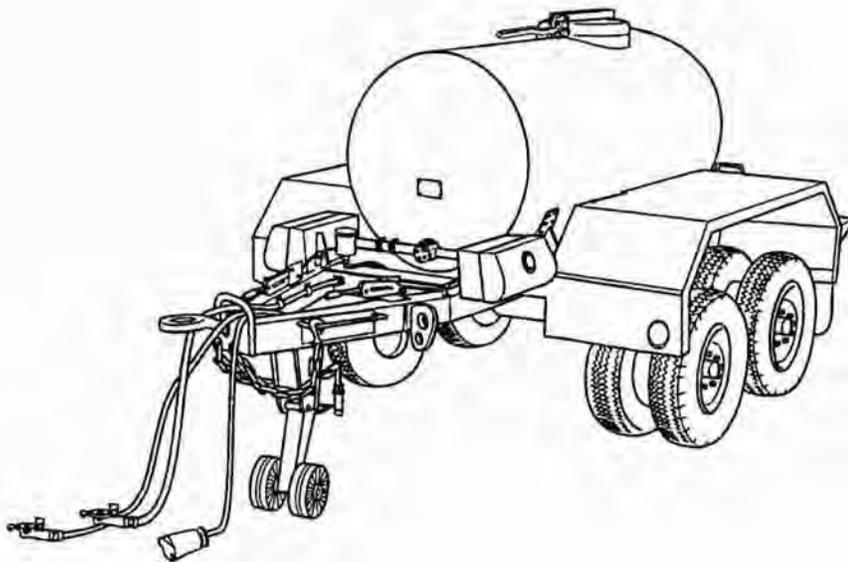


TECHNICAL MANUAL

**OPERATOR'S, UNIT, DIRECT SUPPORT,
AND GENERAL SUPPORT MAINTENANCE
MANUAL
(INCLUDING REPAIR PARTS AND
SPECIAL TOOLS LIST)**

FOR

**TRAILER, TANK, WATER:
400 GALLON, 1-1/2 TON, 8-WHEEL
M1112 (NSN 2330-01-389-9073)
WITH STAINLESS STEEL TANK
BODY**



M1112

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HEADQUARTERS, DEPARTMENT OF THE ARMY

24 APRIL 2000

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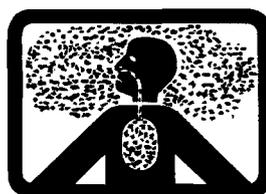
FOR INFORMATION ON FIRST AID, REFER TO FM 21-11.

WARNING

BRAKE DUST HAZARD

DO NOT handle brake shoes, brake drums, or other brake components unless area has been properly cleaned. There may be brake dust on these components which can be dangerous if touch or inhaled. Wear an approved filter mask and gloves. Never use compressed air or a dry brush to clean brake components. Dust may be removed using an industrial-type vacuum cleaner. Clean dust or mud away from brake components with water and a wet, soft brush or cloth. Failure to follow this warning may result in serious illness or death to personnel.

WARNING



CYANIDE GAS HAZARD

DO NOT weld or allow stainless steel tank temperature to exceed 212°F (100°C). Cyanide gases may be released when foam is heated above this temperature. Failure to follow this warning may cause toxic gases to escape and cause serious injury or death to personnel.

WARNING

COMPRESSED AIR

Compressed air used for cleaning or drying purposes, or for clearing restrictions, should never exceed 30 psi (207 kPa). Wear protective clothing (goggles/shield, gloves, etc.) and use caution to avoid injury to personnel.

WARNING

COUPLING AND UNCOUPLING TRAILER

All personnel must stand clear of towing vehicle and trailer during coupling and uncoupling operations. Failure to follow this warning may result in serious injury or death.

WARNING

Do not run safety chains parallel. They must be crossed under drawbar ring to prevent excess shifting of trailer in case its become uncoupled during operation. Failure to follow this warning may result in serious injury or death to personnel and damage to equipment.

WARNING

SECURING TRAILER

If trailer is not coupled to towing vehicle, ensure that wheels are securely chocked. Failure to do so may cause trailer to roll, resulting in serious injury or death to personnel and damage to equipment.

WARNING

ELECTRICAL SYSTEM

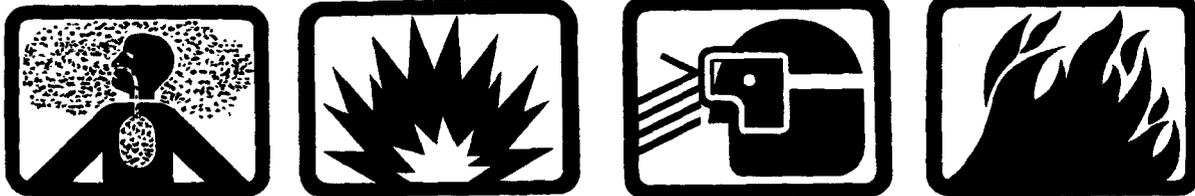
When troubleshooting an electrical malfunction or performing electrical maintenance, ALWAYS disconnect intervehicular electrical cable from towing vehicle. Failure to do so may result in injury or death due to electric shock.

WARNING

HANDLING HEAVY COMPONENTS

- All personnel must stand clear of lifting device when raising or lowering water tank body. Failure to follow this warning may result in injury or death to personnel.
- Landing gear weight 80 LB, raising/lowering of landing gear requires two person's. Failure to follow this warning may result in serious injury or death.

WARNING



SOLVENT PF05 HAZARDS

- Drycleaning solvent (PF05) is combustible. Wear protective goggles and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes; and do not breathe vapors. Keep away from heat or flame. Never smoke when using drycleaning solvent; the flashpoint is 144°F (62°C). Failure to follow this warning may result in injury or death to personnel.
- If personnel become dizzy while using drycleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush them with water and get immediate medical attention.
- When PF05 drycleaning solvent is used, notify the local medical authority (preventive medicine) and environmental coordinator concerning medical surveillance, respiratory protection, and disposal requirements.

WARNING**USING UNAUTHORIZED CLEANING METHODS**

Improper cleaning methods and use of unauthorized cleaning liquids or solvents can injure personnel and damage equipment. To prevent this, refer to TM 9-247 for further instructions.

WARNING**MAINTENANCE INSIDE WATER TANK**

- **NEVER WORK ALONE INSIDE WATER TANK.** A safety rope must be secured around chest and under arms of person entering water tank. Opposite end of safety rope must be held by a person stationed at the manhole opening. This will allow for quick removal of a person from water tank in the event of an accident or personal injury. Failure to follow this warning may result in injury to personnel.
- An adequate air evacuation system must be used to quickly exhaust fumes from inside water tank. Failure to follow this warning may result in serious injury or death to personnel.
- Personnel must wear rubber gloves, canvas sleeves, safety shoes, rubberized apron or jacket, and protective mask while performing abrasive cleaning operation. A portable air filter must also be used. Failure to follow this warning may result in injury to personnel.
- Tank interior is a confined space with potential oxygen deficiency and toxic fume hazards. Failure to follow this warning may result in injury to personnel or death to personnel.

WARNING**WATER SANITATION**

- Use extreme care to ensure that no foreign material enters the water tank. The highest sanitary practices must be followed when handling drinking water. Serious illness may result from impure, contaminated drinking water.
- When water tank is used for **NONPOTABLE WATER**, water tank must be so marked. Failure to follow this warning may result in serious illness or death to personnel.
- If water tank was filled with nonpotable water, water tank must be flushed out with clean potable water and drained. **DO NOT** allow water tank to sit for extended periods of time with any amount of liquid in it. Standing water will result in contamination and food poisoning. **KEEP WATER TANK CLEAN AT ALL TIMES.** Failure to follow this warning may result in serious illness or death to personnel.

WARNING



Adhesive causes immediate bonding on contact with eyes, skin, or clothing and also gives off harmful vapors. Wear protective goggles and use only in a well-ventilated area. If adhesive gets in eyes, try to keep eyes open; flush them with water for 15 minutes and get immediate medical attention.

TECHNICAL MANUAL
NO. 9-2330-397-14&P

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D.C., 24 April 2000

**OPERATOR'S, UNIT, DIRECT SUPPORT, AND
GENERAL SUPPORT MAINTENANCE MANUAL
(INCLUDING REPAIR PARTS AND
SPECIAL TOOLS LIST)
FOR
TRAILER, TANK, WATER:
400 GALLON, 1-1/2 TON, 8-WHEEL
M1112 (NSN 2330-01-389-9073)
WITH STAINLESS STEEL TANK BODY**

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this publication. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Submit your DA Form 2028-2 (Recommended Changes to Equipment Technical Publications), through the Internet on the Army Electronic Product Support (AEPS) website. The Internet address is <http://aeps.ria.army.mil>. If you need a password, scroll and click on "ACCESS REQUEST FORM". The DA Form 2028 is located in the ONLINE FORMS PROCESSING section of the AEPS. Fill out the form and click on SUBMIT. Using this form on the AEPS will enable us to respond more quickly to your comments and better manage the DA Form 2028 program. You may also mail, fax or email your letter, DA Form 2020, or DA Form 2028-2 direct to: Commander, U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-AC-NML, Rock Island, IL 61299-7630. The email address is amsta-ac-nml@ria.army.mil. The fax is DSN 793-0726 or Commercial (309) 782-0726.

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HOW TO USE THIS MANUAL

SCOPE.

This technical manual provides you with the information you will need to operate and maintain the Trailer, Tank, Water: 400-Gallon, 1-1/2 Ton, 8-Wheel M1112 with Stainless Steel Tank Body.

The information contained in this manual is presented in five chapters, nine appendixes, and a repair parts and special tools list (RPSTL). Each chapter is divided into sections covering operating procedures and/or other information for specific systems or components.

Note that Appendix A of this manual gives the full title of every manual, form, pamphlet, or other document referenced in this manual.

INDEXING.

Four indexing procedures are used to help you locate information quickly:

- Cover index. Lists chapter titles and important parts of the manual, with corresponding page numbers. Each chapter or part listed is boxed in, with a black outer edge that is in line with the first page of that chapter or part.
- Table of contents. The table of contents follows the summary of warnings. The table of contents lists all chapters numerically, with corresponding page numbers.
- Section indexes. Each section starts with a numerical listing of all paragraphs in that chapter.
- Alphabetical index. The alphabetically arranged subject index starts on page Index-1.

WARNINGS, CAUTIONS, AND NOTES.

You must read and understand this manual BEFORE operating the M1112 trailer.

Throughout this manual you will see WARNING, CAUTION, and NOTE headings. There are good reasons for every one of these notices.

WARNING

A warning is used to alert the user to hazardous operating and maintenance procedures, practices, or conditions that could result in injury or death. Warnings must be strictly observed.

CAUTION

A caution is used to alert the user to hazardous operating and maintenance procedures, practices, or conditions that could result in damage to, or destruction of, equipment or mission effectiveness. Cautions must be strictly observed.

WARNINGS, CAUTIONS, AND NOTES (continued).

NOTE

A note highlights an essential operating or maintenance procedure, condition, or statement.

Warnings and cautions appear immediately preceding the step to which they pertain. It is important to read and thoroughly understand the warnings and/or cautions before beginning maintenance.

Notes may precede or follow the steps to which they pertain, depending on what makes the most sense.

CHAPTER 1 INTRODUCTION

Section I. GENERAL INFORMATION

Paragraph Number	Paragraph Title	Page Number
1-1	Scope	1-1
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1-1. SCOPE.

- a. This manual describes the operation of and Unit, Direct Support, and General Support maintenance for the Trailer, Tank, Water: 1 1/2 Ton, 8-Wheel, M1112 with Stainless Steel Tank Body. The manual also includes the repair parts and special tools for the M1112 trailer.
- b. Throughout the manual, the terms "right" and "left" are used to describe views of the trailer, as viewed from the rear.

1-2. MAINTENANCE FORMS, RECORDS, AND REPORTS.

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA Pam 738-750, The Army Maintenance Management System (TAMMS).

1-3. DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE.

For destruction of Army materiel to prevent enemy use, refer to TM 750-244-6.

1-4. PREPARATION FOR STORAGE OR SHIPMENT.

For information on preparing the trailer for storage or shipment, refer to Chapter 4, Section XVII.

1-5. QUALITY ASSURANCE.

- a. No specific quality assurance manual pertains to the M1112.
- b. Defective material received through the supply system should be reported on an SF Form 368 (Product Quality Deficiency Report). Instructions for preparing the reports are provided in AR 702-7, Reporting of Product Quality Deficiencies Across Component Lines. Mail your completed form directly to:

Commander
U.S. Army Tank-automotive and Armaments Command
ATTN: AMSTA-AC-NML
Rock Island, IL 61299-7630

1-6. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIRs).

If your water tank trailer needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Put it on an SF Form 368 (Product Quality Deficiency Report). Mail it to address specified in DA PAM 738-750.

1-7. WARRANTY INFORMATION.

The M1112 does not have any warranties.

1-8. SAFETY, CARE, AND HANDLING.

For information on general safety precautions and regulations, review the warning summary at the front of this manual that follows the table of contents. Observe all warnings and cautions that appear in the maintenance procedures.

1-9. CORROSION PREVENTION AND CONTROL.

- a. Corrosion prevention and control (CPC) of Army materiel is a continuing concern. It is important that any corrosion problem with this item be reported so the problem can be corrected and improvements can be made to prevent the problem in future items.
- b. While corrosion is typically associated with the rusting of metals, it can also include deterioration of other materials, such as rubber and plastic. Unusual cracking, softening, swelling, or breaking of these materials may be a corrosion problem.
- c. If a corrosion problem is identified, it can be reported using an SF Form 368. The use of key words, such as "corrosion," "rust," "deterioration," and "cracking," will ensure that the information is identified as a CPC problem. The form should be submitted to the address specified in DA Pam 738-750.

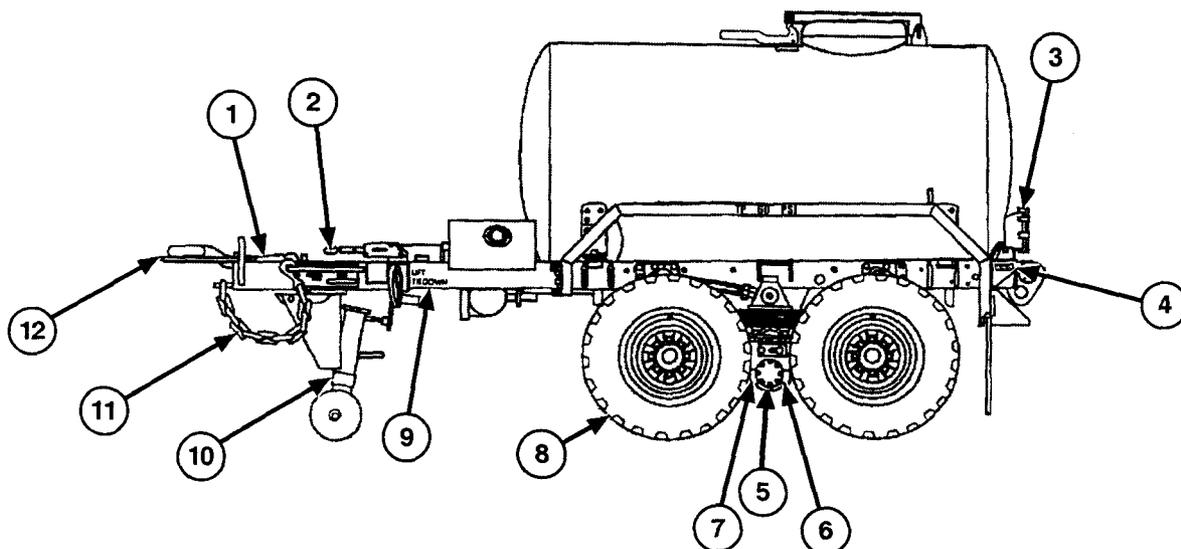
Section II. EQUIPMENT DESCRIPTION AND DATA

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1-11	Location and Description of Major Components	1-4
1-12	Location and Contents of Data Plates	1-6
1-13	Equipment Data	1-7

1-10. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES.

- a. The M1112 water tank trailer is designed to carry 400 gallons (1514 L) of potable or nonpotable water either highway or cross-country.
- b. The trailer is designed to be towed by an M939 Series 5-ton and an M35 2 1/2 ton truck. Maximum allowable speed is 55 miles per hour (88 kph) highway and 10 miles per hour (16 kph) cross-country.
- c. The trailer is equipped with the following:
 - A 24-volt electrical system capable of operating under standard and blackout modes.
 - An adjustable caster assembly to support the front of the trailer when not coupled to the towing vehicle.
 - Manually operated parking brakes used to secure the trailer when stopped or parked.
 - Eight-wheel single axle with leaf spring suspension to absorb road shock.
 - Dual-line air/hydraulic brake system that receives air pressure from towing vehicle.
 - Two adjustable walking beams to provide alignment.

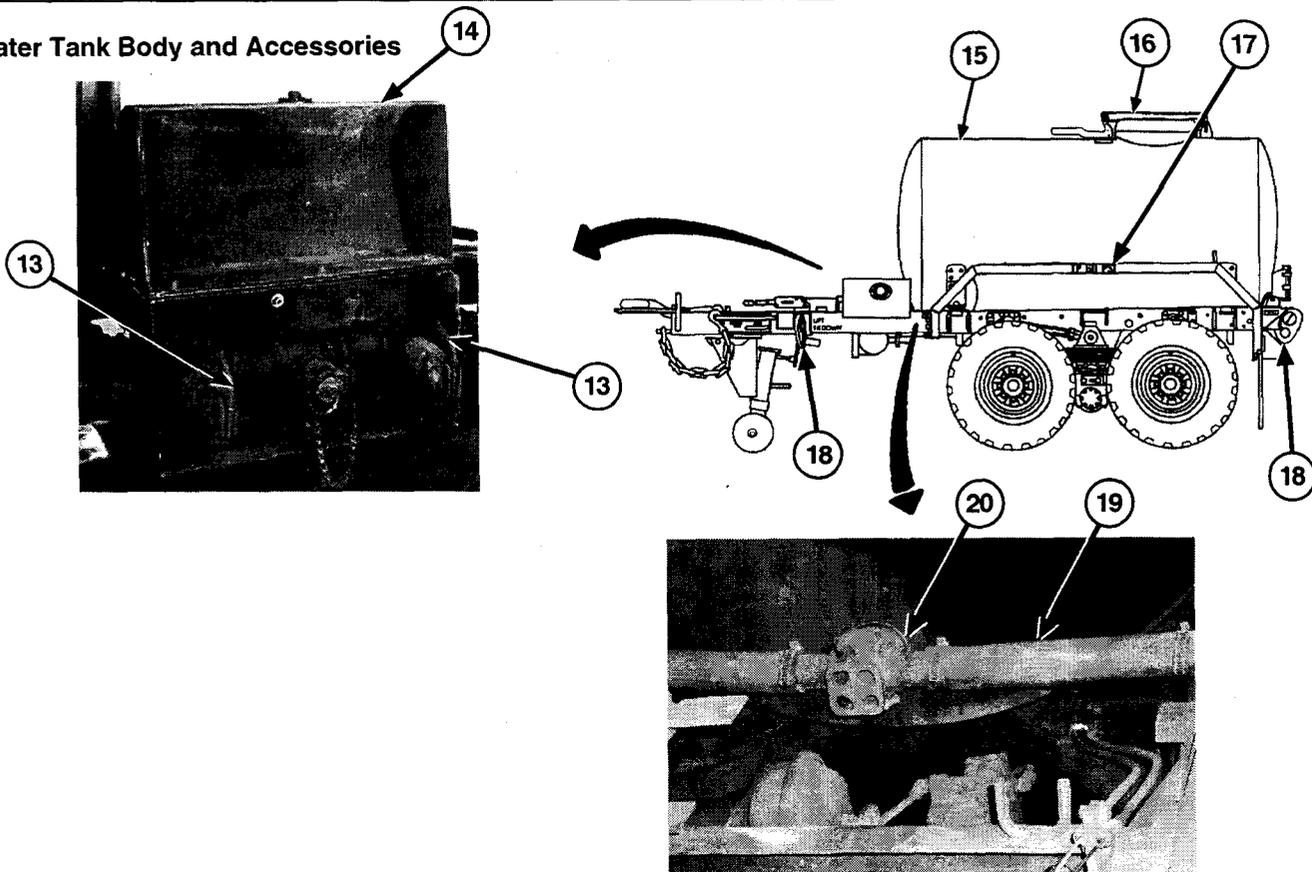
1-11. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS.



Key	Component	Description
1	Intervehicular Cable	Connects trailer electrical system to the towing vehicle.
2	Handbrake Lever Assemblies	Activate the handbrakes when the trailer is stopped or parked.
3	Light Assemblies	Consist of blackout, stoplight, taillight, and composite assemblies. Indicate presence of trailer to vehicles traveling behind.
4	Red Clearance Lights	Indicate presence of trailer to vehicles from side.
5	Cross Axle	Supports the trailer load and mounting for the left frame group and the right frame group.
6	Suspension	Consists of two nine-piece leaf springs and two shock absorbers mounted on one axle. Restrains sudden and rapid vertical movement.
7	Walking Beams	Consist of a front and a rear frame assembly that provide mounting for wheels and alignment.
8	Wheels	Provide support and motion for the trailer.
9	Frame Assembly	Composed of two pressed-steel side rails and six pressed-steel crossmembers. Supports the trailer load.
10	Adjustable Caster Assembly	Supports the front of the trailer when not coupled to the towing vehicle.
11	Safety Chains	Prevent the trailer from breaking away from the towing vehicle.
12	Drawbar Ring	Attaches the trailer to the towing vehicle.

1-11. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (continued).

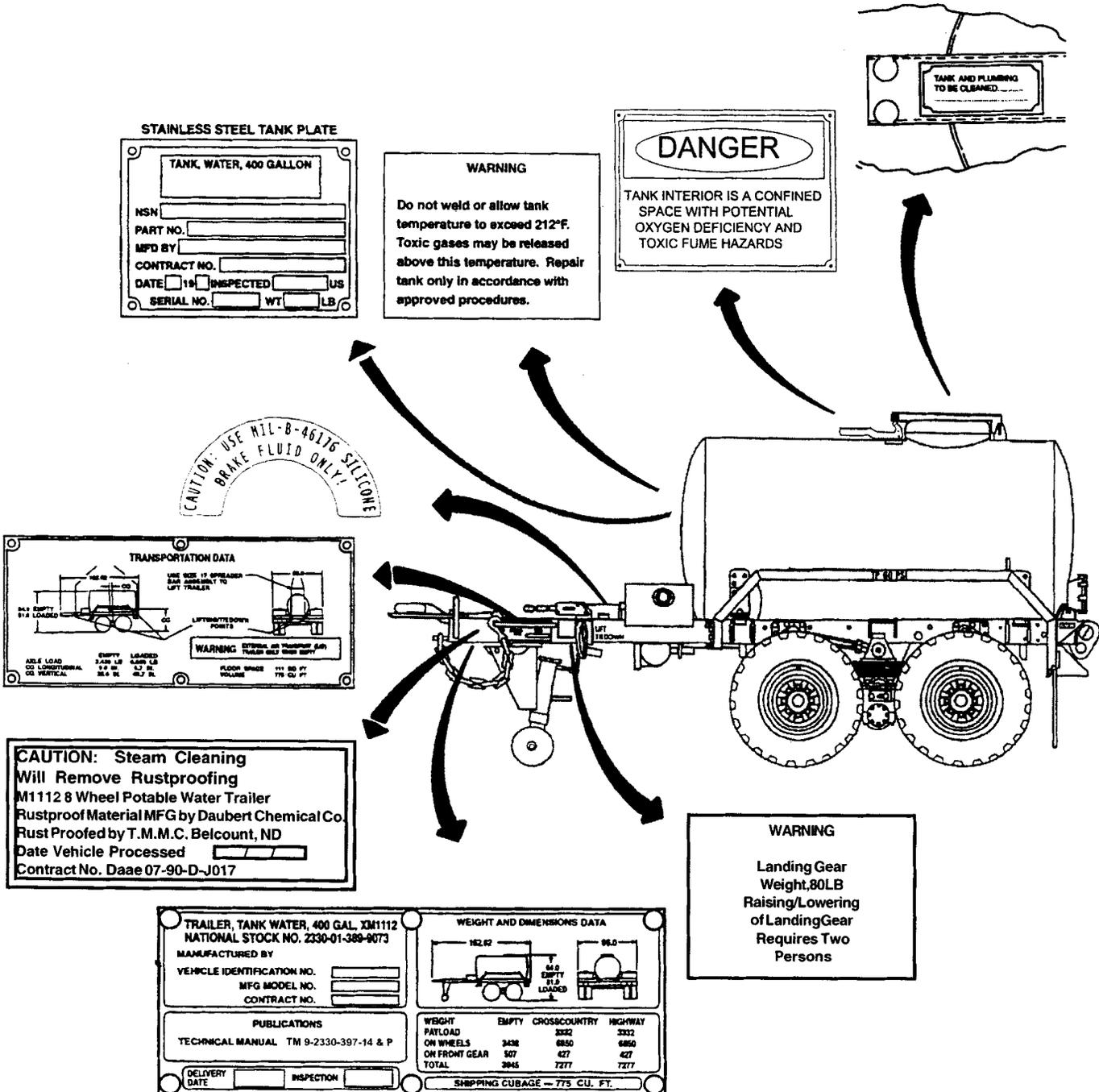
Water Tank Body and Accessories



Key	Component	Description
13	Faucets	Allow for the dispensing of water from the tank.
14	Faucet Box Assemblies	Protect faucets from weather or incidental damage.
15	Tank	Holds 400 gallons (1514 L) of potable water or nonpotable water, if so marked, for transport.
16	Manhole	Provides access to interior of the tank for filling, inspecting, and cleaning.
17	Fender	Protects tires, tank, and vehicles traveling behind the trailer from thrown dirt or stones.
18	Lifting Points	Provide lift points for trailer lifting. Located at front sides and rear of frame.
18	Tie down Points	Secure trailer during shipment. Located at front sides and rear of frame
19	Piping	Provides a passageway for water from the tank to the faucets.
20	Manifold Valve	Directs the flow of water to faucets.

1-12. LOCATION AND CONTENTS OF DATA PLATES.

- The following illustrations show the location and contents of all data plates.
- Maintain data plates so that all information remains legible. If any data plate is missing or no longer legible, notify Unit maintenance.



1-13. EQUIPMENT DATA.

M1112 Water Tank Trailer

Tank Capacity 400 gal. (1514 L)

Dimensions (Overall)

Height (To Top of Manhole Cover):

 Full 81 in. (205.7 cm)
 Empty 84 in. (213.4 cm)
Length 162.62 in. (413.0 cm)
Width 98 in. (248.9 cm)
Drawbar Ring (Adjustable) 36-40 in. (91-102 cm)
Ground Clearance 17 in. (43 cm)

Weights

Payload Maximum:

 Highway 7160 lb (3,251 kg)
 Cross-Country 6850 lb (3,107 kg)
 Empty Net Weight 3880 lb (1,762 kg)

Wheels and Tires

Wheels:

 Rim Size 7.0 x 16 in. (17.8 x 40.6 cm)

Tires:

 Rating 8 ply D-Range, Radial
 Size LT215/85R16, tubeless

Maximum Tire Inflation Pressure:

Highway	60 psi (413.7 kpa)	55 mph
Secondary Roads	60 psi (413.7 kpa)	40 mph
Cross-Country	40 psi (275.8 kpa)	10 mph

Axle Assembly

Capacity 12,000 lbs
Tube Diameter 4 -1/2 in.

Spindle:

 Brake Flanges 3.245
 Dimension at Bearing 2.247

Service Brakes

Air Operating Pressure 100 psi (690 kPa)
Diameter 15 in. (38.1 cm)
Width 3 in. (7.6 cm)

Adjustable Caster Assembly

Gear Ratio 3:1
Lifting Capacity 6,000 lb (2724 kg)
Maximum Extension 10.5 in. (26.7 cm)

1-13. EQUIPMENT DATA (continued).

Towing Vehicle M939 Series 5-ton and an M35 2 1/2 ton

Electrical System 24-volt

CHAPTER 2 OPERATING INSTRUCTIONS

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

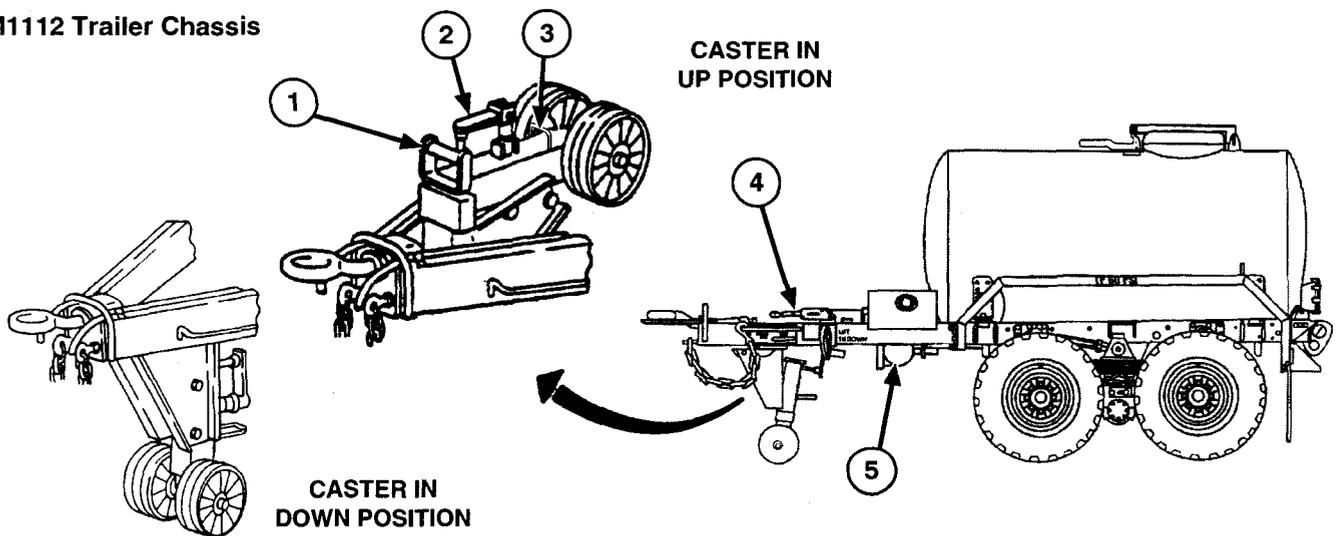
Paragraph Number	Paragraph Title	Page Number
2-1	General	2-1
2-2	Controls and Indicators	2-1

2-1. GENERAL.

This section shows the location and function of all water tank trailer controls and indicators. Review this section thoroughly before operating the trailer.

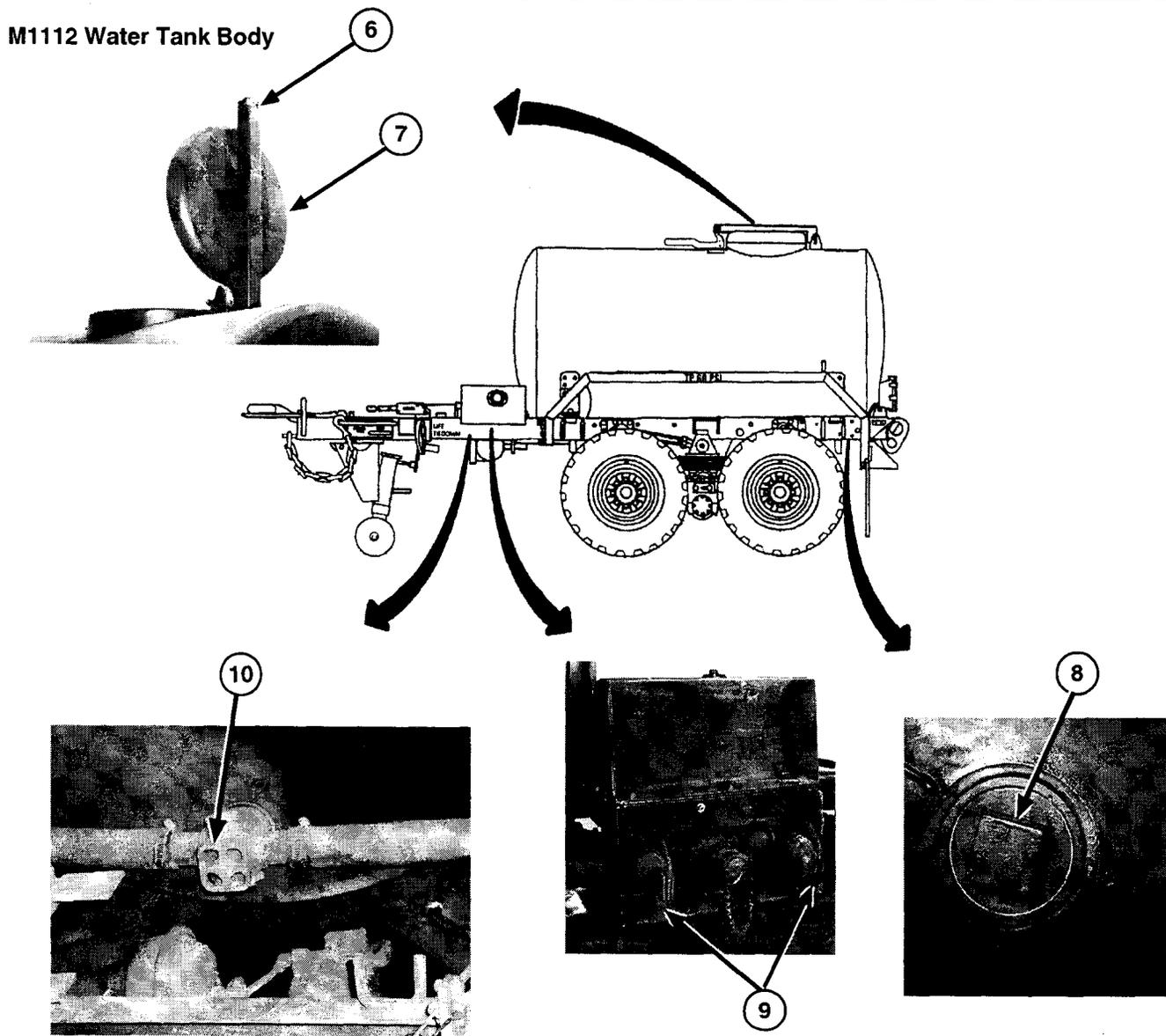
2-2. CONTROLS AND INDICATORS.

M1112 Trailer Chassis



Key	Component	Description
1	Release Handle	Secures the adjustable caster assembly in up or down position.
2	Handcrank	Operates the gearbox to raise or lower the adjustable caster assembly.
3	Ground Pad Handle	Raises or lowers the adjustable caster assembly.
4	Handbrake Lever Assemblies	Activate handbrakes when the trailer is stopped or parked.
5	Pressure Tank Drain Cock	Drains air pressure from pressure tank.

2-2. CONTROLS AND INDICATORS (continued).



Key	Component	Description
6	Latch	Secures the manhole cover closed.
7	Manhole Cover	Provides access to the tank for filling, cleaning, and inspection.
8	Drain Plug	Used to drain water from the tank.
9	Forward Faucets	Used to draw water from the tank.
10	Manifold Valve	Directs water to the faucets.

**Section II. OPERATOR/CREW PREVENTIVE MAINTENANCE
CHECKS AND SERVICES (PMCS)**

Paragraph Number	Paragraph Title	Page Number
2-3	General	2-3
2-4	Service Intervals	2-4
2-5	Reporting Repairs	2-4
2-6	General PMCS Procedures	2-4
2-7	Specific PMCS Procedures	2-4
2-8	Leakage Definitions	2-5
Table 2-1	Operator/Crew Preventive Maintenance Checks and Services (PMCS) for the M1112	2-6

2-3. GENERAL.

- a. To ensure that the water tank trailer is ready for operation at all times, it must be inspected on a regular basis so that defects may be found before they result in serious equipment damage, equipment failure, or injury to personnel. This section contains systematic instructions on inspections, adjustments, and corrections to be performed by the operator/crew.

- b. While performing PMCS, read and follow all safety instructions found in the warning summary at the front of this manual. Keep in mind all WARNINGS and CAUTIONS.

2-4. SERVICE INTERVALS.

Perform PMCS, found in Table 2-1, at the following intervals:

- (1) Perform *Before* PMCS just before operating the trailer.
- (2) Perform *During* PMCS while operating the trailer.
- (3) Perform *After* PMCS right after operating the trailer.
- (4) Perform *Weekly* PMCS once each week.

2-5. REPORTING REPAIRS.

All defects that the operator cannot fix must be reported on a DA Form 2404 immediately after completing PMCS. If a serious problem is found, IMMEDIATELY report it to your supervisor.

2-6. GENERAL PMCS PROCEDURES.

WARNING

Drycleaning solvent PF05 is combustible. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat.

- a. Keep equipment clean. Dirt, oil, and debris may cover up a serious problem. Clean as you work and as needed. Use drycleaning solvent (Item 12, Appendix F) on all metal surfaces. Use soap (Item 35, Appendix F) and water on rubber, plastic, and painted surfaces.
- b. While performing specific PMCS procedures, inspect the following components:
 - (1) **Bolts, Nuts, and Screws.** Make sure they are not loose, missing, bent, or broken. Report loose or missing bolts, nuts, and screws to Unit maintenance.
 - (2) **Welds.** Inspect for gaps where parts are welded together. Check for loose or chipped paint, rust, and cracks. Report bad welds to Unit maintenance.
 - (3) **Electric Conduit, Wires, or Connectors.** Inspect for cracked or broken conduit insulation, bare wires, and loose or broken connectors. Report loose connections and faulty wiring to Unit maintenance.
 - (4) **Hoses, Lines, Clamps and Fittings.** Inspect for wear, damage, and leaks. Make sure that clamps and fittings are tight. Report any damage, leaks, or loose fittings to Unit maintenance.
- c. Check to see that components are adequately lubricated in accordance with Appendix I.

2-7. SPECIFIC PMCS PROCEDURES.

- a. Operator/Crew PMCS is provided in Table 2-1. Always perform PMCS in the order listed. Once PMCS procedures become routine, spotting problems will become much easier.
- b. Before performing PMCS, read all the checks required for the applicable interval and prepare all tools needed for the task. Have several clean rags (Item 32, Appendix F) ready for use. Perform ALL inspections at the applicable interval.

2-7. SPECIFIC PMCS PROCEDURES (continued).

- c. If any problems are discovered through PMCS, perform the appropriate troubleshooting task found in Chapter 3. If any component or system is not serviceable, or if any service does not correct the problem, notify your supervisor.
- d. Explanation of the column headings in Table 2-1 are as follows:
- (1) **Item No.** The item number column of your PMCS table is to be used for reference. When completing DA Form 2404, include the item number for the check/service indicating a fault. Item numbers also appear in the order that you must do checks and services for the intervals listed.
 - (2) **Interval.** This column of your PMCS table tells you when to do a certain check or service.
 - (3) **Location, Item To Check/Service.** This column of your PMCS table provides the location and the item to be checked or serviced.
 - (4) **Procedure.** This column of your PMCS table tells you how to do the required checks and services. Carefully follow these instructions. If you do not have the tools, or if the procedure tells you to, have Unit maintenance do the work.
 - (5) **Not Fully Mission Capable If.** This column tells you when and why your equipment cannot be used.

2-8. LEAKAGE DEFINITIONS.

- a. It is important to know how fluid leakage affects the status of the trailer. The following are types/classes of leakage an operator must know to determine whether the trailer is mission capable. Learn these leakage definitions. When in doubt, notify your supervisor.

Class I	Seepage of fluid (as indicated by wetness or discoloration) not great enough to form drops.
Class II	Leakage great enough to form drops, but not great enough to cause drops to drip from item being inspected.
Class III	Leakage of fluid great enough to form drops that fall from the item being inspected.

CAUTION

- **Equipment operation is allowable with minor leakages (Class I or II). Of course, you must consider the fluid capacity in the item/system being checked/inspected. When in doubt, notify your supervisor. When operating with Class I or Class II leaks, continue to check fluid levels as required in your PMCS.**
 - **Class III leaks should be reported to your supervisor or Unit maintenance.**
- b. Equipment operation is allowed with minor (Class I or II) leakage. Fluid levels in an item/system affected with such leakage must be checked more frequently than required in PMCS. When in doubt notify your supervisor.
- c. Report Class III leaks IMMEDIATELY to your supervisor or Unit maintenance.

TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) FOR THE M1112 (continued)

ITEM NO.	INTERVAL	ITEM TO BE INSPECTED	PROCEDURE	NOT FULLY MISSION CAPABLE IF
NOTE				
<p>Perform Weekly as well as Before PMCS if:</p> <ul style="list-style-type: none"> • You are the assigned operator but have not operated the trailer since the last Weekly PMCS. • You are operating the trailer for the first time. 				
1	Before	Tires	<p>Check tires for cuts, foreign objects, or unusual tread wear. Remove any stones or other debris from treads.</p>	Two or more tires on one side of trailer are missing, flat, or unserviceable.
2	Before	Wheels	<p>Check wheels for damage. Look for loose or missing nuts.</p>	<p>a. Two or more wheels per axle are damaged.</p> <p>b. Two or more wheel nuts are missing from any wheel.</p>
3	Before	Drawbar Ring, Intervehicular Air Hoses, and Safety Chains	<p>a. Check drawbar ring (3) for secure mounting and obvious damage.</p> <p>b. Check intervehicular air hoses (2) and intervehicular cable (1) for cuts and breaks.</p> <p>c. Check safety chains (4) for secure mounting and obvious damage.</p>	<p>a. Drawbar ring is loose or bent.</p> <p>b. Intervehicular air hoses or intervehicular cable broken or missing.</p> <p>c. Safety chains are missing or unsecured.</p>

TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) FOR THE M1112 (continued)

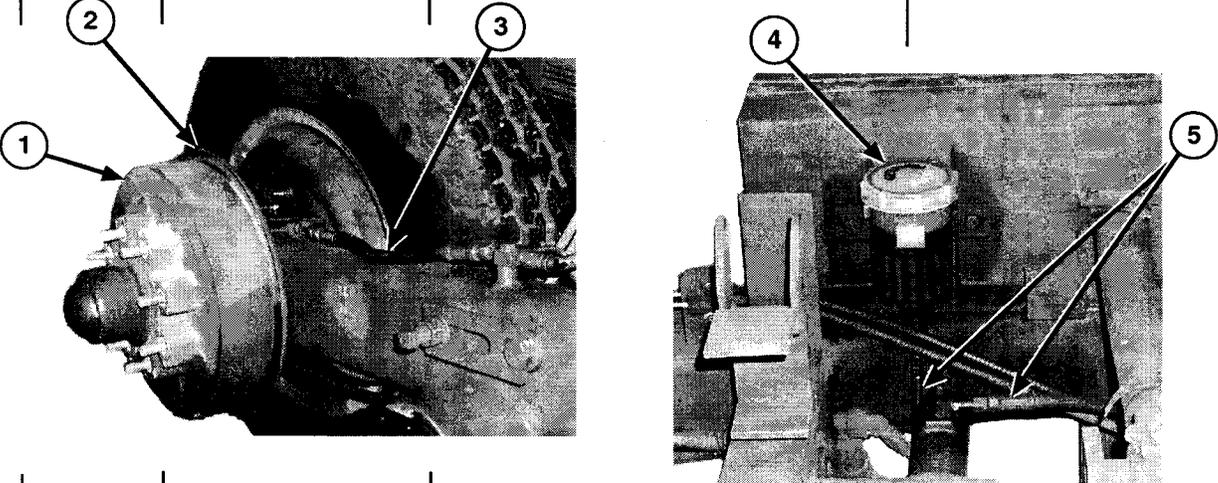
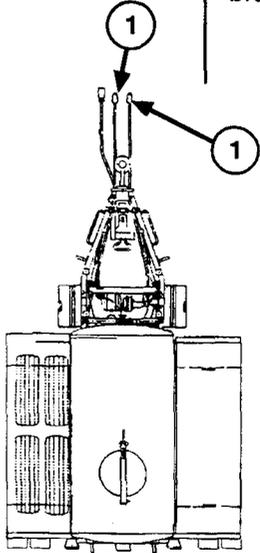
ITEM NO.	INTERVAL	ITEM TO BE INSPECTED	PROCEDURE	NOT FULLY MISSION CAPABLE IF
4	Before	Brake System	<p>Check for fluid leaks at brakedrums (1), backing plate assembly (2), master cylinder (4), and hydraulic brake lines (3 and 5).</p>	Class III leaks are found.
				
5	Before	Operational Air Leak Check	<p>a. Couple trailer to towing vehicle and connect all intervehicular air hoses (para 2-10).</p> <p>b. Start towing vehicle and watch air pressure gage for normal reading. Refer to towing vehicle technical manual for instructions.</p> <p>c. Push towing vehicle brake pedal down to applied position and hold.</p> <p>d. Shut down towing vehicle engine.</p> <p>e. Watch towing vehicle air pressure gage for two minutes. If pressure drops more than 10 percent within two minutes, notify Unit maintenance.</p>	
6	Before	Trailer	Inspect entire chassis for obvious damage, cracks, or broken welds.	Frame is cracked or has damage that would weaken stability in tow or at rest.

TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) FOR THE M1112 (continued)

ITEM NO.	INTERVAL	ITEM TO BE INSPECTED	PROCEDURE	NOT FULLY MISSION CAPABLE IF
7	During	Brake System 	<p>a. Test brake system by coupling trailer to towing vehicle. Check hose connections and make sure towing vehicle air valves are turned on. Actuate service brakes.</p> <p>b. With trailer coupled to towing vehicle, have an assistant actuate service brakes. Listen for air leaks at intervehicular air hoses (1), relay valve (2), and air reservoir (3).</p> <p>c. Be alert for unusual difficulty in stopping that would indicate service brakes are not working properly.</p>	<p>a. Service brakes fail to operate.</p> <p>b. Air leaks are found.</p>

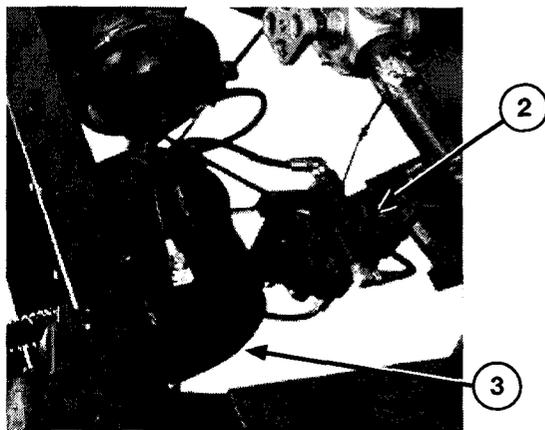


TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) FOR THE M1112 (continued)

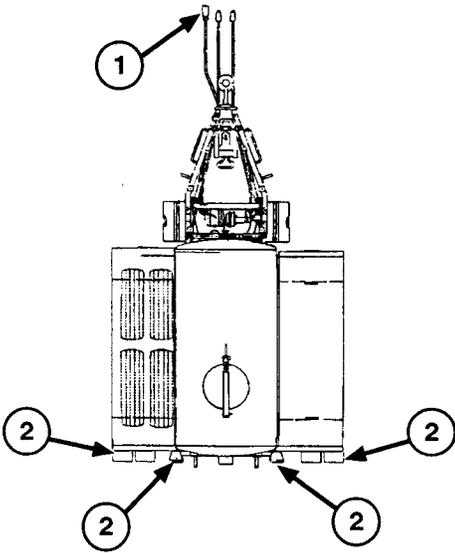
ITEM NO.	INTERVAL	ITEM TO BE INSPECTED	PROCEDURE	NOT FULLY MISSION CAPABLE IF
8	During	Lights and Reflectors	<p style="text-align: center;">NOTE</p> <p>An assistant is required when checking operation of lights.</p> <p>a. If tactical situation permits, connect intervehicular cables (1) to towing vehicle.</p> <p>b. Operate towing vehicle light switch through all settings and check lights (2).</p> <div style="text-align: center;">  </div>	

TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) FOR THE M1112 (continued)

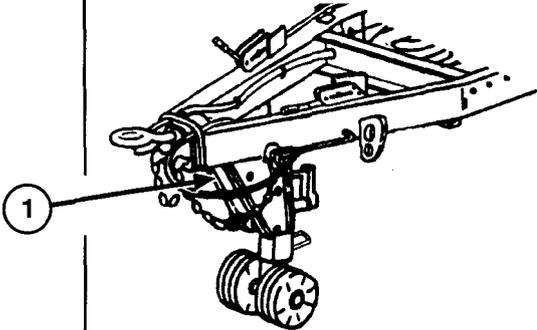
ITEM NO.	INTERVAL	ITEM TO BE INSPECTED	PROCEDURE	NOT FULLY MISSION CAPABLE IF
9	During	Adjustable Caster Assembly	<p>Check adjustable caster assembly (1) for proper mounting, alignment, and general condition.</p> 	Adjustable caster assembly will not secure in stored position or will not support trailer.
10	During	Trailer	<p>a. Be alert for any unusual noises when towing trailer. Stop and investigate any unusual noises.</p> <p>b. Make sure trailer is tracking/following correctly behind towing vehicle, with no side pull.</p>	

TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) FOR THE M1112 (continued)

ITEM NO.	INTERVAL	ITEM TO BE INSPECTED	PROCEDURE	NOT FULLY MISSION CAPABLE IF
11	During	Water Tank	<p>a. When filling, check manhole cover (1), seal, and latch for damage.</p> <p>b. Check forward faucets (2) for leakage and proper operation.</p>	b. One or more faucets are damaged or missing.
12	During	Handbrakes	<p>With trailer coupled to towing vehicle, disconnect intervehicular air hoses from towing vehicle and set handbrakes (2). Move trailer slightly to see if handbrakes hold the wheels. Adjust handbrakes by rotating spring-loaded adjusting knob (1) clockwise to tighten, counterclockwise to loosen. If handbrake still fails to hold notify Unit maintenance.</p>	Handbrakes fail to operate or hold trailer.

TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) FOR THE M1112 (continued)

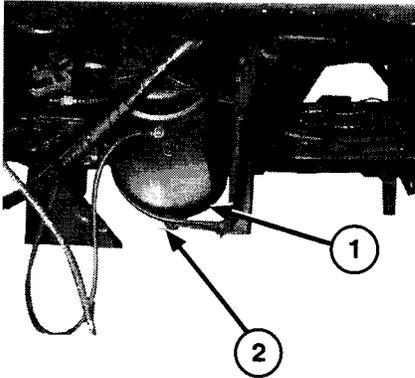
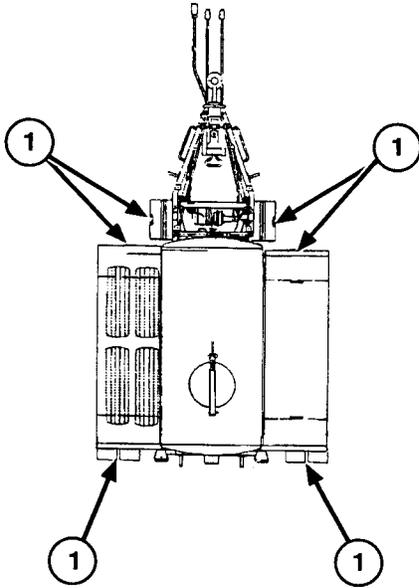
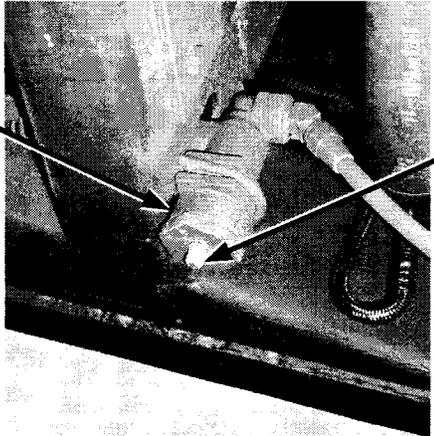
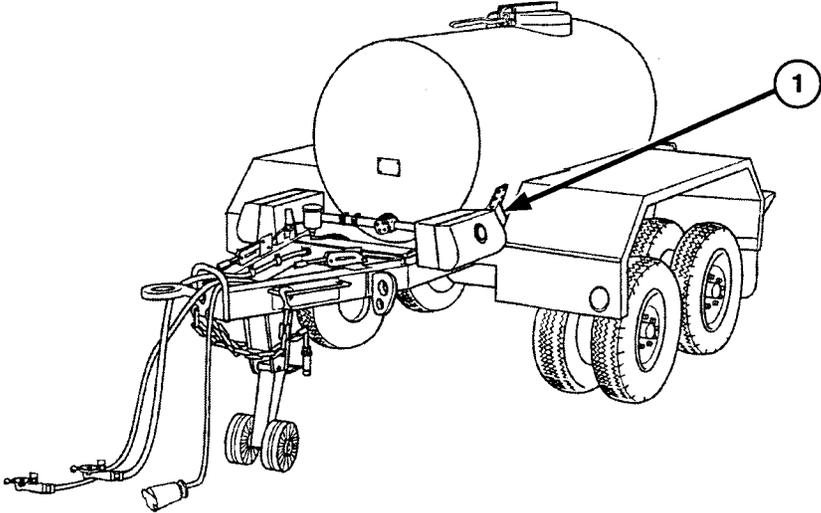
ITEM NO.	INTERVAL	ITEM TO BE INSPECTED	PROCEDURE	NOT FULLY MISSION CAPABLE IF
13	After	Air Tank and Filter	<p>a. Apply handbrakes and open draincock (2) on air reservoir (1) to drain condensation. Close draincock (2).</p> 	
14	Weekly	Tires	<p>Check to make sure that tire pressure is at 60 psi [413.7 kPa] when tires are cool.</p>	
15	Weekly	Lights and Reflectors	<p>Check for presence and damage to reflectors (1).</p> 	

TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) FOR THE M1112 (continued)

ITEM NO.	INTERVAL	ITEM TO BE INSPECTED	PROCEDURE	NOT FULLY MISSION CAPABLE IF
16	Weekly	Air Tank and Filter	<p>Unscrew pipe plug (2) on air filter (1) and drain condensation from air filter. Clean pipe plug with lint-free rag (Item 32, Appendix F) before installing.</p> 	
17	Weekly	Water Tank	<p>a. Check tank interior for contamination (dirt, rust, paint, or chips).</p> <p>b. Check tank mounting screws and bushings (1) for obvious looseness.</p> 	<p>a. Contamination is found in tank interior.</p> <p>b. Tank mounting screws and bushings are missing loose.</p>

Section III. OPERATION UNDER USUAL CONDITIONS

Paragraph Number	Paragraph Title	Page Number
2-9	General	2-14
2-10	Coupling Trailer to Towing Vehicle	2-14
2-11	Towing Instructions	2-16
2-12	Uncoupling Trailer from Towing Vehicle	2-16
2-13	Operating Water Tank	2-17

2-9. GENERAL.

- a. This section contains instructions for safely operating the water tank trailer under usual conditions. Unusual conditions are defined and described in Section IV of this chapter.
- b. Before operating a new or reconditioned trailer, make sure Unit maintenance services the vehicle.
- c. Perform all *Before* PMCS listed in Table 2-1 before operating the trailer to make sure that all adjustments and checks are completed.
- d. Review all towing instructions in towing vehicle manual to prepare for coupling and uncoupling operations.

2-10. COUPLING TRAILER TO TOWING VEHICLE.

WARNING

All personnel must stand clear of towing vehicle and trailer during coupling operation. Failure to follow this warning may result in serious injury or death.

WARNING

Have assistant direct you during backing operations. Failure to follow this warning may result in serious injury or death.

WARNING

Landing gear weight 80 LB, raising/lowering of landing gear requires two person's. Failure to follow this warning may result in serious injury or death.

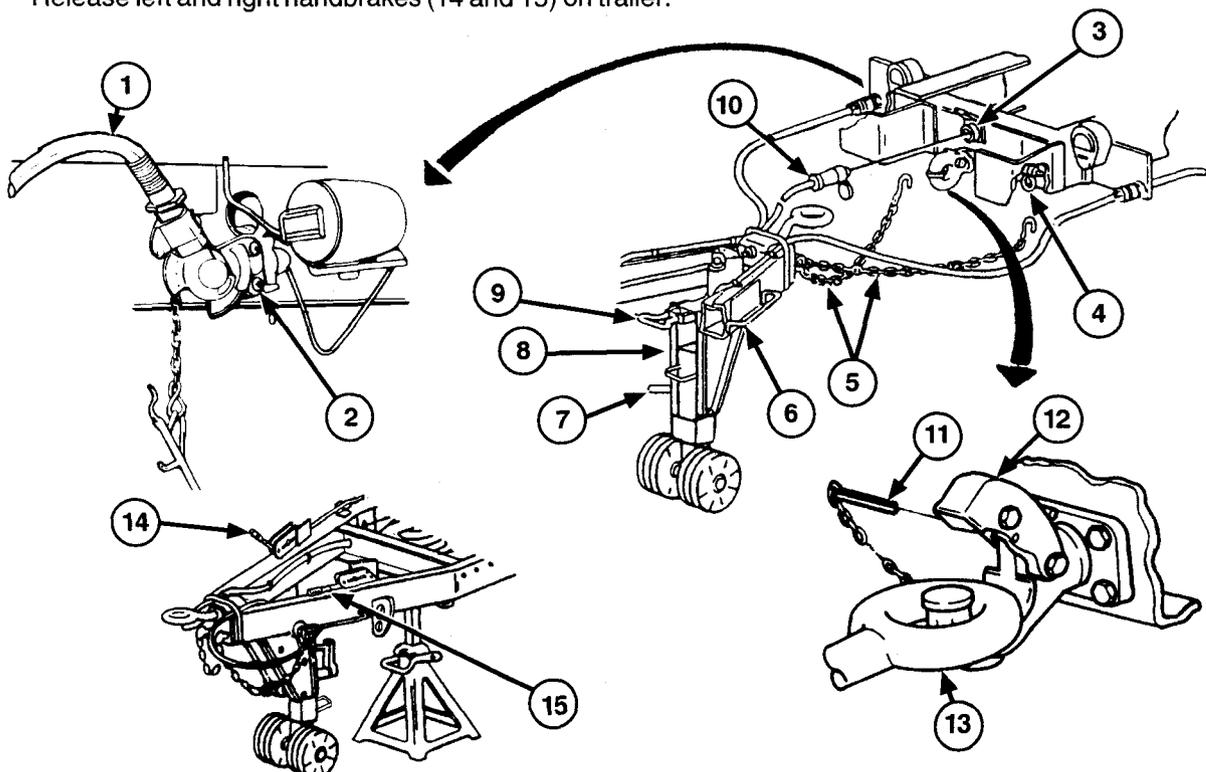
2-10. COUPLING TRAILER TO TOWING VEHICLE (continued).

- a. Remove lockpin (11) and open towing vehicle pintle (12).
- b. Using handcrank (7), crank adjustable caster assembly (8) down until drawbar ring (13) is above divided portion of towing vehicle pintle (12).
- c. Align towing vehicle with trailer and slowly back up towing vehicle until drawbar ring (13) is centered in pintle (12).
- d. Use handcrank (7) on trailer to lower adjustable caster assembly (8) until weight of trailer is supported by towing vehicle.
- e. Close pintle (12) and install lockpin (11).

WARNING

Do not run safety chains parallel. They must be crossed under drawbar ring to prevent excess shifting of trailer in case its become uncoupled during operation. Failure to follow this warning may result in serious injury or death to personnel and damage to equipment.

- f. Remove two safety chains (5) from lifting handles (6). Cross safety chains (5) under drawbar ring (13) and attach to two towing vehicle eyebolts (4).
- g. Connect intervehicular cable (10) to towing vehicle receptacle (3).
- h. Remove two dummy covers from two towing vehicle air couplings (2). Connect two intervehicular air hoses (1) to air couplings (2). Turn on two towing vehicle air valves to supply pressure to trailer service air system.
- i. Pull release handle (9) and raise adjustable caster assembly (8) into locked position. Make sure release handle is fully engaged.
- j. Release left and right handbrakes (14 and 15) on trailer.



2-11. TOWING INSTRUCTIONS.

- a. Perform all *During* PMCS listed in Table 2-1 while operating the trailer.
- b. When towing the trailer, overall length of the unit must be kept in mind when passing other vehicles and when turning.
- c. Turning and backing operations will be affected because towing vehicle and trailer act as a hinged unit.
- d. Follow prescribed speeds at all times (para 1-10).
- e. When parking for extended periods, set the handbrakes on both towing vehicle and trailer.
- f. If trailer or trailer and towing vehicle are parked on a hill, block wheels.
- g. Refer to FM 21-305 for further information on proper driving practices.

2-12. UNCOUPLING TRAILER FROM TOWING VEHICLE.

WARNING

All personnel must stand clear of towing vehicle and trailer during uncoupling operation. Failure to follow this warning may result in serious injury or death.

NOTE

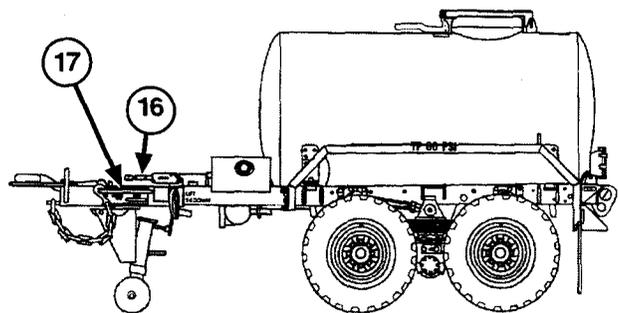
Adjustable caster assembly is heavy. Hold ground pad handle firmly to support adjustable caster assembly while lowering.

- a. Pull release handle (10) and use ground pad handle (7) to lower adjustable caster assembly (9) on trailer into down and locked position.
- b. Use handcrank (8) to raise trailer until weight of trailer is on adjustable caster assembly (9) and drawbar ring (14) is centered in towing vehicle pintle (13).

WARNING

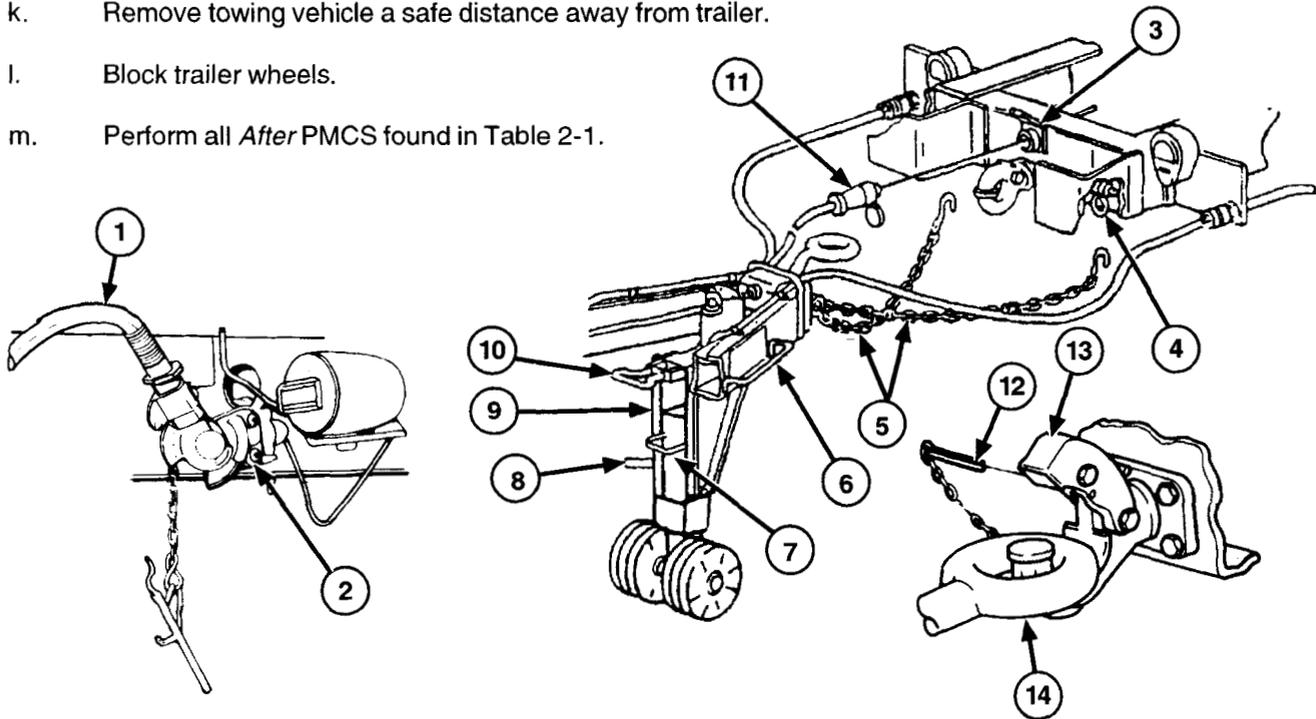
Do not park trailer on crowned or rutted inclined surfaces. The parking brakes will not be effective unless all four front wheels have firm contact with the ground. Failure to follow this warning may result in serious injury or death.

- c. Apply left and right handbrakes on trailer by lowering handbrake lever assemblies (16) until they are parallel to frame assembly (17).
- d. Remove intervehicular cable (11) from towing vehicle receptacle (3) and attach to cable brackets on trailer.
- e. Turn off trailer service air system by turning off two air valves on towing vehicle.
- f. Rotate and release intervehicular air hoses (1) from two towing vehicle air couplings (2).
- g. Install two dummy covers in towing vehicle air couplings (2). Stow two intervehicular air hoses (1) on two trailer brackets.



2-12. UNCOUPLING TRAILER FROM TOWING VEHICLE (continued).

- h. Remove lockpin (12) and open towing vehicle pintle (13).
- i. Remove two safety chains (5) from towing vehicle eyebolts (4) and stow on trailer lifting handles (6).
- j. Use handcrank (8) to raise trailer until weight of trailer is clear of pintle (13).
- k. Remove towing vehicle a safe distance away from trailer.
- l. Block trailer wheels.
- m. Perform all *After* PMCS found in Table 2-1.



2-13. OPERATING WATER TANK.

General

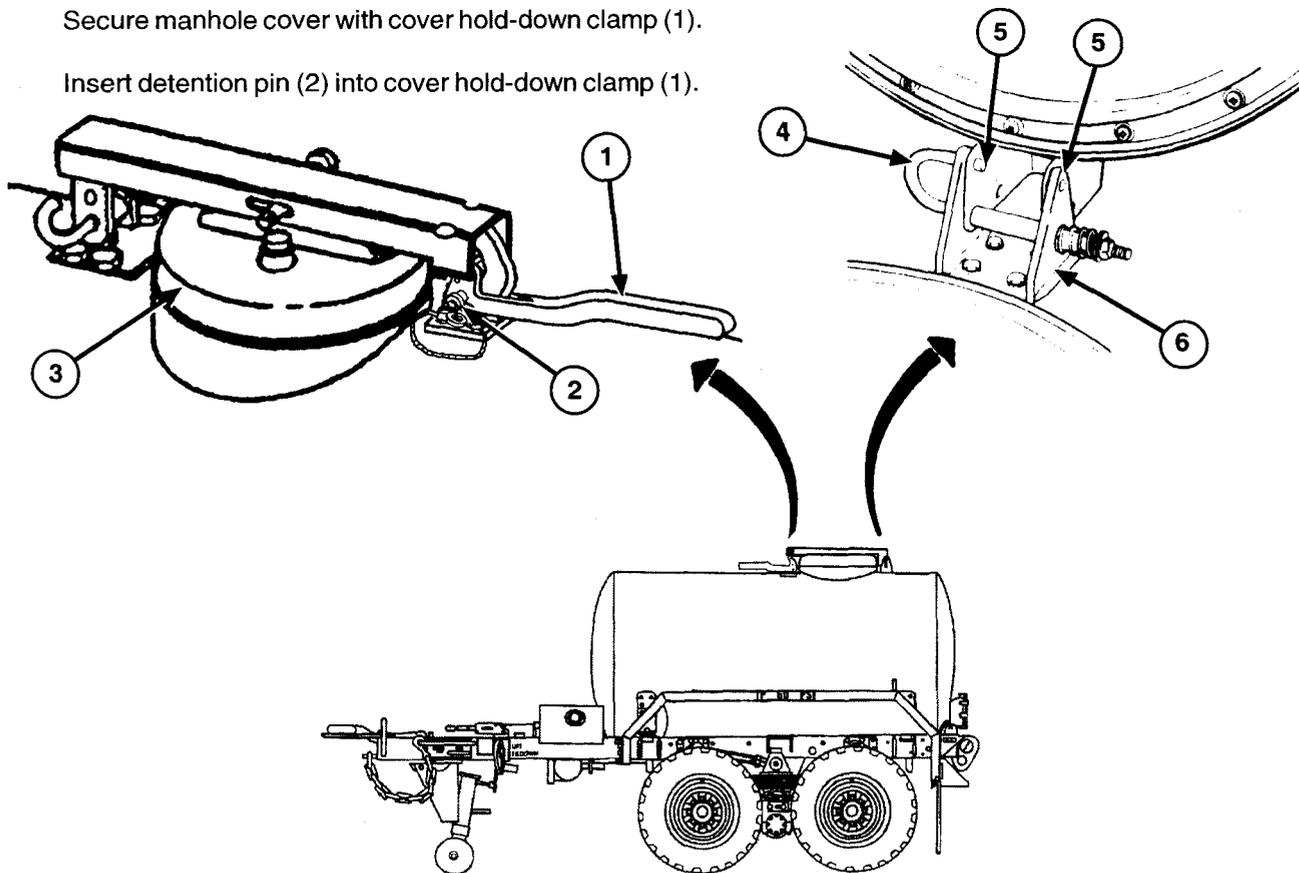
Operate the water tank in accordance with standard operating procedures. Be sure to perform the *During* PMCS listed in Table 2-1.

Water Tank**WARNING**

- Use extreme care to ensure that no foreign material enters water tank. The highest sanitary standards must be followed when handling drinking water. Serious illness may result from impure, contaminated drinking water.
- When water tank is used for NONPOTABLE WATER, water tank must be so marked.

2-13. OPERATING WATER TANK (continued).

- a. Remove detention pin (2), open manhole cover (3) by pulling up on hold-down clamp lever (1). Pull looped end of J-bolt (4) and lift manhole cover (3) until two holes (5) on bracket (6) and manhole cover align. Release J-bolt (4).
- b. Fill water tank through manhole opening.
- c. Pull looped end of J-bolt (4) and close manhole cover (3). Release J-bolt (4) into two holes (5) on bracket (6).
- d. Secure manhole cover with cover hold-down clamp (1).
- e. Insert detention pin (2) into cover hold-down clamp (1).



Draining Water Tank

WARNING

If water tank was filled with nonpotable water, water tank must be flushed out with clean potable water and drained. Do not allow water tank to sit for extended periods of time with any amount of liquid in it. Standing water will result in contamination and food poisoning. **KEEP WATER TANK CLEAN AT ALL TIMES.** Failure to follow this warning may result in serious illness or death to personnel.

NOTE

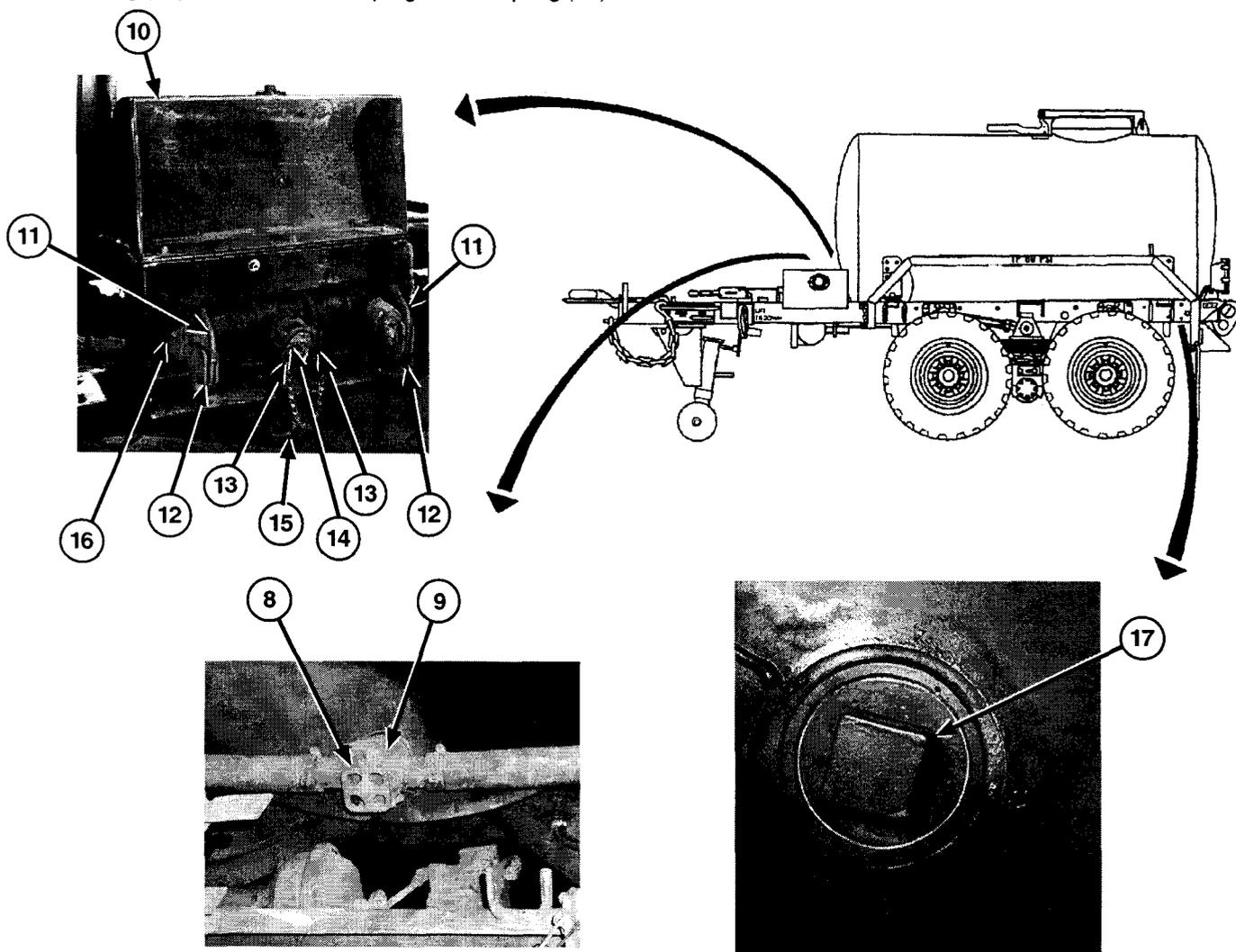
- To clean interior of water tank body, refer to FM 21-10 and TB MED 577 for information on cleaning and disinfecting procedures.
- Open top and bottom handles to drain water out of valve in subzero weather.

2-13. OPERATING WATER TANK (continued).

- a. Close manifold valve (9) by turning center handle (8) counterclockwise.
- b. Press down on two levers (11) and drain remaining water from piping (16).
- c. Remove drain plug (17) from water tank and drain liquid from water tank.
- d. Install drain plug (17) on water tank.

Dispensing Consumable Liquids from Forward Faucets

- a. Pull out and release fastener (15) and lift faucet box cover (10) until open.
- b. Turn center handle (8) of manifold valve (9) clockwise to release liquid to two faucets (12).
- c. Press down on two levers (11) to allow liquid to flow from faucets (12). Release levers (11) to stop flow.
- d. Water tank is equipped with quick-disconnect coupling (14) for use with field kitchens. To use, pull out coupling ring (13) and remove dust plug from coupling (14).



Section IV. OPERATION UNDER UNUSUAL CONDITIONS

Paragraph Number	Paragraph Title	Page Number
2-14	General	2-20
2-15	Operation in Extreme Cold	2-20
2-16	Operation in Extreme Heat	2-22
2-17	Operation in High Humidity and Saltwater Areas	2-22
2-18	Operation in Mud and Snow	2-22
2-19	Operation in Dusty or Sandy Areas	2-22
2-20	Fording	2-22

2-14. GENERAL.

- a. This section contains special instructions for operating and servicing the trailer under unusual conditions.
- b. In addition to performing all normal PMCS, special care must be taken in regard to cleaning and lubrication when extremes in temperature, humidity, and terrain conditions are present or anticipated. Proper cleaning, lubrication, storage, and handling ensures proper operation and function and also guards against excessive wear.

2-15. OPERATION IN EXTREME COLD.

CAUTION

To ensure that water tank trailer is not damaged, approved practices and precautions must be followed. FM 9-207 contains general cold weather information applicable to water tank trailers.

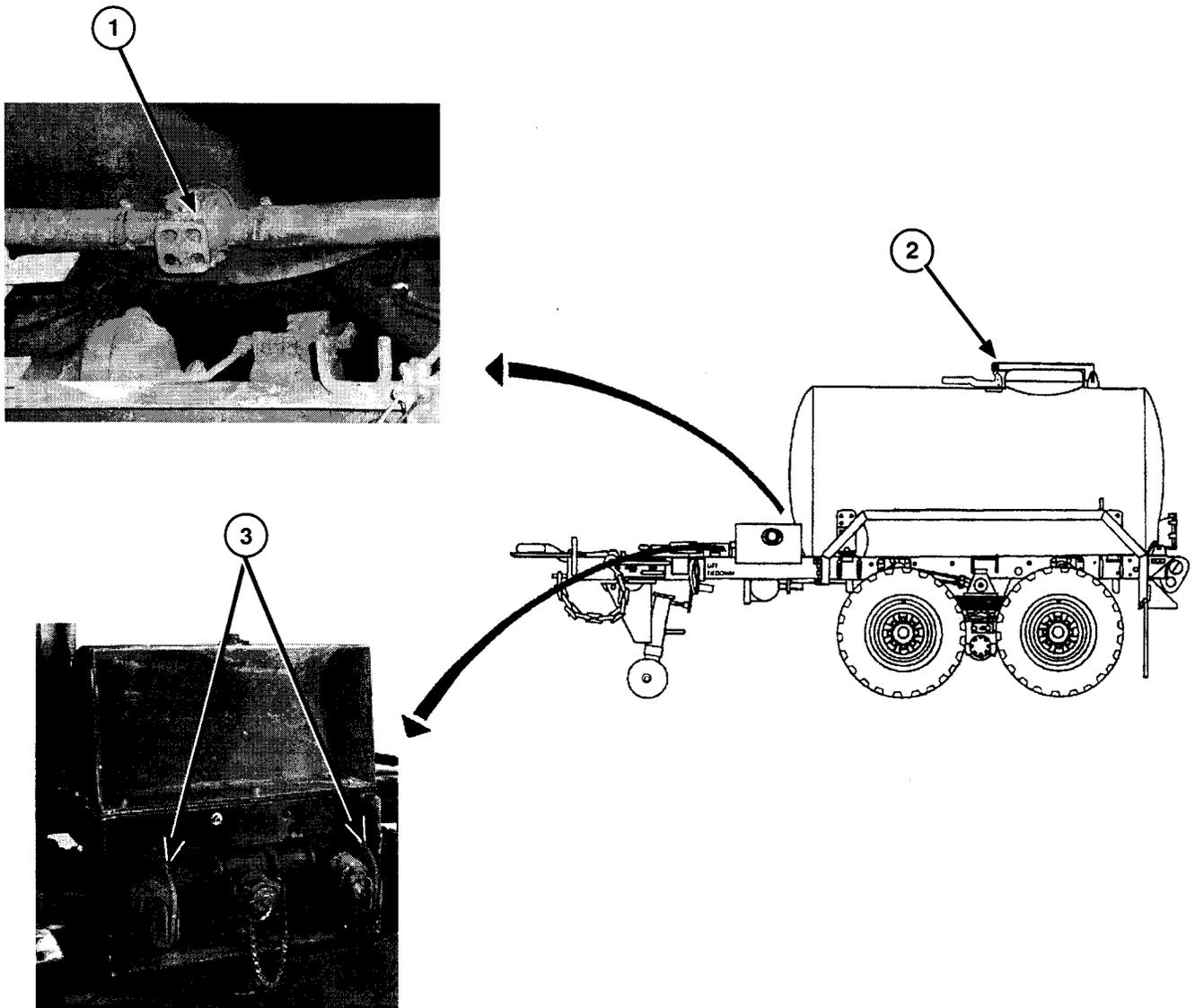
- a. Extensive preparation of materiel scheduled for operation in extreme cold is necessary. Refer to FM 9-207 and FM 21-305.
- b. Refer to Appendix I for proper lubrication during extreme cold weather conditions.

CAUTION

Exercise care when removing accumulations of ice, mud, and snow from water tank trailer and water tank.

2-15. OPERATION IN EXTREME COLD (continued).

- c. To prevent damage to water tank trailer in extreme cold, use the following procedures:
1. In areas where temperatures fall below 32°F (0°C), manhole cover (2) should be kept tightly closed.
 2. After each use, drain piping. Close manifold valve (1) by pushing in, and then depress two faucet levers (3) to drain water from piping.
 3. If the temperature is expected to fall below 0°F (-18°C), the trailer should be placed in a shelter if possible.



2-16. OPERATION IN EXTREME HEAT.

- a. Refer to Appendix I for proper lubrication during extreme heat conditions. Adequate lubrication is essential.
- b. Keep tires covered from direct sunlight to prevent increases in air pressure and deterioration of rubber.

2-17. OPERATION IN HIGH HUMIDITY AND SALTWATER AREAS.

- a. Moist and salty areas can destroy the rust preventative qualities of oils and greases. When equipment is active, exposed surfaces should be cleaned and lubricated daily. Refer to Appendix I for proper lubrication in high humidity and saltwater areas.
- b. When equipment is inactive, unpainted parts should be coated with lubricating oil (Item 30, Appendix F). All covers and caps should be in place.

2-18. OPERATION IN MUD AND SNOW.

