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9-2320-282-10

TM 9-2320-282-10 TO 36A12-1C-461-1

(1-50)

TECHNICAL MANUAL

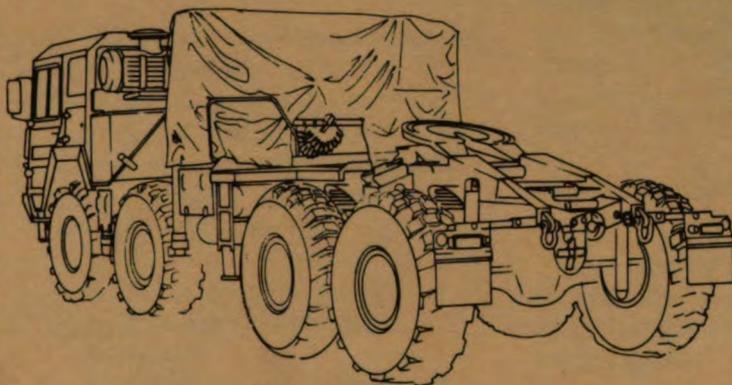


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OPERATOR'S MANUAL

TRUCK, TRACTOR W/CRANE: 10 TON, 8 x 8, M1001
(NSN 2320-12-191-5422)

TRUCK, WRECKER W/CRANE: 10 TON, 8 x 8, M1002
(NSN 2320-12-191-5423)

TRUCK, TRACTOR W/CRANE: 10 TON, 8 x 8, M1013
(NSN 2320-12-191-5424)

TRUCK, TRACTOR W/O CRANE: 10 TON, 8 x 8, M1014
(NSN 2320-12-191-5425)

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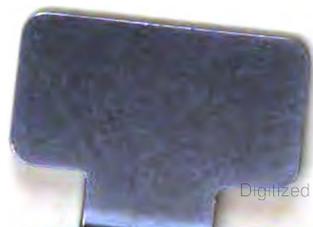


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DEPARTMENTS OF THE ARMY AND THE AIR FORCE



MARCH 1983



WARNINGS

EXHAUST GASES CAN BE DEADLY

Exhaust gases can produce symptoms of headache, dizziness, loss of muscular control, or coma. Permanent brain damage or death can result from severe exposure. You can insure your safety by following these rules:

- DON'T operate the engine or accessory heater in an enclosed area unless it is properly ventilated.
- DON'T drive with any of your truck's inspection plates, or cover plates off unless necessary for maintenance.

If you notice exhaust odors or exposure symptoms, **IMMEDIATELY VENTILATE** the cab. If the symptoms persist, remove the affected personnel and treat them.

- Expose them to fresh air.
- Keep them warm.
- **DON'T PERMIT PHYSICAL EXERCISE.**
- If necessary, give artificial respiration.
- Get medical help.

For artificial respiration refer to FM 21-11.

BATTERIES

Do not smoke or have an open flame nearby when checking batteries. Batteries emit gases which are very explosive. Injury to personnel may result.

REMOVING SURGE TANK CAP

Do not remove surge tank cap if temperature gage reads above 160°F (71°C). Serious burns from hot engine coolant may result.

LOOSE OR FRAYED CABLES

Always wear heavy gloves when you handle winch cables. Never let cable run through your hands; frayed cables can cut you.

USING DRY CLEANING SOLVENT

Dry cleaning solvent, used to clean parts, is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 138°F (58.9°C).

SEAT BELTS

Use of seat belts while operating your vehicle is mandatory as an aid in preventing personal injury in the event of an accident.

WARNINGS - cont

DIESEL FUEL HANDLING

When filling the fuel tanks with diesel fuel, be sure the hose nozzle or container contacts the filler tube on the fuel tank to carry off static electricity. **DO NOT SMOKE OR PERMIT ANY OPEN FLAME IN THE AREA OF THE TRUCK WHILE YOU ARE SERVICING THE DIESEL FUEL SYSTEM.** Failure to follow this warning can result in injury to personnel.

BACKING VEHICLE

Make certain area to side and rear of vehicle is clear of personnel and objects before attempting to back vehicle as serious injury to personnel may result.

PARKING/MOVING OFF BRAKE

Never use the parking/moving off brake for normal braking. Use service brakes only. Injury to personnel may result.

LOWERING VEHICLE

All personnel must stand clear of vehicle during vehicle lowering operation or serious injury to personnel may result.

RECOVERY BOOM

Do not remove boom extension pin when boom is below the fully raised position. Boom extension can slide out. Injury to personnel may result.

FLOODLIGHTS

Do not operate floodlights while vehicle is being driven on roadways. Floodlights are very bright and may temporarily blind other drivers.

WINCHING

Clear all personnel from vehicle and from the path of cable at a distance equal to the length of the cable. Do not release denture clutch with winch under load. Injury to personnel may result.

CONNECTING TO SEMITRAILER

Do not check alignment of kingpin from under semitrailer. Semitrailer may slip and cause injury to personnel.

PARKING VEHICLE ON INCLINE

When vehicle faces down hill, put transmission in first gear. When vehicle faces up hill put transmission in reverse gear. Vehicle may roll and injury to personnel may result.

JACKING AXLES

Make sure jack is on firm, flat ground. Jack must contact shock absorber mount on axle between control arm mountings. Jack may slip. Injury to personnel may result.

TIRE IRONS

Tire irons must be put through wheel stud holes with hooks facing down. Injury to personnel can result.

WARNINGS - cont

TRACTOR PARKING BRAKE

Clear personnel and equipment from the immediate area when testing tractor parking brake. Injury to personnel may result.

TOW STARTING

Clear personnel before you move vehicles. Chain or cable may break. Personnel injury may result.

RAISED CAB

Check that personnel are not standing immediately in front of vehicle or inside cab before raising cab.

TOWING VEHICLE

Vehicle can not be towed more than 2 miles when towing from rear at more than a speed of 10 mph. Safety chains can not be used and if tow bar disconnects an accident could result. Injury to personnel may result.

CRANE OPERATION

Crane operation can be complex and extremely dangerous. To insure your safety while operating the crane use the following guidelines:

- Familiarize yourself with the crane controls (both manual and remote), before attempting to operate the crane.
- Shut off remote control unit before approaching crane hook.
- Direct all personnel to stand clear of crane, load and crane controls.

- Do not operate crane close to overhead high tension electrical wires.
- If crane overload (safe workload exceeded) lamp comes on stop operating crane immediately. Lower crane or reduce load.

CRANE LOAD LIMITS

Operator must know load limits. Overloading crane can cause injury to personnel.

BACKING VEHICLE

Make certain area to side and rear of vehicle is clear of personnel and objects before attempting to back vehicle, as serious injury to personnel and damage to vehicle may result. USE GROUND GUIDE.

TECHNICAL MANUAL
NO. 9-2320-282-10
TECHNICAL ORDER
NO. 36A12-1C-461-1

DEPARTMENTS OF THE ARMY
AND THE AIR FORCE
Washington, DC, 4 March 1983

OPERATOR'S MANUAL
TRUCK, TRACTOR W/CRANE: 10 TON, 8 x 8, M1001
(NSN 2320-12-191-5422)
TRUCK, WRECKER W/CRANE: 10 TON, 8 x 8, M1002
(NSN 2320-12-191-5423)
TRUCK, TRACTOR W/CRANE: 10 TON, 8 x 8, M1013
(NSN 2320-12-191-5424)
TRUCK, TRACTOR W/O CRANE: 10 TON, 8x8, M1014
(NSN 2320-12-191-5425)

REPORTING OF ERRORS

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

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HOW TO USE THIS MANUAL

This manual is designed to help you operate and maintain the M1001, M1002, M1013 and M1014 vehicles and accessory equipment. Listed below are special features which will help you locate the information you need:

- Front cover table of contents for quick reference to chapters and sections.
- An index in the final pages of this manual helps you find specific items of information.

All measurements in this manual are given in both English and Metric units.

- A Metric to English conversion chart is also provided on the inside back cover of this manual.

A dot (•) tells you that the information is directly related to the paragraph or step it follows.

Example:

Check engine crank case oil level.

- Proper oil level is between the add and full mark.

Read all preliminary information found at the beginning of each task. It has important information and safety instructions you must follow before beginning the task. After completing a task, always perform the Follow-On Maintenance at the end of the task.

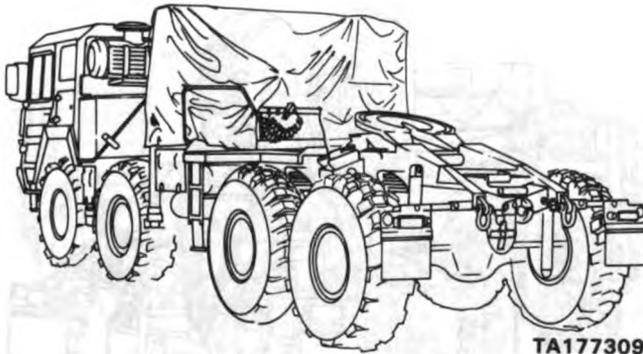
Warning pages are located in the front of this manual. You should learn the warnings before operating or doing maintenance on the vehicle. Important warnings and cautions are also located on other pages in the manual. They appear before or after a step that may result in personnel injury, or damage to equipment. If the instructions are not followed, or care is not taken, you may injure yourself. Notes are located before or after a step to make the step or steps easier. Always read all cautions, warnings, and notes before performing the steps.

A troubleshooting index is located in the rear of this manual. The troubleshooting index lists the common vehicle malfunctions you may find. Do all tests, inspections and corrective actions in the same order they appear in the troubleshooting table. Report any malfunctions you can not correct to organizational maintenance.



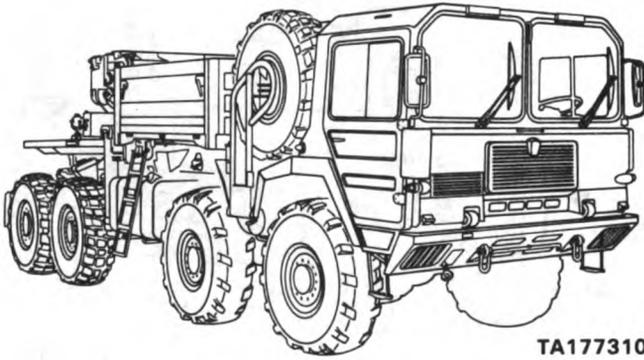
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M1001, RIGHT FRONT VIEW



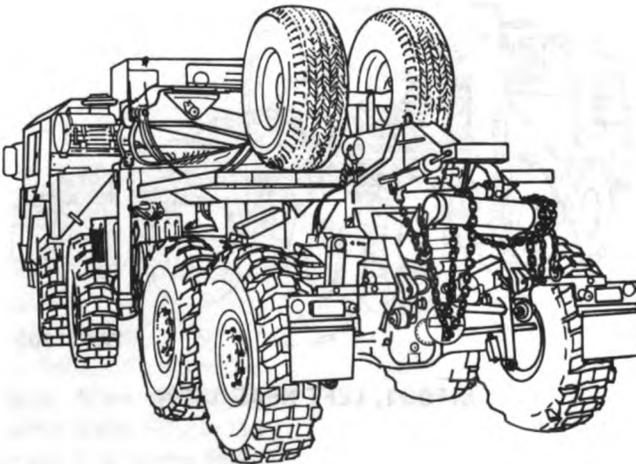
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M1001, LEFT REAR VIEW



TA177310

M1002, RIGHT FRONT VIEW



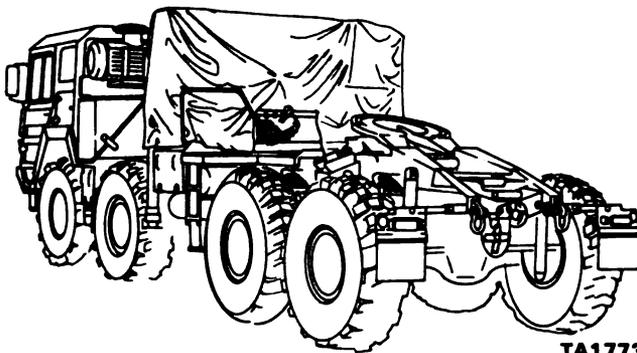
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M1002, LEFT REAR VIEW



TA177312

M1013, RIGHT FRONT VIEW



TA177313

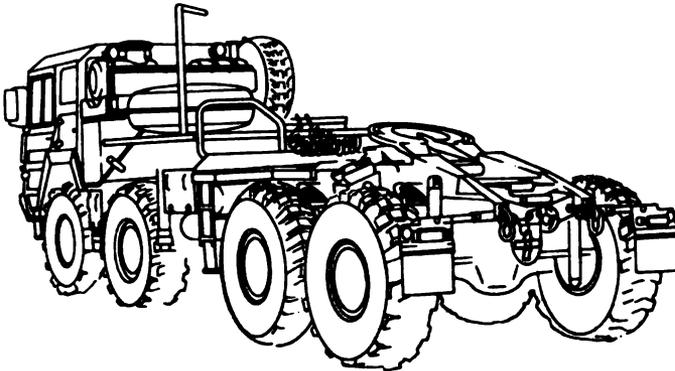
M1013, LEFT REAR VIEW

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TA177314

M1014, RIGHT FRONT VIEW



TA177315

M1014, LEFT REAR VIEW

CHAPTER 1 INTRODUCTION

Section I. GENERAL INFORMATION

1-1. SCOPE.

The operator's manual has instructions for operation and maintenance of the following:

- Truck, Tractor W/Crane:
10 Ton, 8 x 8, M1001
(NSN 2320-12-191-5422)
- Truck, Wrecker W/Crane:
10 Ton, 8 x 8, M1002
(NSN 2320-12-191-5423)
- Truck, Tractor W/Crane:
10 Ton, 8 x 8, M1013
(NSN 2320-12-191-5424)
- Truck, Tractor W/O Crane:
10 Ton, 8 x 8, M1014
(NSN 2320-12-191-5425)

Your manual takes a positive approach. Do the procedures in the same order as in the manual.

1-2. MAINTENANCE FORMS AND RECORDS.

TM 38-750 tells you what forms to complete and how to complete maintenance forms and records.

1-3. HAND RECEIPT (-HR) MANUALS.

This manual has a companion document with a TM number followed by "-HR" (which stands for Hand Receipt).

The TM 9-2320-282-10-HR/TO 36A12-1C-461-2 consists of preprinted hand receipts (DA Form 2062) that list end item related equipment (i.e., COEI, BII, and AAL) for which you must account. As an aid to property accountability, additional -HR manuals may be requisitioned from the following:

Commander
US Army Publications Center
2800 Eastern Boulevard
Baltimore, MD 21220

1-4. METRIC SYSTEM.

Equipment and system is metric. Metric tools are required for equipment maintenance. Metric to English conversion tables are on the inside back cover.

**TM 9-2320-282-10
TO 36A12-1C-461-1**

**1-5. EQUIPMENT IMPROVE-
MENT RECOMMENDA-
TIONS (EIR).**

Anybody may submit an EIR. Use SF 368. Refer to TM 38-750 for preparing SF Form 368. Submit EIRs or any inquiries to the following address:

**M.A.N
Commercial Vehicle Division
ATTN: Service Export (SX)
Dachauerstrasse 667
8000 Munich 50 FRG**

Send information copy to:
Commander
US Army Tank-Automotive
Command
ATTN: DRSTA-MB Warren, MI
48090

You will receive an answer to your EIR.

**1-6. NOMENCLATURE CROSS
REFERENCE.**

All nomenclatures are standard U.S. Army.

**1-7. DESTRUCTION TO PRE-
VENT ENEMY USE.**

- Refer to FM 5-25.

Section II . EQUIPMENT DESCRIPTION AND PERFORMANCE DATA

1-8. GENERAL.

The 10 Ton, 8x8, M1001, M1002, M1013 and M1014 trucks are tactical vehicles. You can use the vehicles over highways and cross country. They can ford a depth of 47 inches. The eight speed transmission has a torque converter and transfer. The vehicles have eight wheel drive. The front two axles are steer axles. All models have a tilt cab.

1-9. DESCRIPTION AND LOCATION OF MAJOR COMPONENTS.

1-9a. DESCRIPTION OF MAJOR COMPONENTS AND SYSTEMS.

- (1) **Engine:**
V-10 Diesel engine.
Model D 2840.
- (2) **Fuel system:**
Engine is fuel injected.
- (3) **Exhaust system:**
Engine has dual exhaust.
- (4) **Cooling system:**
Engine is liquid cooled.
- (5) **Electrical system:**
Vehicle has a 24 volt system.
- (6) **Clutch:**
ZF 400 torque converter with clutch. Air over hydraulic.
- (7) **Transmission:**
Transmission is ZF 4S-150 GP, 4 speed type.
- (8) **Transfer:**
Transfer is a ZF 150 GPA type.
- (9) **Axes:**
All axles are drive axles.
Front axles:
Both front and front intermediate axles are steer axles.
Front axle is a final drive axle.
Front intermediate axle is a through drive axle.
Rear axles:
Rear intermediate axle is a through drive axle.
Rear axle is a final drive axle.
- (10) **Brakes:**
Rear brakes are air. Front brakes are air over hydraulic.
- (11) **Steering:**
Steering is recirculatory ball type. Steering is power assisted.
- (12) **Frame:**
Frame is torsion free with a welded box frame.
- (13) **Suspension:**
Coil springs at each wheel.
Telescopic adjustable shock absorbers at each wheel.
- (14) **Air filter:**
Dry type with two filters.
- (15) **Cab:**
Cab is tilt type with hydraulic lift.
- (16) **Spare tire carrier:**
Spare tire carrier is hydraulically operated.

(17) Material handling crane, 8 ton (M1001 and M1002):

Hydraulically operated with a 164 ft.(50 m) cable and a 16,000 lb.(7,257.6 kg) limit.

(18) Material handling crane, 2 ton (M1013 only):

Hydraulically operated with a 52 ft. (16 m) cable and a 4,277 lb. (1,940 kg) limit.

(19) Self recovery winch:

Hydraulically operated. 20,000 lb. (9,072 kg) limit. 148 ft. (45 m) cable and 115 ft. (35 m) extension cable.

(20) Main recovery winch:

Hydraulically operated. 45,000 lb. (20,412 kg) limit. 164 ft. (50 m) cable.

(21) Recovery unit:

Hydraulically operated. 25,000 lb. (11,340 kg) limit.

(22) Spare tire carrier for trailer:
M1014 tractor only.

(23) Fifth wheel:

M1001, 1013 and 1014 tractor models only.

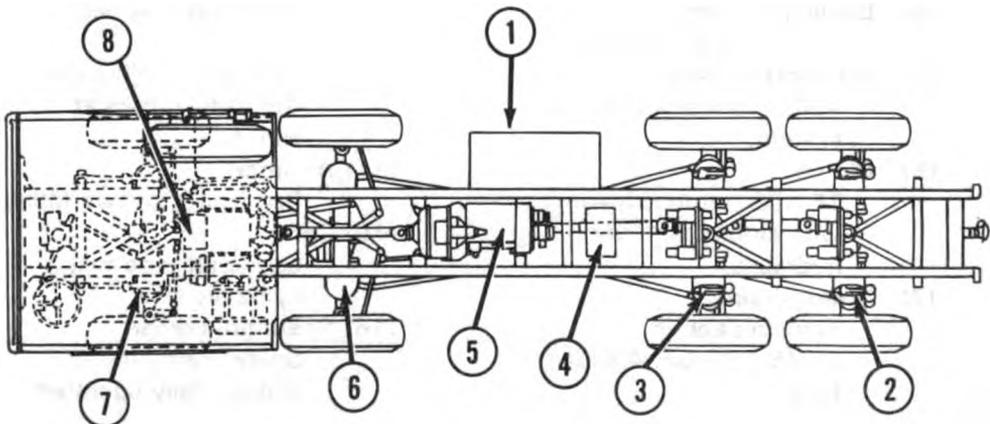
(24) 30 kw generator:
M1001 only .

(25) Cargo box:

M1002 only. Maximum payload 2 metric tons (2,000 kg).

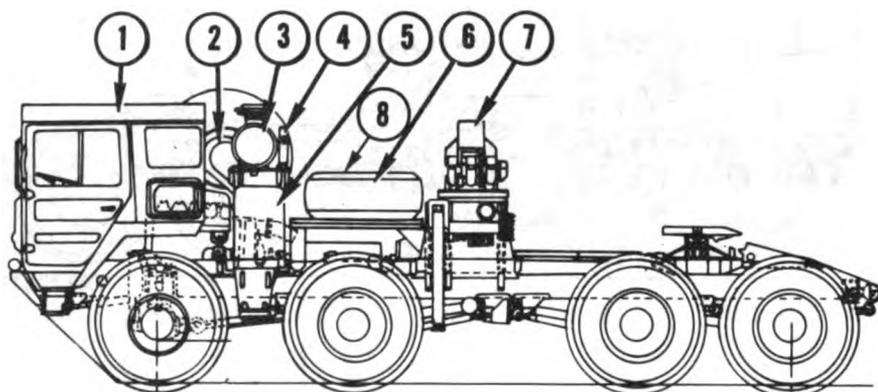
1-9b. LOCATION OF MAJOR COMPONENTS.

- (1) Fuel tank
- (2) Rear axle
- (3) Rear intermediate axle
- (4) Self recovery winch
- (5) Transmission
- (6) Front intermediate axle
- (7) Front axle
- (8) Engine



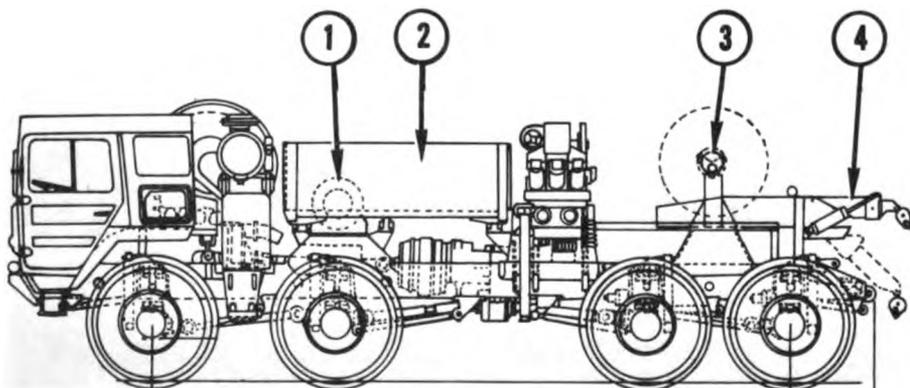
TA177316

- (1) Cab
- (2) Spare tire carrier
- (3) Air cleaner
- (4) Surge tank
- (5) Batteries
- (6) Spare tire carrier M1014
- (7) Material handling crane, 2 ton (M1013 only)
- (8) Camouflage storage box



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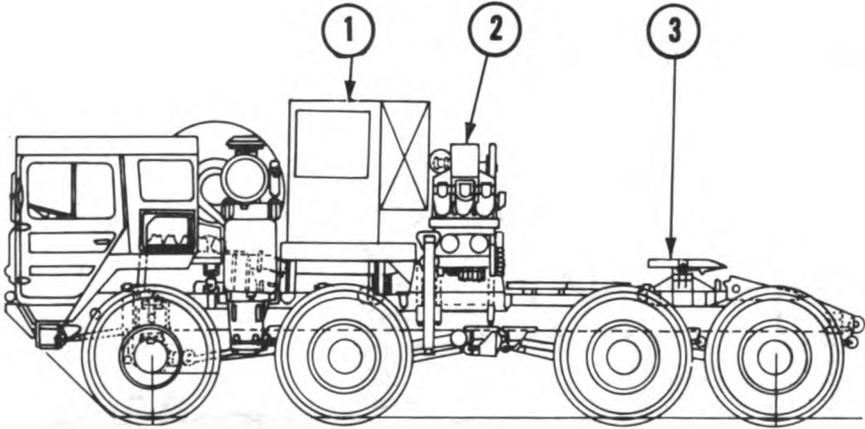
- (1) Main recovery winch (M1002 wrecker)
- (2) Large storage box (M1002 wrecker)
- (3) Spare tire carrier (M1001 trailer only)
- (4) Recovery unit (M1002 wrecker)



TA177318

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- (1) 30 kw generator (M1001)
- (2) Material handling crane, 8 ton (M1001 and M1002 only)
- (3) Fifth wheel, all models except M1002



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1-10. SPECIFICATIONS AND PERFORMANCE DATA.

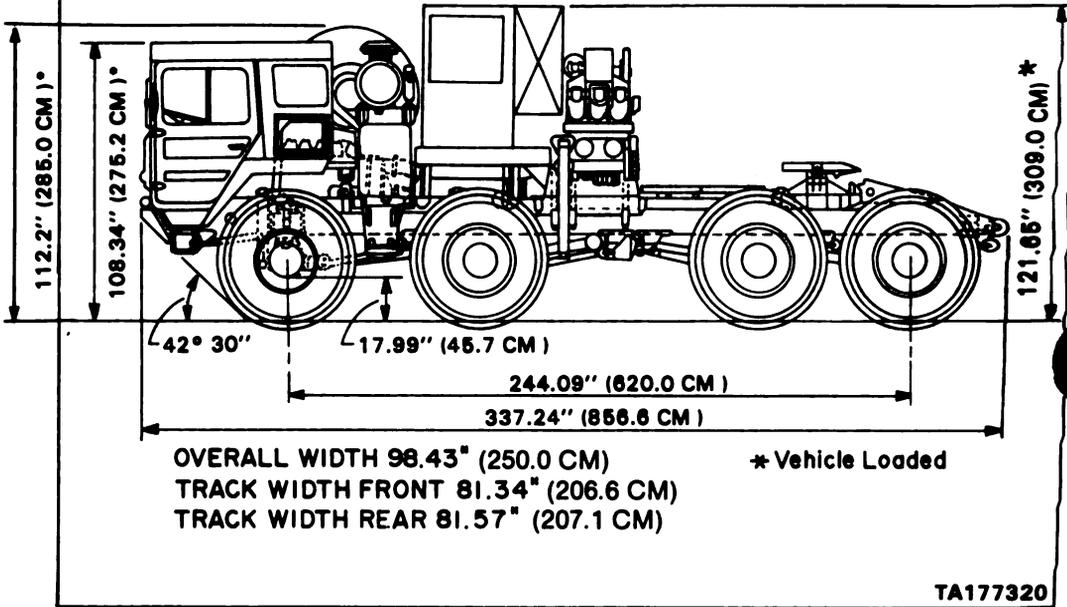
- Weight: See Table 1-1
- Dimensions: See Table 1-2
- Permissible fuel: See Table 1-3
- Maximum road speed: See Table 1-4
- Engine and radiator data: See Table 1-5

TABLE 1-1. WEIGHTS (LBS AND KG)

MODEL	VEHICLE WEIGHT	MAXIMUM PAYLOAD HIGHWAY AND CROSS COUNTRY	MAXIMUM TOWED LOAD HIGHWAY AND CROSS COUNTRY
M1001	37,880 lbs	11,085 lbs (5,027 Kg)	85,000 lbs
M1002	41,260 lbs	—	85,000 lbs
M1013	33,940 lbs	16,802 lbs (7,620 Kg)	85,000 lbs
M1014	29,440 lbs	16,802 lbs (7,620 Kg)	85,000 lbs

TABLE 1-2. DIMENSIONS

MODEL	LENGTH OVERALL	HEIGHT OVERALL	AIR TRANSPORT HEIGHT	WIDTH OVERALL	GROUND CLEARANCE
M1001 PERSHING II	337.24 IN 856.6 CM	112.2 IN 285 CM	105 IN 265.6 CM	98.43 IN 250 CM	17.99 IN 45.7 CM

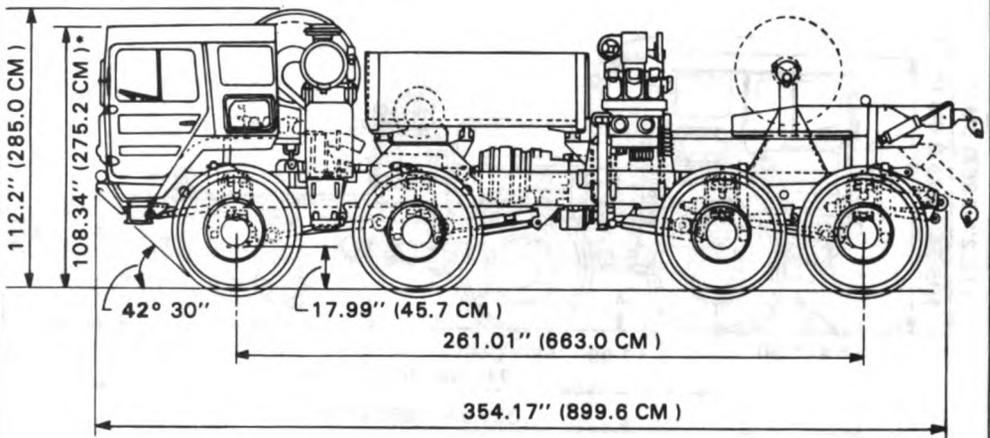


NOTE

Vehicle height overall with 30 kw generator mounted is 121.65 in (309 cm).

TABLE 1-2. DIMENSIONS (continued)

MODEL	LENGTH OVERALL	HEIGHT OVERALL	AIR TRANSPORT HEIGHT	WIDTH OVERALL	GROUND CLEARANCE
M1002 RECOVERY VEHICLE	354.17 IN 899.6 CM	112.2 IN 285 CM	105 IN 265.4 CM	98.43 IN 250 CM	17.99 IN 45.7 CM



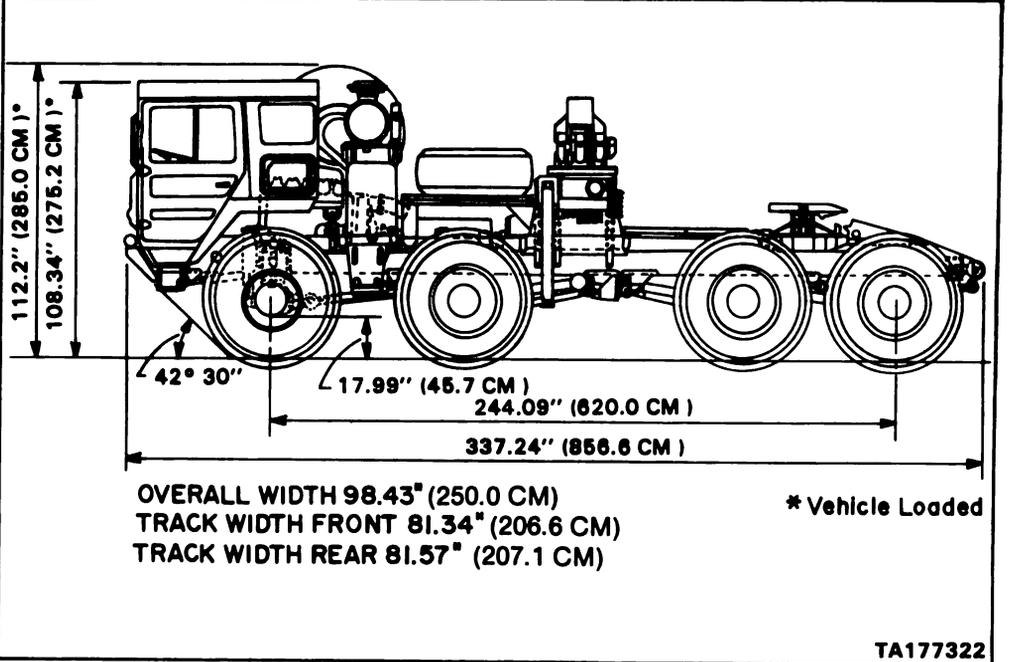
OVERALL WIDTH 98.43" (250.0 CM)
TRACK WIDTH FRONT 81.34" (206.6 CM)
TRACK WIDTH REAR 81.57" (207.1 CM)

* Vehicle Loaded

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TABLE 1-2. DIMENSIONS (continued)

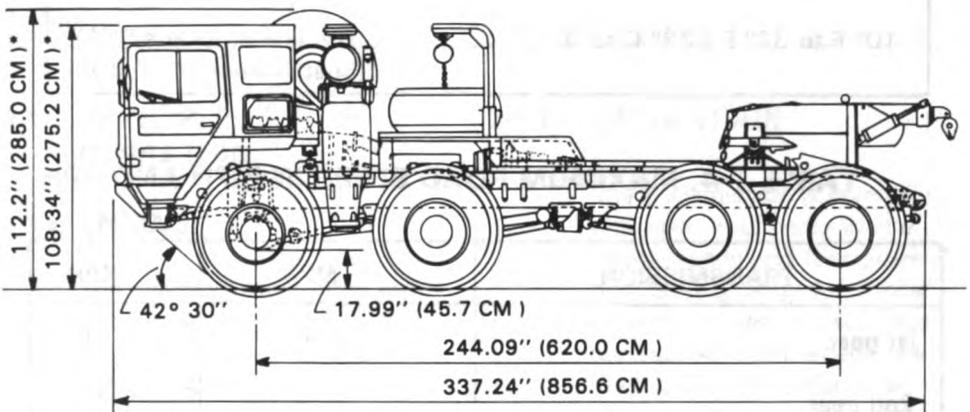
MODEL	LENGTH OVERALL	HEIGHT OVERALL	AIR TRANSPORT HEIGHT	WIDTH OVERALL	GROUND CLEARANCE
M1013 GLCM WITH MATERIAL HANDLING CRANE	337.24 IN 856.6 CM	112.2 IN 285 CM	105 IN 265.4 CM	98.43 IN 250 CM	17.99 IN 45.7 CM



TA177322

TABLE 1-2. DIMENSIONS (continued)

MODEL	LENGTH OVERALL	HEIGHT OVERALL	AIR TRANSPORT HEIGHT	WIDTH OVERALL	GROUND CLEARANCE
M1014 GLCM WITHOUT MATERIAL HANDLING CRANE	337.24 IN 856.6 CM	112.2 IN 285 CM	105 IN 265.4 CM	98.43 IN 250 CM	17.99 IN 45.7 CM



OVERALL WIDTH 98.43" (250.0 CM)
TRACK WIDTH FRONT 81.34" (206.6 CM)
TRACK WIDTH REAR 81.57" (207.1 CM)

* Vehicle Loaded

TA177323

MODEL	WHEEL BASE		ANGLE (DEGREES) OF APPROACH	TURNING RADIUS
	1st to 4th Axle	2nd to 3rd Axle		
M1001 M1013 M1014	244.09 IN 620 CM	109 IN 277 CM	42°	75.5 FT (23 M)
M1002	261.01 IN 633 CM	126 IN 320 CM	42°	80 FT (24.5 M)

TABLE 1-3. FUELS

TEMPERATURE LIMITS	FUEL
All temperature ranges	Diesel fuel (Grade DFA) (Specification VV-F-800)
Above 32° F (0° C)	Diesel fuel (Grade DF2) (Specification VV-F-800)
-10° F to 32° F (-23° C to 0° C)	Diesel fuel (Grade DF1) (Specification VV-F-800)

TABLE 1-4. MAXIMUM ROAD SPEED IN MPH AND KPH

TRANSMISSION	MPH	KPH
1st gear	6	10
2nd gear	9	14
3rd gear	12	20
4th gear	17	27
5th gear	22	35
6th gear	30	49
7th gear	42	68
8th gear	55	92
Reverse gear	5	8

TABLE 1-5. ENGINE AND RADIATOR DATA

	SPECIFICATION
Cylinders (V)	10
Brake horsepower (bhp)	401 bhp (gross at 2300 RPM)
Ignition system	Compression
Firing order	1-6-5-10-2-7-3-8-4-9
Cooling	Liquid

1-11. PRINCIPLES OF OPERATION.

1-11a. ENGINE.

The cylinders operate on the compression ignition principle. Incoming fuel and air are compressed to a ratio of 17:1 before firing. Glow plugs on the engine air intake manifolds heat cold air for more efficient combustion while starting in cold weather. The engine is liquid cooled. An accessory heater warms the engine coolant in very cold weather. When artic kit is added, engine oil and batteries are also warmed.

1-11b. DRIVE TRAIN.

The transmission is manually operated. Four gears in low driving range and four gears in high driving range for a total of eight forward speeds plus reverse. All eight wheels are driving wheels. Differential locks can be used to make sure that all axles and wheels are pulling together in rough terrain.

1-11c. BRAKES.

The four rear wheels have air brakes. The two front axles steer and have air hydraulic brakes. Tractor models also have a trailer hand brake. The vehicle also has an engine brake which, when used, will slow the vehicle on downhill grades. The vehicle is also equipped with a parking/moving off brake, which can be used to hold the vehicle in place on a grade or used for parking.

1-11d. FORDING.

The vehicle can ford up to 47 in. (120 cm.) of water with proper preparation.

1-11e. LOADING CRANE.

The M1001 tractor and the M1002 wrecker each have an eight ton loading crane. The M1013 has a two ton loading crane. The M1014 has no loading crane.

1-11f. HYDRAULICS.

The vehicle has four separate hydraulic systems:

- A central hydraulic tank holds fluid for the cranes, winches and shock absorbers.
- Power steering
- Front axles and brake
- Cab; tilting/lowering, spare tire lifting/lowering

The shock absorbers can be adjusted to lower the trucks for air transport. The loading cranes and winches can be operated with remote controls.

1-11g. RECOVERY.

All vehicles have a self-recovery winch. The M1002 wrecker also has a recovery winch and recovery unit. The M1001, M1013 and M1014 can be equipped with a 5th wheel recovery kit to convert the tractor models to a wrecker.

1-11h. ELECTRICAL SYSTEM.

The electrical system is protected by resettable circuit breakers.

CHAPTER 2

OPERATING INSTRUCTIONS

Section I. DESCRIPTION AND USE OF OPERATORS CONTROLS AND INDICATORS

This section shows the location and describes the function and use of controls and indicators you will use in operating your vehicle.

2-1. KNOW YOUR CONTROLS AND INDICATORS.

You the operator must know the location and function of every control and indicator before operating your vehicle and its equipment.

Illustrations and paragraphs are provided for the following items:

- Paragraph 2-2. — Chassis controls and indicators.
- Paragraph 2-3. — Body equipment controls and indicators.

2-2. CHASSIS CONTROLS AND INDICATORS.

2-2a. INSTRUMENT CLUSTER.

(1) Temperature gage — shows engine coolant temperature

(2) Oil temperature gage — shows temperature of transmission oil

(3) Ammeter gage — shows rate of charge of the batteries

(4) Air pressure gage — shows air pressure in air system

(5) Central indicator panel — houses indicator lights

(6) Oil pressure gage — shows engine oil pressure

(7) Fuel gage — shows fuel level in fuel tank

(8) Panel light dimmer switch — used to dim panel lights

(9) Speedometer — shows vehicle speed

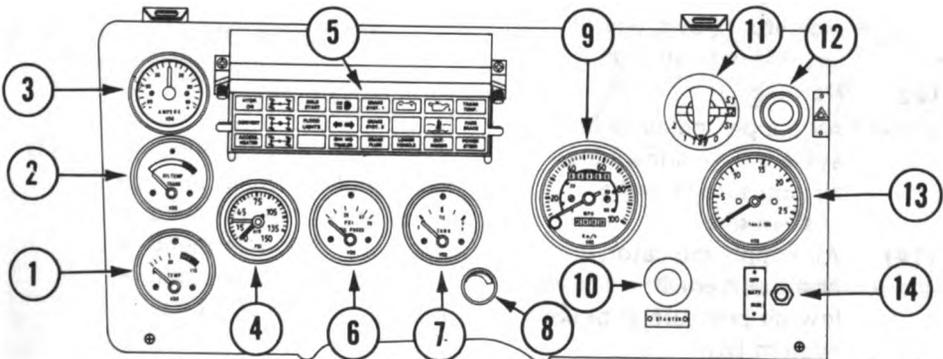
(10) Starter switch — used to start vehicle engine

(11) Light switch — operates all vehicle driving lights

(12) Hazard light switch — operates hazard lights

(13) Tachometer — shows engine RPM

(14) Master switch — turns on electrical system

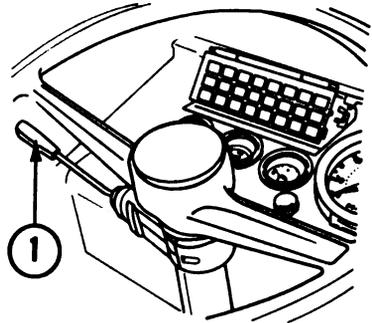
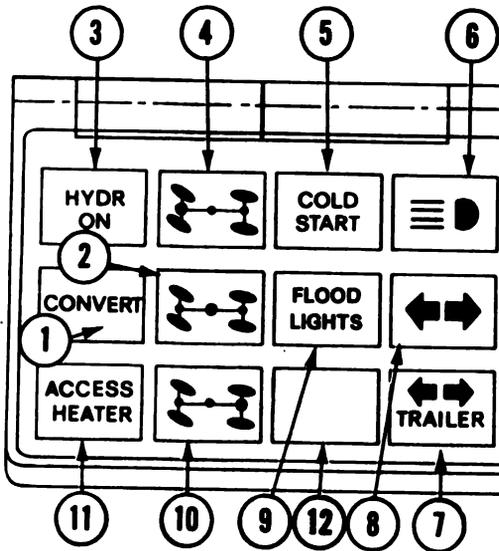


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**2-2b. CENTRAL INDICATOR
PANEL.**

- (1) Converter lockup indicator shows converter lockup clutch is open
- (2) Transfer lock indicator — shows transfer in locked position
- (3) Hydr. On — shows hydraulic pump on
- (4) Front differential lock indicator — shows front differential in locked position
- (5) Cold start indicator — shows engine manifold preheating
- (6) High beam indicator — shows headlight high beams are on
- (7) Trailer turn signal indicator — shows trailer signal lights operating
- (8) Vehicle turn signal indicator — shows vehicle signal lights operating
- (9) Floodlights indicator — shows M1002 wrecker floodlights operating
- (10) Rear differential lock indicator — shows rear differentials in locked position
- (11) Accessory heater indicator shows use of accessory heater kit
- (12) Not used
- (13) Air supply indicator brake system 1 — shows low air pressure in brake system one
- (14) Air supply indicator, brake system 2 — shows low air pressure in brake system two

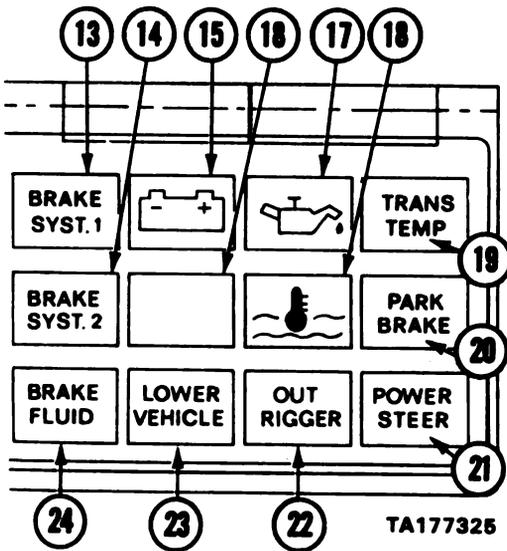
- (15) Battery indicator — indicates battery discharge
- (16) Not used
- (17) Engine oil pressure indicator — shows low engine oil pressure
- (18) Engine coolant temperature — shows high engine temperature
- (19) Transmission oil temperature indicator — shows high transmission oil temperature
- (20) Parking brake indicator — shows parking brake applied
- (21) Power steering indicator — shows low power steering pressure
- (22) Outrigger indicator — shows outrigger(s) not in travel position
- (23) Lower vehicle indicator — shows vehicle being lowered to tie down position
- (24) Brake fluid indicator — shows low brake fluid level in brake reservoirs



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2-2d. CIRCUIT BREAKERS AND LOWER VEHICLE SWITCH.

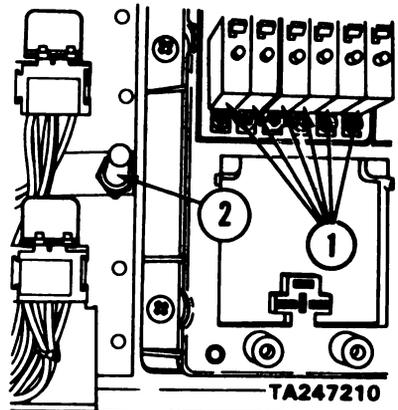
- (1) Circuit breakers — used to protect the electrical system from electrical overload.
- (2) Lower vehicle switch — switch activates the hydraulic shock absorbers to lower the vehicle.



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2-2c. STEERING COLUMN SWITCH.

- (1) Steering column switch — has the following functions:
 - operates turn signals
 - operates horns
 - operates high and low headlight beams

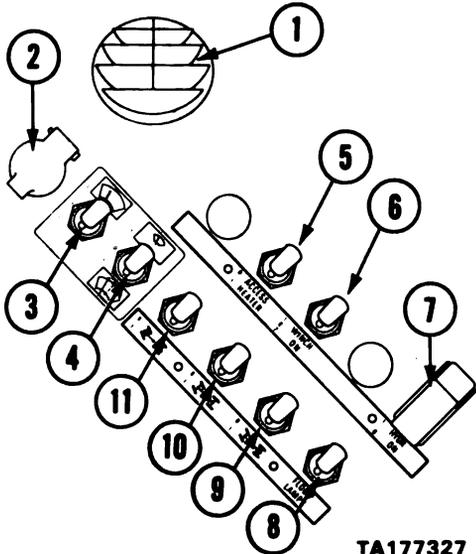


NOTE

Circuit breaker panel is located behind driver seat.

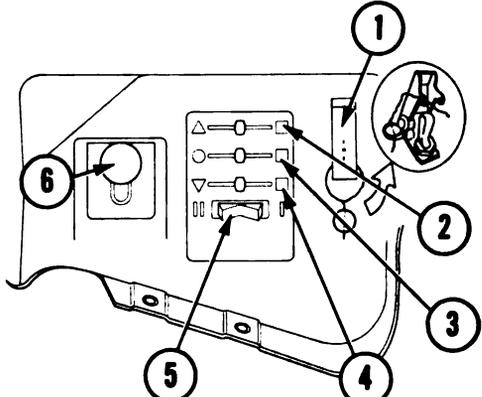
2-2e. CENTRAL SWITCH PANEL.

- (1) Defroster deflector — directs air onto windshield
- (2) Light socket — 24 volt receptacle
- (3) Windshield wiper switch — operates wiper motor
- (4) Windshield washer switch — operates washer and delay
- (5) Accessory heater switch — turns on accessory heater
- (6) Winch switch — turns on power for winch remote operations
- (7) Hydraulics on switch — turns on central hydraulics
- (8) Flood lamp switch (M1002 only) — turns on power to floodlights
- (9) Rear axles differential switch — engages rear axles differential locks.
- (10) Transfer switch — Engages transfer lock
- (11) Front axles differential switch — engages front axles differential locks

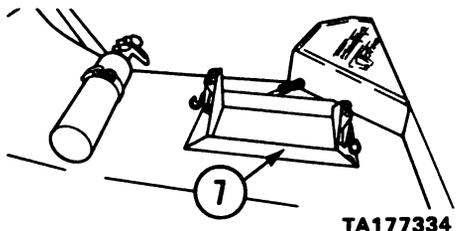


2-2f. CAB HEATER, EMERGENCY OFF, AND TRAILER BRAKE CONTROL PANEL.

- (1) Emergency switch — disconnects all vehicle electrical systems
- (2) Defroster control lever — directs air to defroster deflector
- (3) Heat temperature control — raises and lowers heat temperature
- (4) Heater control lever — directs air through personnel heater
- (5) Heater switch — turns on fans for heater
- (6) Trailer brake control lever — hand operates trailer brakes

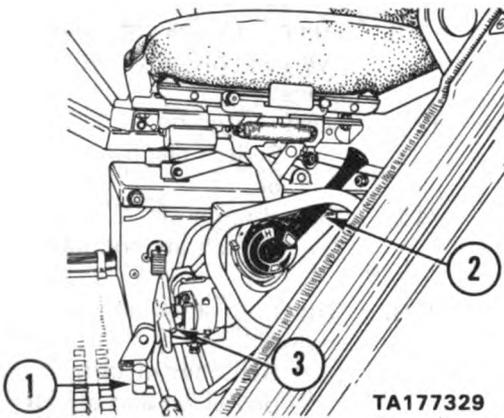


- (7) Telephone bracket (M1013 only) — bracket holds down cab telephone

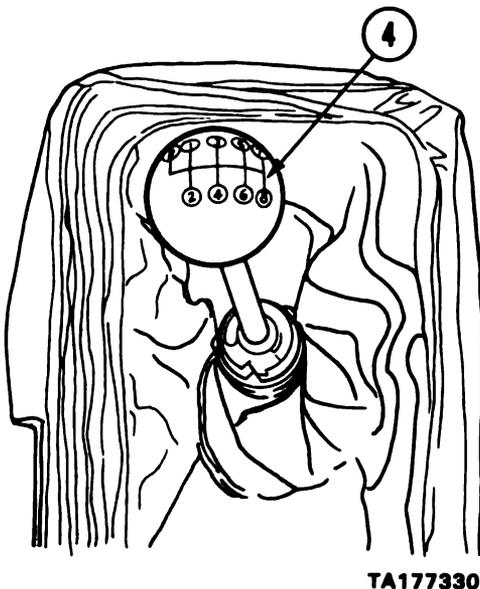


2-2g. OTHER CAB CONTROLS.

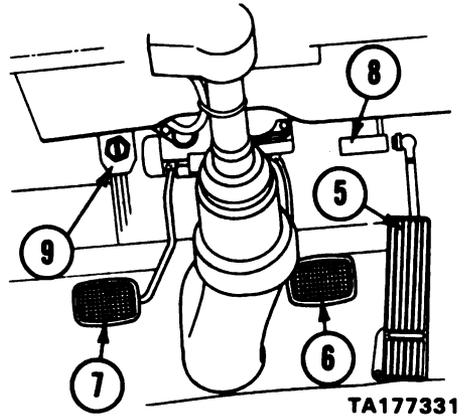
- (1) Engine brake switch — engages engine brake
- (2) Parking and moving off brake lever — controls parking and moving off brake
- (3) Trailer brake regulator valve — controls air pressure to trailer brakes



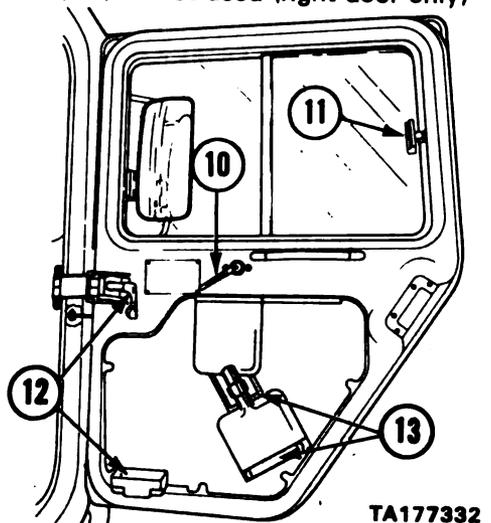
- (4) Gear shift lever — changes gears in transmission.



- (5) Accelerator pedal — controls engine speed
- (6) Brake pedal — engages service brakes
- (7) Clutch pedal — controls transmission clutch
- (8) Hand throttle — adjusts engine speed manually
- (9) Trailer brake test switch — tests parking brake

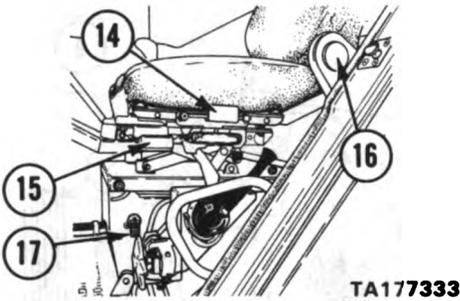


- (10) Door handle — controls door
- (11) Window handle — controls window
- (12) Rifle rack storage brackets — used to stow rifle (both doors)
- (13) Not used (right door only)



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- (14) Hand lever — permits forward or rear adjustment of driver's seat
- (15) Hand lever — permits seat cushion height adjustment
- (16) Hand lever — permits backrest adjustment and releases backrest to the forward position
- (17) Hand lever — permits air adjustment of seat

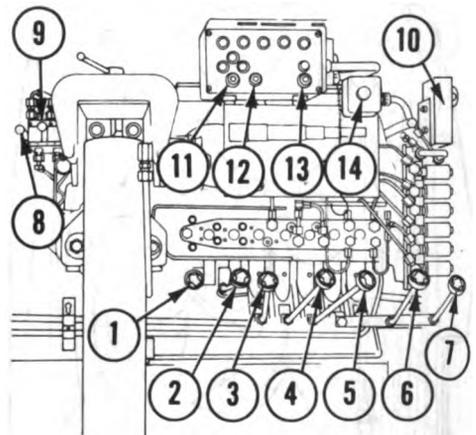


2-3. BODY EQUIPMENT CONTROLS AND INDICATORS.

2-3a. MATERIAL HANDLING CRANE MANUAL CONTROLS (EXCEPT M1014).

- (6) Lever operates lifting cylinders which raises and lowers boom.
- (7) Lever operates slewing cylinders which turns the crane assembly to the right and left.
- (8) Lever controls left outrigger control valve (M1001 and M1002 only).
- (9) Lever controls right outrigger control valve (M1001 and M1002 only).
- (10) Pump provides emergency hydraulic pressure for crane.
- (11) Main switch-on
 - Switch electric power on.
- (12) Main switch-off.
 - Switch electric power off.
- (13) Transit position on-off switch.
 - Switches electric power on and off for placing crane in operation or transit position.
- (14) Emergency stop switch — cuts off all electrical power to crane.

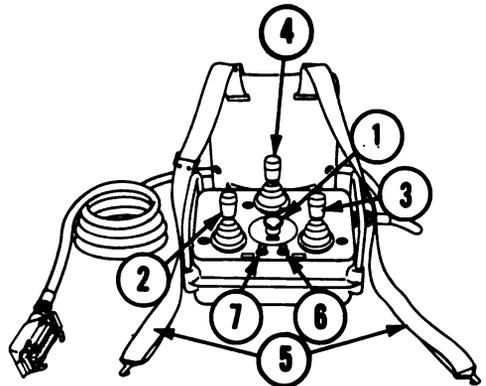
- (1) Lever operates left outrigger support cylinder and extension cylinder.
- (2) Lever operates right outrigger support cylinder and extension cylinder.
- (3) Lever operates holding cylinder which raises and lowers crane assembly.
- (4) Lever operates lifting winch which raises and lowers lifting hook.
- (5) Lever operates extension cylinders which pushes out and pulls in boom extensions.



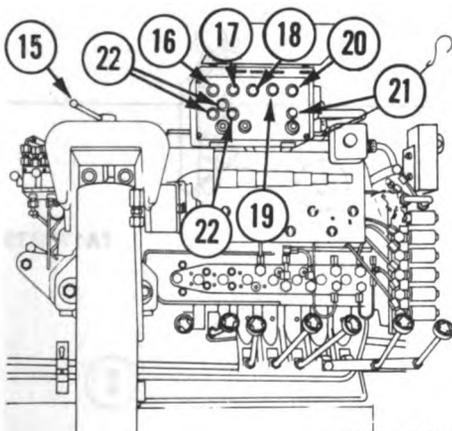
- (15) Handle unlocks/locks outrigger extension arms (M1001 and M1002 only).
- (16) Tilt angle indicator lamp.
 - Lit lamp shows vehicle sitting at angle of 5 degrees or more.
- (17) Pulley end stop indicator lamp (except M1013).
 - Lit lamp shows lifting hook too close to boom end pulley.
- (18) Winch overload indicator lamp.
 - Lit lamp shows overload of the lifting winch.
- (19) Safe work load exceeded indicator lamp.
 - Lit lamp shows overload on end of boom.
- (20) Transit Position.
 - Lit lamp indicates crane is ready for travel.
- (21) Transit position indicator.
 - Lit lamp indicates crane is in position for fold down.
- (22) Power fuse indicator lamp.
 - Lit lamp shows crane assembly electric power is on.

2-3b. MATERIAL HANDLING CRANE CONTROLS AT REMOTE CONTROL.

- (1) Emergency stop turns on remote control.
- (2) Lever operates lifting winch and slewing cylinders.
- (3) Lever operates extension cylinders and lifting cylinders.
- (4) Lever operates base column.
- (5) Body harness — use to strap remote control unit to operator.
- (6) Tilt angle indicator lamp.
- (7) Transit position indicator lamp.



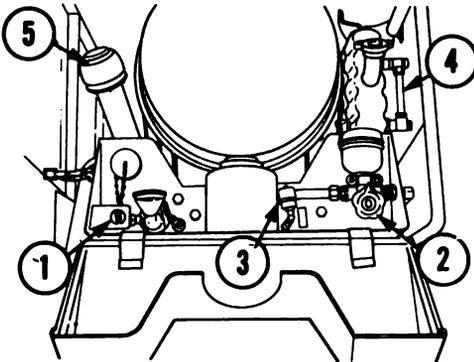
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2-3c. CENTRAL HYDRAULIC SYSTEM, ALCOHOL EVAPORATOR, AIR FILTER CONTAMINATION INDICATOR AND COOLING SYSTEM SIGHT GLASS.

- (1) Control knob — switches central hydraulic system from crane operation to winch operation.
- (2) Alcohol evaporator control dial — used to set proper alcohol flow rate for air brake system.
- (3) Air filter contamination indicator — indicates when air filter requires service.
- (4) Cooling system sight glass — indicates level of coolant in system.
- (5) Fill point for central hydraulic tank.

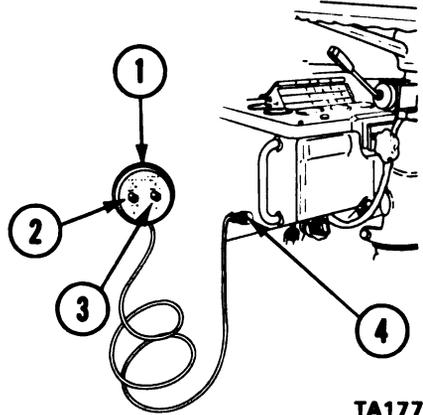


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2-3d. WINCH AND RECOVERY UNIT REMOTE CONTROLS.

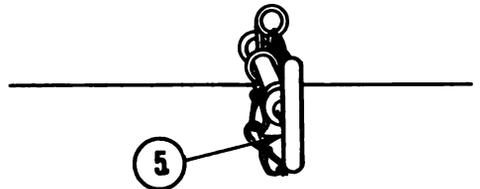
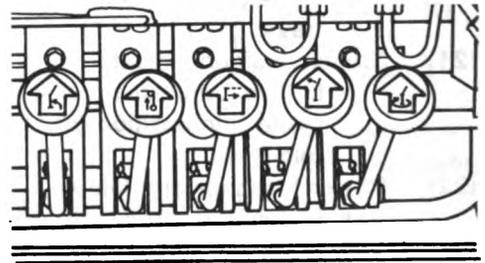
- (1) Remote control
- (2) Toggle switch — operates the wrecker and fifth wheel kit recovery cranes.

- (3) Toggle switch — operates the main recovery winch, and the self-recovery winch.
- (4) Remote control connection in cab.



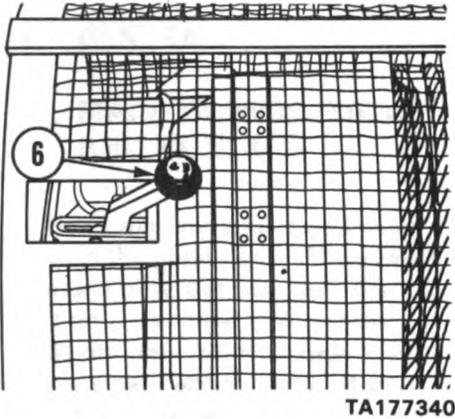
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- (5) Denture clutch lever — locks and unlocks self-recovery winch clutch.

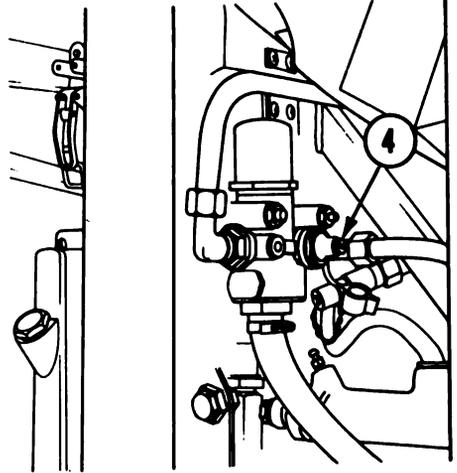


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- (6) Denture clutch lever — locks and unlocks main recovery winch clutch (M1002 only).

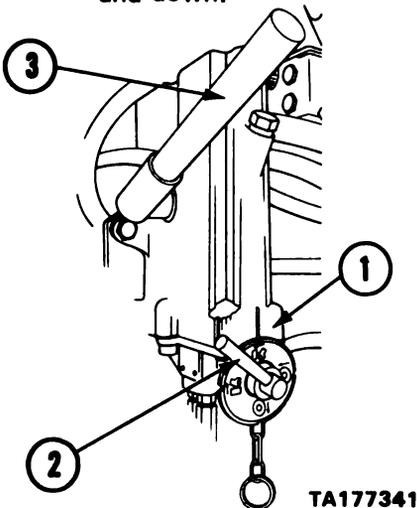


- (4) Pressure regulator air hose connector — use to air vehicle tires.



2-3e. CAB AND SPARE TIRE CONTROL VALVE AND AIR HOSE CONNECTION.

- (1) Tilt cab and spare wheel holder control valve.
- (2) Valve handle — switches valve to raise and lower cab and spare wheel.
- (3) Pump handle — use to pump spare tire and cab up and down.



Section II. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS).

2-4. GENERAL.

2-4a. MAINTENANCE FORMS AND RECORDS.

Every mission begins and ends with the paper work. There isn't much of it, but you have to keep it up. The forms and records you fill out have several uses; they are a permanent record of the services, repairs, and modifications made on your vehicle; they are reports to Organizational Maintenance and to your Commander; and they are a checklist for you when you want to know what is wrong with the vehicle after its last use, and whether those faults have been fixed. For the information you need on forms and records, see TM 38-750.

