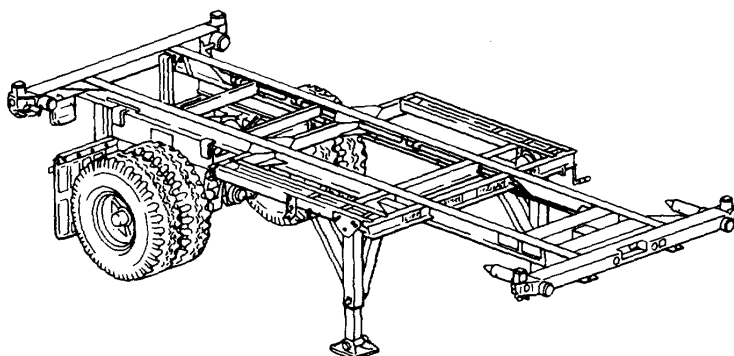


## TECHNICAL MANUAL

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



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**OPERATOR  
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**ORGANIZATIONAL  
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**DIRECT SUPPORT &  
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**MAINTENANCE  
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**REPAIR PARTS &  
SPECIAL TOOLS LIST  
PAGE F-1**

**CHASSIS, COUPLEABLE, SEMITRAILER  
(MILVAN) 12-TON, 2-WHEEL  
(NSN 2330-00-168-2259)  
BOGIE ASSEMBLY  
(NSN 2530-00-168-2296)**

This copy is a reprint which includes current  
pages from Change 1.

**HEADQUARTERS, DEPARTMENT OF THE ARMY  
DECEMBER 1984**

**WARNING**

Drycleaning solvent PD-680 is both toxic and flammable. Avoid prolonged breathing of vapors and avoid skin contact. Do not use near open flame or excessive heat. Flash point of solvent is 138°F (59°C).

Improper cleaning methods and use of unauthorized cleaning liquids or solvents can injure personnel and damage equipment. Refer to TM 9-208-1 and TM 9-247.

**WARNING**

All persons not involved in coupling operation must stand clear of towing vehicle and semitrailer to prevent possible injury.

**WARNING**

Do not operate semitrailer with burned-out or missing running, stop, or turn lights. Not being seen could result in injury to personnel and damage to equipment.

**WARNING**

The MILVAN chassis could tip when loading the forward portion of the container with high density cargo with a forklift truck. To prevent injury to personnel, place an antitipping device or any suitable blocking under the front end of the semitrailer chassis.

**WARNING**

Stand clear of landing gear legs when releasing them from folded position to prevent serious injury to personnel.

**WARNING**

Particles blown by compressed air are hazardous. Make certain the airstream is directed away from user and other personnel in the area. User must wear safety eye goggles or face shield to prevent injury when using compressed air.

**WARNING**

Wear protective goggles when opening air reservoir draincock to prevent eye injury. Step away from airstream to prevent injuries.

**WARNING**

Brake chamber housing is under spring pressure. Secure the brake chamber in a suitable vise before removing housing clamps to prevent injuries.

**WARNING**

When preparing the semitrailer for shipment by railroad, the height and width of the semitrailer packaging must not exceed the limits of the loading table in TM 55-200. Consult the local transportation officer whenever possible for limitations of railroad lines to be used to avoid delays, dangerous conditions, and damage to equipment.

CHANGE

NO. 1

HEADQUARTERS  
DEPARTMENT OF THE ARMY  
Washington D.C., 5 November 1991

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

**FOR**

**CHASSIS, COUPLEABLE, SEMITRAILER  
(MILVAN) 12-TON, 2-WHEEL  
(NSN 2330-00-168-2259)**

**BOGIE ASSEMBLY  
(NSN 2530-00-168-2296)**

Current as of 9 August 1991

TM 9-2330297-14&P, dated 18 December 1984, is changed as follows.

- 1 Make the following changes to the Warning Summary, located on the back of the front cover:
  - a First Warning, Line 5 Change last sentence to read "Refer to TM 9-247".
  - b Ninth Warning, Line 2 Change "TM 55-200" to read "TM 5521"
- 2 Remove old pages and insert new pages.
- 3 New or changed material is indicated by a vertical bar in the margin and by a vertical bar adjacent to the TA number.

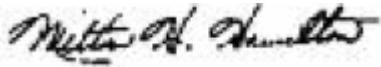
Approved for public release distribution is unlimited.

Remove Pages	Insert Pages
i through 1-2	I through 1-2
4-1 and 4-2	4-1 and 4-2
4-5 and 4-6	4-5 and 4-6
4-9 and 4-10	4-9 and 4-10
4-31 through 4-34	4-31 through 4-34.2
4-77 and 4-78	4-77 and 4-78
4-83 and 4-84	4-83 and 4-84
5-5 and 5-6	5-5/(5-6 blank)
A-1/(A-2 blank)	A-1 and A-2
B-3 through B-6	B-3 through B-6
Appendix F (in its entirety)	Appendix F (in its entirety)
G-1 and G-2	G-1 through G-3/(G-4 blank)
Index I through Index 6	Index 1 through Index 6
DA Form 2028-2's	DA Form 2028-2's

- 4 File this change sheet in front of the publication for reference purposes.

By Order of the Secretary of the Army:

Official



MILTON H. HAMILTON

*Administrative Assistant to the  
Secretary of the Army*

00070

GORDON R. SULLIVAN  
*General, United States Army  
Chief of Staff*

Distribution:

To be distributed in accordance with DA Form 12-39-E (Block 0808) Operator, Unit, Direct Support and General Support Maintenance Requirements for TM9-2330-297-14&P.

TECHNICAL MANUAL  
NO 9-2330-297-14&P

HEADQUARTERS  
DEPARTMENT OF THE ARMY  
WASHINGTON, DC 18 Dec 1984

OPERATOR, ORGANIZATIONAL,  
DIRECT SUPPORT, AND GENERAL SUPPORT  
MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LISTS)

CHASSIS, COUPLEABLE,  
SEMITRAILER (MILVAN)  
12-TON, 2-WHEEL  
(NSN 2330-00-168-2259)

BOGIE ASSEMBLY  
(NSN 2530-00-168-2296)

Current as of 9 August 1991 .

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help Improve this manual If you find any mistakes or If you know of a way to Improve the procedures, please let us know Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to Commander, US Tank-Automotive Command, ATTN AMSTA-MB, Warren, MI 48397-5000 A reply will be sent to you.

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\*This manual supersedes TM 9-2330-297-14, 18 January 1974, including all changes.

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## HOW TO USE THIS MANUAL

This manual is designed to help you operate and maintain the 12-ton, 2-wheel Semitrailer (MILVAN) and Bogie Assembly. The front cover table of contents is provided for quick reference to important information. There is also an index located in the final pages for use in locating specific items of information.

Measurements in this manual are given in both English and Metric units. A Metric to English conversion chart can be found on the inside back cover.

Read all preliminary information found at the beginning of each task. It has important information and safety instructions you must follow before beginning the task.

Warning pages are located in the front of this manual. You should read the warnings before operating or doing maintenance on the equipment.

A subject index appears at the beginning of each chapter listing sections that are included in that chapter. A more specific subject index is located at the beginning of each section to help you find the exact paragraph you're looking for.

Instructions for using troubleshooting tables are located in chapters 3 and 4.

Instructions for performing PMCS are located in chapters 2 and 4.

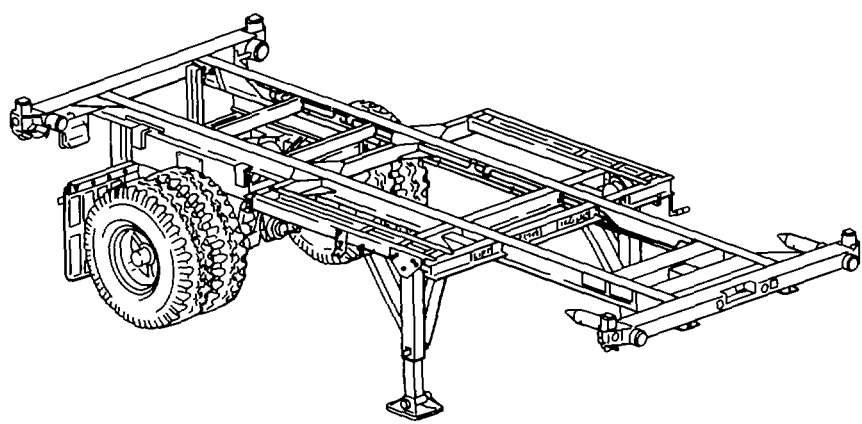
CHAPTER 1  
INTRODUCTION

OVERVIEW

The purpose of this chapter is to provide information on the coupleable semitrailer size, shape, major equipment, and operation.

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Section I. GENERAL INFORMATION



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SCOPE

Type of Manual: Operator's, Organizational, Direct Support, and General Support Maintenance Manual (Including Repair Parts and Special Tools List).

Equipment Name- Chassis, Coupleable, Semitrailer (MILVAN) 12-ton, 2-wheel; and Bogie Assembly.

Purpose of Equipment The semitrailer is used to transport MILVAN containers on Improved roads

An additional bogie assembly can be used to increase the load capacity of the semitrailer.

MAINTENANCE FORMS AND RECORDS

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)

DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

Destruction of Army Tank-Automotive Equipment to prevent enemy use shall be in accordance with TM 750-244-6.

PREPARATION FOR STORAGE AND SHIPMENT

See chapter 4, section XIII for instructions on the preparation for storage or shipment.

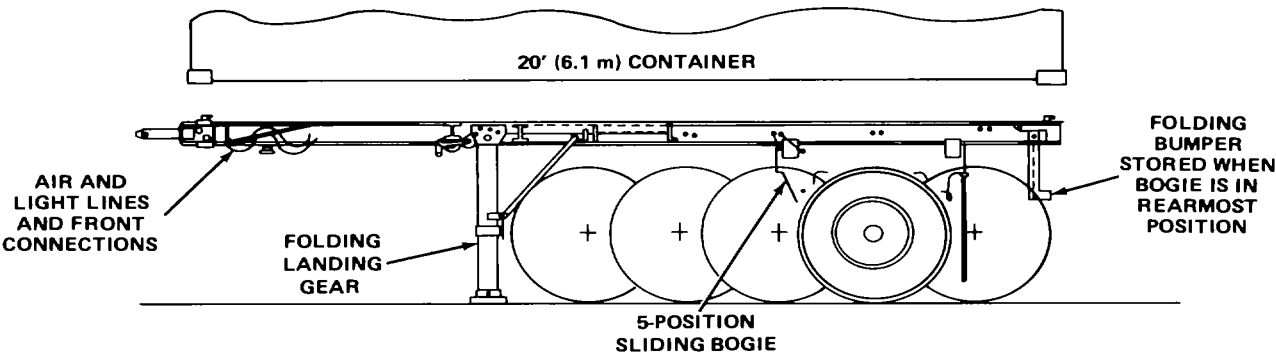
REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If your semitrailer 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. Put it on an SF 368 (Quality Deficiency Report). Mail it to Commander, US Army Tank-Automotive Command, ATTN AMSTA-MP, Warren, MI 48397-5000 We will send you a reply.

Section II. EQUIPMENT DESCRIPTION AND DATA

	Page		Page
Equipment Characteristics.....		Location and Description of	
Capabilities, and Features.....	1-2	Data Plates.....	1-9
Equipment Data .....	1-8	Major Components .....	1-5

EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES



TA223054

## EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES - CONTINUED

### CHARACTERISTICS

Open frame semitrailer chassis.

May be towed by military (normally 5-ton, M818) or any truck-tractor equipped with a fifth wheel and matching brake system.

Can operate on 12-volt (commercial vehicle) or 24-volt (military vehicle) electrical system.

Has airbrake system operated from towing vehicle.

Has a single axle four-wheel bogie assembly.

Bogie can be moved to any of five positions to compensate for load distribution and density.

Has folding landing gear that can raise or lower the front of the semitrailer or be used as standing legs at park.

Used to transport 20-foot long MILVAN container or 40-foot container when chassis are coupled in tandem.

Has automatic cutoff of forward semitrailer service lights when two semitrailers are coupled.

Has automatic emergency braking in the event of trailer break-away or emergency air line break.

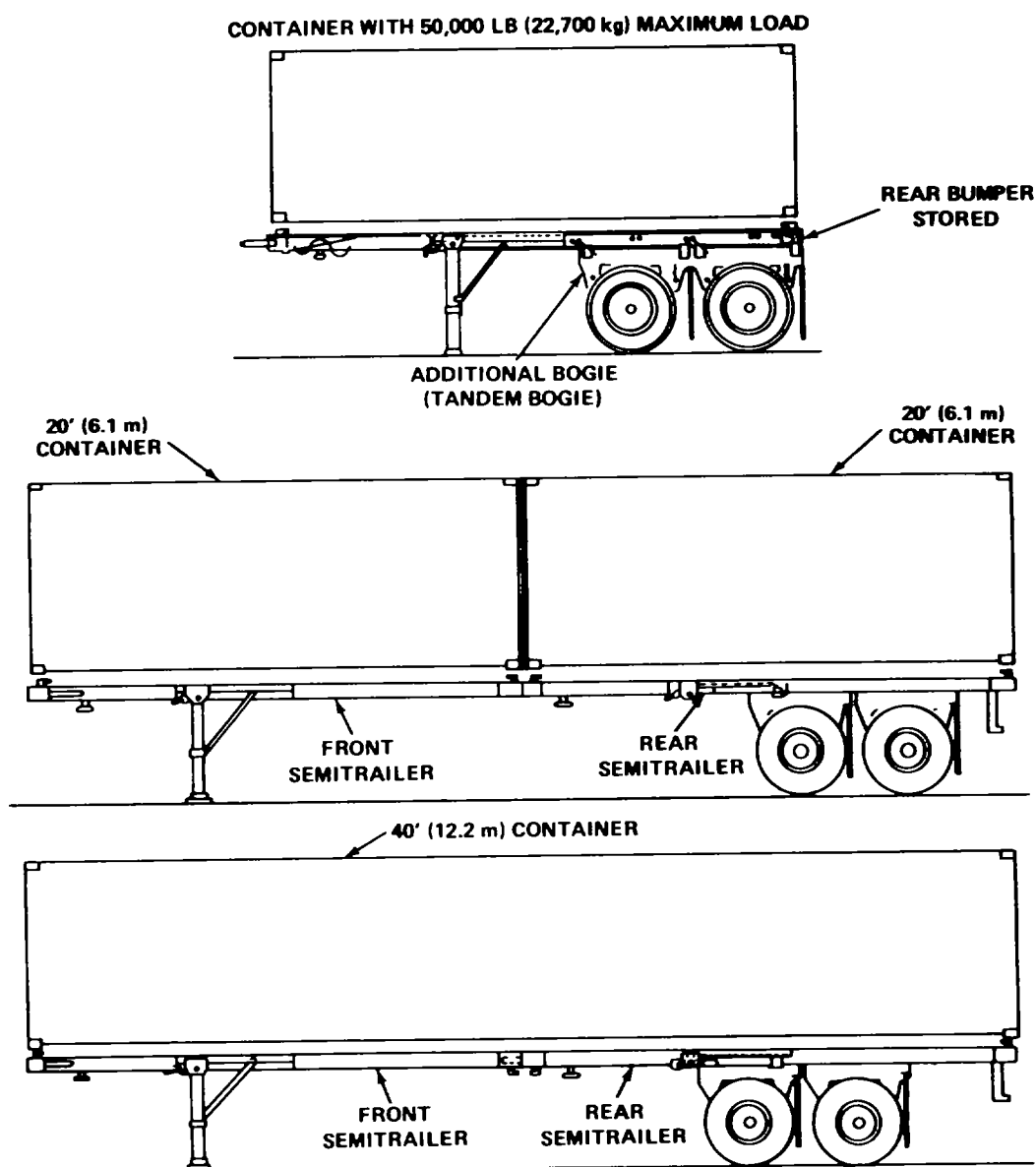
### CAPABILITIES AND FEATURES

Maximum Load	Pounds	Kilograms
20-foot (6.1-meter) single bogie assembly	35,000	15,890
20-foot (6.1-meter) tandem bogie assembly	50,000	22,700
40-foot (12.2-meter) tandem bogie assembly	62,000	28,148

Speed is governed by safe driving speed of towing vehicle.

## EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES - CONTINUED

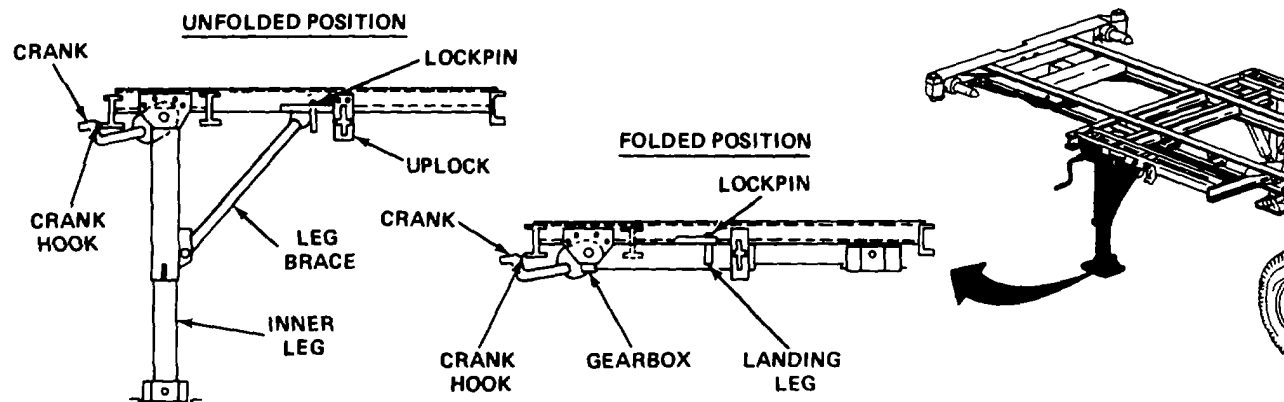
Two semitrailers may be coupled together to transport two 20-foot (6.1-meter) or one 40-foot (12.2-meter) MILVAN containers.



TA223055

## LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

### LANDING GEAR



Supports front of semitrailer when parked

Can be used to raise or lower the front of the semitrailer for coupling with towing vehicle or another semitrailer.

Can be folded back into a stowed position after coupling.

A gearbox is installed, with two operating speeds, for extending or retracting the inner leg of the landing gear; high speed when unloaded, low speed when loaded

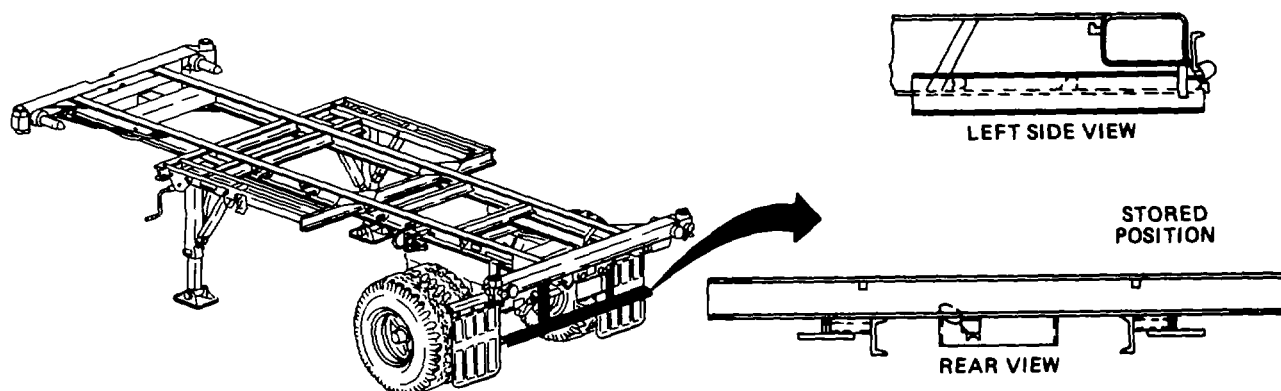
Lockpins are provided to lock the leg braces in down position.

Uplocks are installed to support the landing gear legs in the folded position

A crank is provided to drive the gearbox.

A crank hook is installed to support the crank in stowed position

### REAR BUMPER

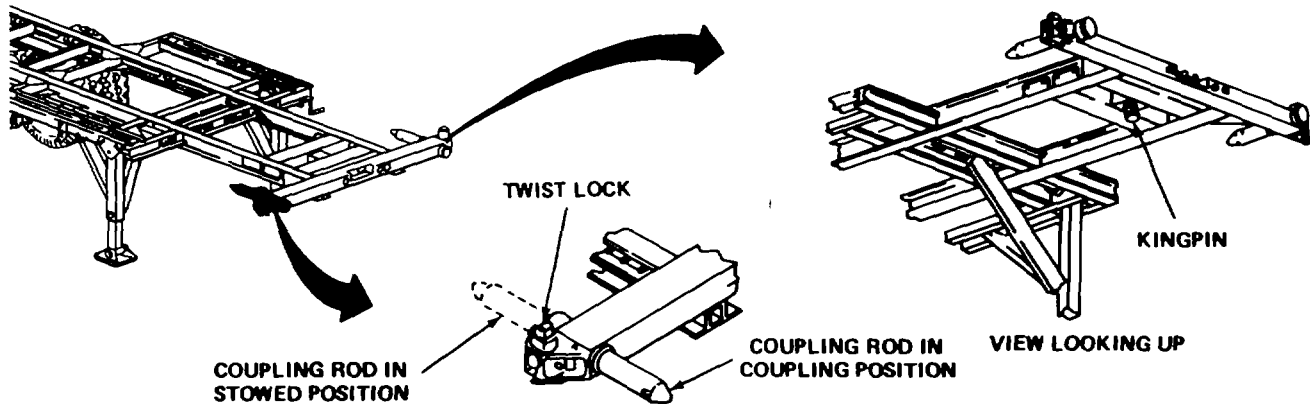


Rear bumper is normally in down (extended) position. It is stored when bogie is in rearmost position or when it is the front semitrailer in a coupled unit.

TA223056

## LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED

### KINGPIN, TWIST LOCK, AND COUPLING PINS

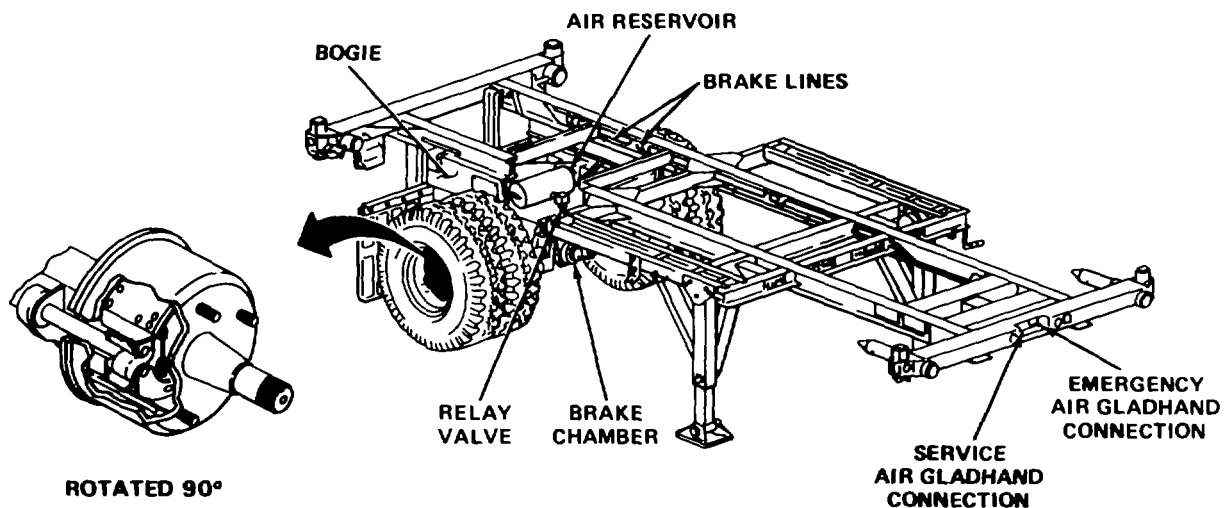


Kingpin - Extends down from fifth wheel plate and is used to couple the semitrailer to the towing vehicle.

Twist Locks - Locks the MILVAN container to the semitrailer chassis at its four corners.

Coupling Rods - Coupling rods are used to couple two semitrailers together.

### BRAKE SYSTEM



Brake System - Operates on air supplied by the towing vehicles.

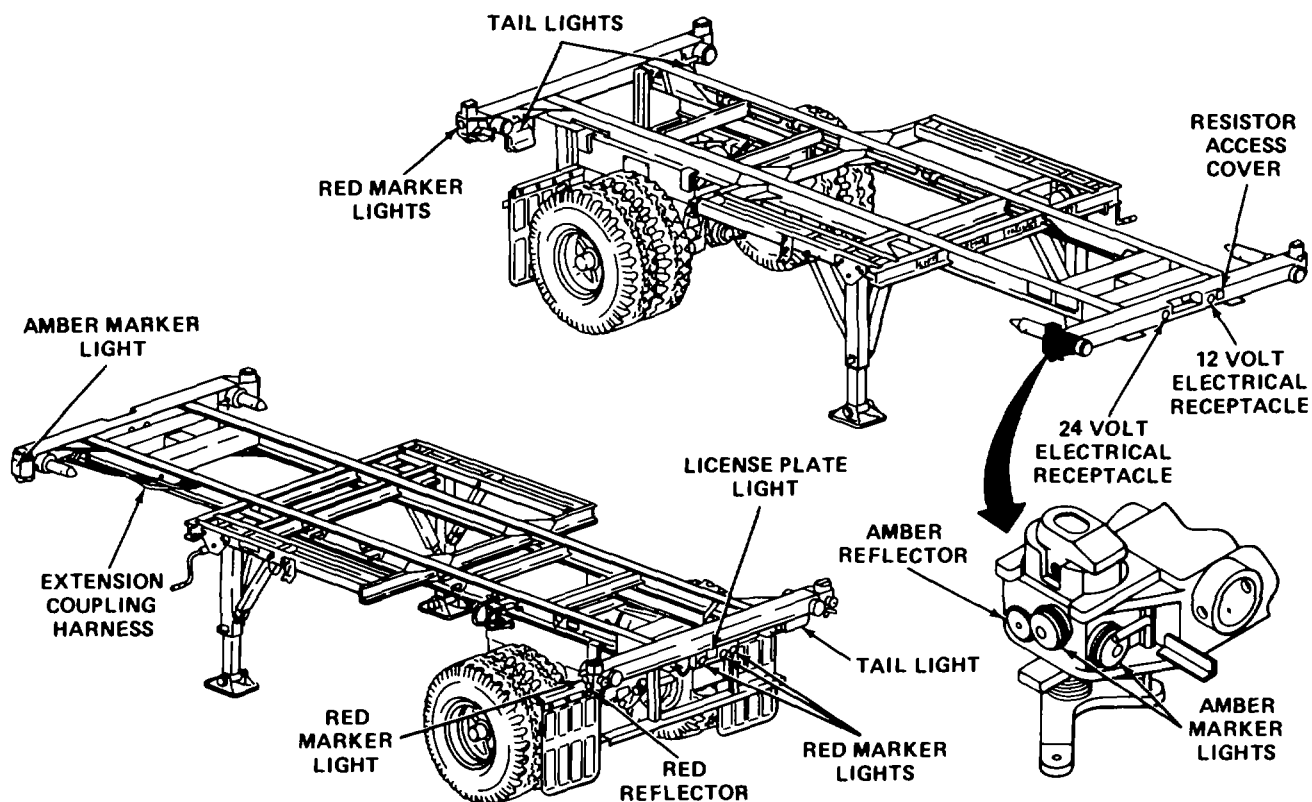
Air Reservoir - Stores pressurized air for brake operation at the bogie.

Relay Valve - Controls flow of air to air reservoir and from air reservoir to brake chamber. It mounts on the air reservoir.

Brake Chambers - Mounted on the axle beam and operates the brake mechanism that applies the brakes.

## LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED

## ELECTRICAL SYSTEM



12-Volt Receptacle - Used with commercial towing vehicle electrical system and is mounted on the front of the semitrailer.

24-Volt Receptacle - Used with military vehicle electrical system and is mounted on the front of the semitrailer.

Resistors - Used in the 24-volt system to reduce voltage + 12 volts.

Extension Coupling Harness - Used when coupling two semitrailers together.

Taillight - Provides stopping and turning signals.

Marker Lights - Used to make semitrailer more visible at night. Five red marker lights on rear and four amber marker lights on the front.

Reflectors - Used to make semitrailers more visible by reflecting light from oncoming vehicles

License Plate Light - Used to light up semitrailer license plates.