- a. After operation in mud or snow, have Unit maintenance inspect and perform wheel bearing maintenance as required.
- b. Refer to FM 21-305 for special instructions on driving hazards in snow. For better traction, reduce air pressure to 25 psi (172 kPa).
- c. Immediately after operation in mud or snow, thoroughly clean, inspect, and lubricate if tactical situation permits. Refer to Appendix I for proper lubrication instructions.
- d. Inspect, clean, and lubricate frequently when operating in mud. Refer to Appendix I for proper lubrication instructions.

2-19. OPERATION IN DUSTY OR SANDY AREAS.

- a. Inspect, clean, and lubricate frequently when operating in dusty or sandy areas. Refer to Appendix I, for proper lubrication instructions.
- b. Make sure no dust or sand enters exposed mechanisms or lubrication fittings during inspections and repair operations. Cover exposed parts with tarpaulins or other suitable cover during disassembly and assembly.
- c. When beginning operations in dusty or sandy areas, remove lubricants from exposed components, such as landing gear, if tactical situation permits. Grease and oil will cause dust and sand to accumulate and act as an abrasive, which will cause rapid wear.

2-20. FORDING.

- a. Refer to towing vehicle operating instructions in towing vehicle technical manual for information on fording operations. Towing vehicle instructions are also applicable.

2-20. FORDING (continued).

- b. Refer to TM 9-238 for instruction on deepwater fording and deepwater fording kits.
- c. Fording depth of water tank trailer is limited to manhole cover. If trailer is properly sealed, fording depth limit is to the towing vehicle depth.
- d. If tactical situation permits, perform the following services immediately after fording trailer:
 - 1. Notify Unit maintenance to remove wheel and rim assemblies and clean them thoroughly with cleaning compound (Item 8, Appendix F). Dry all working components of handbrakes and wheel bearings. Lubricate handbrakes and underbody (Appendix I and Table 4-1).
 - 2. Immersion in saltwater greatly increases rusting and corrosion, especially on unpainted surfaces. Remove all traces of saltwater and salt deposits from all areas of the trailer. Apply lubricating oil (Item 30, Appendix F). Notify Unit maintenance that complete disassembly and assembly may be needed.

CHAPTER 3 OPERATOR MAINTENANCE

Section I. OPERATOR/CREW TROUBLESHOOTING PROCEDURES

Paragraph Number	Paragraph Title	Page Number
3-1	General	3-1
3-2	Explanation of Columns	3-1
3-3	Troubleshooting Malfunction Index	3-2
Table 3-1	Operator/Crew Troubleshooting	3-3

3-1. GENERAL.

- a. This section provides information for identifying and correcting malfunctions that may develop while operating your trailer.
- b. The Troubleshooting Malfunction Index (para 3-3) lists common malfunctions that may occur and refers you to the proper page in Table 3-1, Operator/Crew Troubleshooting, for a troubleshooting procedure.
- c. If you are unsure of the location of an item mentioned in troubleshooting, refer to paragraph 1-11 or to the maintenance task in this manual where the item is replaced.
- d. Before performing troubleshooting, read and follow all safety instructions found in the Warning Summary at the beginning of this manual.
- e. This section cannot list all the malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed or is not corrected by the corrective action listed, notify your supervisor.
- f. When troubleshooting a malfunction:
 - Locate the symptom or symptoms in the Troubleshooting Malfunction Index (para 3-3) that best describe the malfunction.
 - Turn to the page in Table 3-1 where the troubleshooting procedures for the malfunction in question are described. Headings at the top of each page show how each troubleshooting procedure is organized: MALFUNCTION, TEST OR INSPECTION, and CORRECTIVE ACTION. The malfunctions, tests or inspections, and corrective actions are indented to line up under the appropriate heading.
 - Perform each step in the order listed until the malfunction is corrected. DO NOT perform any maintenance task unless the troubleshooting procedure tells you to do so.

3-2. EXPLANATION OF COLUMNS.

Explanations of the columns in Table 3-1 are as follows:

MALFUNCTION. A visual or operational indication that something is wrong with the trailer.

TEST OR INSPECTION. A procedure to isolate the problem in a component or system.

CORRECTIVE ACTION. A procedure to correct the problem.

3-3. TROUBLESHOOTING MALFUNCTION INDEX.

Troubleshooting Procedure	Page
ELECTRICAL SYSTEM	
All lamps fail to light	3-3
One stoplight lamp or taillight lamp does not light	3-3
All chassis lights are on and clearance lights are off	3-3
BRAKES	
Handbrakes fail to hold trailer	3-4
Brakes drag when trailer is towed	3-4
Brakes are locked; wheels will not turn	3-4
Brakes will not hold when service brakes are applied	3-4
Air is leaking when intervehicular air hoses are connected	3-5
Fluid is leaking around master cylinder or wheel cylinder	3-5
Trailer jerks when service brakes are applied	3-5
Trailer service brakes lock up when towing vehicle brakes are applied	3-5
TIRES AND WHEELS	
Wheels wobble during movement	3-5
Tires are wearing unevenly	3-5
FRAME ASSEMBLY AND WATER TANK	
Frame assembly components are broken or damaged	3-6
Leaks are found around water tank fittings or weld joints	3-6

Table 3-1. OPERATOR/CREW TROUBLESHOOTING

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
-------------	--------------------	-------------------

NOTE

- For corrective actions or malfunctions not listed in Table 3-1, notify Unit maintenance.
- Wherever the word "lubricate" appears, see Appendix I.
- Malfunctions, tests or inspections, and corrective actions are listed/indented according to the heading at the top of each page.

ELECTRICAL SYSTEM**1. ALL LAMPS FAIL TO LIGHT.**

Check to make sure intervehicular cable is properly connected and secured.

Remove intervehicular cable from towing vehicle receptacle, then insert intervehicular cable plug in towing vehicle receptacle to ensure a good connection.

If still inoperative, notify Unit maintenance.

2. ONE STOPLIGHT LAMP OR TAILLIGHT LAMP DOES NOT LIGHT.

Step 1. Check for loose plug connectors at affected light.

Connect loose plug connectors.

Step 2. Check for broken wires and stripped insulation.

Notify Unit maintenance.

Step 3. Check for moisture inside composite light assembly.

Notify Unit maintenance.

3. ALL CHASSIS LIGHTS ARE ON AND CLEARANCE LIGHTS ARE OFF.

Step 1. Check lens and light assembly for damage.

If damaged notify Unit maintenance.

If lens and light assembly are not damaged, proceed to step 2.

Step 2. Check for dirty or corroded connections.

Clean connections if dirty or corroded.

If above step does not correct malfunction, notify Unit maintenance.

Table 3-1. OPERATOR/CREW TROUBLESHOOTING (continued)

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

BRAKES

4. HANDBRAKES FAIL TO HOLD TRAILER.

Check to see if handbrakes need adjustment.

Perform minor adjustment at handbrake lever (para. 3-4).

If minor adjustment does not correct fault, notify Unit maintenance.

5. BRAKES DRAG WHEN TRAILER IS TOWED.

Check to make sure handbrake lever assemblies have been disengaged.

Disengage handbrake.

Notify Unit maintenance if brakes still drag.

6. BRAKES ARE LOCKED; WHEELS WILL NOT TURN.

Step 1. Check for closed air valve on towing vehicle.

Open air valve. Refer to towing vehicle technical manual for instructions.

Step 2. Drain air from air reservoir. If brakes do not unlock, perform step 3.

Step 3. Make sure service brake intervehicular air hose is connected to proper air coupling on towing vehicle.

Connect intervehicular air hoses to proper towing vehicle air couplings.

7. BRAKES WILL NOT HOLD WHEN SERVICE BRAKES ARE APPLIED.

Step 1. Check for presence of brake fluid in master cylinder.

Notify Unit maintenance if brake fluid level is low.

Step 2. Make sure towing vehicle air valves are turned on.

Turn on towing vehicle air valves. Refer to towing vehicle technical manual.

Step 3. Check for evidence of leaking brake fluid or water around disk and rim assembly and around backing plate assembly, which would indicate saturated brake linings.

Notify Unit maintenance if brake fluid leaks are found.

Dry service brakes by applying service brakes while trailer is in motion.

Table 3-1. OPERATOR/CREW TROUBLESHOOTING (continued)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
BRAKES (continued)		
8. AIR IS LEAKING WHEN INTERVEHICULAR AIR HOSES ARE CONNECTED.	No test or inspection is required.	Notify Unit maintenance.
9. FLUID IS LEAKING AROUND MASTER CYLINDER OR WHEEL CYLINDER.	No test or inspection is required.	Notify Unit maintenance.
10. TRAILER JERKS WHEN SERVICE BRAKES ARE APPLIED.	No test or inspection is required.	Notify Unit maintenance.
11. TRAILER SERVICE BRAKES LOCK UP WHEN TOWING VEHICLE BRAKES ARE APPLIED.	No test or inspection is required.	Notify Unit maintenance.
TIRES AND WHEELS		
12. WHEELS WOBBLE DURING MOVEMENT.	Step 1. Check to make sure wheel nuts are tight.	Tighten wheel nuts. Notify Unit maintenance to apply proper torque.
	Step 2. Have Unit maintenance check for loose wheel bearings and bent wheels.	
13. TIRES ARE WEARING UNEVENLY.	Step 1. Check for proper tire pressure.	Inflate tires to 60 psi (413 kPa).
	Step 2. Check to make sure wheel nuts are tight.	Tighten wheel nuts. Notify Unit maintenance to apply proper torque.
	Step 3. Have Unit maintenance check brake adjustment, suspension system, and walking beam assembly alignment.	

Table 3-1. OPERATOR/CREW TROUBLESHOOTING (continued)

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

FRAME ASSEMBLY AND WATER TANK

14. FRAME ASSEMBLY COMPONENTS ARE BROKEN OR DAMAGED.

No test or inspection is required.

Notify Unit maintenance.

15. LEAKS ARE FOUND AROUND WATER TANK FITTINGS OR WELD JOINTS.

No test or inspection is required.

Notify Unit maintenance.

Section II. OPERATOR'S MAINTENANCE PROCEDURES

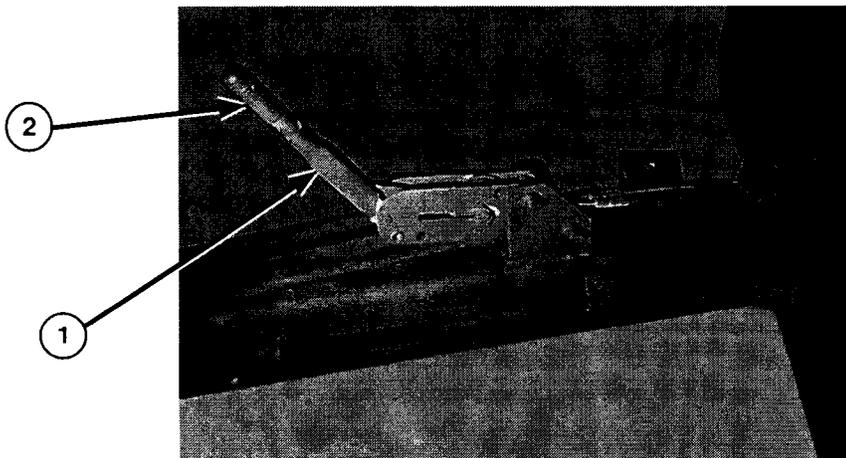
3-4. HANDBRAKE LEVER ASSEMBLY ADJUSTMENT.

WARNING

If trailer is not coupled to towing vehicle, make sure wheels are securely blocked. Failure to block wheels securely may cause trailer to roll, resulting in serious injury or death to personnel and damage to equipment.

NOTE

- When handbrake lever assembly is properly adjusted, it should require only one-third of its full travel to apply.
 - Both handbrake lever assemblies are adjusted the same way. This procedure covers one handbrake lever assembly.
- a. Release handbrake lever assembly (1).
 - b. Turn adjustment knob (2) clockwise to tighten or counterclockwise to loosen.
 - c. Apply handbrake lever assembly (1) and check to make sure front inner and outer wheel locks. Repeat steps a and b as required.



CHAPTER 4 UNIT MAINTENANCE

Section I. REPAIR PARTS; TOOLS; SPECIAL TOOLS; TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE); AND SUPPORT EQUIPMENT

Paragraph Number	Paragraph Title	Page Number
4-1	General	4-1
4-2	Common Tools and Equipment	4-1
4-3	Special Tools, TMDE, and Support Equipment	4-1
4-4	Repair Parts	4-1

4-1. GENERAL.

This chapter describes the maintenance tasks to be performed on the M1112 water tank trailer.

4-2. COMMON TOOLS AND EQUIPMENT.

Common tools and equipment are issued to Unit maintenance personnel for maintaining the M1112. Common tools and equipment should not be used for purposes other than those prescribed and should be properly stored when not in use. Refer to the *Modified Table of Organization and Equipment (MTOE)* for authorized common tools and equipment applicable to your unit.

4-3. SPECIAL TOOLS LIST, TMDE, AND SUPPORT EQUIPMENT.

One special tool, a 2-1/4 inch (3/4 inch drive) socket (Appendix E) is authorized for the water tank trailer. There is no TMDE authorized for the water tank trailer. Support equipment needed to operate this equipment is limited to the towing vehicle.

4-4. REPAIR PARTS.

Repair parts are listed and illustrated in the repair parts and special tools list (Appendix E) of this manual.

Section II. SERVICE UPON RECEIPT

Paragraph Number	Paragraph Title	Page Number
4-5	General	4-2
4-6	Inspection Instructions	4-2
4-7	Servicing Instructions	4-2

4-5. GENERAL.

When a new, used, or reconditioned water tank trailer is received, determine whether it has been properly prepared for service and is capable of performing its mission. Follow the inspection instructions in paragraph 4-6 and servicing instructions in paragraph 4-7.

4-6. INSPECTION INSTRUCTIONS.

- a. Refer to DD Form 1397 for procedures on unpacking the water tank trailer.
- b. Remove all straps, plywood, tape, seals, and wrappings.

WARNING

Drycleaning solvent PF05 is combustible. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat.

- c. Remove rust preventive compound from coated exterior parts of the water trailer using drycleaning solvent (Item 12, Appendix F) and rags (Item 32, Appendix F).
- d. Inspect the water tank trailer for any damage incurred during shipment. Check also to see if the equipment has been modified.
- e. Check the equipment against the packing list to ensure that the shipment is complete. Report any discrepancies in accordance with instructions in DA Pam 738-750.

4-7. SERVICING INSTRUCTIONS.

- a. Perform all Operator/Crew and Unit preventive maintenance checks and service (PMCS) (Table 4-1 and Table 4-1). Schedule the next PMCS for both Operator and Unit on DD Form 314.
- b. Lubricate all lubrication points as described in Appendix I, regardless of interval.
- c. Report any problems on DA Form 2407.
- d. Perform a break-in road test of 25 miles (40 km) at a maximum speed of 50 miles per hour (80 kph).

Section III. UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) AND LUBRICATION INSTRUCTIONS AND MANDATORY REPLACEMENT PARTS

Paragraph Number	Paragraph Title	Page Number
4-8	General	4-3
4-9	Service Intervals	4-3
4-10	Reporting Repairs	4-3
4-11	General PMCS Procedures	4-3
4-12	Specific PMCS Procedures	4-4
Table 4-1	Unit Preventive Maintenance Checks and Services (PMCS) for the M1112	4-5

4-8. GENERAL.

- a. To ensure that the water tank trailer is ready for operation at all times, it must be inspected systematically so that defects can be detected and corrected before they result in serious damage or failure. Table 4-1 contains a listing of preventive maintenance checks and services (PMCS) to be performed by Unit maintenance personnel.
- b. While performing PMCS, read and follow all safety instructions found in the warning summary at the front of this manual. Keep in mind all WARNINGS and CAUTIONS.

4-9. SERVICE INTERVALS.

Perform the PMCS procedures listed in Table 4-1 at the following intervals:

- (1) Perform *Semiannual* PMCS procedures once every six months.
- (2) Perform *Annual* PMCS procedures once each year.

4-10. REPORTING REPAIRS.

Report all defects and corrective actions on SF Form 368. If a serious problem is found, report it to your supervisor immediately.

4-11. GENERAL PMCS PROCEDURES.

WARNING

Drycleaning solvent PF05 is combustible. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat.

- a. Keep equipment clean. Dirt, oil, and debris may cover up a serious problem. Clean as you work and as needed. Use drycleaning solvent (Item 12, Appendix F) on all metal surfaces. Use dishwashing compound (Item 11, Appendix F) and water on rubber, plastic, and painted surfaces.

4-11. GENERAL PMCS PROCEDURES (continued).

- b. While performing PMCS, inspect the following components:
- (1) **Bolts, Nuts, and Screws.** Make sure they are not loose, missing, bent, or broken. Tighten any that are loose.
 - (2) **Welds.** Inspect for gaps where parts are welded together. Report bad welds to your supervisor.
 - (3) **Electrical Wires or Connectors.** Inspect for cracked or broken insulation, bare wires, and loose or broken connectors. Make repairs or replace as required.
 - (4) **Hoses, Lines, and Fittings.** Inspect for wear, damage, and leaks. Make sure clamps and fittings are tight. If a leak originates from a loose fitting or connector, tighten it. If a component is broken or worn out, correct problem as authorized by the maintenance allocation chart (MAC) (Appendix B). If not authorized, report it to your supervisor.

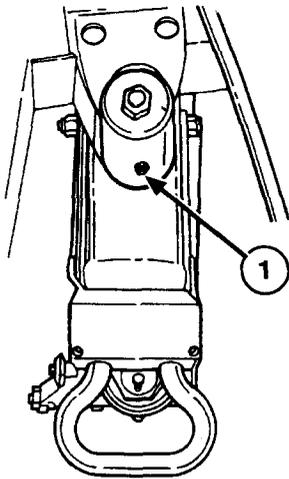
4-12. SPECIFIC PMCS PROCEDURES.

- a. Unit PMCS procedures are listed in Table 4-1. Always perform PMCS in the order listed. Once your routine becomes a habit, anything that is not right can be spotted in a minute. If anything wrong is discovered through PMCS, perform the appropriate troubleshooting task found in Section IV of this chapter. If any component or system is not serviceable or if given service does not correct the problem, notify your supervisor.
- b. The PMCS procedures listed in Table 4-1 may be performed at three intervals. Before performing preventive maintenance, read all the checks required for the applicable interval and prepare tools needed to make all checks. Have several clean rags (Item 32, Appendix F) handy. Perform ALL inspections at applicable intervals.
- c. Explanations of the column headings in Table 4-1 are as follows:
- (1) **Item No.** The item number column of your PMCS table is to be used for reference. When completing DA Form 2404, include the item number for the check/service indicating a fault. Item numbers also appear in the order that you must do checks and services for the intervals listed.
 - (2) **Interval.** This column of your PMCS table tells you when to do a certain check or service.
 - (3) **Location, Item To Check/Service.** This column of your PMCS table provides the location and the item to be checked or serviced.
 - (4) **Procedure.** This column of your PMCS table tells you how to do the required checks and services. Carefully follow these instructions. If you do not have the tools, or if the procedure tells you to, have Unit maintenance do the work.
 - (5) **Not Fully Mission Capable If.** Information in this column tells you what faults will keep the equipment from being capable of performing its mission. If PMCS reveals faults listed in this column, do not operate the equipment. Follow standard operating procedures for maintaining the equipment or reporting equipment failures.

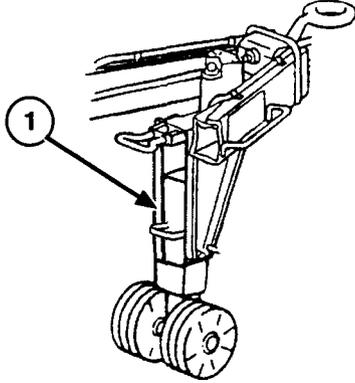
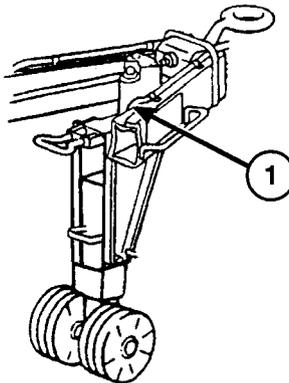
TABLE 4-1. UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) FOR THE M1112

ITEM NO.	INTERVAL	ITEM TO BE INSPECTED	PROCEDURE	NOT FULLY MISSION CAPABLE IF
NOTE				
Perform Operator/Crew PMCS prior to or along with Unit PMCS.				
1	Semi-annually	Lights	Replace any broken or cracked lenses or unserviceable lights (para 4-22 and 23).	Any light is missing or inoperative.
2	Semi-annually	Intervehicular Cable	Check intervehicular cable for cuts, breaks, and frayed wires or damaged plug (para 4-27).	Intervehicular cable is cut, broken, or frayed or plug is damaged.
3	Semi-annually	Brakes	<p>a. Check master cylinder reservoir (1) fluid level. Fill to within 1/2 inch (12.7 mm) from top.</p> <div style="text-align: center;"> </div> <p>b. Clean, inspect, and repair or replace internal service brake parts as required (para 4-36).</p> <p>c. Adjust brakeshoes (para 4-36).</p> <p>d. Check handbrake cable adjustment. Adjust as required (para 3-4).</p>	<p>b. Service brakes damaged or inoperative.</p> <p>c. Brakeshoes will not adjust.</p> <p>d. Handbrakes will not adjust or are damaged.</p>
4	Semi-annually	Intervehicular Air Hoses	Check air hoses for cuts, breaks, and damaged air couplings. Replace if defective (para 4-41).	Air hoses or air couplings are damaged.
5	Semi-annually	Air Reservoir	Check air reservoir and lines for damage and make sure fittings are tight. Replace air chamber if damaged (para 4-42).	Air reservoir or lines are damaged

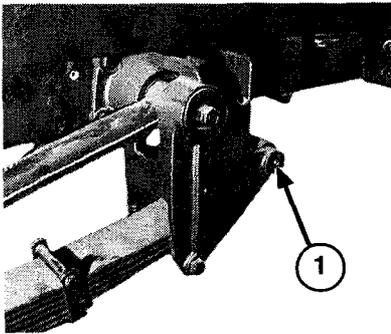
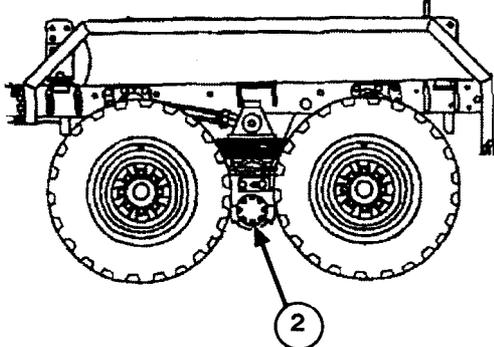
**TABLE 4-1. UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)
FOR THE M1112 (continued)**

ITEM NO.	INTERVAL	ITEM TO BE INSPECTED	PROCEDURE	NOT FULLY MISSION CAPABLE IF
			<p>NOTE</p> <p>A one-time, mandatory replacement of the spacer sleeve between seal, plain encased and brake backing plate is required during the first annual service.</p>	
6	Annually	Wheel Bearings	Remove wheel hubs and wheel bearings. Clean, inspect, and pack wheel bearings (para 4-47).	
7	Semi-annually	Wheels and Tires	<p>a. Inspect tires for wear and damage. Check tread depth (refer to TM 9-2610-200-24).</p> <p>b. Torque wheel nuts between 105 lb-ft (142 N•m) (para 4-45).</p>	<p>a. Tread depth is less than what is specified in TM 9-2610-200-24.</p> <p>b. Wheel nuts stripped or will not torque properly.</p>
8	Annually	Frame	Inspect for cracks, bent members, and broken welds.	Frame is cracked, bent, or has broken welds.
9	Semi-annually	Adjustable Caster Assembly	<p>a. Inspect for bent and broken components (para 4-52).</p> <p>b. Inspect release handle for proper operation (para 4-52).</p>	<p>a. Caster assembly has bent or broken components.</p> <p>b. Release handle does not operate properly.</p>
10	Semi-annually	Adjustable Caster Assembly Mounting Bracket Assembly	<p>Lubricate adjustable caster assembly mounting bracket assembly (1) with grease (Item 18, Appendix F).</p> 	

**TABLE 4-1. UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)
FOR THE M1112 (continued)**

ITEM NO.	INTERVAL	ITEM TO BE INSPECTED	PROCEDURE	NOT FULLY MISSION CAPABLE IF
11	Semi-annually	Leg Screw Shaft	Lubricate leg screw shaft (1) with grease (Item 18, Appendix F). 	
12	Semi-annually	Caster Mounting Brackets	Lubricate caster mounting brackets (1) with grease (Item 18, Appendix F). 	
13	Semi-annually	Suspension	a. Inspect suspension for bent or cracked leaves, loose mounting, and worn components. b. Inspect shock absorbers for damage or leaks (para 4-55). <p style="text-align: center;">CAUTION</p> <p>To prevent damage to trailer, do not lubricate springs.</p>	a. Suspension leaves are damaged, components are worn, or mountings are loose. b. Shock absorbers are damaged or leaking.

**TABLE 4-1. UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)
FOR THE M1112 (continued)**

ITEM NO.	INTERVAL	ITEM TO BE INSPECTED	PROCEDURE	NOT FULLY MISSION CAPABLE IF	
13	Semi-annually	Suspension (continued)	<p>c. Lubricate spring rollers (1) with grease (Item 18, Appendix F).</p> <p>d. Lubricate suspension bushing (2) with grease (Item 18, Appendix F)</p>		
					
14	Semi-annually	Water Tank	<p style="text-align: center;"><u>WARNING</u></p> <p>If water tank contained other than potable water, water tank must be flushed out with clean potable water and drained. Do not allow trailer to sit for extended periods of time with liquid in the tank. Standing water will result in contamination and food poisoning. KEEP WATER TANK CLEAN AT ALL TIMES. Failure to follow this warning may result in serious injury or death to personnel.</p> <p>a. Check for contamination. If tank is contaminated, flush with fresh water before use (para 2-13).</p> <p>b. Check water tank body brackets for cracks, missing lockwire, and missing or loose bolts.</p>	<p>a. Water tank is contaminated.</p> <p>b. Water tank body brackets are cracked, missing lockwire, or have missing or loose bolts.</p>	
15	Semi-annually	Reflectors	Replace any cracked or broken reflectors (para 4-60).		
16	Semi-annually	Data Plates, Decals, and Stencil Markings	Make sure all data plates, decals, and stencil markings are legible and in good condition. Replace damaged or disfigured plates (para 4-61).		

Section IV. UNIT TROUBLESHOOTING PROCEDURES

Paragraph Number	Paragraph Title	Page Number
4-13	General	4-9
4-14	Explanation of Columns	4-10
4-15	Troubleshooting Malfunction Index	4-10
Table 4-2	Unit Troubleshooting	4-11

4-13. GENERAL.

- a. This section provides information for identifying and correcting malfunctions that may develop while operating your trailer.
- b. The Troubleshooting Malfunction Index (para 4-15) lists common malfunctions that may occur and refers you to the proper page in Table 4-2, Unit Troubleshooting, for a troubleshooting procedure.
- c. This section cannot list all the malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed or is not corrected by the corrective actions listed, notify your supervisor.
- d. When troubleshooting a malfunction:
 - Question operator to obtain any information that might help determine the cause of a problem. Before continuing, make sure all applicable Operator/Crew troubleshooting was performed.
 - Locate the symptom(s) in paragraph 4-15 that best describes the malfunction. If the appropriate symptom is not listed, notify your supervisor.
 - Turn to the page in Table 4-2 where the troubleshooting procedures for the malfunction in question are described. Headings at the top of each page show how each troubleshooting procedure is organized: MALFUNCTION, TEST OR INSPECTION (in step number order), and CORRECTIVE ACTION. The malfunctions, tests or inspections, and corrective actions are indented to line up under the appropriate heading.
 - Perform each step in the order listed until the malfunction is corrected. DO NOT perform any maintenance task unless the troubleshooting procedure tells you to do so.

4-14. EXPLANATION OF COLUMNS.

Explanations of the columns in Table 4-2 are as follows:

- **MALFUNCTION.** A visual or operational indication that something is wrong with the trailer.
- **TEST OR INSPECTION.** A procedure to isolate the problem in a component or system.
- **CORRECTIVE ACTION.** A procedure to correct the problem.

4-15. TROUBLESHOOTING MALFUNCTION INDEX.

Troubleshooting Procedure	Page
ELECTRICAL SYSTEM	
All lamps fail to light	4-11
Taillight will not light	4-11
Left or Right stoplight, signal light will not light	4-13
Blackout stoplight will not light	4-15
Right or left blackout marker light will not light	4-17
Lights are dim or flickering	4-19
Clearance light will not light	4-20
BRAKES	
Handbrake(s) drag when trailer is moved	4-21
Handbrake(s) will not hold when applied	4-21
Service brakes are weak	4-21
Service brakes are locked	4-22
Service brakes are dragging, uneven, or grabbing (one or both brakedrums are running hot)	4-22
TIRES	
Tires are cupped or wearing unevenly	4-23
SUSPENSION	
Suspension system lacks springing action	4-23

Table 4-2. UNIT TROUBLESHOOTING

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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ELECTRICAL SYSTEM

NOTE

For all lamps that will not light, check continuity of lamp filament. Replace lamp if check shows a burned-out filament. If lamp is good, continue troubleshooting.

1. ALL LAMPS FAIL TO LIGHT.

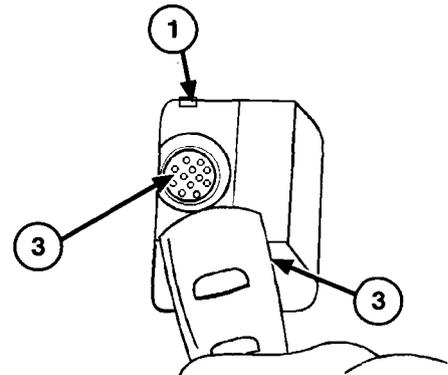
Step 1. Check to see if intervehicular cable (2) is properly connected to towing vehicle socket (3).

If intervehicular cable (2) is not connected or is loose, plug intervehicular cable into towing vehicle socket (3) and secure with latch (1).

Step 2. Using towing vehicle technical maintenance manual, troubleshoot towing vehicle electrical system to ensure that correct voltage is present in towing vehicle socket (3).

If needed, correct towing vehicle wiring (see towing vehicle technical maintenance manual).

If towing vehicle voltage is correct, troubleshoot trailer wiring harness. Go to symptom 2. TAILLIGHT WILL NOT LIGHT, step 3.



2. TAILLIGHT WILL NOT LIGHT.

Step 1. Using troubleshooting procedures in towing vehicle technical manual, perform tests to ensure that 24 V dc are present in towing vehicle socket (1).

Correct towing vehicle wiring (see towing vehicle technical maintenance manual).

Step 2. Check intervehicular cable (2) for corrosion, frayed spots, cuts, and proper connection.

Clean all contact pins (3) with abrasive cloth (Item 9, Appendix F); plug intervehicular cable (2) into towing vehicle socket (1), making sure it is secure. Replace intervehicular cable if needed (para 4-28).

If taillight does not light, go to step 3.

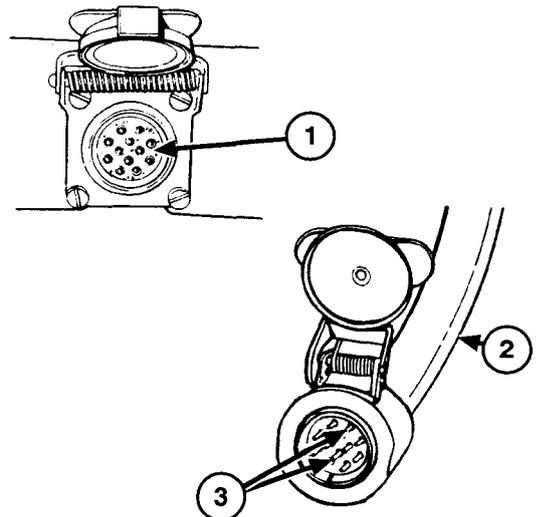


Table 4-2. UNIT TROUBLESHOOTING (continued)

MALFUNCTION

TEST OR INSPECTION

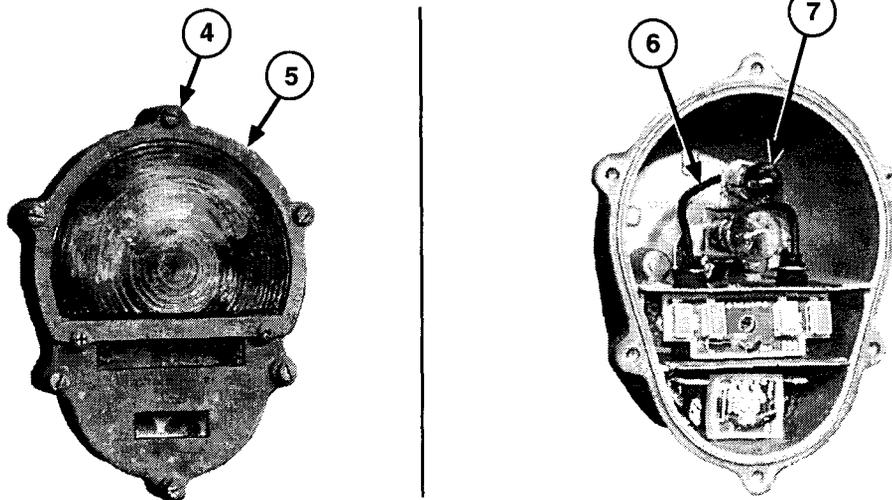
CORRECTIVE ACTION

Step 3. Loosen six retaining screws (4), remove door assembly (5), and check for broken or frayed wires (6), broken lamps (7), and corrosion.

Replace lamps that do not light, and replace damaged parts (para 4-22) as necessary.

Remove lamp that does not light and clean socket with rag (Item 32, Appendix F) and cleaning compound (Item 8, Appendix F) as necessary.

If lamp (7) still does not light, go to step 4.



Step 4. Set multimeter for voltage check. Place red lead (8) in lamp socket, and black lead to ground, and check for 24 V dc.

If voltage is not present, go to step 5.

If voltage is present, install new lamp (7).

Step 5. Disconnect lead 489 (9), place red lead (8) in lead 489, and black lead to ground, and check for 24 V dc.

If no voltage is present, go to step 6.

If voltage is present, connect wiring and go to step 7.

Step 6. Connect lead 489 (9) at the rear harness connectors and disconnect lead 489 from lead 21 at intervehicular connector. Place red lead (8) in lead 21 and check for 24 V dc.

If voltage is present, replace chassis wiring harness (para 4-25).

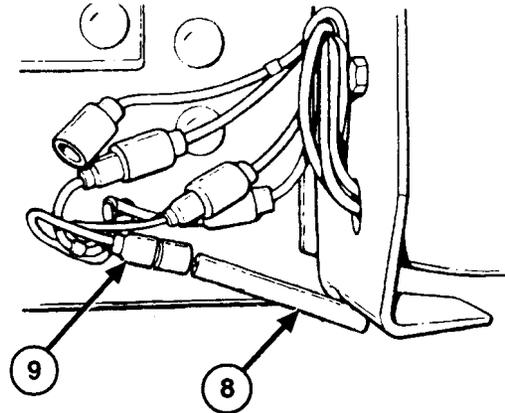
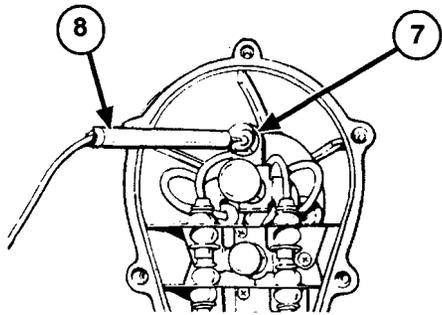
If voltage is not present, replace intervehicular cable (2) (para 4-28).

Table 4-2. UNIT TROUBLESHOOTING (continued)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 7. Remove composite light assembly (para 4-23), and make sure mounting surface is clean.

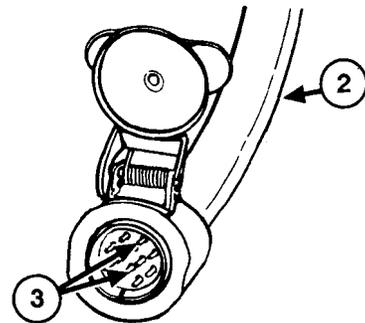
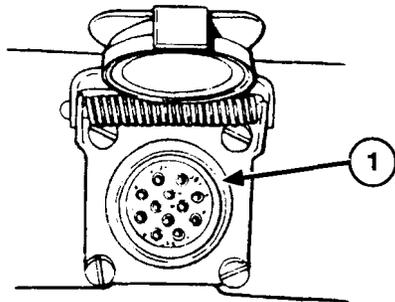
Clean mounting surface with rag (Item 32, Appendix F) and cleaning compound (Item 8, Appendix F) as required. Install composite light assembly (para 4-23). If lamp does not light, replace composite light assembly.



3. LEFT OR RIGHT STOPLIGHT, SIGNAL LIGHT WILL NOT LIGHT.

Step 1. Using troubleshooting procedures from towing vehicle technical manual, perform test to make sure 24 V dc are present in towing vehicle socket (1).

Correct towing vehicle wiring (see towing vehicle technical maintenance manual).



Step 2. Check intervehicular cable (2) for corrosion, frayed spots, cuts, and proper connection.

Clean all contact pins (3) with abrasive cloth (Item 9, Appendix F). Plug intervehicular cable (2) into towing vehicle socket (1), making sure it is secure. Replace intervehicular cable (2) if needed (para 4-28).

If taillight does not light, go to step 3.

Table 4-2. UNIT TROUBLESHOOTING (continued)

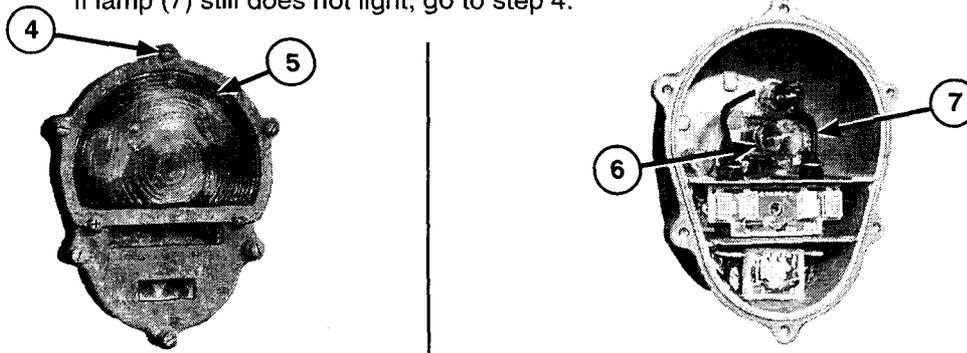
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 3.	Loosen six retaining screws (4), remove door assembly (5) from trailer, and check for broken or frayed wires (6), broken lamps (7), and corrosion.	
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Replace lamps that do not light, and replace damaged parts (para 4-22) as necessary.

Remove lamp that does not light and clean socket with rag (Item 32, Appendix E) and cleaning compound (Item 8, Appendix F) as necessary.

If lamp (7) still does not light, go to step 4.



Step 4.	Set multimeter for voltage check. Place red lead (8) in light socket, and black lead to ground, and check for 24 V dc.	
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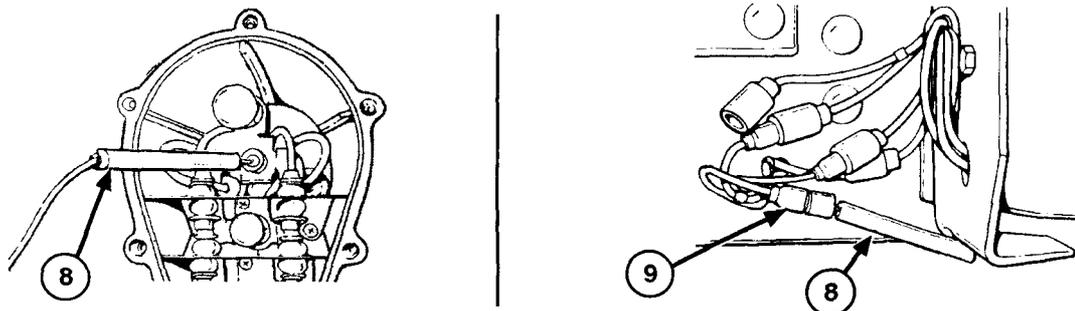
If voltage is not present, go to step 5.

If voltage is present, install new light.

Step 5.	Disconnect lead 461 (left side) or wire 460 (right side) (9), place red lead (8) on lead 460 or 461, and black lead to ground, and check for 24 V dc.	
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If no voltage is present, go to step 6.

If voltage is present, connect wiring and go to step 7.



Step 6.	Connect lead 461 or 460 (9) at rear harness connector, and disconnect lead 461 or 460 from lead 22 at intervehicular connector. Place red lead in lead 22 and check for 24 V dc.	
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If voltage is present, replace chassis wiring harness (para 4-25).

If voltage is not present, replace intervehicular cable (para 4-28).

Table 4-2. UNIT TROUBLESHOOTING (continued)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 7. Remove composite light assembly (para 4-23) and make sure mounting surface is clean.

Clean mounting surface with rag (Item 32, Appendix F) and cleaning compound (Item 8, Appendix F) as required. Install composite light assembly (para 4-23). If lamp does not light, replace composite light assembly.

4. BLACKOUT STOPLIGHT WILL NOT LIGHT.

Step 1. Using troubleshooting procedures from towing vehicle technical manual, perform test to make sure 24 V dc are present in towing vehicle socket (1).

Correct towing vehicle wiring (see towing vehicle technical maintenance manual).

Step 2. Check intervehicular cable (2) for corrosion or frayed spots, cuts, and proper connection.

Clean all contact pins (3) with abrasive cloth (Item 9, Appendix F); plug intervehicular cable (2) into towing vehicle socket (1), making sure that it is secure. Replace intervehicular cable (2) if needed (para 4-28).

If lamp does not light, go to step 3.

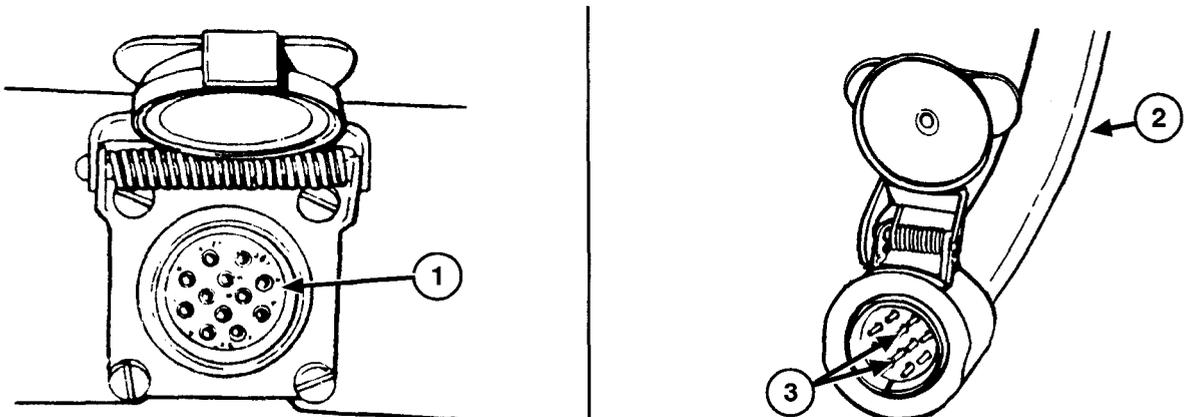


Table 4-2. UNIT TROUBLESHOOTING (continued)

MALFUNCTION

TEST OR INSPECTION

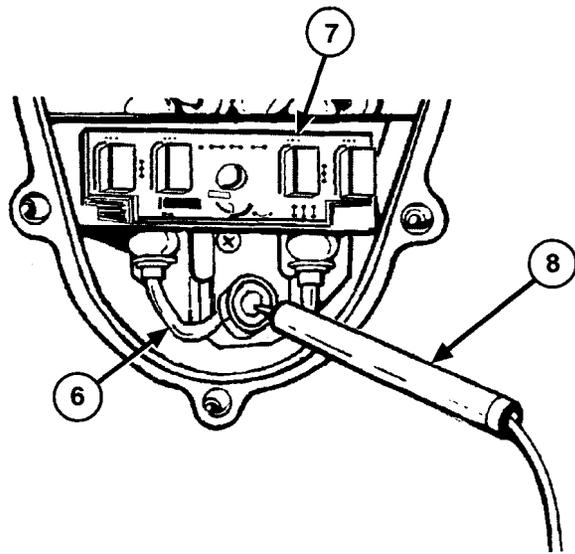
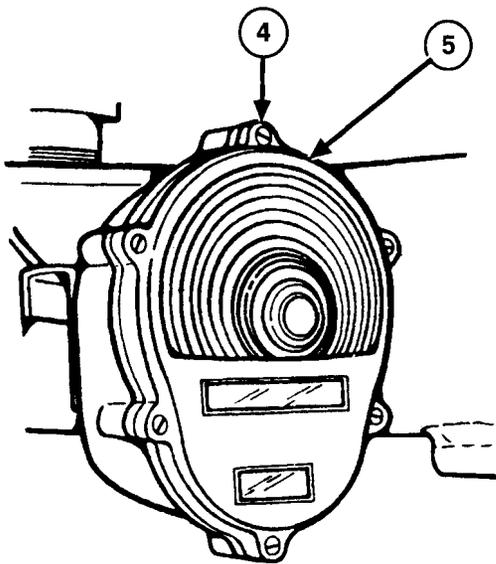
CORRECTIVE ACTION

Step 3. Loosen six retaining screws (4), remove door assembly (5) from trailer, and check for broken or frayed wires (6), broken LEDs (7), and corrosion.

Replace LEDs that do not light and replace damaged parts (para 4-22) as necessary.

Remove LED that does not light and clean socket with rag (Item 32, Appendix F) and cleaning compound (Item 8, Appendix F) as necessary.

If LED (7) still does not light, go to step 4.



Step 4. Set multimeter for voltage check. Place red lead (8) in LED socket and black lead to ground, and check for 24 V dc.

If voltage is not present, go to step 5.

If voltage is present, install new LED (7).

Step 5. Disconnect lead 23 (9), place red lead (8) in wire, and black lead to ground, and check for 24 V dc.

If no voltage is present, go to step 6.

If voltage is present, connect wiring and go to step 7.

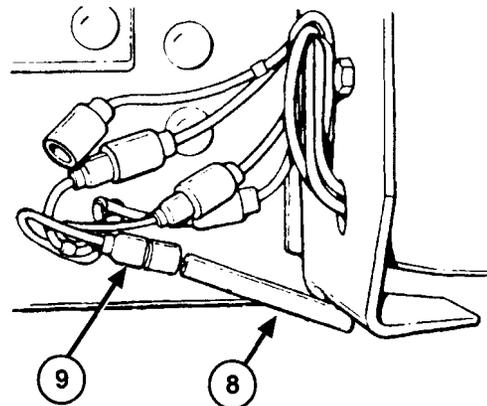


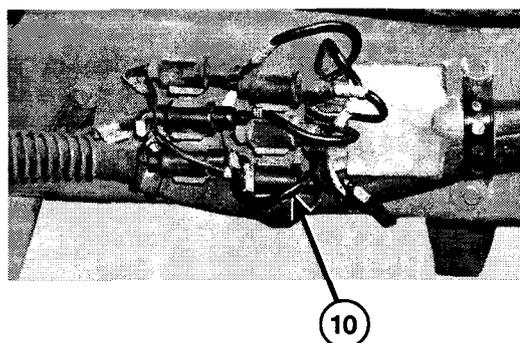
Table 4-2. UNIT TROUBLESHOOTING (continued)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 6. Connect lead 23 (10) at the intervehicular connector. Place the red lead in lead 23 and check for 24 V dc.

If voltage is present, replace chassis wiring harness (para 4-24).

If voltage is not present, replace intervehicular cable (para 4-26).



Step 7. Remove composite light assembly (para 4-23), and make sure mounting surface is clean.

Clean mounting surface with rag (Item 32, Appendix F) and cleaning compound (Item 8, Appendix F) as required. Install composite light assembly (para 4-23). If lamp does not light, replace composite light assembly.

5. RIGHT OR LEFT BLACKOUT MARKER LIGHT WILL NOT LIGHT.

Step 1. Using troubleshooting procedures from towing vehicle technical manual, perform test to make sure 24 V dc are present in towing vehicle socket (1).

Correct towing vehicle wiring (see towing vehicle maintenance manual).

Step 2. Check intervehicular cable (2) for corrosion or frayed spots, cuts, and proper connection.

Clean all contact pins (3) with abrasive cloth (Item 9, Appendix E); plug intervehicular cable (2) into towing vehicle socket (1), making sure that it is secure. Replace intervehicular cable (2) if needed (para 4-28).

If lamp does not light, go to step 3.

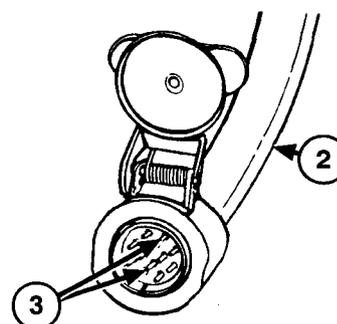
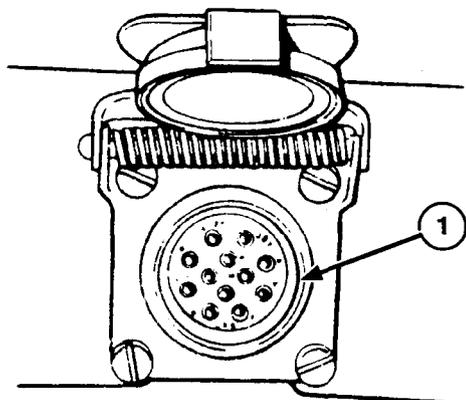


Table 4-2. UNIT TROUBLESHOOTING (continued)

MALFUNCTION

TEST OR INSPECTION

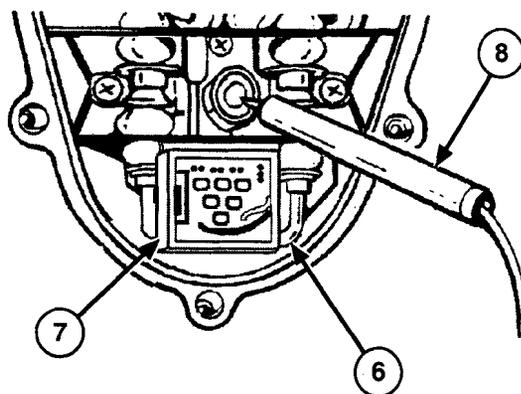
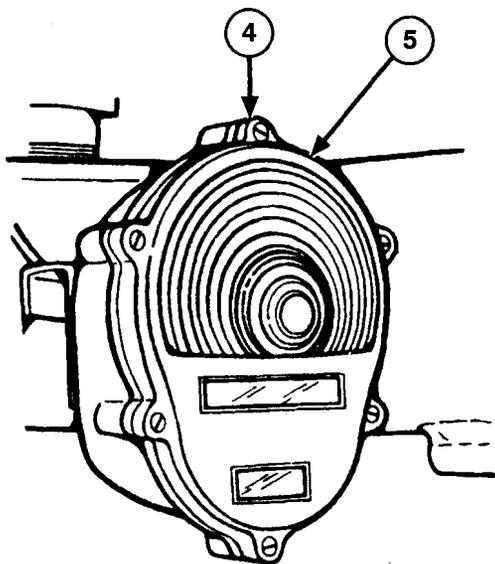
CORRECTIVE ACTION

Step 3. Loosen six retaining screws (4), remove door assembly (5), and check for broken or frayed wires (6), broken LED (7), and corrosion.

Replace LEDs that do not light and replace damaged parts (para 4-22) as necessary.

Remove LED that does not light and clean socket with rag (Item 32, Appendix F) and cleaning compound (Item 8, Appendix F) as necessary.

If new LED (7) still does not light, go to step 4.



Step 4. Set multimeter for voltage check. Place red lead (8) in lamp socket, black lead to ground, and check for 24 V dc.

If voltage is not present, go to step 5.

If voltage is present, install new LED.

Step 5. Disconnect lead 484 (left side) or 483 (right side) (9), place red lead (8) in lead and black lead to ground, and check for 24 V dc.

If no voltage is present, go to step 6.

If voltage is present, connect wiring and go to step 7.

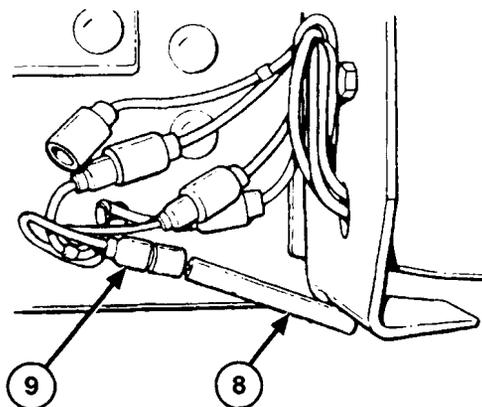
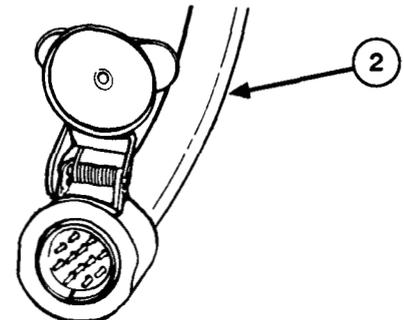
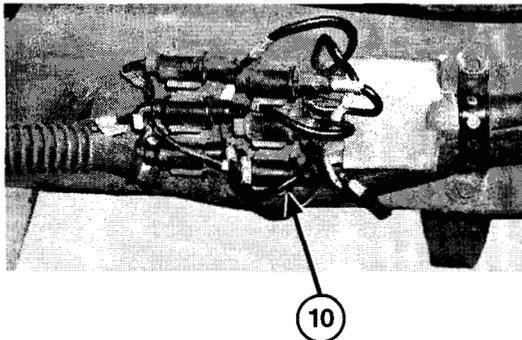


Table 4-2. UNIT TROUBLESHOOTING (continued)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
	Step 6.	<p>Connect lead 483 or 484 (9) as applicable to the rear harness connector and disconnect lead 24 (10) from lead 483 or 484 at the intervehicular connector. Place the red lead in lead 24 and check for 24 V dc.</p> <p>If voltage is present, replace chassis wiring harness (para 4-25).</p> <p>If voltage is not present, replace intervehicular cable (2) (para 4-28).</p>



Step 7. Remove composite light assembly (para 4-23), and make sure mounting surface is clean.

Clean mounting surface with rag (Item 32, Appendix F) and cleaning compound (Item 8, Appendix F) as required. Install composite light assembly (para 4-23). If lamp does not light, replace composite light assembly.

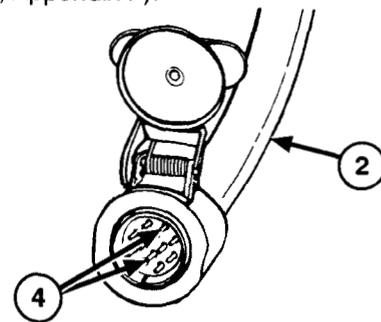
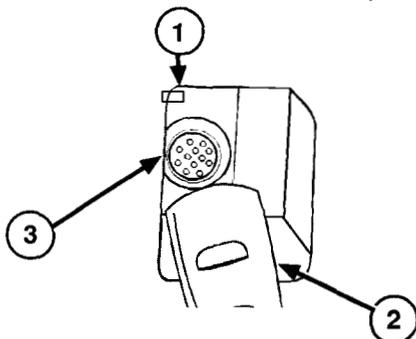
6. LIGHTS ARE DIM OR FLICKERING.

Step 1. Check to see if intervehicular cable (2) is properly plugged into towing vehicle socket (3).

Plug intervehicular cable (2) firmly into towing vehicle socket (3) and secure with latch (1).

Step 2. Check for dirty or corroded contact pins (4) in intervehicular cable plug and towing vehicle socket (3).

Clean as required with abrasive cloth (Item 9, Appendix F).



Step 3. Check for poor or loose ground connections on trailer.

Clean and tighten ground connections.

Table 4-2. UNIT TROUBLESHOOTING (continued)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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7. CLEARANCE LIGHT WILL NOT LIGHT.

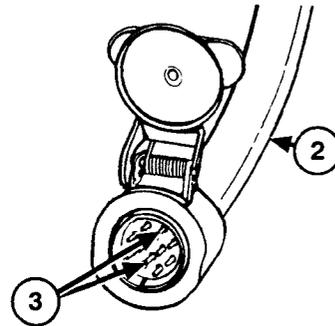
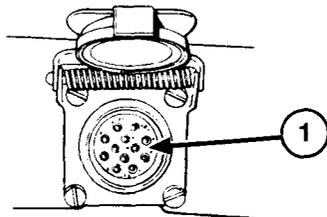
Step 1. Using troubleshooting procedures from towing vehicle technical manual, perform test to make sure 24 V dc are present in towing vehicle socket (1).

Correct towing vehicle wiring (see towing vehicle maintenance manual).

Step 2. Check intervehicular cable (2) for corrosion or frayed spots, cuts, and proper connection.

Clean all contact pins (3) with abrasive cloth (Item 9, Appendix E); plug intervehicular cable (2) into towing vehicle socket (1), making sure that it is secure. Replace intervehicular cable (2) if needed (para 4-28).

If lamp does not light, go to step 3.



Step 3. Disconnect lead 489 from lead 21 at clearance light. Place red lead in lead 21, and black lead to ground, and check for 24 V dc.

If voltage is present, replace clearance light (para 4-24).

If voltage is not present, go to step 4.

Step 4. Disconnect lead 21 from lead 21 at the rear harness connectors. Place red lead in lead 21 at chassis harness connector, and black lead to ground, and check for 24 V dc.

If voltage is present, replace harness (12474722) (para 4-26).

If voltage is not present, go to step 5.

Step 5. Disconnect lead 21 at intervehicular cable. Place red lead in lead 21, and black lead to ground, and check for 24V dc.

If voltage is present, replace chassis wiring harness (para 4-25).

If voltage is not present, replace intervehicular cable (para 4-28).

Table 4-2. UNIT TROUBLESHOOTING (continued)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
BRAKES		
8. HANDBRAKE(S) DRAG WHEN TRAILER IS MOVED.		
Step 1.	Check for improperly adjusted handbrake lever assemblies	Adjust handbrake lever assemblies (para 3-4).
Step 2.	Check for improperly installed or broken brakeshoe return springs.	Correctly install brakeshoe return springs or replace handbrake cable assembly as required (para 4-34).
9. HANDBRAKE(S) WILL NOT HOLD WHEN APPLIED.		
Step 1.	Check for improperly adjusted handbrake lever assemblies.	Adjust handbrake lever assemblies (para 3-4).
Step 2.	Check movement of handbrake cable assembly when handbrake is applied.	If no movement is observed, replace handbrake cable assembly (para 4-34).
10. SERVICE BRAKES ARE WEAK.		
Step 1.	Check for low brake fluid level at master cylinder.	Add brake fluid (Item 4, Appendix F) (Table 4-1).
Step 2.	Check for air leaks in intervehicular air hoses (Table 2-1).	Replace air hoses that leak (para 4-41).
NOTE		
Remove parts needed to gain access to brakeshoe linings (para 4-47).		
Step 3.	Check for worn brakeshoe linings.	Adjust service brakes (para 4-36).
Step 4.	Check for grease or water on brakeshoe linings.	Replace brakeshoe linings if coated with grease (para 4-36).

Table 4-2. UNIT TROUBLESHOOTING (continued)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 5. Check to make sure towing vehicle air valves are turned on.

Turn on towing vehicle air valves as directed in towing vehicle technical manual.

11. SERVICE BRAKES ARE LOCKED.

Step 1. Check to see if intervehicular air hoses are properly connected.

Connect intervehicular air hoses to towing vehicle correctly (para 2-10).

Step 2. Check to make sure towing vehicle air valves are turned on.

Turn on towing vehicle air valves as directed in towing vehicle technical manual.

Step 3. Check to make sure handbrakes are released.

Release handbrakes.

Step 4. Check for damaged or missing preformed packing (in intervehicular air coupling).

Replace damaged or missing preformed packing (para 4-41).

Step 5. Check for air leaks in intervehicular air hoses.

Tighten loose fittings or connectors.

NOTE

Remove parts as needed to gain access to brakeshoe helical springs (para 4-33).

Step 6. Check for weak or broken brakeshoe return springs.

Replace weak or broken brakeshoe helical springs (para 4-36).

12. SERVICE BRAKES ARE DRAGGING, UNEVEN, OR GRABBING (ONE OR BOTH BRAKEDRUMS ARE RUNNING HOT).

Step 1. Make sure service brakes are not out of adjustment or adjusted too tight.

Adjust service brakes (para 4-36).

NOTE

Remove parts needed to gain access to brakedrums, wheel bearings, and brakeshoe linings (para 4-36).

Table 4-2. UNIT TROUBLESHOOTING (continued)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
Step 2.	Check for cracked, scored, or deformed brakedrums.	Replace brakedrum (para 4-47). Notify Direct Support maintenance to repair brakedrums as needed.
Step 3.	Check for loose wheel bearings.	Adjust wheel bearings (para 4-47).
Step 4.	Check for loose or worn out brakeshoe linings.	Replace brakeshoes (para 4-36).

TIRES

13. TIRES ARE CUPPED OR WEARING UNEVENLY.

- Step 1. Check for correct tire pressure of 60 psi (413.7 kPa).
Adjust tire pressure as needed.
- Step 2. Check for loose wheel nuts.
Torque wheel nuts to 105 lb-ft (142 N•m).
- Step 3. Check for loose wheel bearings.
Adjust wheel bearings (para 4-47).
- Step 4. Check for bent wheel or rim.
Replace defective tire assembly (para 4-45).
-

SUSPENSION

14. SUSPENSION SYSTEM LACKS SPRINGING ACTION.

- Step 1. Check for loose or broken spring leaves.
Replace springs as needed (para 4-54).
- Step 2. Check for loose or worn out shock absorbers.
Tighten or replace shock absorbers as required (para 4-55).

Section V. MAINTENANCE PROCEDURES

Paragraph Number	Paragraph Title	Page Number
4-16	General	4-24
4-17	Work Safety	4-24
4-18	Cleaning Instructions	4-25
4-19	Inspection Instructions	4-26
4-20	Repair Instructions	4-26
4-21	Tagging Wires and Hoses	4-27

4-16. GENERAL.

- a. These general maintenance instructions contain general shop practices and specific methods you must be familiar with to properly maintain your trailer. You should read and understand these practices and methods before performing any Unit maintenance tasks.
- b. Before beginning a task, find out how much repair, modification, or replacement is needed to fix the equipment as described in this manual. Sometimes the reason for equipment failure can be seen right away, and complete teardown is not necessary. Disassemble equipment only as far as necessary to repair or replace damaged or broken parts.
- c. The following "Initial Setup" information applies to all procedures:
 - 1. Resources are not listed unless they apply to the procedure.
 - 2. Personnel are listed only if more than one technician is required to complete task. If "Personnel Required" is not listed, one technician can complete task.
- d. All tags and forms attached to equipment must be checked to learn the reason for removal from service. Modification work orders (MWOs) and technical bulletins (TBs) must also be checked for equipment changes and updates.
- e. In some cases, a part may be damaged by removal. If the part appears to be good and other parts behind it are not defective, leave it on and continue with the procedure. Here are a few simple rules:
 - 1. Do not remove dowel pins or studs unless loose, bent, broken, or otherwise damaged.
 - 2. Do not remove bearings or bushings unless damaged. If you need to remove them to access parts behind them, pull bearings and bushings out carefully.
 - 3. Replace all gaskets, seals, and preformed packings.

4-17. WORK SAFETY.

- a. Observe all WARNINGS and CAUTIONS. Always use power tools carefully.
- b. Protect yourself against injury. Wear protective gear, such as safety goggles or lenses, safety shoes, rubber apron, or gloves.
- c. When lifting heavy parts, have someone help you. Make sure that lifting/jacking equipment is working properly, is suitable for assigned the task, and is secure against slipping.

4-18. CLEANING INSTRUCTIONS.

WARNING

Improper cleaning methods and use of unauthorized cleaning liquids or solvents can injure personnel and damage equipment. To prevent this, refer to TM 9-247 for further instructions.

- a. **General.** Cleaning instructions will be the same for a majority of parts and components that make up the trailer. The following should apply to all cleaning, inspection, repair, and assembly operations:
1. Clean all parts before inspection, after repair, and before assembly.
 2. Keep hands free of grease, which can collect dust, dirt, and grit.
 3. After cleaning, all parts should be covered or wrapped to protect them from dust and dirt. Parts that are subject to rust should be lightly oiled.
- b. **Steam Cleaning.**
1. Before steam cleaning exterior of trailer, protect all electrical equipment that could be damaged by steam or moisture.
 2. Place disassembled parts in a suitable container to steam clean. Parts that are subject to rust should be dried and lightly oiled after cleaning.
- c. **Castings, Forgings, and Machined Metal Parts.**

WARNING

Drycleaning solvent PF05 is combustible. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat.

1. Clean inner and outer surfaces with drycleaning solvent (Item 12, Appendix F).
2. Remove grease and accumulated deposits with a stiff bristle brush.

WARNING

Compressed air used for cleaning or drying purposes, or for clearing restrictions, should never exceed 30 psi (207 kPa). Wear protective clothing (goggles/shield, gloves, etc.) and use caution to avoid injury to personnel.

3. Clear out all threaded holes with compressed air to remove dirt and cleaning fluids.

CAUTION

Do not wash oil seals, electrical cables, and flexible hoses with drycleaning solvent or mineral spirits. Serious damage or destruction of material would result.

- d. **Oil Seals, Electrical Cables, and Flexible Hoses.** Wash electrical cables and flexible hoses with solution of water and dishwashing compound (Item 11, Appendix F) and wipe dry.
- e. **Bearings.** Clean bearings in accordance with TM 9-214.

4-19. INSPECTION INSTRUCTIONS.

NOTE

All damaged areas should be marked for repair or replacement.

- a. All components and parts must be carefully checked to determine if they are serviceable for reuse, can be repaired, or must be scrapped.
- b. Inspect drilled and tapped (threaded) holes for the following:
 - 1. In or around holes—wear, distortion, cracks, and any other damage.
 - 2. Threaded areas—wear, distortion (stretching) and evidence of cross-threading.
- c. Inspect metal lines, flexible lines (hoses), and metal fittings for the following:
 - 1. Metal lines—sharp kinks, cracks, bad bends, and dents.
 - 2. Flexible lines—fraying, evidence of leakage, and loose metal fittings or connectors.
 - 3. Metal fittings and connectors—thread damage and worn or rounded hex heads.
- d. Inspect castings, forgings, and machined metal parts for the following:
 - 1. Machined surfaces—nicks, burrs, raised metal, wear, and other damage.
 - 2. Inner and outer surfaces—breaks and cracks.
- e. With solution of dishwashing compound (Item 11, Appendix F) and water, inspect air lines, fittings, and connectors for leaks by coating fittings and connections. No leakage is permissible.
- f. Inspect bearings in accordance with TM 9-214.

4-20. REPAIR INSTRUCTIONS.

- a. Any repair procedure peculiar to a specific part or component is covered in the section or paragraph relating to that item. After repair, clean all parts thoroughly to prevent dirt, metal chips, or other foreign material from entering any working parts.
- b. Repair casting, forgings, and machined metal parts according to the following instructions:
 - 1. Refer to TM 9-237 for instructions on repairing minor cracked castings or forgings.
 - 2. Repair minor damage to machined surfaces with a fine mill file or abrasive cloth (Item 9, Appendix F) dipped in drycleaning solvent (Item 12, Appendix F).
 - 3. Replace any deeply nicked machined surface that could affect the assembly operation.
 - 4. Repair minor damage to threaded capscrew holes with thread tap of same size, to prevent cutting oversize.
- c. Refer to paragraph 4-37 for maintenance on metal lines, flexible lines (hoses), and metal fittings.

4-21. TAGGING WIRES AND HOSES.

- a. As soon as first wire or hose is disconnected, write the number "1" on two tags. Secure one tag to wire or hose and other tag to terminal, nipple, or fitting. After disconnecting second wire or hose, write the number "2" on two tags. Secure one tag to wire or hose and second tag to terminal, nipple, or fitting. Do the same for all wires and hoses.
- b. Note which numbers you used, in pencil, on art in this manual. This will help you to retag properly when you remove tags from some parts to perform cleaning and maintenance work.
- c. Remove all tags when finished.

Section VI. ELECTRICAL SYSTEM MAINTENANCE

Paragraph Number	Paragraph Title	Page Number
4-22	Lamp Replacement	4-28
4-23	Composite Stoplight-Taillight Replacement	4-30
4-24	Clearance Marker Light Replacement	4-31
4-25	Chassis Wiring Harness Replacement	4-32
4-26	Clearance Marker Light Wiring Harness Replacement	4-34
4-27	Chassis Wiring Harness Repair	4-36
4-28	Intervehicular Cable Replacement	4-38
4-29	Wiring Diagrams	4-40

4-22. LAMP REPLACEMENT.

This Task Covers:

- a. Removal
- b. Installation

Initial Setup:

Tools/Test Equipment:
 mechanic's tool kit
 (Item 1, Appendix B)

- Lamp, A6324 or A52463-2-10
- LED, 12360870-2 or 12360850-1
- General

Equipment Conditions:

- Trailer parked on level ground (para 2-12).

Materials/Parts:

- O-Ring, 11639519-2

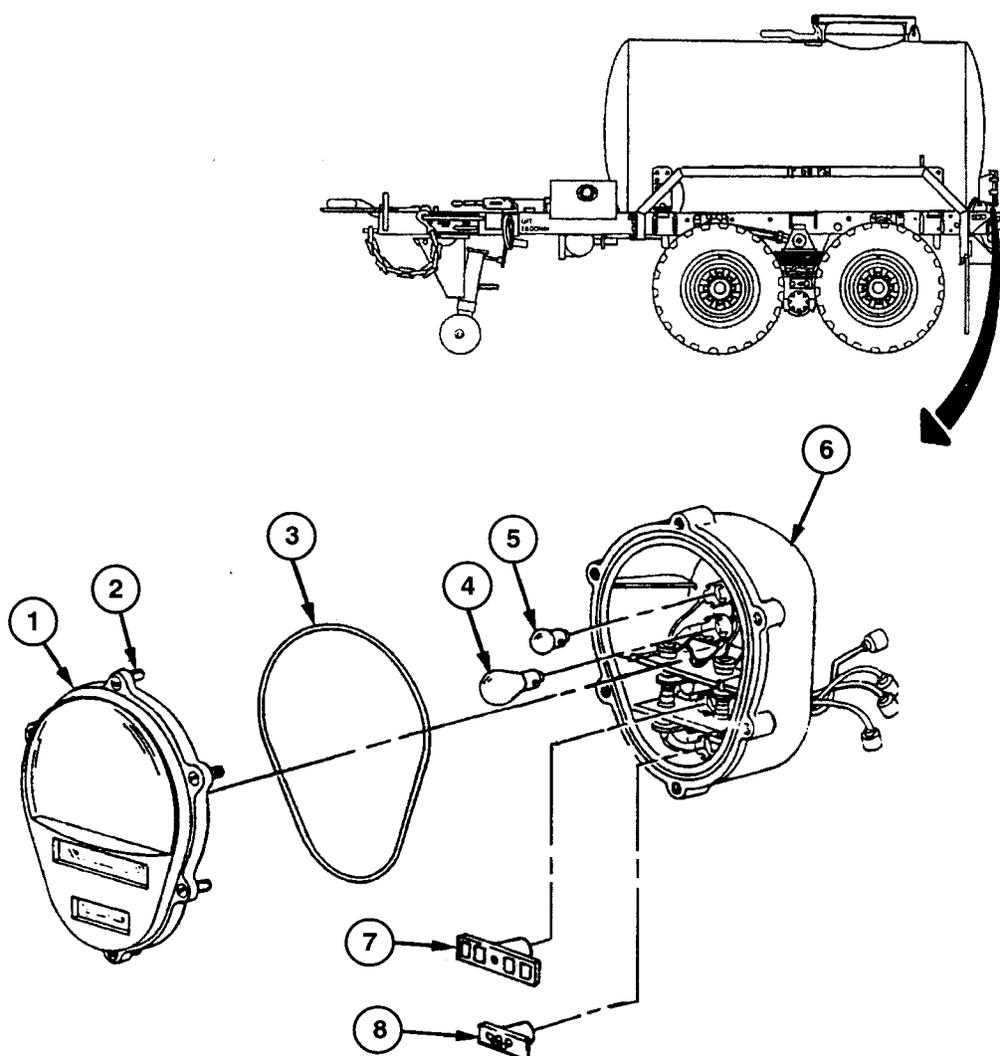
a. REMOVAL

1. Loosen six screws (2) and remove lens assembly (1) from body assembly (6).
2. Remove O-Ring (3) from lens assembly (1). Discard O-Ring.
3. Remove stop lamp (4) from body assembly (6) by pushing in and turning counterclockwise until it releases. Discard lamp.
4. Repeat step 3 for taillight lamp (5).
5. To remove LED (7), insert small flat-tipped screwdriver into slot inside center hole of LED (7). Firmly push in LED (7), turn counterclockwise slightly, and remove LED (7) from body assembly (6).
6. To remove LED (8) from body assembly (6), insert small flat-tipped screwdriver into slot on left side of LED (8). Remove cover from LED (8), allowing access to slot in center hole. Firmly push in LED (8) with screwdriver in center hole slot, turn clockwise slightly, and remove LED (8) from body assembly (6).

4-22. LAMP REPLACEMENT (continued).

b. INSTALLATION

1. Install new stop lamp (4) in socket by pressing in and turning clockwise until lamp (4) locks.
2. Repeat step 1 for taillight lamp (5).
3. Install two LEDs (7 and 8) in body assembly (6) by snapping into place.
4. Install new O-Ring (3) on lens assembly (1).
5. Install lens assembly (1) on body assembly (6) and tighten six screws (2).

**FOLLOW-ON TASKS:**

- Check operation of lamp (refer to towing vehicle technical manual).

4-23. COMPOSITE STOPLIGHT-TAILLIGHT REPLACEMENT.

This Task Covers:

- a. Removal
- b. Installation

Initial Setup:

Tools/Test Equipment:

- General mechanic's tool kit (Item 1, Appendix B)

Equipment Conditions:

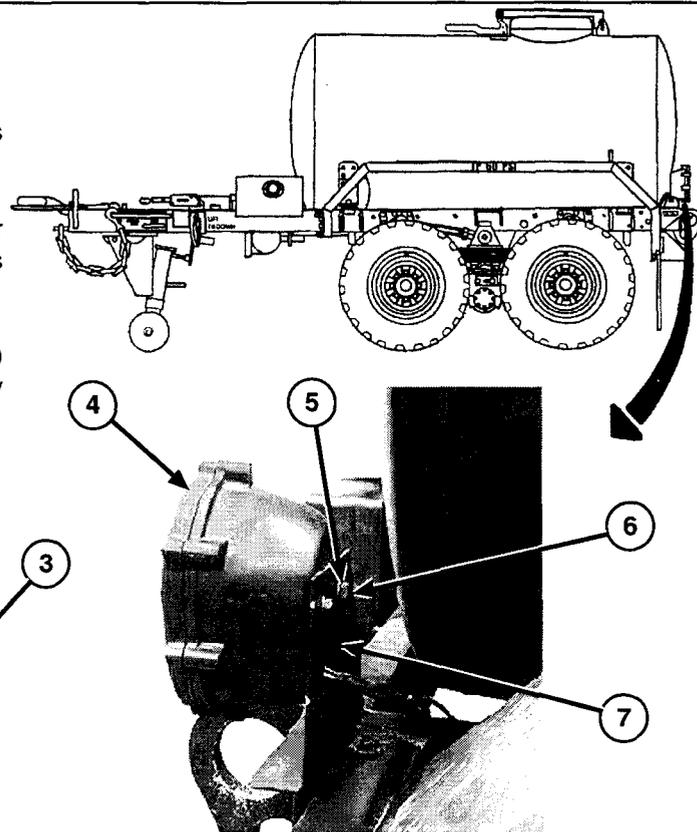
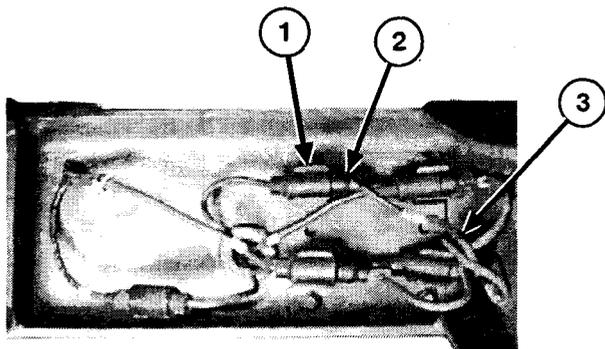
- Trailer parked on level ground (para 2-12).

Materials/Parts:

- Marker tags (as required) (Item 38, Appendix F)
- Lockwasher (2), MS35338-46

a. REMOVAL

1. Tag wires for installation if identification bands are missing or not legible (para 4-21).
2. Remove four plug connectors (2) from rear bracket (1), and disconnect four plug connectors (2) from chassis wiring harness (3).
3. Remove two screws (6) and lockwashers (5) and composite stoplight-tailight body assembly



b. INSTALLATION

1. Position composite stoplight-tailight body assembly (4) on bracket (7) and install two new lockwashers (5) and screws (6) on bracket (7).
2. Connect four plug connectors (2) to chassis wiring harness (3).
3. Install four plug connectors (2) in rear bracket (1).

FOLLOW-ONTASKS:

4-24. CLEARANCE MARKER LIGHT REPLACEMENT.

This Task Covers:

- a. Removal b. Installation
-

Initial Setup:

Tools/Test Equipment:

- General mechanic's tool kit (Item 1, Appendix B)

Equipment Conditions:

- Trailer parked on level ground (para 2-12).

Materials/Parts:

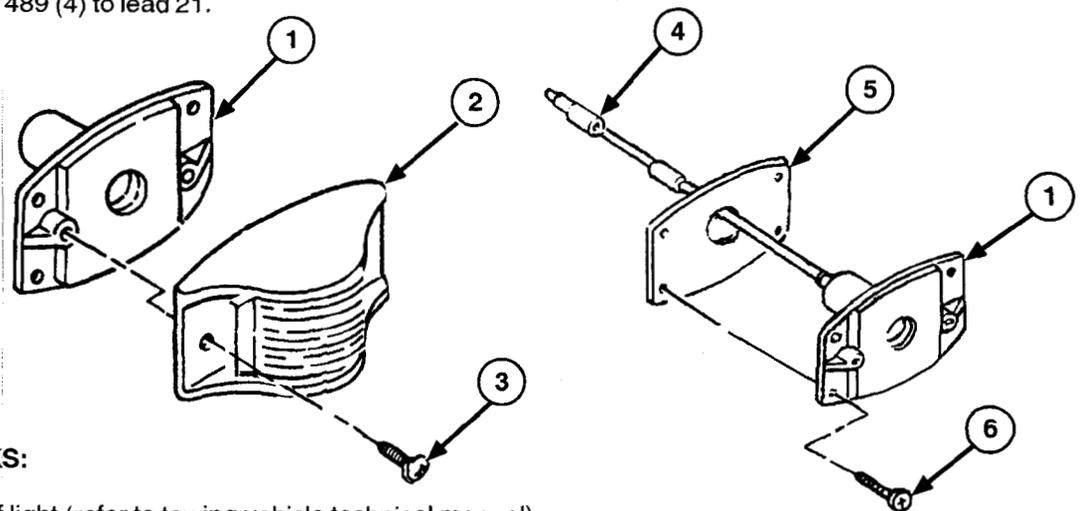
- Marker tags (as required) (Item 38, Appendix F)
-

a. REMOVAL

1. Tag wires for installation if identification bands are missing or not legible (para 4-21).
2. Disconnect lead 489 (4) from lead 21.
3. Remove two screws (3) and lens housing (2) from marker light body (1).
4. Remove four screws (6), marker light body (1), and gasket (5) from trailer.

b. INSTALLATION

1. Install gasket (5), marker light body (1), and four screws (6) to trailer.
2. Install lens housing (2) on marker light body (1) with two screws (3).
3. Connect lead 489 (4) to lead 21.



FOLLOW-ONTASKS:

- Check operation of light (refer to towing vehicle technical manual).

4-25. CHASSIS WIRING HARNESS REPLACEMENT.

This Task Covers:

- a. Removal b. Installation

Initial Setup:

Tools/Test Equipment:

- General mechanic's tool kit (Item 1, Appendix B)

- Nuts, self-locking (13), MS51922-1

Materials/Parts:

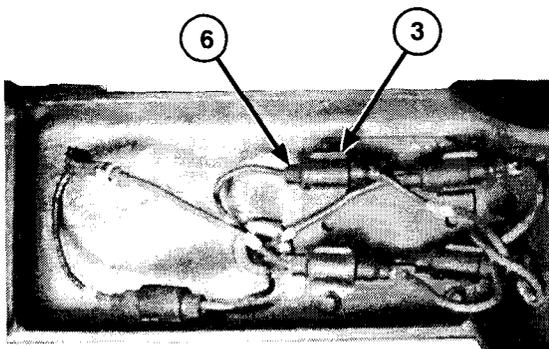
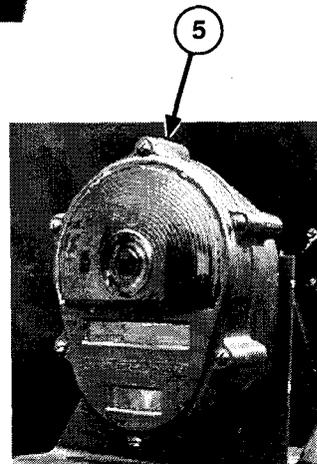
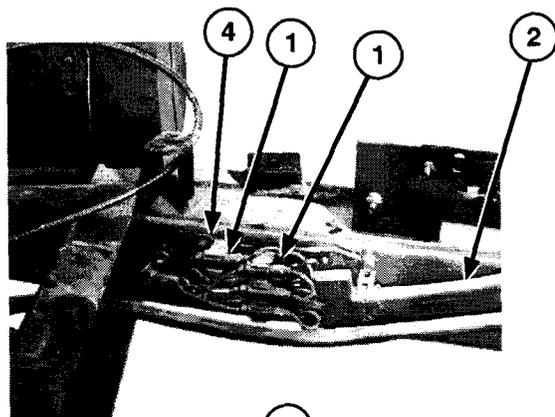
- Marker tags (as required) (Item 38, Appendix F)

Equipment Conditions:

- Trailer parked on level ground (para 2-12).

a. REMOVAL

1. Tag wires for installation if identification bands are missing or not legible (para 4-21).
2. Remove eight rear plug connectors (6) from two brackets (3). Remove six front plug connectors (1) from front retaining strap (4).
3. Disconnect six front plug connectors (1) from intervehicular cable (2). Disconnect four rear plug connectors (6) from right and left light assemblies (5).
4. Remove five self-locking nuts (11), self-tapping screws (17), washers (10), and tiedown straps (18) from chassis wiring harness (12) and frame assembly (19). Discard self-locking nuts.
5. Remove three self-tapping screws (15), tiedown straps (13), washers (14) from chassis wiring harness (12) and frame assembly (19).



