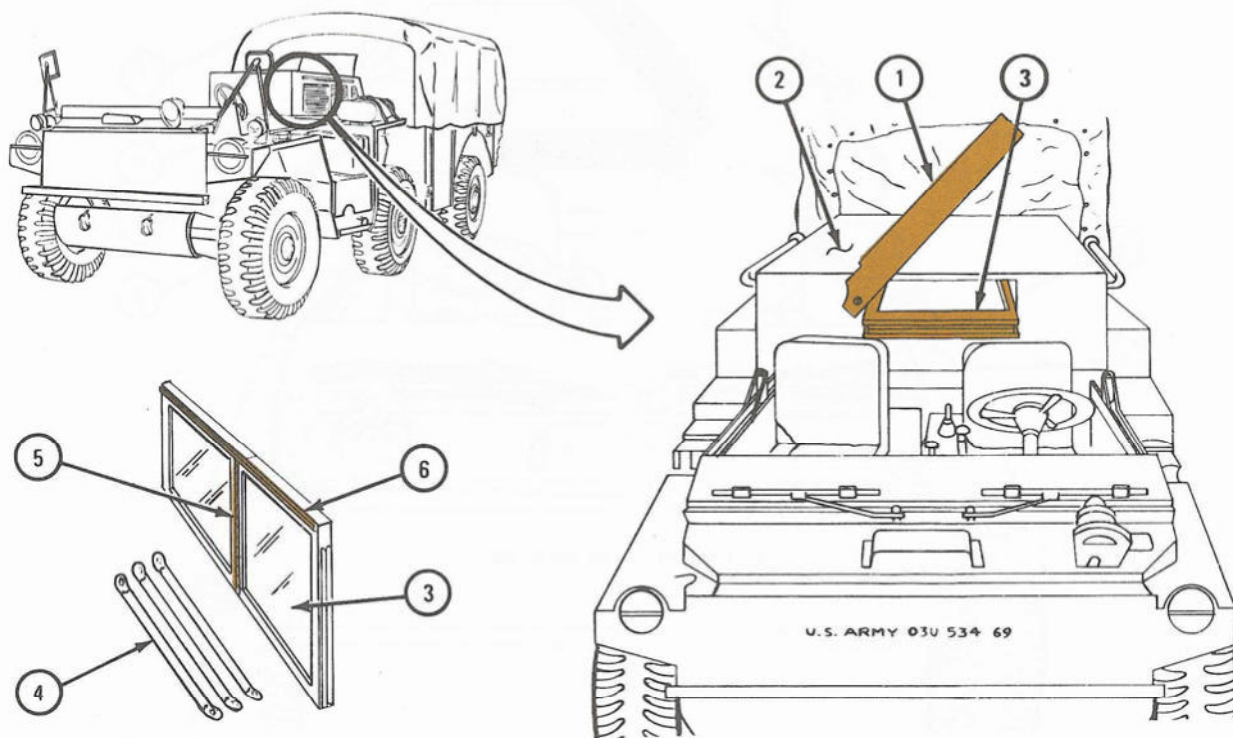
TA 053770

b. Installation.

FRAME 1

1. Open stowage compartment door (1) on engine cover (2). Take out windshield (3) and stanchions (4) from stowage compartment.
2. Unfold windshield (3) so that hinge (5) is away from truck and slotted tube (6) is on top.

GO TO FRAME 2



TA 053771

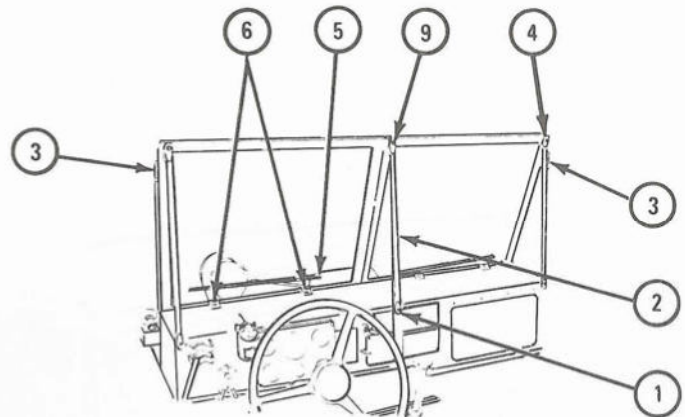
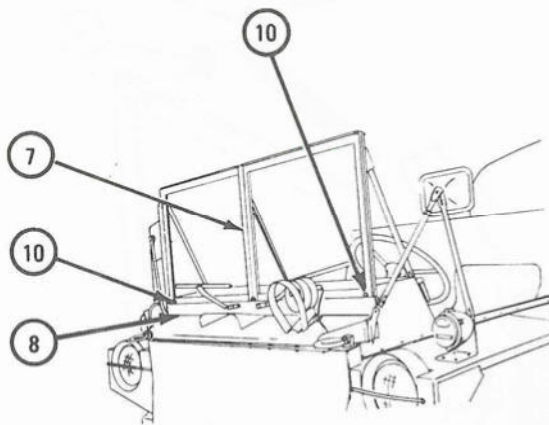
## FRAME 2

1. Screw on and tighten three thumb screws (1) holding stanchions (2) to truck. Fastening studs (3) on side stanchions must face outward. Angled tab (4) must be at top of stanchion.
2. Take out windshield wipers (5) from latching brackets (6). Place windshield (7) in support channel (8). Place wipers on windshield.
3. Screw on and tighten three thumb screws (9) to top of stanchions (2) and windshield.
4. Screw on and tighten three thumb screws (10) holding windshield to support channel.

## NOTE

Follow-on Maintenance Action Required:

Put on tractor canopy and frame. Refer to para 4-11b.



TA 053772



4-14. WINDSHIELD REMOVAL AND INSTALLATION WITH CANOPY AND FRAME INSTALLED.

TOOLS: Slip-joint pliers

SUPPLIES: None

PERSONNEL: Two

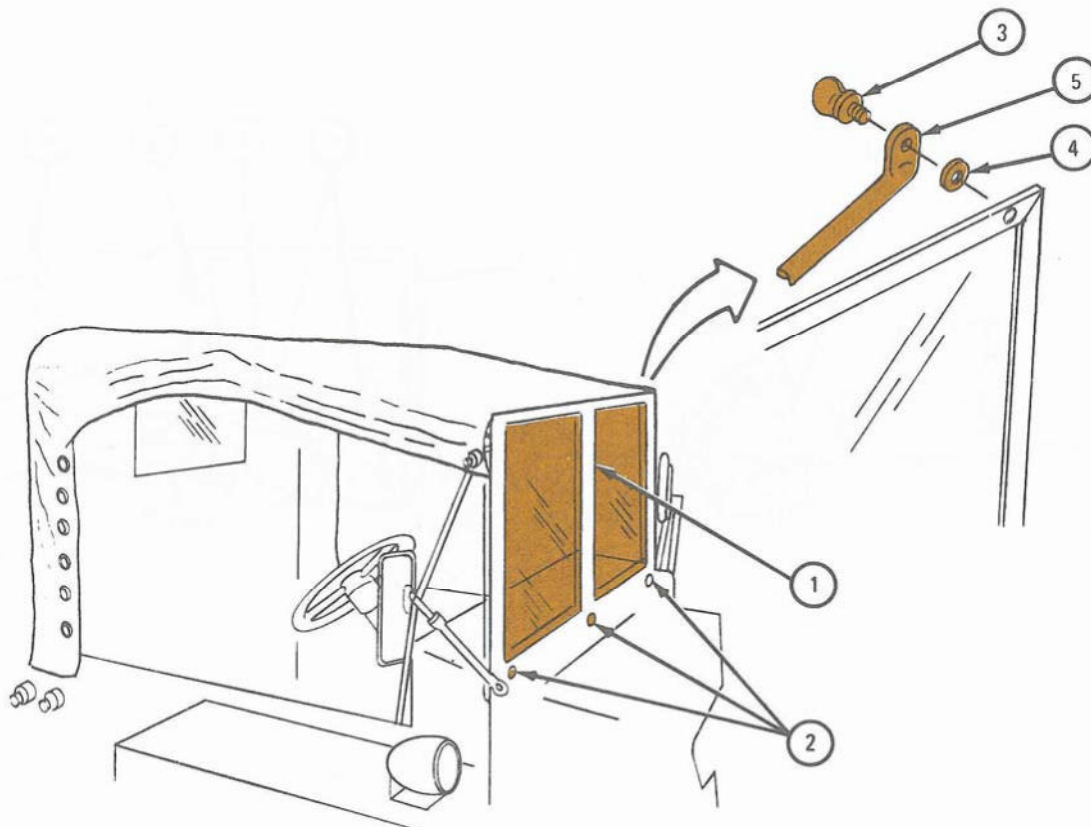
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

- Soldier A 1. Hold windshield (1).
- Soldier B 2. Unscrew and take off three thumb screws (2) at bottom of windshield (1).
3. Unscrew and take off three thumb screws (3) and three washers (4) holding stanchions (5) to windshield (1).

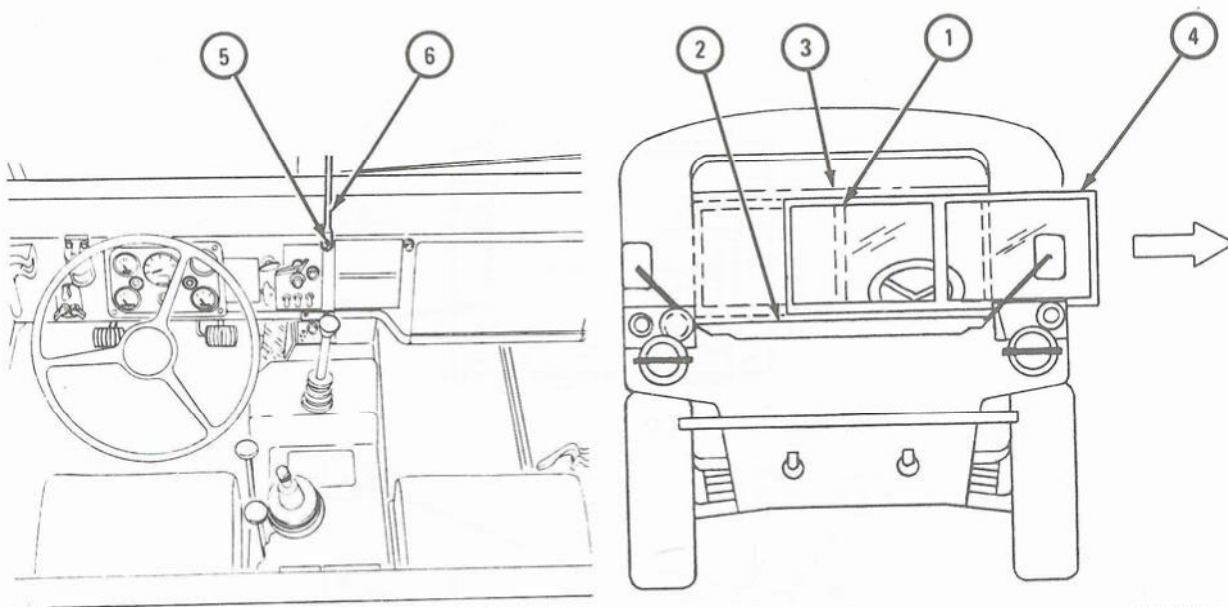
GO TO FRAME 2



TA 053773

## FRAME 2

- Soldiers A and B
1. Lift windshield (1) out of support channel (2) and slide windshield in direction shown. Rolled edge of canopy (3) will slide out of slotted tube (4).
  2. Unscrew and take off one thumb screw (5) and take out center stanchion (6).
  3. Fold and stow windshield (1) and stanchion (6) in stowage compartment in the engine cover. Refer to para 4-13.



TA 053774

b. Installation.

FRAME 1

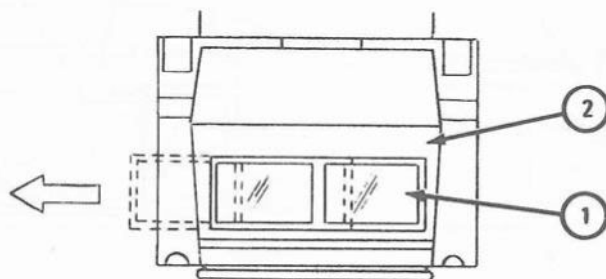
- Soldiers A and B
1. Take windshield and stanchion from stowage compartment. Refer to para 4-13b. Unfold windshield.
  2. Lay windshield assembly (1) on top of tractor canopy (2).

NOTE

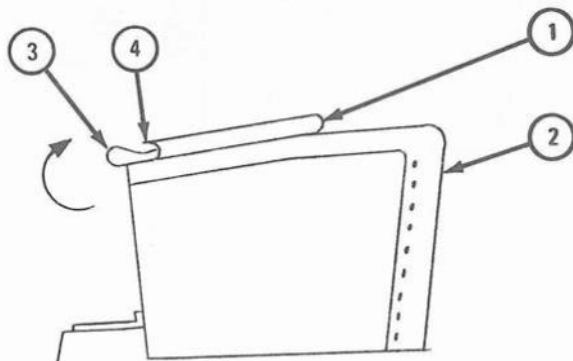
Slotted tube on top of the windshield must face the front of truck. Hinge assembly will be facing downward.

3. Slide windshield (1) to one side. Flip rolled welt edge of canopy (3) over and put it in slotted tube (4) on top of windshield.
4. Slide windshield (1) back over canopy (2), feeding welt edge (3) into slotted tube (4) until it comes out other side of slotted tube.

GO TO FRAME 2



TOP VIEW

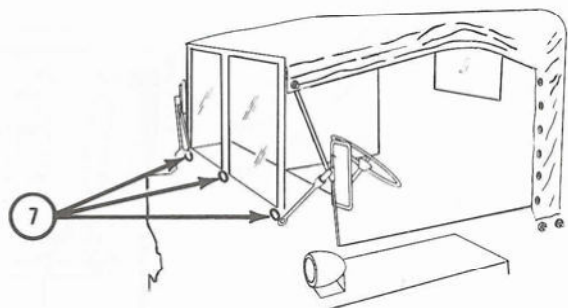
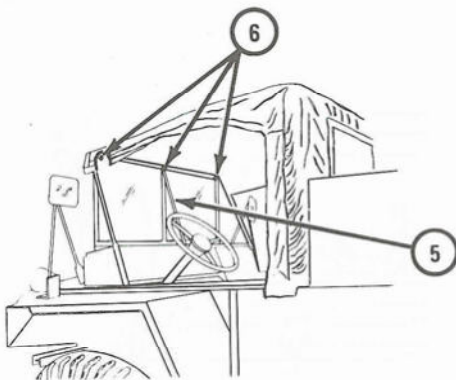
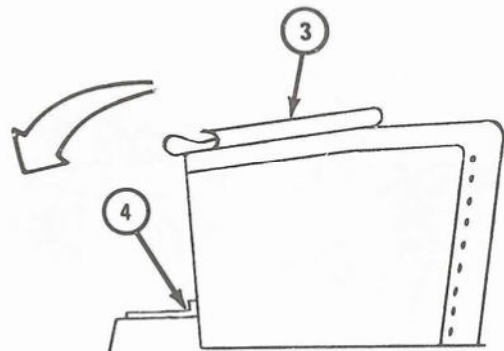
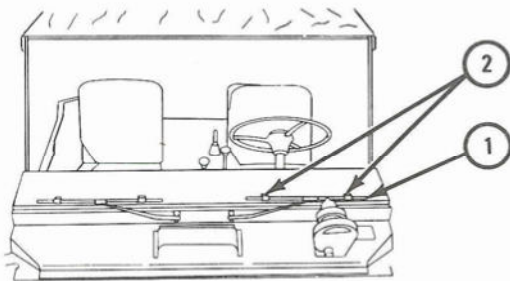


SIDE VIEW

TA 053775

## FRAME 2

1. Take out windshield wipers (1) from latching brackets (2). Flip windshield (3) over into support channel (4). Let wipers go against windshield.
2. Put center stanchion (5) in place.
3. Screw on and tighten three thumb screws and three washers (6) at top of windshield (3).
4. Screw on and tighten three thumb screws (7) at bottom of windshield (3).



TA 053776



#### 4-15. OPENING AND CLOSING TAILGATE.

TOOLS: None

SUPPLIES: None

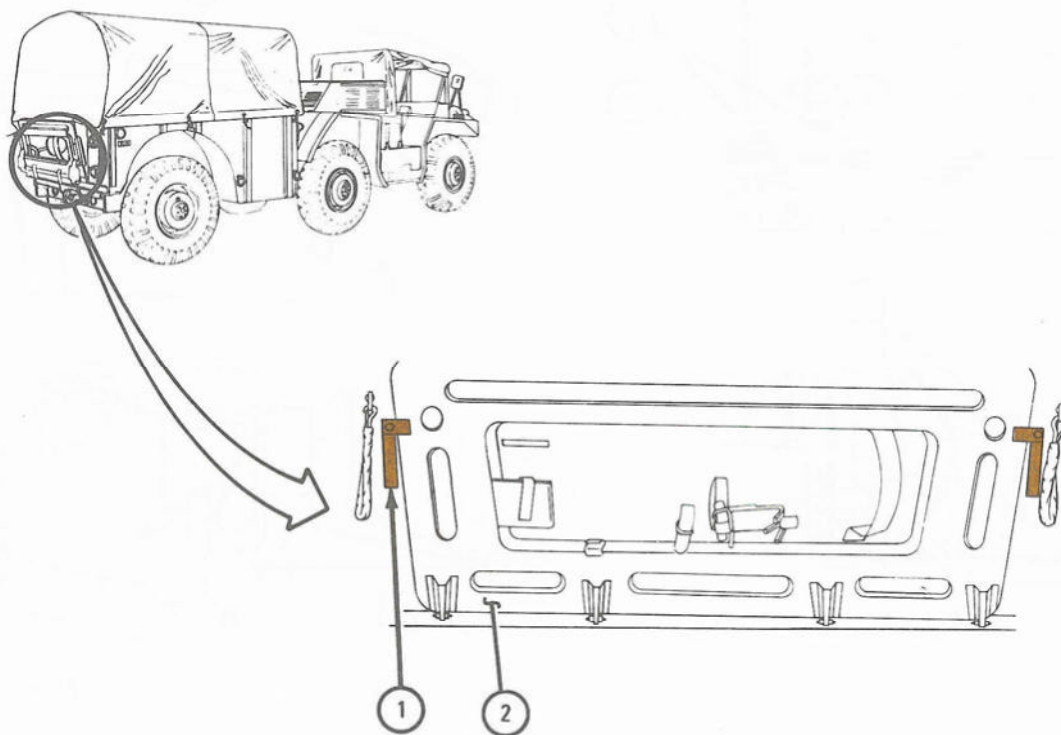
PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

##### a. Opening Tailgate.

###### FRAME 1

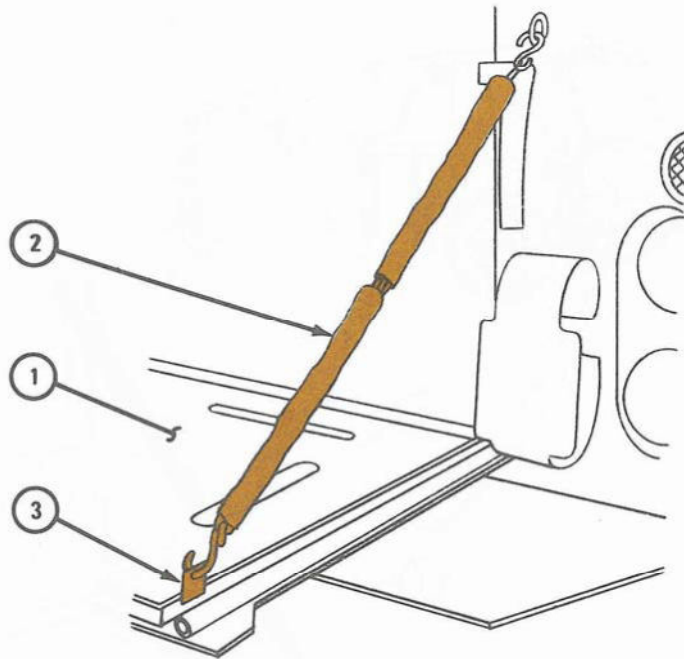
1. Turn locking handles (1) to free tailgate (2).
  2. Lower tailgate (2) until it is level with carrier floor. Do not let tailgate drop.
- GO TO FRAME 2



TA 053780

## FRAME 2

1. Raise tailgate (1) slightly and hook chain (2) into hole in tab (3).



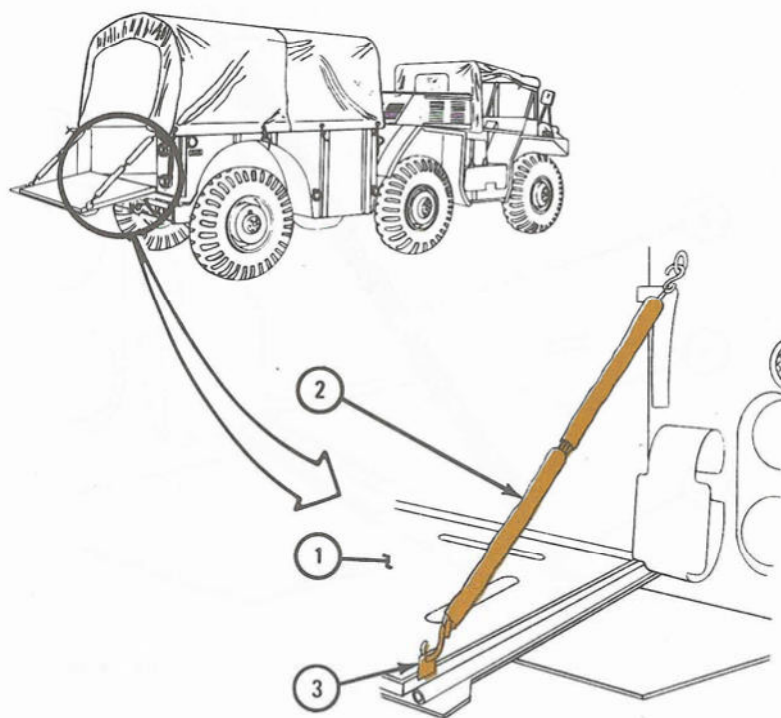
TA 053781

b. Closing Tailgate.