TA223058

**EQUIPMENT DATA**

## Weights and Dimensions

(Chassis, 20-foot (6 1-meter))

Length	242 inches (614.68 cm)
Width	96 inches (243.84 cm)
Height, overall	159 inches (403.86 cm)
Ground clearance	13 318 inches (33.97 cm)
Coupled chassis length	484 inches (1229.36 cm)
Front to center of kingpin	25 inches (63.5 cm)
Distance between axles (tandem)	52 inches (132.08 cm)
Tread width	48 inches (121.92 cm)
Weight	4000 pounds (1816 kg)
Angle of departure	40-degree slope

## Gross Vehicle Weights (GVW)

20-foot single bogie	35,000 pounds (15,890 kg)
20-foot tandem bogie (high density)	50,000 pounds (22,700 kg)
40-foot tandem bogie	62,000 pounds (28,148 kg)

## Tire Pressures (Highway Usage)

12-ply tires	75 psi (517.13 kPa)
14-ply tires	90 psi (620.55 kPa)

## Electrical System

12/24 volts (12-volt bulbs)	
Service/tail and stoplight	Number 1157 bulb
Marker and clearance	Number 194 bulb
License plate	Number 97 bulb

## Frame

Skeletal type I-beam	Has five locating positions for a slideable bogie
Height	54 inches- (137.16 cm)

## Bogie

Axle	22,500 pounds (10,215 kg) capacity
Suspension	Single taper leaf
Brakes	Air actuated S-cam
Wheels	Dual with demountable rims five-spoke type

## Tires

Number	Four per bogie (no spares)
Size	10:00 X 20
Ply	12/14 ply

## Wheel Removal Wrench

11 4-inch socket

## Kingpin Diameter

2.00 inches (50.80 mm)

# EQUIPMENT DATA - CONTINUED

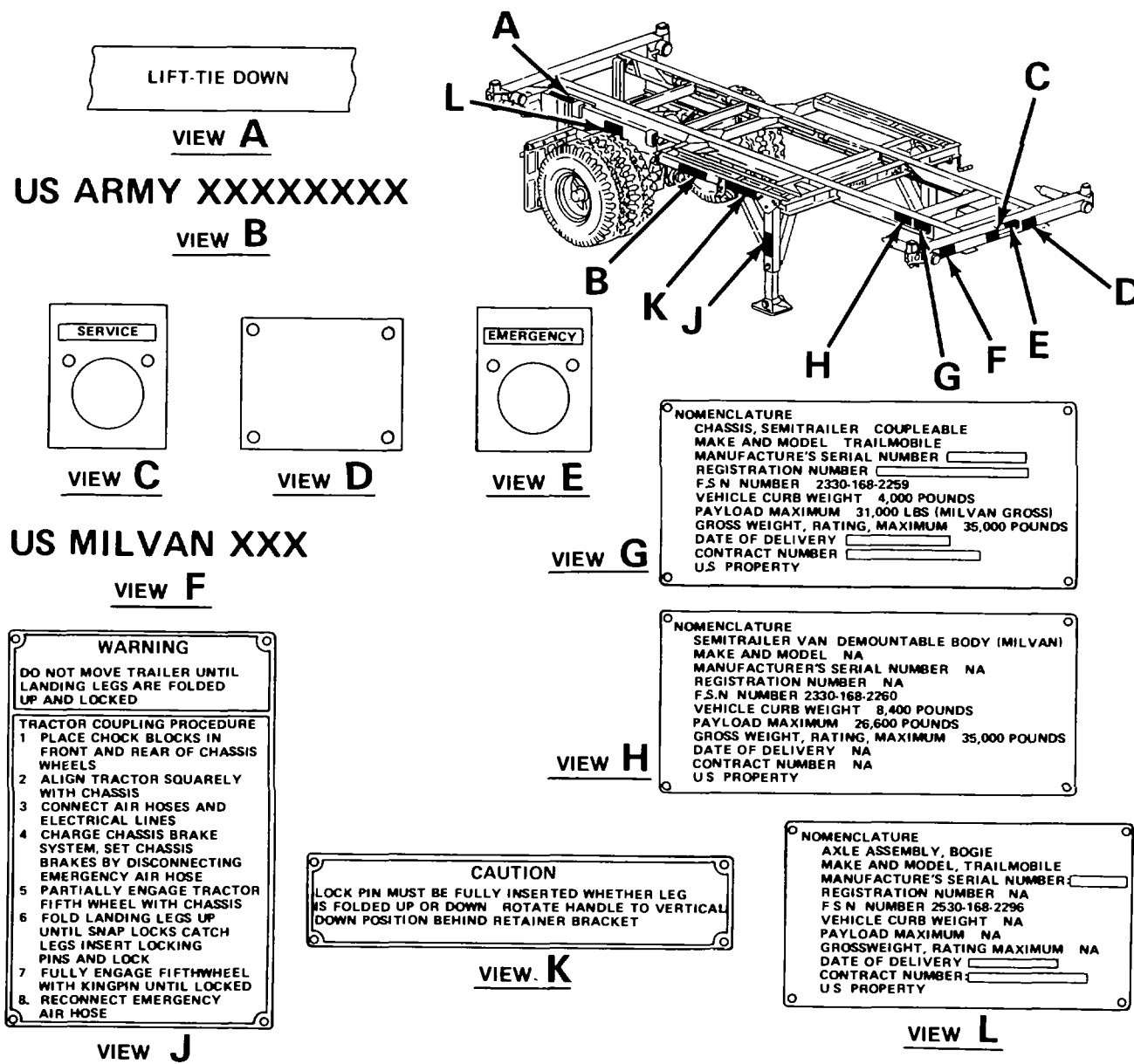
Landing Gear  
Type  
Speeds  
Travel distance

Folding, stowable  
Two (high and low) with handcrank  
18 62 inches (47 29 cm)

Rear Bumper  
Type

Folding, stowable

## LOCATION AND DESCRIPTION OF DATA PLATES



TA223059

LOCATION AND DESCRIPTION OF DATA PLATES - CONTINUED

**US MILVAN XXX**

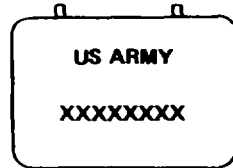
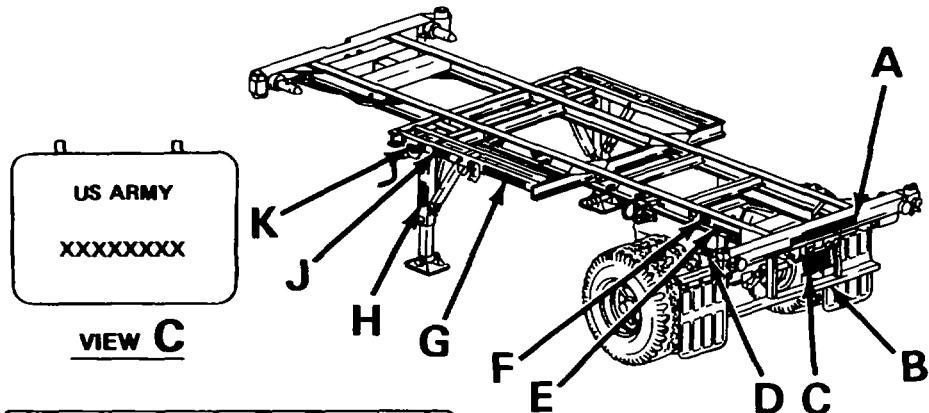
VIEW A

**US MILVAN XXX**

VIEW B

**LOCK**

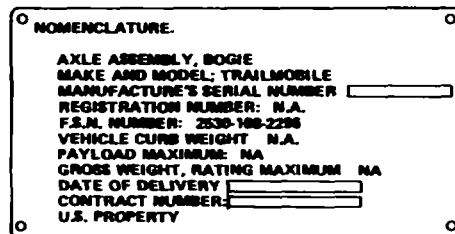
VIEW D



VIEW C



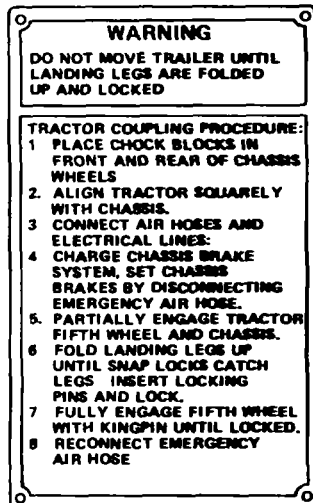
VIEW E



VIEW F

**US ARMY XXXXXXXXX**

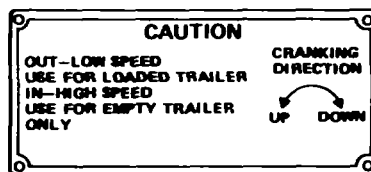
VIEW G



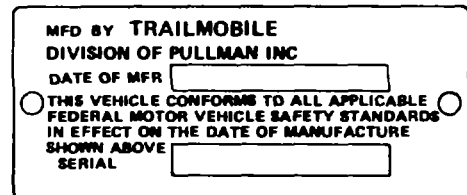
VIEW H



VIEW J



VIEW K



VIEW L

Data plates provide identification, registration, weight, warnings, and caution information.

TA223060

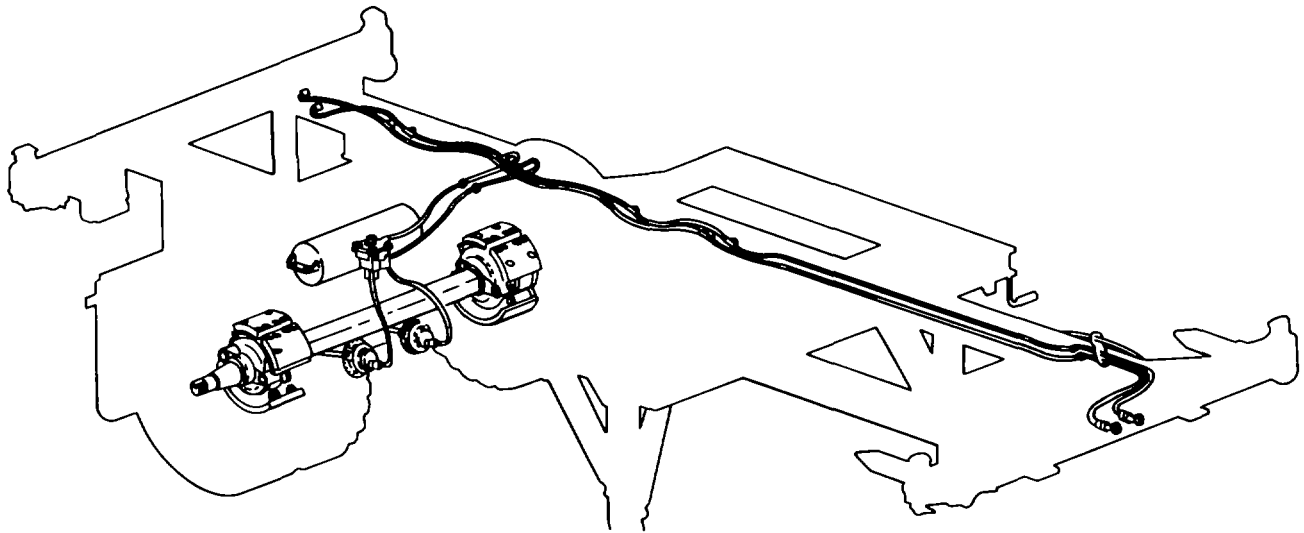
### Section III. PRINCIPLES OF OPERATION

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Airbrake System.....	1-11	Electrical System .....	1-12

#### AIRBRAKE SYSTEM

Service and emergency air pressure from the towing vehicle is supplied to the chassis brake system through the gladhand couplings at the front of the chassis. The couplings are marked to ensure correct hookup and must not be crossed when coupling. Tubing extends the length of the chassis to supply service and emergency air to the relay valve and reservoir. Both lines tee into 10 quick disconnects located along the chassis frame. This provides an air source for the bogie in any of its five positions. The airbrake system consists of two bogie-to-chassis airhoses with quick disconnects tubing, a relay valve, an air reservoir, two brake chambers, two slack adjusters, two camshafts, and four brakeshoes.

When the towing vehicle service brakes are applied, air is sent through the service air line to the relay valve. The relay valve action then releases reservoir air to the air chamber. The air chamber movement, through the slack adjuster, rotates the camshaft which forces the brakeshoes against the brakedrum. Brakeshoe and drum friction slows, stops, and holds the semitrailer until the brake pedal is released, venting pressurized air from the brake chamber.



TA223061

**AIRBRAKE SYSTEM - CONTINUED**

GLADHANDS - coupling points for the towing vehicle air lines. They are marked, one emergency, the other service, to ensure correct hookup.

AIR LINES - extend the length of the chassis to supply service and emergency air supply to the relay valve and air reservoir.

RELAY VALVE- directs and controls the flow of air to and from the reservoir to the brake chambers. When no pressure is in the reservoir, air from the towing vehicle flows through the emergency line into the relay valve which directs air into the reservoir. At the same time, air is sent to the brake chamber which then applies the brakes. The brakes will remain on until pressure in the reservoir reaches 60 psi (413.7 kPa). The relay valve will then release the brakes by venting the brake chamber. AIR RESERVOIR stores the system air pressure (normally 90 to 120 psi (620.55 to 827.4 kPa)) that operates the airbrake system. Pressure to the reservoir is initially supplied and then maintained through the emergency supply line from the towing vehicle through the relay valve.

BRAKE CHAMBERS used to convert air pressure to mechanical motion. This movement, through the slack adjusters, rotates the camshaft and applies the brakes. When brake chamber air pressure is released spring action releases the brakes.

SLACK ADJUSTERS convert linear motion of the brake chamber to rotating motion of the camshaft. The slack adjusters consist of a housing, two gears, and two gear covers. Brake adjustments are made through the slack adjuster.

BRAKESHOES AND LINKAGE two brakeshoes on each wheel assembly are spread apart by the rotation of the camshaft by the slack adjusters. The brakeshoes are pushed against the brake drum causing friction to slow or stop the semitrailer.

ELECTRICAL SYSTEM- The Intervehicular receptacle on the front of the semitrailer receives the electrical current from the towing vehicle. Electrical current is sent through a wiring harness to the marker lights, license plate light, and taillight. Switches in the towing vehicle control the operation of the light assemblies. The light assemblies operate on 12 volts. The semitrailer can be used with a commercial towing vehicle (12 volts) or a military vehicle (24 volts). When used with a military vehicle, a resistor harness reduces the voltage from 24 volts to 12 volts.

CHAPTER 2

OPERATING INSTRUCTIONS

OVERVIEW

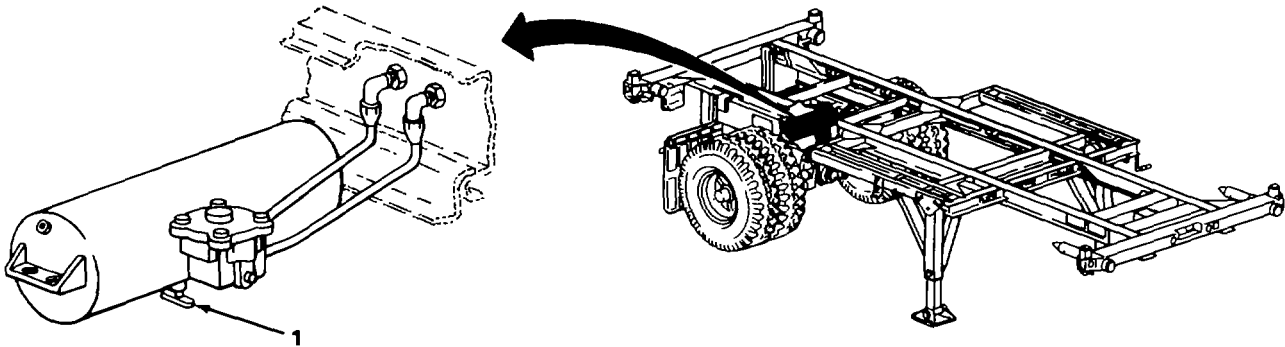
This chapter shows and describes the semitrailer controls and contains operator/crew level preventive maintenance procedures. There are instructions for coupling towing vehicle to semitrailer, semitrailer-to-semitrailer; installing container on semitrailer, driving, stopping, and backing, in both usual and unusual conditions, and other information to help you understand and better operate the semitrailer.

		Page
Section I	Description and Use of Operator's Controls.....	2-1
Section II	Operator/Crew Preventive Maintenance Checks and Services (PMCS) .....	2-6
Section III	Operation Under Usual Conditions .....	2-14
Section IV	Operation Under Unusual Conditions.....	2-40

Section I. DESCRIPTION AND USE OF OPERATOR'S CONTROLS

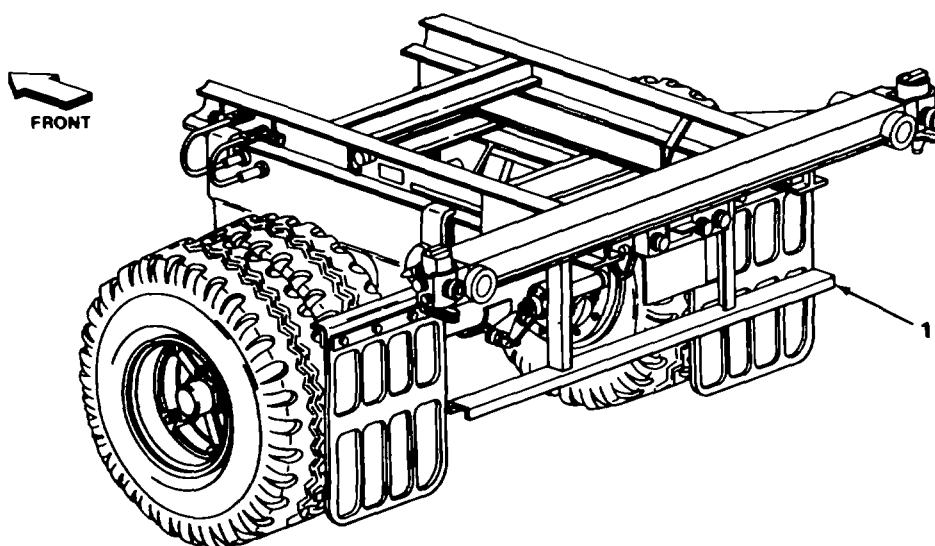
Page	Page		
Air Reservoir .....	2-1	Rear Bumper .....	2-2
Bogie-to-Semitrailer Connectors.....	2-4	Semitrailer-to-Semitraller Connectors .....	2-5
Container Locks .....	2-4	Semitrailer-to-Towing Vehicle Connectors .....	2-3
Landing Gear .....	2-2		

AIR RESERVOIR



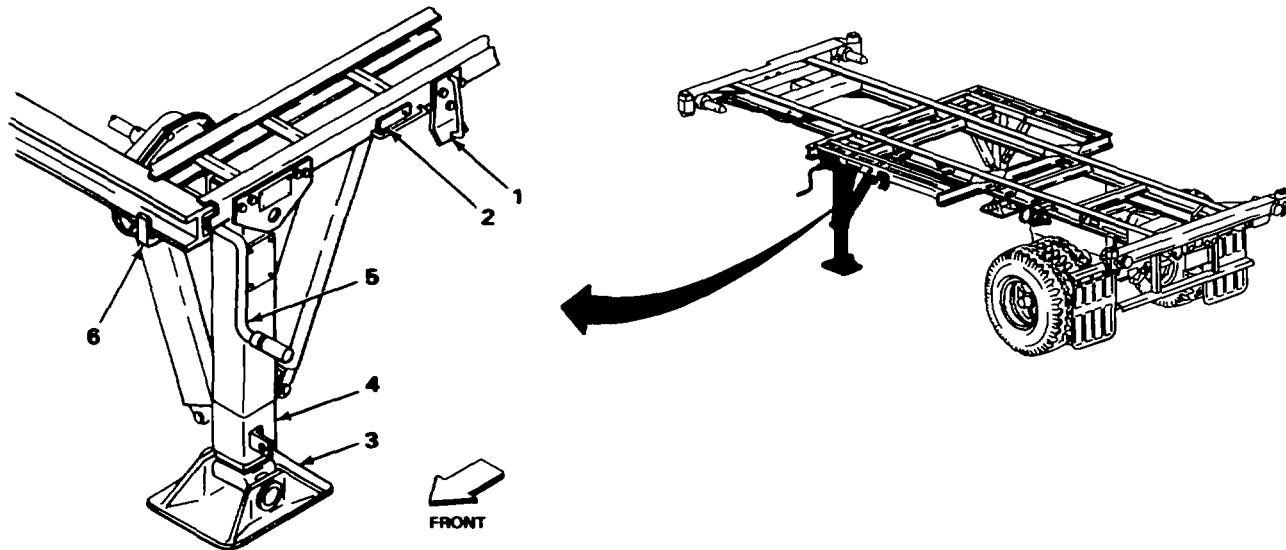
KEY	CONNECTOR	FUNCTION
1	Reservoir draincock	Used to drain moisture and/or air from semitrailer brake system. Located forward of rear bumper

## REAR BUMPER



KEY	CONNECTOR	FUNCTION
1	Rear bumper	Used to protect the bogie from damage during rear end accident.

## LANDING GEAR



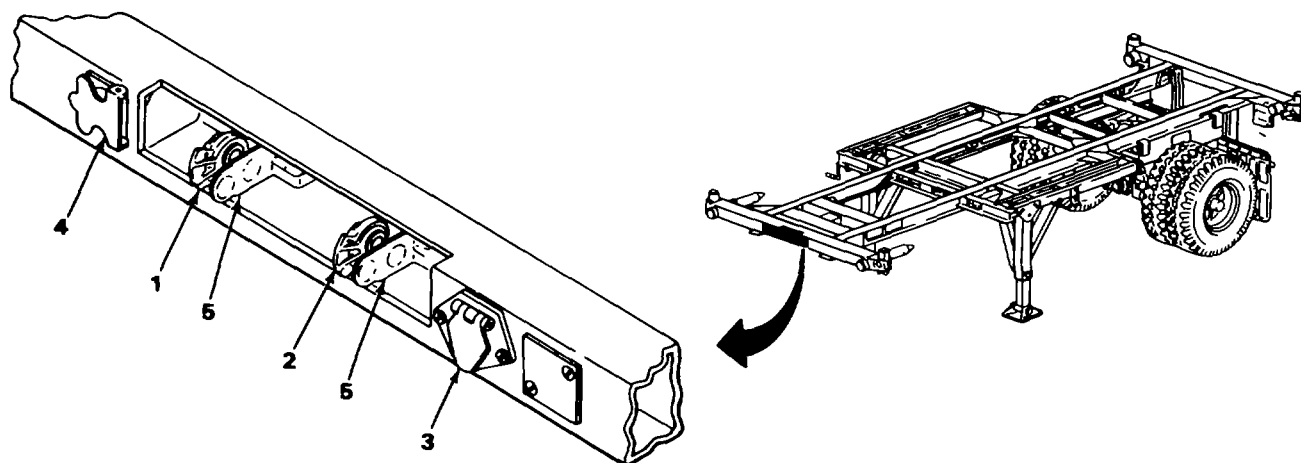
KEY	CONNECTOR	FUNCTION
1	Uplock	Locks landing gear in stored position.
2	Lockpin	Used to secure landing gear in stored or extended position.

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## LANDING GEAR - CONTINUED

KEY	CONNECTOR	FUNCTION
3	Landing gear shoe	Keeps legs from sinking into the ground.
4	Landing gear leg	Two legs support weight of semitrailer when extended.
5	Crank	Operates the landing gear. Turning the crank counter-clockwise lowers the legs; clockwise raises the legs. Push crank in for high speed, pull it out for low speed.
6	Stowage hook	Stows crank when crank is not in use.

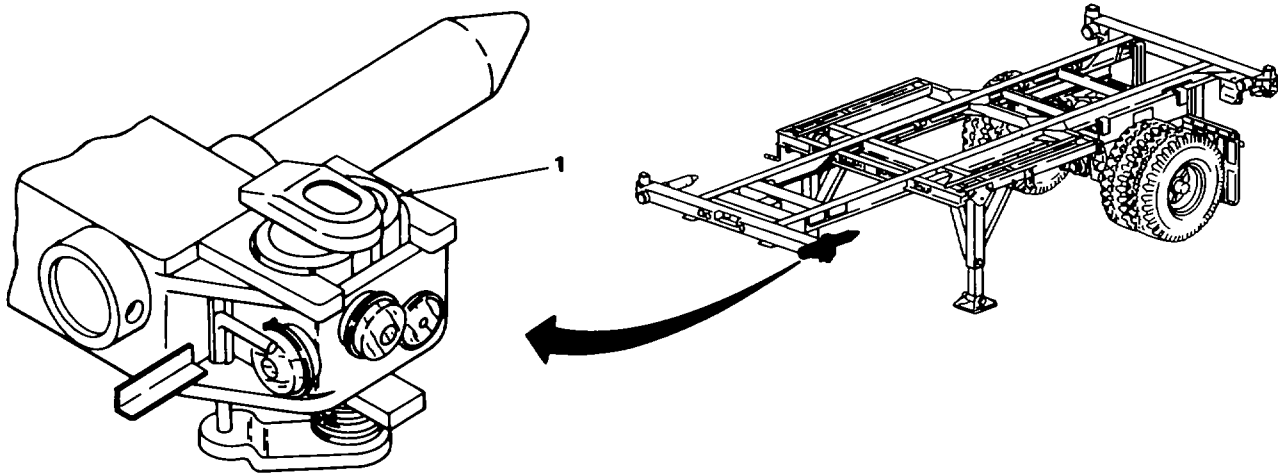
## SEMITRAILER-TO-TOWING VEHICLE CONNECTORS



KEY	CONNECTOR	FUNCTION
1	Service gladhand	Provides the connection between the semitrailer service brake system and the towing vehicle air supply system.
2	Emergency gladhand	Provides the connection between the semitrailer emergency brake system and the towing vehicle air supply system.
3	Cover plug, 7-way, 12-volt	Provides the connection between the semitrailer lights and a commercial towing vehicle electrical system.
4	Electrical plug, 12-way, 24-volt	Provides the connection between the semitrailer lights and a military towing vehicle electrical system.
5	Covers	A protective cover for the gladhands that keeps foreign matter out of semitrailer air lines when not connected to towing vehicle.

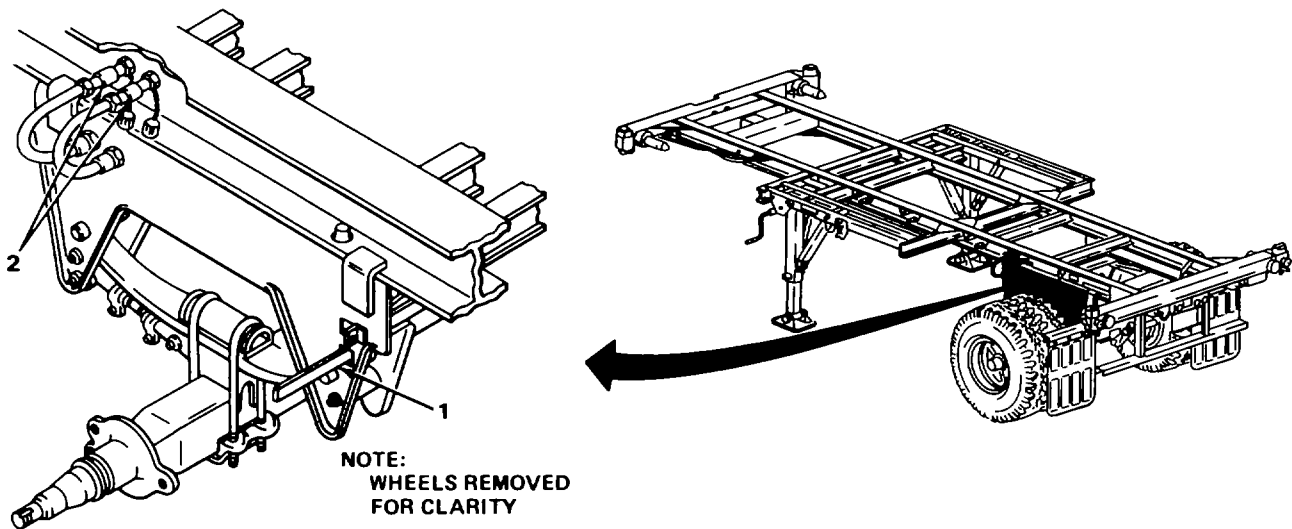
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## CONTAINER LOCKS



KEY	CONNECTOR	FUNCTION
1	Twist locks	Secures container(s) to semitrailer chassis.

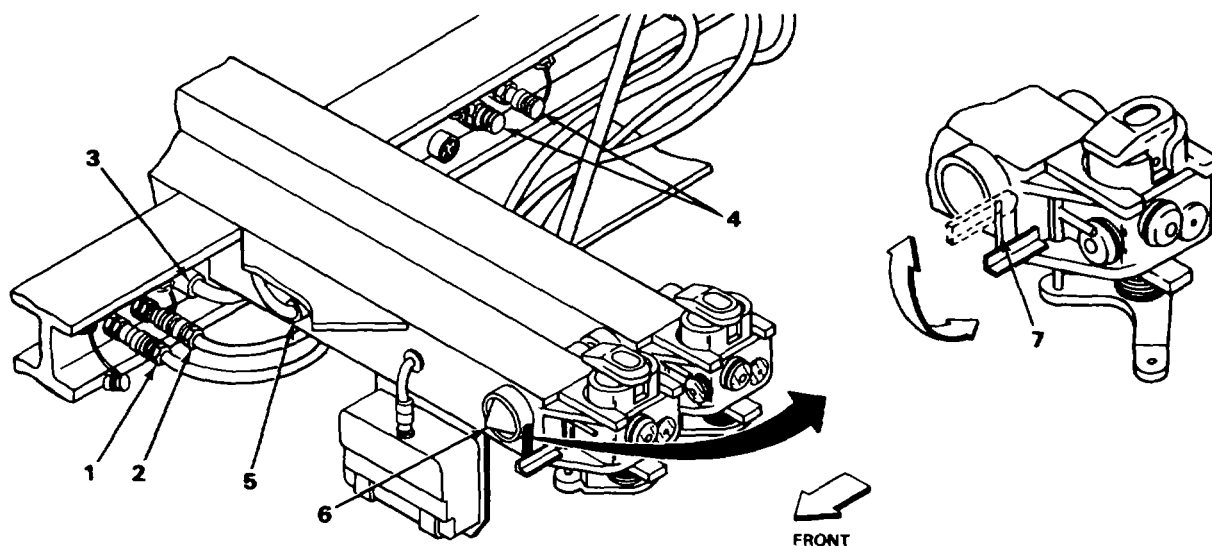
## BOGIE-TO-SEMITRAILER CONNECTORS



KEY	CONNECTOR	FUNCTION
1	Pull handle	Used to lock bogie to semitrailer chassis
2	Bogie airhose connectors	Connects bogie brake airhoses to semitrailer air supply system.

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## SEMITRAILER-TO-SEMITRAILER CONNECTORS



KEY	CONNECTOR	FUNCTION
1	Service brake hose assembly	Connects front and rear semitrailer service brake air system.
2	Emergency brake hose assembly	Connects front and rear semitrailer emergency brake air system.
3	Electrical harness	Connects front and rear semitrailer electrical system.
4	Dust covers	Protects service and emergency airbrake systems Keeps foreign material out of air lines when brake hose assemblies are not connected.-
5	Storage tube	Stores electrical plug when not connected to electrical receptacle.
6	Coupling rods	Used to couple two semitrailer chassis together.
7	Lockpins	Used to lock coupling rods in sleeves of semitrailer chassis.

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

Page Page

General.....	2-6.....	PMCS Column
Description.....	2-7	
Operator/Crew Preventive Main- .....	Special Instructions.....	2-6
tenance Checks and Services .....	2-8	

### GENERAL

This section contains PMCS for the semitrailer (MILVAN). The procedure lists checks, services, and criteria to ensure that the semitrailer is prepared for operation. Perform the checks and services at the specified intervals, keeping in mind the following guidelines:

Do your before (B) PMCS just before you operate the vehicle. Pay attention to the CAUTIONS and WARNINGS.

Do your (D) PMCS during operation. During operation means to monitor the vehicle and its related components while they are actually being operated.

Do your after (A) PMCS right after operating the vehicle. Pay attention to the CAUTIONS and WARNINGS.

Do your (M) PMCS monthly.

### SPECIAL INSTRUCTIONS

If something doesn't work, troubleshoot it with the instructions in this manual and notify your supervisor.

Always do your preventive maintenance in the same order so it gets to be a habit. Once you've had some practice, you'll spot anything wrong in a hurry.

If anything looks wrong and you can't fix it, write it on your DA Form 2404. If you find something seriously wrong, report it to organizational maintenance RIGHT NOW.

When you do your preventive maintenance, take along the tools you need to make all the checks. You always need a rag or two.

### WARNING

Drycleaning solvent PD80 is both toxic and flammable. Avoid prolonged breathing of vapors and avoid skin contact. Do not use near open flame or excessive heat. Flash point of solvent is 138°F (59°C).

Keep it Clean. Dirt, grease, oil, and debris only get in the way and may cover up a serious problem.

Clean as you work and as needed. Use drycleaning solvent PD-680 on all metal surfaces Use soap and water when cleaning rubber or plastic material.

Bolts, Nuts, and Screws. Check that they are not loose, missing, bent, or broken. Look for chipped paint, bare metal, or rust around bolt heads. If you think one is loose, report it to organizational maintenance.

## **SPECIAL INSTRUCTIONS - CONTINUED**

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

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

Hoses and Air Lines. Look for wear, damage, and leaks, and make sure clamps and fittings are tight. If a leak comes from a loose fitting or connector, or if something is broken or worn out, report it to organizational maintenance.

## **PMCS COLUMN DESCRIPTION**

Item No. - The order that PMCS should be performed, and also used as a source of item numbers for the TM number column on DA Form 2404, Equipment Inspection and Maintenance worksheet when recording results of PMCS.

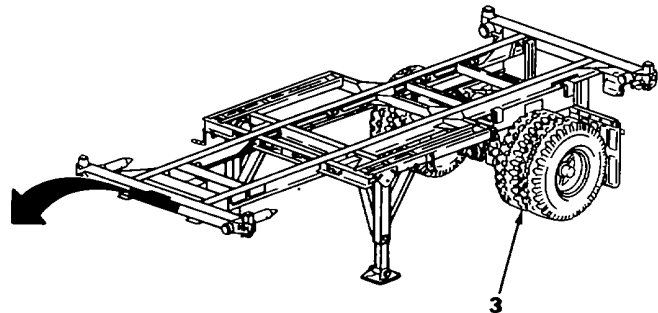
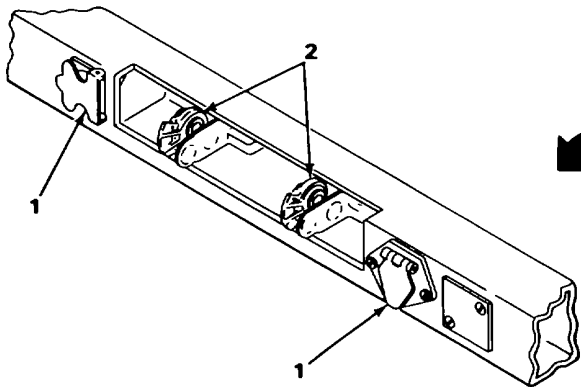
Interval - Tells when each check is to be performed.