4-25. CHASSIS WIRING HARNESS REPLACEMENT (continued).

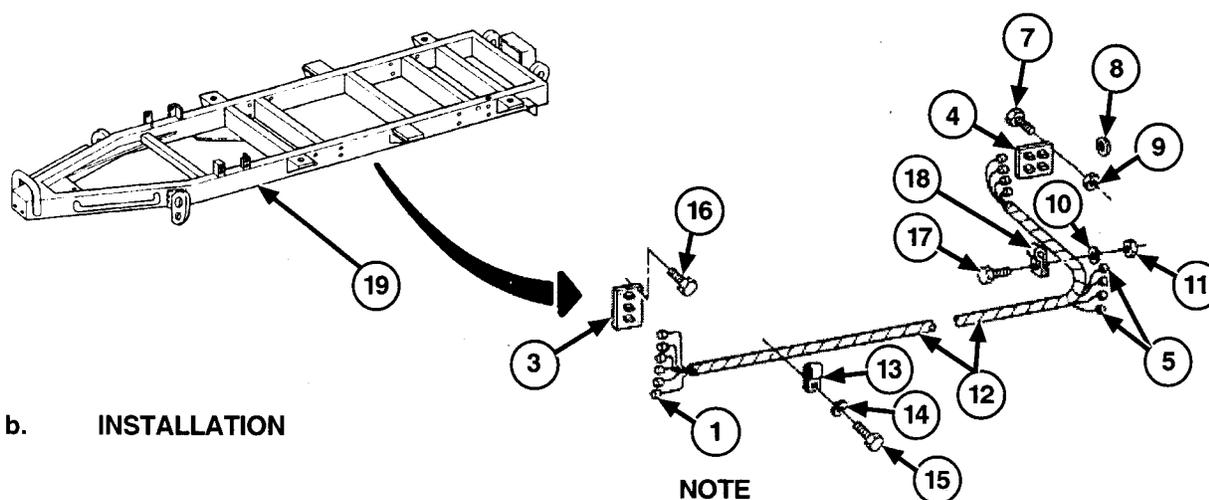
6. Remove chassis wiring harness (12) and two grommets (8) from frame assembly (19).

NOTE

- There are two rear clip assemblies for plug connectors. Only one is shown.
- Perform Steps 7 and 8 only if brackets or retaining strap are damaged.

7. Remove eight self-tapping screws (7), self-locking nuts (9), and two rear brackets (4) from rear of frame assembly (19). Discard self-locking nuts.

8. Remove four self-tapping screws (16) and front retaining strap (3) from front of frame assembly (19).



b. INSTALLATION

NOTE

Perform Steps 1 and 2 only if brackets or retaining strap were removed.

1. Position front retaining strap (3) on front of frame assembly (19) and install four self-tapping screws (16).
2. Position two rear brackets (4) on rear of frame assembly (19) and install eight self-tapping screws (7) and eight new self-locking nuts (9).
3. Position chassis wiring harness (12) on frame assembly (19) and install two grommets (8).
4. Install three self-tapping screws (15), washers (14), and tiedown straps (13) on chassis wiring harness (12) and frame assembly (19).
5. Install five self-tapping screws (17), tiedown straps (18), washers (10), and new self-locking nuts (11) on chassis wiring harness (12) and frame assembly (19).
6. Connect six front plug connectors (1) to intervehicular cable (2). Connect four rear plug connectors (6) to right and left light assemblies (5).
7. Install eight rear plug connectors (6) in two brackets (3). Install six front plug connectors (1) in from retaining strap (4).

4-26. CLEARANCE MARKER LIGHT WIRING HARNESS REPLACEMENT.

This Task Covers:

- a. Removal b. Installation

Initial Setup:

Tools/Test Equipment:

- General mechanic's tool kit (Item 1, Appendix B)

Equipment Conditions:

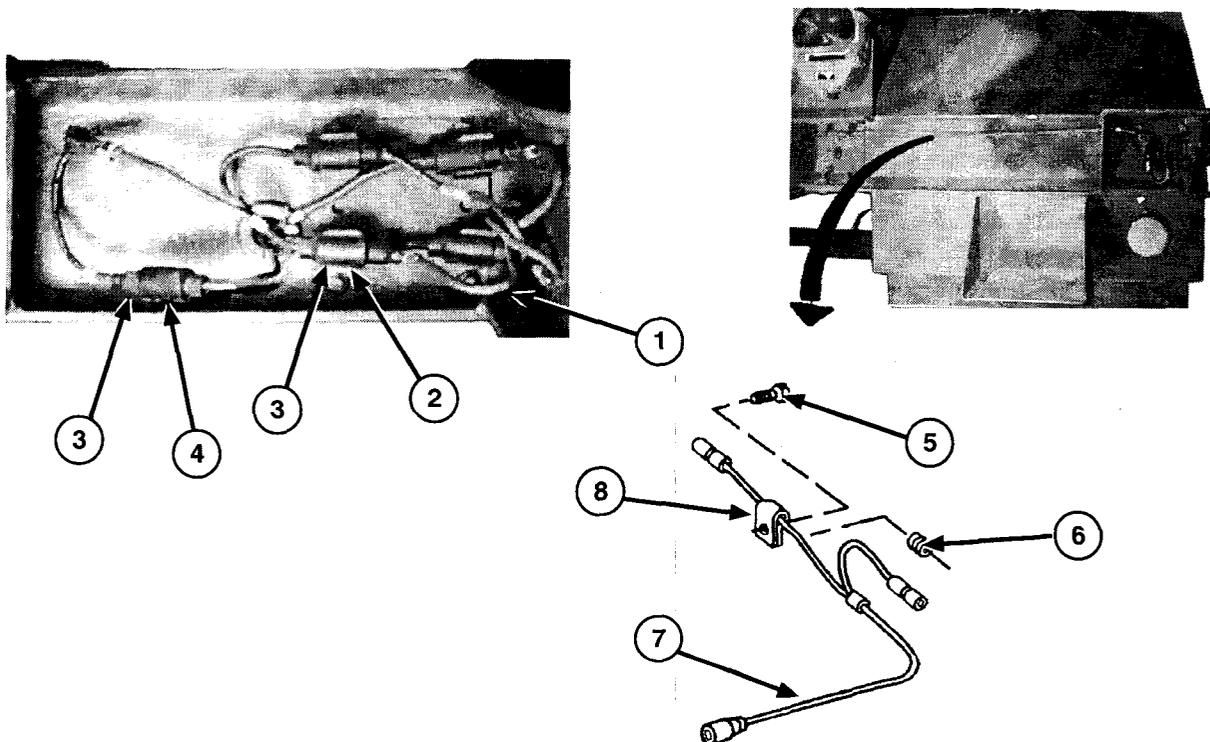
- Trailer parked on level ground (para 2-12).

Materials/Parts:

- Marker tags (as required) (Item 38, Appendix F)

a. REMOVAL

1. Tag wires for installation if identification bands are missing or not legible (para 4-21).
2. Remove one rear plug connector (3) from bracket (2).
3. Disconnect two plug connector (3) from chassis wiring harness (1) and composite stoplight-tailight harness (4).
4. Remove screw (5) and clamp (8) from rear of frame assembly.
5. Remove clearance light wiring harness (7) grommet (6) from frame assembly.



4-26. CLEARANCE MARKER LIGHT WIRING HARNESS REPLACEMENT (continued).

b. INSTALLATION

1. Install grommet (6) to frame assembly.
2. Position clearance marker light harness (7) to frame assembly and install clamp (8) and screw (5).
3. Connect two plug connectors (3) to chassis wiring harness (1) and composite stoplight-tailight harness (4).
4. Install one rear plug connector (3) to bracket (2).

FOLLOW-ON TASKS:

- Check operation of lights (refer to towing vehicle technical manual).

4-27. CHASSIS WIRING HARNESS REPAIR.

This Task Covers:

- | | |
|------------------------------------|----------------------------|
| a. Identification Band Replacement | b. Terminal Replacement |
| c. Male Connector Repair | d. Female Connector Repair |
-

Initial Setup:

Tools/Test Equipment:

- General mechanic's tool kit (Item 1, Appendix B)
- Common No. 1 tool set (Item 2, Appendix B)

- Tag, marker (as required) (Item 38, Appendix F)
- Terminals (as required)

Materials/Parts:

- Contacts (as required)
- Identification bands (as required)

Equipment Conditions:

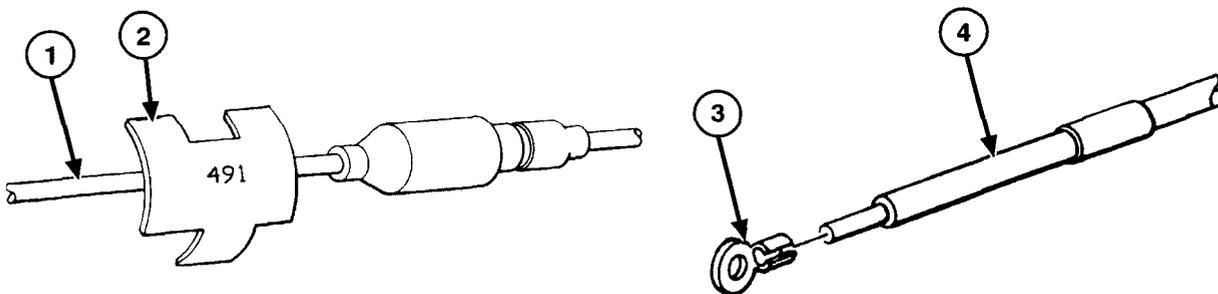
- Trailer parked on level ground (para 2-12).
-

a. IDENTIFICATION BAND REPLACEMENT

1. Remove identification band (2) from wire lead (1). Discard identification band.
2. Mark new identification band (2) with proper identification number.
3. Position new identification band (2) on wire lead (1) and bend tabs over wire lead (1).

b. TERMINAL REPLACEMENT

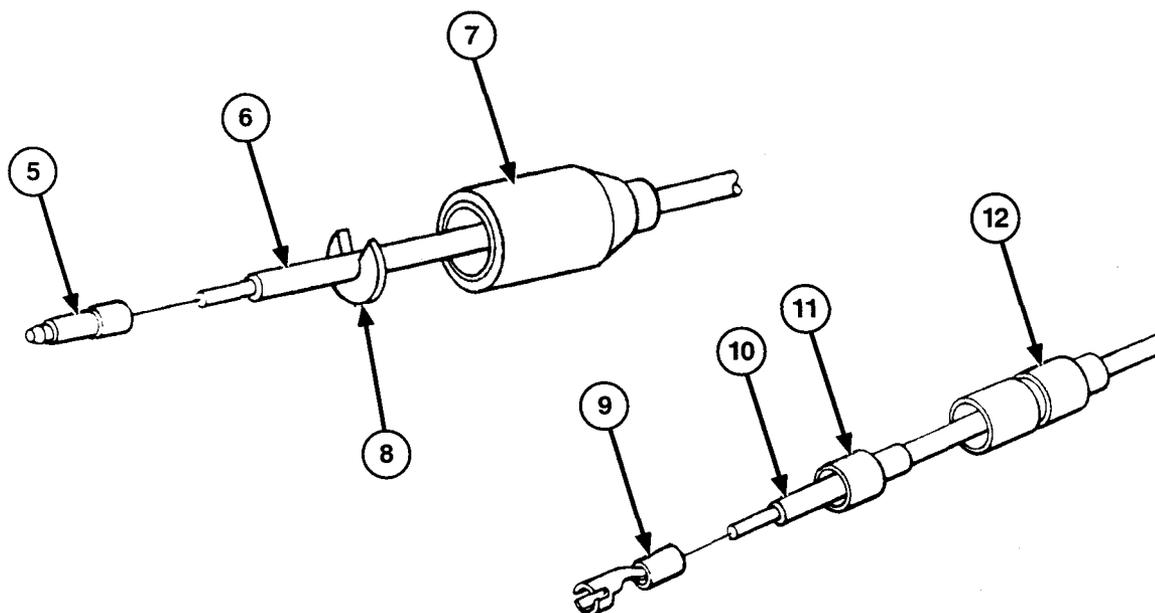
1. Cut terminal (3) from wire lead (4). Discard terminal.
2. Strip insulation from wire lead (4) equal to depth of new terminal (3).
3. Position new terminal (3) on wire lead (4) and crimp terminal (3).



4-27. CHASSIS WIRING HARNESS REPAIR (continued).

c. MALE CONNECTOR REPAIR

1. Slide back shell (7) and remove washer (8) from wire lead (6). Cut contact (5) from wire lead (6). Discard wire lead.
2. Strip insulation from wire lead (6) equal to depth of new contact (5).
3. Position new contact (5) on wire lead (6) and crimp.
4. Position washer (8) on wire lead (6), and slide shell (7) over washer (8) and contact (5).

**d. FEMALE CONNECTOR REPAIR**

1. Slide back connector (12) and insulator (11), and cut terminal (9) from wire lead (10). Discard terminal.
2. Strip insulation from wire lead (10) equal to depth of new terminal (9).
3. Position new terminal (9) on wire lead (10) and crimp.
4. Slide insulator (11) and connector (12) over terminal (9).

FOLLOW-ON TASKS:

- Check operation of lights (refer to towing vehicle technical manual).

4-28. INTERVEHICULAR CABLE REPLACEMENT.

This Task Covers:

- a. Removal b. Installation

Initial Setup:

Tools/Test Equipment:

- General mechanic's tool kit (Item 1, Appendix B)
- Common No.1 tool set (Item 2, Appendix B)

- Lockwasher (2), MS35338-20
- Nuts , self-locking (3), MS51922-57

Materials/Parts:

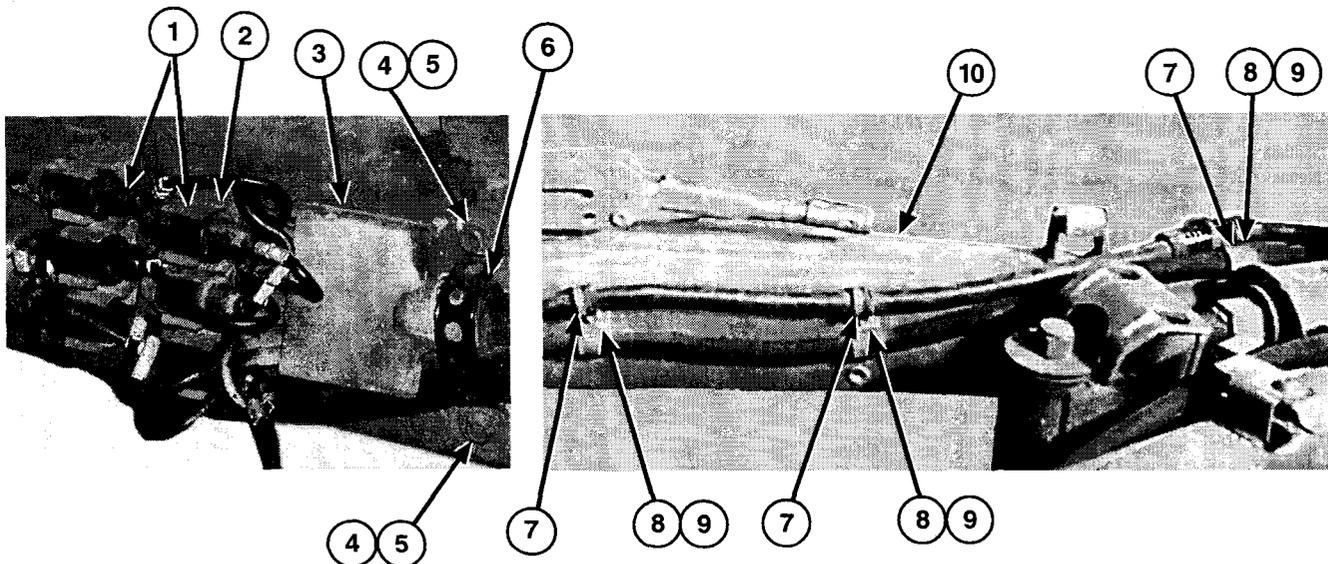
- Tag, marker (as required) (Item 38, Appendix F)

Equipment Conditions:

- Trailer parked on level ground (para 2-12).

a. REMOVAL

1. Tag wires for installation if identification bands are missing or not legible (para 4-21).
2. Remove six plug connectors (1) from two mounting brackets (2) and disconnect six plug connectors (1) from intervehicular cable (3).
3. Remove two screws (4), flat washers (5), and tiedown straps (6) from frame assembly (10).
4. Remove three screws (8), flat washers (9), and looped clamps (7) from frame assembly (10).
5. Remove intervehicular cable (3) from frame assembly (10).



4-28. INTERVEHICULAR CABLE REPLACEMENT (continued).

b. INSTALLATION

1. Position intervehicular cable (3) on frame assembly (10) and install three looped clamps (7), screws (8), and flat washers (9).
2. Position intervehicular cable (3) on frame assembly (10) and install tiedown strap (6) and two flat washers (5), and screws (4).
3. Connect six plug connectors (1) to intervehicular cable (3), and place six plug connectors (1) in two mounting brackets (2).

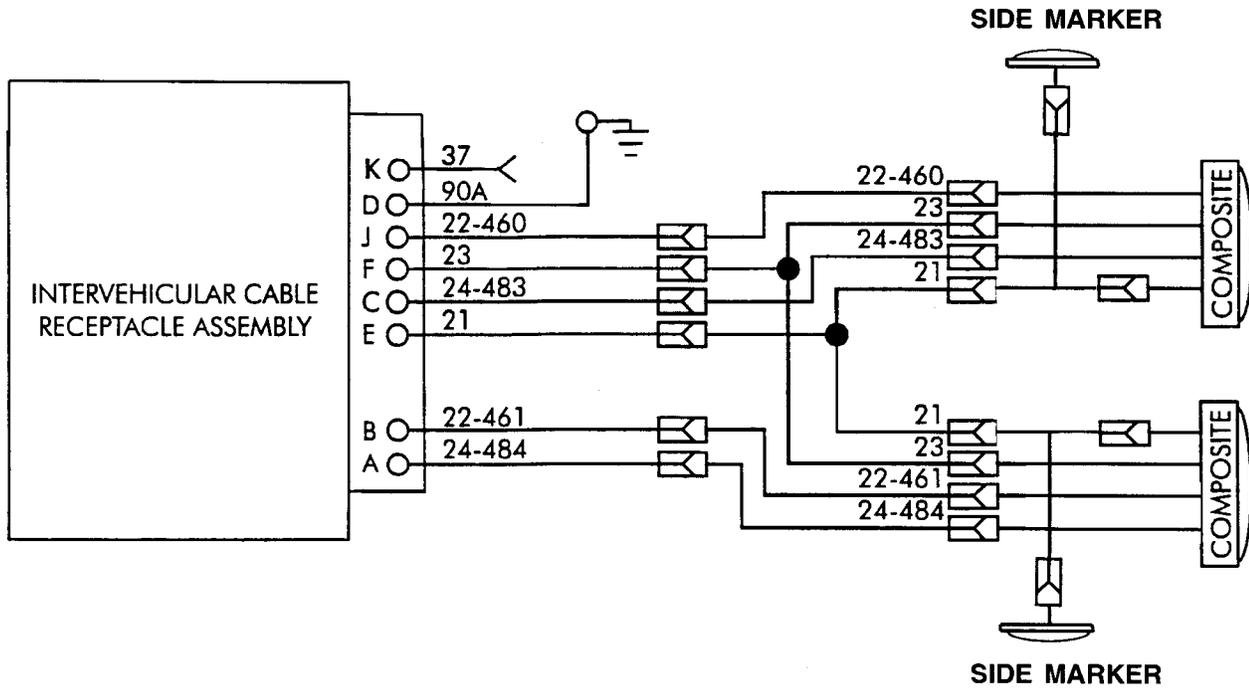
FOLLOW-ON TASKS:

- Check operation of lights (refer to towing vehicle technical manual).

4-29. WIRING DIAGRAMS.

NOTE

This paragraph contains the trailer wiring diagrams. Refer to these diagrams when performing electrical troubleshooting and when performing repair and maintenance.



Section VII. AXLE MAINTENANCE

4-30. CROSS AXLE REPLACEMENT.*This Task Covers:*

- a. Removal b. Installation

*Initial Setup:***Tools/Test Equipment:**

- General mechanic's tool kit (Item 1, Appendix B)
- Common No. 1 tool set (Item 2, Appendix B)

Equipment Conditions:

- Right and left undercarriage groups removed (para 4-48).
- Shock absorbers removed (4-55).

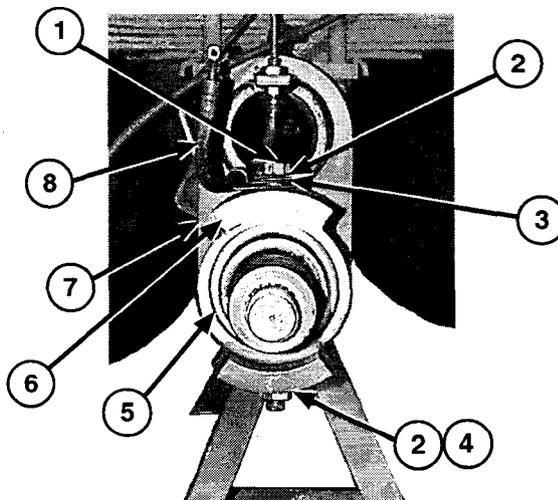
Materials/Parts:

- Grease (Item 18, Appendix F)
- Lockwasher (8), MS35340-51
- Nuts, self-locking (2), MS51922-57

Personnel Required: Two**a. REMOVAL****WARNING**

Cross axle is heavy and awkward to handle. Use caution, provide adequate support, and use assistance during removal. Failure to follow this warning may result in serious injury to personnel and damage to equipment.

1. Remove capscrew (1), two washers (2), clamp (3), brake hose (8), and self-locking nut (4) from axle stop (6). Discard self-locking nut.
2. Remove spacer (5) and axle stop (6) from cross axle (7).
3. Repeat steps 1 and 2 for the other side of trailer.



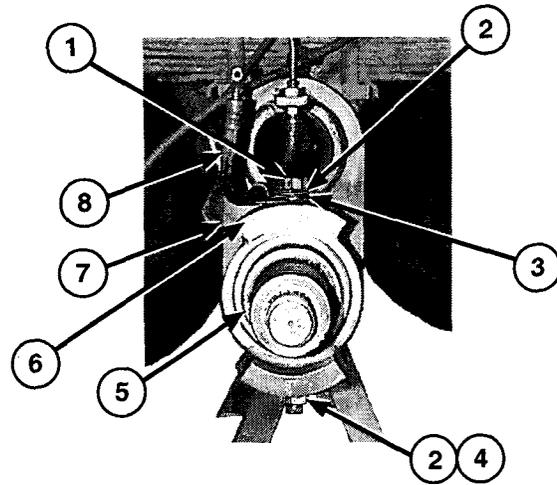
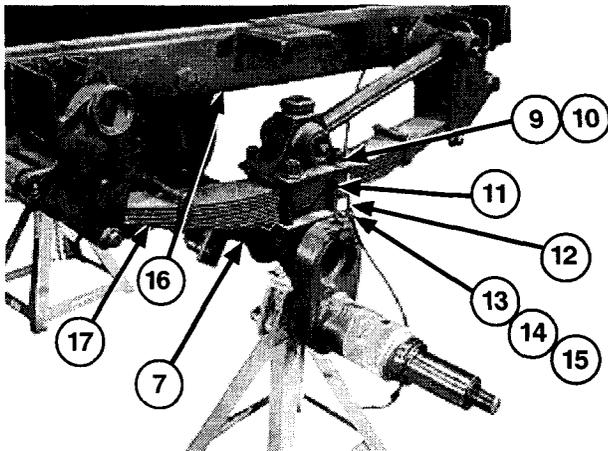
4-30. CROSS AXLE REPLACEMENT (continued).

4. Remove screw (13), washer (14), clamp (15), and handbrake cable assembly (12) from cross axle (7).

WARNING

Cross axle is heavy and awkward to handle. Use caution, provide adequate support, and use assistance during removal. Failure to follow this warning may result in serious injury to personnel and damage to equipment.

5. Remove eight nuts (9) and lockwashers (10) and four U-bolts (11) from cross axle (7). With the aid of an assistant, remove cross axle (7) from trailer (16). Discard lockwashers.



b. INSTALLATION

WARNING

Cross axle is heavy and awkward to handle. Use caution, provide adequate support, and use assistance during installation. Failure to follow this warning may result in serious injury to personnel and damage to equipment.

1. With the aid of an assistant, position cross axle (7) on floor jacks underneath trailer (16). Align spring assembly (17) and cross axle (7) locators.
2. Install eight U-bolts (11) on cross axle (7) with eight nuts (9) and new lockwashers (10).
3. Install handbrake cable (12) to cross axle (7) with screw (13), washer (14) and clamp (15).
4. Install axle stop (6) and spacer (5) on cross axle (7).
5. Align holes in cross axle (7) and axle stop (6). Install capscrew (1), two washers (2), clamp (3), brake hose (8), and new self-locking nut (4).
6. Repeat steps 4 and 5 for other side of trailer.

FOLLOW-ONTASKS:

- Install shock absorbers (para 4-55).

Section VIII. WALKING BEAM MAINTENANCE

Paragraph Number	Paragraph Title	Page Number
4-31	Walking Beam Replacement	4-43
4-32	Walking Beam Alignment	4-47

4-31. WALKING BEAM REPLACEMENT.

This Task Covers:

- a. Removal
- b. Cleaning and Inspection
- c. Installation

Initial setup:

Tools/Test Equipment:

- General mechanic's tool kit (Item 1, Appendix B)
- Common No. 1 tool set (Item 2, Appendix B)
- 2-1/4 inch socket wrench, 3/4 inch drive (Item 6, Appendix B)

Personnel Required: Two

Equipment Conditions:

- Inner and outer service brakes disassembled (para 4-36).
- Hydraulic lines, hoses, and fittings removed (para 4-37).

Materials/Parts:

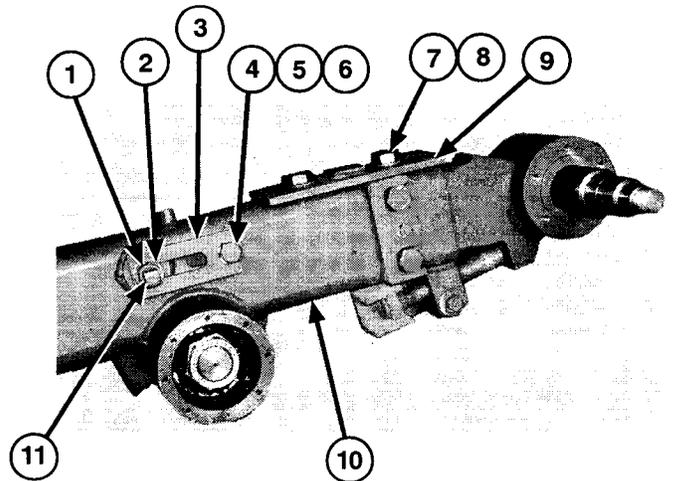
- Drycleaning solvent (Item 12, Appendix F)
- Grease (Item 18, Appendix F)
- Rag (Item 32, Appendix F)
- Lip seal, 155256 P/N 13370
- Nut, self-locking, MS51943-57

a. REMOVAL

NOTE

Both walking beams are replaced the same way. The right side walking beam is shown.

1. Loosen nut (1) from setscrew (11). Remove setscrew (11), washer (2), and plate (3) from outer walking beam (10).
2. Remove bolt (4), two washers (5), and spherical washer (6) from outer walking beam (10).
3. Remove two capscrews (7), washers (8), and plate (9) from outer walking beam (10).



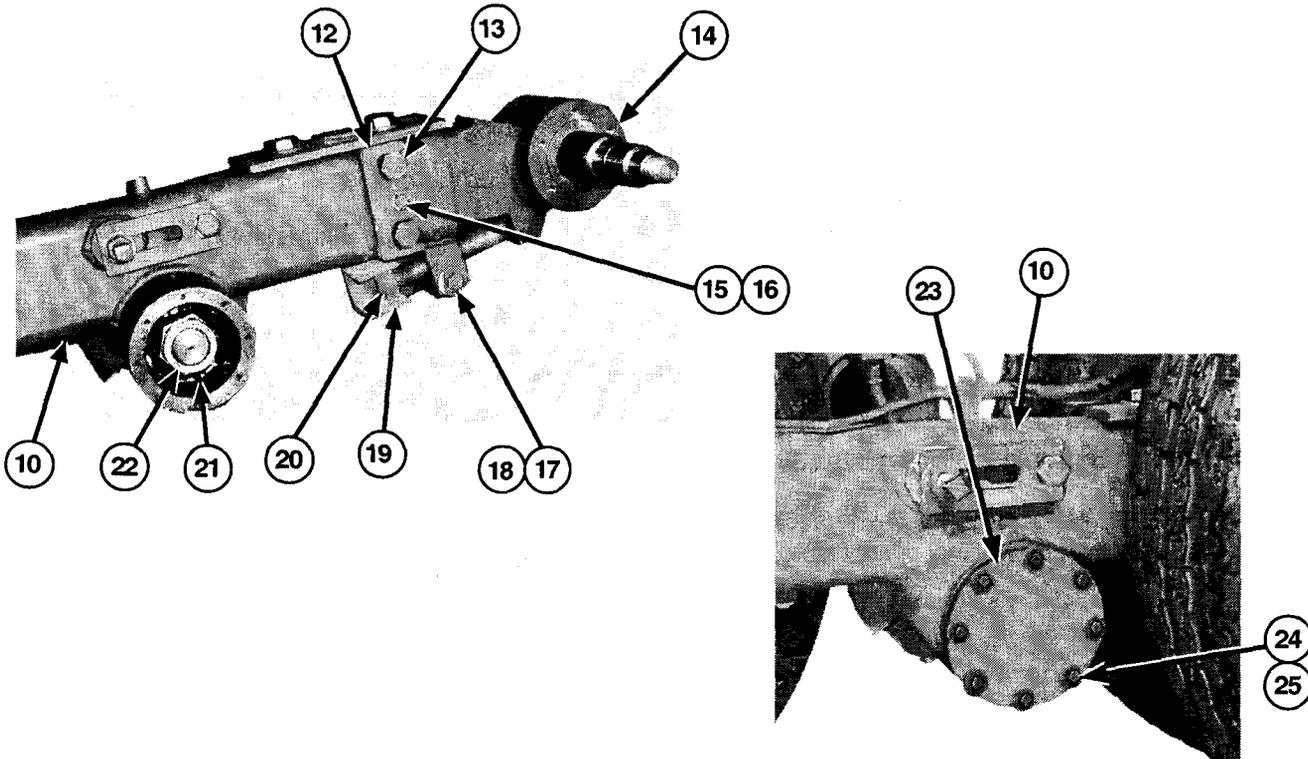
4-31. WALKING BEAM REPLACEMENT (continued).

4. Remove screw (16), washer (15), plate (12), and two bolts (13) from the walking beam (10).
5. Remove inner walking beam (14) from outer walking beam (10).
6. Remove capscrew (18), washers (17), and retaining bracket (19) from adjustment bolt (20).
7. Remove adjustment bolt (20) from outer walking beam (10).
8. Remove eight capscrews (24), washers (25) and axle cover (23) from outer walking beam (10).
9. Using a 2-1/4 inch socket wrench, remove self-locking nut (22) from walking beam (10). Discard self-locking nut.

WARNING

Walking beam is heavy. To prevent injury to personnel and damage to equipment, two people are required to remove walking beam from cross axle.

10. With the aid of an assistant, remove outer walking beam (10) and retainer plate (21) from trailer.
11. Remove lip seal (26) from outer walking beam (10). Discard lip seal.
12. Remove spacer (28) and axle stop (27) from cross axle (29).



4-31. WALKING BEAM REPLACEMENT (continued).

b. CLEANING AND INSPECTION**WARNING**

Drycleaning solvent PF05 is combustible. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and **DO NOT** breathe vapors. **DO NOT** use near open flame or excessive heat.

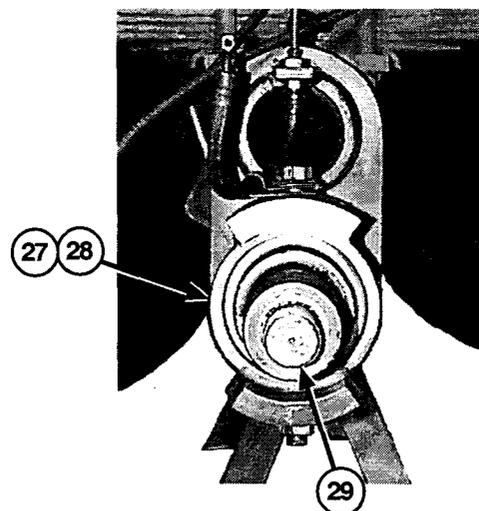
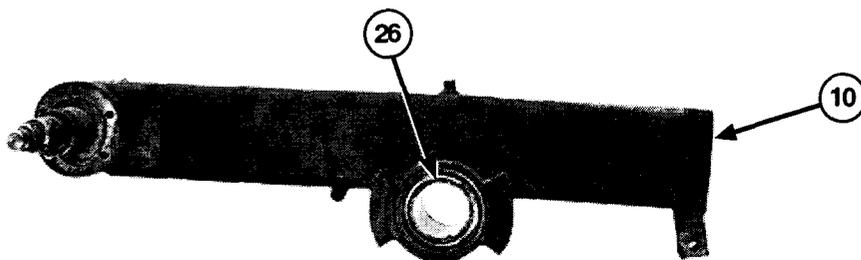
1. Clean all parts with drycleaning solvent and rag.
2. Inspect front and rear frame assemblies for damage. Replace any damaged parts.

c. INSTALLATION

1. Install spacer (28) and axle stop (27) on cross axle (29).
2. Install new lip seal (26) on front walking beam (10).

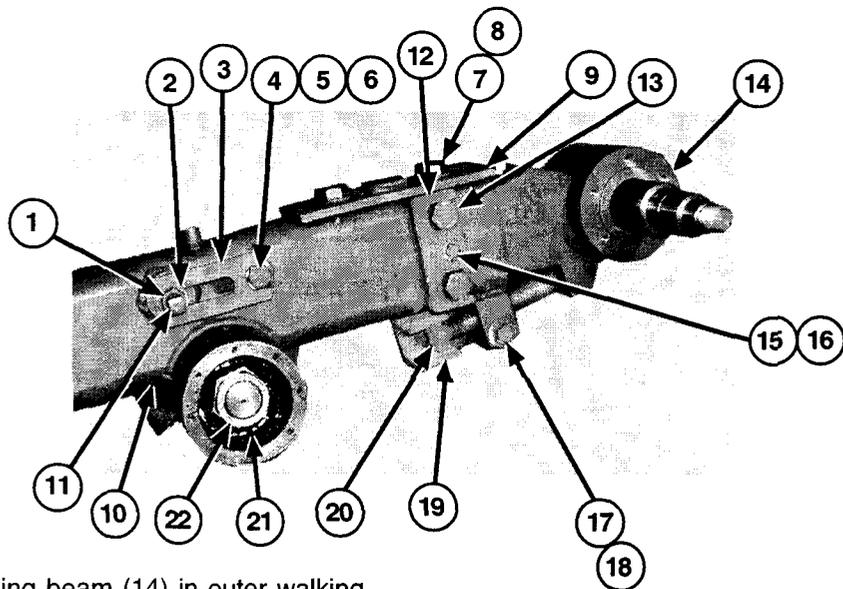
WARNING

Walking beam is heavy. To prevent injury to personnel and damage to equipment, two people are required to install walking beam on cross axle.

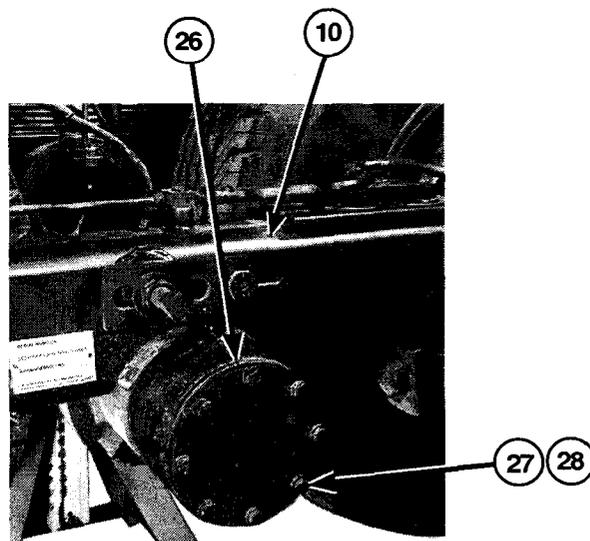


4-31. WALKING BEAM REPLACEMENT (continued).

3. With the aid of an assistant, install outer walking beam (10) and retainer plate (21) on trailer.
4. Using a 2-1/4 inch socket wrench, tighten new self-locking nut (22) until a slight drag is felt when moving outer walking beam (10).
5. Install axle cover (26) on outer walking beam (10) with eight cap head screws (27) and washers (28). Torque screws (27) between 9 and 11 lb-ft (12 and 15 N•m).
6. Loosely install adjustment bolt (20) on outer walking beam (10).
7. Install capscrew (18), washers (17), and retaining bracket (19) on adjustment bolt (20).



8. Install inner walking beam (14) in outer walking beam (10).
9. Loosely install screw (16), washer (15), plate (12), and two bolts (13) on outer walking beam (10).
10. Loosely install two capscrews (7), washers (8), and plate (9) on outer walking beam (10).
11. Loosely install bolt (4), spherical washer (6), and two washers (5) on outer walking beam (10).
12. Loosely install setscrew (11), washer (2), nut (1), and plate (3) on outer walking beam (10).



FOLLOW-ONTASKS:

- Install hydraulic lines, hoses, and fittings (para 4-37).
- Assemble and adjust inner and outer service brakes (para 4-36).
- Align walking beam (para 4-32).

4-32. WALKING BEAM ALIGNMENT

This Task Covers:

- a. Alignment

Initial Setup:

Tools/Test Equipment:

- General mechanic's tool kit (Item 1, Appendix B)
- Common #1 tool set (Item 2, Appendix B)

Equipment Conditions:

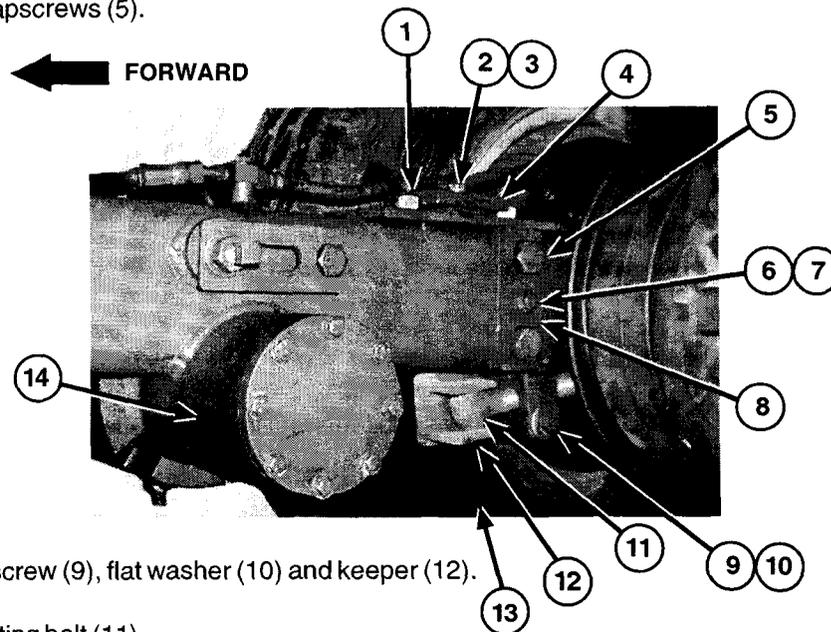
- Rear outer tire assembly removed (para 4-46)

Materials/Parts:

- Rag (Item 32, Appendix F)

a. ALIGNMENT

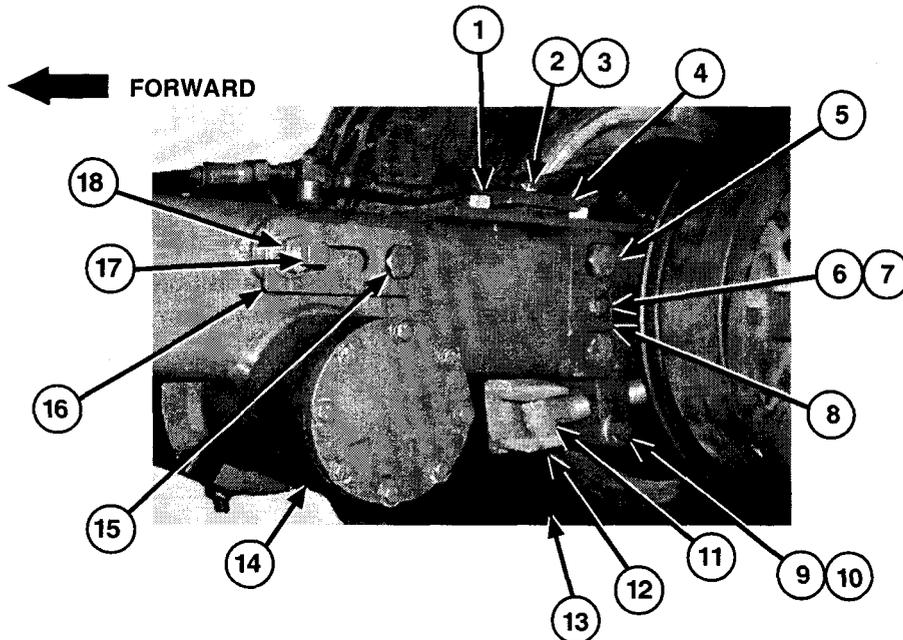
1. Raise cross axle (14) until wheel (13) is clear of ground. Support cross axle (14) with jackstand. Lower and remove hydraulic jack.
2. Remove capscrew (2), washer (3), guard (4).
3. Loosen two capscrews (1).
4. Remove capscrew (6), washer (7) and retainer (8).
5. Loosen two capscrews (5).



6. Remove capscrew (9), flat washer (10) and keeper (12).

7. Loosen adjusting bolt (11).

4-32. WALKING BEAM ALIGNMENT (continued).



8. Loosen nut (18), setscrew (17) and slide keeper (16) forward until clear of capscrew (15).
9. Loosen capscrew (15).
10. Push rear tire (13) towards rear of trailer until fully extended.
11. Using torque wrench, torque capscrews (1) between 120 and 130 lb-ft (163 and 176 N•m) until capscrew flats align with guard (4).
12. Install guard (4), washer (3) and capscrew (2).
13. Tighten capscrew (15) enough to align with keeper (16). Slide keeper (16) on capscrew (15)
14. Tighten setscrew (17) enough to engage inner walking beam. Tighten nut (18).
15. Tighten adjusting bolt (11) enough to engage stop. Continue tightening until adjusting bolt flats align with keeper (12).
16. Install keeper (12), washer (10) and screw (9).
17. Loosely tighten two capscrews (5) enough to engage inner walking beam. Continue tightening until capscrews flats align with retainer (8).
18. Install retainer (8), washer (7), and capscrew (6).

FOLLOW-ON TASKS:

- Install rear outer tire assembly (para 4-46)

Section IX. SERVICE BRAKE MAINTENANCE

Paragraph Number	Paragraph Title	Page Number
4-33	Handbrake Lever Assembly Replacement	4-50
4-34	Handbrake Cable Assembly Replacement	4-52
4-35	Wheel Cylinder Replacement	4-54
4-36	Service Brake Replacement and Adjustment	4-56
4-37	Hydraulic Lines, Hoses, and Fittings Replacement	4-61
4-38	Master Cylinder and Airbrake Chamber Replacement	4-70
4-39	Hydraulic Fluid Reservoir Replacement	4-72
4-40	Bleeding Hydraulic Brake System	4-73
4-41	Air Lines, Hoses, and Fittings Replacement	4-75
4-42	Air Chamber Replacement	4-77
4-43	Relay Valve Replacement	4-78
4-44	Air Filter Assembly Repair	4-79

4-33. HANDBRAKE LEVER ASSEMBLY REPLACEMENT.

This Task Covers:

- a. Removal b. Installation
-

Initial Setup:

Tools/Test Equipment:

- General mechanic's tool kit (Item 1, Appendix B)

Equipment Conditions:

- Trailer parked on level ground (para 2-12).

Materials/Parts:

- Cotter pin, MS24665-283
 - Nut, self-locking M45913/1-5CG5C
 - Nut, self-locking MS51922-17
-

a. REMOVAL

WARNING

If trailer is not coupled to towing vehicle, make sure wheels are securely blocked. Failure to do so may cause trailer to roll, resulting in serious injury or death to personnel or damage to equipment.

NOTE

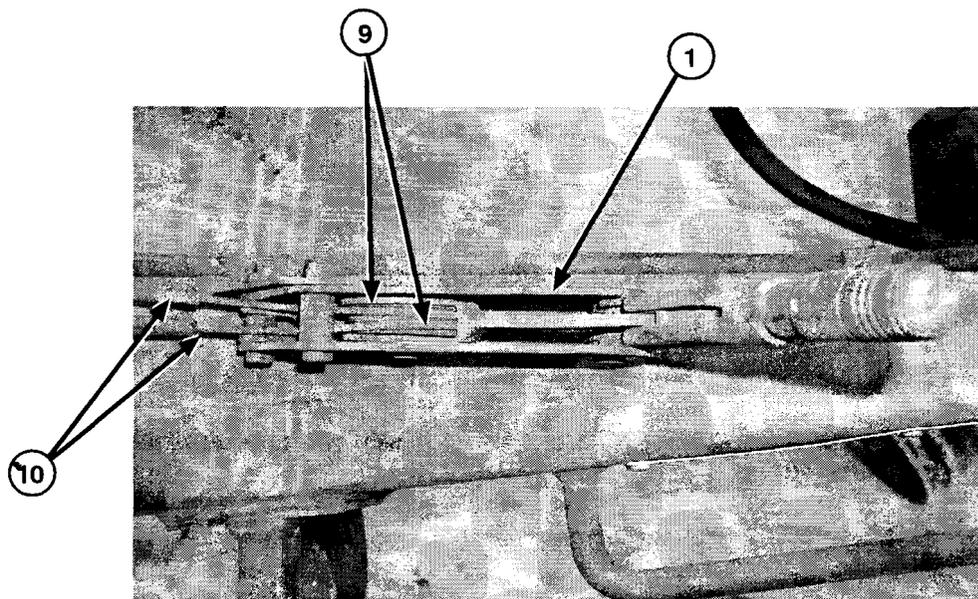
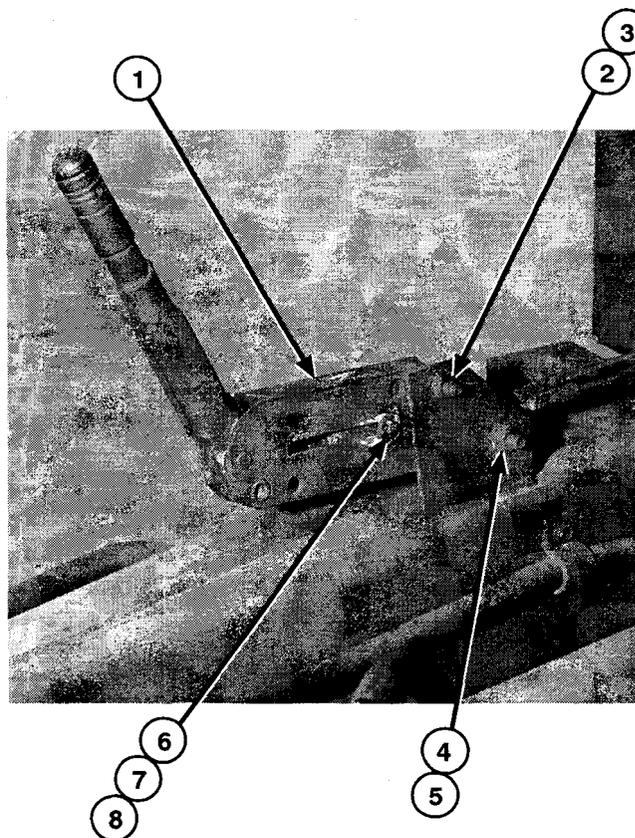
Both handbrake lever assemblies are replaced the same way. The right-side handbrake lever assembly is shown.

1. Remove self-locking nut (4), screw (5), and two handbrake cable assemblies (10) from handbrake lever (1). Discard self-locking nut.
2. Remove self-locking nut (2), and screw (3) and handbrake lever (1) from bracket. Discard self-locking nut.
3. Remove cotter pin (6), washer (7), headed straight pin (8), two wheels (9), and handbrake cable assemblies (10) from handbrake lever (1). Discard cotter pin.

b. INSTALLATION

1. Install two handbrake cable assemblies (10) and wheels (9) on handbrake lever (1) with headed straight pin (8), washer (7), and new cotter pin (6).
2. Install screw (5) through handbrake cable assembly (10) on handbrake lever (1) and secure with new self-locking nut (4).
3. Install handbrake lever (1) on bracket with screw (3) and new self-locking nut (2).

4-33. HANDBRAKE LEVER ASSEMBLY REPLACEMENT (continued).



FOLLOW-ONTASKS:

- Adjust handbrake lever assembly (para 3-4).

4-34. HANDBRAKE CABLE ASSEMBLY REPLACEMENT.

This Task Covers:

- a. Removal b. Installation
-

Initial Setup:

Tools/Test Equipment:

- General mechanic's tool kit (Item 1, Appendix B)

Materials/Parts:

- Lockwasher (2), MS35338-45
- Nut, self-locking, MS51922-1

Equipment Conditions:

- Front inner and outer tire assembly removed (para 4-46).
 - Brake drums removed (para 4-47).
 - Handbrake lever removed (para 4-33).
-

NOTE

All handbrake cable assemblies are replaced the same way.

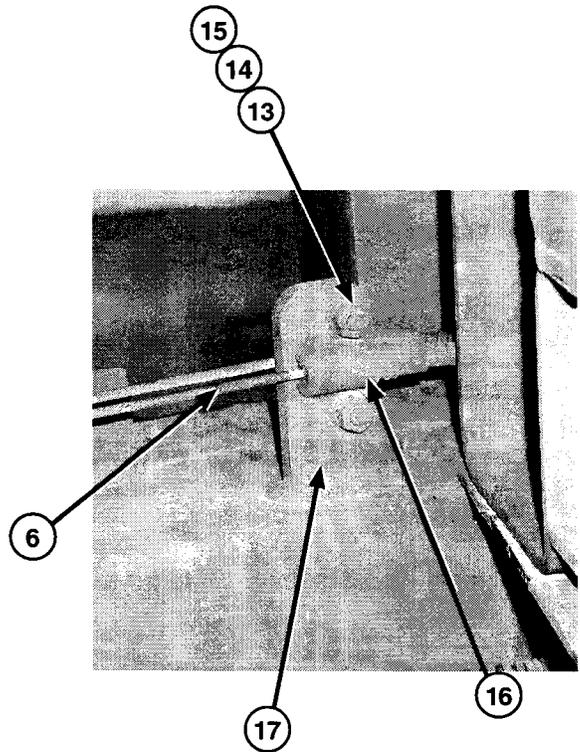
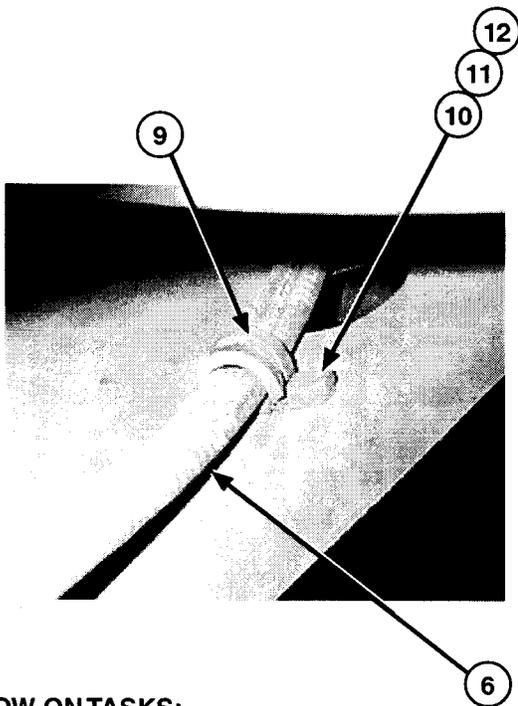
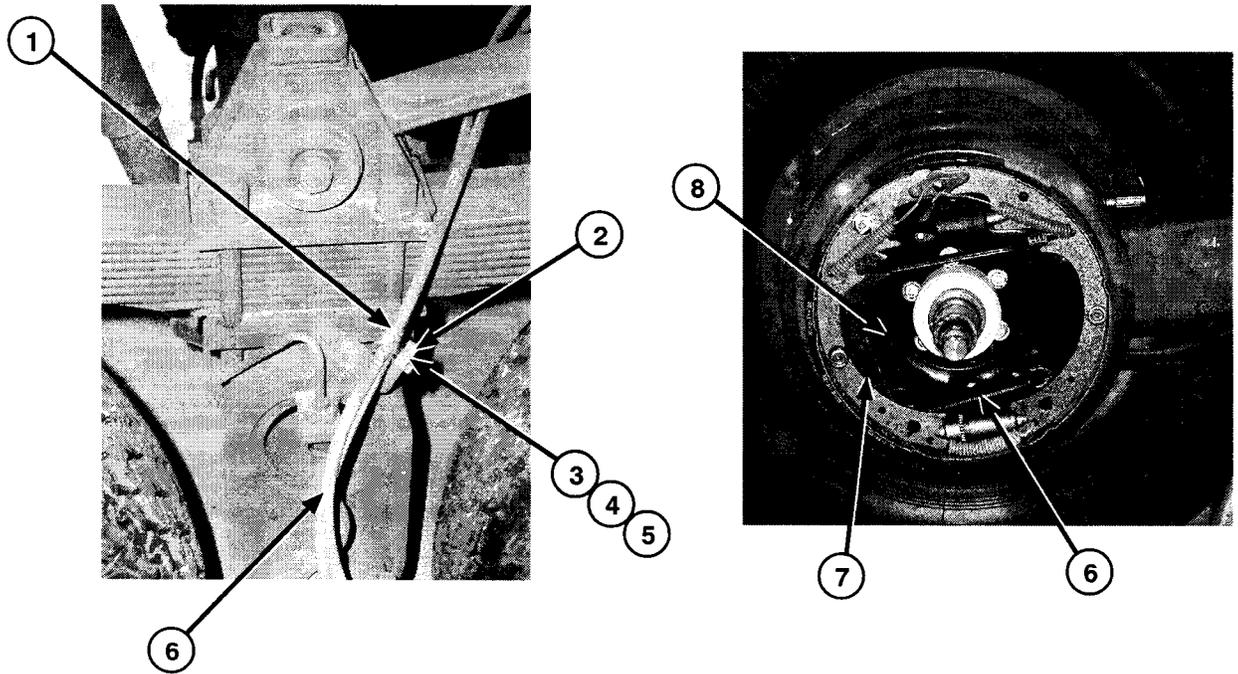
a. REMOVAL

1. Remove capscrew (3), washer (4), self-locking nut (5), loop clamp (1) and two handbrake cable assemblies (6) from bracket (2) on outer walking beam. Discard self-locking nut.
2. Remove handbrake cable assembly (6) from handbrake lever (7) and back of backing plate (8).
3. Remove two capscrews (10), washers (11), self-locking nuts (12), loop clamps (9) and handbrake cable assemblies (6) from trailer frame. Discard self-locking nuts.
4. Remove two screws (13), lockwashers (14), nuts (15), two brackets (16) and handbrake cable assemblies (6) from bracket (17) on trailer frame. Discard lockwashers.

b. INSTALLATION

1. Push each handbrake cable assembly (6) through backing plate (8) and attach handbrake cable (6) to handbrake lever (7).
2. Route handbrake cable assembly (6) through frame and to bracket (17) on trailer frame.
3. Install two handbrake cable assemblies (6) on bracket (17) with two brackets (16), screws (13), new lockwashers (14) and nuts (15).
4. Install handbrake cable assemblies (6) on trailer frame with loop clamps (9), capscrews (10), washers (11) and new self-locking nuts (12).
5. Install handbrake cable assemblies (6) to bracket (2) on and outer walking beam with loop clamp (1), capscrew (3), washer (4), and new self-locking nut (5).

4-34. HANDBRAKE CABLE ASSEMBLY REPLACEMENT (continued).



FOLLOW-ON TASKS:

- Install brake drum (para 4-47).
- Install tire assembly (para 4-46).
- Install handbrake lever assembly (para 4-33).
- Adjust handbrake lever assembly (para 3-4).

4-35. WHEEL CYLINDER REPLACEMENT.

This Task Covers:

- a. Removal b. Installation
-

Initial Setup:

Tools/Test Equipment:

- General mechanic's tool kit (Item 1, Appendix B)

Materials/Parts:

- Screw-assembled washer (2), 2345700
- Cylinder assembly, 0977700 or 0977600

Equipment Conditions:

- Tire assembly removed (para 4-46).
 - Brake drum removed (para 4-47).
 - Service brake disassembled (para 4-36).
-

NOTE

All wheel cylinders are replaced the same way. The left inner wheel cylinder is shown.

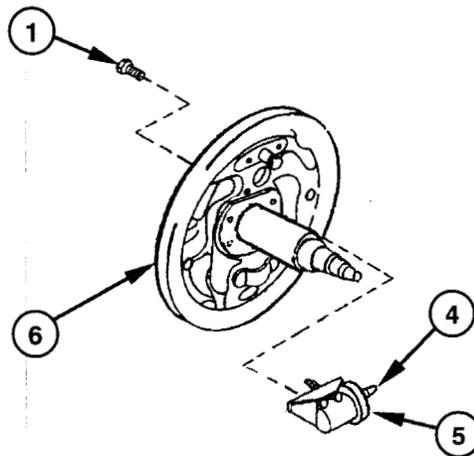
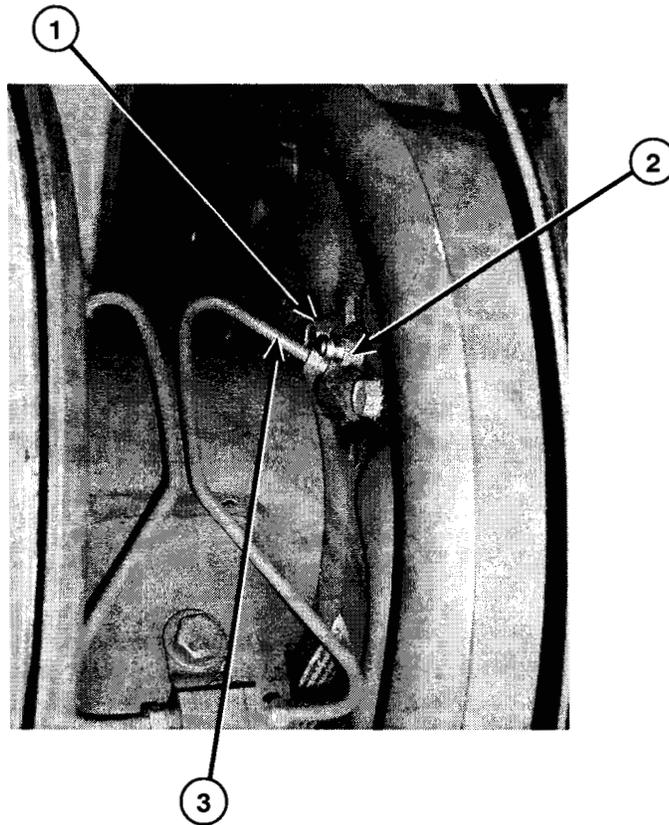
a. REMOVAL

1. Position drain pan to catch brake fluid.
2. Disconnect tube assembly (3) from wheel cylinder (5).
3. Remove bleeder valve (2) from wheel cylinder (5).
4. Remove two screw-assembled washers (1) and wheel cylinder (5) from backing plate (6). Discard screw-assembled washers.
5. Remove cylinder link (4) from wheel cylinder (5).

b. INSTALLATION

1. Install bleeder valve (2) on wheel cylinder (5).
2. Position cylinder link (4) on wheel cylinder (5).
3. Position wheel cylinder (5) on backing plate (6) and install with two new screw-assembled washers (1) .
4. Connect tube assembly (3) to wheel cylinder (5).

4-35. WHEEL CYLINDER REPLACEMENT (continued).

**FOLLOW-ONTASKS:**

- Assemble service brakes (para 4-33).
- Install brake drum (para 4-43).
- Bleed brakes (para 4-36).
- Adjust service brake (para 4-33).
- Install tire assembly (para 4-41).

4-36. SERVICE BRAKE REPLACEMENT AND ADJUSTMENT.

This Task Covers:

- | | |
|----------------|----------------------------|
| a. Disassembly | b. Cleaning and Inspection |
| c. Assembly | d. Minor Adjustment |
-

Initial Setup:

Tools/Test Equipment:

- General mechanic's tool kit (Item 1, Appendix B)
- Common No. 1 tool set (Item 2, Appendix B)

Equipment Conditions:

- Tire assembly removed (para 4-46).
- Brake drum removed (para 4-47).

Materials/Parts:

- Drycleaning solvent (Item 12, Appendix F)
 - Rag, wiping (Item 32, Appendix F)
 - Retainer, 0979500
-

a. DISASSEMBLY

WARNING

DO NOT handle brake shoes, brake drums, or other brake components unless area has been properly cleaned. There may be brake dust on these components which can be dangerous if touched or inhaled. Wear an approved filter mask and gloves. Never use compressed air or a dry brush to clean brake components. Dust may be removed using an industrial-type vacuum cleaner. Clean dust or mud away from brake components with water and a wet, soft brush or cloth. Failure to follow this warning may result in serious illness or death to personnel.

NOTE

Use this procedure for all right and left hand service brakes. Left hand inner service brake is shown.

1. Remove helical spring (20) from primary and secondary brake shoes (6) and two helical springs (8 and 9) and washer (7) from backing plate (3).
2. To provide slack, back off adjusting screw (18) from primary and secondary brake shoes (6) a few turns.
3. Spread apart lower ends of primary and secondary brake shoes (6). Remove adjusting screw (18) and socket (19) from primary and secondary brake shoes (6).
4. Spread apart upper ends of primary and secondary brake shoes (6). Remove parking brake strut (13) and helical spring (14) from primary and secondary brake shoes (6).
5. While holding head of toggle pin (2), compress helical spring (11 or 16) and turn toggle pin (2) from outside to disengage from cup (12 or 15). Remove toggle pin (2), helical spring (11 or 16), and two cups (12 and 10 or 15 and 17).

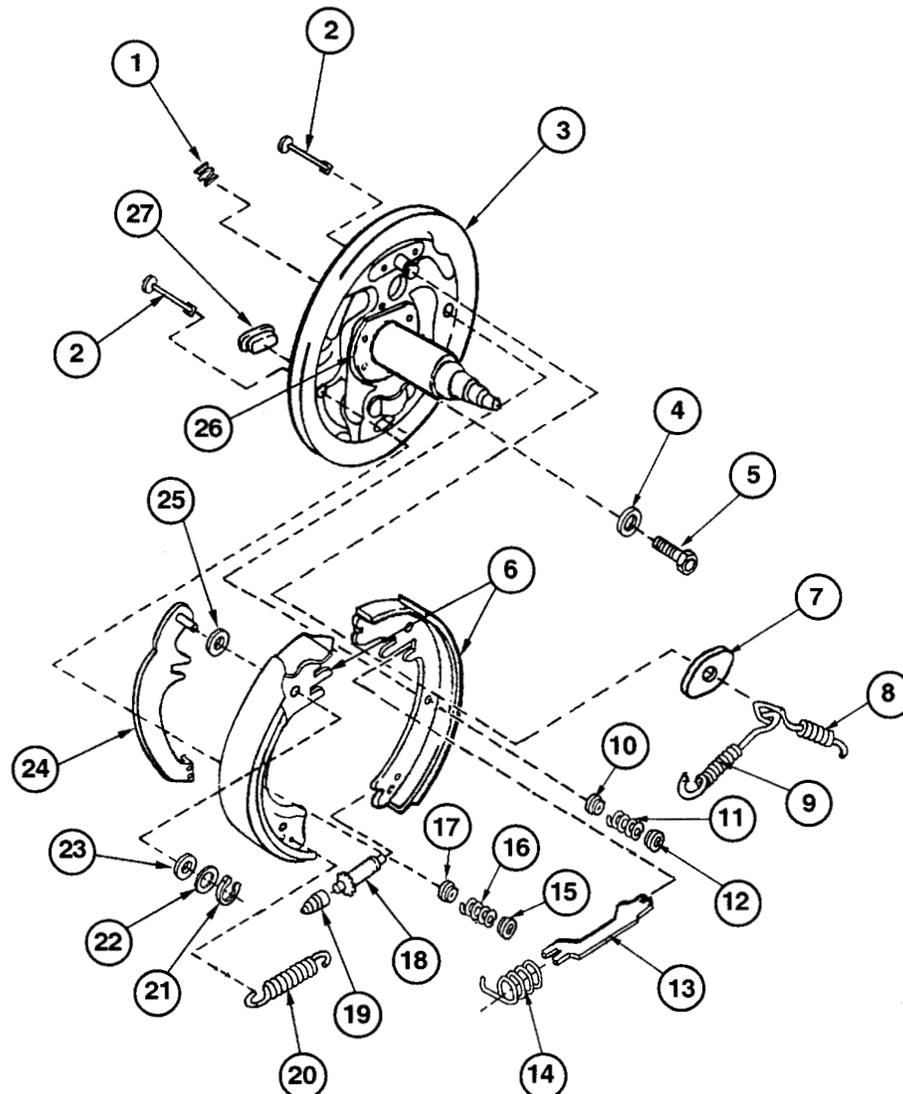
4-36. SERVICE BRAKE REPLACEMENT AND ADJUSTMENT (continued).

6. Repeat step 5 for other brake shoe.
7. Remove primary and secondary brake shoes (6) from backing plate (3).
8. Remove retainer (21) from parking brake lever (24). Remove two washers (23 and 25), springwasher (22), and parking brake lever (24) from secondary brake shoe (6). Discard retainer (21).

NOTE

Perform steps 9 and 10 only if backing plate needs to be removed.

9. Remove wheel cylinder (para. 4-35).
10. Remove five capscrews (5) and washers (4) and backing plate (3) from front frame assembly spindle (26).
11. Remove covers (1 and 27) from backing plate (3).



4-36. SERVICE BRAKE REPLACEMENT AND ADJUSTMENT (continued).

b. CLEANING AND INSPECTION

WARNING

Drycleaning solvent PF05 is combustible. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat.

1. Clean all parts with drycleaning solvent and rags.
2. Inspect all parts for damage. Replace any damaged parts.
3. Inspect brake shoe surfaces for cracks, distortion, and excessive wear. Brake shoe linings should have a minimum thickness of 1/8 inch (3.2 mm). Replace brake shoes if cracked or if lining thickness is less than 1/8 inch (3.2 mm).

c. ASSEMBLY

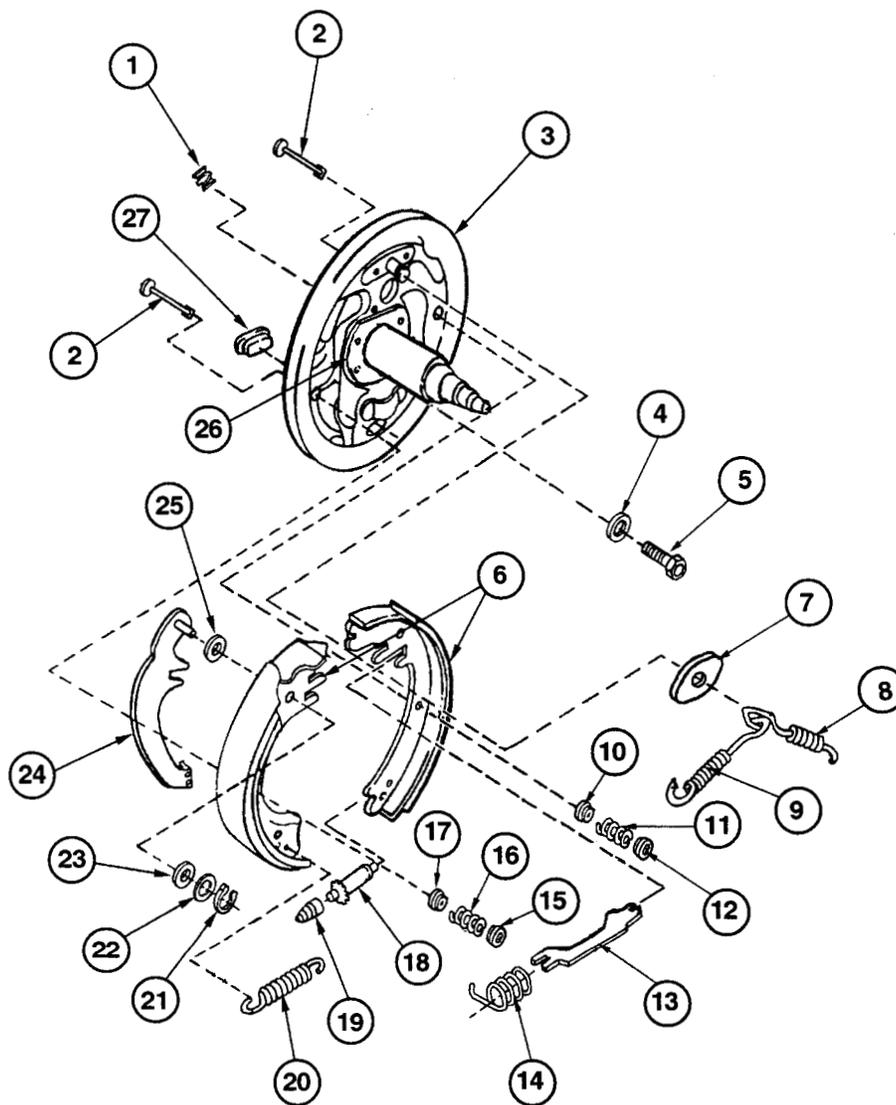
NOTE

Perform steps 1 and 2 only if backing plate was removed.

1. Install wheel cylinder (para. 4-35).
2. Install covers (1 and 27) in backing plate (3).
3. Position new backing plate (3) on front frame assembly spindle (26), and install five capscrews (5) and washers (4) on backing plate (3).
4. Position washer (25) and parking brake lever (24) on secondary brake shoe (6) and install with washer (23), springwasher (22), and new retainer (21).
5. Position primary and secondary brake shoes (6) on backing plate (3). Install toggle pin (2) in primary and secondary brake shoes (6).
6. Install helical spring (11 or 16), and two cups (12 and 10 or 15 and 17) on toggle pin (2). Compress and turn cup (12 or 15) until engaged.
7. Repeat step 6 for other brake shoe.
8. Spread apart upper ends of primary and secondary brake shoes (6). Install parking brake strut (13) and helical spring (14) on primary and secondary brake shoes (6).
9. Spread apart lower ends of primary and secondary brake shoes (6). Install adjusting screw (18) and socket (19) in primary and secondary brake shoes (6).
10. Position washer (7) on backing plate (3).
11. Install three helical springs (8,9, and 20) on primary and secondary brake shoes (6) and backing plate (3).

4-36. SERVICE BRAKE REPLACEMENT AND ADJUSTMENT (continued).

12. Install brake drum (para 4-47) and perform service brake adjustment (task d).



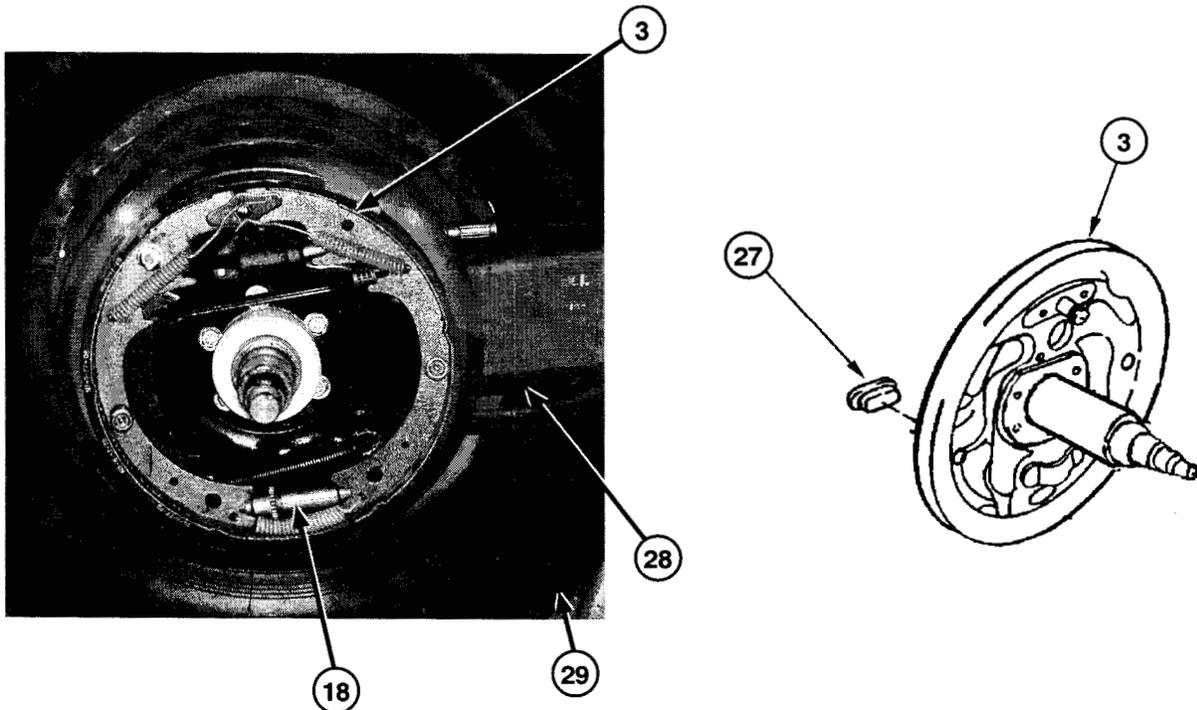
4-36. SERVICE BRAKE REPLACEMENT AND ADJUSTMENT (continued).

d. ADJUSTMENT

CAUTION

To avoid damage to cross axle, make sure hydraulic jack is placed as close as possible to suspension springs when lifting trailer.

1. Apply parking brake and block the wheel opposite the wheel that is being adjusted.
2. Using hydraulic jack, raise cross axle (28) until wheels (29) are clear of ground. Support cross axle (28) with jackstands. Lower and remove hydraulic jack.
3. Remove access cover (27) from backing plate (3).
4. Using brakeshoe adjusting tool, adjust service brakes by turning adjusting screw (18) until a slight drag is felt when wheel is spun.
5. Back off adjusting screw (18) so wheel (29) spins freely.
6. Install access cover (27) in backing plate (3).
7. Using hydraulic jack, raise cross axle (28) until clear of jackstands. Remove jackstands and lower hydraulic jack.



FOLLOW-ON TASKS:

- Install tire assembly (para 4-46).
- Adjust handbrake lever (para 3-4).
- Bleed brakes (para 4-40).

4-37. HYDRAULIC LINES, HOSES, AND FITTINGS REPLACEMENT.

This Task Covers:

- | | |
|-----------------------------------|----------------------------------|
| a. Rear Brake Lines Removal | b. Front Brake Lines Removal |
| c. Cleaning and Inspection | d. Rear Brake Lines Installation |
| e. Front Brake Lines Installation | |
-

Initial Setup:

Tools/Test Equipment:

- General mechanic's tool kit (Item 1, Appendix B)
- Common No. 1 tool set (Item 2, Appendix B)

- Nut, self-locking, MS51922-57
- Nuts, self-locking (2), MS51922-1

Materials/Parts:

- Drycleaning solvent (Item 12, Appendix F)
- Rag, wiping (Item 32, Appendix F)

Equipment Conditions:

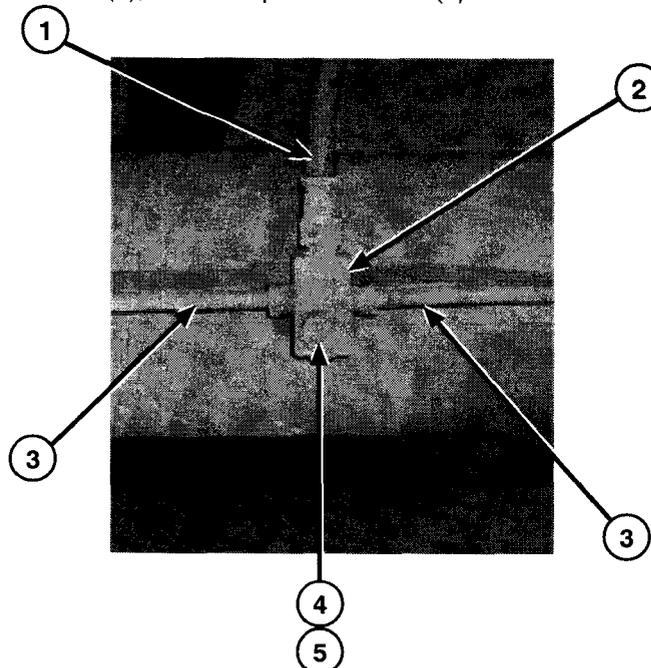
- Trailer parked on level ground (para 2-12).
 - Oil reservoir drained.
-

a. REAR BRAKE LINES REMOVAL

NOTE

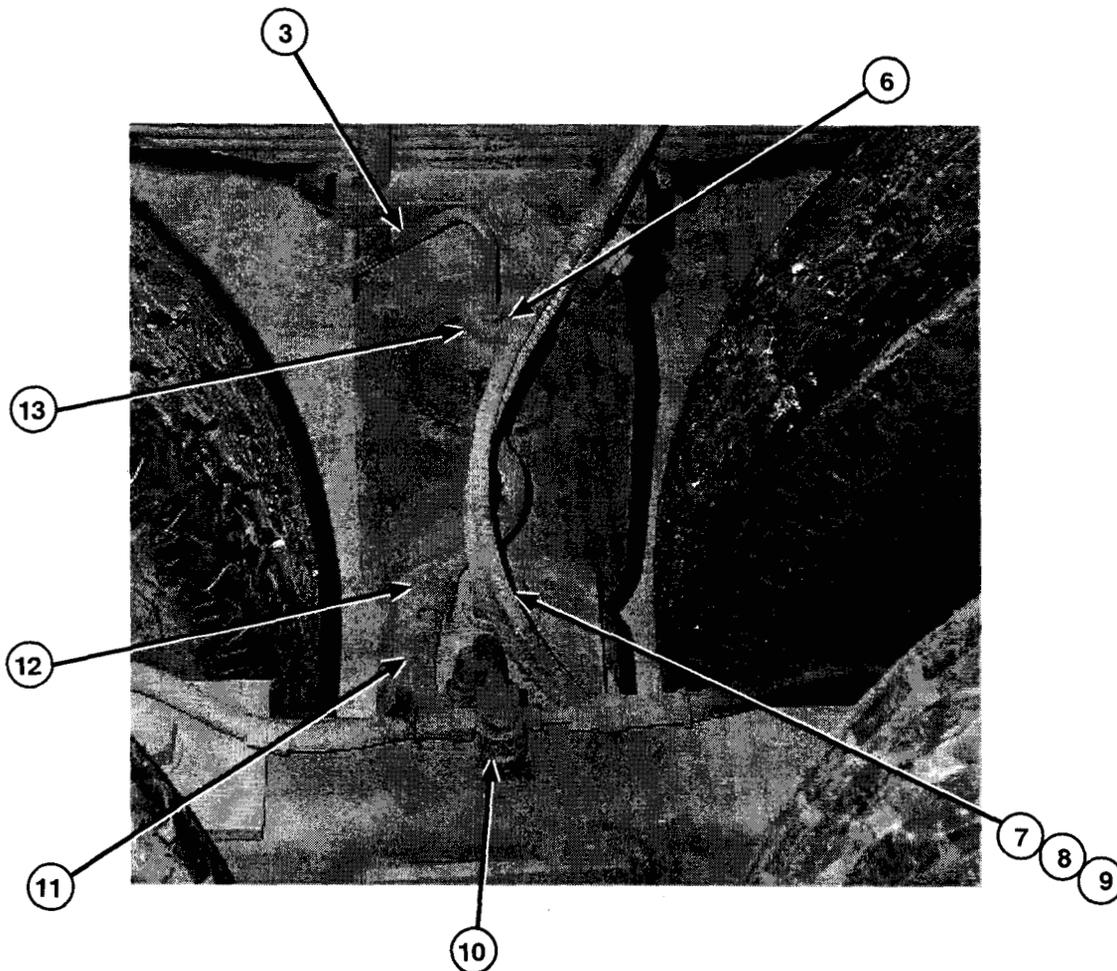
- Use this task to maintain left-side or right-side hydraulic lines, hoses, and fittings. Left side hydraulic lines, hoses, and fittings are shown.
- Have drain pan ready to catch brake fluid.