FRAME 1

1. Lift tailgate (1) slightly and unhook chains (2) from tab (3).
2. Close tailgate (1).

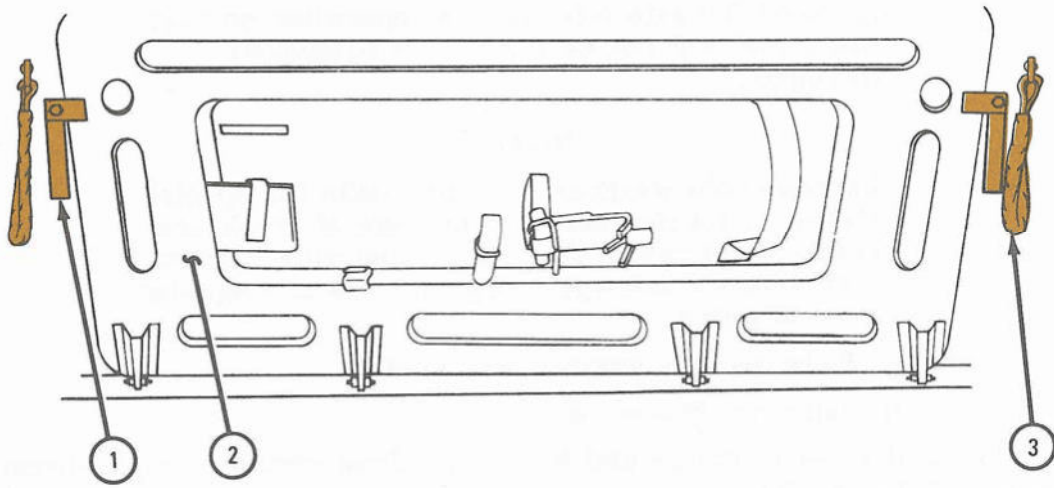
GO TO FRAME 2



TA 053782

## FRAME 2

1. Turn locking handles (1) to hold tailgate (2) closed.
2. Stow chains (3) as shown.



TA 053783



### Section III. OPERATION UNDER UNUSUAL CONDITIONS

#### 4-16. OPERATION UNDER EXTREME WEATHER CONDITIONS AND UNUSUAL TERRAIN.

a. General. Extremes of temperature, humidity, and terrain call for special operating procedures. Instructions for operating under unusual conditions are given in this section.

(1) Refer to TM 21-300 for instruction on driver selection, training and supervision.

(2) Refer to FM 21-305 for special driving instructions for operation of wheeled vehicles under unusual conditions.

(3) Refer to LO 9-2320-242-12 for lubrication under unusual conditions.

b. Operation in Extreme Cold Weather.

#### WARNING

Approved practices and precautions must be followed for safe cold weather operation so that personnel will not be injured or equipment damaged.

#### NOTE

Extreme cold weather operation calls for special cleaning, lubrication, and storage of truck and special handling of fuels and lubricants. Special care keeps truck operating and protects against wear of parts.

(1) General. Extreme cold weather will cause:

- (a) Lubricants to thicken or get hard.
- (b) Batteries to freeze and keep them from giving enough current for starting.
- (c) Electrical insulation to crack and cause short circuits.
- (d) Fuel not to vaporize and mix with air to form a mixture that will burn.

(2) Refer to FM 9-207 and TB 750-651, which give more information on cold weather operation. Study this information before starting engine.

## (3) Moving the truck.

## FRAME 1

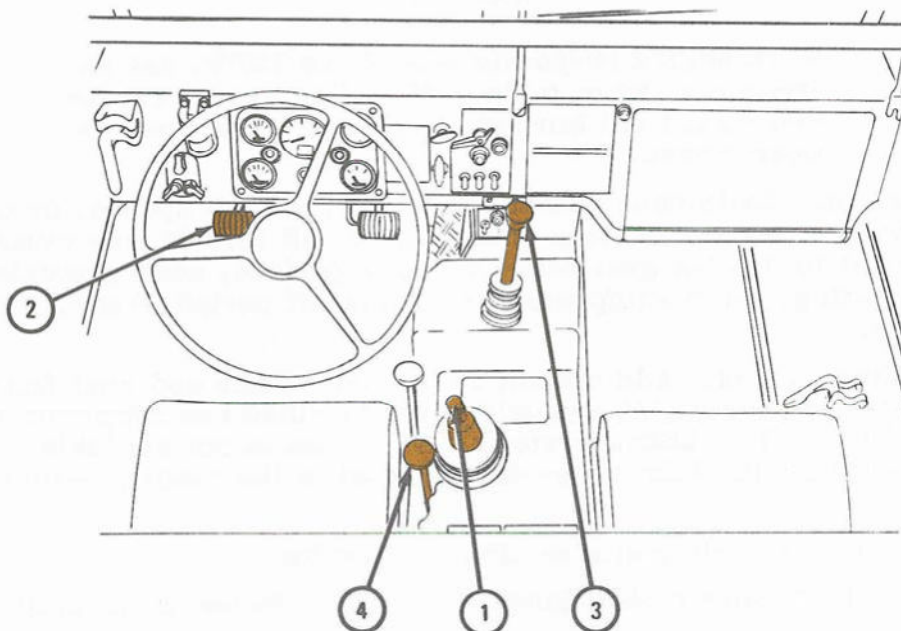
CAUTION

The operator must always be alert for the effect of cold weather on truck. After shutdown for long periods of time, lubricants harden and brakes and tires may freeze fast. Take each condition into account before moving truck so that equipment will not be damaged. Pay attention to all gages and indicators for signs of trouble.

NOTE

Check that PMCS that deal with the operation in extreme cold weather have been done.

1. Start engine and let it warm up thoroughly. Refer to para 4-6c. Put handbrake (1) in down (brake off) position.
2. Push clutch pedal (2) all the way down.
3. Place TRANSMISSION gear selector lever (3) in position 1.
4. Place TRANSFER selector lever (4) in LOW position.
5. Drive truck at lowest speed for about 100 yards to warm lubricants and tires for normal operations.



TA 053712

(4) Parking the truck.

(a) Park truck in a sheltered area out of the wind. If no shelter is available, park truck so that it does not face into wind.

(b) Do not park truck in slush, mud, or water which can freeze to tires. If high, dry ground is not available, spread out planks or brush and chock truck wheels, if needed.

(c) Clean all parts of truck of snow, ice, or mud as soon as possible after operation.

(d) Place all control levers in neutral position and handbrake in off position to stop freezing in gear due to water condensation.

(e) In areas where temperatures reach -50°F or colder, put air in tires to 50 psi. Bring tires back to normal pressure before operating truck. Refer to table 2-4.

(f) Refuel as soon as possible to prevent condensation of water in fuel tank. Before refueling, unscrew fuel tank drain plug and drain off any water.

(g) Tell organizational maintenance to take out batteries and store in a warm place if temperature is below 0°F.

(h) Drain water from primary fuel filter. Refer to vol 2, chapter 1, table 1-1.

(i) Cover openings in engine hood to prevent entry of snow.

(j) If no approved antifreeze solution is available, tell organizational maintenance to drain radiator and block.

c. Operation in Extreme Hot Weather.

WARNING

When engine temperature is above 180°F, use extreme care when taking off cooling system cap so you do not get burned or scalded. Use a rag or wear gloves.

(1) General. Continuous operation of truck at high speeds, or under long, hard pulls in low gear ratios on steep grades or in soft terrain may cause engine to overheat. Try not to use low gear ratios for long periods, when possible. Always watch for overheating. Stop equipment for cooling-off period whenever needed and situation permits.

(2) Cooling system. Add coolant as needed. Scale and rust form quicker in extremely high temperatures. Always add corrosion-inhibitor compound to coolant. Water may be added to the cooling system when coolant is not available. Do not use water that contains alkali. Rain water may be used in the cooling system when coolant is not available.

(a) Check cooling system often to look for:

1. Proper coolant level in radiator. Refer to vol 2, chapter 1, table 1-1.

2. Leaking hose connections.



3. Proper fan belt tension. Refer to vol 2, chapter 1, table 1-1.
4. Cracked or leading hose lines.

#### WARNING

Eye shields must be worn when using compressed air. Compressed air pressure should be 30 psi or less. Injury can occur if eye shields are not used.

(b) If truck overheats often, inspect and clean radiator fins with compressed air to get rid of sand, dust, and insects.

(c) If engine still overheats, tell organizational maintenance.

#### (3) Batteries.

(a) In very hot zones, check level of electrolyte in battery cells daily. If low, add distilled water. If distilled water is not available use rain or drinking water. Water with a high mineral content will damage battery.

#### NOTE

Use of water with high mineral content will do less damage to battery than letting electrolyte level drop below plates. A dry battery has a short life.

(b) Battery will discharge faster if left standing for long periods at high temperature. If necessary to park for several days, tell organizational maintenance to take out batteries and store them in a cool place.

(4) Body and chassis. In hot, damp climates, corrosion takes place quickly, especially during rainy seasons. Check often for the following:

(a) Signs of pitting or blistering paint on metal surfaces.

(b) Signs of mildew, mold, or fungus on fabric, rubber or glass.

If any signs of the above are found, tell organizational maintenance.

#### (5) Parking the truck.

(a) Do not park truck in the sun for long periods. Heat and sunshine will shorten the life of all rubber, fabric, plastics, and paint on the truck. When possible, park under cover to keep truck from sun, sand, and dust.

(b) Cover trucks not in use with tarpaulins if no shelter is available. When entire truck cannot be covered, cover window glass to stop etching of glass by sand and cover engine compartment to keep out sand.

(c) Correct tire inflation. Refer to table 2-4.

#### NOTE

When checking tire pressure, do not let air out if tire is hot.



d. Operation in Extreme Sand and Dust.

(1) General. Operation in extreme sand and dust calls for more frequent attention to lubricated points, air, oil, and fuel filters and radiator.

(2) When operating vehicle on dusty or sandy terrain, clean air filter daily. Refer to vol 4, chapter 2, para 2-4.

(3) The engine oil filter should be cleaned monthly when operating under dusty or sandy conditions. Tell organizational level maintenance.

(4) Engine fuel filters should be cleaned daily under dusty or sandy conditions. Tell organizational level maintenance.

(5) Make sure all lubricants contaminated by sand or dust have been forced out during a complete lubrication after operations in extreme sand or dust.

(6) For operations in beach or desert areas, put tire pressure to 12 psi. As soon as possible after operation put tire pressure to 22 psi. Lowering tire pressure when driving on sand will increase traction. (Refer to table 2-4.)

(7) When shelter is not available, cover truck with tarpaulins. Pay particular attention to covering the windshield and engine compartment.

e. Operation on Unusual Terrain.

(1) General. The connection between the tractor and the carrier calls for different driving skills for off-highway driving such as steep slopes, soft soil, ditches, and other obstacles.

NOTE

Truck has a ground clearance of 15 inches. Use lowest gear and 6-wheel drive to go through or over an obstacle.

(2) Mud, Bogs, Deep Snow and Loose Sand.

(a) Use TRANSMISSION gearshift lever in lowest gears, 6 WHEEL DRIVE, LOW TRANSFER range, and constant throttle to creep through obstacle. Try and back up and go around obstacle if truck bogs down.

(b) If truck becomes stuck, raise stuck wheels and put matting or planking under them for footing. If this fails, tow or winch truck across hazard. (Refer to para 4-10, 4-24.)

WARNING

Do not jam sticks or stones under a spinning wheel. This can cause injury to personnel or unnecessary tirewear.

(c) Lowering tire pressure will increase traction in loose sand. (Refer to table 2-4.) Tire chains on the two center wheels will give better traction in deep mud or snow.

CAUTION

When operating with tire chains, chains must be put on both wheels of the center axle only. Serious damage can happen with only one tire chained. Make sure spinning wheels do not become buried up to axle housing.

## (3) Ice, sleet, and snow.

(a) The steerable front and rear wheels give good steering control on icy surfaces without chains. For the best steering control, use 6 WHEEL DRIVE and TRANSFER selector in HIGH position with tire chains on the center wheels.

(b) Skidding and loss of steering control are the main troubles when driving on icy roads. When rear end skidding happens, steer in direction of skid. When skidding, let up on accelerator pedal and pump service foot brakes slowly. Do not press in the clutch.

NOTE

Be aware of front and rear steering on this vehicle. It does not handle like other vehicles.

## (4) Slopes and ditches.

(a) Use lower gears, 6 WHEEL DRIVE, and a steady throttle for the most control. Lower gears and TRANSFER selector lever in LOW position give enough power for steep grades. Do not slip clutch to get more power. Control truck speed with accelerator pedal.

(b) Come up to and climb short steep grades head-on, not at an angle. Do not charge the grade. Shift to a low gear before climbing and climb slowly. Long grades are handled in the same way.

(c) Shallow ditches may be crossed faster if taken at an angle. Deep ditches are crossed head-on. Drive slowly but raise engine speed to climb out. Do not use clutch pedal.

## (5) Vertical terrain (Up and down).

(a) Use low gear LOW TRANSFER range and 6 WHEEL DRIVE. Come up to the step slowly and at a slight angle. Let the vehicle creep, one wheel at a time, onto the step. A step of up to 20 inches may be climbed.

## (6) Crusted surfaces.

(a) Use TRANSMISSION gearshift lever in position 1 and 6 WHEEL DRIVE. Keep from breaking through crust by placing brush, canvas, or planking for short stretches.

## (7) Operation at high altitudes.

(a) Check the cooling system more often than normal to make sure coolant is not lost.

(b) Check tire pressure at high altitudes and change pressure if needed.

### CAUTION

Use care when taking off ice, snow, or mud to prevent damage to truck or any of its parts.

- (8) After-Operation procedures. Take off ice, snow, and mud from fenders and hulls, wheels, wheel drive shafts and couplings, steering linkages, battery cases and fuel tanks, radiator and joint between tractor and carrier as soon as possible after operation.



## 4-17. FORDING AND SWIMMING.

TOOLS: 3/4-inch square access plug wrench.

a. General. The truck can ford streams up to 30-inches deep with a current no more than six mph. The truck can swim in calm water, using the wheels for power and as steering rudders.

b. Fording the Truck.

(1) Before entering water.

FRAME 1

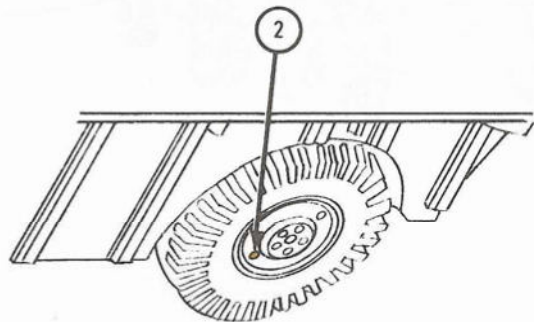
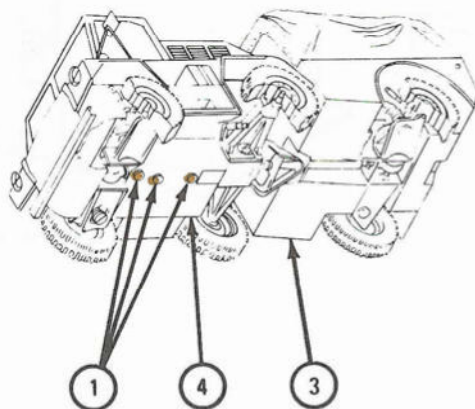
1. Before fording, stop truck. Refer to para 4-6e.
2. Make sure tractor transfer case body access, transmission body access, and engine crankcase body access plugs (1) are screwed in tight using access plug wrench.
3. Make sure brake drum plugs (2) are screwed in tight.

NOTE

Brake drum plugs (2) are the smaller, threaded plugs on outer side of brake drums.

4. Look at carrier (3) and tractor (4) hulls and check for damaged areas that can leak.

GO TO FRAME 2



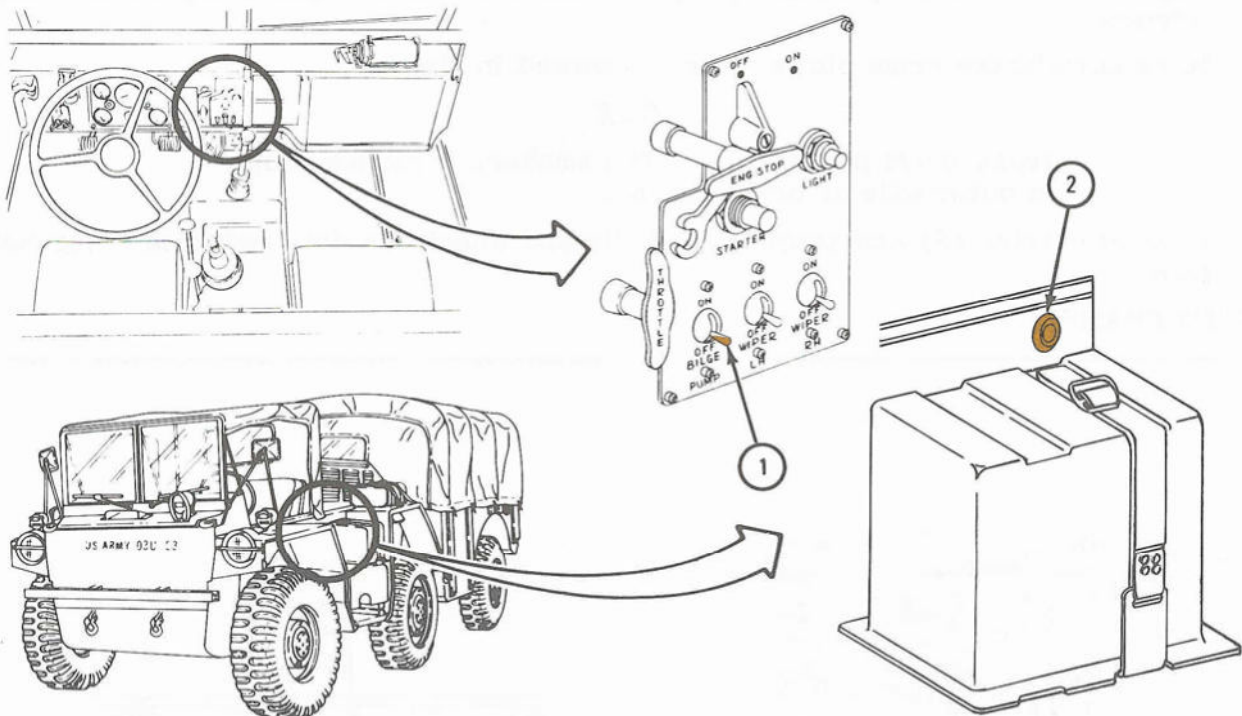
TA 053701



FRAME 2

1. Set BILGE PUMP switch (1) to ON position.
2. Check that water or air is coming out of outlet (2).
3. Set BILGE PUMP switch (1) to OFF position.