2-4b. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Table 2-1).

- (1) Do your before (B) PREVENTIVE MAINTENANCE just before you operate your vehicle. Pay attention to the CAUTIONS and WARNINGS.
- (2) Do your during (D) PREVENTIVE MAINTENANCE while the vehicle and/or its component systems are in operation.
- (3) Do your after (A) PREVENTIVE MAINTENANCE right after operating the vehicle. Pay attention to the CAUTIONS and WARNINGS.
- (4) Do your weekly (W) PREVENTIVE MAINTENANCE weekly.
- (5) Do your monthly (M) PREVENTIVE MAINTENANCE once a month.
- (6) If something doesn't work, troubleshoot it with the instructions in this manual and notify your supervisor.
- (7) Always do your PREVENTIVE MAINTENANCE in the same order until it gets to be a habit. Once you've had some practice, you'll spot anything wrong in a hurry.
- (8) If anything looks wrong and you can't fix it, write it on your DA Form 2404. If you find something seriously wrong, report it to Organizational Maintenance RIGHT NOW.
- (9) When you do your PREVENTIVE MAINTENANCE, take along the tools you need to make all the checks. You always need a rag or two.

2-5. GENERAL MAINTENANCE PROCEDURES.

2-5a. CLEANLINESS.

Dirt, grease, oil, and debris only get in the way and may cover up a serious problem. Clean as you work and as needed. Use dry cleaning solvent (SD-2) on all metal surfaces. Use soap and water when you clean rubber or plastic material.

WARNING

Dry cleaning solvent, used to clean parts, is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 138 °F (58.9 °C).

2-5b. BOLTS, NUTS AND SCREWS.

Check them all for obvious looseness, missing, bent or broken condition. You can't try them all with a tool, of course, but look for chipped paint, bare metal, or rust around bolt heads. If you find one you think is loose, tighten it, or report it to Organizational Maintenance if you can't tighten it.

2-5c. WELDS.

Look for loose or chipped paint, rust, or gaps where parts are welded together. If you find a bad weld, report it to Organizational Maintenance.

2-5d. ELECTRIC WIRES AND CONNECTORS.

Look for cracked or broken insulation, bare wires, and loose or broken connectors. Tighten loose connectors and make sure the wires are in good shape.

2-5e. HOSES AND FLUID LINES.

Look for wear, damage and leaks. Make sure clamps and fittings are tight. Wet spots show leaks, of course, but a stain around a fitting or connector can mean a leak. If a leak comes from a loose fitting or connector, tighten it. If something is broken or worn out, report it to Organizational Maintenance.

2-5f. FLUID LEAKAGE.

It is necessary for you to know how fluid leakage affects the status of your vehicle. The following are definitions of the types/classes of leakage you need to know to be able to determine the status of your vehicle. Learn, then be familiar with them and REMEMBER — WHEN IN DOUBT, NOTIFY YOUR SUPERVISOR.

Leakage definitions for crew/operator PMCS:

CLASS I Seepage of fluid (as indicated by wetness or discoloration) but not great enough to form drops.

CLASS II Leakage of fluid great enough to form drops but not enough to cause drops to drip from item being checked/inspected.

CLASS III Leakage of fluid great enough to form drops that fall from the item being checked/inspected.

CAUTION

Equipment operation is allowable with minor leakage (Class I or II). Report all Class III leaks to your supervisor immediately. Of course, consideration must be given to the fluid capacity in the item/system being checked/inspected. When in doubt, notify your supervisor.

TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

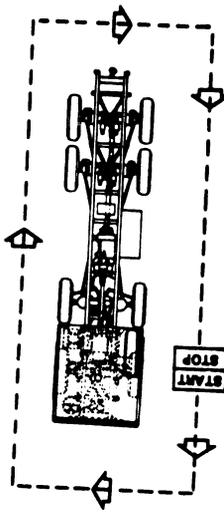
ITEM NO.	INTERVAL					ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W	M		
1						<p>NOTE</p> <p>Perform WEEKLY (W) as well as BEFORE (B) PMCS if: (1) you are the assigned operator but have not operated the vehicle since the last weekly PMCS; or (2) you are operating the vehicle for the first time.</p> <p>MAKE THE FOLLOWING WALK-AROUND CHECKS following the route shown below.</p> <div style="text-align: center;">  <p>TA177342</p> </div> <p>EXTERIOR</p> <p>a. Visually check for damage to body and cab that would impair operation.</p> <p>b. Check under vehicle for fluid leaks (fuel, oil, engine coolant and brake hydraulic fluid).</p>	<p>Vehicle damage which impairs operation, such as a damaged fifth wheel.</p> <p>Class III leakage.</p>

TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

ITEM NO.	INTERVAL					ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W	M		
2		•				c. Check condition of: (1) Mirrors (2) Windshield and windows (3) Windshield wiper arms and blades (4) Check operation of doors and windows (5) All locking and fastening devices (6) Tractor and trailer spare tire mounting	
		•				d. Check operation of all exterior lights for damage.	
						TIRES AND WHEELS	
		•				a. Check tires for cuts, gouges, or cracks and tread wear. Remove any objects stuck in tire tread.	Tire damage which would cause tire to fail during operation. One or more tires missing or flat, except spare tire.
		•				b. Check lug nuts visually for tightness. Tighten loose lug nuts.	
				•	c. Gage tires for correct air pressure, using tire inflation gage and hose assembly. Adjust as necessary.		

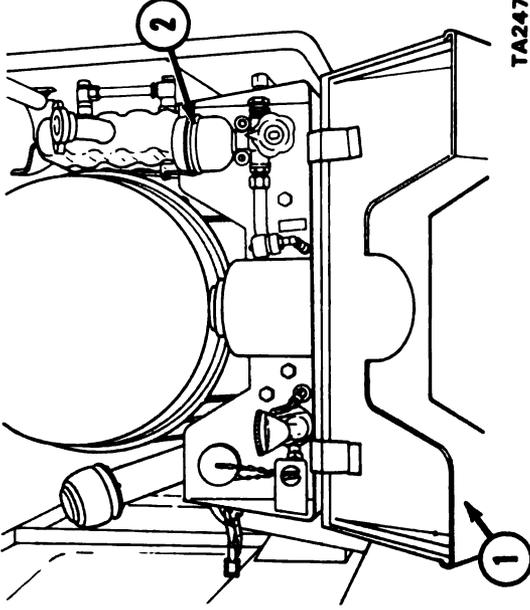
TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

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	B	D	A	W	M																						
						<p style="text-align: center;">CAUTION</p> <p>Increase rear tires air pressure to approximately 87 PSI (600 kPa) when fifth wheel recovery kit is used with any tractor models. Failure to increase tire pressure can damage tires or suspension system.</p> <p style="text-align: center;">TIRE INFLATION DATA</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="3">MODEL</th> <th rowspan="3">TIRE SIZE</th> <th colspan="3">APPROXIMATE PRESSURE PSI (kPa)</th> </tr> <tr> <th>FRONT</th> <th>REAR</th> <th rowspan="2">HIGHWAY & CROSS COUNTRY</th> </tr> <tr> <th colspan="2">HIGHWAY & CROSS COUNTRY</th> </tr> </thead> <tbody> <tr> <td>ALL TRACTOR MODELS</td> <td>1600 R 20</td> <td>50 PSI (350 kPa)</td> <td>50 PSI * (350 kPa)</td> <td></td> </tr> <tr> <td>WRECKER M1002</td> <td>1600 R 20</td> <td>50 PSI (350 kPa)</td> <td>87 PSI (600 kPa)</td> <td></td> </tr> </tbody> </table> <p>*87 PSI WITH FIFTH WHEEL RECOVERY KIT MOUNTED.</p> <p style="text-align: center;">NOTE</p> <p>Your vehicle is equipped with differential locks to provide maximum traction for all axles. Adjusting air pressure for cross-country driving is not necessary. See paragraph 2-2.4 for differential lock operation.</p>	MODEL	TIRE SIZE	APPROXIMATE PRESSURE PSI (kPa)			FRONT	REAR	HIGHWAY & CROSS COUNTRY	HIGHWAY & CROSS COUNTRY		ALL TRACTOR MODELS	1600 R 20	50 PSI (350 kPa)	50 PSI * (350 kPa)		WRECKER M1002	1600 R 20	50 PSI (350 kPa)	87 PSI (600 kPa)		
MODEL	TIRE SIZE	APPROXIMATE PRESSURE PSI (kPa)																									
		FRONT	REAR	HIGHWAY & CROSS COUNTRY																							
		HIGHWAY & CROSS COUNTRY																									
ALL TRACTOR MODELS	1600 R 20	50 PSI (350 kPa)	50 PSI * (350 kPa)																								
WRECKER M1002	1600 R 20	50 PSI (350 kPa)	87 PSI (600 kPa)																								

TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

ITEM NO.	INTERVAL				ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W/M		
3				•	<p>ALCOHOL EVAPORATOR</p> <p>a. Open cover (1). Check fluid level in evaporator: Check that fluid level is at lower ring (2). Fill as necessary. Refer to LO 9-2320-282-12/TO 36A12-1C-461LC-1 for proper fluid.</p> 	

TA247112

TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

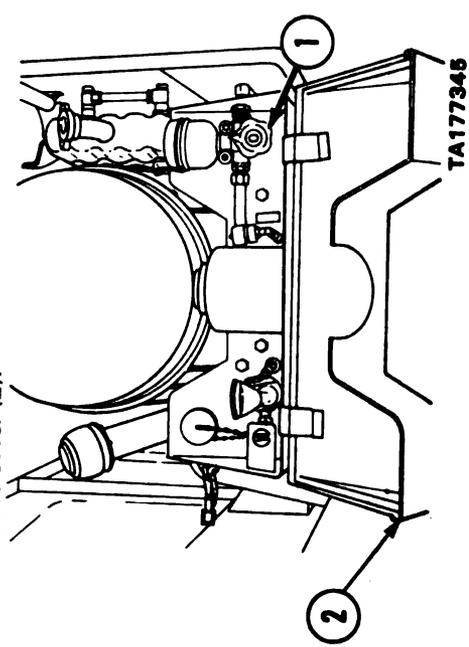
ITEM NO.	INTERVAL					ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W	M		
•						b. Adjust Alcohol Evaporator <ul style="list-style-type: none"> • Below 41°F (5° C) <ul style="list-style-type: none"> - Turn adjustment knob (1) to 1/1 position. • 59°F to 41°F (15°C to 5°C) <ul style="list-style-type: none"> - Turn adjustment knob (1) to ½ position. • Above 59°F (15°C) <ul style="list-style-type: none"> - Turn adjustment knob (1) to 0 position. - Close cover (2). 	
							

TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

ITEM NO.	INTERVAL				ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	M		
4					<p>MASTER CYLINDERS</p> <p>Lower spare tire. Refer to Paragraph 3-6.</p> <p>Check fluid level in both master cylinders. Open cover (1). Correct level is above minimum mark (2). Add fluid as necessary. Refer to LO 9-2320-282-12/TO 36A12-1C-461LC-1 for proper fluid.</p> <p>Raise spare tire. Refer to Paragraph 3-6.</p>	

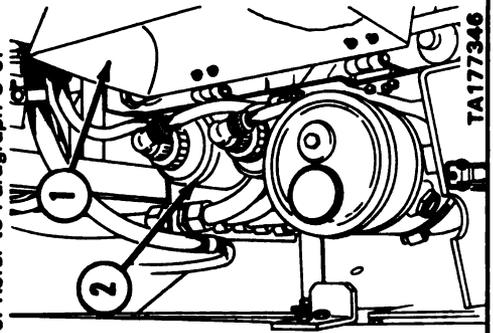
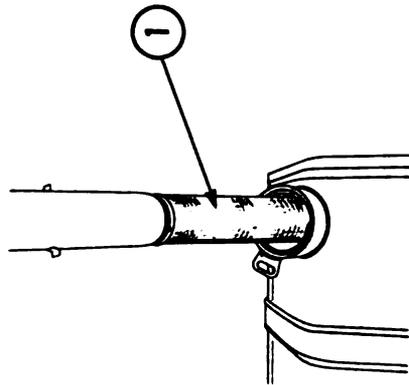


TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

ITEM NO.	INTERVAL					ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W	M		
5						<p>FUEL TANK CAP AND STRAINER</p> <p>a. Check fuel cap for missing gasket or obvious damage.</p> <p>b. Check fuel tank strainer (1) for debris or damage.</p>	



TA177347

TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

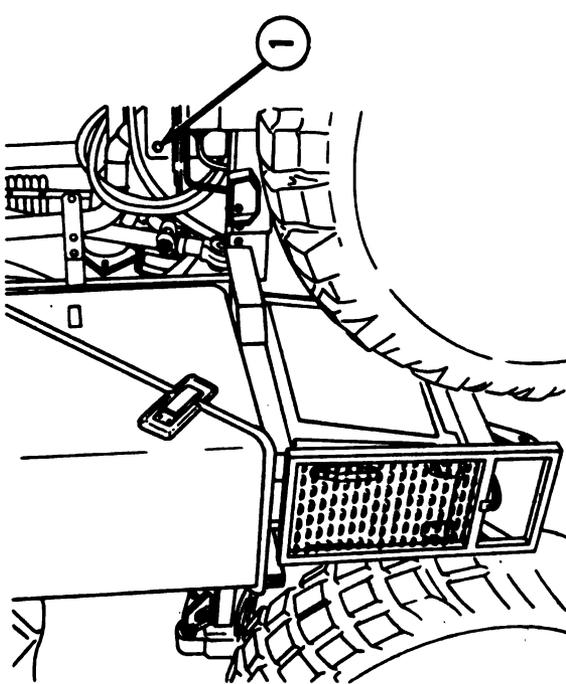
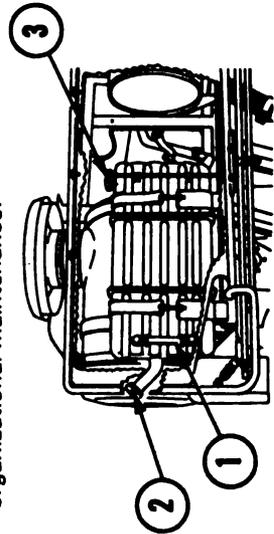
ITEM NO.	INTERVAL				ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W M		
6					<p>HYDRAULIC SYSTEM</p> <p>Check hydraulic fluid level. Level is correct when fluid is visible in sight glass (1). Add as necessary. Refer to LO 9-2320-282-12/ TO 36A12-1C-461C-1 for proper fluid.</p>  <p style="text-align: right;">TA177348</p>	

TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

ITEM NO.	INTERVAL				ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	M		
7					<p>COOLING SYSTEM</p> <p><u>WARNING</u></p> <p>Do not remove surge tank cap when engine is hot. Serious burns from hot coolant may result.</p> <p><u>CAUTION</u></p> <p>Do not remove sealed (wired) radiator cap. Damage to accessory heater may result.</p> <p>a. Check coolant level. Coolant should be visible in sight glass (1). Remove unwired cap (2) and add coolant as necessary. Refer to LO 9-2320-282-12/TO 36A12-1C-461LC-1 for proper fluid.</p> <p>b. Check sealed (wired) surge tank cap (3). If seal is broken or cap is damaged or missing notify organizational maintenance.</p>	<p>Cracked or broken sight glass.</p> <p>Seal broken or cap damaged.</p>



TA177349

TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

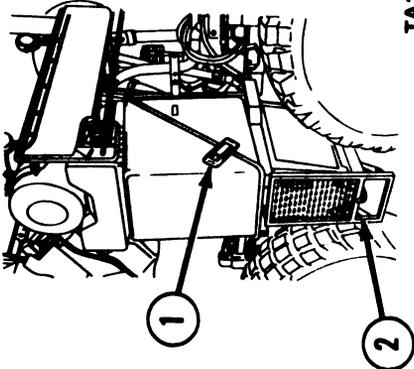
ITEM NO.	INTERVAL				ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W/M		
8					<p>BATTERIES</p> <p><u>WARNING</u></p> <p>Do not smoke or have an open flame nearby when checking batteries. Batteries emit gases which are very explosive. Injury to personnel may result.</p> <p>Open two cover latches (1). Remove battery box cover. Pull down step (2).</p>  <p style="text-align: right;">TA177350</p>	

TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

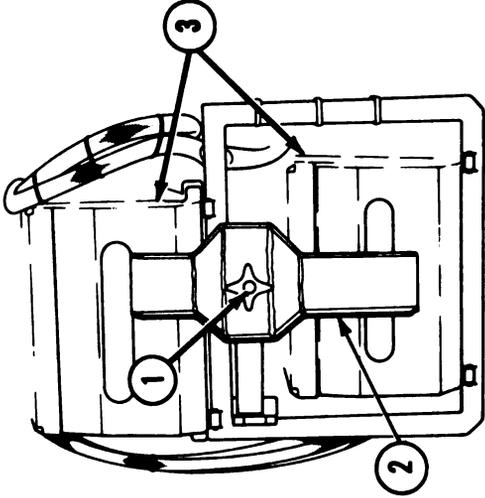
ITEM NO.	INTERVAL				ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	M		
					<p>Unscrew battery retaining bar screw (1). Pull bar (2) out of the way. Slide out trays (3) as necessary.</p>  <p style="text-align: right;">TA247133</p> <p>a. Check vent tubes (1) for crimps or other damage.</p> <p style="text-align: center;"><u>NOTE</u></p> <p>Check all batteries in both upper and lower racks.</p>	

TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

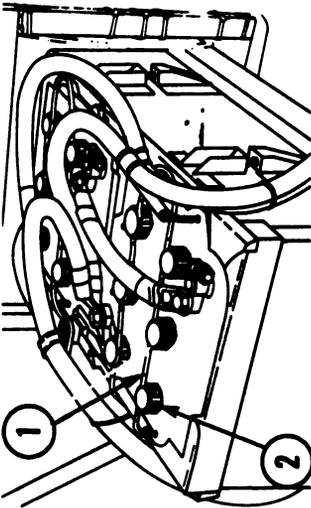
ITEM NO.	INTERVAL				ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	M		
					<p>b. Remove caps (2). Check electrolyte level in all battery cells. Correct level is lower edge of filler bore. Fill batteries with distilled water, if level is low.</p>  <p>TA177344</p> <p>c. Visually check batteries for cracked or leaking casing and corrosion around the posts. Report damage to organizational maintenance.</p> <p>Slide in trays. Tighten retaining bar screw. Replace battery box cover. Pull up step.</p>	Batteries unserviceable, missing or does not crank engine.

TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

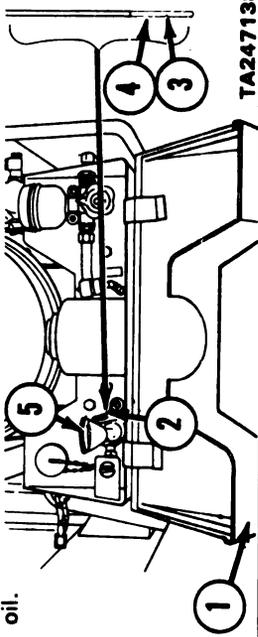
ITEM NO.	INTERVAL				ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	M		
9					<p>ENGINE OIL</p> <p>CAUTION Do not over fill engine. Damage to engine may result if oil level is above full mark (4).</p> <p>Open cover (1). Pull out dipstick (2). Check engine oil level (hot or cold). Correct level is between marks (3) and (4).</p> <p>NOTE Check oil level with engine off and with the vehicle on level ground. If engine has been running, wait five minutes before checking level. If oil level is at or above mark (4) when engine is cold, DO NOT add oil.</p> <p>If level is below mark (3), add 4 quarts of oil until oil level is above mark (3). Add oil through filler neck (5). Refer to LO 9-2320-282-12/TO 36A12-1C-461LC-1 for proper grade of oil.</p>  <p style="text-align: right;">TA247138</p>	Engine oil level above full mark. Notify organizational maintenance.

TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

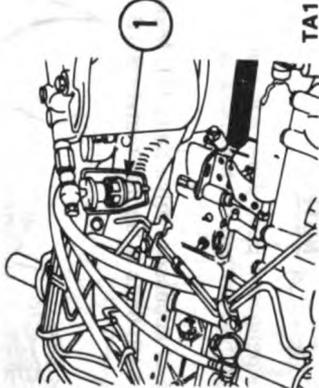
ITEM NO.	INTERVAL				ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W M		
10					<p>ENGINE COMPARTMENT</p> <p>Raise cab. Refer to paragraph 2-12.</p> <p>a. Check initial fuel filter sight glass (1) for water or other foreign matter, etc. Notify organizational maintenance if found.</p>  <p style="text-align: right;">TA177362</p>	<p>Water or foreign matter found in sight glass.</p>

TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

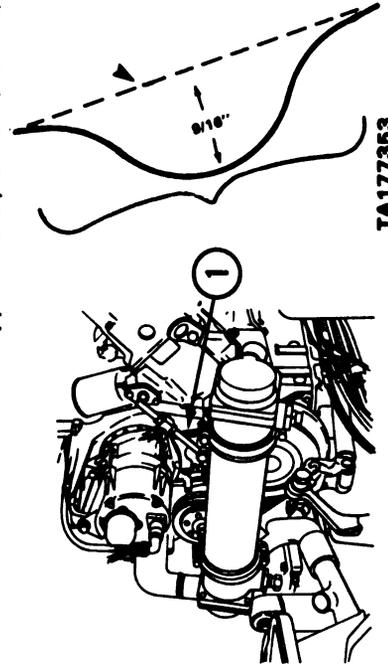
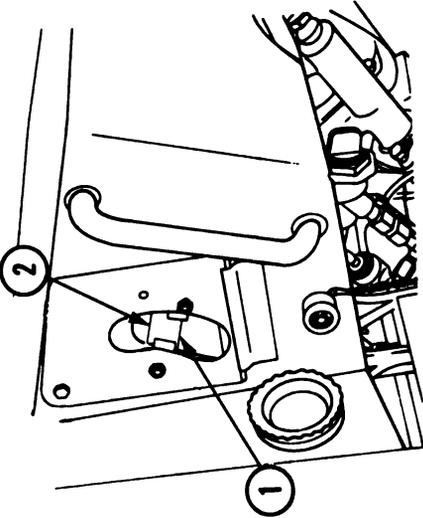
ITEM NO.	INTERVAL				ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W M		
					<p>NOTE</p> <p>To measure deflection push down one belt first. The belt should go no further than the thickness of the other belt.</p> <p>b. Check tension of accessory drive belts (1). Maximum deflection for both belts is approximately 9/16" (15 mm).</p>  <p>TA177363</p> <p>Notify organizational maintenance if belt tension is not correct.</p> <p>c. Check belts for cracking, fraying and breaks.</p>	Belts unserviceable or missing.
						Belts are cracked, frayed, broken or missing.

TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

ITEM NO.	INTERVAL				ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	M		
11					<p>CAB COMPARTMENT</p> <p>Lower cab. Refer to paragraph 2-12.</p> <p>a. Check cab compartment for obvious damage.</p> <p>b. Check clutch fluid level. Correct level is between add mark (1) and full mark (2). Refer to LO 9-2320-282-12/ TO 36A12-1C-461LC-1 for proper fluid.</p> 	

TA177564

TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

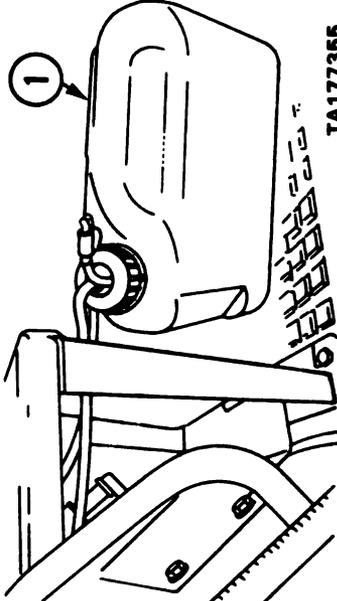
ITEM NO.	INTERVAL				ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W/M		
12					<p>c. Check windshield washer reservoir (1) fluid level.</p>  <p>INSTRUMENTS, WARNING LIGHTS AND CONTROLS</p> <p>Start engine, refer to paragraph 2-7.</p> <p>a. Check operation of the following gages:</p>	

TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

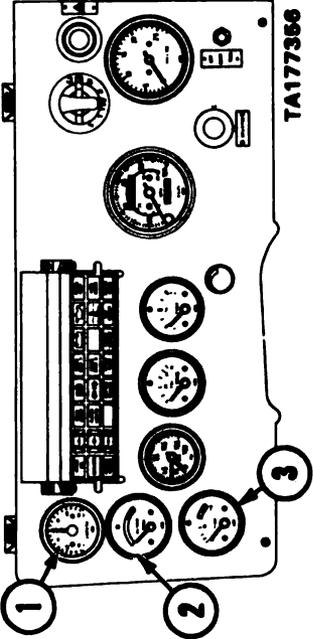
ITEM NO.	INTERVAL				ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W/M		
	•				<p>(1) AMMETER - Should deflect to the right within approximately 3 to 5 seconds after engine starts.</p> <p>(2) TRANSMISSION OIL TEMPERATURE - Should remain within green or yellow scale during operation.</p> <p>(3) COOLANT TEMPERATURE - Should remain between 174°F - 196°F (80°C - 91°C) when engine is warmed up.</p>	<p>Ammeter gage needle reads to the left side of the gage, battery indicator light on or off.</p> <p>Transmission oil temperature gage needle reads in the red scale, transmission oil temperature indicator light on or off.</p> <p>Gage reads above 196°F (91 °C), engine coolant temperature indicator light on or off.</p>
					 <p style="text-align: right;">TA177366</p>	

TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

ITEM NO.	INTERVAL				ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W M		
		•			<p>(4) AIR PRESSURE — Red and white indicators should read 90 to 115 PSI during operation.</p> <p>(5) OIL PRESSURE — Should read at least 15 to 85 PSI.</p> <p>(6) TACHOMETER — Should read 500-600 RPM at idle.</p>	<p>Air pressure gage red and white needles read below 90 PSI, brake system 1 or 2 indicator lights on or off.</p> <p>Oil pressure gage needle reads below 15 PSI, engine oil pressure indicator light on or off.</p>

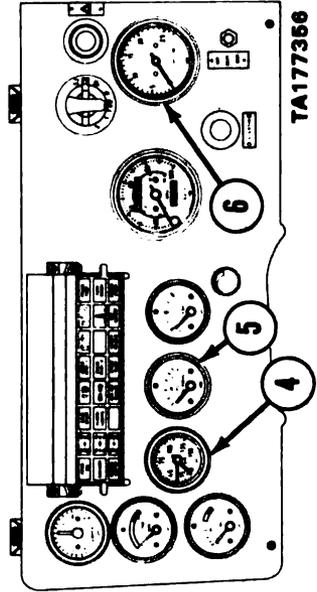


TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

ITEM NO.	INTERVAL					ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W	M		
						<p>b. Check warning lights for obvious damage. After starting vehicle check operation of the following warning lights:</p> <p>(1) and (2) Brake system indicator lights — should go out when air pressure gage reading is above 80 PSI.</p> <p>(3) Battery indicator light — should go out after engine starts.</p> <p>(4) Engine oil pressure indicator light — should go out when oil pressure gage reading is above 15 PSI.</p> <p>(5) Engine coolant temperature indicator light — should not be lit unless coolant temperature gage reads above 196°F (91°C).</p>	

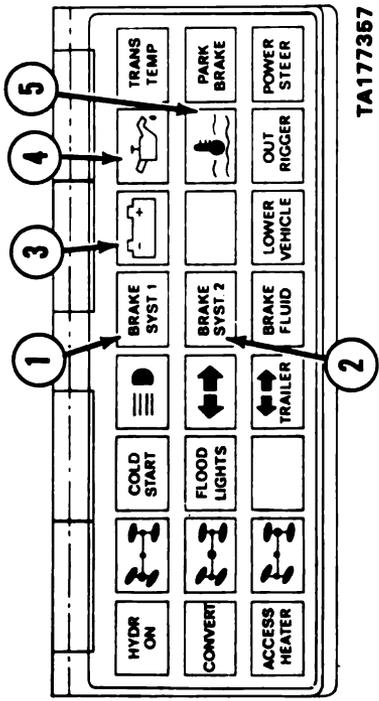
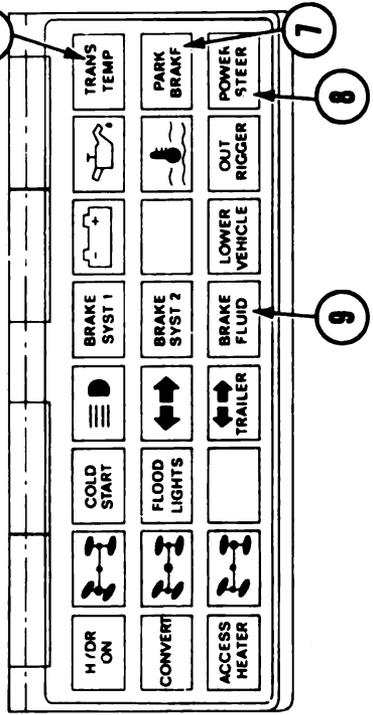


TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

ITEM NO.	INTERVAL					ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF: 2
	B	D	A	W	M		
	•					(6) Transmission temperature indicator light — should not be lit unless transmission temperature gage indicator is pointing to red scale.	
		•				(7) Parking brake indicator light — should go out when parking brake is released.	
			•			(8) Power steering indicator light — should remain on until vehicle speed reaches 3 MPH (5 KPH).	Power steering indicator light stays on above 3 MPH (5 KPH). Hydraulic brake fluid indicator light stays on
				•		(9) Brake fluid indicator light — indicates low hydraulic brake fluid level. Should remain off at all times.	



TA177367

TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

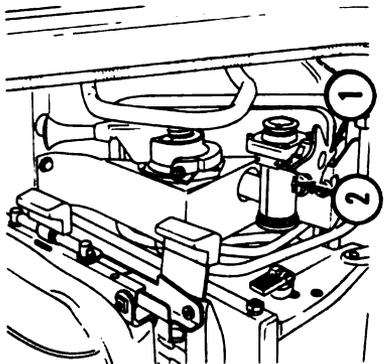
ITEM NO.	INTERVAL				ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	M		
•					<p>e. Check position of trailer brake regulator valve. Set position of valve (1) to one of the four settings shown below to match the amount of your trailer load. Turn valve until position you want points to arrow (2).</p> <p style="text-align: center;">LOAD</p> <p>POSITION</p> <p>BLANK — NO TRAILER/VEHICLE CONNECTED 0 — EMPTY 1/2 — HALF LOAD 1/1 — FULL LOAD</p> <p style="text-align: center;"><u>NOTE</u></p> <p>When towing disabled vehicle set regulator valve to 1/1 position.</p> <div style="text-align: right;">  <p>TA247140</p> </div>	

TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

ITEM NO.	INTERVAL					EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W	M	
13						Engine inoperative or unusual noise or vibration.
14						Indicator shows red.

ITEM TO BE INSPECTED
PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED
OR ADJUSTED AS NEEDED

ENGINE

Check engine for:

- a. unusual noise or vibration
- b. excessive exhaust smoke
- c. rough idle
- d. hard starting
- e. lack of power

AIR FILTER CONTAMINATION INDICATOR (ENGINE RUNNING)

Open cover (1).

Check air filter contamination indicator (2). If red scale is visible, notify organizational maintenance.

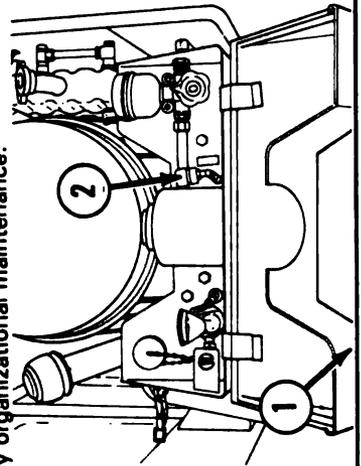


TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

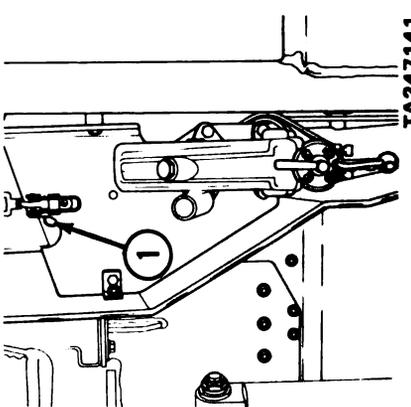
ITEM NO.	INTERVAL			ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A		
15					
				<p>POWER STEERING RESERVOIR</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>Clean top of reservoir before removing cap to prevent dirt and other debris from entering reservoir. Damage to power steering system may result.</p> <p>Check power steering fluid level. Look into site glass (1). Fluid must appear in site glass. Add fluid as necessary while engine is running. Refer to LO 9-2320-282-12/TO 36A12-1C-461LC-1.</p>	
					

TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

ITEM NO.	INTERVAL				PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W M		
16					<p>STEERING</p> <p>Check steering for:</p> <ul style="list-style-type: none"> a. Wander/pulling to one side b. Vibration c. Hard turning d. Unusual noise while turning 	<p>Steering wheel difficult to turn. Steering inoperative. Vehicle wanders or steering pulls excessively.</p>
17					<p>SERVICE BRAKES</p> <p>Check service brakes for:</p> <ul style="list-style-type: none"> a. Side pull b. Vibration c. Unusual noise d. Stopping ability e. After releasing brake pedal listen for air exhausting from air tank automatic drain valves. 	<p>Service brakes do not operate properly.</p>
18					<p>CLUTCH</p> <p>Check clutch for slippage.</p>	<p>Air does not exhaust from tanks automatic drain valves.</p> <p>Clutch slipping or inoperative.</p>

TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

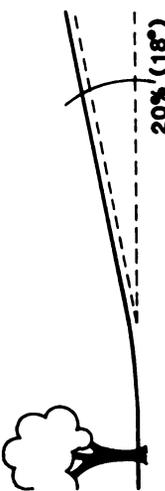
ITEM NO.	INTERVAL				ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W M		
19					<p>TRANSMISSION</p> <p>Check transmission for:</p> <ul style="list-style-type: none"> a. Slipping out of gears b. Sticking in gears c. Grinding 	Transmission inoperative.
20					<p>PARKING BRAKE</p> <p>Make sure parking brake holds on incline of approximately 20 percent as shown below. Refer to paragraph 2-8d for operation of parking brake test valve.</p> 	Vehicle fails to hold on an incline of approximately 20 percent.

TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

ITEM NO.	INTERVAL			ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A		
21				SPECIAL BODY EQUIPMENT	
				FIFTH WHEEL (EXCEPT M1002)	
	•	•		a. Inspect fifth wheel for missing mounting hardware or obvious damage. b. Check release handles for proper operation. Release handles must move freely. Refer to paragraph 2-18 for operation of handles. c. Lubricate fifth wheel. Refer to LO 9-2320-282-12/ TO 36A12-1C-461-LC-1.	Primary or secondary lock fails to lock or unlock, faulty coupling or uncoupling action.
22				TRAILER CONNECTING (INTERVEHICULAR CABLES AND COUPLINGS) ACCESSORIES	
			•	a. Check air hoses and couplings for damage, deterioration and leakage. b. Inspect cables, receptacles and covers for cracks, breaks, and other damage.	Air hoses or couplings are damaged, missing or leaking. Cables, receptacles or covers cracked, broken or missing.

TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

ITEM NO.	INTERVAL					EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W	M	
23						Remote control inoperative. Winch inoperative or Class III leaks. Cable kinked, frayed, or has other damage.
	•					
24						Remote control inoperative. Winch inoperative or Class III leaks. Cable kinked, frayed, or has other damage.
	•					
	•					
	•					
24						Remote control inoperative. Winch inoperative or Class III leaks. Cable kinked, frayed, or has other damage.
	•					
	•					
	•					

TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

ITEM NO.	INTERVAL					PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W	M		
25						<p>MATERIAL HANDLING CRANE (EXCEPT M1014)</p> <p>a. Check remote control unit and manual for proper operation. Refer to paragraph 2-17.</p> <p>b. Check crane for: (1) Leaks (2) Obvious damage (3) Missing components</p> <p>c. Check for kinked, frayed, or damaged winch cable.</p>	<p>Crane does not operate in the manual and remote modes.</p> <p>Crane inoperative or Class III leaks.</p> <p>Frayed, kinked, or damaged winch cable.</p>
		•					
			•				
			•				
			•				
26						<p>RECOVERY CRANE (M1002 ONLY)</p> <p>a. Check remote control for proper operation. Refer to paragraph 2-19. Inspect remote control and cable for damage.</p> <p>b. Check recovery crane for: (1) Leaks (2) Obvious damage (3) Missing or damaged boom support pins.</p>	<p>Remote control inoperative.</p> <p>Crane inoperative or Class III leaks.</p> <p>Missing or damaged boom support pins.</p>
		•					
			•				

TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

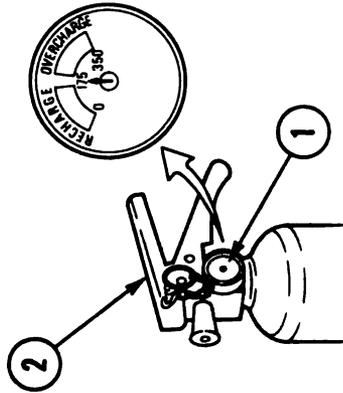
B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

ITEM NO.	INTERVAL				ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W/M		
27					SPECIAL PURPOSE KITS FIFTH WHEEL RECOVERY KIT (EXCEPT M1002) a. Check recovery kit for: (1) Leaks (2) Obvious damage (3) Missing or damage mounting chains (4) Missing or damaged boom support pins b. Check remote control unit for proper operation. Inspect remote control unit and cable for damage. ACCESSORY HEATER Check accessory heater hoses for fuel and coolant leaks.	Recovery kit inoperative or Class III leaks. Mounting chains missing or damaged. Damaged or missing boom support pins. Remote control unit inoperative. Class III leaks.
	•					
	•					
	•					
	•					
28					ACCESSORY HEATER Check accessory heater hoses for fuel and coolant leaks.	Class III leaks.
	•					

TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

ITEM NO.	INTERVAL				ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W M		
29					<p>ACCESSORY ITEMS</p> <p>FIRE EXTINGUISHERS</p> <p>a. Check that seal on fire extinguisher handle is not broken or missing.</p> <p>b. Check that gage (1) shows full charge if applicable.</p> <p>c. Check for damage to handle (2) or gage (1) if applicable.</p>	<p>Seal broken or missing.</p> <p>Extinguisher discharged.</p> <p>Damaged handle or gage.</p>



TA177358

SECTION III. OPERATION UNDER USUAL CONDITIONS

2-6. GENERAL INFORMATION

Section III gives instructions for operating the vehicle under normal temperature, normal humidity, and normal terrain conditions. Instructions for operating vehicle under unusual conditions are in Section IV, Chapter 2.

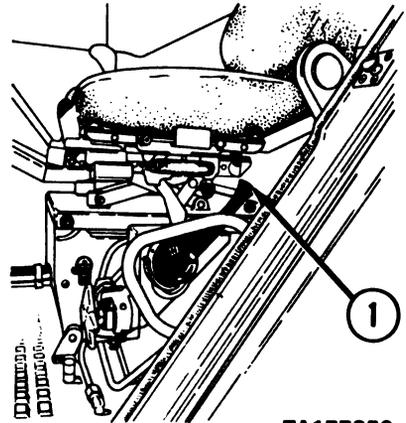
2-7. STARTING ENGINE.

FRAME 1. START ENGINE.

NOTE

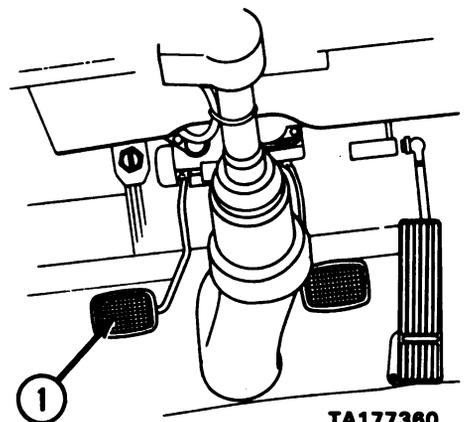
Your vehicle is equipped with an automatic cold weather starting aid. Cold start preheater will start automatically when outside temperature is below 60°F.

- Step 1.** Do your before (B) PMCS in Table 2-1.
- Step 2.** Adjust seat. Refer to paragraph 2-14.
- Step 3.** Adjust steering wheel. Refer to paragraph 2-13m.
- Step 4.** Adjust mirrors.
- Step 5.** Pull back parking brake lever (1).



TA177359

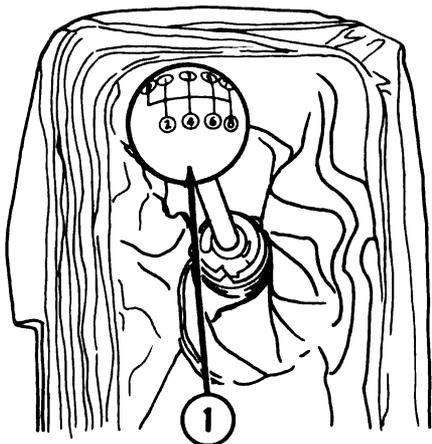
- Step 6.** Push down clutch pedal (1).



TA177360

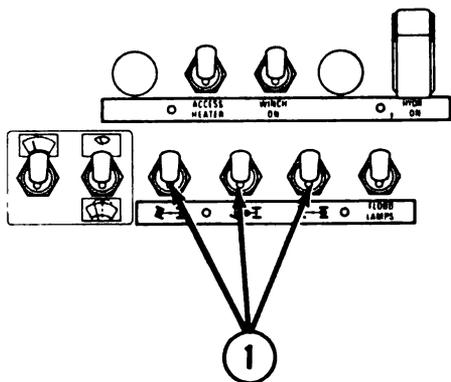
**TM 9-2320-282-10
TO 36A12-1C-461-1**

Step 7. Put transmission lever (1) in neutral position and release clutch pedal.



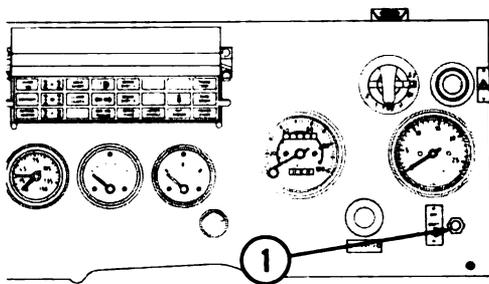
TA177361

Step 8. Turn off all auxiliary switches (1).



TA177362

Step 9. Turn master switch (1) to run position.



TA177363

NOTE

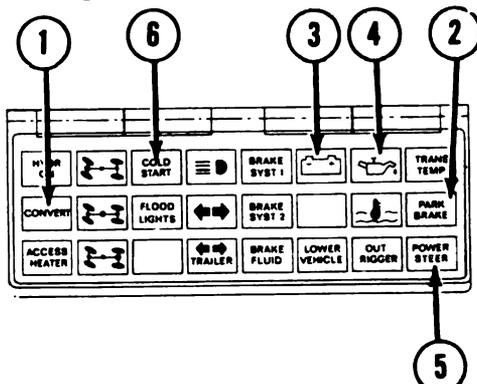
Five indicator lamps must light. If any one of the lamps fails to light, report failure to maintenance.

Step 10. Five indicator lamps must light:

- (1) Converter lock up clutch
- (2) Parking brake
- (3) Battery indicator
- (4) Engine oil pressure
- (5) Power steering

NOTE

If cold start indicator lamp (6) comes on and stays on, do Steps 11 through 13. If cold start lamp does not come on, go to Step 14.



TA177364

CAUTION

Engine oil pressure must indicate 15 through 51 PSI (120 through 350 KPa) within 15 seconds. No oil pressure within 15 seconds, stop engine. Running engine without oil pressure can cause damage to engine. Report condition to maintenance.

Do not hold starter switch more than 15 seconds. Starter motor may burn out.

Step 11. Wait until cold start lamp starts blinking. Push down accelerator pedal (1). Push start button.

NOTE

If starter button is not pushed within 15 seconds, cold start cycle will go off. Turn off master switch. Start again with Step 9.

If engine fails to crank refer to Table 3-1.

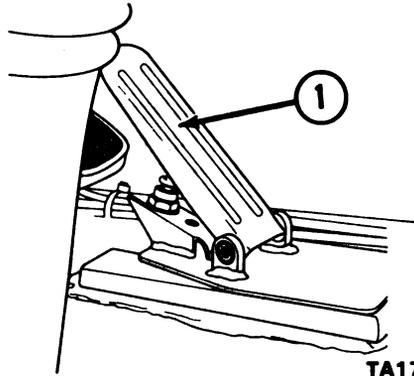
CAUTION

Do not exceed 1000 RPM until preheater indicator lamp goes out. Damage to engine may result.

Step 12. Run engine below 1000 RPM until cold start lamp stops blinking.

Step 13. Go to Step 16.

Step 14. Push down accelerator pedal (1).



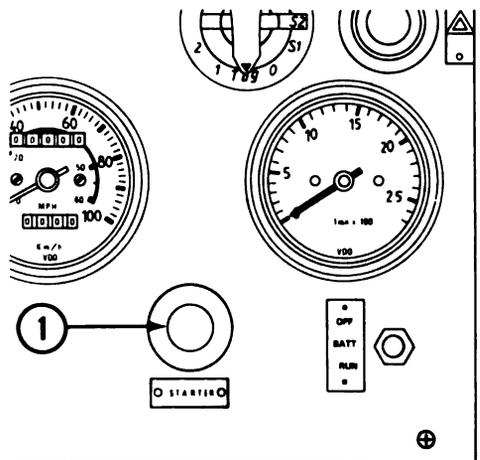
TA177365

CAUTION

Engine oil pressure must indicate 15 through 51 PSI (120 through 350 KPa) within 15 seconds. No oil pressure within 15 seconds, stop engine. Running engine without oil pressure can cause damage to engine. Report condition to maintenance.

Do not hold starter switch more than 15 seconds. Starter motor may burn out.

Step 15. Push starter switch (1).



TA177366

NOTE

If engine fails to start, wait 30 seconds and do Step 15 again. If engine fails to crank, refer to Table 3-1.

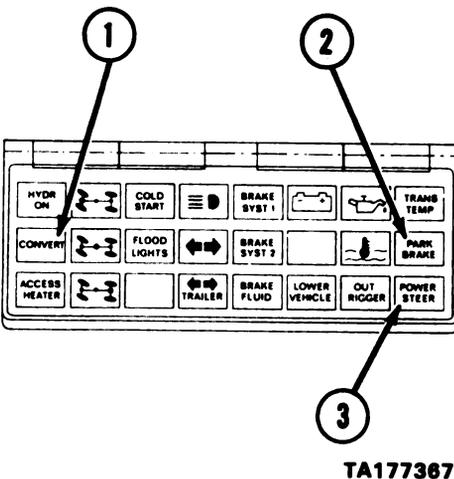
Step 16. Run engine below 1000 RPM. Take foot off accelerator pedal.

NOTE

Three indicator lamps must stay lit:

- (1) Converter lock up clutch
- (2) Parking brake
- (3) Power steering

If indicator lamps are not lit, stop engine and report fault to maintenance. Brake circuits 1 and 2 indicator lamps stay on until air gage reads between 72 to 78 PSI (500 to 540 KPa). Air pressure gage, red needle is brake circuit 1, and the white needle is brake circuit 2.

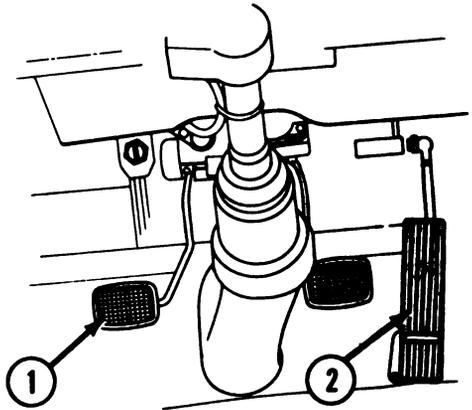


CAUTION

Make sure accelerator pedal lock works. Bad accelerator pedal lock may cause damage to clutch.

Step 17. Check accelerator pedal lock:

- Push down clutch pedal (1).
- Put shift lever into 8th gear.
- Push down accelerator pedal (2). If engine accelerates, report problem to maintenance.



TA177368

Step 18. Put shift lever in neutral position. Take foot off clutch pedal.

End of Task.

2-8. PLACING, MAINTAINING VEHICLE IN MOTION, AND STOPPING VEHICLE.

2-8a. PUT VEHICLE IN MOTION.

FRAME 1. MOVING OFF.

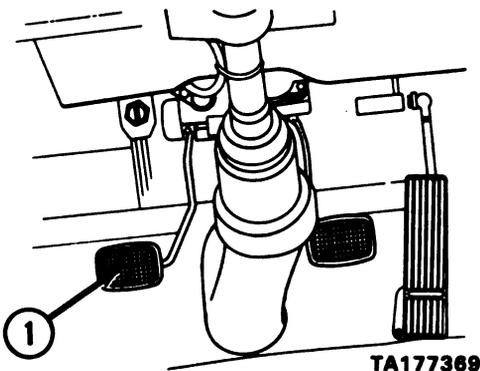
WARNING

Use of seat belts while operating your vehicle is mandatory as an aid in preventing personal injury in the event of an accident.

NOTE

Air pressure gage must read between 90 to 105 PSI (620 to 724 KPa) before you drive vehicle.

- Step 1. Fasten seat belt.
- Step 2. Start engine. Refer to paragraph 2-7.
- Step 3. Press down clutch pedal (1).

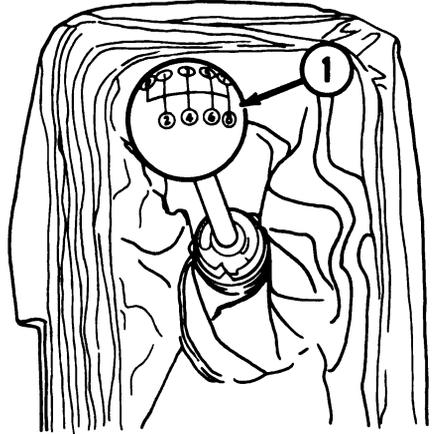


TA177369

NOTE

Refer to top of shift lever knob for shift pattern.

- Step 4. Move shift lever (1) to first gear position.



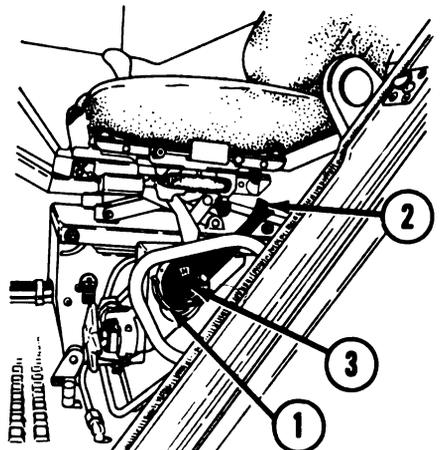
TA177370

- Step 5. Release clutch pedal slowly.

- Step 6. Release parking brake. Lift release button (2) and move brake lever to brake release position (3).

NOTE

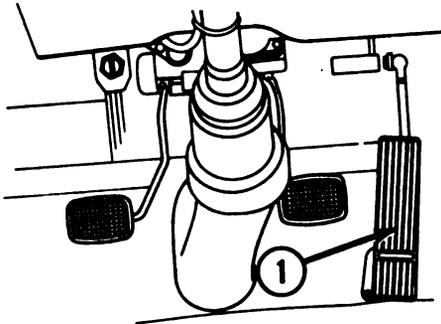
On uphill grade put brake lever in moving off position (1). Slowly release brake as accelerator is depressed.



TA177371

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TO 36A12-1C-461-1

Step 7. Press accelerator pedal (1) slowly.



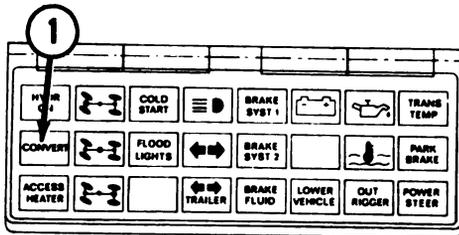
TA177372

WARNING

Never use parking/moving off brake for normal braking. Use service brakes only. Injury to personnel may result.

CAUTION

Converter indicator lamp (1) must go out at 1200 RPM. If converter indicator lamp does not go out, stop engine. Converter can over heat. Report problem to maintenance.



TA177373

CAUTION

Do not go over engine speed of 2300 RPM. Damage to engine can result.

Step 8. Increase vehicle speed slowly.

End of Task.

2-8b. MAINTAIN VEHICLE IN MOTION.

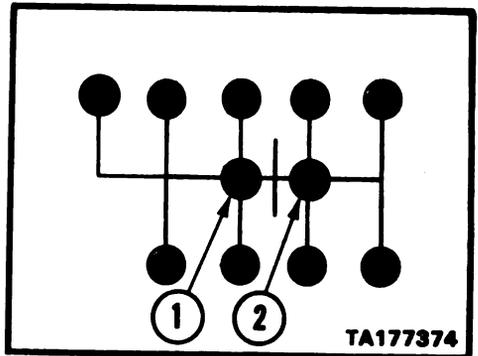
NOTE

Change gears in smooth manner.

FRAME 1. SHIFT GEARS.

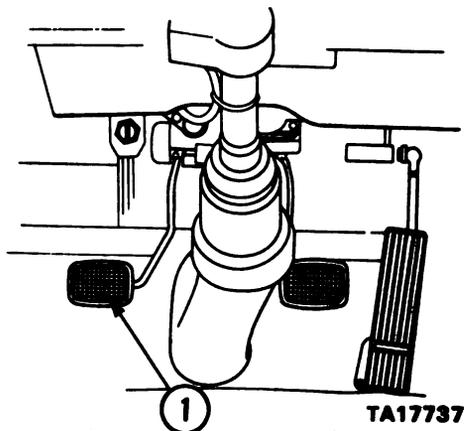
NOTE

Shifts between low range (1) and high range (2) require more shifting pressure to overcome spring pressure.



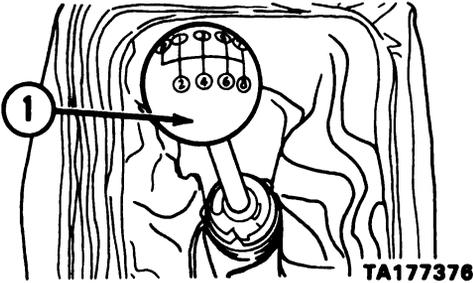
TA177374

Step 1. Press clutch (1).



TA177375

Step 2. Move shift lever (1) to proper gear position.



Step 3. Release clutch. Press accelerator pedal.

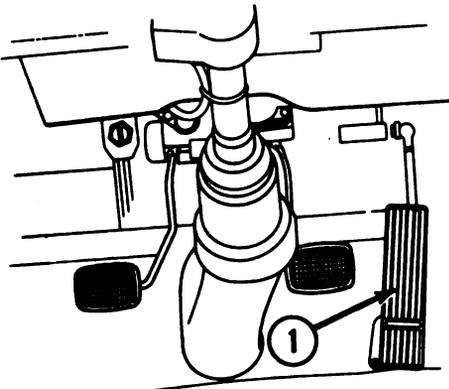
End of Task.

**FRAME 2. OPERATING
KICKDOWN
SWITCH.**

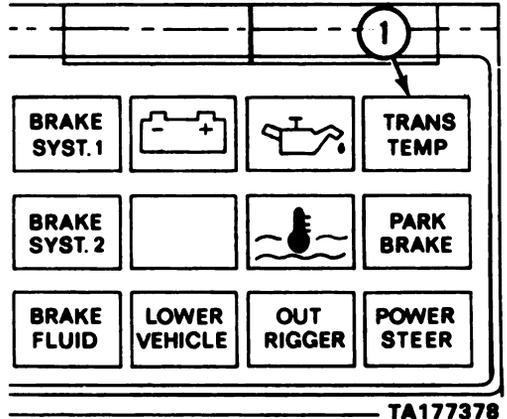
CAUTION

Do not hold engaged kickdown switch for a long period of time. Converter can be damaged. Engage kickdown switch to increase engine torque.

Step 1. Push accelerator (1) to floor. Kickdown switch engages.



Step 2. Shift transmission to lower gear if transmission temperature light (1) comes on or transmission temperature gage reads in red.



NOTE

If transmission temperature light stays on or transmission temperature gage reads in red more than 3 minutes, go to Step 3.

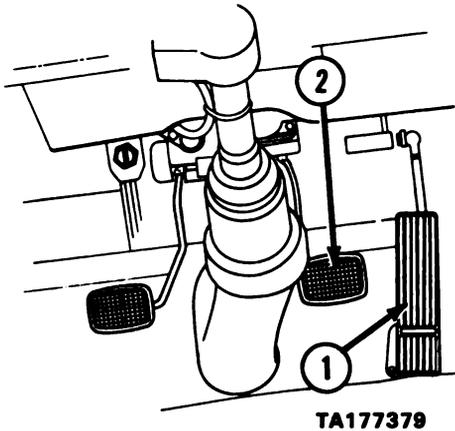
- Step 3.** Stop vehicle and shift transmission to neutral position.
- Step 4.** Run engine 3-5 minutes.
- Step 5.** Stop engine if light stays on or gage stays in red. Contact organizational maintenance.
- Step 6.** Keep on driving vehicle if light goes out or gage moves to yellow or green.

End of Task.

2-8c. SLOW DOWN VEHICLE.

FRAME 1. NORMAL SLOW DOWN OF VEHICLE.

- Step 1.** Remove foot from accelerator pedal (1).
- Step 2.** Pump brake pedal (2).



End of Task.

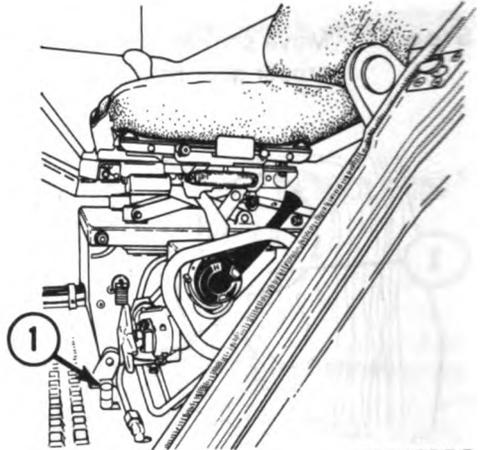
FRAME 2. SLOW DOWN VEHICLE ON DOWN-HILL GRADE.

- Step 1.** Before going downhill, shift transmission to lower gear to slow vehicle.

NOTE

Use same gear for downhill as using for uphill.

- Step 2.** Release accelerator pedal. Use engine brake switch (1).
- Step 3.** Release switch at proper vehicle speed for driving conditions.
- Step 4.** Pump brake pedal to slow vehicle as needed.



End of Task.

2-8d. STOPPING VEHICLE AND ENGINE.

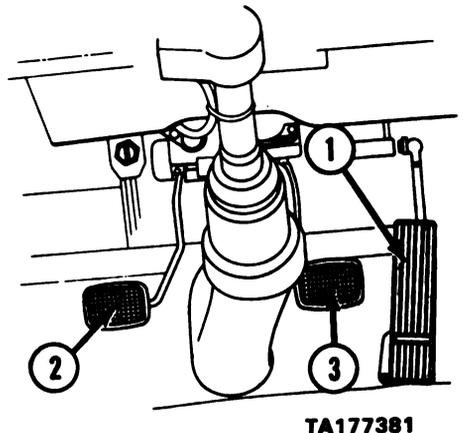
FRAME 1. STOPPING VEHICLE.

- Step 1.** Take foot off accelerator pedal (1).

CAUTION

Do not push clutch pedal (2) down. Use clutch pedal for gear changes only. Damage to clutch may result.

- Step 2.** Push down brake pedal (3) slowly. Stop vehicle.



End of Task.

FRAME 2. TESTING TRACTOR PARKING BRAKE WITH SEMITRAILER.

Step 1. Park vehicle on hill with a grade of approximately 20 percent.

WARNING

Clear personnel and equipment from the immediate area when testing tractor parking brake. Injury to personnel may result.

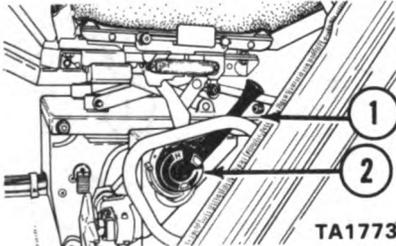
Step 2. Pull back parking brake lever (1). Put brake lever in park position (2).

Step 3. Take foot off brake pedal to assure vehicle parking brake holds.

Step 4. Push down clutch pedal.

Step 5. Move transmission shift lever to neutral position.

Step 6. Take foot off clutch pedal.



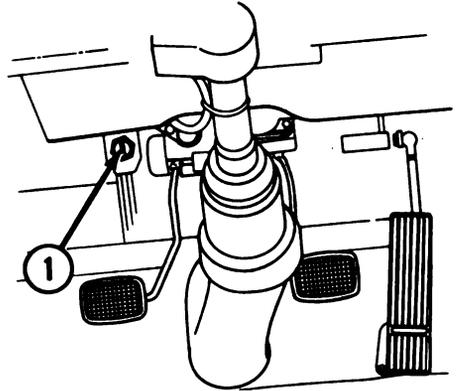
TA177382

Step 7. Turn trailer park brake test valve (1) 1/4 turn right.

NOTE

If tractor parking brake does not hold vehicle on a grade of approximately 20 percent, report problem to organizational maintenance.

Step 8. Release test valve (1)

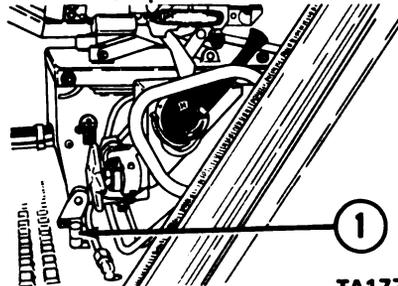


End of Task.