1. Disconnect hose assembly (1) and two cross axle tube assemblies (3) from multiple connector (2).
2. Remove capscrew (4), washer (5), and multiple connector (2) from cross axle assembly.



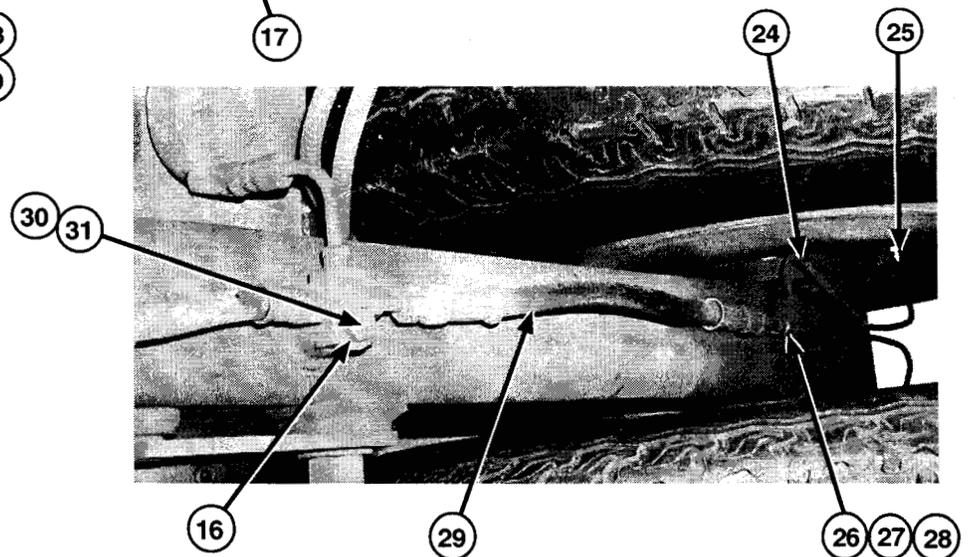
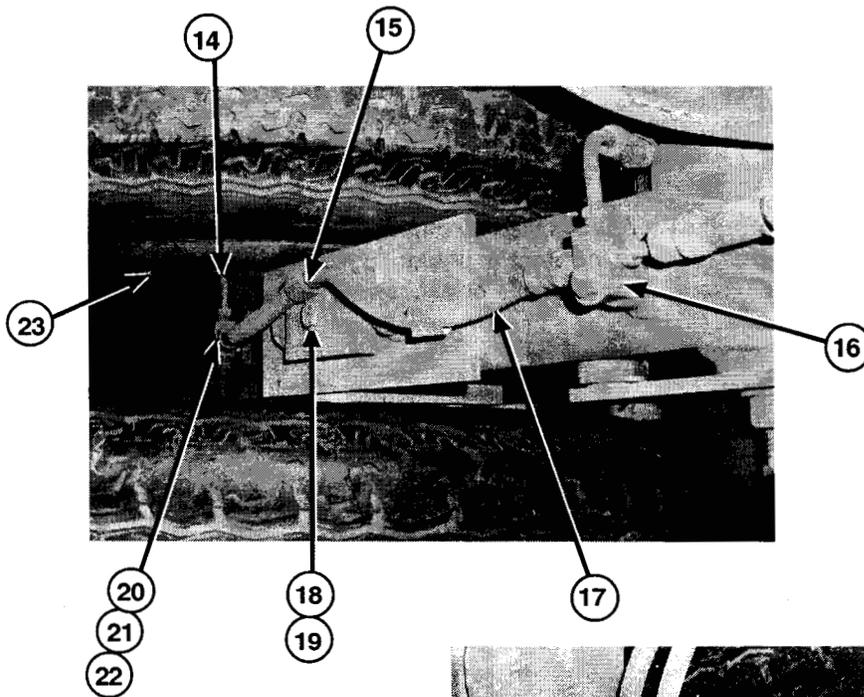
4-37. HYDRAULIC LINES, HOSES, AND FITTINGS REPLACEMENT (continued).

3. Disconnect cross axle tube assembly (3) from cross axle bracket (13) and remove cross axle tube assembly (3) from trailer.
4. Remove plain nut (6) and hose assembly (11) from cross axle bracket (13).
5. Disconnect hose assembly (11) from tee (10).
6. Remove self-locking nut (7), two washers (8), bolt (9), clamp (12), and hose assembly (11) from rear axle. Discard self-locking nut.



4-37. HYDRAULIC LINES, HOSES, AND FITTINGS REPLACEMENT (continued).

7. Remove screw (18), washer (19), clamp (15) and hose assembly (17) from walking beam.
8. Disconnect hose assembly (17) from tee (16) and tee (20).
9. Disconnect two tube assemblies (14) from tee (20) and two wheel cylinders (23).
10. Remove screw (21), washer (22), and tee (20) from walking beam.
11. Disconnect hose assembly (29) from tee (26) and tee (16).
12. Remove screw (27), washer (28), and tee (16) from walking beam.
13. Disconnect two tube assemblies (24) from tee (26) and two wheel cylinders (25).
14. Remove screw (30), washer (31), and tee (16) from walking beam.



4-37. HYDRAULIC LINES, HOSES, AND FITTINGS REPLACEMENT (continued).

b. FRONT BRAKE LINES REMOVAL

1. Disconnect tube assembly (33) and hose assembly (34) from coupling (32).
2. Disconnect tube assembly (37) from hose assembly (40).
3. Remove nut (38) and hose assembly (40) from bracket (39).
4. Remove two screws (36), self-locking nuts (35), and clamps (41) and tube assembly (37) from frame. Discard self-locking nuts.
5. Remove screw (43) and clamp (42) from hose assembly (34).
6. Disconnect hose assembly (34) from elbow (46) on master cylinder (45).
7. Disconnect hose assembly (47) from brake fluid reservoir (44) and master cylinder (45).

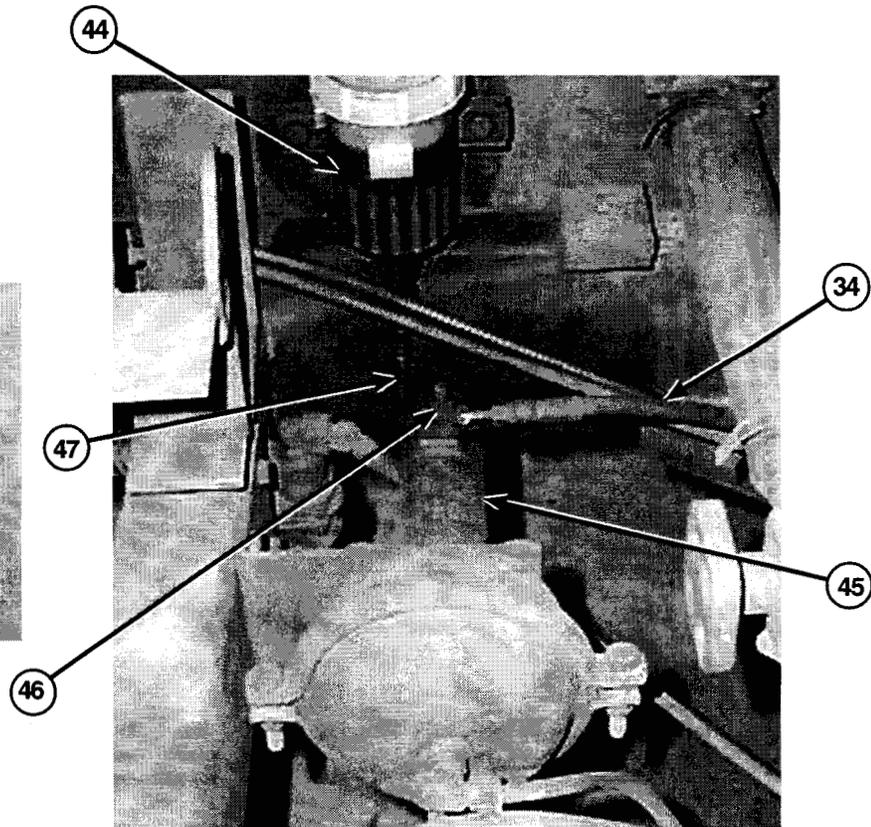
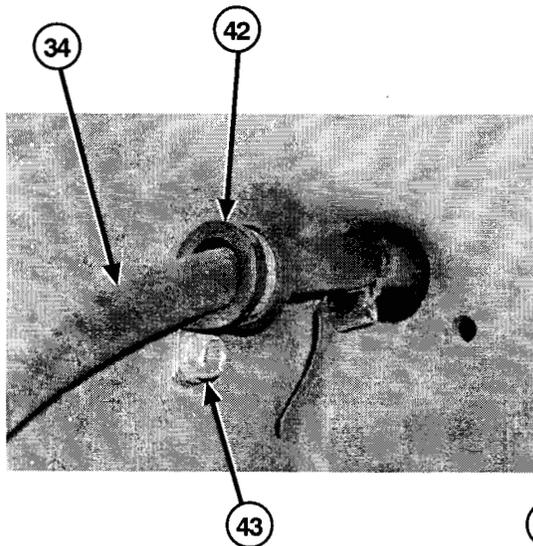
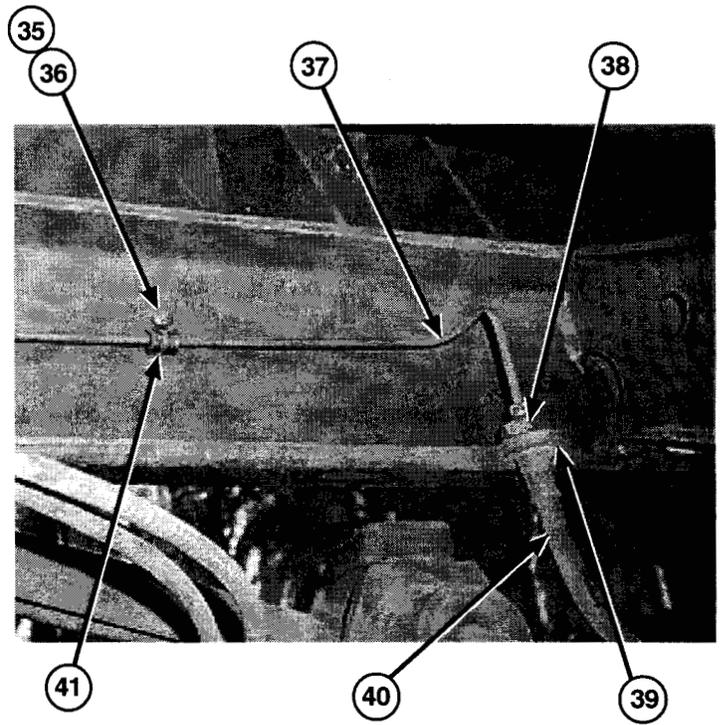
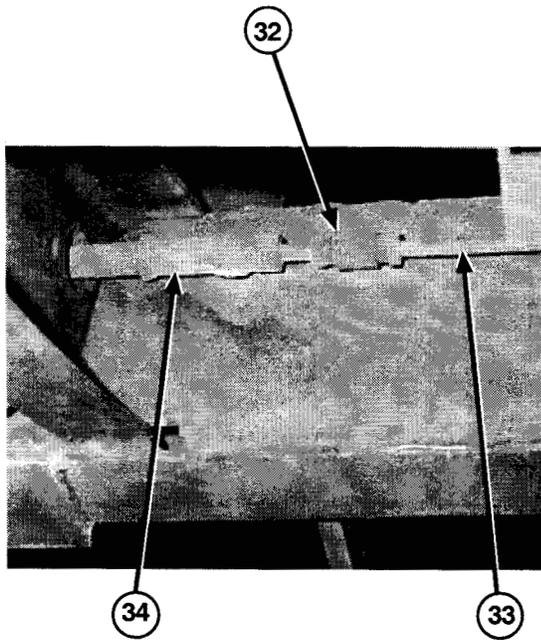
c. CLEANING AND INSPECTION

WARNING

Drycleaning solvent PF05 is combustible. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat.

1. Clean all parts with drycleaning solvent and rags.
2. Inspect hoses, tee assembly, and multiple connector for damage and replace if necessary.
3. Inspect tube assemblies for cracks, breaks, bends, or damaged nuts. Fabricate and replace any damaged tube assemblies.

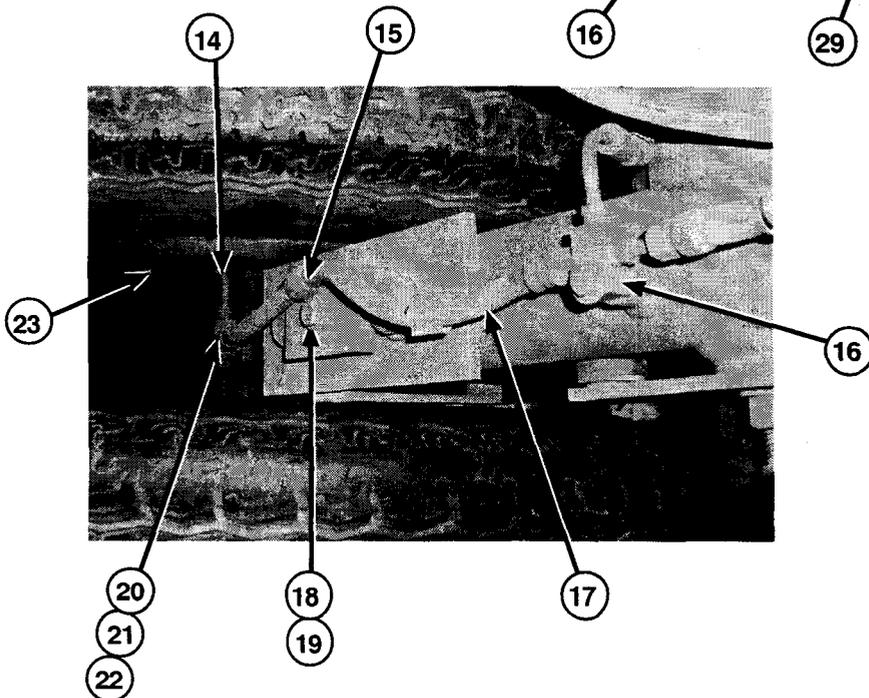
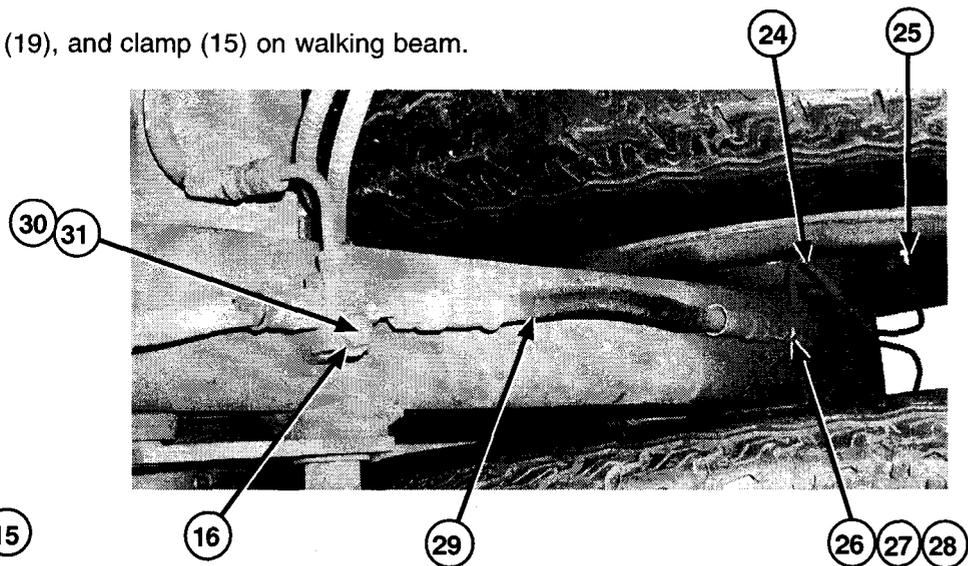
4-37. HYDRAULIC LINES, HOSES, AND FITTINGS REPLACEMENT (continued).



4-37. HYDRAULIC LINES, HOSES, AND FITTINGS REPLACEMENT (continued).

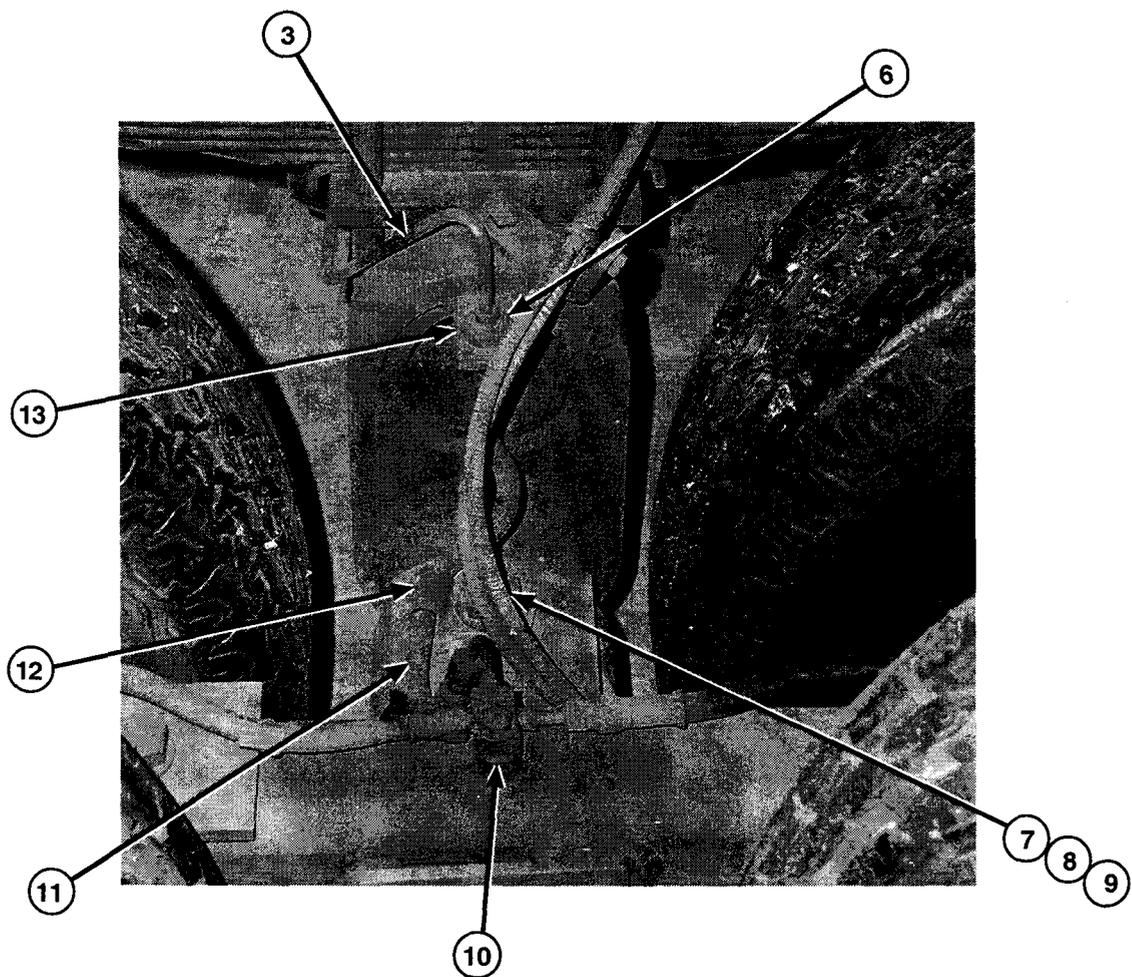
d. REAR BRAKE LINES INSTALLATION

1. Install screw (27), washer (28), and tee (26) on walking beam.
2. Install two tube assemblies (24) on tee (26) and two wheel cylinders (25).
3. Install screw (31), washer (30), and tee (16) on walking beam.
4. Install hose assembly (29) on tee (16) and tee (26).
5. Install screw (21), washer (22), and tee (20) on walking beam.
6. Install two tube assemblies (14) on tee (20) and two wheel cylinders (23).
7. Install hose assembly (17) on tee (16) and tee (20).
8. Install screw (18), washer (19), and clamp (15) on walking beam.



4-37. HYDRAULIC LINES, HOSES, AND FITTINGS REPLACEMENT (continued).

9. Install new self-locking nut (7), washers (8), bolt (9), clamp (12), and hose assembly (11) on trailer.
10. Install hose assembly (11) on tee (10).
11. Install plain nut (6) and hose assembly (11) on cross axle bracket (13).
12. Install cross axle tube assembly (3) on hose bracket (13).

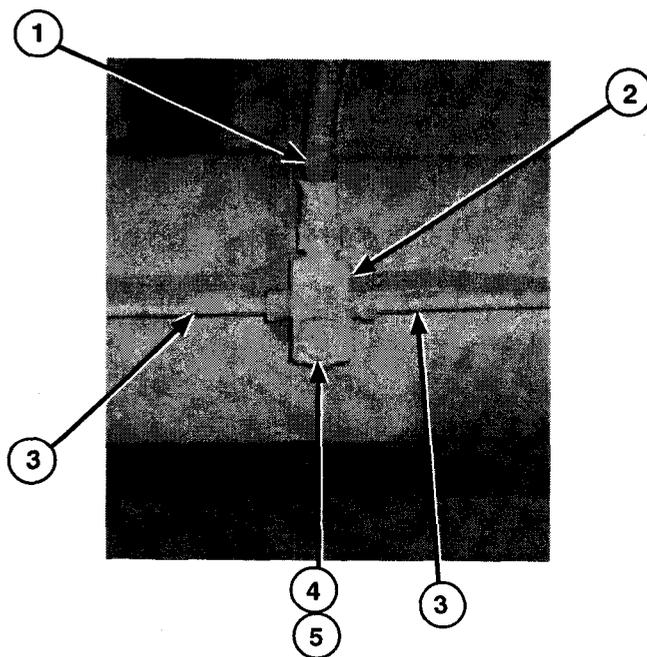


4-37. HYDRAULIC LINES, HOSES, AND FITTINGS REPLACEMENT (continued).

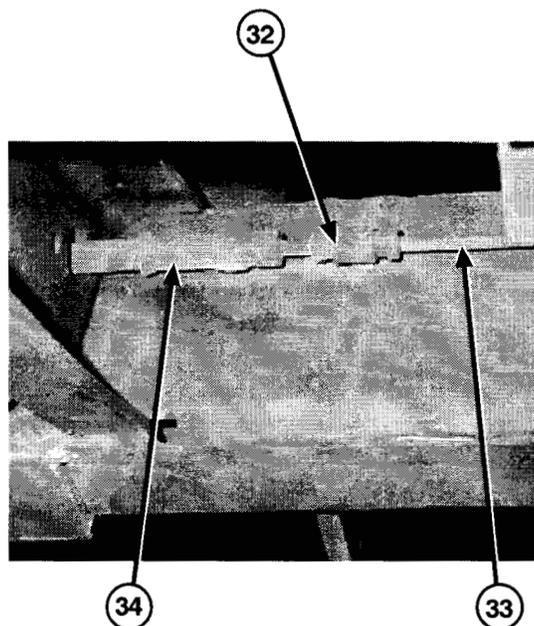
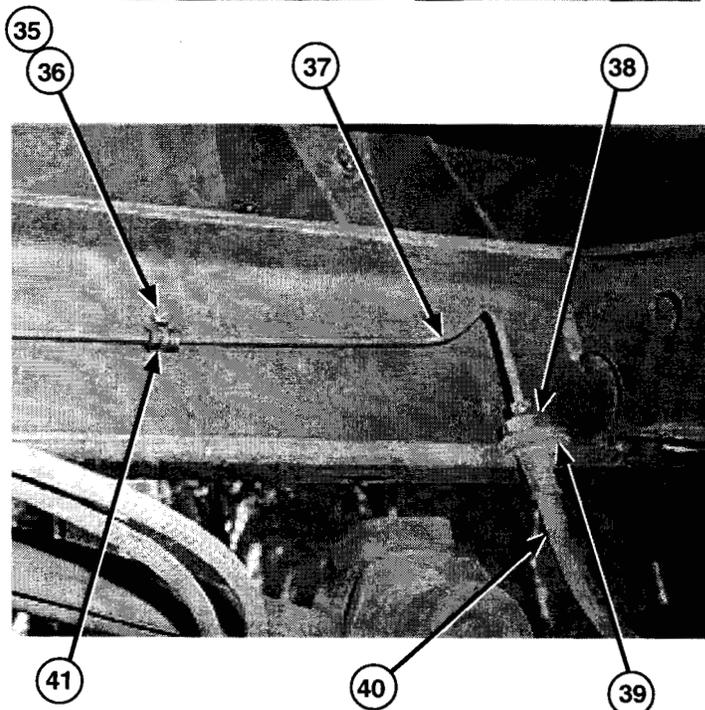
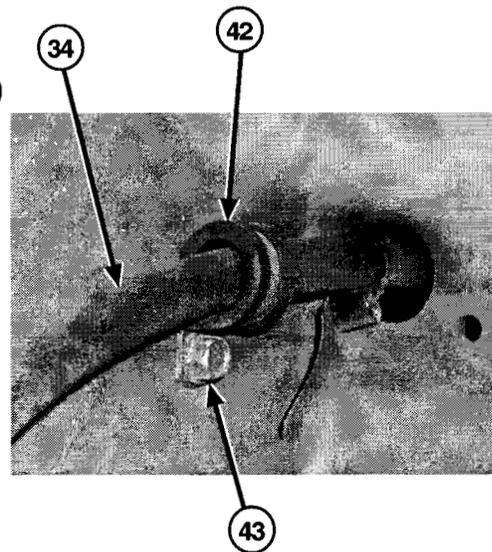
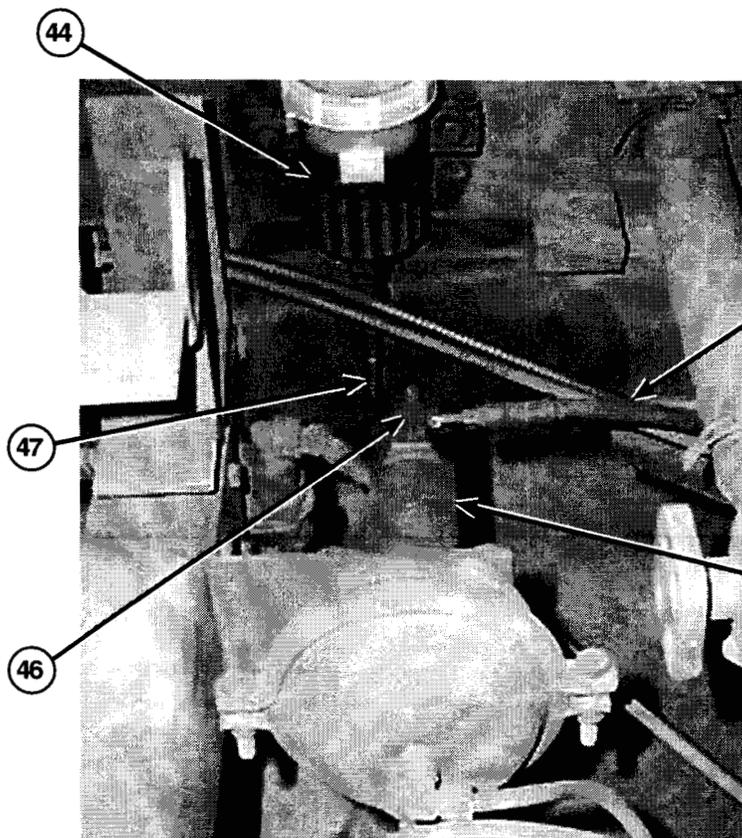
13. Install capscrew (4), washer (5), and multiple connector (2) on cross axle assembly.
14. Connect two cross axle tube assemblies (3) and hose assembly (1) to multiple connector (2).

e. FRONT BRAKE LINES INSTALLATION

1. Install hose assembly (47) on brake fluid reservoir (44) and master cylinder (45).
2. Install hose assembly (34) on elbow (46) on master cylinder (45).
3. Install clamp (42) and screw (43) on hose (34).
4. Install two screws (36), new self-locking nuts (35), and clamps (41) and tube assembly (33) on frame.
5. Install nut (38) and hose assembly (40), to bracket (39).
6. Install tube assembly (37) on hose assembly (40).
7. Install tube assembly (33) and hose assembly (34) to tubing coupling connector (32).



4-37. HYDRAULIC LINES, HOSES, AND FITTINGS REPLACEMENT (continued).



FOLLOW-ONTASKS:

- None.

4-38. MASTER CYLINDER AND AIRBRAKE CHAMBER REPLACEMENT.

This Task Covers:

- a. Removal b. Installation
-

Initial setup:

Tools/Test Equipment:

- General mechanic's tool kit, (Item 1, Appendix B)
- Common No.1 tool set, (Item 2, Appendix B)

Equipment Conditions:

- Trailer parked on level ground (para 2-12).
- Air reservoir drain valve opened (para 4-42).

Materials/Parts:

- Lockwasher (2), MS35338-47
 - Nuts, self-locking (4), MS51922-17
-

a. REMOVAL

NOTE

Have drainage container ready to catch brake fluid.

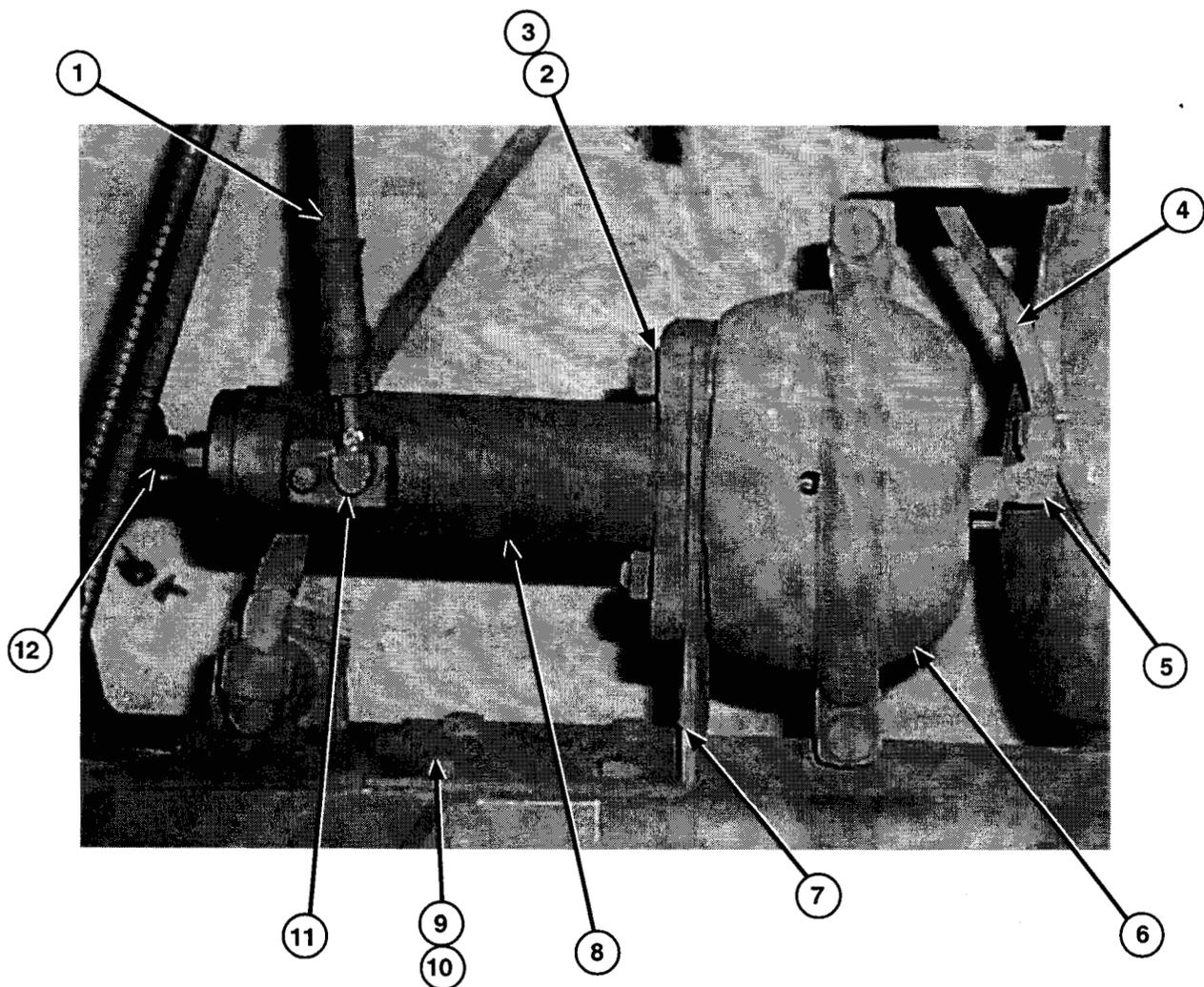
1. Disconnect tube assembly (1) from elbow (11) on master cylinder (8).
2. Disconnect tube assembly (12) on master cylinder (8).
3. Disconnect tube assembly (4) from elbow (5) on airbrake chamber (6).
4. Remove four capscrews (9), self-locking nuts (10) and bracket (7) with airbrake chamber (6) and master cylinder (8) from trailer. Discard self-locking nuts.
5. Remove two hexnuts (2), lockwashers (3), airbrake chamber (6), and master cylinder (8) from bracket (7). Discard lockwashers.
6. Remove elbows (5 and 11) from airbrake chamber (6) and master cylinder (8).

b. INSTALLATION

1. Install elbows (5 and 11) on airbrake chamber (6) and master cylinder (8).
2. Install airbrake chamber (6) and master cylinder (8) on bracket (7) with two hexnuts (2) and new lockwashers (3).
3. Install bracket (7) with airbrake chamber (6) and master cylinder (8) with four capscrews (9) and new self-locking nuts (10).
4. Connect tube assembly (4) to elbow (5) on airbrake chamber (6).

4-38. MASTER CYLINDER AND AIRBRAKE CHAMBER REPLACEMENT (continued).

5. Connect tube assembly (1) to elbow (11) on master cylinder (8).
6. Connect tube assembly (12) on master cylinder (8).

**FOLLOW-ONTASKS:**

- Close air reservoir drain valve (para 4-42).
- Bleed brakes (para 4-40).

4-39 HYDRAULIC FLUID RESERVOIR REPLACEMENT.

This Task Covers:

- a. Removal b. Installation
-

Initial setup:

Tools/Test Equipment:

- General mechanic's tool kit, (Item 1, Appendix B)

Equipment Conditions:

- Air reservoir drain valve opened (para 4-42).
- Trailer parked on level ground (para 2-12).

Materials/Parts:

- Nuts, self-locking (2), MS51922-17
-

a. REMOVAL

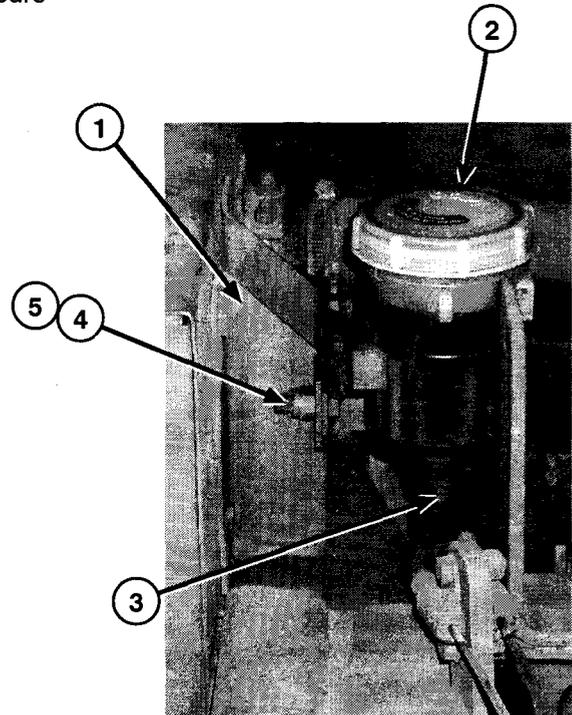
NOTE

Have drainage container ready to catch brake fluid.

1. Disconnect tube assembly (3) from hydraulic reservoir (2).
2. Remove two capscrews (4), self-locking nuts (5), and hydraulic fluid reservoir (2) from bracket (1). Discard self-locking nuts.

b. INSTALLATION

1. Install hydraulic fluid reservoir (2) on bracket (1) and secure with two capscrews (4) and new self-locking nuts (5).
2. Install tube assembly (3) on hydraulic reservoir (2).



FOLLOW-ON TASKS:

- Close air reservoir drain valve (para 4-42).
- Bleed brakes (para 4-40).

4-40. BLEEDING HYDRAULIC BRAKE SYSTEM.

This Task Covers:

Bleeding hydraulic brake system

Initial Setup:

Tools/Test Equipment:

- General mechanic's tool kit (Item 1, Appendix B)
- One quart jar

Materials/Parts:

- Brake fluid, Silicone (Item 4, Appendix F)
- Rag, wiping (Item 32, Appendix F)
- Tubing, plastic (Item 43, Appendix F)
- Drycleaning solvent (Item 12, Appendix F)

Personnel Required: Two

Equipment Conditions:

- Trailer coupled to towing vehicle (refer to towing vehicle technical manual).
-

BLEEDING HYDRAULIC BRAKE SYSTEM

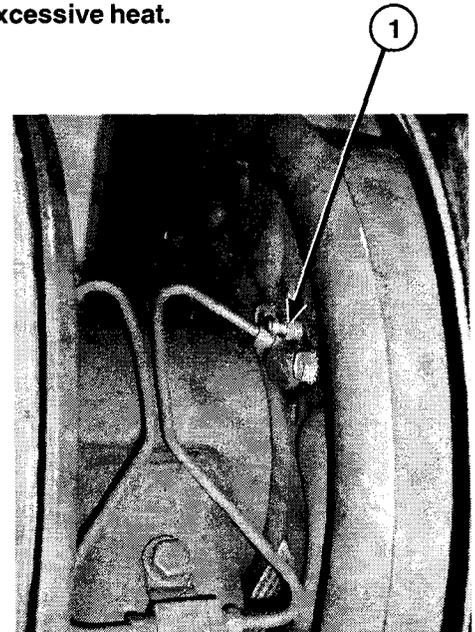
NOTE

- The trailer has one master cylinder and eight wheel cylinders.
- The master cylinder must be kept full during bleeding procedures to prevent air from entering the hydraulic system.

WARNING

Drycleaning solvent PF05 is combustible. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat.

1. Clean bleeder valve (1) with drycleaning solvent and rags.
2. Install one end of plastic tube over bleeder valve (1). Place free end of plastic tube in clean one quart jar.
3. Fill quart jar half full with brake fluid. Make sure free end of plastic tube is below the level of brake fluid in quart jar.



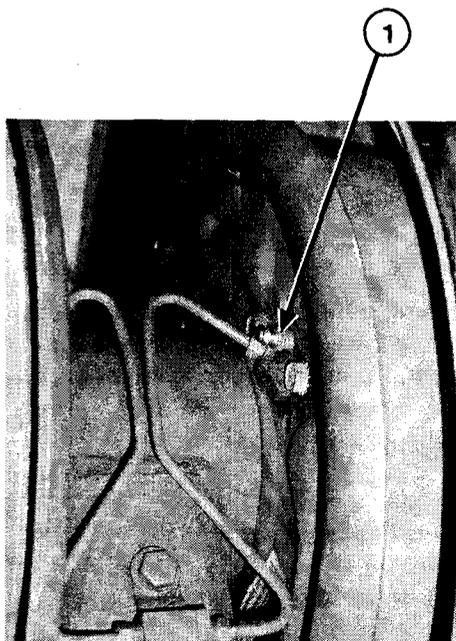
4-40. BLEEDING HYDRAULIC BRAKE SYSTEM (continued).

4. With the aid of an assistant, apply towing vehicle brakes.

NOTE

Air coming out of plastic tube will show up as bubbles in brake fluid.

5. Open bleeder valve (1) to release air from the hydraulic brake system.
6. Close bleeder valve (1) when bubbles cease, and release towing vehicle brakes.
7. Repeat steps 1 through 6 for each wheel cylinder, starting with the wheel farthest from master cylinder.



4-41. AIR LINES, HOSES, AND FITTINGS REPLACEMENT.

This Task Covers:

- a. Removal
- b. Installation

Initial Setup:

Tools/Test Equipment:

- General mechanic's tool kit (Item 1, Appendix B)

Equipment Conditions:

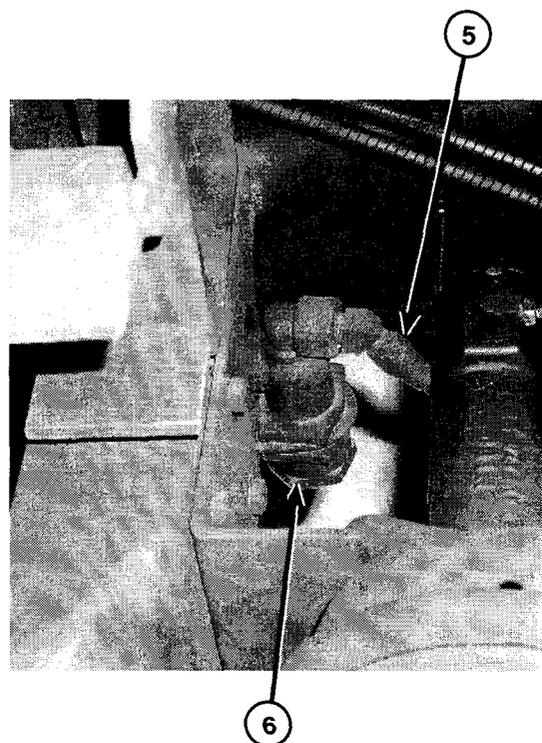
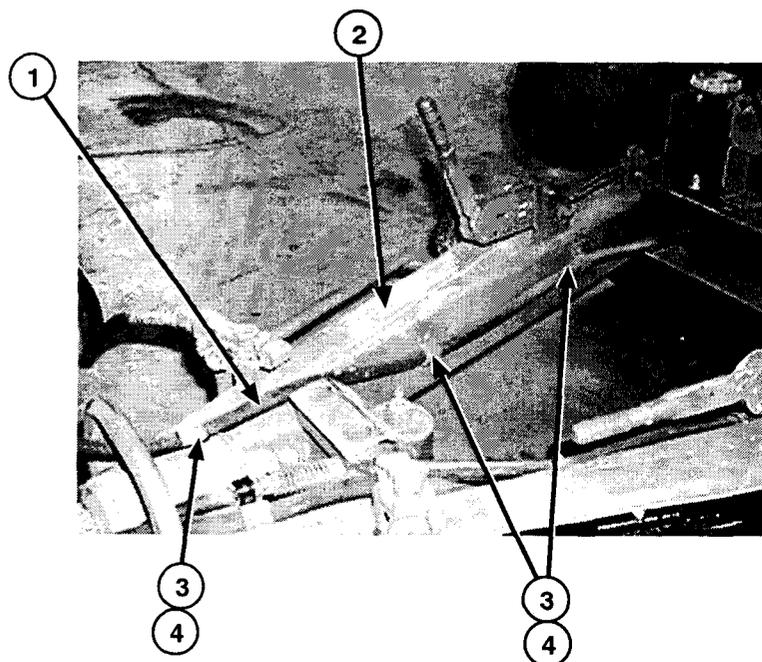
- Air reservoir drain valve opened (Table 2-1, Item 14).

a. REMOVAL

NOTE

Service and Emergency air lines are replaced basically the same way. Steps 1 and 2 are for the Service air line.

1. Remove three self-tapping screws (3), loop clamps (4), and air hose assembly (1) from trailer frame (2).
2. Remove air hose assembly (1) from air filter assembly (6).
3. Remove tube assembly (5) and insert from air filter assembly (6).



4-41. AIR LINES, HOSES, AND FITTINGS REPLACEMENT (continued).

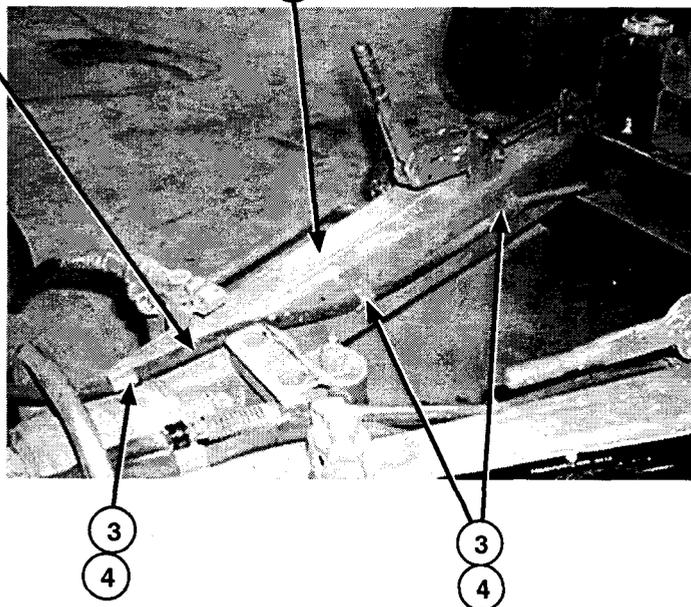
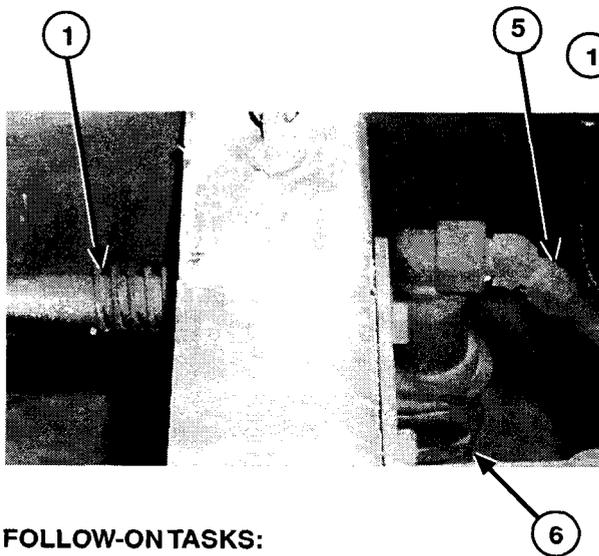
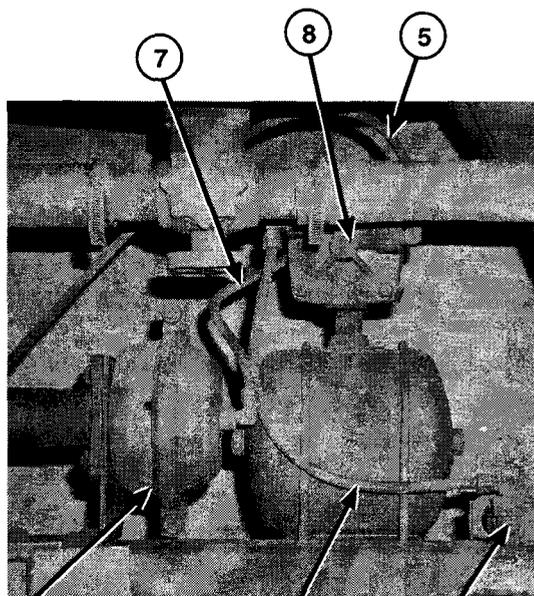
4. Remove tube assembly (5) and insert from relay valve (8).
5. Remove tube assembly (7) and two inserts from air chamber (11) and relay valve (8).
6. Remove tube assembly (10) and two inserts from air filter assembly (9) and relay valve (8).

b. INSTALLATION

NOTE

Service and Emergency air lines are replaced basically the same way. Steps 5 and 6 are for the Service air line.

1. Install tube assembly (5) and insert on relay valve (8).
2. Install tube assembly (5) and insert on air filter assembly (6).
3. Install air hose assembly (1) on air filter assembly (6).
4. Install air hose assembly (1) on trailer frame (2) with three self-tapping screws (3) and loop clamps (4).
5. Install tube assembly (10) and two inserts on air filter assembly (9) and relay valve (8).
6. Install tube assembly (7) and two inserts on air chamber (11) and relay valve (8).



FOLLOW-ON TASKS:

- Close air reservoir drain valve (para 4-42).

4-42. AIR CHAMBER REPLACEMENT.

This Task Covers:

a. Removal

b. Installation

Initial Setup:

Tools/Test Equipment:

- General mechanic's tool kit (Item 1, Appendix B)

Equipment Conditions:

- Relay valve removed (para 4-43).

Materials/Parts:

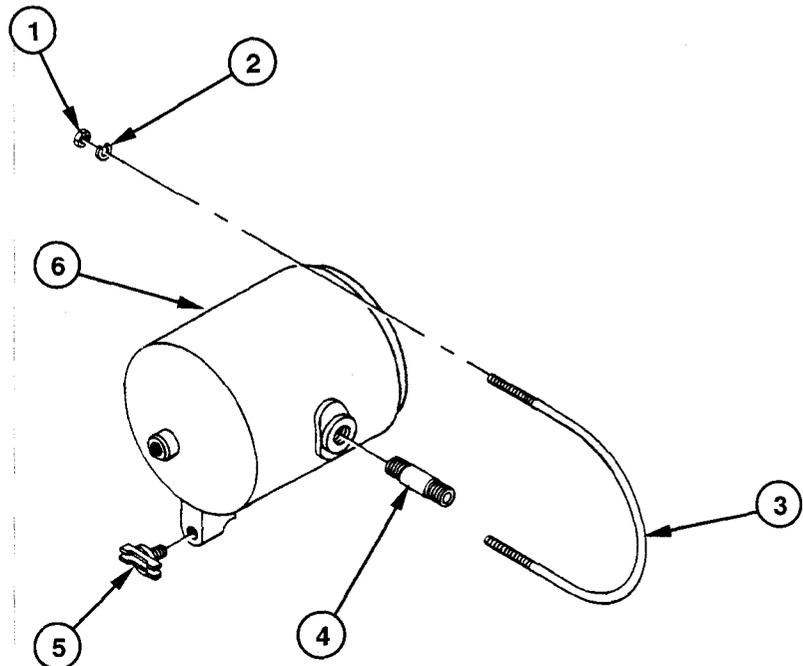
- Lockwasher (4), 1372
-

a. REMOVAL

1. Remove four hexnuts (1) and lockwashers (2), two U-bolts (3), and air reservoir (6) from trailer. Discard lockwashers.
2. Remove drain valve (5) and nipple (4) from air reservoir (6).

b. INSTALLATION

1. Install drain valve (5) and nipple (4) in air reservoir (6).
2. Install air reservoir (6) on trailer with two U-bolts (3) and four new lockwashers (2) and hexnuts (1).



FOLLOW-ONTASKS:

- Install relay valve (para 4-43).

4-43. RELAY VALVE REPLACEMENT.

This Task Covers:

- a. Removal b. Installation
-

Initial Setup:

Tools/Test Equipment:

- General mechanic's tool kit (Item 1, Appendix B)

Equipment Conditions:

- Trailer parked on level ground (para 2-12).

Materials/Parts:

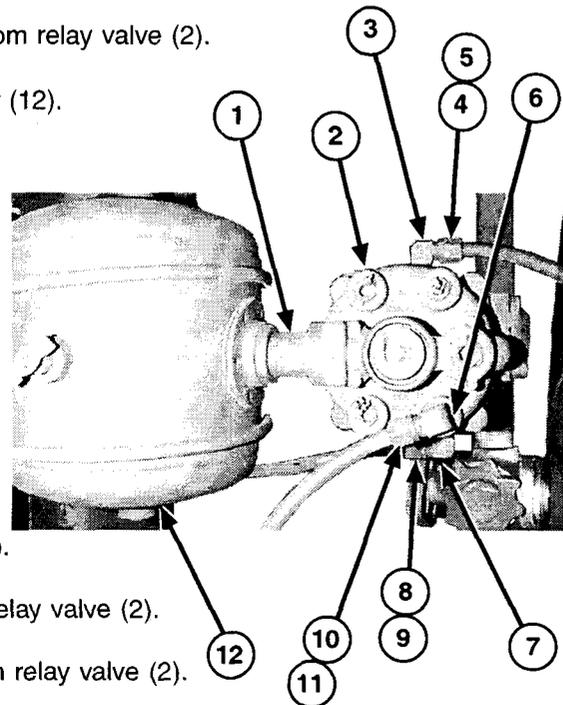
- Tape, antiseize (Item 39, Appendix F)
-

a. REMOVAL

1. Remove tube assembly (4), insert (5), and elbow (3) from relay valve (2).
2. Remove tube assembly (10), insert (11), and elbow (6) from relay valve (2).
3. Remove tube assembly (8), insert (9), and elbow (7) from relay valve (2).
4. Remove relay valve (2) and nipple (1) from air chamber (12).
5. Remove nipple (1) from relay valve (2).

b. INSTALLATION

1. Apply antiseize tape to nipple (1) and install nipple (1) in relay valve (2).
2. Apply antiseize tape to other end of nipple (1) and install nipple (1) and relay valve (2) on air chamber (12).
3. Install elbow (7), insert (9), and tube assembly (8) on relay valve (2).
4. Install elbow (6), insert (11), and tube assembly (10) on relay valve (2).
5. Install elbow (3), insert (5), and tube assembly (4) on relay valve (2).



FOLLOW-ON TASKS:

- None.

4-44. AIR FILTER ASSEMBLY REPAIR.

This Task Covers:

a. Removal

b. Installation

Initial Setup:

Tools/Test Equipment:

- General mechanic's tool kit (Item 1, Appendix B)

- Lockwasher (2), MS35338-45

Materials/Parts:

- Drycleaning solvent (Item 12, Appendix F)
- Rag, wiping (Item 32, Appendix F)
- Filter element, 7411081

Equipment Conditions:

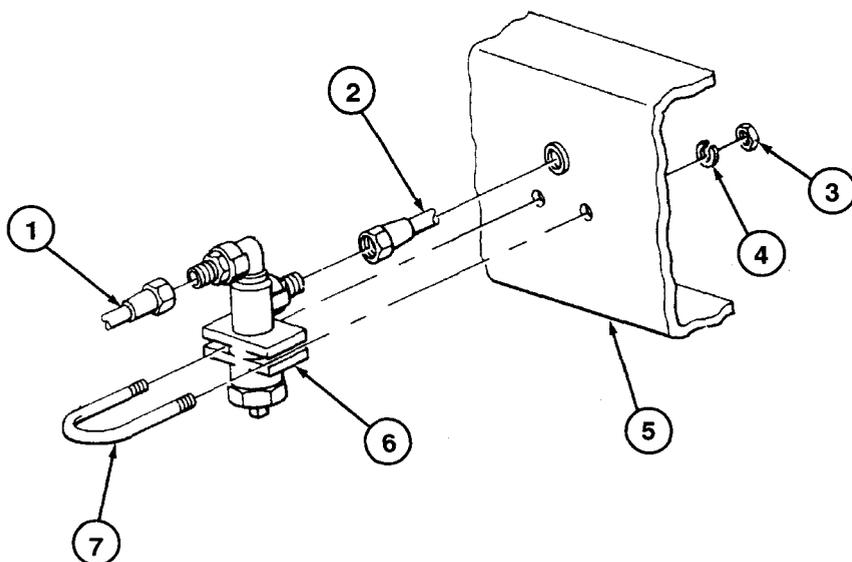
- Trailer parked on level ground (para 2-12).
 - Air reservoir drain valve opened (Table 2-1, Item 14).
-

a. REMOVAL

1. Disconnect air lines (1 and 2) from air filter (6).
2. Remove two nuts (3) and lockwashers (4), U-bolt (7), and air filter assembly (6) from crossmember (5). Discard lockwashers.

b. INSTALLATION

1. Install air filter assembly (6) on crossmember (5) with two nuts (3) and new lockwashers (4) and U-bolt (7).
2. Connect air lines (1 and 2) to air filter (6).



FOLLOW-ON TASKS:

- None.

Section X. WHEEL AND TIRE MAINTENANCE

Paragraph Number	Paragraph Title	Page Number
4-45	Tire Assembly Replacement	4-80
4-46	Tire Assembly Maintenance	4-81
4-47	Brake drum Replacement	4-81
4-48	Undercarriage Group Replacement	4-84

4-45. TIRE ASSEMBLY REPLACEMENT.

This Task Covers:

- a. Removal
- b. Installation

Initial Setup:

Tools/Test Equipment:

- General mechanic's tool kit (Item 1, Appendix B)
- Jack, 10,000 lb (4540 kg) capacity (Item 3, Appendix B)
- Common No. 1 tool set (Item 2, Appendix B)

Equipment Conditions:

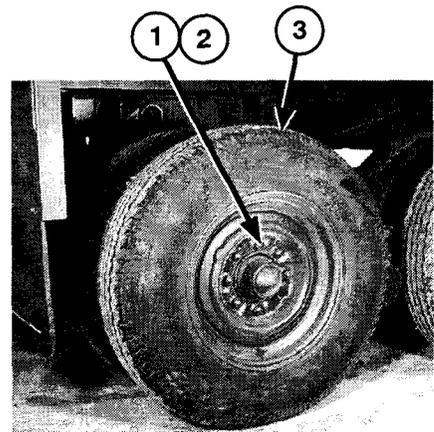
- Trailer parked on level ground (para 2-12).
- Handbrakes applied (para 2-12).

a. REMOVAL

NOTE

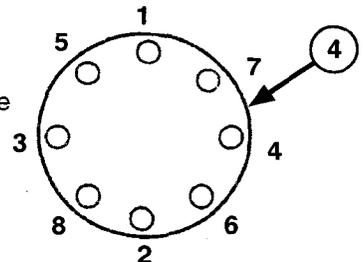
- All tire assemblies are removed the same way. The right-rear outer tire is shown.
- The walking beam can be rotated forward and rearward to provide clearance during inner tire removal.

1. Place jack under cross axle on side closest to the tire being removed, until weight of trailer is on jack.
2. Loosen, but do not remove, eight lug nuts (1) on tire assembly (3). Raise trailer until tire is completely off ground. Place jack stand on cross axle.
3. Remove eight lug nuts (1) and tire assembly (3) from eight studs (2).



b. INSTALLATION

1. Position tire assembly (3) on studs (2), and install eight lug nuts (1) on eight studs (2). Remove waking beam and cross axle jack stands.
2. Lower trailer until full weight is on wheels. Following torque sequence (4), torque eight lug nuts (1) between to 105 lb-ft



FOLLOW-ONTASKS:

Re-torque wheel nuts after approximately 100 miles of operation.

4-46. TIRE ASSEMBLY MAINTENANCE.

Refer to TM 9-2610-200-24 for instructions on tire and tube maintenance.

4-47. BRAKE DRUM REPLACEMENT.

This Task Covers:

- | | |
|-----------------------------|-----------------|
| a. Removal | b. Disassembly |
| c. Assembly | d. Installation |
| e. Wheel Bearing Adjustment | |

Initial Setup:

Tools/Test Equipment:

- General mechanic's tool kit (Item 1, Appendix B)
- Common No. 1 tool set (Item 2, Appendix B)

- Grease (Item 18, Appendix F)
- Cotter pin, MS24665-283
- Grease seal, 12448074

Materials/Parts:

- Drycleaning solvent (Item 12, Appendix F)

Equipment Conditions:

- Tire assembly removed (para 4-45).

WARNING

DO NOT handle brake shoes, brake drums, or other brake components unless area has been properly cleaned. There may be brake dust on these components which can be dangerous if touch or inhaled. Wear an approved filter mask and gloves. Never use compressed air or a dry brush to clean brake components. Dust may be removed using an industrial-type vacuum cleaner. Clean dust or mud away from brake components with water and a wet, soft brush or cloth. Failure to follow this warning may result in serious illness or death to personnel.

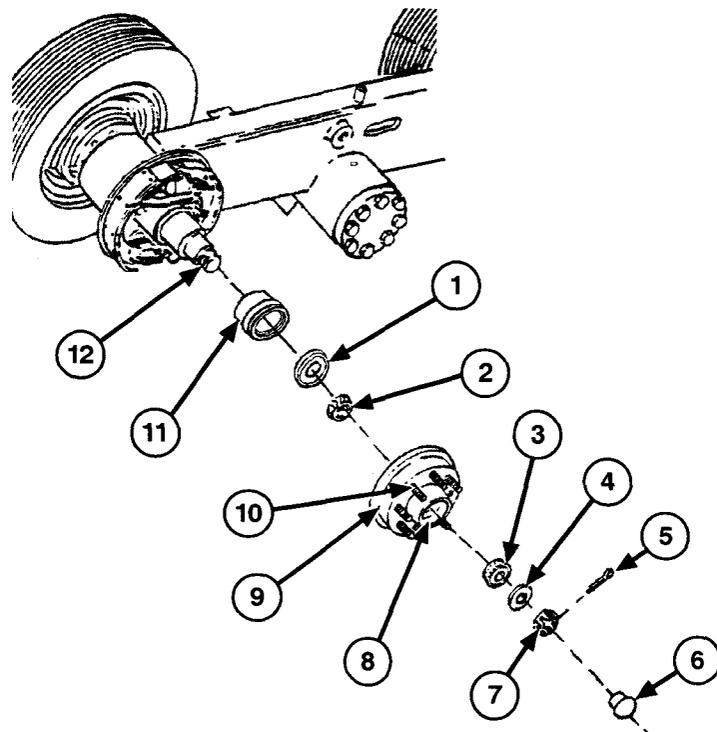
a. REMOVAL

1. Remove grease cap (6) from brake drum (9).
2. Remove cotter pin (5), slotted nut (7), and washer (4) from spindle (12). Discard cotter pin.

NOTE

Release parking brake prior to removing brake drum.

3. Pull brake drum (9) from spindle (12) to loosen outer wheel bearing cone (3). Remove outer wheel bearing cone (3) from brake drum (9) and spindle (12).
4. Remove brake drum (9) from spindle (12).
5. Remove inner wheel bearing cone (2) and grease seal (1) from brake drum (9). Discard grease seal.
6. Remove spacer (11) from spindle (12).



4-47. BRAKE DRUM REPLACEMENT (continued).

WARNING

Drycleaning solvent PF05 is combustible. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat.

NOTE

If inner and outer wheel bearing cones need to be replaced, wheel bearing cones and races are replaced as a set.

7. Clean and inspect inner and outer wheel bearing cones in accordance with TM 9-214. Discard if damaged.

b. DISASSEMBLY

1. Remove inner and outer bearing races (8) from brake drum (9).
2. Remove shoulder bolt (10) from brake drum (9).

c. ASSEMBLY

1. Install inner and outer bearing races (8) in brake drum (9).
2. Install shoulder bolt (10) in brakedrum (9).

d. INSTALLATION

NOTE

Instructions on packing wheel bearing cones can be found in TM 9-214.

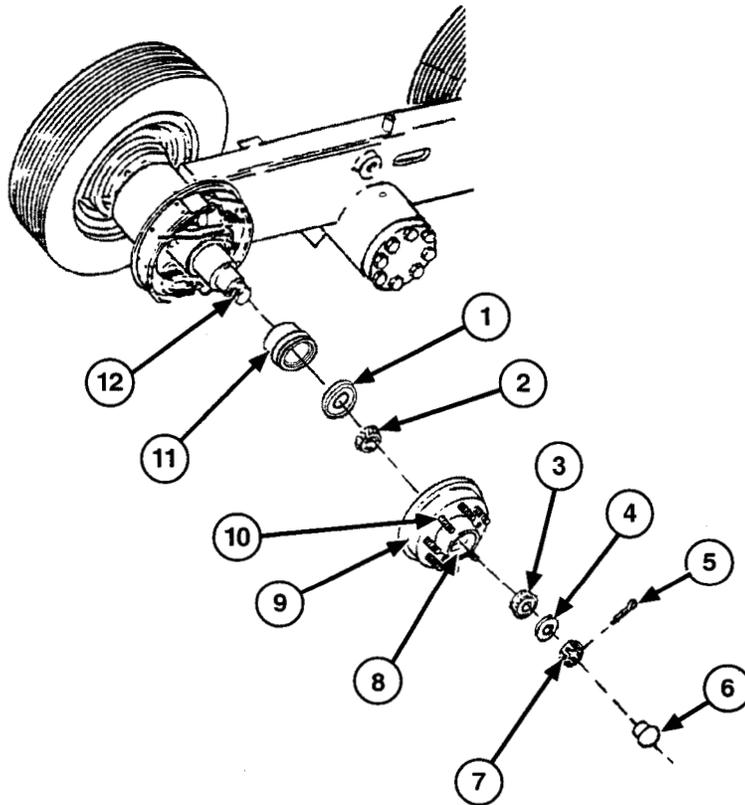
1. Pack inner wheel bearing cone (3) with grease.
2. Install new grease seal (1) in brakedrum (9) so that the flat side of seal is facing the inner bearing, toward the threaded end of the spindle.
3. Install spacer (11) on spindle (12).
4. Position brake drum (9) on spindle (12).
5. Pack outer wheel bearing cone (3), position in brake drum (9), on spindle (12), and install washer (4) and slotted nut (7) on spindle (12).

e. WHEEL BEARING ADJUSTMENT

1. Tighten slotted nut (7) while turning brake drum (9) until drag is felt.
2. Rotate brake drum (9) one turn and loosen slotted nut (7) while rocking brake drum (9) back and forth until looseness is felt.

4-47. BRAKE DRUM REPLACEMENT (continued).

3. Tighten slotted nut (7) until looseness is no longer felt.
4. Install new cotter pin (5) on spindle (12).
5. Install grease cap (6) on brake drum (9).

**FOLLOW-ON TASKS:**

- Install tire assembly (para 4-46).
- Adjust service brakes (para 4-36).

4-48. UNDERCARRIAGE GROUP REPLACEMENT.

This Task Covers:

- | | |
|-----------------|----------------------------|
| a. Removal | b. Cleaning and Inspection |
| c. Installation | |

Initial Setup:

Tools/Test Equipment:

- General mechanic's tool kit (Item 1, Appendix B)
- Common #1 tool set (Item 2, Appendix B)
- 2-1/4 inch socket wrench, 3/4 inch drive (Item 6, Appendix B)

Personnel Required: Two

Equipment Conditions:

- Front inner and outer tire assembly removed (para 4-45)
- Front inner and outer brake drums removed (para 4-47)

Materials/Parts:

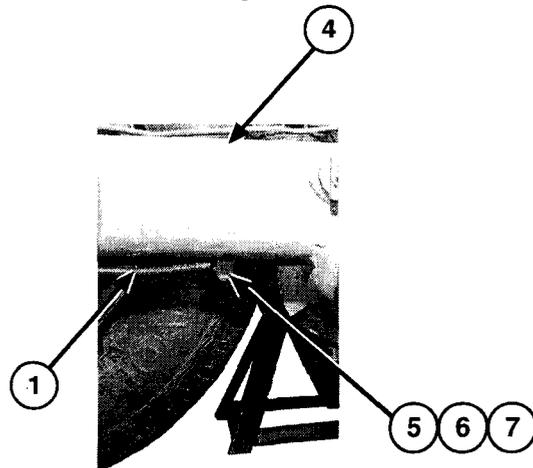
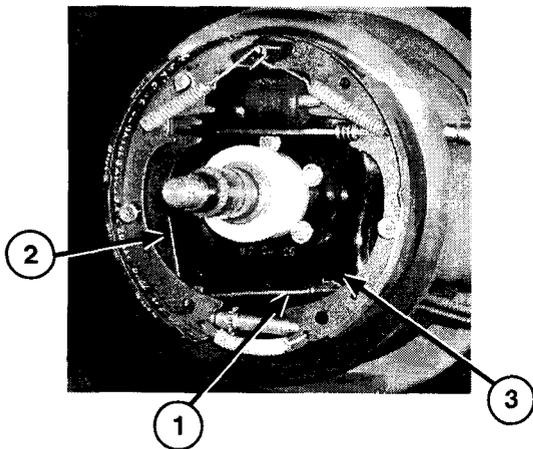
- Drycleaning solvent (Item 12, Appendix F)
- Nut, self-locking, MS51943-57

a. REMOVAL

NOTE

Both undercarriage groups are replaced the same way. The left-side undercarriage group is shown.

1. Remove capscrew (5), washer (6), and two loop clamps (7) from outer walking beam (4).
2. Unhook both handbrake cable assemblies (1) from handbrake lever (2). Pull handbrake cable assembly (1) out of backing plate (3).
3. Remove hose assembly (11) from frame tee (12).
4. Remove eight capscrews (8), washers (9), and axle cover (10) from outer walking beam (4).
5. Remove self-locking nut (13) from outer walking beam (4). Discard self-locking nut.

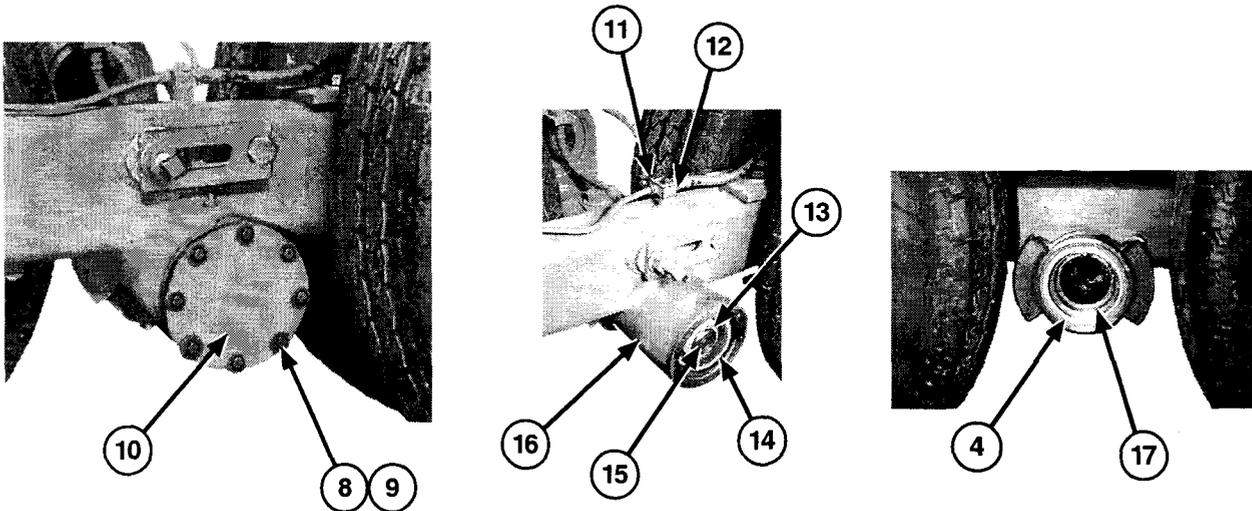


4-48. UNDERCARRIAGE GROUP REPLACEMENT (continued).

WARNING

Undercarriage group is heavy. To prevent injury to personnel and damage to outer walking beam bearing, cross axle spindle, or outer walking beam lip seal, two people are required to remove undercarriage group from cross axle spindle.

6. With the aid of an assistant, slide undercarriage group (16) and retainer plate (14) from cross axle spindle (15).
7. Remove lip seal (17) from outer walking beam (4). Discard lip seal.

**b. CLEANING AND INSPECTION****WARNING**

Drycleaning solvent PF05 is combustible. Always wear protective goggles and gloves, and use in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT use near open flame or excessive heat.

1. Clean outer walking beam housing and bearings with drycleaning solvent and rag.
2. Inspect outer walking beam bearings and lip seal for damage. Replace any damaged bearings.

c. INSTALLATION

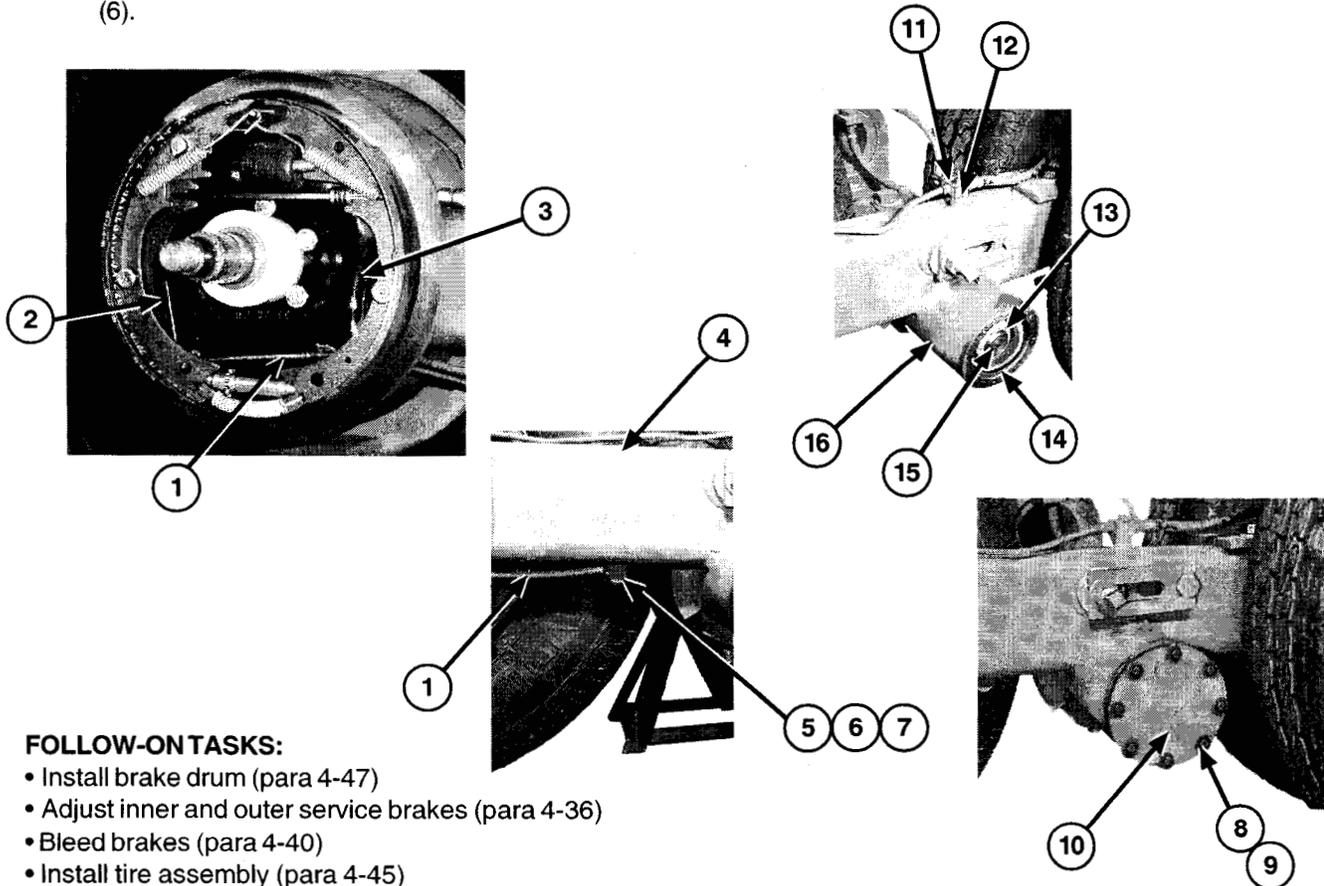
1. Install new lip seal (17) on outer walking beam (4).

4-48. UNDERCARRIAGE GROUP REPLACEMENT (continued).

WARNING

Undercarriage group is heavy. To prevent injury to personnel and damage to outer walking beam bearing, cross axle spindle, or outer walking beam lip seal, two people are required to install undercarriage group on cross axle spindle.

2. With the aid of an assistant, slide undercarriage group (16) on cross axle spindle (15).
3. Install retainer plate (14) and new self-locking nut (13) on cross axle spindle (15).
4. Using a 2-1/4 inch socket wrench, tighten self-locking nut (13) on cross axle spindle (15). Torque self-locking nut (13) to 100 lb-ft (136 N•m).
5. Install axle cover (10), eight washers (9), and eight capscrews (8) on outer walking beam (4). Torque eight capscrews (8) between 9 and 11 lb-ft (12 and 15 N•m).
6. Push handbrake cable assembly (1) through backing plate (3), and attach handbrake brake cable assembly (1) to lever (2).
7. Install hose assembly (11) on frame tee (12).
8. Install loop clamp (7), handbrake cable assembly (1) on outer walking beam (4) with capscrew (5) and washer (6).



FOLLOW-ON TASKS:

- Install brake drum (para 4-47)
- Adjust inner and outer service brakes (para 4-36)
- Bleed brakes (para 4-40)
- Install tire assembly (para 4-45)

Section XI. FRAME AND TOWING ATTACHMENTS MAINTENANCE

Paragraph Number	Paragraph Title	Page Number
4-49	Drawbar Ring and Safety Chain Replacement	4-87
4-50	Fender Assembly Replacement	4-88
4-51	Faucet Box Assembly Repair	4-90
4-52	Adjustable Caster Assembly Repair	4-92
4-53	Suspension Bracket Replacement	4-95

4-49. DRAWBAR RING AND SAFETY CHAIN REPLACEMENT.

This Task Covers:

- a. Removal
- b. Installation

Initial Setup:

Tools/Test Equipment:

- General mechanic's tool kit (Item 1, Appendix B)
- Common No. 1 tool set (Item 2, Appendix B)

Equipment Conditions:

- Trailer parked on level ground (para 2-12).

Materials/Parts:

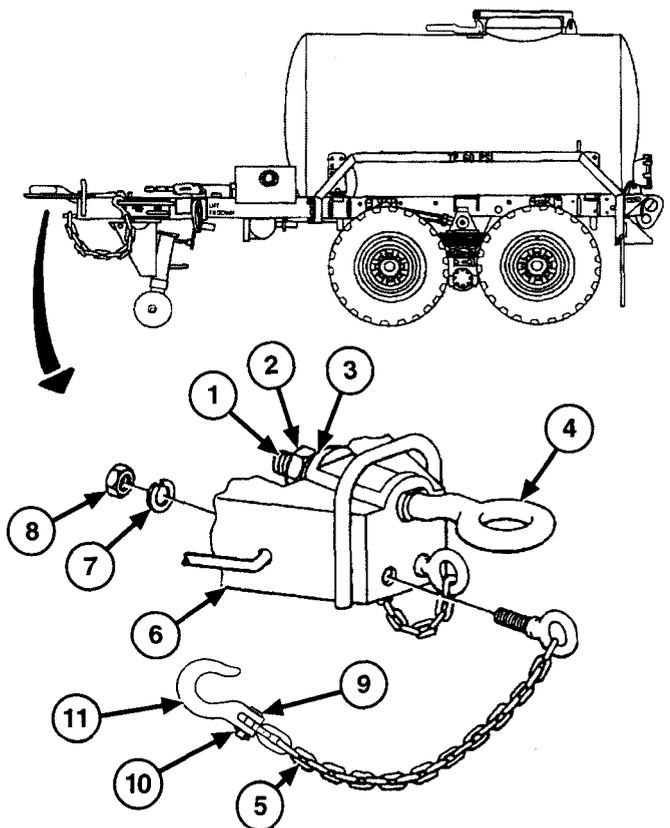
- Cotter pin, MS24665-495
- Cotter pin, MS24665-283
- Lockwasher, MS35338-51

a. REMOVAL

1. Remove cotter pin (1), slotted nut (2), washer (3), and drawbar coupler (4) from frame (6). Discard cotter pin.
2. Remove nut (8), lockwasher (7), and safety chain (5) from frame (6). Discard lockwashers.
3. Remove cotter pin (10), pin (9), and hook (11) from chain (5). Discard cotter pin.

b. INSTALLATION

1. Install hook (11), pin (9), and new cotter pin (10) to chain (5).
2. Install safety chain (5), new lockwasher (7), and nuts (8) on frame (6).
3. Position drawbar coupler (4) on frame (6), and install washer (3) and slotted nut (2) on frame (6). Torque nut between 400 and 450 lb-ft (542 and 610 N•m).
4. Install new cotter pin (1) on drawbar ring (4).



FOLLOW-ON TASKS:

None

4-50. FENDER ASSEMBLY REPLACEMENT.

This Task Covers:

- a. Removal b. Installation
-

Initial Setup:

Tools/Test Equipment:

- General mechanic's tool kit (Item 1, Appendix B)
- Common No. 1 tool kit (Item 2, Appendix B)

Personnel Required: Three

Materials/Parts:

- Lockwasher (5), MS35338-44
- Lockwasher (10), MS35338-45
- Lockwasher (8), MS35340-47

Equipment Conditions:

- Trailer parked on level ground (para 2-12).
-

a. REMOVAL

NOTE

- Both fenders are replaced the same way. The left-side fender is shown.
- Assistance will be required for the removal and installation of fender.

1. Remove five nuts (14), lockwashers (15), and capscrews (6), mounting plate (13), and splashguard (7) from fender (10). Discard lockwashers.
2. Remove five rear nuts (2), lockwashers (3), washers (4), and capscrews (5) from fender (10). Discard lockwashers.
3. Remove five front nuts (24), lockwasher (25), washers (26), and capscrews (27) from fender (10). Remove fender (10) from frame (1). Discard lockwashers.

WARNING

Fender is heavy. Three people are required to remove fender from frame at all times. Failure to do so may result in injury to personnel and damage to fender brackets.

4. With the aid of assistants to support fender, remove four capscrews (17), lockwashers (18), and washers (19), from center fender bracket (16). Discard lockwashers.
5. Remove four nuts (11), lockwashers (12), washers (20), and capscrews (21) from center fender bracket (16). Remove center fender bracket (16) from fender (10). Discard lockwashers.
6. Remove two self-tapping screws (22) and front reflector (23) from fender (10).
7. Remove two self-tapping screws (8) and rear reflector (9) from fender (10).

b. INSTALLATION

1. Position front reflector (23) on fender (10) and secure with two self-tapping screws (22).
2. Position rear reflector (9) on fender (10) and secure with two self-tapping screws (8).