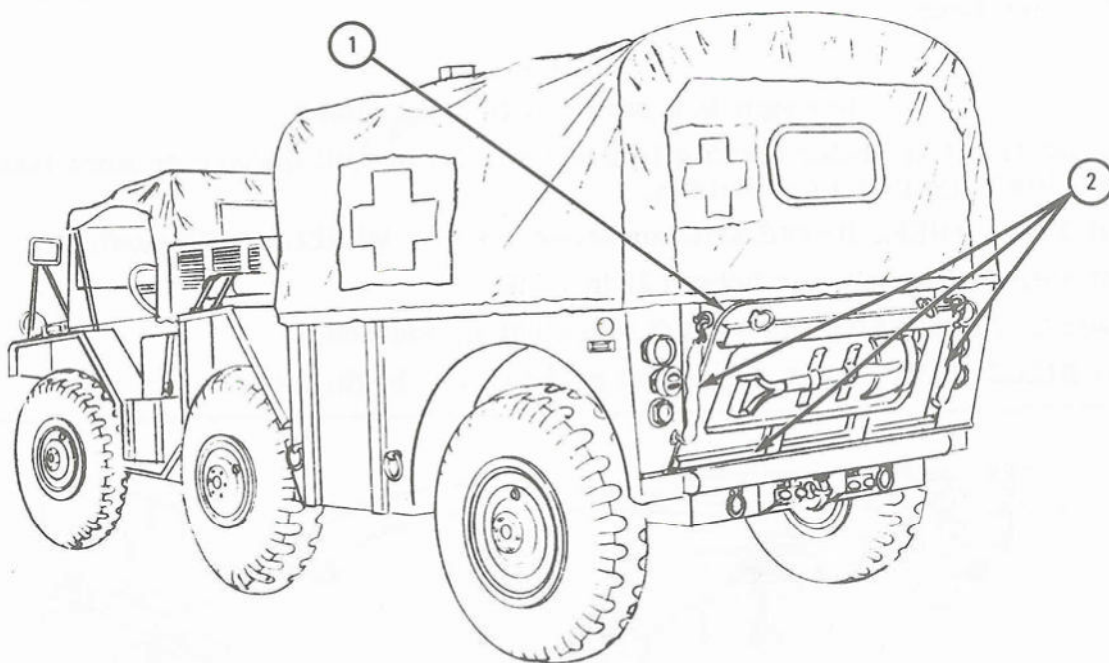
GO TO FRAME 3



TA 053702

## FRAME 3

1. Make sure that tailgate (1) is securely locked.
2. Make sure that tailgate seals (2) are evenly squeezed between carrier body and tailgate.
3. Make sure all personnel put on life preservers using instructions given on the preserver.



TA 053703

## (2) Entering the water.

CAUTION

During fording, do not go faster than two or three mph. Fording may suddenly become swimming operation due to increase in water depth.

If truck has been swamped by water or has rolled on its side, do not try to start the engine. Damage to the engine may happen from hydrostatic lock or not enough lubrication.

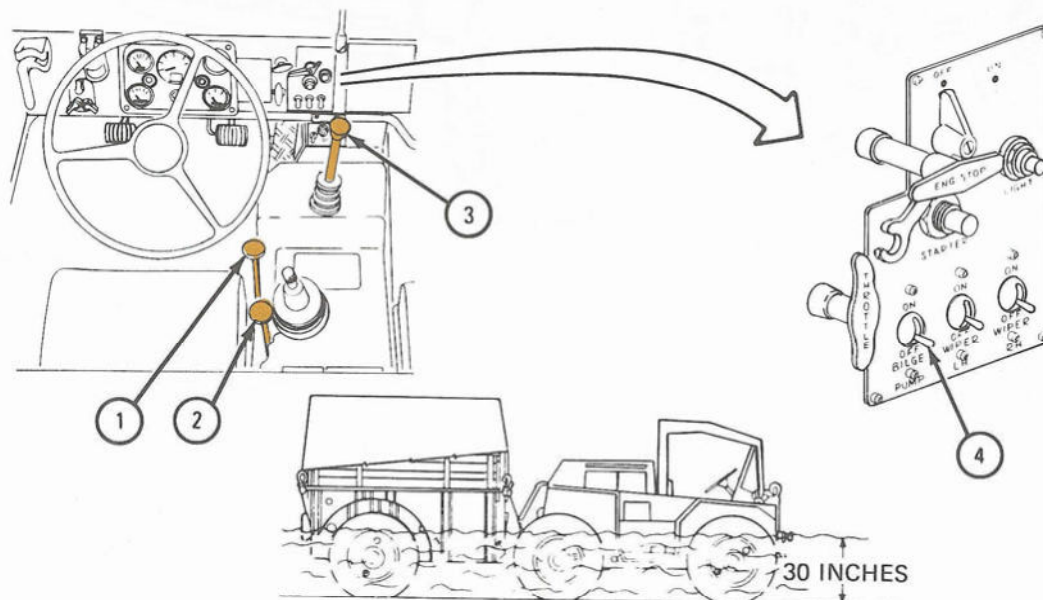
**FRAME 1**

1. Do not try to ford depth of 30 inches of water if current is faster than six miles per hour.

NOTE

Six mph is a person's trotting speed.

2. Do not try deep water fording if there is a lot of hull damage or more leakage than the bilge pump can handle.
3. Put 2 or 6 WHEEL DRIVE selector lever (1) in 6 WHEEL DRIVE position.
4. Put TRANSFER selector lever (2) in LOW.
5. Place TRANSMISSION gear shift lever (3) in position 1.
6. Set BILGE PUMP switch (4) to ON position and begin ford.



TA 053704



(3) After leaving the water.

# FRAME 1

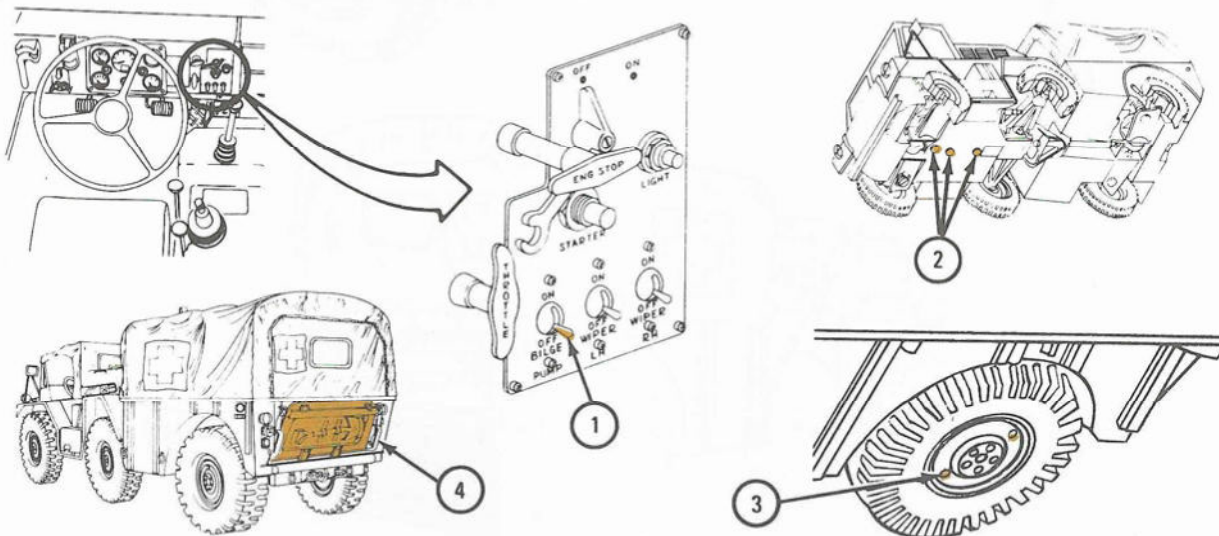
1. After leaving water, set BILGE PUMP switch (1) to OFF position. Stop truck. Refer to para 4-6e. Check underside of truck for branches or debris.
2. Unscrew body access plugs (2) and brake drum access plugs (3) to let water out. Open tailgate (4) to let water out.
3. If truck has been exposed to salt water, wash with clean, fresh water as soon as possible.
4. Lubricate all underbody universal and slip joints, steering system support bearings, and idler arm fittings. Refer to LO 9-2320-242-12.

## NOTE

Lubrication is not needed if the truck was in the water only long enough to cross a water-filled ditch or narrow stream.

5. Send truck to organizational maintenance as soon as practical to check for water contamination in differentials and steering gear boxes.

GO TO FRAME 2



TA 053705

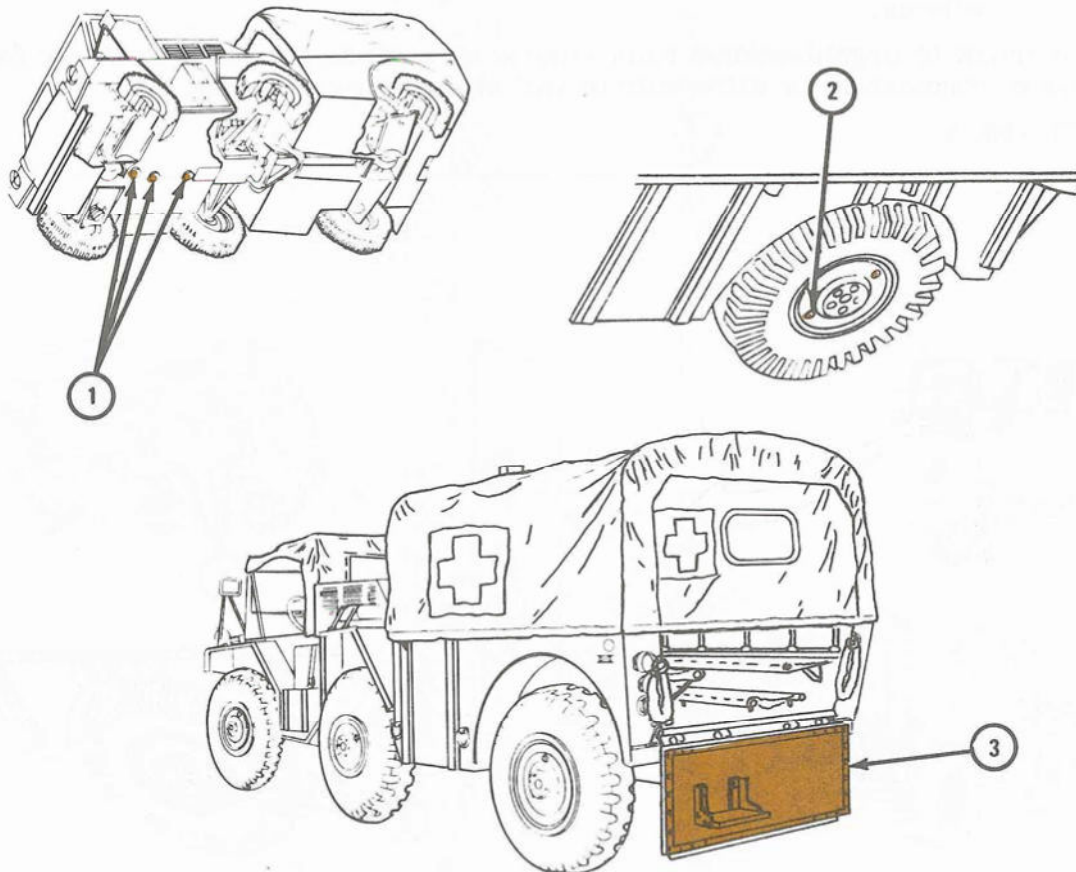


## FRAME 2

CAUTION

If truck has been swamped by water or has rolled on its side, do not try to start the engine. Damage to the engine may happen from hydrostatic lock or not enough lubrication.

1. Screw in and tighten body access plugs (1) and brake drum access plugs (2).
2. Close and latch tailgate (3).
3. Start engine. Refer to paras 4-6 a and b.
4. Place truck in motion. Refer to para 4-6d.



TA 053706

c. Excessive Entry of Water or Submersion.

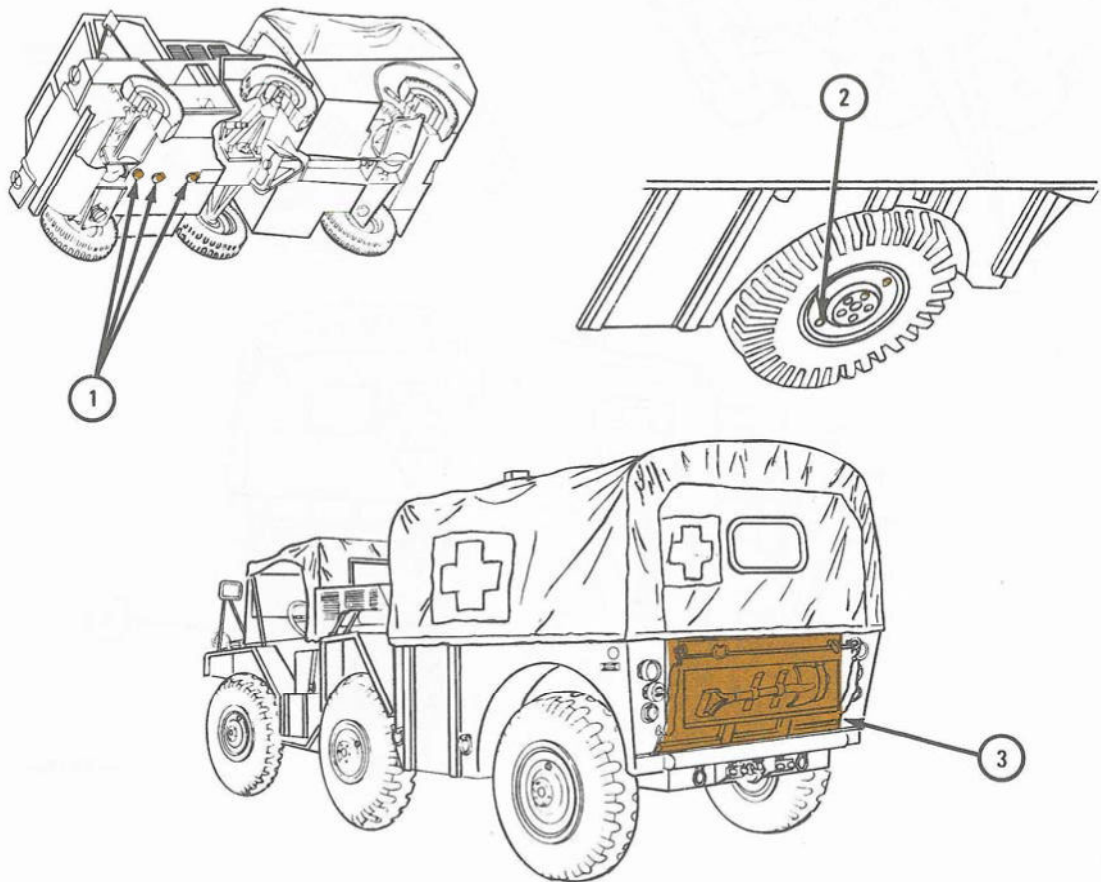
## FRAME 1

CAUTION

If truck has been covered by water or has rolled on its side, do not try to start the engine. Damage to the engine may happen from hydrostatic lock or not enough lubrication.

1. If truck has been swamped, get the truck ashore by winching or any other way.
2. Open body access plugs (1) and brake drum access plugs (2) to let water out.
3. Open tailgate (3) and let water out.

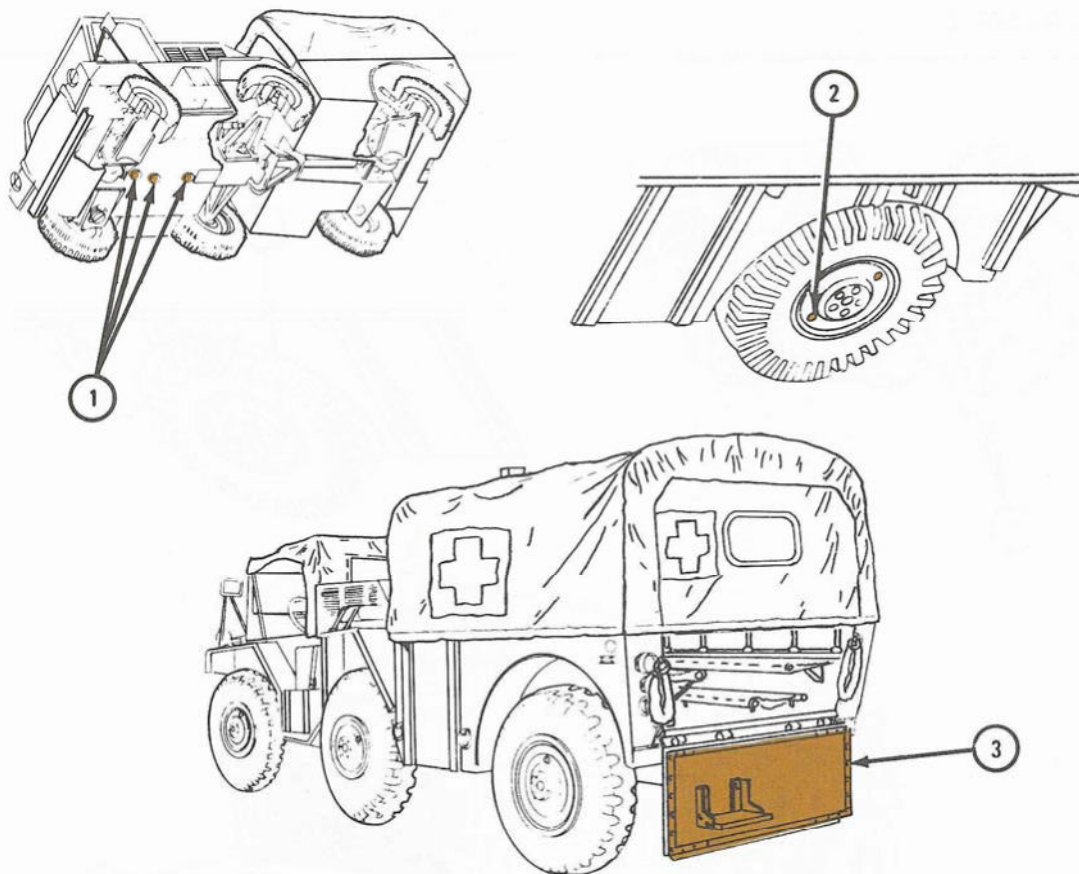
GO TO FRAME 2



TA 053707

## FRAME 2

1. Wash the body with clean, fresh water.
2. Screw in and tighten body access plugs (1) and brake drum access plugs (2).
3. Close and latch tailgate (3).
4. Send the truck to organizational maintenance for preventive maintenance checks and services as soon as possible.



TA 053706



d. Swimming the Vehicle.

- (1) Before Entering the Water. Procedures are the same as before fording.  
(Refer to para 4-17 b (1).)
- (2) Entering the Water.

## FRAME 1

WARNING

Always wear inflated life preserver during swimming operation.

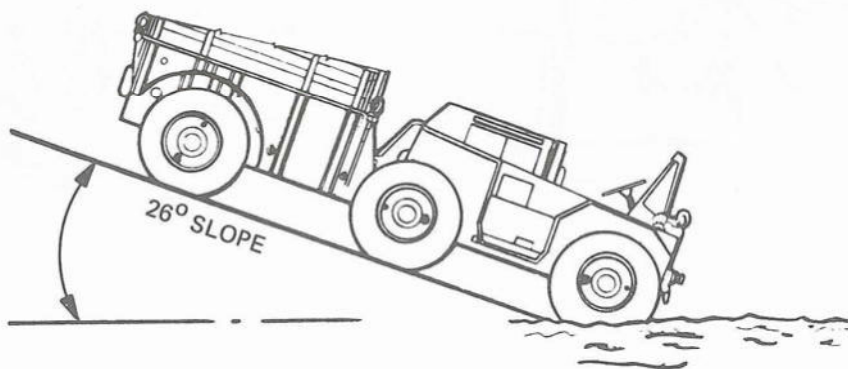
CAUTION

Do not try swimming an overloaded truck. Spread load evenly in carrier to give most stability while swimming. Do not try to swim truck into strong headwind (20 mph). Do not try to swim truck without special equipment in waves larger than 6 inches and in currents greater than 4 mph.

Watch for swells and wakes caused by moving ships in area. Do not try to swim truck if truck will ship more water than bilge pump can handle.

1. Take off and store tractor and carrier canopies. (Refer to para 4-11 and 4-12.)
2. Check to be sure truck is evenly loaded. Keep everything tied down.
3. Make sure all personnel put on life preservers using instructions given on preserver.
4. Choose an entry slope no greater than  $26^{\circ}$  (as shown) with no sharp drop off.