Item To Be Inspected - Lists the checks to be performed.

Equipment Is Not Ready/Available If - Has an entry only when the semitrailer should not be operated or accepted with that problem.

# OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

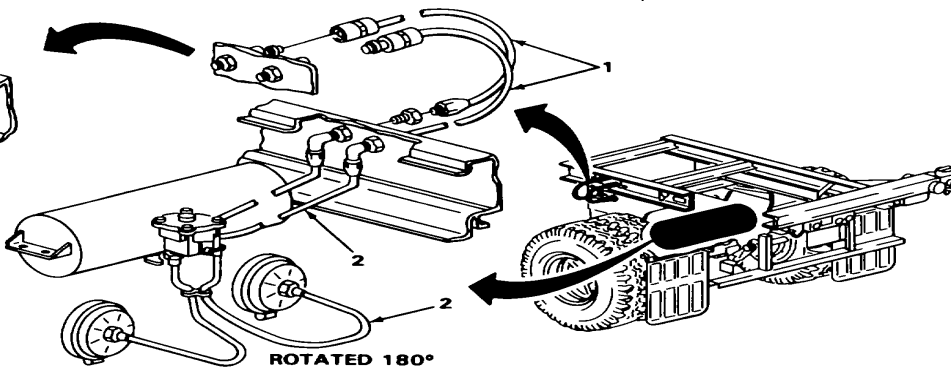
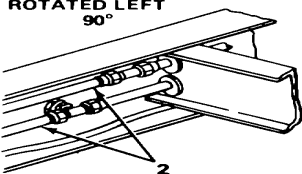
B - Before					D - During	A - After	W - Weekly
ITEM NO	INTERVAL				ITEM TO BE INSPECTED PROCEDURE: Check for and have repaired, filled, or adjusted as needed	Equipment is Not Ready/Available If:	
	B	D	A	W			
1.					<p>NOTE</p> <p>Perform PMCS if.</p> <p>You are the assigned operator but have not used the semitrailer recently.</p> <p>You are using the semitrailer for the first time.</p> <p>MAKE THE FOLLOWING WALKAROUND CHECKS:</p> <ul style="list-style-type: none"><li>a. Visually check for loose, missing, or damaged parts</li><li>b. Inspect electrical receptacles (1) and air connectors (2) on trailer and towing vehicles to assure a good connection.</li><li>c Check tires (3) for damage or low pressure 12 ply 75 psi (517 13 kPa) failure. 14 ply 90 psi (620.55 kPa)</li></ul>	<p>Tires have cuts or abrasions that could cause tire missing or unserviceable.</p>	



# OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES - CONTINUED

ITEM NO	INTERVAL				ITEM TO BE INSPECTED PROCEDURE: Check for and have repaired, filled, or adjusted as needed	Equipment is Not Ready/Available If:
	B	D	A	W		
2.		•			<p><b>AIRBRAKE SYSTEM</b></p> <p>a. Inspect airhoses (1) and lines (2) for damage.</p> <p>b. With air applied, check for leaks.</p> <p>c. Apply service brakes to check for proper operation.</p>	<p>Hoses are cracked or damaged and/or leaks.</p> <p>Brakes will not apply or release.</p>

ROTATED LEFT  
90°



ROTATED 180°

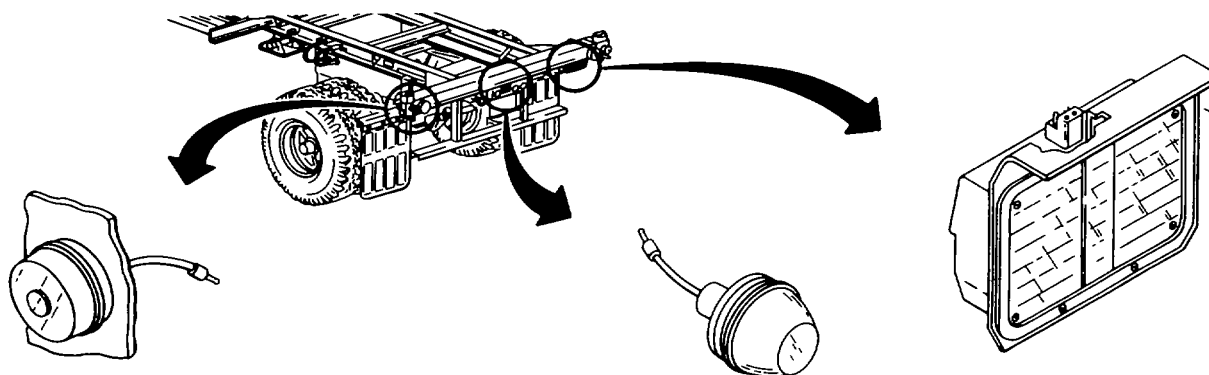
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3.

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## LIGHTS

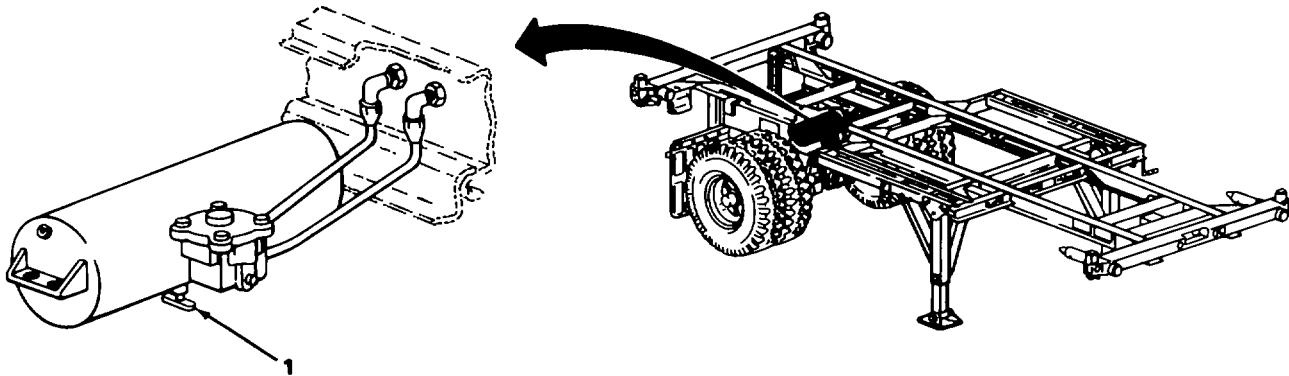
Check that lights work properly.



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# OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES - CONTINUED

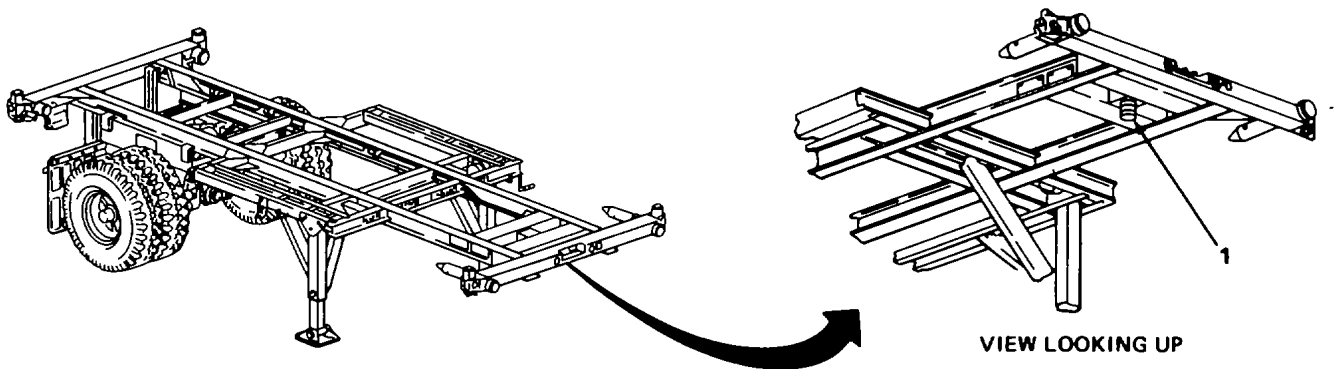
B - Before					D - During	A - After	W - Weekly
ITEM NO	INTERVAL				ITEM TO BE INSPECTED		
	B	D	A	W	PROCEDURE: Check for and have repaired, filled, or adjusted as needed		
4.			•		<p>AIR RESERVOIR</p> <p><b><u>WARNING</u></b></p> <p>Goggles must be worn when draining air reservoir to prevent particles from entering and injuring eyes. Do not stand in or near airstream while draining. Open draincock (1) momentarily to release accumulated moisture. Close draincock.</p>	Equipment is Not Ready/Available If:	



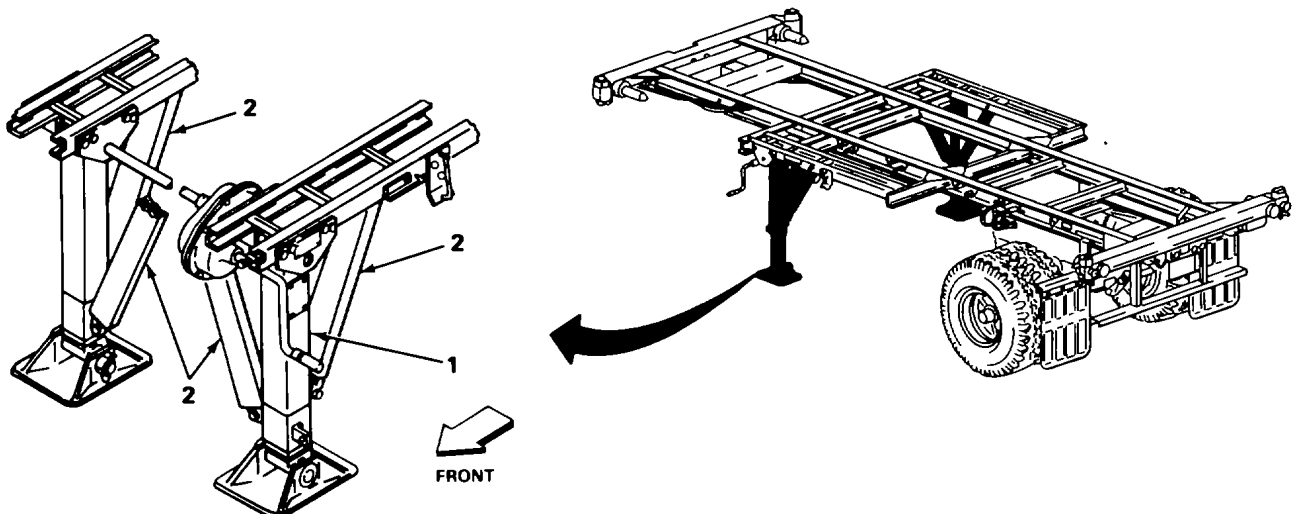
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OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES - CONTINUED

ITEM NO	INTERVAL					ITEM TO BE INSPECTED PROCEDURE:	Equipment is Not Ready/Available If:
	B	D	A	W	M		
5.						<ul style="list-style-type: none"> <li>KINGPIN                             <ul style="list-style-type: none"> <li>a. Inspect for cracks, damage, or uneven wear.</li> <li>b. Notify organizational maintenance if cracks, damage, or uneven wear are found</li> </ul> </li> </ul>	Kingpin (1) is cracked or damaged



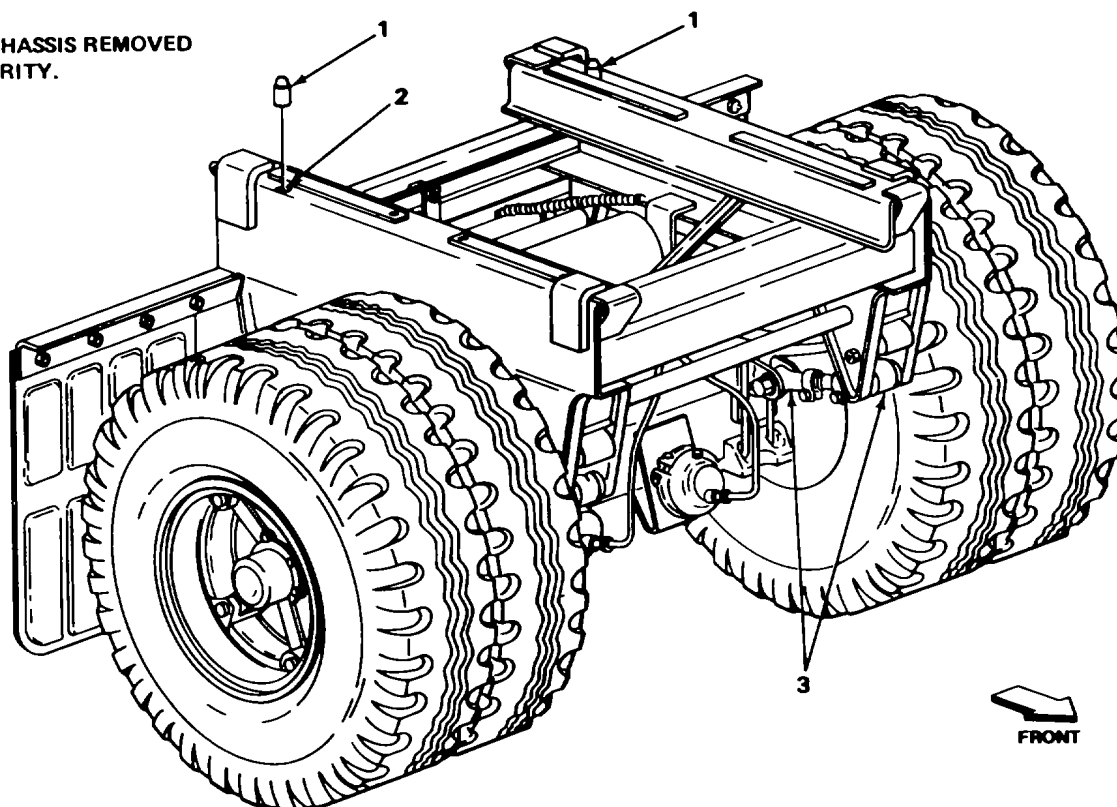
6.						<ul style="list-style-type: none"> <li>LANDING GEAR                             <ul style="list-style-type: none"> <li>a. Inspect for proper operation</li> <li>b. Check legs (1) and braces (2) for cracks or damage. Notify organizational maintenance if cracks or damage are found.</li> </ul> </li> </ul>	Evidence or indication that landing gear might collapse
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## OPERATOR CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES - CONTINUED

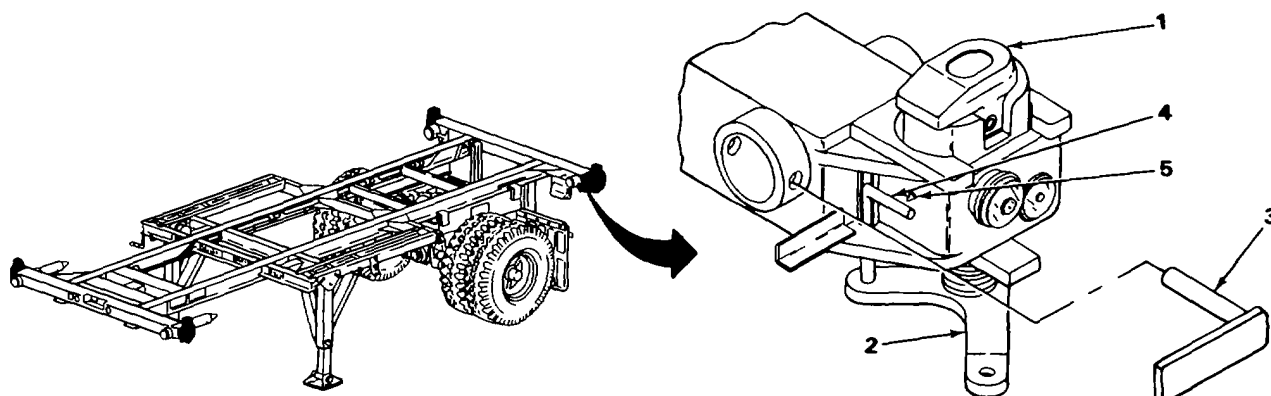
B - Before						D - During	A - After	W - Weekly
ITEM NO	INTERVAL					ITEM TO BE INSPECTED PROCEDURE:		Equipment is Not Ready/Available If:
	B	D	A	W	M			
7.						<ul style="list-style-type: none"> <li>FRAME AND SUSPENSION</li> </ul> <p>Inspect frame and suspension after semitrailer is loaded for damage.</p>		Frame is obviously broken or cracked.
8.						BOGIE ASSEMBLY <ul style="list-style-type: none"> <li>a. Inspect lockpins (1) and holes (2)</li> </ul> <p>for excessive wear.</p> <ul style="list-style-type: none"> <li>b. Check torque arms for straightness and condition of rubber bushings (3).</li> <li>c. Check for obvious misalignment.</li> </ul>		Lockpins are broken or not engage chassis rails.
will	•							
	•							
	•							

**NOTE**  
FRAME CHASSIS REMOVED  
FOR CLARITY.



## OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES - CONTINUED

ITEM NO	B - Before					D - During	A - After	W - Weekly
	INTERVAL							
	ITEM TO BE INSPECTED PROCEDURE:							
	B	D	A	W	M	Equipment is Not Ready/Available If:		
9.	<ul style="list-style-type: none"><li>•</li><li>•</li><li>•</li><li>•</li></ul>					REMOVABLE COUPLING RODS  a. Inspect rods for burrs. b. Check sleeves for damage. c. Check for missing rods broken.		Rods or sleeves are cracked or damaged. Lockpins are missing or
10.	<ul style="list-style-type: none"><li>•</li><li>•</li><li>•</li><li>•</li></ul>					TWIST LOCK ASSEMBLIES  a Inspect for damaged heads (1) b. Check for missing or damaged locking handles (2) and lockpins (3). c Check for damaged or missing handle locking plungers (4). d. Check for missing or damaged grease fittings (5).		Heads are cracked or broken. Lock handles or lockpins are missing. Plungers are broken.



### Section III. OPERATION UNDER USUAL CONDITIONS

	Page		Page
After Use.....	2-35	Preparation for Use.....	2-14
Operation.....	2-34		

#### PREPARATION FOR USE

Perform the operator/crew preventive maintenance checks and services in the Before (B) column before doing the procedures below.

Notify organizational maintenance for assistance whenever bogies are to be moved, or containers are to be loaded or removed from semitrailer chassis.

#### COUPLING TOWING VEHICLE TO SEMITRAILER CHASSIS

##### NOTE

**Prime mover is 5-ton M818 or any 5-ton truck with compatible hookup capability**

##### WARNING

**All persons not involved in coupling operation must stand clear of towing vehicle and semitrailer to prevent possible injury.**

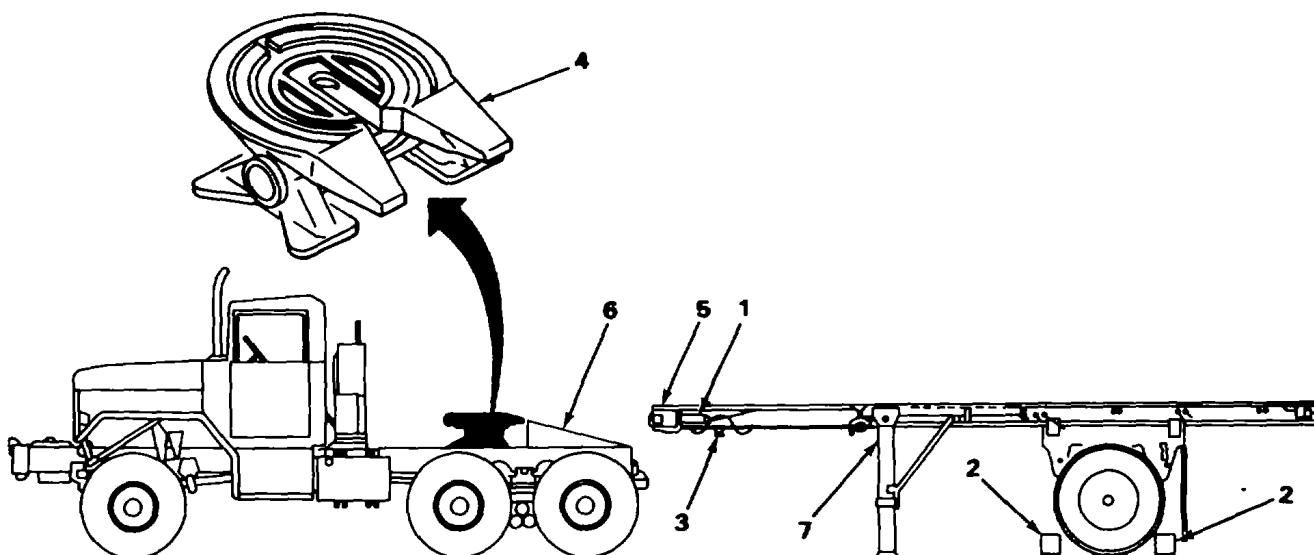
1. Check that coupling rods (1) are in stowed position.
2. Review and perform towing vehicle operating procedures to prepare towing vehicle for coupling.
3. Place wheel chocks (2) in front and back of left and right wheels on semitrailer chassis.
4. Aline towing vehicle with semitrailer.
5. Check that kingpin (3) is in line with fifth wheel kingpin lock (4).

##### CAUTION

**Steps 6 thru 8 should be done before fifth wheel approach ramps make contact with kingpin plate.**

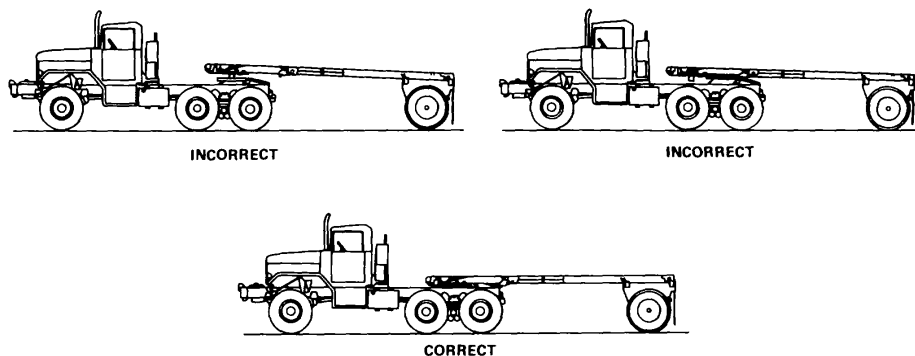
6. Check that kingpin plate (5) is above fifth wheel approach ramps (6).
7. Adjust kingpin (3) height as needed by raising or lowering the landing gear legs (7). See page 2-16.
8. Check that fifth wheel kingpin lock (4) is open.
9. Slowly back towing vehicle until fifth wheel kingpin lock (4) closes on kingpin (3).

## PREPARATION FOR USE - CONTINUED

**CAUTION**

There should be no daylight between kingpin plate and fifth wheel, nor should kingpin be hooked over front of fifth wheel.

10. Visually check coupling.



11. Ease towing vehicle forward to check coupling.

**CAUTION**

Loop both airhoses and intervehicular cable around the hanger pipe before connecting to semitrailer so they don't interfere with towing vehicle wheels.

**NOTE**

If coupling is not locked, rock towing vehicle back and forth slowly until kingpin is locked. If hookup failed, repeat steps 4 thru 11.

## PREPARATION FOR USE - CONTINUED

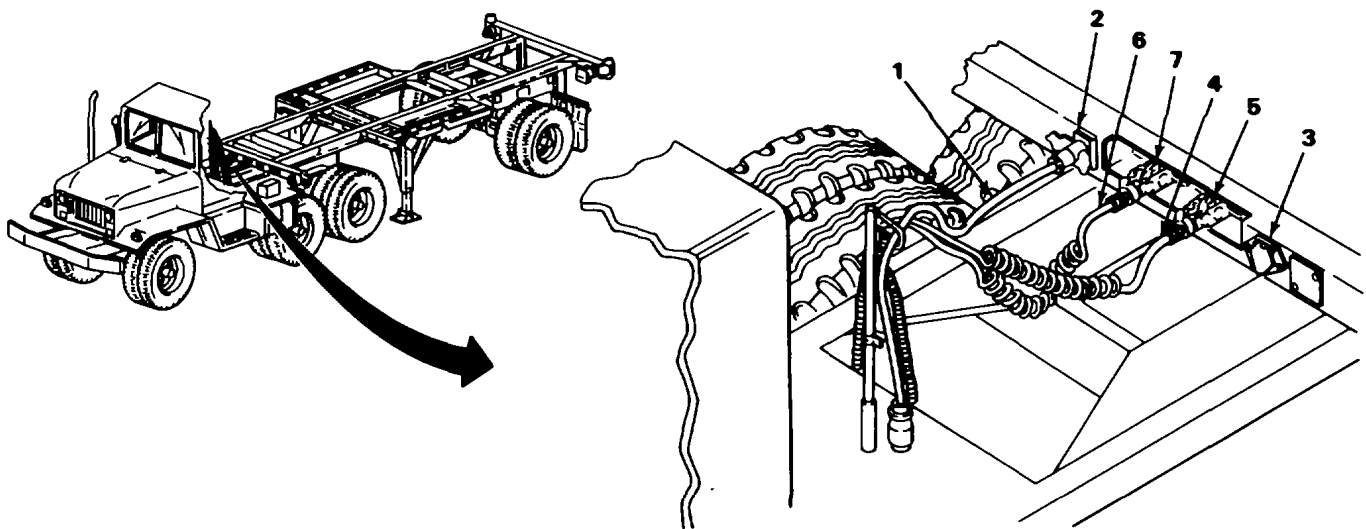
### COUPLING TOWING VEHICLE TO SEMITRAILER CHASSIS - CONTINUED

#### NOTE

**If commercial towing vehicle is used, connect cable plug (1) to 12-volt electrical socket (2).**

**If a military towing vehicle is used, connect cable plug (1) to 24-volt electrical socket (3).**

12. Connect towing vehicle intervehicular cable to semitrailer chassis.
13. Connect service airhose (4) to right gladhand (5).
14. Connect emergency airhose (6) to left gladhand (7).
15. Check airhose connections for security.
16. Turn on towing vehicle air supply to pressurize airbrake system.



### RAISING LANDING GEAR

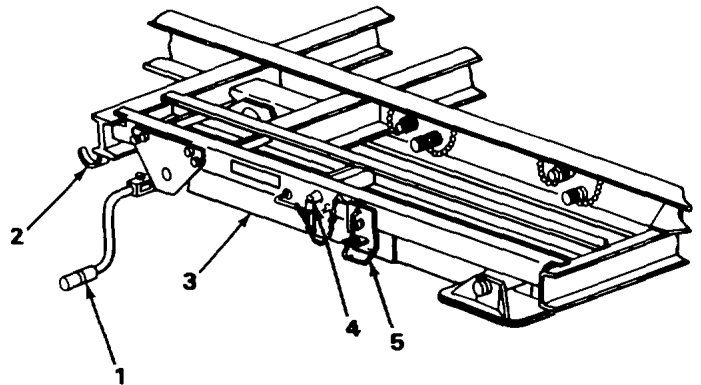
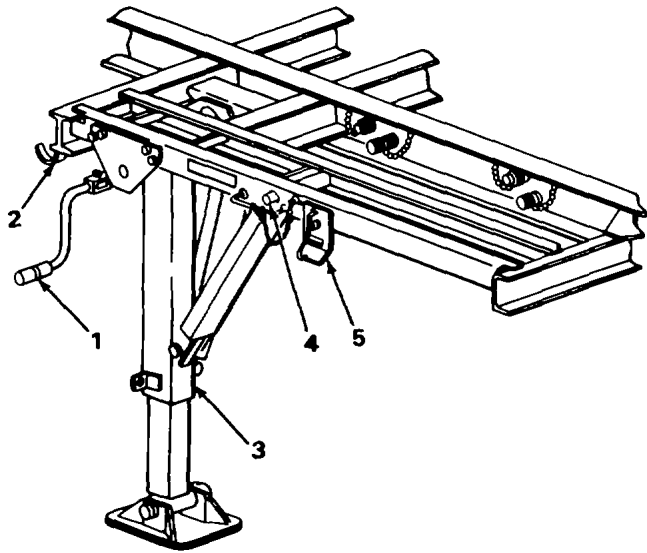
#### CAUTION

**Recheck coupling lock by trying to ease towing vehicle and semitrailer forward before raising landing gear. If not properly coupled, repeat coupling procedure.**

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**PREPARATION FOR USE - CONTINUED**

1. Unhook crank handle (1) from stowage hook (2)
2. Pull crank out for low speed and turn crank handle (1) clockwise until weight is off legs.
3. Push crank in for high speed and turn crank handle (1) clockwise until legs (3) are fully retracted.
4. Rehook crank handle (1) in stowage hook (2).
5. Remove lockpin (4).
6. Push leg (3) rearward and upward until leg (3) is secured in uplock (5).
7. Insert lockpin (4).
8. Remove chock blocks from front and back of semitrailer left and right wheels.

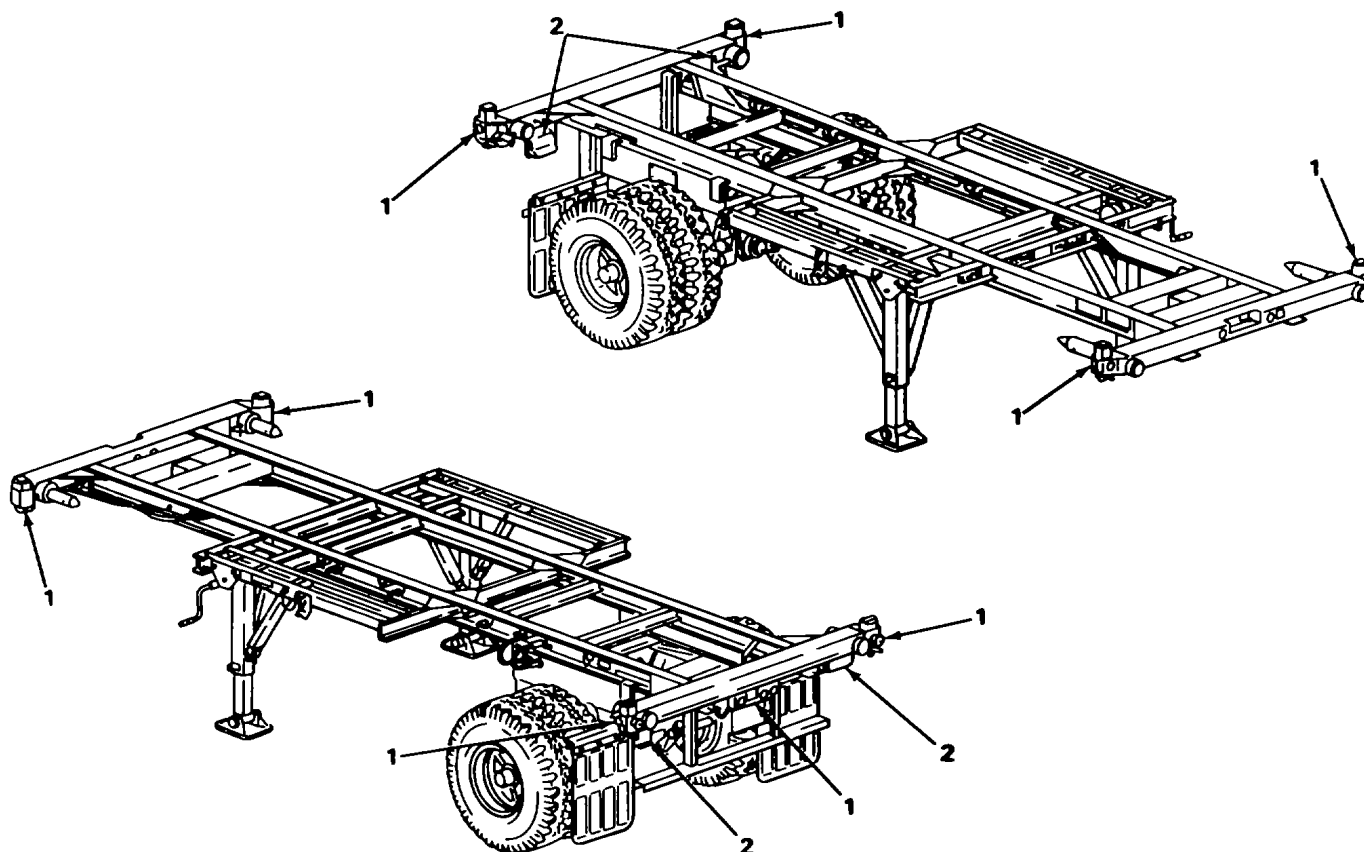
**CHECKING LIGHTS****WARNING**

Do not operate semitrailer with burned out or missing running, stop, or turnlights. Not being seen could result in injury to personnel and damage to equipment.