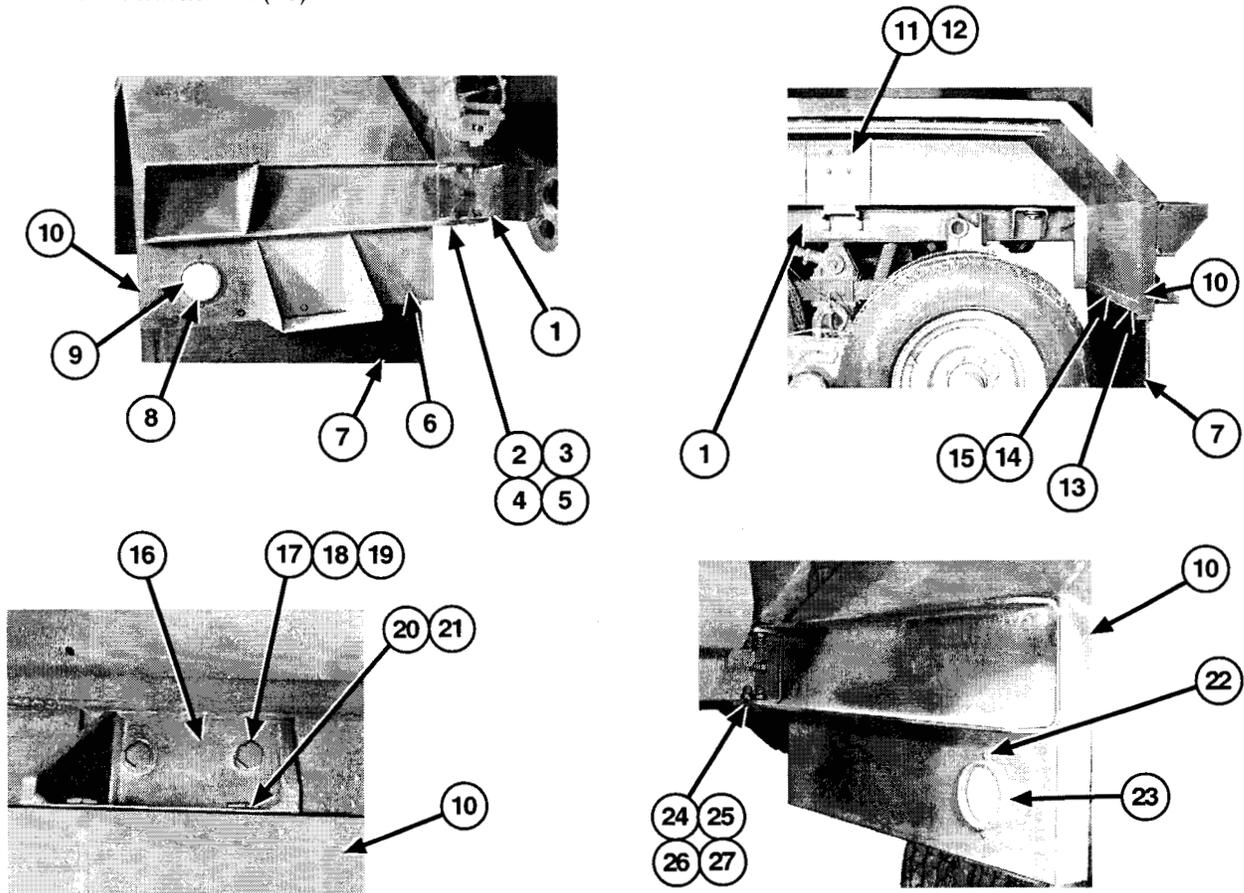
4-50. FENDER ASSEMBLY REPLACEMENT (continued).

- Position center fender bracket (16) on fender (10) and secure four capscrews (21), washers (20), nuts (11), and new lockwashers (12). Torque nuts (11) between 50 and 55 lb-ft (67.8 and 74.6 N•m).

WARNING

Fender is heavy. Three people are required to install fender on frame. Failure to do this may result in injury to personnel and damage to fender brackets.

- With the aid of assistants to support fender, position fender (10) on frame (1) and loosely secure with five rear capscrews (5), washers (4), nuts (2), and new lockwashers.
- Position fender (10) on frame (1) and loosely secure with five front capscrews (27), washers (26), nuts (24), and new lockwashers (25).
- With the aid of assistants to support fender, loosely secure center bracket (16) to frame (1) using four capscrews (17), washers (19), and new lockwashers (18).
- Torque four center fender bracket nuts (11) between 50 and 55 lb-ft (67.8 and 74.6 N•m). Torque five front nuts (24) and five rear nuts (2) between 50 and 55 lb-ft (67.8 and 74.6 N•m).
- Position splash guard (7) on fender (10) and secure with five capscrews (6), mounting plate (13), nuts (14), and new lockwashers (15).



FOLLOW-ONTASKS:

None

4-51. FAUCET BOX ASSEMBLY REPAIR.

This Task Covers:

- | | |
|-------------|-----------------|
| a. Removal | b. Disassembly |
| c. Assembly | d. Installation |

Initial Setup:

Tools/Test Equipment:

- General mechanic's tool kit (Item 1, Appendix B)

Equipment Conditions:

- Hoses and faucets removed (para 4-59).

Materials/Parts:

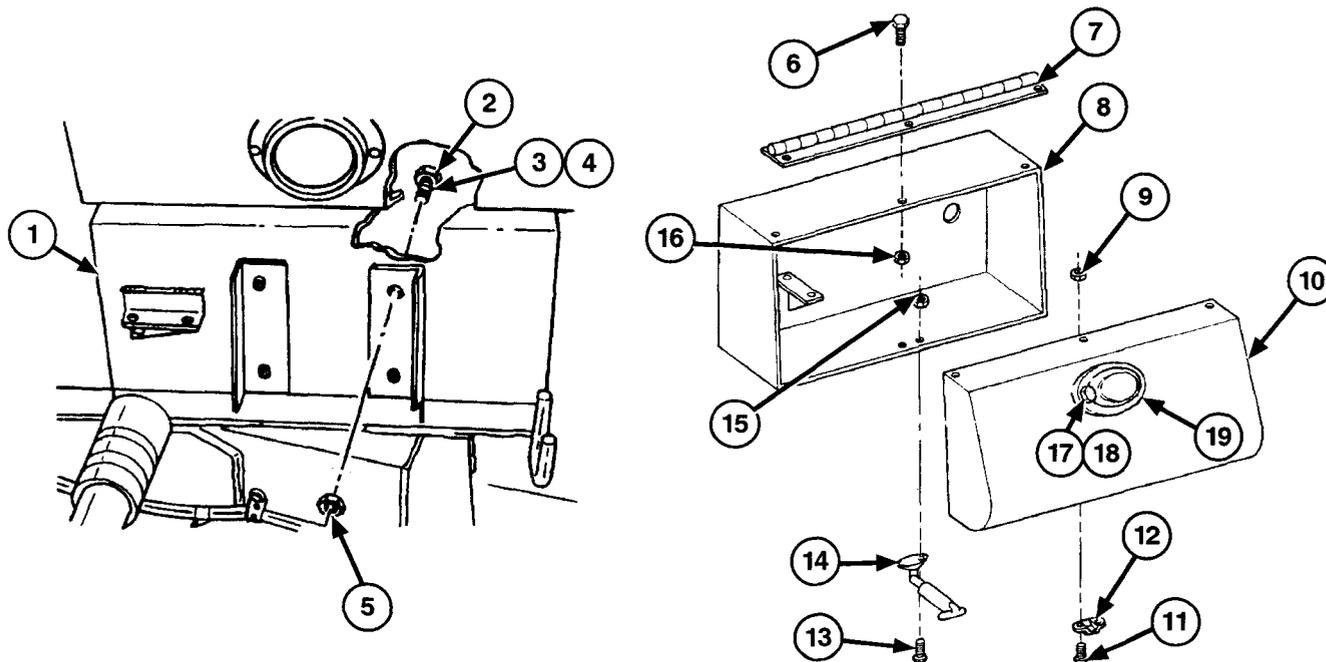
- Nuts, self-locking (12), MS51922-1
- Lockwasher, MS535338-44

a. REMOVAL

1. Remove four nuts (5), lockwasher (3), washer (4), and bolts (2) from faucet box assembly (1). Discard lockwashers.
2. Remove faucet box assembly (1) from trailer.

b. DISASSEMBLY

1. Remove two self-locking nuts (15), bolts (13), and release fastener (14) from faucet box (8).
2. Remove three capscrews (6), self-locking nuts (16), and access cover (10), with hinge (7), from faucet box (8). Discard self-locking nuts.



4-51. FAUCET BOX ASSEMBLY REPAIR (continued).

3. Remove three screws (6), self-locking nuts (16), and hinge (7) from access cover (10). Discard self-locking nuts.
4. Remove two nuts (9), screws (11), and bracket (12) from access cover (10). Discard self-locking nuts.
5. Remove two capscrews (17), self-locking nuts (18), and reflector (19) from cover (10). Discard self-locking nuts.

c. ASSEMBLY

1. Position fastener (14) on box (8), and install two screws (13) and new self-locking nuts (15) on box (8).
2. Position bracket (12) on access cover (10), and install two screws (11) and new self-locking nuts (9) on access cover (10).
3. Position hinge (7) on access cover (10), and install three screws (6) and new self-locking nuts (16) on access cover (10).
4. Position access cover (10) and hinge (7) on box (8), and install three screws (6) and new self-locking nuts (16) on box (8).
5. Position reflector (19) on access cover (10) and secure with two capscrews (17) and new self-locking nuts (18).

d. INSTALLATION

1. Position faucet box assembly (1) on trailer.
2. Install four bolts (2), washers (4), lockwashers (3), and nuts (5) on faucet box assembly (1).
3. Secure fastener (14) in bracket (12).

FOLLOW-ON TASKS:

- Install hoses and faucets (para 4-59).

4-52. ADJUSTABLE CASTER ASSEMBLY REPAIR.

This Task Covers:

- | | |
|----------------------------|----------------|
| a. Removal | b. Disassembly |
| c. Cleaning and Inspection | d. Assembly |
| e. Installation | |

Initial Setup:

Tools/Test Equipment:

- General mechanic's tool kit (Item 1, Appendix B)
- Common No. 1 tool set (Item 2, Appendix B)

- Nut, self-locking, MS21044-N12
- Nuts, self-locking (2), MS51922-1
- Nut, self-locking, MS21083-N5
- Spring pin (2), MS171656
- Spring pin (2) MS171658

Materials/Parts:

- Drycleaning solvent (Item 12, Appendix F)
- Lockwasher (4), MS35338-48
- Nut, self-locking, MS17829-4C
- Nut, self-locking, MS21044-N9

Personnel Required: Two

Equipment Conditions:

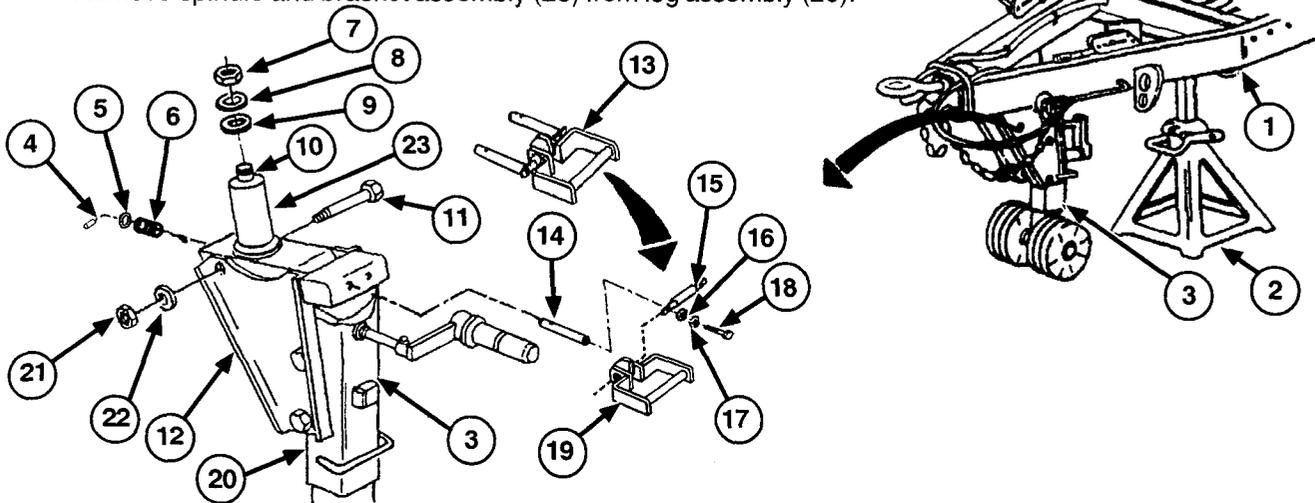
- Trailer parked on level ground (para 2-12).

a. REMOVAL

1. Raise front of trailer and position two jackstands (2) under frame (1).
2. With the aid of an assistant, remove self-locking nut (7), washer (8), adjustable caster assembly (3), and washer (9) from mounting stud (10) and frame (1). Discard self-locking nut.

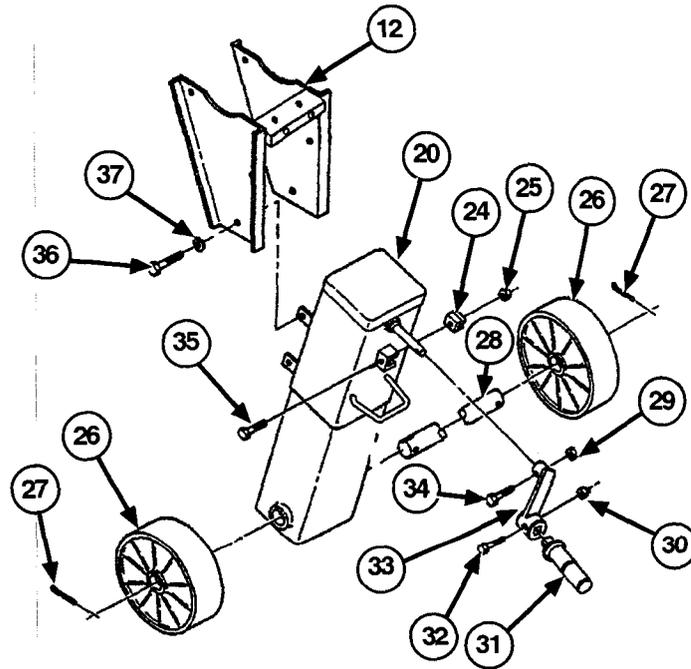
b. DISASSEMBLY

1. Remove self-locking nut (21), washer (22), and bolt (11) from retainer leg (12) and spindle and bracket assembly (23). Discard self-locking nut.
2. Remove spindle and bracket assembly (23) from leg assembly (20).



4-52. ADJUSTABLE CASTER ASSEMBLY REPAIR (continued).

3. Remove two spring pins (4), manual control handle (13), two springs (6) and washers (5) from retainer leg (12).
4. Remove two bolts (18), lockwashers (17), washers (16), and straight pins (14) from pivot rod (15).
5. Remove pivot rod (15) from handle (19).
6. Remove four screws (36) and lockwashers (37) and retainer leg (12) from leg assembly (20). Discard lockwashers.
7. Remove self-locking nut (30), screw (32), and handle (31) from handcrank arm (33). Discard self-locking nut.
8. Remove self-locking nut (29), screw (34), and handcrank arm (33) from leg assembly (20). Discard self-locking nut.
9. Remove two spring pins (27) wheels (26) and axle shaft (28) from leg assembly (20). Discard spring pins.
10. Remove self-locking nut (25), screw (35), and clip (24) from leg assembly (20). Discard self-locking nut.

**c. CLEANING AND INSPECTION****WARNING**

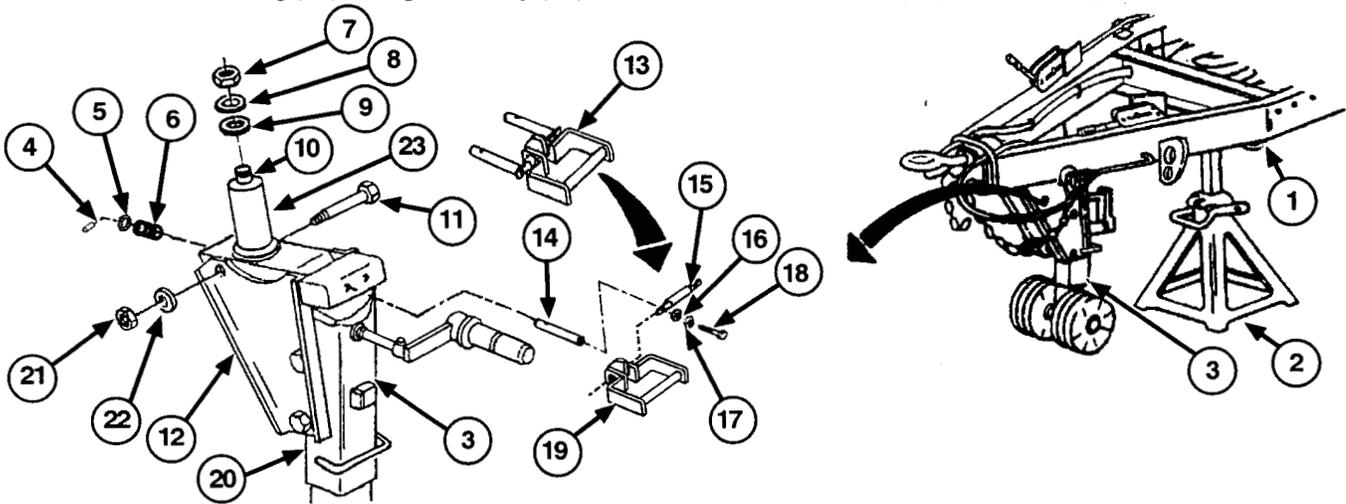
Drycleaning solvent PF05 is combustible. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat.

1. Clean all parts with drycleaning solvent. Dry thoroughly.
2. Inspect all parts for damage. Replace any damaged parts.

4-52. ADJUSTABLE CASTER ASSEMBLY REPAIR (continued).

d. ASSEMBLY

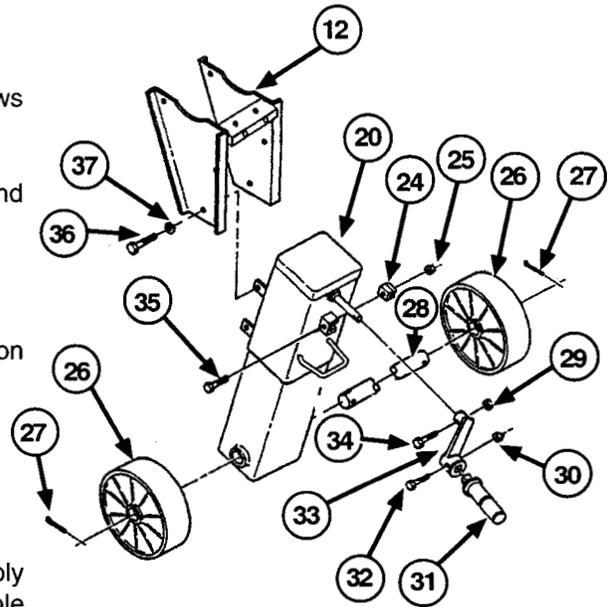
1. Install clip (24) on leg assembly (20) with screw (35) and new self-locking nut (25).
2. Install axle (28) and two wheels (26) on leg assembly (20), with two new spring pins (27).
3. Install handcrank arm (33) on leg assembly (20) with screw (34) and new self-locking nut (29).
4. Install handle (31) on handcrank arm (33) with screw (32) and new self-locking nut (30).
5. Install retainer leg (12) on leg assembly (20) with four new lockwashers (37) and screws (36).



6. Install pivot rod (15) in handle (19).
7. Install two straight pins (14) on pivot rod (15) with two screws (18), new lock washers (17), and washers (16).
8. Position two washers (5) springs (6), release handle (13), and two spring pins (4) on retainer leg (12).
9. Position leg assembly (20) on retainer leg (12).
10. Install bolt (11), washer (22), and new self-locking nut (21) on retainer leg (12) and leg assembly (20).

e. INSTALLATION

1. Install washer (9) on mounting stud (10).
2. With the aid of an assistant, align adjustable caster assembly (3), mounting stud (10) with frame (1). Install adjustable caster assembly (3) to fram (1) with washer (8) and new self-locking nut (7).



FOLLOW-ONTASKS:

- Lubricate adjustable caster assembly (Table 4-1).

4-53. SUSPENSION BRACKET REPLACEMENT.

This Task Covers:

a. Removal

b. Installation

Initial Setup:

Tools/Test Equipment:

- General mechanic's tool kit (Item 1, Appendix B)

Equipment Conditions:

- Radius rod removed (para 4-56).

Materials/Parts:

- Lockwasher (7), MS35338-48
-

a. REMOVAL

NOTE

- Perform step 1 for removing front suspension brackets.
- Perform step 2 for removing rear suspension brackets.

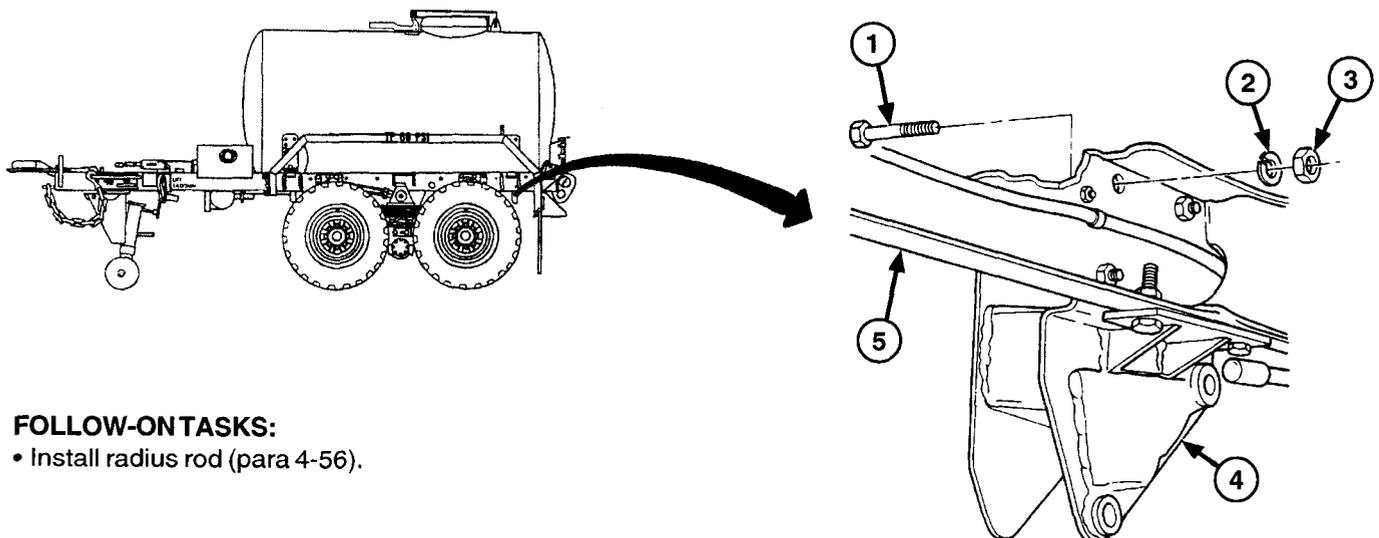
1. Remove four nuts (3), seven screws (1), four lockwashers (2), and front suspension bracket (4) from frame assembly (5). Discard lockwashers.
2. Remove seven nuts (3), screws (1), lockwashers (2), and rear suspension bracket (4) from frame assembly (5). Discard lockwashers.

b. INSTALLATION

NOTE

- Perform step 1 for installing front suspension brackets.
- Perform step 2 for installing rear suspension brackets.

1. Install front suspension bracket (4) on frame assembly (5) with four nuts (3), seven screws (1) and four new lockwashers (2).
2. Install rear suspension bracket (4) on frame assembly (5) with seven nuts (3), screws (1), and new lockwashers (2).



FOLLOW-ON TASKS:

- Install radius rod (para 4-56).

Section XII. SPRINGS AND SHOCK ABSORBER MAINTENANCE

Paragraph Number	Paragraph Title	Page Number
4-54	Spring Assembly Replacement	4-96
4-55	Shock Absorber Replacement	4-98
4-56	Radius Rod Repair and Adjustment	4-99

4-54. SPRING ASSEMBLY REPLACEMENT.

This Task Covers:

- a. Removal
- b. Installation

Initial Setup:

Tools/Test Equipment:

- General mechanic's tool kit (Item 1, Appendix B)

Personnel Required: Two

Materials/Parts:

- Nut, self-locking, MS51922-53

Equipment Conditions:

- Cross axle removed (para 4-30).

a. REMOVAL

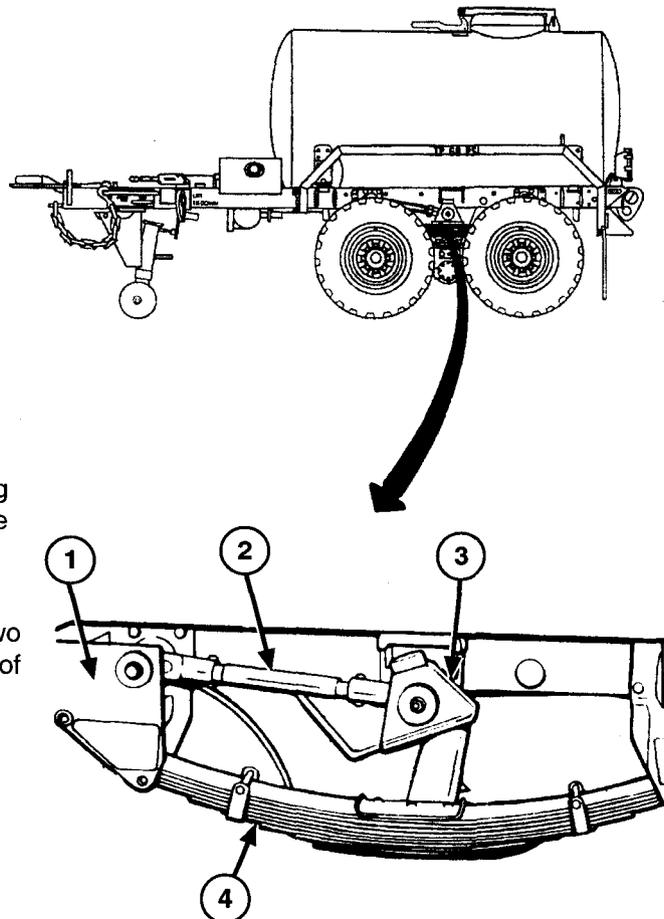
WARNING

Radius rod and bracket will swing freely. Radius rod and bracket must be tied to frame assembly to prevent injury to personnel and damage to equipment.

NOTE

Right-side and left-side spring assemblies are replaced the same way. This procedure covers one spring assembly.

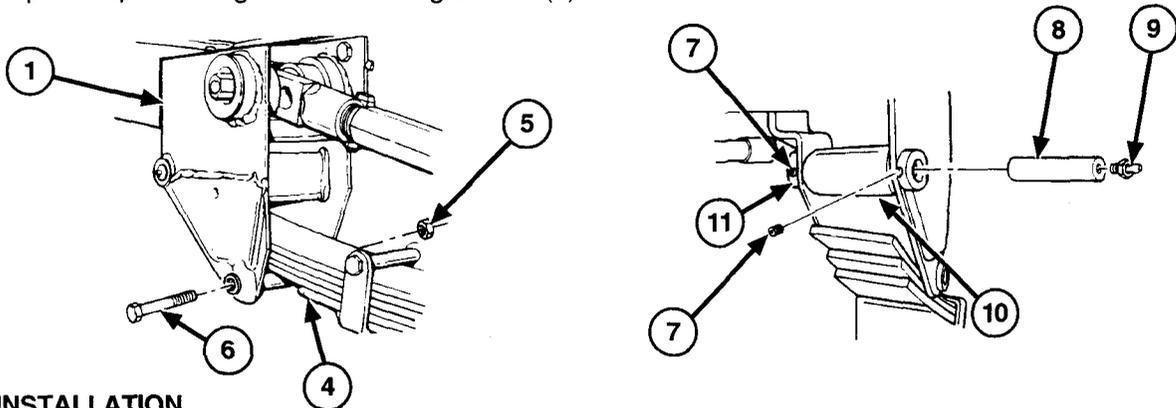
1. Move radius rod (2) and bracket (3) clear of spring assembly (4) and secure radius rod (2) to frame assembly.
2. Remove two bolts (6) and self-locking nuts (5) from two brackets (1) and spring assembly (4) at each end of spring assembly.



4-54. SPRING ASSEMBLY REPLACEMENT (continued).**WARNING**

Spring assembly is heavy. Use caution, provide adequate support, and use assistance during removal. Failure to follow this warning may result in serious injury to personnel and damage to equipment.

3. With the aid of an assistant, remove spring assembly (4) from two brackets (1).
4. Loosen two setscrews (7), and tap pin (8) free of one of two brackets (1).
5. Remove two bushings (11) and roller assembly (10) from bracket (1).
6. Remove grease fitting (9) from pin (8).
7. Repeat steps 4 through 6 for remaining bracket (1).

**b. INSTALLATION**

1. Install grease fitting (9) in pin (8).
2. Position two bushings (11) and roller assembly (10) in one of two brackets (1).
3. Tap pin (8) into position and tighten two setscrews (7).
4. Repeat steps 1 through 3 for remaining bracket (1).

WARNING

Spring assembly is heavy. Use caution, provide adequate support, and use assistance during removal. Failure to follow this warning may result in serious injury to personnel and damage to equipment.

5. With the aid of an assistant, position and support spring assembly (4) on two brackets (1).
6. Install two bolts (6) and self-locking nuts (5) in two brackets (1).
7. Untie radius rod (2) and bracket (3) from frame assembly. Swing down into position at top of spring assembly (4).

FOLLOW-ON TASKS:

- Install cross axle (para 4-30).

4-55. SHOCK ABSORBER REPLACEMENT.

This Task Covers:

- a. Removal b. Installation

Initial Setup:

Tools/Test Equipment:

- General mechanic's tool kit (Item 1, Appendix B)
- Common No. 1 tool set (Item 2, Appendix B)

Equipment Conditions:

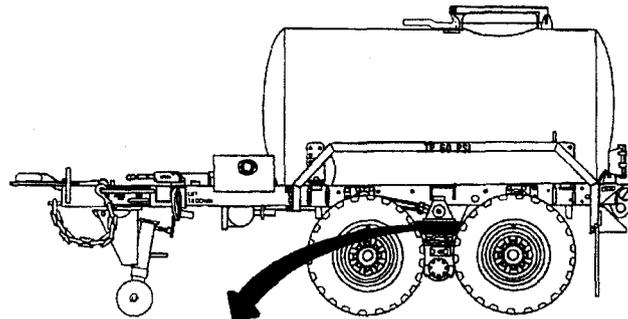
- Trailer parked on level ground (para 2-12).

Materials/Parts:

- Lockwasher (2), 004-003005-059

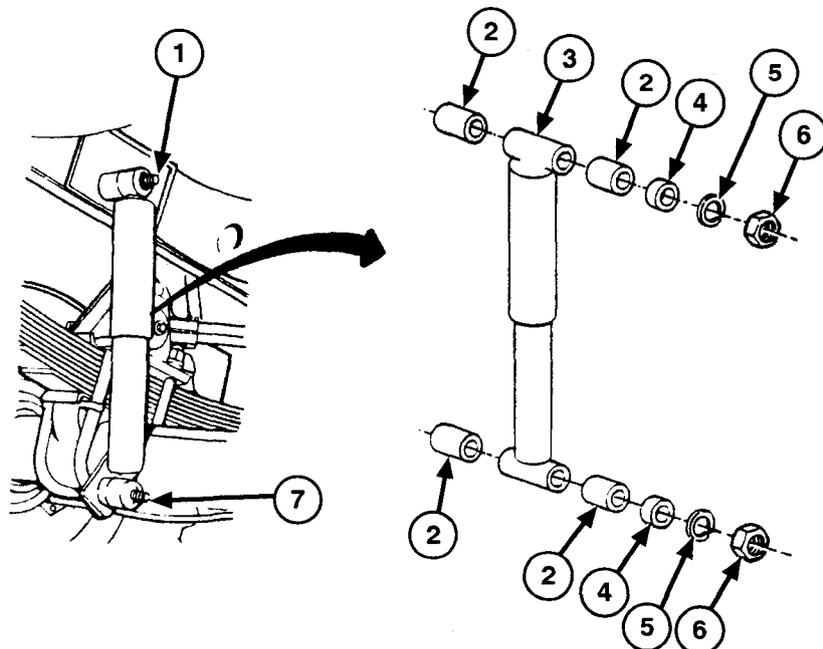
a. REMOVAL

1. Remove two nuts (6), lockwashers (5), and recessed washers (4) and shock absorber (3) from frame stud (1) and axle stud (7). Discard lockwashers.
2. Remove four rubber bushings (2) from shock absorber (3). Replace rubber bushings if damaged.



b. INSTALLATION

1. Install four rubber bushings (2) in shock absorber (3). Position shock absorber (3) on frame stud (1) and axle stud (7).
2. Install two recessed washers (4), new lockwashers (5), and nuts (6) on frame stud (1) and axle stud (7). Make sure nuts are fully tightened.



FOLLOW-ON TASKS:

None

4-56. RADIUS ROD REPAIR AND ADJUSTMENT.

This Task Covers:

- | | |
|---------------|-----------------|
| a. Removal | b. Disassembly |
| c. Assembly | d. Installation |
| e. Adjustment | |

Initial Setup:

Tools/Test Equipment:

- General mechanic's tool kit (Item 1, Appendix B)
- Common No. 1 tool set (Item 2, Appendix B)

Equipment Conditions:

- Spring assembly removed (para 4-54).
- Suspension bracket removed (para 4-53).

Materials/Parts:

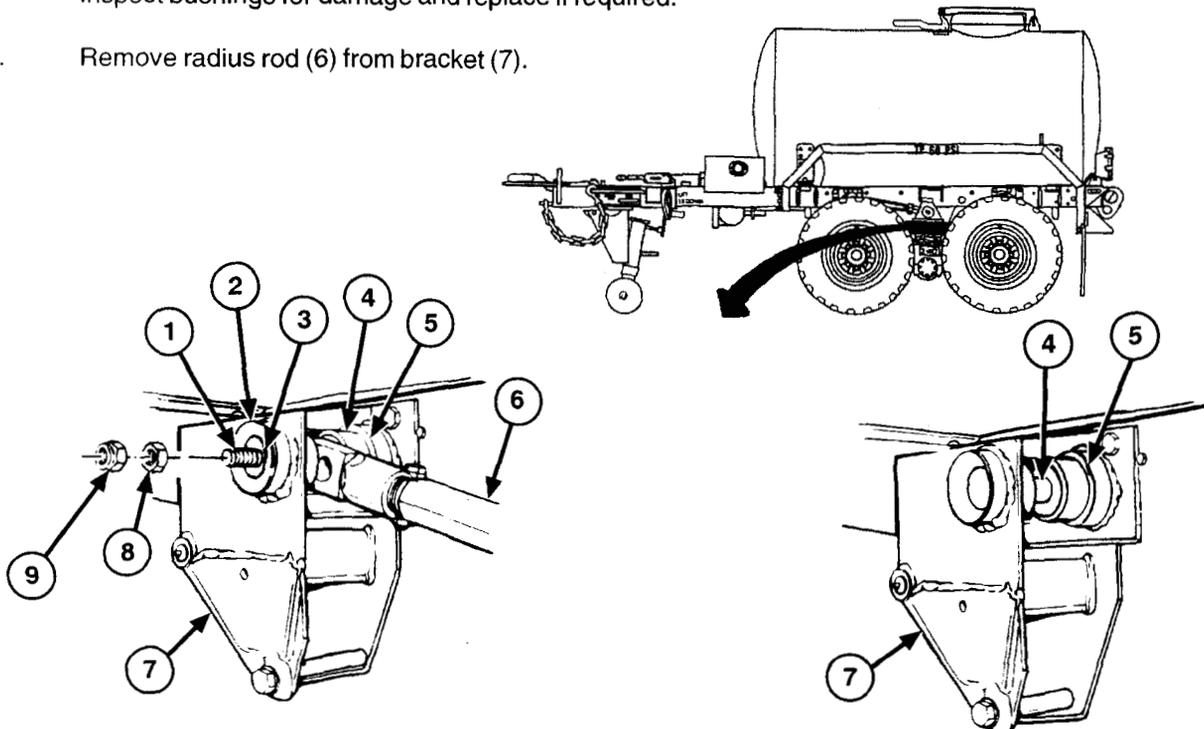
- Lockwasher, MS35333-42
- Lockwasher (2), MS35335-48

NOTE

There are two radius rods. This procedure covers replacement of both radius rods, and repair of the adjustable radius rod.

a. REMOVAL

1. Remove nut (9), nut (8), and capscrew (1) from radius rod (6).
2. Remove two shouldered washers (2) and bushings (5), sleeve bearing (3), and two washers (4) from bracket (7). Inspect bushings for damage and replace if required.
3. Remove radius rod (6) from bracket (7).



4-56. RADIUS ROD REPAIR AND ADJUSTMENT (continued).

4. Remove screw (10), lockwasher (11), washer (12), and bumper (13) from bracket (20). Discard lockwasher.

NOTE

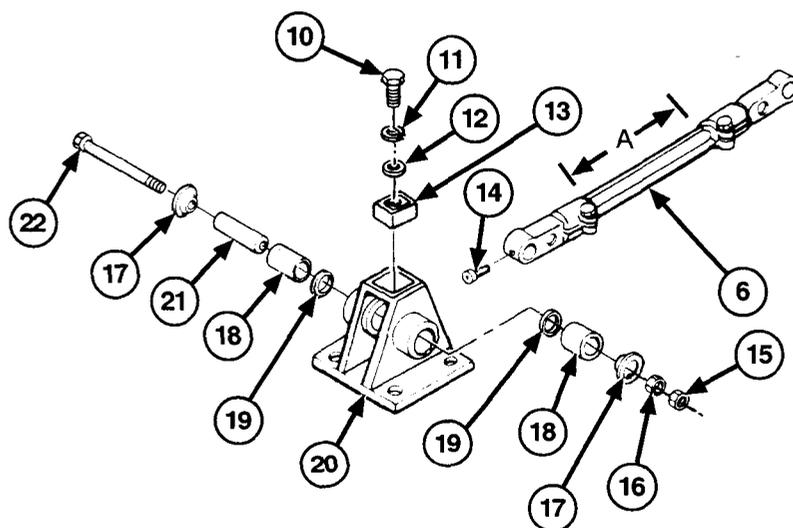
Remove screw only if screw is damaged.

5. Loosen screw (14) on radius rod (6).
6. Remove nut (15), nut (16), and capscrew (22) from bracket (20).
7. Remove two shouldered washers (17) and bushings (18) from bracket (20).

NOTE

If replacing nonadjustable radius rod, go to section d, Installation. If replacing adjustable radius rod, perform steps 8 and 9.

8. Measure and record distance (A) between two connectors (23).
9. Remove sleeve bearing (21) and two washers (19) and radius rod (6) from bracket (20).

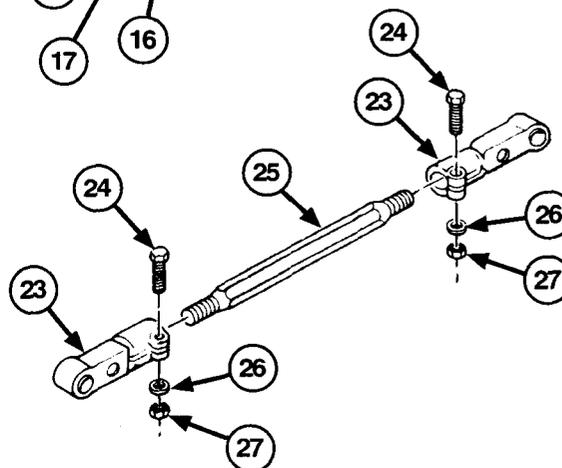


b. DISASSEMBLY

Remove two screws (24), nuts (27), lockwashers (26), and connectors (23) from rod (25). Discard lockwashers.

c. ASSEMBLY

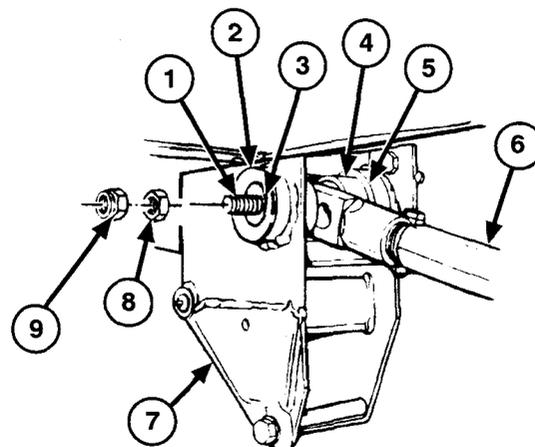
Install two connectors (23) on rod (25) with two screws (24), new lockwashers (26), and nuts (27).



4-56. RADIUS ROD REPAIR AND ADJUSTMENT (continued).

d. INSTALLATION

1. Align radius rod (6) and two washers (19) in bracket (20), and install sleeve bearing (21) in bracket (20).
2. Install two bushings (18) and shouldered washers (17) in bracket (20).
3. Install capscrew (22), nut (16), and nut (15) in bracket (20).
4. Tighten screw (14) on radius rod (6).
5. Install bumper (13), washer (12), new lockwasher (11), and screw (10) in bracket (20).
6. Install two bushings (5) and washers (4) in bracket (7).
7. Install radius rod (6) and sleeve bearing (3) in bracket (7).
8. Install two shouldered washers (2), capscrew (1), nut (8), and nut (9) in bracket (7).

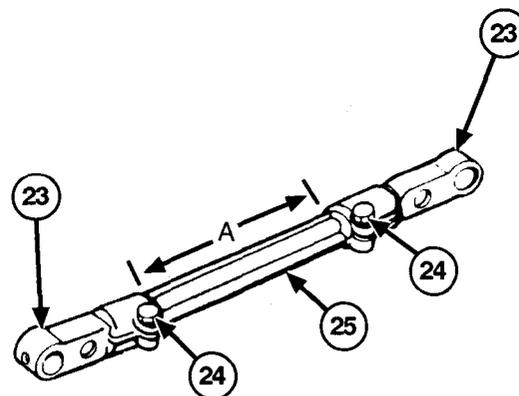


e. ADJUSTMENT

NOTE

Make sure that distance (A) between connectors is the same as that recorded when radius rod was removed.

1. Measure distance between two connectors (23). If measurement is the same as measurement recorded during removal of radius rod, adjustment is correct. If adjustment is not correct, go to step 2.
2. Loosen two screws (24) and turn rod (25) clockwise to shorten (counterclockwise to lengthen) distance between two connectors (23).
3. When measurement between two connectors (23) is same as that recorded during removal of radius rod, tighten two screws (24).



FOLLOW-ON TASKS:

- Install suspension bracket (para 4-53).
- Install spring assembly (para 4-54).

Section XIII. BODY MAINTENANCE

Paragraph Number	Paragraph Title	Page Number
4-57	Manhole Cover Repair	4-102
4-58	Water Tank Body Replacement	4-105
4-59	Hoses and Faucet Replacement	4-107

4-57. MANHOLE COVER REPAIR.

This Task Covers:

- | | |
|-------------|-----------------|
| a. Removal | b. Disassembly |
| c. Assembly | d. Installation |

Initial Setup:

Tools/Test Equipment:

- General mechanic's tool kit (Item 1, Appendix B)

- Nut, self-locking, MS51922-13

- Cotter pin, MS24665-285

- Gasket, 12354242

- Lockwasher (8), MS35338-139

Materials/Parts:

- Adhesive (Item 1, Appendix F)
- Drycleaning solvent (Item 12, Appendix F)
- Rag, wiping (Item 32, Appendix F)

Equipment Conditions:

- Trailer parked on level ground (para 2-12).

a. REMOVAL

1. Lift and remove cover hold-down clamp (15) from bar (19).
2. Remove four screws (4), lockwashers (5), and spacers (8) and bracket (7), with manhole cover assembly (11) from tank assembly (13). Discard lockwashers.
3. Remove four screws (17), lockwashers (16), spacers (12), detention assembly pin (14), and cover hold-down clamp (15) from tank assembly (13). Discard lockwashers.

b. DISASSEMBLY

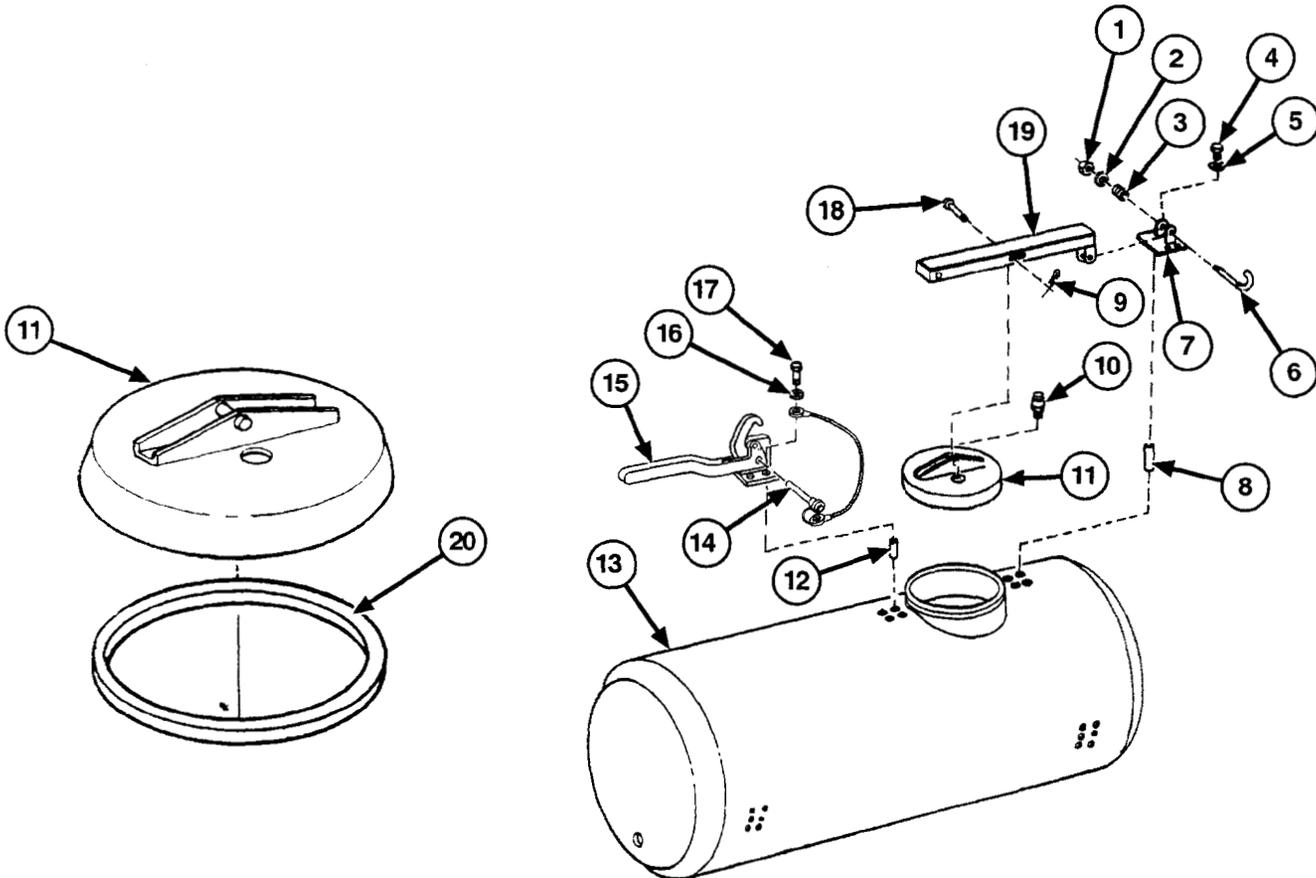
1. Remove cotter pin (9), straight pin (18), and bar (19) from manhole cover (11). Discard cotter pin.
2. Remove self-locking nut (1), washer (2), spring (3), hook bolt (6), and bracket (7) from bar (19). Discard self-locking nut.
3. Remove vacuum valve (10) from manhole cover (11).

4-57. MANHOLE COVER REPAIR (continued).

3. Install vacuum valve (10) on manhole cover (11).
4. Position bracket (7) on bar (19) and install hook bolt (6), spring (3), washer (2), and new self-locking nut (1) in bracket (7).
5. Position bar (19) on manhole cover (11), and install straight pin (18) and new cotter pin (9) on manhole cover (11).

d. INSTALLATION

1. Install four spacers (12) in tank assembly (13).
2. Position cover hold-down clamp (15) on tank assembly (13), and install detention assembly pin (14), four new lockwashers (16) and screws (17) on tank assembly (13).
3. Position four spacers (8) in tank assembly (13).
4. Position bracket (7) on tank assembly (13), and install four new lockwashers (5) and screws (4) on bracket (7).
5. Lift and secure latch cover hold-down clamp (15) to bar (19).



FOLLOW-ONTASKS:

None

4-58. WATER TANK BODY REPLACEMENT.

This Task Covers:

- a. Removal
- b. Cleaning
- c. Installation

Initial setup:

Tools/Test Equipment:

- General mechanic's tool kit (Item 1, Appendix B)
- Common No. 1 tool set (Item 2, Appendix B)

Materials/Parts:

- Wire (Item 44, Appendix F)
- Nuts, self-locking (4), MS51922-53
- Gasket (4), 12269895

Personnel Required: Two

References:

- FM 21-10
- TB MED 577

Equipment Conditions:

- Piping and faucets removed (para 4-59).

a. REMOVAL

WARNING

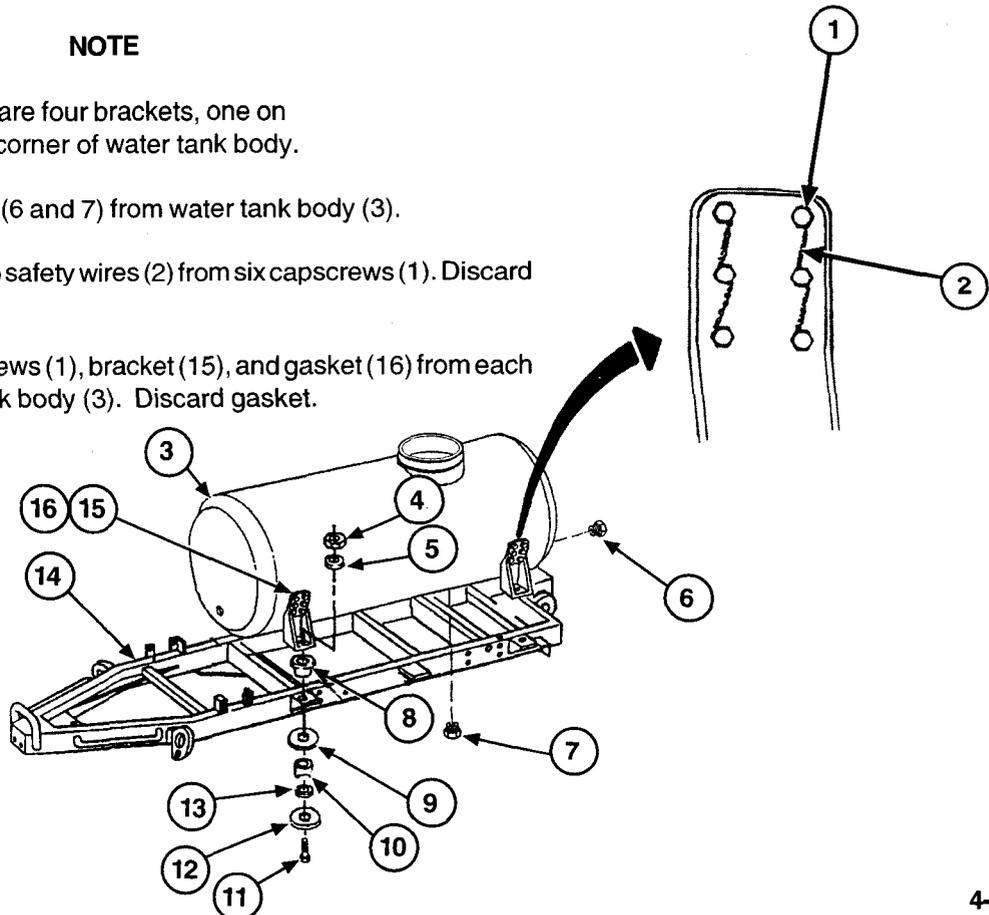
All personnel must stand clear of hoist when raising or lowering water tank body. Failure to follow this warning may result in serious injury or death to personnel.

1. Install sling on water tank body (3) and connect to suitable lifting device. Tank weight is 1,020 lbs (1383 N•m).

NOTE

There are four brackets, one on each corner of water tank body.

2. Remove two plugs (6 and 7) from water tank body (3).
3. Cut and remove two safety wires (2) from six capscrews (1). Discard wire.
4. Remove six capscrews (1), bracket (15), and gasket (16) from each corner of water tank body (3). Discard gasket.



4-58. WATER TANK BODY REPLACEMENT (continued).

5. Remove screw (11), washer (12), spacer (13), packing (10), spacer (9), resilient mount (8), washer (5), and self-locking nut (4) from bracket (15). Discard self-locking nuts.
6. Repeat steps 3 through 5 for remaining brackets.
7. Remove water tank body (3) from frame assembly (14).

b. CLEANING

WARNING

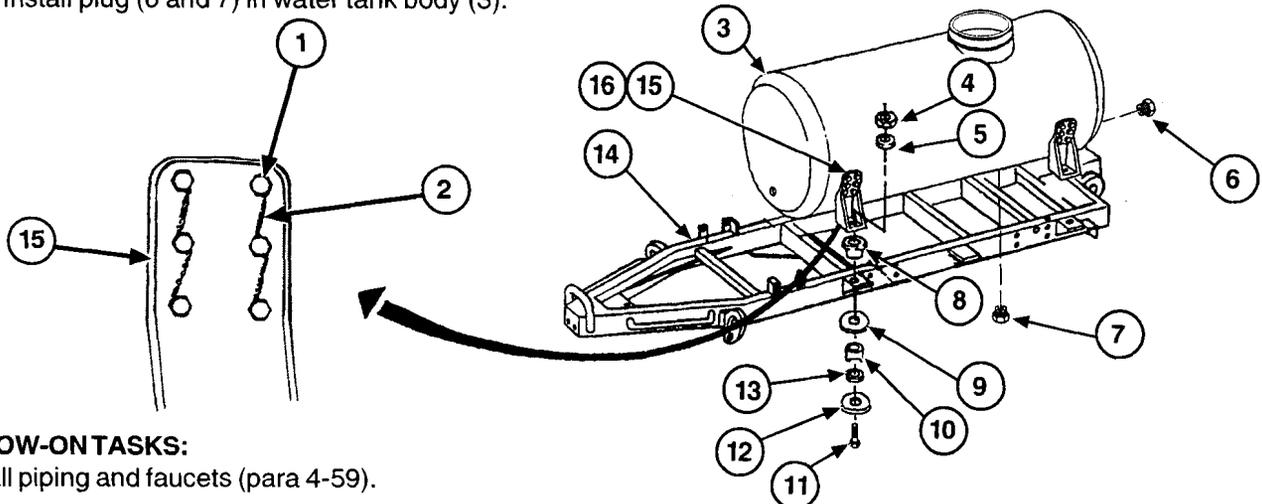
Tank interior is a confined space with potential oxygen deficiency and toxic fume hazards. Failure to follow this warning may result in injury to personnel or death to personnel.

NOTE

To clean interior of water tank body, refer to FM 21-10 and TB MED 577 for information on cleaning and disinfecting procedures.

c. INSTALLATION

1. Install screw (11), washer (12), spacer (13), packing (10), spacer (9), resilient mount (8), washer (5), new self-locking nut (4), and bracket (15) to frame assembly (14).
2. Repeat step 1 for remaining brackets.
3. Using suitable lifting device, position water tank body (3) on frame assembly (14).
4. Install new gasket (16), bracket (15) and six capscrews (1) in tank body (3). Lace six capscrews (1) with two new wires (2).
5. Repeat step 4 for remaining brackets.
6. Remove lifting device from water tank body (3).
7. Install plug (6 and 7) in water tank body (3).



FOLLOW-ON TASKS:

- Install piping and faucets (para 4-59).

4-59. HOSES AND FAUCET REPLACEMENT.

This Task Covers:

- | | |
|-----------------|----------------------------|
| a. Removal | b. Cleaning and Inspection |
| c. Installation | |

Initial Setup:

Tools/Test Equipment:

- General mechanic's tool kit (Item 1, Appendix B)

Equipment Conditions:

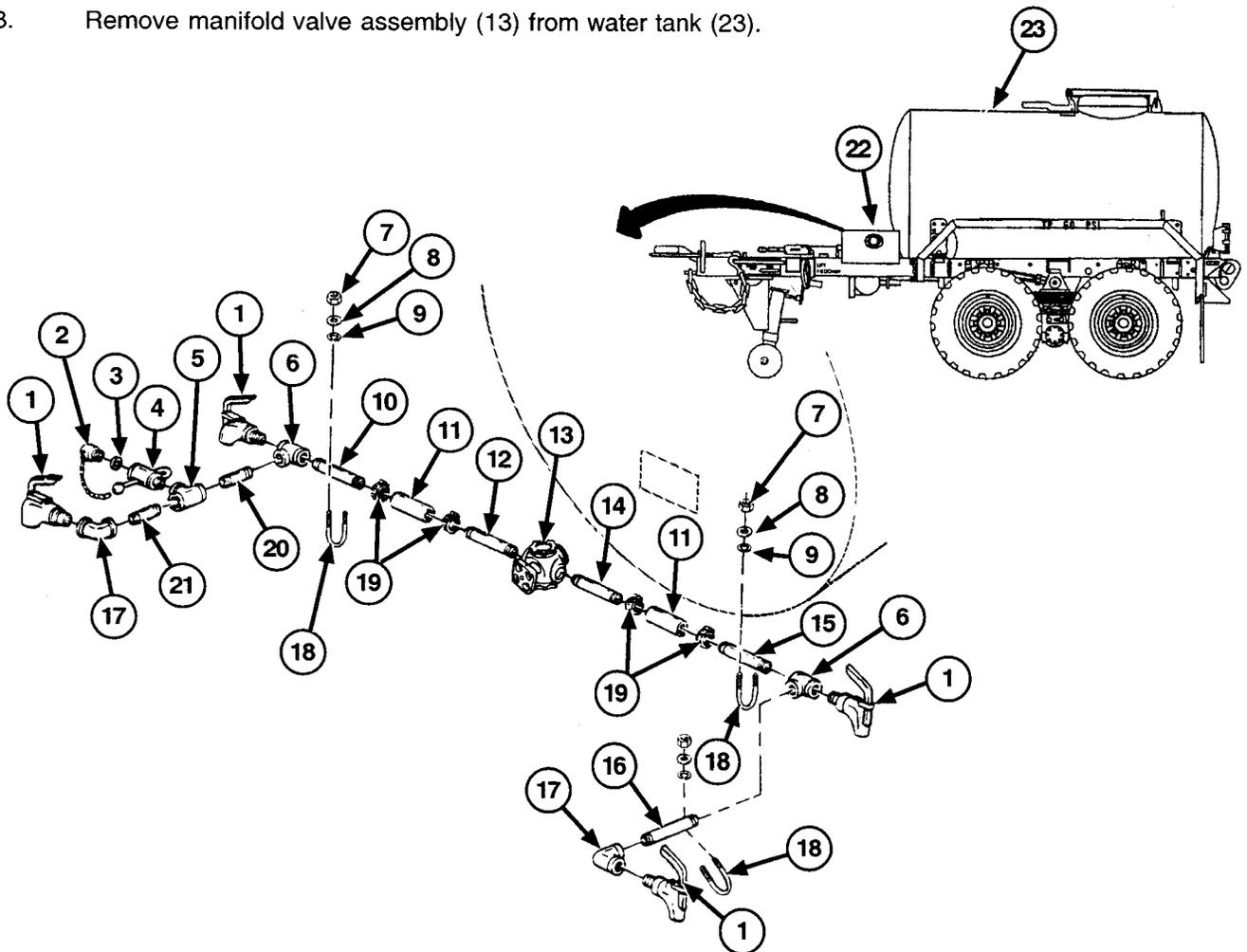
- Manifold valve in OFF position (para 2-13).
- Water tank drained (para 2-13).

Materials/Parts:

- Lockwasher (8), MS35333-40

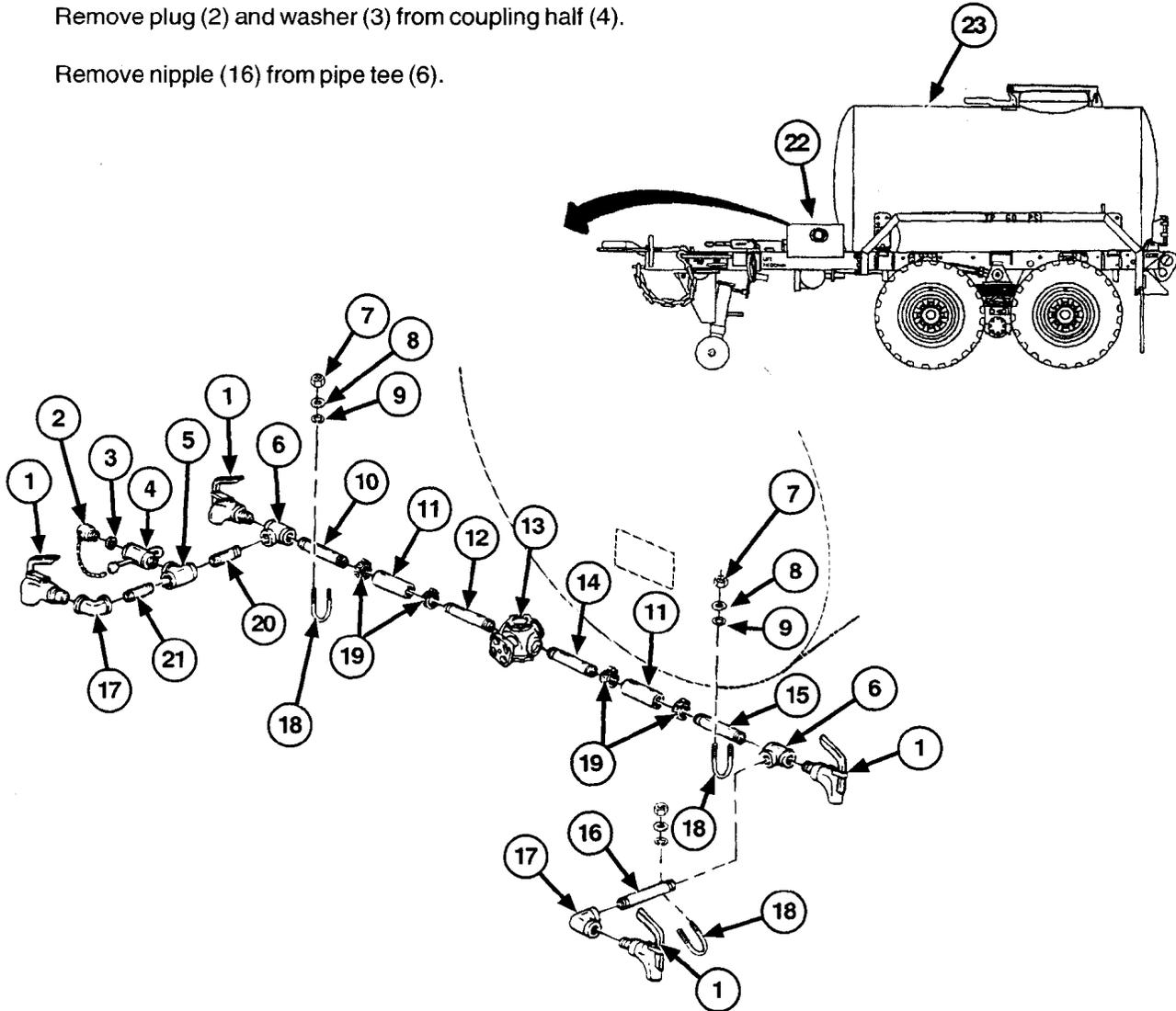
a. REMOVAL

1. Remove four hose clamps (19) and two hoses (11) from four straight adapters (10, 12, 14, and 15).
2. Remove two straight adapters (12 and 14) from manifold valve assembly (13).
3. Remove manifold valve assembly (13) from water tank (23).



4-59. HOSES AND FAUCET REPLACEMENT (continued).

4. Remove eight nuts (7), washers (8), and lockwashers (9) and four U-bolts (18) from faucet boxes (22). Discard lockwashers.
5. Remove four faucets (1) with attached parts from faucet boxes (22).
6. Remove two faucets (1) from two pipe tees and remove two faucets (1) from two elbows (17).
7. Remove two elbows (17) from nipple (16) and nipple (21).
8. Remove two straight adapters (10 and 15) from two pipe tees (6).
9. Remove nipple (20) from pipe tee (6) and pipe tee (5).
10. Remove nipple (21) from pipe tee (5) and coupling half (4) from pipe tee (5).
11. Remove plug (2) and washer (3) from coupling half (4).
12. Remove nipple (16) from pipe tee (6).



4-59. HOSES AND FAUCET REPLACEMENT (continued).

b. CLEANING AND INSPECTION

1. Clean all parts and inspect for cracks, damaged threads, and evidence of leakage.
2. Replace any damaged parts.

c. INSTALLATION

1. Install two straight adapters (10 and 15) in pipe tee (6).
2. Install two nipples (20 and 21) in pipe tee (5).
3. Install washer (3), plug (2), and coupling half (4) in pipe tee (5).
4. Install nipple (20) and straight adapter (10) in pipe tee (6).
5. Install two elbows (17) on nipple (16) and nipple (21).
6. Install four faucets (1) in two pipe tees (6) and elbows (17).
7. Position four faucets (1) with attached hardware in two faucet boxes (22) and install four U-bolts (18) and eight new lockwashers (9), washers (8), and nuts (7) on faucet boxes (22).
8. Install manifold valve assembly (13) in water tank. Connect two straight adapters (12 and 14) to manifold valve assembly (13).
9. Position two hoses (11) and four hose clamps (19) on four straight adapters (10, 12, 14, and 15). Tighten hose clamps (19).

FOLLOW-ON TASKS:

None

Section XIV. ACCESSORY ITEMS MAINTENANCE

Paragraph Number	Paragraph Title	Page Number
4-60	Reflectors Replacement	4-110
4-61	Data Plates and Decal Replacement	4-112

4-60. REFLECTORS REPLACEMENT.

This Task Covers:

- a. Removal
- b. Installation

Initial Setup:

Tools/Test Equipment:

- General mechanic's tool kit (Item 1, Appendix B)

Equipment Conditions:

- Trailer parked on level ground (para 2-12).

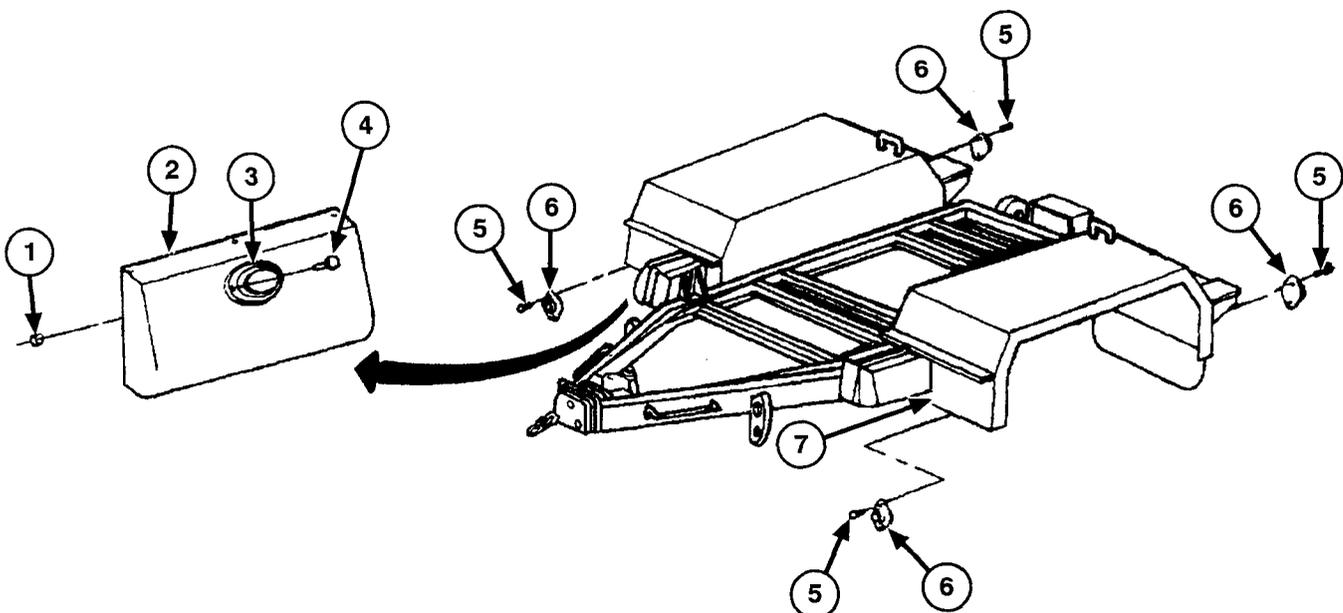
Materials/Parts:

- Nuts, self-locking (4), MS51922-1

a. REMOVAL

NOTE

There are six reflectors, two on faucet box covers, four on fenders.



4-60. REFLECTORS REPLACEMENT (continued).

1. Remove two self-locking nuts (1) and screws (4) and reflector (3) from faucet box cover (2). Discard self-locking nuts.
2. Remove two self-tapping screws (5) and reflector (6) from fender (7).

b. INSTALLATION

1. Install reflector (6) on fender (7) with two self-tapping screws (5).
2. Install reflector (3) on faucet box cover (2) with two screws (4) and new self-locking nuts (1).

FOLLOW-ONTASKS:

None

4-61. DATA PLATES AND DECAL REPLACEMENT.

This Task Covers:

- a. Removal b. Installation

Initial Setup:

Tools/Test Equipment:

- General mechanic's tool kit (Item 1, Appendix B)

Materials/Parts:

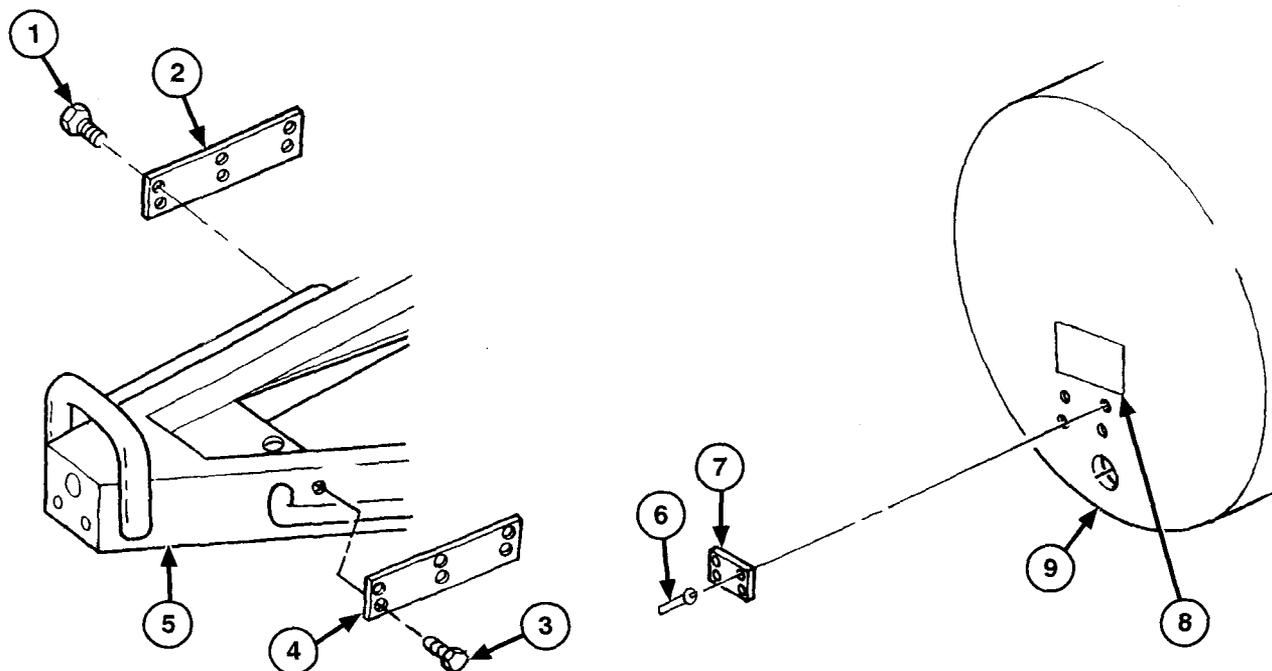
- Adhesive (RTV162White) (Item 1, Appendix F)

NOTE

All data plates are replaced the same way except that the quantity of screws may vary. Refer to paragraph 1-12 for the location of data plates and warning decal.

REMOVAL

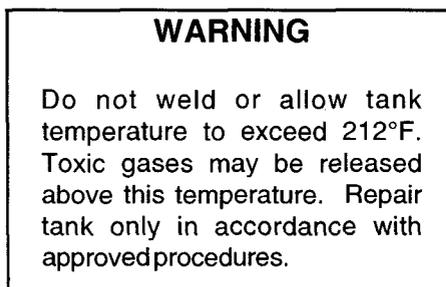
1. Remove six screws (1) and vehicle identification data plate (2) from frame assembly (5).
2. Remove six screws (3) and transportation data plate (4) from frame assembly (5).
3. Remove four rivets (10) and tank cleaning and sanitation plate (11) from manhole cover (12).
4. Remove tank welding warning decal (8) from water tank assembly (9).
5. Remove four rivets (6) and tank identification data plate (7) from water tank assembly (9).



4-61. DATA PLATES AND DECAL REPLACEMENT (continued).

b. INSTALLATION**NOTE**

When replacing warning decal, make sure new warning decal reads as follows:

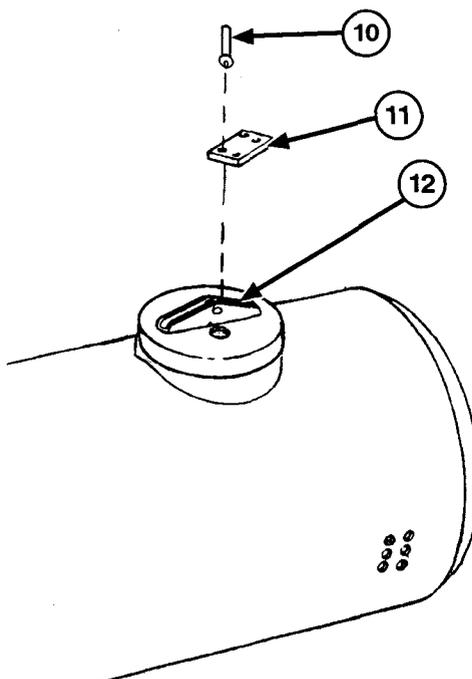


1. Peel backing off new tank welding warning decal (8) and install where old decal was removed.
2. Install tank cleaning and sanitation instruction plate (11) on manhole cover (12) with four new rivets (10).

WARNING

Adhesive causes immediate bonding on contact with eyes, skin, or clothing and also gives off harmful vapors. Wear protective goggles and use only in a well-ventilated area. If adhesive gets in eyes, try to keep eyes open; flush them with water for 15 minutes and get immediate medical attention.

3. Apply adhesive to four holes of tank identification data plate (7) and install on water tank assembly (9) with four new rivets (6).
4. Install transportation data plate (4) on frame assembly (5) with six screws (3).
5. Install vehicle identification data plate (2) on frame assembly (5) with six screws (1).

**FOLLOW-ON MAINTENANCE:**

None

Section XV. SPECIAL PURPOSE KITS MAINTENANCE

Paragraph Number	Paragraph Title	Page Number
4-62	Winterization Kit Installation	4-114
4-63	Water Chiller Installation	4-116

4-62. WINTERIZATION KIT INSTALLATION.

This Task Covers:

Installation

Initial Setup:

Tools/Test Equipment:

- General mechanic’s tool kit (Item 4, Appendix B)
- Common No. 1 tool set (item 2, Appendix B)

Personnel Required: Two

Equipment Conditions:

- Piping and faucets removed (para 4-59)
- Water tank body removed (para 4-58)

Materials/Parts:

- Nuts, self-locking (4), MS51922-53

INSTALLATION

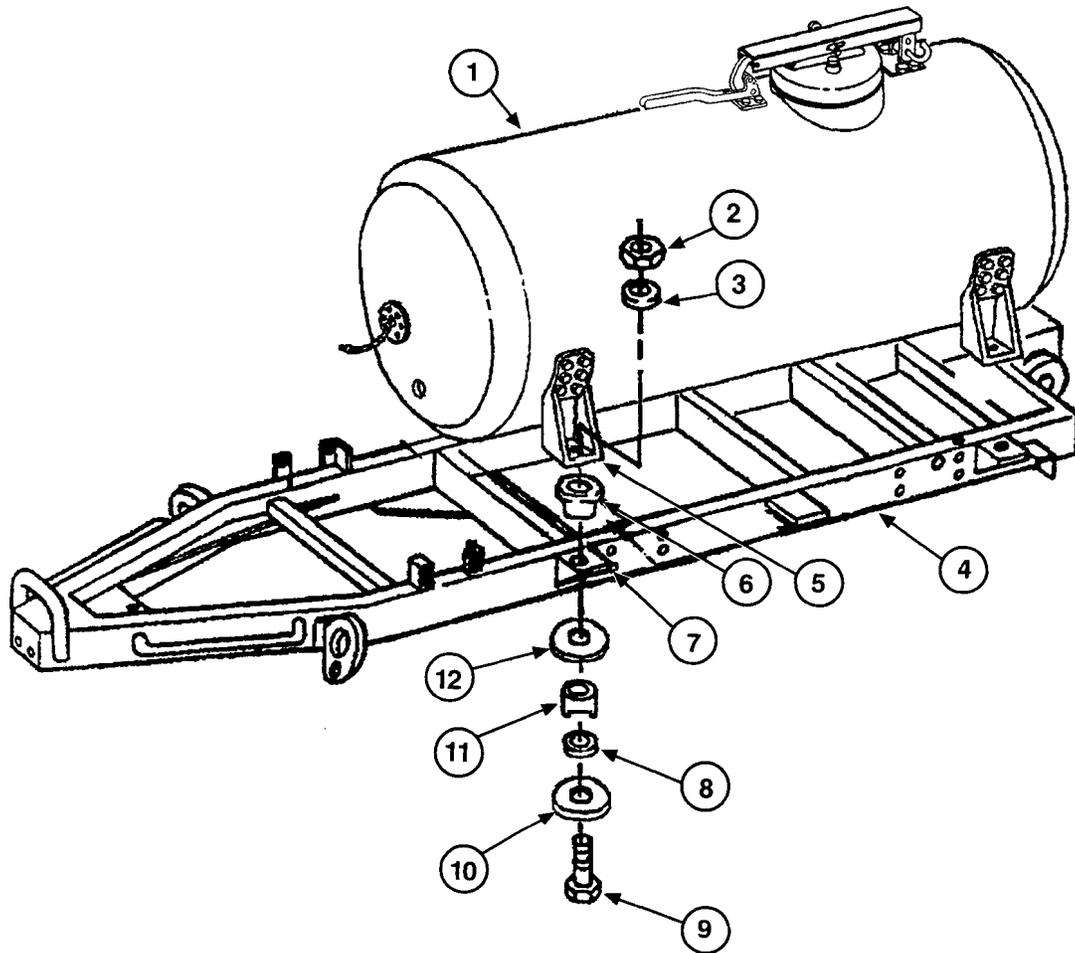
WARNING

All personnel must stand clear of hoist when raising or lowering water tank body. Failure to follow this warning may result in serious injury or death to personnel.

1. Using suitable lifting device, position water tank body (1) on frame assembly (4).
2. Line up four brackets (5) on tank assembly (1) with four brackets (7) on frame assembly (4).
3. Install four screws (9), washers (10), spacers (8), washers (11), spacers (12), resilient mounts (6), washers (3), and new self-locking nuts (2), to brackets (5 and 7), on each corner of frame assembly (4) and tank assembly (1).

4-62. WINTERIZATION KIT INSTALLATION (continued).

4. Remove lifting device from tank assembly (1).



FOLLOW-ON MAINTENANCE:

- Install piping and faucets (para 4-59)

4-63. WATER CHILLER INSTALLATION.

Refer to TM 5-4130-237-14.

Section XVI. PREPARATION FOR STORAGE OR SHIPMENT

Paragraph Number	Paragraph Title	Page Number
4-64	General	4-117
4-65	Definition of Administrative Storage.	4-117
4-66	Preparation of Equipment for Administrative Storage	4-118
4-67	Care of Equipment in Administrative Storage	4-119
4-68	Procedures for Common Components and Miscellaneous Items	4-121
4-69	Removal of Equipment from Administrative Storage	4-121
4-70	Preparation of Equipment for Shipment	4-121

4-64. GENERAL.

- a. This section contains requirements and procedures for administrative storage of equipment that is issued to and in use by Army activities worldwide.
- b. The requirements specified herein are necessary to maintain equipment in administrative storage in such a way as to achieve maximum readiness condition.
- c. Equipment that is placed in administrative storage should be capable of being readied to perform its mission within a 24-hour period, or as otherwise may be prescribed by the approving authority. Before equipment is placed in administrative storage, current PMCS procedures should be completed and deficiencies corrected.
- d. Report equipment in administrative storage as prescribed for all reportable equipment.
- e. Perform inspections, maintenance services, and lubrication as specified herein.
- f. Records and reports to be maintained for equipment in administrative storage are those prescribed by DA Pam 738-750 for equipment in use.
- g. A 10 percent variance is acceptable on time, running hours, or mileage used to determine maintenance actions.
- h. Accomplishment of applicable PMCS procedures, as mentioned throughout this section, will be on a semi-annual basis.