TA177383

FRAME 3. STOPPING ENGINE USING ENGINE BRAKE.

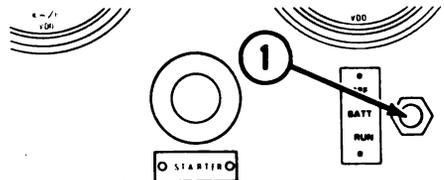
Step 1. Push down engine brake switch (1) until engine stops.



TA177384

Step 2. Push master switch (1) up to off position.

Step 3. Make sure all indicator lights are out.

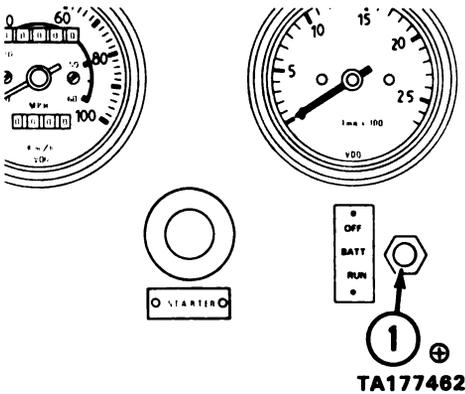


TA177385

End of Task.

FRAME 4. STOPPING ENGINE USING MASTER SWITCH.

- Step 1.** Push master switch (1) up to off position.
- Step 2.** Make sure all indicator lights are out.



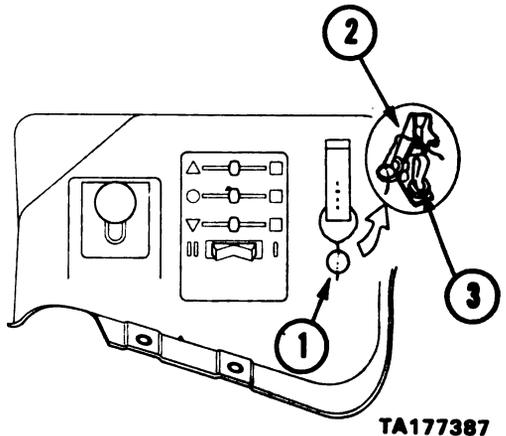
End of Task.

FRAME 5. EMERGENCY STOPPING OF ENGINE.

CAUTION

Do not restart engine after using emergency off switch. Damage to equipment may result. Immediately report problem to organizational maintenance.

- Step 1.** Break seal (1) and lift up protective cover (2).
- Step 2.** Pull emergency off switch (3) up. Wait until engine stops.



End of Task.

2-9. OPERATING LIGHTS.

NOTE

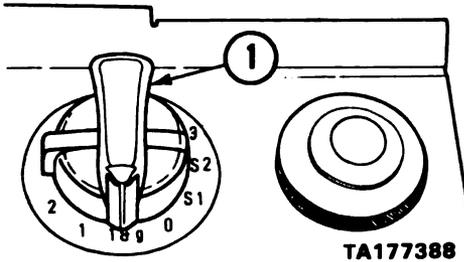
Master switch must be on BATT. or run position.

FRAME 1. NORMAL DRIVING LIGHTS.

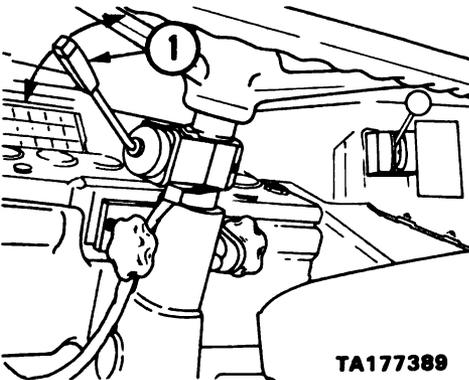
- Step 1.** Turn light switch (1) to number 1 position.
 - Marker lights come on.
 - Tail lights come on.

- Brake light comes on only when you push brake pedal.

- Step 2.** Turn light switch (1) to number 2 position.
- Headlights come on.
 - Marker lights come on.
 - Tail lights come on.



- Step 3.** Move lever (1) to upper hold position. Low beams come on.
- Step 4.** Move lever (1) to lower hold position. High beams come on.



End of Task.

FRAME 2. OPERATE BLACKOUT LIGHTS.

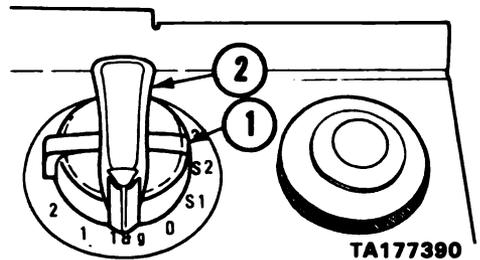
- Step 1.** Push bar (1) to left stop.
- Step 2.** Turn light switch (2) to blackout position.
- S1 position: Convoy light

- and blackout stop light operate.
- S2 position: Blackout driving lights operate.
- S3 position: All blackout lights operate.

- Step 3.** Push down on switch to return to daylight (tag) position.
- Step 4.** Push bar (1) to the right.

NOTE

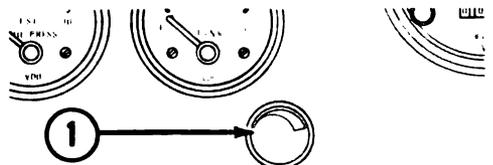
Blackout brake light comes on only when you push brake pedal.



End of Task.

FRAME 3. OPERATE INSTRUMENT LIGHTS.

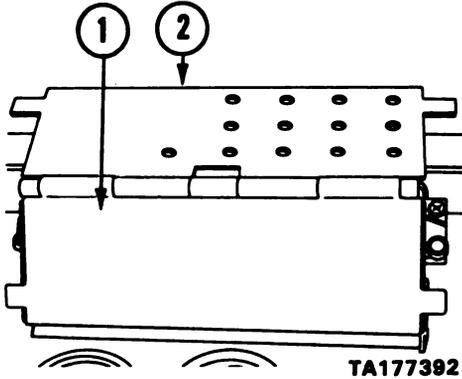
- Step 1.** Turn rotary switch (1) to right position. Instrument lights come on bright.
- Step 2.** Turn switch (1) to left position. Instrument lights dim.



End of Task.

FRAME 4. INDICATOR ANTI-GLARE PLATES.

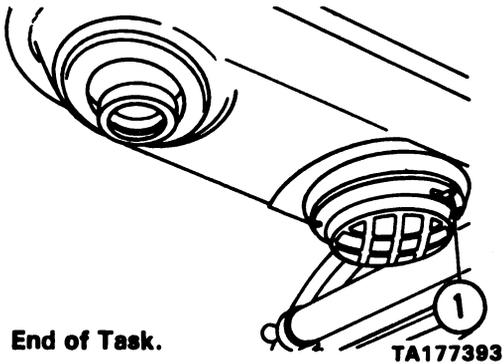
- Step 1. Lower first plate (1) for normal night driving.
- Step 2. Lower plate (2) for blackout driving.
- Step 3. Raise anti-glare plates for day time driving.



End of Task.

FRAME 5. OPERATE DOME LIGHT IN DRIVERS CAB.

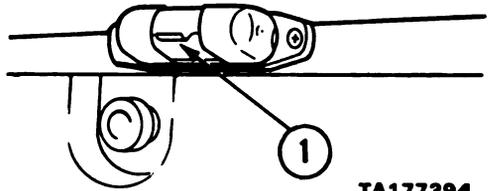
- Step 1. Turn master switch to run position.
- Step 2. Push switch (1) to on position.
- Step 3. Pull switch (1) to off position.



End of Task.
2-58

FRAME 6. OPERATE READING LIGHT.

- Step 1. Turn master switch to run position.
- Step 2. Push up cover (1). Light comes on.
- Step 3. Push down cover (1). Light goes out.



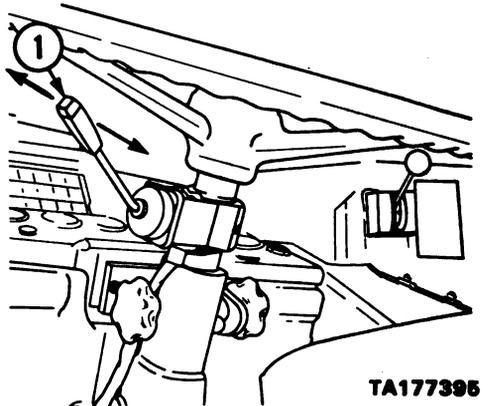
End of Task.

FRAME 7. OPERATE TURN SIGNALS.

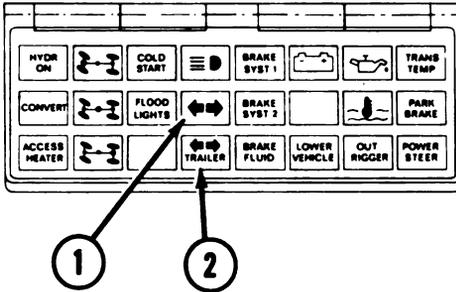
- Step 1. Turn master switch to RUN position.
- Step 2. Move lever (1) up. Right signal light operates.
- Step 3. Move lever (1) down. Left signal light operates.

NOTE

Lever (1) returns automatically to off position after turn.



- Step 3.** Indicator light (1) and trailer indicator light (2) flash as turn signals operate.

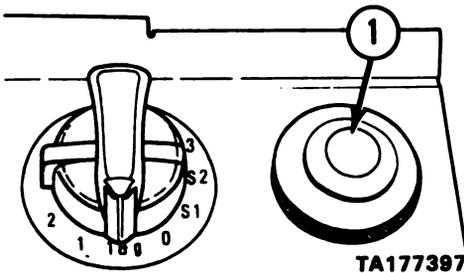


TA177396

End of Task.

FRAME 8. OPERATE HAZARD LIGHTS.

- Step 1.** Push down switch (1). Hazard lights come on. Indicator light in switch (1) flashes.
- Step 2.** Push down switch (1). Hazard lights go out.



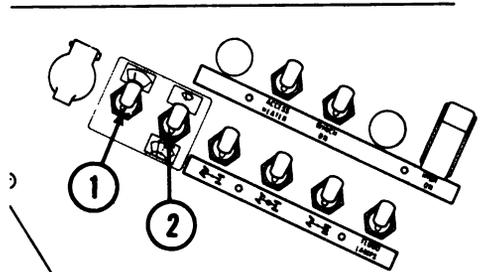
TA177397

End of Task.

2-10. OPERATING WINDSHIELD WIPER AND WASHER.

FRAME 1. OPERATING WINDSHIELD WIPER AND WASHER.

- Step 1.** Put master switch in run position.
- Step 2.** Move windshield wiper switch (1) to position 1. Wipers operate at low speed.
- Step 3.** Move windshield wiper switch (1) to position 2. Wipers operate at high speed.
- Step 4.** Move windshield wiper switch (1) to 0 position. Wipers stop.
- Step 5.** Push up switch (2). Wipers operate in delay mode.
- Step 6.** Pull switch (2) to 0 position. Wipers stop.
- Step 7.** Pull switch (2). Liquid sprays on windshield.
- Step 8.** Push switch (2) to 0 position. Spray stops. Do steps 7 and 8 until windshield is clean.



TA177398

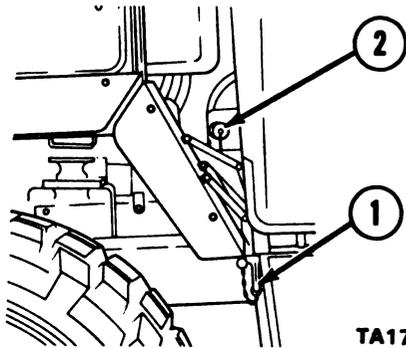
2-11. EMERGENCY STARTING.

2-11a. USING SLAVE RECEPTACLE.

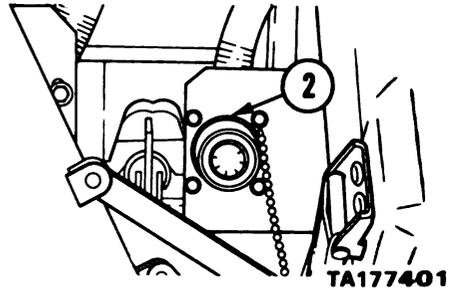
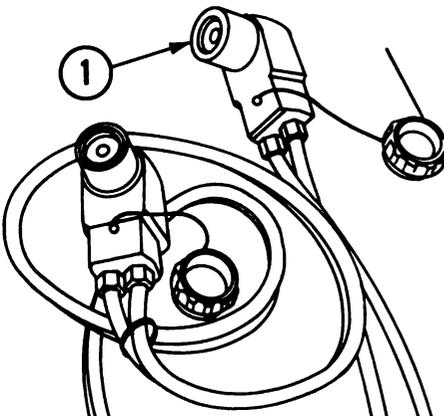
NOTE

Use a 24 volt power source from a M1001, M1002, M1013 or M1014.

- Step 1. Turn off master switch.
- Step 2. Remove clip and pull out pin (1). Lower fender trim.
- Step 3. Pull off slave receptacle cap (2).



- Step 4. Connect one end of power cord (1) to power source.
- Step 5. Connect other end of power cord (1) to slave receptacle (2).



- Step 6. Turn master switch to RUN position.
- Step 7. Start engine. Refer to paragraph 2-7.
- Step 8. Remove power cord.
- Step 9. Push up fender trim to original position and insert pin.

NOTE

Your vehicle may be used to supply 24 volt electrical power for other electrical equipment. Connect slave receptacle between your vehicle and the equipment. Run vehicle engine at approximately 1300 RPM.

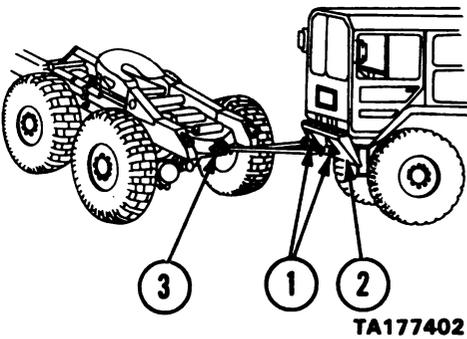
End of Task.

2-11b. TOW STARTING ENGINE WITH TOWBAR.

- Use with model(s): All models.
- Supplies: Towbar.
- Number of personnel: Two.
- Equipment condition: Vehicle parked.
- Task interval: As necessary.
- Reference: None.
- Special safety instructions: None.
- Preliminary tasks: None.

FRAME 1. TOW START ENGINE.

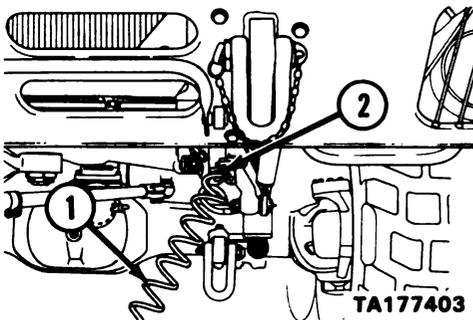
- Step 1.** Soldiers A and B: Pick up tow bar ends (1). Connect ends on vehicle bumper (2).
- Step 2.** Soldiers A and B: Pick up other end (3) of towbar. Connect towbar to pintle (3).
- Step 3.** Soldier A: Lock pintle.



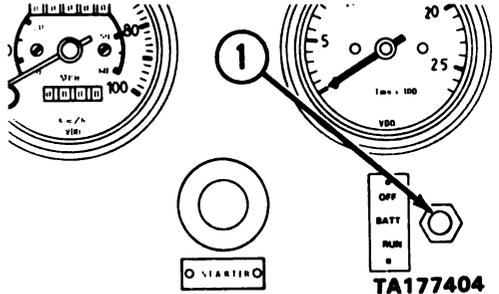
- Step 4.** Connect air supply hose (1) from towing vehicle to connector (2).
- Step 5.** Do Step 4 for air brake supply hose on other side of vehicle.

NOTE

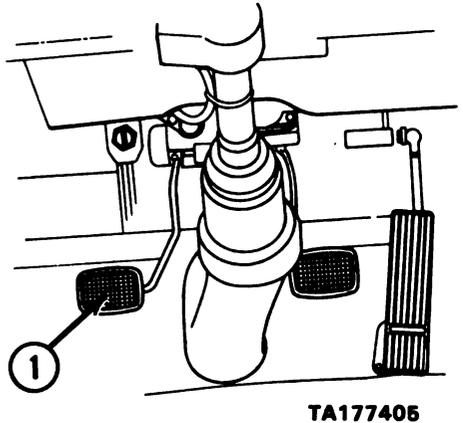
Air pressure gage must read over 90 PSI (620 KPa) on both vehicles before you tow start.



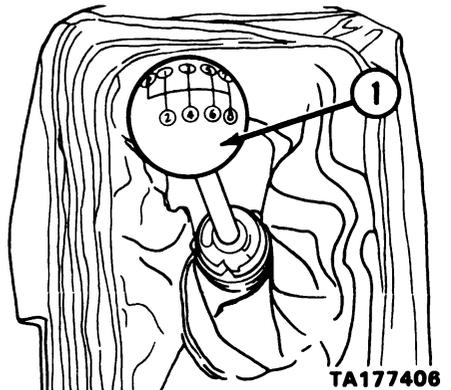
- Step 6.** Turn master switch (1) to RUN position.



- Step 7.** Push down clutch pedal (1).



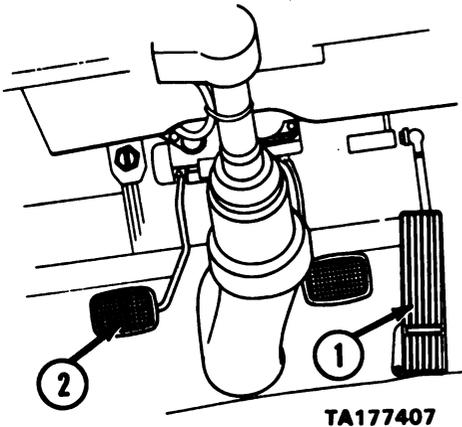
- Step 8.** Move transmission shift lever (1) into third gear.



NOTE

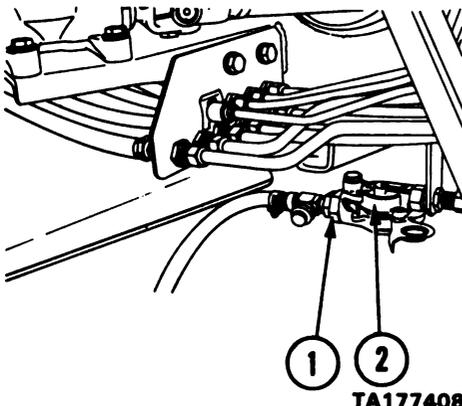
Steering is difficult at speeds below 3 MPH (5 KPH). Auxiliary power steering takes effect after 3 MPH (5 KPH).

- Step 9. Put parking brake lever in off position.
- Step 10. Soldier B: Move towing vehicle at a slow speed.
- Step 11. Soldier A: Take foot off clutch pedal (2) slowly.
- Step 12. Push down accelerator pedal (1).
- Step 13. After engine starts, push down clutch pedal (2).



TA177407

- Step 14. Put transmission shift lever into neutral position.
- Step 15. Run engine at approximately 1000 RPM.
- Step 16. Soldiers A and B: Stop vehicles.
- Step 17. Soldiers A and B: Put parking brake lever in park position.
- Step 18. Remove air supply hose (1) from connector (2).



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- Step 19. Do Step 18 for air brake supply hose on other side of vehicle.
- Step 20. Unlock pintle.
- Step 21. Soldiers A and B: Remove towbar from tow vehicle.
- Step 22. Soldiers A and B: Remove towbar ends from towed vehicle.

End of Task.

2-11c. TOW STARTING ENGINE WITH CHAIN OR CABLE.

Use this method only as a last resort to start engine. Possible damage to vehicle may result.

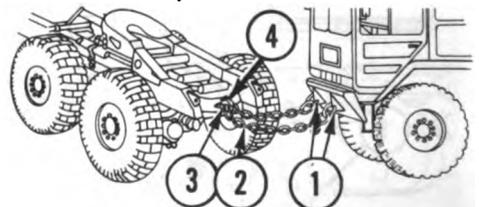
FRAME 1. TOW START ENGINE.

- Step 1. Attach chain or cable ends (1) on vehicle towing eyes.
- Step 2. Attach tow chain or cable (2) to pintle (3).

WARNING

Clear personnel before you move vehicles. Chain or cable may break. Personnel injury may result.

- Step 3. Tow start vehicle. Do Steps 4 through 19 in paragraph 2-11 b.
- Step 4. Remove tow chain or cable (3) from pintle (4).
- Step 5. Remove tow chain or cable ends (1) from vehicle bumper (2).



End of Task.

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2-12. RAISE AND LOWER TILT CAB.

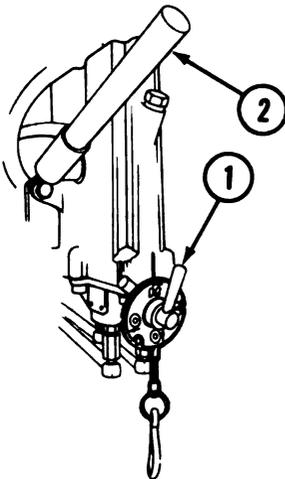
FRAME 1. RAISE CAB.

- Step 1. Secure all loose items in cab.
- Step 2. Close doors.
- Step 3. Remove pump handle from storage.
- Step 4. Check over head clearance. Minimum clearance must be 13 feet (4.0 meters).
- Step 5. Check forward clearance. Minimum clearance must be 5 feet (1.5 meters).
- Step 6. Turn lever handle (1) on hydraulic pump to cab raise position.

WARNING

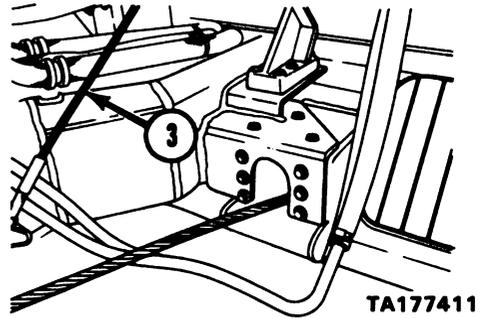
Check that personnel are not standing immediately in front of vehicle or inside cab before raising cab.

- Step 7. Put pump lever (2) in socket of the pump.
 - Work pump handle until the cab is in the full up position.



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- Step 8. Tight cable (3) indicates cab in full up position.
- Step 9. Turn lever handle left or right 1/4 turn.

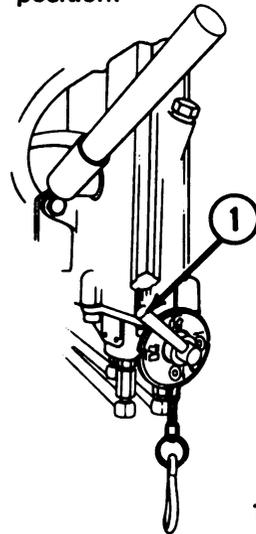


CAUTION

Fold back rear view mirrors to doors to prevent mirror damage. When climbing into cab with cab in the tilted position, do not use the doors as a step. Lower door slowly.

FRAME 2. LOWER CAB.

- Step 1. Remove all tools from engine area.
- Step 2. Turn lever (1) to cab lower position.



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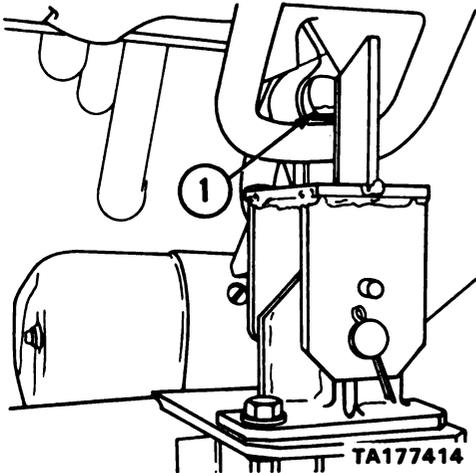
- Step 3. Work pump handle until cab returns to lock position.

NOTE

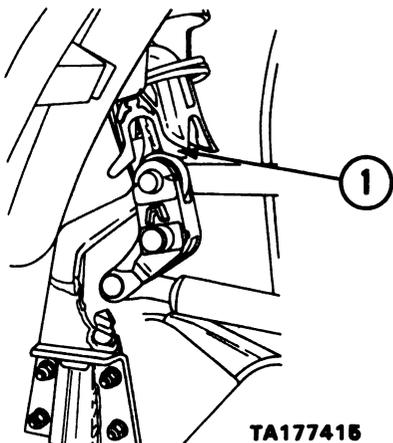
Cab must seat on cab locks and gear shift on transmission shift linkage.

Step 4. Check rear cab locks. Locks (1) must close.

Step 5. Turn valve lever $\frac{1}{4}$ turn right or left to release pressure in system.



Step 6. Check linkage coupling (1). Linkage must line up.



Step 7. Remove and store pump handle.

End of Task.

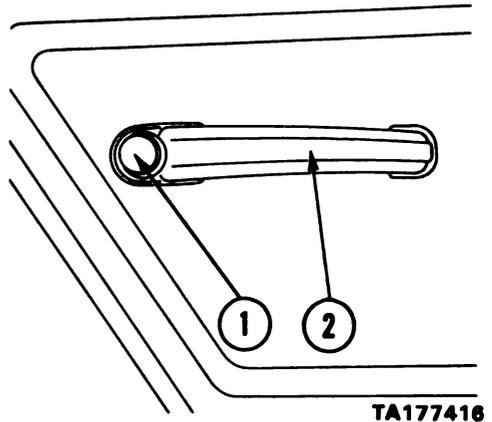
2-13. OPERATING DOORS, WINDOWS, FLAPS, LIDS AND OTHER BODY ACCESSORIES.

2-13a. OPERATING CAB DOOR.

FRAME 1. OPERATE FROM OUTSIDE OF VEHICLE.

Step 1. Press button (1) on handle (2).

Step 2. Open door.



End of Task.

FRAME 2. OPERATE DOOR FROM INSIDE CAB.

Step 1. Pull handle (1) to the rear.

Step 2. Open door (2).

NOTE

To lock passenger door (2), push handle (1) up. Driver's door cannot be locked from inside.

2-13c. OPERATING SUN VISOR.

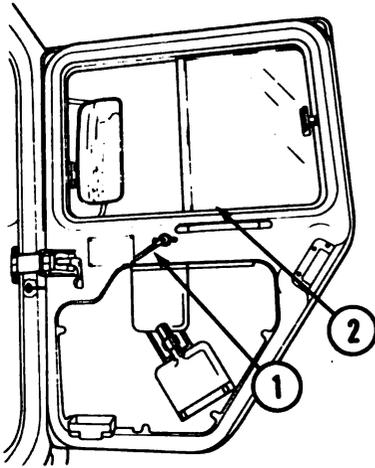
FRAME 1. SUN VISOR ADJUSTMENT.

- Step 1.** Pull tab (1) on bottom of visor (2).
- Step 2.** Move visor (2) to proper height.

End of Task.

FRAME 2. RAISE SUN VISOR.

- Step 1.** Press down lever (3). Visor returns to up position automatically.



End of Task.

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2-13b. OPERATING DOOR WINDOWS.

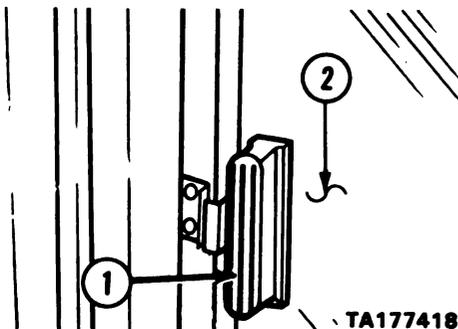
FRAME 1. OPEN WINDOW.

- Step 1.** Squeeze lock handle (1).
- Step 2.** Slide open window (2).

End of Task.

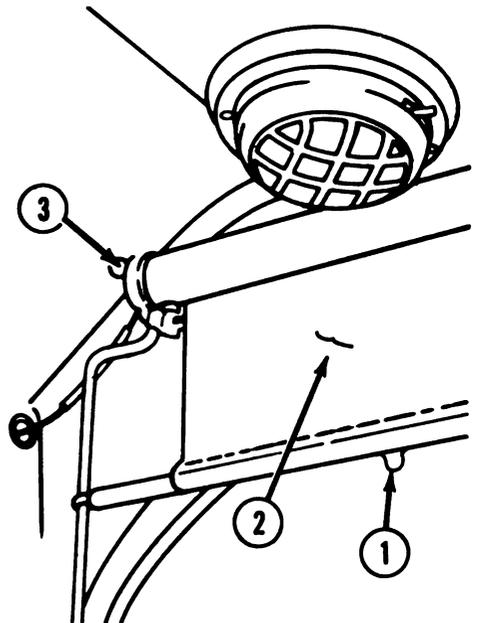
FRAME 2. CLOSE WINDOW.

- Step 1.** Slide window (2) to closed position.
- Step 2.** Lock engages automatically.



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End of Task.



End of Task.

TA177419

2-13d. DASH PANEL DOOR.

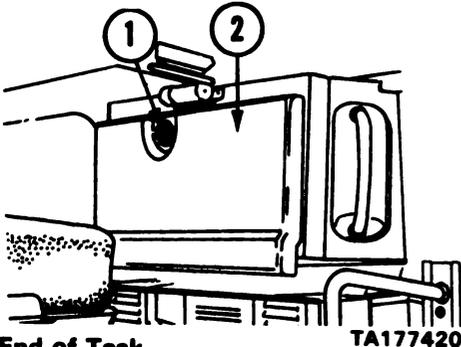
FRAME 1. OPEN DOOR.

Step 1. Turn knob (1). Pull down door (2) to open.

End of Task.

FRAME 2. CLOSE DOOR.

Step 1. Push up door (2) to closed position. Door locks automatically.



End of Task.

2-13e. CAB REAR WALL STORAGE COMPARTMENT DOOR.

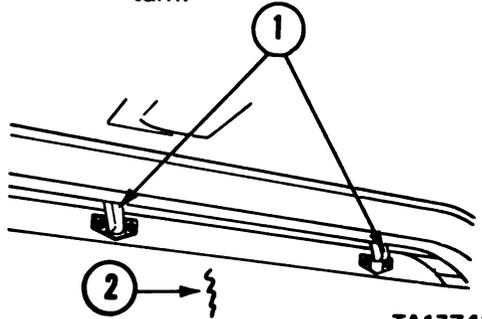
FRAME 1. OPEN DOOR.

Step 1. Move levers (1) right 1/4 turn.
Step 2. Lower door (2) to open position.

End of Task.

FRAME 2. CLOSE DOOR.

Step 1. Push door (2) to closed position.
Step 2. Move levers (1) right 1/4 turn.



End of Task.

2-13f. STORAGE BOXES.

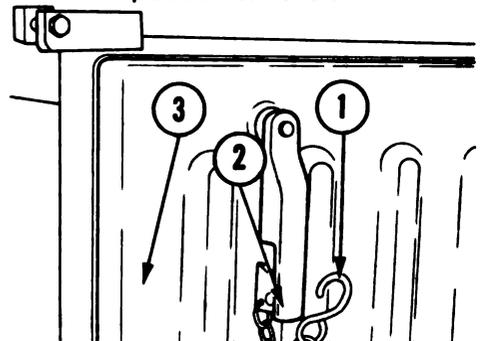
FRAME 1. OPEN BOX.

Step 1. Remove padlock and safety hook (1) from lever (2).
Step 2. Move two levers to the right.
Step 3. Open door (3).

End of Task.

FRAME 2. CLOSE BOXES.

Step 1. Close door (3).
Step 2. Move two levers (2) to the left.
Step 3. Hook safety hook (1). Lock padlock on lever.

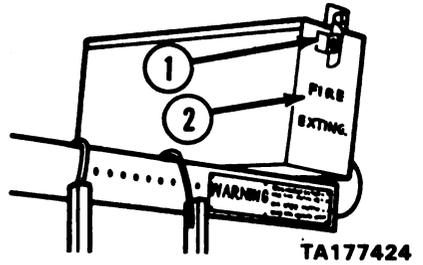


End of Task.

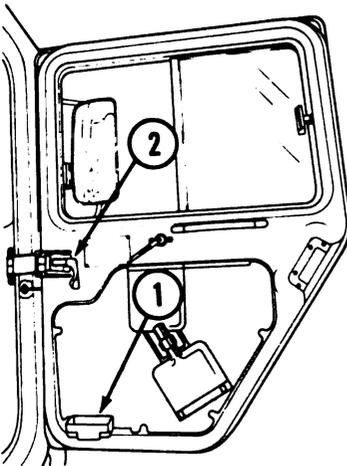
2-13g. RIFLE RACK (BOTH DOORS).

FRAME 1. STOW RIFLE.

- Step 1.** Put butt of rifle in lower support (1).
- Step 2.** Put upper part of rifle in support (2).
- Step 3.** Turn rifle retaining handle to secure rifle in place.



End of Task.

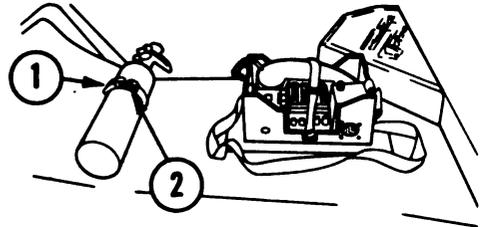


TA177423

End of Task.

2-13h. EXTERNAL FIRE EXTINGUISHER BOX.

- Step 1.** Push lever (1) to the right.
- Step 2.** Pull down on door to open box (2).

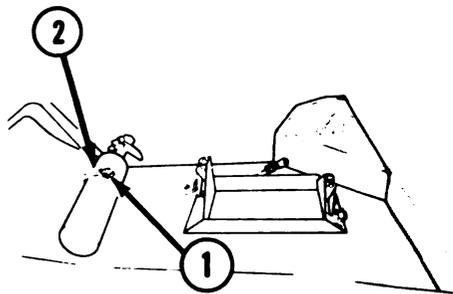


- Step 3.** Remove fire extinguisher from clamp.

FRAME 2. OPERATING FIRE EXTINGUISHER.

- Step 1. Hold fire extinguisher upright.
- Step 2. Point nozzle (1) in the direction of the area you want to spray.
- Step 3. Remove clip (2) from handle.
- Step 4. Pull up on handle (3) to discharge fire extinguisher.

- Step 2. Clean fire extinguisher.
- Step 3. Place fire extinguisher in storage clamp.
- Step 4. Insert clamp strap (1) in handle detent.
- Step 5. Pull down clamp handle (2).



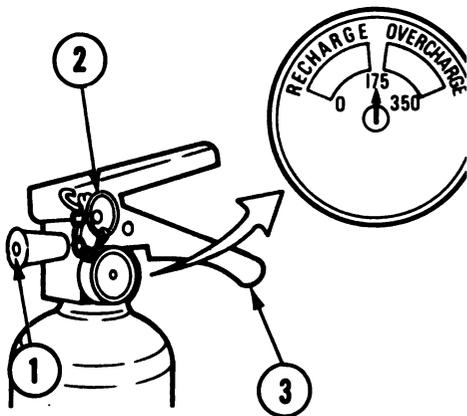
TA177426

FRAME 3. STOWING FIRE EXTINGUISHER.

NOTE

A discharged fire extinguisher must be recharged as soon as possible.

- Step 1. Replace clip (2).



TA177427

End of Task.

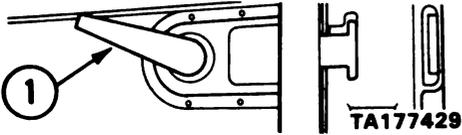
2-13j. WRECKER CARGO BOX PANELS OPERATION (M1002 ONLY).

FRAME 1. OPENING SIDE PANELS.

- Step 1. Hold panel securely.
- Step 2. Push up panel handle (1) on right side of panel.
- Step 3. Push up panel handle on left side of panel.
- Step 4. Pull out on panel. Slowly lower panel to side of vehicle.

NOTE

Side panel operation is the same for both sides of cargo box.



End of task.

- Step 5.** Soldiers A and B: Slide up panel and lift off cargo box.
- Step 6.** Soldiers A and B: Lay panel on flat surface.
- Step 7.** Do Steps 1 through 6 for other side and rear panel.
- Step 8.** Slide up and remove panel corner support brackets (1) on both sides of box.

FRAME 2. REMOVING SIDE AND REAR PANELS.

Use with model(s): M1002

Supplies: None.

Number of personnel: Two.

Equipment condition: Parking brake on.

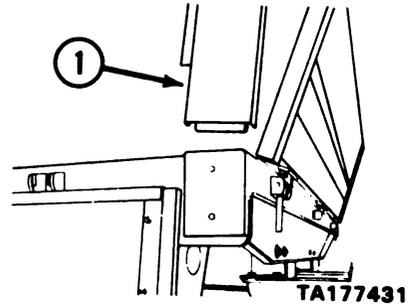
Task interval: None.

Reference: None.

Special safety instructions: Soldier A work from inside of cargo box.

Preliminary tasks: None.

- Step 1.** Soldier A: Hold panel securely.
- Step 2.** Soldier B: Do Steps 2 and 3 in Frame 1.



NOTE

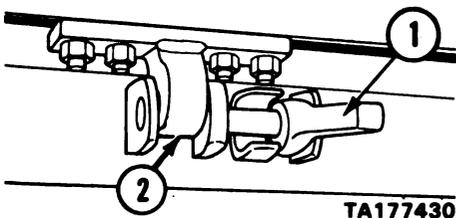
Cargo box front panel is the stationary support panel. It should only be removed for maintenance. Refer to Frame 4 to stow panels.

End of Task.

NOTE

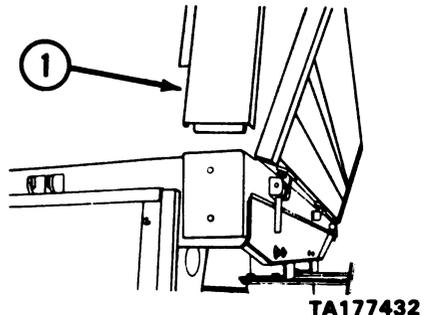
Rear cargo panel has two locks (2), which must be opened when removing panel.

- Step 3.** Soldier B: Pull up lever (1) to center position.
- Step 4.** Soldier B: Push lever (1) to the right.

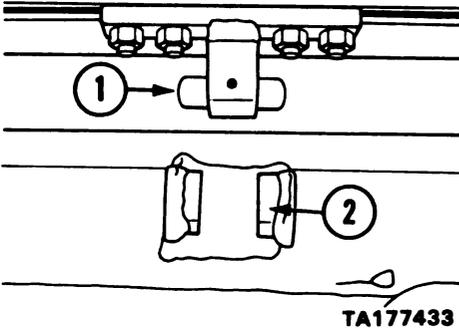


FRAME 3. REPLACING SIDE AND REAR PANELS.

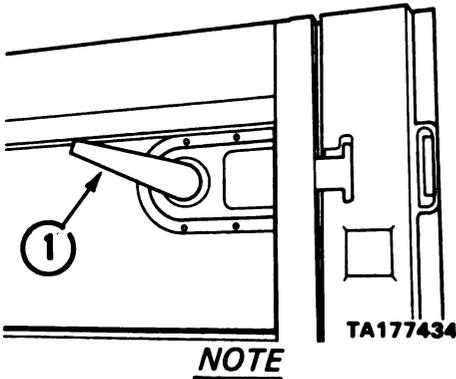
- Step 1.** Slide in panel corner support brackets (1) on both sides of box.



Step 2. Soldiers A and B: Insert side panel pivot pins (1) in holder (2).

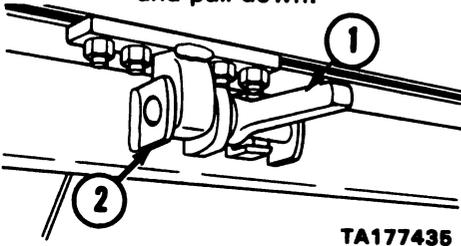


Step 3. Push side panel in place.
Step 4. Push down handles (1) on both sides of panel.



Rear cargo panel has two locks (2), which must be closed.

Step 5. Slide lever (1) to the left and pull down.

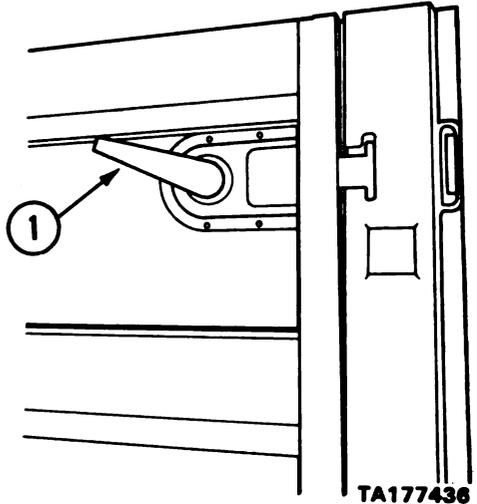


Step 6. Do Steps 1 through 5 for other side and rear panels.

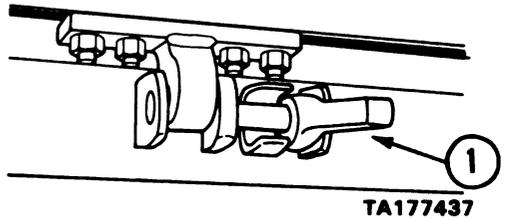
End of Task.
2-70

FRAME 4. STOWING REAR PANEL.

Step 1. Soldier A: Hold rear panel securely.
Step 2. Soldier B: Pull down panel handle (1) on both sides of panel.



Step 3. Soldier B: Pull up two levers (1) to center position.
Step 4. Soldier B: Push two levers (1) to the right.



Step 5. Soldiers A and B: Lift up and remove panel.

NOTE

Rear panel must rest in storage brackets with panel handles towards front of vehicle.

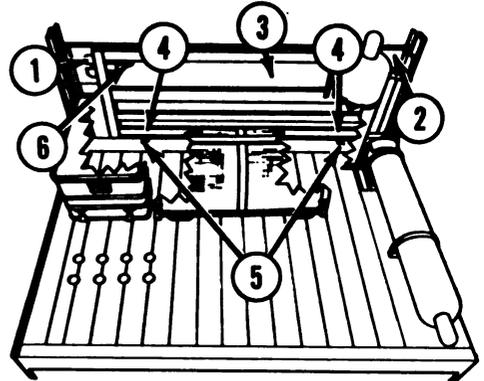
Step 6. Soldiers A and B: Slide rear panel into storage support brackets (1) on front panel.

Step 7. Pull up handles (2) on both sides of rear panel.



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End of Task.



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NOTE

Do Steps 1 and 2 to stow other side panel.

Step 3. Lift up and remove panel corner support bracket (1).

NOTE

Corner bracket does not go all the way down even with top of front panel.

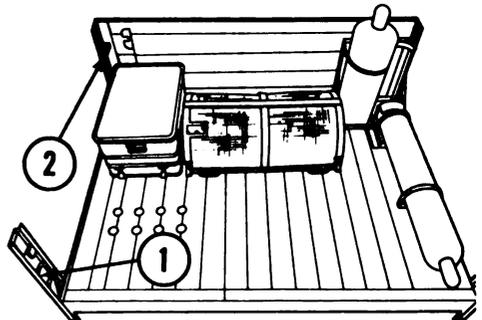
Step 4. Slide support brackets into two retaining brackets (2).

Step 5. Do Steps 3 and 4 for other panel support bracket.

FRAME 5. STOWAGE OF SIDE PANELS.

Step 1. Pull out two catches (1) on both sides of front panel (2).

Step 2. Position side panel (3) between two catches (1). Check that panel pivot pins (4) sit in grooves of mounting brackets (5). Pull down two levers (6) to secure side panels.



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End of Task.

2-13k. ACCESS LADDER.

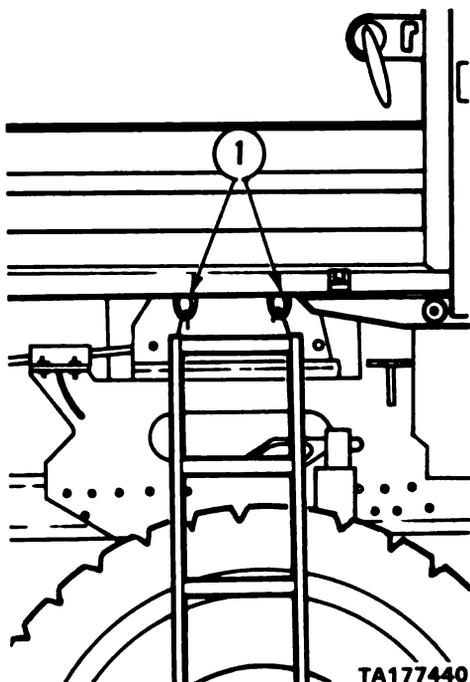
**FRAME 1. CLIMBING POINT
ONE — CARGO
BOX (M1002
ONLY).**

Step 1. Turn locking handles (1) to rear to unlock position.

NOTE

The access ladder has two hooks at the top. The hooks are used to attach the ladder at the climbing point.

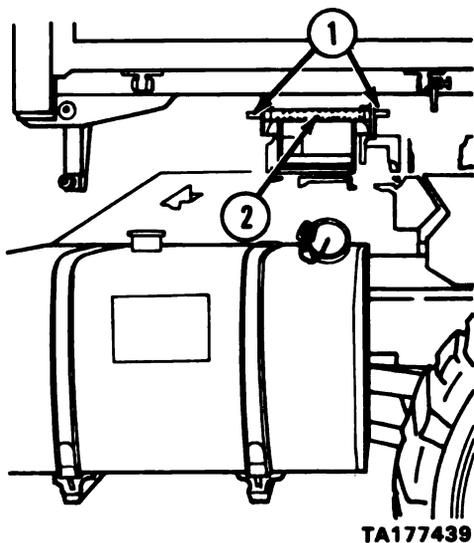
Step 2. Pull out access ladder (2).



NOTE

Go to Frame 3 to stow ladder.

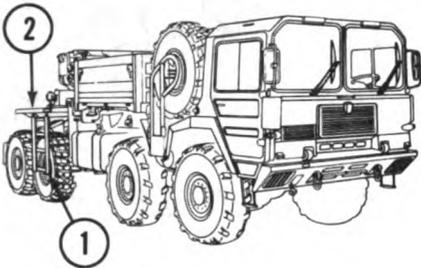
End of Task.



Step 3. Hook ladder in eyelets (1).
Lay ladder against tire.

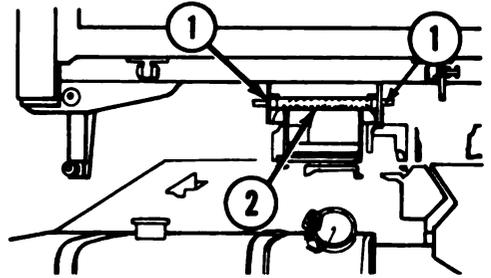
FRAME 2. CLIMBING POINT TWO – DECKS.

- Step 1.** Place ladder (1) in center of third or fourth axle tire.
- Step 2.** Slide hooks into holes on rear deck (2).



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- Step 4.** Slide ladder half way into storage rack.
- Step 5.** Pull locking handles (1) to forward position.
- Step 6.** Slide ladder all the way to the rear of the storage rack. Handles automatically lock.



TA177441

End of Task.

NOTE

Go to Frame 3 to stow ladder.

End of Task.

FRAME 3. REMOVING AND STOWING LADDER.

- Step 1.** Turn locking handles (1) to rear to unlock position.
- Step 2.** Pull out access ladder (2).
- Step 3.** Remove ladder from climbing point.

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TO 36A12-1C-461-1

2-13L. OPERATING FLOODLIGHTS.

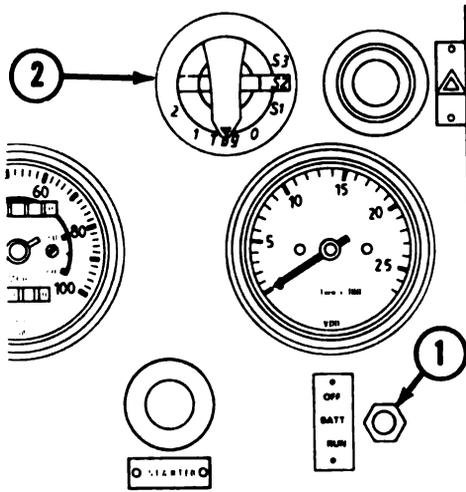
WARNING

Do not operate floodlights while vehicle is being driven on roadways. Floodlights are very bright and may temporarily blind other drivers.

FRAME 1. TURN ON FLOODLIGHTS.

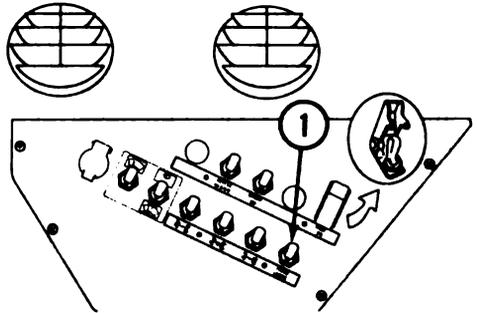
Step 1. Turn master switch (1) to either BATT. or RUN position.

Step 2. Turn light switch (2) to either position 1 or 2.



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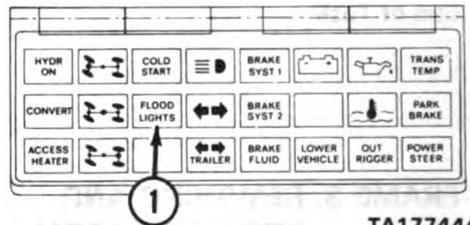
Step 3. Turn floodlight switch (1) on.



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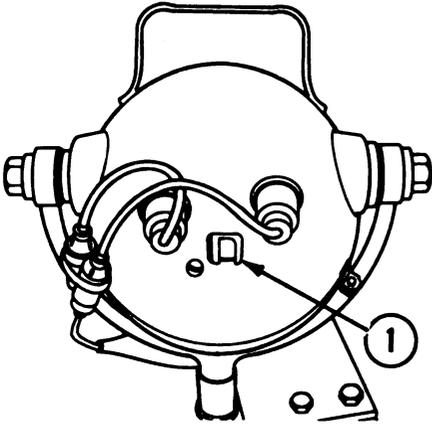
NOTE

After doing steps 1 through 3 above, floodlight indicator (1) should be lit. If this indicator is not lit, notify maintenance.



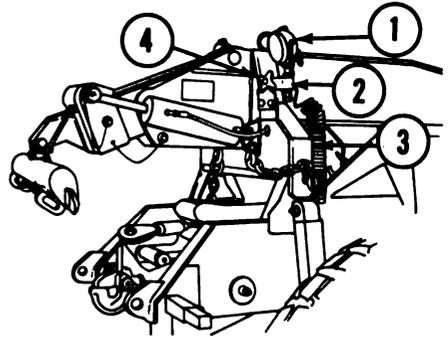
TA177444

Step 4. Push light switch (1) up to operate individual floodlights.



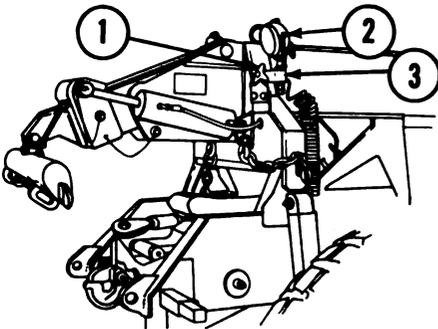
TA177445

Step 2. Store cable (3) as shown.
Step 3. Turn knob (4) to the right, tighten until floodlight is secure in storage bracket.



TA177447

Step 5. Loosen knob (1) to remove floodlight (2) from storage bracket (3).

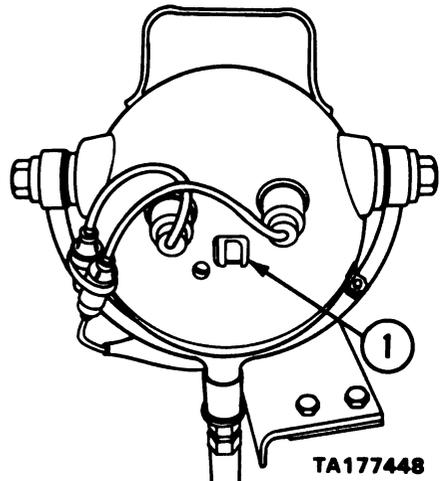


TA177446

FRAME 2. STOWING FLOODLIGHTS.

Step 1. Place floodlight (1) on storage bracket (2).

Step 4. Turn off floodlight switch (1) on rear of each floodlight.

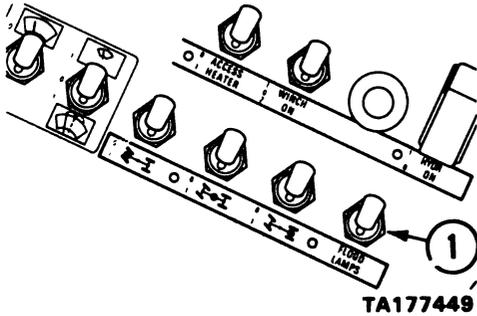


TA177448

End of Task.

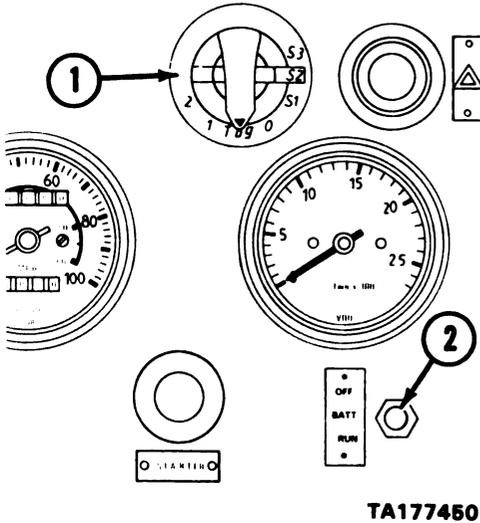
**TM 9-2320-282-10
TO 36A12-1C-461-1**

Step 5. Turn off floodlight switch (1).



Step 6. Turn light switch (1) to tag.

Step 7. Turn master switch (2) to off position.

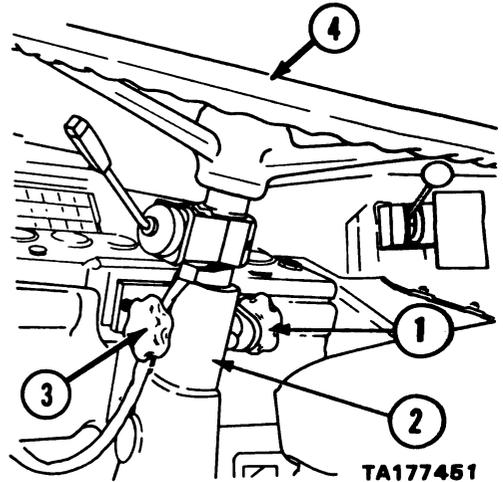


End of Task.

**2-13m. STEERING WHEEL
ADJUSTMENT.**

**FRAME 1. STEERING WHEEL
ANGLE AND
HEIGHT.**

- Step 1.** Loosen knob (1).
- Step 2.** Move steering column (2) forward or back as desired.
- Step 3.** Tighten knob (1).
- Step 4.** Loosen knob (3).
- Step 5.** Move steering wheel (4) up or down as desired.
- Step 6.** Tighten knob (3).



End of Task.

2-13n. FRONT BUMPER STEP.

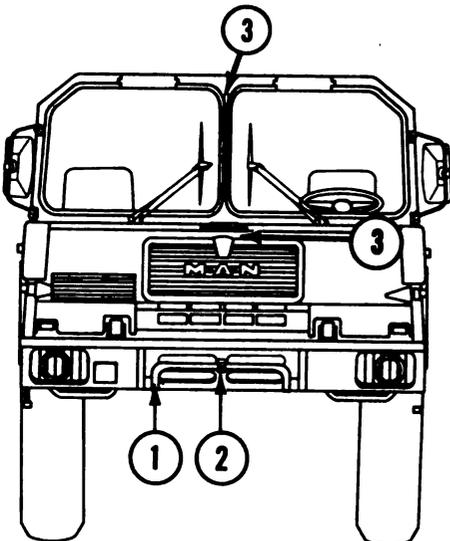
FRAME 1. LOWER STEP.

- Step 1.** Pull step (1) out of lock clamp (2).

- Step 2. Push down step.
- Step 3. Use hand holds (3) when standing on step.

FRAME 2. RAISE STEP.

- Step 1. Pull up step (1).
- Step 2. Push step into lock clamp (2).



TA177453

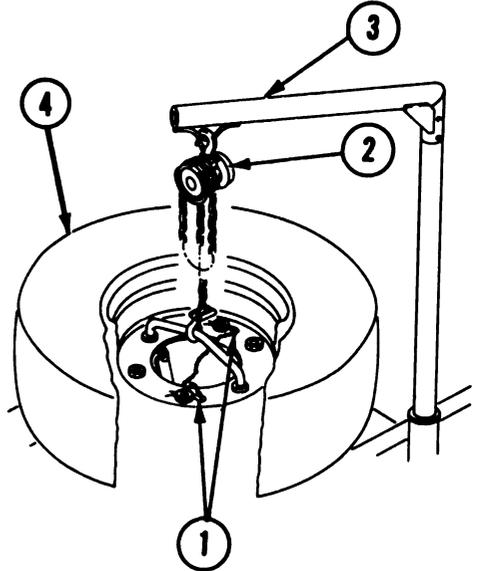
End of Task.

2-13p. REMOVE AND REPLACE TRAILER SPARE WHEEL (M1014 ONLY).

FRAME 1. REMOVE.

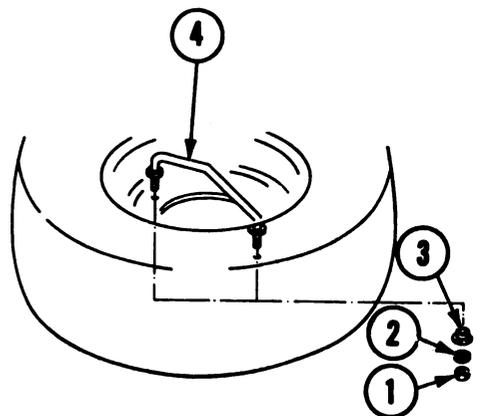
- Step 1. Remove two lock clips (1).
- Step 2. Operate chain hoist (2). Lift spare wheel until it is clear of spare wheel holder.
- Step 3. Push chain hoist arm (3) to the left until spare wheel (4) clears vehicle.

- Step 4. Operate chain hoist (2). Lower spare wheel to the ground.



TA177454

- Step 5. Remove lifting hook from lifting bar (4).
- Step 6. Remove two nuts (1) with washers (2) and spacers (3) from lifting bar (4).
- Step 7. Remove lifting bar (4).

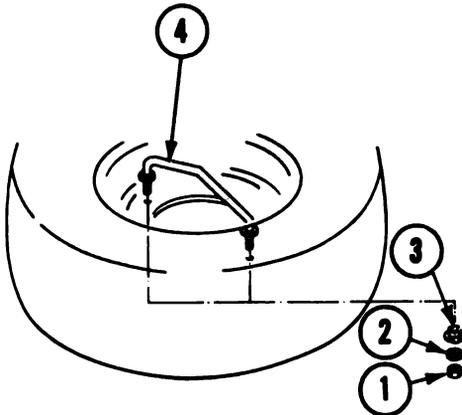


TA177455

End of Task.

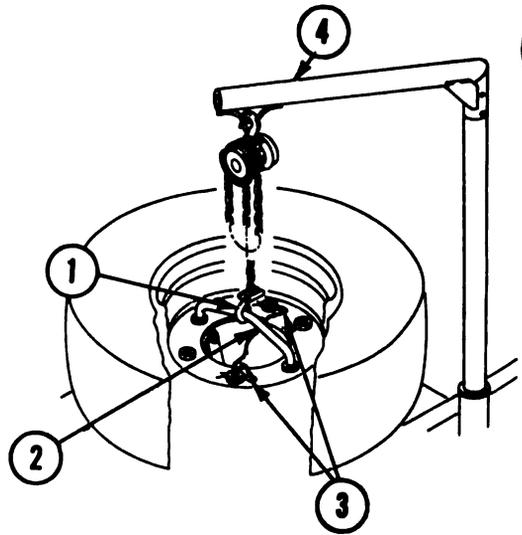
FRAME 2. REPLACE.

- Step 1.** Put lifting bar (4) through two stud holes in spare wheel.
- Step 2.** Put on two nuts (1) with washers (2) and spacers (3). Tighten nuts.



TA177456

- Step 3.** Attach chain hoist hook (1) to lifting bar (2).
- Step 4.** Operate chain hoist. Lift spare wheel until spare wheel is higher than spare wheel holder.
- Step 5.** Push chain hoist arm (4) to the right until spare wheel is centered over spare wheel holder.
- Step 6.** Soldier A: Operate chain hoist. Lower spare wheel onto spare wheel holder.
- Step 7.** Soldier B: Guide spare wheel so studs on spare wheel holder go through stud holes in spare wheel.
- Step 8.** Put two lock clips (3) into studs in spare wheel holder.
- Step 9.** Operate chain hoist. Take up slack in lifting chain.



TA177457

End of Task.

2-13q. REMOVE AND REPLACE TRAILER SPARE WHEEL (M1002 ONLY).

Use material handling crane to remove spare wheel. Refer to paragraph 2-17.

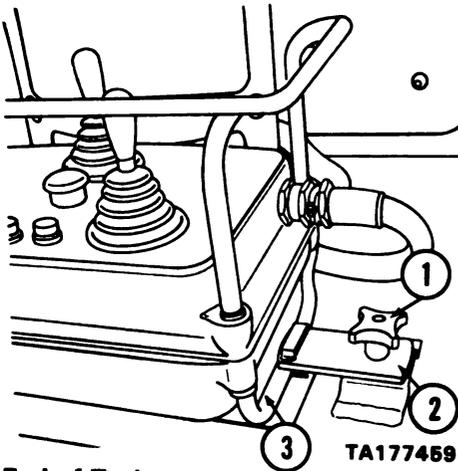
2-13r. MATERIAL HANDLING CRANE REMOTE CONTROL — STORAGE LOCATION.