TA223075

**PREPARATION FOR USE - CONTINUED****CHECKING LIGHTS - CONTINUED**

1. Turn on service lights in towing vehicle and check that clearance (1) and taillights (2) are lit.
2. Have an assistant apply service brakes while you check that both brake lights (2) are lit.
3. Check that both brake lights go off when brakes are released.
4. Operate left and right turn signals and check that turn signal lights (2) flash.

**COUPLING TWO SEMITRAILER CHASSIS TOGETHER****NOTE**

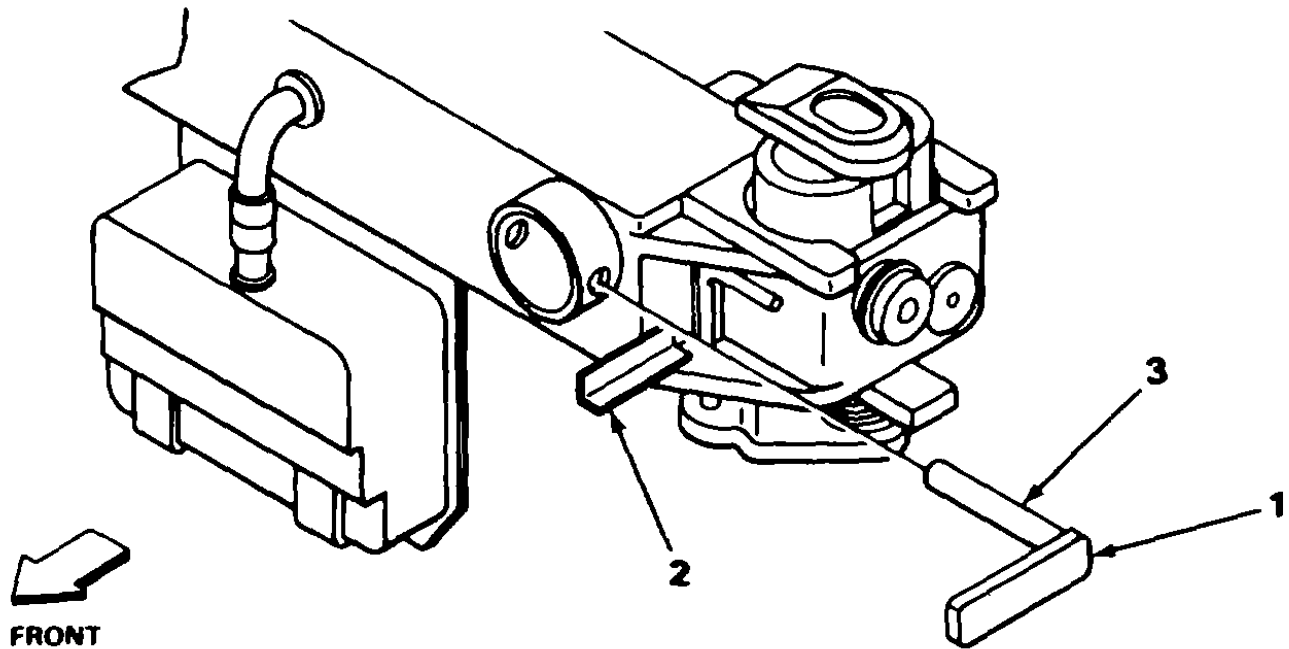
The following procedures describe coupling two semitrailers using a military towing vehicle.

Do not perform steps 12, 13, 21, and 22 when using a commercial towing vehicle.

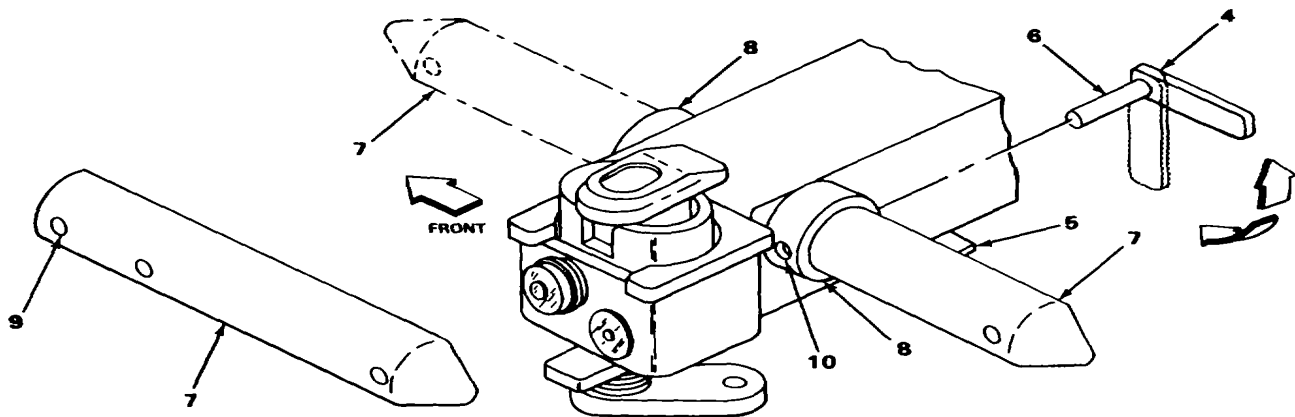
TA223076

## PREPARATION FOR USE - CONTINUED

1. Stow rear bumper on front semitrailer chassis See page 3-15.
2. Rotate handle (1) up to clear retaining angle (2). Pull out lockpin (3) on both sides of rear crossmember on front semitrailer chassis.



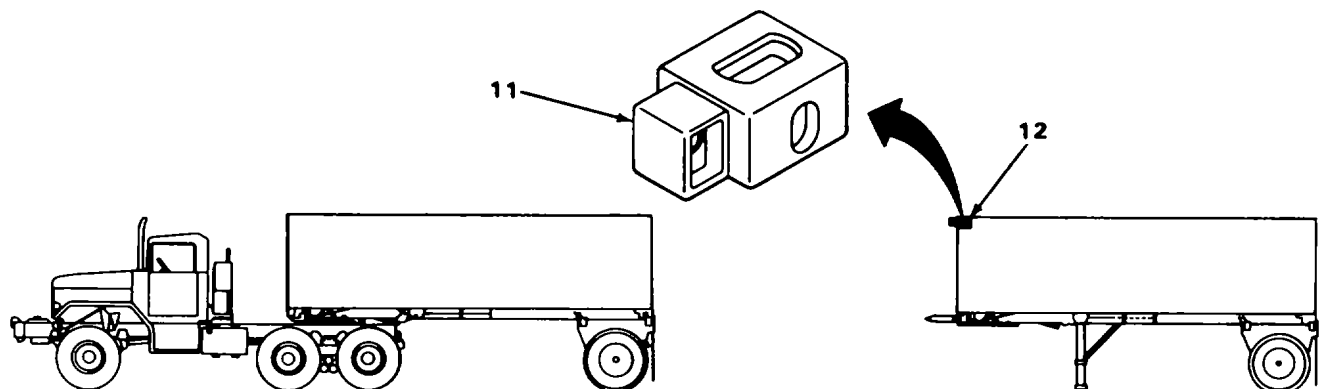
3. Rotate handle (4) up to clear retaining angle (5) and pull out lockpin (6).
4. Pull coupling rod (7) out of sleeve (8) and turn it over.
5. Push coupling rod (7) into front of sleeve (8) with pointed end of coupling rod facing forward on front of semitrailer chassis.
6. Aline coupling rod hole (9) with hole (10) in sleeve (8).
7. Insert lockpin (6) all the way through holes (9) and (10).
8. Rotate handle (4) to down position between sleeve (8) and retaining angle (5).



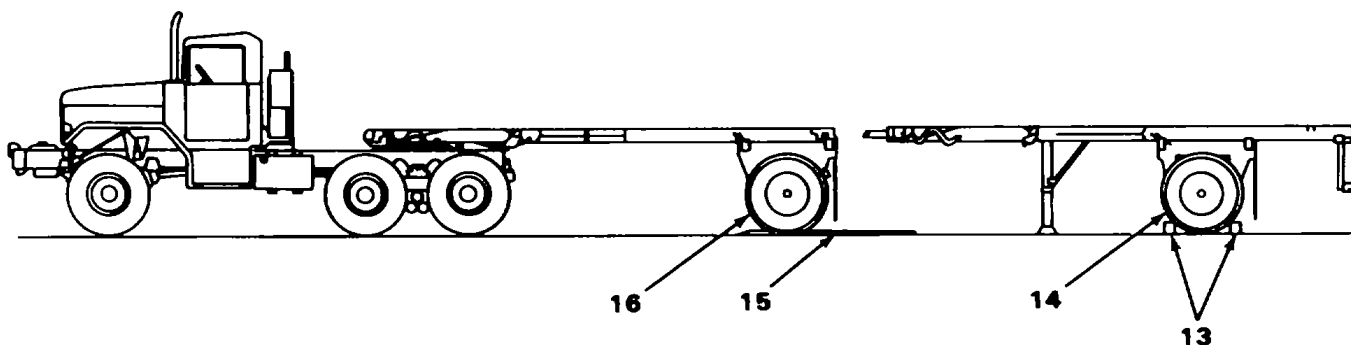
**PREPARATION FOR USE - CONTINUED****COUPLING TWO SEMITRAILER CHASSIS TOGETHER - CONTINUED****CAUTION**

**When coupling semitrailer chassis with containers installed, spacer blocks must be placed into fitting holes at top front end of rear container. Failure to do so will place extreme torsional stress on chassis during operation and resultant damage.**

9. Install spacer blocks (11) into fitting holes (12) at top of container.



10. Place wheel chocks (13) in front and back of both wheels (14) of rear semitrailer.  
 11. Aline front semitrailer chassis with rear semitrailer chassis.  
 12. Place ramps (15) approximately 6 to 8 inches high and 6 feet long, in line with the wheels (16) of front semitrailer chassis, and just in front of rear semitrailer chassis  
 13. Back the front semitrailer wheels onto ramps (15).



TA223078

## PREPARATION FOR USE - CONTINUED

**CAUTION**

**Make sure that sleeves on front semitrailer chassis and coupling rods on rear semitrailer chassis are in alignment.**

**Use landing gear crank in low speed only when raising or lowering semitrailer with loaded container.**

Make sure gear is fully engaged before cranking.

14. Aline the coupling rods (1) to sleeves (2) by raising or lowering landing gear legs on rear semitrailer chassis. See page 2-16.

**NOTE**

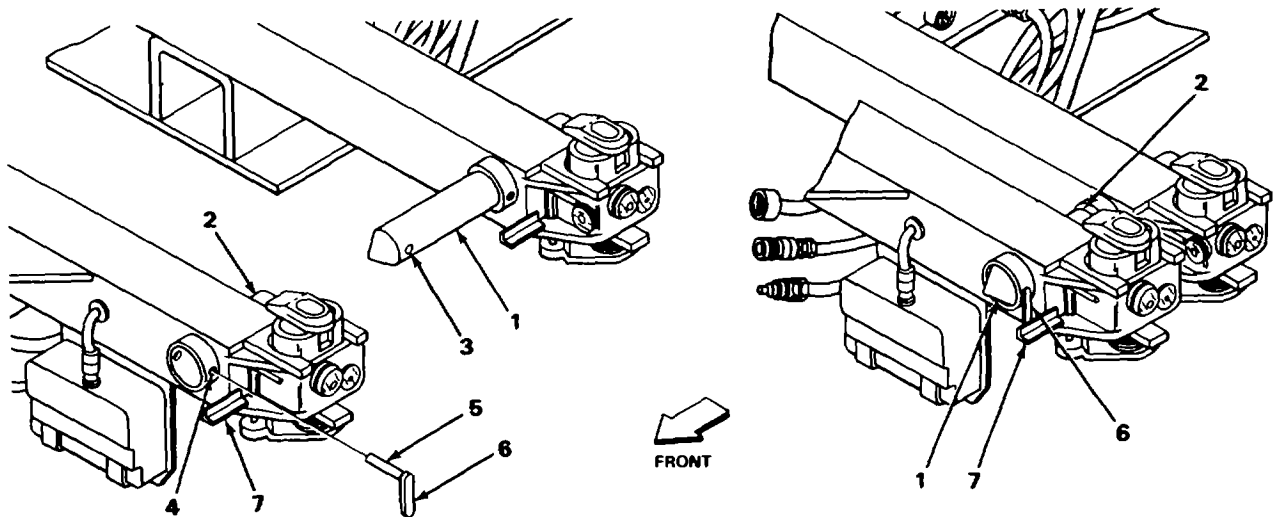
**Use an assistant as a guide to aline coupling rods to sleeves.**

15. Slowly back the front semitrailer chassis so coupling rods (1) slide into sleeves (2). Correct vertical misalignment by raising or lowering landing gear legs on rear semitrailer.

16. Back the front semitrailer until hole (3) in coupling rods (1) is alined with hole (4) in sleeves.

17. Insert lockpins (5) through holes (4) and (3).

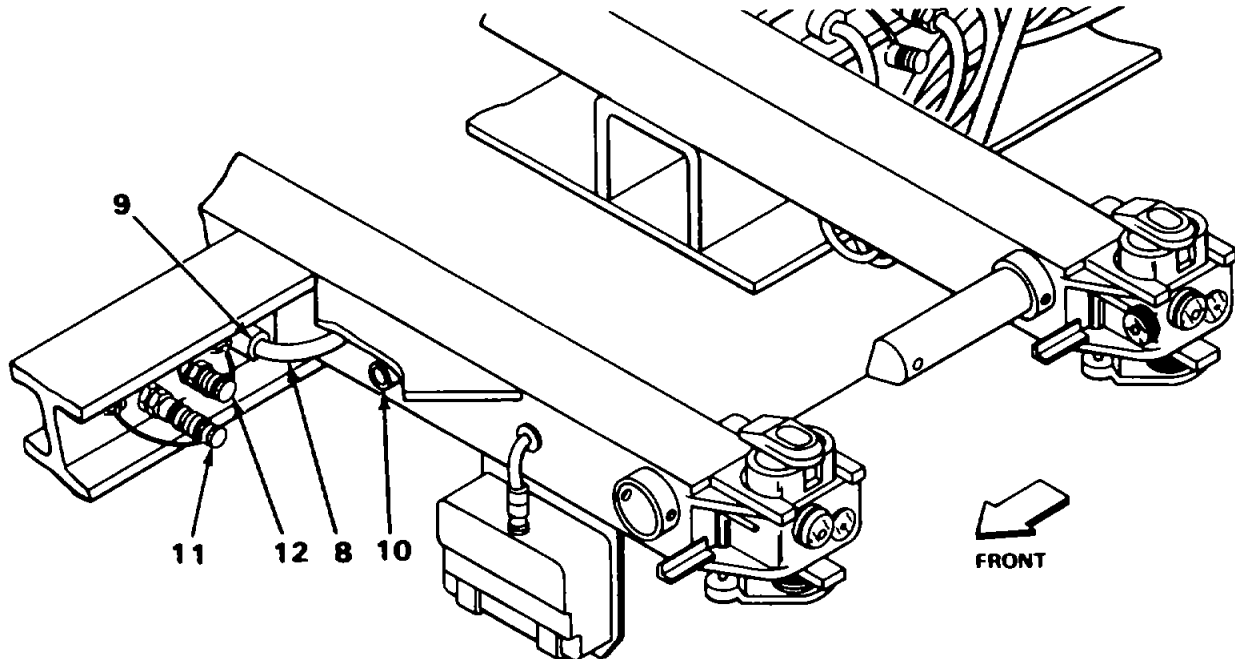
18. Rotate handles (6) down between sleeve (2) and retaining angle (7)



TA223079

**PREPARATION FOR USE - CONTINUED****COUPLING TWO SEMITRAILER CHASSIS TOGETHER - CONTINUED**

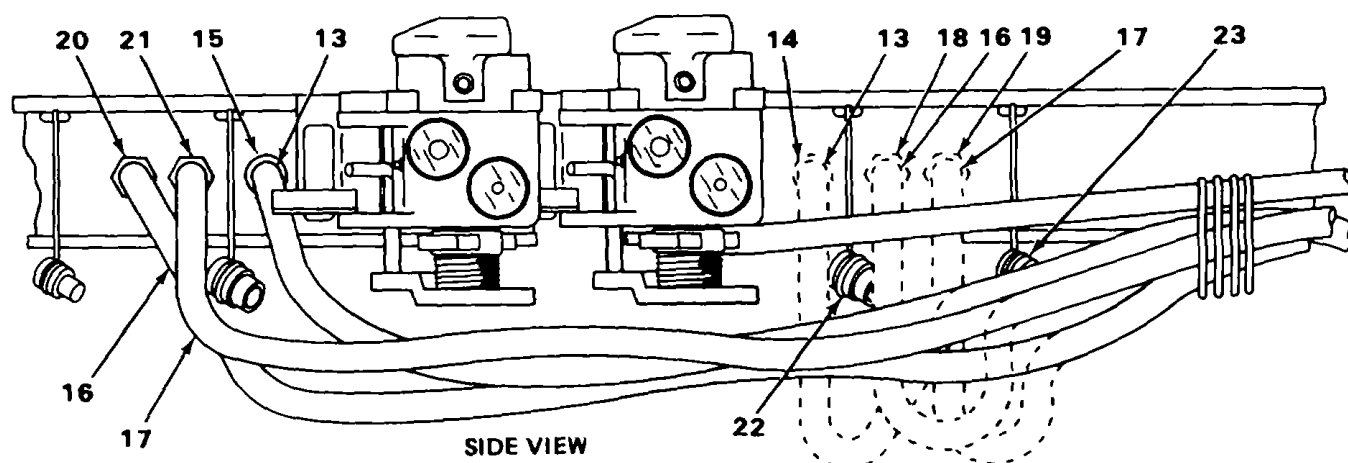
19. Stow landing gear legs on rear semitrailer chassis. See page 2-17.
20. Remove wheel chock from wheels on rear semitrailer chassis.
21. Drive front semitrailer chassis wheels off ramps.
22. Remove ramps.
23. Disconnect light plug (8) from receptacle (9) and store in storage tube (10).
24. Remove dust caps (11) and (12).

**CAUTION**

**Follow steps 25 through 28 carefully. If service and emergency air lines are crossed, damage to trailer brake system could result.**

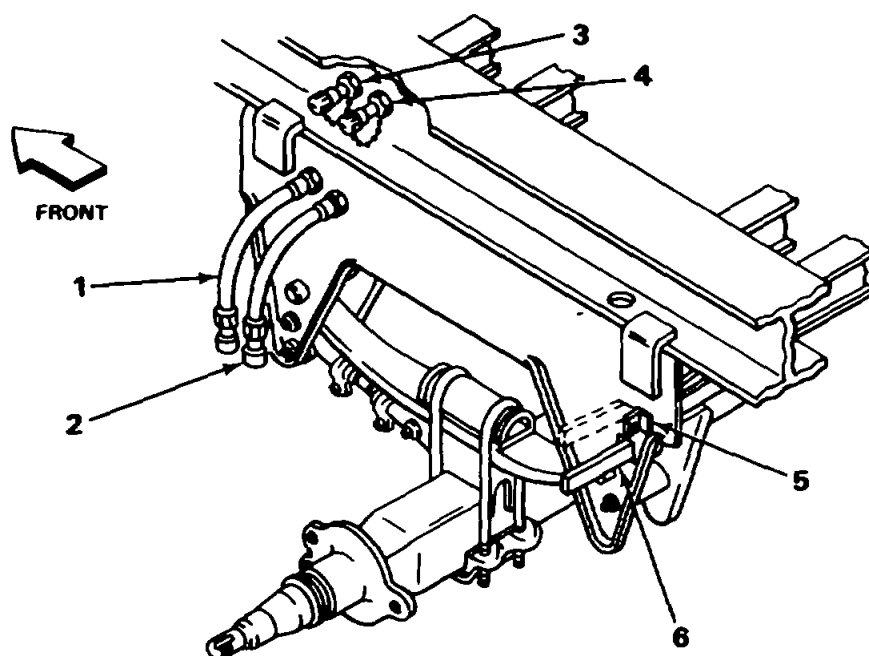
25. Disconnect connector (13) from receptacle (14) and reconnect to receptacle (15).
26. Disconnect airhoses (16) and (17) from quick disconnect nipples (18) and (19).
27. Connect airhoses (16) and (17) to quick disconnect nipples (20) and (21).
28. Place dust caps (22) and (23) on quick disconnects (18) and (19).
29. Check airhose and electrical connections for security.

## PREPARATION FOR-USE - CONTINUED



## MOVING FRONT SEMITRAILER BOGIE TO REAR SEMITRAILER CHASSIS

1. Apply semitrailer service brakes and disconnect front bogie airhoses (1) and (2). Bogie brakes will lock.
2. Place dust caps on quick disconnect nipples (3) and (4).
3. Using a 9/16-inch open-end wrench, back off pull handle lock screw (5).
4. Take pull handle (6) out of top notch and push it down into bottom notch.



**NOTE:**  
WHEELS REMOVED  
FOR CLARITY.

5. Release semitrailer service brakes. Front bogie brakes will remain locked.

**CAUTION**

Prevent damage to license plate holder by providing clearance when shifting bogie.

## PREPARATION FOR USE - CONTINUED

### MOVING FRONT SEMITRAILER BOGIE TO REAR SEMITRAILER CHASSIS - CONTINUED

#### NOTE

**Use an assistant as a guide to position front bogie against rear bogie and align lockpins with holes in main rail.**

6. Slowly drive the coupled semitrailer chassis forward until the front bogie is against the rear bogie.
7. Repeat steps 2, 3, and 4 for rear bogie.
8. Slowly back the coupled semitrailer chassis until lockpin of front bogie is aligned with fifth hole in rail and lockpin of rear bogie is aligned with third hole in rail.

#### NOTE

**Do steps 9 through 13 for both bogies.**

9. Pull pull handle (7) out of bottom notch and place in top notch to engage lockpin (8) in hole.

#### NOTE

**If lockpins do not engage holes, gently rock the semitrailer back and forth, while pulling up on pull handle, until lockpins are fully engaged.**

10. Using a 9/16-inch open-end wrench, tighten handle lock screw (9) against pull handle (7).
11. Remove dust caps (10) from quick disconnects (11) and (12).
12. Connect service and emergency brake hoses (13) and (14) to quick disconnects (11) and (12).
13. Check security of airhose connections.

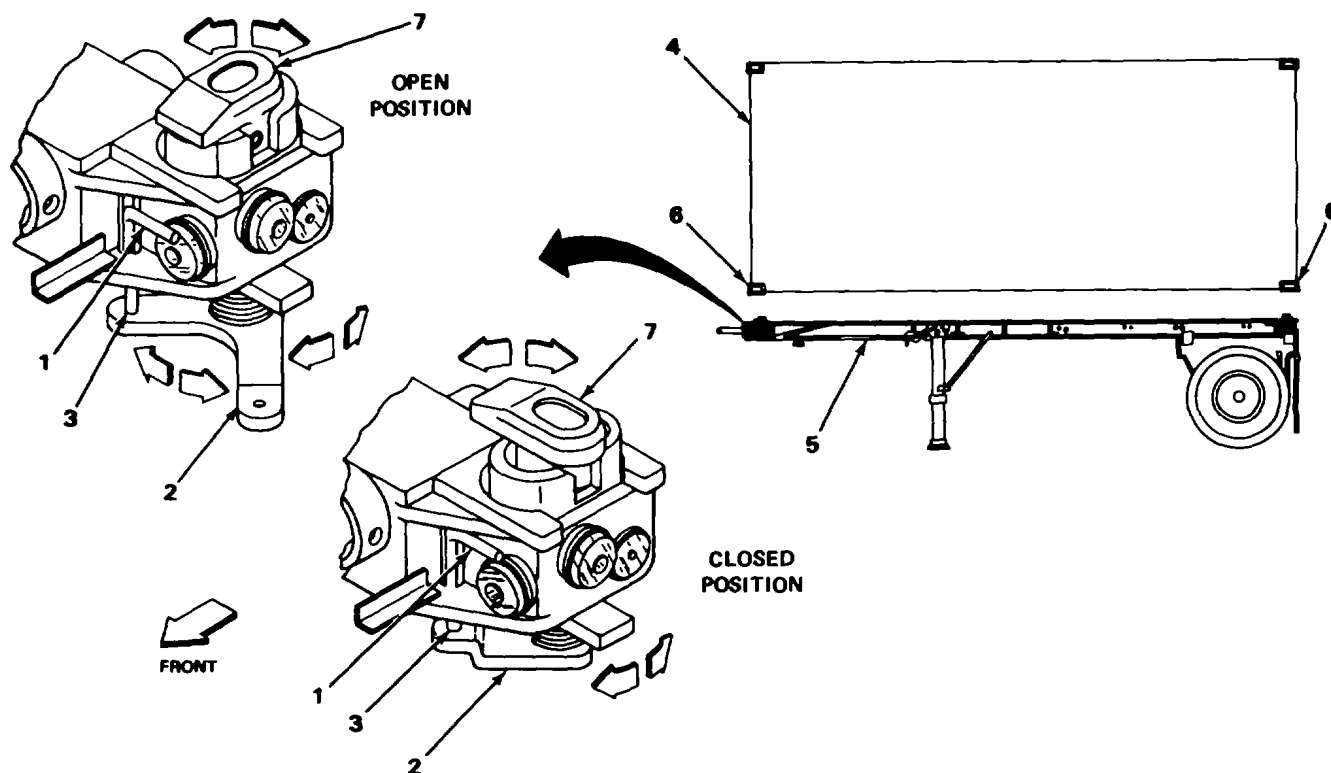
**PREPARATION FOR USE - CONTINUED****INSTALLATION OF 20-FOOT CONTAINER ON SEMITRAILER CHASSIS****CAUTION**

Twist locks must be in unlocked position when installing container on semitrailer chassis.

**NOTE**

Do steps 1 thru 3 if twist locks are in locked position. Container is secured to semitrailer with four twist locks.

1. Lift plunger handles (1).
2. Rotate stem handles (2) counterclockwise one-quarter turn.
3. Engage plungers (3) into holes of stem handles (2).
4. Using a suitable hoist, place container (4) on semitrailer chassis (5) so corner fittings (6) can be secured by twist locks (7).

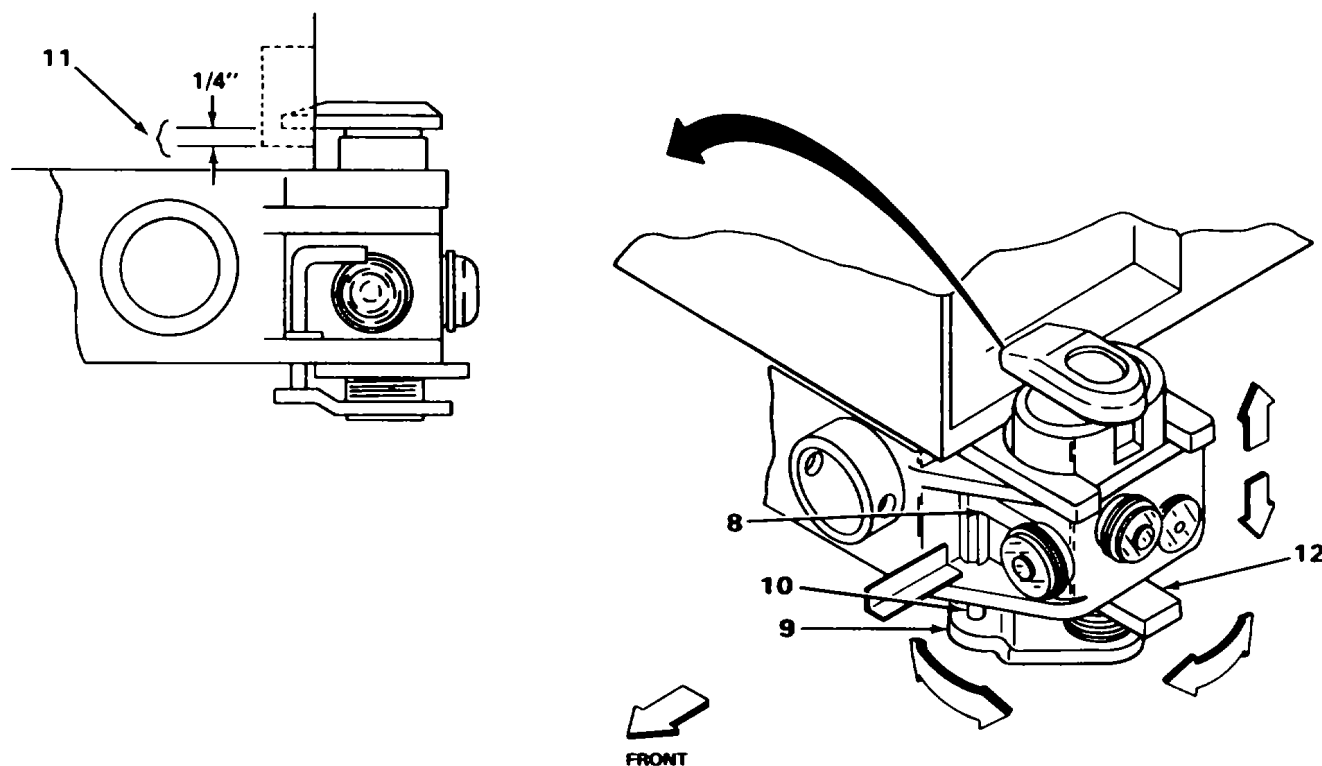
**CAUTION**

Failure to maintain 1/4-inch (6.35-mm) clearance between twist lock head and container corner fittings (when locked) will result in damage to twist locks by road shock as well as stress during vehicle operation.

TA223083

**PREPARATION FOR USE - CONTINUED****INSTALLATION OF 20-FOOT CONTAINER ON SEMITRAILER CHASSIS - CONTINUED**

5. Lift plunger handles (8).
6. Rotate stem handles (9) clockwise one-quarter turn.
7. Engage plungers (10) into holes in stem handles.
8. Maintain 1/4-inch (6.35-mm) clearance (11) by turning stem nut (12) counterclockwise to increase clearance, and clockwise to decrease clearance.

**INSTALLATION OF TWO COUPLED CONTAINERS ON TWO COUPLED CHASSIS****CAUTION**

Twist locks must be in unlocked position when installing coupled containers on coupled chassis or they may be damaged.