4-65. DEFINITION OF ADMINISTRATIVE STORAGE.

Equipment placement in administrative storage can be for short periods when:

- a. Units lack operating funds, personnel, other resources, or normal usage of its organic materiel.
- b. Materiel exceeding the owning unit's capability for operation and maintenance must be retained by that unit for contingency or other reasons.

Installation or unit commanders may authorize the administrative storage of their materiel through guidance furnished in AR 750-1. M1112s should be ready to use within time factors determined by the directing authority. During the storage period appropriate maintenance records will be kept.

4-66. PREPARATION OF EQUIPMENT FOR ADMINISTRATIVE STORAGE.

Storage Site

- a. Select the best available site for administrative storage. Separate stored equipment from equipment in use. Conspicuously mark the area "Administrative Storage."
- b. Covered space is preferred.
- c. Open site should be improved hardstand, if available. Unimproved sites should be firm, well drained, and free of excessive vegetation.

Storage Plan

- a. Store equipment so as to provide maximum protection from the elements and access for inspection, maintenance, and exercising. Anticipate removal or deployment problems and take suitable precautions.
- b. Take into consideration environmental conditions such as extreme heat or cold, high humidity, soft ground, mud, heavy snows, and blowing sand, dust, or loose debris, or any combination thereof, and take adequate precautions.
- c. Establish a fire plan and provide for adequate fire-fighting equipment and personnel.

Maintenance Service and Inspection

- a. Prior to storage, perform the next scheduled Unit PMCS procedures.
- b. Inspect and approve the equipment prior to storage. Do not place equipment that is not mission capable in storage.

Auxiliary Equipment and Basic Issue Items

- a. Process auxiliary equipment and basic issue items (BII) simultaneously with the major item to which they are assigned.
- b. If possible, store auxiliary equipment and BII with the major item.
- c. If stored apart from the major item, mark auxiliary equipment and BII with tags indicating the major item and its registration or serial number and location, and store in protective-type closures. In addition, place a tag or list indicating the location of the removed items in a conspicuous place on the major item.

Correction of Shortcomings and Deficiencies

Correct all shortcomings and deficiencies prior to storage, or obtain a deferment from the approving authority.

Lubrication

Lubricate equipment in accordance with instructions in Appendix I.

4-66. PREPARATION OF EQUIPMENT FOR ADMINISTRATIVE STORAGE (continued).

General Cleaning, Painting, and Preservation**CAUTION**

Do not direct water or steam under pressure against unsealed electrical systems or any exterior opening. Failure to follow this caution may result in damage to equipment.

- a. Clean dirt, grease, and other contaminants from the equipment, but do not use vapor degreasing.
- b. Remove rust and damaged paint by scraping, wire brushing, sanding, or buffing. Sand to a smooth finish and spot-paint as necessary (refer to TB 43-0209).
- c. After cleaning and drying, immediately coat unpainted metal surfaces with oil or grease, as appropriate (para. 1-9).

CAUTION

Place a piece of barrier material between desiccant bags and metal surfaces to prevent corrosion.

NOTE

Air circulation under draped covers reduces deterioration from moisture and heat.

- d. Sunlight, heat, moisture (humidity), and dirt tend to accelerate deterioration. Install all covers (including vehicle protective closures) authorized for the equipment. Close and secure all openings except those required for venting and draining. Seal openings to prevent the entry of rain, snow, or dust. Insert desiccant when complete seal is required. Place equipment and provide blocking or framing to allow for ventilation and water drainage. Support cover away from surfaces that may rust, rot, or mildew.

4-67. CARE OF EQUIPMENT IN ADMINISTRATIVE STORAGE.

Maintenance Services

After equipment has been placed in administrative storage, inspect, service, and exercise as specified herein.

Inspection

Inspection will usually be visual and must consist of at least a walk around examination of all equipment to detect any deficiencies. Inspect equipment in open storage weekly, and inspect equipment in covered storage monthly. Inspect all equipment immediately after any severe storm or environmental change. The following are examples of things to look for during a visual inspection:

- a. Low or flat tires.
- b. Condition of preservatives, seals, and wraps.
- c. Torn, frayed, or split canvas covers and tops.
- d. Corrosion or other deterioration.

4-67. CARE OF EQUIPMENT IN ADMINISTRATIVE STORAGE (continued).

- e. Missing or damaged parts.
- f. Water in compartments.
- g. Any other readily recognizable shortcomings or deficiencies.

Repair During Administrative Storage

Keep equipment in an optimum state of readiness. Accomplish the required services and repairs as expeditiously as possible. Whenever possible, perform all maintenance on-site.

Exercising

Exercise equipment in accordance with Table 4-3 and the following instructions:

- a. **Vehicle Major Exercise.** Depreserve equipment by removing only that material restricting exercise. Close all drains, remove blocks, and perform all before-operation checks. Couple trailer to towing vehicle and drive for at least 25 mi (40 km). Make several right and left 90-degree turns. Make several hard braking stops without skidding. Perform PMCS and scheduled services during exercising when it is convenient; operate all other functional components and perform all during- and after-operation checks.
- b. **Scheduled Service.** Scheduled services will include inspection per paragraph the "Inspection" above and will be conducted in accordance with Table 4-3. Lubricate in accordance with instructions in Appendix I.
- c. **Corrective Action.** Immediately take action to correct shortcomings and deficiencies noted. Record inspection and exercise results on DA Form 2404. Record and report all maintenance actions on DA Form 2407. After exercising, restore the preservation to the original condition. Replenish lubricants used during exercising and note the amount on DA Form 2408.

Table 4-3. EXERCISE SCHEDULE

Weeks	2	4	6	8	10	12	14	16	18	20	22	24
PMCS						X						X
Scheduled Services		X		X		X		X		X		
Major Exercise												X

Rotation

Rotate items in accordance with any rotational plan that will keep equipment in an operational condition and reduce the maintenance effort.

4-68. PROCEDURES FOR COMMON COMPONENTS AND MISCELLANEOUS ITEMS.

Tires

Visually inspect tires during each walkaround inspection. This inspection includes checking with a tire gage. Inflate, repair, or replace as necessary those tires found to be low, damaged, or excessively worn. Mark inflated and repaired tires with chalk for checking at the next inspection.

Air Lines and Air Reservoir

Drain air lines and air reservoir of condensation and leave draincock open. Attach a caution tag, annotated to provide for closing of draincock when equipment is exercised. Place tag in a conspicuous location.

Seals

Seals may develop leaks during storage or shortly thereafter. If leaking persists, refer to the applicable maintenance section in this manual for corrective maintenance procedures.

4-69. REMOVAL OF EQUIPMENT FROM ADMINISTRATIVE STORAGE.

Activation

Restore the equipment to normal operating condition in accordance with the instructions contained in Chapter 4, Section II.

Servicing

Resume the maintenance service schedule in effect at the commencement of storage, or service the equipment before the scheduled dates in order to produce a staggered maintenance workload.

4-70. PREPARATION OF EQUIPMENT FOR SHIPMENT.

- a. Refer to TM 55-200, TM 55-601, and TM 743-200-1 for additional instructions on processing, storage, and shipment of materiel.
- b. Trailers that have been removed from storage for shipment do not have to be reprocessed if they will reach their destination within the administrative storage period. Reprocess only if inspection reveals any corrosion or if anticipated in-transit weather conditions make it necessary.
- c. When a trailer is received and has already been processed for domestic shipment, as indicated on DD Form 1397, the trailer does not have to be reprocessed for storage unless corrosion and deterioration are found during the inspection upon receipt. List on SF Form 364 all discrepancies found because of poor preservation, packaging, packing, marking, handling, loading, storage, or excessive preservation. Repairs that cannot be handled by the receiving unit must have tags attached listing the needed repairs. A report of these conditions will be submitted by the unit commander for action by an ordnance maintenance unit.

CHAPTER 5 DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE

Section I. WHEEL MAINTENANCE

5-1. BRAKE DRUM REPAIR.

This Task Covers:

- a. Inspection b. Repair

Initial Setup:

Tools/Test Equipment:

- Field basic tool set (Item 3, Appendix B)

Equipment Conditions:

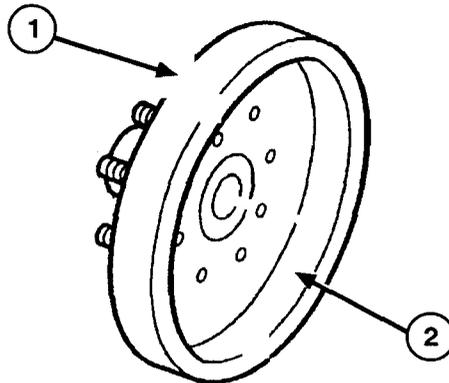
- Brake drum placed on clean work surface.

a. INSPECTION

WARNING

DO NOT reuse a brakedrum that exceeds maximum wear specifications. Maximum rebore diameter is 12.09 inches (30.71 cm). Failure to follow this warning may result in brake failure and serious injury or death to personnel.

1. Inspect braking surface (2) of brakedrum (1) for warpage, cracks, heat checking, or scoring. Discard brake drum (1) if cracked or scoring is deeper than 0.090 inches (2.29 mm).
2. Check braking surface (2) of brakedrum (1) at four locations 45 degrees apart using inside micrometer. Discard brakedrum if out-of-round requires removal of more than 0.09 inches (2.29 mm) of metal.



b. REPAIR

Reface braking surface (2) of brake drum (1) using brakedrum lathe, removing a maximum of 0.01 inches (0.254 mm) per cut.

FOLLOW-ON TASKS:

None

Section II. BODY MAINTENANCE

5-2. WATER TANK BODY REPAIR.

This Task Covers:

Repair

Initial Setup:

Tools/Test Equipment:

- Welding tool kit, (Item 4, Appendix B)
- Welder's shop equipment, (Item 6, Appendix B)

Equipment Conditions:

- Water tank body removed and suitably supported (para. 4-58)

References: TM9-237

REPAIR

WARNING

Do not allow stainless steel tank temperature to exceed 212°F (100°C) when welding. Cyanide gases may be released when foam is heated above this temperature. Failure to follow this warning may cause toxic gases to escape and result in serious injury or death to personnel.

For instructions on how to repair water tank body, refer to TM 9-237.

FOLLOW-ONTASKS:

- Install water tank body on trailer (para 4-58).

APPENDIX A REFERENCES

Paragraph Number	Paragraph Title	Page Number
A-1	General	A-1
A-2	Forms	A-1
A-3	Field Manuals	A-1
A-4	Technical Manuals	A-2
A-5	Pamphlets and Bulletins	A-2
A-6	Other Publications	A-2

A-1. GENERAL.

This appendix lists all forms, manuals, bulletins, and other publications referenced in this manual and which apply to the operation, unit, direct support, and general support maintenance of the M112 Series water tank trailer applicable to material covered in this technical manual. DA Pam 25-30, *Consolidated Index of Army Publications and Blank Forms*, should be consulted frequently for latest changes or revisions and for new publications relevant to material covered in this technical manual.

A-2. FORMS.

Refer to DA Pam 738-750, The Army Maintenance Management System (TAMMS), for instructions on the use of maintenance forms.

Recommended Changes to Publications and Blank Forms	DA Form 2028
Recommended Changes to Equipment Technical Publications	DA Form 2028-2
Organization Control Record for Equipment	DA Form 2401
Equipment Inspection and Maintenance Worksheet	DA Form 2404
Maintenance Request	DA Form 2407
Equipment Log Assembly (Records)	DA Form 2408
Preventive Maintenance Schedule and Record	DD Form 314
Processing and Deprocessing Record for Shipment, Storage and Issue of Vehicles and Spare Engines	DD Form 1397
Report of Discrepancy (ROD)	SF Form 364
Product Quality Deficiency Report	SF Form 368

A-3. FIELD MANUALS.

NBC Contamination Avoidance	FM 3-3
NBC Protection	FM 3-4
NBC Decontamination	FM 3-5
Operation and Maintenance of Ordnance Materiel in Cold Weather (0 Degrees F to Minus 65 Degrees F)	FM 9-207
Field Hygiene and Sanitation	FM 21-10
First Aid for Soldiers	FM 21-11
Manual for the Wheeled Vehicle Driver	FM 21-305

A-4. TECHNICAL MANUALS.

Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tools List) for Heater, Immersion, Liquid Fuel Fired: 35,000 BTU Output for Corrugated Cans (Military Model M67) TM5-4540-202-12&P

Inspection Care and Maintenance of Antifriction Bearings TM9-214

Railway Operating and Safety Rules FM 55-21

Operator's Manual for Welding Theory and Application TM9-237

Deepwater Fording of Ordnance Materiel TM9-238

Materials Used for Cleaning, Preserving, Abrading and Cementing Ordnance Materiel and Related Materials Including Chemicals TM9-247

Operator's, Unit, Direct Support and General Support Maintenance Manual For Small Mobile Water Chiller Model LCW 2685 (NSN) (4130-01-131-2685) Model LCC2685 (4130-01-315-7583) TM10-4130-237-14

Painting Instructions for Army Materiel TM43-0139

Railcar Loading Procedures TM55-601

Storage and Materials Handling TM743-200-1

Procedures for Destruction of Tank-Automotive Equipment to Prevent Enemy Use. TM750-244-6

Organizational, Direct Support and General Support Maintenance Manual (Including Repair Parts and Special Tools) for Heaters, Vehicular Compartment TM9-2540-205-24&P

Equipment Improvement Report and Maintenance Digest (U.S. Army Tank-Automotive and Armaments Command) Tank and Automotive Equipment TB43-0001-39 Series

Color, Marking, and Camouflage Painting of Military Vehicles, Construction Equipment and Materials Handling Equipment TB43-0209

Tactical Wheeled Vehicles: Repair of Frames TB9-2300-247-40

Occupational and Environmental Health Sanitary Control and Surveillance of Field Water Supplies TB MED 577

A-5. PAMPHLETS AND BULLETINS.

List of Storage and Outloading Drawings for Ammunition DA Pam 75-5

Storage and Serviceability Standard: Tracked Vehicles, Wheeled Vehicles, and Component Parts. SB740-98-1

A-6. OTHER PUBLICATIONS.

Army Logistics Readiness and Sustainability AR700-138

Army Medical Department Expendable/Durable Items CTA8-100

Expendable/Durable Items (Except Medical, Class V, Repair Parts and Heraldic Items) CTA50-970

APPENDIX B MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION

Paragraph Number	Paragraph Title	Page Number
B-1	General	B-1
B-2	Maintenance Functions	B-1
B-3	Explanation of Columns in Section II Maintenance Allocation Chart for Trailer, Tank, Water, M1112	B-2
B-4	Explanation of Columns in Section III, Tool and Test Equipment Requirements	B-3

B-1. GENERAL.

Appendix B consists of three sections:

- a. Section I provides a general explanation of all maintenance and repair functions authorized at the various maintenance levels.
- b. Section II, the maintenance allocation chart (MAC) designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component will be consistent with the capacities and capabilities of the designated maintenance levels.
- c. Section III lists the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from Section II.

B-2. MAINTENANCE FUNCTIONS.

Maintenance functions are limited to and defined as follows:

- a. **Inspect.** To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination (e.g., by sight, sound, or feel).
- b. **Test.** To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards.
- c. **Service.** To keep an item in proper operating condition by periodically cleaning (including decontaminating, when required), preserving, draining, painting, or replenishing fuel, lubricants, chemical fluids, or gases.
- d. **Adjust.** To maintain or regulate, within prescribed limits, by bringing into proper or exact position or by setting the operating characteristics to specified parameters.
- e. **Align.** To adjust specified variable elements of an item to bring about optimum or desired performance.
- f. **Calibrate.** To determine the accuracy of and cause corrections or adjustments to be made on instruments or test, measuring, and diagnostic equipment (TMDE) used in precision measurement. Calibration consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

B-2. MAINTENANCE FUNCTIONS (continued).

- g. **Remove/Install.** To remove and install the same item when required to perform service or other maintenance functions. "Install" may be the act of emplacing, seating, or fixing into position a spare, repair part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.
- h. **Replace.** To remove an unserviceable item and install a serviceable counterpart in its place. "Replace" is authorized by the MAC and is shown as the third position of the source, maintenance, and recoverability (SMR) code.
- i. **Repair.** To apply maintenance services—including fault location/troubleshooting, removal/installation, and disassembly/assembly procedures—and maintenance actions to identify troubles and restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.
- j. **Overhaul.** To perform that maintenance effort (service/action) required to restore an item to a completely serviceable/operational condition as required by maintenance standards in an appropriate technical publication (e.g., depot maintenance work requirement). Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like-new condition.
- k. **Rebuild.** To perform those services/actions necessary for the restoration of unserviceable equipment to a like-new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours/miles, etc.) considered in classifying Army equipment/components.

B-3. EXPLANATION OF COLUMNS IN SECTION II, MAINTENANCE ALLOCATION CHART (MAC) FOR TRAILER, TANK, WATER, M112.

- a. **(1) Group Number.** Column 1 lists functional group code numbers, whose purpose is to identify maintenance-significant components, assemblies, subassemblies, and modules with the next higher assembly. The end item group number is "00."
- b. **(2) Component/Assembly.** Column 2 contains the names of components, assemblies, subassemblies, and modules for which maintenance is authorized.
- c. **(3) Maintenance Function.** Column 3 lists the functions to be performed on the item listed in Column 2. (For a detailed explanation of these functions, refer to para B-2.)
- d. **(4) Maintenance Level.** Column 4 specifies, by the listing of a work-time figure in the appropriate subcolumn(s), the level of maintenance authorized to perform the function listed in Column 3. This figure represents the active time required to perform that maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function varies at different maintenance levels, appropriate work-time figures will be shown for each level. The work-time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the MAC. The symbol designations for the various maintenance levels are as follows:

B-3. EXPLANATION OF COLUMNS IN SECTION II, THE MAC FOR TRAILER, TANK, WATER, M1112 (continued).

C Operator/Crew
 O Unit
 F Direct Support
 H General Support
 D Depot

- e. **(5) Tools and Equipment Reference Code.** Column 5 specifies, by code, those common tool sets (not individual tools), common TMDS, special tools, special TMDE, and special support equipment required to perform the designated maintenance function. Codes are keyed to tools and test equipment listed in Section III.
- f. **(6) Remarks.** When applicable, this column contains a letter code, in alphabetical order, which is keyed to remarks contained in Section IV. If there is nothing in the Remarks column, there is no Section IV.

B-4. EXPLANATION OF COLUMNS IN SECTION III, TOOL AND TEST EQUIPMENT REQUIREMENTS.

- a. **Column 1, Tool or Test Equipment Reference Code.** This code correlates with the code used in Section II, Column 5.
- b. **Column 2, Maintenance Level.** The symbol designation shown indicates the lowest level of maintenance authorized to use the tool or test equipment.
- c. **Column 3, Nomenclature.** This is the name or identification of the tool or test equipment.
- d. **Column 4, National Stock Number.** This is the national stock number of the tool or test equipment.
- e. **Column 5, Tool Number.** This is the manufacturer's part number.

**Section II. MAINTENANCE ALLOCATION CHART
FOR TRAILER, TANK, WATER,
M1112**

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment Ref. Code	(6) Remarks
			C	O	F	H	D		
06	ELECTRICAL SYSTEM								
0609	Stop Light-Taillight	Inspect Remove and Replace Repair	.1	.3 .6				1 1	
	Light, Marker Clearance	Inspect Remove and Replace Repair	.1	.3 .6					
	Lamp, Incandescent	Inspect Remove and Replace Fault Location		.8 .2				1	
			.1	3.2				1, 2	
0613	Wiring Harness	Inspect Remove and Replace Fault Location		.2 .4				1	
			.2	.7				1, 2	
	Wiring Harness, Branched	Remove and Replace Repair Fault Location		.7 .4				1 1, 2	
				1.4				1, 2	
11	REAR AXLE								
1100	Stop	Remove and Replace		1.4				1	
	Drop Axle	Remove and Replace		5.0				1, 2, 7	
1108	Walking Beam Assembly	Inspect Remove Adjust Replace		2.8 4.4 .5 4.4				1 1, 2, 6	

**Section II. MAINTENANCE ALLOCATION CHART
FOR TRAILER, TANK, WATER,
M1112 (continued)**

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment Ref. Code	(6) Remarks
			C	O	F	H	D		
12	BRAKES								
1201	Lever, Manual Control	Adjust Remove and Replace Lubricate	.7 .3	.2				1	
1201	Cable and Conduit Assembly	Inspect Remove and Replace Lubricate	.8	1.3 .3				2 1	
1202	Brake Group	Inspect Service Repair Fault Location	.1	.1 2.2 2.4 .2				1 1, 2 1, 2	
	Cylinder, Hydraulic	Remove and Replace		3.8				1	
1204	Tube Assembly	Inspect Remove and Replace		.55 1.2				1, 2 1, 2	
	Actuator	Remove and Replace		.4				1, 2	
	Hose Assembly	Remove and Replace		.1				2	
1208	Hose, Nonmetallic	Inspect Remove and Replace		.8 .4				1, 2 1, 2	
	Parts Kit, Relay Valve	Remove and Replace		.6				1	
	Tank, Pressure	Inspect Remove and Replace	.7	.2 .8				1, 2 1, 2	
	Air Filter, Brake Line	Remove and Replace		.2				1	

**Section II. MAINTENANCE ALLOCATION CHART
FOR TRAILER, TANK, WATER,
M1112 (continued)**

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment Ref. Code	(6) Remarks
			C	O	F	H	D		
13	WHEELS	Repair		.4				1	
1313	Cone and Rollers	Inspect Lubricate		.5 .5				1, 2 1	
	Tire Assembly	Inspect Remove and Replace	.2		.4			1, 2	
	Wheel, Pneumatic	Inspect	.7						
	Brakedrum	Remove and Replace Repair		.9 1.1	1.5			1, 2 1, 2, 3	
15	FRAME, TOWING AT- TACHMENTS, DRAW- BARS, AND ARTICULA- TION SYSTEMS								
1501	Box, Faucet	Remove and Replace Repair Lubricate		2.1 2.4				2 1	
	Fender	Remove and Replace		.3				1	
	Coupler, Drawbar Ring	Inspect Remove and Replace	.5		.2			1, 2	
	Bracket, Leaf Spring Rear	Inspect Remove and Replace	.8		6.5			1	
	Bracket, Leaf Spring Front	Inspect Remove and Replace	.8		6.5			1	
1507	Support, Retractable	Inspect Remove and Replace Repair	.2	.3 .2 1.4				1, 2 1, 2 1, 2	

**Section II. MAINTENANCE ALLOCATION CHART
FOR TRAILER, TANK, WATER,
M1112 (continued)**

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment Ref. Code	(6) Remarks
			C	O	F	H	D		
16	SPRINGS AND SHOCK ABSORBERS	Lubricate	.3	.3				1	
1601	Spring Assembly, Leaf	Inspect		.3				1, 2	
		Remove and Replace		5.7				1	
		Fault Location		.1				1, 2	
		Lubricate		.3				1	
1604	Shock Absorber, Direct	Remove and Replace		.1				1, 2	
1605	Rod Assembly, Radius	Remove and Replace		6.3				2	
		Repair		6.4				1	
18	BODY, CAB, AND HOOD								
1811	Piping Installation	Remove and Replace		1.9				1	
	Tank, Water, Trailer	Inspect	.13						
		Remove and Replace		4.2				1, 2, 7	
		Repair			.5			4, 5	
	Cover	Remove and Replace		.3				2	
		Repair		1.2				2	
		Lubricate	.3						
	Bracket, Mounting	Inspect		.5				1, 2	
		Remove and Replace							
		Fault Location			4.6			2	
		Lubricate	.3						
	Faucet, Single	Remove and Replace		1.4					
		Repair		1.2				1	

**Section II. MAINTENANCE ALLOCATION CHART
FOR TRAILER, TANK, WATER,
M1112 (continued)**

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment Ref. Code	(6) Remarks
			C	O	F	H	D		
22	BODY AND CHASSIS ACCESSORY ITEMS								
2202	Reflector, Indicating	Inspect Remove and Replace		.2				1, 2	
				.2				1	
2210	Plate, Identification	Inspect Remove and Replace		.2				1, 2	
				.4				1	
33	SPECIAL PURPOSE KITS								
3307	Mounting Kit, Water Chiller	Install		4.2					

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS

(1) Tool or Test Equipment Reference Code	(2) Maintenance Level	(3) Nomenclature	(4) National Stock Number	(5) Tool Number
1	O	Tool Kit, General Mechanic's, Automotive	5180-00-177-7033	
2	O	Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power	4910-00-754-0654	
3	F	Shop Equipment, Automotive Maintenance and Repair: Field Maintenance, Supplemental No. 1	4910-00-754-0650	
4	F	Tool Kit, Welder's	5180-00-754-0661	
5	F	Shop Equipment, Welding, Field Maintenance	3470-00-357-7268	
6	O	Socket, Socket Wrench, Axle Pivot	5120-00-199-7771	
7	O	Crane, Wheel Mounted	3810-01-165-7771	

APPENDIX C
COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS

The water tank trailer currently does not have any assigned components of end item or basic issue items.

APPENDIX D ADDITIONAL AUTHORIZATION LIST

Section I. INTRODUCTION

Paragraph Number	Paragraph Title	Page Number
D-1	Scope	D-1
D-2	Explanation of Listing	D-1

D-1. SCOPE.

This appendix, Additional Authorization List (AAL), lists additional items you are authorized for the support of the M1112.

D-2. EXPLANATION OF LISTING.

The national stock number, description, commercial and government entity code (CAGEC) (in parentheses), part number, unit of measure (U/M), and quantity recommended (Qty Recm) are provided for each item to help you identify and request the additional items you require to support this equipment.

Section II. ADDITIONAL AUTHORIZATION LIST (AAL)

(1) National Stock Number	(2) Description CAGEC and Part Number	(3) U/M	(4) Qty Recm
4130-01-353-6086	Water Chiller (A-W-40-G/E)	EA	1
4130-01-131-2685	Water Chiller, 36024 (LWG-2685)	EA	1

APPENDIX E REPAIR PARTS AND SPECIAL TOOLS LIST

Section I. INTRODUCTION

E-1. SCOPE.

This repair parts and special tools list (RPSTL) lists and authorizes spares and repair parts; special tools; special test, measurement, and diagnostic equipment (TMDE); and other special M1112 support equipment required for the performance of Unit, Direct Support, and General Support maintenance of the M1112 trailer. It authorizes the requisitioning, issue, and disposition of spares, repair parts, and special tools as indicated by the source, maintenance, and recoverability (SMR) code.

E-2. GENERAL.

In addition to Section I, this RPSTL is divided into the following sections:

- a. **Section II. Repair Parts List.** A list of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. The list also includes parts that must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in ascending alphanumeric sequence, with the parts in each group listed in ascending figure and item number sequence. Bulk materials are listed in item name sequence. Repair parts kits are listed separately in their own functional group within Section II. Repair parts for repairable special tools are also listed in this section. Items listed are shown on the associated illustration(s)/figure(s).
- b. **Section III. Special Tools List.** A list of special tools, special TMDE, and other special support equipment authorized by this RPSTL for the performance of maintenance.
- c. **Section IV. Cross Reference Indexes.** A list, in national item identification number (NIIN) sequence, of all national stock numbered items appearing in the listing, followed by a list in alphanumeric sequence of all part numbers appearing in the listings. National stock numbers (NSNs) and part numbers are cross-referenced to each illustration/figure and item number appearance.

E-3. EXPLANATION OF COLUMNS (SECTIONS II AND III).

- a. **ITEM NO. [Column (1)].** Indicates the number used to identify items called out in the illustration.
- b. **SMR CODE [Column (2)].** The SMR code is a 5-position code containing supply/requisitioning information, maintenance category authorization criteria, and disposition instruction, as shown in the following breakout:

Source Code	Maintenance Code		Recoverability Code
xx	xx		x
1st two positions: How to get an item.	3rd position: Who can install, replace, or use the item.	4th position: Who can do complete repair* on the item.	5th position: Who determines disposition action on unserviceable items.

* *Complete Repair:* Maintenance capacity, capability, and authority to perform all corrective maintenance tasks of the "Repair" function in a use/user environment in order to restore serviceability to a failed item.

E-3. EXPLANATION OF COLUMNS (SECTIONS II AND III) (continued).

(1) **Source Code.** The source code tells you how to get an item needed for maintenance, repair, or overhaul of an end item/equipment. Explanations of source codes follow:

<u>Code</u>	<u>Application/Explanation</u>
<div style="border: 1px solid black; padding: 5px; display: inline-block;"> PA PB PC** PD PE PF PG </div>	<p>Stocked items; use the applicable NSN to request/requisition items with these source codes. They are authorized to the category indicated by the code entered in the third position of the SMR code.</p> <p style="text-align: center;"><i>**Items coded PC are subject to deterioration.</i></p> <p>.....</p>
<div style="border: 1px solid black; padding: 5px; display: inline-block;"> KD KF KB </div>	<p>Items with these codes are not to be requested/requisitioned individually. They are part of a kit that is authorized to the maintenance category indicated in the third position of the SMR code. The complete kit must be requisitioned and applied.</p> <p>.....</p>
<div style="border: 1px solid black; padding: 5px; display: inline-block;"> MO - Made at ORG/AVUM Level MF - Made at DSA/AVUM Level MH - Made at GS Level MD - Made at Depot </div>	<p>Items with these codes are not to be requested/requisitioned individually. They must be made from bulk material that is identified by the part number in the DESCRIPTION AND USABLE ON CODE (UOC) column and listed in the bulk material group of the repair parts list in this RPSTL. If the item is authorized to you by the third position code of the SMR code, but the source code indicates it is made at a higher level, order the item from the higher level of maintenance.</p>
<div style="border: 1px solid black; padding: 5px; display: inline-block;"> AO - Assembled by ORG/AVUM Level AF - Assembled by DS/AVUM Level AH - Assembled by GS Level AD - Assembled at Depot </div>	<p>Items with these codes are not to be requested/requisitioned individually. The parts that make up the assembled item must be requisitioned or fabricated and assembled at the level of maintenance indicated by the source code. If the third position code of the SMR code authorizes you to replace the item, but the source code indicates that the item is assembled at a higher level, order the item from the higher level of maintenance.</p>

E-3. EXPLANATION OF COLUMNS (SECTIONS II AND III) (continued).

NOTE

Cannibalization or controlled exchange, when authorized, may be used as a source of supply for items with the preceding source codes, except for those source coded "XA."

XA - DO NOT requisition an "XA" -coded item. Order its next higher assembly.

XB - If an "XB" item is not available from salvage, order it using the CAGEC and part number given.

XC - Installation drawing, diagram, instruction sheet or field service drawing that is identified by manufacturer's part number.

XD - Item is not stocked. Order an "XD" -coded item through normal supply channels using the CAGEC and part number given if no NSN is available.

- (2) **Maintenance Code.** Maintenance codes tell you the level(s) of maintenance authorized to use and repair support items. The maintenance codes are entered in the third and fourth positions of the SMR code as follows:

- (a) The maintenance code entered in the third position tells you the lowest maintenance level authorized to remove, replace, and use an item. The maintenance code entered in the third position will indicate authorization to one of the following levels of maintenance:

<u>Code</u>	<u>Application/Explanation</u>
<i>C</i>	Crew or operator maintenance done within Unit maintenance or aviation Unit maintenance.
<i>O</i>	Organizational maintenance or aviation Unit can remove, replace, and use the item.
<i>F</i>	Direct support or aviation intermediate level can remove, replace, and use the item.
<i>H</i>	General support level can remove, replace, and use the item.
<i>L</i>	Specialized repair activity (SRA) can remove, replace, and use the item.
<i>D</i>	Depot level can remove, replace, and use the item.

NOTE

If authorized by the maintenance allocation chart (MAC) and SMR codes, some limited repair may be done on an item at a lower level of maintenance.

- (b) The maintenance code entered in the fourth position tells whether the item is to be repaired and identifies the lowest maintenance level with the capability to do complete repair (i.e., perform all authorized "Repair" functions). This position will contain one of the following maintenance codes:

E-3. EXPLANATION OF COLUMNS (SECTIONS II AND III) (continued).

<u>Code</u>	<u>Application/Explanation</u>
O	Organizational maintenance or aviation unit is the lowest level that can do complete repair of the item.
F	Direct support of aviation intermediate is the lowest level than can do complete repair of the item.
H	General support is the lowest level that can do complete repair of the item.
L	Specialized repair activity is the lowest level that can do complete repair of the item.
D	Depot is the lowest level that can do complete repair of the item.
Z	Nonrepairable. No repair is authorized.
B	No repair is authorized. (No parts or special tools are authorized for the maintenance of a "B" coded item.) However, the item may be reconditioned by adjusting, lubricating, etc., at the user level.

(3) **Recoverability Code.** Recoverability codes are assigned to items to indicate the disposition action on unserviceable items. The recoverability code is entered in the fifth position of the SMR code as follows:

<u>Code</u>	<u>Application/Explanation</u>
Z	Nonrepairable item. When unserviceable, condemn and dispose of the item at the level of maintenance shown in the third position of the SMR code.
O	Repairable item. When uneconomically repairable, condemn and dispose of the item at Unit maintenance or aviation Unit level.
F	Repairable item. When uneconomically repairable, condemn and dispose of the item at the Direct Support or aviation intermediate level.
H	Repairable item. When uneconomically repairable, condemn and dispose of the item at the General Support level.
D	Repairable item. When beyond lower-level repair capability, return to depot. Condemnation and disposal of the item is not authorized below depot level.
L	Repairable item. Condemnation and disposal of the item is not authorized below SRA.
A	Item requires special handling or condemnation procedures for specific reasons (e.g., precious metal content, high dollar value, critical material, or hazardous material). Refer to appropriate manuals/directives for specific instructions.

- c. **NSN [Column (3)].** The NSN for the item is listed in this column.
- d. **CAGEC [Column (4)].** The CAGEC is a 5-digit alphanumeric code used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

E-3. EXPLANATION OF COLUMNS (SECTIONS II AND III) (continued).

NOTE

When you use an NSN to requisition an item, the item you receive may have a part number different from the part ordered.

- d. **PART NUMBER [Column (5)].** Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirements, to identify an item or range of items.
- e. **DESCRIPTION AND USABLE ON CODE (UOC) [Column (6)].** This column includes the following information:
- (1) The Federal item name and, when required, a minimum description to identify the item.
 - (2) Physical security classification. Not applicable.
 - (3) Items that are included in kits and sets are listed below the name of the kit or set on Figure KIT.
 - (4) Spare/repair parts that make up an assembled item are listed immediately following the assembled item line entry.
 - (5) Part numbers for bulk materials are referenced in this column in the line item entry for the item to be manufactured/fabricated.
 - (6) When the item is not used with all serial numbers of the same model, the effective serial numbers are shown on the last line(s) of the description (before UOC).
 - (7) The UOC, when applicable.
 - (8) In the Special Tools List section, the Basis of Issue (BOI) appears as the last line(s) in the entry for each special tool, special TMDE, and other special support equipment. When density of equipments supported exceeds density spread indicated in the BOI, the total authorization is increased proportionately.
 - (9) The statement "END OF FIGURE" appears just below the last item description in Column 5 for a given figure in both Section II and Section III.
- f. **QTY [Column (7)].** The *QTY* (quantity per figure) column indicates the quantity of the item used in the breakout shown on the illustration/figure, which is prepared for a functional group, subfunctional group, or an assembly. A "V" appearing in this column in lieu of a quantity indicates that the quantity is variable and the quantity may vary from application to application.

E-4. EXPLANATION OF COLUMNS (SECTION IV).

a. National Stock Number (NSN) Index.

- (1) **STOCK NUMBER Column.** This column lists the NSN by NIIN sequence. The NIIN consists of the last nine digits of the NSN (e.g.,
NSN
5305-01-674-1467). When using this column to locate an item, ignore the first 4 digits
NIIN
of the NSN. However, the complete NSN should be used when ordering items by stock number.
- (2) **FIG. Column.** This column lists the number of the figure where the item is identified/located. The figures are in numerical order in Section II and Section III.
- (3) **ITEM Column.** The item number identifies the item associated with the figure listed in the adjacent FIG. column. This item is also identified by the NSN listed on the same line.

b. Part Number Index. Part numbers in this index are listed by part number in ascending alphanumeric sequence (i.e., vertical arrangement of letter and number combination that places the first letter or digit of each group in order A through Z, followed by the numbers 0 through 9 and each following letter or digit in like order).

- (1) **CAGEC Column.** The CAGEC is a 5-digit alphanumeric code used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.
- (2) **PART NUMBER Column.** Indicates the primary number used by the manufacturer (individual, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirements, to identify an item or range of items.
- (3) **STOCK NUMBER Column.** This column lists the NSN for the associated part number and manufacturer identified in the PART NUMBER and CAGEC columns to the left.
- (4) **FIG. Column.** This column lists the number of the figure where the item is identified/located in Section II and Section III.
- (5) **ITEM Column.** The item number is that number assigned to the item as it appears in the figure referenced in the adjacent figure number column.

E-5. SPECIAL INFORMATION.

- a. **Usable On Code.** Not applicable.
- b. **Fabrication Instructions.** Bulk materials required to manufacture items are listed in the Bulk Material Functional Group of this RPSTL. Part numbers for bulk material are also referenced in the DESCRIPTION column of the line item entry for the item to be manufactured/fabricated. Detailed fabrication instructions for items source coded to be manufactured or fabricated are found in Appendix G of this manual.
- c. **Assembly Instructions.** Detailed assembly instructions for items source coded to be assembled from component spare/repair parts are found in Chapters 4 and 5. Items that make up the assembly are listed immediately following the assembly item entry, or reference is made to an applicable figure.
- d. **Kits.** Not applicable.

- e. **Index Numbers.** Not applicable.
- f. **Associated Publications.** Not applicable.

E-6. HOW TO LOCATE REPAIR PARTS.

a. **When National Stock Number or Part Number Is Not Known:**

- (1) **First.** Using the Table of Contents, determine the assembly group or subassembly group to which the item belongs. This is necessary because figures are prepared for assembly groups and subassembly groups, and listings are divided into the same groups.
- (2) **Second.** Find the figure covering the assembly group or subassembly group to which the item belongs.
- (3) **Third.** Identify the item on the figure and note the number(s).

b. **When National Stock Number or Part Number Is Known:**

- (1) **First.** Using the National Stock Number Index or Part Number Index, find the pertinent NSN or part number. The NSN Index is in NIIN sequence. The part numbers in the Part Number Index are listed in ascending alphanumeric sequence. Both indexes cross-reference you to the illustration/figure and item number of the item you are looking for.
- (2) **Second.** Turn to the figure and item number, verify that the item is the one you're looking for, then locate the item number in the repair parts list for the figure.

E-7. ABBREVIATIONS.

For standard abbreviations see MIL-STD-12, Military Standard Abbreviations for Use on Drawings, Specifications, Standards, and in Technical Documents.

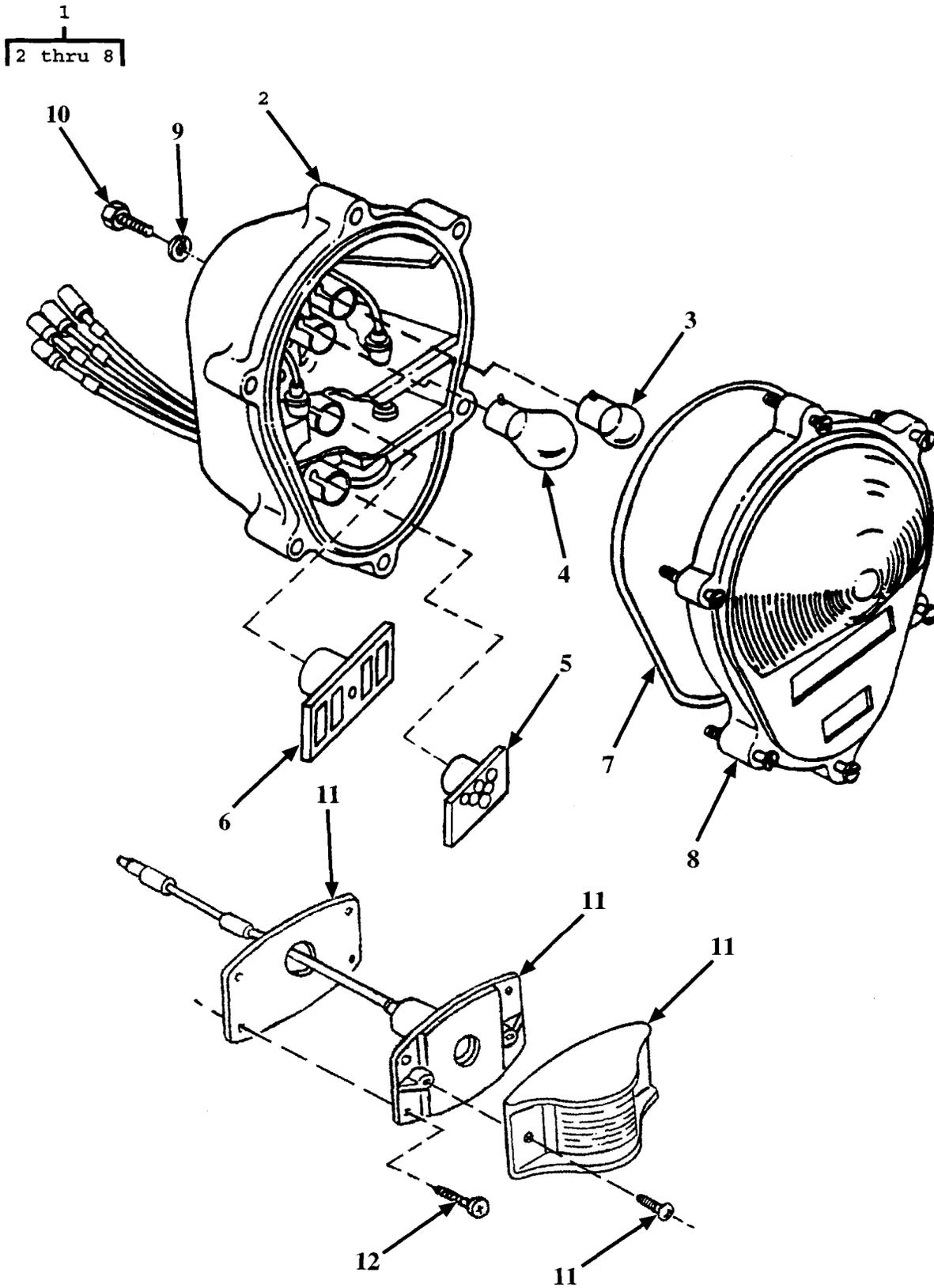


Figure 1. Composite Stoplight-Taillight

SECTION II

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(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
GROUP 06 ELECTRICAL SYSTEM						
GROUP 0609 LIGHTS						
FIG.1 COMPOSITE STOPLIGHTS-TAILLIGHT						
1	PAOOO	6220014330485	19207	11614157-2	STOP LIGHT-TAILLIGHT <i>Assy</i>	2
2	XAOZZ		19207	12375838	.BODY ASSEMBLY.....	1
3	PAOZZ	6240000193093	96787	A6324	.LAMP, INCANDESCENT.....	1
4	PAOZZ	6240000446914	58536	A52463-2-10	.LAMP, INCANDESCENT.....	1
5	PAOZZ	6220012973217	19207	12360870-2	.STOP LIGHT, VEHICULA.....	1
6	PAOZZ	6220012842709	19207	12360850-1	.LIGHT, MARKER, CLEARA.....	1
7	PAOZZ	5331004620907	19207	11639519-2	.O-RING.....	1
8	PAOZZ	6220001794324	19207	11639535	.LENS, LIGHT.....	1
9	PAOZZ	5310006379541	96906	MS35338-46	WASHER, LOCK.....	4
10	PAOZZ	5305011409118	80204	B1821BH038C088N	SCREW, CAP, HEXAGON H 9/16 HEX, 7/ 8X16 UNC 3/4 INCHES LONG.....	4
11	PAOZZ	6220014173311	96906	M3976/1-2-R-28	LIGHT, MARKER, CLEARA LED RED.....	2
12	PAOZZ	5305008550956	96906	MS24629-47	SCREW, TAPPING.....	4

END OF FIGURE

11
12 thru 20

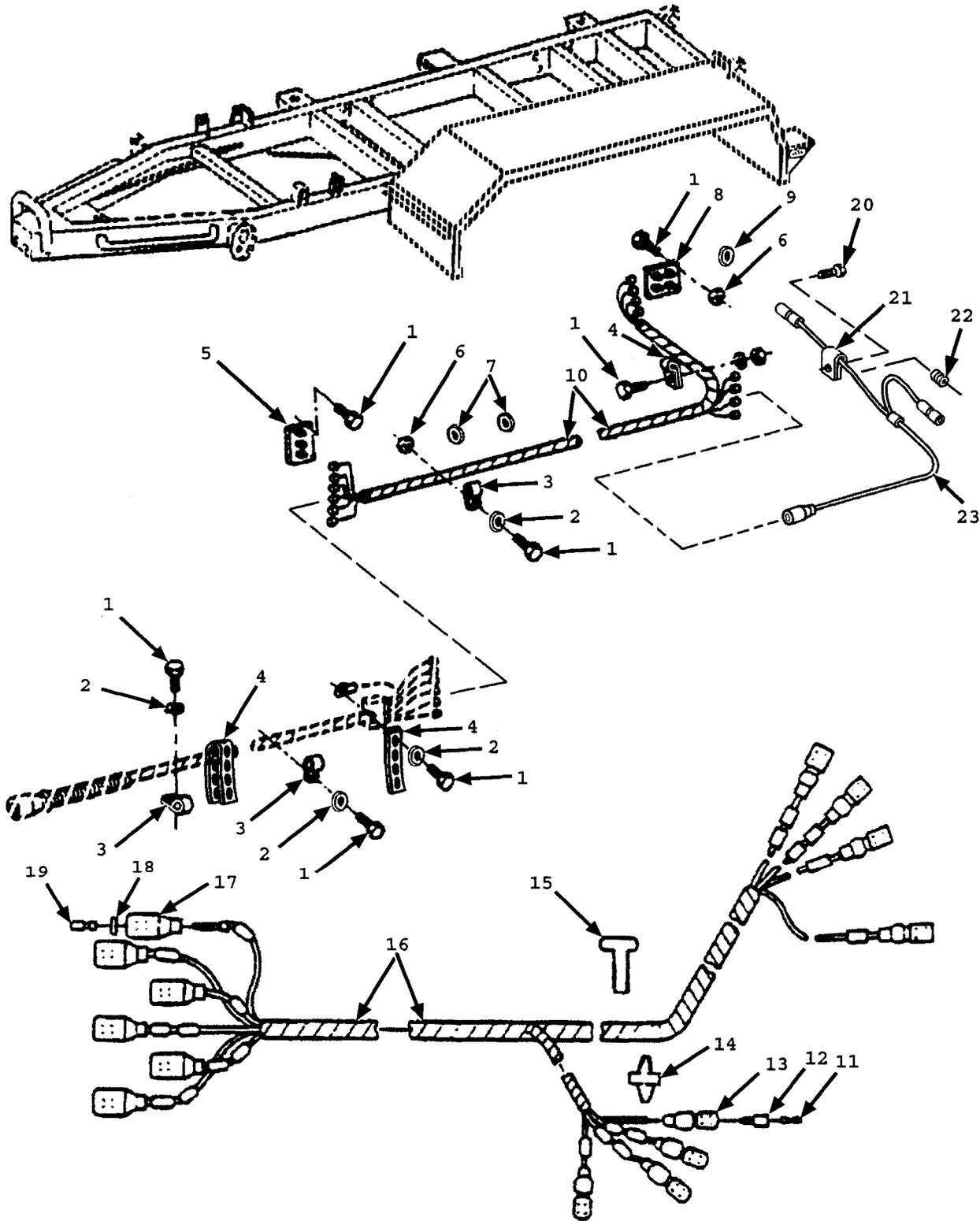


Figure 2. Chassis Wiring Harness

SECTION II

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(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM	SMR			PART		
NO	CODE	NSN	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY
GROUP 0613 HULL OR CHASSIS WIRING HARNESS						
FIG.2 CHASSIS WIRING HARNESS						
1	PAOZZ	5305011373938	96906	MS51871-3	SCREW, TAPPING 9/16 HEX, .75 INCHES LONG.....	14
2	PAOZZ	5310008093078	96906	MS27183-11	WASHER, FLAT.....	13
3	PAOZZ	5340000881254	96906	MS21333-104	CLAMP, LOOP.....	2
4	MOOZZ		19207	10905840-8	STRAP, TIEDOWN ELECT MAKE FROM STRAP, TIEDOWN ELECTRICAL, P/N 10905840, 8 INCHES LONG.....	11
5	PAOZZ	5340010482239	19207	10935126	BRACKET, MOUNTING.....	2
6	PAOZZ	5310000881251	81349	M45913/1-4CG5C	NUT, SELF-LOCKING, HE 7/16 HEX, 1/4-20 UNC-2B RH THD.....	14
7	PAOZZ	5325002766098	96906	MS35489-78	GROMMET, NONMETALLIC.....	2
8	PAOZZ	5340006117883	19207	8747908	STRAP, RETAINING.....	2
9	PAOZZ	5325002903777	96906	MS35489-77	GROMMET, NONMETALLIC.....	24
10	PAOZZ	2590011787374	19207	11597762	WIRING HARNESS, BRAN.....	1
11	PAOZZ	5940003996676	19207	8338564	TERMINAL ASSEMBLY.....	8
12	PAOZZ	5970008338562	19207	8338562	INSULATOR, BUSHING.....	8
13	PAOZZ	5935008338561	19207	8338561	SHELL, ELECTRICAL CO.....	8
14	PAOZZ	9905007524649	81349	M43436/1-1	BAND, MARKER.....	14
15	PAOZZ	9905008414445	81349	M43436/1-2	BAND, MARKER.....	1
✓16	MOOZZ		19207	11597762-96	WIRE, ELECTRICAL MAKE FROM WIRE, ELECTRICAL, P/N 900010-32C, 96 INCHES LONG.....	1
17	PAOZZ	5935005729180	19207	8338566	SHELL, ELECTRICAL CO.....	6
18	PAOZZ	5310008338567	19207	8338567	WASHER, SLOTTED.....	6
19	PAOZZ	5999000572929	19204	572929	CONTACT, ELECTRICAL.....	6
20	PAOZZ	5305004324205	96906	MS51861-49	SCREW, TAPPING.....	4
21	PAOZZ	5340000572891	96906	MS21333-4	CLAMP, LOOP.....	4
22	PAOZZ		19207	12474734	GROMMET, STRESS RELI.....	2
23	PAOZZ		19207	12474722	WIRING HARNESS, BRAN CLEARANCE LIGHT HARNESS.....	2

END OF FIGURE

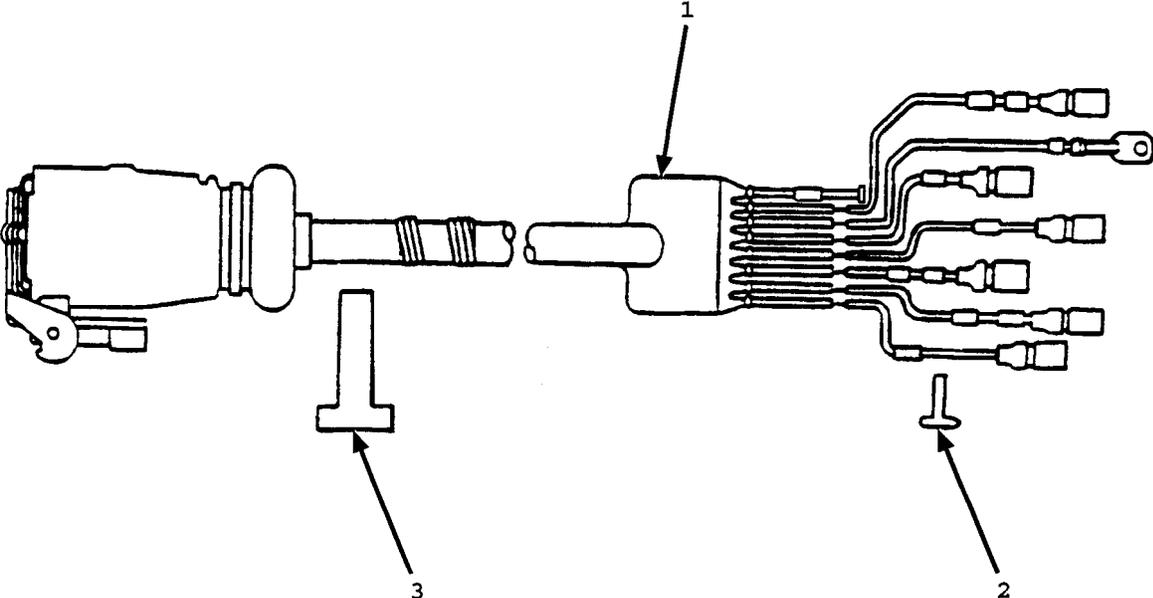


Figure 3. Intervehicular Cable

SECTION II

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(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM	SMR			PART		
NO	CODE	NSN	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY
					GROUP 0613 HULL OR CHASSIS WIRING HARNESS FIG.3 INTERVEHICULAR CABLE	
1	PAOZZ	6150007773068	19207	7055100	WIRING HARNESS.....	1
2	PAOZZ	9905007524649	81349	M43436/1-1	BAND,MARKER PART OF P/N 7055100.....	12
3	PAOZZ	9905008933570	81349	M43436/1-3	BAND,MARKER PART OF P/N 7055100.....	1

END OF FIGURE

SECTION II

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(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM	SMR			PART		
NO	CODE	NSN	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY
					GROUP 11 REAR AXLE	
					GROUP 1100 REAR AXLE ASSEMBLY	
					FIG.4 CROSS AXLE GROUP	
1	PFOZZ	3040014409824	19207	12448082	AXLE, SHOULDERED CROSS AXLE.....	1
2	PAOZZ	5305001775651	19207	12448079-2	SCREW, CAP, HEXAGON H.....	2
3	PAOZZ	5310008098533	96906	MS27183-23	WASHER, FLAT.....	4
4	PAOZZ	5340014493771	19207	12448099	STOP, MECHANICAL.....	2
5	PAOZZ	5365014493695	19207	12469550	SPACER, RING.....	2
6	PAOZZ	5330013981419	30076	155256 P/N 13370	SEAL, PLAIN.....	2
				52		
7	PAOZZ	5310000676356	81349	M45913/2-12CG5C	NUT, SELF-LOCKING, HE.....	2
8	PAOZZ	5340014408093	19207	12448092	PLATE, RETAINER, SEAL.....	2
9	PAOZZ	5310010322319	96906	MS51943-57	NUT, SELF-LOCKING, HE 2 1/4 HEX 1 1/	2
					2X14 UNEF 3B RH THD.....	
10	PAOZZ	5340014406666	19207	12448104	COVER, AXLE.....	2
11	PAOZZ	5310012743255	96906	MS27183-52	WASHER, FLAT.....	16
12	PAOZZ	5305000680508	80204	B1821BH025C075N	SCREW, CAP, HEXAGON H 7/16 HEX, 3/4-	16
					20 UNC .75 INCHES LONG.....	

END OF FIGURE

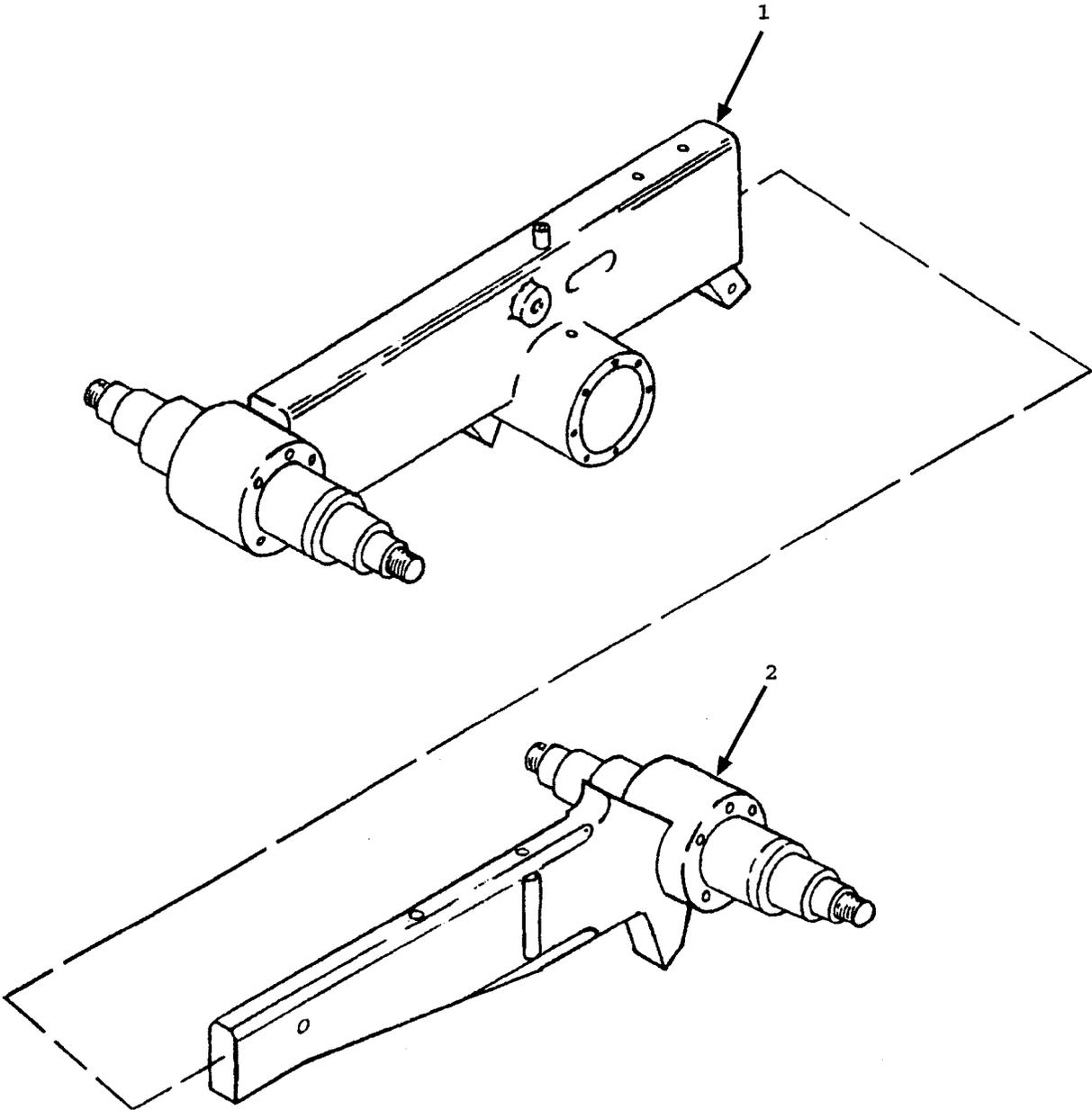


Figure 5. Walking Beam

SECTION II

TM 9-2330-397-14&P

(1) (7) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	
					GROUP 1108 WALKING BEAM, STUB AXLES AND PARTS FIG.5 WALKING BEAM	
1	PFOOO	2510014446654	19207	12448089	FRAME SECTION,STRUC RIGHT-HAND, OUTER WALKING BEAM.....	1
1	PFOOO	2510014412859	19207	12448095	FRAME SECTION,STRUC LEFT HAND, OUTER WALKING BEAM.....	1
2	PFOZZ	2530014412767	19207	12461816	.ARM,PIVOTING WHEEL INNER WALKING BEAM.....	2

END OF FIGURE

TWO BRAKE CABLES USED ON EACH SIDE,
ONE CABLE PER SIDE SHOWN FOR CLARITY

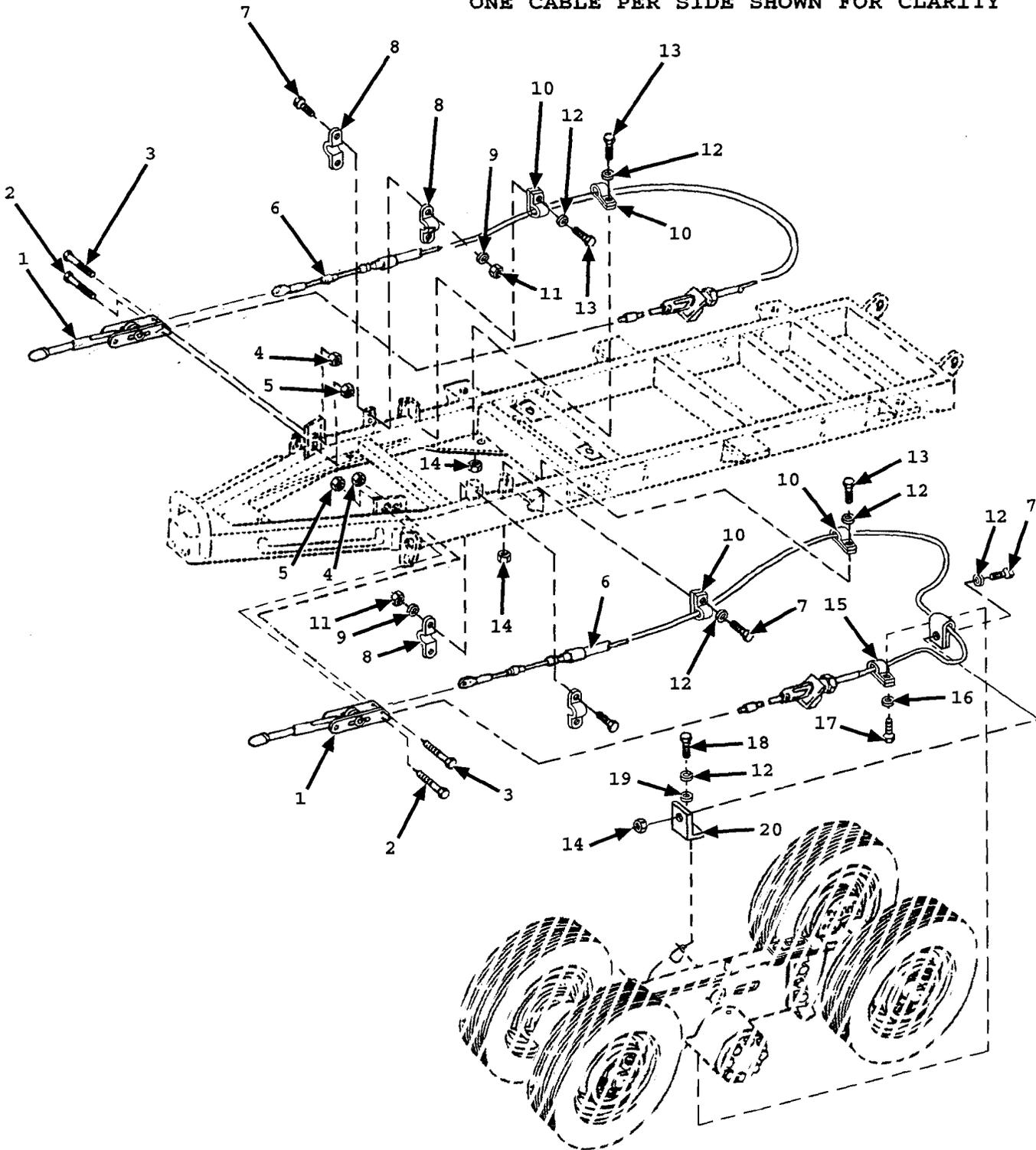


Figure 6. Handbrakes, Controls and Linkage

SECTION II

TM 9-2330-397-14&P

(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM	SMR			PART		
NO	CODE	NSN	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY
5-1						
GROUP 12 BRAKES GROUP 1201 HANDBRAKES FIG.6 HANDBRAKES, CONTROLS, AND LINK AGE						
1	PAOZZ	5340009365284	19207	10926073	LEVER, MANUAL CONTRO.....	2
2	PAOZZ	5306002264833	80204	B1821BH031C200N	BOLT, MACHINE 1/2 HEX, 1 1/16-20 UNC 2 INCHES LONG.....	2
3	PAOZZ	5305007829489	80204	B1821BH038C200N	SCREW, CAP, HEXAGON H 9/13 HEX, 1 3/ 16-16 UNC 2 INCHES LONG.....	2
4	PAOZZ	5310000874652	96906	MS51922-17	NUT, SELF-LOCKING, HE 9/16 HEX, 3/8- 16 UNC-3B RN THD.....	2
5	PAOZZ	5310009843806	81349	M45913/1-5CG5C	NUT, SELF-LOCKING, HE 1/2 HEX, 5/16- 18 UNC-3B RN THD.....	2
6	PAOZZ	2530014333012	19207	11686101-2	CABLE AND CONDUIT A.....	10
7	PAOZZ	5306002258499	96906	MS90725-34	BOLT, MACHINE 1/2 HEX, 5/16, 18 UNC 2A RH THD, 1 INCH LONG.....	10
8	PAOZZ	5342004089177	19207	5303461	BRACKET, BRAKE CABLE.....	2
9	PAOZZ	5310004079566	96906	MS35338-45	WASHER, LOCK.....	4
10	PAOZZ	5340000881254	96906	MS21333-104	CLAMP, LOOP.....	10
11	PAOZZ	5310008807744	96906	MS51967-5	NUT, PLAIN, HEXAGON 1/2 HEX, 5/16-18 UNC-2B RH THD.....	4
12	PAOZZ	5310000814219	96906	MS27183-12	WASHER, FLAT.....	10
13	PAOZZ	5306002264825	80204	B1821BH031C075N	BOLT, MACHINE 1/2 HEX, 5/16-18 UNC- 2A RH THD, 3/4 INCHES LONG.....	10
14	PAOZZ	5310009843806	81349	M45913/1-5CG5C	NUT, SELF-LOCKING, HE.....	8
15	PAOZZ	5340007255280	96906	MS21333-125	CLAMP, LOOP.....	8
16	PAOZZ	5310000806004	96906	MS27183-14	WASHER, FLAT.....	4
17	PAOZZ	5305005434372	80204	B1821BH038C075N	SCREW, CAP, HEXAGON H 9/16 HEX, 3/4- 16 UNC-2A, RH THD, 3/4 INCHES LONG..	2
18	PAOZZ	5305000680510	80204	B1821BH038C100N	SCREW, CAP, HEXAGON H 9/16 HEX, 1-16, UNC-2A RN THD, 1 INCH LONG.....	2
19	PAOZZ	5310006379541	96906	MS35338-46	WASHER, LOCK.....	2
20	PAOZZ		19207	12474720	BRACKET, SUPPORT BRA.....	2

END OF FIGURE

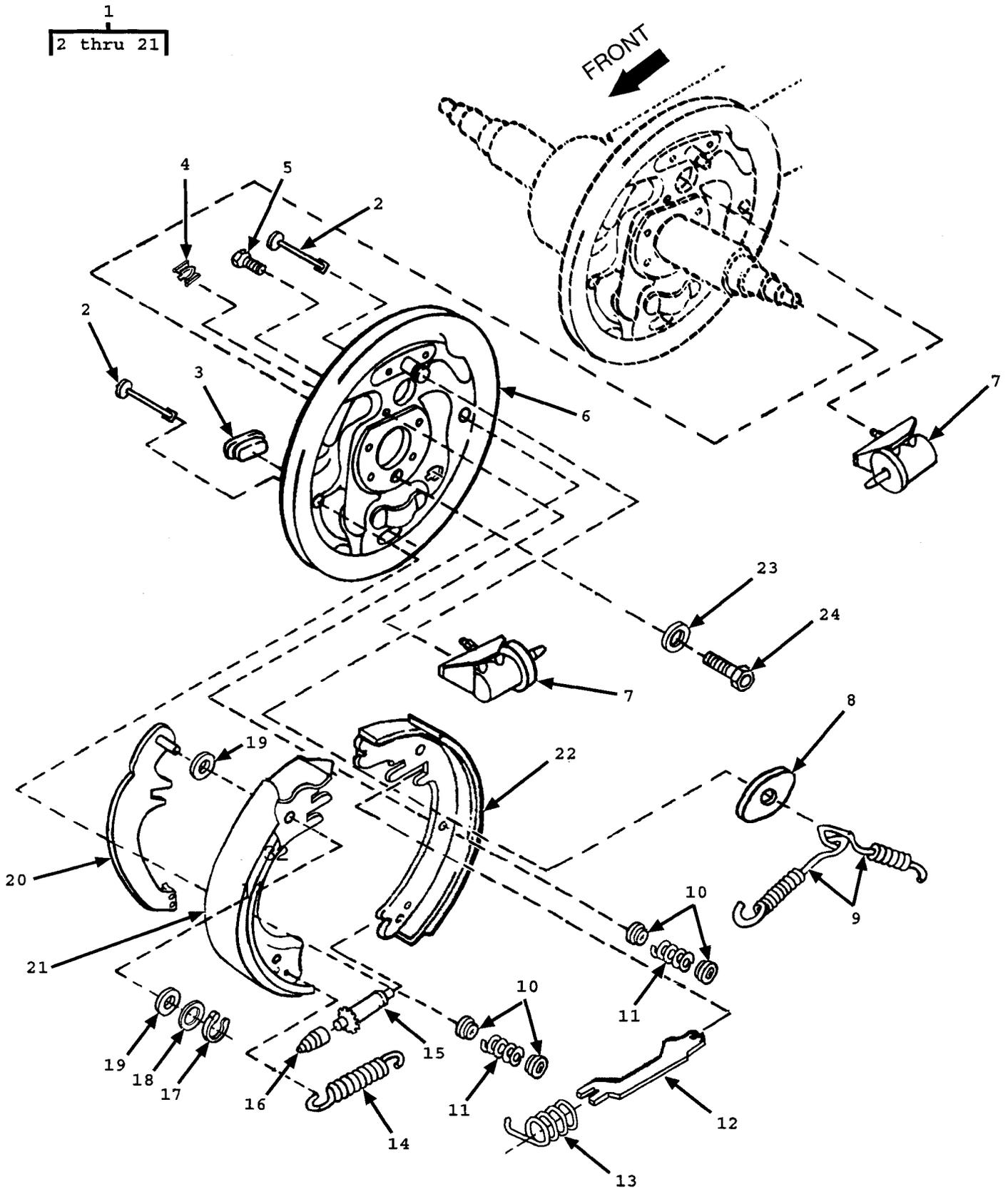


Figure 7. Right Hand and Left Hand Brake Groups

SECTION II

TM 9-2330-397-14&P

(1)	(2)	(3)	(4)	(5)	(6)
(7)	ITEM	SMR		PART	
QTY	NO	CODE	NSN	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)
					GROUP 1202 SERVICE BRAKES
					FIG.7 RIGHT HAND AND LEFT HAND BRAKE
					GROUPS
1	A0000		20076 23512		BRAKE ASSEMBLY, RIGH RIGHT-HAND..... 4
1	A0000		20076 23513		BRAKE ASSEMBLY, LEFT LEFT-HAND..... 4
2	PFOZZ		20076 1850800		.PIN, TOGGLE, HEADED SHOE HOLD DOWN 2
					PIN.....
3	PFOZZ		20076 2475700		.COVER, DUST, BRAKE AD..... 1
4	PFOZZ		20076 4744600		.COVER, DUST, PARK BRA..... 1
5	PFOZZ		20076 2345700		.SCREW, ASSY, WASHER..... 2
6	PFOZZ		20076 4485901042		.PLATE, BACKING, BRAKE..... 1
7	PFOZZ		20076 0977700		.CYLINDER, WHEEL, LH LEFT-HAND..... 1
7	PFOZZ		20076 0977600		.CYLINDER, WHEEL, RH RIGHT-HAND..... 1
8	PFOZZ		20076 4446000		.GUIDE, SHOE..... 1
9	PFOZZ		20076 0978600		.SPRING, HELICAL, EXTE ORANGE..... 2
10	PFOZZ		20076 0978900		.CUP, SPRING HOLDDOWN SPRING 4
					HOLDDOWN.....
11	PFOZZ		20076 0979100		.SPRING, HELICAL, EXTE BLACK..... 2
12	PFOZZ		20076 4499100		.STRUT, PARKING BRAKE..... 1
13	PFOZZ		20076 4499200		.SPRING, HELICAL, EXTE PARKING STRUT. 1
14	PFOZZ		20076 0978400		.SPRING, HELICAL, EXTE YELLOW..... 1
15	PFOZZ		20076 2332300		.ADJUSTING SCREW ASS..... 1
16	PFOZZ		20076 1883600		.SOCKET, BRAKE ADJUST..... 1
17	PFOZZ		20076 0979500		.RETAINER..... 1
18	PFOZZ		20076 0979400		.WASHER, SPRING..... 1
19	PFOZZ		20076 4486900		.WASHER, FLAT..... 2
20	PFOZZ	2530014612900	20076 4486500		.LEVER, PARKING BRAKE RIGHT-HAND.... 1
20	PFOZZ	2530014612899	20076 4486600		.LEVER, PARKING BRAKE LEFT-HAND.... 1
21	PFOZZ		20076 234920		.BRAKE SHOE, FRONT FRONT SHOE..... 1
22	PFOZZ		20076 185030		.BRAKE SHOE, REAR REAR SHOE..... 1
23	PAOZZ	5310000806004	96906 MS27183-14		WASHER, FLAT..... 40
24	PAOZZ	5305014079006	80204 B1821BH038C112N		SCREW, CAP, HEXAGON H 9/16 HEX, 3/8- 4
					40 UNC-2A RH THD, 1 INCH LONG.....