GO TO FRAME 2



TA 053708



## FRAME 2

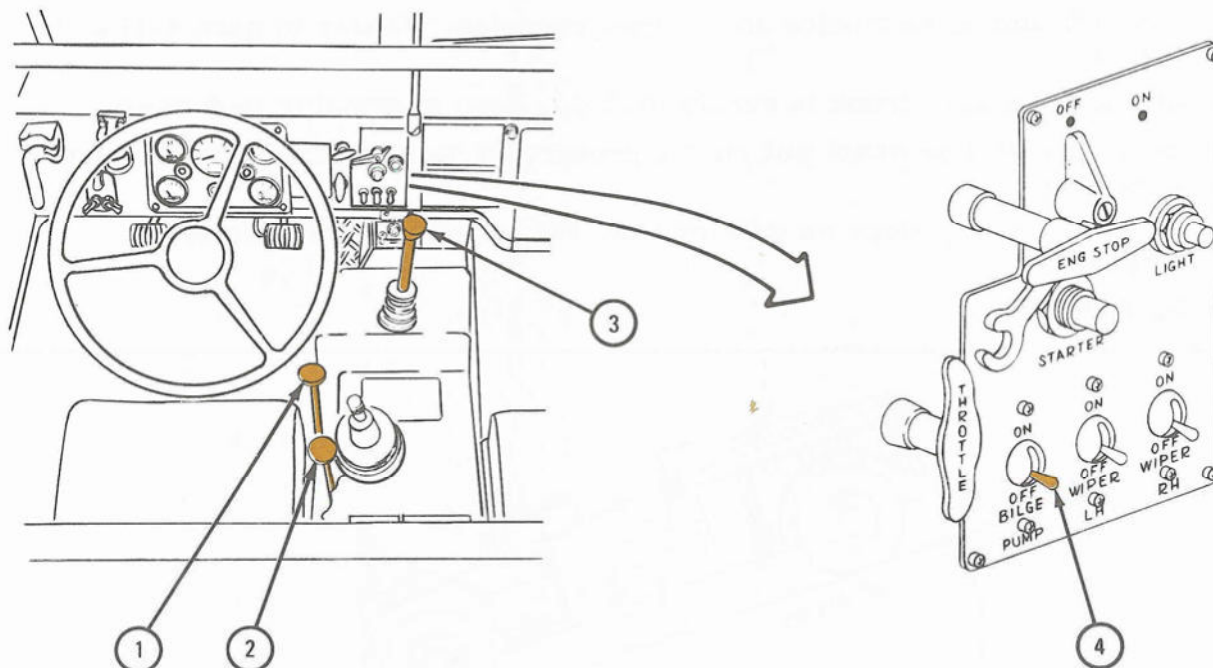
CAUTION

Be careful when making turns while in water. Slow down while making turns. Do not cross wake of other crafts. Watch out for sudden swells breaking against truck.

1. Start engine. Refer to para 4-6 a and b.
2. Put 2 WHEEL or 6 WHEEL DRIVE selector lever (1) in 6 WHEEL DRIVE position.
3. Put TRANSFER selector lever (2) in LOW.
4. Put TRANSMISSION gear selector lever (3) in position 1.
5. Turn BILGE PUMP switch (4) to ON position.
6. Slowly enter water at speed not more than 2 mph.
7. When truck floats, put TRANSMISSION gear shift lever (3) in position 3. Increase speed to 20 mph (2 mph in water).

NOTE

Turns and stops in water need extra space and time. Plan ahead while in the water.



TA 053709

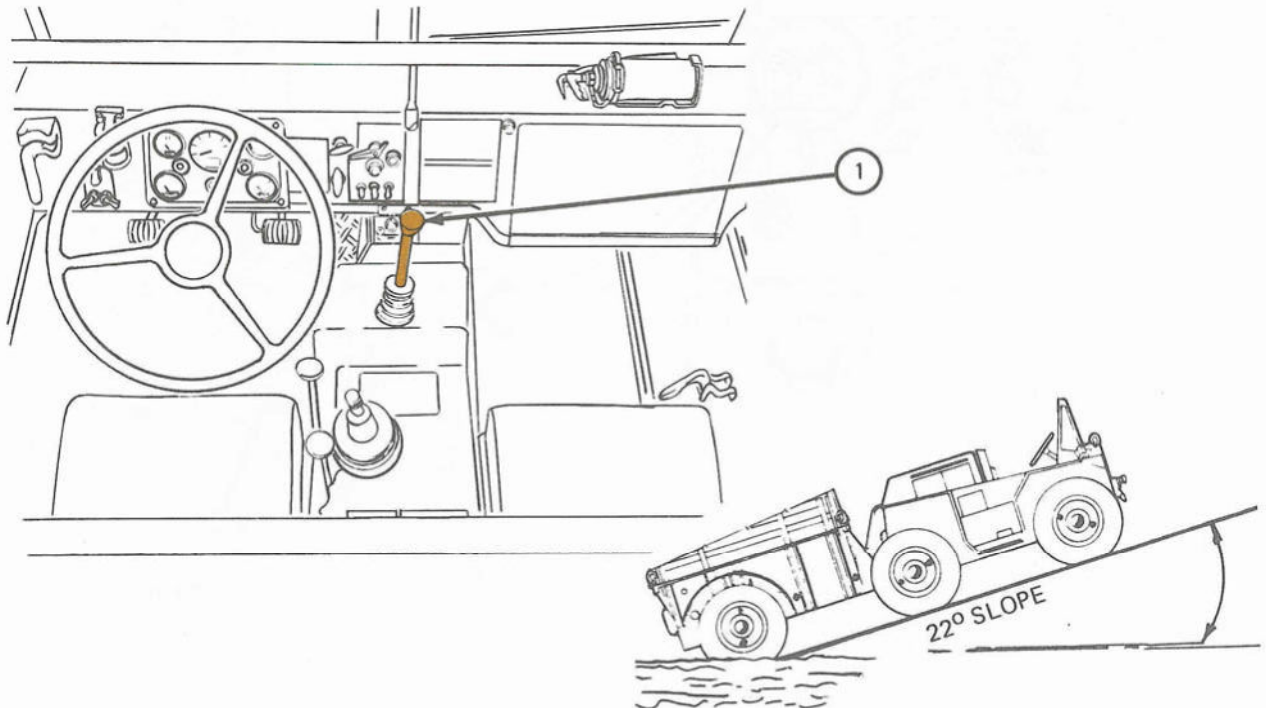
## (3) Leaving the water.

## FRAME 1

CAUTION

When leaving the water, stay away from steep slopes. Truck may ship water. Stay away from mucky banks or shores with loose surface material. Traction may be lost and truck may slip back into the water.

1. Before reaching shoreline, shift TRANSMISSION gear shift lever (1) to position 1.
2. Choose an exit slope no greater than  $22^{\circ}$  (as shown). Exit slope must be firm.
3. Meet exit slope head-on, not at an angle.
4. Exit slowly so water can drain off.

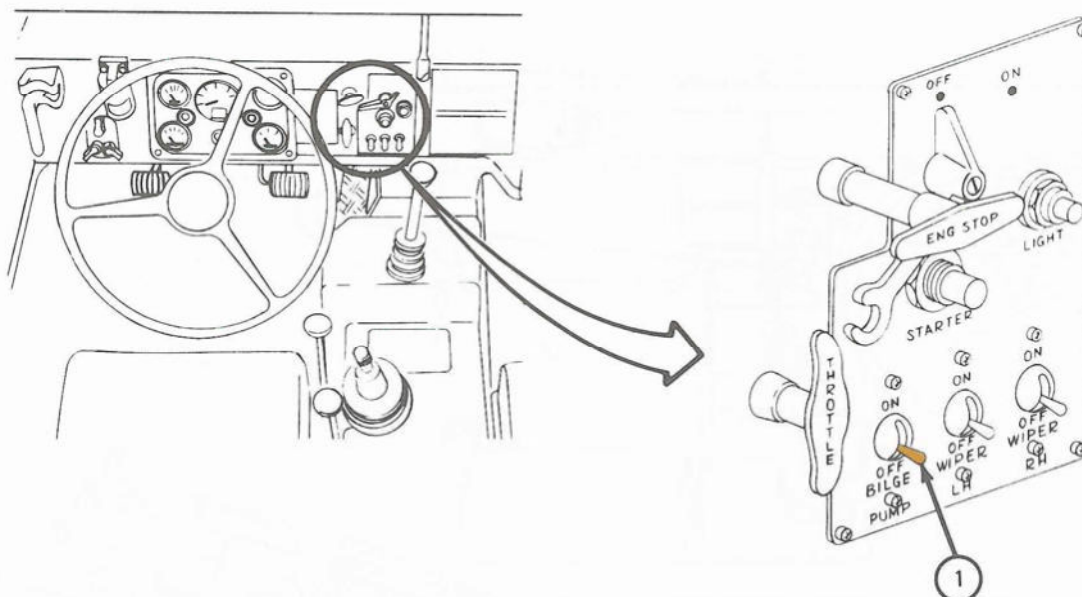


TA 053710

(4) After leaving the water.

FRAME 1

1. Set BILGE PUMP switch (1) to OFF position.
2. Stop engine. (Refer to para 4-6h.)
3. Do after-swimming maintenance. Procedures are the same as after fording. (Refer to para 4-17 b (3).)
4. Put tractor and carrier canopies back in place. (Refer to para 4-11 and 4-12.)



TA 053711

#### 4-18. OPERATION WITH SURFING KIT.

a. General. The surfing kit is used on United States Marine Corps trucks only. The kit helps keep water from the tractor cab when truck is leaving a landing craft in water.

b. Preliminary Procedures.

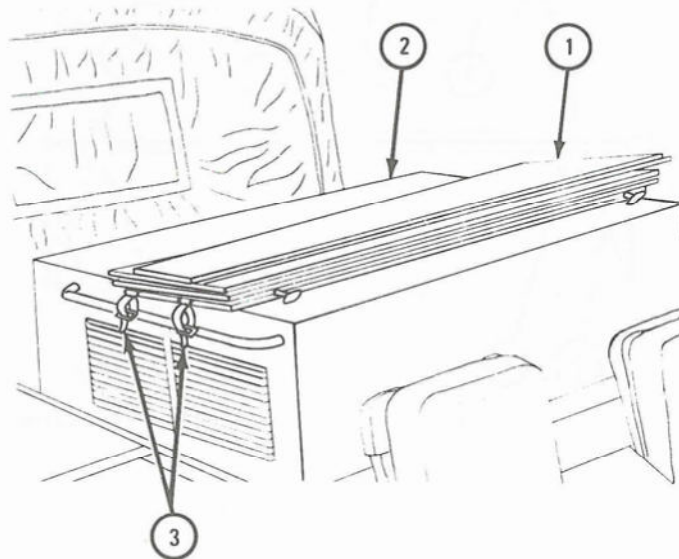
- (1) Take off and stow tractor canopy and frame. (Refer to para 4-11a.)
- (2) Tell organizational maintenance to take off rear view mirrors and braces.
- (3) Take off and stow windshield and stanchions. (Refer to para 4-13a.)

c. Before Installation.

##### FRAME 1

1. Take off surfing kit (1) from the top of the engine cover (2) by taking off the four securing straps (3).

GO TO FRAME 2

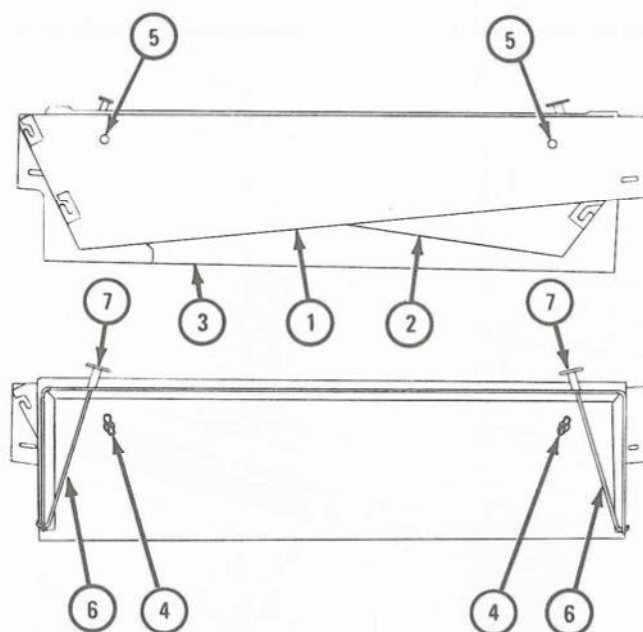


TA 053747



## FRAME 2

1. Separate left sideboard (1) and right sideboard (2) from headboard (3) by unscrewing and taking off two wingnuts (4) and two securing bolts (5). (These nuts and bolts will be used later for putting on surfing kit.)
2. Take off two hook bolts (6) by loosening handles (7). (These bolts will be used for putting on surfing kit.)



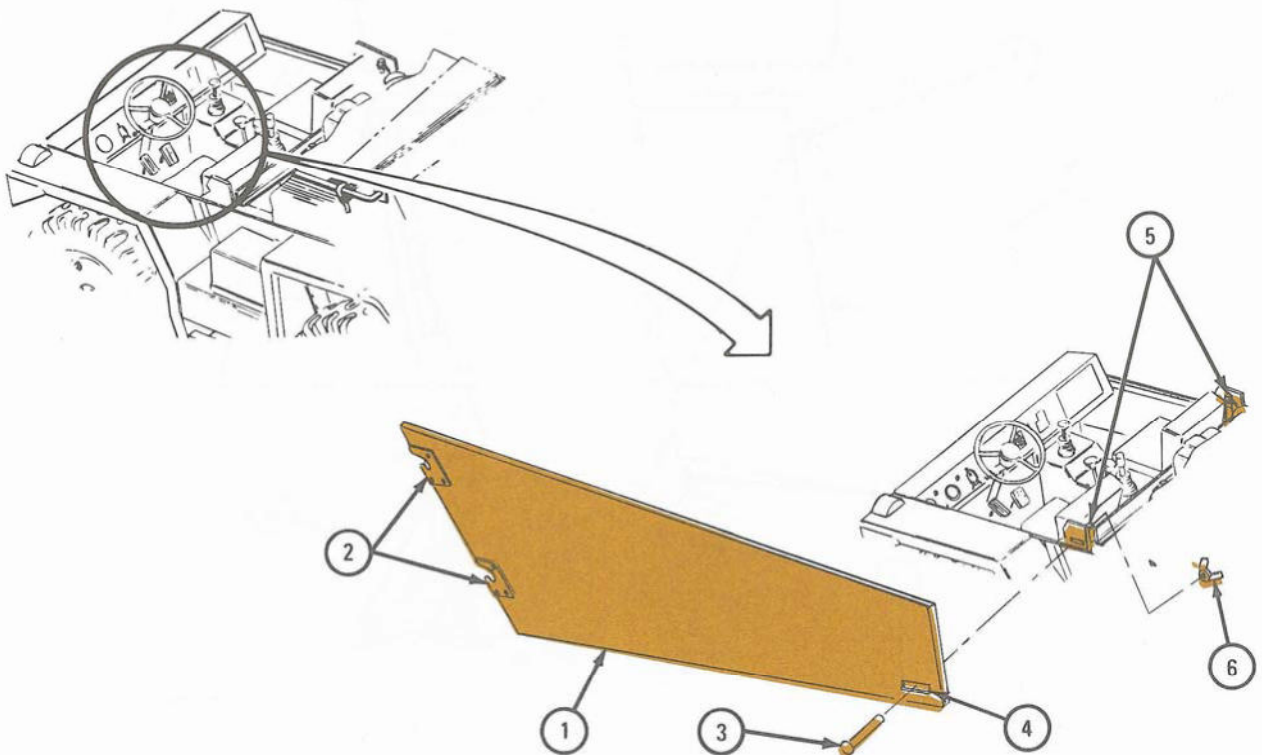
TA 053748

d. Installation of Surfing Kit.

## FRAME 1

1. Set sideboard (1) upright on top of the tractor front fender. Lockplates (2) must be at front and facing outward.
2. Put bolt (3) through slot (4) in sideboard (1) and through hole in rear canopy socket (5). Screw on and tighten wing nut (6).
3. Do steps 1 and 2 again for other side of truck.

GO TO FRAME 2

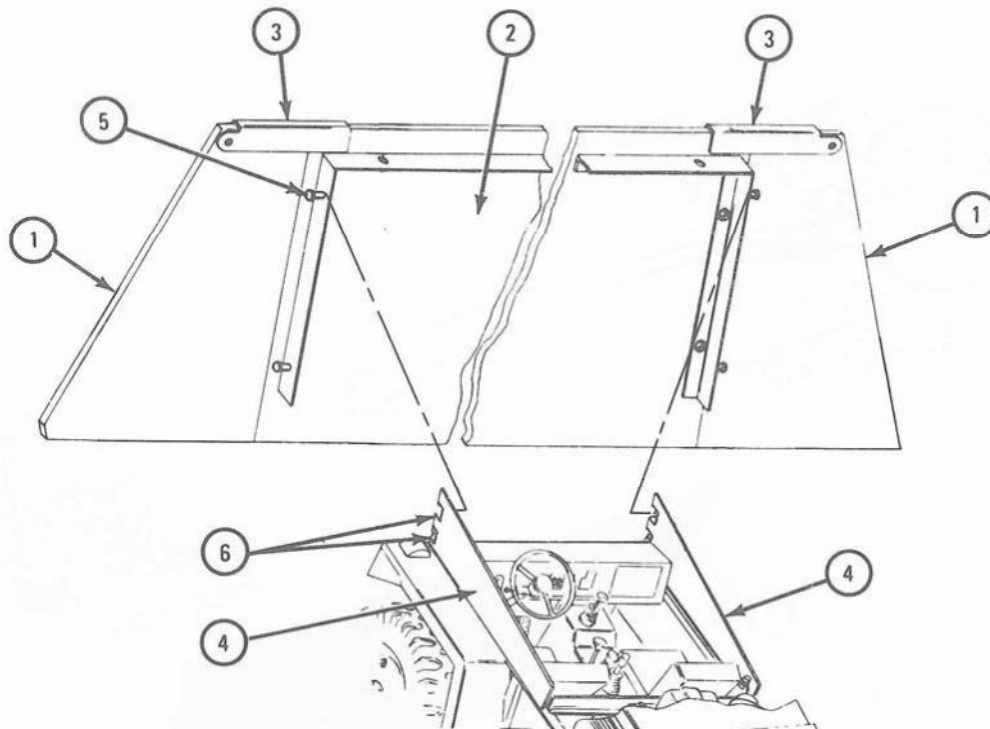


TA 053749

FRAME 2

1. Unfold two endboards (1) on the headboard (2). Turn two clips (3) over headboard to lock endboards and headboard into one straight piece.
2. Join headboard (2) to sideboards (4) by putting pins (5) on headboard into lockplates (6) on sideboards.

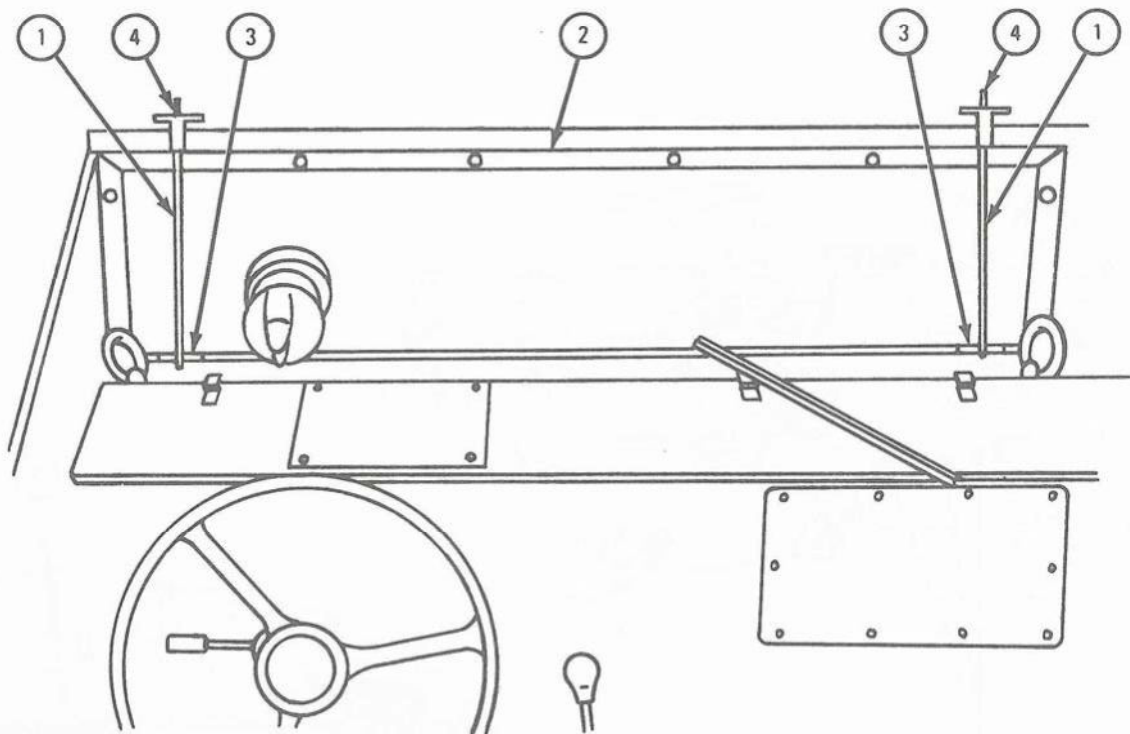
GO TO FRAME 3



TA 053750

## FRAME 3

1. Hook two hookbolts (1) through headboard frame (2) and brackets (3) at front of truck.
2. Tighten two handles (4) so they are aligned with headboard (2) as shown.