**NOTE**

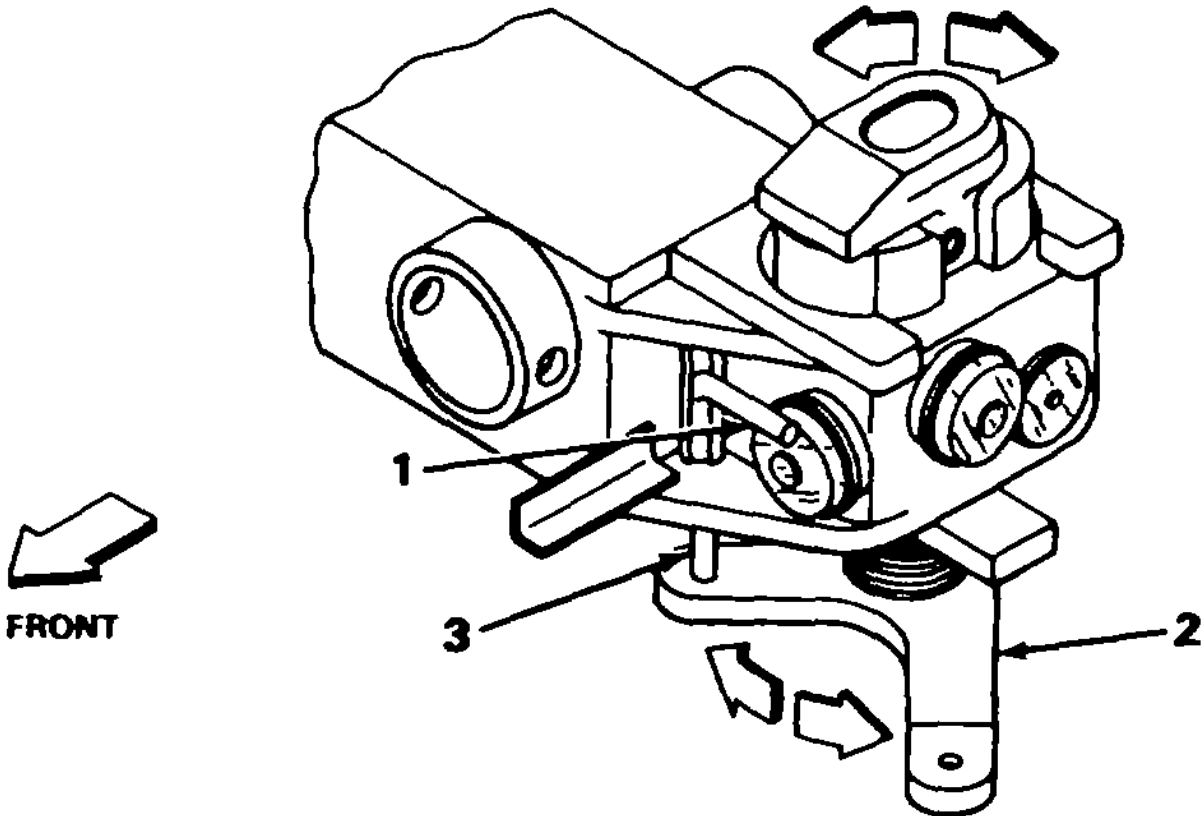
Do steps 1 thru 3 when twist locks are found in locked position.

Containers are secured to semitrailer with eight twist locks.

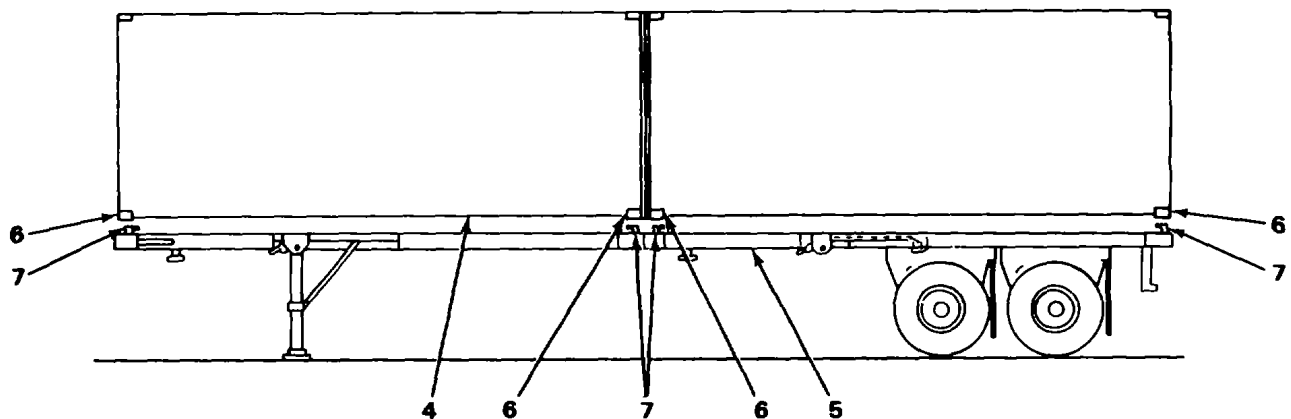
TA223084

**PREPARATION FOR USE - CONTINUED**

1. Lift plunger handles (1).
2. Rotate stem handle (2) counterclockwise one-quarter turn.
3. Engage plunger (3) into hole of stem handle.



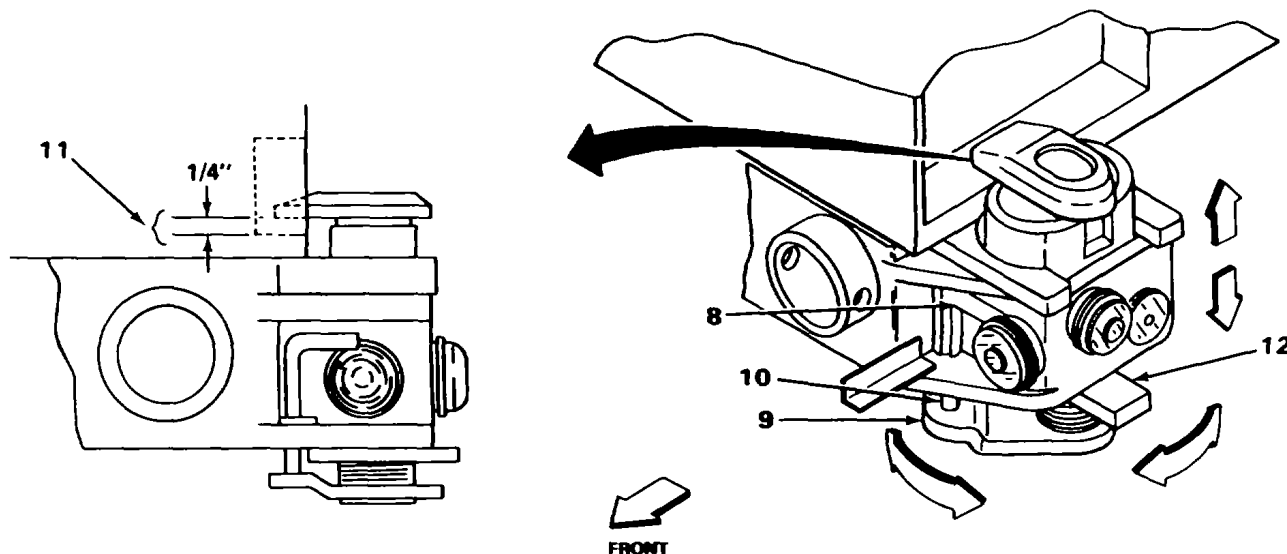
4. Using a suitable hoist, place coupled containers (4) on coupled semitrailer chassis (5).
5. Place containers so corner fittings (6) can be held by twist locks (7).

**CAUTION**

Failure to maintain 114-inch (6.35-mm) clearance between twist lock head and container corner fitting (when locked) will result in damage to twist locks by road shock as well as stress during vehicle operation.

**PREPARATION FOR USE - CONTINUED****INSTALLATION OF TWO COUPLED CONTAINERS ON TWO COUPLED CHASSIS - CONTINUED**

6. Lift plunger handle (8).
7. Rotate stem handle (9) clockwise one-quarter turn.
8. Engage plunger (10) into hole in stem handle.
9. Maintain 1/4-inch (6.35mm) clearance (11) by turning stem nut (12) counterclockwise to increase clearance, and clockwise to decrease clearance.

**INSTALLING 40-FOOT CONTAINER ON TWO COUPLED CHASSIS****CAUTION**

All twist locks must be in unlocked position when installing 40-foot container on coupled semitrailer chassis or they may be damaged.

**NOTE**

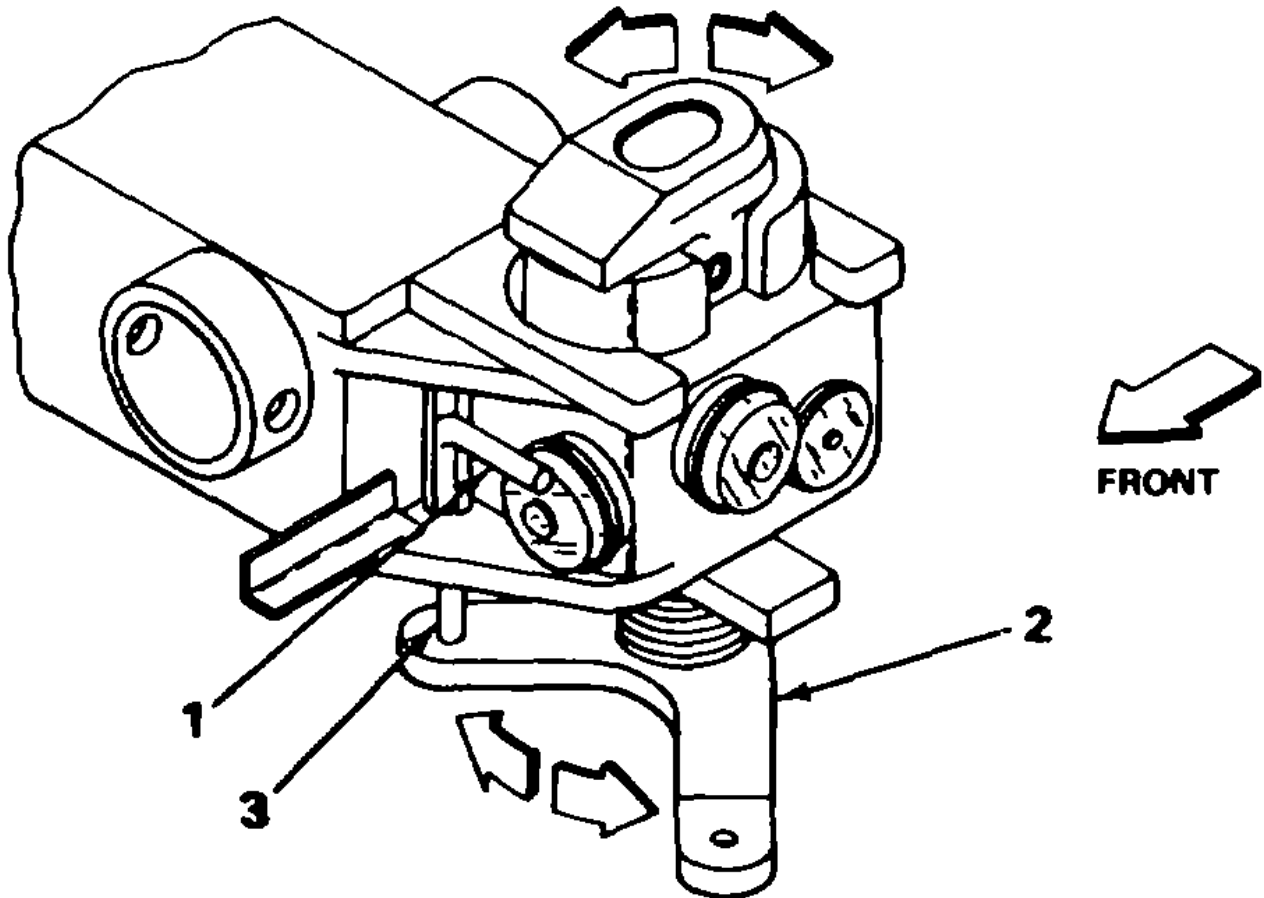
Do steps 1 thru 3 when twist locks are found in locked position.

40-foot container is secured to coupled semitrailers by two twist locks at front and two twist locks at rear of coupled semitrailers.

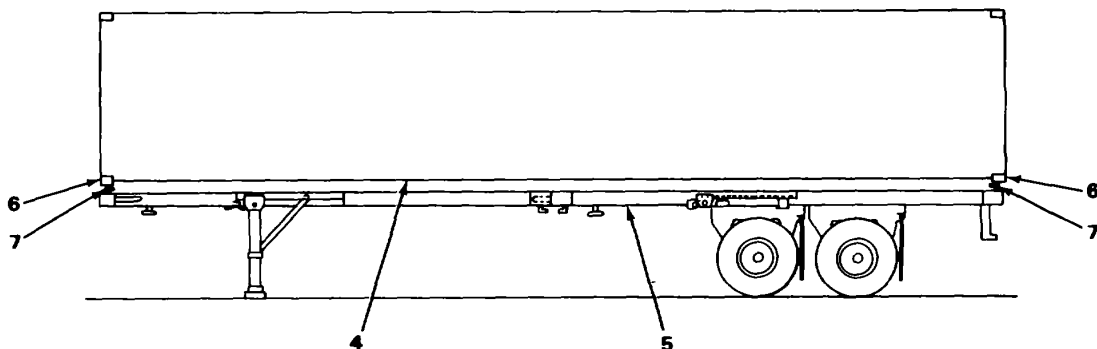
TA223086

**PREPARATION FOR USE - CONTINUED**

1. Lift plunger handle (1).
2. Rotate stem handle (2) counterclockwise one-quarter turn.
3. Engage plunger (3) into hole in stem handle.



4. Using a suitable hoist, place 40-foot container (4) on coupled semitrailer chassis (5).
5. Set container so corner fittings (6) can be held by twist locks (7).

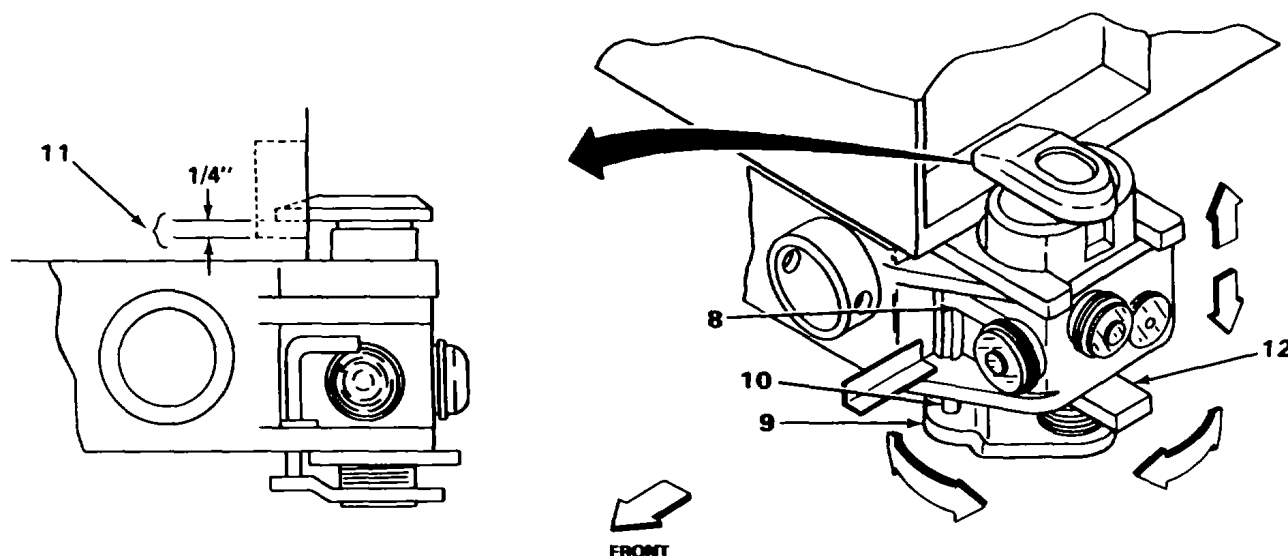
**CAUTION**

Failure to maintain 1/4-inch (6.35-mm) clearance between twist lock head and container corner fitting when locked will result in damage to twist locks because of road shock and stress during vehicle operation.

## PREPARATION FOR USE - CONTINUED

## INSTALLING 40-FOOT CONTAINER ON TWO COUPLED CHASSIS - CONTINUED

6. Lift plunger handle (8).
7. Rotate stem handle (9) clockwise one-quarter turn.
8. Engage plunger (10) into hole in stem handle.
9. Maintain 1/4-inch (6.35-mm) clearance (11) by turning stem nut (12) counterclockwise to increase clearance, and clockwise to decrease clearance.



## RELOCATING BOGIES FOR TOWING UNLOADED COUPLED SEMITRAILER CHASSIS

## NOTE

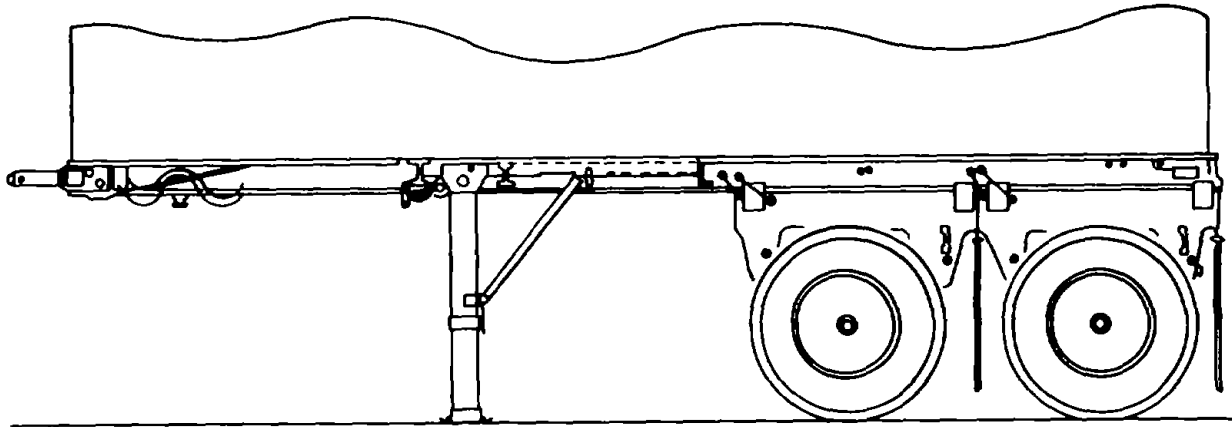
**Bogies should be located as far forward as possible on the rear semitrailer chassis when coupled semitrailer chassis are used without containers installed.**

**Use an assistant as a guide to position bogies and align lockpins with holes in main rail.**

TA223088

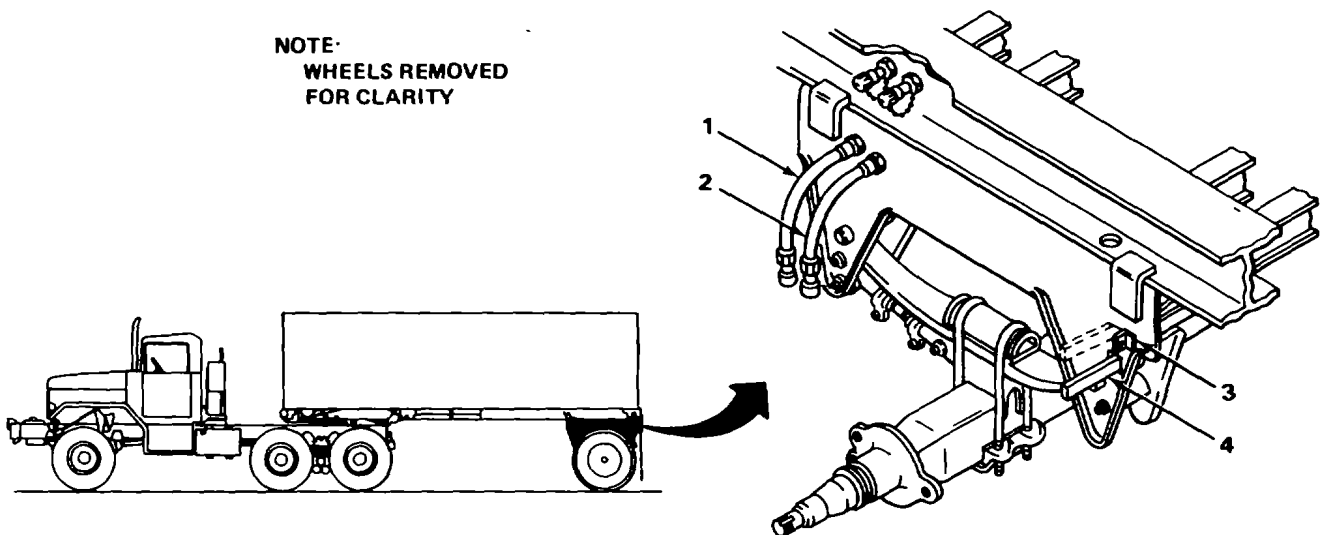
**PREPARATION FOR USE - CONTINUED****INSTALLING TANDEM BOGIE ASSEMBLY ON SEMITRAILER CHASSIS****NOTE**

High density loads require a tandem bogie assembly on 20-foot semitrailer chassis.



1. Couple towing vehicle to semitrailer chassis. See page 2-14.
2. Apply semitrailer service brakes.
3. Disconnect bogie airbrake hoses (1) and (2). Bogie brakes will lock.
4. Using a 9/16-inch open-end wrench, back off handle lock screw (3).
5. Take pull handle (4) out of top notch and push it down into bottom notch.

**NOTE:**  
WHEELS REMOVED  
FOR CLARITY



6. Release semitrailer service brakes. Bogie brakes will remain locked.

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**PREPARATION FOR USE - CONTINUED****INSTALLING TANDEM BOGIE ASSEMBLY ON SEMITRAILER CHASSIS - CONTINUED****NOTE**

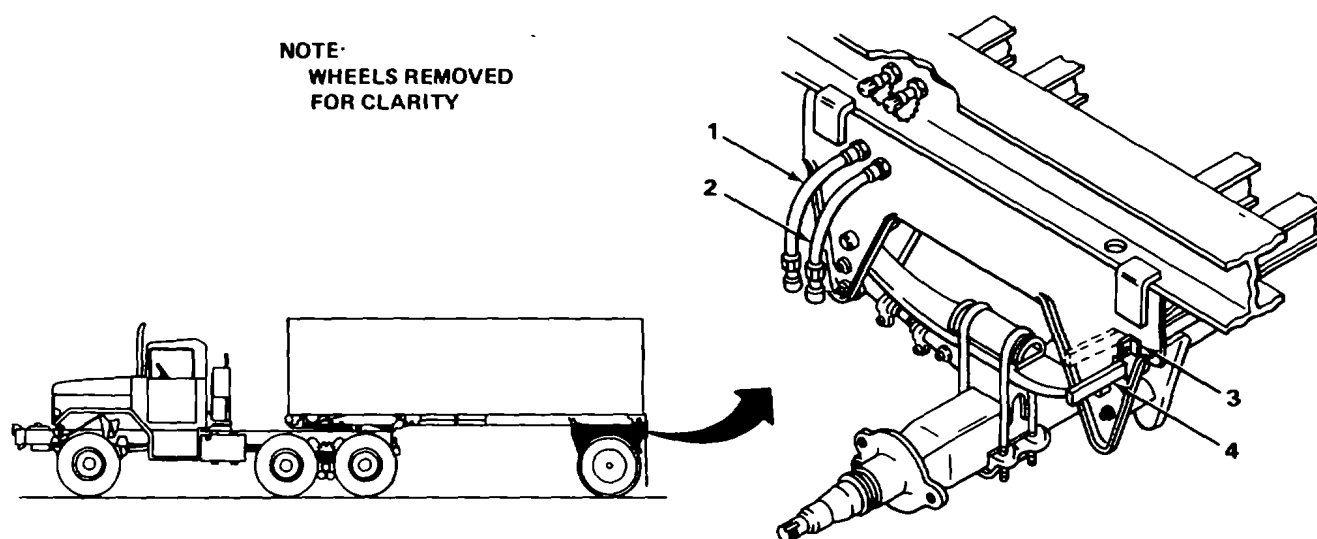
**Use an assistant as a guide to aline lockpins in holes on rails.**

7. Slowly back semitrailer chassis until lockpin (5) is alined with third hole in rail (6).
8. Take pull handle (7) out of bottom notch and pull it up into top notch to engage lockpin (5) in hole.

**NOTE**

**If lockpins do not engage holes, gently rock the semitrailer back and forth while pulling up on pull handle until lockpins are fully engaged.**

9. Using a 9/16-inch open-end wrench, tighten handle lock screw (8) against pull handle (7).
10. Remove dust caps (9) from quick disconnects (10) and (11).
11. Connect service and emergency brake hoses (12) and (13) to quick disconnect (10) and (11).
12. Check security of airhose connections.



13. Stow rear bumper (1). See page 315.

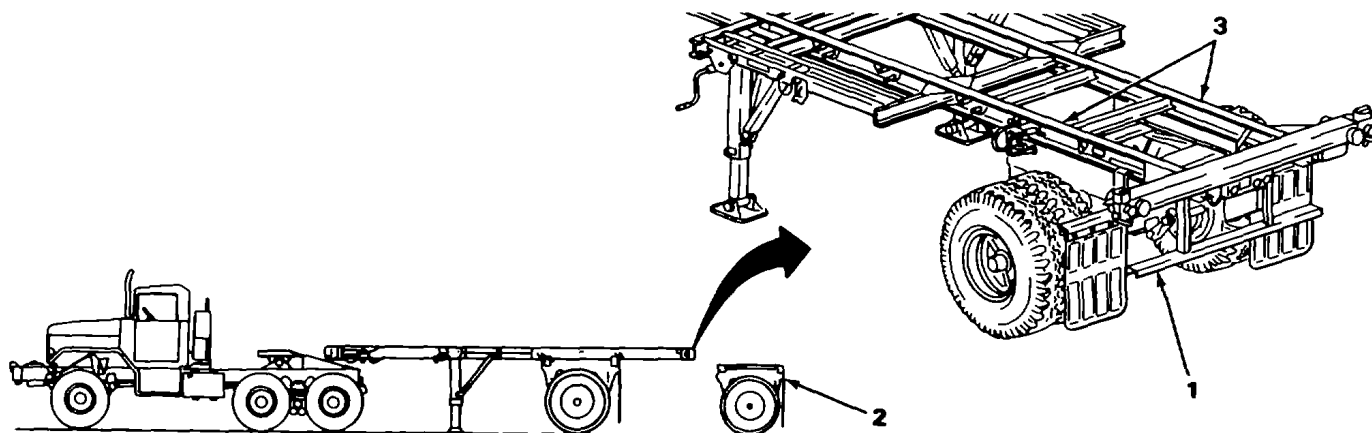
**NOTE**

**If the brakes are locked on the second bogie, open the reservoir draincock to release them (page 2-10).**

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## PREPARATION FOR USE - CONTINUED

- 14 With the help of an assistant, align second bogie (2) with back end of left and right rails (3)

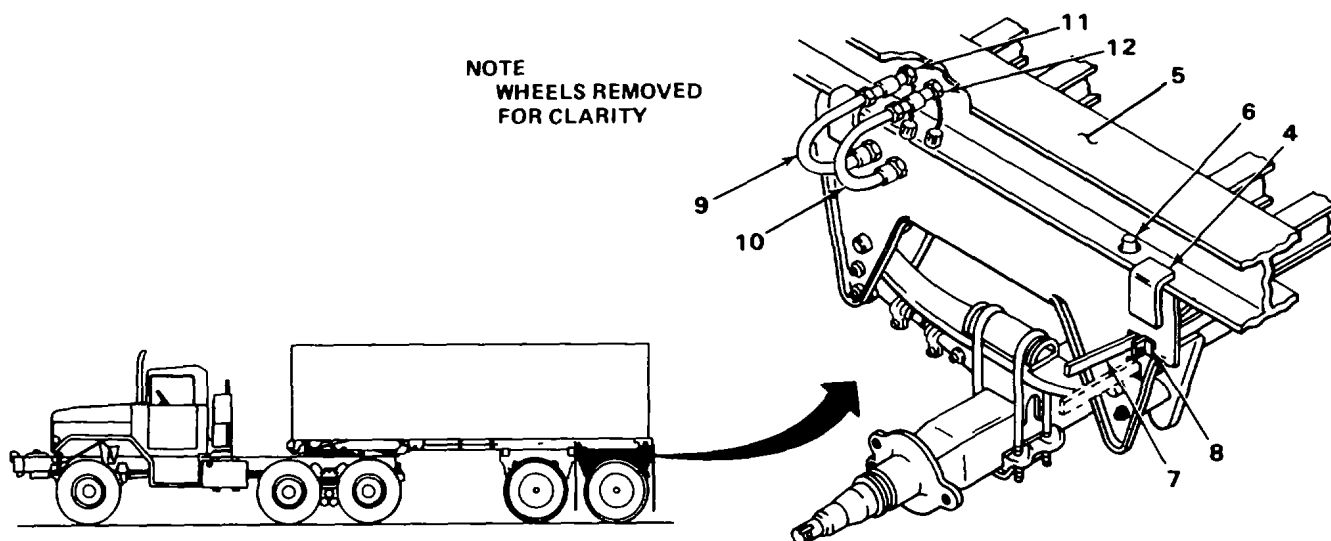


15. With the help of an assistant, roll second bogie under chassis, engaging the bogie holddown clips (4) on rails (5).  
 16. Roll bogie forward until lockpins (6) are aligned with first holes in rails.  
 17. Take pull handle (7) out of bottom notch and pull it up into top notch to engage lockpin (6) in hole.

## NOTE

**If lockpins do not engage holes, gently rock semitrailer back and forth while pulling up on pull handle until lockpins are fully engaged**

- 18 Using 9116-inch open-end wrench, tighten handle lock screw (8) against pull handle (7).  
 19. Connect service and emergency airbrake hoses (9) and (10) to quick disconnect nipples (11) and (12) Check security of airhose connections.



**NOTE**  
**WHEELS REMOVED**  
**FOR CLARITY**

**PREPARATION FOR USE - CONTINUED****LOADING CONTAINER WITH HIGH DENSITY CARGO****WARNING**

**The MILVAN chassis could tip when loading the forward portion of the container with high density cargo with a forklift truck. To prevent injury to personnel, place an antitipping device or any suitable blocking under the front end of the semitrailer chassis.**

**OPERATION****DRIVING**

When driving the towing vehicle and semitrailer, the overall length of the unit must be kept in mind when passing other vehicles, and when turning. Keep in mind, when backing, that the unit is hinged in the middle.

**TURNING**

Put on turn signal lights before turning. When turning corners, the semitrailer chassis wheels turn inside the turning radius of the towing vehicle. Make a right turn at intersection by driving the truck tractor halfway into the intersection, and then cut sharply to the right. This will keep the semitrailer chassis wheels off the curb. Keep your vehicle close enough to the edge of the road to prevent a following vehicle from passing on the right.

**STOPPING****CAUTION**

**Semitrailer chassis brakes should not be used alone to stop the entire vehicle. This practice will cause brake overheating and resultant damage.**

The brakes of the towing vehicle and the semitrailer are applied at the same time in normal operation. Brake pressure must be applied gradually and smoothly. The semitrailer brakes may be applied separately by using the trailer handbrake control lever on the steering column. The semitrailer brakes must be applied before the towing vehicle brakes when stopping on steep downgrades or slippery surfaces. This will reduce the possibility of jackknifing the semitrailer.