FRAME 1. REMOVING REMOTE CONTROL.

- Step 1.** Unscrew locking knob (1).
- Step 2.** Slide retaining bar (2) off remote bracket (3).
- Step 3.** Remove remote control unit from retaining bracket.

FRAME 2. STOWING REMOTE CONTROL.

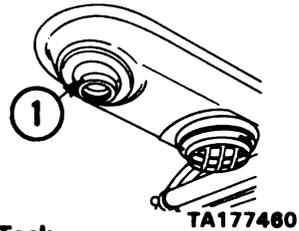
- Step 1.** Slide remote control unit into rear retaining bracket.
- Step 2.** Slide retaining bar (2) over remote control bracket (3).
- Step 3.** Tighten locking knob (1).



End of Task.

2-13s. OPERATING CAB CEILING AIR VENTS.

- Step 1.** Turn vent (1) to the right for fresh air.
- Step 2.** Turn vent (1) to the left to close.



End of Task.

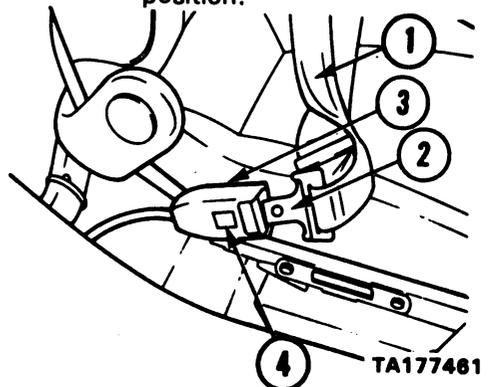
2-13t. OPERATING DRIVER AND ASSISTANT DRIVER SEAT BELTS.

FRAME 1. FASTENING BELTS.

- Step 1.** Pull belt (1) across body.
- Step 2.** Push belt clip (2) into clip fastener (3).

FRAME 2. UNHOOKING BELTS.

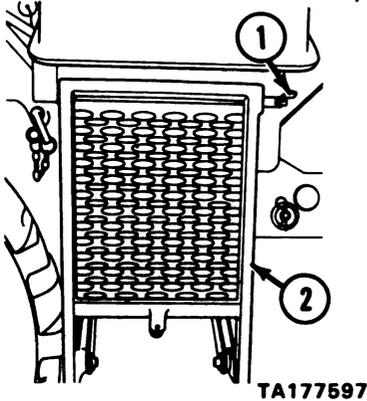
- Step 1.** Push button (4) to release belt clip. Belt returns automatically to stow position.



End of Task.

2-13u. OPERATING BATTERY BOX STEP.

- Step 1. Pull out lock handle (1) and pull down battery box step (2).
- Step 2. Push up step (2). Step locks in place automatically.

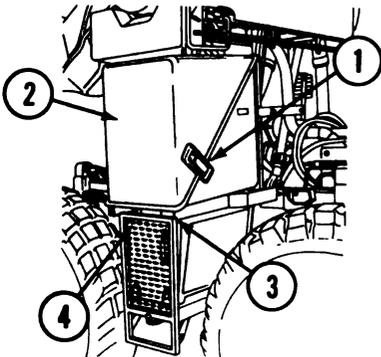


2-13v. OPERATING BATTERY BOX TRAYS.

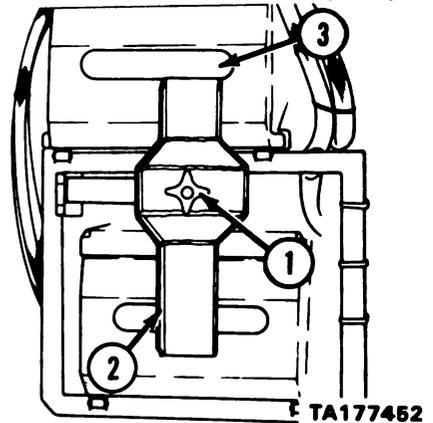
WARNING

Do not smoke or have an open flame nearby when checking batteries. Batteries emit gases which are very explosive. Injury to personnel may result.

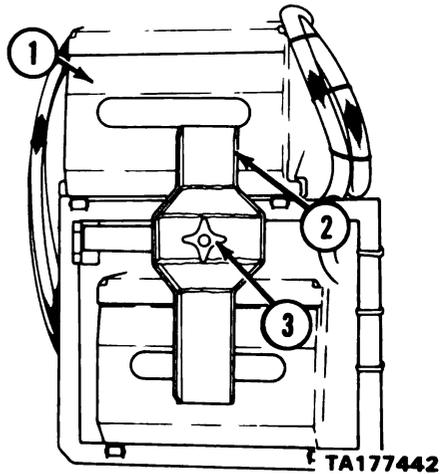
- Step 1. Open two cover latches (1). Remove battery box cover (2).
- Step 2. Pull out lock handle (3) and pull down step (4).



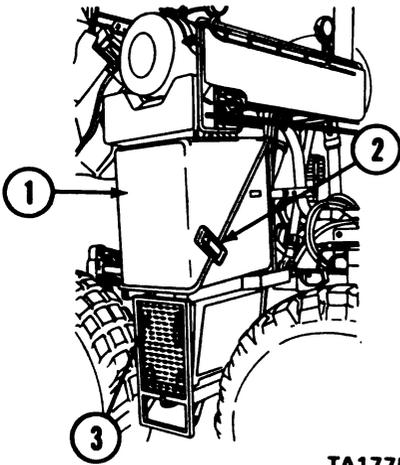
- Step 3. Unscrew battery retaining bar screw (1). Pull bar (2) out of the way.
- Step 4. Grab battery trays in hole (3). Slide out battery tray.



- Step 5. Push in battery tray (1).
- Step 6. Close retaining bar (2) and tighten screw (3).



- Step 7. Put battery box cover (1) in place and close two latches (2).
- Step 8. Push up step (3).



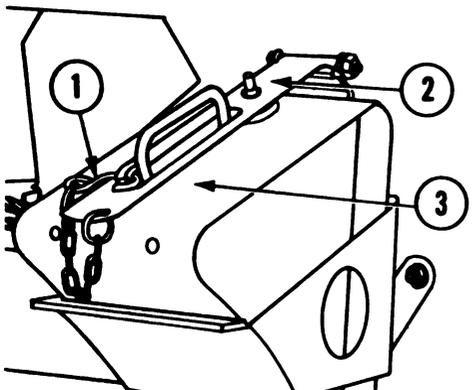
TA177586

End of Task.

2-13w. WHEEL CHOCKS.

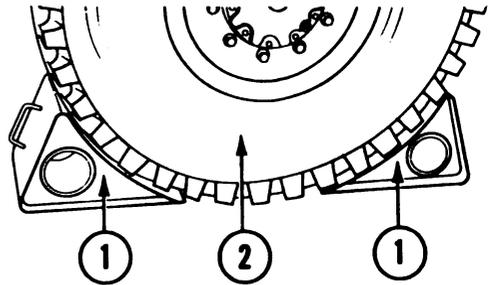
FRAME 1. REMOVE WHEEL CHOCKS FROM HOLDERS.

- Step 1.** Pull out hook (1). Lift up arm (2). Remove wheel chock (3).
- Step 2.** Do Step 1 to other wheel chock.



TA177588

- Step 3.** Place both wheel chocks (1) under wheel (2).

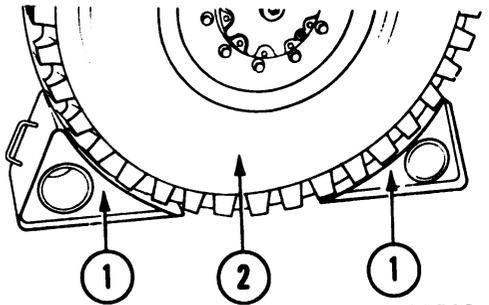


TA177587

End of Task.

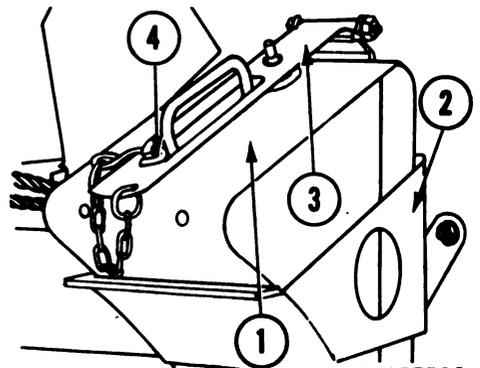
FRAME 2. PUT WHEEL CHOCKS BACK IN HOLDERS.

- Step 1.** Take wheel chocks (1) from under wheel (2).



TA177589

- Step 2.** Put wheel chock (1) in holder (2).
- Step 3.** Lower arm (3). Put in hook (4).
- Step 4.** Do Steps 2 and 3 to other wheel chock.



TA177592

End of Task.

2-14. OPERATING DRIVER AND ASSISTANT DRIVER SEAT.

2-14a. DRIVERS SEAT ADJUSTMENT.

NOTE

Always make air adjustment before height adjustment.

FRAME 1. AIR ADJUSTMENT.

NOTE

Seat adjustment must be made with at least 100 PSI in both brake circuits.

- Step 1. Lift up seat adjustment lever (2).
- Step 2. Push lever forward to release air pressure and lower seat.
- Step 3. Push lever to the rear and hold.

NOTE

Air pressure will adjust suspension comfort automatically according to weight of driver.

- Step 4. Release lever when seat stops.
- Step 5. Push lever down.

End of Task.

FRAME 2. HEIGHT ADJUSTMENT.

- Step 1. Lift up lever (1) on left side of seat. Hold lever (1) up.

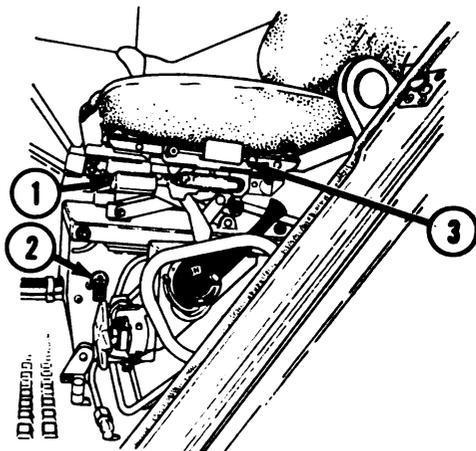
2-82

- Step 2. Adjust seat height. Release lever (1).

End of Task.

FRAME 3. FORWARD AND BACK ADJUSTMENT.

- Step 1. Lift lever (3) on left side of seat. Hold lever (3) up.
- Step 2. Move seat. Release lever (3).



TA177463

End of Task.

FRAME 4. BACKREST ADJUSTMENT.

NOTE

See adjustment for assistant driver seat.

2-14b. ASSISTANT DRIVER SEAT ADJUSTMENT.

FRAME 1. HEIGHT ADJUSTMENT.

- Step 1. Raise lever (1). Hold lever.
- Step 2. Adjust seat height.
- Step 3. Release lever (1).

End of Task.

FRAME 2. FORWARD AND BACK ADJUSTMENT.

- Step 1. Lift lever (2). Hold lever.
- Step 2. Move seat as necessary.
- Step 3. Release lever (2).

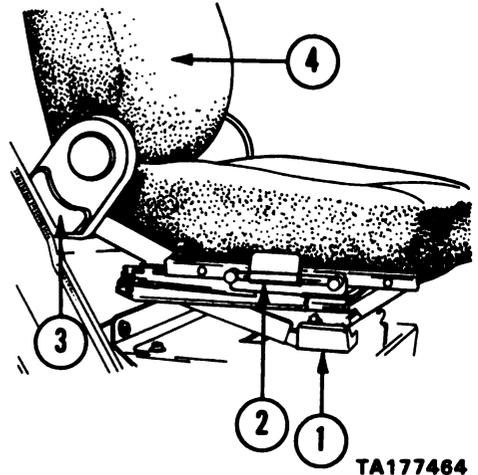
End of Task.

FRAME 3. BACKREST ADJUSTMENT.

NOTE

Backrest adjustment is the same for both cab compartment seats. Lever (3) is on left side of driver seat.

- Step 1. Lift lever (3). Hold lever.
- Step 2. Adjust backrest (4).
Release lever (3).



End of Task.

2-15. OPERATING SELF RECOVERY WINCH.

Use with model(s): All models.
Supplies: Leather gloves.
Number of personnel: One.
Equipment condition: Vehicle in line with load.
Task interval: As necessary.
Reference: FM 20-22 recovery operations.
Special safety instructions: Wear leather gloves.
Preliminary task: Check cable need.
Refer to FM 20-22 recovery operations.

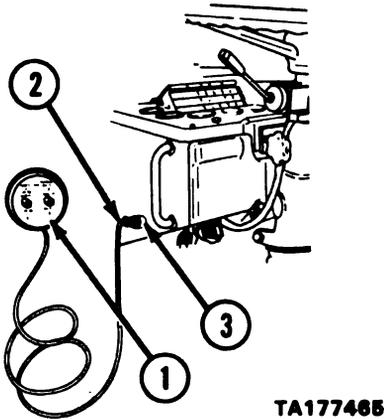
2-15a. OPERATE SELF RECOVERY WINCH.

FRAME 1. PREPARE WINCH FOR USE.

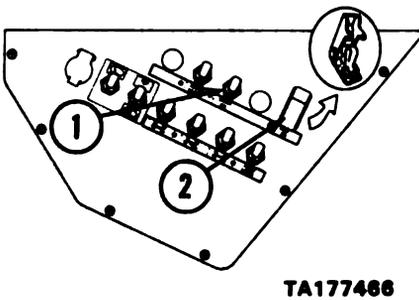
NOTE

Follow steps below for cable toward front or cable toward rear.

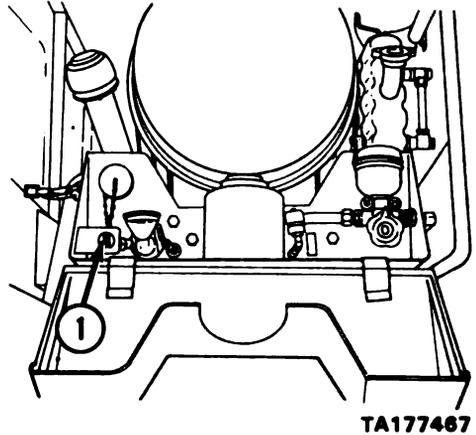
- Step 1.** Pull cable winch remote control (1) from storage box.
- Step 2.** Connect remote control cable end (2) to socket (3).



- Step 3.** Start engine. See paragraph 2-7. Set engine idle at 1400 RPM.
- Step 4.** Turn on main winch switch (1) to position 1.
- Step 5.** Turn on HYDR ON switch (2).



- Step 6.** Turn hydraulic valve selector lever (1) to winch position.



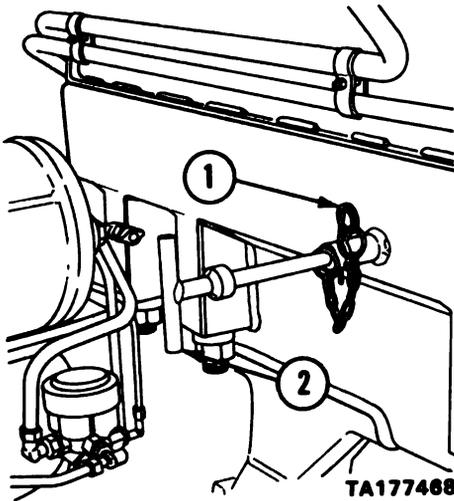
FRAME 2. ROUTE WINCH CABLE TOWARD FRONT.

- Step 1.** Use remote control unit. Hold toggle switch in the reel off position until winch cable is slack.

NOTE

Denture clutch handle location is on driver's side of vehicle in front of rear intermediate axle. Pulling out handle disengages denture clutch. Push in handle to engage clutch.

- Step 2.** Pull out pin (1).
Step 3. Pull out denture clutch handle (2). Permits hand pull of cable from winch drum.



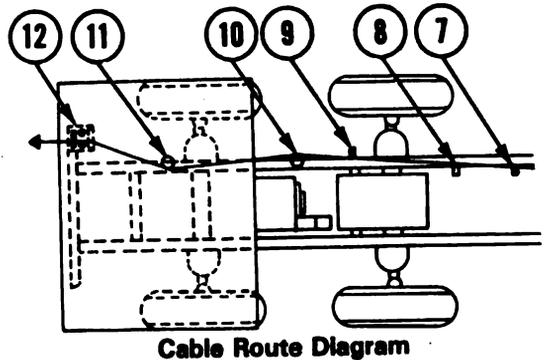
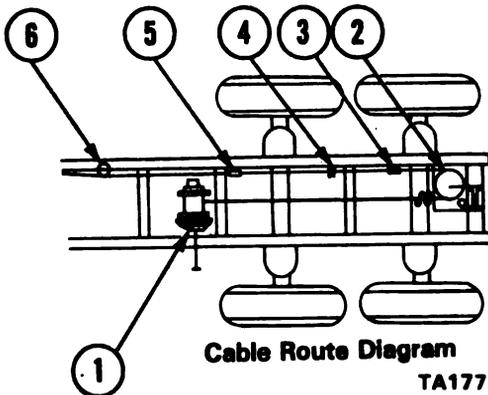
NOTE

Use cable route diagram below for Steps 4 through 13.

WARNING

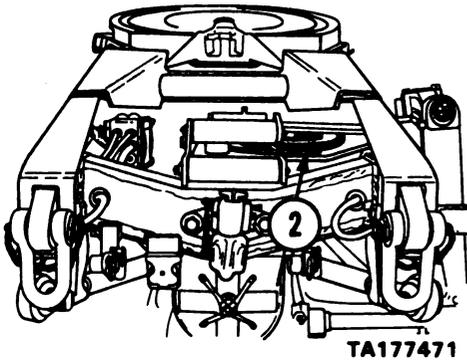
Always wear heavy gloves when you handle winch cables. Never let cable run through your hands; frayed cables can cut you.

- Step 4.** Pull winch cable from winch drum (1).

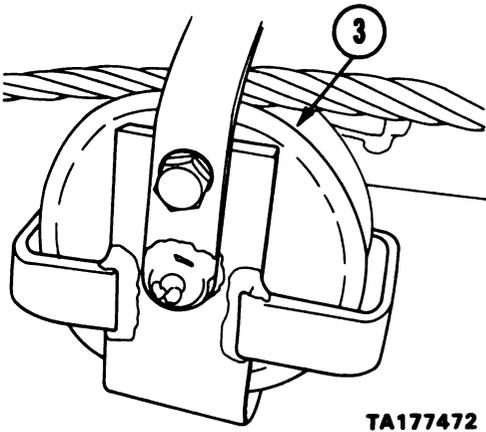


TA177470

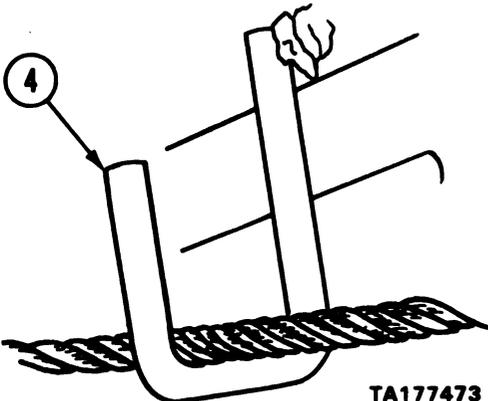
Step 5. Put cable around reversing roller (2).



Step 6. Put cable on deflection roller (3).



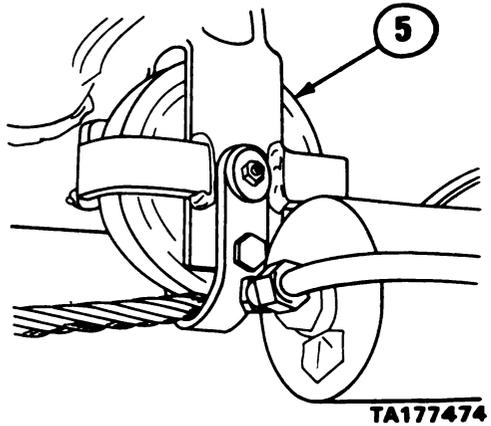
Step 7. Put cable on cable guide (4).



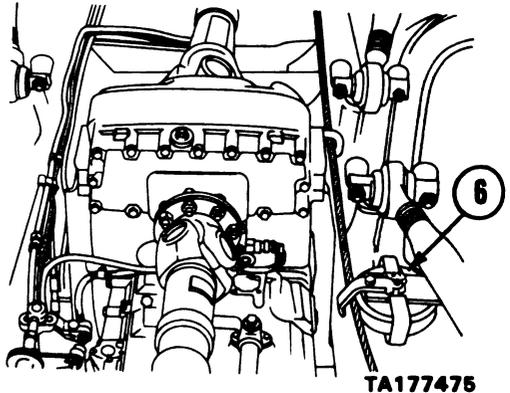
NOTE

Cable can be slipped over each cable guide except the guide forward of the front intermediate axle. Cable must be inserted through the guide forward of the front intermediate axle.

Step 8. Put cable on deflection roller (5).



Step 9. Put cable on deflection roller (6).



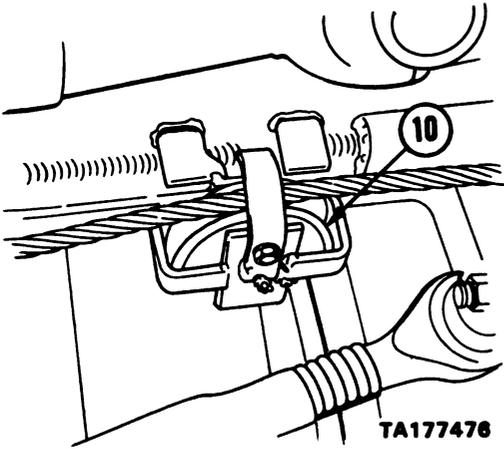
Step 10. Put cable on cable guides (7), (8), and (9).

Step 11. Put cable on deflection roller (10).

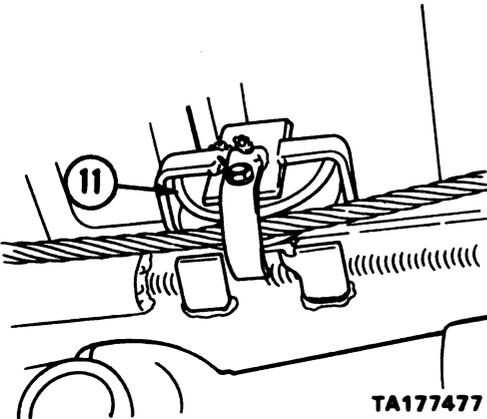
**FRAME 3. ROUTE WINCH
CABLE TOWARD
REAR.**

NOTE

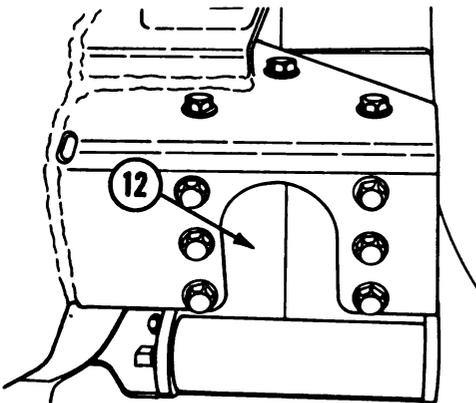
Denture clutch handle location is on driver side of vehicle in front of rear intermediate axle.



Step 12. Put cable on deflection roller (11).



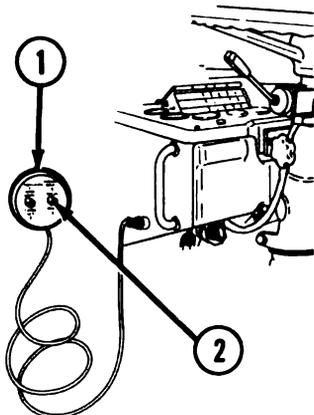
Step 13. Put cable through cable guide gate (12).



End of Task.

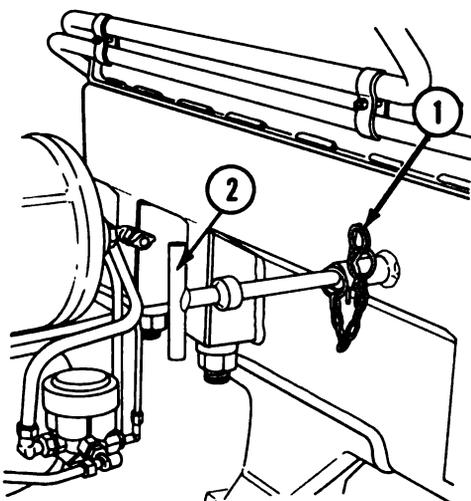
TA177478

Step 1. Use remote control unit (1). Hold toggle switch (2) in the reel off position until winch cable is slack.



TA177480

Step 2. Pull out pin (1).
Step 3. Pull out denture clutch handle (2).



TA177481

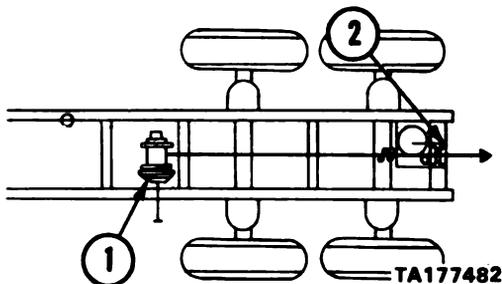
NOTE

Use cable route diagram for location of items for Steps 4 and 5.

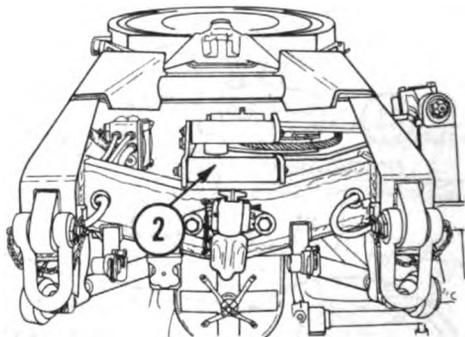
WARNING

Always wear heavy gloves when you handle winch cables. Never let cable run through your hands; frayed cables can cut you.

Step 4. Manually pull winch cable from winch drum (1).



Step 5. Put cable through cable guide gate (2).



TA177483

End of Task.

2-15b. ATTACH WINCH CABLE TO FIXED POINT.

Use with model(s): All models.

Supplies: Leather gloves.

Number of personnel: One.

Equipment condition: Vehicle in line with load. Engine operating. Parking brake on.

Task interval: None.

Reference: FM 20-22 recovery operations.

Special safety instructions: Wear leather gloves. Keep personnel clear of cable path.

Preliminary tasks: None.

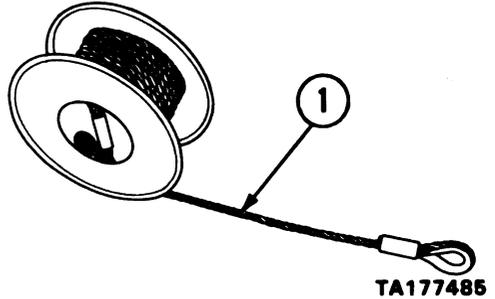
FRAME 1. ATTACH SINGLE CABLE TO VEHICLE OR PERMANENT FIXTURE.

NOTE

Use extension cable (1) for distance greater than 125 feet (38 meters) from vehicle.

WARNING

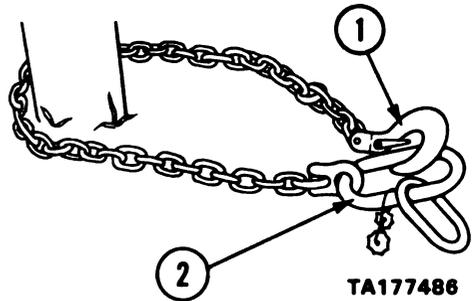
Always wear heavy gloves when you handle winch cables. Never let cable run through your hands; frayed cables can cut you.



CAUTION

Never operate winch with less than five turns of cable on the drum. With fewer windings cable may slip off drum. Keep cable coils tight and close together on drum while winching. Damage to winch may result.

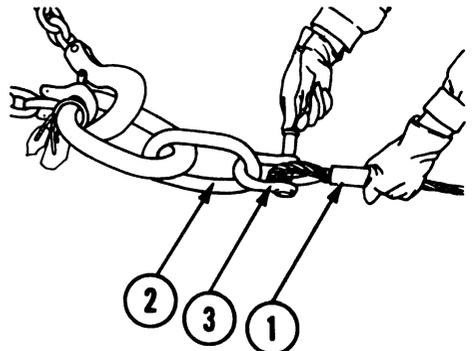
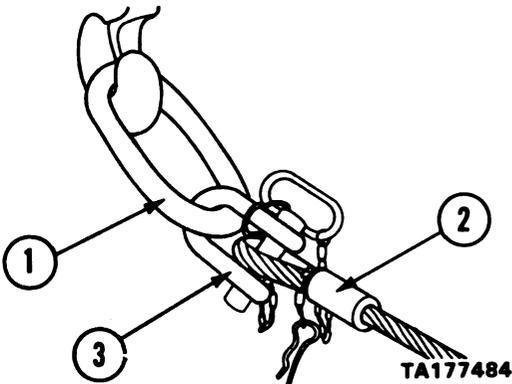
Step 3. Put chain around tree or permanent fixture strong enough to hold truck. Hang hook (1) in chain ring (2).



Step 1. Attach ring (1) or use loose chain on vehicle.

Step 2. Attach winch cable (2) to ring with shackle (3).

Step 4. Connect winch cable (1) to chain ring (2) with shackle (3).



End of Task.

FRAME 2. ATTACH DOUBLE CABLE TO VEHICLE OR PERMANENT FIXTURE.

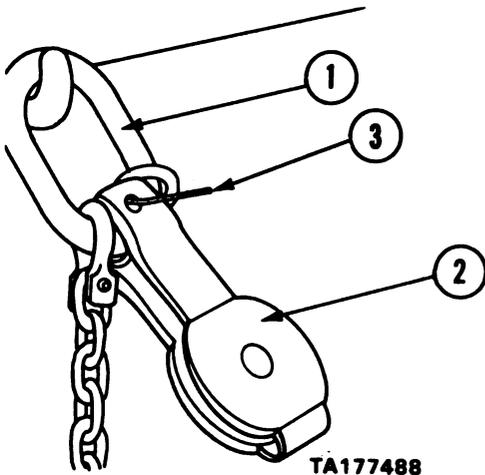
NOTE

Keep 5 windings of steel cable on cable winch drum. With fewer windings, cable may slip off drum.

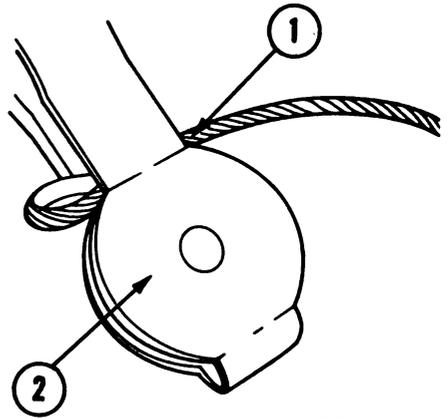
- Step 1.** Attach chain with ring (1) to another vehicle or permanent fixture.
- Step 2.** Attach roller (2) to chain ring. Lock roller with socket pin (3).

WARNING

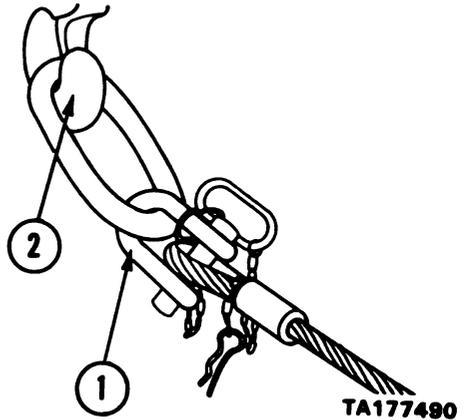
Always wear heavy gloves when you handle winch cables. Never let cable run through your hands, frayed cables can cut you.



- Step 3.** Guide winch cable (1) through roller (2).



- Step 4.** Connect winch cable to chain ring with shackle (1).
- Step 5.** Place ring on own vehicle towing pintle (2) if winching from rear or place ring on your vehicle front towing eye.



End of Task.

FRAME 3. ATTACH EXTENSION CABLE TO VEHICLE OR PERMANENT FIXTURE.

WARNING

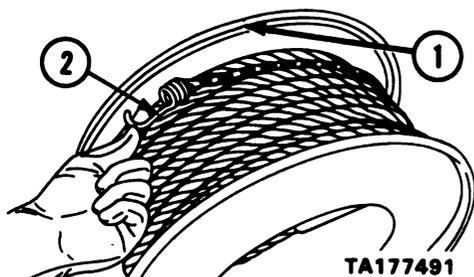
Always wear heavy gloves when you handle winch cables. Never let cable run through your hands; frayed cables can cut you.

CAUTION

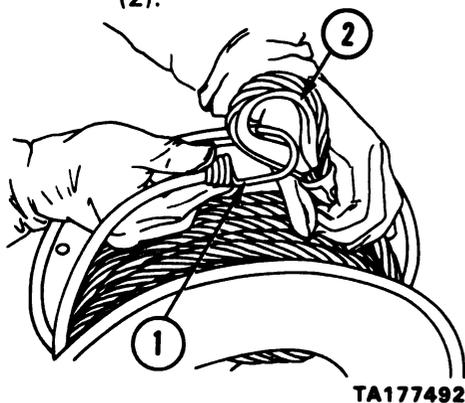
Never operate winch with less than five turns of cable on the drum. Keep cable coils tight and close together on drum while winching. Damage to winch may result.

Step 1. Remove cable reel (1) from storage box.

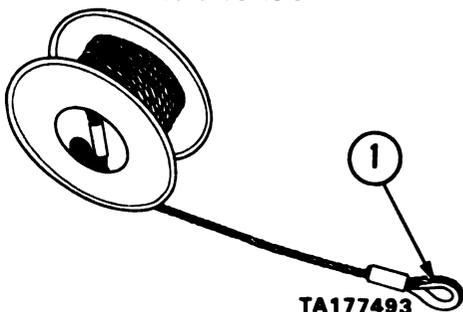
Step 2. Remove holding hook (2) from reel.



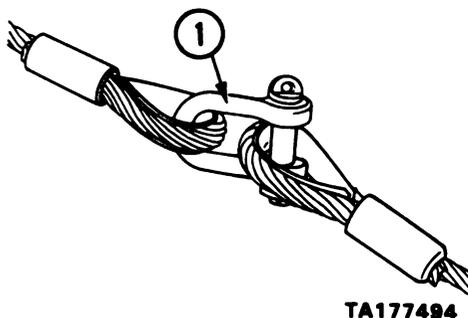
Step 3. Remove holding hook (1) from extension cable eyelet (2).



Step 4. Stand reel on end. Position extension cable end (1) toward vehicle.



Step 5. Connect extension cable eyelet to winch cable eyelet with shackle (1).

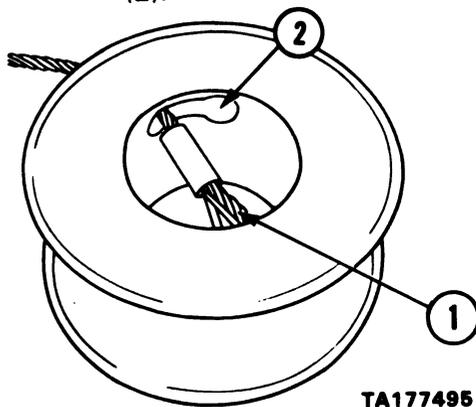


Step 6. Roll cable reel toward permanent fixture.

CAUTION

Do not pull cable from side of reel. Cable twist may result.

Step 7. Remove extension cable eyelet (1) from reel opening (2).



End of Task.
FRAME 4. PULL VEHICLE.

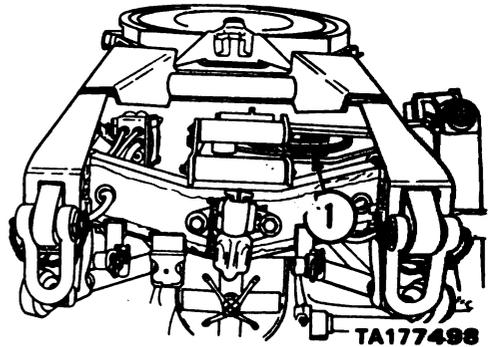
WARNING

Clear all personnel from vehicle and from the path of cable at a distance equal to the length of the cable. Do not release denture clutch with winch under load. Injury to personnel and damage to equipment may result.

CAUTION

Do not use force when denture clutch handle will not engage.
Damage to winch gears may result.

Step 1. Hold winch toggle switch (1) in reel off or wind on position for one or two seconds.

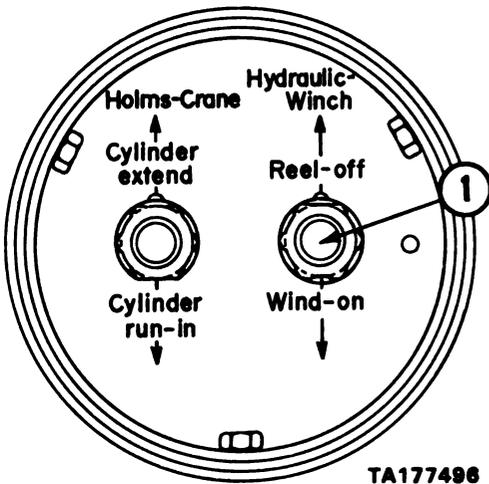


WARNING

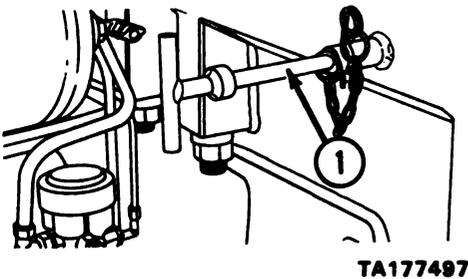
Clear all personnel from vehicle and from the path of cable at a distance equal to the length of the cable. Do not release denture clutch with winch under load. Injury to personnel and damage to equipment may result.

Step 4. Operate winch control with switch (1) on remote control unit (2).

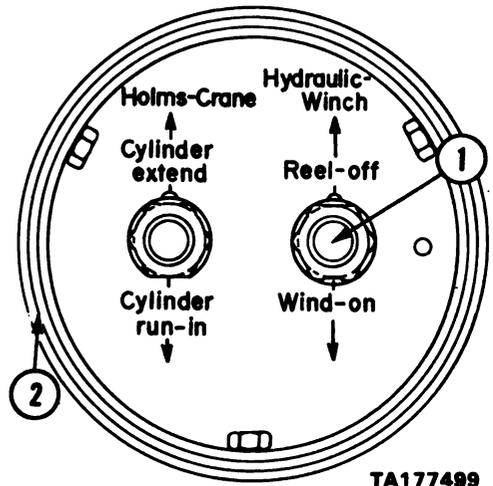
- Pull vehicle-Hold toggle switch in wind on position.
- Lower vehicle-Hold toggle switch in reel off position.
- Stop or hold vehicle-Release toggle switch.



Step 2. Push in denture clutch handle (1).



Step 3. Make sure cable is on all deflection rollers and the reversing roller (1).



End of Task.

2-15c. PREPARE WINCH FOR TRAVEL.

Use with model(s): All models.

Supplies: Leather gloves.

Number of personnel: One.

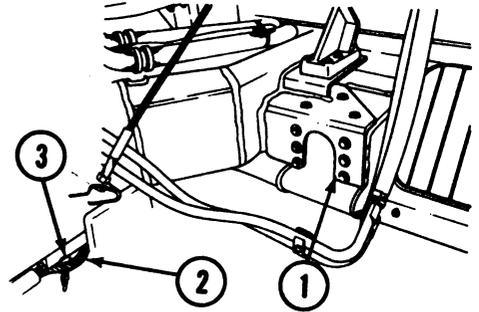
Equipment condition: Vehicle in line with load. Engine operating. Parking brake on.

Task interval: None.

Reference: FM 20-22.

Special safety instructions: Chock wheels of vehicle. Wear leather gloves. Keep personnel clear of cable path.

Preliminary tasks: None.



TA177500

Step 3. Make sure denture clutch handle (1) is in during travel.

FRAME 1. PREPARE WINCH FOR TRAVEL WITH CABLE TOWARD FRONT.

WARNING

Always wear heavy gloves when you handle winch cables. Never let cable run through your hands; frayed cables can cut you.

CAUTION

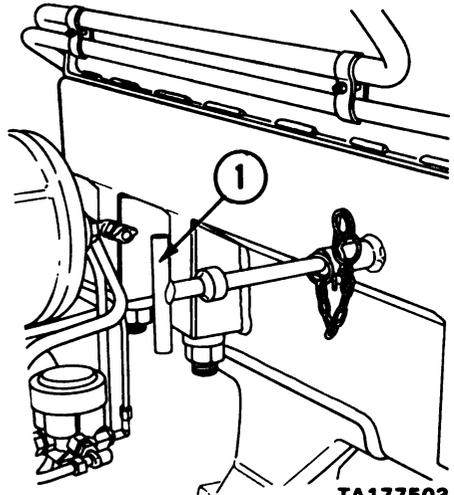
Never operate winch with less than five turns of cable on the drum. Keep cable coils tight and close together on drum while winching. Damage to winch may result.

NOTE

Normal travel position for winch cable is cable pointed to the front.

Step 1. Pull cable through cable guide gate (1).

Step 2. Attach cable eyelet (2) on holder. Use remote control to wind cable on winch drum. Put tension on cable. Put in pin (3).

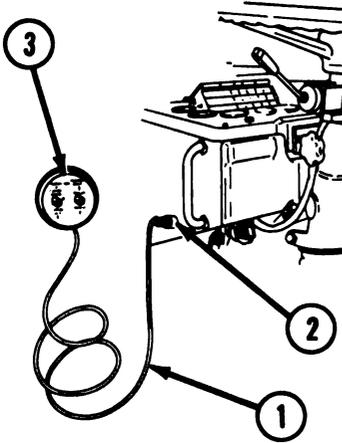


TA177503

Step 4. Reduce engine speed to 600 RPM.
Step 5. Turn off HYDR ON switch and winch switch.
Step 6. Stop engine.

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- Step 7.** Disconnect remote control cable (1) from socket (2).
- Step 8.** Put remote control unit (3) in storage box.



TA177504

End of Task.

FRAME 2. PREPARE WINCH FOR TRAVEL WITH CABLE TOWARD REAR.

- Step 1.** Route cable to front. Refer to paragraph 2-15 a.
- Step 2.** Prepare winch for travel with cable toward front. Refer to paragraph 2-15 c.

End of Task.

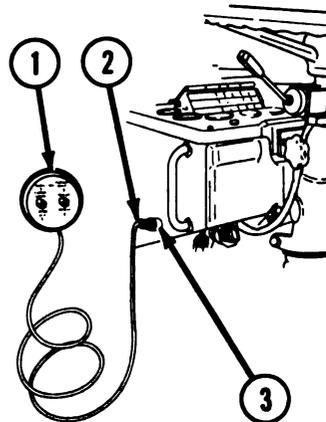
2-16. OPERATING WRECKER MAIN RECOVERY WINCH.

Use with model: M1002.
Supplies: Leather gloves.
Number of personnel: One.
Equipment condition: Vehicle in line with load.
Task interval: None.
Reference: FM 20-22, recovery operations.
Special safety instructions: Chock rear wheels. Wear leather gloves.
Preliminary tasks: Check cable need, refer to FM 20-22 recovery operations.

2-16a. OPERATING WRECKER MAIN RECOVERY WINCH.

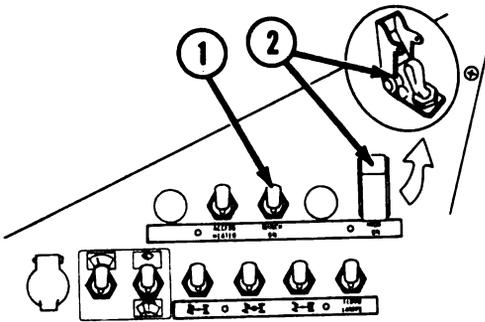
FRAME 1. PREPARE WINCH FOR USE.

- Step 1.** Take cable winch remote control (1) from storage box.
- Step 2.** Connect remote control cable end (2) to socket (3).



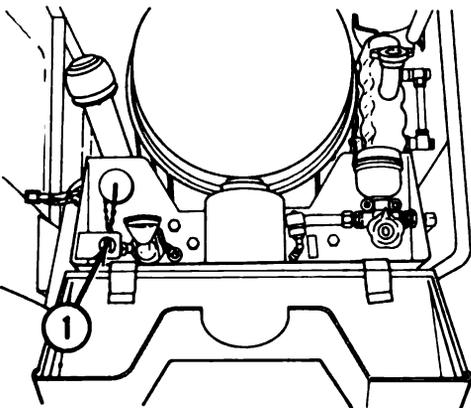
TA177505

- Step 3. Start engine. See paragraph 2-7.
- Step 4. Turn winch switch (1) to position 2 (main recovery winch position). Set engine idle at 1400 RPM.
- Step 5. Turn on HYDR ON switch (2).



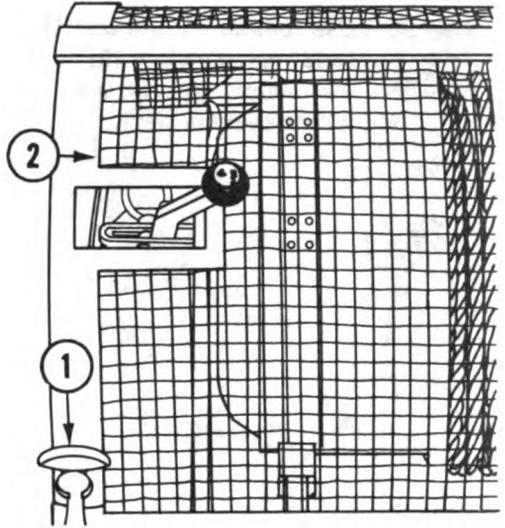
TA177506

- Step 6. Ensure that selector lever (1) is in winch position.



TA177507

- Step 7. Unhook four latches (1). Remove cage (2).

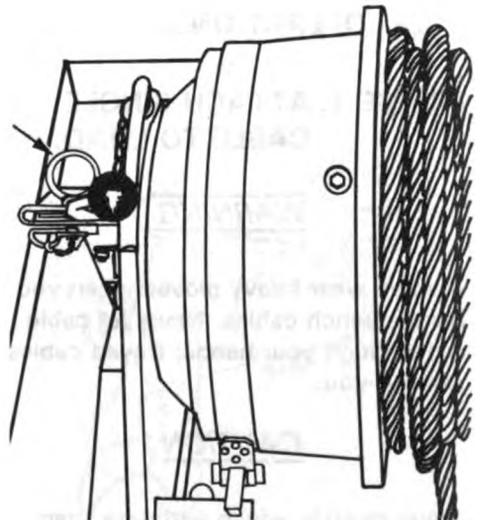


TA177508

- Step 8. Check that lock pin (1) is in place.

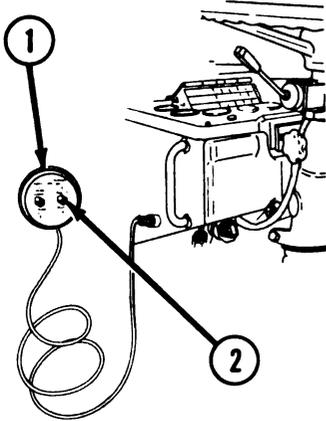
NOTE

Denture clutch lever location is on driver side of vehicle in cargo box.



TA177509

Step 9. Use remote control unit (1). Hold toggle switch (2) in the reel off position until winch cable is slack.



TA177510

End of Task.

2-16b. WINCHING OPERATIONS.

FRAME 1. ATTACH SINGLE CABLE TO LOAD.

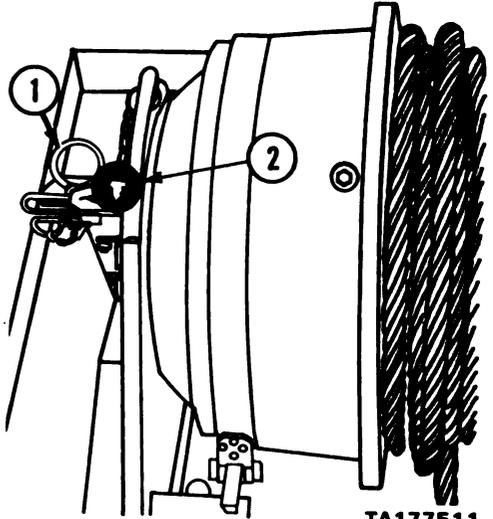
WARNING

Always wear heavy gloves when you handle winch cables. Never let cable run through your hands; frayed cables can cut you.

CAUTION

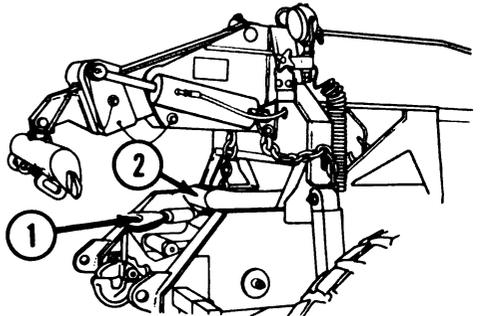
Never operate winch with less than five turns of cable on the drum. Keep cable coils tight and close together on drum while winching. Damage to winch may result.

Step 1. Pull out lock pin (1). Pull out denture clutch handle (2).



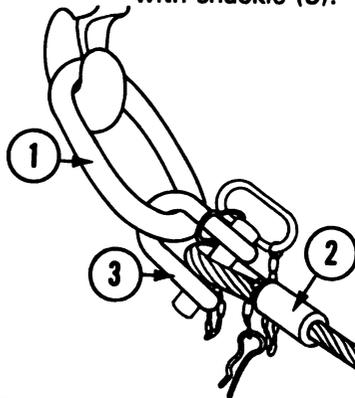
TA177511

Step 2. Pull cable (1) from rear cable guide gate (2).



Step 3. Attach ring (1) to load.

Step 4. Attach cable (2) to ring with shackle (3).



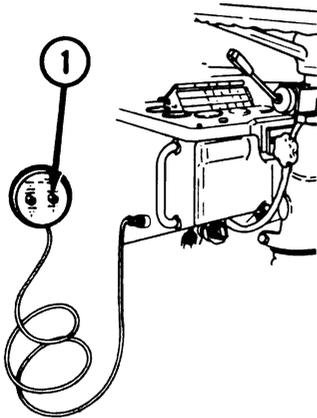
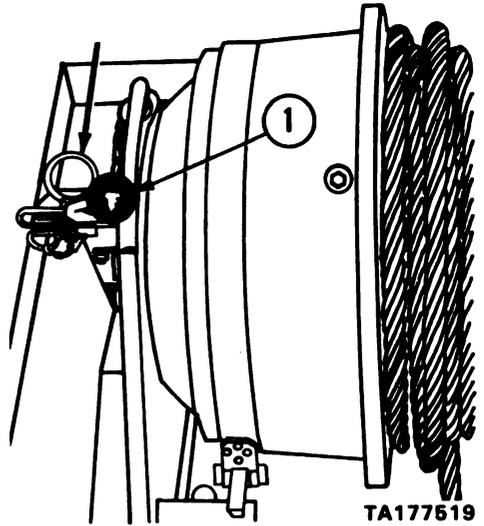
TA177513

End of Task.

FRAME 2. PULL LOAD.

CAUTION

Do not use force when denture clutch handle will not engage. Damage to winch gears may result. Hold winch toggle switch (1) in reel off or wind on position for one or two seconds.

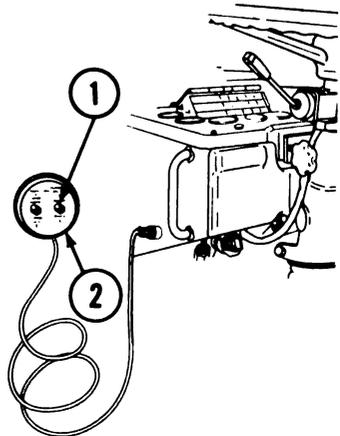


- Step 2.** Operate winch control switch (1) on remote control unit (2).
- Pull load-Hold toggle switch in wind on position.
 - Lower load-Hold toggle switch in reel off position.
 - Stop or hold load-Release toggle switch.

- Step 1.** Push in denture clutch lever (1). Put in lock pin (2).

WARNING

Clear all personnel from vehicle and from the path of cable at a distance equal to the length of the cable. Do not release denture clutch with winch under load. Injury to personnel may result.

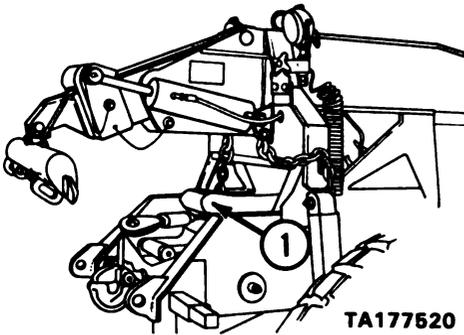


End of Task.

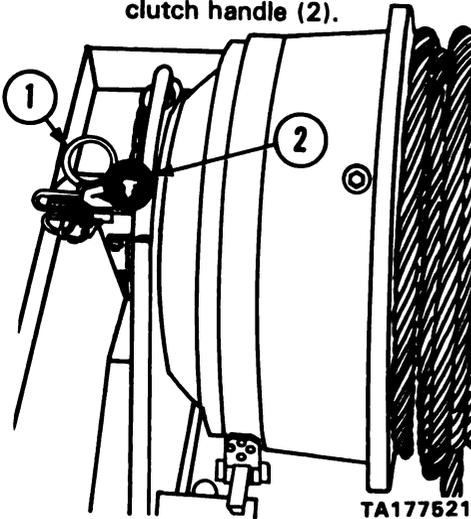
2-16c. PREPARE WINCH FOR TRAVEL.

FRAME 1. PREPARE WRECKER MAIN RECOVERY WINCH FOR TRAVEL.

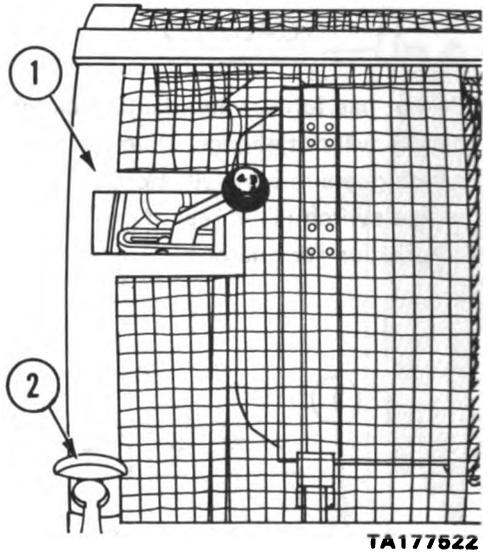
Step 1. Wind in cable until cable eyelet is against cable guide gate (1).



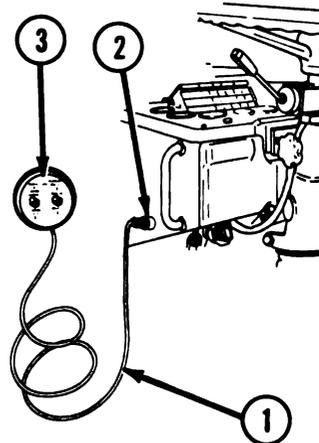
Step 2. Put tension on cable.
Step 3. Put lock pin (1) in denture clutch handle (2).



Step 4. Put cage (1) in place. Hook four latches (2).



Step 5. Reduce engine speed.
Step 6. Turn off HYDR ON switch and winch switch.
Step 7. Stop engine.
Step 8. Disconnect remote control cable (1) from socket (2).
Step 9. Put remote control unit (3) in storage box.



End of Task.

TA247213

2-17. OPERATING THE MATERIAL HANDLING CRANE.

2-17a. LOAD LIMITS FOR MATERIAL HANDLING CRANE. ALL MODELS EXCEPT M1014.

Refer to Table 2-2 for lifting capacities for the 2 ton and 8 ton material handling cranes. The Table provides the lifting capacity for each extension position.

TABLE 2-2.

MATERIAL HANDLING CRANES – LIFTING CAPACITIES	
2 TON CRANE – M1013	
<p>The diagram shows a crane boom with three extension points. The first point is 10'8" from the base, with a capacity of 4277 lbs (1940 Kg). The second point is 13'9" from the base, with a capacity of 3283 lbs (1480 Kg). The third point is 17'1" from the base, with a capacity of 2835 lbs (1180 Kg).</p>	
8 TON CRANE – M1001 AND M1002	
<p>The diagram shows a crane boom with four extension points. The first point is 10' from the base, with a capacity of 14,620 lbs (6630 kg). The second point is 12'6" from the base, with a capacity of 12,380 lbs (5500 Kg). The third point is 17'10" from the base, with a capacity of 8020 lbs (3640 Kg). The fourth point is 23'7" from the base, with a capacity of 5880 lbs (2660 Kg). The fifth point is 29'2" from the base, with a capacity of 4630 lbs (2100 Kg).</p>	

2-17b. PLACE CRANE INTO OPERATION USING MANUAL CONTROLS.

Use with model(s): M1001, M1002 and M1013.

Supplies: None.

Number of personnel: Two.

Equipment condition: Operational vehicle.

Task interval: As necessary.

Reference: None.

Special safety instructions: None.

Preliminary tasks: Start engine. Refer to paragraph 2-7.

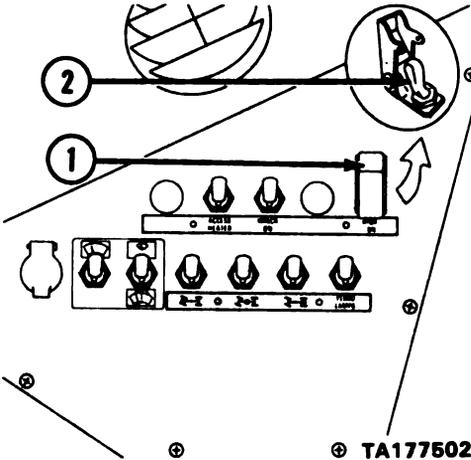
FRAME 1. POSITION VEHICLE AND OUTRIGGERS.

WARNING

When operating material handling crane, check clearance of overhead electrical wires. **DO NOT** operate crane close to overhead high tension wires. Severe injury or death may result.

Step 1. Soldier A: Operate vehicle. Soldier B: Ground guide vehicle into position on level surface. Position vehicle within boom length of load.

Step 2. Soldier A: Lift cover (1). Push up HYDR ON switch (2).



Step 3. Soldier B: Remove hook (1). Open indicator lamp panel door (2).

Step 4. Push main power switch (3). Indicator lamps (4) and (5) should remain on about three seconds. If indicators do not come on report problem to organizational maintenance.

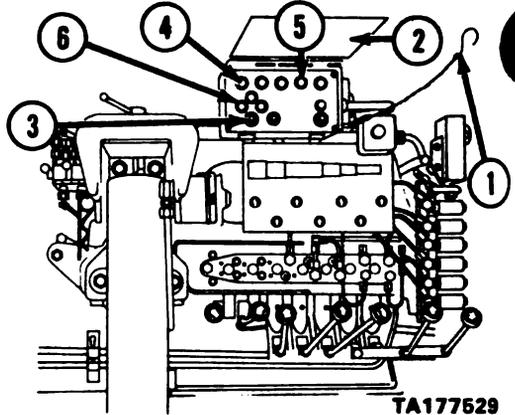
Step 5. Check tilt angle indicator lamp (4). Lamp must not remain on.

CAUTION

Do not operate crane when vehicle tilts more than five degrees. Vehicle damage can result.

Step 6. If indicator lamp (4) is on, repeat Step 1 until lamp goes out. If indicator lamp is off, do Step 7.

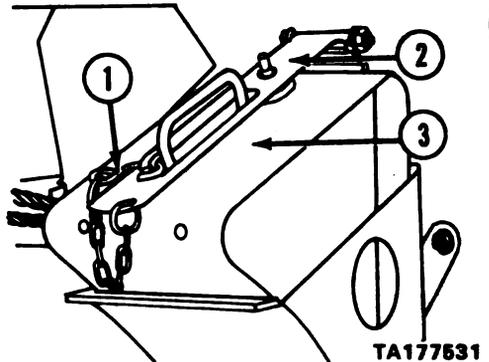
Step 7. Three fuse lamps (6) must light. Report problems to organizational maintenance.



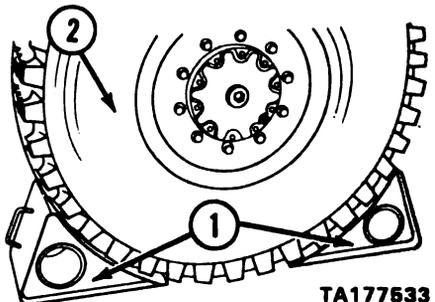
Step 8. Soldier A: Adjust engine speed to 1400 RPM. Insure parking brake is on.

Step 9. Soldier B: Pull out hook (1). Lift up arm (2). Remove wheel chock (3).

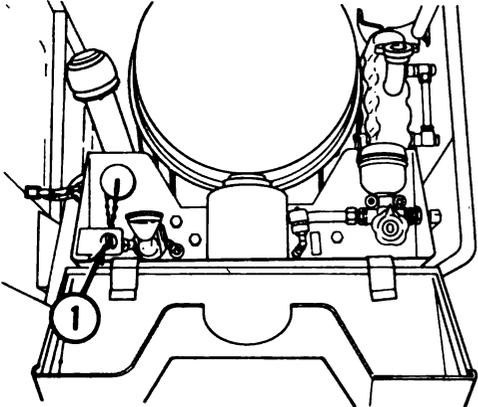
Step 10. Soldier B: Do Step 1 to other wheel chock.