TA 053751

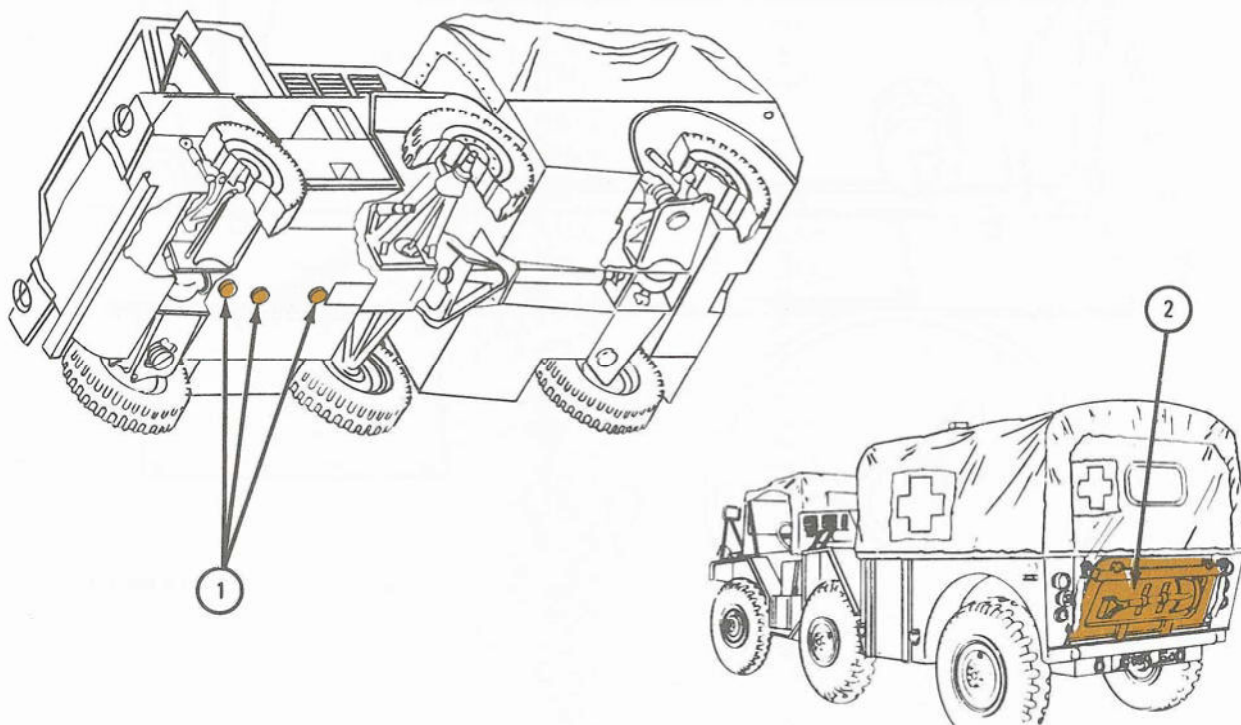


e. Debarkation Procedures.

(1) Before entering the water.

FRAME 1

1. Make sure body access plugs (1) are screwed in tight. Make sure tailgate (2) is closed and sealed.
2. Check hulls for damaged areas that can leak.
3. If carrier canopy is in place, make it fast so it will help keep water out. Make sure all passengers put on life preservers, using instructions given on the preserver.
4. Make sure carrier load is spread out evenly to give the most stability while in water.



TA 053713

## (2) Entering the water.

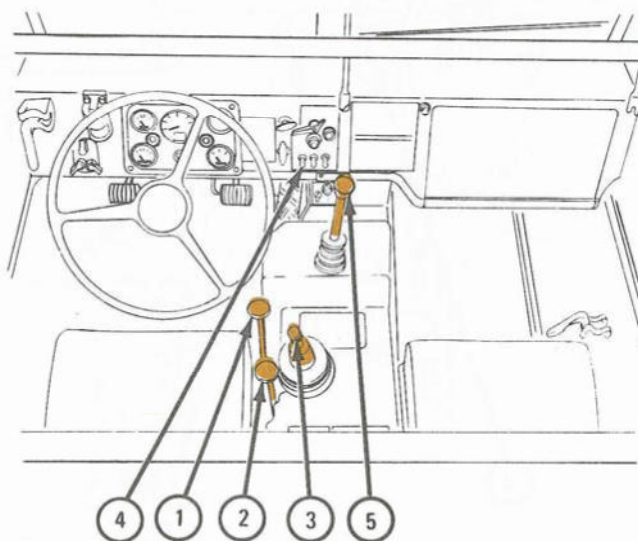
## FRAME 1

1. Start engine. (Refer to para 4-6a, b.)
2. Put 2 or 6 WHEEL DRIVE selector lever (1) in 6 WHEEL DRIVE. Put TRANSFER selector lever (2) in LOW position.
3. Put handbrake (3) in down (brake off) position. Drive truck to bow of landing craft and stop truck. Set BILGE PUMP switch (4) to ON position.
4. Drive onto landing craft ramp, stop, and set handbrake to up (brake on) position.
5. Check wave position. Place TRANSMISSION gear shift lever (5) in position 2. Put handbrake (3) in down (brake off) position.

WARNING

To stop water from entering cab or possible submersion during debarkation, make sure truck enters water right behind breaking wave.

6. Enter water just as wave passes under landing craft ramp.
7. When truck floats, place TRANSMISSION gear shift lever (5) in position 3.



TA 053714

(3) Leaving the water.

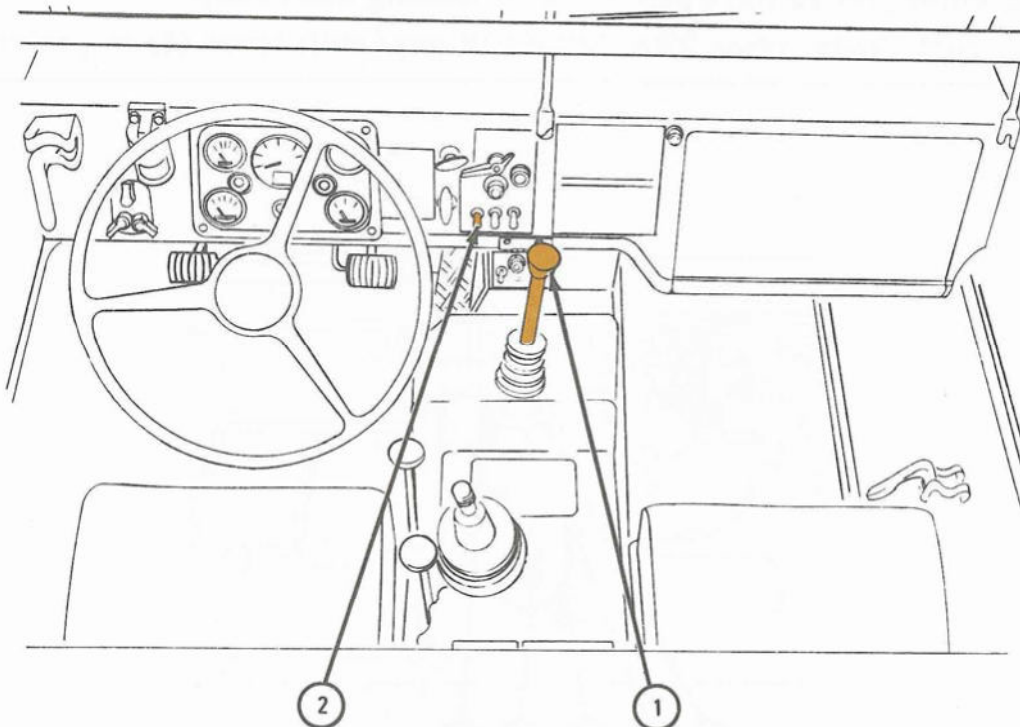
FRAME 1

1. When wheels touch bottom, place TRANSMISSION gear shift lever (1) in position 2. Drive ashore as quickly as possible.
2. When ashore, use bilge pump until bilges are clear of water, then set BILGE PUMP switch (2) to OFF position.

NOTE

Follow-on Maintenance Action Required:

1. Take off and stow surfing kit. (Refer to para f and g.)
2. Do after-swimming maintenance. (Refer to para 4-17 b (3).)



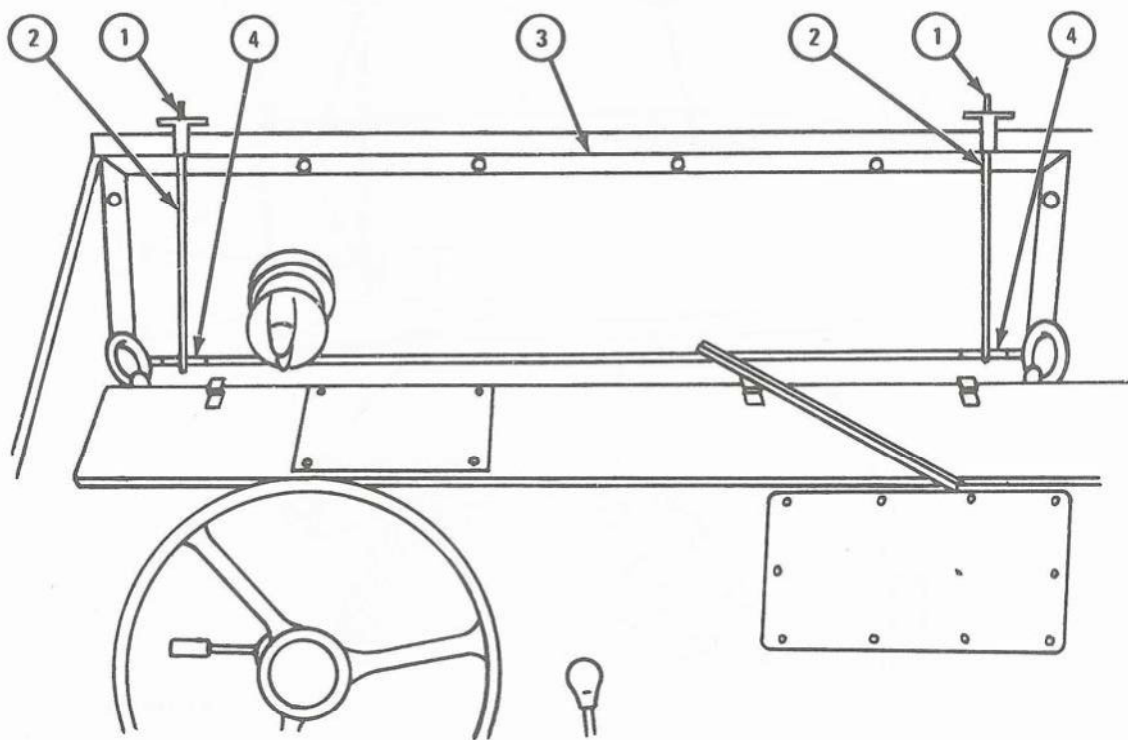
TA 053715

f. Removal of Surfing Kit.

## FRAME 1

1. Loosen two handles (1) on hookbolts (2).
2. Take off hookbolts (2) from headboard assembly (3) and brackets (4) on front of truck.

GO TO FRAME 2

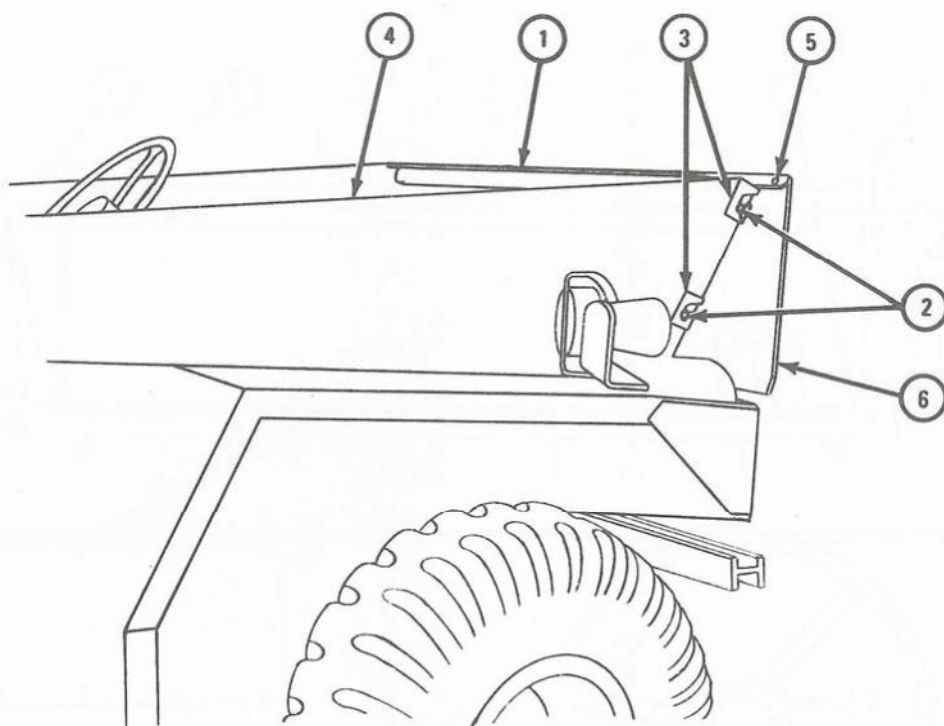


TA 053752



FRAME 2

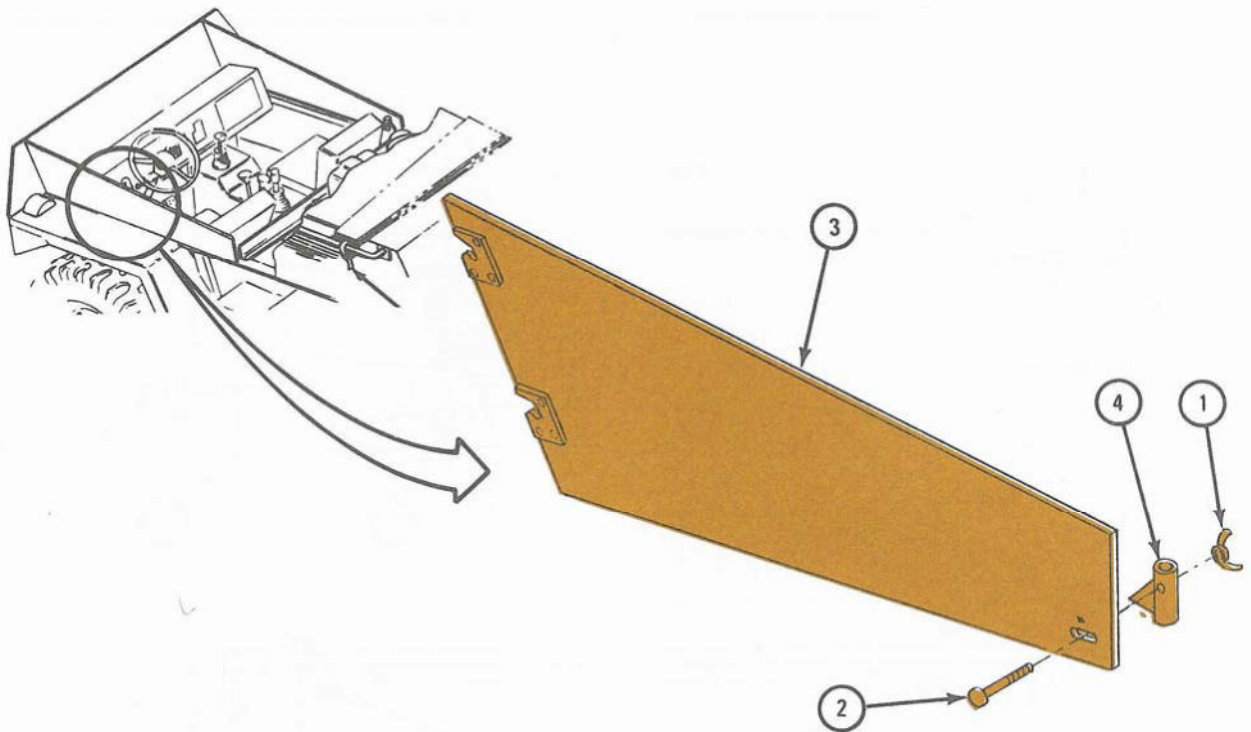
1. Take off headboard assembly (1) by slipping pins (2) from lockplates (3) on sideboards (4).
  2. Swing out two clips (5) and fold endboards (6) into headboard assembly (1).
- GO TO FRAME 3



TA 053753

## FRAME 3

1. Unscrew and take off wingnut (1) and bolt (2) from sideboard (3) and rear canopy socket (4).
2. Lift off sideboard (3).
3. Do steps 1 and 2 again for other side of truck.



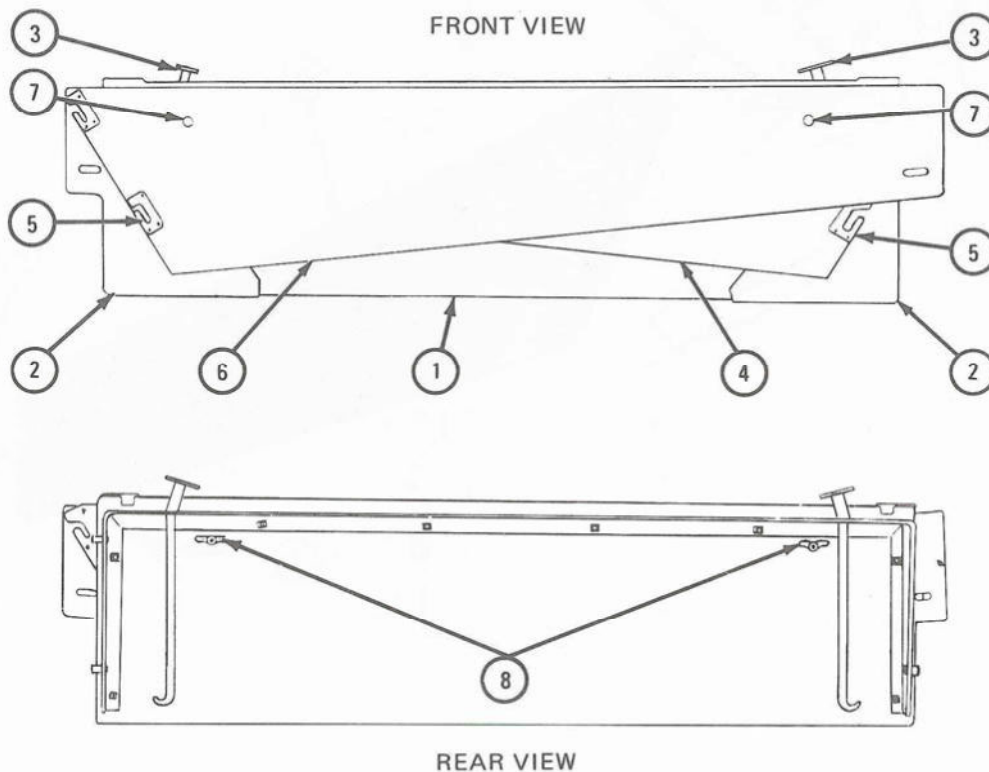
TA 053754

g. Stowage of Surfing Kit.

FRAME 1

1. Lay headboard assembly (1) down with folded endboards (2) facing up with hook bolt handles (3) at the top.
2. Lay right sideboard (4) down with lockplates (5) to the right and facing up.
3. Lay left sideboard (6) on top of right sideboard (4) with lockplates (5) to the left and facing up.
4. Align holes on sideboards and put in bolts (7).
5. Put assembled sideboards on top of headboard assembly (1). Push bolts (7) through headboard. Turn boards over and screw on and tighten wing nuts (8).

GO TO FRAME 2



TA 053755

## FRAME 2

1. Put four securing straps (1) through the slots (2) in the headboard frame (3).
2. Hook two hook bolts (4) over notched end (5) of headboard frame (3). Tighten two handles (6) so they are even with the frame.
3. Place assembled surfing kit (7) on engine cover (8). Fasten straps (1) around engine cover rails (9).

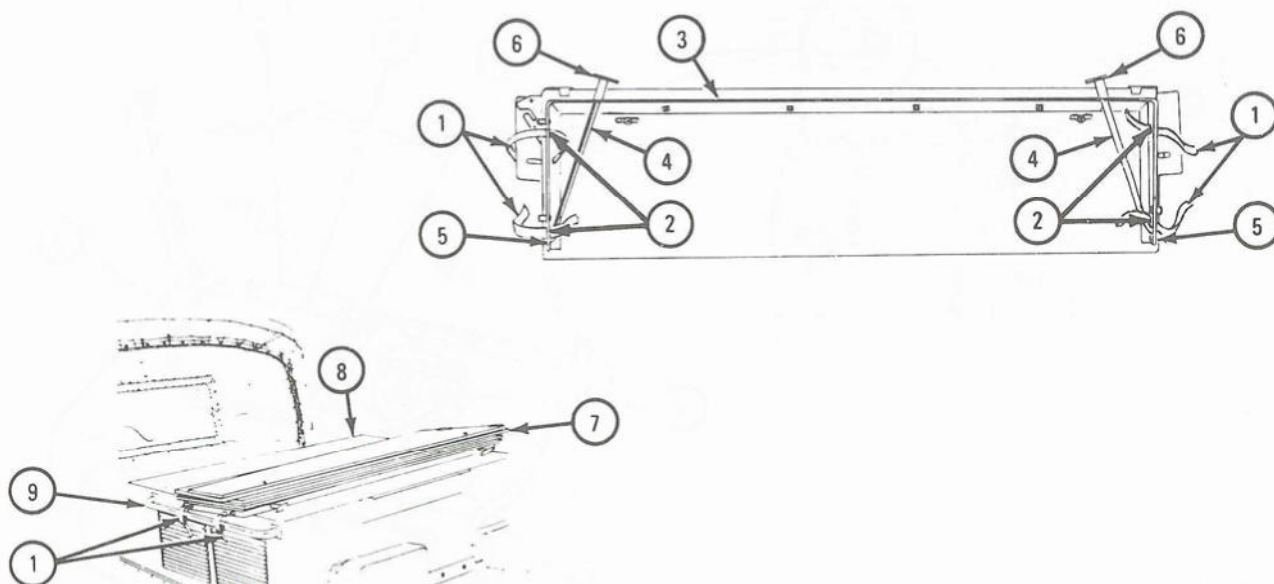
## NOTE

Hook bolt handles must be forward and headboard frame should be about nine-inches from front of engine cover.