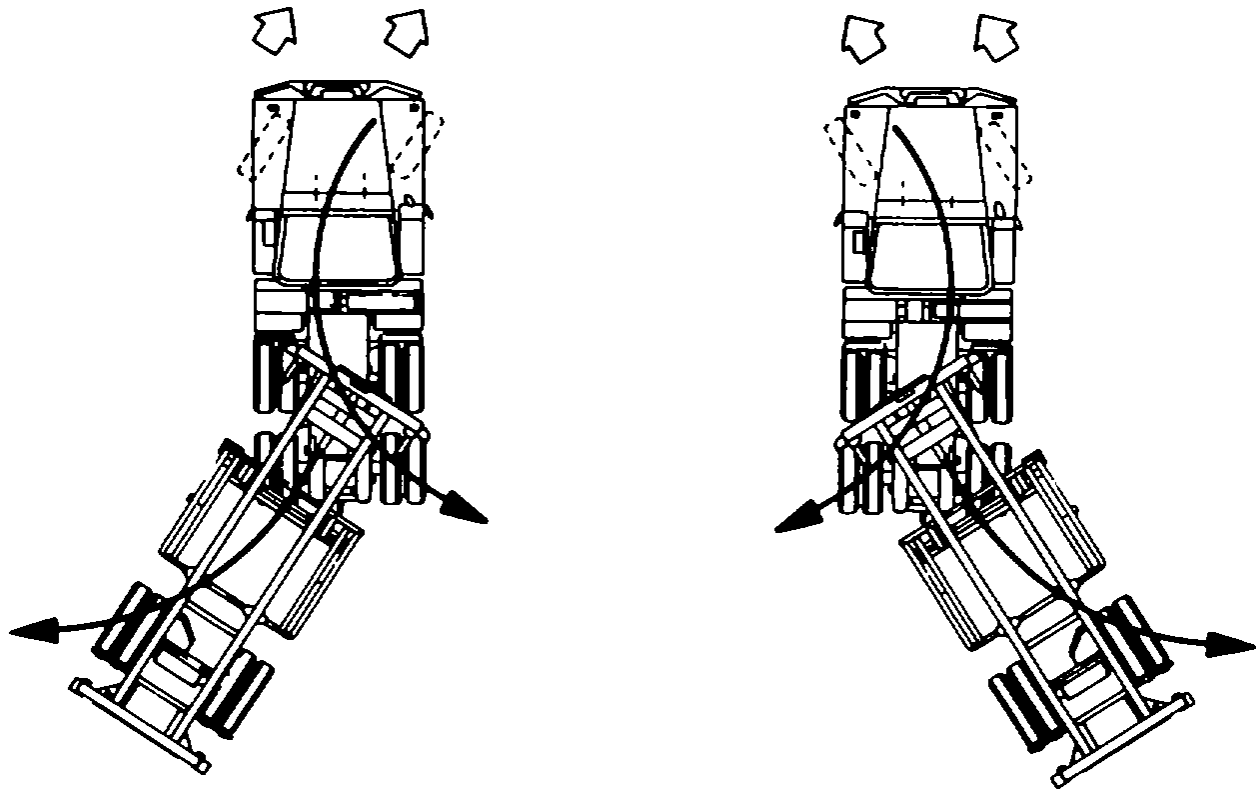
**PARKING**

When parking a towing vehicle and semitrailer and leaving unattended, set parking brakes on towing vehicle and apply the trailer handbrake control. Turn off engine before leaving cab. Place wheel chocks behind semitrailer wheels on an uphill grade, and in front of wheels on a downhill grade.

**BACKING**

Use an assistant as a guide while backing. Adjust rearview mirrors before backing. When the towing vehicle and semitrailer are in a straight line, the rear of the semitrailer will move opposite to the direction the front towing vehicle wheels are turned. If wheels of the towing vehicle are turned to the right, the rear of the semitrailer will go to the left. The sharper the towing vehicle wheels are turned to the right, the tighter the semitrailer will turn to the left. When towing vehicle wheels are turned to the left, the semitrailer will turn to the right. To decrease the angle of turn, turn the towing vehicle wheels in the direction the semitrailer is turning. This will decrease the turning angle until the towing vehicle and semitrailer are in a straight line.

## OPERATION - CONTINUED



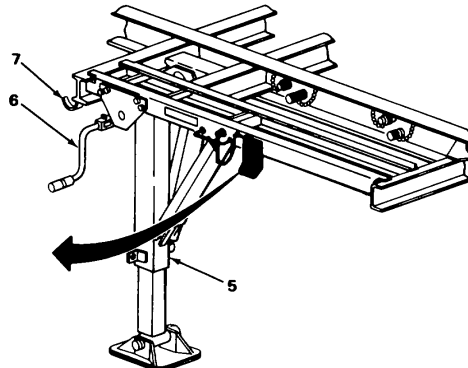
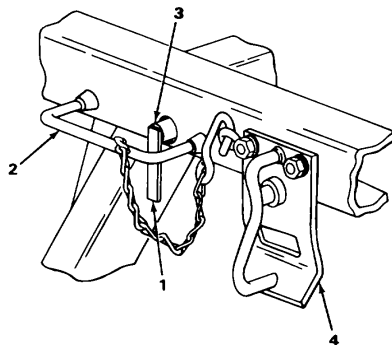
## AFTER USE

### LOWERING LANDING GEAR

#### **WARNING**

**To avoid injury stand clear of landing gear legs when releasing from folded position.**

1. Rotate handle (1) up to clear retainer bracket (2), and pull lockpin (3) out.
2. Release uplock (4) and allow landing gear leg (5) to swing down.
3. Insert lockpin (3) back in rail hole and secure by rotating handle (1) to down position behind retainer bracket (2).
4. Unhook crank handle (6) from stowage hook (7) and turn crank handle (6) counter clockwise until legs (5) reach ground.
5. Place crank handle (6) in stowage hook (7).



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**AFTER USE - CONTINUED****UNCOUPLE TWO SEMITRAILER CHASSIS**

1. Couple towing vehicle to front semitrailer chassis See page 2-14.
2. Apply semitrailer service brake.
3. Disconnect front bogie airbrake hoses (1) and (2). Bogie brakes will lock.
4. Put dust caps (3) and (5) on quick disconnects (4) and (6).
5. Using a 9/16-inch open-end wrench, back off handle lock screw (7).
6. Take pull handle (8) out of top notch and push it down into bottom notch.
7. Check that rear semitrailer landing gear is in folded up position.
8. Release semitrailer service brake. Front bogie brakes will remain locked.

**NOTE**

**Use an assistant as a guide to position bogie and align lockpins in holes on rails.**

9. Slowly back semitrailer chassis until front bogie is in place at back end of front semitrailer chassis.
10. Align lockpins (9) with holes in rails (10).
11. Take pull handle (8) out of bottom notch and pull it up into top notch.

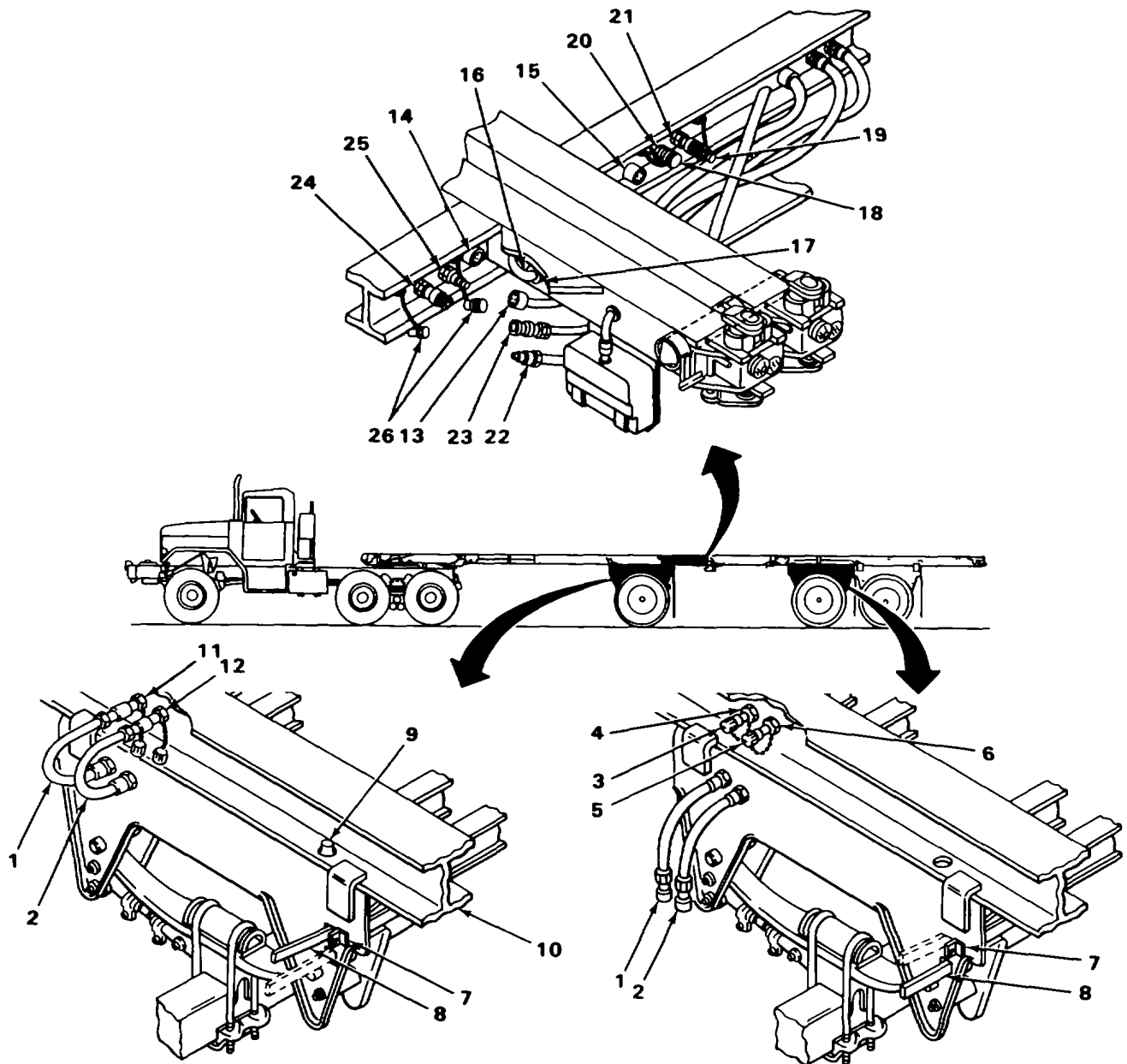
**NOTE**

**If lockpins do not engage holes, gently rock semitrailer back and forth while pulling up on pull handle until lockpins are fully engaged**

12. Using a 9/16-inch open-end wrench, tighten handle lock screw (7) against pull handle (8)
13. Connect service and emergency airbrake hoses (1) and (2) to quick disconnects (11) and (12)
14. Remove connector (13) from receptacle (14) and install in receptacle (15).
15. Remove connector (16) from storage tube (17) and install in receptacle (14).
16. Remove dust caps (18) and (19) from quick disconnects (20) and (21).
17. Remove service and emergency airbrake hoses (22) and (23) from quick disconnects (24) and (25)

**AFTER USE - CONTINUED**

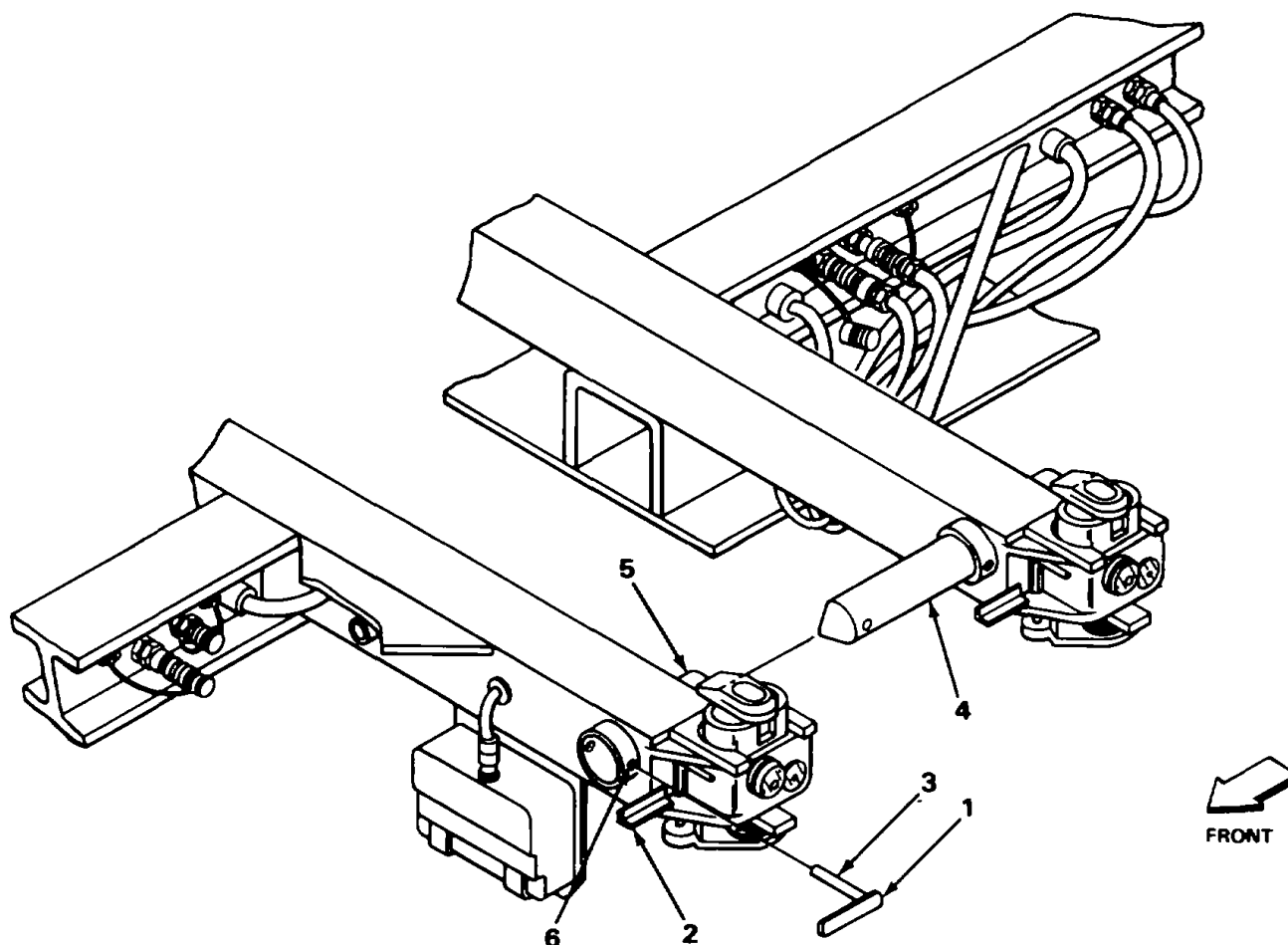
18. Connect service and emergency airbrake hoses (22) and (23) to quick disconnects (20) and (21).
19. Install dust caps (26) to quick disconnects (24) and (25).



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**AFTER USE - CONTINUED**

20. Lower landing gear on rear semitrailer chassis and relieve weight on coupling rods. See page 2-35.
21. Rotate lockpin handles (1) to clear retaining angles (2) and pull out lockpins (3)
22. Slowly move front semitrailer chassis forward until coupling rods (4) are completely disengaged from sleeves (5).
23. Insert lockpins (3) into holes (6).
24. Secure lockpins (3) by rotating handles (1) down and behind the retaining angles (2).

**UNCOUPLE TOWING VEHICLE FROM SEMITRAILER CHASSIS****WARNING**

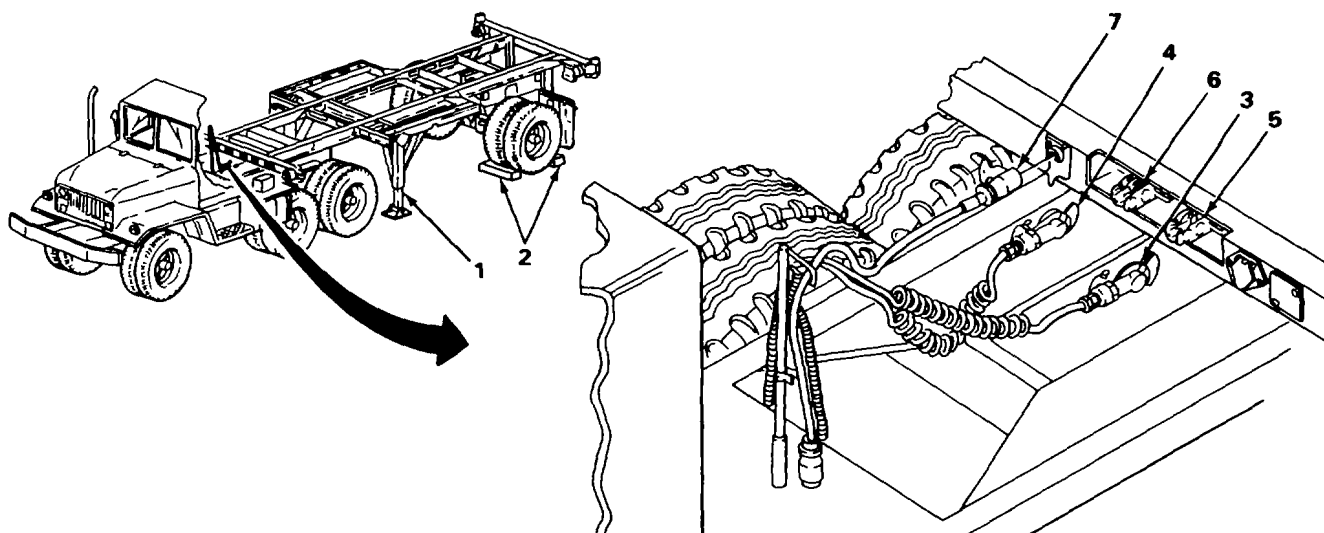
**To avoid injury, stand clear of landing gear legs when releasing from folded position.**

1. Lower landing gear legs (1). See page 2-35.

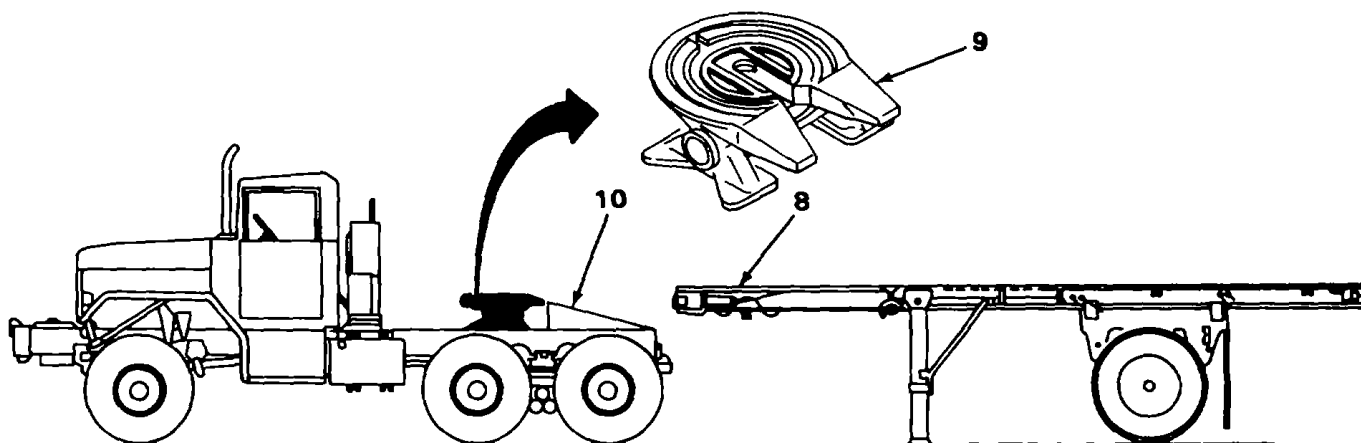
TA223094

**AFTER USE - CONTINUED**

2. Put wheel chocks (2) in front and back of semitrailer chassis wheels.
3. Disconnect service airbrake hose (3) and emergency airbrake hose (4) from gladhands (5) and (6) on semitrailer chassis.
4. Disconnect intervehicular cable (7) from semitrailer chassis



5. Release semitrailer kingpin (8) from towing vehicle fifth wheel (9). See towing vehicle operators manual for instructions.
6. Slowly move towing vehicle forward until semitrailer is clear of approach ramps (10).



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**Section IV. OPERATION UNDER UNUSUAL CONDITIONS**

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## **OPERATION IN EXTREME HEAT**

Do not park the semitrailer in sunlight for long periods of time. Heat and sunlight shorten the life of tires. If possible, shelter or cover semitrailer.

## **OPERATION IN EXTREME COLD**

1. Extreme cold can cause lubricants to thicken or congeal, insulation to crack and cause electrical short circuits, and construction materials to become hard, brittle, and easily damaged or broken.
2. Tires may freeze to the ground or have a flat spot if underinflated.
3. Brakeshoes may freeze to the brakedrums and need to be heated to prevent damage to mating surfaces.
  - 4 Refer to FM 9-207 and FM 21-305 for special instructions on driving hazards in extreme cold.
5. When parking short term, park in a sheltered area out of the wind.
6. For parking long term, If high, dry ground is not available, place a footing of planks or brush under semitrailer wheels and landing gear.
7. Remove all built-up ice, snow, and mud as soon as possible after use.
8. Cover and shield semitrailer with canvas covers, if available. Keep ends of covers off the ground to keep them from freezing to the ground.

## **OPERATION IN RAINY OR HUMID CONDITIONS**

Inspect, clean, and lubricate equipment often to stop rust and fungus.

## **OPERATION IN SANDY OR DUSTY AREAS**

### **CAUTION**

**Do not tow, pull, or push semitrailer by the rear bumper. Damage may result.**

1. Clean, inspect, and lubricate more often in dusty or sandy areas.

## OPERATION IN SANDY OR DUSTY AREAS - CONTINUED

### NOTE

**The semitrailer is designed for the transportation of MILVAN containers on improved roads only.**

2. Reduce tire pressure for emergency use on beach or desert sand.
3. Be sure to return tire pressure to normal (75 or 90 psi/512 or 615 kPa), after emergency operation in sand.

## OPERATION IN SNOW

See FM 21-305 for special instructions on operation in snow.

## OPERATION IN MUD

### CAUTION

**Do not tow, pull, or push semitrailer by the rear bumper. Damage may result.**

### NOTE

**The semitrailer is designed for the transportation of MILVAN containers on improved roads only.**

1. Reduce tire pressure for emergency use in soft mud, if practical.
2. If one or more wheels sink into the mud, you may need to jack up the wheels and put planking or matting under it.
3. Clean off all mud after operation.

## OPERATION IN SALTWATER AREAS

Saltwater will cause early rust and corrosion. Clean, inspect, and lubricate often.

## OPERATION ON ROCKY TERRAIN

### NOTE

**The semitrailer is designed for the transportation of MILVAN containers on improved roads only.**

1. Tires must be fully inflated to 75 or 90 psi (512 or 615 kPa) if emergency use requires movement over rocky terrain. Underinflated tires will cause internal ruptures of the tires and damage to the tubes.
2. Before driving over stumps or rocks, make sure the semitrailer can clear them. Such objects can damage components on the underside of the semitrailer. Beware of low hanging tree limbs that can cause damage to the container.

## FORDING

1. Before entering water, check the bottom surface condition. If bottom surface is too soft, do not ford.
2. Protect cables, connectors, and terminals by spraying them with ignition insulation compound.
3. After coming out of water, apply the brakes a few times to help dry out the brake linings. Make sure the semitrailer brakes are operating properly before driving at normal speeds.
4. Drain or dry all areas where water is lying.
5. Lubricate all unpainted surfaces with lubricative oil.
6. Dry all lubricating points and lubricate them. See lubrication chart, page 4-3.

## CHAPTER 3

### OPERATOR MAINTENANCE

#### OVERVIEW

This chapter contains the lubrication and troubleshooting maintenance instructions and procedures authorized at operator level.

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Section I Lubrication Instructions .....	3-1
Section II Operator Troubleshooting Procedures .....	3-1
Section III Operator Maintenance Procedures .....	3-9

#### Section I. LUBRICATION INSTRUCTIONS

Lubrication under usual and unusual conditions, and the semitrailer lubrication chart are contained in organizational maintenance, chapter 4.

#### Section II. OPERATOR TROUBLESHOOTING PROCEDURES

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General.....3-1	

#### GENERAL

This section lists the common malfunctions that you may find during operation of the semitrailer and its components. Perform the tests/inspections and corrective maintenance in the order listed.

This manual cannot list all malfunctions that may occur nor all tests or inspections and corrective actions. If a malfunction is not listed or it is not corrected by the listed corrective actions, notify your supervisor.

#### EXPLANATION OF COLUMNS

Malfunction. Visual or operational indication that something is wrong with the semitrailer.

Test/Inspection. Procedure to isolate the problem to a component or system.

Corrective Action. Procedure to correct problem.

#### SYMPTOM INDEX

This symptom index is provided as a quick way to get you to the troubleshooting procedure that will help you solve the problem you are having.

**SYMPTOM INDEX - CONTINUED**

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All lamps fail to light .....	3-2
One or more (but not all) lamps fail to light .....	3-3
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Landing gear is difficult to operate .....	3-6
<b>TIRES</b>	
Excessively worn, scuffed, or cupped tires.....	3-5

**OPERATOR TROUBLESHOOTING**


---

<b>MALFUNCTION</b>
<b>TEST OR INSPECTION</b>
<b>CORRECTIVE ACTION</b>

---

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

Step 1. Check towing vehicle-to-semitrailer electrical cable (1) for proper connection.

If cable (1) is not properly connected, reconnect.

Step 2. Check towing vehicle-to-semitrailer cable connectors (2), (3), and (4) for bent, broken, dirty, or corroded pins (5) and sockets (6).

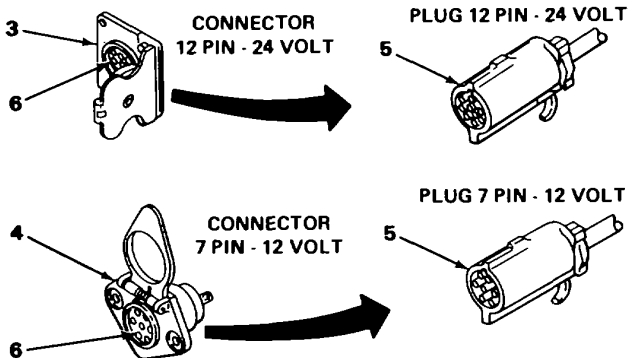
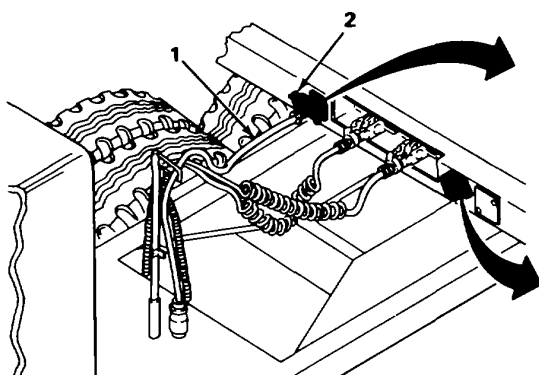
If pins (5) or sockets (6) are dirty or corroded, clean them.

If all lamps still fail to light, notify organizational maintenance.

If pins are bent or broken, notify organizational maintenance.

## OPERATOR TROUBLESHOOTING - CONTINUED

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



## 2. ONE OR MORE (BUT NOT ALL) LAMPS FAIL TO LIGHT.

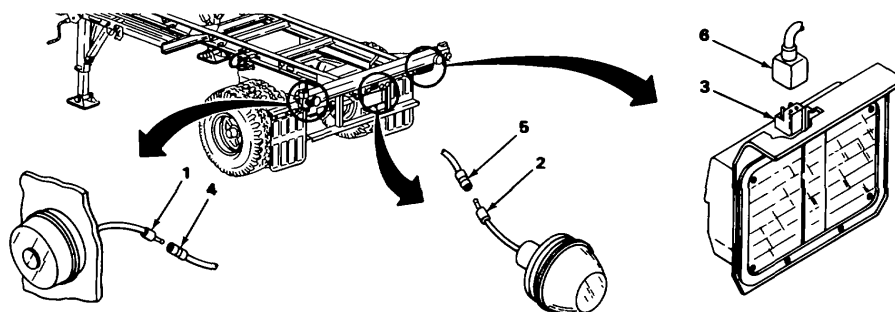
Step 1. Check for loose marker lights connector (1), license plate light connector (2), and taillight connector (3).

If improperly connected, reconnect.

If lamps still fail to light, notify organizational maintenance.

Step 2. Check for broken lead wires (4), (5), and (6).

If lead wires are broken, notify organizational maintenance.



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## OPERATOR TROUBLESHOOTING - CONTINUED

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

## BRAKES

## 3. BRAKES WILL NOT RELEASE.

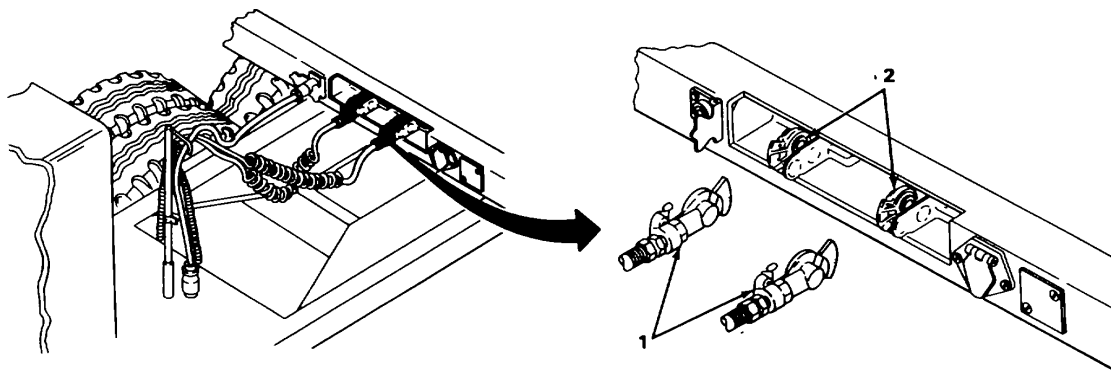
Step 1. Check connections of air lines (1) to gladhands (2) for proper connection (Emergency-to-Emergency and Service-to-Service).

If air lines are not connected properly, reconnect.

Step 2. Check for dirty or leaking gladhand connection.

If gladhand is dirty, clean.

If gladhand connection leaks after cleaning, notify organizational maintenance.



Step 3. Inspect hoses, lines, and connectors for leaks.

If leaks are found, notify organizational maintenance.

Step 4. Check semitrailer air reservoir (3) for open draincock (4).

If draincock (4) is open, close it

If draincock is closed and brakes still will not release, notify organizational maintenance.

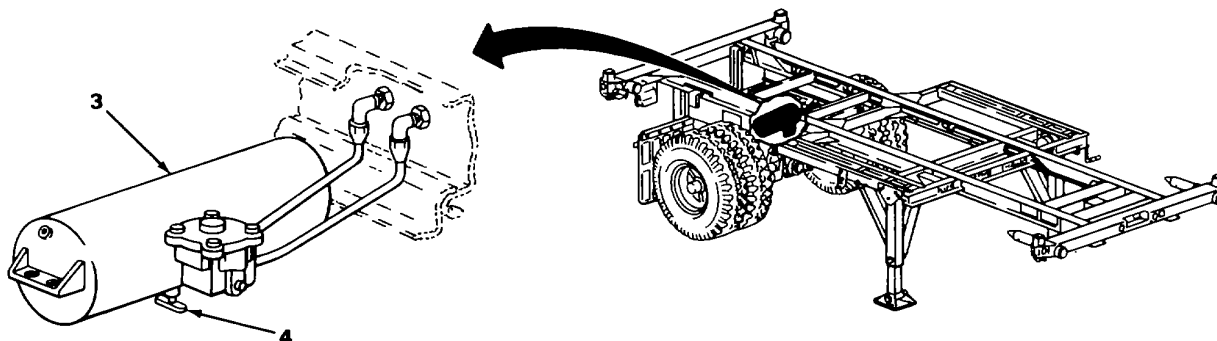
Step 5. Check for proper venting of pressurized air at relay valve.