Step 11. Soldier B: Place both wheel chocks (1) under wheel (2).



- Step 12.** Soldier B: Turn winch/crane selector knob (1) to crane position.

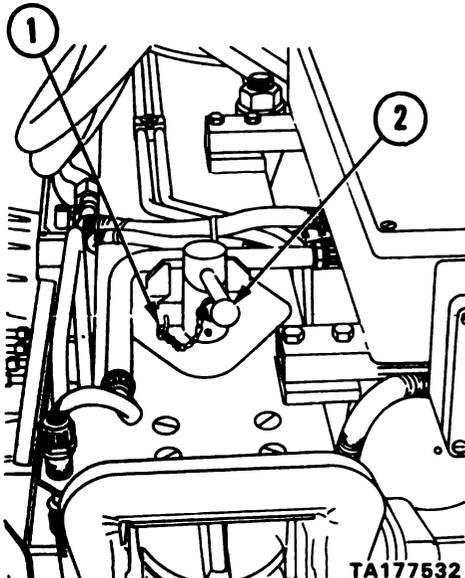


TA177524

NOTE

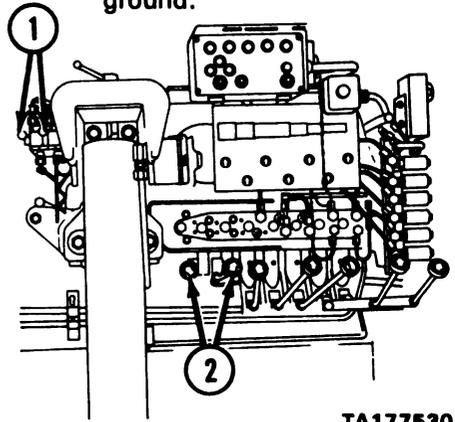
Steps 13 through 16 do not apply to the M1013.

- Step 13.** Pull out lock clip (1). Turn lock handle (2) any direction 180 degrees.



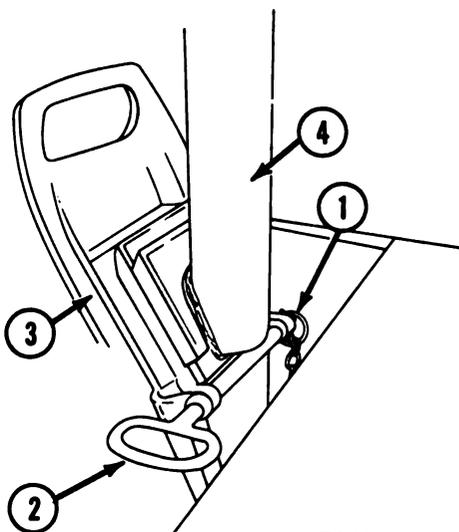
TA177532

- Step 14.** Do Step 13 for other outrigger lock handle.
- Step 15.** Insure outrigger control valve levers (1) are in the up position. Pull down two control levers (2) until both outriggers arms are fully extended. Release levers.
- Step 16.** Pull down outrigger control valve levers (1).
- Step 17.** Pull down two control levers (2) until outrigger support arms are about eighteen inches off the ground.



TA177530

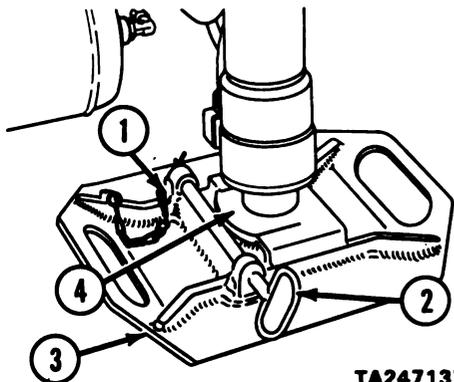
- Step 18. Pull out lock pin (1). Pull out retaining pin (2).
- Step 19. Pull support plate (3) from holder (4).
- Step 20. Do Steps 18 and 19 for support plate on other side of vehicle.



TA177528

- Step 21. Slide support plate (3) on outrigger support cylinder disc (4).

- Step 22. Put in retaining pin (2). Push in lock clip (1).



TA247137

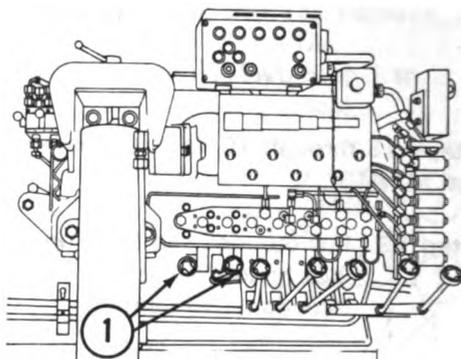
- Step 23. Do Steps 21 and 22 for other outrigger support cylinder.

CAUTION

Do not use blocks under outriggers to raise vehicle. Damage to equipment could result.

- Step 24. Pull down outrigger control valve levers (1) until support cylinders stop. Release levers.

- Step 25. Check tilt angle indicator lamp. Lamp must not be on. If light comes on raise outrigger on side of vehicle where ground is highest.



TA247158

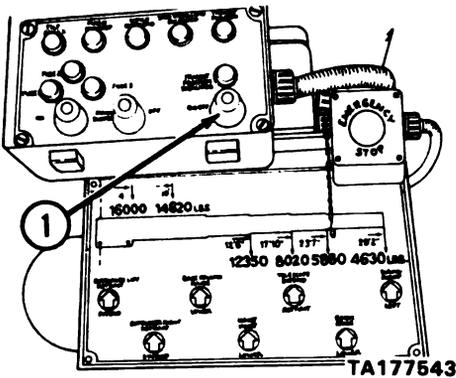
End of Task.

FRAME 2. RAISE CRANE TO OPERATING POSITION.

WARNING

Clear personnel from area of crane. Crane can cause serious injury to personnel. Failure to follow Steps 1 through 6 may cause personnel injury.

- Step 1. Soldier A: Push transit position switch (1).



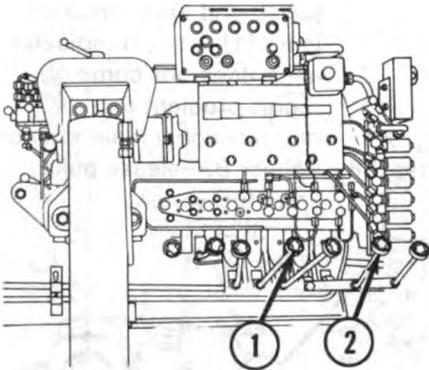
CAUTION

Check transit position indicator lamp. If lamp is out, connect remote control. Check transit position indicator on remote control unit. If both lamps are out, stop crane operation and report problem to organizational maintenance. Damage to crane may result. If one lamp is on, continue to operate.

NOTE

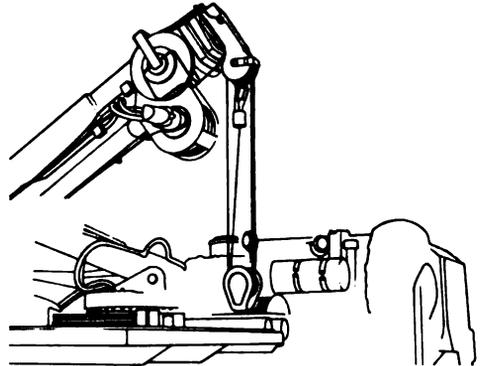
Soldiers A and B read Steps 2 and 3, then perform task.

Step 2. Soldier A: Slowly pull down lever (1) and slowly push up lever (2) together.



TA177536

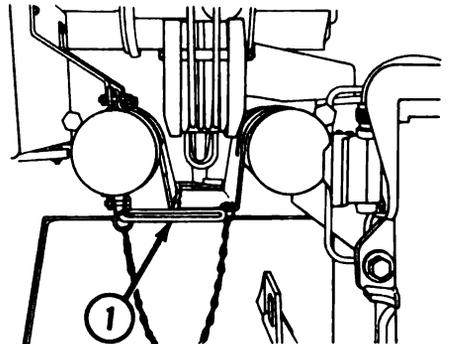
Step 3. Soldier B: Tell Soldier A to stop crane when lifting hook cable is slack, and when crane is in position as shown below.



TA177537

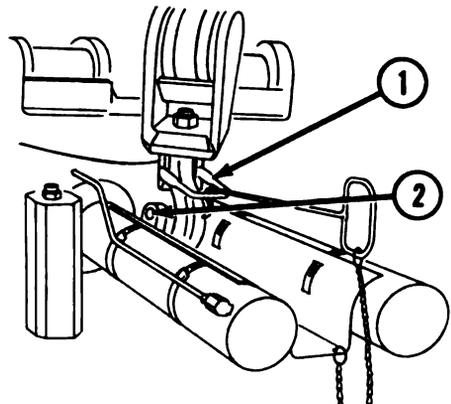
Step 4. Soldier B: Turn winch/crane hydraulic selector knob to winch position.

Step 5. Soldier B: Remove crane hook remover/replacer (1).



TA177545

Step 6. Soldier B: Grab crane hook (1). Remove hook from storage holder (2).



TA177544

Step 7. Soldier B: Turn winch/cable hydraulic selector knob to crane position.

CAUTION

Make sure lifting hook clears crane. Damage to crane can result if hook does not clear crane.

Step 8. Soldier A: Push up lever (1). Hold lever as base column lifts to upper position.

Step 9. Soldier A: Hold lever (1) for about five seconds after base column gets to final stop. Release lever.

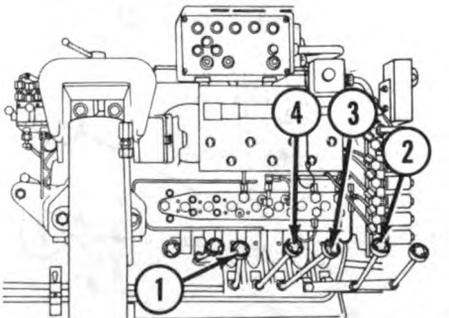
Step 10. Soldier A: Turn off transit position switch.

Step 11. Soldier A: Push up lever (2).

CAUTION

Lower lifting hook at the same time you push out the boom extension. Damage to boom and cable may result.

Step 12. Soldier A: Push up lever (3) and pull down lever (4) at the same time.



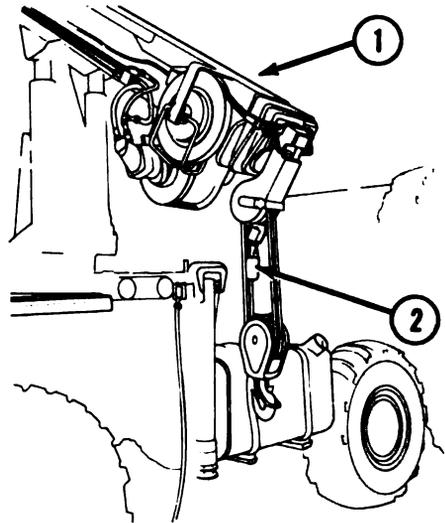
NOTE

On the M1001 and M1002 the first boom extension must reach the final stop before hydraulic system operates

under full pressure. On the M1013 the first boom extension must be extended more than halfway before full hydraulic pressure is available.

Step 13. Soldier A: Lower boom (1) until boom is approximately five feet above the ground.

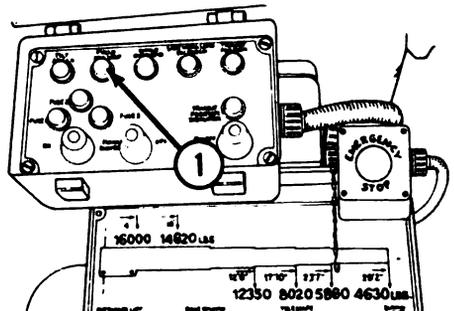
Step 14. Soldier B: Lift up pulley end stop weight (2).



TA177539

Step 15. Soldier A: Look to see if pulley end stop indicator lamp (1) is on. If indicator lamp does not come on, report problem to organizational maintenance.

Step 16. Soldier B. Release pulley end stop weight.



TA247142

End of Task.

FRAME 3. HANDLING CARGO.

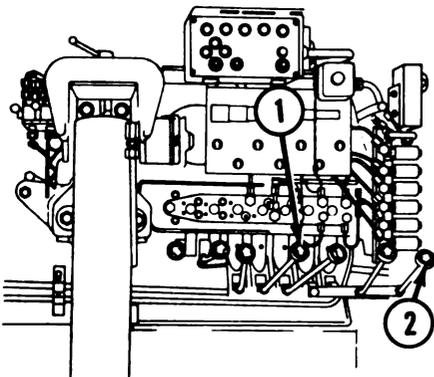
WARNING

If crane overloads (safe workload exceeded) lamp lights, stop operating crane immediately. Lower and reduce load. Serious damage and personnel injury can result from overload conditions.

CAUTION

Lower lifting hook at the same time you push out the boom extensions. Damage to boom and cable may result.

- Step 1.** Soldier B: Attach lifting hook to cargo.
- Step 2.** Soldier A: Push up lever (1) to lift cargo.
- Step 3.** Soldier A: Pull or push lever (2) to swing cargo into position.
- Step 4.** Soldier A: Pull down lever (1) to lower cargo.
- Step 5.** Soldier B: Remove lifting hook from cargo.



TA177855

End of Task.

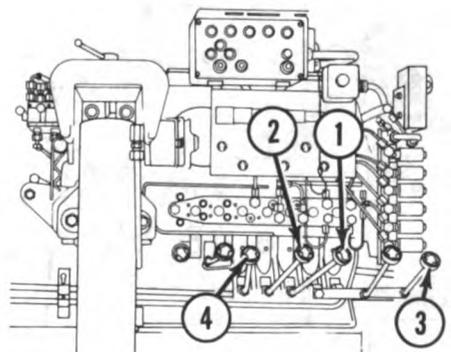
FRAME 4. PUT CRANE IN TRAVEL POSITION.

- Step 1.** Soldier A: Push transit position switch.

NOTE

For normal operation of vehicle, fold down the crane with boom end to the side of vehicle. Refer to Appendix F for placing crane in travel position when shipping vehicle.

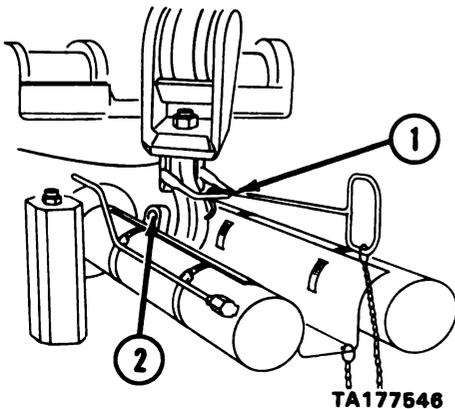
- Step 2.** Pull down lever (1). Fully pull in boom extensions.
- Step 3.** Push up lever (2). Raise hook to within approximately one foot from boom pulley.
- Step 4.** Push or pull lever (3). Rotate crane until transit position light comes on.
- Step 5.** Pull down lever (4). Hold lever. Lower base column to final stop.
- Step 6.** Soldier B: Tell Soldier A when lifting hook is over storage holder.
- Step 7.** Soldier A: Raise or lower boom until lifting hook is hanging directly over storage holder.
- Step 8.** Soldier A: Pull down lever (2). Lower lifting hook to storage holder. Release lever.



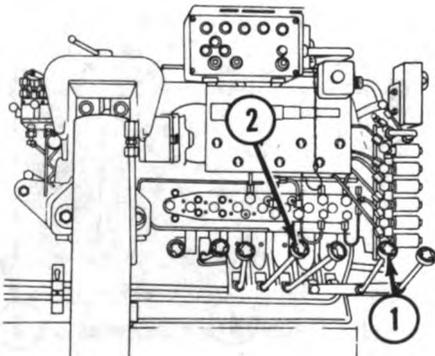
TA177552

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- Step 9.** Turn winch/crane hydraulic selector lever to winch position.
- Step 10.** Soldier B: Using hook remover/replacer (1), position hook on storage holder (2).



- Step 11.** Soldier A: Turn winch/crane hydraulic selector lever to crane position.
- Step 12.** Soldier B: Tell Soldier A when winch cable is tight.
- Step 13.** Soldier A: Pull down lever (1) and push up lever (2) together. Stop when boom is fully lowered and winch cable is tight.

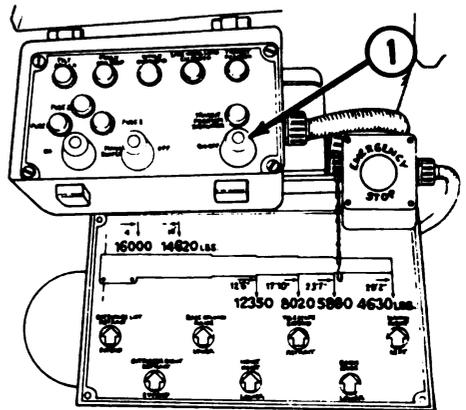


TA177541

CAUTION

Fold down crane to the right side of vehicle for normal travel. Refer to Appendix F for preparing vehicle for transport.

- Step 14.** Turn off transit position switch (1).

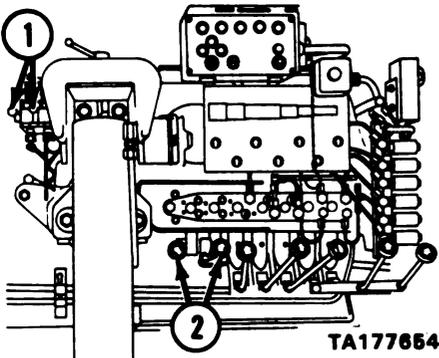


TA177542

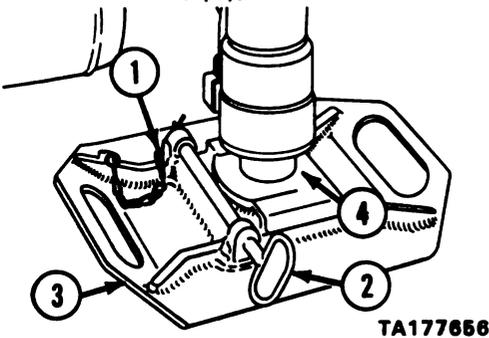
End of Task.

FRAME 5. PLACE OUTRIGGER IN TRAVEL POSITION.

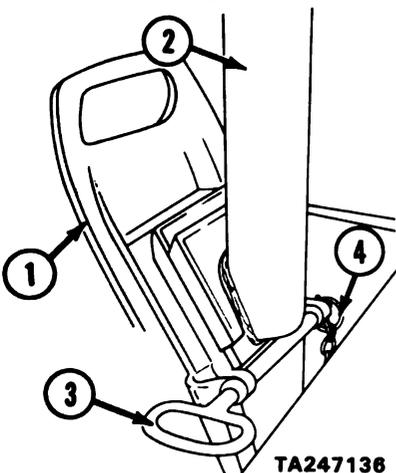
- Step 1.** Pull down outrigger control valve levers (1).
- Step 2.** Push up outrigger control levers (2). Release lever when outriggers are about eighteen inches off ground.



- Step 3.** Pull out lock clip (1). Slide out retaining pin (2).
- Step 4.** Slide support plate (3) off outrigger support cylinder disc (4).



- Step 5.** Slide support plate (1) on holder (2).
- Step 6.** Push in retaining pin (3). Push lock clip (4) in retaining pin.

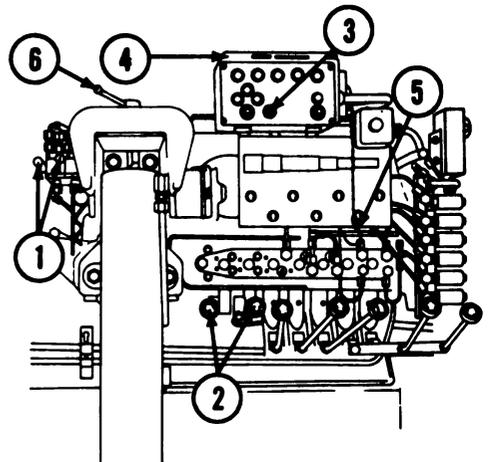


- Step 7.** Do Steps 3 through 6 for other outrigger support plate.
- Step 8.** Push up outrigger control levers (2). Raise outrigger support cylinders until they stop.

NOTE

Steps 9 and 10 do not apply to the M1013.

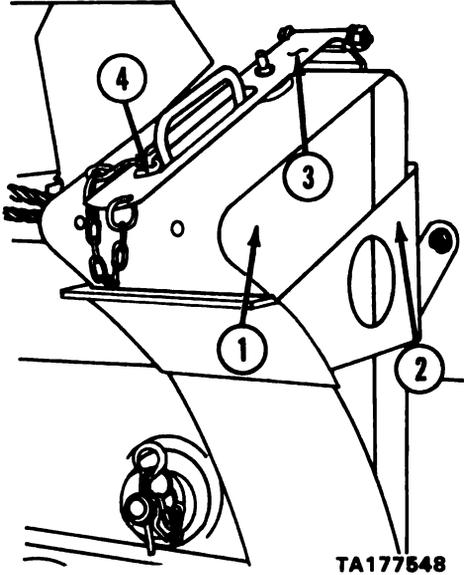
- Step 9.** Push up outrigger control valve levers (1).
- Step 10.** Push up outrigger control levers (2) until outrigger arms are fully retracted.
- Step 11.** Turn off crane main switch (3).
- Step 12.** Close indicator lamp control panel door (4).
- Step 13.** Put safety hook (5) through panel door.
- Step 14.** Turn outrigger lock handles (6) any direction 180 degrees. Put in two lock clips (M1001 and M1002 only).



- Step 15.** Take wheel chocks from under wheel.

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- Step 16.** Put wheel chock (1) in holder (2).
- Step 17.** Lower arm (3). Put in hook (4).
- Step 18.** Do Steps 16 and 17 to other wheel chock.



- Step 19.** Turn winch/crane selector level to winch position.
- Step 20.** Turn off HYDR ON switch.

End of Task.

Follow on maintenance. Stop engine. Refer to paragraph 2-8.

2-17c. OPERATING CRANE WITH REMOTE CONTROL UNIT.

Use with model(s): M1001, M1002 and M1013.

Supplies: None.

Number of personnel: Two.

Equipment condition: Operational vehicle.

2-108

Task interval: As necessary.

Reference: None.

Special safety instructions: None.

Preliminary tasks:

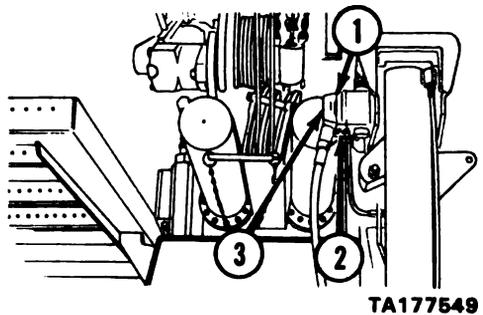
- Remove remote control unit from storage compartment. Refer to paragraph 2-13.
- Position vehicle and outriggers. Refer to paragraph 2-17b, Frame 1.

FRAME 1. CONNECT REMOTE CONTROL UNIT.

NOTE

Remote control sockets are located on both sides of the crane near the outrigger arm housing.

- Step 1.** Pull socket cover lock (1) to open cover (2).
- Step 2.** Push remote control plug (3) into socket.
- Step 3.** Push cover lock (1) to lock remote control plug.



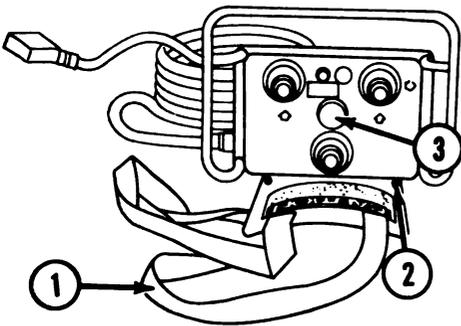
Step 4. Soldier A: Place one remote control harness strap (1) over each shoulder. Cross straps over your back. Hook straps in holes (2) on breast board.

FRAME 2. RAISE CRANE TO OPERATING POSITION.

WARNING

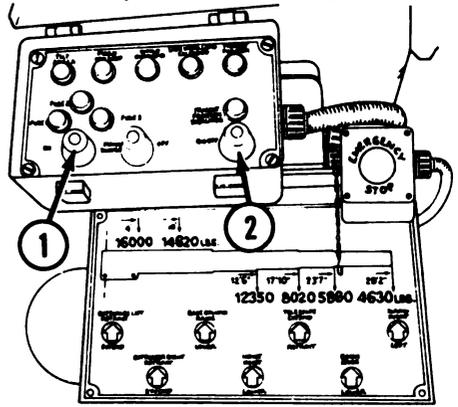
Clear personnel from area of crane. Crane can cause serious injury to personnel. Failure to follow Steps 4 through 8 may cause personnel injury.

Step 1. Turn remote control emergency stop button (3) to the right.



TA177551

Step 2. Push on main switch (1).
Step 3. Soldier B: Push transit position switch (2).



TA177553

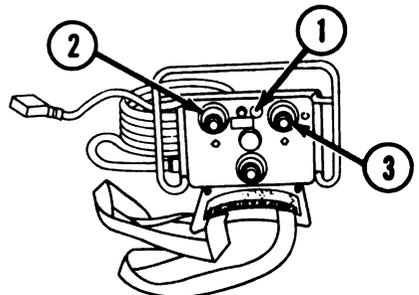
CAUTION

Check transit position indicator lamp (1) on remote control and on crane indicator panel. If both lamps are out, stop crane operation and report problem to organizational maintenance. Damage to crane may result. If one lamp is on, continue to operate.

NOTE

Soldiers A and B read Steps 4 and 5, then perform task.

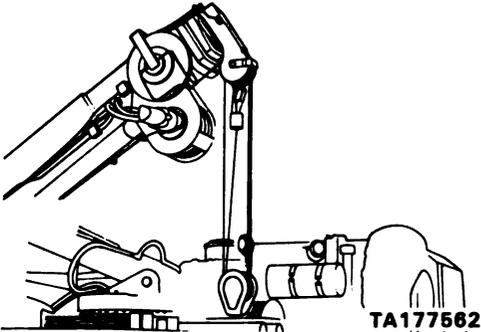
Step 4. Soldier A: Slowly push lever (2) and slowly pull in lever (3) together.



TA177556

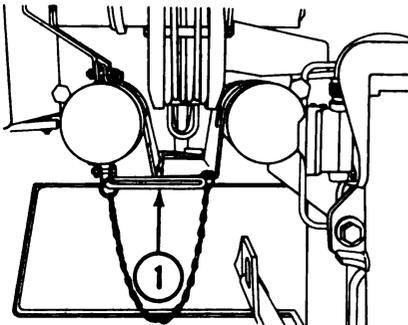
**TM 9-2320-282-10
TO 36A12-1C-461-1**

Step 5. Soldier B: Tell Soldier A to stop crane when lifting hook cable is slack, and is 90 degrees to ground and crane is in the position shown below.

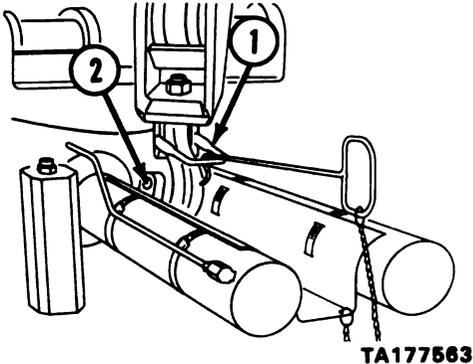


Step 6. Soldier B: Turn winch/crane hydraulic selector knob to winch position.

Step 7. Soldier B: Remove crane hook remover/replacer (1).



Step 8. Soldier B: Grab crane hook (1). Remove hook from storage holder (2).



Step 9. Soldier B: Turn winch/crane hydraulic selector knob to crane position.

CAUTION

Make sure lifting hook clears crane. Damage to crane can result if hook does not clear crane.

Step 10. Soldier A: Push out lever (1). Hold lever. Move hook within approximately one foot of boom pulley. Release lever.

Step 11. Soldier A: Push lever (2) to the right. Hold lever as base column lifts to upper position.

Step 12. Soldier A: Hold lever (2) for about five seconds after base column gets to final stop. Release lever.

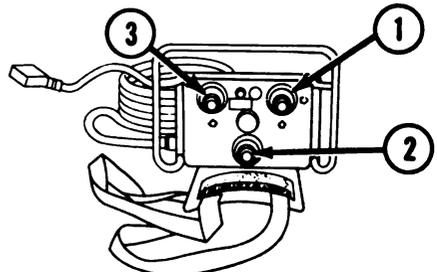
Step 13. Soldier B: Turn off transit position switch.

Step 14. Soldier A: Push lever (3) forward to raise boom.

CAUTION

Lower lifting hook at the same time you push out the boom extension. Damage to boom and cable may result.

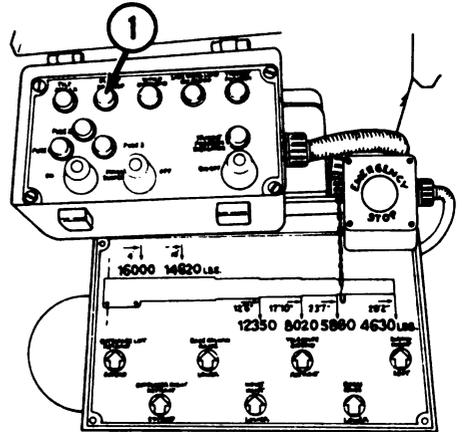
Step 15. Soldier A: Pull lever (1) and push lever (3) to the right at the same time.



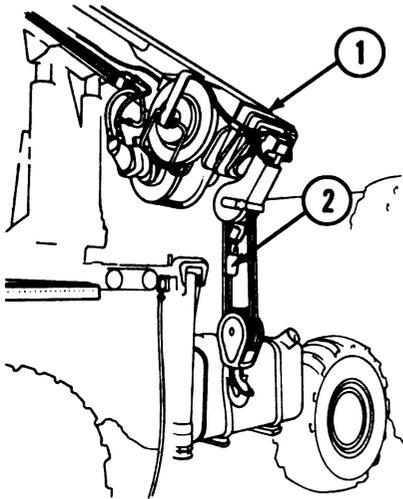
NOTE

On the M1001 and M1002, the first boom extension must reach the final stop before hydraulic system operates under full pressure. On the M1013, the first boom extension must be extended more than halfway before full pressure is available.

- Step 16.** Soldier A: Lower boom (1) until boom is about five feet above the ground.
- Step 17.** Soldier B: Lift up pulley end stop weight (2).



TA177566



TA177479

End of Task.

- Step 18.** Soldier A: Look to see if pulley end stop indicator lamp (1) is on. If indicator lamp does not come on, report problem to organizational maintenance.
- Step 19.** Soldier B: Release pulley end stop weight.

FRAME 3. HANDLING CARGO.

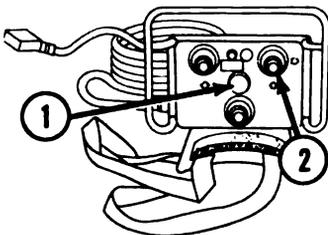
WARNING

If crane overloads (safe workload exceeded) lamp lights, stop operating crane immediately. Lower and reduce load. Serious damage and personnel injury can result from overload conditions. Shut off remote control unit before approaching crane hook, or personal injury may result.

CAUTION

Lower lifting hook at the same time you push out the boom extensions. Failure to do so can result in damage to boom and cable.

- Step 1.** Soldier A: Turn main switch back on after resetting emergency stop button (1).
- Step 2.** Soldier B: Attach lifting hook to cargo.
- Step 3.** Soldier A: Push up lever (2) to lift cargo.
- Step 4.** Soldier A: Push lever (2) right or left to swing cargo into position.
- Step 5.** Soldier A: Pull lever (2) to lower cargo.
- Step 6.** Soldier B: Remove lifting hook from cargo.



TA247156

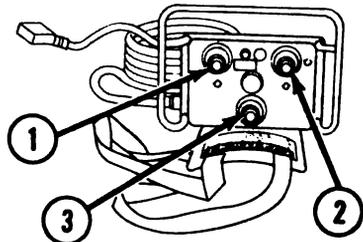
FRAME 4. PUT CRANE IN TRAVEL POSITION.

- Step 1.** Soldier B: Push transit position switch.

NOTE

For normal operation of vehicle, fold down the crane only with boom end to side of vehicle. Refer to Appendix F for placing crane in travel position when shipping vehicle.

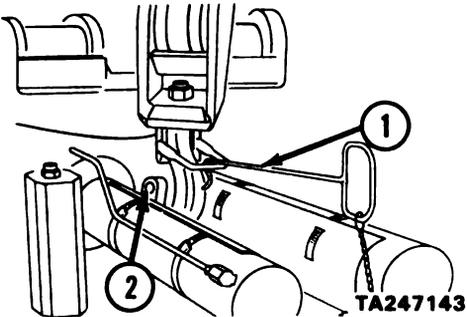
- Step 2.** Soldier A: Push lever (1) to the left. Fully pull in boom extensions.
- Step 3.** Push out lever (2) and raise lifting hook to within approximately one foot from boom pulley.
- Step 4.** Push lever (2) right or left. Rotate crane until transit position light comes on.
- Step 5.** Push lever (3) to the left. Hold lever. Lower base column to final stop.
- Step 6.** Soldier B: Tell Soldier A when lifting hook is over storage holder.
- Step 7.** Soldier A: Raise or lower boom until lifting hook is hanging directly over storage holder.
- Step 8.** Pull lever (2). Lower lifting hook to storage holder. Release lever.



TA247157

Step 9. Soldier B: Turn winch/crane hydraulic selector knob to winch position.

Step 10. Soldier B: Using hook remover/replacer (1), position hook on storage holder (2).

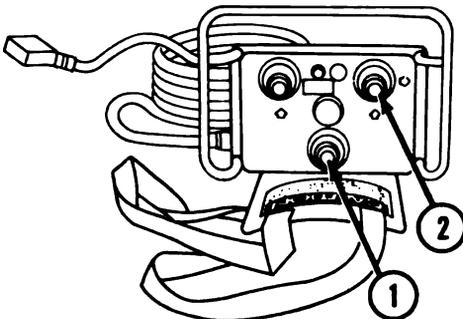


TA247143

Step 11. Soldier B: Turn winch/crane hydraulic selector knob to crane position.

Step 12. Soldier B: Tell Soldier A when winch cable is tight.

Step 13. Soldier A: Push lever (1) to the left and push lever (2) together. Stop when boom is fully lowered and winch cable is tight.

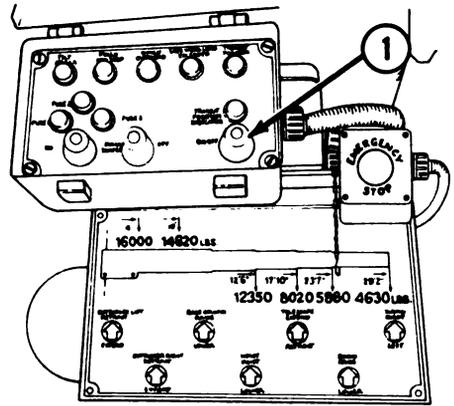


TA247144

CAUTION

Fold down crane to the right side of vehicle for normal travel. Refer to Appendix F for preparing vehicle for transport.

Step 14. Soldier B: Turn off transit position switch (1).



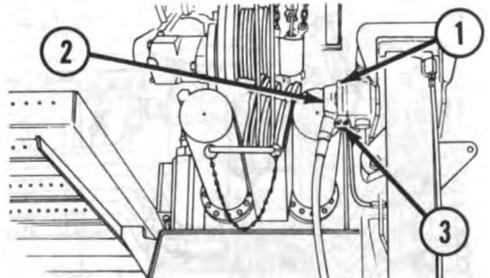
TA177561

Step 15. Push down emergency stop remote control switch.

Step 16. Unhook straps on remote control unit.

Step 17. Pull socket cover lock (1). Remove remote control plug (2).

Step 18. Close socket cover (3). Push socket cover lock (1) to lock cover.



TA177560

End of Task.

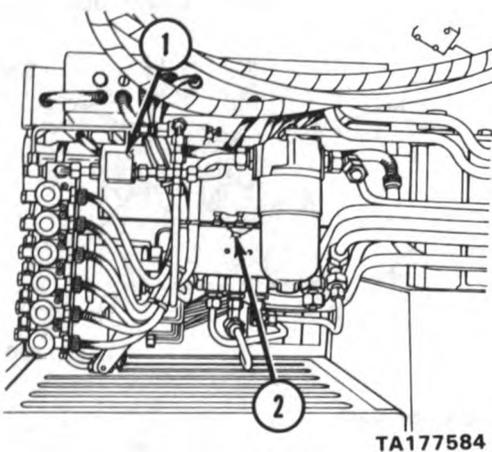
Follow on maintenance:

- Place outrigger in travel position. Refer to paragraph 2-17b, Frame 5.
- Stow remote control unit. Refer to paragraph 2-13r.

2-17d. EMERGENCY OPERATION OF CRANE.

This is an emergency operation only. It is used to lower a load and fold the crane in the event of a loss of power. Two men are required.

- Step 1.** Soldier A: Turn emergency control valve (1) to the open position. Put pump handle in pump (2). Operate pump handle. Use full strokes to build up pressure. Continue to pump handle until operation is complete.
- Step 2.** Soldier B: Move control levers up or down depending on task to be performed.



CAUTION

At end of emergency operation, turn emergency control valve to the off position. Notify organizational maintenance.

End of Task.
2-114

2-18. OPERATION OF TRACTOR.

Use with model(s): M1001, M1013, and M1014.

Supplies: None.

Number of personnel: Two.

Equipment condition: Vehicle parked.

Task Interval: As necessary.

References: Refer to Appendix A for semitrailer manual.

Special safety instructions: Use ground guide.

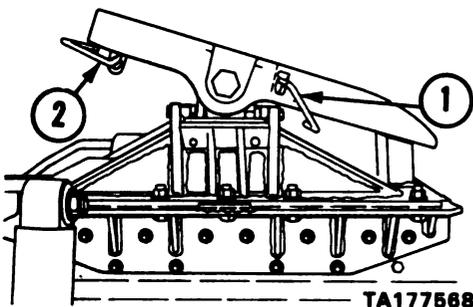
Preliminary tasks: Start engine. Refer to paragraph 2-7.

2-18a. COUPLING SEMITRAILER.

FRAME 1. MAKE READY FOR COUPLING.

Step 1. Pull out secondary lock handle (1).

Step 2. Pull out primary lock handle (2).

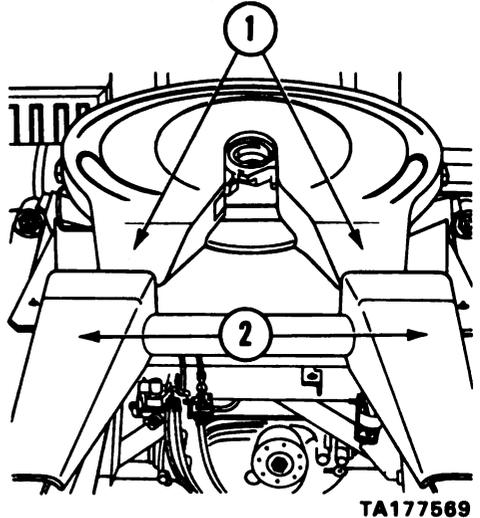


CAUTION

Fifth wheel ramps must be below pick up ramps or damage to vehicle could result.

Step 3. Make sure fifth wheel ramps (1) are below angle of pick up ramps (2).

Step 4. Ready semitrailer for coupling. Refer to semitrailer manual for operating the semitrailer (see Appendix A).



End of Task.

FRAME 2. CONNECT SEMITRAILER TO TRACTOR FIFTH WHEEL.

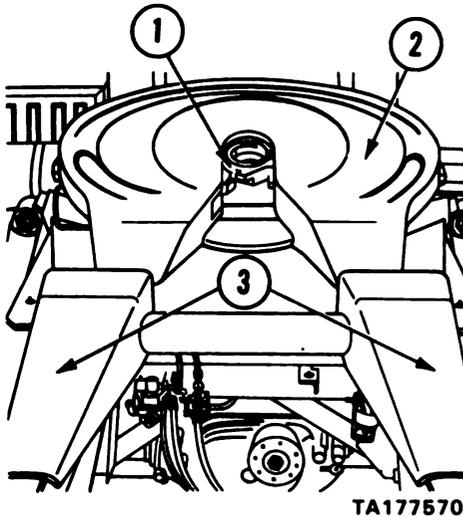
Step 1. Soldier B: Ground guide
Soldier A.

- Soldier A: Align tractor straight in front of semitrailer.
- Soldier B: Adjust trailer so skid plate is below fifth wheel.

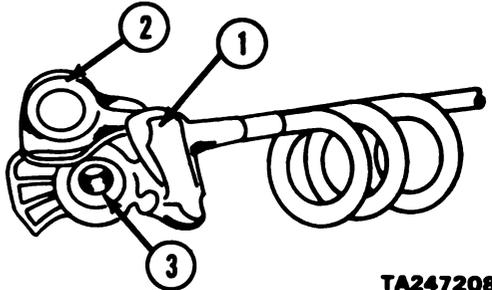
WARNING

Do not check alinement of kingpin from under semitrailer. Semitrailer may slip and cause injury to personnel.

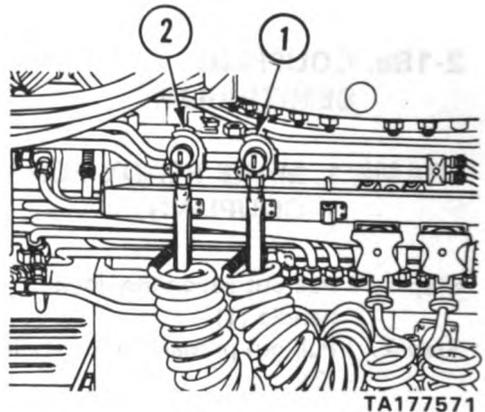
- Step 2.** Soldier B: Ground guide
Soldier A: Soldier A: Back tractor slowly under semitrailer. Kingpin must center in throat (1) of fifth wheel (2).
- Step 3.** Stop tractor as pick-up ramps (3) pick up semitrailer. Soldier B: check alignment of kingpin.



- Step 8.** Push in on valve (3). Air will exhaust from air supply line coupling only.



- Step 9.** Connect braking coupling (1).
- Step 10.** Connect air supply line coupling (2).

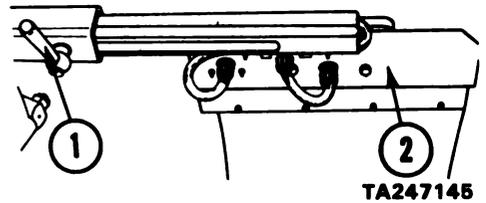
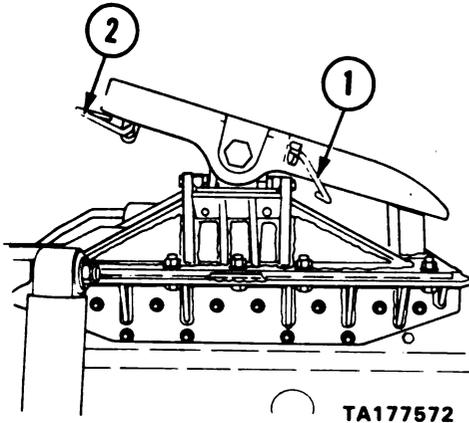


- Step 4.** Back tractor until fifth wheel locks with semitrailer kingpin.
- Step 5.** Put transmission in neutral. Apply parking brake.
- Step 6.** Insure air couplings are connected correctly. Remove air supply line coupling (1).
- Step 7.** Slide back coupling connector cover (2).

CAUTION

Check coupling. Kingpin must be in fifth wheel locks. Fifth wheel lock handles must be in lock position or damage to semitrailer may result.

Step 11. Push in secondary lock handle (1) to lock position. Make sure primary lock handle (2) is in lock position.



Step 17. Do Steps 15 and 16 for mud flap on other side of vehicle.

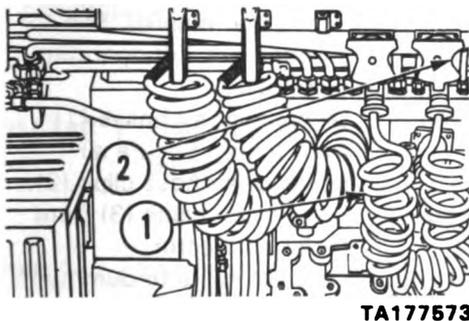
NOTE

Rear mud flaps should always be pushed in when towing trailer with tractor. When operating the tractor without trailer, mud flaps must always be in the outward position to cover tire spray.

Step 12. Disconnect intervehicular electrical cable (1) from dummy connector (2).

Step 13. Connect intervehicular electrical cable (1) to semitrailer connector.

Step 14. Raise and secure semitrailer landing gear. Refer to semitrailer manual (see Appendix A).



End of Task.

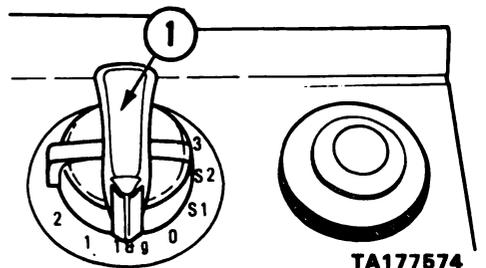
FRAME 3. CHECK SEMITRAILER LIGHTS.

Step 1. Turn light switch (1) to position 1.

Step 2. Check trailer lights. All lights must light.

NOTE

To check trailer brake lights an additional soldier is required.



Step 15. Loosen handle (1). Push in rear mud flap (2).

Step 16. Tighten handle (1).

End of Task.

2-18b. OPERATING THE TRAILER HAND BRAKE.

FRAME 1. OPERATING THE TRAILER HAND BRAKE.

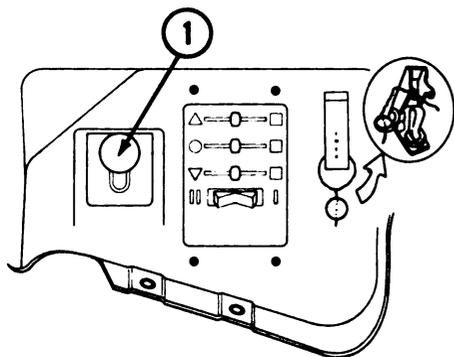
- Step 1.** Push control lever (1) down.
- Step 2.** Hold control lever down.
- Step 3.** Release control lever after reaching bottom of grade.
- Step 4.** The control lever returns to neutral position automatically.

CAUTION

Use trailer hand brake only to maintain control of trailer. Do not use hand brake for long periods of time or trailer brakes may over heat.

NOTE

No brake force is applied to the tractor by the trailer hand brake. You must use the service brake for full braking action.



TA177585

2-18c. PREPARE FOR UNCOUPLING SEMITRAILER.

Use with model(s): M1001, M1013, and M1014.

Supplies: None.

Number of personnel: One.

Equipment condition: Vehicle parked.

Task interval: As necessary.

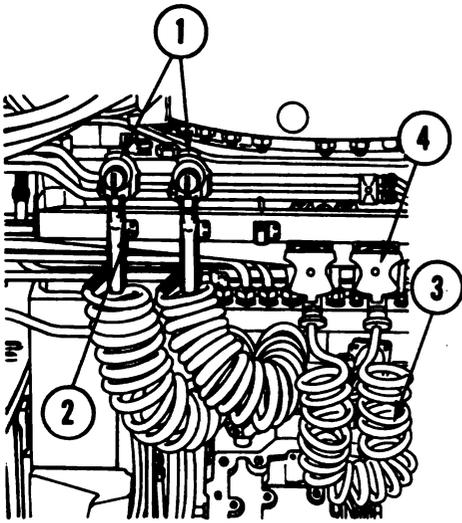
Reference: Refer to Appendix A for semitrailer manual.

Special safety instructions: None.

Preliminary tasks: None.

FRAME 1. DISCONNECT AIR LINES AND INTERVEHICULAR ELECTRICAL CABLE.

- Step 1.** Engage tractor parking brake. Refer to paragraph 2-8.
- Step 2.** Prepare semitrailer for uncoupling. Refer to semitrailer manual. See Appendix A for operating semitrailer.
- Step 3.** Disconnect air hoses (1) from trailer. Secure air hoses to air hose clips (2).
- Step 4.** Disconnect cable (3) from trailer connector.
- Step 5.** Connect cable to dummy connector (4).



End of Task.

2-18d. UNCOUPLING SEMITRAILER.

Use with model(s): M1001, M1013, and M1014.

Supplies: None.

Number of personnel: One.

Equipment condition: Tractor coupled to trailer.

Task interval: None.

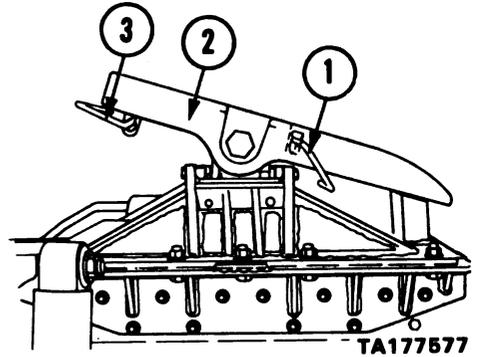
Reference: None.

Special safety instructions: None.

Preliminary tasks: Start engine. Refer to paragraph 2-7.

FRAME 1. UNLOCK FIFTH WHEEL.

- Step 1. Lower semitrailer landing gear. Refer to semitrailer manual (see Appendix A).
- Step 2. Pull out secondary lock handle (1) on fifth wheel (2).
- Step 3. Pull out primary lock handle (3) on fifth wheel (2).



End of Task.

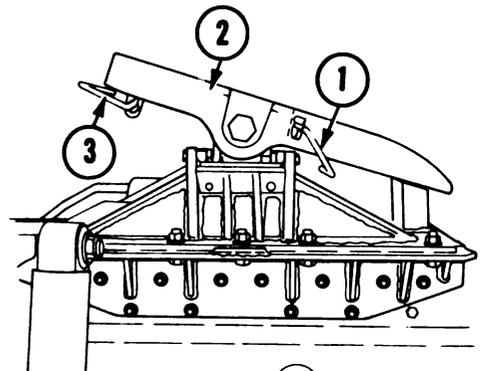
FRAME 2. UNCOUPLING.

- Step 1. Drive tractor forward. Tractor must clear semitrailer.
- Step 2. Stop tractor.
- Step 3. Stop engine.

End of Task.

FRAME 3. LOCK FIFTH WHEEL.

- Step 1. Push in primary lock handle (3) on fifth wheel (2).
- Step 2. Push in secondary handle (1) on fifth wheel (2).

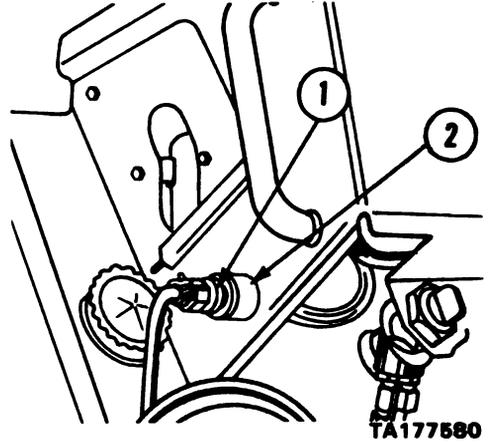


End of Task.

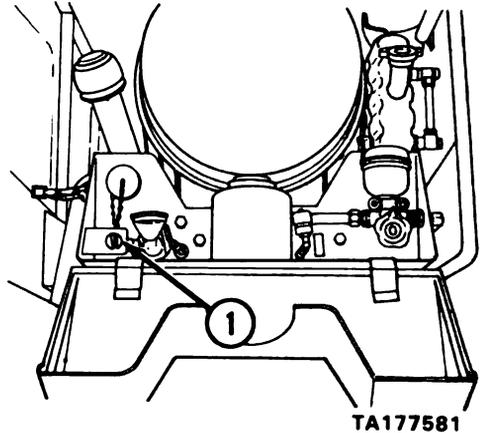
2-19. OPERATING WRECKER RECOVERY UNIT.

2-19a. PREPARE RECOVERY UNIT FOR USE.

Use with model(s): M1002.
Supplies: None.
Number of personnel: One.
Equipment condition: Vehicle parked.
Task interval: As necessary.
Reference: None.
Preliminary tasks: None.

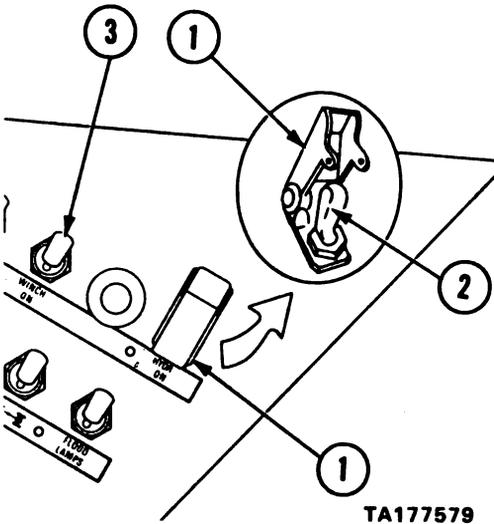


Step 6. Check if control lever (1) is in winch position.



End of Task.

- Step 1.** Start engine. Refer to paragraph 2-7.
- Step 2.** Set engine speed at 1400 RPM.
- Step 3.** Lift up cover (1). Push hydraulics on switch (2) to position 1.
- Step 4.** Push winch on switch (3) to position 1.

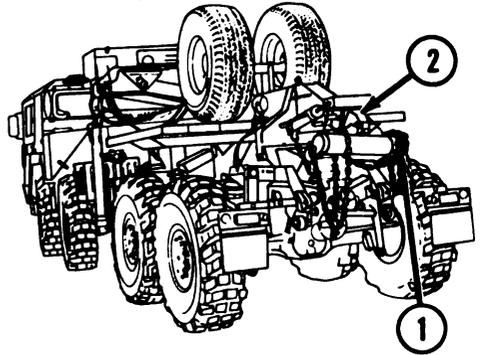


- Step 5.** Connect remote control cable (1) to cab connection (2).

2-19b. OPERATE RECOVERY UNIT.

Use with model(s): M1002.
Supplies: None.
Number of personnel: Two.
Equipment condition: Vehicle parked.
Task interval: As necessary.
Reference: None.
Special safety instructions: None.
Preliminary tasks: None.

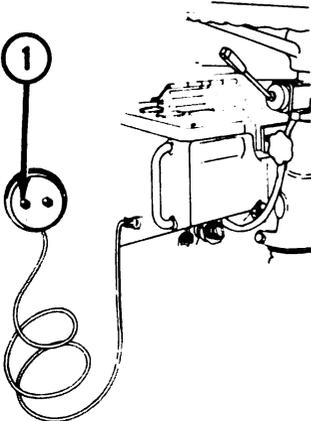
FRAME 1. CONNECT TO FRONT OF DISABLED VEHICLE.



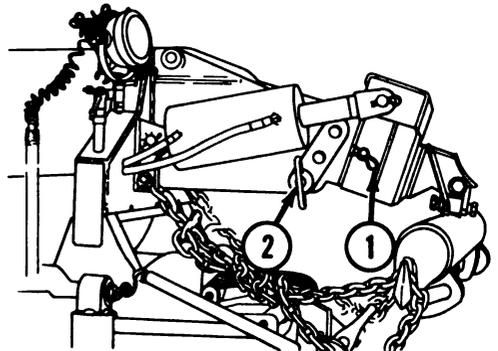
TA247146

- Step 1.** Prepare recovery unit for use. Refer to paragraph 2-19a.
- Step 2.** Push up control switch (1) to raise recovery unit. Pull down control switch to lower recovery unit.

- Step 4.** Remove lock clip (1). Unscrew and remove lock nut (2).



TA247209



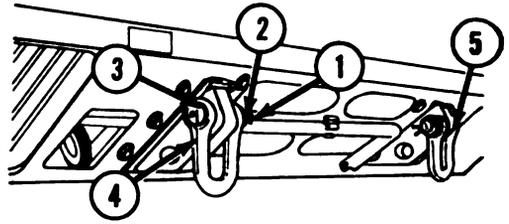
TA247147

- Step 3.** Remove chains (1) from recovery unit (2).

WARNING

Do not remove boom extension pin when boom is below the fully raised position. Boom extension can slide out. Injury to personnel may result.

- Step 5. Raise boom (1) to fully raised position.
- Step 6. Remove boom extension pin (2).
- Step 7. Pull out boom extension (3) until three holes (4) are showing.



TA177492

CAUTION

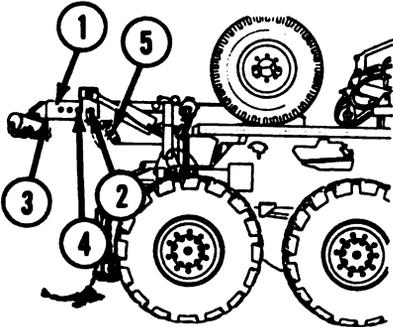
Do not substitute boom pins and lock nuts. Use only authorized stock numbered parts or damage to equipment may result.

- Step 8. Line up pin holes. Put boom extension pin (2) back in boom extension. Put lock clip in boom extension pin.
- Step 9. Remove boom support pin (5).

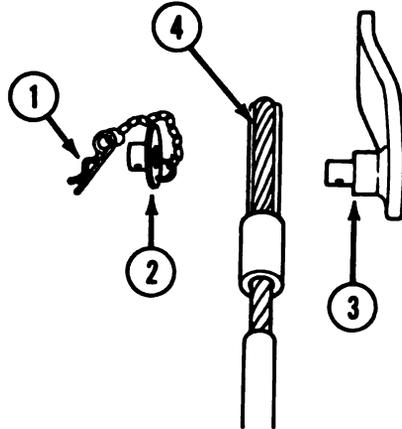
NOTE

Do Steps 13 through 18 to both sides of both front axles.

- Step 13. Pull out safety kit lock clip (1). Remove safety kit retaining washer (2) on axle sling adapter (3).
- Step 14. Put axle sling adapter (3) through tie down cable eyelet (4).
- Step 15. Put safety kit retaining washer (2) in place. Put in safety kit lock clip (1).



TA177583

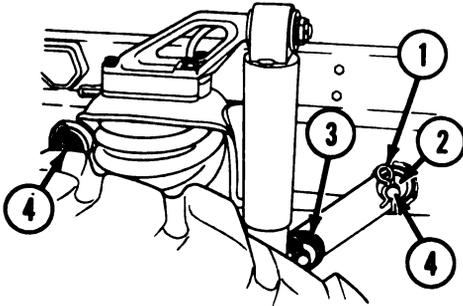


TA177494

- Step 10. Pull out lock clip (1) of lifting shackle pin from disabled vehicle front bumper.
- Step 11. Unscrew and remove nut (2). Pull out pin (3) and remove lifting shackle (4).
- Step 12. Do Steps 10 and 11 to other lifting shackle (5) on front bumper.

- Step 16. Pull out two lock clips (1). Remove retaining washers (2) on both front axle tie down points.
- Step 17. Put tie down cable (3) under axle and connect eyelets to tie down points (4).

Step 18. Put retaining washers (2) in place. Put in lock clips (1).



TA247215

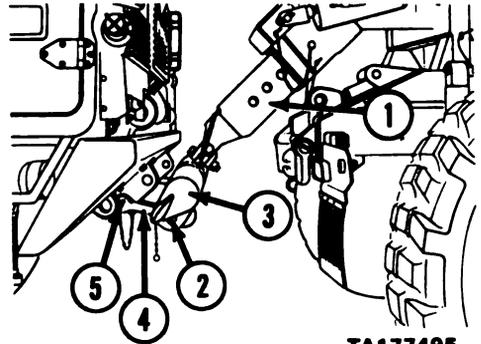
Step 19. Soldier A: Operate towing vehicle. Soldier B: Ground guide vehicle into position in front of disabled vehicle as shown below. Increase engine speed to 1400 RPM.

Step 20. Soldier A: Lower recovery unit boom (1) until tow bar lines up with lifting shackle pin holes.

Step 21. Soldiers A and B: Put lifting shackles from disabled vehicle through outer eyelets (2) of tow bar (3). Soldier B: Tell Soldier A to back up vehicle until tow bar is almost touching front bumper of disabled vehicle as shown below.

Step 22. Soldier A: Set parking brake on vehicle and assist Soldier B.

Step 23. Soldiers A and B: Lift up lifting shackles (4) and line up pin holes. Put in pins (5). Screw on nuts and put lock clips in pins.

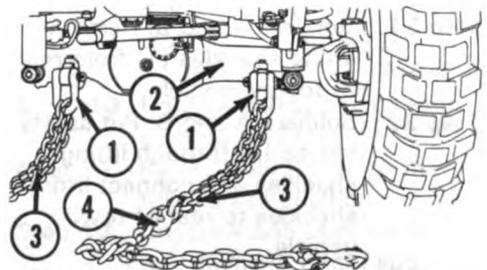


TA177495

Step 24. Soldiers A and B: Remove lifting shackles (1) from front axle (2) of disabled vehicle.

Step 25. Soldiers A and B: Put safety chains (3) through lifting shackles and connect lifting shackles to front axle.

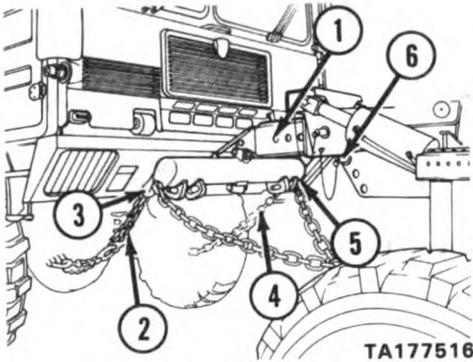
Step 26. Hook safety chain hooks (4) to safety chains.