END OF FIGURE

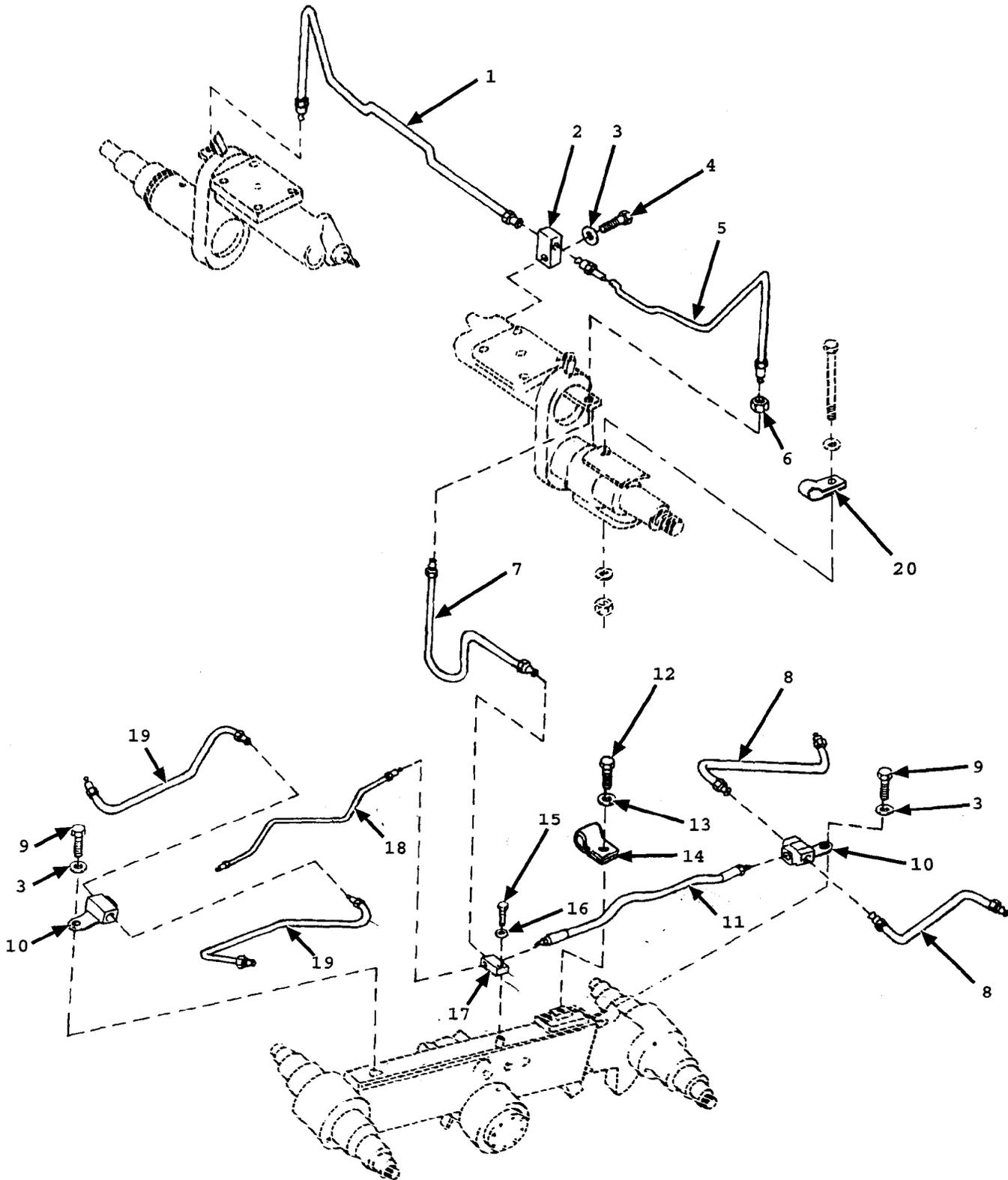


Figure 8. Rear Hydraulic Brake Lines, Hoses, and Fittings

SECTION II

TM 9-2330-397-14&P

7-1

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
GROUP 1204 HYDRAULIC BRAKE SYSTEM FIG.8 REAR HYDRAULIC BRAKE LINES, HOSES, AND FITTINGS						
1	PAOZZ	4710014338268	19207	12448083	TUBE ASSEMBLY, METAL.....	1
2	PAOZZ	4730004631588	19207	5167679	CONNECTOR, MULTIPLE,	1
3	PAOZZ	5310000806004	96906	MS27183-14	WASHER, FLAT.....	4
4	PAOZZ	5305000680511	80204	B1821BH038C125N	SCREW, CAP, HEXAGON H 9/16 HEX, 3/8- 16 UNC-2A UNC-2A RH THD 1 1/4 INCHES LONG.....	1
5	PAOZZ	4710014338270	19207	12448084	TUBE ASSEMBLY, METAL.....	1
6	PAOZZ	5310008913405	96906	MS35691-54	NUT, PLAIN, HEXAGON 15/16 HEX, 9/16- 18 UNF-2B RH THD.....	2
7	PAOZZ	4720014356253	19207	12448108	HOSE ASSEMBLY, NONME.....	2
8	PAOZZ	4710014338271	19207	12448087	TUBE ASSEMBLY, METAL.....	4
9	PAOZZ	5305005434372	80204	B1821BH038C075N	SCREW, CAP, HEXAGON H 9/16 HEX, 3/4- 16 UNC-2A, RH THD, 3/4 INCHES LONG..	4
10	PAOZZ	4730013773452	OGW75	112-10915	TEE, ASSEMBLY, FLANGE.....	4
11	PAOZZ	4720014360768	19207	12448109	HOSE ASSEMBLY, NONME.....	2
12	PAOZZ	5305000680510	80204	B1821BH038C100N	SCREW, CAP, HEXAGON H 9/16 HEX, 1-16, UNC-2A RN THD 1 INCH LONG.....	1
13	PAOZZ	5310000806004	96906	MS27183-14	WASHER, FLAT.....	1
14	PAOZZ	5340009891771	96906	MS21333-123	CLAMP, LOOP.....	2
15	PAOZZ	5306002264827	80204	B1821BH031C100N	BOLT, MACHINE 1/2 HEX, 1-18 UNC-2A RH THD 1 INCH LONG.....	2
16	PAOZZ	5310000814219	96906	MS27183-12	WASHER, FLAT.....	2
17	PAOZZ	4730014203846	06625	112-08047	TEE, TUBE.....	2
18	PAOZZ	4710014338273	19207	12448086	TUBE ASSEMBLY, METAL.....	2
19	PAOZZ	4710014337186	19207	12448085	TUBE ASSEMBLY, METAL.....	4
20	PAOZZ	5340014325616	19207	12461847	CLAMP, LOOP.....	2

END OF FIGURE

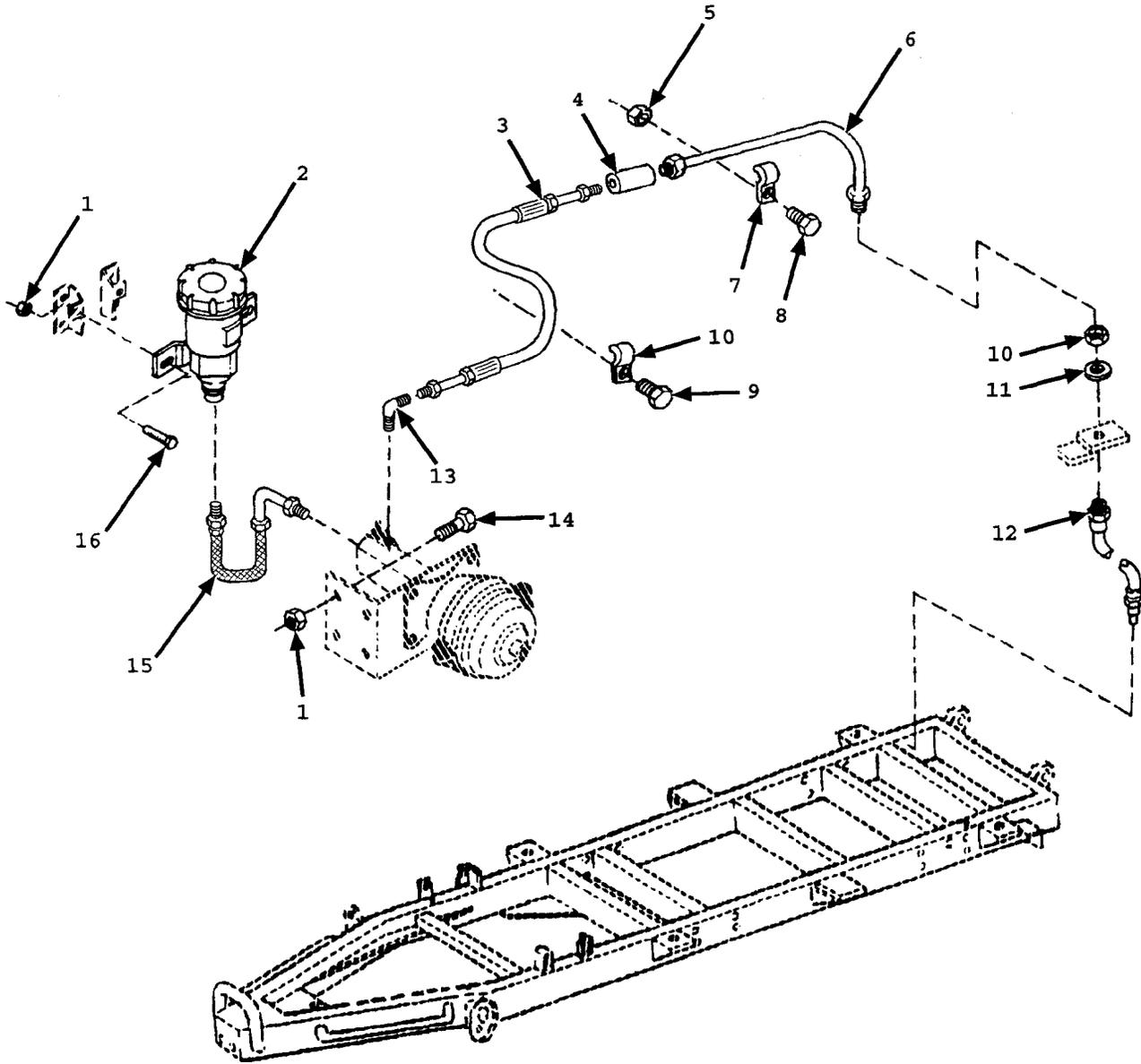


Figure 9. Front Hydraulic Brake Lines, Hoses, and Fittings

SECTION II

TM 9-2330-397-14&P

(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM	SMR			PART		
NO	CODE	NSN	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY
8-1						
GROUP 1204 HYDRAULIC BRAKE SYSTEM FIG. 9 FRONT HYDRAULIC BRAKE LINES, HOSES, AND FITTINGS						
1	PAOZZ	5310000874652	96906	MS51922-17A	NUT, SELF-LOCKING, HE 9/16 HEX, 3/8-16 UNC-2B RH THD.....	6
2	PAOZZ	2530012207021	92865	20-920-509	RESERVOIR, BRAKE FLU.....	1
3	PCOZZ		19207	12472170	HOSE ASSEMBLY.....	1
4	PAOZZ	4730014345154	81343	4-4 040101B	CONNECTOR, TUBING, ST.....	2
5	PAOZZ	5310000881251	81349	M45913/1-4CG5C	NUT, SELF-LOCKING, HE.....	2
6	PAOZZ	4710014492468	19207	12461811	TUBE ASSEMBLY, METAL.....	1
7	PAOZZ	5340000881254	96906	MS21333-104	CLAMP, LOOP.....	4
8	PAOZZ	5305000680502	96906	MS90725-6	SCREW, CAP, HEXAGON H.....	2
9	PAOZZ	5305011373938	96906	MS51871-3	SCREW, TAPPING.....	1
10	PAOZZ	5310008352037	96906	MS35691-53	NUT, PLAIN, HEXAGON.....	1
11	PAOZZ	5310005434385	96906	MS35333-46	WASHER, LOCK.....	1
12	PAOZZ	4720007744040	23834	4440	HOSE ASSEMBLY, NONME.....	1
13	PAOZZ	4730010435999	81343	4-2 040202BA	ELBOW, PIPE TO TUBE.....	9
14	PAOZZ	5305000680511	80204	B1821BH038C125N	SCREW, CAP, HEXAGON H 9/16 HEX, 3/8-16 UNC-2A, RH THD, 1 1/4 INCHES LONG	4
15	PAOZZ		19207	12472172	HOSE ASSEMBLY.....	1
16	PAOZZ	5305000680510	80204	B1821BH038C100N	SCREW, CAP, HEXAGON H 9/16 HEX, 1-16 UNC-2A, RN THD, 1 INCH LONG.....	2

END OF FIGURE

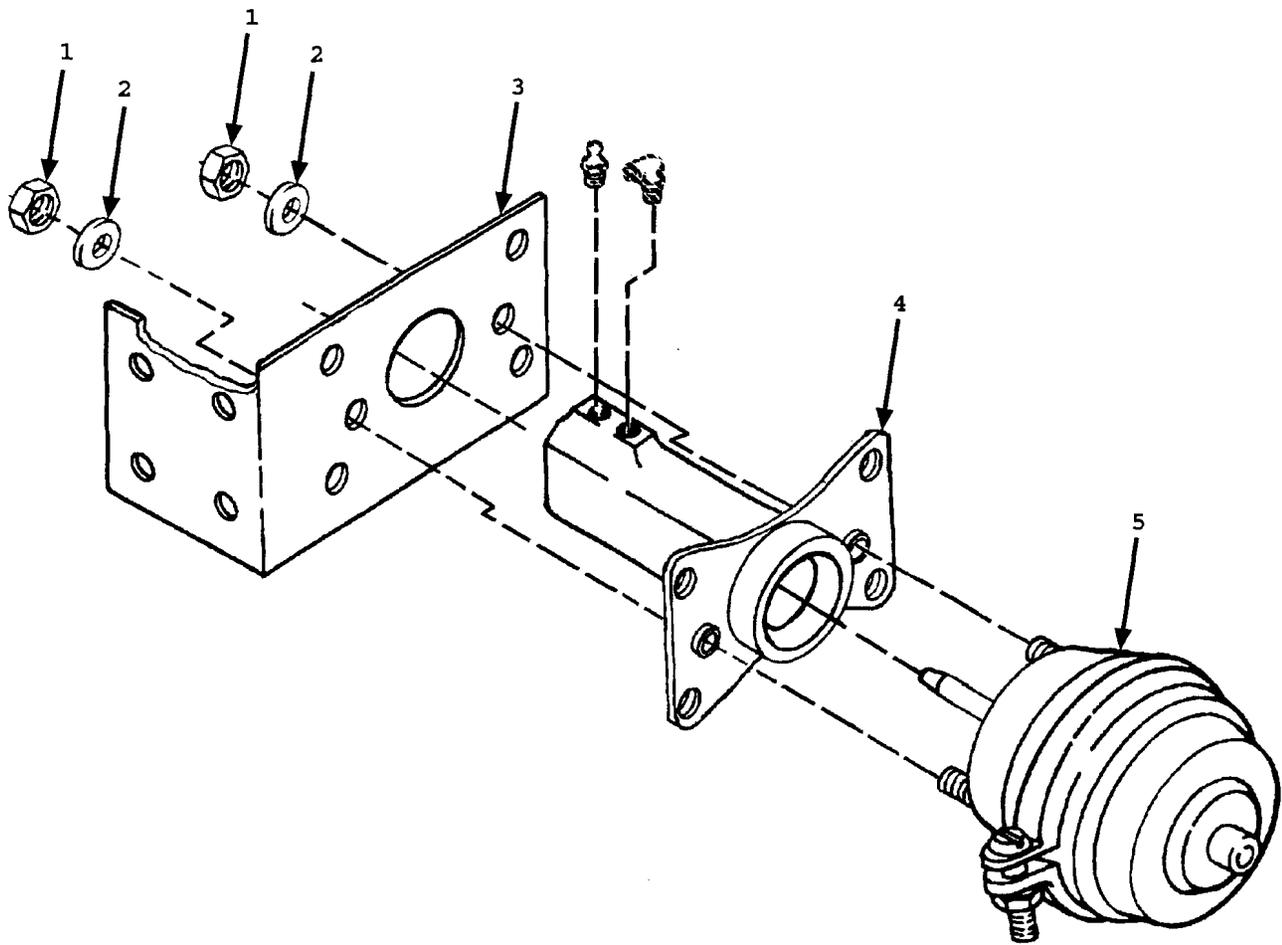


Figure 10. Air Brake Chamber Assembly

SECTION II

TM 9-2330-397-14&P

9-1

(7) QTY	(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	
						GROUP 1204 HYDRAULIC BRAKE SYSTEM FIG.10 AIR BRAKE CHAMBER ASSEMBLY	
1	PAOZZ	5310008807745	96906	MS51968-11	NUT, PLAIN, HEXAGON.....	2	
2	PAOZZ	5310002090965	96906	MS35338-47	WASHER, LOCK.....	2	
3	PAOZZ	2530014354923	92865	32-260-011	PLATE, BRAKE CHAMBER.....	1	
4	PAOZZ	2530014479821	92865	02-460-061	CYLINDER, PNEUMATIC, MASTER CYLINDER, BRAKE.....	1	
5	PAOZZ	2530014479804	92865	40-530-010	CHAMBER, AIR, BRAKE.....	1	

END OF FIGURE

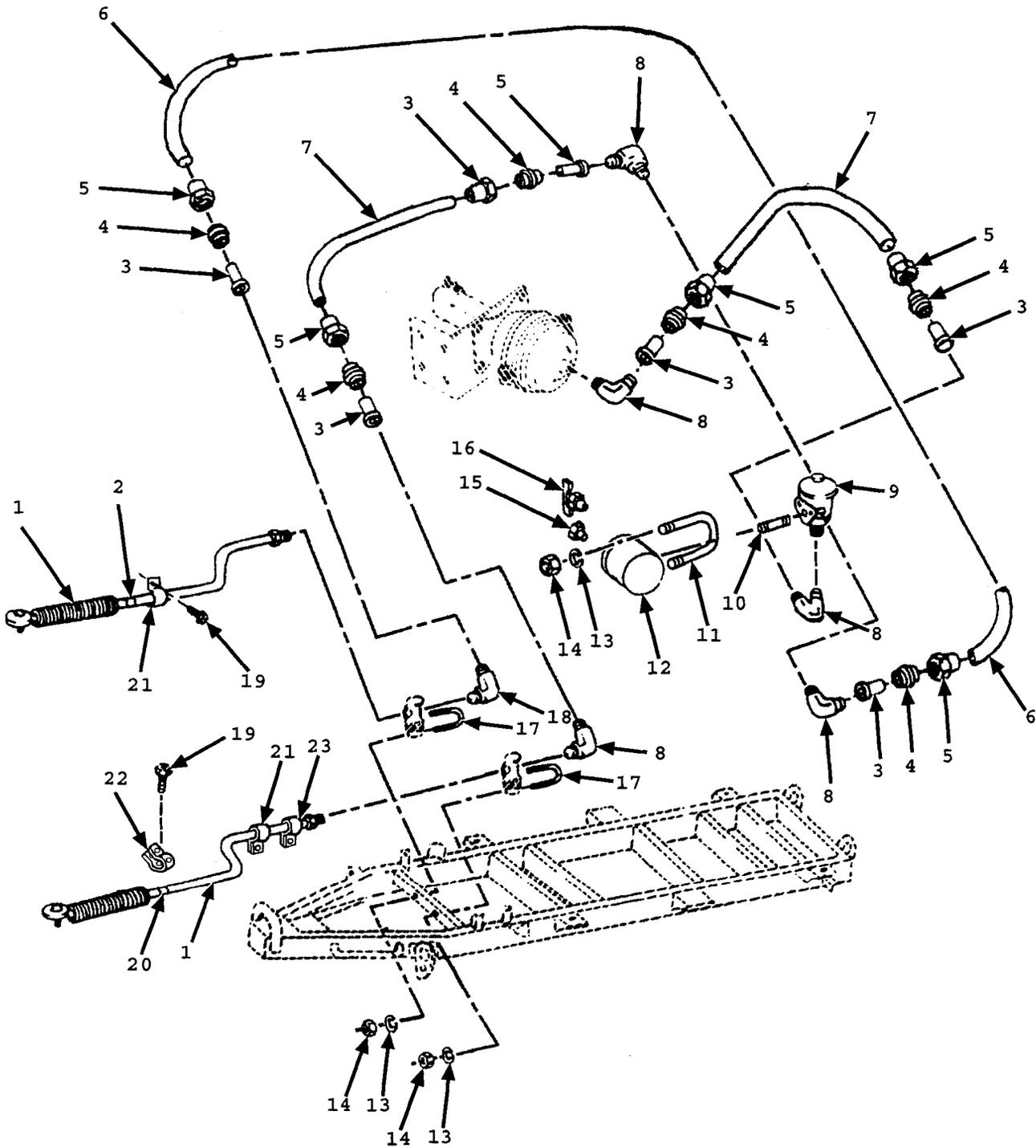


Figure 11. Airbrake System

SECTION II

TM 9-2330-397-14&P

(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM	SMR			PART		
NO	CODE	NSN	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY
10-1						
GROUP 1208 AIR BRAKE SYSTEM FIG.11 AIRBRAKE SYSTEM						
1	PAOZZ	4720000182296	19207	8741770	HOSE ASSEMBLY, NONME.....	2
2	PAOZZ	9905014381502	19207	12355943-1	BAND, MARKER EMERGENCY.....	1
3	PAOZZ	4730010798821	19207	CPR102321-1	INSERT, TUBE FITTING.....	6
4	PAOZZ	4730014345156	81343	6-120111BA	SLEEVE, COMPRESSION,.....	6
5	PAOZZ	4730002937108	81343	6 120115B	SLEEVE, COMPRESSION,.....	6
6	MOOZZ		06853	246115-32	HOSE, NONMETALLIC MAKE FROM HOSE, NONMETALLIC, P/N J844TYBSIZE 3/8 BLACK 32 INCHES LONG.....	1
7	MOOZZ		06853	246115-18	HOSE, NONMETALLIC MAKE FROM HOSE, NONMETALLIC, P/N J844TYBSIZE 3/8 BLACK 18 INCHES LONG.....	2
8	PAOZZ	4730000691187	81343	6-4 100202BA	ELBOW, PIPE TO TUBE.....	4
9	PAOZZ	2530000212366	96906	MS53004-2	PARTS KIT, RELAY VAL.....	6
10	PAOZZ	4730001961505	96906	MS51953-101	NIPPLE, PIPE.....	1
11	PAOZZ	5306010435702	19207	11625105	BOLT, U.....	2
12	PAOZZ	2530010420683	19207	11625104	TANK, PRESSURE.....	1
13	PAOZZ	5310004079566	73734	1372	WASHER, LOCK.....	8
14	PAOZZ	5310008807746	96906	MS51968-5	NUT, PLAIN, HEXAGON.....	8
15	PAOZZ	4730000575555	81343	6 130109NC	PLUG, PIPE.....	1
16	PAOZZ	4820008491220	96906	MS35782-5	COCK, DRAIN.....	1
17	PAOZZ	5306007979296	19207	7979296	BOLT, U.....	2
18	PAOZZ	4730010669484	81343	6-4 120302BA	ELBOW, PIPE TO TUBE.....	1
19	PAOZZ	5305011373938	96906	MS51871-3	SCREW, TAPPING.....	2
20	PAOZZ	9905014411063	19207	12355943-2	BAND, MARKER SERVICE.....	1
21	PAOZZ	5340002811446	19207	8331536	STRAP, RETAINING.....	6
22	PAOZZ	5975003458055	19207	10905840	STRAP, TIEDOWN, ELECT.....	2
23	PAOZZ	5340008091500	96906	MS21333-107	CLAMP, LOOP.....	1

END OF FIGURE

1
2 thru 8

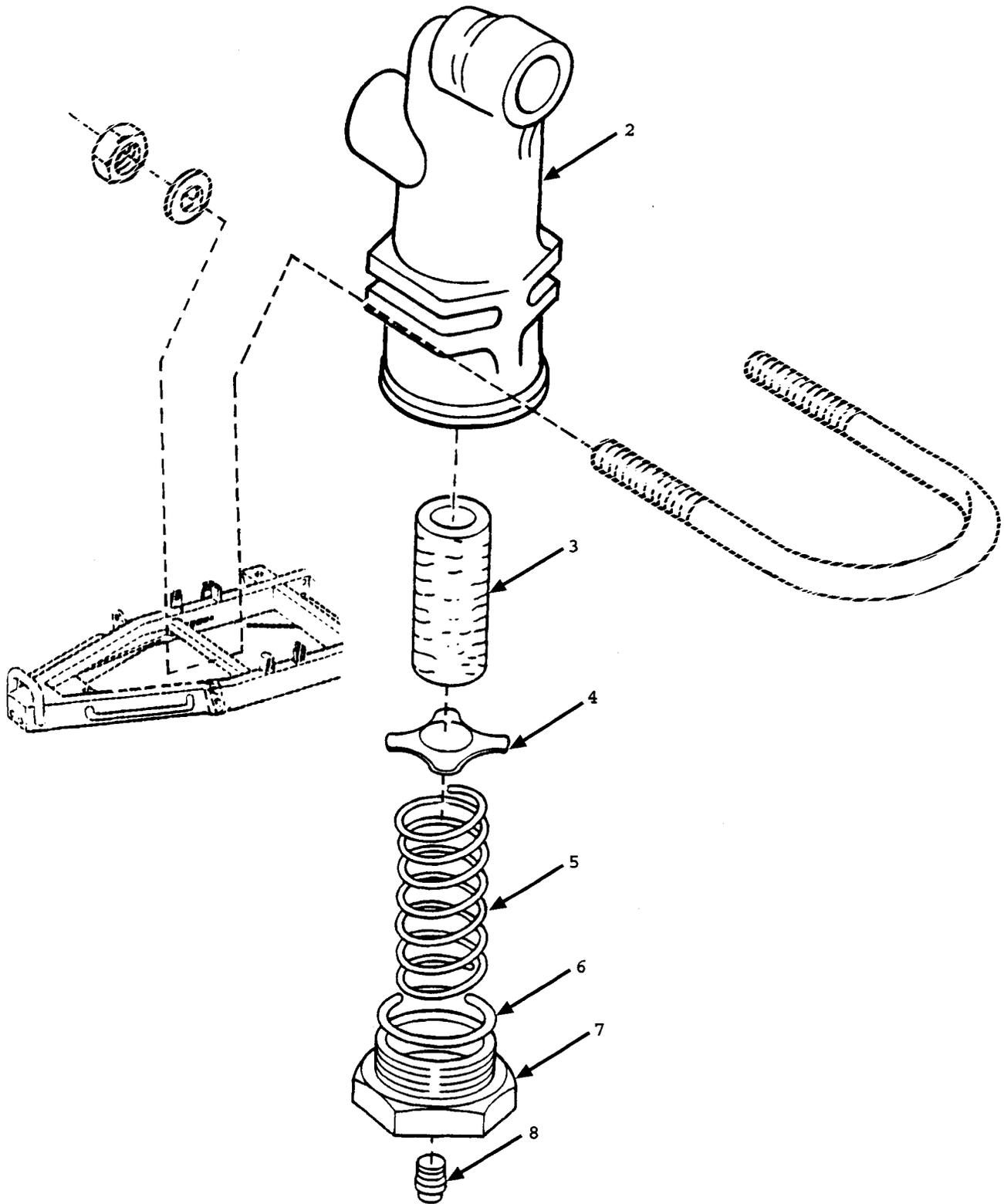


Figure 12. Air Line Filter Assembly

SECTION II

TM 9-2330-397-14&P

(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM	SMR			PART		
NO	CODE	NSN	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY
				11-1		
					GROUP 1208 AIR BRAKE SYSTEM	
					FIG.12 AIR LINE FILTER ASSEMBLY	
1	PAOZZ	2530007979295	23705	A298749	AIR FILTER, BRAKE LI.....	1
2	PAOZZ	2530007415748	06721	N-12970-A	.ELBOW BODY, AIR LINE.....	1
3	PAOZZ	2940007411081	06721	N-12971-B	.FILTER ELEMENT, FLUI.....	1
4	PAOZZ	5310006793606	06721	N12972	.WASHER, SPRING TENS.....	1
5	PAOZZ	5360007069054	06853	235093	.SPRING, HELICAL, COMP.....	1
6	PAOZZ	5331000039157	02697	2-026N602-70	.O-RING.....	1
7	PAOZZ	4730005808457	06853	235091	.ADAPTER BUSHING.....	1
8	PAOZZ	4730002212136	16236	M10514	.PLUG, PIPE.....	1

END OF FIGURE

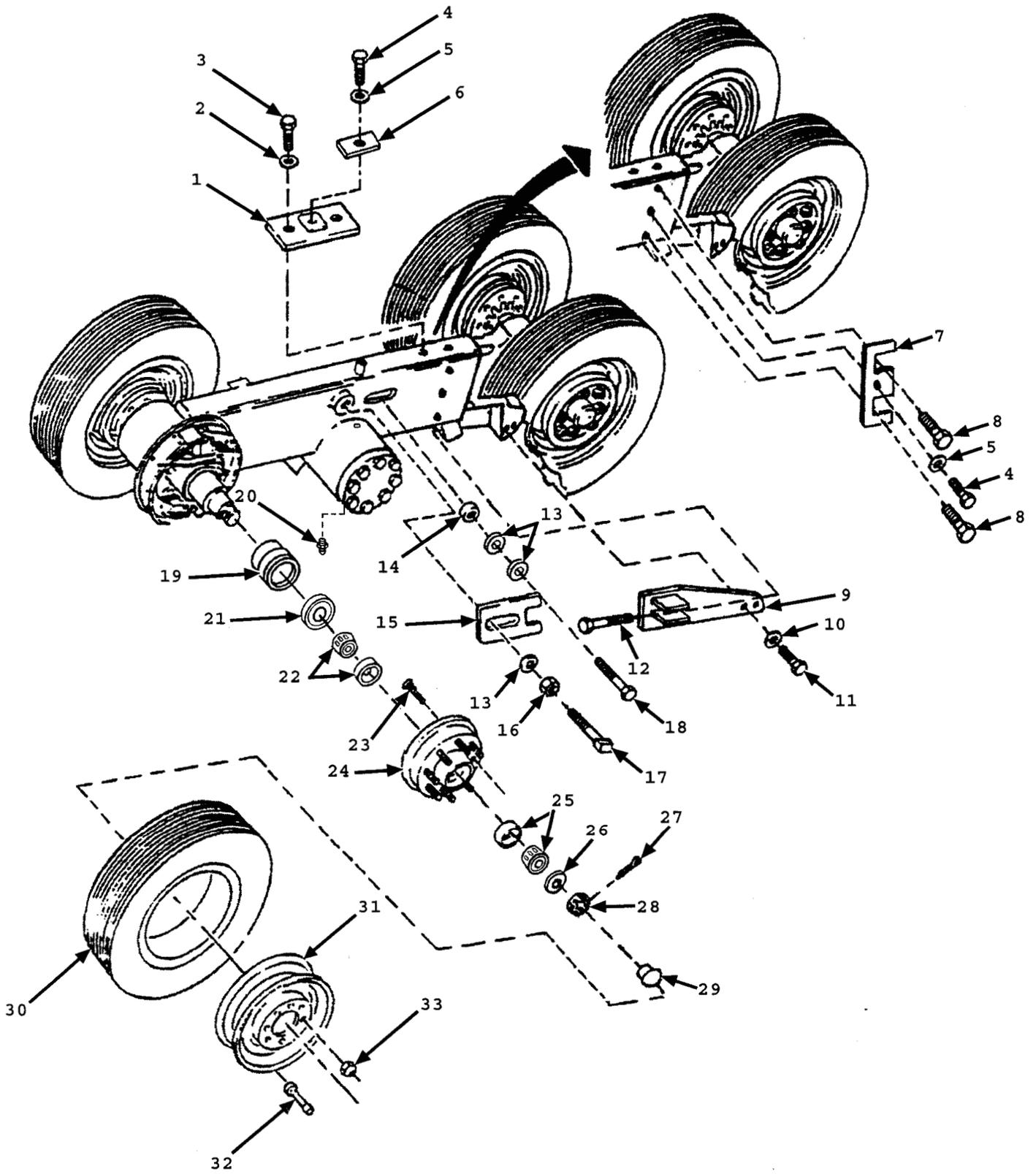


Figure 13. Undercarriage Group

SECTION II

TM 9-2330-397-14&P

(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM	SMR			PART		
NO	CODE	NSN	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY
GROUP 13 WHEELS AND TRACKS						
GROUP 1313 TIRES, TUBES, AND TIRE CHAINS						
FIG.13 UNDERCARRIAGE GROUP						
1	PAOZZ	5340014493777	19207	12448105	PLATE, MOUNTING.....	2
2	PAOZZ	5310008098533	96906	MS27183-23	WASHER, FLAT.....	4
3	PAOZZ	5305009381539	80204	B1821BH075C200N	SCREW, CAP, HEXAGON H 1 1/8 HEX, 3/4-10 UNC-2A THD, 2 INCHES LONG.....	4
4	PAOZZ	5305000680510	80204	B1821BH038C100N	SCREW, CAP, HEXAGON H.....	2
5	PAOZZ	5310000806004	96906	MS27183-14	WASHER, FLAT.....	4
6	PAOZZ	2540014480698	19207	12448107	GUARD, SPLASH, VEHICU KEEPER PLATE...	2
7	PAOZZ	5330014483347	19207	12448102	RETAINER, PACKING.....	2
8	PAOZZ	5305012770456	80204	B1821BH075C088N	SCREW, CAP, HEXAGON H.....	4
9	PAOZZ	2590014492464	19207	12461848	BRACKET, VEHICULAR C.....	2
10	PAOZZ	5310008095998	96906	MS27183-18	WASHER, FLAT.....	2
11	PAOZZ	5305000712074	80204	B1821BH050C275N	SCREW, CAP, HEXAGON H 3/4 HEX, 1/2-13 UNC-2A THD, 2 3/4 INCHES LONG.....	2
12	PAOZZ	5305009908416	19207	12448079-1	SCREW, CAP, HEXAGON H.....	2
13	PAOZZ	5310008238803	96906	MS27183-21	WASHER, FLAT.....	4
14	PFOZZ		19207	12448080	WASHER, FLAT.....	2
15	PAOZZ	5340014406676	19207	12448101	STRAPPING.....	2
16	PAOZZ	5310008913404	96906	MS35691-50	NUT, PLAIN, HEXAGON.....	2
17	PAOZZ	5305014321119	96906	MS51054-94	SETSCREW.....	2
18	PAOZZ	5305007247223	80204	B1821BH063C225N	SCREW, CAP, HEXAGON H 3/4 HEX, 5/8-11 UNC-2A THD, 2 1/4 INCHES LONG.....	2
19	PAOZZ	5365014498442	19207	12469551	SPACER, SLEEVE.....	8
20	PAOZZ	4730000504208	96906	MS15003-1	FITTING, LUBRICATION.....	2
21	PAOZZ	5330014483346	19207	12448074	SEAL, PLAIN ENCASED.....	8
22	PFOZZ	3110001003541	01212	BT25580	CONE AND ROLLERS, TA.....	8
23	PAOZZ	5306014329779	1GD20	ST-504	BOLT, RIBBED SHOULDE.....	8
24	PAOFF		19207	12448075	BRAKE DRUM ASSEMBLY.....	8
25	PAOZZ	3110001424355	43334	A143241	CONE AND ROLLERS, TA.....	8
26	PAOZZ	5310008098541	96906	MS27183-27	WASHER, FLAT.....	8
27	PAOZZ	5315000137228	96906	MS24665-423	PIN, COTTER.....	8
28	PAOZZ	5310010122634	75828	X39-70	NUT, PLAIN, SLOTTED, H.....	8
29	PAOZZ	3040011495061	99003	1605	CAP, GREASE.....	8
30	PAOFZ	2610014343363	19207	12461813	TIRE, PNEUMATIC, VEHI.....	8
31	PAOZZ	2530014351913	19207	12448090	WHEEL, PNEUMATIC TIR.....	1
32	PAOZZ	2640005552829	27783	501	VALVE, PNEUMATIC TIR PART OF P/N 12448090.....	1
33	PAOZZ	5310014411666	19207	12448072	NUT, LUG.....	64

END OF FIGURE

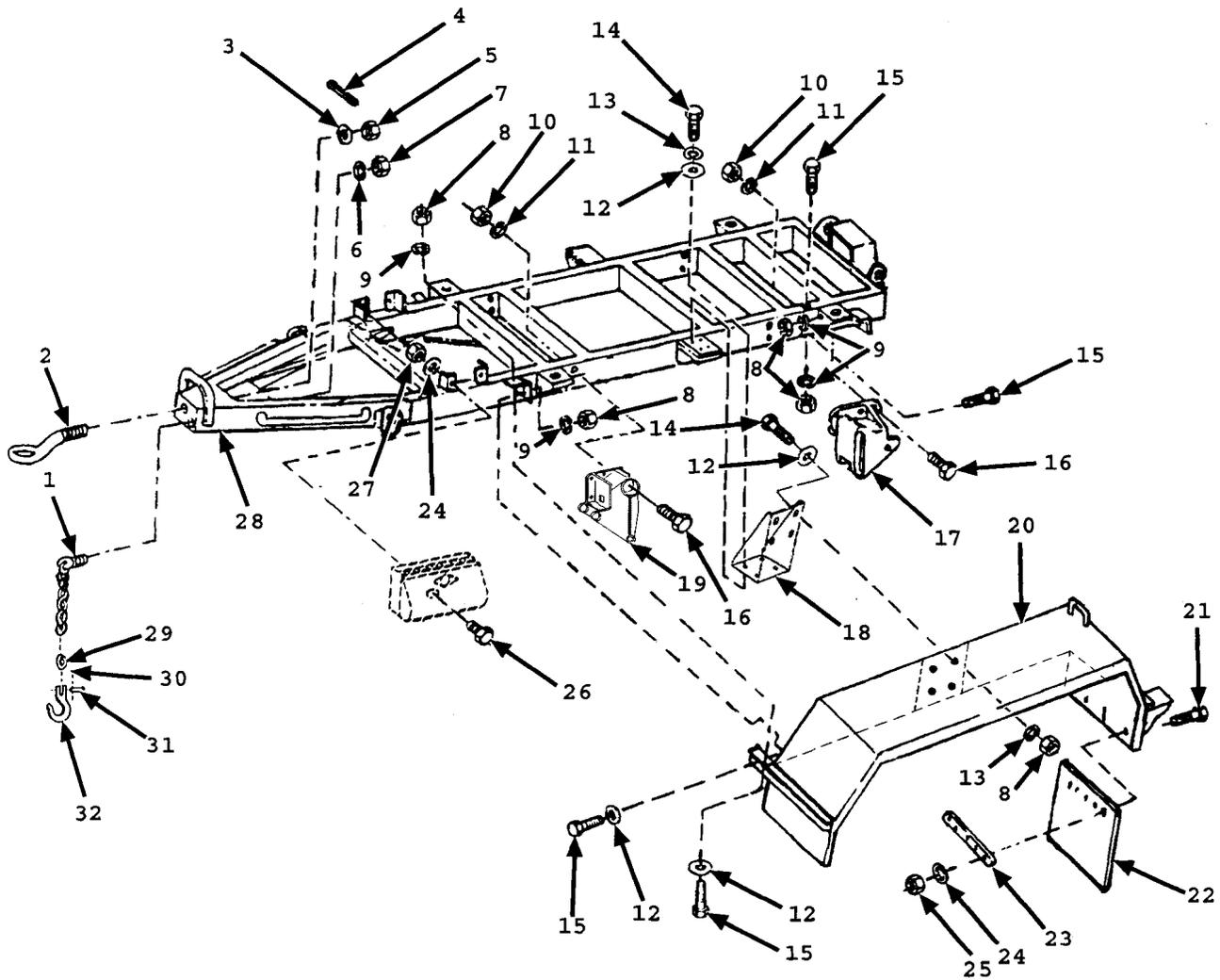


Figure 14. Frame Assembly

SECTION II

TM 9-2330-397-14&P

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
GROUP 15 FRAME, TOWING, ATTACHMENTS, DRAWBARS, AND ARTICULATION SYSTEMS GROUP 1501 FRAME ASSEMBLY FIG.14 FRAME ASSEMBLY						
1	PAOZZ	4010014583852	19207	12461851-3	CHAIN ASSEMBLY, SING.....	2
2	PAOZZ	2540009995584	96906	A52464-3	COUPLER, DRAWBAR, RIN.....	1
3	PAOZZ	5310000446284	24617	446284	WASHER, FLAT.....	1
4	PAOZZ	5315002341664	96906	MS24665-495	PIN, COTTER.....	1
5	PAOZZ	5310007411028	19207	7411028	NUT, PLAIN, SLOTTED, H.....	1
6	PAOZZ	5310005847888	96906	MS35338-51	WASHER, LOCK.....	2
7	PAOZZ	5310007638922	96906	MS51967-24	NUT, PLAIN, HEXAGON 1 1/4 HEX, 3/4-10 UNC-2B RH THD.....	12
8	PAOZZ	5310008808189	96906	MS51967-11	NUT, PLAIN, HEXAGON.....	28
9	PAOZZ	5310004079566	96906	MS35338-45	WASHER, LOCK.....	28
10	PAOZZ	5310007320560	96906	MS51968-14	NUT, PLAIN, HEXAGON.....	22
11	PAOZZ	5310005845272	96906	MS35338-48	WASHER, LOCK.....	22
12	PAOZZ	5310001867411	96906	MS27183-60	WASHER, FLAT.....	36
13	PAOZZ	5310006559370	96906	MS35340-47	WASHER, LOCK.....	1
14	PAOZZ	5305000711786	80204	B1821BH044C100N	SCREW, CAP, HEXAGON H 5/8 HEX, 7/16- 14 UNC-2A THD, 1 INCH LONG.....	8
15	PAOZZ	5305000712055	80204	B1821BH044C150N	SCREW, CAP, HEXAGON H 5/8 HEX, 7/16- 14 UNC-2A RH THD, 1 1/2 INCHES LONG.	36
16	PAOZZ	5305007195235	80204	B1821BH050F175N	SCREW, CAP, HEXAGON H 3/4 HEX, 1/2-20 UNF-2A THD, 1 3/4 INCHES LONG.....	10
17	XBOZZ		19207	7059565	BRACKET.....	2
18	PAOZZ	2590014492456	19207	12461888	BRACKET, VEHICULAR C.....	2
19	XBOZZ		19207	7059533	BRACKET.....	2
20	PAOZZ	2510014492462	19207	12461887	FENDER, VEHICULAR RIGHT-HAND.....	1
20	PAOZZ	2510014412787	19207	12448013	FENDER, VEHICULAR LEFT-HAND.....	1
21	PAOZZ	5305000712237	96906	MS90725-14	SCREW, CAP, HEXAGON H 7/16 HEX, 1/4- 20 UNC-2A RH THD, 2 INCHES LONG.....	10
22	PAOZZ	2540014350325	19207	11597666-2	GUARD, SPLASH, VEHICU.....	2
23	PAOZZ	5340014329808	19207	11597745-1	PLATE, MOUNTING.....	2
24	PAOZZ	5310005825965	96906	MS35338-44	WASHER, LOCK.....	18
25	PAOZZ	5310007616882	96906	MS51967-2	NUT, PLAIN, HEXAGON.....	10
26	PAOZZ	5305002678953	80204	B1821BH025F063N	SCREW, CAP, HEXAGON H 7/16 HEX, 1/4- 28 UNC-2A RH THD, 5/8 INCHES LONG...	8
27	PAOZZ	5310007680319	96906	MS51968-2	NUT, PLAIN, HEXAGON.....	8
28	XAFZZ		19207	12447268	FRAME ASSEMBLY.....	1
29	PAOZZ	4010011128082	96906	MS87008-3	LINK, CHAIN, CONNECTI PART OF KIT P/N 12461851-3.....	2
30	PAOZZ	5315008423044	96906	MS24665-283	PIN, COTTER PART OF KIT P/N 12461851-3.....	2
31	PAOZZ	5315009570765	96906	MS20392-5C47	PIN, STRAIGHT, HEADED PART OF KIT P/N 12461851-3.....	2
32	PAOZZ	4030014381803	19207	12461854	HOOK, SLIP PART OF KIT P/N 12461851-3	2

END OF FIGURE

1
2 thru 8

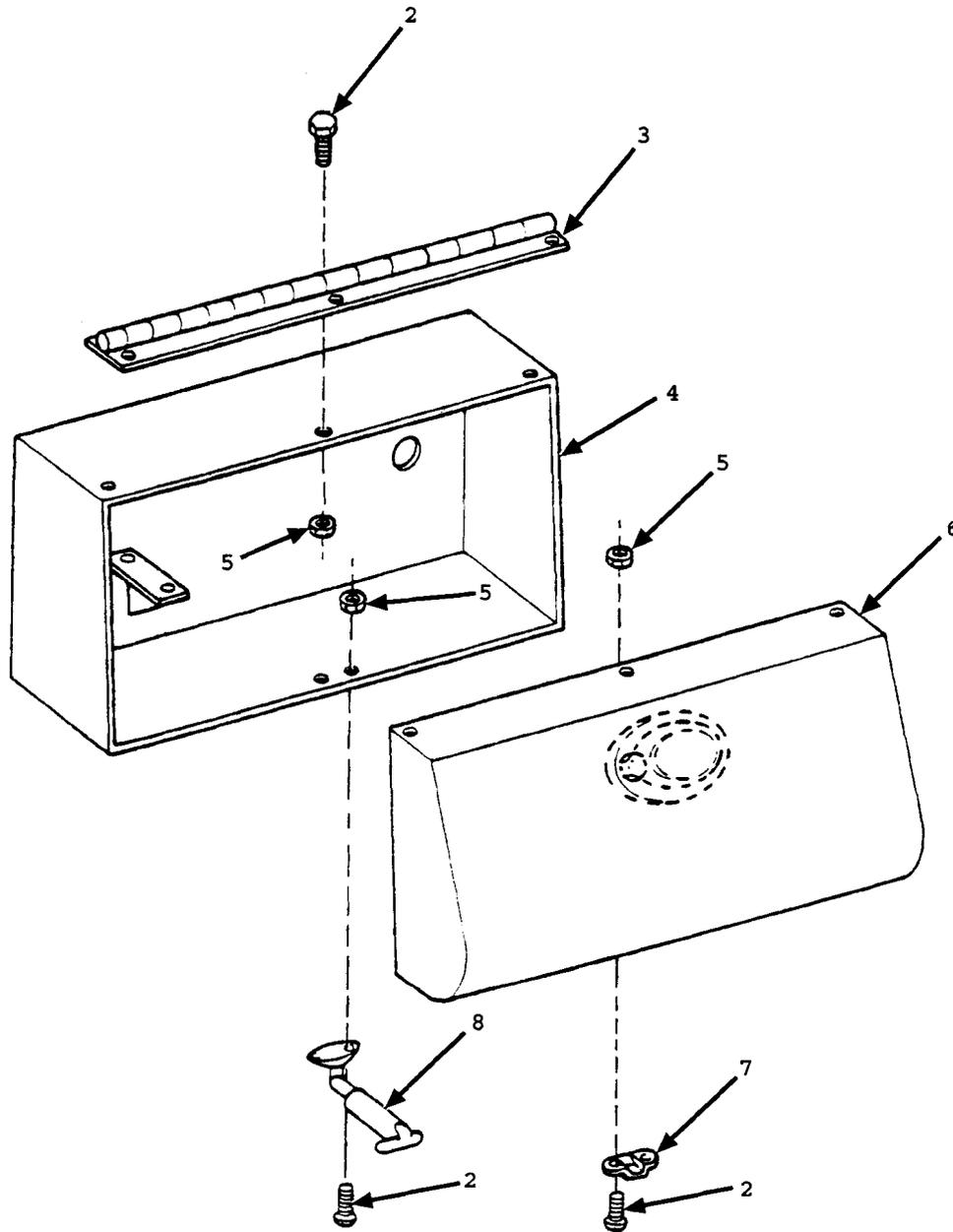


Figure 15. Faucet Box Assembly

SECTION II

TM 9-2330-397-14&P

(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM	SMR			PART		
NO	CODE	NSN	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY
GROUP 1501 FRAME ASSEMBLY						
FIG.15 FAUCET BOX ASSEMBLY						
1	PAOOO	2540011689876	19207	7035486	BOX,ACCESSORIES STO LEFT-HAND.....	1
1	PAOOO	2540013553195	19207	7035487	BOX,ACCESSORIES STO RIGHT-HAND.....	1
2	PAOZZ	5305000712507	80204	B1821BH025C044N	.SCREW,CAP,HEXAGON H 7/16 HEX,1/4- 20 UNC-2A RH THD,7/16 INCHES LONG..	10
3	MOOZZ		19207	7037002-17	.HINGE,BUTT SEE APPENDIX G, MAKE FROM HINGE,BUTT, P/N MS35822-16D, 17 INCHES LONG.....	1
4	PAOZZ	8115010861666	19207	7035452	.BOX,SMALL PARTS LEFT-HAND.....	1
4	PAOZZ	8115010861666	19207	7035452	.BOX,SMALL PARTS RIGHT-HAND.....	1
5	PAOZZ	5310000881251	81349	M45913/1-4CG5C	.NUT,SELF-LOCKING,HE.....	10
6	PAOZZ	5340010086088	19207	7034748	.COVER,ACCESS.....	1
7	PAOZZ	2510007697483	19207	7697483	.BRACKET HOOD CATCH.....	1
8	PAOZZ	2590000402075	27182	750105-CG	.FASTENER,CYLINDER,S.....	1

END OF FIGURE

1
2 thru 34

6
7 thru 12

17
18 thru 23

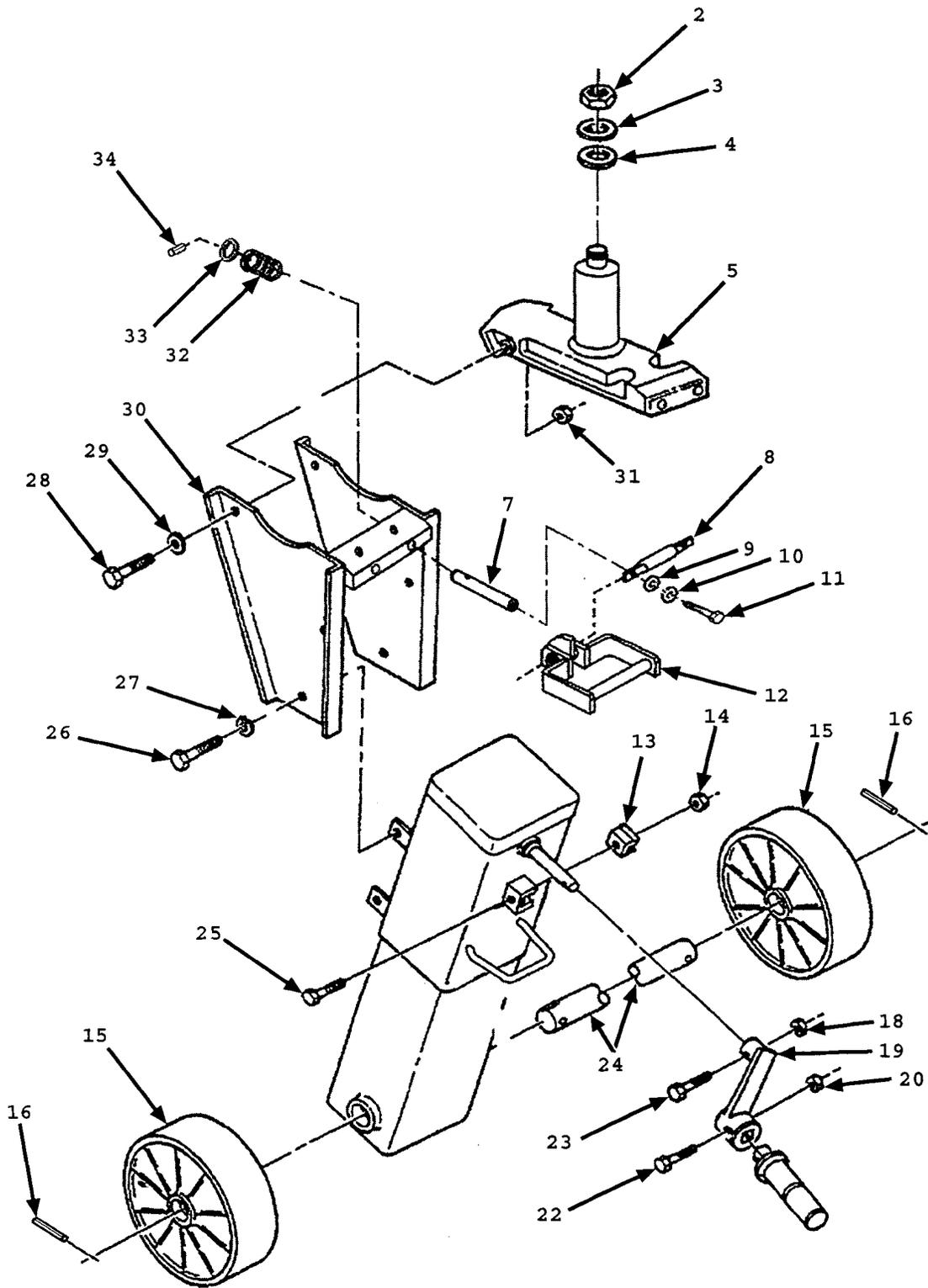


Figure 16. Caster Assembly, Folding Adjustable

SECTION II

TM 9-2330-397-14&P

(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM	SMR			PART		
NO	CODE	NSN	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY
					GROUP 1507 LANDING GEAR, LEVELING JACKS	
					FIG.16 CASTER ASSEMBLY, FOLDING ADJUSTABLE	
1	PFOZZ	2590012546554	19207	12259830-1	LEG, SEMITRAILER RET.....	1
2	PFOZZ	5310009826810	96906	MS21044-N12	.NUT, SELF-LOCKING, HE.....	1
3	PAOZZ	5310002708832	19207	8330821	.WASHER, FLAT.....	1
4	PFOZZ	5310002708834	19207	8330813	.WASHER, FLAT.....	1
5	PFOZZ	2530006930736	23705	324420	.SPINDLE, WHEEL, DRIVI.....	1
6	PAOZZ	5340014382335	19207	12461862	.HANDLE, MANUAL CONTR.....	1
7	PFOZZ	5315014397765	19207	12461861	..PIN, STRAIGHT, HEADLE.....	2
8	XDOZZ		19207	12461860	..PIN, SHOULDER, HEADLE.....	1
9	PFOZZ	5310000814219	96906	MS27183-12	..WASHER, FLAT.....	2
10	PFOZZ	5310004079566	96906	MS35338-45	..WASHER, LOCK.....	2
11	PFOZZ	5306002264826	80204	B1821BH031C088N	..BOLT, MACHINE.....	1
12	PFOZZ	4730014405261	19207	12461859	..HANDLE, WELDMENT, DOU.....	1
13	PFOZZ	5340012225247	19207	12312996	.CLIP, SPRING TENSION.....	1
14	PFOZZ	5310000881251	81349	M45913/1-4CG5C	.NUT, SELF-LOCKING, HE.....	1
15	PFOZZ	2530012153389	19207	12259845	.WHEEL, METAL TIRE.....	2
16	PFOZZ	5315011860829	96906	MS171656	.PIN, SPRING.....	2
17	PFOZZ	5340012090475	19207	12259835	.CRANK, HAND.....	1
18	PFOZZ	5310006603381	96906	MS21083-N5	..NUT, SELF-LOCKING, HE.....	1
19	PFOZZ	5340012090503	19207	12259840	..ARM, HAND CRANK.....	1
20	PFOZZ	5310004838792	96906	MS17829-4C	..NUT, SELF-LOCKING, HE.....	1
21	PFOZZ	5340012090500	19207	12259837	..HANDLE, MANUAL CONTR.....	1
22	PFOZZ	5305000680509	80204	B1821BH025C125N	..SCREW, CAP, HEXAGON H.....	1
23	PFOZZ	5305002259093	96906	MS90726-38	..SCREW, CAP, HEXAGON H.....	1
24	PFOZZ	3040012090497	19207	12259831	.SHAFT, STRAIGHT.....	1
25	PFOZZ	5305000680501	96906	MS90725-5	.SCREW, CAP, HEXAGON H.....	1
26	PFOZZ	5305000712066	80204	B1821BH050C100N	.SCREW, CAP, HEXAGON H.....	4
27	PFOZZ	5310005845272	96906	MS35338-48	.WASHER, LOCK.....	4
28	PFOZZ	5306001744246	19207	7979972	.BOLT, SHOULDER.....	1
29	PFOZZ	5310008238803	96906	MS27183-21	.WASHER, FLAT.....	2
30	PFOZZ	2590012108843	19207	12259839	.LEG, SEMITRAILER RET.....	1
31	PFOZZ	5310009826808	96906	MS21044-N9	.NUT, SELF-LOCKING, HE.....	1
32	PFOZZ	5360006998489	19207	8331541	.SPRING, HELICAL, COMP.....	2
33	PFOZZ	5310002206848	0AHP5	27D252	.WASHER, FLAT.....	2
34	PFOZZ	5315006821777	96906	MS171658	.PIN, SPRING 1/4 DIA, 1 1/2 INCHES LONG.....	2

END OF FIGURE

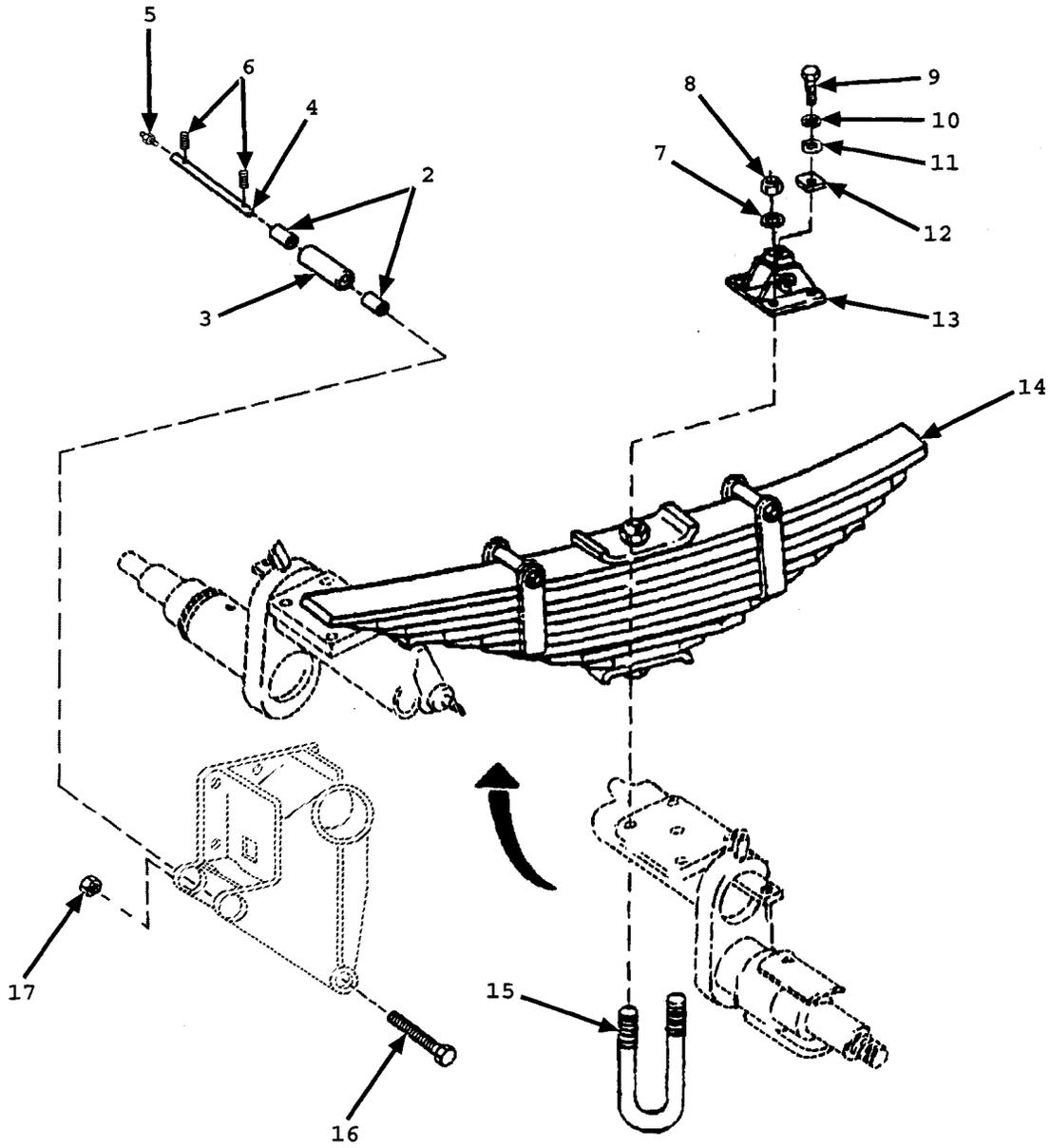
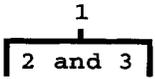


Figure 17. Spring

SECTION II

TM 9-2330-397-14&P

(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM	SMR			PART		
NO	CODE	NSN	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY
					GROUP 16 SPRINGS AND SHOCK ABSORBERS	
					GROUP 1601 SPRINGS	
					FIG.17 SPRINGS	
1	PAOZZ	2510000179588	19207	10929946	ROLLER ASSEMBLY,HAN.....	4
2	PAOZZ	3120010938325	19207	8389733	BUSHING,SLEEVE PART OF P/N 10929946.....	2
3	PAOZZ	3120000562173	19207	8389734	BEARING,SLEEVE PART OF P/N 10929946.....	1
4	PAOZZ	2510000564799	19207	8389735	PIN,VEHICULAR LEAF.....	4
5	PAOZZ	4730000504203	96906	MS15001-1	FITTING,LUBRICATION.....	4
6	PAOZZ	5305007286281	96906	MS51973-54	SETSCREW.....	8
7	PAOZZ	5310000526454	96906	MS35340-51	WASHER,LOCK.....	8
8	PAOZZ	5310004270043	19207	7411041	NUT,PLAIN,HEXAGON.....	8
9	PAOZZ	5305002693238	80204	B1821BH038F125N	SCREW,CAP,HEXAGON H 9/16 HEX,3/8 24 UNF-2A THD, 1 1/4 INCHES LONG....	2
10	PAOZZ	5310005957237	96906	MS35333-42	WASHER,LOCK.....	2
11	PAOZZ	5310008094061	96906	MS27183-15	WASHER,FLAT.....	2
12	PAOZZ	5340006563638	19207	7522436	BUMPER,NONMETALLIC.....	2
13	PAOZZ	3040012452522	19207	7350779	BRACKET,EYE,ROTATIN.....	2
14	PAOZZ	2510000562174	19207	8389626	SPRING ASSEMBLY,LEA.....	2
15	PAOZZ	5306000530512	19207	8389628	BOLT,U.....	4
16	PAOZZ	5305007262572	80204	B1821BH063F600N	SCREW,CAP,HEXAGON H.....	4
17	PAOZZ	5310002256408	81349	M45913/1-10FG5C	NUT,SELF-LOCKING,HE.....	4

END OF FIGURE

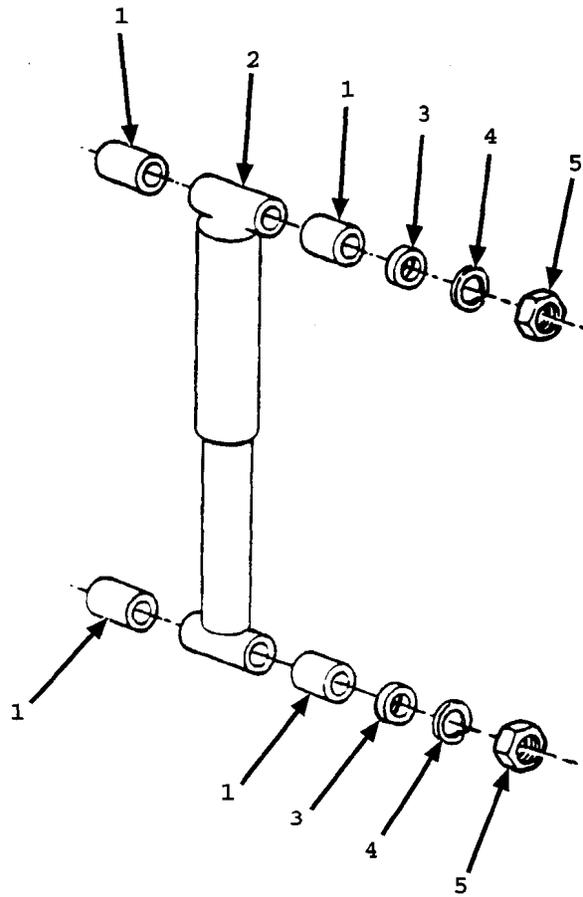


Figure 18. Shock Absorbers

SECTION II

TM 9-2330-397-14&P

(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM	SMR			PART		
NO	CODE	NSN	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY
					GROUP 1604 SHOCK ABSORBER EQUIPMENT	
					FIG.18 SHOCK ABSORBERS	
1	PAOZZ	5365002754519	19207	7339466	BUSHING, NONMETALLIC.....	8
2	PAOZZ	2510008868061	19207	8716992	SHOCK ABSORBER, DIRE.....	4
3	PAOZZ	5310007339465	19207	7339465	WASHER, RECESSED.....	4
4	PAOZZ	5310000045034	26916	004-003005-059	WASHER, LOCK.....	4
5	PAOZZ	5310007638905	96906	MS51968-20	NUT, PLAIN, HEXAGON.....	4

END OF FIGURE

10
11 thru 16

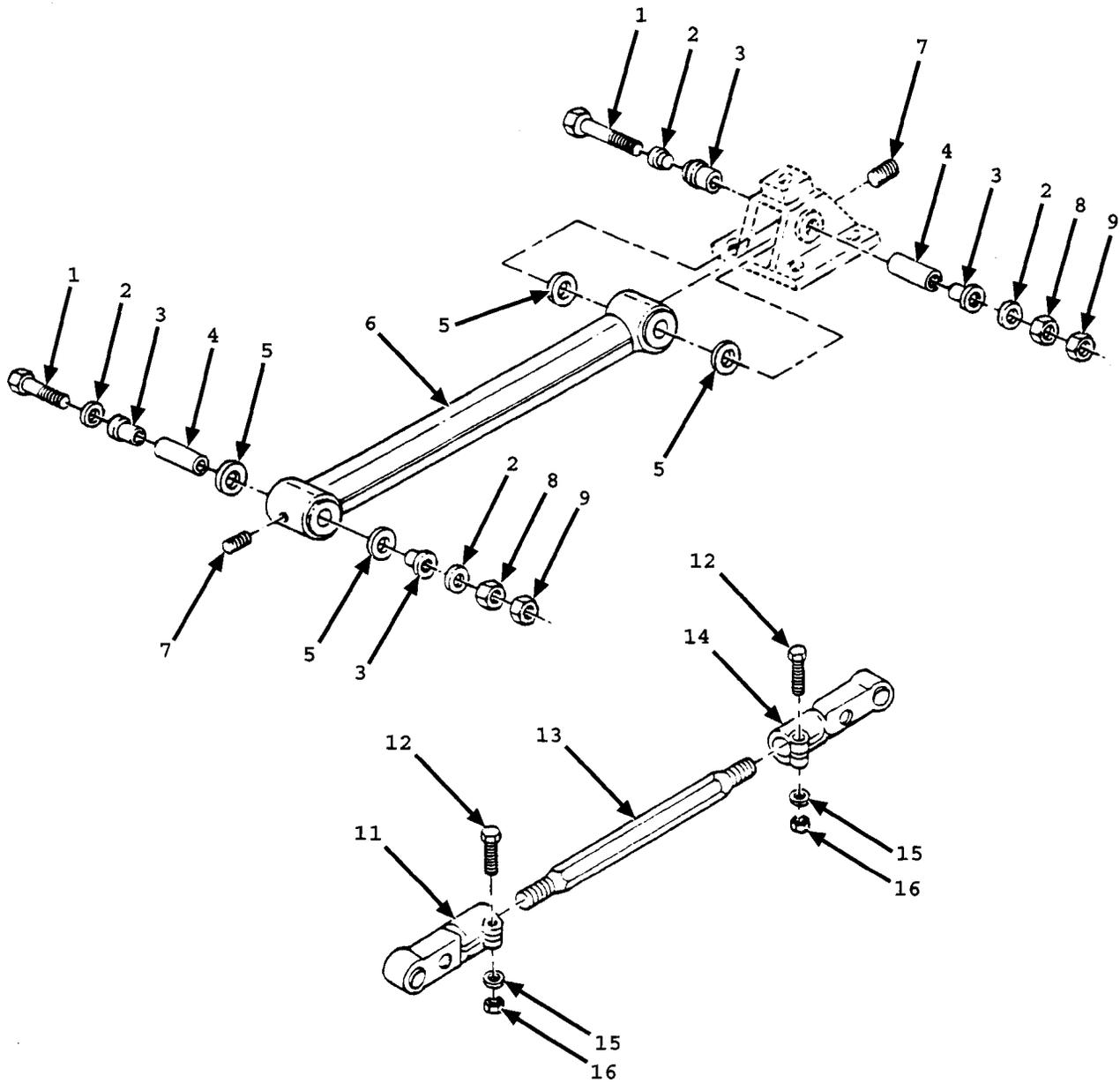


Figure 19. Radius Rods

SECTION II

TM 9-2330-397-14&P

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
GROUP 1605 TORQUE, RADIUS, AND STABILIZER RODS FIG.19 RADIUS RODS						
1	PAOZZ	5305007262572	80204	B1821BH063F600N	SCREW,CAP,HEXAGON H 15/16 HEX, 5/8-18 UNC-2A RH THD, 6 INCHES LONG.....	4
2	PAOZZ	5310004241452	23705	563823	WASHER, SHOULDERED.....	8
3	PAOZZ	5365003500155	27387	777	BUSHING, NONMETALLIC.....	8
4	PAOZZ	5365006240255	19207	7974917	SPACER, SLEEVE.....	4
5	PAOZZ	5310004241456	19207	7349029	WASHER, FLAT.....	8
6	PAOZZ	2530010871003	19207	11625147	ROD ASSEMBLY, RADIUS.....	1
7	PFOZZ		19207	139855	SCREW.....	4
8	PAOZZ	5310008352037	96906	MS35691-53	NUT, PLAIN, HEXAGON.....	4
9	PAOZZ	5310007638905	96906	MS51968-20	NUT, PLAIN, HEXAGON.....	4
10	PAOOO	2530010938270	19207	7366478-1	ROD ASSEMBLY, RADIUS.....	1
11	PAOZZ	5340004217242	19207	7349017	.CONNECTOR, ROD END.....	1
12	PAOZZ	5305007195239	96906	MS90727-116	.SCREW, CAP, HEXAGON H.....	2
13	PAOZZ	2530010938271	19207	7366480-1	.ROD, ALIGNING, VEHICU.....	1
14	PAOZZ	5340004270080	19207	7349016	.CONNECTOR, ROD END.....	1
15	PAOZZ	5310005845272	96906	MS35338-48	.WASHER, LOCK.....	2
16	PAOZZ	5310007320560	96906	MS51968-14	.NUT, PLAIN, HEXAGON.....	2

END OF FIGURE

1	2
2, 5 thru 26	3 and 4

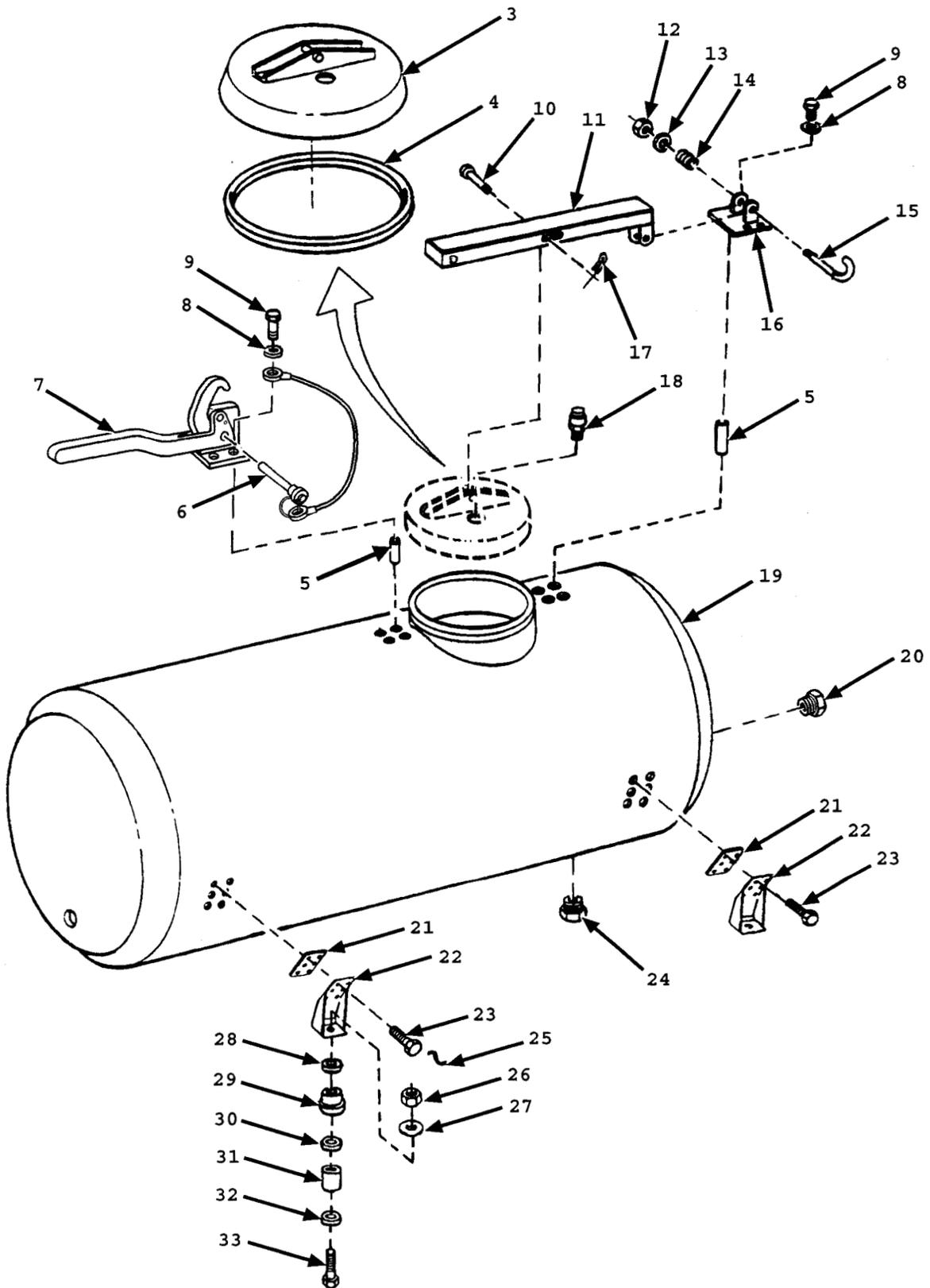


Figure 20. Tank Body (Without Heater)

SECTION II

TM 9-2330-397-14&P

(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM	SMR			PART		
NO	CODE	NSN	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES(UOC)	QTY
					GROUP 18 BODY, CAB, HOOD, AND HULL	
					GROUP 1811 TANK BODIES	
					FIG.20 TANK BODIES (WITHOUT HEATER)	
1	PFOFF	2510010915167	19207	12269886	TANK, WATER, TRLR MTD.....	1
2	PAOFF	2510010952422	19207	12269951	.COVER, MANHOLE.....	1
3	XAOZZ		19207	12269958	..COVER.....	1
4	PAOZZ	5330013179640	19207	12354242	..SEAL, NONMETALLIC SP.....	1
5	XBOZZ		19207	12296261	.SPACER.....	8
6	PAOZZ		19207	12474733	.PIN, DETENTION ASSEM.....	1
7	PAOZZ		19207	12474732	.CLAMP, COVER HOLD-DO ASSEMBLY.....	1
8	PAOZZ	5310009338121	96906	MS35338-139	.WASHER, LOCK.....	8
9	PAOZZ	5305002072297	96906	MS35307-312	.SCREW, CAP, HEXAGON H.....	8
10	PAOZZ	5315009041643	96906	MS20392-7C75	.PIN, STRAIGHT, HEADED.....	1
11	PFOZZ		19207	12269960-1	.STRUCTURAL SECTION,.....	1
12	PAOZZ	5310009843807	81349	M45913/1-5FG5C	.NUT, SELF-LOCKING, HE.....	1
13	PAOZZ	5310000877493	96906	MS27183-13	.WASHER, FLAT.....	1
14	PAOZZ	5360010785574	96906	MS24585C507	.SPRING, HELICAL, COMP.....	1
15	PAOZZ	5306010881962	19207	12269970	.BOLT, HOOK.....	1
16	PAOZZ	3040012545369	19207	12296219	.BRACKET, EYE, NONROTA.....	1
17	PAOZZ	5315013591451	96906	MS24665-285	.PIN, COTTER.....	1
18	PAOZZ	4820008561722	19207	7034882	.VALVE, VACUUM BREAKI.....	1
19	PAOFF	2510010929228	19207	12269860	.TANK WATER, INSULATE.....	1
20	PAOZZ	4730011901028	30780	LHP-SS	.PLUG, PIPE.....	1
21	PAOZZ	5330010845991	19207	12269895	.GASKET.....	4
22	PAOZZ	5340013431795	19207	12331710	.BRACKET, DOUBLE ANGL.....	4
23	PAOZZ	5305009146131	96906	MS18153-63	.SCREW, CAP, HEXAGON H 9/16 HEX, 3/8-	24
					24 UNF-2A RH THD, 1 3/4 INCHES LONG.	
24	PAOZZ	4730010861620	19207	8741782-1	.PLUG, PIPE.....	1
25	MOOZZ		00624	12269886-20	WIRE NONELECTRICAL MAKE FROM WIRE,	1
					NONELECTRICAL, P/N 900010-32C, 20	
					INCHES LONG.....	
26	PAOZZ	5310002256408	81349	M45913/1-10FG5C	NUT, SELF-LOCKING, HE 15/16 HEX, 5/8-	4
					18 UNF-2B RH THD.....	
27	PAOZZ	5310013729444	96906	MS27183-63	WASHER, FLAT.....	4
28	PAOZZ	5310011301226	19207	11597768	WASHER, FLAT.....	4
29	PAOZZ	5342005372212	19207	8331543	MOUNT, RESILIENT.....	4
30	PAOZZ	5330005759791	19207	8331544	PACKING WITH RETAIN.....	4
31	PAOZZ	5365014328664	19207	12355810	SPACER, PLATE.....	4
32	PAOZZ	5310014326741	19207	12355811	WASHER, FLAT.....	4
33	PAOZZ	5305007262558	96906	MS90727-171	SCREW, CAP, HEXAGON H 15/16 HEX, 5/8-	4
					18 UNF-2A RH THD, 3 3/4 INCHES LONG.	

END OF FIGURE

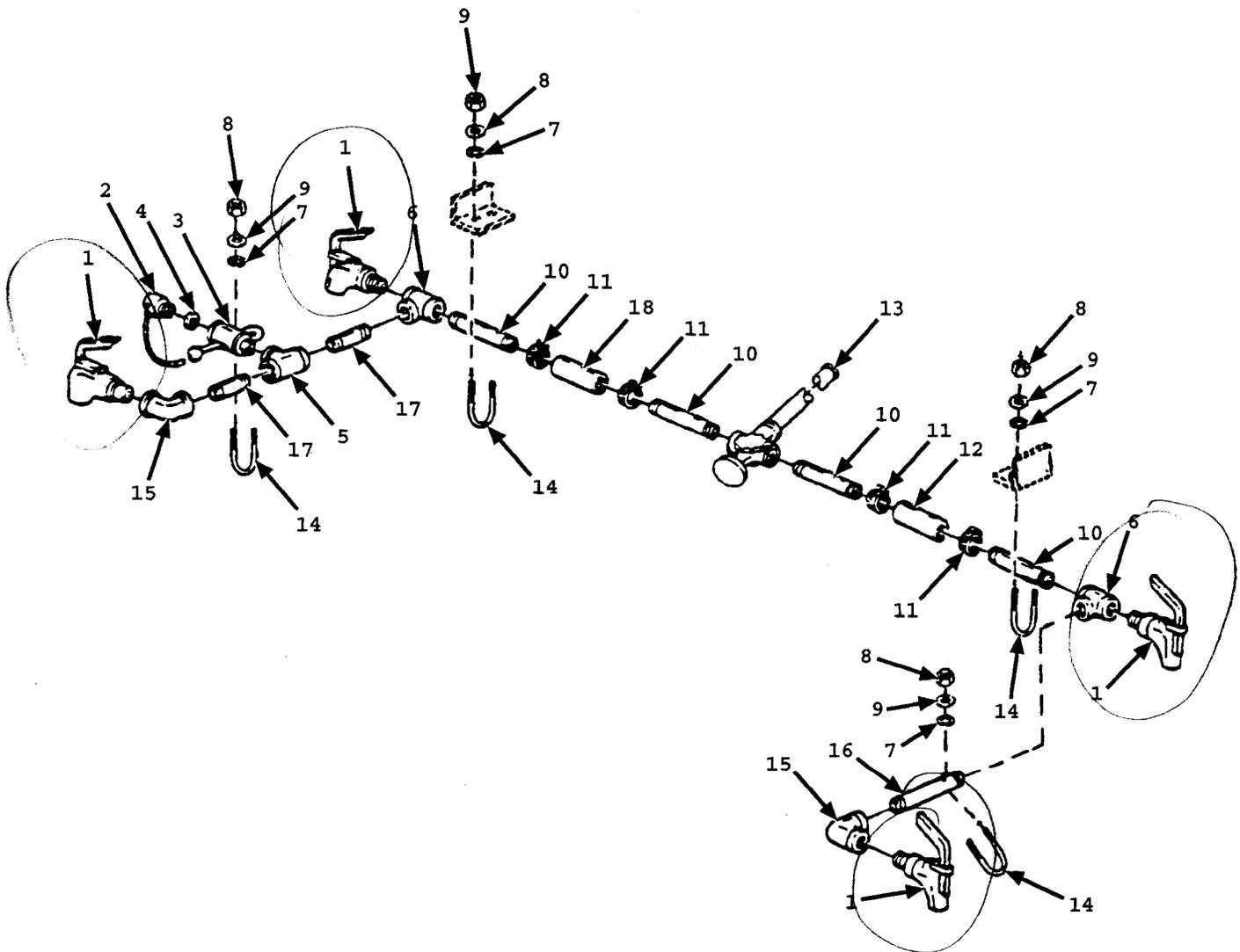


Figure 21. Tank Plumbing

SECTION II

TM 9-2330-397-14&P

(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM	SMR			PART		
NO	CODE	NSN	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY
					GROUP 1811 TANK BODIES	
					FIG.21 TANK PLUMBING	
1	PAOZZ	4510014330396	19207	12406415	FAUCET, SINGLE.....	3
2	PAOZZ	4730010367498	96906	MS27029-6	PLUG, QUICK DISCONNE.....	1
3	PAOZZ	4730000847436	96906	MS27026-6	COUPLING HALF, QUICK.....	1
4	PAOZZ	5330000889167	96906	MS27030-3	GASKET PART OF MS27026-6.....	1
5	PAOZZ	4730011346995	96906	MS14309-24	TEE, PIPE.....	1
6	PAOZZ	4730014332618	96906	MS14309-30	TEE, PIPE.....	2
7	PAOZZ	5310005501130	96906	MS35333-40	WASHER, LOCK.....	8
8	PAOZZ	5310009035966	96906	MS51971-1	NUT, PLAIN, HEXAGON.....	8
9	PAOZZ	5310008094058	96906	MS27183-10	WASHER, FLAT.....	8
10	PAOZZ	4730001682075	19207	7065947	ADAPTER, STRAIGHT, PI.....	4
11	PAOZZ	4730009098627	01276	FF9311-36	CLAMP, HOSE.....	4
12	PAOZZ	4720014409299	19207	8724753-1	HOSE, NONMETALLIC.....	1
13	PAOZZ	4820013847555	3W359	70-2351	VALVE ASSEMBLY, MANI.....	1
14	PAOZZ	5306009371312	19207	8724754	BOLT, U.....	4
15	PAOZZ	4730014332623	96906	MS14308-7	ELBOW, PIPE LEFT HAND.....	2
16	PAOZZ	4730001962017	96906	MS51846-122	NIPPLE, PIPE.....	1
17	PAOZZ	4730001682074	19207	7035450	NIPPLE, PIPE.....	2

END OF FIGURE

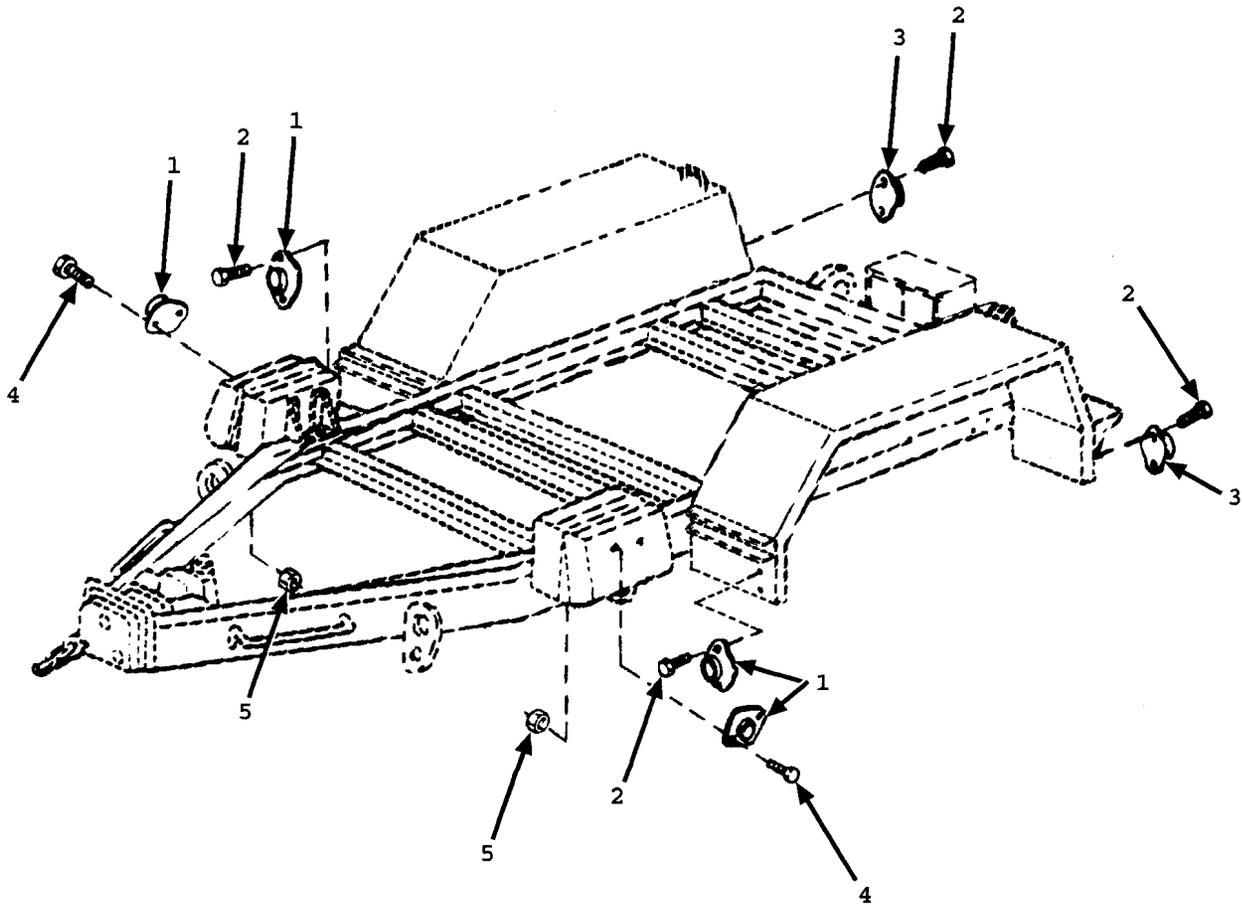


Figure 22. Reflectors

SECTION II

TM 9-2330-397-14&P

(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM	SMR			PART		
NO	CODE	NSN	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY
					GROUP 22 BODY, CHASSIS, AND HULL ACCESSORY ITEMS GROUP 2202 ACCESSORY ITEMS FIG.22 REFLECTORS	
1	PAOZZ	9905002023639	96906	MS35387-2	REFLECTOR, INDICATIN AMBER.....	4
2	PAOZZ	5305000526921	80205	MS24629-57	SCREW, TAPPING.....	8
3	PAOZZ	9905002052795	96906	MS35387-1	REFLECTOR, INDICATIN RED.....	2
4	PAOZZ	5305000712506	80204	B1821BH025C050N	SCREW, CAP, HEXAGON H 7/16 HEX, 1/4- 20 UNC-2A RH THD, 1/2 INCHES LONG...	4
5	PAOZZ	5310000881251	81349	M45913/1-4CG5C	NUT, SELF-LOCKING, HE.....	4

END OF FIGURE

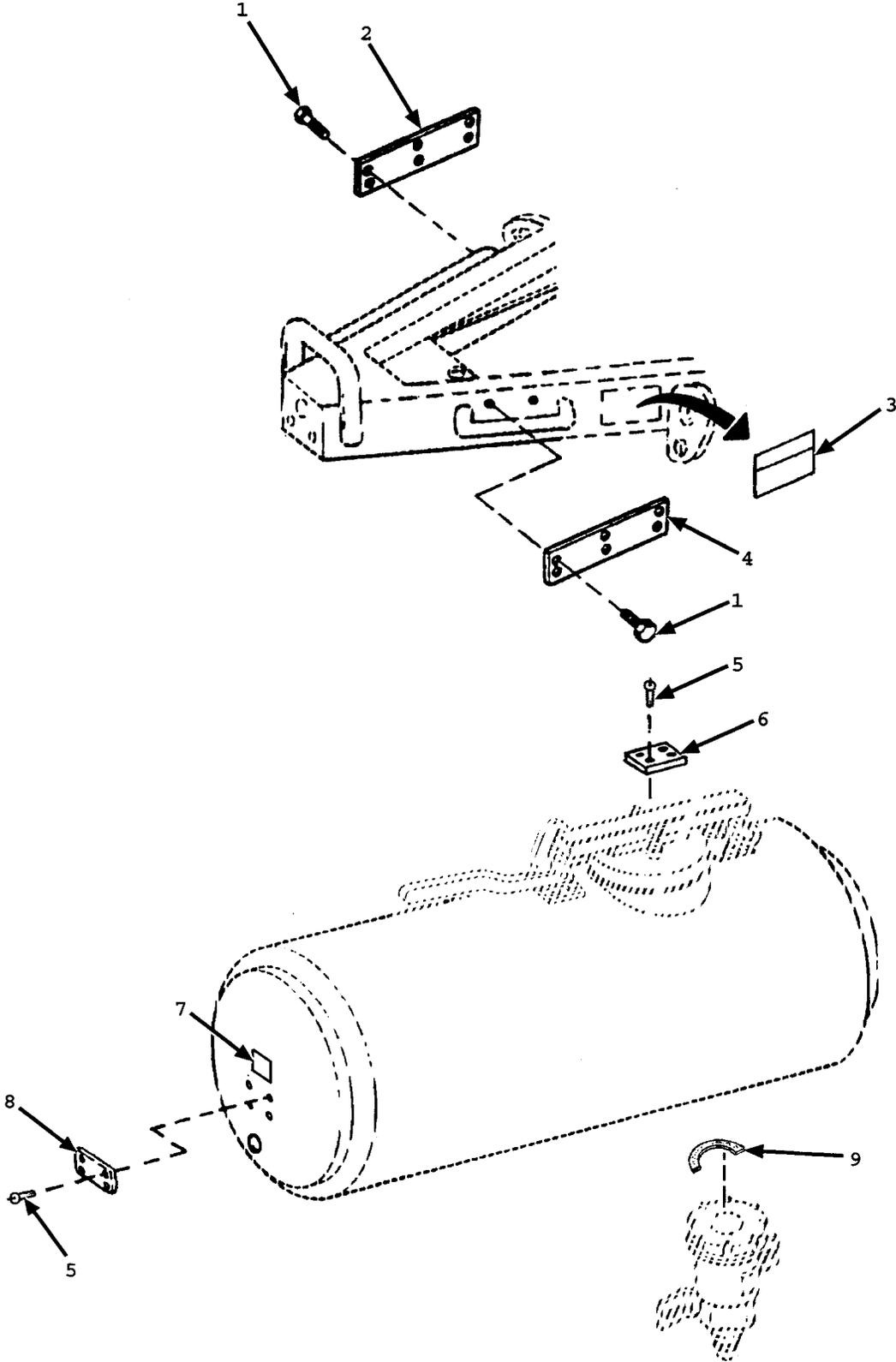


Figure 23. Data Plates

SECTION II

TM 9-2330-397-14&P

(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM	SMR			PART		
NO	CODE	NSN	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY
					GROUP 2210 DATA PLATES AND INSTRUCTION HOLDERS FIG.23 DATA PLATES	
1	PAOZZ	5305002535633	80205	MS21318-59	SCREW, DRIVE.....	12
2	PAOZZ	9905014381503	19207	12448018	PLATE, IDENTIFICATIO.....	1
3	PAOZZ	7690014461396	19207	12441062	LABEL WARNING, LANDING LEG.....	1
4	PAOZZ	9905014377264	19207	12448017	PLATE, IDENTIFICATIO.....	1
5	PAOZZ	5320001299706	81349	M24243/1-F402	RIVET, BLIND.....	8
6	PFOZZ	9905014353496	19207	12355946	PLATE, IDENTIFICATIO.....	1
7	PFOZZ	7690013626547	19207	12362734	PLATE, INSTRUCTION.....	1
8	PAOZZ	9905010977047	19207	10929816-1	PLATE, IDENTIFICATIO.....	1
9	PFOZZ		19207	12474727	DECAL SILICONE BRAKE FLUID.....	1

END OF FIGURE

1
2 thru 8

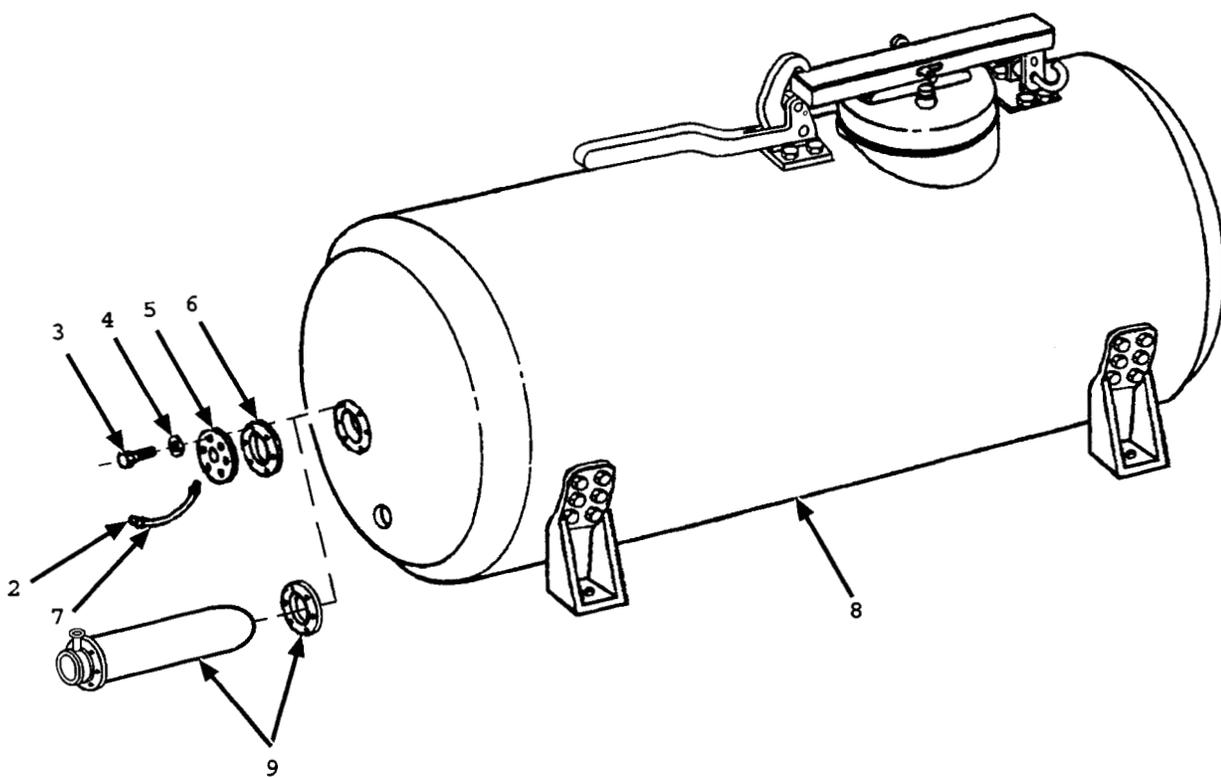


Figure 24. Winterization Kit

SECTION II

TM 9-2330-397-14&P

(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM	SMR			PART		
NO	CODE	NSN	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES(UOC)	QTY
					GROUP 33 SPECIAL PURPOSE KITS	
					GROUP 3303 WINTERIZATION KIT	
					FIG.24 WINTERIZATION KITS	
1	PAOFF	2540014406102	19207	57K1860	WINTERIZATION KIT,V.....	1
2	PAOZZ	4030007296054	96906	MS87006-63	.HOOK,CHAIN,S PART OF KIT P/N	1
					57K1860.....	
3	PAOZZ	5305005434372	80204	B1821BH038C075N	.SCREW,CAP,HEXAGON H 9/16 HEX, 3/4-	8
					16 UNC-2A, RH THD, 3/4 INCHES LONG	
					PART OF KIT P/N 57K1860.....	
4	PAOZZ	5310009032612	96906	MS9321-12	.WASHER,FLAT PART OF KIT P/N	8
					57K1860.....	
5	PAOZZ	5340014324851	19207	12440419	.COVER,ACCESS PART OF KIT P/N	1
					57K1860.....	
6	PAOZZ	5330014335806	19207	12440420-1	.GASKET PART OF KIT P/N 57K1860....	1
7	PAOZZ	4010011727685	19207	12270017-2	.WIRE ROPE ASSEMBLY PART OF KIT	1
					P/N 57K1860.....	
8	PAOFF	2510014375070	19207	12269886-1	.TANK UNIT,WATER DIS PART OF KIT	1
					P/N 57K1860.....	
9	PFOZZ	1660014676611	19207	11668949	HEAT EXCHANGER,FLUI.....	1

END OF FIGURE

SECTION II

TM 9-2330-397-14&P

(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM	SMR			PART		
NO	CODE	NSN	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY

GROUP 95 GENERAL USE STANDARDIZATION PARTS
GROUP 9501 HARDWARE SUPPLIES AND BULK MATERIAL
FIG.BULK-1

1	PAOZZ	5340011899985	96906	MS35822-16D	HINGE,BUTT.....	V
2	PAOZZ	4720010144915	81343	J844TYBSIZE 3/8 BLACK	HOSE, NONMETALLIC.....	V
3	PAOZZ	5975003458055	19207	10905840	STRAP, TIEDOWN, ELECT.....	V
4	PAOZZ	9505002934208	00624	900010-32C	WIRE, NONELECTRICAL.....	V

END OF FIGURE

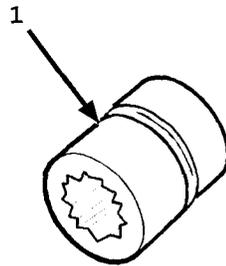


Figure 25. Special Tools

SECTION III

TM 9-2330-397-14&P

(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM	SMR			PART		
NO	CODE	NSN	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY

GROUP 26 TOOLS AND TEST EQUIPMENT
GROUP 2604 SPECIAL TOOLS
FIG. 25 SPECIAL TOOLS

1 PAOZZ 5120001997771 8Z799 H-1272

SOCKET, SOCKET WRENC.....