If relay valve does not vent, notify organizational maintenance.

TA223097

## OPERATOR TROUBLESHOOTING - CONTINUED

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



## 4. NO BRAKES OR WEAK BRAKES.

Check that relay valve lines are properly connected.

If valve lines are not properly connected, notify organizational maintenance

## TIRES

## 5. EXCESSIVELY WORN, SCUFFED, OR CUPPED TIRES

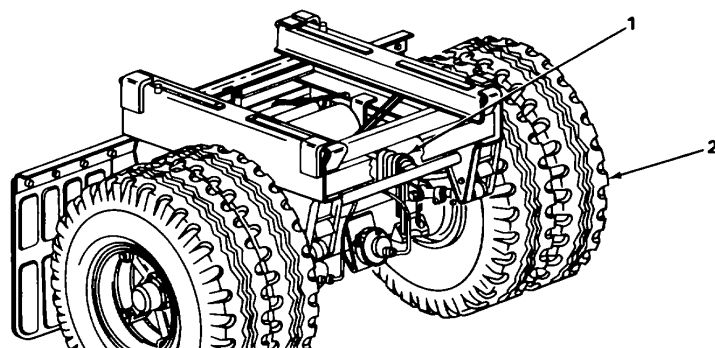
Step 1. Check tire (1) pressure.

Inflate 12-ply tire to 75 psi (517.13 kPa).

Inflate 14-ply tire to 90 psi (620.55 kPa).

Step 2. Check suspension system (2) for damage or for loose or missing nuts and bolts.

If any of these problems exist, notify organizational maintenance.



TA223098

## OPERATOR TROUBLES.HOOTING - CONTINUED

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

## LANDING GEAR

6. LANDING GEAR IS DIFFICULT TO OPERATE.

## NOTE

**Be sure you are using low gear when raising or lowering the trailer. Use high gear when extending or retracting the landing gear on a trailer connected to a towing vehicle.**

Step 1. Check that gearbox (1) is in proper gear.

Push crank handle (2) in for low gear, and pull crank handle (2) out for high gear.

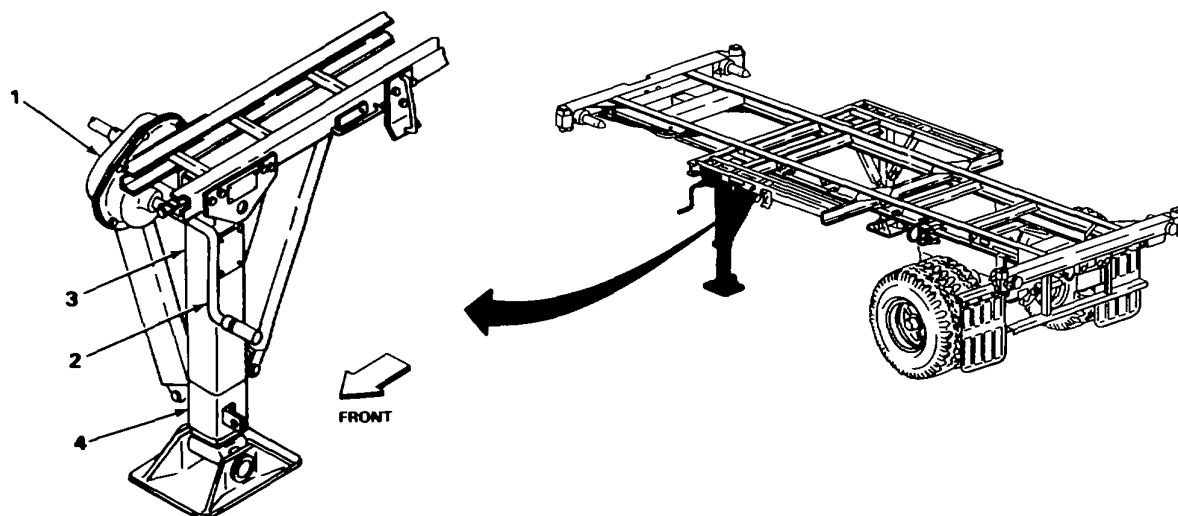
Step 2. Check for misaligned or broken crank handle (2).

If crank handle (2) is misaligned or broken, notify organizational maintenance.

Step 3. Check for misaligned, bent, or damaged legs (3).

If legs (3) are misaligned, bent, or damaged, notify organizational maintenance.

Step 4. Check for dirt on lower landing gear legs (4) Clean dirty lower landing gear legs (4)



TA223099

## OPERATOR TROUBLESHOOTING - CONTINUED

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

## FRAME, TOWING, AND COUPLING ATTACHMENTS

## 7. TWIST LOCK BINDS, TURNS HARD.

Step 1. Check that container is seated properly on trailer.

Reseat on trailer as described on page 2-25.

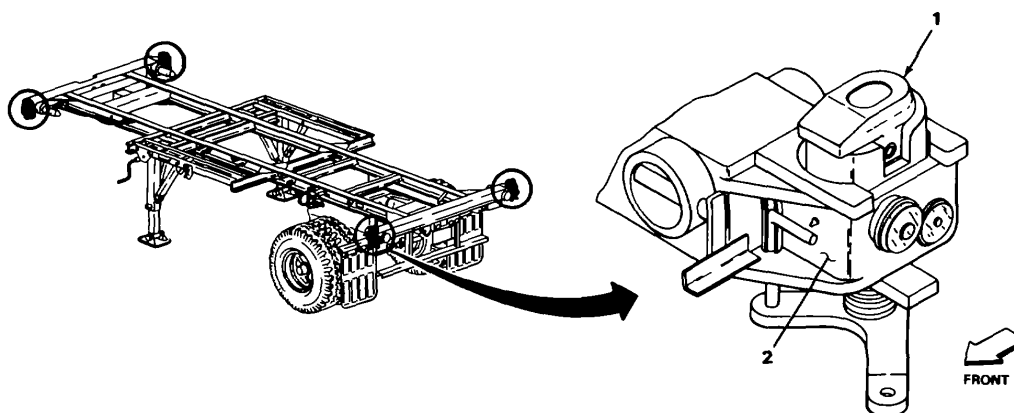
Step 2. Check height of twist lock head (1) for proper clearance

Adjust twist lock head (1) to proper clearance as described on page 2-25.

Step 3. Check twist lock (2) for caked-on dirt and/or corrosion.

Clean twist lock (2) of all caked-on dirt and/or corrosion.

If above steps do not correct the problem, notify organizational maintenance.



TA223100

## OPERATOR TROUBLESHOOTING - CONTINUED

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

## 8. TWO UNITS CANNOT BE COUPLED WITH CONTAINERS MOUNTED.

Step 1. Check that the two units are properly aligned.

Realine the two units as described on page 2-19.

Step 2. Check that the rear trailer wheels are properly chocked.

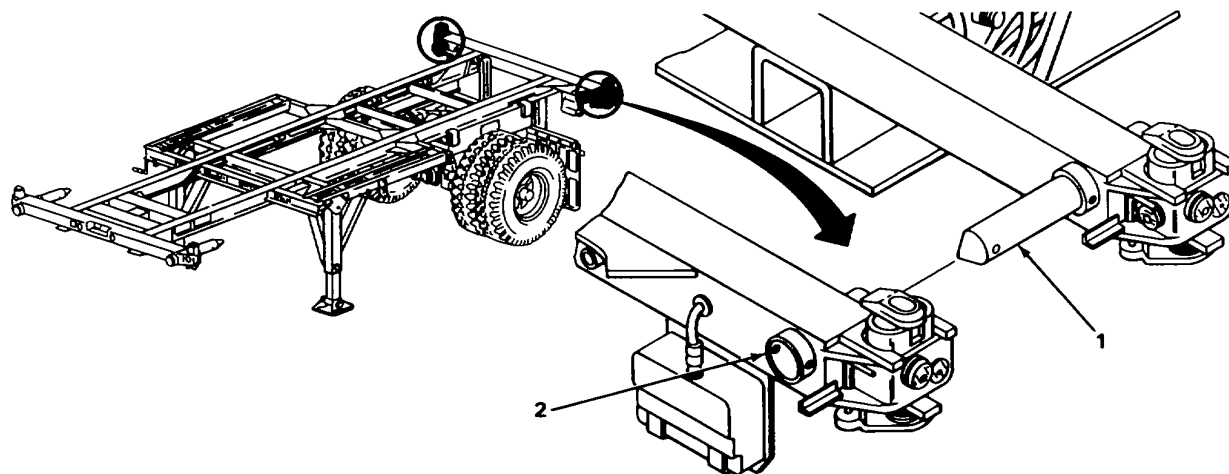
Chock the rear trailer wheels properly.

Step 3. Check coupling rods (1) and sleeves (2) for corrosion and damage.

Clean coupling rods (1) and sleeves (2) of all corrosion.

If coupling rods (1) or sleeves (2) are damaged, notify organizational maintenance.

If the above steps do not correct the problem, notify organizational maintenance.



TA223101

Section III. OPERATOR MAINTENANCE PROCEDURES

	Page		Page
Air Reservoir .....	3-11	Gladhands.....	3-10
Bumper .....	3-15	Landing Gear Leg .....	3-12
Electrical Connectors .....	3-9	Twist Lock.....	3-13

ELECTRICAL CONNECTORS

This task covers:

Cleaning

INITIAL SETUP

Materials/Parts

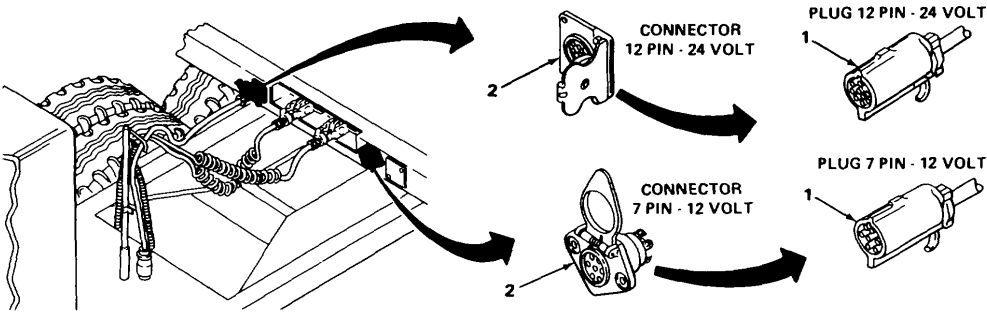
- Drycleaning solvent PD-680 (item 1, appendix E)
- Rags (item 2, appendix E)

LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

WARNING

Drycleaning solvent PD-680 is both toxic and flammable. Avoid prolonged breathing of vapors and avoid skin contact. Do not use near open flame or excessive heat. Flash point of solvent is 138°F (59°C).

Front of semitrailer	Electrical connectors (1) and (2)	Using rags and drycleaning solvent, clean electrical connectors and allow to dry.
----------------------	-----------------------------------	---



TASK ENDS HERE

GLADHANDS

This task covers:

Cleaning

INITIAL SETUP

Materials/Parts

Drycleaning solvent PD-680 (item 1, appendix E)

Materials/Parts - Continued

Rags (item 2, appendix E)  
Soap and water (item 3, appendix E)

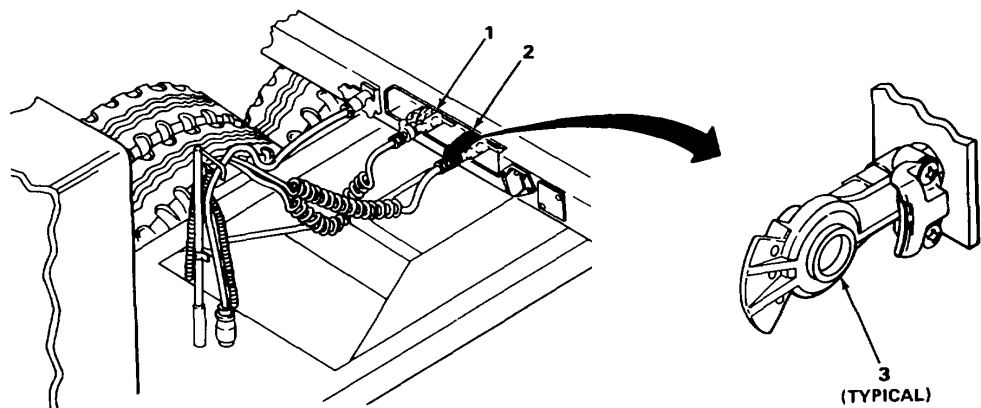
LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

**WARNING**

Do not use drycleaning solvent to clean gladhand packing Cleaning solvent speeds up packing deterioration.

Drycleaning solvent PD-680 is both toxic and flammable Avoid prolonged breathing of vapors and avoid skin contact. Do not use near open flame or excessive heat. Flash point of solvent is 138°F (59°C).

Front of semitrailer	Gladhands (1) and (2)	a. Using rags and drycleaning solvent, clean metal parts of gladhands (1) and (2).  b. Using rags and soap and water wash gladhand packing (3).
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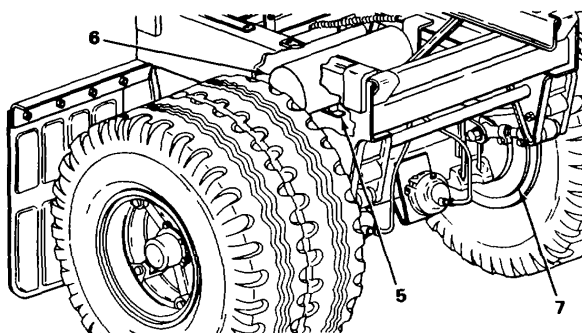
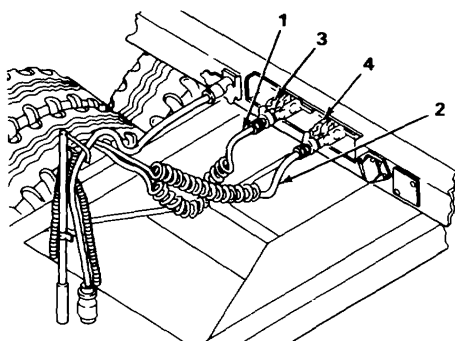
TASK ENDS HERE

## AIR RESERVOIR

## This task covers:

## Servicing

LOCATION	ITEM	ACTION	REMARKS
1. Towing vehicle	Air supply	Turn off.	
2. Front of semitrailer	Air lines (1) and (2)	Uncouple gladhands (3) and (4).	
<p style="text-align: center;"><b><u>WARNING</u></b></p> <p><b>Wear protective goggles when opening air reservoir draincock to prevent eye injury. Move away from airstream to prevent injuries.</b></p>			
3. Bogie	Air reservoir draincock (5)	a. Open draincock (5) and fully drain air reservoir (6). b. Close draincock (5).	
4. Front of semitrailer	Air lines (1) and (2)	Couple gladhands (3) and (4); turn on air supply.	
5. Front of semitrailer	Gladhands (3) and (4)	Check for leaks.	
6. Bogie	Air reservoir draincock (5)	Check for leaks.	
7.	Brakes (7)	a. Check that brakes are applied. b. Check that brakes release. <b>Brakes should release when reservoir pressure reaches 60 psi (414 kPa).</b>	



TASK ENDS HERE

LANDING GEAR LEG

This task covers:

Cleaning

INITIAL SETUP

Materials/Parts

- Drycleaning solvent (item 1, appendix E)
- Rags (item 2, appendix E)

LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

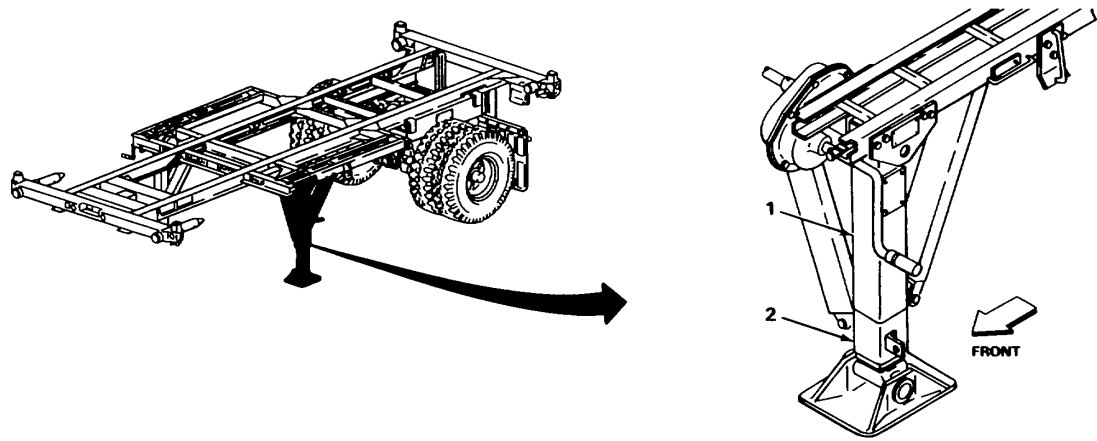
NOTE

The landing gear should be cleaned before retracting to prevent dirt from contaminating the threaded shaft.

WARNING

Drycleaning solvent PD680 is both toxic and flammable. Avoid prolonged breathing of vapors and avoid skin contact. Do not use near open flame or excessive heat Flash point of solvent is 138°F (59°C).

Semitrailer	Landing gear leg (1)	Using rags and drycleaning solvent, clean inner landing gear leg (2) of all dirt and grease before retracting.
-------------	----------------------	--



TASK ENDS HERE

**TWIST LOCK**

---

**This task covers:**

- a. Cleaning (page 3-13)
- b. Lubrication (page 3-14)
- c. Adjustment (page 3-14)

---

**INITIAL SETUP**

**Materials/Parts**

Drycleaning solvent PD-680  
(item 1, appendix E)  
Rags

---

LOCATION	ITEM	ACTION	REMARKS

---

**CLEANING**

**WARNING**

Drycleaning solvent PD-680 is both toxic and flammable. Avoid prolonged breathing of vapors and avoid skin contact. Do not use near open flame or excessive heat. Flash point of solvent is 138<sup>0</sup>F (59<sup>0</sup>C).

# TWIST LOCK - CONTINUED'

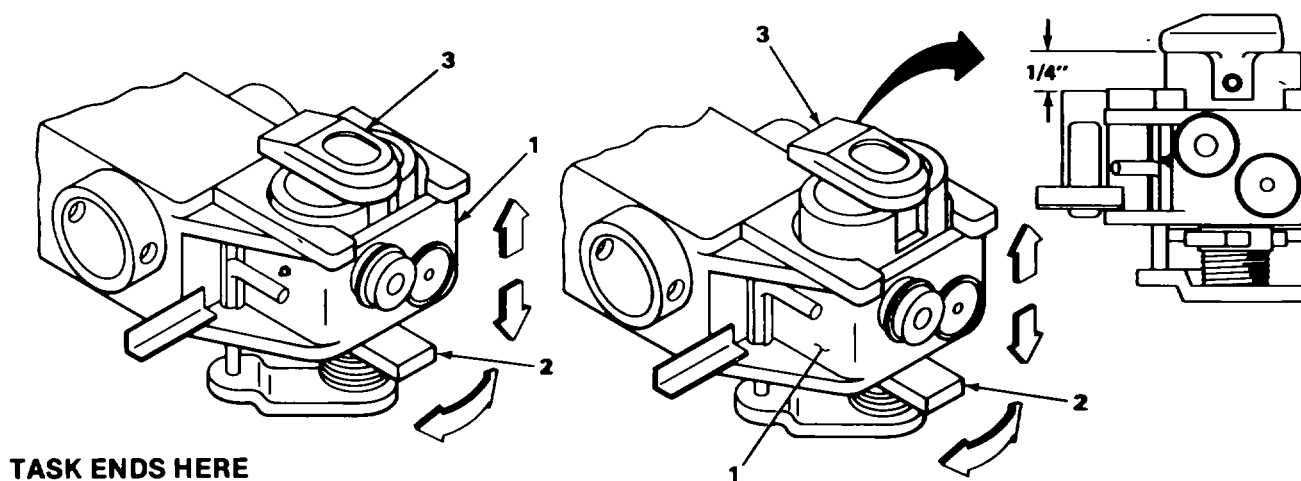
LOCATION	ITEM	ACTION	REMARKS
<b>CLEANING - CONTINUED</b>			
1. Semitrailer	Twist lock (1)	Using rags and drycleaning solvent, clean twist locks of all dirt and grease.	
<b>LUBRICATION</b>			
2. Semitrailer	Twist lock (1)	Notify organizational maintenance that the twist locks have been cleaned and require lubrication.	

## ADJUSTMENT

### NOTE

Twist locks are to be adjusted after installing container on chassis.

- |                |                |   |
|----------------|----------------|---|
| 3. Semitrailer | Twist lock (1) | <p>Adjust.</p> <ol style="list-style-type: none"> <li>Place all four twist locks (1) in the unlocked position.</li> <li>Place container on semitrailer chassis.</li> <li>Turn stem nut (2) until there is approximately 1/4 inch under the twist lock head (3) in the locked position.</li> </ol> |
|----------------|----------------|---|



**TASK ENDS HERE**

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BUMPER

This task covers:

- a. Stowing (page 3-15)
- b. Removing from Stowage (page 3-15)

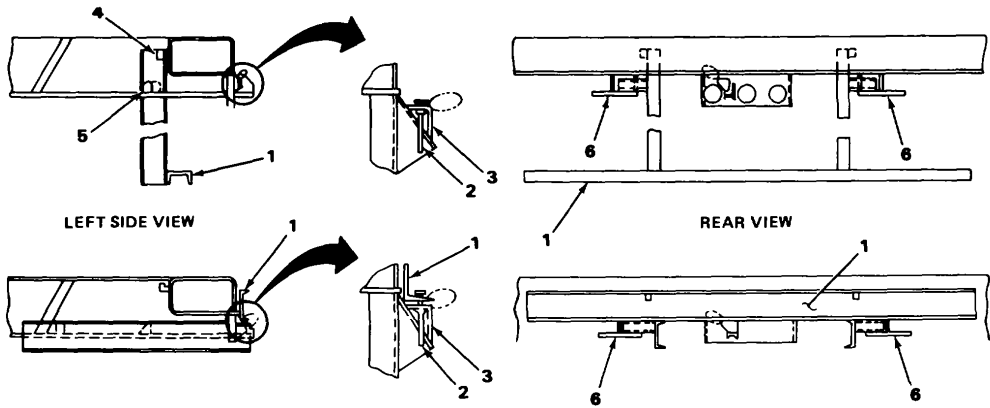
LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

STOWING

1.	Chassis rear	Bumper (1)	<p>Store bumper.</p> <ul style="list-style-type: none"><li>a. Pull retaining pin (2) from retaining angle (3).</li><li>b. Lift bumper (1) off hooks (4) and from back of blocks (5).</li><li>c. Swing bumper (1) up and slide bumper (1) into rails (6).</li><li>d. Insert retaining pin (2) through bumper (1) and angle (3).</li></ul>
----	--------------	------------	--

REMOVING FROM STOWAGE

2.		Bumper (1)	<p>Unstore bumper.</p> <ul style="list-style-type: none"><li>a. Pull retaining pin (2) from bumper (1) and retaining angle (3).</li><li>b. Slide bumper (1) out and down.</li><li>c. Lift bumper (1) onto hooks (4) and in back of blocks (5).</li><li>d. Insert retaining pin in retaining angle (3).</li></ul>
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TASK ENDS HERE

TA223107

## CHAPTER 4

## ORGANIZATIONAL MAINTENANCE

## OVERVIEW

This chapter contains all the maintenance authorized to be performed by organizational maintenance

	<b>Page</b>
Section I Lubrication Instructions .....	4-2
Section II Repair Parts; Special Tools; Test, Measurement, and Diagnostic Equipment (TMDE), and Support Equipment.....	4-5
Section III. Service Upon Receipt of Materiel.....	4-5
Section IV Organizational Preventive Maintenance Checks and Services .....	4-7
Section V Organizational Troubleshooting Procedures.....	4-10
Section VI Cleaning and Inspection Instructions.....	4-19
Section VII Electrical System Maintenance .....	4-21
Section VIII Axle and Bogie Assembly Maintenance .....	4-43
Section IX Brake System Maintenance .....	4-51
Section X Wheel and Tire Assembly Maintenance .....	4-78
Section XI Landing Gear Maintenance .....	4-85
Section XII Torque Arm Maintenance.....	4-97
Section XIII Frame and Body Maintenance .....	4-98
Section XIV Body Accessory Maintenance .....	4-102
Section XV Preparation for Storage and Shipment .....	4-105

## Section I. LUBRICATION INSTRUCTIONS

	Page		Page
Lubrication Chart .....	4-2	Lubrication Instructions .....	4-2

### LUBRICATION INSTRUCTIONS

#### GENERAL

Keep all lubricants in closed containers and store in a clean dry place away from external heat. Keep container covers clean and allow no dust, dirt, or other foreign material to mix with the lubricants.

Keep all lubrication equipment clean and ready for use.

#### CLEANING

Keep all external parts, not requiring lubrication, free of lubricants. Before lubricating the equipment, wipe all lubrication points free of dirt and grease. Clean all lubrication points after servicing to prevent accumulation of foreign matter.

#### LUBRICATION INTERVAL

Service the lubrication points at the proper intervals as specified in the lubrication chart. The intervals specified are based on operation under normal conditions. Modification of the recommended intervals may be required under unusual operating conditions.

#### LUBRICATION CHART

For lubrication under normal conditions, refer to the lubrication chart on the following page.

For instructions on lubrication in weather below 0°F (-180C), refer to FM 9-207.

After operating in mud, dust, sand, or other unusual conditions, clean and inspect all lubrication points. Lubricate semitrailer in accordance with the lubrication chart.

## LUBRICATION CHART

# CHASSIS, COUPLEABLE, SEMITRAILER (MILVAN) 12-TON, 2-WHEEL (2330-00-168-2259) AND BOGIE ASSEMBLY (2530-00-168-2296)

Hard-time intervals and the related man-hour times are based on normal operation. The man-hour time specified is the time you need to do all the services prescribed for a particular interval. Change the interval if your lubricants are contaminated or if you are operating the equipment under adverse operating condition, including longer than usual operating hours. The interval may be extended during periods of low activity. If extended, adequate preservation precautions must be taken.

Clean fittings before lubricating. Lubricate points indicated by dotted arrow shaft on both sides of the equipment. Clean parts with drycleaning solvent PD-680. Dry before lubricating.

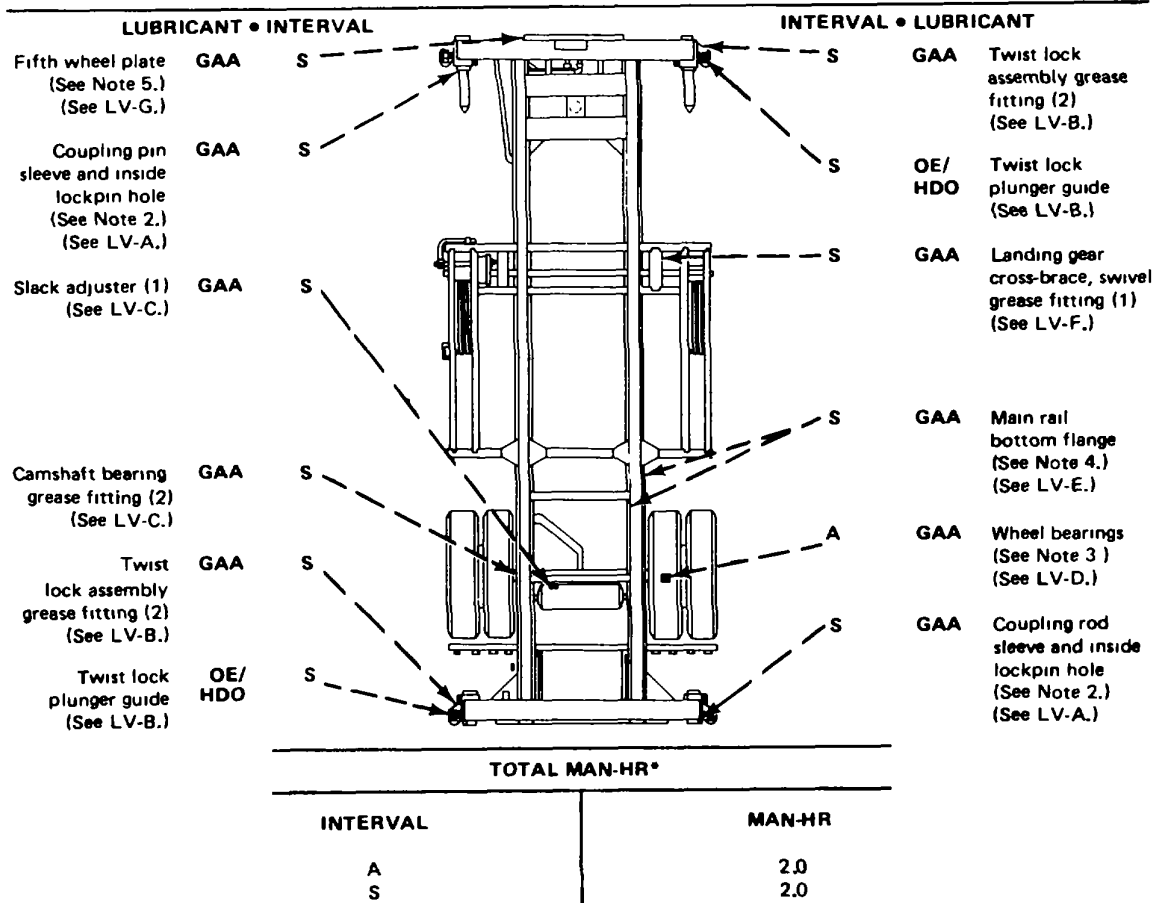
The lowest level of maintenance authorized to lubricate the semitrailer is organizational maintenance.

**WARNING**

Drycleaning solvent PD-680 is both toxic and flammable. Avoid prolonged breathing of vapors and avoid skin contact. Do not use near open flame or excessive heat. Flash point of solvent is 138°F (59°C). Serious illness, injury, or loss of life could result from improper use.

**NOTE**

The number in brackets following the lubrication point identification on the lubrication chart indicates the number of grease points.



\*The time specified is the time required to perform all services at the particular interval.

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## -KEY-

LUBRICANTS		EXPECTED TEMPERATURES			For arctic operations, refer to FM 9-207	INTERVALS  A - Annually S - Semiannually
		ABOVE +32°F (ABOVE 0°C)	+40°F TO -10°F (+5°C TO -23°C)	0°F TO -65°F (-18°C TO -50°C)		
OE/HDO (MIL-L-2104)	Lubricating oil, engine					
	Oilcan points	OE/HDO 30	OE/HDO 30			
OEA/APG-PD-1 (MIL-L-46167/01)	Lubricating oil, ice, subzero					
	Oilcan points			OEA/APG-PD-1		
GAA (MIL-G-10924)	Grease, automotive and artillery	GAA	GAA	GAA		

## Notes

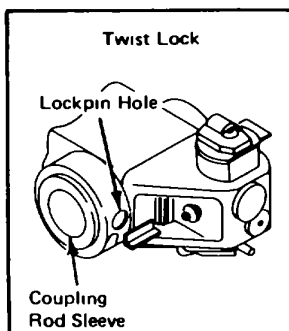
1 FOR OPERATION OF EQUIPMENT IN PROTRACTED COLD TEMPERATURES BELOW -10°F (-23°C) Remove lubricants prescribed in the key for temperatures above -10°F (-23°C). Clean parts with drycleaning solvent PD-680. Relubricate with lubricants specified in the key for temperatures 0°F to -65°F (-18°C to -50°C).