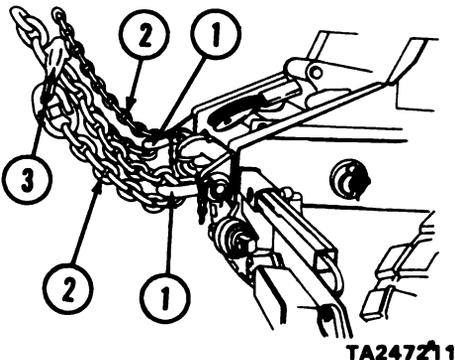
TA177557

**TM 9-2320-282-10
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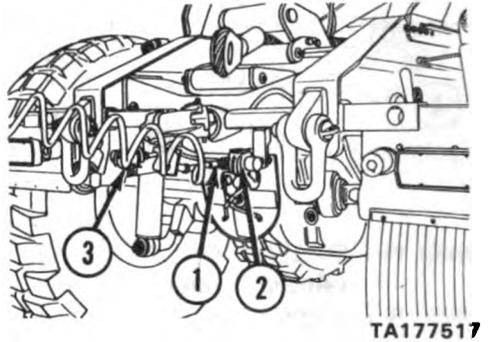
- Step 27.** Raise recovery unit boom (1) to fully raised position.
- Step 28.** Crisscross chains (2). Hook chain in tow bar grab hook (3).
- Step 29.** Hook chain (4) in tow bar grab hook (5).
- Step 30.** Put boom support pin (6) in top hole with flat side up. Screw on lock nut. Lower boom (1) onto support pin (6).



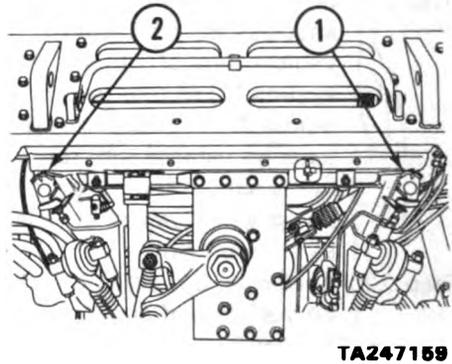
- Step 31.** Soldiers A and B: Remove lifting shackles (1) from rear of towing vehicle.
- Step 32.** Soldiers A and B: Put safety chains (2) through lifting shackles and connect lifting shackles to rear of towing vehicle.
- Step 33.** Hook safety chain hooks (3) to safety chains.



- Step 34.** Connect braking air line (1) to towing vehicle braking air coupling (2).
- Step 35.** Connect air supply line to towing vehicle air supply line coupling (3).



- Step 36.** Connect braking air line from towing vehicle to connector (1).
- Step 37.** Connect air supply line from towing vehicle to connector (2).



CAUTION

If vehicle is to be towed more than 60 miles (100 km), propeller shaft between rear intermediate axle and transmission must be removed by organizational maintenance.

Step 38. Soldier B: Make sure transmission in disabled vehicle is in neutral position.

Step 39. Soldier B: Make sure parking brake is off in disabled vehicle before towing.

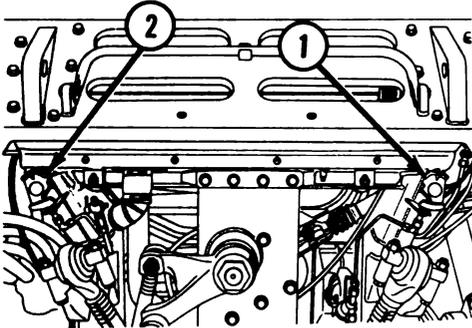
End of Task.

FRAME 2. DISCONNECT FROM FRONT OF DISABLED VEHICLE.

Step 1. Soldier A: Stop vehicles. Apply parking brake in towing vehicle.

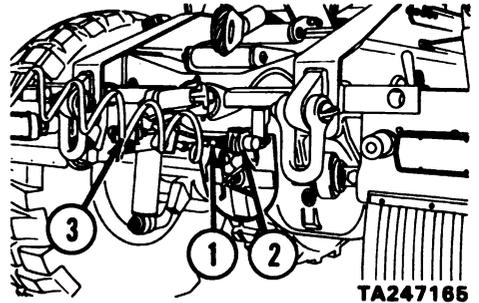
Step 2. Soldier B: Disconnect braking air line from connector (1) of disabled vehicle.

Step 3. Soldier B: Disconnect air supply line from connector (2) of disabled vehicle.



Step 4. Soldier A: Disconnect braking air line (1) from connector (2) on towing vehicle.

Step 5. Soldier A: Disconnect air supply line from connector (3) on towing vehicle.

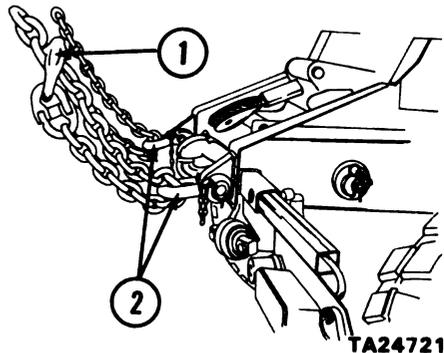


Step 6. Unhook ends of safety chains (1).

Step 7. Remove lifting shackles (2) from rear of towing vehicle.

Step 8. Take chains out of lifting shackles (2).

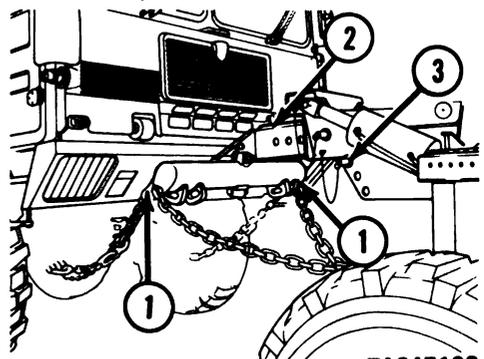
Step 9. Connect lifting shackles (2) to rear of towing vehicle.



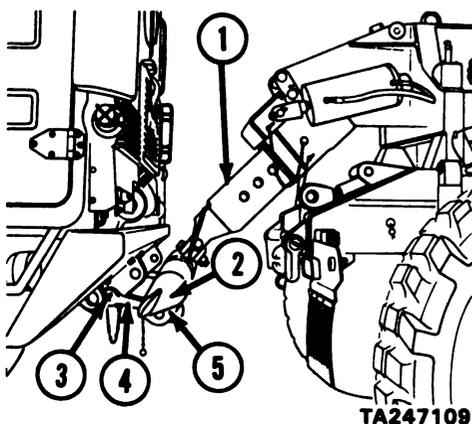
Step 10. Unhook safety chains from grab hooks (1).

Step 11. Raise boom (2) up to the fully raised position.

Step 12. Unscrew and remove lock nut. Remove boom support pin (3).

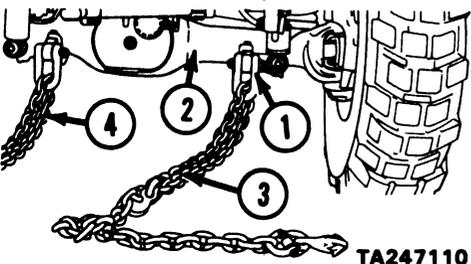


- Step 13.** Soldier A: Lower boom (1) until disabled vehicle is on the ground and tow bar (2) is loose.
- Step 14.** Soldier B: Apply parking brake of disabled vehicle.
- Step 15.** Soldiers A and B: Pull out lock clip and remove nuts from pins (3). Remove pins from lifting shackles (4).
- Step 16.** Remove lifting shackles from tow bar outer eyelets (5).
- Step 17.** Soldier A: Release parking brake of towing vehicle and pull vehicle forward approximately 10 feet.



TA247109

- Step 18.** Remove lifting shackle (1) on front axle (2) of disabled vehicle.
- Step 19.** Remove safety chain (3) from lifting shackle. Connect lifting shackle to front axle.
- Step 20.** Do Steps 13 and 14 to other safety chain (4).

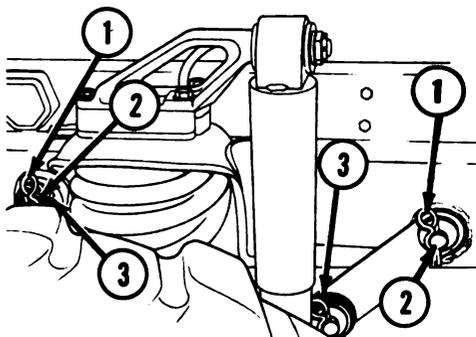


TA247110

NOTE

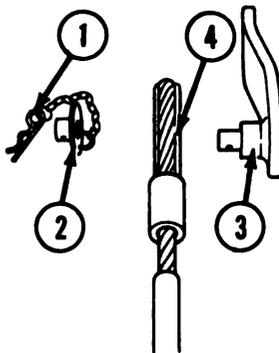
Do Steps 21 through 25 to both sides of both front axles.

- Step 21.** Remove lock clips (1). Remove retaining washers (2) on both front axle tie down points.
- Step 22.** Remove tie down cable (3).
- Step 23.** Put retaining washers (2) in place. Put in lock clips (1).



TA247219

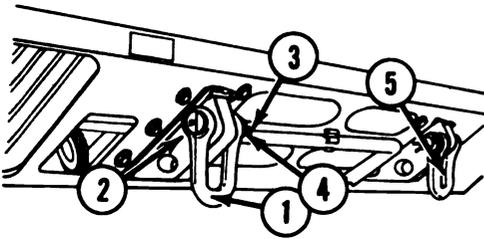
- Step 24.** Pull out safety kit lock clip (1). Remove safety kit retaining washer (2).
- Step 25.** Pull axle sling adapter (3) out of tie down cable eyelet (4). Put safety kit retaining washer (2) and safety kit lock clip (1) back on axle sling adapter (3).



TA247218

Step 26. Put front lifting shackle (1) in place on disabled vehicle front bumper. Put in pin (2). Screw on nut (3). Put in lock clip (4).

Step 27. Do Step 26 to other lifting shackle (5) on front bumper.



TA247130

WARNING

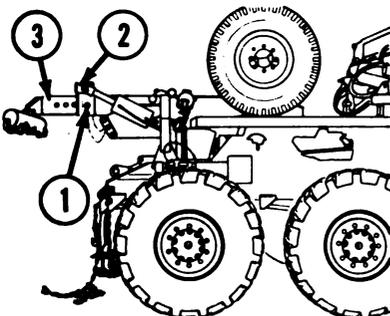
Do not remove boom extension pin when boom is below the fully raised position. Boom extension can slide out. Injury to personnel may result.

Step 28. Raise boom (2) to fully raised position.

Step 29. Soldier A: Remove lock clip from boom extension pin (1). Remove pin.

Step 30. Soldiers A and B: Push boom extension (3) all the way in.

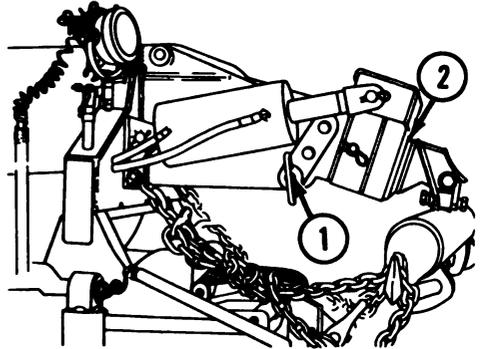
Step 31. Soldier A: Put in pin (1). Put in lock clip.



TA247131

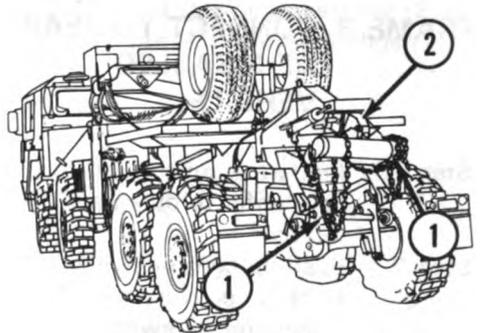
Step 32. Soldier B: Put in boom support pin (1) with flat side up. Screw on lock nut.

Step 33. Soldier A: Lower boom (2) to boom support pin.



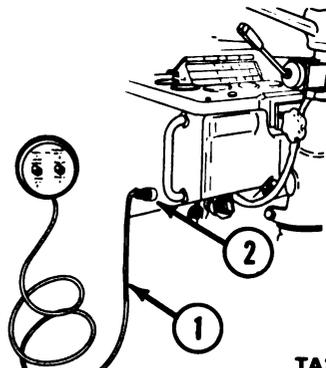
TA247132

Step 34. Replace safety chains (1) on recovery unit (2).



TA247148

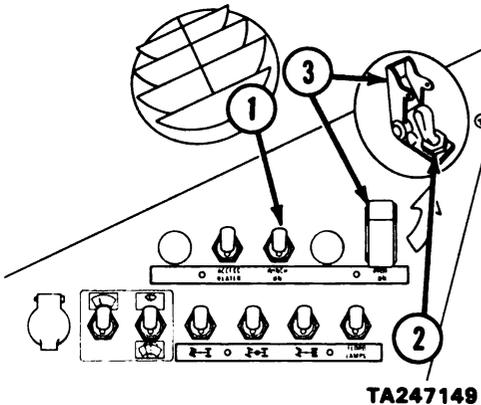
Step 35. Disconnect remote control cable (1) from cab connection (2).



TA247129

**TM 9-2320-282-10
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- Step 36.** Pull winch on switch (1) to 0 position.
- Step 37.** Pull hydraulic on switch (2) to 0 position. Close cover (3).
- Step 38.** Stop engine. Refer to paragraph 2-8d.

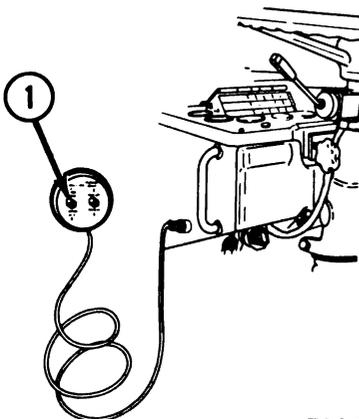


TA247149

End of Task.

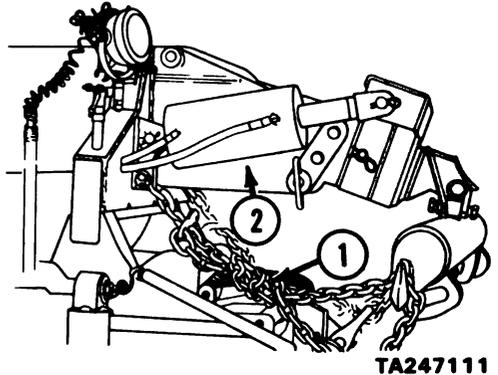
FRAME 3. CONNECT TO REAR OF DISABLED VEHICLE.

- Step 1.** Prepare recovery unit for use. Refer to paragraph 2-19a.
- Step 2.** Push up control switch (1) to raise recovery unit. Pull down control switch to lower recovery unit.



TA247150

- Step 3.** Remove chains (1) from recovery unit (2).



TA247111

WARNING

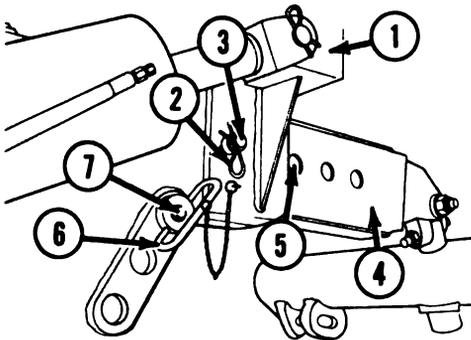
Do not remove boom extension pin when boom is below the fully raised position. Boom extension can slide out. Injury to personnel may result.

- Step 4.** Raise boom (1) to fully raised position.
- Step 5.** Pull out lock clip (2) and remove boom extension pin (3).
- Step 6.** Pull out boom extension (4) until three holes (5) are showing.

CAUTION

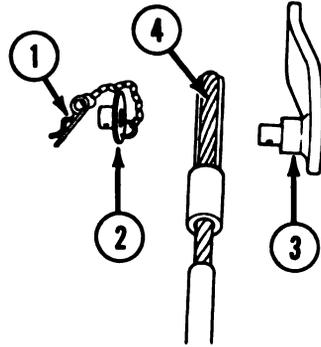
Do not substitute boom pins and lock nuts. Use only authorized stock numbered parts or damage to equipment may result.

- Step 7.** Line up pin holes. Put boom extension pin (3) back in boom extension. Put lock clip (2) in boom extension pin.
- Step 8.** Unscrew and remove lock nut (6). Remove boom support pin (7).



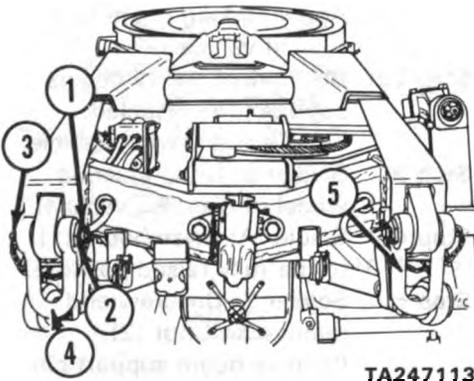
TA247112

- Step 9.** Pull out lock clip (1) from rear lifting shackle of disabled vehicle. Unscrew and remove nut (2). Remove pin (3) and lifting shackle (4).
- Step 10.** Do Step 9 to other lifting shackle (5).



TA247151

- Step 14.** Pull out lock clips (1). Remove retaining washers (2).
- Step 15.** Put tie down cable (3) under axle and connect eyelets to tie down points (4).
- Step 16.** Put retaining washers (2) in place. Put in lock clips (1).

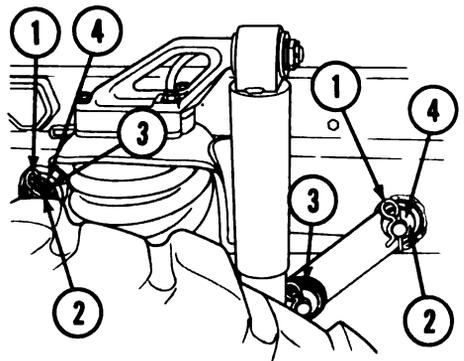


TA247113

NOTE

Do Steps 11 through 16 to both sides of both rear axles.

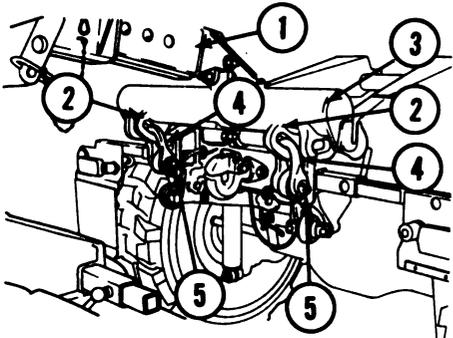
- Step 11.** Pull out safety kit lock clip (1). Remove safety kit retaining washer (2).
- Step 12.** Put axle sling adapter (3) through tie down cable eyelet (4).
- Step 13.** Put safety kit retaining washer (2) in place. Put in safety kit lock clip (1).



TA247115

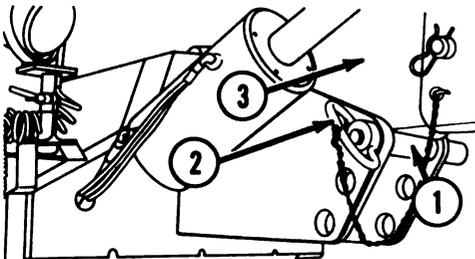
- Step 17.** Soldier A: Operate towing vehicle. Soldier B: Ground guide vehicle into position in rear of disabled vehicle as shown on next page.

- Step 18.** Soldier A: Lower recovery boom (1) as shown below.
- Step 19.** Soldiers A and B: Put lifting shackles from disabled vehicle through inner eyelets (2) of tow bar (3).
- Step 20.** Soldier B: Tell Soldier A to back up vehicle until tow bar is almost touching rear bumper of disabled vehicle as shown below.
- Step 21.** Soldier A: Set parking brake on vehicle and assist Soldier B.
- Step 22.** Soldiers A and B: Lift up lifting shackles (4) and line up pin holes. Put in pins (5). Screw on nuts and put lock clips in pins.
- Step 23.** Soldier A: Raise boom to the fully raised position.



TA247116

- Step 24.** Put boom support pin (1) in top hole with flat side up. Screw on lock nut (2). Lower boom (3) onto support pin (1).



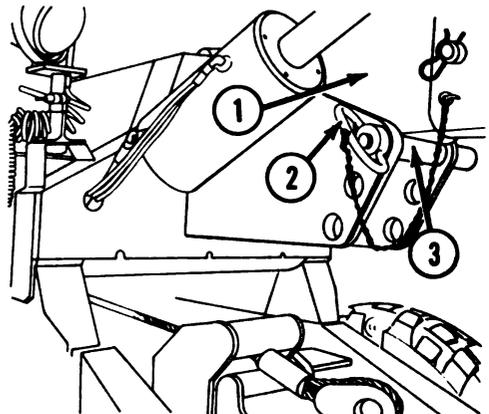
TA247117

- Step 25.** Connect safety chains between towing vehicle and disabled vehicle.
- Step 26.** Soldier B: Make sure transmission in disabled vehicle is in neutral position.
- Step 27.** Soldier A: Tie down steering wheel to prevent wheel from turning during towing.

End of Task.

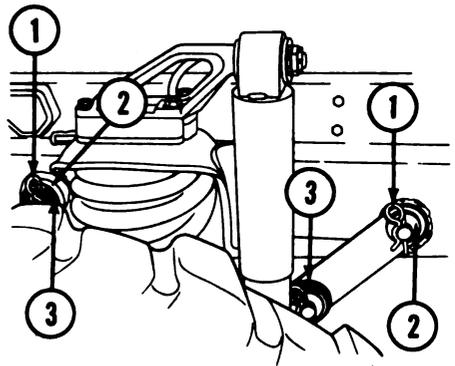
FRAME 4. DISCONNECT FROM REAR OF DISABLED VEHICLE.

- Step 1.** Soldier A: Stop vehicles. Apply parking brake in towing vehicle.
- Step 2.** Disconnect safety chains between the disabled vehicle and towing vehicle.
- Step 3.** Soldier B: Untie steering wheel of disabled vehicle.
- Step 4.** Soldier A: Raise boom (1) to the fully raised position.
- Step 5.** Soldier B: Unscrew and remove lock nut (2). Remove boom support pin (3).

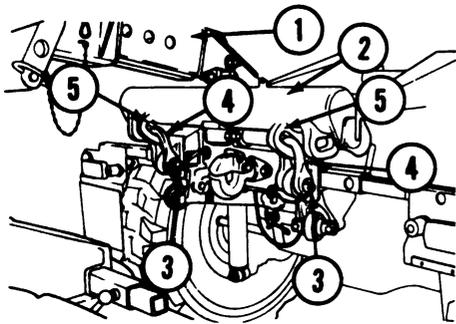


TA247118

- Step 6.** Soldier A: Lower boom (1) until disabled vehicle is on the ground and tow bar (2) is loose.
- Step 7.** Soldier B: Apply parking brake of disabled vehicle.
- Step 8.** Soldiers A and B: Pull out lock clip and remove nuts from pins (3). Remove pins from lifting shackles (4).
- Step 9.** Remove lifting shackles from tow bar inner eyelets (5).
- Step 10.** Soldier A: Release parking brake of towing vehicle and pull vehicle forward approximately 10 feet.



TA247121



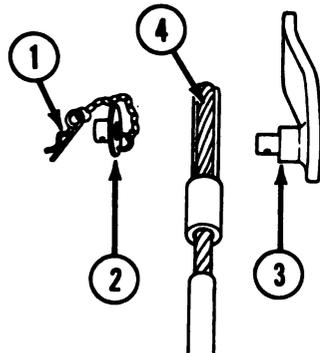
TA247119

NOTE

Do Steps 11 through 16 to both sides of both rear axles.

- Step 11.** Remove lock clips (1). Remove retaining washers (2) on both rear axle tie down points.
- Step 12.** Remove tie down cable (3).
- Step 13.** Put retaining washer (2) in place. Put in lock clips (1).

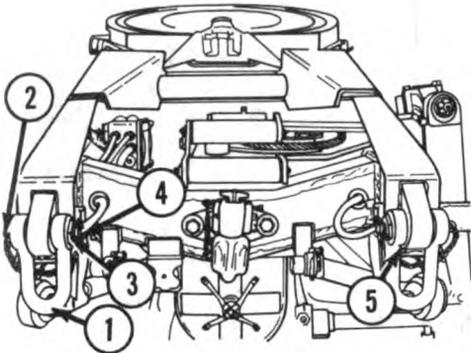
- Step 14.** Pull out safety kit lock clip (1). Remove safety kit retaining washer (2).
- Step 15.** Pull axle sling adapter (3) out of tie down cable eyelet (4).
- Step 16.** Put safety kit retaining washer (2) and safety kit lock clip (1) on axle sling adapter (3).



TA247152

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- Step 17.** Put rear shackle (1) in place. Put in pin (2). Screw on nut (3). Screw on lock clip (4).
- Step 18.** Do Step 17 to other lifting shackle (5).

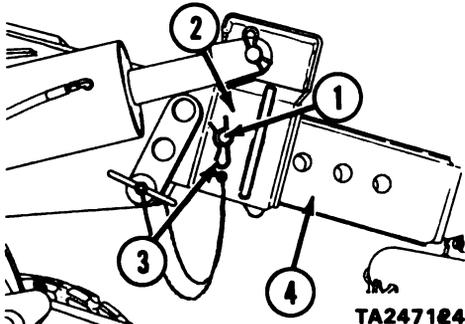


TA247123

WARNING

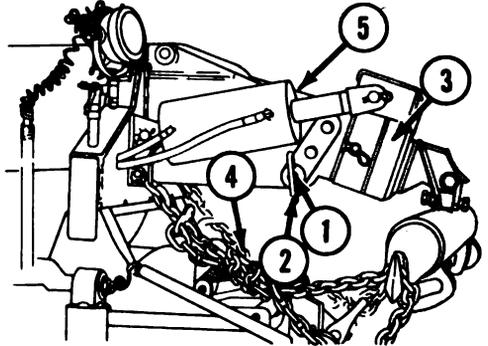
Do not remove boom extension pin when boom is below the fully raised position. Boom extension can slide out. Injury to personnel may result.

- Step 19.** Raise boom (2) to fully raised position.
- Step 20.** Soldier A: Remove lock clip (3) from boom extension pin (1). Remove pin.
- Step 21.** Soldiers A and B: Push boom extension (4) all the way in.
- Step 22.** Soldier A: Put in pin (1). Put in lock clip (3).



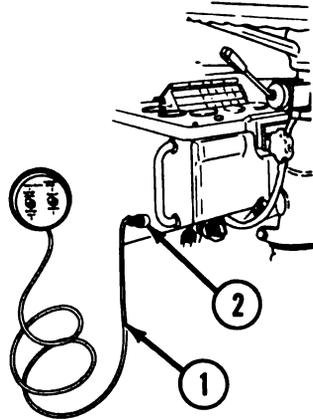
TA247124

- Step 23.** Soldier B: Put in boom support pin (1) with flat side up. Screw on lock nut (2).
- Step 24.** Soldier A: Lower boom (3) to boom support pin.
- Step 25.** Replace safety chains (4) on recovery unit (5).



TA177515

- Step 26.** Disconnect remote control cable (1) from cab connection (2).



TA247155

- Step 27.** Pull winch on switch (1) to 0 position.
- Step 28.** Pull hydraulics on switch (2) to 0 position. Close cover (3).
- Step 29.** Stop engine. Refer to paragraph 2-8d.

NOTE

Accessory (access) heater indicator lamp must light. Heater must ignite within 15 seconds.

Step 3. Check heater for ignition. Listen for the start of heater blower.

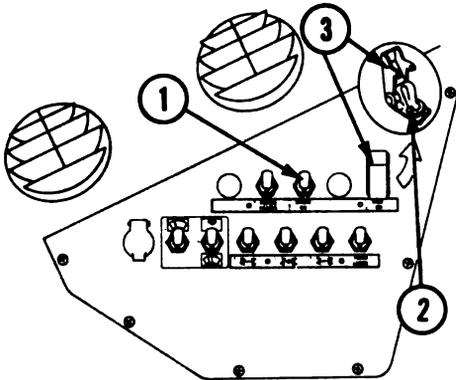
NOTE

The heater will stop or fail to ignite under the following conditions:

- No ignition after switch is turned on.
- Flame goes out.
- heater overheats.

Step 4. Push switch (1) to off position. Heater stops automatically after a one or two minute cool down period.

Step 5. Notify organizational maintenance if heater fails to work.



TA247153

End of Task.

2-20. OPERATION OF AUXILIARY EQUIPMENT (SPECIAL PURPOSE KITS).

2-20a. OPERATING ACCESSORY HEATER.

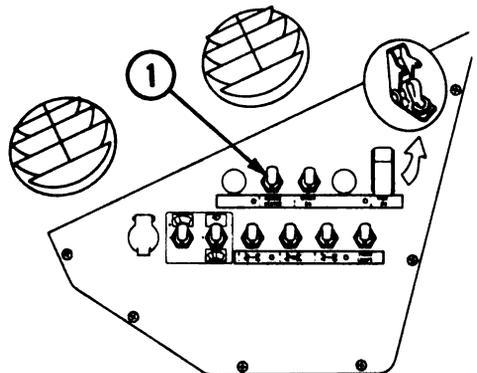
Use with model(s): All models.
Number of personnel: One.
Equipment condition: None.
Task interval: As necessary.
Reference: None
Special safety instructions: Vented area.
Preliminary tasks: None

Step 1. Turn master switch to RUN position.

NOTE

Heater is normally used to preheat vehicle coolant system. The accessory heater can be operated also while engine is running.

Step 2. Pull switch (1). Heater starts.



TA247154

End of Task.

2-20b. MOUNT AND REMOVE FIFTH WHEEL KIT.

Use with model(s): M1013 and
M1014.

Supplies: None.

Number of personnel: Two.

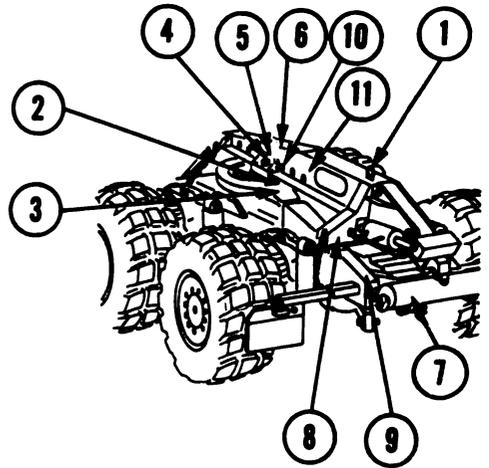
Equipment condition: Vehicle parked.

Task interval: As necessary.

Reference: None.

Special safety instructions: None.

Preliminary tasks: None.

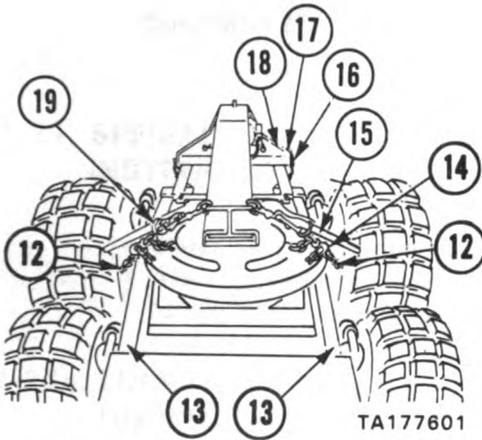


TA247161

FRAME 1. MOUNTING FIFTH WHEEL WRECKER.

- Step 1.** Soldier A: Attach hoist to lifting eye (1) on boom.
- Step 2.** Soldier B: Raise wrecker boom. Position boom kingpin (2) over tractor fifth wheel (3).
- Step 3.** Lower wrecker boom kingpin (2) into tractor fifth wheel (3). Kingpin must lock in fifth wheel (3).
- Step 4.** Remove lock clip (4). Remove adjusting pin (5).
- Step 5.** Soldiers A and B: Slide wrecker boom assembly (6) forward or back until:
- Tow bar (7) is far enough to rear for proper turning clearance during towing.
 - Wrecker frame crosspipe (8) sits flat on tractor frame rail (9).
 - Kingpin assembly (10) aligns with one of the holes (11) in wrecker boom.
- Step 6.** Put in adjusting pin (5). Put lock clip (4) on adjusting pin.

- Step 7.** Put rear hold down chain (12) under both tractor frame rails (13). Pull chain tight.
- Step 8.** Put hold down chain (12) in grab hook (14).
- Step 9.** Raise load binder handles (15).
- Step 10.** Position front hold down chains (16) around tractor frame rails.
- Step 11.** Hook chain grab hooks (17) on frame rail flange (18).
- Step 12.** Pull down load binder handles (15).
- Step 13.** Slide keeper rings (19) over load binder handles (15).
- Step 14.** Remove hoist hook from lifting eye on boom.
- Step 15.** Connect hydraulic lines.

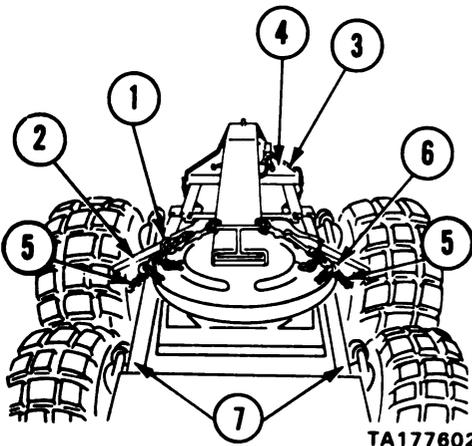


TA177601

End of Task.

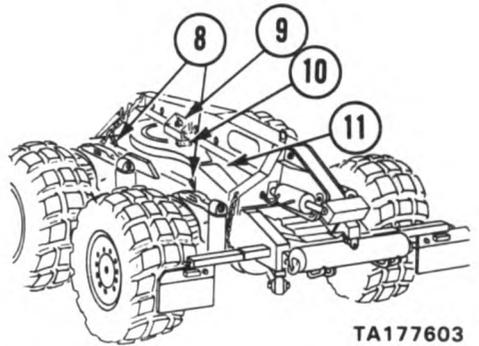
FRAME 2. REMOVE FIFTH WHEEL KIT.

- Step 1. Disconnect hydraulic lines.
- Step 2. Attach hoist to lifting eye on wrecker boom. Take up hoist slack.
- Step 3. Slide keeper rings (1) off load binder handles (2). Lift load binder handles.
- Step 4. Remove chain grab hooks (3) from frame rails (4).
- Step 5. Remove rear hold down chain (5) from grab hook (6). Pull hold down chain from under tractor frame rails (7).



TA177602

- Step 6. Pull fifth wheel lock handles (8). Unlock boom assembly kingpin.
- Step 7. Lift boom assembly weight off fifth wheel.
- Step 8. Slide wrecker boom assembly (9). Kingpin (10) must clear fifth wheel (11).
- Step 9. Soldier A and B: Move boom assembly away from tractor. Lower boom assembly to floor.



TA177603

End of Task.

Follow on maintenance: None.

2-20c. FIFTH WHEEL RECOVERY KIT OPERATION.

Refer to paragraph 2-19. Operation of the fifth wheel recovery kit is the same as the operation of the wrecker recovery unit.

Section **IV**. OPERATION UNDER UNUSUAL CONDITIONS

2-21. SPECIAL INSTRUCTIONS.

- Clean vehicle more often.
- After operation in rough terrain check vehicle for damage.

2-21a. LUBRICATION UNDER UNUSUAL CONDITIONS.

See LO 9-2320-282-12/
TO 36A12-1C-461LC-1
for lubrication instructions.

2-21b. DRIVING UNDER UNUSUAL CONDITIONS.

Use the following references.

- TM 21-305 Manual for the Wheeled Vehicle Operator.
- TM 9-207 Operation and Maintenance of Ordnance Material in Extreme Cold Weather (0° to -65° F).
- FM 31-70 Basic Cold Weather manual.
- FM 31-71 Northern Operations.
- FM 31-72 Mountain Operations.

2-22. EXTREME COLD WEATHER.

Vehicles need special attention and care during periods of extreme cold weather. The following things occur in extreme cold:

- Lubricants thicken.
- Batteries might lose power and freeze.
- Electrical insulation might crack and cause short circuits.
- Engines are more difficult to start.
- Metals and other materials become brittle.
- POL products require special storage and handling.
- Cooling system requires protection from freezing.
- Air brake requires antifreeze protection.
- Special fuels are required.

2-22a. STARTING OUT.

- Do PMCS in Table 2-1.
- Use accessory heater to warm engine. Refer to paragraph 2-20 a.
- Drive slow for approximately the first 218 yards (200 meters). **Let parts warm to normal operating temperature.**

2-22b. STOPPING AND PARKING.

- Park in sheltered area.
- Face vehicle away from wind.
- Do PMCS in Table 2-1.

2-23. EXTREME HOT WEATHER.

During extreme hot weather, protect the vehicle from the following conditions:

- Continuous high speeds.
- Long, hard pulls.
- Fungus or rust.
- Continuous use of low gears on steep grades or in soft terrain.

PROTECT THE VEHICLE.

- Park in sheltered area.
- Check coolant often.
- Check contamination indicator often.
- Do PMCS.

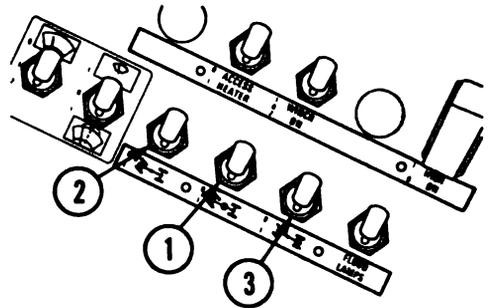
2-24. OPERATING IN DUST, SAND, MUD OR SNOW.

CAUTION

Do not lock transfer or differential locks on hard surface. Damage to transfer or differential may result.

Power is provided to all wheels through transfer gears.

- (1) Transfer switch — engages transfer lock.
- (2) Front axles differential switch — engages front axles differential locks.
- (3) Rear axles differential switch — engages rear axles differential locks.



TA177604

NOTE

Use tire chains for operation in soft terrain or deep mud or snow. See paragraph 2-25.

2-24a. USE TRANSFER LOCK.

CAUTION

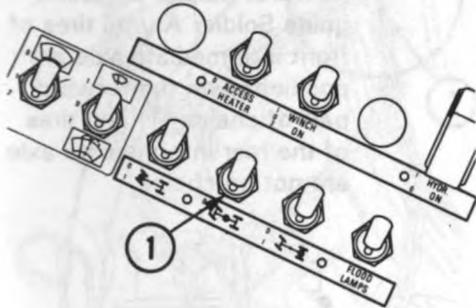
Stop vehicle before engaging lock. Engaging transfer lock while vehicle is in motion can result in damage to transfer.

- Step 1. Stop vehicle.
- Step 2. Move toggle switch (1) to transfer lock position.

NOTE

After moving vehicle, observe indicator lamp on instrument panel. Report failure of lamp to organizational maintenance. Do not exceed 3-5 MPH. Stop vehicle when on hard surface.

Step 3. Move toggle switch (1) to off position. Continue normal operation.



TA177605

End of Task.

2-24b. USE DIFFERENTIAL LOCKS.

CAUTION

Never use differential locks on hard surfaces. If this procedure is not followed, damage to equipment may result.

NOTE

First lock transfer. Then lock rear and front differentials. Always engage rear differential lock first before engaging front. Engage differential locks to prevent spinning wheels in soft surface or on slopes.

Step 1. Stop vehicle. Push transfer toggle switch (1).

Step 2. Push toggle switch (3) to engage rear differential lock.

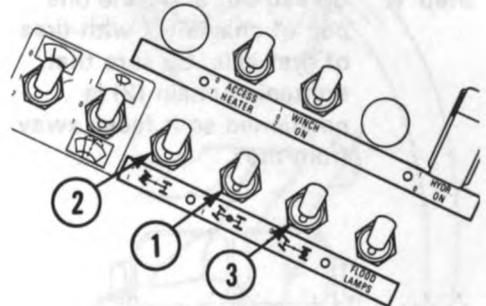
Step 3. Push toggle switch (2) to engage front differential locks.

Step 4. Observe indicator lamps on dash panel. Report lamp failure to maintenance.

Step 5. Stop vehicle. Move toggle switches (1), (2) and (3) to off position.

NOTE

If indicator lights fail to go off, report failure to organizational maintenance.



TA177606

End of Task.

2-25. OPERATING VEHICLE WITH TIRE CHAINS.

Use with model(s): All models.

Supplies: None.

Number of personnel: Two.

Equipment condition: Engine off. Hand brake set.

Task interval: None.

References: None.

Special safety instructions: None.

Preliminary tasks: Remove chains from storage box.

NOTE

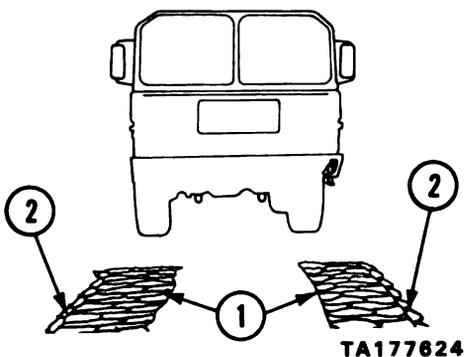
Do not use chains on tires of front axle or rear axle.

FRAME 1. PUT ON TIRE CHAINS.

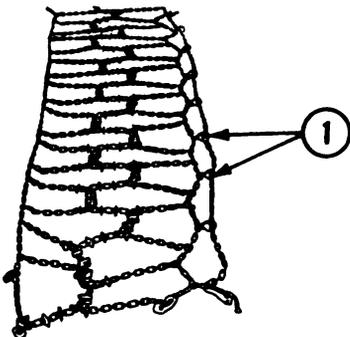
NOTE

Put chains on one axle at a time.

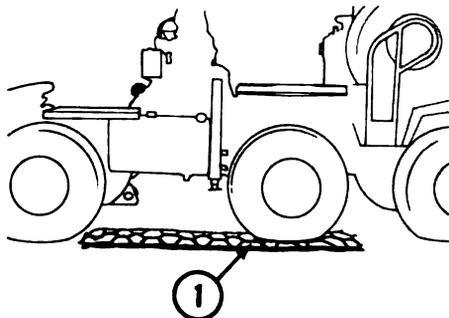
- Step 1.** Spread out and aline one pair of chains (1) with tires of first axle. Be sure that tightening chain (2) is positioned so it faces away from tire.



- Step 2.** Make sure open ends of hooks (1) are facing down.

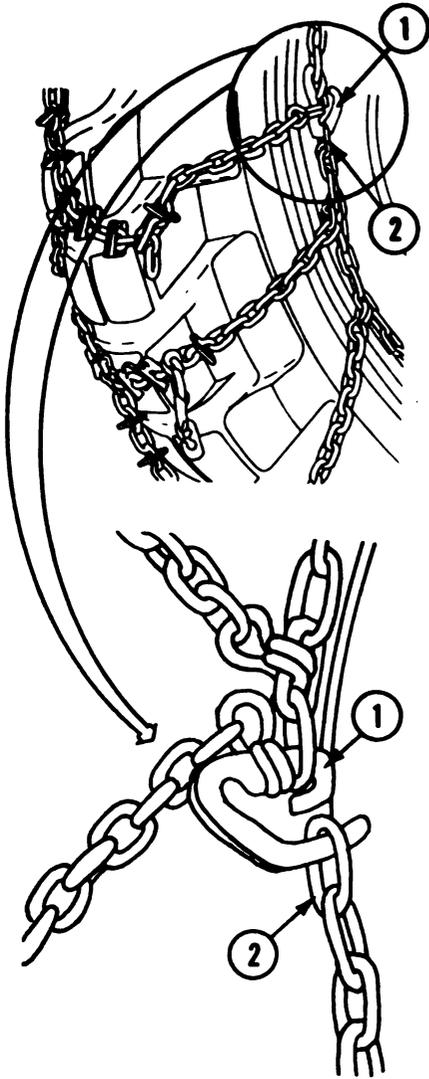


- Step 3.** Soldier A: Start engine. Refer to paragraph 2-7.
- Step 4.** Soldier A: Drive vehicle forward. Soldier B ground guide Soldier A until tires of front intermediate axle are positioned on the forward part of chains (1) and tires of the rear intermediate axle are not on chains.

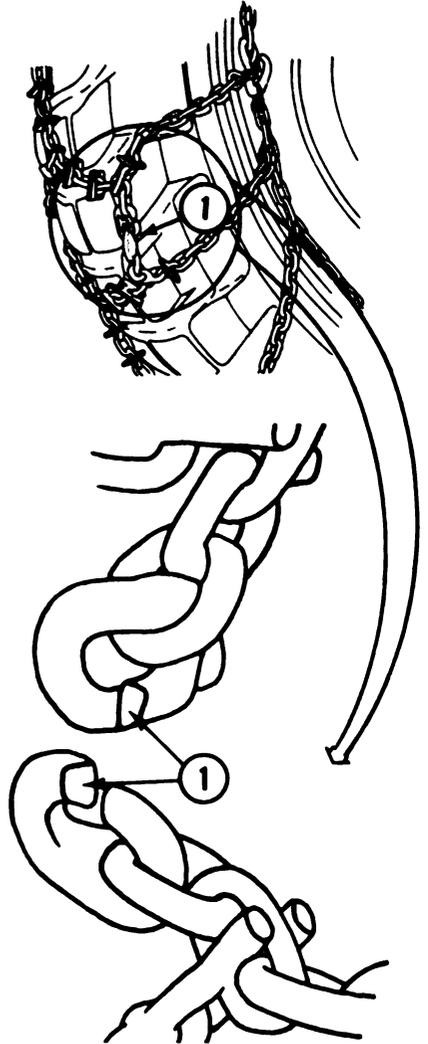


- Step 5.** Soldier A: Stop engine. Refer to paragraph 2-8.
- Step 6.** Soldier B: Chock wheels. Refer to paragraph 2-13.
- Step 7.** Soldiers A and B: Lift and position chain over tire.
- Step 8.** Soldier A: Work under vehicle. Connect fastening hook (1) to side chain (2).

Step 9. Soldier A: Connect two center links (1).

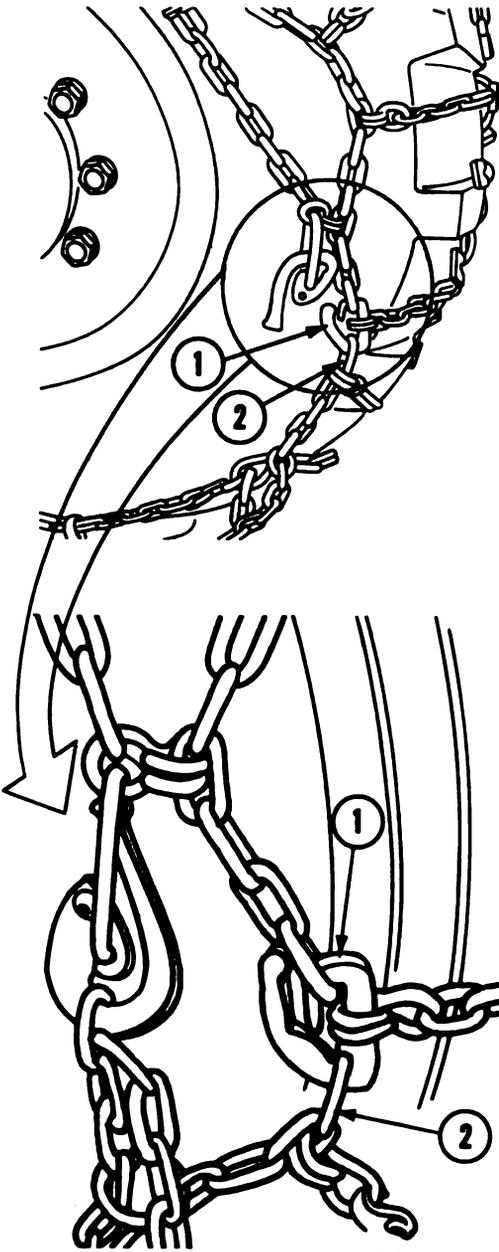


TA177610



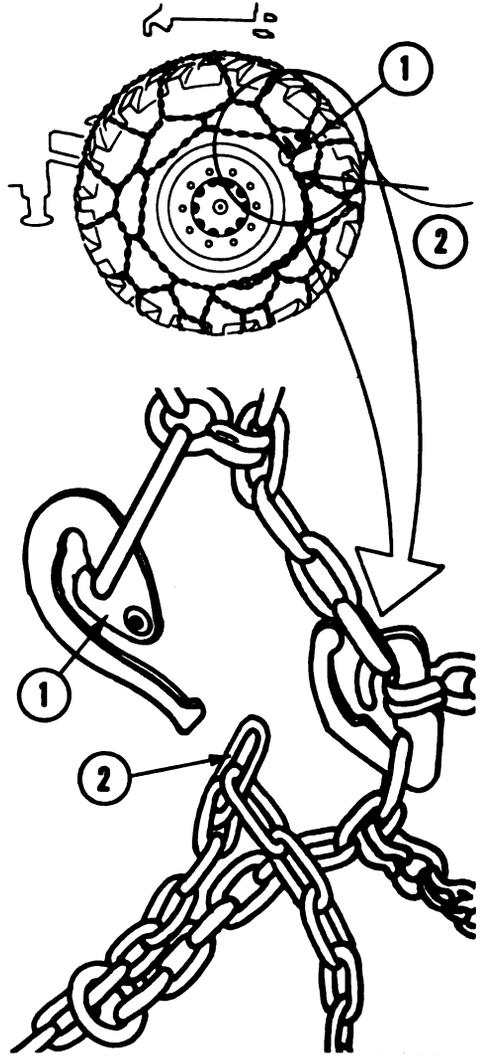
TA177611

Step 10. Soldier A: Connect fastening hook (1) to side chain (2).



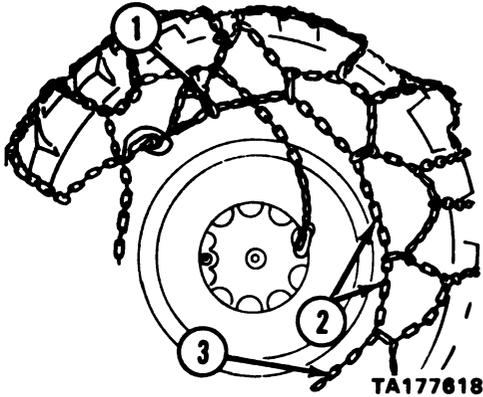
TA177615

Step 11. Soldier A: Connect tightening chain hook (1) with other end of tightening chain (2).



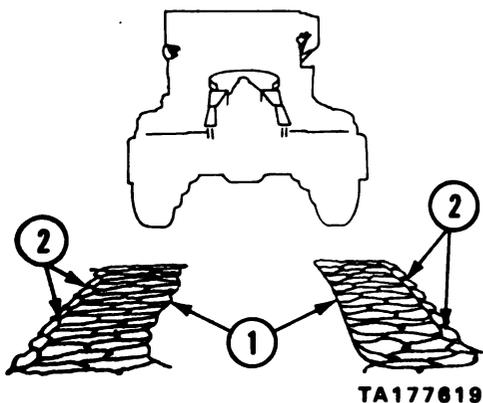
TA177617

Step 12. Soldier A: Loop loose end of tightening chain (1) around tightening chain (2) and connect to tightening chain (2) at position (3).

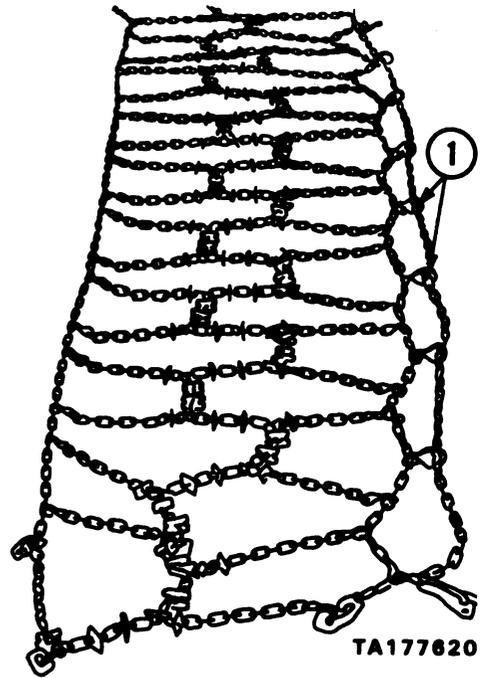


Step 13. Remove wheel chocks.

Step 14. Soldiers A and B: Spread out and align one pair of chains (1) with tires of rear axle. Be sure that tightening chain (2) is positioned so it faces away from tire.



Step 15. Make sure hooks (1) are facing down.



Step 16. Soldier A: Start vehicle.
Refer to paragraph 2-7.

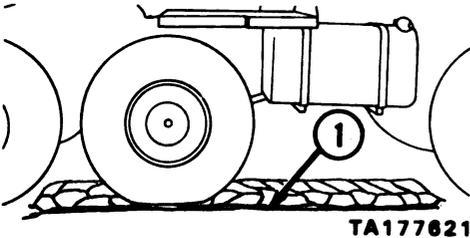
WARNING

Make certain area to side and rear of vehicle is clear of personnel and objects before attempting to back vehicle, as serious injury to personnel and damage to vehicle may result.
USE GROUND GUIDE.

Step 17. Soldier A: Back up vehicle.
Soldier B: Ground guide
Soldier A until tires of rear
intermediate axle are
positioned to the rear part
of chains (1).

NOTE

Tires of the rear axle and front
intermediate axle must not be on
chains.



Step 18. Repeat Steps 5 through
13 to connect tire
chains.

**FRAME 2. DRIVING VEHICLE
WITH TIRE CHAINS.**

CAUTION

Do not drive more than 31 MPH (50
KPH) with chains on wheels. Tighten
chains after driving approximately
500 yards (457 meters).

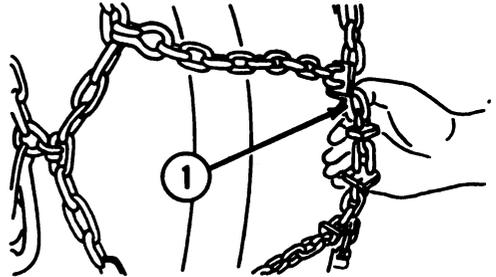
NOTE

Tire chains must move over the entire
tread surface. Do the following:

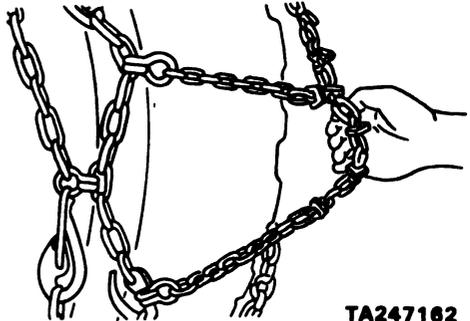
- Check chains after driving a short distance. Check chains for proper fit.
- Use loose chain position in deep snow. Do Step 2.

- Use loose chain position on rough terrain. Do Step 2.
- Use tight chain position on road. Do Step 1 only.

Step 1. Tight chain position. Adjust
chain (1) until you can put
your hand under the chain.



Step 2. Loose chain position. Pull
the chain 4 inches (10
centimeters) away from the
tire.



End of Task.

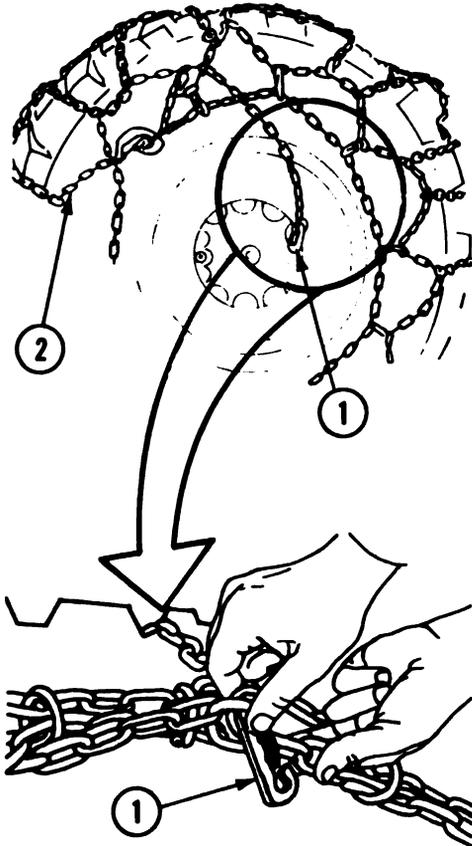
FRAME 3. REMOVAL.

NOTE

Chains can be removed from both
axles at the same time.

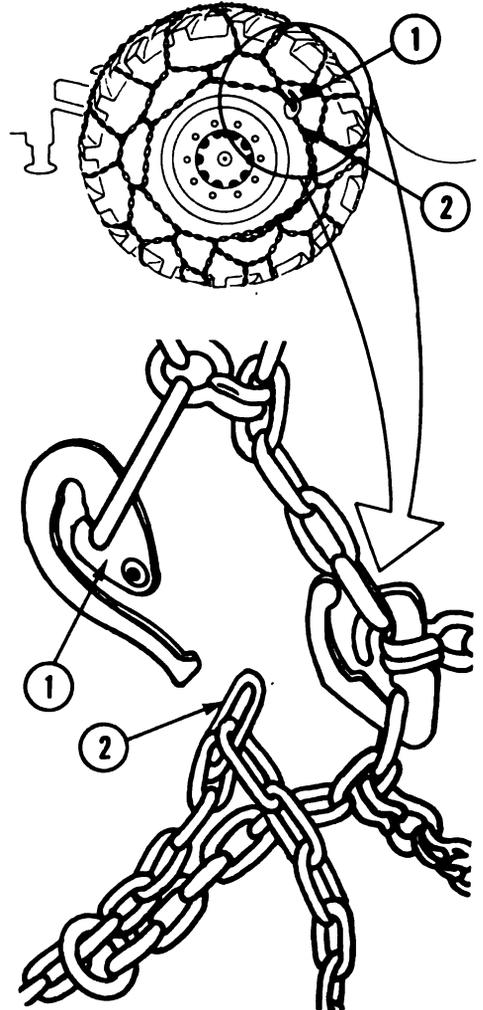
Step 1. Soldier A: Chock wheels.
Refer to paragraph 2-17.

Step 2. Soldier B: Disconnect end of tightening chain (1) and unwind from tightening chain (2).



TA177623

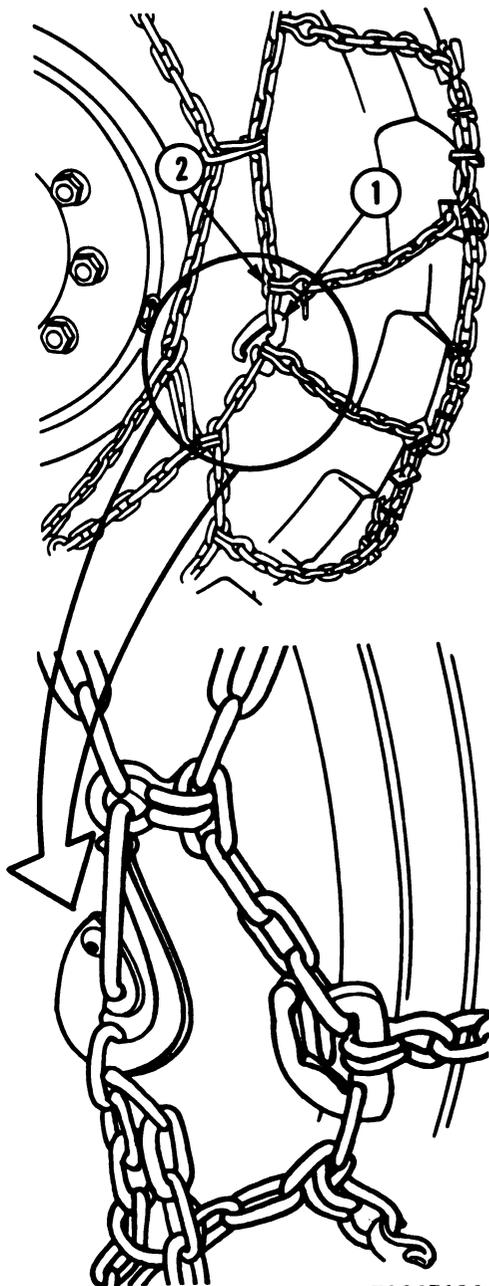
Step 3. Soldier B: Disconnect tightening chain hook (1) from other end of tightening chain (2).



TA177625

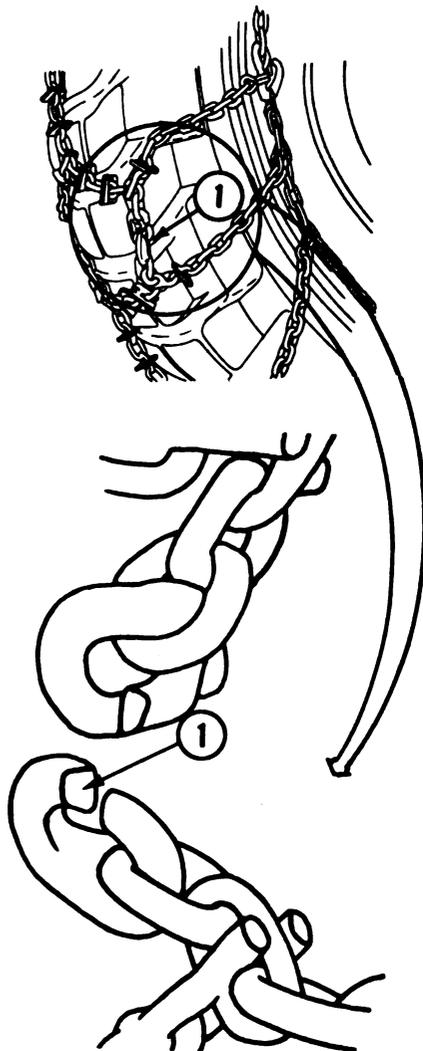
TM 9-2320-282-10
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Step 4. Soldier B: Disconnect fastening hook (1) from side chain (2).