## NOTE

## Follow-on Maintenance Action Required:

1. Put on windshield and stanchions. (Refer to para 4-13b.)
2. Tell organizational maintenance to put on rear view mirror and braces.
3. Put on tractor canopy and frame. (Refer to para 4-11b.)



TA 053756



#### 4-19. FIRE EXTINGUISHER.

##### WARNING

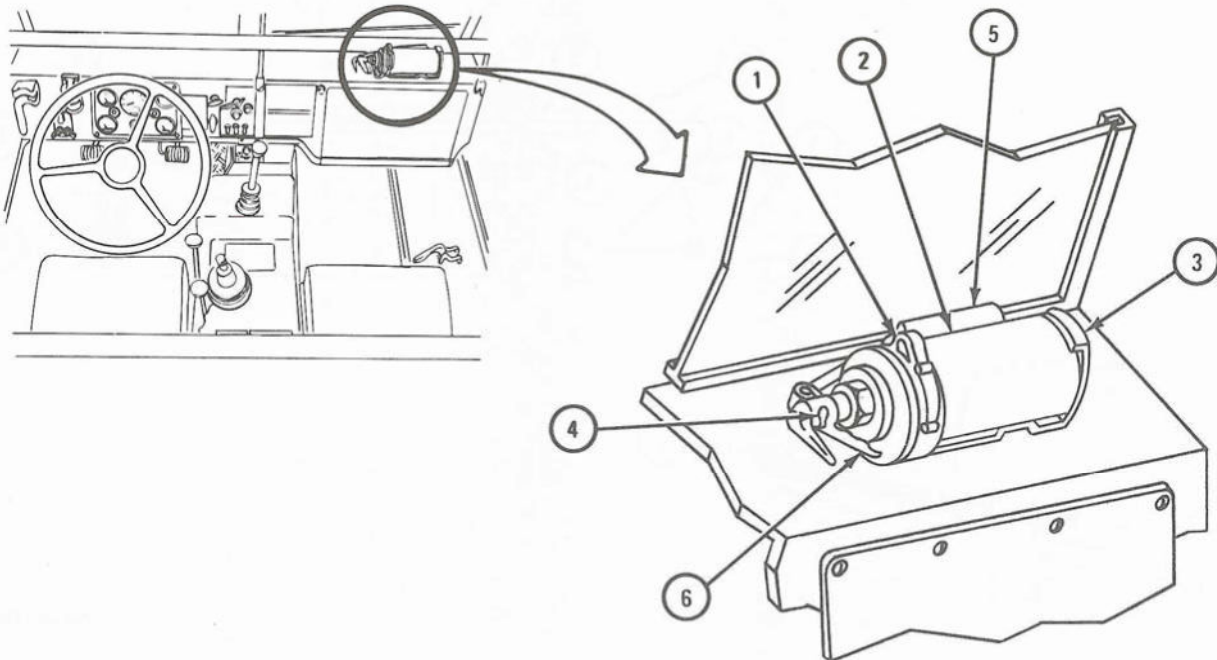
When fighting a fire, avoid breathing the fumes. Smoke and fumes are harmful to eyes, nose, throat, and lungs.

a. General. Fire extinguisher can be used on fuel, electrical, oil, canvas, and rubber fires. Extinguisher is mounted on the right hand cowl of truck, where it can easily be reached by operator or crew.

b. Operation.

##### FRAME 1

1. Open clamp (1) and take fire extinguisher (2) from mounting bracket (3).
2. Pull out safety pin (4).
3. Aim nozzle (5) at base of flame and press trigger (6).
4. When fire is out, give extinguisher to organizational maintenance for recharging.



TA 053716

## 4-20. LIFE PRESERVER OPERATION.

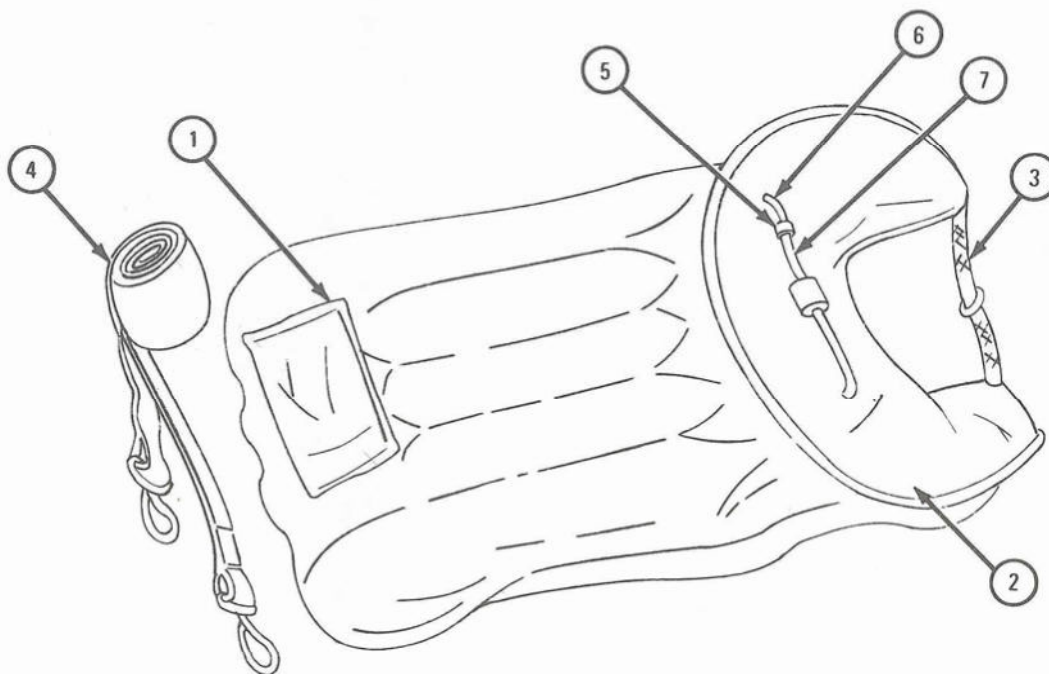
a. General. Life preservers are to be used for fording, swimming, and debarking operations. They are stored on truck in an area chosen by the operator. The preserver is worn, without inflation, on the chest and over clothes.

b. Operation.CAUTION

Inflated life preservers must be worn by the operator and crew during fording, swimming, and debarkation operations.

## FRAME 1

1. Read operating instructions (1) before using.
2. Take out preserver from storage. Fit bib (2) under chin. Adjust collar strap (3).
3. Pass harness strap (4) around waist and hook straps into rings.
4. Unscrew locking sleeve nut (5) on mouthpiece (6).
5. Press down on rubber covered section of mouthpiece (6) to open inflating valve (7). Blow up preserver.
6. To let the air out, open valve (7) by pressing mouthpiece (6)
7. Clean and dry preserver after use and store it.



TA 053717

#### 4-21. FIVE-WHEEL OPERATION.

##### CAUTION

To prevent damage to the hulls and suspension, avoid rough terrain and obstacles during five-wheel operation.

a. General. If a truck front wheel or a carrier wheel has a flat, one of the center wheels may be used as a spare. This is done with a brace and truss assembly. With the brace and truss assembly in place, truck then drives like a regular truck.

##### b. Operation.

(1) Preliminary procedure. Put brace and truss assembly in place on truck. Refer to vol 4, chapter 2, para 2-9b and para 2-9e. Make complete check of brace and truss assembly, before driving truck, to make sure suspension is all right.

(2) During operation. Stop truck from time to time to make sure brace and truss assembly is secure.

(3) After operation. Take brace and truss assembly off truck. Refer to vol 4, chapter 2 para 2-9d and para 2-9e.

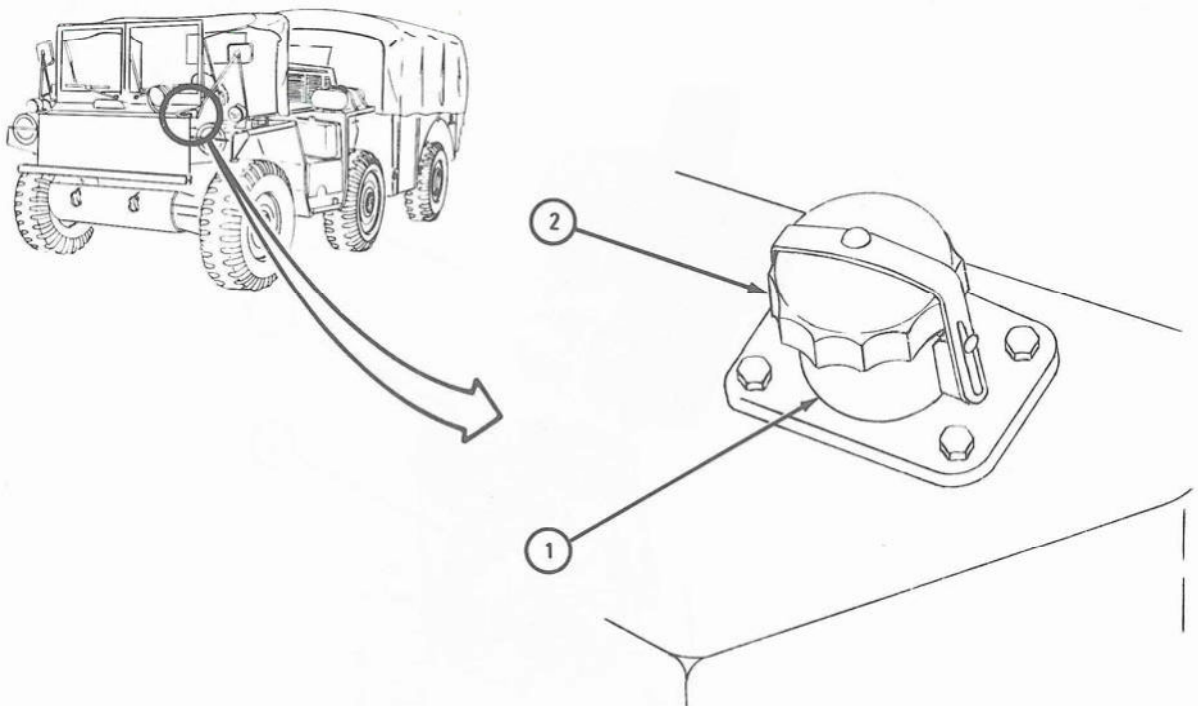
#### 4-22. SLAVE CABLE STARTING WITH ANOTHER TRUCK.

a. General. On trucks with a slave receptacle kit installed the slave receptacle is located at the left front cowl next to left front headlight. It is joined by cables to battery. Slave receptacle gives 24-volts DC from truck to outside equipment when the engine is running. Trucks with battery failure can get power from another truck through slave receptacle.

b. Using the Slave Receptacle.

##### FRAME 1

1. Start engine. Refer to para 4-6a, b, c.
  2. Place truck so that slave receptacle (1) faces slave receptacle of disabled truck.
  3. Stop engine. Refer to para 4-6h.
  4. Unscrew protective cap (2) and swing it up from slave receptacle (1).
- GO TO FRAME 2



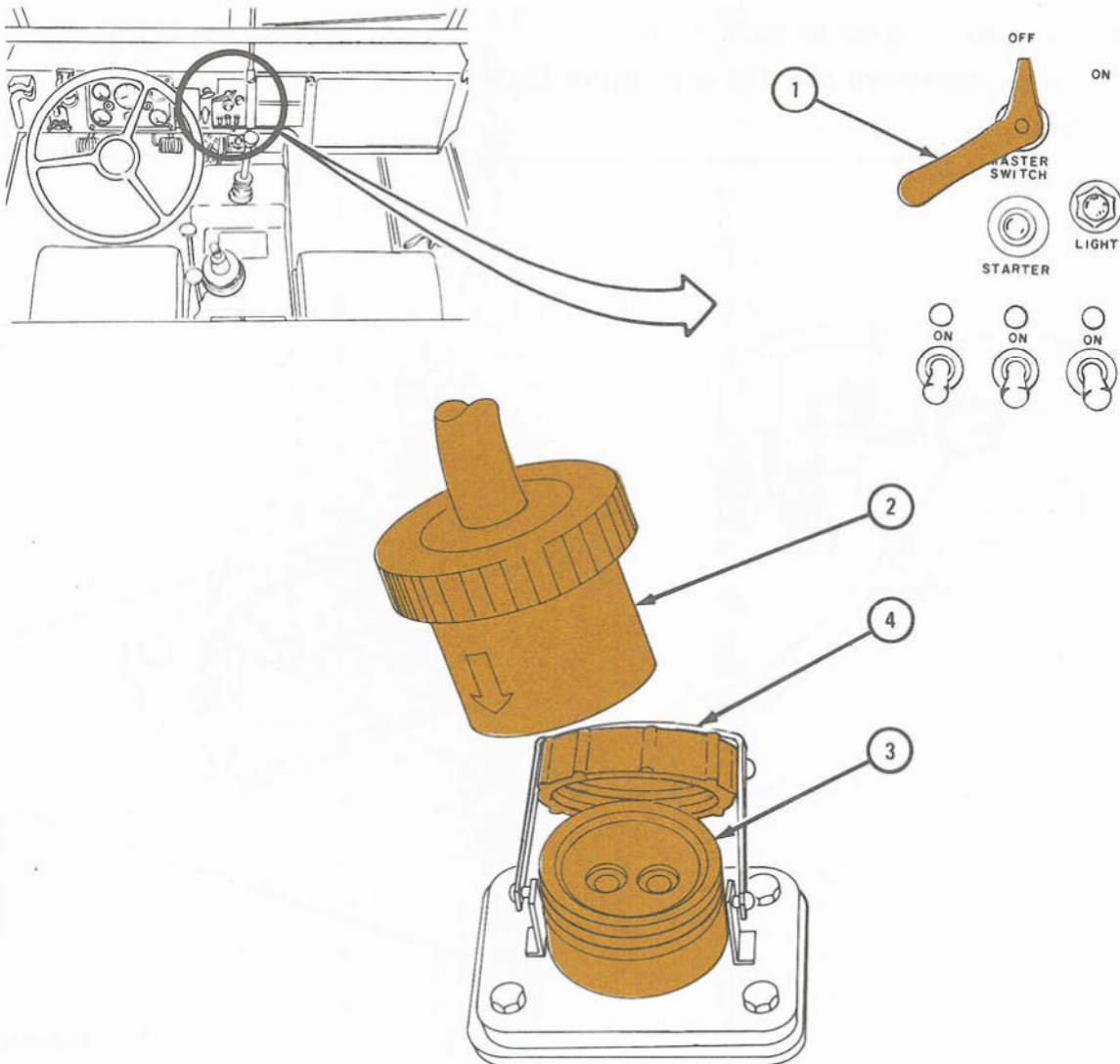
TA 053719



## FRAME 2

1. Make sure MASTER SWITCH (1) of disabled truck is in OFF position.
2. Plug service cable connectors (2) into slave receptacle (3) on each truck.
3. Start slaving truck engine and run at fast idle (1000 rpm). (Refer to para 4-6a, b, c.) Start disabled truck engine in same way.
4. As soon as engine on disabled truck is running smoothly, take off service cable connectors (2) from receptacles (3).
5. Swing protective cap (4) back into position and screw cap onto receptacles (3).

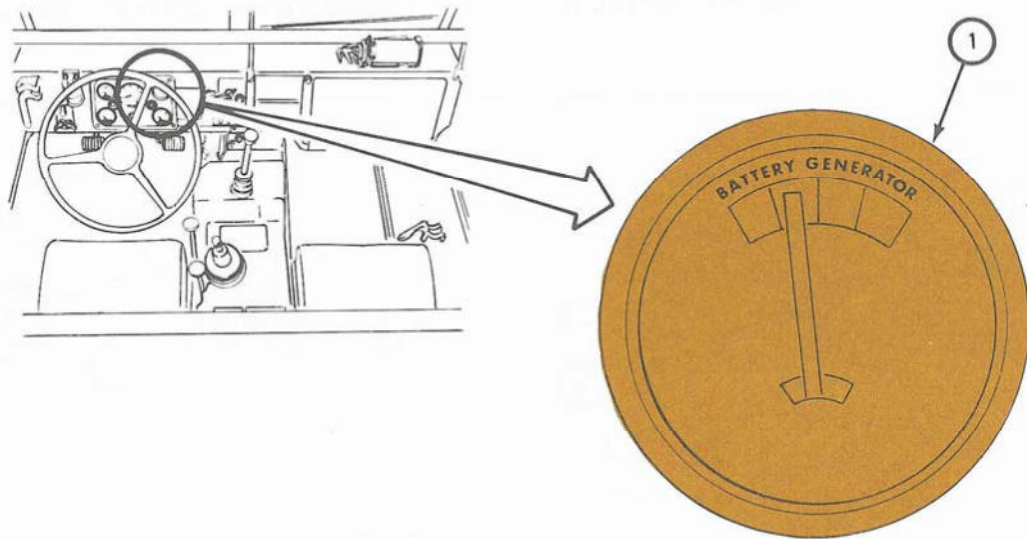
GO TO FRAME 3



TA 053720

## FRAME 3

1. Check battery-generator indicator (1) on slaved truck. If indicator reading is in yellow or red, stop engine (para 4-6h) and tell organizational maintenance.



TA 053721

#### 4-23. JUMPER CABLE STARTING WITH EXTERNAL BATTERIES.

TOOLS: Jumper cables

SUPPLIES: None

PERSONNEL: Two

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

##### FRAME 1

Soldier A 1. Position slaving truck so that its battery (1) is opposite left side battery (2) of disabled truck.

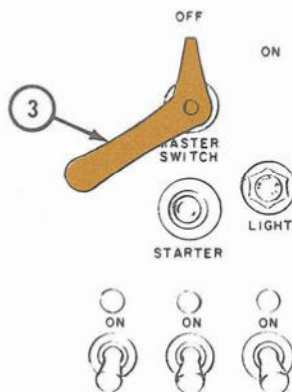
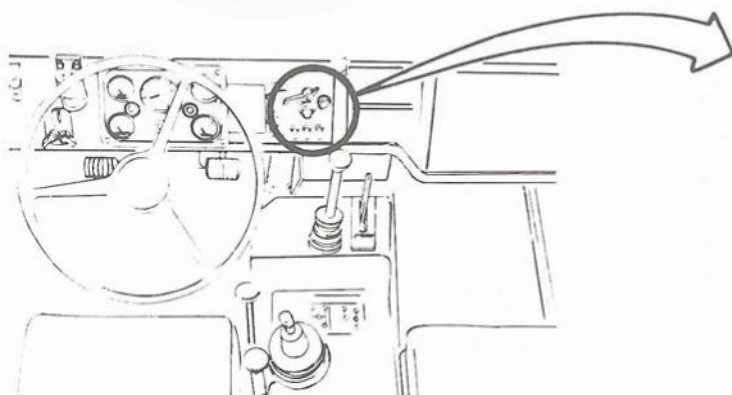
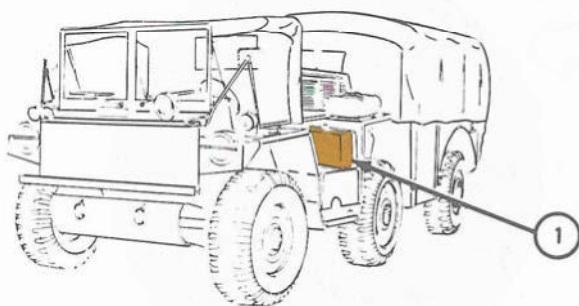
##### NOTE

A 24-volt battery or two 12-volt batteries connected in series may be used as external power source to start engine of disabled truck.

2. Stop engine. (Refer to para 4-6h.)

Soldier B 3. Turn MASTER SWITCH (3) of disabled truck to OFF position.