END OF FIGURE

SECTION IV

TM 9-2330-397-14&P

CROSS-REFERENCE INDEXES

NATIONAL STOCK NUMBER INDEX					
STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
5331-00-003-9157	12	6	5310-00-087-4652	9	1
5310-00-004-5034	18	4	5310-00-087-7493	20	13
5315-00-013-7228	13	27	5310-00-088-1251	2	6
2510-00-017-9588	17	1		9	5
4720-00-018-2296	11	1		15	5
6240-00-019-3093	1	3		16	14
2530-00-021-2366	11	9		22	5
2590-00-040-2075	15	8	5340-00-088-1254	2	3
5310-00-044-6284	14	3		6	10
6240-00-044-6914	1	4		9	7
4730-00-050-4203	17	5	5330-00-088-9167	21	4
4730-00-050-4208	13	20	3110-00-100-3541	13	22
5310-00-052-6454	17	7	5320-00-129-9706	23	5
5305-00-052-6921	22	2	3110-00-142-4355	13	25
5306-00-053-0512	17	15	4730-00-168-2074	21	17
3120-00-056-2173	17	3	4730-00-168-2075	21	10
2510-00-056-2174	17	14	5306-00-174-4246	16	28
2510-00-056-4799	17	4	5305-00-177-5651	4	2
5340-00-057-2891	2	21	6220-00-179-4324	1	8
5999-00-057-2929	2	19	5310-00-186-7411	14	12
4730-00-057-5555	11	15	4730-00-196-1505	11	10
5310-00-067-6356	4	7	4730-00-196-2017	21	16
5305-00-068-0501	16	25	5120-00-199-7771	25	1
5305-00-068-0502	9	8	9905-00-202-3639	22	1
5305-00-068-0508	4	12	9905-00-205-2795	22	3
5305-00-068-0509	16	22	5305-00-207-2297	20	9
5305-00-068-0510	6	18	5310-00-209-0965	10	2
	8	12	5310-00-220-6848	16	33
	9	16	4730-00-221-2136	12	8
	13	4	5310-00-225-6408	17	17
5305-00-068-0511	8	4		20	26
	9	14	5306-00-225-8499	6	7
4730-00-069-1187	11	8	5305-00-225-9093	16	23
5305-00-071-1786	14	14	5306-00-226-4825	6	13
5305-00-071-2055	14	15	5306-00-226-4826	16	11
5305-00-071-2066	16	26	5306-00-226-4827	8	15
5305-00-071-2074	13	11	5306-00-226-4833	6	2
5305-00-071-2237	14	21	5315-00-234-1664	14	4
5305-00-071-2506	22	4	5305-00-253-5633	23	1
5305-00-071-2507	15	2	5305-00-267-8953	14	26
5310-00-080-6004	6	16	5305-00-269-3238	17	9
	7	23	5310-00-270-8832	16	3
	8	3	5310-00-270-8834	16	4
	8	13	5365-00-275-4519	18	1
	13	5	5325-00-276-6098	2	7
5310-00-081-4219	6	12	5340-00-281-1446	11	21
	8	16	5325-00-290-3777	2	9
	16	9	9505-00-293-4208	BULK	4
4730-00-084-7436	21	3	4730-00-293-7108	11	5
5310-00-087-4652	6	4	5975-00-345-8055	11	22

TM 9-2330-397-14&P
CROSS-REFERENCE INDEXES

SECTION IV

NATIONAL STOCK NUMBER INDEX					
STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
5975-00-345-8055	BULK	3	5305-00-726-2572	19	1
5365-00-350-0155	19	3	5305-00-728-6281	17	6
5940-00-399-6676	2	11	4030-00-729-6054	24	2
5310-00-407-9566	6	9	5310-00-732-0560	14	10
	11	13		19	16
	14	9	5310-00-733-9465	18	3
	16	10	5310-00-741-1028	14	5
5342-00-408-9177	6	8	2940-00-741-1081	12	3
5340-00-421-7242	19	11	2530-00-741-5748	12	2
5310-00-424-1452	19	2	9905-00-752-4649	2	14
5310-00-424-1456	19	5		3	2
5310-00-427-0043	17	8	5310-00-761-6882	14	25
5340-00-427-0080	19	14	5310-00-763-8905	18	5
5305-00-432-4205	2	20		19	9
5331-00-462-0907	1	7	5310-00-763-8922	14	7
4730-00-463-1588	8	2	5310-00-768-0319	14	27
5310-00-483-8792	16	20	2510-00-769-7483	15	7
5342-00-537-2212	20	29	4720-00-774-4040	9	12
5305-00-543-4372	6	17	6150-00-777-3068	3	1
	8	9	5305-00-782-9489	6	3
	24	3	2530-00-797-9295	12	1
5310-00-543-4385	9	11	5306-00-797-9296	11	17
5310-00-550-1130	21	7	5340-00-809-1500	11	23
2640-00-555-2829	13	32	5310-00-809-3078	2	2
5935-00-572-9180	2	17	5310-00-809-4058	21	9
5330-00-575-9791	20	30	5310-00-809-4061	17	11
4730-00-580-8457	12	7	5310-00-809-5998	13	10
5310-00-582-5965	14	24	5310-00-809-8533	4	3
5310-00-584-5272	14	11		13	2
	16	27	5310-00-809-8541	13	26
	19	15	5310-00-823-8803	13	13
5310-00-584-7888	14	6		16	29
5310-00-595-7237	17	10	5935-00-833-8561	2	13
5340-00-611-7883	2	8	5970-00-833-8562	2	12
5365-00-624-0255	19	4	5310-00-833-8567	2	18
5310-00-637-9541	1	9	5310-00-835-2037	9	10
	6	19		19	8
5310-00-655-9370	14	13	9905-00-841-4445	2	15
5340-00-656-3638	17	12	5315-00-842-3044	14	30
5310-00-660-3381	16	18	4820-00-849-1220	11	16
5310-00-679-3606	12	4	5305-00-855-0956	1	12
5315-00-682-1777	16	34	4820-00-856-1722	20	18
2530-00-693-0736	16	5	5310-00-880-7744	6	11
5360-00-699-8489	16	32	5310-00-880-7745	10	1
5360-00-706-9054	12	5	5310-00-880-7746	11	14
5305-00-719-5235	14	16	5310-00-880-8189	14	8
5305-00-719-5239	19	12	2510-00-886-8061	18	2
5305-00-724-7223	13	18	5310-00-891-3404	13	16
5340-00-725-5280	6	15	5310-00-891-3405	8	6
5305-00-726-2558	20	33	9905-00-893-3570	3	3
5305-00-726-2572	17	16			

SECTION IV

 TM 9-2330-397-14&P
 CROSS-REFERENCE INDEXES

STOCK NUMBER	NATIONAL STOCK NUMBER INDEX				FIG.	ITEM
	FIG.	ITEM	STOCK NUMBER	FIG.		
5310-00-903-2612	24	4	3040-01-149-5061	13	29	
5310-00-903-5966	21	8	2540-01-168-9876	15	1	
5315-00-904-1643	20	10	4010-01-172-7685	24	7	
4730-00-909-8627	21	11	2590-01-178-7374	2	10	
5305-00-914-6131	20	23	5315-01-186-0829	16	16	
5310-00-933-8121	20	8	5340-01-189-9985	BULK	1	
5340-00-936-5284	6	1	4730-01-190-1028	20	20	
5306-00-937-1312	21	14	5340-01-209-0475	16	17	
5305-00-938-1539	13	3	3040-01-209-0497	16	24	
5315-00-957-0765	14	31	5340-01-209-0500	16	21	
5310-00-982-6808	16	31	5340-01-209-0503	16	19	
5310-00-982-6810	16	2	2590-01-210-8843	16	30	
5310-00-984-3806	6	5	2530-01-215-3389	16	15	
	6	14	2530-01-220-7021	9	2	
5310-00-984-3807	20	12	5340-01-222-5247	16	13	
5340-00-989-1771	8	14	3040-01-245-2522	17	13	
5305-00-990-8416	13	12	3040-01-254-5369	20	16	
2540-00-999-5584	14	2	2590-01-254-6554	16	1	
5340-01-008-6088	15	6	5310-01-274-3255	4	11	
5310-01-012-2634	13	28	5305-01-277-0456	13	8	
4720-01-014-4915	BULK	2	6220-01-284-2709	1	6	
5310-01-032-2319	4	9	6220-01-297-3217	1	5	
4730-01-036-7498	21	2	5330-01-317-9640	20	4	
2530-01-042-0683	11	12	5340-01-343-1795	20	22	
5306-01-043-5702	11	11	2540-01-355-3195	15	1	
4730-01-043-5999	9	13	5315-01-359-1451	20	17	
5340-01-048-2239	2	5	7690-01-362-6547	23	7	
4730-01-066-9484	11	18	5310-01-372-9444	20	27	
5360-01-078-5574	20	14	4730-01-377-3452	8	10	
4730-01-079-8821	11	3	4820-01-384-7555	21	13	
5330-01-084-5991	20	21	5330-01-398-1419	4	6	
4730-01-086-1620	20	24	5305-01-407-9006	7	24	
8115-01-086-1666	15	4	6220-01-417-3311	1	11	
	15	4	4730-01-420-3846	8	17	
2530-01-087-1003	19	6	5305-01-432-1119	13	17	
5306-01-088-1962	20	15	5340-01-432-4851	24	5	
2510-01-091-5167	20	1	5340-01-432-5616	8	20	
2510-01-092-9228	20	19	5310-01-432-6741	20	32	
2530-01-093-8270	19	10	5365-01-432-8664	20	31	
2530-01-093-8271	19	13	5306-01-432-9779	13	23	
3120-01-093-8325	17	2	5340-01-432-9808	14	23	
2510-01-095-2422	20	2	4510-01-433-0396	21	1	
9905-01-097-7047	23	8	6220-01-433-0485	1	1	
4010-01-112-8082	14	29	4730-01-433-2618	21	6	
5310-01-130-1226	20	28	4730-01-433-2623	21	15	
4730-01-134-6995	21	5	2530-01-433-3012	6	6	
5305-01-137-3938	2	1	5330-01-433-5806	24	6	
	9	9	4710-01-433-7186	8	19	
	11	19	4710-01-433-8268	8	1	
5305-01-140-9118	1	10	4710-01-433-8270	8	5	

CROSS-REFERENCE INDEXES

STOCK NUMBER	NATIONAL STOCK NUMBER INDEX		FIG.	ITEM
	FIG.	ITEM		
4710-01-433-8271	8	8		
4710-01-433-8273	8	18		
2610-01-434-3363	13	30		
4730-01-434-5154	9	4		
4730-01-434-5156	11	4		
2540-01-435-0325	14	22		
2530-01-435-1913	13	31		
9905-01-435-3496	23	6		
2530-01-435-4923	10	3		
4720-01-435-6253	8	7		
4720-01-436-0768	8	11		
2510-01-437-5070	24	8		
9905-01-437-7264	23	4		
9905-01-438-1502	11	2		
9905-01-438-1503	23	2		
4030-01-438-1803	14	32		
5340-01-438-2335	16	6		
5315-01-439-7765	16	7		
4730-01-440-5261	16	12		
2540-01-440-6102	24	1		
5340-01-440-6666	4	10		
5340-01-440-6676	13	15		
5340-01-440-8093	4	8		
4720-01-440-9299	21	12		
3040-01-440-9824	4	1		
9905-01-441-1063	11	20		
5310-01-441-1666	13	33		
2530-01-441-2767	5	2		
2510-01-441-2787	14	20		
2510-01-441-2859	5	1		
2510-01-444-6654	5	1		
7690-01-446-1396	23	3		
2530-01-447-9804	10	5		
2530-01-447-9821	10	4		
2540-01-448-0698	13	6		
5330-01-448-3346	13	21		
5330-01-448-3347	13	7		
2590-01-449-2456	14	18		
2510-01-449-2462	14	20		
2590-01-449-2464	13	9		
4710-01-449-2468	9	6		
5365-01-449-3695	4	5		
5340-01-449-3771	4	4		
5340-01-449-3777	13	1		
5365-01-449-8442	13	19		
4010-01-458-3852	14	1		
2530-01-461-2899	7	20		
2530-01-461-2900	7	20		
1660-01-467-6611	24	9		

SECTION IV

TM 9-2330-397-14&P
CROSS-REFERENCE INDEXES

CAGEC	PART NUMBER	PART NUMBER INDEX		FIG.	ITEM
			STOCK NUMBER		
43334	A143241		3110-00-142-4355	13	25
23705	A298749		2530-00-797-9295	12	1
58536	A52463-2-10		6240-00-044-6914	1	4
96906	A52464-3		2540-00-999-5584	14	2
96787	A6324		6240-00-019-3093	1	3
01212	BT25580		3110-00-100-3541	13	22
80204	B1821BH025C044N		5305-00-071-2507	15	2
80204	B1821BH025C050N		5305-00-071-2506	22	4
80204	B1821BH025C075N		5305-00-068-0508	4	12
80204	B1821BH025C125N		5305-00-068-0509	16	22
80204	B1821BH025F063N		5305-00-267-8953	14	26
80204	B1821BH031C075N		5306-00-226-4825	6	13
80204	B1821BH031C088N		5306-00-226-4826	16	11
80204	B1821BH031C100N		5306-00-226-4827	8	15
80204	B1821BH031C200N		5306-00-226-4833	6	2
80204	B1821BH038C075N		5305-00-543-4372	6	17
				8	9
				24	3
80204	B1821BH038C088N		5305-01-140-9118	1	10
80204	B1821BH038C100N		5305-00-068-0510	6	18
				8	12
				9	16
				13	4
80204	B1821BH038C112N		5305-01-407-9006	7	24
80204	B1821BH038C125N		5305-00-068-0511	8	4
				9	14
80204	B1821BH038C200N		5305-00-782-9489	6	3
80204	B1821BH038F125N		5305-00-269-3238	17	9
80204	B1821BH044C100N		5305-00-071-1786	14	14
80204	B1821BH044C150N		5305-00-071-2055	14	15
80204	B1821BH050C100N		5305-00-071-2066	16	26
80204	B1821BH050C275N		5305-00-071-2074	13	11
80204	B1821BH050F175N		5305-00-719-5235	14	16
80204	B1821BH063C225N		5305-00-724-7223	13	18
80204	B1821BH063F600N		5305-00-726-2572	17	16
				19	1
80204	B1821BH075C088N		5305-01-277-0456	13	8
80204	B1821BH075C200N		5305-00-938-1539	13	3
19207	CPR102321-1		4730-01-079-8821	11	3
01276	FF9311-36		4730-00-909-8627	21	11
8Z799	H-1272		5120-00-199-7771	25	1
81343	J844TYBSIZE 3/8 BLACK		4720-01-014-4915	BULK	2
96906	MS14308-7		4730-01-433-2623	21	15
96906	MS14309-24		4730-01-134-6995	21	5
96906	MS14309-30		4730-01-433-2618	21	6
96906	MS15001-1		4730-00-050-4203	17	5
96906	MS15003-1		4730-00-050-4208	13	20
96906	MS171656		5315-01-186-0829	16	16
96906	MS171658		5315-00-682-1777	16	34
96906	MS17829-4C		5310-00-483-8792	16	20

TM 9-2330-397-14&P
CROSS-REFERENCE INDEXES

SECTION IV

CAGEC	PART NUMBER	PART NUMBER INDEX		FIG.	ITEM
			STOCK NUMBER		
96906	MS18153-63		5305-00-914-6131	20	23
96906	MS20392-5C47		5315-00-957-0765	14	31
96906	MS20392-7C75		5315-00-904-1643	20	10
96906	MS21044-N12		5310-00-982-6810	16	2
96906	MS21044-N9		5310-00-982-6808	16	31
96906	MS21083-N5		5310-00-660-3381	16	18
80205	MS21318-59		5305-00-253-5633	23	1
96906	MS21333-104		5340-00-088-1254	2	3
				6	10
				9	7
96906	MS21333-107		5340-00-809-1500	11	23
96906	MS21333-123		5340-00-989-1771	8	14
96906	MS21333-125		5340-00-725-5280	6	15
96906	MS21333-4		5340-00-057-2891	2	21
96906	MS24585C507		5360-01-078-5574	20	14
96906	MS24629-47		5305-00-855-0956	1	12
80205	MS24629-57		5305-00-052-6921	22	2
96906	MS24665-283		5315-00-842-3044	14	30
96906	MS24665-285		5315-01-359-1451	20	17
96906	MS24665-423		5315-00-013-7228	13	27
96906	MS24665-495		5315-00-234-1664	14	4
96906	MS27026-6		4730-00-084-7436	21	3
96906	MS27029-6		4730-01-036-7498	21	2
96906	MS27030-3		5330-00-088-9167	21	4
96906	MS27183-10		5310-00-809-4058	21	9
96906	MS27183-11		5310-00-809-3078	2	2
96906	MS27183-12		5310-00-081-4219	6	12
				8	16
				16	9
96906	MS27183-13		5310-00-087-7493	20	13
96906	MS27183-14		5310-00-080-6004	6	16
				7	23
				8	3
				8	13
				13	5
96906	MS27183-15		5310-00-809-4061	17	11
96906	MS27183-18		5310-00-809-5998	13	10
96906	MS27183-21		5310-00-823-8803	13	13
				16	29
96906	MS27183-23		5310-00-809-8533	4	3
				13	2
96906	MS27183-27		5310-00-809-8541	13	26
96906	MS27183-52		5310-01-274-3255	4	11
96906	MS27183-60		5310-00-186-7411	14	12
96906	MS27183-63		5310-01-372-9444	20	27
96906	MS35307-312		5305-00-207-2297	20	9
96906	MS35333-40		5310-00-550-1130	21	7
96906	MS35333-42		5310-00-595-7237	17	10
96906	MS35333-46		5310-00-543-4385	9	11
96906	MS35338-139		5310-00-933-8121	20	8
96906	MS35338-44		5310-00-582-5965	14	24

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CAGEC	PART NUMBER	PART NUMBER INDEX		FIG.	ITEM
			STOCK NUMBER		
96906	MS35338-45		5310-00-407-9566	6	9
				14	9
				16	10
96906	MS35338-46		5310-00-637-9541	1	9
				6	19
96906	MS35338-47		5310-00-209-0965	10	2
96906	MS35338-48		5310-00-584-5272	14	11
				16	27
				19	15
96906	MS35338-51		5310-00-584-7888	14	6
96906	MS35340-47		5310-00-655-9370	14	13
96906	MS35340-51		5310-00-052-6454	17	7
96906	MS35387-1		9905-00-205-2795	22	3
96906	MS35387-2		9905-00-202-3639	22	1
96906	MS35489-77		5325-00-290-3777	2	9
96906	MS35489-78		5325-00-276-6098	2	7
96906	MS35691-50		5310-00-891-3404	13	16
96906	MS35691-53		5310-00-835-2037	9	10
				19	8
96906	MS35691-54		5310-00-891-3405	8	6
96906	MS35782-5		4820-00-849-1220	11	16
96906	MS35822-16D		5340-01-189-9985	BULK	1
96906	MS51054-94		5305-01-432-1119	13	17
96906	MS51846-122		4730-00-196-2017	21	16
96906	MS51861-49		5305-00-432-4205	2	20
96906	MS51871-3		5305-01-137-3938	2	1
				9	9
				11	19
96906	MS51922-17		5310-00-087-4652	6	4
				9	1
96906	MS51943-57		5310-01-032-2319	4	9
96906	MS51953-101		4730-00-196-1505	11	10
96906	MS51967-11		5310-00-880-8189	14	8
96906	MS51967-2		5310-00-761-6882	14	25
96906	MS51967-24		5310-00-763-8922	14	7
96906	MS51967-5		5310-00-880-7744	6	11
96906	MS51968-11		5310-00-880-7745	10	1
96906	MS51968-14		5310-00-732-0560	14	10
				19	16
96906	MS51968-2		5310-00-768-0319	14	27
96906	MS51968-20		5310-00-763-8905	18	5
				19	9
96906	MS51968-5		5310-00-880-7746	11	14
96906	MS51971-1		5310-00-903-5966	21	8
96906	MS51973-54		5305-00-728-6281	17	6
96906	MS53004-2		2530-00-021-2366	11	9
96906	MS87006-63		4030-00-729-6054	24	2
96906	MS87008-3		4010-01-112-8082	14	29
96906	MS90725-14		5305-00-071-2237	14	21
96906	MS90725-34		5306-00-225-8499	6	7
96906	MS90725-5		5305-00-068-0501	16	25

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CAGEC	PART NUMBER	PART NUMBER INDEX		FIG.	ITEM
			STOCK NUMBER		
96906	MS90725-6		5305-00-068-0502	9	8
96906	MS90726-38		5305-00-225-9093	16	23
96906	MS90727-116		5305-00-719-5239	19	12
96906	MS90727-171		5305-00-726-2558	20	33
96906	MS9321-12		5310-00-903-2612	24	4
16236	M10514		4730-00-221-2136	12	8
81349	M24243/1-F402		5320-00-129-9706	23	5
96906	M3976/1-2-R-28		6220-01-417-3311	1	11
81349	M43436/1-1		9905-00-752-4649	2	14
				3	2
81349	M43436/1-2		9905-00-841-4445	2	15
81349	M43436/1-3		9905-00-893-3570	3	3
81349	M45913/1-10FG5C		5310-00-225-6408	17	17
				20	26
81349	M45913/1-4CG5C		5310-00-088-1251	2	6
				9	5
				15	5
				16	14
				22	5
81349	M45913/1-5CG5C		5310-00-984-3806	6	5
				6	14
81349	M45913/1-5FG5C		5310-00-984-3807	20	12
81349	M45913/2-12CG5C		5310-00-067-6356	4	7
06721	N-12970-A		2530-00-741-5748	12	2
06721	N-12971-B		2940-00-741-1081	12	3
06721	N12972		5310-00-679-3606	12	4
1GD20	ST-504		5306-01-432-9779	13	23
30076-75828	X39-78-249259		5310-01-012-2634	13	28
26916	004-003005-059		5310-00-004-5034	18	4
92865	02-460-061		2530-01-447-9821	10	4
20076	0977600			7	7
20076	0977700			7	7
20076	0978400			7	14
20076	0978600			7	9
20076	0978900			7	10
20076	0979100			7	11
20076	0979400			7	18
20076	0979500			7	17
30780	1HP-SS		4730-01-190-1028	20	20
19207	10905840		5975-00-345-8055	11	22
				BULK	3
19207	10905840-8			2	4
19207	10926073		5340-00-936-5284	6	1
19207	10929816-1		9905-01-097-7047	23	8
19207	10929946		2510-00-017-9588	17	1
19207	10935126		5340-01-048-2239	2	5
06625	112-08047		4730-01-420-3846	8	17
0GW75	112-10915		4730-01-377-3452	8	10
19207	11597666-2		2540-01-435-0325	14	22
19207	11597745-1		5340-01-432-9808	14	23
19207	11597762		2590-01-178-7374	2	10

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CAGEC	PART NUMBER	PART NUMBER INDEX		FIG.	ITEM
			STOCK NUMBER		
19207	11597762-96			2	16
19207	11597768		5310-01-130-1226	20	28
19207	11614157-2		6220-01-433-0485	1	1
19207	11625104		2530-01-042-0683	11	12
19207	11625105		5306-01-043-5702	11	11
19207	11625147		2530-01-087-1003	19	6
19207	11639519-2		5331-00-462-0907	1	7
19207	11639535		6220-00-179-4324	1	8
19207	11668949		1660-01-467-6611	24	9
19207	11686101-2		2530-01-433-3012	6	6
19207	12259830-1		2590-01-254-6554	16	1
19207	12259831		3040-01-209-0497	16	24
19207	12259835		5340-01-209-0475	16	17
19207	12259837		5340-01-209-0500	16	21
19207	12259839		2590-01-210-8843	16	30
19207	12259840		5340-01-209-0503	16	19
19207	12259845		2530-01-215-3389	16	15
19207	12269860		2510-01-092-9228	20	19
19207	12269886		2510-01-091-5167	20	1
19207	12269886-1		2510-01-437-5070	24	8
00624	12269886-20			20	25
19207	12269895		5330-01-084-5991	20	21
19207	12269951		2510-01-095-2422	20	2
19207	12269958			20	3
19207	12269960-1			20	11
19207	12269970		5306-01-088-1962	20	15
19207	12270017-2		4010-01-172-7685	24	7
19207	12296219		3040-01-254-5369	20	16
19207	12296261			20	5
19207	12312996		5340-01-222-5247	16	13
19207	12331710		5340-01-343-1795	20	22
19207	12354242		5330-01-317-9640	20	4
19207	12355810		5365-01-432-8664	20	31
19207	12355811		5310-01-432-6741	20	32
19207	12355943-1		9905-01-438-1502	11	2
19207	12355943-2		9905-01-441-1063	11	20
19207	12355946		9905-01-435-3496	23	6
19207	12360850-1		6220-01-284-2709	1	6
19207	12360870-2		6220-01-297-3217	1	5
19207	12362734		7690-01-362-6547	23	7
19207	12375838			1	2
19207	12406415		4510-01-433-0396	21	1
19207	12440419		5340-01-432-4851	24	5
19207	12440420-1		5330-01-433-5806	24	6
19207	12441062		7690-01-446-1396	23	3
19207	12447268			14	28
19207	12448013		2510-01-441-2787	14	20
19207	12448017		9905-01-437-7264	23	4
19207	12448018		9905-01-438-1503	23	2
19207	12448072		5310-01-441-1666	13	33
19207	12448074		5330-01-448-3346	13	21

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CAGEC	PART NUMBER INDEX		FIG.	ITEM
	PART NUMBER	STOCK NUMBER		
19207	12448075		13	24
19207	12448079-1	5305-00-990-8416	13	12
19207	12448079-2	5305-00-177-5651	4	2
19207	12448080		13	14
19207	12448082	3040-01-440-9824	4	1
19207	12448083	4710-01-433-8268	8	1
19207	12448084	4710-01-433-8270	8	5
19207	12448085	4710-01-433-7186	8	19
19207	12448086	4710-01-433-8273	8	18
19207	12448087	4710-01-433-8271	8	8
19207	12448089	2510-01-444-6654	5	1
19207	12448090	2530-01-435-1913	13	31
19207	12448092	5340-01-440-8093	4	8
19207	12448095	2510-01-441-2859	5	1
19207	12448099	5340-01-449-3771	4	4
19207	12448101	5340-01-440-6676	13	15
19207	12448102	5330-01-448-3347	13	7
19207	12448104	5340-01-440-6666	4	10
19207	12448105	5340-01-449-3777	13	1
19207	12448107	2540-01-448-0698	13	6
19207	12448108	4720-01-435-6253	8	7
19207	12448109	4720-01-436-0768	8	11
19207	12461811	4710-01-449-2468	9	6
19207	12461813	2610-01-434-3363	13	30
19207	12461816	2530-01-441-2767	5	2
19207	12461847	5340-01-432-5616	8	20
19207	12461848	2590-01-449-2464	13	9
19207	12461851-3	4010-01-458-3852	14	1
19207	12461854	4030-01-438-1803	14	32
19207	12461859	4730-01-440-5261	16	12
19207	12461860		16	8
19207	12461861	5315-01-439-7765	16	7
19207	12461862	5340-01-438-2335	16	6
19207	12461887	2510-01-449-2462	14	20
19207	12461888	2590-01-449-2456	14	18
19207	12469550	5365-01-449-3695	4	5
19207	12469551	5365-01-449-8442	13	19
19207	12472170		9	3
19207	12472172		9	15
19207	12474720		6	20
19207	12474722		2	23
19207	12474727		23	9
19207	12474732		20	7
19207	12474733		20	6
19207	12474734		2	22
73734	1372	5310-00-407-9566	11	13
19207	139855		19	7
30076	155256 P/N 13370 52	5330-01-398-1419	4	6
99003	1605	3040-01-149-5061	13	29
20076	1850300		7	22

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CAGEC	PART NUMBER	PART NUMBER INDEX		FIG.	ITEM
			STOCK NUMBER		
20076	1850800			7	2
20076	1883600			7	16
02697	2-026N602-70		5331-00-003-9157	12	6
92865	20-920-509		2530-01-220-7021	9	2
20076	2332300			7	15
20076	2345700			7	5
20076	2349200			7	21
06853	235091		4730-00-580-8457	12	7
06853	235093		5360-00-706-9054	12	5
20076	23512			7	1
20076	23513			7	1
06853	246115-18			11	7
06853	246115-32			11	6
20076	2475700			7	3
D8435	26-9001-25-00-05			30	19
0AHP5	27D252		5310-00-220-6848	16	33
92865	32-260-011		2530-01-435-4923	10	3
23705	324420		2530-00-693-0736	16	5
81343	4-2 040202BA		4730-01-043-5999	9	13
81343	4-4 040101B		4730-01-434-5154	9	4
92865	40-530-010		2530-01-447-9804	10	5
23834	4440		4720-00-774-4040	9	12
20076	4446000			7	8
24617	446284		5310-00-044-6284	14	3
20076	4485901042			7	6
20076	4486500		2530-01-461-2900	7	20
20076	4486600		2530-01-461-2899	7	20
20076	4486900			7	19
20076	4499100			7	12
20076	4499200			7	13
20076	4744600			7	4
27783	501		2640-00-555-2829	13	32
19207	5167679		4730-00-463-1588	8	2
19207	5303461		5342-00-408-9177	6	8
23705	563823		5310-00-424-1452	19	2
19207	57K1860		2540-01-440-6102	24	1
19204	572929		5999-00-057-2929	2	19
81343	6 120115B		4730-00-293-7108	11	5
81343	6 130109NC		4730-00-057-5555	11	15
81343	6-120111BA		4730-01-434-5156	11	4
81343	6-4 100202BA		4730-00-069-1187	11	8
81343	6-4 120302BA		4730-01-066-9484	11	18
3W359	70-2351		4820-01-384-7555	21	13
19207	7034748		5340-01-008-6088	15	6
19207	7034882		4820-00-856-1722	20	18
19207	7035450		4730-00-168-2074	21	17
19207	7035452		8115-01-086-1666	15	4
				15	4
19207	7035486		2540-01-168-9876	15	1
19207	7035487		2540-01-355-3195	15	1
19207	7037002-17			15	3

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CAGEC	PART NUMBER	PART NUMBER INDEX		FIG.	ITEM
			STOCK NUMBER		
19207	7055100		6150-00-777-3068	3	1
19207	7059533			14	19
19207	7059565			14	17
19207	7065947		4730-00-168-2075	21	10
19207	7339465		5310-00-733-9465	18	3
19207	7339466		5365-00-275-4519	18	1
19207	7349016		5340-00-427-0080	19	14
19207	7349017		5340-00-421-7242	19	11
19207	7349029		5310-00-424-1456	19	5
19207	7350779		3040-01-245-2522	17	13
19207	7366478-1		2530-01-093-8270	19	10
19207	7366480-1		2530-01-093-8271	19	13
19207	7411028		5310-00-741-1028	14	5
19207	7411041		5310-00-427-0043	17	8
27182	750105-CG		2590-00-040-2075	15	8
19207	7522436		5340-00-656-3638	17	12
19207	7697483		2510-00-769-7483	15	7
27387	777		5365-00-350-0155	19	3
19207	7974917		5365-00-624-0255	19	4
19207	7979296		5306-00-797-9296	11	17
19207	7979972		5306-00-174-4246	16	28
19207	8330813		5310-00-270-8834	16	4
19207	8330821		5310-00-270-8832	16	3
19207	8331536		5340-00-281-1446	11	21
19207	8331541		5360-00-699-8489	16	32
19207	8331543		5342-00-537-2212	20	29
19207	8331544		5330-00-575-9791	20	30
19207	8338561		5935-00-833-8561	2	13
19207	8338562		5970-00-833-8562	2	12
19207	8338564		5940-00-399-6676	2	11
19207	8338566		5935-00-572-9180	2	17
19207	8338567		5310-00-833-8567	2	18
19207	8389626		2510-00-056-2174	17	14
19207	8389628		5306-00-053-0512	17	15
19207	8389733		3120-01-093-8325	17	2
19207	8389734		3120-00-056-2173	17	3
19207	8389735		2510-00-056-4799	17	4
19207	8716992		2510-00-886-8061	18	2
19207	8724753-1		4720-01-440-9299	21	12
19207	8724754		5306-00-937-1312	21	14
19207	8741770		4720-00-018-2296	11	1
19207	8741782-1		4730-01-086-1620	20	24
19207	8747908		5340-00-611-7883	2	8
00624	900010-32C		9505-00-293-4208	BULK	4

APPENDIX F EXPENDABLE AND/DURABLE ITEMS LIST

Section I. INTRODUCTION

Paragraph Number	Paragraph Title	Page Number
F-1	Scope	F-1
F-2	Explanation of Columns	F-1

F-1. SCOPE.

This appendix lists expendable/durable supplies and materials you will need to operate and maintain the water tank trailer. This listing is for informational purposes only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, Expendable/Durable Items (Except Medical, Class V, Repair Parts and Heraldic Items), or CTA 8-100, Army Medical Department Expendable/Durable Items.

F-2. EXPLANATION OF COLUMNS.

- a. **Column (1) - Item Number.** This number is assigned to the entry in the listing and is referenced in the "Initial Setup" of maintenance paragraphs or narrative instructions to identify the material needed (e.g., Drycleaning solvent, Item 12, Appendix F).

- b. **Column (2) - Level.** This column identifies the lowest level of maintenance that requires the listed item.
 - C - Operator/Crew
 - O - Unit
 - F - Direct Support
 - H - General Support

- 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 (CAGEC).** Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the commercial and government entity Code (CAGEC) in parentheses followed by the part number, if applicable.

- e. **Column (5) - (U/M) Unit of Measure.** Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation: BT (bottle), EA (each), FT (foot), GL (gallon), IN. (inch), LB (pound), OZ (ounce), QT (quart), and SH (sheet): If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

Section II. EXPENDABLE AND DURABLE ITEMS LIST

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description (CAGEC)	(5) U/M
1	O	8040-00-157-8677	Adhesive (81348) MMM-A-134	EA
2	O	8040-00-118-2695	Adhesive, 3-Ounce Tube (72799) RTV162WHITE	OZ
3	O	8040-00-938-1535	Adhesive, 12-Ounce Tube (71984) 736 RTV WHT 12OZ	OZ
4	O	9150-01-102-9455	Brake Fluid, Automotive, 1-Gallon Can (81349) MIL-B-46176	GL
5	O	9150-01-123-3152	Brake Fluid, Automotive, 5-Gallon Can (81349) MIL-B-46176	GL
6	O	9150-01-072-8379	Brake Fluid, Automotive, 55-Gallon Drum (81349) MIL-B-46176	GL
7	O	7920-00-061-0038	Brush, Scrub (81348) H-B-1490	EA
8	O	6850-00-597-9765	Cleaning Compound, Solvent, 1 Gallon Can (81349) MIL-C-18718	GL
9	O	5350-00-221-0872	Cloth, Abrasive, 50-Sheets (58536) A-A-1206	EA
10	F	8135-00-309-1574	Cushioning Material (81349) MIL-P-26514	SH
11	O	7930-00-899-9534	Dishwashing Compound, Hand, 5-Gallon Can (81348) P-D-410	GL
12	O	7930-01-330-0187	Drycleaning Solvent, 1-Quart Can (81348) PF05	QT
13	O	7930-01-328-5960	Drycleaning Solvent, 1-Gallon Can (81348) PF05	GL
14	O	7930-01-328-2030	Drycleaning Solvent, 5-Gallon Can (81348) PF05	GL
15	F	3439-00-245-6630	Electrode Welding: 308 Stainless Steel Welding Rod (81348) MIL-E-22200/2	LB

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (continued)

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description (CAGEC)	(5) U/M
16	F	8010-00-118-2456	Epoxy Coating Kit: White, 2-Gallon Kit Epoxy Enamel (13178) R100G	GL
17	F	8010-00-118-2455	Epoxy Thinner, 1-Gallon Can (13178) AT333	GL
18	O	9150-00-935-1017	Grease, Automotive and Artillery, 14-Ounce Can (81349) MIL-G-10924	OZ
19	O	9150-00-190-0904	Grease, Automotive and Artillery, 1.75-Pound Can (81349) MIL-G-10924	LB
20	O	9150-00-190-0905	Grease, Automotive and Artillery, 6.50 Pound Can (81349) MIL-G-10924	LB
21	O	9150-00-189-6727	Lubricating Oil, 1-Quart Can Engine, OE/HDO-10 (81349) MIL-L-2104	QT
22	O	9150-00-186-6668	Lubricating Oil, 5-Gallon Can Engine, OE/HDO-10 (81349) MIL-L-2104	GL
23	O	9150-00-191-2772	Lubricating Oil, 55-Gallon Drum Engine, OE/HDO-10 (81349) MIL-L-2104	GL
24	O	9150-00-186-6681	Lubricating Oil, Engine, 1-Quart Can OE/HDO-30 (81349) MIL-L-2104	QT
25	O	9150-00-188-9858	Lubricating Oil, Engine, 5-Gallon Can OE/HDO-30 (81349) MIL-L-2104	GL
26	O	9150-00-189-6729	Lubricating Oil, Engine, 55-Gallon Drum OE/HDO-30 (81349) MIL-L-2104	GL
27	O	9150-00-402-4478	Lubricating Oil, 1-Quart Can Engine, OEA (19349) MIL-L-46167	GL

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (continued)

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description (CAGEC)	(5) U/M
28	O	9150-00-402-2372	Lubricating Oil, 5-Gallon Can Engine, OEA (19349) MIL-L-461675	GL
29	O	9150-00-491-7197	Lubricating Oil, 55-Gallon Drum Engine, OEA (19349) MIL-L-461675	GL
30	C	9150-00-231-6689	Lubricating Oil, 1-Quart Can General Purpose, PL-S (81348) W-L-800	QT
31	C	9150-00-231-9062	Lubricating Oil, 5-Gallon Can General Purpose, PL-S (81348) W-L-800	GL
32	O	7920-00-205-1711	Rag, Wiping, 50-Pound Bale (58536) A-A-531	LB
33	F	8010-01-060-7176	Repair Kit, Epoxy (19207) 12259529	EA
34	O	8030-00-081-2329	Sealing Compound, 10-Cubic Cm Bottle (81349) MIL-S-22473	BL
35	C	8520-00-228-0598	Soap, Toilet, 6-Gallon Can (81348) P-S-624	GL
36	C	6810-00-900-6276	Sodium Hypochlorite., 5-Gallon Can Liquid Laundry Bleach (81348) O-S-602	GL
37	O	3439-00-824-9856	Solder, Lead, 1-Pound Bar (09185) 44RE	LB
38	O	9905-00-537-8954	Tag, Marker, 50-Each (81349) MIL-T-12755	EA
39	O	8030-00-067-7368	Tape, Antiseize, 1/4 Inch Wide, 54-Foot Long (71643) TEMPRTH	FT
40	O	8030-00-889-3535	Tape, Antiseize, 1/2-Inch Wide, 260 Inchs Long (81349) MIL-T-27330A	IN

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description (CAGEC)	(5) U/M
41	O	8030-00-889-3535	Tape, Antiseize, 260 Inches Long	IN
42	F	8010-00-558-7026	Thinner, Paint, Mineral Spirits, 5-Gallon Can (81348) TT-T-291	GL
43	O	4720-01-014-4915	Tubing, Plastic, A844 Type B3, 8-Inch Black	FT
44	F	9505-00-555-8648	Wire, Nonelectrical (96906) MS20995C47-14	LB
45	O	9505-00-248-9850	Wire, Steel, Carbon (96906) MS20995F47-12	LB
46	O	6810-00-900-6276	Bleach, Sodium Hypochlorite, 5-Gallon Can (81349) O-S-602	GL
47	O	6640-01-364-1413	Jar, Screw Cap Plastic, U/I Package of 12 32 Ounce Capacity (15481) 033-670	EA

APPENDIX G ILLUSTRATED LIST OF MANUFACTURED ITEMS

Paragraph Number	Paragraph Title	Page Number
G-1	General	G-1
G-2	Definition of Columns	G-1
G-3	Actuator to Relay Valve and Cleaner Assembly to Relay Valve Hoses	G-2
G-4	Butt Hinge	G-3

G-1. GENERAL.

This Appendix includes instructions for making items authorized to be manufactured or fabricated.

A part number index in alphanumeric order is provided in Table 1 for the part number of each item to be fabricated.

Bulk materials needed for the manufacture of an item are listed by part number and national stock number (NSN) in the tabular listing.

When manufacturing items, make sure the appropriate tools are used to cut and shape materials. Bend hoses to configurations shown and be careful not to kink hoses. Reuse old connectors and fittings whenever possible. Make sure hoses are clean before installing after fabrication.

G-2. DEFINITION OF COLUMNS.

Column (1) - Part Number of Item. This column lists the nomenclature and part number of the item that must be manufactured.

Column (2) - Part Number and NSN of Bulk Material. This column lists the part number and the NSN for the bulk material required to manufacture the item.

Column (3) - Required Length. This column specifies the dimensions of the item to be manufactured.

Table G-1. ILLUSTRATED LIST OF MANUFACTURED ITEMS

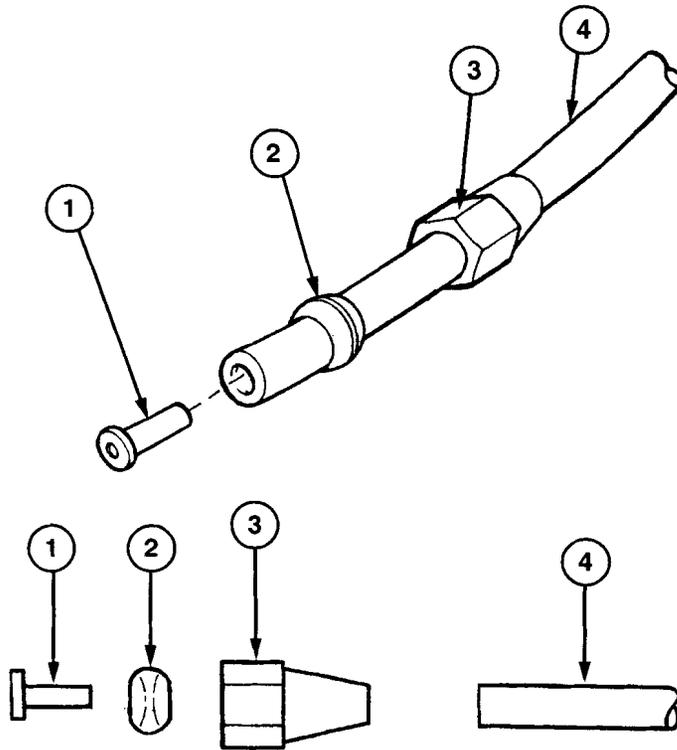
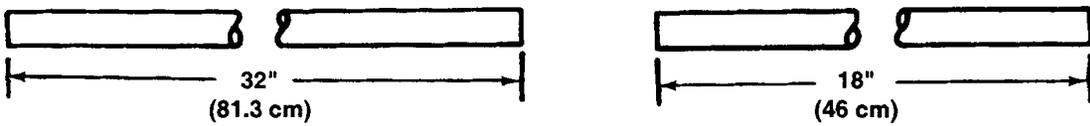
(1) Part Number of Item	(2) Part Number and NSN of Bulk Material	(3) Required Length
Hose, Actuator to Relay Valve 246115-18	J844/TYB	18 in. (45.7 cm)
Hose, Cleaner Assembly to Relay Valve 246115-32	J844/TYB	32 in. (81.3 cm)
Hose, Cleaner Assembly to Relay Valve 246115-18	J844/TYB	18 in. (45.7 cm)
Hinge, Butt MS35822-16D	5340-01-189-9985	17 in. (43.18 cm)

G-3. ACTUATOR TO RELAY VALVE AND CLEANER ASSEMBLY TO RELAY VALVE HOSES.

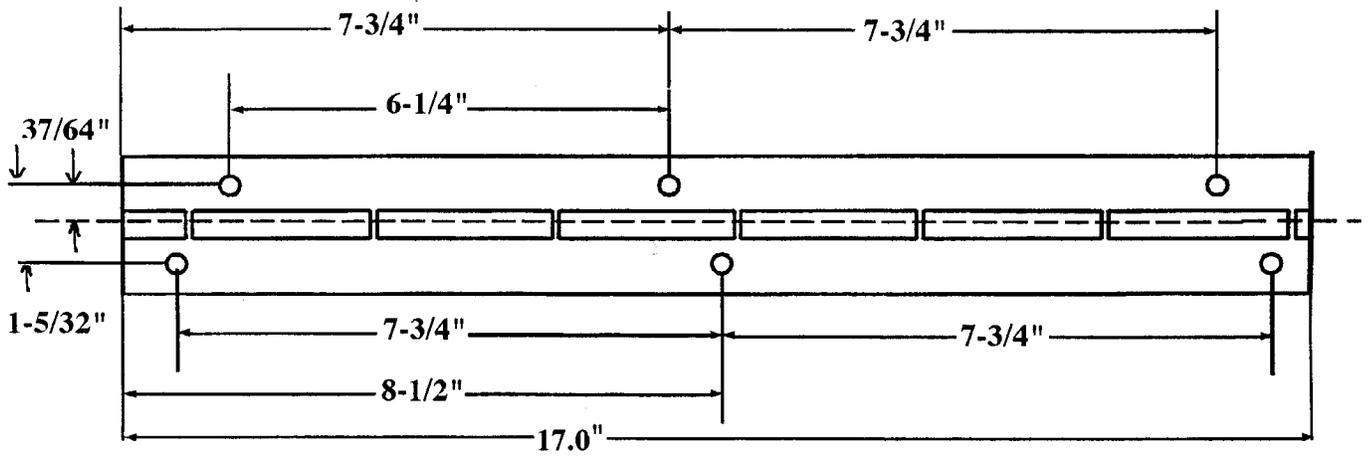
NOTE

Hoses may be reused only if sufficient length remains to prevent kinking after assembly. If not, replace them.

1. Using hose cutter and Table G-1, cut hose(s) to length as required.
2. Install coupling nut (3) on hose (4) after cutting hose to a determined length. Install compression sleeve (2) on hose (4), and install insert (1) in hose (4).



G-4. BUTT HINGE.



NOTES:

1. Hole diameter=5/16" (6 holes)
2. Make from P/N MS35822-16D (cut to 17")

APPENDIX H TORQUE VALUES FOR THREADED FASTENERS

Paragraph Number	Paragraph Title	Page Number
H-1	General	H-1
H-2	Torque Limits	H-1
H-3	How To Use Torque Table	H-1
H-4	Tightening Metal Fasteners	H-3
H-5	Fastener Size and Thread Pattern	H-4
H-6	Fastener Grade	H-5

H-1. GENERAL.

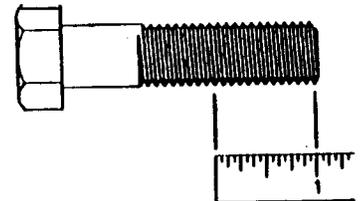
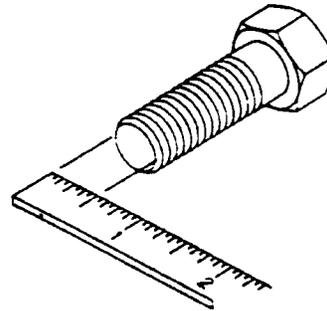
This section provides general torque limits for screws used on the M1112 water tank trailer. Special torque limits are indicated in the maintenance procedures for applicable components. The general torque limits given in this appendix shall be used when specific torque limits are not indicated in the maintenance procedure. These general torque limits cannot be applied to screws that retain rubber components. The rubber components will be damaged before the correct torque limit is reached. If a special torque limit is not given in the maintenance instructions, tighten the screw or nut until it touches the metal bracket, then tighten it one more turn.

H-2. TORQUE LIMITS.

Table H-1 lists dry torque limits. Dry torque limits are used on screws that do not have lubricants applied to threads. Table H-2 lists wet torque limits. Wet torque limits are used on screws that have high-pressure lubricants applied to threads.

H-3. HOW TO USE TORQUE TABLE.

1. Measure the diameter of the screw to be installed.
2. Count the number of threads per inch or use a pitch gage.
3. Under the heading SIZE, look down the left-hand column until the diameter of screw to be installed is found (there will usually be two lines beginning with the same size).
4. In the second column under SIZE, find the number of threads per inch that matches the number of threads counted in step 2.

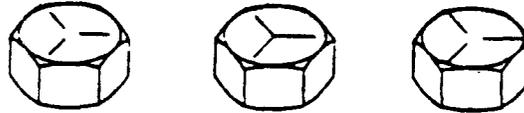


H-3. HOW TO USE TORQUE TABLE (continued).

5. To find the grade of the screw that is to be installed, match the markings on the head to the correct picture of CAPSCREW HEAD MARKINGS on the table.

CAPSCREW HEAD MARKINGS

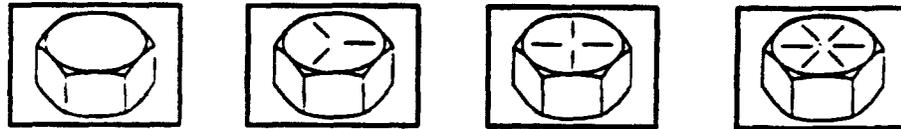
Manufacturer's marks may vary.
These are all SAE Grade 5 (3 lines).



6. Look down the column under the picture found in step 5 until the torque limit in foot-pounds for the diameter and threads per inch of the screw being installed is found.

Table H-1. TORQUE LIMITS FOR DRY FASTENERS

SAE CAPSCREW HEAD MARKINGS

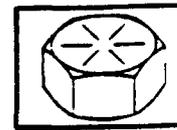
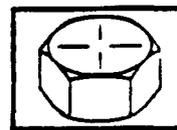
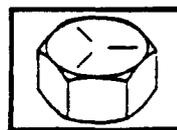
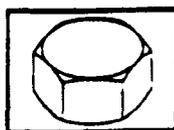


SIZE			TORQUE							
DIA. IN.	THREADS PER INCH	MMs	SAE GRADE No. 1 or 2		SAE GRADE No. 5		SAE GRADE No. 6 or 7		SAE GRADE No. 8	
			FOOT- POUNDS	N•m	FOOT- POUNDS	N•m	FOOT- POUNDS	N•m	FOOT- POUNDS	N•m
1/4	20	6.35	5	6.78	8.0	10.85	10	13.56	12.0	16.27
1/4	28	6.35	6	8.14	10.0	13.56	—	—	14.0	18.98
5/16	18	7.94	11	14.92	17.0	23.05	19	25.76	24.0	32.52
5/16	24	7.94	13	17.63	19.0	25.76	—	—	27.0	36.61
3/8	16	9.53	18	24.41	31.0	42.04	34	46.10	44.0	59.66
3/8	24	9.53	20	27.12	35.0	47.46	—	—	49.0	66.44
7/16	14	11.11	28	37.97	49.0	66.44	55	74.58	70.0	94.92
7/16	20	—	30	40.68	55.0	74.58	—	—	78.0	105.77
1/2	13	12.70	39	52.88	75.0	101.70	85	115.26	105.0	142.38
1/2	20	—	41	55.60	85.0	115.26	—	—	120.0	162.78
9/16	12	14.28	51	69.16	110.0	149.16	120	162.72	155.0	210.18
9/16	18	—	55	74.58	120.0	162.72	—	—	170.0	230.52
5/8	11	15.88	63	85.43	150.0	203.40	167	226.45	210.0	284.76
5/8	18	—	95	128.82	170.0	230.52	—	—	240.0	325.44
3/4	10	19.05	105	142.38	270.0	356.12	280	379.68	375.0	506.50
3/4	16	—	115	155.94	295.0	400.02	—	—	420.0	596.52
7/8	9	22.23	160	216.96	375.0	536.62	440	596.64	605.0	820.38
7/8	14	—	175	237.30	435.0	599.85	—	—	675.0	915.30
1	8	25.40	235	318.66	590.0	800.04	660	694.96	910.0	1233.96
1	14	—	250	338.00	660.0	894.96	—	—	990.0	1342.44
1-1/8	—	25.58	—	—	800.0	1064.8	—	—	1280.0	1735.7
					880.0	1193.3	—	—	1444.0	1952.8
1-1/4	—	31.75	—	—	—	—	—	—	1820.0	2467.9
									2000.0	2712.0
1-3/8	—	34.93	—	—	1460.0	1979.8	—	—	2300.0	3227.3
					1680.0	2278.1	—	—	2720.0	3688.3
1-1/2	—	38.10	—	—	1940.0	2630.6	—	—	3160.0	4285.0
					2200.0	2963.2	—	—	3560.0	4827.4

H-3. HOW TO USE TORQUE TABLE (continued).

Table H-2. TORQUE LIMITS FOR WET FASTENERS

SAE CAPSCREW HEAD MARKINGS



SIZE			TORQUE							
			SAE GRADE No. 1 or 2		SAE GRADE No. 5		SAE GRADE No. 6 or 7		SAE GRADE No. 8	
DIA. IN.	THREADS PER INCH	MMs	FOOT-POUNDS	N•m	FOOT-POUNDS	N•m	FOOT-POUNDS	N•m	FOOT-POUNDS	N•m
1/4	20	6.35	4.9	6.10	7.2	9.76	9.0	12.0	10.8	14.64
1/4	28	6.35	5.4	7.33	9.0	12.20	—	—	12.6	17.08
5/16	18	7.94	9.9	13.34	15.3	22.54	17.1	23.18	21.6	29.27
5/16	24	7.94	11.7	15.87	17.1	23.18	—	—	24.3	32.95
3/8	16	9.53	16.2	21.97	27.9	37.84	30.6	41.49	39.6	53.69
3/8	24	9.53	18.0	24.41	31.5	42.71	—	—	44.1	59.80
7/16	14	11.11	25.2	34.17	44.1	59.80	49.5	67.12	63.0	85.42
7/16	20	—	27.0	36.61	49.5	67.12	—	—	70.2	95.19
1/2	13	12.70	35.1	47.58	67.5	91.53	76.5	103.73	94.5	128.14
1/2	20	—	36.9	50.04	76.5	103.73	—	—	106.0	146.50
9/16	12	14.29	45.9	62.24	99.0	134.24	108.0	146.45	139.5	189.16
9/16	18	—	45.5	67.12	106.0	146.45	—	—	153.0	207.47
5/8	11	15.88	56.7	76.89	135.0	183.06	150.3	203.80	189.0	256.28
5/8	18	—	85.5	115.94	153.0	207.47	—	—	216.0	296.90
3/4	10	19.05	94.5	128.14	243.0	329.51	252.0	341.71	337.5	457.65
3/4	16	—	103.5	140.35	265.5	360.2	—	—	378.0	536.87
7/8	9	22.23	144.0	195.26	355.5	482.06	396.0	536.98	544.5	738.34
7/8	14	—	157.5	213.57	391.5	530.87	—	—	607.5	823.77
1	8	25.40	211.5	286.79	531.0	720.04	594.0	805.46	819.0	1110.56
1	14	—	225.0	305.10	594.0	805.46	—	—	891.0	1208.20
1-1/8	—	25.58	—	—	720.0	976.32	—	—	1152.0	1562.13
					792.0	1073.97	—	—	1296.0	1757.52
1-1/4	—	31.75	—	—	—	—	—	—	1638.0	2221.11
									1800.0	2440.80
1-3/8	—	34.93	—	—	1314.0	1781.82	—	—	2142.0	2904.57
					1512.0	2050.29	—	—	2448.0	3319.47
1-1/2	—	38.10	—	—	1746.0	2367.54	—	—	2844.0	3856.50
					1980.0	2684.88	—	—	3204.0	4344.66

H-4. TIGHTENING METAL FASTENERS.

When torquing a fastener, select a torque wrench whose range (Table H-3) fits the required torque value. A torque wrench is most accurate from 25 percent to 75 percent of its stated range. A torque wrench with a stated range of 0 to 100 will be most accurate from 25 to 75 foot-pounds. The accuracy of readings will decrease as you approach 0 foot-pounds or 100 foot-pounds. The ranges in Table H-3 are based on this principle.

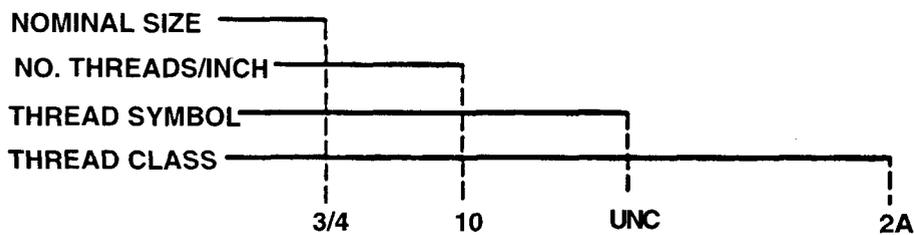
H-4. TIGHTENING METAL FASTENERS (continued).

Table H-3. TORQUE RANGES	
STATED RANGE	MOST EFFECTIVE RANGE
0-600 ft-lb	150-450 ft-lb
0-170 ft-lb	44-131 ft-lb
15-75 ft-lb	30-60 ft-lb

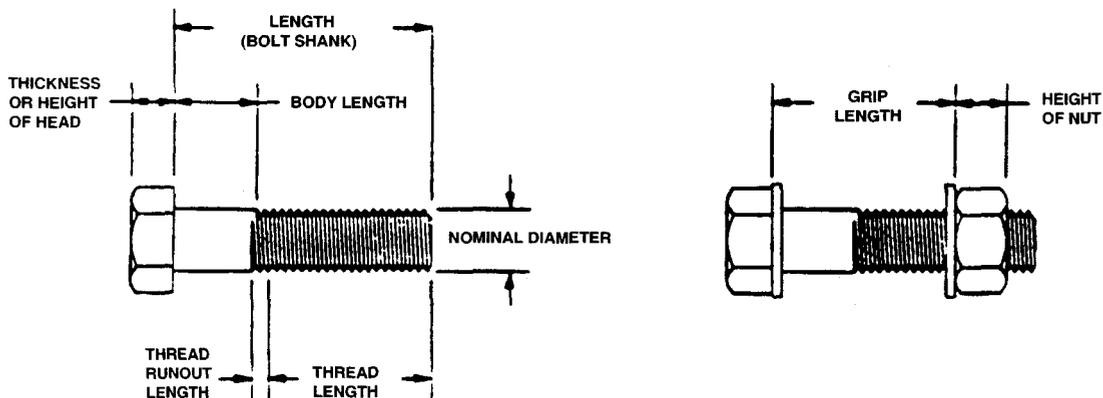
H-5. FASTENER SIZE AND THREAD PATTERN.

Threaded fasteners are categorized according to diameter of the fastener shank. Thread styles are divided into broad groups, the two most common being coarse (Unified Coarse-UNC) and fine (Unified Fine-UNF). These groups are defined by the number of threads per inch on the bolt shanks. In addition, threads are categorized by thread class (Table H-4), which is a measure of the degree between threads of bolt or screw (external threads) and threads of the attaching nut or tapped hole (internal threads of the attaching nut or tapped hole) (internal threads). The most common thread class for bolts and screws is Class 2.

Table H-4. THREAD CLASSES AND DESCRIPTION		
EXTERNAL	INTERNAL	INTERNAL
1A	1B	LOOSE FIT
2A	2B	MEDIUM FIT
3A	3B	CLOSE FIT



NOTE: Unless followed with -LH (e.g. 314-10 UNC-2A-LH), threads are right-hand.



H-6. FASTENER GRADE.

In addition to being classified by thread type, thread fasteners are also classified by material. The most familiar fastener classification system is the SAE grading system (Table H-5).

Table H-5. SAE SCREW AND BOLT MARKINGS	
SCREWS	BOLTS
SAE GRADE 2 NO MARKING	SAE GRADE 6 4 RADIAL DASHES 90° APART
SAE GRADE 3 2 RADIAL DASHES 180° APART	SAE GRADE 7 5 RADIAL DASHES 72° APART
SAE GRADE 5 3 RADIAL DASHES 120° APART	SAE GRADE 8 6 RADIAL DASHES 60° APART

Markings on Hex Locknuts

GRADE A - No Marks
 GRADE B - 3 Marks
 GRADE C - 6 Marks

GRADE A - No Marks
 GRADE B - Letter B
 GRADE C - Letter C

GRADE A - No Notches
 GRADE B - One Notch
 GRADE C - Two Notches

APPENDIX I LUBRICATION INSTRUCTIONS

Paragraph Number	Paragraph Title	Page Number
I-1	General	I-1
I-2	Specific Lubrication Instructions	I-1

I-1. GENERAL.

NOTE

These instructions are MANDATORY.

- a. The water tank trailer must receive lubrication with approved lubricants at recommended intervals in order to be mission-ready at all times.
- b. The KEY (p. I-2) lists lubricants to be used in all temperature ranges and shows the intervals.
- c. The Lubrication Chart (p. I-3) shows lubrication points, names to be lubricated, the required lubricant, and recommended intervals for lubrication. Any special lubricating instructions required for specific components are contained in the NOTES section of the chart.
- d. Recommended intervals are based on normal conditions of operation, temperature, and humidity. When operating under extreme conditions, lubricants should always be changed more frequently. When in doubt, notify your supervisor.

I-2. SPECIFIC LUBRICATION INSTRUCTIONS.

- a. Keep all lubricants in a closed container and store in a clean, dry place away from extreme heat. Keep container covers clean and do not allow dust, dirt, or other foreign material to mix with lubricants. Keep all lubrication equipment clean and ready for use.
- b. Maintain a record of lubrication performed and report any problems noted during lubrication. Refer to DA Pam 738-750 for maintenance forms and procedures to record and report any findings.

WARNING

Wipe excess lubricant from the area of brakeshoe linings to prevent grease from soaking the linings. If brakeshoe linings become soaked, have Unit maintenance replace them. Failure to follow this warning may cause brakes to malfunction, resulting in serious injury or death to personnel.

- c. Keep brakeshoe linings and all external parts of equipment not requiring lubrication free of lubricants. After lubrication, wipe off excess oil or grease to prevent accumulation of foreign matter.
- d. Refer to FM 9-207 for lubrication instructions in cold weather.

I-2. SPECIFIC LUBRICATION INSTRUCTIONS (continued).

- e. After operation in mud or in sandy or dusty conditions, clean and inspect all points of lubrication for fouled lubricants. Change lubricants as required.

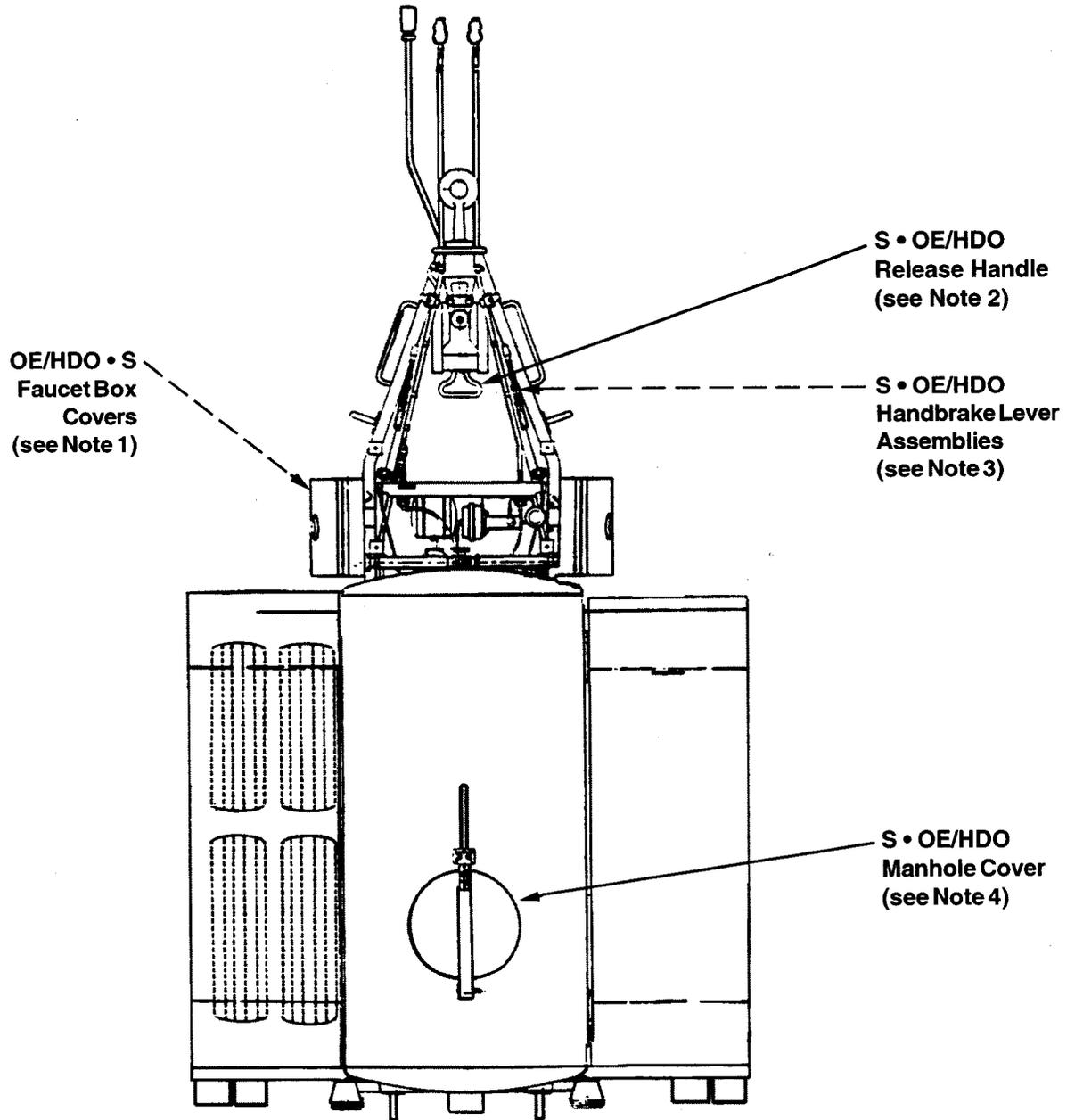
On Condition (OC) intervals shall be determined by the Army Oil Analysis Program (AOAP) laboratory and shall apply unless otherwise notified. Hard-time intervals will apply in the event AOAP support is unavailable.

WARNING

Drycleaning solvent PF05 is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat.

Clean all fittings and areas around lubrication points with drycleaning solvent (Item 12, Appendix F) or equivalent, before lubricating equipment. After lubrication, wipe off excess oil or grease to prevent an accumulation of foreign matter.

LUBRICANT • INTERVAL



INTERVAL	MAN-HOURS *
S	0.1

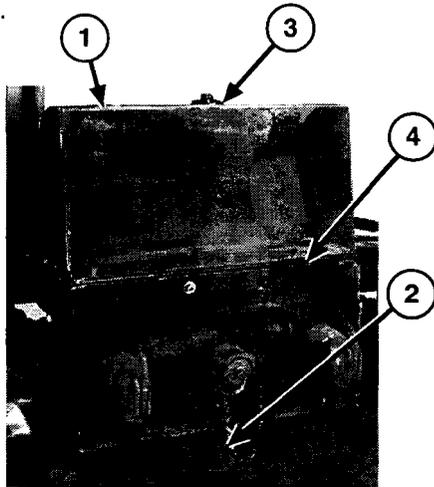
* The man-hour time specified is the time you need to do all the services prescribed.

- KEY -

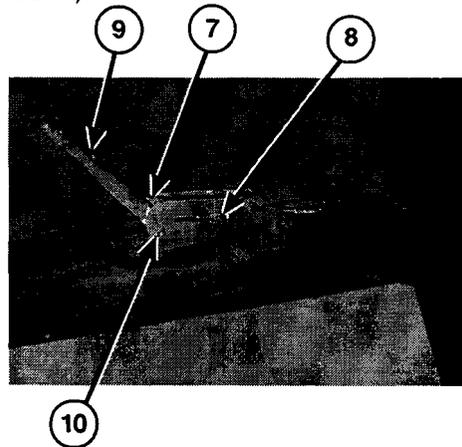
LUBRICANTS	EXPECTED TEMPERATURE *			INTERVALS
	Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-18°C to -54°C)	
OE/HDO (MIL-L-2104) Lubricating Oil, Internal Combustion Engine, Tactical Service * For arctic operation refer to FM 9-207.	OE/HDO-30	OE/HDO-10		S - Semiannual

NOTES:

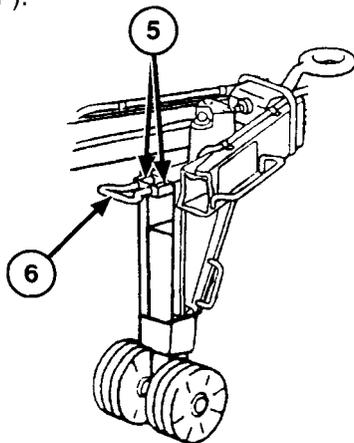
1. FAUCET BOX COVERS. Lubricate hinges (4) and swivel bases (3) of faucet box cover (1) and faucet box cover latch (2) sparingly with lubricating oil (Item 21, Appendix F).



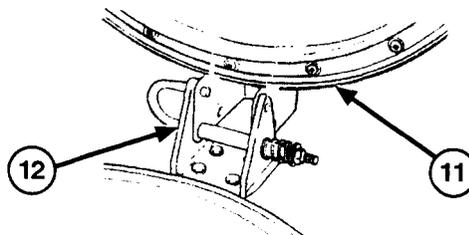
3. HANDBRAKE LEVER ASSEMBLIES. Lubricate all linkages (7), hinges (10), and latches (8) of both handbrake lever assemblies (9) with lubricating oil (Item 21, Appendix F).



2. RELEASE HANDLE. Lubricate pivot points (5) on release handle (6) sparingly with lubricating oil (Item 21, Appendix F).



4. MANHOLE COVER. Lubricate hinges (12) on manhole cover (11) sparingly with lubricating oil (Item 21, Appendix F).



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2-8			2-1
12	1-6a		

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

Item 10. Change illustration. Reason: Tube end shown assembled on wrong side of lever cam.

Item 3. The NSN and P/N are not listed on the AMDF nor the MCRL. Request correct NSN and P/N be furnished.

Preventive Maintenance Checks and Services. Item 7 under "Items to be inspected" should be changed to read as follows: Firing linkage and firing mechanism pawl.

Since there are both 20- and 30- round Magazines for this rifle, data on both should be listed.

SAMPLE

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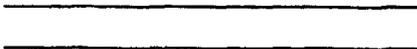
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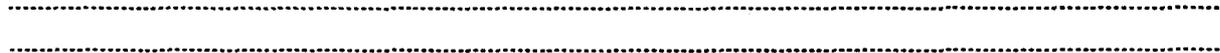
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THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
 1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
 1 Kilometer = 1000 Meters = 0.621 Miles

WEIGHTS

1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
 1 Kilogram = 1000 Grams = 2.2 Lb.
 1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
 1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

SQUARE MEASURE

1 Sq. Centimeter = 100 Sq. Millimeters = 0.155 Sq. Inches
 1 Sq. Meter = 10,000 Sq. Centimeters = 10.76 Sq. Feet
 1 Sq. Kilometer = 1,000,000 Sq. Meters = 0.386 Sq. Miles

CUBIC MEASURE

1 Cu. Centimeter = 1000 Cu. Millimeters = 0.06 Cu. Inches
 1 Cu. Meter = 1,000,000 Cu. Centimeters = 35.31 Cu. Feet

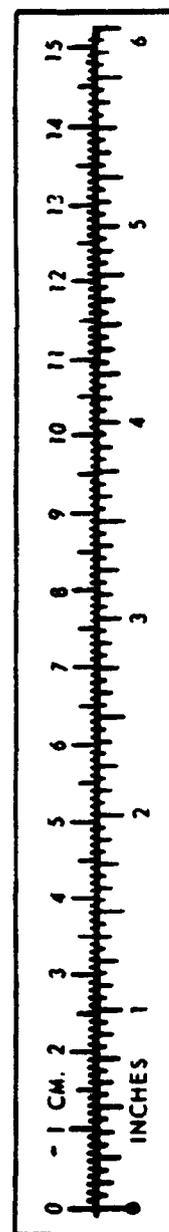
TEMPERATURE

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

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
Kilometers per Liter	Miles per Gallon	2.354
Kilometers per Hour	Miles per Hour	0.621



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