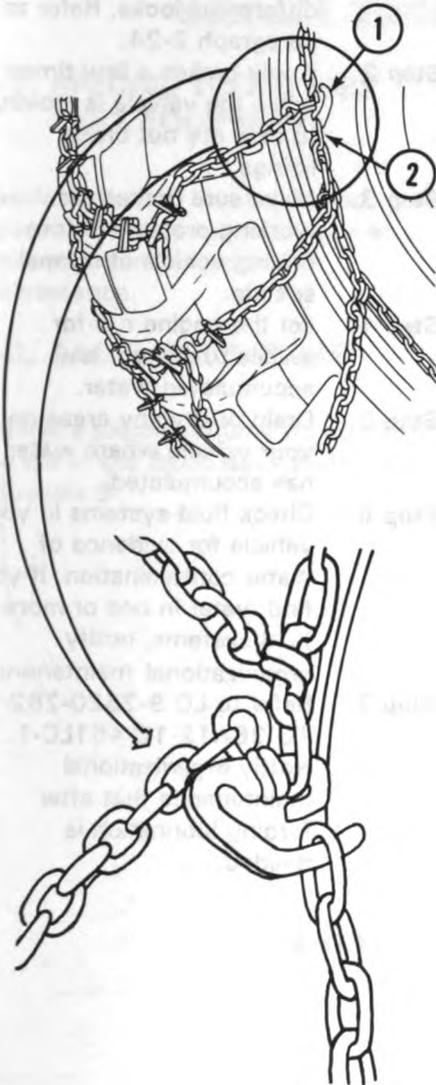
TA247134

Step 5. Soldier B: Work under vehicle. Disconnect two center links (1).



TA177627

Step 6. Soldier B: Disconnect fastening hook (1) from side chain (2).



TA247135

Step 7. Soldiers A and B: Pull chain from tire and lay on ground.

Step 8. Soldier A: Remove wheel chocks. Refer to paragraph 2-13.

Step 9. Soldier B: Start engine. Refer to paragraph 2-7.

Step 10. Soldier B: Drive vehicle forward until tires clear all chains.

End of Task.

2-26. FORDING OPERATIONS.

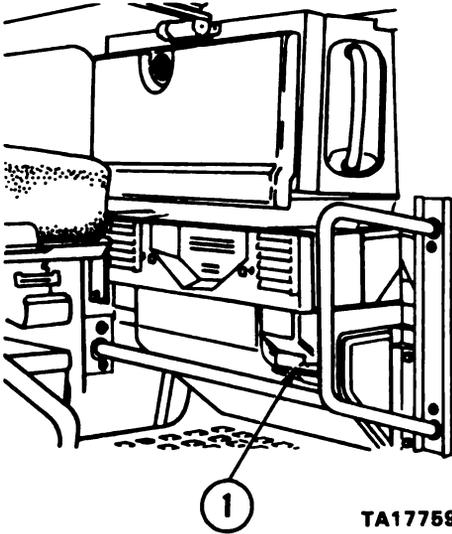
2-26a. BEFORE FORDING.

Before you attempt fording with the M1001, M1002, M1013, and M1014 vehicles, Refer to TM 9-238, Deep Water Fording of Ordnance Materiel. Make sure the bottom surface is hard enough that you can ford without exceeding the maximum fording depth of 47 inches. If the bottom surface is too soft, do not attempt fording.

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TO 36A12-1C-461-1**

Ford to the maximum depth of 47 inches for short periods or short distances only.

- Step 1.** Always close passengers air vent by moving lever (1) down prior to fording.



- Step 2.** Make sure engine is operating properly before entering water.
- Step 3.** Lubricate unpainted surfaces to guard against rust and deterioration.
- Step 4.** Engage transfer and differential locks. Refer to paragraph 2-24a.

End of Task.

2-26b. DURING FORDING OPERATIONS.

- Step 1.** Put transmission in first gear. Enter water slowly.
- Step 2.** Ford at speeds of 3-4 MPH (4-6 KPH).

End of Task

2-148

2-26c. AFTER FORDING OPERATIONS.

- Step 1.** Disengage transfer and differential locks. Refer to paragraph 2-24.
- Step 2.** Apply brakes a few times while the vehicle is moving to help dry out brake linings.
- Step 3.** Make sure brakes are working properly before driving vehicle at normal speeds.
- Step 4.** Let the engine run for awhile to dry out any accumulated water.
- Step 5.** Drain or dry any areas on your vehicle where water has accumulated.
- Step 6.** Check fluid systems in your vehicle for evidence of water contamination. If you find water in one or more fluid systems, notify organizational maintenance.
- Step 7.** Refer to LO 9-2320-282-12/ TO 36A12-1C-461LC-1. Notify organizational maintenance that after fording lubrication is needed.

End of Task.

CHAPTER 3

MAINTENANCE INSTRUCTIONS

Section I. TOOLS AND EQUIPMENT

3-1. SPECIAL TOOLS AND TEST EQUIPMENT.

Special tools and test equipment: Operator needs no special tools or test equipment for operator maintenance.

3-2. BASIC ISSUE ITEMS.

Vehicle equipment items for operator use are in the Basic Issue Items List, Appendix B.

3-3. EXPENDABLE SUPPLIES AND MATERIALS.

- Maintenance support supplies and materials for the M1001, M1002, M1013 and M1014 vehicles are authorized by SB 700-50.
- Appendix D lists expendable supplies and materials.

Section II. TROUBLESHOOTING

3-4. GENERAL INSTRUCTIONS.

The troubleshooting table lists the common vehicle malfunctions you may find.

Do all tests, inspections, and corrective actions in the same order they appear in the table.

Record all malfunctions and corrective actions on DA Form 2404.

- TM 38-750 shows you how to complete DA Form 2404.

Report any malfunctions you can not correct to organizational maintenance.

The corrective action column list only maintenance actions you can complete. Report all other malfunctions to organizational maintenance.

3-4a. EXPLANATION OF COLUMNS FOR TROUBLESHOOTING TABLE.

The troubleshooting table has 6 columns:

- Column 1 — Item number.
 - Gives the chart malfunction number.
- Column 2 — Malfunction.
 - Lists the common vehicle malfunctions you may find.
- Column 3 — Probable cause.
 - Lists the probable cause(s) for the

malfunction in column 2.

- Check the probable causes in the same order they appear in the table.

Column 4 — Test and inspection.

- Lists the tests or checks.

Column 5 — Corrective action.

- Lists the actions you must take to correct the cause of the malfunction.

Column 6 — Tools and equipment.

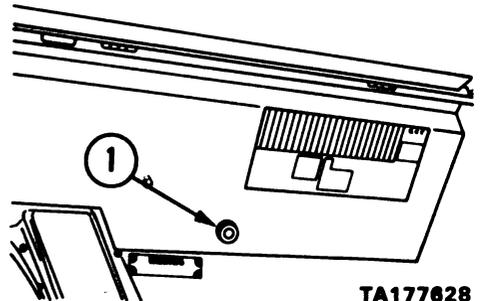
- Lists the tools and equipment you need to check or correct the malfunction. Check contents.

3-4b. CHECKING CIRCUIT BREAKERS.

NOTE

If any system on your vehicle fails to operate, check system circuit breaker(s) first. Follow the steps below:

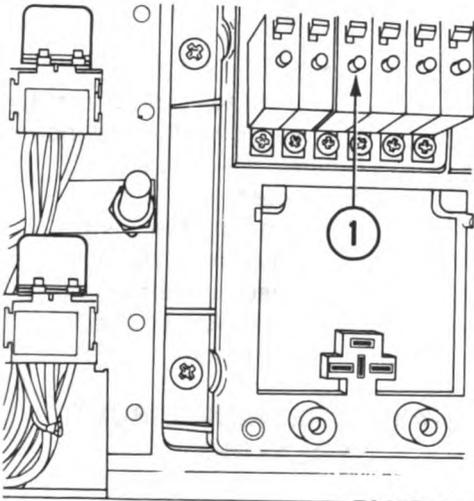
- Step 1.** Pull driver seat back rest forward.
- Step 2.** Lift up door (1) located behind driver seat.



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- Step 3.** Look for circuit breaker that has a button (1) sticking out further than the other circuit breaker buttons.
- Step 4.** To reset circuit breaker, push in button (1).
- Step 5.** If button (1) fails to stay in, notify organizational maintenance.



End of Task.

TROUBLESHOOTING SYMPTOM INDEX

SYMPTOM	PAGE
ENGINE	
Engine fails to crank or cranks slowly	3-6
Engine cranks but fails to start.	3-6
Engine does not run smoothly or lacks power.	3-7
Low oil pressure.	3-7
Excessive exhaust smoke.	3-7
Engine overheats.	3-8
CLUTCH	
Clutch does not disengage.	3-8
ELECTRICAL SYSTEM	
Charging system indicator light on while engine running.	3-9
TRANSMISSION	
Transmission overheats. Temperature indicator light comes on.	3-9
Transmission will not shift between 4th and 5th gears.	3-9
BRAKES	
Parking brake will not release.	3-10
STEERING	
Vehicle pulls to one side.	3-10
Unusal vibration.	3-10
Hard steering.	3-10
BODY and CAB	
Cab will not tilt.	3-11
Cab will not lock down.	3-11
SELF OR MAIN RECOVERY WINCH	
Winch will not operate.	3-12
Winch stops operating under load.	3-13
Winch operates too slowly.	3-13
CRANE	
Crane will not operate.	3-13
Crane stops operating.	3-14
Boom will not fold down.	3-14
RECOVERY CRANE/FIFTH WHEEL RECOVERY KIT	
Recovery crane will not operate.	3-14
HYDRAULIC SHOCK ABSORBER	
Hydraulic shocks will not lower vehicle.	3-16
One or more shocks will not lower.	3-17

TABLE 3-1. OPERATOR TROUBLESHOOTING CHART

ITEM NO.	MALFUNCTION	PROBABLE CAUSE	TEST/INSPECTION	CORRECTIVE ACTION	TOOLS/EQUIP.
0100 1	Engine fails to crank or cranks slowly.	Master switch off.	<u>ENGINE</u> Check position of master switch. Refer to para 2-8.	Turn master switch on. Refer to para 2-8.	NONE
		Transmission shift lever not in neutral position.	Check shift lever position. Refer to para 2-8.	Place shift lever in neutral position. Refer to para 2-8.	NONE
		Low battery electrolyte level. Ammeter indicates low battery charge.	Check electrolyte level. Refer to PMCS _____	Add distilled water. Slave start vehicle.	NONE
2	Engine cranks but fails to start.	Low fuel level.	Check fuel level gage.	Fill fuel tank.	NONE
		Air restriction.	Check air cleaner contamination indicator. Refer to PMCS	Notify organizational maintenance.	NONE
		Contaminated fuel.	Check initial fuel filter. Refer to PMCS.	Notify organizational maintenance.	NONE

TABLE 3-1. OPERATOR TROUBLESHOOTING CHART (continued)

ITEM NO.	MALFUNCTION	PROBABLE CAUSE	TEST/INSPECTION	CORRECTIVE ACTION	TOOLS/EQUIP.
3	Engine does not run smoothly or lacks power.	Contaminated fuel. Air restriction.	<u>ENGINE (continued)</u> Check initial fuel filter. Refer to PMCS. Check air cleaner contamination indicator. Refer to PMCS.	Notify organizational maintenance.	NONE
4	Low oil pressure.	Low oil level.	Check oil level. Refer to PMCS.	Add oil as necessary.	NONE
5	Excessive exhaust smoke.	Dirty air cleaner.	Check air cleaner contamination indicator. Refer to PMCS.	Notify organizational maintenance.	NONE

TABLE 3-1. OPERATOR TROUBLESHOOTING CHART (continued)

ITEM NO.	MALFUNCTION	PROBABLE CAUSE	TEST/INSPECTION	CORRECTIVE ACTION	TOOLS/EQUIP.
6	Engine overheats.	Low coolant level.	<p><u>ENGINE (continued)</u></p> <p>Check coolant level. Refer to PMCS.</p>	<p>Add coolant. Idle engine for 3 to 5 minutes. If engine temperature indicator light fails to go out or temperature gage still reads above 196 °F (91 °C) notify organizational maintenance.</p>	NONE
<u>0200</u>	Clutch does not disengage.	Low engine oil level.	<p>Check engine oil level. Refer to PMCS.</p> <p><u>CLUTCH</u></p> <p>Check air pressure gage.</p>	<p>Add engine oil.</p> <p>Run engine until 90-105 PSI is reached. If clutch still fails to disengage notify organizational maintenance.</p>	NONE

TABLE 3-1. OPERATOR TROUBLESHOOTING CHART (continued)

ITEM NO.	MALFUNCTION	PROBABLE CAUSE	TEST/INSPECTION	CORRECTIVE ACTION	TOOLS/EQUIP.
<u>0600</u> 8	Charging system indicator light on while engine running.	Loose drive belts.	<u>ELECTRICAL SYSTEM</u> Check belt tension. Refer to PMCS.	Notify organizational maintenance.	NONE
<u>0700</u> 9	Transmission overheats. Temperature indicator light comes on.	Excessive use of kick-down switch.	<u>TRANSMISSION</u>	Stop vehicle. Put transmission in neutral. Idle engine for 3 to 5 minutes. If transmission temperature indicator light fails to go out notify organizational maintenance.	NONE
10	Transmission will not shift between 4th and 5th gears.	Low air pressure.	Check air pressure gage.	Run engine until 90-105 PSI is reached. If transmission still fails to shift notify organizational maintenance.	NONE

TABLE 3-1. OPERATOR TROUBLESHOOTING CHART (continued)

ITEM NO.	MALFUNCTION	PROBABLE CAUSE	TEST/INSPECTION	CORRECTIVE ACTION	TOOLS/EQUIP.
<u>1200</u>					
11	Parking brake will not release.	Low air pressure.	<u>BRAKES</u> Check air pressure gage.	Run engine until 90 to 105 PSI is reached. If parking brake still fails to release, notify organizational maintenance.	NONE
<u>1400</u>					
12	Vehicle pulls to one side.	Low tire pressure.	<u>STEERING</u> Check tire pressure. Refer to PMCS.	Add air as necessary.	Tire pressure air hose. Air pressure gage.
13	Unusual vibration.	Loose lug nuts.	Check lug nuts.	Tighten lug nuts. Refer to para 3-10.	Lug wrench.
14	Hard steering.	Low power steering fluid level.	Check fluid level. Refer to PMCS.	Add power steering fluid.	NONE

TABLE 3-1. OPERATOR TROUBLESHOOTING CHART (continued)

ITEM NO.	MALFUNCTION	PROBABLE CAUSE	TEST/INSPECTION	CORRECTIVE ACTION	TOOLS/EQUIP.
<u>1800</u> 15	Cab will not tilt.	<p>Pump lever in wrong position.</p> <p>Pump, cylinder, or hydraulic lines leaking.</p>	<p><u>BODY and CAB</u></p> <p>Check lever position. Refer to para 2-12.</p> <p>Check for leaks.</p>	<p>Put lever in correct position. Refer to para 2-12.</p> <p>Notify organizational maintenance.</p>	<p>Hydraulic pump handle.</p> <p>NONE</p>
16	Cab will not lock down.	Tools or other objects under cab.	Raise cab, check for tools and other objects.		NONE

TABLE 3-1. OPERATOR TROUBLESHOOTING CHART (continued)

ITEM NO.	MALFUNCTION	PROBABLE CAUSE	TEST/INSPECTION	CORRECTIVE ACTION	TOOLS/EQUIP.	
<u>2001</u>		<u>SELF OR MAIN RECOVERY WINCH</u>				
17	Winch will not operate.	Denture clutch not engaged.	Check position of Denture clutch handle. Refer to paragraph 2-15.	Insure clutch handle is pushed all the way in.	NONE	
		Hydraulics ON switch not turned on.	Check switch position on instrument panel.	Move switch to ON position.	NONE	
		Selector switch not in winch position.	Check position of switch. Refer to paragraph 2-15.	Turn switch to winch	NONE	
		Low air pressure.	Check air pressure.	Allow air pressure to reach 90 - 105 PSI.	NONE	
		Remote control not properly connected.	Check remote control connection on dash.	Connect remote control properly.	NONE	
		Circuit breaker	Check circuit breaker No. 7.	Reset circuit breaker No. 7.	NONE	

TABLE 3-1. OPERATOR TROUBLESHOOTING CHART (continued)

ITEM NO.	MALFUNCTION	PROBABLE CAUSE	TEST/INSPECTION	CORRECTIVE ACTION	TOOLS/EQUIP.
18	Winch stops operating under load.	Low fluid level	Check fluid level in sight glass of hydraulic tank.	Service hydraulic system. Refer to LO 9-2320-282-12/ TO 36A12-1C-461LC-1.	NONE
19	Winch operates too slowly.	Winch overloaded. Incorrect engine RPM.	Check load. Check engine RPM.	Reduce load or use double block. Adjust to 1 400 RPM.	NONE NONE
<u>2001</u>			<u>CRANE</u>		
20	Crane will not operate.	Hydraulics on switch not in on position. Circuit breaker Selector switch not in crane position.	Check switch on instrument panel. Check circuit breaker No. 7. Check position of switch.	Move switch to ON position. Reset circuit breaker No. 7. Move switch to crane position.	NONE NONE NONE

TABLE 3-1. OPERATOR TROUBLESHOOTING CHART (continued)

ITEM NO.	MALFUNCTION	PROBABLE CAUSE	TEST/INSPECTION	CORRECTIVE ACTION	TOOLS/EQUIP.
		Master switch on crane control panel not turned on.	Check switch position on control panel.	Push switch to turn on.	NONE
21	Crane stops operating.	Overloaded	Check fluid level in sight glass of hydraulic tank.	Service hydraulic system. Refer to LO 9-2320-282-12/ TO 36A12-1C-461LC-1.	NONE
22	Boom will not fold down.	Crane not in travel position.	Check overload indicator. Refer to paragraph 2-17.	Reduce load.	NONE
			Check crane position. Refer to paragraph 2-17.	Rotate crane to travel position.	NONE
<u>2001</u>		<u>RECOVERY UNIT/FIFTH WHEEL RECOVERY KIT</u>			
23	Recovery crane will not operate.	Hydraulic ON switch not turned on.	Check switch position on instrument panel.	Move switch to ON position. Refer to paragraph 2-15.	NONE

TABLE 3-1. OPERATOR TROUBLESHOOTING CHART (continued)

ITEM NO.	MALFUNCTION	PROBABLE CAUSE	TEST/INSPECTION	CORRECTIVE ACTION	TOOLS/EQUIP.
		Winch switch not on.	Check switch position on instrument panel.	Move switch to ON position. Refer to paragraph 2-15.	NONE
		Selector switch not in proper position.	Check position of switch. Refer to paragraph 2-15.	Move switch to proper position.	NONE
		Low air pressure.	Check air pressure.	Allow air pressure to reach at least 90 PSI.	NONE
		Circuit breaker.	Check circuit breaker No. 7.	Reset circuit breaker No. 7.	NONE
		Quick disconnect.	Check for proper connection.	Connect quick disconnects properly.	NONE
		Low fluid level.	Check fluid level in sight glass of hydraulic tank.	Service hydraulic system. Refer to LO 9-2320-282-12/TO 36A12-1C-461LC-1.	NONE
		Remote control.	Not plugged in properly.	Connect remote control properly.	NONE

TABLE 3-1. OPERATOR TROUBLESHOOTING CHART (continued)

ITEM NO.	MALFUNCTION	PROBABLE CAUSE	TEST/INSPECTION	CORRECTIVE ACTION	TOOLS/EQUIP.
<u>2001</u>					
24	Hydraulic shocks will not lower vehicle.	<p>HYDRAULIC SHOCK ABSORBER</p> <p>Hydraulic ON switch not turned on.</p> <p>Selector switch not in winch position.</p> <p>Low air pressure.</p> <p>Switch for lowering vehicle not in lower position.</p> <p>Circuit breaker.</p>	<p>Check switch position on instrument panel.</p> <p>Check position of switch. Refer to paragraph 2-15.</p> <p>Check air pressure.</p> <p>Check position of switch. Refer to Appendix F.</p> <p>Check circuit breaker No. 7.</p>	<p>Move switch to ON position. Refer to paragraph 2-15.</p> <p>Turn switch to winch position.</p> <p>Allow air pressure to reach 90 - 105 PSI.</p> <p>Move switch to lower position.</p> <p>Reset circuit breaker No. 7.</p>	<p>NONE</p> <p>NONE</p> <p>NONE</p> <p>NONE</p> <p>NONE</p>

TABLE 3-1. OPERATOR TROUBLESHOOTING CHART (continued)

ITEM NO.	MALFUNCTION	PROBABLE CAUSE	TEST/INSPECTION	CORRECTIVE ACTION	TOOLS/EQUIP.
25	One or more shock(s) will not lower.	Low fluid level. Defective shock.	Check fluid level in sight glass of hydraulic tank. _____	Service hydraulic system. Refer to LO 9-2320-282-12/ TO 36A12-1C-461LC-1. Notify Organizational Maintenance.	NONE NONE

Section III . MAINTENANCE PROCEDURES

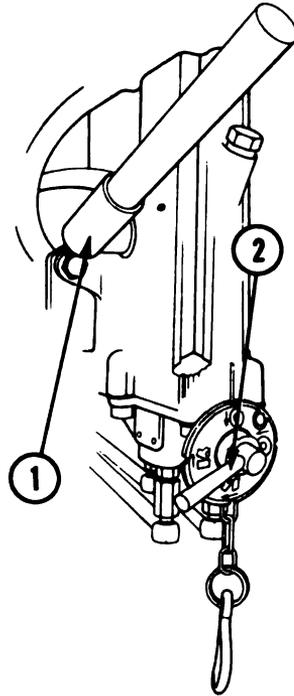
3-5. DRIVER DUTIES.

The operator is responsible for daily, weekly and monthly preventive maintenance checks and services. See Table 2-1 for PMCS.

The operator is responsible for other maintenance services. Driver maintenance services are located in this section.

- Remove dirt with a clean rag.
- Remove dirt from oil filler plugs.
- Remove dirt from lubricating points.

Inspect all lubricating points. Report broken or missing grease fittings to maintenance.



TA177630

3-6. WHEELS AND TIRES.

Use with model(s): All models.

Supplies: None.

Number of personnel: Two.

Equipment condition: Vehicle parked.

Front wheels straight ahead.

Task interval: As necessary.

Reference: None.

Special safety instructions: None.

Preliminary tasks: None.

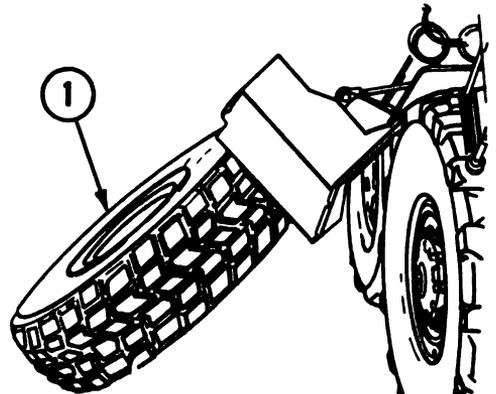
3-6a. REMOVE AND REPLACE SPARE WHEEL.

FRAME 1. REMOVE.

Step 1. Put pump handle into pump (1).

Step 2. Turn valve handle (2) to spare wheel lower position.

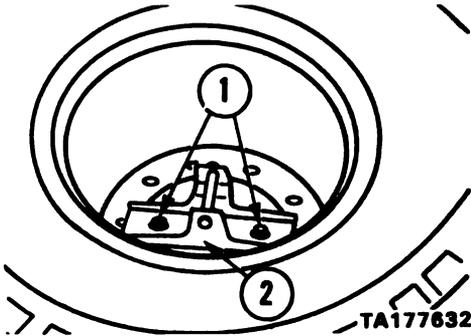
Step 3. Operate pump until spare wheel (1) is on the ground.



TA177631

TM 9-2320-282-10
TO 36A12-1C-461-1

- Step 4.** Loosen two nuts (1).
 Remove nuts.
- Step 5.** Remove holder bar (2).
 Soldier A and Soldier B:
 Remove spare wheel.



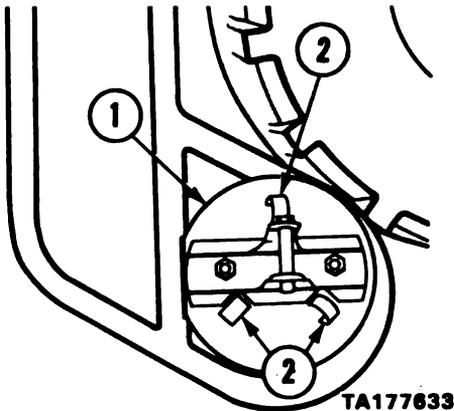
NOTE

When changing tires on passenger side of front axles, return spare tire carrier to the up position.

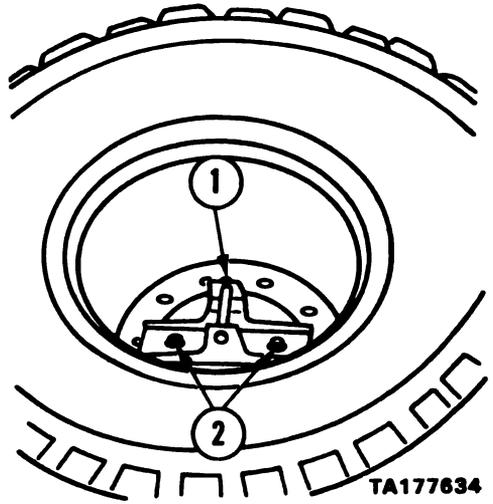
End of Task.

FRAME 2. REPLACE.

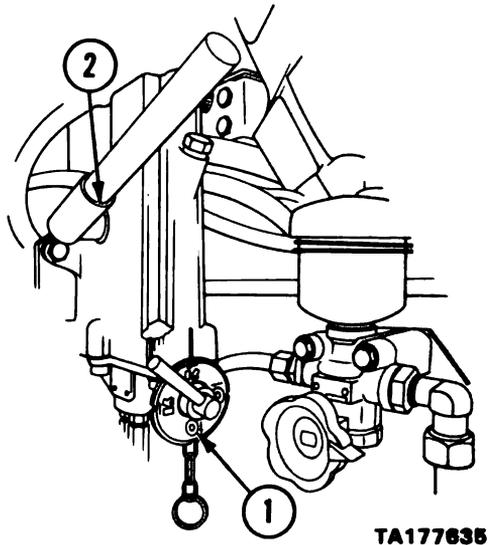
- Step 1.** Soldier A and Soldier B: Lay spare wheel on spare wheel holder (1).
- Step 2.** Center spare wheel over guide brackets (2).



- Step 3.** Put on holder bar (1).
Step 4. Put on two nuts (2).
 Tighten nuts.



- Step 5.** Turn pump valve handle (1) to spare wheel up position.
- Step 6.** Operate pump (2). Raise spare wheel to up position.
- Step 7.** Turn pump valve handle (1) ¼ turn right or left to relieve pressure.

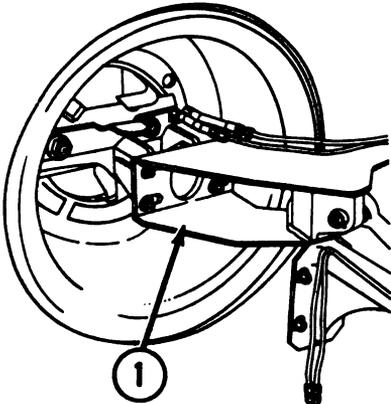


- Step 8.** Check spare wheel lock (1). Spare wheel must lock securely.

WARNING

Make sure jack is on firm, flat ground. Jack must contact shock absorber mount on axle between control arm mountings. Jack may slip. Injury to personnel may result.

Step 3. Put support block (1) under axle (2). Set jack (3) on support block. Put in jack handle (4). Raise jack until jack touches axle.



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End of Task.

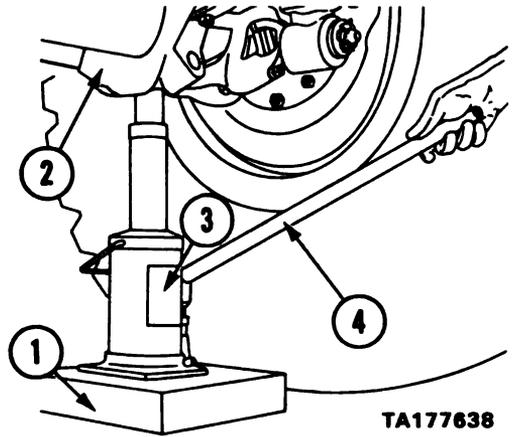
3-6b. CHANGE WHEELS.

FRAME 1. REMOVE WHEEL.

WARNING

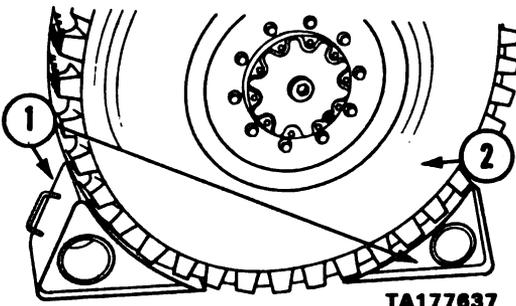
When vehicle faces down hill, put transmission in first gear. When vehicle faces up hill put transmission in reverse gear. Vehicle may roll.

- Step 1.** Apply parking brake.
- Step 2.** Put chocks (1) under at least one wheel (2).

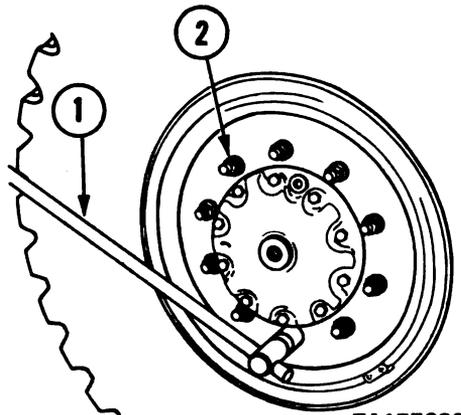


TA177638

Step 4. Use wheel lug wrench (1). Turn 10 lug nuts (2) to the left one turn.

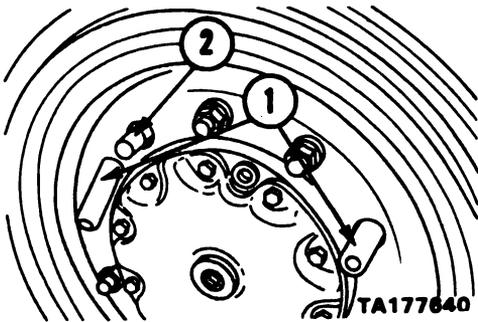


TA177637

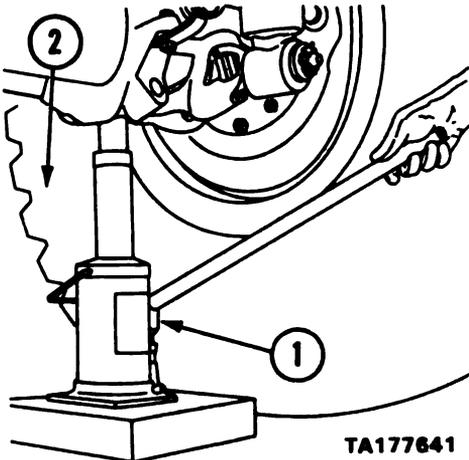


TA177639

Step 5. Take off two lug nuts.
Screw guide sleeves (1) on
two studs (2).

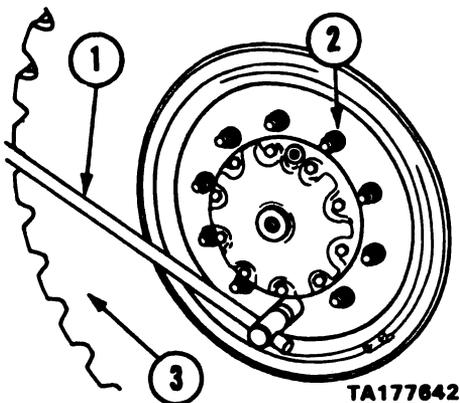


Step 6. Use jack (1). Lift axle until
wheel (2) clears the ground.



Step 7. Use lug wrench (1).
Remove eight lug nuts (2).

Step 8. Soldiers A and B: lift off
wheel (3).



End of Task.

FRAME 2. REPLACE WHEEL.

Step 1. Soldiers A and B: Position
new wheel in front of hub.
Line up holes.

WARNING

Tire irons must be put through wheel
stud holes with hooks facing down.
Injury to personnel can result.

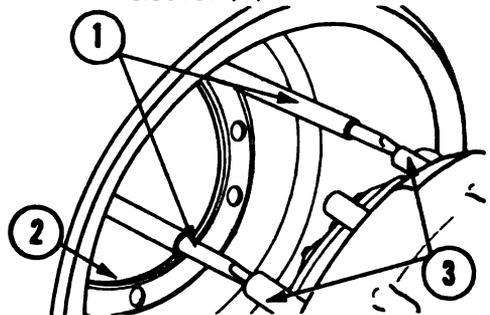
NOTE

Clean wheel and hub mating surface
before replacing tire.

Step 2. Put two tire irons (1)
through holes in wheel
(2) which align with
guide sleeves (3).

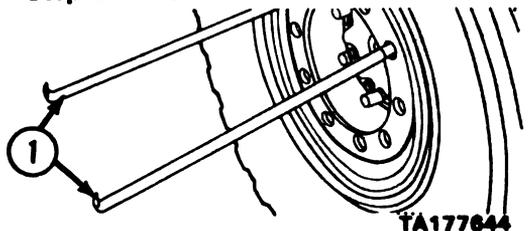
Step 3. Line up tire irons with guide
sleeves (3).

Step 4. Put tire irons (1) in guide
sleeves (3).



Step 5. Soldiers A and B: Pull up on
end of tire irons (1). Slide
wheel on to the wheel
studs.

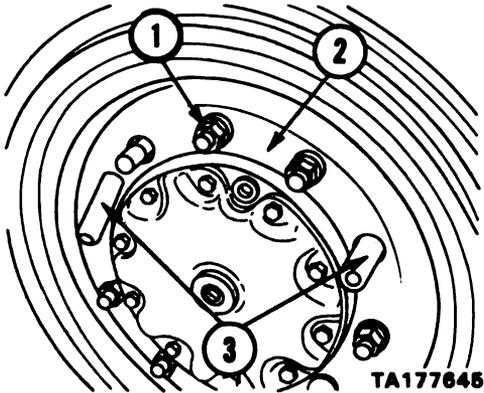
Step 6. Pull out tire irons.



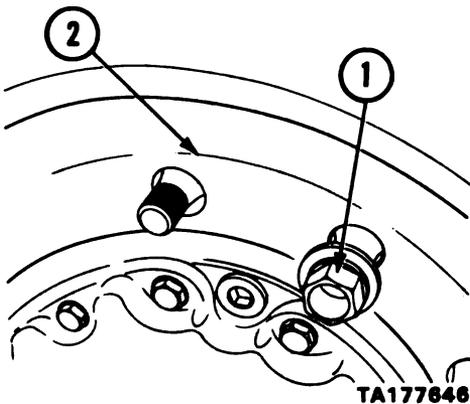
CAUTION

Do not substitute lug nuts. Use only authorized stock numbered parts or damage to equipment may result.

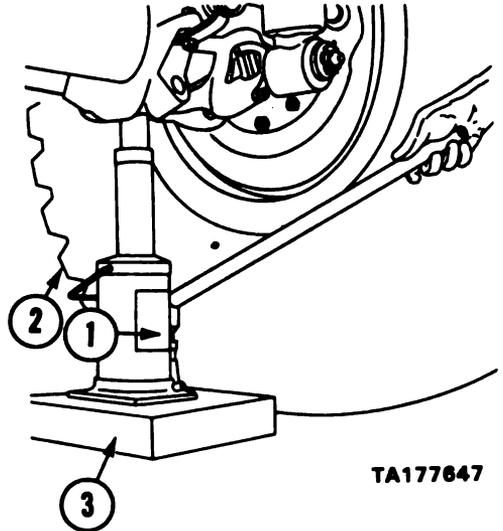
- Step 7.** Screw on eight lug nuts (1). Tighten lug nuts snug against wheel (2).
- Step 8.** Screw out two guide sleeves (3) off wheel studs.



- Step 9.** Screw on two lug nuts (1). Tighten lug nuts snug against wheel (2).



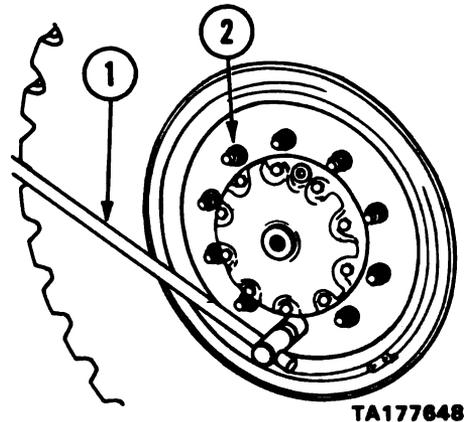
- Step 10.** Lower jack (1) until wheel (2) sets on the ground. Take out jack and support plate (3).



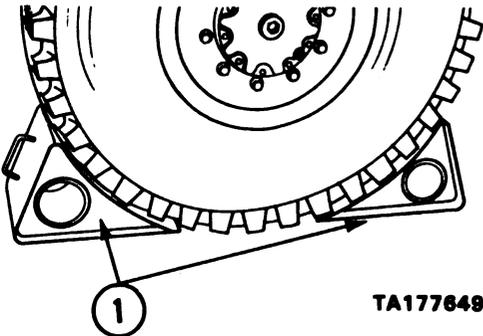
NOTE

Tighten one lug nut then tighten the nut opposite. Tighten all lug nuts using this opposite tightening method.

- Step 11.** Use lug wrench (1). Tighten 10 lug nuts (2).



Step 12. Take out wheel chocks (1).



TA177649

NOTE

Have wheel lug nuts torqued by organizational maintenance as soon as possible after completing mission.

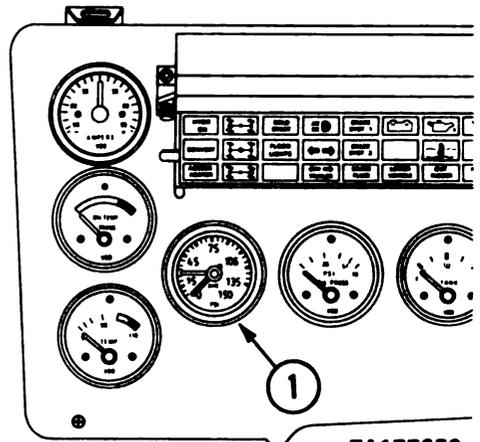
End of Task

Follow on maintenance: None.

3-7. TIRE INFLATION.

Use with model(s): All models.
Supplies: None.
Number of Personnel: One.
Equipment condition: Vehicle parked.
Task interval: As necessary.
References: None.
Special safety instructions: Do not over inflate the tires.
Preliminary tasks: Start engine.
Refer to paragraph 2-7.

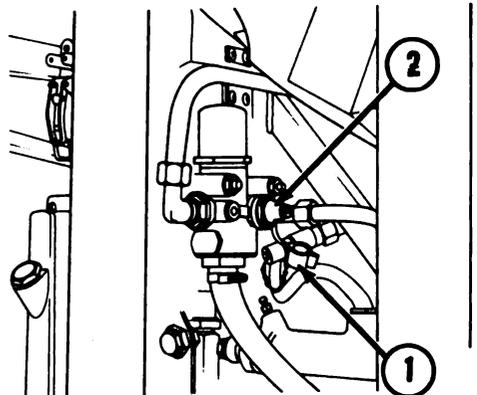
Step 1. Look at air pressure gage (1). Air pressure gage should show 90 PSI (620 kPa) to 105 PSI (724 kPa) before inflating tires.



TA177650

Step 2. Unscrew cap (1) from connector on pressure regulator (2).

Step 3. Connect hose to pressure regulator connector.



TA177651

Step 4. Unscrew tire valve stem cap.

Step 5. Connect hose (1) to the tire valve stem (2). Hold 3 seconds. Remove hose from valve stem.

Step 6. Use tire pressure gage. Check tire pressure. Do Steps 5 and 6 again until pressure reading is correct.

See tire inflation table below for correct tire pressure.

TIRE INFLATION DATA

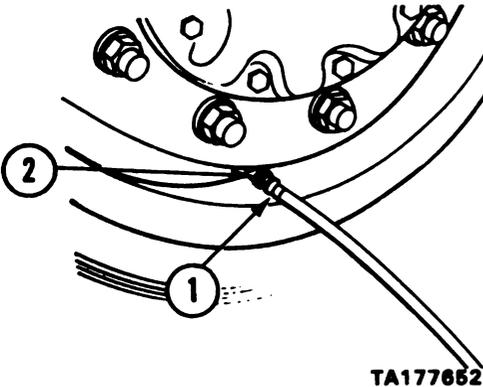
MODEL	TIRE SIZE	PRESSURE PSI (kPa)	
		FRONT	REAR
		HIGHWAY & CROSS COUNTRY	HIGHWAY & CROSS COUNTRY
ALL TRACTOR MODELS	1600 R 20	50 PSI (350 kPa)	50 PSI (350 kPa)
WABCOER M1002	1600 R 20	50 PSI* (350 kPa)	57 PSI (500 kPa)

* 57 PSI WITH FIFTH WHEEL RECOVERY KIT MOUNTED.

NOTE

Your vehicle is equipped with differential locks to provide maximum traction for all axles. Adjusting air pressure for cross-country driving is not necessary. See paragraph 2-24 for differential lock operation.

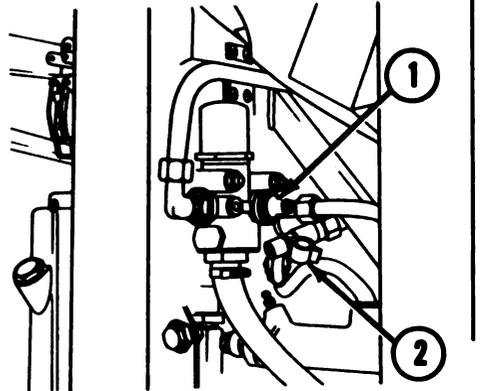
Step 7. Screw on tire valve stem cap.



TA177652

Step 8. Unscrew hose from pressure regulator connector (1).

Step 9. Screw cap (2) on connector of pressure regulator.



TA177653

End of Task.

Follow on maintenance: Stop engine, paragraph 2-8.

APPENDIX A

REFERENCES

A-1. Scope

Appendix A has 4 lists:

- forms
- technical manuals
- field manuals
- other publications referenced in this manual.

A-2. Forms

Accident Identification Card	DD Form 518
Equipment Daily or Monthly Log	DA Form 2408-1
Equipment Inspection and Maintenance Work Sheet	DA Form 2404
Maintenance Request	DA Form 2407
Quality Deficiency Report	SF 368
Operator's Permit	SF 46
Recommended Changes to DA Publications	DA Form 2028-2
Uncorrected Fault Record	DA Form 2408-14
Vehicle Accident Report	SF 91

A-3. Field Manual

Wheeled Vehicle Operations	FM 21-305
Basic Cold Weather Manual	FM 31-70
Mountain Operations	FM 31-72 90-6 (HTF)
Northern Operations	FM 31-71
Operation and Maintenance of Ordnance Material in Cold Weather (0° to -65° F)	FM 9-207
Camouflage	FM 5-20
Destruction to Prevent Enemy Use	FM 5-25

A-4. Technical Manuals

Operator's Organizational DS and GS Maintenance Manual: Storage Batteries Lead-Acid Type	TM 9-6140-200-14
Painting Instructions For Field Use	TM 9-213
Chemical, Biological, Radiological (CBR) Decontamination	TM 3-220
Procedures for Destruction of Tank-Automotive Equipment to Prevent Enemy Use	TM 750-244-6

**TM 9-2320-282-10
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The Army Maintenance Management System (TAMMS) TM 38-750
Cold Weather Operations TM 9-207
Deep Water Forging of Ordnance Material TM 9-238
Ground Launched Cruise Missile System:
M986, Semitrailer,
Transporter Erector Launcher (TEL) and
M999 Semitrailer,
Launch Control Center (LCC) TM 9-2330-365-14&P/
TO 36A9-11-130-1

Operator's Manual:
PERSHING II Erector Launcher (EL) TM 9-1440-389-10

A-5. Other Publications

Lubrication Order:
Truck, Tractor and Wrecker, 10 Ton 8 x 8
(M1001, M1002, M1013 and M1014) LO 9-2300-282-12/
TO 36A12-1C-461LC-1

Chassis and Body Warranty:
Truck, Tractor and Wrecker 10 Ton 8 x 8,
M1001, M1002, M1013 amd M1014 TB 9-2300-295-15/19
TO 36A12-1C-471-1

APPENDIX B

COMPONENTS OF END ITEM LIST

Section I. INTRODUCTION

B-1. SCOPE.

This appendix lists integral components of and basic issue items for the M1001, M1002, M1013, and M1014 vehicles to help you inventory items required for safe and efficient operation.

B-2. GENERAL.

The Components of End Item list and Basic Issue Items lists are divided into two sections:

a. Section II.

Components of End Item. This listing is for informational purposes only, and is not authority to requisition replacements. These items are part of the end item, but are removed and separately packaged for transportation of shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Illustrations are furnished to assist you in identifying the items.

b. Section III.

Basic Issue Items. These are the minimum essential items required to place the M1001, M1002,

M1013 and M1014 in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged, BII must be with the M1001, M1002, M1013 and M1014 during operation and whenever they are transferred between property accounts. The illustrations will assist you with hard-to-identify items. This manual is your authority to request/requisition replacement BII, based on TOE/MTOE authorization of the end item.

B-3. EXPLANATION OF COLUMNS.

The following provides an explanation of columns found in the tabular listings:

a. Column (1).

Illustration Number. This column indicates the number of the illustration in which the item is shown.

b. Column (2).

National Stock Number. Indicates the National Stock Number assigned to the item and will be used for requisitioning purposes.

c. Column (3).

Description to identify and locate the item. The last line for each indicates the FSCM (in parentheses) followed by the part number. If items needed differs for different models of this equipment, the model is shown under the "Usable On" heading in this column. These codes are identified as:

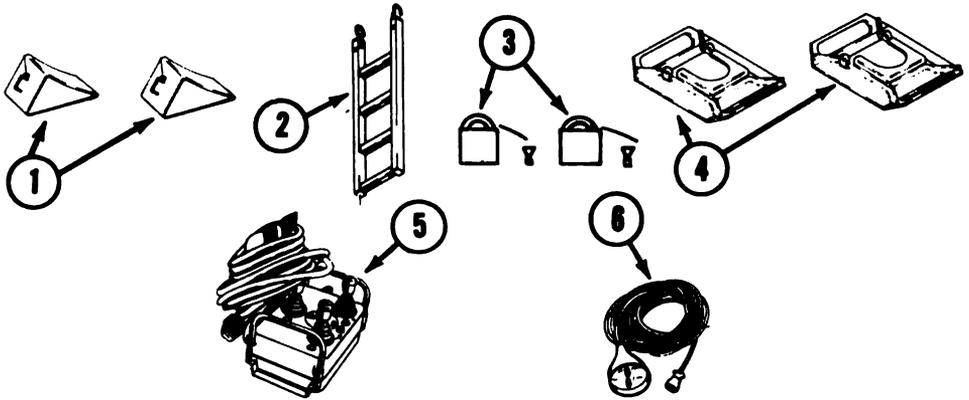
CODE	Used on
PAA	Model M1001
PAB	Model M1013
PAC	Model M1014
PAD	Model M1002

d. Column (4).

Unit of Measure (U/M). Indicates the measure used in performing the actual operational/maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr).

e. Column (5).

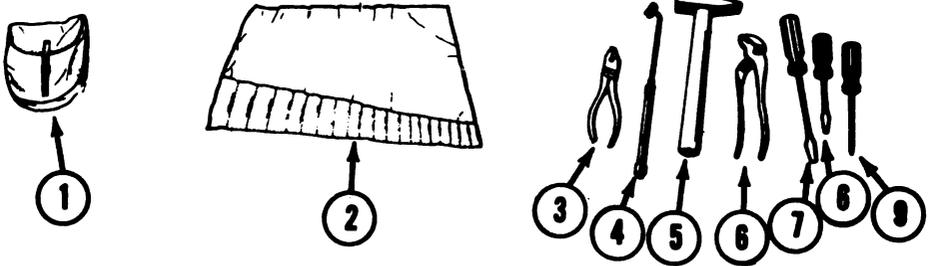
Quantity required (Qty rqr). Indicates the quantity of the item authorized to be used with/on the equipment.



TA247108

Section II. COMPONENTS OF END ITEM

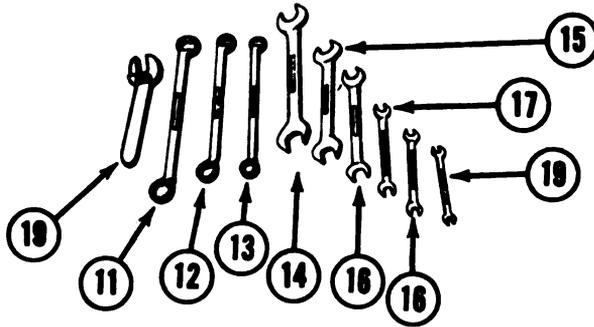
(1) ILLS NO.	(2) NSN	(3) Description FSCM and Part Number	Usable on Code	(4) U/M	(5) QTY. RQR.
1		Chocks, Wheel (D2213) 81.66935.5003		EA.	2
2		Ladder, Climbing (D2213) 81.66904.6006	PAD	EA.	1
3	5340- 00-912- 4086	Padlock Set (96906) MS21313-160		SET	1
4		Plate, Outrigger Support (D2213) 81.67102.0003	PAA PAB PAD	EA.	2
5		Remote Control, Crane (D2213) 81.67105.6001	PAA PAB PAD	EA.	1
6		Remote Control, Winch (D2213) 81.67105.6003		EA.	1



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Section III. BASIC ISSUE ITEMS

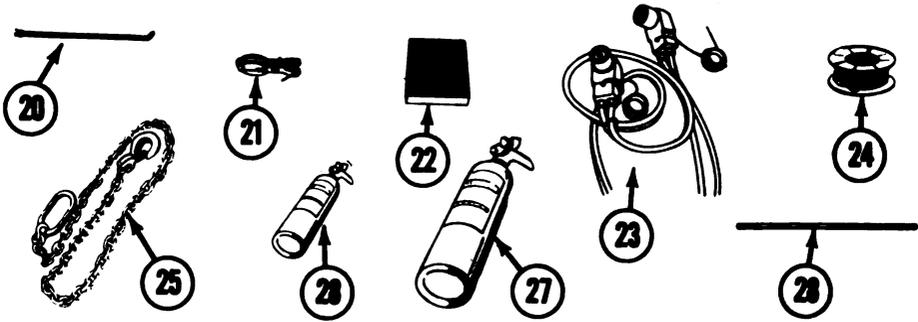
(1) ILLS NO.	(2) NSN	(3) Description FSCM and Part Number	Usable on Code	(4) U/M	(5) QTY. RQR.
1	2540-00-670-2459	Bag, Pamphlet (19207) 7961712		EA.	1
2		Roll, Tool, wo/tools (D2213) 83.09101.5003		EA.	1
3		Cutters, Wire (D2213) 08.04000.0105		EA.	1
4		Gauge, Tire (D2213) 81.66806.0003		EA.	1
5		Hammer, 500G (D2213) 08.01001.0217		EA.	1
6		Pliers, Slip Joint (D2213) 08.04200.3006		EA.	1
7		Screwdriver, Flat Tip, Large (D2213) 08.06507.0300		EA.	1
8		Screwdriver, Flat Tip, Small (D2213) 08.06507.0200		EA.	1
9		Screwdriver, Phillips (D2213) 08.06502.4200		EA.	1



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Section III. BASIC ISSUE ITEMS (CONTINUED)

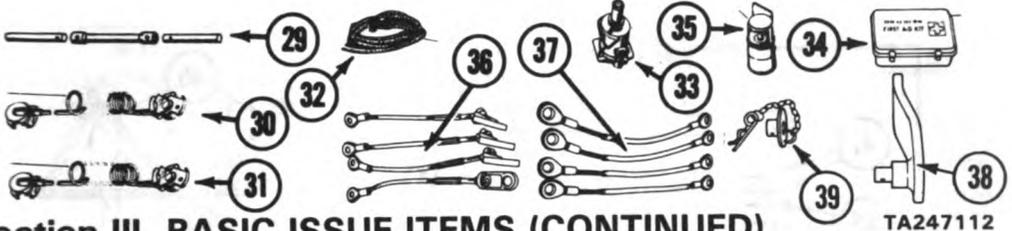
(1) ILLS NO.	(2) NSN	(3) Description FSCM and Part Number	Usable on Code	(4) U/M	(5) QTY. RQR.
10		Wrench, Adjustable (D2213) 08.06302.0119		EA.	1
11		Wrench, Box End, 10x11mm (D2213) 08.06004.9003		EA.	1
12		Wrench, Box End, 12x13mm (D2213) 08.06004.9004		EA.	1
13		Wrench, Box End, 19x22mm (D2213) 08.06009.9007		EA.	1
14		Wrench, Open End, 8x9mm (D2213) 08.06049.9002		EA.	1
15		Wrench, Open End, 10x11mm (D2213) 08.06049.9003		EA.	1
16		Wrench, Open End, 12x13mm (D2213) 08.06049.9004		EA.	1
17		Wrench, Open End, 14x15mm (D2213) 08.06049.9005		EA.	1
18		Wrench, Open End, 16x17mm (D2213) 08.06049.9007		EA.	1
19		Wrench, Open End, 19x22mm (D2213) 08.06049.9008		EA.	1



Section III. BASIC ISSUE ITEMS (CONTINUED)

TA247111

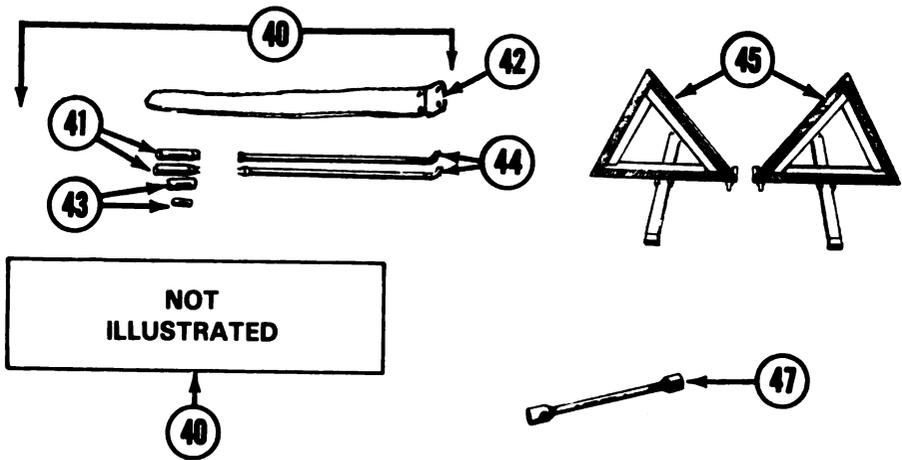
(1) ILLS NO.	(2) NSN	(3) Description FSCM and Part Number	Usable on Code	(4) U/M	(5) QTY. RQR.
20	5120-00-224-1372	Bar, Pinch, 36 inches (81348) GGG-B-101	PAD	EA.	1
21		Block, Rigging (D2213) 81.42352.6044		EA.	1
22		Board, Jack Spt (D2213) 81.66937.0001		EA.	1
23	2590-00-148-7961	Cable Assembly, Slave (19207) 11682379-1	PAD	EA.	1
24		Cable, Extension, Winch (D2213) 81.42361.6003	PAD	EA.	1
25		Chain, w/Ring and Hook (D2213) 81.92607.6018	PAD	EA.	1
26	4210-00-775-0127	Fire Extinguisher, 5 Lbs. (19207) 7015266		EA.	1
27	4210-00-965-1107	Fire Extinguisher, 10 Lbs. (58536) A-A-393		EA.	1
28		Handle, Jack and Cab Pump (D2213) 81.66805.0054		EA.	1



Section III. BASIC ISSUE ITEMS (CONTINUED)

TA247112

(1) ILLS NO.	(2) NSN	(3) Description FSCM and Part Number	Usable on Code	(4) U/M	(5) QTY. RQR.
29		Handle, Lug Wrench (D2213) 81.66807.6013		EA.	1
30		Hose, Trailer, Air, Supply (D2213) 81.96340.6070		EA.	1
31		Hose, Trailer, Air, Brake (D2213) 81.96340.6078		EA.	1
32		Hose, Pneumatic 55 ft. (D2213) 81.96330.6004		EA.	1
33		Jack, Hydraulic, 8 Ton (D2213) 81.66805.6004		EA.	1
34	6545- 00-922- 1200	Kit, First Aid (19207) 11677011		EA.	1
35		Light, Amber Flashing Warning (D2213) 83.09105.6006		EA.	1
36		Sling, Axle Tie Down Adjustable (D2213) 81.92611.6015	PAD	EA.	4
37		Sling, Axle Tie Down Non-Adjustable (D2213) 81.92611.5017	PAD	EA.	4
38		Adapter, Axle Sling (D2213) 81.41415.5013	PAD	EA.	4
39		Adapter, Safety Kit (D2213) 81.91320.6032	PAD	EA.	4



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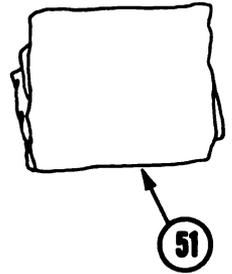
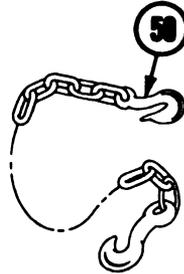
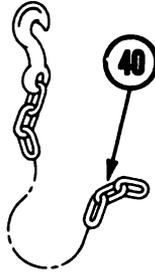
TA247113

Section III. BASIC ISSUE ITEMS (CONTINUED)

(1) ILLS NO.	(2) NSN	(3) Description FSCM and Part Number	Usable on Code	(4) U/M	(5) QTY. RQR.
40		Tire Iron Set (D2213) 83.09140.6002 Consisting of:		SET	1
41		Adapter, Tire Iron (D2213) 83.09140.0018		EA.	2
42		Bag, Storage (D2213) 83.09140.0020		EA.	1
43		Guide Sleeves, Wheel Stud (D2213) 83.09140.0019		EA.	2
44		Tire Iron (D2213) 83.09140.0017		EA.	2
45	9905- 00-534- 8376	Warning Device, Triangular		EA.	1
46		Wiring, Harness, Trailer (D2213) 81.25411.6015		EA.	1
47		Wrench, Lug (D2213) 81.66807.0015		EA.	1

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TA247139

Section III. BASIC ISSUE ITEMS (CONTINUED)

(1) ILLS NO.	(2) NSN	(3) Description FSCM and Part Number	Usable on Code	(4) U/M	(5) QTY. RQR.
48		Cable, Field Telephone (D2213) 81.25403.6732	PAB PAC	EA.	1
49		Chain, Small (D2213) 81.92607.6020	PAD	EA.	2
50		Chain, Large (D2213) 81.92607.6011	PAD	EA.	2
51		Cover, Crane (D2213) 81.66961.5028	PAA PAB PAD	EA.	1

APPENDIX C

ADDITIONAL AUTHORIZED LIST

Section I. INTRODUCTION

C-1. SCOPE.

This appendix lists additional items you are authorized for the support of the M1001, M1002, M1013 and M1014.

CODE	USABLE ON
PAA	Model M1001
PAB	Model M1013
PAC	Model M1014
PAD	Model M1002

C-2. GENERAL.

This list identifies items that do not have to accompany the M1001, M1002, M1013 and M1014 and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

C-3. EXPLANATION OF LISTING.