GO TO FRAME 2

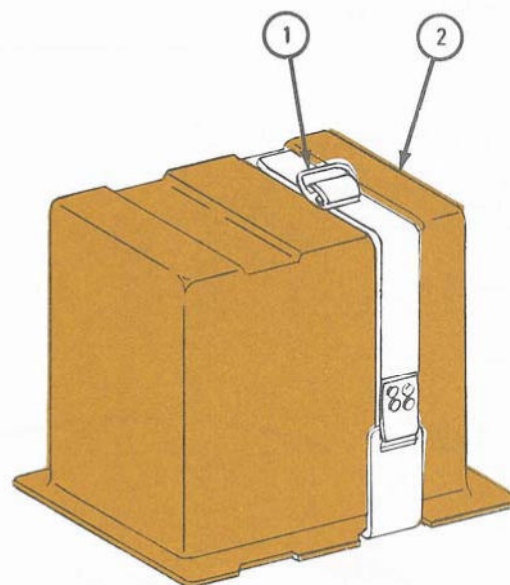


TA 053722

## FRAME 2

1. Loosen strap (1) and lift off battery box cover (2) on both trucks.

GO TO FRAME 3



TA 053723



## FRAME 3

WARNING

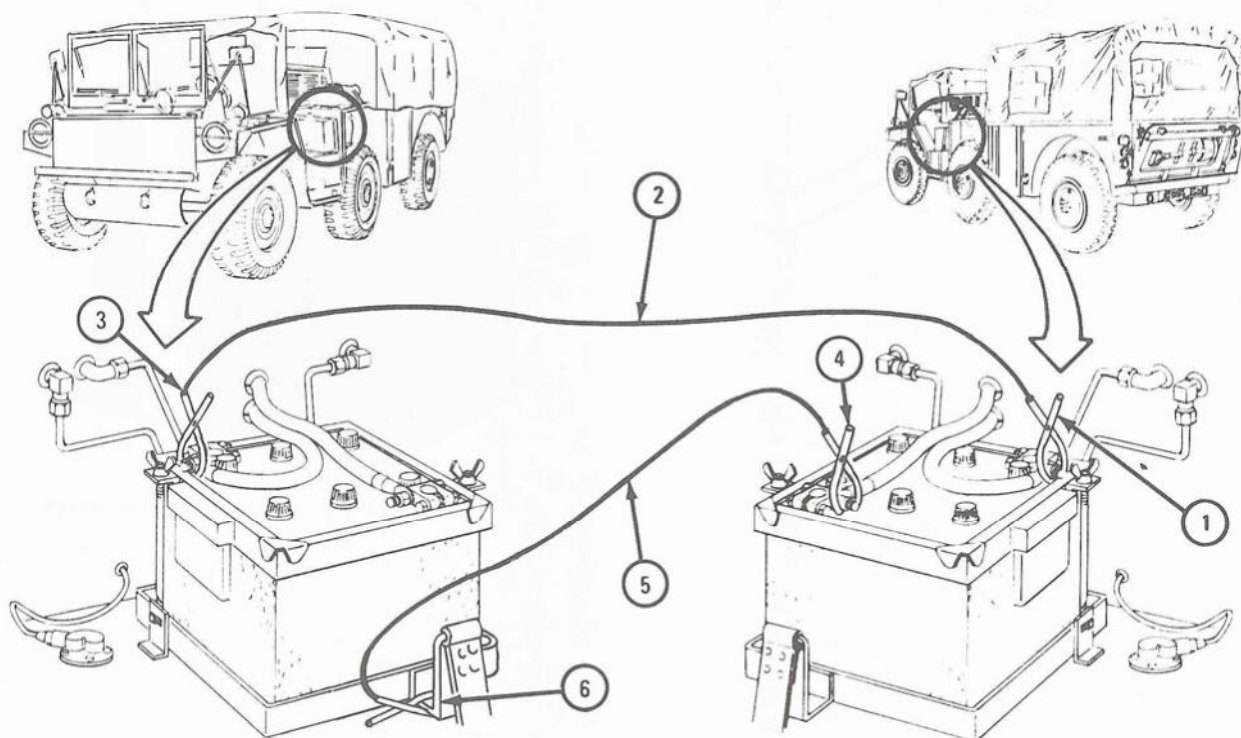
Do not let clamp ends of battery cables touch battery and truck. This will cause a direct short, arcing, cable clamps will get red hot and battery may explode. This can cause serious injury to personnel and damage to equipment.

CAUTION

Avoid a positive to negative connection. A positive to negative connection will cause too much voltage which could damage electrical circuits of truck.

1. Clamp end (1) of positive jumper cable (2) to positive battery post of slaving truck. Clamp end (3) of cable (2) to positive battery post of disabled truck.
2. Clamp end (4) of negative jumper cable (5) to negative battery post of slaving truck. Clamp end (6) of negative jumper cable to engine or frame of disabled truck.

GO TO FRAME 4



TA 053724

## FRAME 4

- Soldier A 1. Start engine of slaving truck. (Refer to para 4-6a, b, c.)  
Soldier B 2. Start engine of disabled truck. (Refer to para 4-6a, b, c.)

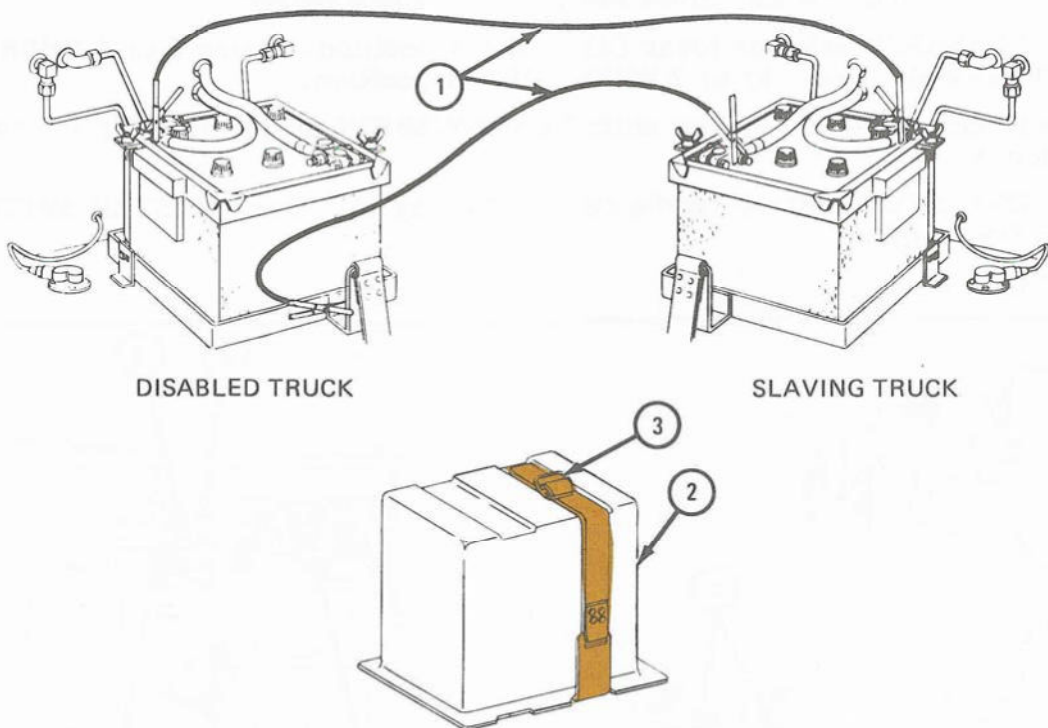
**NOTE**

If engine of disabled truck does not start after three or four tries, tell organizational maintenance.

**CAUTION**

Take off one jumper cable at a time to stop contact of positive and negative ends of cables. Shorting the battery can damage the alternator.

3. Take off jumper cables (1).  
4. Put battery cover (2) back and tighten strap (3) on both batteries.



TA 053725

#### 4-24. TOWING.

##### a. Towing Truck to Start the Engine.

TOOLS: Tow bar or towing cables

SUPPLIES: None

PERSONNEL: Two

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

#### FRAME 1

#### CAUTION

Towing shackles are to be used for all towing operations. Do not drive faster than 10 mph when towing. Chock wheels before removing or installing the towing cable or tow bar.

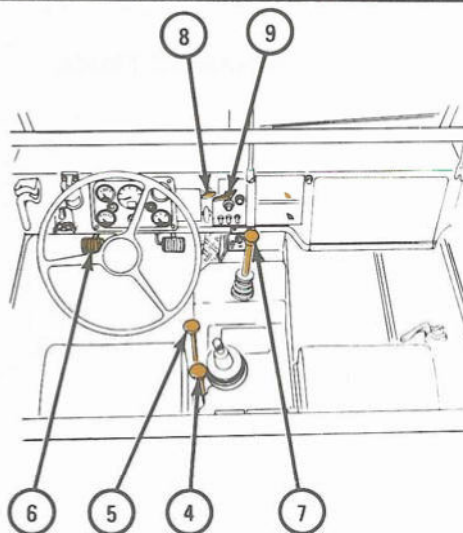
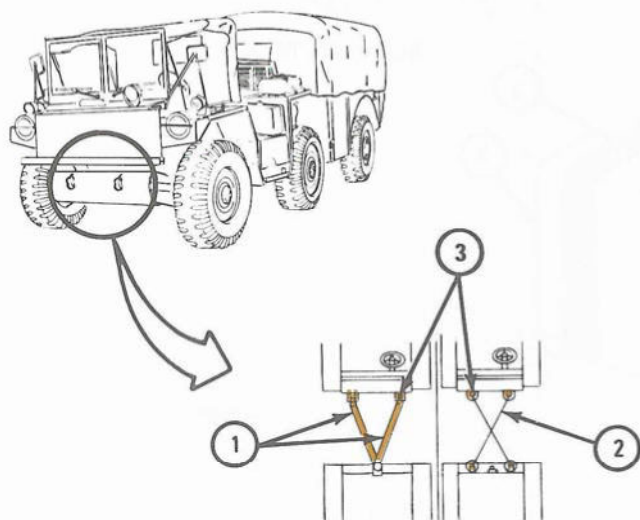
1. Hook tow bar (1) or towing cable (2) to front towing shackles (3) of disabled truck.

#### NOTE

Tow bar is better than a towing cable for towing starts because tow bar gives better control and safety.

2. Place TRANSFER selector lever (4) in HIGH position. Place 2 or 6 WHEEL DRIVE selector lever (5) in 2 WHEEL DRIVE position.
3. Press in clutch pedal (6) and shift TRANSMISSION gearshift lever (7) to position 3.
4. Push ENG. STOP control handle (8) all the way in. Turn MASTER SWITCH (9) to ON position.

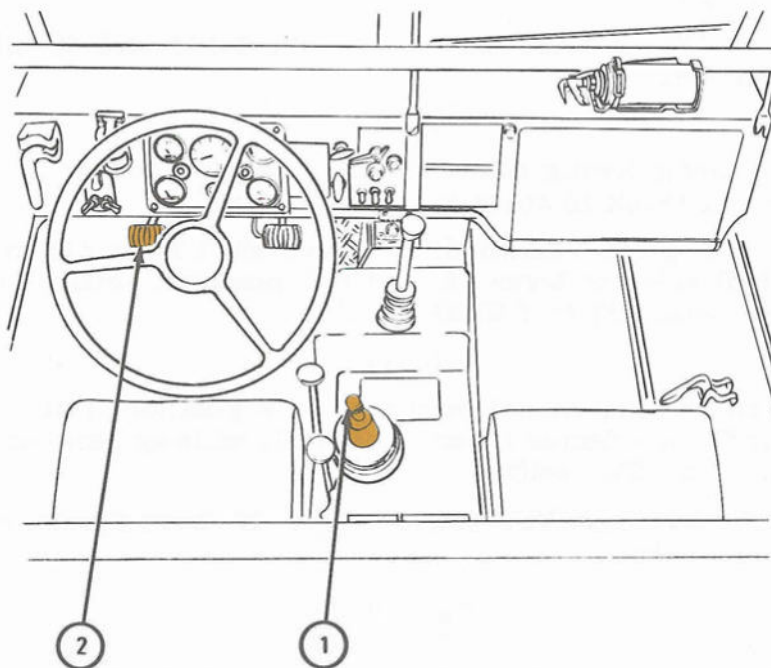
GO TO FRAME 2



TA 053777

## FRAME 2

1. Put handbrake (1) in down (brake off) position.
2. Keep the clutch pedal (2) in until truck is going about 10 mph. Slowly let out clutch pedal all the way.
3. If engine does not start, tell organizational maintenance.



TA 053778



b. Towing Truck when Disabled.

TOOLS: Tow bar or towing cables

SUPPLIES: None

PERSONNEL: Two

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set, wheels chocked.

FRAME 1

CAUTION

Use towing shackles whenever towing. Do not drive faster than 10 mph. Chock wheels before putting on or taking off tow bar or cables. Avoid quick starts and stops.

1. Hook tow bar or towing cables between towing truck and disabled truck. Refer to para 4-24a.

NOTE

When using towing cables, there must be a driver in disabled truck to steer and brake truck.

2. In disabled truck, place TRANSMISSION gearshift lever (1) in N position. Place TRANSFER selector lever (2) in HIGH position. Place 2 or 6 WHEEL DRIVE selector lever (3) in 2 WHEEL DRIVE.

NOTE

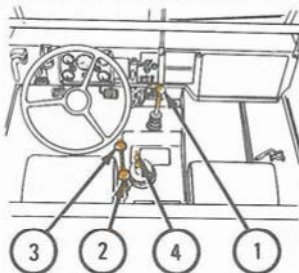
If transmission cannot be placed in N position, put TRANSFER selector lever in neutral, midway between HIGH and LOW position.

3. Take away wheel chocks. Put handbrake (4) in down (brake off) position. Begin towing operation.

CAUTION

When using towing cables, take up slack slowly.

4. Chock front and rear wheels of truck at end of towing operation.



TA 053779

c. Using Truck to Tow Another Truck.WARNING

Do not try any type of swimming operations when truck is towing another truck.

(1) Truck can serve as a prime mover for any of the following types of equipment:

- (a) Trailer-type equipment weighing up to 5,000 pounds.
- (b) Signal Corps electronic shelter S-250, including operations on side slopes up to 30°.
- (c) 105-mm howitzer, (trucks M101 and M102).
- (d) 3/4-ton trailer (truck M101).
- (e) 1 1/4-ton ammunition trailer (truck M332, if the drawbar lunette is rotated 180°).

CAUTION

Be careful when backing up with a towed load. Because rear wheels are steerable, trailer moves faster than normal and it can jackknife.

d. Pushing.

(1) Pushing truck is not usually done. If pushing is needed during emergencies, make sure bumperettes on carrier body are aligned with front bumper of pushing truck during pushing operation.

WARNING

Do not let any part of pushing truck touch any part of carrier tailgate. Tailgate could be damaged, causing it to leak during swimming operations.

(2) Using truck to push another truck is not usually done. With winch installed, damage can occur to winch or truck.

(3) If winch is not installed and pushing must be done during an emergency, make sure front bumper of truck is aligned with rear bumper of pushed truck during pushing operation. Pushed truck must not be larger than those listed in para 2-24c (1) above.



## APPENDIX A

### REFERENCES

#### A-1. PUBLICATION INDEXES and GENERAL REFERENCE.

Indexes should be checked often for the latest changes or revisions of references given in this appendix and for new publications on materiel covered in this technical manual.

##### a. Military Publications Indexes.

Index of Blank Forms ..... DA Pam 310-2

##### Military Publications:

Index of Technical Manuals, Technical  
Bulletins, Supply Bulletins, and  
Lubrication Orders..... DA Pam 310-4

##### b. General Reference.

Authorization Abbreviations and Brevity  
Codes ..... AR 310-50

Dictionary of United States Army Terms ..... AR 310-25

#### A-2. FORMS.

The following forms are for this materiel (refer to DA Pamphlet 310-2 for index of blank forms and to TM 38-750 for explanation of their use).

Recommended Changes to Publications ..... DA Form 2028

Maintenance Request - Continuation Sheet..... DA Form 2407-1

Equipment Log Assembly (Records) ..... DA Form 2408

#### A-3. OTHER PUBLICATIONS.

##### a. Truck.

Lubrication Order ..... LO 9-2320-242-12



b. General.

Basic Cold Weather Manual .....	FM 31-70
Northern Operations .....	FM 31-71
Mountain Operations (How To Fight) .....	FM 90-6(HTF)
Security of Tactical Wheeled Vehicles .....	TB 9-2300-422-20
Use of Antifreeze Solutions and Cleaning Compounds in Engine Cooling Systems .....	TB 750-651
Operation and Maintenance of Ordnance Materiel in Cold Weather (0° to -65°F) .....	FM 9-207
Deep Water Fording of Ordnance Materiels .....	TM 9-238
Petroleum Tank Vehicle Operation.....	FM 10-71
Army Motor Transport Units and Operations.....	FM 55-30
Drivers Manual, Wheeled Vehicle.....	FM 21-305
Army Maintenance Management System .....	TM 38-750
Route Reconnaissance and Classification . . . . .	FM 5-36
Procedures for Destruction of Tank-Automotive Equipment to Prevent Enemy Use . . . . .	TM 750-244-6

## APPENDIX B

### COMPONENTS OF END ITEM LIST

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#### Section I. INTRODUCTION

B-1. SCOPE. This appendix lists integral components of and basic issue items for the Gama Goat to help you find items needed for safe and efficient operation.

B-2. GENERAL. This Components of End Item List is broken down into the following sections:

- a. Section II. Integral Components of the End Item. These items, when put on the truck, are part of the truck and must go with it whenever it is moved to another site or turned in. The illustrations will help you find these items.
- b. Section III. Basic Issue Items. These are the minimum basic items needed to place the truck in operation, to operate it, and to do emergency repairs. Although packed and shipped separately, they must go with the truck during operation and whenever it is turned over to another accountable officer. The illustrations will help you with hard-to-find items. This manual is your authority to order replacement BII, based on TOE/MTOE authorization of the end item.

B-3. EXPLANATION OF COLUMNS.

- a. Illustration. This column is broken down as follows:
  - (1) Figure Number. The number of the illustration on which the item is shown.
  - (2) Item Number. The number of the item called out in the illustration.
- b. National Stock Number. The National stock number given to the item which will be used to order the item.
- c. Part Number. The primary number used by the manufacturer which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to pin point the item or range of items.
- d. Description. Gives the Federal Item Name and, if needed, a minimum description of the item.
- e. Location. The location on the truck of each item listed is given in this column. The lists are made up to show all items in one area of the major item before moving on to the next area.

- f. Usable on Code. Usable On codes are given to help you find which component items are used on the different models. The codes used in these lists are as follows:

<u>Code</u>	<u>Used On</u>
A	M561 Cargo Truck
B	M792 Ambulance

- g. Quantity Required (Reqd Qty). This column lists the quantity of each item needed for a complete major item.
- h. Quantity. This column is left blank and is to be used during an inventory. In the Rev'd column, list the quantity you actually get on your major item. The Date columns are for your use when you make an inventory of the major item at a later date, such as for shipment to another site.