National Stock Numbers, descriptions, and quantities are provided to help you identify and request the additional items you require to support this equipment. The items are listed in alphabetical sequence by item name under the type document (i.e., CTA, MTOE, TDA, or JTA) which authorizes the item(s) to you. If item required differs for different models of this equipment, the model is shown under the "Usable On" heading in the description column. These codes are identified as:

Section II. ADDITIONAL AUTHORIZATION LIST

(1) NATIONAL STOCK NO.	(2) DESCRIPTION FSCM & PART NO.	USABLE ON CODE	(3) U/M	(4) QTY. AUTH.
5110-00-293-2336	AX: single bit, 4 lb. head weight, 4- $\frac{3}{4}$ in. cutting edge, 35- $\frac{1}{2}$ in. to 36- $\frac{1}{2}$ in. long, type I, class I, design A, olive drab finish. (19207) 6150925		EA.	1
2590-00-148-7961	CABLE ASSEMBLY, SLAVE (19207) 11682379-1	PAA PAB PAC	EA.	1
	CABLE, EXTENSION, WINCH (D2213) 81.42361.6003	PAA PAB PAC	EA.	1
	CHAINS, TIRE (D2213) 81.66815.6023		EA.	4
5110-00-221-1075	CHISEL: blacksmith's, cold handled, 1- $\frac{1}{2}$ in. cutting edge, 16 in. handle olive drab finish. (96906) MS16882-2	PAD	EA.	1
5120-00-224-1390	CROWBAR: pinch-point, 1- $\frac{1}{4}$ in. diameter stock, 59 in. to 62 in. long, olive drab finish, type II, class I, size 4. (18876) 9150189	PAD	EA.	1
8120-00-268-3360	CYLINDER: compressed gas, acetylene, 225 cu. ft. capacity. (81349) MIL-C-3701-4	PAD	EA.	1
8120-00-285-4763	CYLINDER: compressed gas, oxygen, 250 cu. ft. capacity. (81349) MIL-C-12661	PAD	EA.	1
5120-00-265-7462	HAMMER, HAND 6 LB. (88728) 84H	PAD	EA.	1
5120-00-900-6098	HAMMER, HAND 12 LB. (81348) GGG-H-86	PAD	EA.	1

Section II. ADDITIONAL AUTHORIZATION LIST

(1) NATIONAL STOCK NO.	(2) DESCRIPTION FSCM & PART NO.	USABLE ON CODE	(3) U/M	(4) QTY. AUTH.
5120-00-288-6574	HANDLE: mattock pick, railroad or clay pick, 36 in. long, olive drab finish grade AA. (19207) 11677021		EA.	1
4720-00-356-8571	HOSE: rubber, braided, acetylene, red, 5/16 in. diameter, 25 ft. long, w/ couplings, type II, style A. (55681) 5600FR	PAD	EA.	1
4720-00-356-8572	HOSE ASSEMBLY: rubber, braided, oxygen, green, 5/16 in. diameter, 25 ft. long, w/couplings, type II, style A. (55681) 5600FG	PAD	EA.	1
5120-00-188-1790	JACK: hydraulic, hand, self-cont. 30-ton cap. w/oper. lever, olive drab finish. (28047) RHD160	PAD	EA.	1
5120-00-243-2395	MATTOCK: pick type, 5 lb. w/o handle, olive drab finish, type II, class F. (19207) 11677022		EA.	1
5120-00-197-9473	PUNCH, BLACKSMITHS, 17 IN. (81348) GGG-T-00563	PAD	EA.	1
4820-00-285-6067	REGULATING, VALVE, FL: pressure, compressed gas, acetylene, 2-stage, w/ couplings, adapter and outlet, type V. (63026) VTS 410-968	PAD	EA.	1
4820-00-641-3519	REGULATING, VALVE, FL: pressure, compressed gas, oxygen, 2-stage, w/ couplings, adapter and outlet, type VI. (36346) 03X05	PAD	EA.	1
5110-00-242-7147	SAW: crosscut 1-man, 4-½ ft. blade, 5 ft. long w/ supplementary handle. (96906) MS16515-2		EA.	1

Section ii. ADDITIONAL AUTHORIZATION LIST

(1) NATIONAL STOCK NO.	(2) DESCRIPTION FSCM & PART NO.	USABLE ON CODE	(3) U/M	(4) QTY. AUTH.
	SHACKLE, ANCHOR: 1 in. diameter with pin, without chain. (D2213) 81.92502.6007		EA.	8
	SHACKLE, AXLE ANCHOR: with pin, with chain. (D2213) 81.92502.6008		EA.	4
5120-00-293-3336	SHOVEL: hand, round point, D-handle, short, size 2, olive drab finish, type IV, class A, style I. (19207) 11656784		EA.	1
	SLING, AXLE TIE DOWN: adjustable. (D2213) 81.92611.6015	PAA PAB PAC	EA.	4
	SLING, AXLE TIE DOWN: non-adjustable (D2213) 81.92611.5017	PAA PAB PAC	EA.	4
5180-00-754-0661	TOOL KIT, WELDING (19204) 7540661	PAD	EA.	1
3433-00-294-6743	TORCH SET: cutting and welding oxy-acetylene, medium duty. See SC# 5180-90-CL-N39 for listing of components. (17941) KL-79	PAD	EA.	1
2540-00-378-2012	TOW BAR, MOTOR VEHICLE MEDIUM DUTY (19207) 8383802 Composed of:	PAD	EA.	1
5340-00-545-2337	CLEVIS, ROD END (19207) 8724449	PAD	EA.	2
5315-00-539-9174	PIN, GROOVED HEADED (19207) 10929861	PAD	EA.	2

Section II. ADDITIONAL AUTHORIZATION LIST

(1) NATIONAL STOCK NO.	(2) DESCRIPTION FSCM & PART NO.	USABLE ON CODE	(3) U/M	(4) QTY. AUTH.
5315-00- 350-4326	PIN, LOCKING (19207) 5213744	PAD	EA.	2
5120-00- 243-9072	VISE: bench and pipe, swivel base, 5 in. stationary jaw, w/1/8 in. to 4 in. pipe jaw. (19207) 7974484	PAD	EA.	1

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 M1001, M1002, M1013 and M1014. These items are authorized to you by CTA 50-970, Expendable Items (Except Medical, Class V, Repair Parts, and Insignia Items).

D-2. EXPLANATION OF COLUMNS.

a. Column (1).

Item number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., "Use Dry Cleaning Solvent, item 5, App. D").

b. Column (2).

Level. This column identifies the lowest level of maintenance that requires the listed item.

- C — Operator/Crew
- O — Organizational Maintenance
- F — Direct Support Maintenance

c. Column (3).

National Stock Number. This is the National Stock Number assigned to the item. Use it to request or requisition the item.

d. Column (4).

Description. Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the Federal Supply Code for Manufacturer (FSCM) in parentheses followed by the part number.

e. Column (5).

Unit of Measure (U/M). Indicates the measure used in performing the actual maintenance function. The measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

EXPENDABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NO.	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
1	C	6850-00- 181-7929	ANTIFREEZE: PERMANENT ETHYLENE GLYCOL (-65°) INHIBITED (MIL-A-46153) 1 GAL. CONTAINER	GAL.
2	C	6850-00- 181-7933	ANTIFREEZE: PERMANENT ETHYLENE GLYCOL (-65°) INHIBITED (MIL-A-46153) 5 GAL. CONTAINER	GAL.
3	C	6850-00- 181-7940	ANTIFREEZE: PERMANENT ETHYLENE GLYCOL (-65°) INHIBITED (MIL-A-46153) 55 GAL. DRUM	GAL.
4	C	6850-00- 174-1806	ANTIFREEZE: PERMANENT TYPE; ARCTIC GRADE (-90°F) (O-1-490) (MIL-A-11755) 55 GAL. DRUM	GAL.
5	O	9150-00- 698-2382	DEXTRON II	5 GAL.
6	C	6810-00- 543-7415	ETHANOL, DENATURED (O-E-00760)	5 GAL.
7	C	9150-01- 102-9455	FLUID, BRAKE SILICONE (MIL-B-46176) 1 GAL. PLASTIC	GAL.
8	C	9150-00- 065-0029	GAA, GREASE, AUTOMOTIVE AND ARTILLERY (MIL-L-10924) 2½ OZ. TUBE	OZ.
9	C	9150-00- 935-1017	GAA, GREASE, AUTOMOTIVE AND ARTILLERY (MIL-L-10924) 14 OZ. CARTRIDGE	OZ.
10	C	9150-00- 190-0904	GAA, GREASE, AUTOMOTIVE AND ARTILLERY (MIL-L-10924) 1 LB. CAN	LB.
11	C	9150-00- 190-0905	GAA, GREASE, AUTOMOTIVE AND ARTILLERY (MIL-L-10924) 5 LB. CAN	LB.

EXPENDABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NO.	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
12	C	9150-00-190-0907	GAA, GREASE, AUTOMOTIVE AND ARTILLERY (MIL-L-10924) 35 LB. PAIL	LB.
13	C	9150-00-530-7369	GAA, GREASE, AUTOMOTIVE AND ARTILLERY (MIL-L-10924) 120 LB. DRUM	LB.
14	C	9150-00-082-7524	HYDRAULIC FLUID (H515) (MIL-H-5606)	GAL.
15	C	9150-00-234-5200	LUBRICANT CHAIN AND WIRE ROPE, CWII (VV-L-751) 5 LB. CAN	LB.
16	C	9140-00-286-5295	OIL, FUEL, DIESEL DF-2, REGULAR (VV-F-800) 5 GAL. CAN	GAL.
17	C	9140-00-286-5296	OIL, FUEL, DIESEL DF-2, REGULAR (VV-F-800) 55 GAL. DRUM, 16 GAGE	GAL.
18	C	9140-00-286-5297	OIL, FUEL, DIESEL DF-2, REGULAR (VV-F-800) 55 GAL. DRUM, 18 GAGE	GAL.
19	C	9140-00-286-5294	OIL, FUEL, DIESEL DF-2, REGULAR (VV-F-800) BULK	GAL.
20	C	9140-00-286-5287	OIL, FUEL, DIESEL DF-1, WINTER (VV-F-800) 5 GAL. DRUM	GAL.
21	C	9140-00-286-5288	OIL, FUEL, DIESEL DF-1, WINTER (VV-F-800) 55 GAL. DRUM, 16 GAGE	GAL.
22	C	9140-00-286-5289	OIL, FUEL, DIESEL DF-1, WINTER (VV-F-800) 55 GAL. DRUM, 18 GAGE	GAL.
23	C	9140-00-286-5286	OIL, FUEL, DIESEL DF-1, WINTER (VV-F-800) BULK	GAL.
24	C	9140-00-286-5282	OIL, FUEL, DIESEL, DF-A (ARCTIC) (VV-F-800) 5 GAL. DRUM	GAL.

EXPENDABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NO.	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
25	C	9140-00-286-5284	OIL, FUEL, DIESEL, DF-A (ARCTIC) (VV-F-800) 55 GAL. DRUM, 16 GAGE	GAL.
26	C	9140-00-286-5285	OIL, FUEL, DIESEL, DF-A (ARCTIC) (VV-F-800) 55 GAL. DRUM, 18 GAGE	GAL.
27	C	9140-00-286-5283	OIL, FUEL, DIESEL, DF-A (ARCTIC) (VV-F-800) BULK	GAL.
28	O		OIL, LUBRICATING, GEAR GO 80/90 (MIL-L-2105) 1 QT. CAN	QT.
29	O		OIL, LUBRICATING, GEAR GO 80/90 (MIL-L-2105) 5 GAL. DRUM	GAL.
30	O		OIL, LUBRICATING, GEAR GO 80/90 (MIL-L-2105) 55 GAL. DRUM, 16 GAGE	GAL.
31	O		OIL, LUBRICATING, GEAR GO 75 (MIL-L-10324) 1 QT.	QT.
32	O		OIL, LUBRICATING, GEAR GO 75 (MIL-L-10324) 5 GAL. DRUM	GAL.
33	C	9150-00-189-6727	OIL, LUBRICATING, OE/HDO 10 (MIL-L-2104) 1 QT. CAN	QT.
34	C	9150-00-186-6668	OIL, LUBRICATING, OE/HDO 10 (MIL-L-2104) 5 GAL. DRUM	GAL.
35	C	9150-00-264-9429	OIL, LUBRICATING, OE/HDO 10 (MIL-L-2104) 55 GAL. DRUM, 16 GAGE	GAL.
36	C	9150-00-191-2772	OIL, LUBRICATING, OE/HDO 10 (MIL-L-2104) 55 GAL. DRUM, 18 GAGE	GAL.
37	C		OIL, LUBRICATING, OE/HDO 10 (MIL-L-2104) BULK	GAL.

EXPENDABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NO.	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
38	C	9150-00-265-9433	OIL, LUBRICATING, OE/HDO 30 (MIL-L-2104) 1 QT. CAN	QT.
39	C	9150-00-265-9435	OIL, LUBRICATING, OE/HDO 30 (MIL-L-2104) 5 GAL. DRUM	GAL.
40	C		OIL, LUBRICATING, OE/HDO 30 (MIL-L-2104) 55 GAL. DRUM, 16 GAGE	GAL.
41	C	9150-00-265-9437	OIL, LUBRICATING, OE/HDO 30 (MIL-L-2104) 55 GAL. DRUM, 18 GAGE	GAL.
42	C		OIL, LUBRICATING, OE/HDO 30 (MIL-L-2104) BULK	GAL.
43	C	9150-00-402-4478	OIL, LUBRICATION, ENGINE, ARCTIC [ICE, SUB-ZERO] (MIL-L-46167) 1 QT.	QT.
44	C	9150-00-402-2372	OIL, LUBRICATION, ENGINE, ARCTIC, [ICE, SUB-ZERO] (MIL-L-46167) 5 GAL. DRUM	GAL.
45	C	9150-00-491-7197	OIL, LUBRICATION, ENGINE, ARCTIC [ICE, SUB-ZERO] (MIL-L-46167) 55 GAL. DRUM, 16 GAGE	GAL.
46	C	6810-00-356-4936	WATER, DISTILLED, 5 GAL. CONTAINER	GAL.
47	C	6850-00-926-2275	WINDSHIELD WASHER FLUID CLEANING, COMPOUND, WINDOW	PT.
48	O		PETROLATUM TECHNICAL (VASELINE, INDUSTRIAL) (VVP236)	
49	O	6850-00-664-5685	SOLVENT, DRY CLEANING, SD (P-D-680) 1 QT. CAN	QT.

EXPENDABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NO.	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
50	O	6850-00- 281-1985	SOLVENT, DRY CLEANING, SD (P-D-680) 1 GAL. CAN	GAL.
51	F		SEALANT, GASKET (D2213) 04.10194.9045	TUBE

APPENDIX E

STOWAGE AND SIGN GUIDE

Section I. INTRODUCTION

E-1. SCOPE.

This appendix shows the location for stowage of equipment and material required to be carried on the M1001, M1002, M1013 and M1014 and also the location of decals, stencils and metal signs.

E-2. GENERAL.

The illustrations in Section II show the location of decals, stencils and metal signs which are needed for proper and safe operation of the truck.

Use these symbols for location and identification of data plates and stencils. A circle with solid arrow

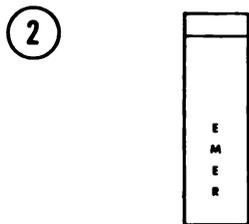
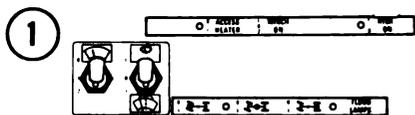
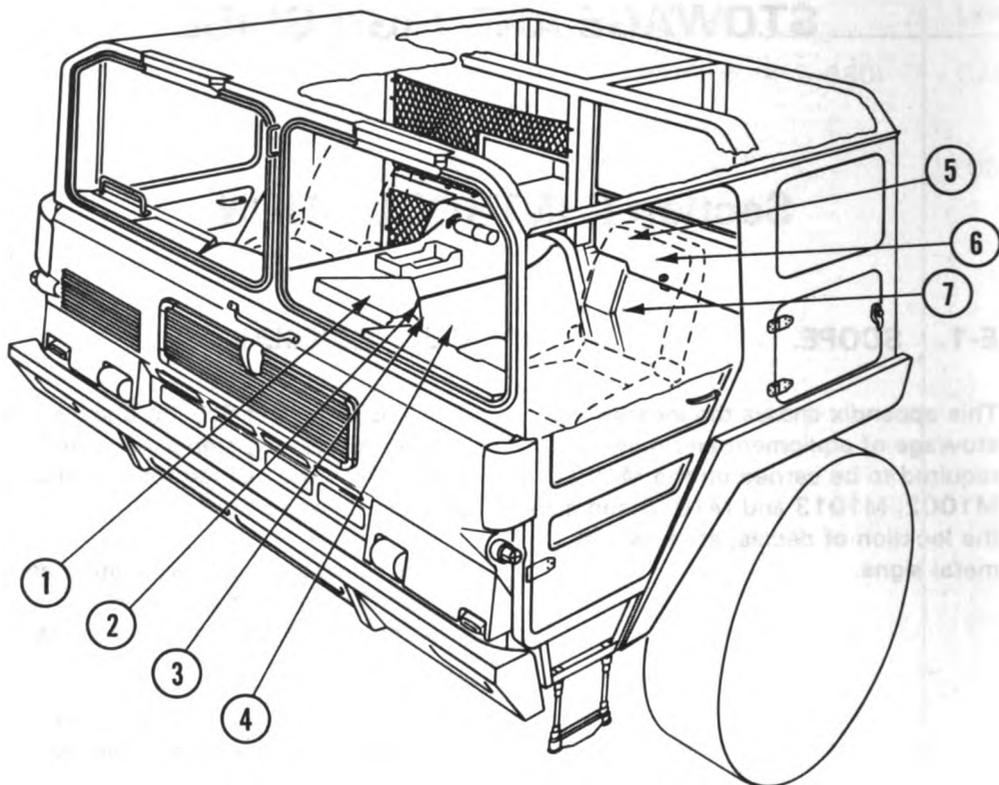
 shows the location of data plates and decals.

A broken circle with solid arrow

 shows the locations of stencils on the truck. A broken circle with broken arrow

 indicates stencils located on both sides of vehicle. Section III shows the equipment stowage location for equipment which is required to be carried on the truck.

Section II. DECALS, STENCILS AND METAL SIGNS



3

WARNING

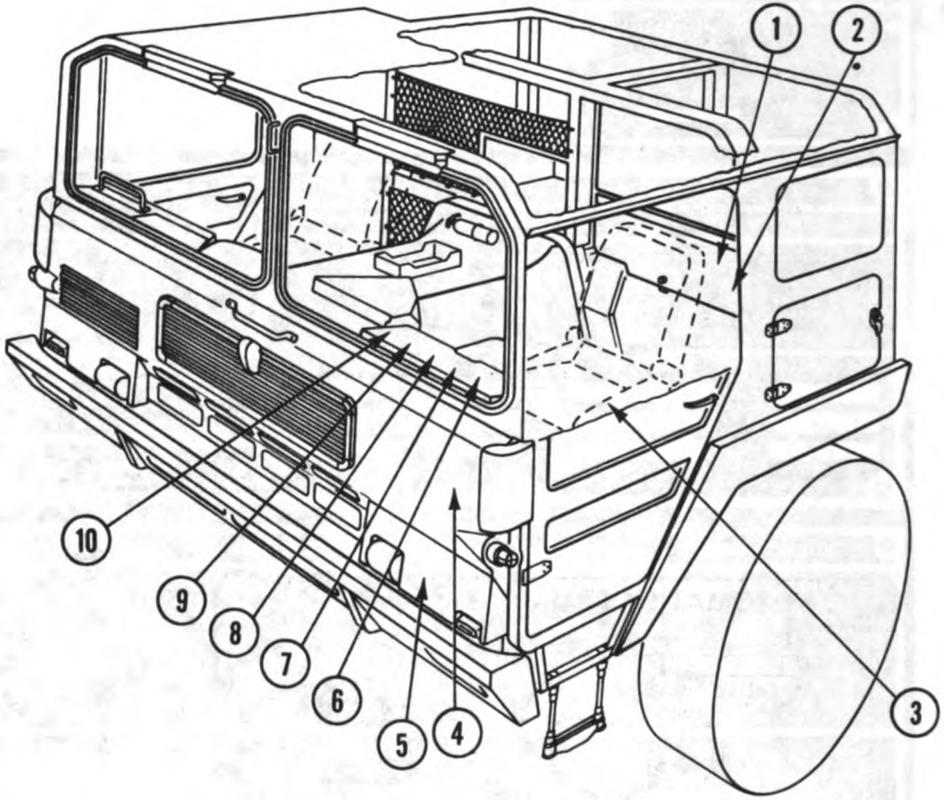
TRANSMISSION MUST NOT BE USED IN CONVERTER MODE FOR LONG PERIODS

USE OPEN HAND SHIFT ACROSS NEUTRAL GATE

**CAUTION! DO NOT EXCEED
MAXIMUM ROAD SPEED IN MPH/KMH**

TRANSMISSION	MPH	KMH
EIGHTH	55	89
SEVENTH	42	68
SIXTH	30	49
FIFTH	22	35
FOURTH	17	27
THIRD	12	20
SECOND	8	14
FIRST	6	10
REVERSE	5	8

TM 9-2320-282-10
TO 36A12-1C-461-1



1

- | | | | | | | |
|--------------------|------------------|------------------------------|-------------------------------|--------------------------|-------------------------|----------------------------------|
| SHUT DOWN
(K 1) | STARTER
(K 3) | HAZARD WARNING UNIT
(K 6) | HAZARD WARNER SWITCH
(K 5) | TURN IND. RIGHT
(K 7) | TURN IND. LEFT
(K 9) | TRAILER TURN IND. RIGHT
(K 8) |
|--------------------|------------------|------------------------------|-------------------------------|--------------------------|-------------------------|----------------------------------|

- | | | | | | | |
|----------------------------------|------------------|------------------|-------------------------|---------------------------|-----------------------------|-----------------------------|
| TRAILER TURN IND. LEFT
(K 10) | TRANS.
(K 11) | TRANS.
(K 12) | LOWER VEHICLE
(K 22) | BLACK OUT LIGHTS
(K 4) | HEAVY DUTY WRENCH
(K 20) | HEAVY DUTY WRENCH
(K 21) |
|----------------------------------|------------------|------------------|-------------------------|---------------------------|-----------------------------|-----------------------------|

2

- | | | | | |
|---------------|--------------|---------------|----------------|-----------------|
| HEATER BYPASS | BATT. HEATER | LOWER VEHICLE | NOT USED SPARE | CRANE HYDRAULIC |
|---------------|--------------|---------------|----------------|-----------------|

(V12)

(K20) (K24) (K22) (K13) (K29)

(K3)
 BRK. STOP

(V1)
(V2)
(V3)

(V4)
(V5)
(V6)

DIFF. LOCK

(V7)
(V8)
(V9)

(V10)
(V11)
(V12)

3

U.S. ARMY
TRUCK, TRACTOR 10 TON 8x8 W/WNCH

MODEL M1002 CONTRACT NO. DAJA 37-81-C-0023

SER. _____ REG. NO. _____

NSN. _____ DATE MFD _____

DATE INSP. _____ INSP. STAMP _____

WARRANTY 12 MONTHS OR 50,000 KM/31,000 MILES
M.A.N. MASCHINENFABRIK AUGSBURG NUERNBERG A.G.
W. GERMANY

U.S. AIR FORCE
TRUCK, TRACTOR 10 TON 8x8 W/WNCH

MODEL M1002 CONTRACT NO. DAJA 37-81-C-0023

SER. _____ REG. NO. _____

NSN. _____ DATE MFD _____

DATE INSP. _____ INSP. STAMP _____

WARRANTY 12 MONTHS OR 50,000 KM/31,000 MILES
M.A.N. MASCHINENFABRIK AUGSBURG NUERNBERG A.G.
W. GERMANY

U.S. ARMY
TRUCK, TRACTOR 10 TON 8x8 W/WNCH

MODEL M1001 CONTRACT NO. DAJA 37-81-C-0023

SER. _____ REG. NO. _____

NSN. _____ DATE MFD _____

DATE INSP. _____ INSP. STAMP _____

WARRANTY 12 MONTHS OR 50,000 KM/31,000 MILES
M.A.N. MASCHINENFABRIK AUGSBURG NUERNBERG A.G.
W. GERMANY

U.S. AIR FORCE
TRUCK, TRACTOR 10 TON 8x8 W/WNCH

MODEL M1001 CONTRACT NO. DAJA 37-81-C-0023

SER. _____ REG. NO. _____

NSN. _____ DATE MFD _____

DATE INSP. _____ INSP. STAMP _____

WARRANTY 12 MONTHS OR 50,000 KM/31,000 MILES
M.A.N. MASCHINENFABRIK AUGSBURG NUERNBERG A.G.
W. GERMANY

4

AUTOMATIC LOAD-CONTR. BRAKING



AXLE LOAD UNLOADED [] ± LBS.

LEVER LENGTH L [] IN.

BRAKE PRESSURE LOADED [] ± 3.0 PSI

ENTRY PRESSURE [] PSI

TRAVEL TO STOP [] ± 0.2 IN.

ADMISSIBLE AXLE LOAD [] LBS.

BRAKE PRESSURE LOADED [] ± 3.0 PSI

5

HBV	HBA	1	2	BII	VII	B1	VI
•	•	•	•	•	•	•	•
4	3	43					24 Kuppl.

6

HYDR ON		COLD START		BRAKE SYST 1		TRANS TEMP	
CONVERT		FLOOD LIGHTS		BRAKE SYST 2		PARK BRAKE	
ACCESS HEATER				LOWER VEHICLE		POWER STEER	

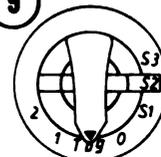
7

STARTER

8

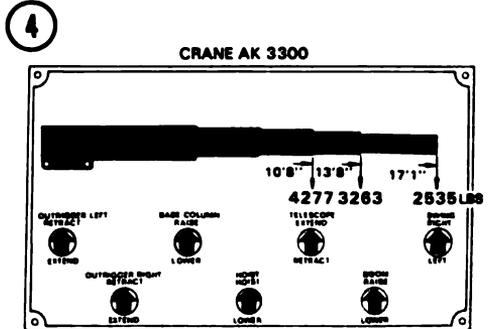
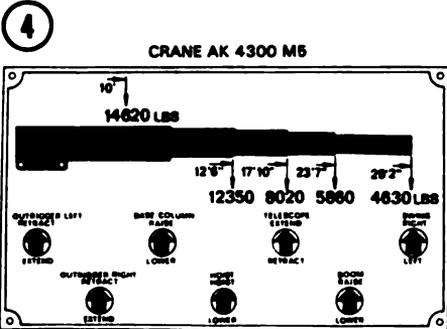
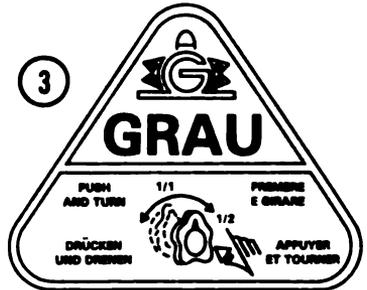
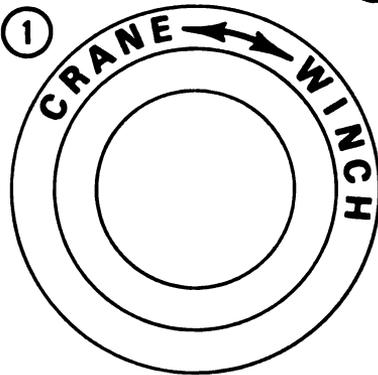
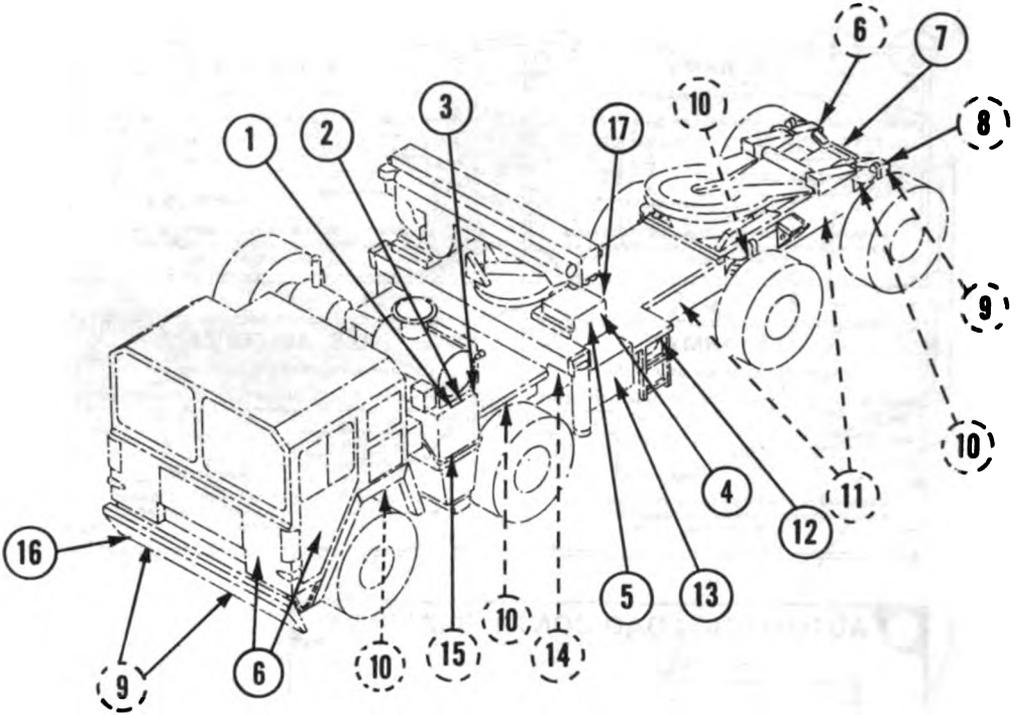
OFF
BATT
RUN

9

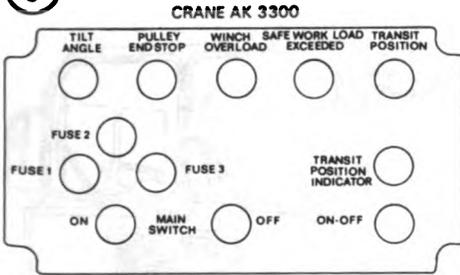


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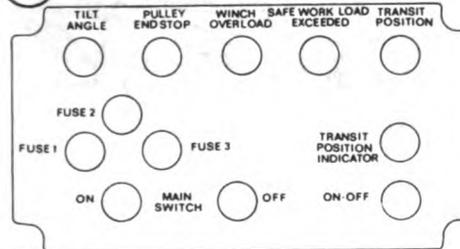
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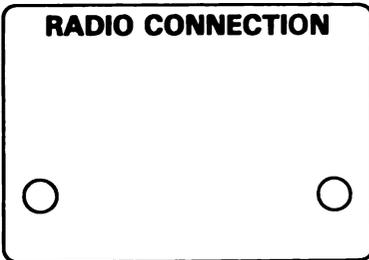
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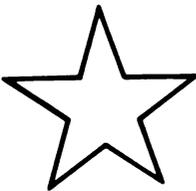
6

USA REGISTRATION NUMBER

7



8



9

TIE DOWN 45,000 LBS. MAX.

10

TP-50

11

TIE DOWN 20,000 LBS. MAX.

12



13



14

C/G
(CENTER OF GRAVITY)

15

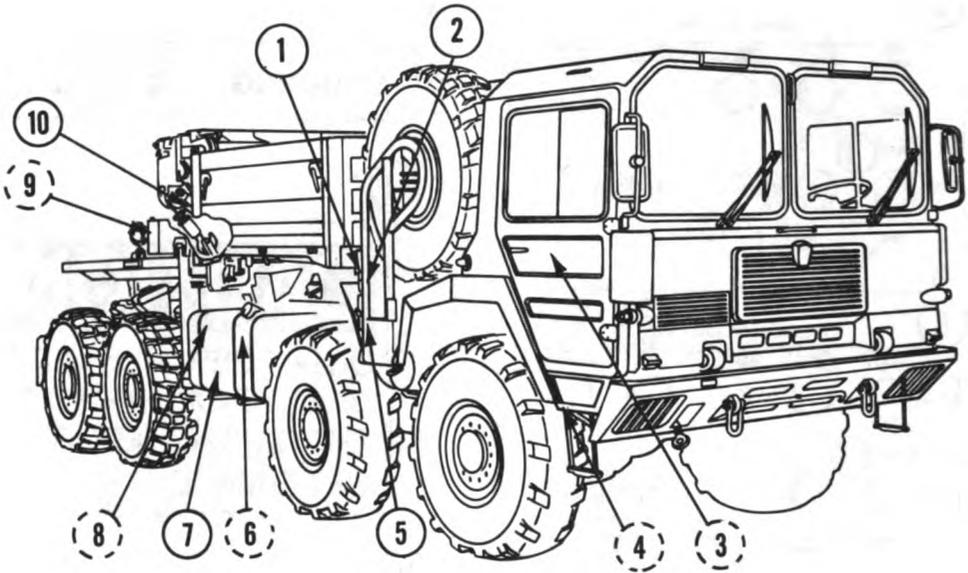
CHECK BATTERIES WEEKLY

16



17





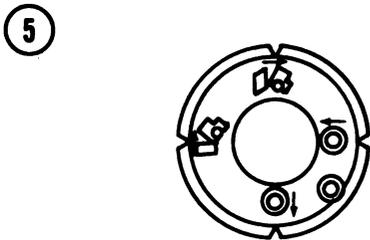
① **Zahnradfabrik Friedrichshafen AG/ Werk Schwabisch Gmund**
 Lubricant for steering gear
 as specified by the vehicle manufacturer
 Check oil level with the pump operating
 Observe maintenance instructions




② **CAUTION**
 CLEAN FILLER CAP BEFORE REMOVING
 USE ONLY SILICONE FLUID MIL-B-46176
 FROM SEALED CONTAINER.

③ **USA REGISTRATION NUMBER**

④ **SERIAL NUMBER**
 (Stamped lower portion of vehicle frame)



⑥ **DO NOT FILL ABOVE THIS LINE**

⑧ **NO STEP**

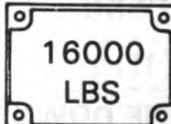
⑦ **CAUTION**
 OUTRIGGER LEGS MUST BE EXTENDED AND ON THE GROUND BEFORE LIFT IS MADE

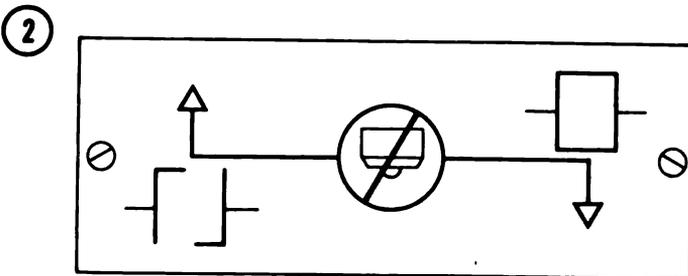
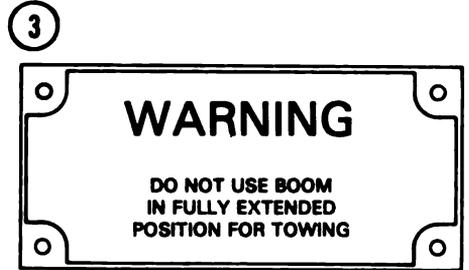
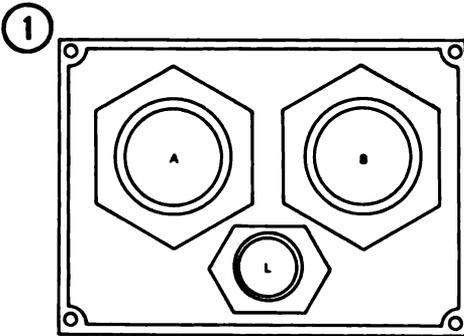
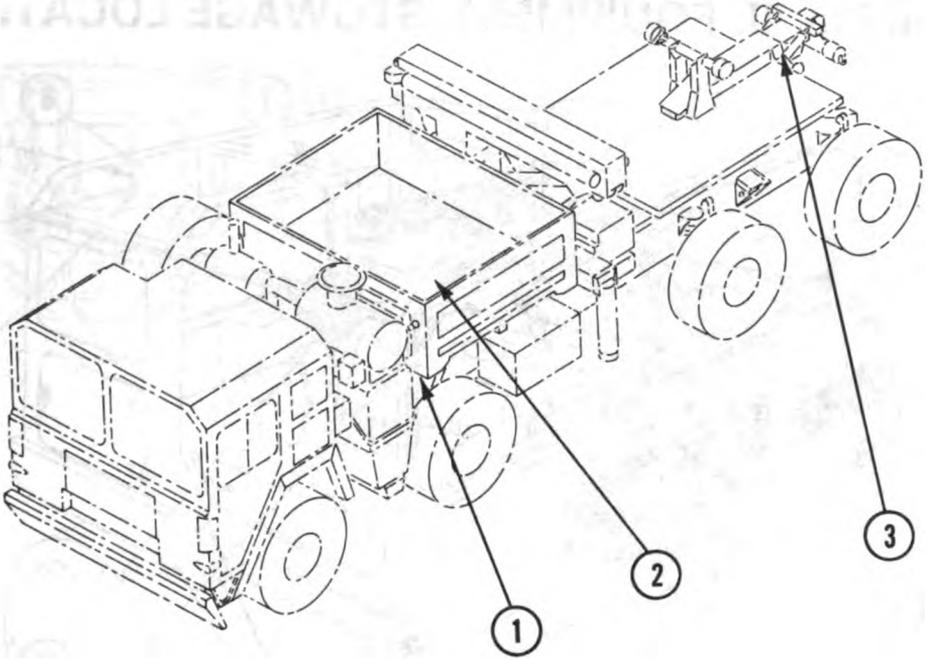
⑨ **FIRE EXTING.**

⑩ **CRANE AK 3300**

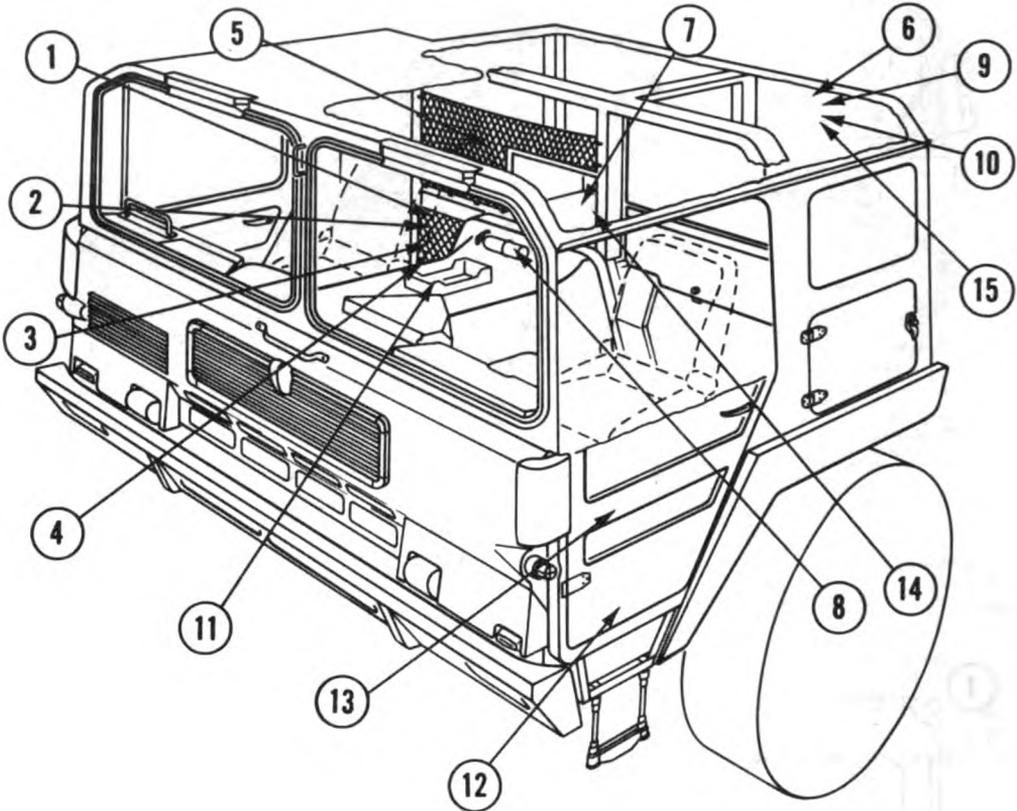


CRANE AK 4300 M5

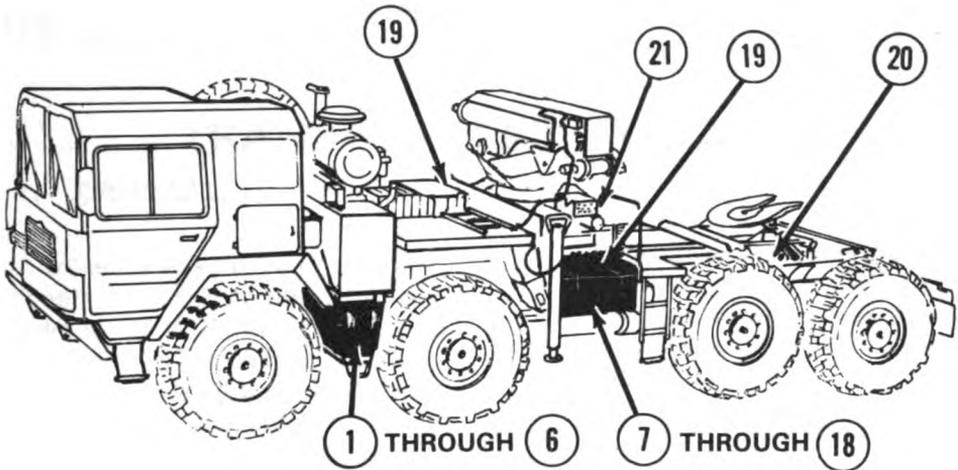




Section III. EQUIPMENT STOWAGE LOCATION



- (1) Triangular warning device
- (2) Amber flashing warning light
- (3) First aid kit
- (4) Winch remote control
- (5) Crane remote control (M1001, M1002, and M1013)
- (6) CBR and other equipment
- (7) Radio
- (8) Fire extinguisher — 5 lbs.
- (9) Slave cable assembly (M1002 only)
- (10) Trailer wiring harness
- (11) Field phone (M1013 and M1014)
- (12) Rifle
- (13) Pamphlet bag
- (14) Log book
- (15) Field telephone cable



FRONT STORAGE BOX

- (1) Axle sling adapter (M1002 only)
- (2) Adapter safety kit (M1002 only)
- (3) Axle tie down slings (M1002 only)
- (4) Rigging block
- (5) Tool roll
- (6) Padlock

REAR STORAGE BOX

- (7) Pinch bar
- (8) Jack support board
- (9) Winch cable extension (M1002 only)
- (10) Chain, with ring and hook (M1002 only)
- (11) Jack and cab pump handle
- (12) Lug wrench handle
- (13) Trailer air hoses
- (14) Pneumatic hose, 55 ft.
- (15) Hydraulic jack, 8 ton
- (16) Tire iron set
- (17) Lug wrench
- (18) Padlock (locks for storage boxes)

OTHER LOCATIONS

- (19) Outrigger support plate (M1001, M1002, and M1013)
- (20) Wheel chocks (one on each side of frame, rear)
- (21) Fire extinguisher — 10 lbs.
- (22) Small chain (attached to recovery unit—M1002 only) Not illustrated
- (23) Large chain (attached to recovery unit—M1002 only) Not illustrated
- (24) Climbing ladder (M1002 only under carbo box) Not illustrated

APPENDIX F

TRANSPORTABILITY DATA

F-1. GENERAL.

This appendix has the information needed by the operator/crew to prepare the M1001, M1002, M1013 and M1014 for transport by rail, sea or air. The following tasks must be accomplished prior to loading the vehicle for transport. These tasks apply to all modes of transportation.

- Remove and stow communication antennas.
- Stow and secure all BII not required for transport use.
- Remove spare tire from vehicle and secure during transport. Refer to paragraph 3-6a.

After vehicle tie down is complete, do the following tasks:

- Put parking brake on.
- Engage emergency off switch. Refer to paragraph 2-8d.

F-2. LOWERING VEHICLE AND SECURING SUSPENSION.

CAUTION

The vehicle lowering system is to be used only for purposes of loading and transporting vehicles. Do not exceed vehicle speed of 5 mph (8 kph) when vehicle is in lowered position. Steering capability is reduced to slight turns to the left or right.

DO NOT attempt sharp turns with vehicle in lowered position. Damage to vehicle steering or suspension components may result.

- Step 1.** Turn wheel straight ahead.
- Step 2.** Put parking brake on.
- Step 3.** Start engine. Increase idle to 1400 RPM.
- Step 4.** Turn on hydraulics on switch.
- Step 5.** Insure hydraulic selector is in winch position.

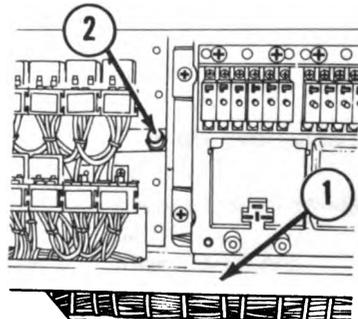
WARNING

Clear all personnel from immediate area when lowering vehicle.

NOTE

Refer to paragraph 2-2d for location of lower switch.

- Step 6.** Open electrical panel door (1).
- Step 7.** Put lowering switch (2) in lower position.



TA247111

F-1

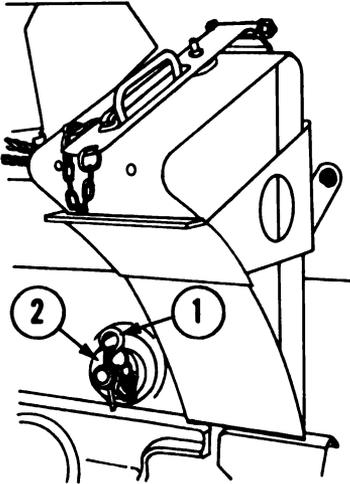
**TM 9-2320-282-10
TO 36A12-1C-461-1**

Step 5. Chock wheels.

NOTE

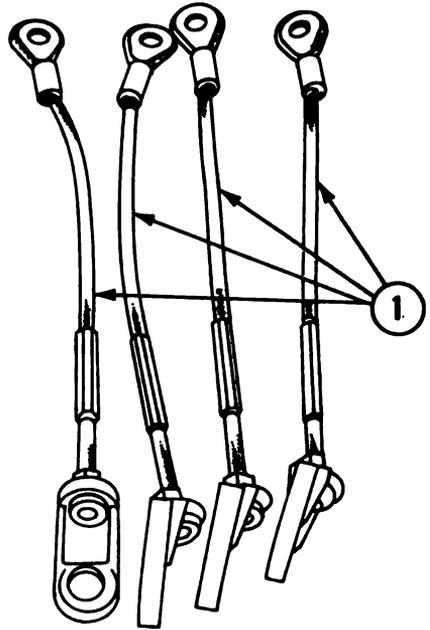
Step 6 applies to all axle tie down points.

Step 6. Remove retaining pins (1) and retaining washers (2) from axle tie down points.

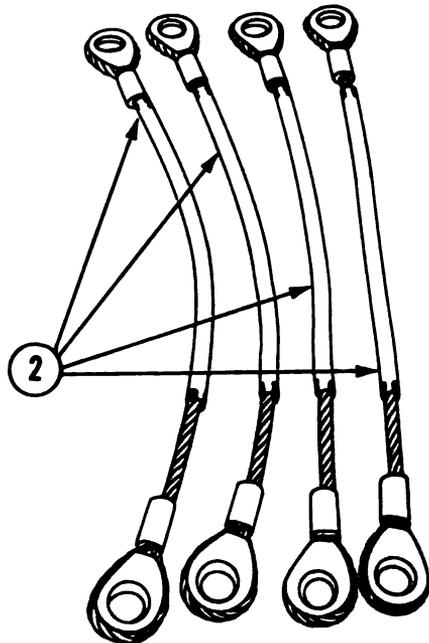


NOTE

Use tie down cables (1) for front axles and tie down cables (2) for rear axles. Rear axle tie downs do not require adjustment. Do Steps 7 and 8 for both rear axles and Steps 9 through 15 for both front axles.



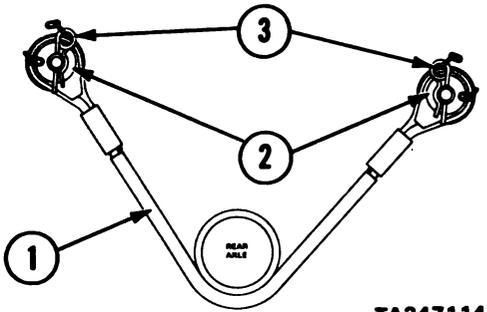
TA247112



TA247113

Step 7. Put rear tie down cables (1) on axle tie down points.

Step 8. Put on retaining washers (2) and retaining pins (3).



TA247114

NOTE

Adjustable end of front tie down cable goes on rear tie down points.

Step 9. Put end (1) of tie down cable (2) on tie down point.

Step 10. Put on retaining washer (3) and retaining pin (4).

Step 11. Put end (5) of tie down cable on tie down point.

NOTE

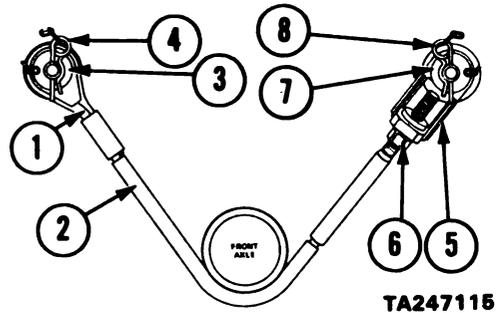
If tie down cable (2) does not fit snugly around axle, remove end (5) from tie down point and do Steps 12 through 15. If tie down cable fits snugly around axle, go to Step 15.

Step 12. Loosen counter nut (6).

Step 13. Turn end (5) to the left or right until cable fits snugly around axle.

Step 14. Tighten counter nut (6).

Step 15. Put on retaining washer (7) and retaining pin (8).

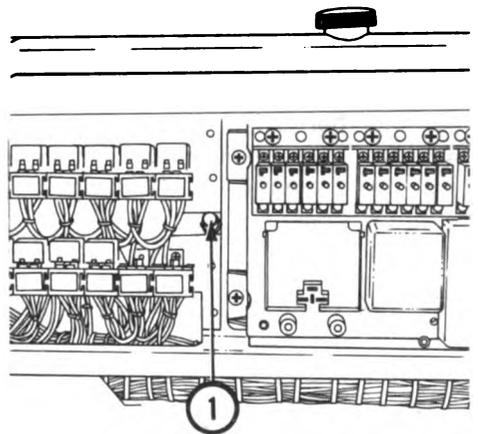


TA247115

WARNING

Clear all personnel from immediate area before putting lowering switch in raised position. Cables may break causing serious injury to personnel.

Step 16. Put lowering switch (1) in raised position.



TA247116

Step 17. Turn off hydraulics on switch.

Step 18. Return engine speed to 600 RPM.

Step 19. Shut off engine.

End of Task.

F-3. REMOVE AND REPLACE TRAILER SPARE TIRE HOIST.

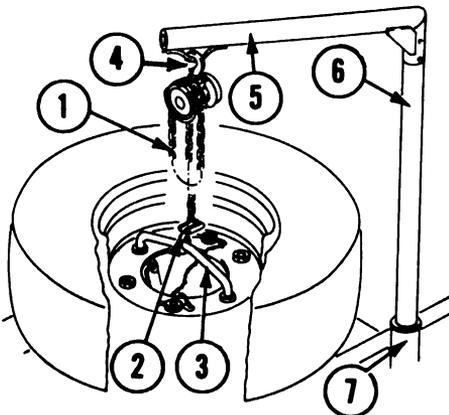
FRAME 1. REMOVE.

- Step 1. Loosen chain (1). Remove hook (2) from tire mount (3).
- Step 2. Remove hoist (4) from cross bar (5).
- Step 3. Slide cross bar (5) out of bar (6).
- Step 4. Slide bar (6) out of hoist mount (7).

End of Task.

FRAME 2. REPLACE.

- Step 1. Slide bar (6) into hoist mount (7).
- Step 2. Slide cross bar (5) into bar (6).
- Step 3. Hook hoist (4) onto cross bar (5).
- Step 4. Hook chain hook (2) onto tire mount (3). Tighten chain (1).



TA247117

End of Task.

F-4. TRANSPORTING BY AIR.

Do the preparation tasks listed in the air shipment preparation tasks list below for your vehicle.

AIR SHIPMENT PREPARATION TASKS LIST.

PREPARATION TASK	MODEL				PARAGRAPH
	M1001	M1002	M1013	M1014	
Remove Spare Tire	•	•	•	•	3-6a
Remove 30 KW Generator	•				
Remove Trailer Spare Tires		•			2-13q
Lower Vehicle Suspension and Tie Down Axles.	•	•	•	•	F-2
Remove Trailer Spare Tire Hoist			•	•	F-3

Refer to paragraph F-5 for vehicle tie down points of M1001, M1013 and M1014.

Refer to paragraph F-5 for vehicle tie down points of M1002.

Center of gravity and dimensions for the M1001, M1002, M1013 and M1014 are located on data plates in cab compartment.

F-5. TRANSPORTING BY RAIL.

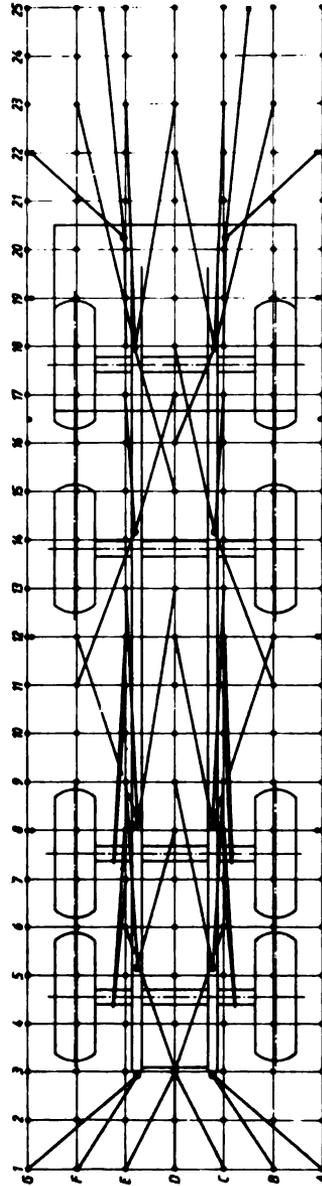
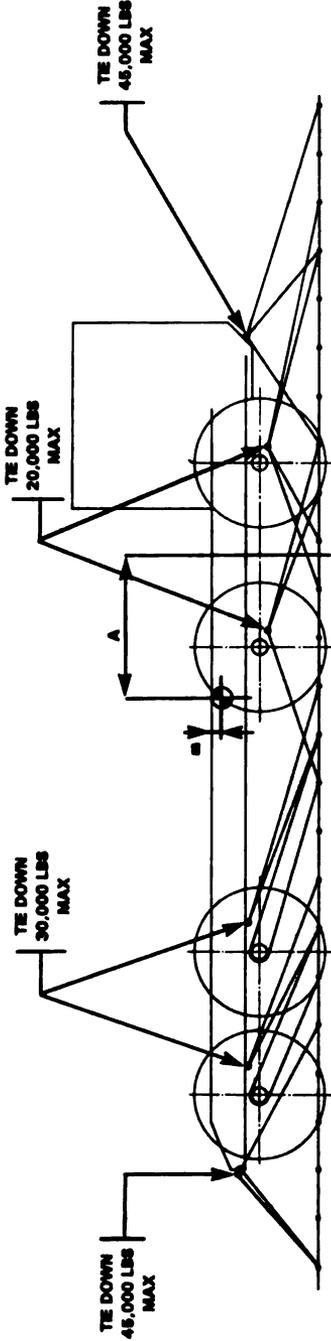
Do the preparation tasks listed in the rail shipment preparation tasks list below for your vehicle.

RAIL SHIPMENT PREPARATION TASKS LIST.

PREPARATION TASK	MODEL				PARAGRAPH
	M1001	M1002	M1013	M1014	
REMOVE 30 KW Generator					
Remove Cargo Box Panel		•			2-13j
Turn Crane*	•	•	•		2-17
Remove Trailer Spare Tire Hoist			•	•	F-3
Remove Tractor/Wrecker Spare Tire	•	•	•	•	3-6a
Lower Vehicle Suspension and Tie Down Axles	•	•	•	•	F-2

*Turn crane with hook 90° to rear from travel position for M1001 and M1002, and 60° to front from travel position for M1013. Refer to "M1001, M1013, M1014 Tractor Tie Down Points Diagram" for vehicle tie down points of M1001, M1013 and M1014. Refer to "M1002 Wrecker Tie Down Points Diagram" for vehicle tie down points of M1002.

M1001, M1013, M1014 TRACTOR TIE DOWN POINTS



← DIRECTION OF FLIGHT

Fuel Tank Contents: 100L (Maximum)

Fuel Flash Point:

DIN/DF-A > 55°C

DF-1 > 37.8°C

DF-2 > 37.8°C

Battery Acid Capacity: 29.2L

Vehicle Center of Gravity:	A		B	
	M1001-Perching II	1670	20	20
M1014-GLCM w/o Crane	1455	210	106	106
M1013-GLCM with Crane	1550	106	106	106

* 4536 hp (10,000 lbs)

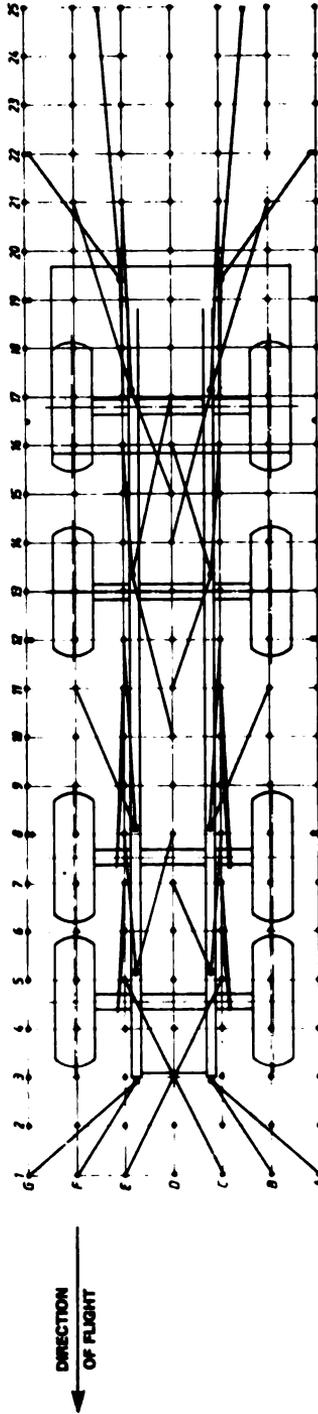
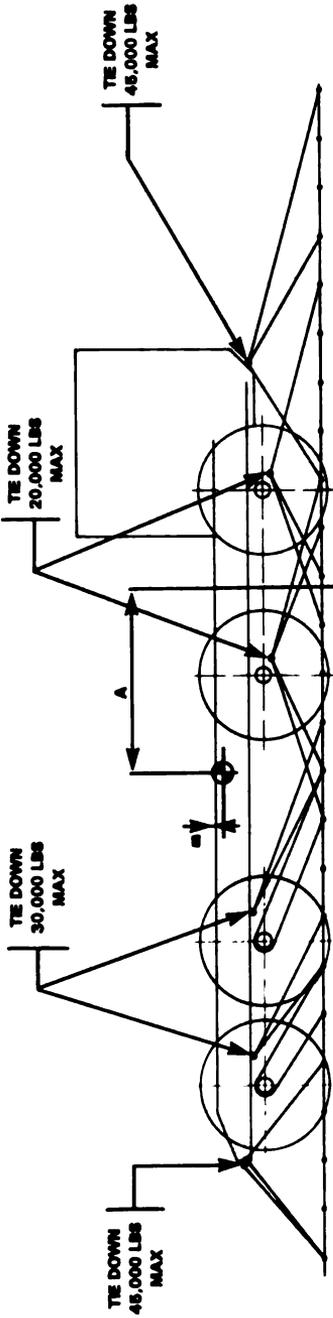
* 11340 hp (25,000 lbs)

TIE DOWN POINTS

Storage Temperature of Vehicle: -46°C to +71°C

TA247108

M1002 WRECKER TIE DOWN POINTS



Fuel Tank Contents: 100L (Maximum)

Fuel Flash Point:
DIN/DF-A > 55°C
DF-1 > 37.8°C
DF-2 > 37.8°C

Battery Acid Capacity: 29.2L

Vehicle Center of Gravity:
M1002 - Wrecker

A	B
2000	8

Storage Temperature of Vehicle: -46°C to +71°C

• 6.536 hp (10,000 lbs)
• 11,340 hp (25,000 lbs)

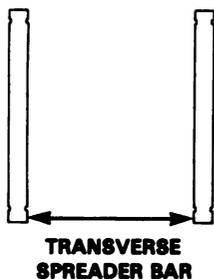
TIE DOWN POINTS

TA247109

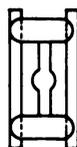
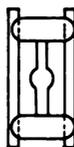
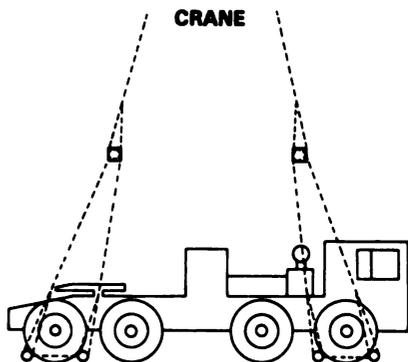
F-6. TRANSPORTING BY SEA.

No special preparations other than those cited in paragraph F-1 are required. It is recommended that a cradle similar to that shown below be used to load vehicle on board ship.

UPPER SECTION
WITH TRANSVERSE
SPREADER BAR
PLAN VIEW



LOWER SECTION
PLAN VIEW



TA247110

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By Order of the Secretary of the Army:

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General, United States Army
Chief of Staff

ROBERT M. JOYCE
Major General, United States Army
The Adjutant General

Official:

CHARLES A. GABRIEL, General, USAF
Chief of Staff

JAMES E. WYATT, JR., Colonel, USAF
Director of Administration

Distribution:

To be distributed in accordance with DA Form 12-38, Operator's Maintenance requirements for Truck, Tractor w/Crane, 10 Ton, 8x8, M1001; Truck, Wrecker w/Crane, 10 Ton, 8x8, M1002; Truck, Tractor w/Crane, 10 Ton, 8x8, M1013 and Truck, Tractor w/o Crane, 8x8, M1014.

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SAMPLE

THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
 1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
 1 Kilometer = 1000 Meters = 0.621 Miles

WEIGHTS

1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
 1 Kilogram = 1000 Grams = 2.2 Lb
 1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
 1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

CUBIC MEASURE

1 Cu Centimeter = 1000 Cu Millimeters = 0.06 Cu Inches
 1 Cu Meter = 1,000,000 Cu Centimeters = 35.31 Cu Feet

SQUARE MEASURE

1 Sq Centimeter = 100 Sq Millimeters =
 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

TEMPERATURE

5/9 (°F-32) = °C
 212° Fahrenheit is equivalent to 100° Celsius
 90° Fahrenheit is equivalent to 32.2° Celsius
 32° Fahrenheit is equivalent to 0° Celsius
 9/5 C° + 32 = F°

APPROXIMATE CONVERSION FACTORS

<u>TO CHANGE</u>	<u>TO</u>	<u>MULTIPLY BY</u>
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

<u>TO CHANGE</u>	<u>TO</u>	<u>MULTIPLY BY</u>
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
Kilometers per Liter	Miles per Gallon	2.354
Kilometers per Hour	Miles per Hour	0.621