B-4. ABBREVIATIONS. The following abbreviations are found in the lists:

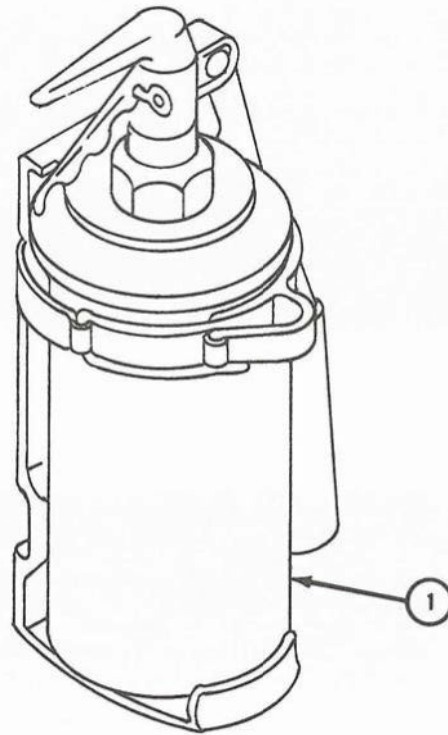
<u>Abbreviation</u>	<u>Explanation</u>
assy	assembly
compt	compartment
dbl	double
dia	diameter
ft	foot, feet
gal	gallon(s)
hex	hexagon(al)
in	inch(es)
L	left
lb	pound(s)
lg	long

<u>Abbreviation</u>	<u>Explanation</u>
max	maximum
R	right
rd	round
sq	square
w/	with
wo/	without





## Section II. INTEGRAL COMPONENTS OF THE END ITEM



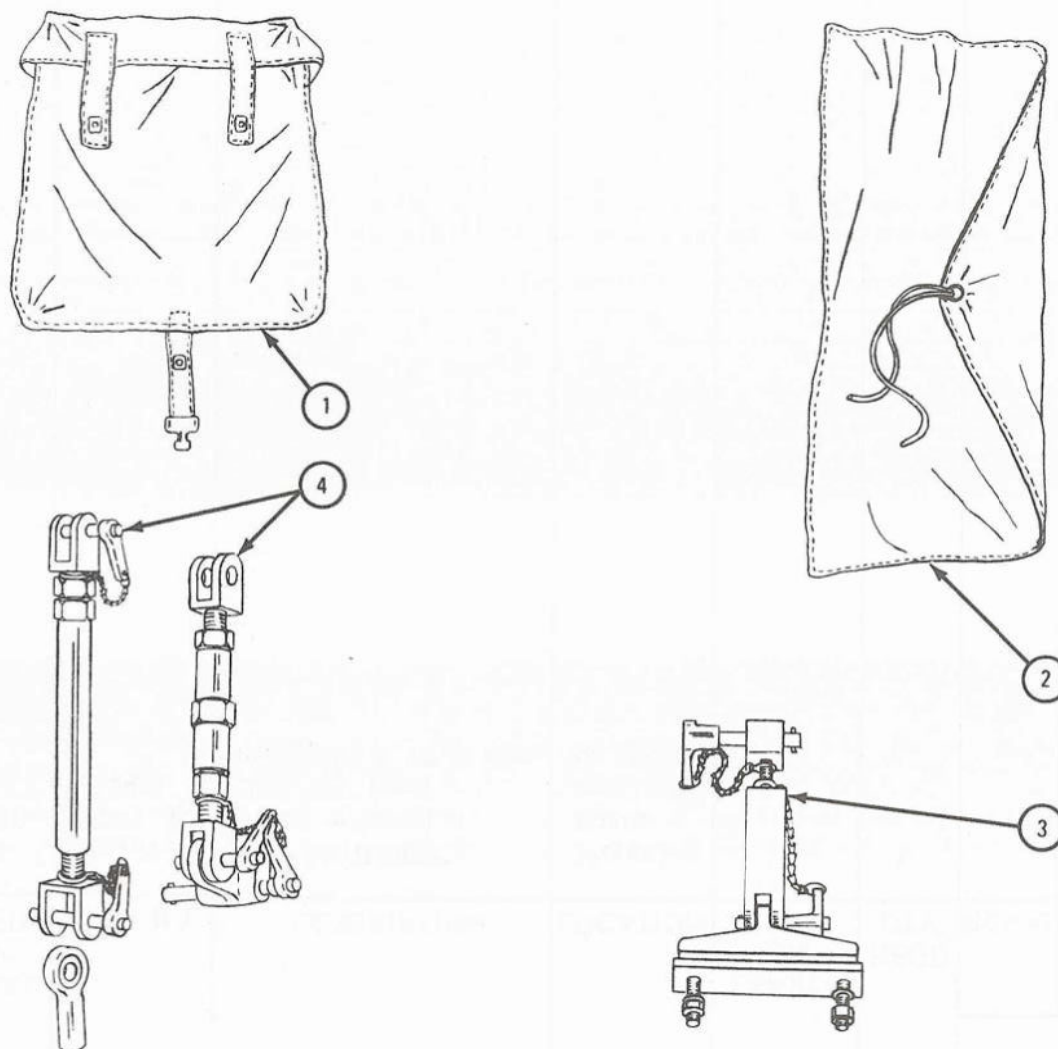
TA 088584

Figure B-1. Integral Components

# Section II. INTEGRAL COMPONENTS OF THE END ITEM

(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)			
ILLUSTRATION		NATIONAL STOCK NUMBER	PART NO.	DESCRIPTION	LOCATION	USABLE ON CODE	REQD QTY	QUANTITY			
(a) FIGURE NO.	(b) ITEM NO.							RCV'D	DATE	DATE	DATE
B1	1	4210-00- 889-2221	MIL-E- 52031 (81349)	EXTINGUISHER: Fire, w/bracket, CF <sub>3</sub> Br, hand charged, 2.75 lb cap	Mounting space available on R cowl		1				

## Section III. BASIC ISSUE ITEMS



TA 088585-1

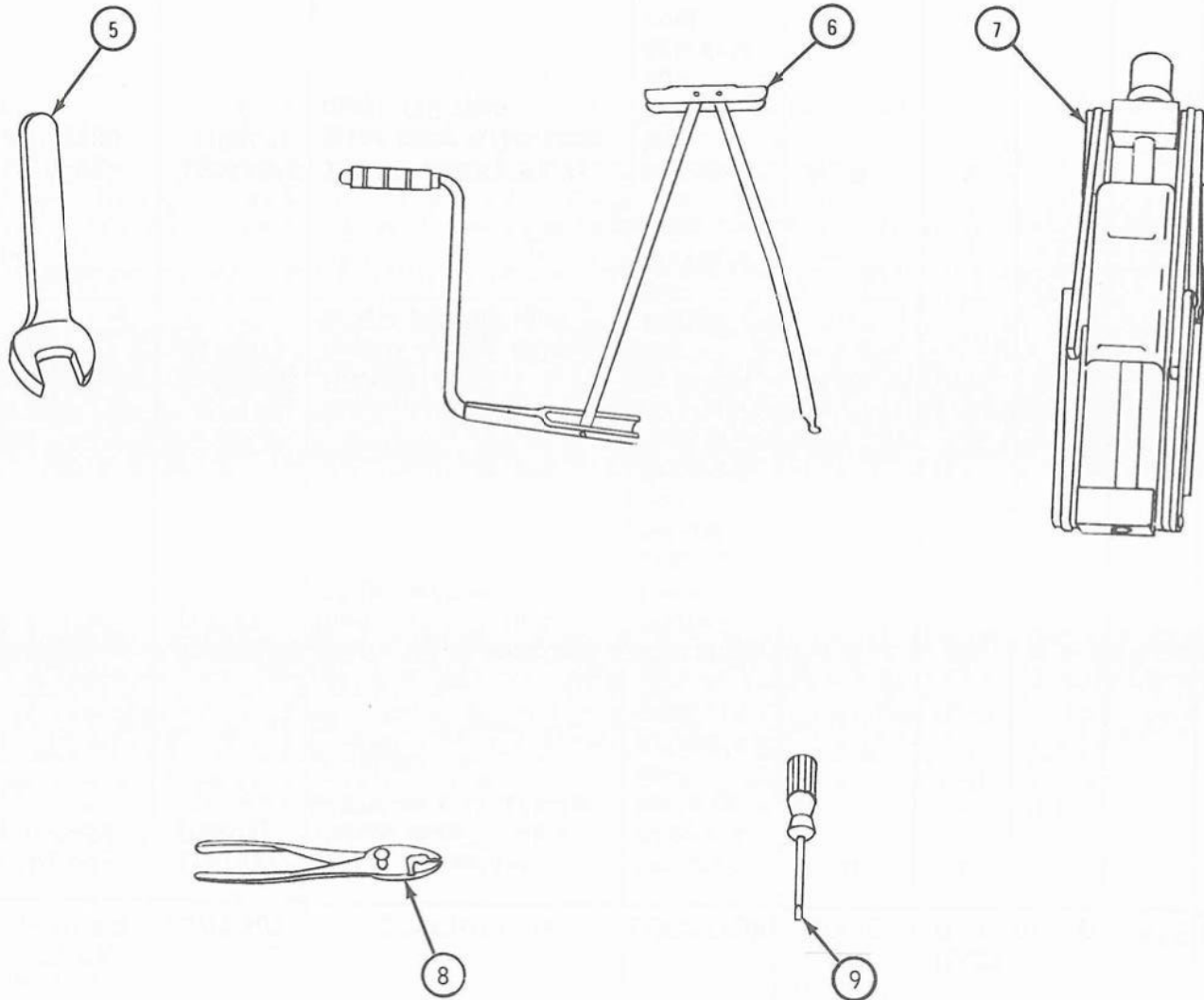
Figure B-2. Basic Issue Items (Sheet 1 of 3)

## Section III. BASIC ISSUE ITEMS

(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)			
ILLUSTRATION		NATIONAL STOCK NUMBER	PART NO.	DESCRIPTION	LOCATION	USABLE ON CODE	REQD QTY	QUANTITY			
(a) FIGURE NO.	(b) ITEM NO.							RCV'D	DATE	DATE	DATE
B-2	1	2540-00-670-2459	11676920 (19207)	BAG: Pamphlet, cotton duck, 3-in x 9 1/4-in x 11 1/4-in	On back of operator's or co-driver's seat	A, B	1				
	2	5140-00-880-4792	11595183 (19207)	BAG: Tool, cotton duck, 12 1/2-in x 22 in, w/flap	1 behind operator's seat, 1 behind co-driver's seat	A, B	2				
	3	4910-00-880-4787	11595202 (19207)	BRACE ASSY: Install center axle w/QD locking pins	In tool bag behind co-driver's seat	A, B	1				
	4	4910-00-880-4789	11595065 (19207)	TRUSS ASSEMBLY: Inter body w/locking pins, OD type	In tool bag behind co-driver's seat	A, B	2				



## Section III. BASIC ISSUE ITEMS - Cont



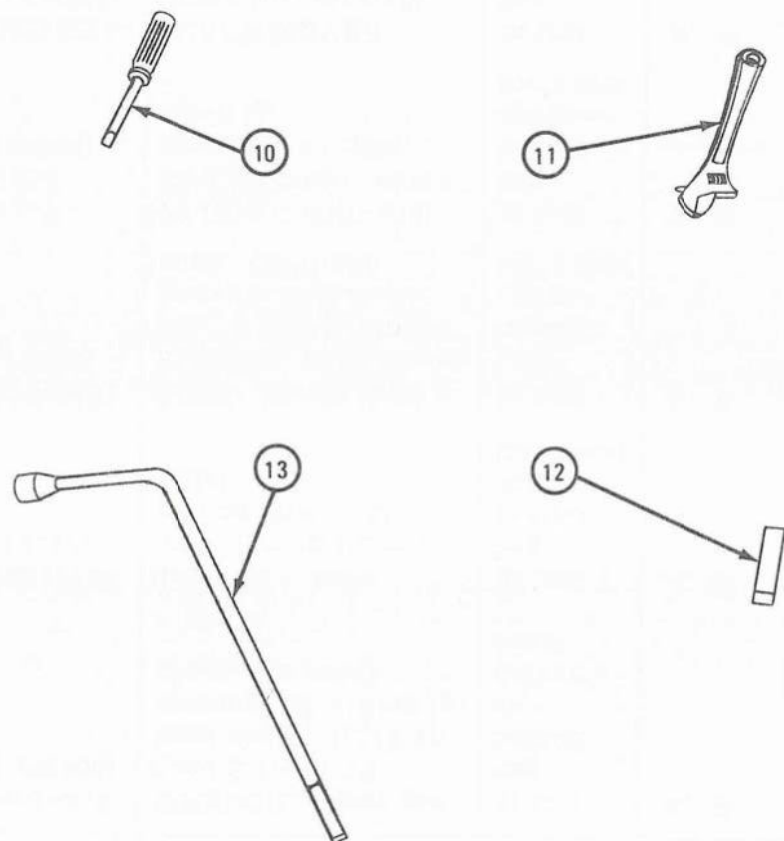
TA 088585-2

Figure B-2. Basic Issue Items (Sheet 2 of 3)

## Section III. BASIC ISSUE ITEMS - Cont

(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)			
ILLUSTRATION		NATIONAL STOCK NUMBER	PART NO.	DESCRIPTION	LOCATION	USABLE ON CODE	REQD QTY	QUANTITY			
(a) FIGURE NO.	(b) ITEM NO.							RCV'D	DATE	DATE	DATE
B-2	5	5120-00- 277-1246	MS16382- 1 (96906)	WRENCH: Open end, fixed S head, 15° head angle, 1 1/2-in opening, 13 3/8-in lg, phosphate finish	In tool bag behind co- driver's seat	A, B	1				
	6	5120-00- 032-6042	12255298 (19207)	HANDLE: Jack, 58 1/4-in lg (nom), folding type, OD finish	In tool bag behind opera- tor's seat	A, B	1				
	7	5120-00- 106-7598	11640481 (19207)	JACK: Mechanical, scissors, hand, 2-ton cap, 2 1/4-in closed (max) to 18 1/2-in open, OD finish	In tool bag behind opera- tor's seat	A, B	1				
	8	5120-00- 223-7398	41-P- 1654 (80244)	PLIERS: Slip-joint, straight-nose, com- bination, w/cutter, 10-in lg	In tool bag behind opera- tor's seat	A, B	1				
	9	5120-00- 234-8913	MS15224- 5 (96906)	SCREWDRIVER: Cross tip, straight, Phillips, plastic handle, point no. 2, 4-in blade, 7 1/2-in lg (nom)	In tool bag behind opera- tor's	A, B	1				

## Section III. BASIC ISSUE ITEMS - Cont



TA 088585-3

Figure B-2. Basic Issue Items (Sheet 3 of 3)

## Section III. BASIC ISSUE ITEMS - Cont

(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)			
ILLUSTRATION		NATIONAL STOCK NUMBER	PART NO.	DESCRIPTION	LOCATION	USABLE ON CODE	REQD QTY	QUANTITY			
(a) FIGURE NO.	(b) ITEM NO.							RCV'D	DATE	DATE	DATE
B-2	10	5120-00- 222-8852	GGG-S- 121 (81348)	SCREWDRIVER: Flat tip, common, flared sides, plastic handle, round blade, 1/4-in w/tip, 4-in blade, 7 3/4-in lg (nom)	In tool bag behind opera- tor's ' seat	A, B	1				
	11	5120-00- 449-8083	41-W- 487 (80244)	WRENCH: Adjustable, open end, heavy duty, 1.135-in jaw opening, 10-in lg, phosphate finish	In tool bag behind opera- tor's seat	A, B	1				
	12	5120-00- 935-4654	11595203 (19207)	WRENCH: Drain plug, straight bar, 3/4-in sq, 3-in lg	In tool bag be- hind op- erator's seat	A, B	1				
	13	5120-00- 935-4651	11595182 (19207)	WRENCH: Socket, wheel stud nut, ell handle, 5-in plus 10° offset, 3/4-in hex opening, 15-in lg (nom), phosphate finish	In tool bag be- hind op- erator's seat	A, B	1				
Not shown	-	7530-01- 065-0166	43986-1 (72094)	FOLDER: Equipment binder		A, B	1				



Section III. BASIC ISSUE ITEMS - Cont

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## Section III. BASIC ISSUE ITEMS - Cont

(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)			
ILLUSTRATION		NATIONAL STOCK NUMBER	PART NO.	DESCRIPTION	LOCATION	USABLE ON CODE	REQD QTY	QUANTITY			
(a) FIGURE NO.	(b) ITEM NO.							RCV'D	DATE	DATE	DATE
Not shown	-		LO 9- 2320-242- 12	LUBRICATION ORDER: For truck, cargo, 1 1/4-ton, 6 x 6, M561; truck, ambulance, 1 1/4-ton, 6 x 6, M792		A, B	1				
Not shown	-		TMs 9- 2320-242- 10-1, 10-2, 10-3 and 10-4	OPERATOR'S MANUAL: For truck, cargo, 1 1/4-ton, 6 x 6, M561; truck, ambulance, 1 1/4-ton, 6 x 6, M792		A, B	1				



## APPENDIX C

### ADDITIONAL AUTHORIZATION LIST

---

#### Section I. INTRODUCTION

C-1. SCOPE. This appendix lists additional items you are authorized for the support of the Gama Goat.

C-2. GENERAL. This list is made up of items that do not have to stay with the truck and that do not have to be turned in with it. Authorization for these items is given by CTA, MTOE, TDA or JTA.

C-3. EXPLANATION OF LISTING.

- a. National stock numbers, descriptions, and quantities give all details needed to order the additional items for support of this equipment. If item needed is different for different models of this equipment, the model using this item is shown under the Usable On Code heading in the Description column. These codes are as follows:

<u>Code</u>	<u>Used On</u>
A	M561 Cargo Truck
B	M792 Ambulance

- b. U/M is unit of measure for items listed.
- c. QTY AUTH is quantity of the item authorized.



## Section II. ADDITIONAL AUTHORIZATION LIST

(1)  NATIONAL STOCK NUMBER	(2)  DESCRIPTION  PART NUMBER & FSCM      USABLE ON CODE	(3)  U/M	(4)  QTY AUTH
5110-00-293-2336	AXE: S bit, 4-lb hand weight, 35 1/2 to 36 1/2-in lg GGG-A-926 (81348)	Ea	1
7240-00-222-3088	CAN: Fuel, MIL type, 5-gal 4-2T-13600 (80244)	Ea	1
7240-00-242-6153	CAN: Water, MIL type, 6-gal MIL-C-43613 (80244)	Ea	1
	DECAL: Good driver DA LABEL 76	Ea	1
5120-00-288-6574	HANDLE: Mattock pick, RR or clay pick, 36-in lg 11677021 (19207)	Ea	1
4220-00-783-6609	LIFE PRESERVER: Yoke, oral inflation, trapped air, adult, 26 1/2-in high MIL-L-52413 (81349)	Ea	10
5120-00-243-2395	MATTOCK: Pick type, 5-lb wo/handle GGG-A-506 (81348)	Ea	1
5120-00-293-3336	SHOVEL: Hand, round point, D-handle, short size 2 MS17088-1 (96906)	Ea	1
7240-00-177-6154	SPOUT: Fuel can, flexible, 2 1/4-in outer dia, 16-in lg MIL-S-1285 (81349)	Ea	1
5340-00-753-3741	STRAP: Cotton webbing, 1-in wide x 14-in lg, w/buckle and end clip 8690463 (19207)	Ea	3
5340-00-530-5021	STRAP: Cotton webbing, 1-in wide x 20-in lg, w/buckle and end clip 8690466 (19207)	Ea	1
5340-00-543-3321	STRAP: Cotton webbing, 1-in wide x 39-in lg, w/buckle and end clip 8690474 (19207)	Ea	1
5340-00-543-3155	STRAP: Cotton webbing, 1-in wide x 45-in lg, w/buckle and end clip 8690476 (19207)	Ea	2
5340-00-753-3740	STRAP: Cotton webbing, 1-in wide x 8-in lg, w/buckle and end clip (for tractor bows) 8690460 (19207)	Ea	2
5340-00-980-9277	STRAP: Tie-down, universal type, ratchet buckle, nylon, 216-in lg, w/swivel snap hooks 10900880 (19207)	Ea	3

## APPENDIX D

### EXPENDABLE SUPPLIES AND MATERIALS LIST

---

#### Section I. INTRODUCTION

D-1. SCOPE. This appendix lists expendable supplies and materials you will need to operate and maintain the Gama Goat. These items are authorized by CTA 50-970, Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items).

D-2. EXPLANATION OF COLUMNS.

- a. Column 1 - Item number. This number is given to the entry in the listing.
- b. Column 2 - Level. This is the lowest level of maintenance that needs the listed item.  

C - Operator/Crew

D - Organizational Maintenance
- c. Column 3 - National Stock Number. This is the National stock number given to the item; use it to order the item.
- d. Column 4 - Description. Shows the Federal item name and, if needed, a description to give more details about the item. The last line for each item shows the part number, followed by the Federal Supply Code for Manufacturer (FSCM) in brackets, if it applies.
- e. Column 5 - Unit of Measure (U/M). Shows the measure used in doing the actual maintenance function. This measure is shown by an alphabetical abbreviation (ea, in., qt). If the unit of measure is different from the unit of issues, order the lowest unit of issue that will give you what you need.

## Section II. EXPENDABLE SUPPLIES AND MATERIAL LIST

(1)	(2)	(3)	(4)	(5)
ITEM NUMBER	LEVEL	NATIONAL STOCK NUMBER	DESCRIPTION	U/M
2	C	9140-00- 286-5284	Diesel Fuel, Grade DF-A, Spec VV-F-800, 55 gal drum	GAL
3	C	9150-00- 191-2772	Lubricating Oil, MIL-L-2104, OE	GAL
1	C	9140-00- 286-5282	Diesel Fuel, Grade DF-A, Spec VV-F-800, 5-gal	GAL

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30 Sept 80

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2-6		2-4	
2-20	2-10		
2-22		2-5	

IN THIS SPACE TELL WHAT IS WRONG  
AND WHAT SHOULD BE DONE ABOUT IT:

Change illustration callouts.

Reason: callouts for starter motor (+)  
and alternator (?) are reversed.

Refers to table 2-5. Should refer to table  
2-4.

Last line of table reads "Do not use  
below -32°F." Should read "Do not use  
below +32°F."

# SAMPLE

PRINTED NAME GRADE OR TITLE AND TELEPHONE NUMBER

SP4 Jane Idone Auto von 222-2224

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Jane Idone

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MATERIEL READINESS COMMAND  
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TEAR ALONG PERFORATED LINE



# THE METRIC SYSTEM AND EQUIVALENTS

## LINEAR MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches  
 1 Meter = 100 Centimeters = 1,000 Millimeters = 39.37 Inches  
 1 Kilo Meter = 1,000 Meters = 0.621 Miles

## WEIGHTS

1 Gram = 0.001 Kilograms = 1,000 Milligrams = 0.035 Ounces  
 1 Kilogram = 1,000 Grams = 2.2 Lb  
 1 Metric Ton = 1,000 Kilograms = 1 Megagram = 1.1 Short Tons

## LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces  
 1 Liter = 1,000 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 = 1,000 Cu Millimeters = 0.06 Cu Inches  
 1 Cu Meter = 1,000,000 Cu Centimeters = 35.31 Cu Feet

## TEMPERATURE

$5/9 (^{\circ}\text{F} - 32) = ^{\circ}\text{C}$   
 212° Fahrenheit is equivalent to 100° Celsius  
 90° Fahrenheit is equivalent to 32.2° Celsius  
 32° Fahrenheit is equivalent to 0° Celsius  
 $9/5 (^{\circ}\text{C} + 32) = ^{\circ}\text{F}$

## APPROXIMATE CONVERSION FACTORS

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 Per Square 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
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Millimeters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds Per Square Inch	0.145
Kilometers Per Liter	Miles Per Gallon	2.354
Kilometers Per Hour	Miles Per Hour	0.621