2 COUPLING ROD SLEEVES. Apply a light film of GAA inside sleeves and inside lockpin hole, both sides of collar.

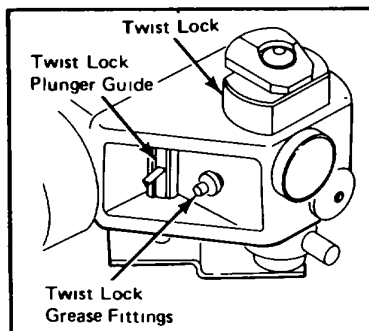
3 WHEEL BEARINGS. Refer to TM 9-214 Inspection, Care and Maintenance of Antifriction bearings.

4. MAIN RAIL BOTTOM FLANGES. Apply film of GAA on both bottom flanges of rails, full length of chassis.

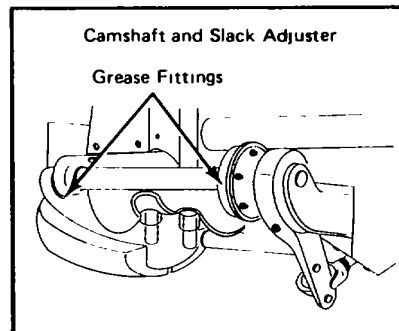
5. FIFTH WHEEL PLATE Apply film of GAA on bottom of plate, 18-inch radius from kingpin



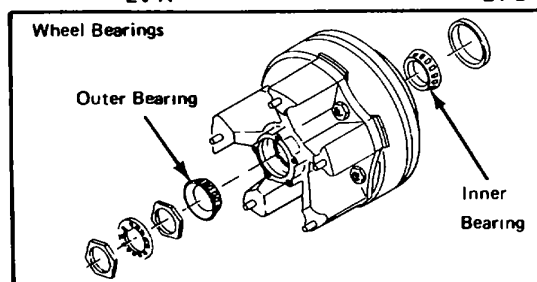
LV-A



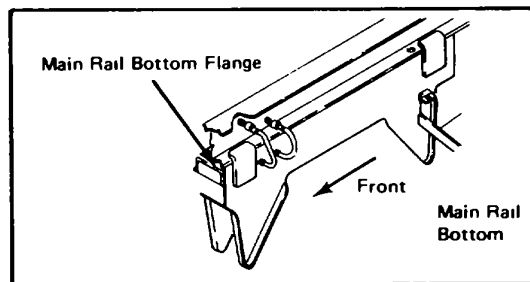
LV-B



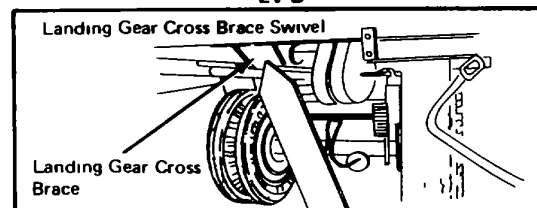
LV-C



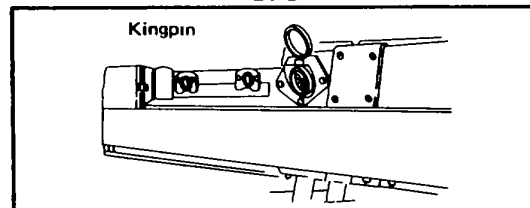
LV-D



LV-E



LV-F



LV-G

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

	Page		Page
Common Tools and Equipment .....	4-5	Special Tools, TMDE, and Support	
Repair Parts .....	4-5	Equipment.....	4-5

### COMMON TOOLS AND EQUIPMENT

Refer to the Modified Table of Organization and Equipment (MTOE) for authorized common tools and equipment applicable to your unit.

### SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

No special tools, TMDE, or support equipment are required to maintain the semitrailer.

### REPAIR PARTS

Repair parts are listed and illustrated in appendix F of this manual.

## Section III. SERVICE UPON RECEIPT

	Page		Page
Preliminary Servicing and Adjustment of Equipment .....	4-6	Service Upon Receipt of Materiel.....	4-5

### SERVICE UPON RECEIPT OF MATERIEL

---

#### This task covers:

Unpacking and Checking Unpacked Equipment

---

### INITIAL SETUP

#### Tools

Nail puller  
Strap cutter

#### Materials/Parts

Drycleaning solvent PD-680 (item 1,  
appendix E)  
Rags (item 2, appendix E)

4-5

## SERVICE UPON RECEIPT OF MATERIEL - CONTINUED

LOCATION	ITEM	ACTION REMARKS
1. Semitrailer	DD Form 1397	Read and follow all instructions.
2.	Metal strapping, plywood, tapes, seals, and wrappings	Using strap cutters and nail pullers, remove strappings, plywood, tapes, seals, and wrappings.
<p style="text-align: center;"><b><u>WARNING</u></b></p> <p><b>Drycleaning solvent PD-680 is both toxic and flammable. Avoid prolonged breathing of vapors and avoid skin contact Do not use near open flame or excessive heat Flash point of solvent is 138 °F (59 °C).</b></p>		
3.	Coated exterior parts	Using drycleaning solvent and rags, remove rust preventive compound.
4.	Semitrailer	a. Inspect the equipment for damage incurred during shipment. b. If the equipment has been damaged, report the damage on SF Form 364, Report of Discrepancy.  c. Check to see whether the equipment has been modified.
5.	Equipment packing slip	a. Check the equipment against the packing slip to see if the shipment is complete. b. Report all discrepancies in accordance with the instructions in DA PAM 738-750

## TASK ENDS HERE

## PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT

Perform the operators and organizational preventive maintenance checks and services (PMCS) as described on pages 2-6 thru 2-13 and 4-7.

Lubricate all lubrication points as shown in the Lubrication Chart (page 4-3), regardless of interval.

Schedule the next PMCS on DD Form 314, Preventive Maintenance Schedule and Record.

Report all problems on DA Form 2407 if the deficiencies appear to involve unsatisfactory design.

Perform a break-in road test of 25 miles (40 23 kilometers) at a maximum speed of 55 mph (88.5 km/h).

## Section IV. ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES

Page	Page
General.....	4-7
Organizational Preventive Main- tenance Checks and Services .....	4-9
PMCS Column Description.....	4-8
Special Instructions.....	4-7

### GENERAL

The semitrailer must be inspected systematically to ensure that it is ready for operation at all times. Inspection will allow defects to be discovered and corrected before they result in serious damage or failure. This section contains a tabulated list of preventive maintenance checks and services. All deficiencies and corrective actions taken will be recorded on DA Form 2404.

Do your (S) PMCS once each 6 months.

Do your (A) PMCS once each year.

### SPECIAL INSTRUCTIONS

If something doesn't work, troubleshoot it with the instructions in this manual or notify your supervisor.

Always do your PMCS in the same order, so it gets to be a habit. Once you've had practice, you will spot something wrong in a hurry.

If anything looks wrong and you can't fix it, write it down on your DA Form 2404. If you find something seriously wrong, report it to direct support as soon as possible.

### WARNING

**Drycleaning solvent PD-680 is both toxic and flammable. Avoid prolonged breathing of vapors and avoid skin contact. Do not use near open flame or excessive heat. Flash point of solvent is 138°F (59°C).**

### NOTE

**When you are doing any PMCS or routine checks, keep in mind the warnings and cautions.**

**SPECIAL INSTRUCTIONS - CONTINUED**

Routine checks like those that are listed below are not listed in the PMCS checks. They are things that you should do anytime you see they must be done. If you find a routine check in your PMCS, it is because other operators reported problems with this item.

**Keep it Clean.** Dirt, grease, oil, and debris only get in the way and may cover up a serious problem. Clean as you work and as needed. Use drycleaning solvent PD-680 to clean metal surfaces. Use soap and water when you clean rubber or plastic material. **Bolts, Nuts, and Screws** Check that they are not loose, missing, bent, or broken. You can't try them all with a tool of course, but look for chipped paint, bare metal, or rust around bolt heads. Tighten any that you find loose.

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

**Electric Wires and Connectors** Look for cracked or broken insulation, bare wires, and loose or broken connectors. Tighten loose connections and make sure the wires are in good condition.

**Hoses and Lines** Look for wear, damage, and leaks. Make sure clamps and fittings are tight. If a leak comes from a loose fitting or connector, tighten it. If something is broken or worn out, either correct it or report it to direct support (refer to MAC).

**PMCS COLUMN DESCRIPTION**

**Item No.** - The order that PMCS should be performed, and also used as a source of item numbers for the TM number column on DA Form 2404, Equipment Inspection and Maintenance Worksheet when recording results of PMCS.

**Interval** - Tells when each check should be performed.

**Item to be Inspected** - Lists the checks to be performed.

**NOTE**

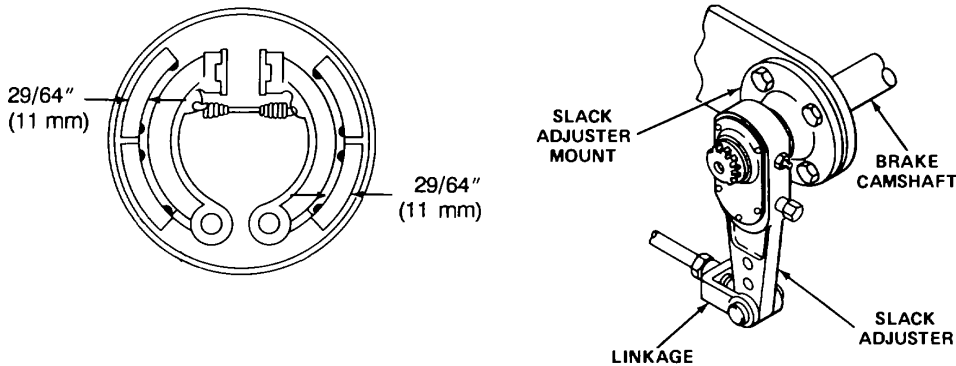
**Perform operator/crew PMCS prior to or in conjunction with organizational PMCS if there is a delay between daily operation of the equipment and the organizational PMCS, or if the regular operator is not helping or taking part.**

ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES

S- Semiannually

A - Annually

ITEM NO.	INTERVAL		ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED REPLACED, OR ADJUSTED AS NEEDED
	S	A	
1.	<ul style="list-style-type: none"><li></li><li></li><li></li></ul>		<p>BRAKE SYSTEM</p> <p>a. Inspect brake system components for wear and damage I</p> <p>b. Check brake lining thickness without removing the drum Replace brake lining if lining is worn to 29/64 Inch (11 mm)</p> <p>c. Check brake lining thickness with brakedrum removed Replace brake lining if lining is within 0.030 Inch (0.762 mm) of rivet head</p> <p>d. Adjust slack adjuster See page 4-60</p>



2.	<ul style="list-style-type: none"><li></li></ul>	<ul style="list-style-type: none"><li></li></ul>	<p>LUBRICATION</p> <p>Perform chassis lubrication as described In section I, Lubrication Instructions</p>
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TA508351

**Section V. ORGANIZATIONAL TROUBLESHOOTING PROCEDURES**

	<b>Page</b>		<b>Page</b>
Explanation of Columns.....	4-10	Symptom Index .....	4-10
General.....	4-10		

**GENERAL**

This section lists the common malfunctions that you may find during the operation or maintenance of the semitrailer or components. You should do the test or inspection and corrective action in the order listed.

This manual cannot list all malfunctions that may occur, nor all test or inspections and corrective actions. If a malfunction is not listed or is not corrected by the corrective action column, notify your supervisor.

**EXPLANATION OF COLUMNS**

**Malfunction.** Visual or operational indication that something is wrong with your semitrailer.

**Test or Inspection.** Procedure used to isolate the problem to a system or a component.

**Corrective Action.** Procedure used to correct the problem.

**SYMPTOM INDEX**

This symptom index is provided as a quick way to get you to the troubleshooting procedure that will help you solve the problem you are having.

	<b>Page</b>
<b>ELECTRICAL SYSTEM</b>	
All lamps fail to light .....	4-11
One or more (but not all) lamps fail to light .....	4-13
Dim or flickering lights .....	4-15
<b>BRAKE SYSTEM</b>	
Brakes will not release .....	4-15
No brakes or weak brakes.....	4-15
<b>WHEELS</b>	
Excessively worn, scuffed, or cupped tires.....	4-17
<b>LANDING GEAR</b>	
Difficulty in lowering or raising landing gear .....	4-18

NOTE

Semitrailer must be hooked up to the towing vehicle when performing electrical or airbrake system tests.

ORGANIZATIONAL TROUBLESHOOTING

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

ELECTRICAL SYSTEM

1. ALL LAMPS FAIL TO LIGHT.

Step 1. Check towing vehicle circuit breakers and fuses.

Reset circuit breaker and replace bad fuses. See towing vehicle technical manual.

Step 2. Check for open circuit in intervehicular cable.

Military towing vehicles

Have an assistant apply brakes on towing vehicle.

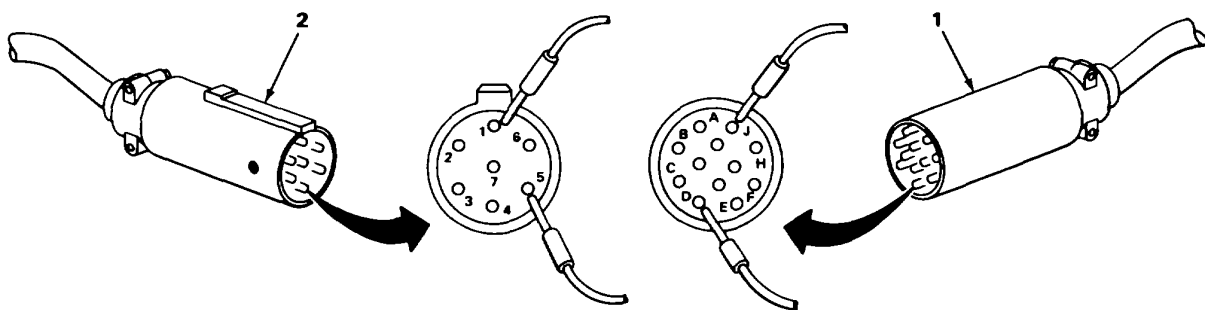
Using multimeter, check voltage between contact D and contacts B, E, and J of intervehicular cable plug (1). Multimeter should read 24 volts.

Commercial towing vehicle

Have an assistant apply brakes on towing vehicle.

Using multimeter, check voltage between contact 1 and contacts 2, 3, 4, 5, and 6 of intervehicular cable plug (2). Multimeter should read 12 volts.

If improper or no reading is obtained, troubleshoot towing vehicle as described in towing vehicle technical manual.



TA223111

## ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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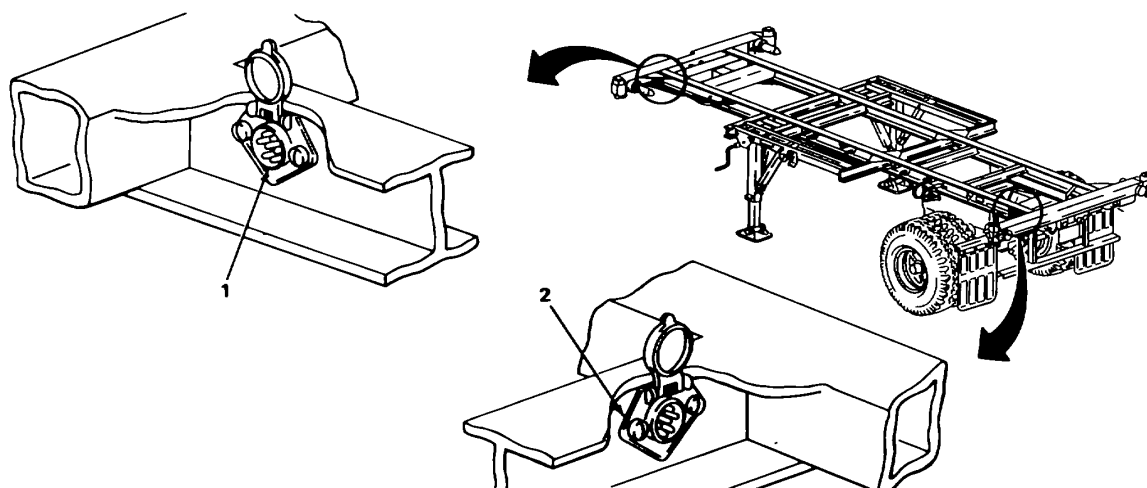
## 1. ALL LAMPS FAIL TO LIGHT - CONTINUED.

Step 3. Using multimeter, check that 12 volts are available at connector (1).

If voltage is available, proceed with step 4. If voltage is not available, proceed with step 5.

Step 4. Using multimeter, check that 12 volts are available at connector (2).

If no voltage is available, check harness assembly for damage. If harness is not damaged, proceed with step 5.



Step 5. Check for good ground at intervehicular cable connector on front of semitrailer. Using a multimeter, check for continuity between contact D (24-volt connector) or contact 1 (12-volt connector) and any bare metal on semitrailer chassis.

If no continuity or high resistance exists, remove connector and ground wire.

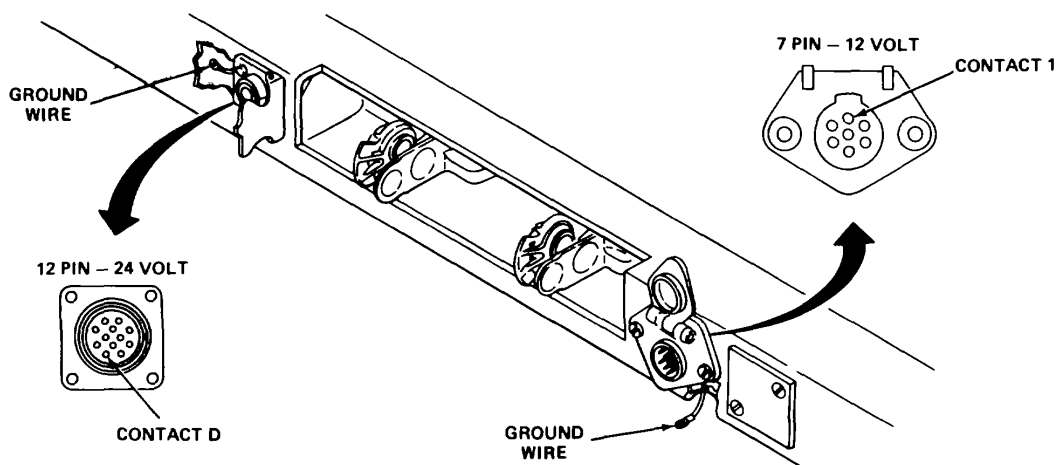
Clean ground wire and contact surface.

Reinstall ground wire and connector.

If continuity is not obtained, replace connector.

## ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

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



## 2. ONE OR MORE (BUT NOT ALL) LAMPS FAIL TO LIGHT.

Step 1. Check for loose or broken light assembly.

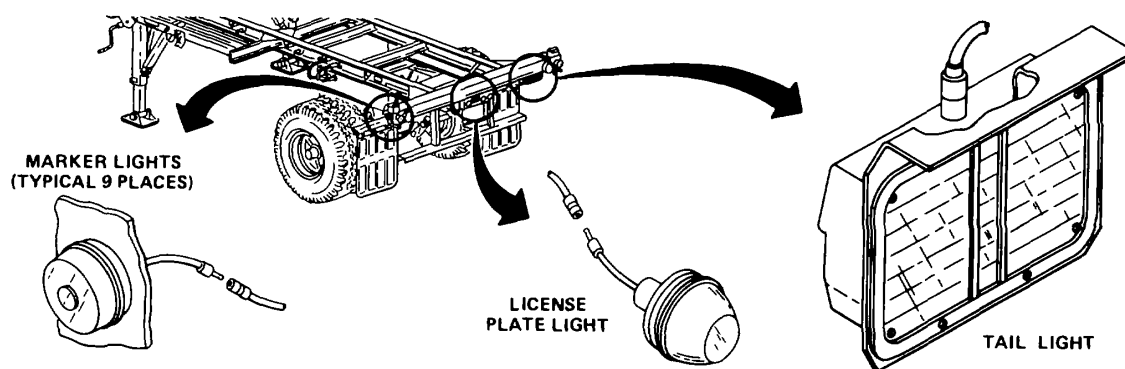
Tighten loose light assembly.

Replace broken light assembly.

See page 4-27 for taillight.

See page 4-25 for license plate light.

See page 4-23 for marker lights.



TA223113

## ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

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<b>MALFUNCTION</b> <b>TEST OR INSPECTION</b> <b>CORRECTIVE ACTION</b>
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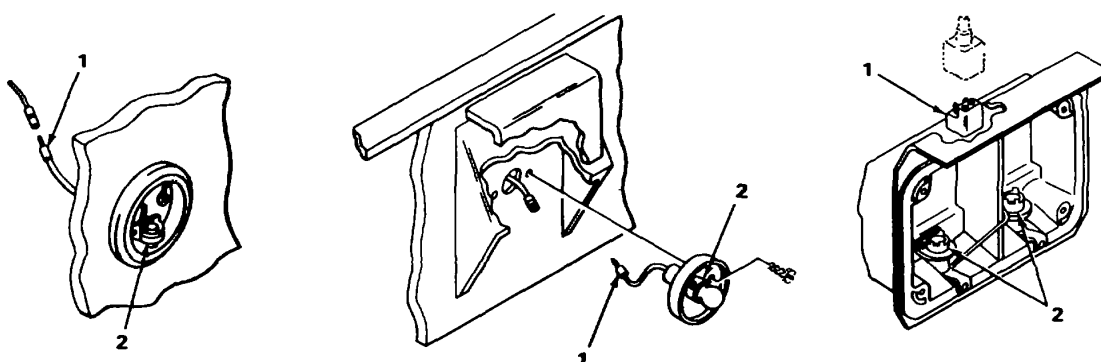
## 2. ONE OR MORE (BUT NOT ALL) LAMPS FAIL TO LIGHT - CONTINUED.

Step 2. Check for burned-out lamps

Replace burned-out lamps.

Step 3. Check for corroded or broken lamp contact and sockets (1) and (2).

If corroded, scrape and clean contacts and sockets.

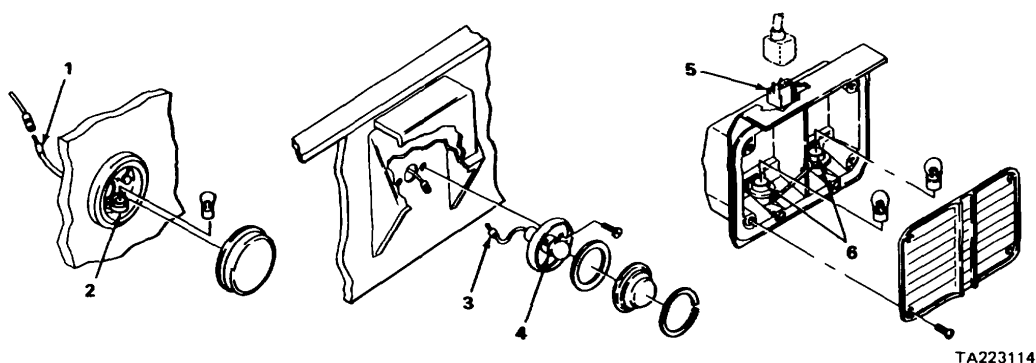


Step 4. Using multimeter, check voltage at electrical harness connector at the bad light. Voltage reading should be approximately 12 volts.

Inspect and repair harness assembly. See page 4-32.

Step 5. Using multimeter, check for continuity across points (1) and (2) for marker lights (3) and (4), for license plate light, and points (5) and (6) for taillight.

Replace light assembly if no continuity exists. See page 4-27 for taillight, page 4-25 for license plate light, and page 4-23 for marker lights.



TA223114

## ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

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<b>MALFUNCTION</b>
<b>TEST OR INSPECTION</b>
<b>CORRECTIVE ACTION</b>

---

## 3. DIM OR FLICKERING LIGHTS.

Step 1. Check for loose or bad ground.

See malfunction 1, step 5.

Step 2. Check for loose, dirty, or corroded contacts at:  
 Intervehicular cable connector.  
 Front and rear main harness connectors.  
 Front and rear harness connectors.  
 Affected light assembly connector.  
 Affected light assembly lamp socket.

Tighten loose and clean dirty or corroded contacts.

## BRAKE SYSTEM

## 4. BRAKES WILL NOT RELEASE.

Check operation of relay valve (1).

**NOTE**

If brake system air pressure is below 60 psi (413.7 kPa), the relay valve will go into emergency bypass and apply brakes until system pressure increases to 60 psi (413.7 kPa).

Have assistant apply brakes at towing vehicle; then release brakes. Brake chamber air pressure should vent through relay valve.

Replace relay valve if air does not vent. See page 4-64.

## ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

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<b>MALFUNCTION</b>
<b>TEST OR INSPECTION</b>
<b>CORRECTIVE ACTION</b>

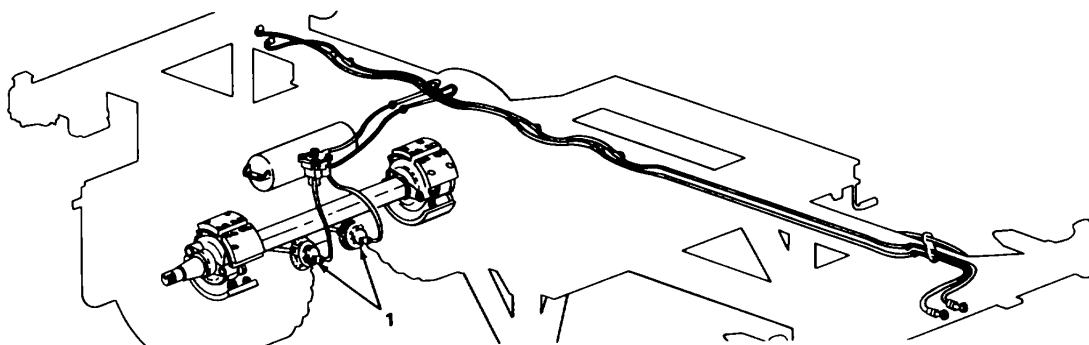
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## 5. NO BRAKES OR WEAK BRAKES.

Step 1. Check brake air chamber (1) for leaks.

Have an assistant apply the brakes in the towing vehicle while you listen for leaks at the brake air chamber (1).

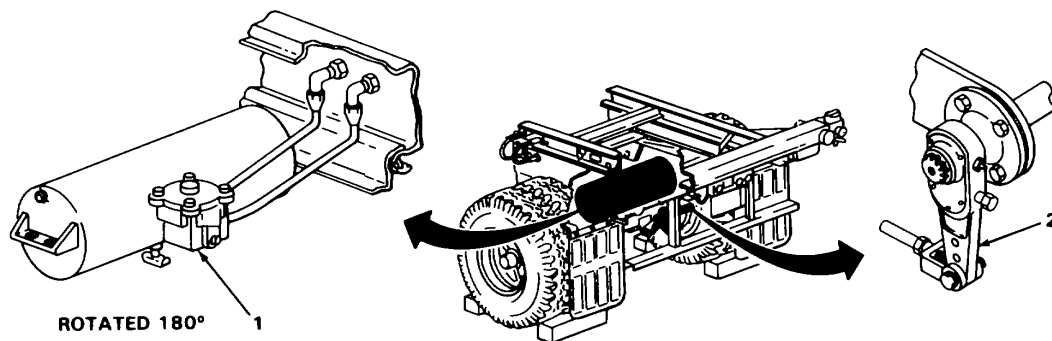
Replace leaking brake air chamber (1). See page 4-68.



Step 2. Check relay valve (1) operation.

Have an assistant apply brakes at towing vehicle while watching for slack adjuster (2) for movement.

Replace relay valve (1) if there is no movement at slack adjuster (2) or if movement is slow. See page 4-64.



TA223115

## ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

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MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- Step 3. Check brakes for excessive clearance
- Adjust brakes as described on page 4-60.

## WHEELS

## 6. EXCESSIVELY WORN, SCUFFED, OR CUPPED TIRES.

- Step 1. Check axle for bent spindle.
- Notify direct support maintenance.

- Step 2. Check axle alignment.
- Aline axle. See page 4-44.

## LANDING GEAR

## 7. DIFFICULTY IN LOWERING OR RAISING LANDING GEAR.

- Step 1. Check left-hand jackscrew and gearbox operation.  
 Disconnect coupling (1) at cross-shaft (2).  
 Turn crank handle (3).  
 If handle (3) turns hard, continue with step 2.  
 If handle (3) turns easy, right-hand jackscrew is-bad. Replace right-hand landing gear leg (4). See page 4-85.

## ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

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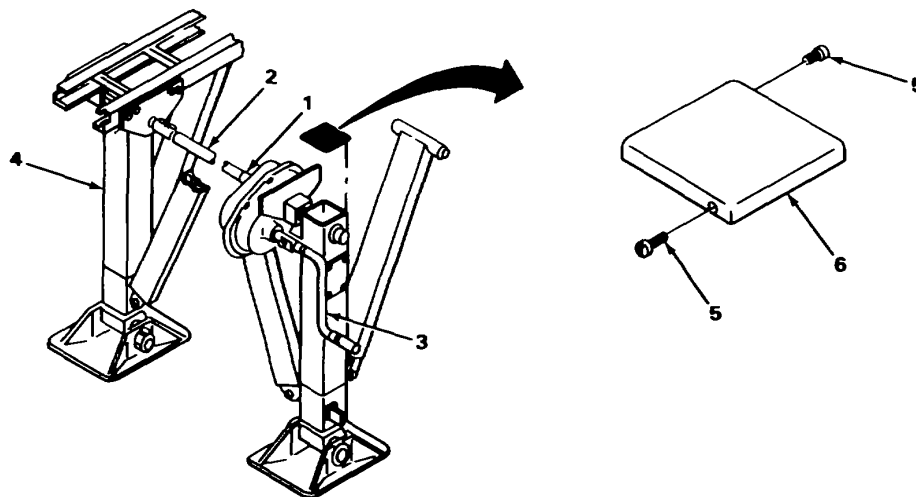
<b>MALFUNCTION</b>	<b>TEST OR INSPECTION</b>	<b>CORRECTIVE ACTION</b>
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Step 2. Check gearbox operation.

Using 9/16-inch wrench remove capscrews (5) and cap (6).  
Turn crank handle (3).

If handle (3) turns easy, left-hand jackscrew is bad. Replace left-hand landing gear leg. See page 4-85.  
If handle (3) turns hard, gearbox is bad. Replace gearbox. See page 4-91.



## Section VI. CLEANING AND INSPECTION INSTRUCTIONS

	Page		Page
Cleaning Instructions.....	4-18	Inspection Instructions.....	4-20

**WARNING**

Improper cleaning methods and use of unauthorized cleaning liquids or solvents can injure personnel and damage equipment. Refer to TM 9-208-1 and TM 9-247.

**CLEANING INSTRUCTIONS**

Cleaning instructions will be the same for the majority of parts and components that make up the semitrailer.

TA223116

**CLEANING INSTRUCTIONS - CONTINUED**

The importance of cleaning must be thoroughly understood by maintenance personnel. Great care and effort are required in cleaning. Dirt and foreign material are a constant threat to satisfactory maintenance. 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 any accumulation of grease which can collect dust, dirt, or grit.
3. After cleaning cover, wrap all parts to protect them from dust and dirt. Lightly oil parts that are subject to rust.

**STEAM CLEANING**

Protect all electrical equipment that can be damaged by the steam or moisture before steam cleaning the exterior of the semitrailer.

Place disassembled parts in a suitable container to steam clean.

After cleaning, dry and cover (or lightly oil) all parts subject to rust.

**CASTINGS, FORGINGS, AND MACHINED METAL PARTS****WARNING**

Dry-cleaning solvent PD-680 is both toxic and flammable. Avoid prolonged breathing of vapors and avoid skin contact. Do not use near open flame or excessive heat. Flash point of solvent is 1380F (590C).

Clean inner and outer surfaces with dry-cleaning solvent.

Remove grease and accumulated deposits with a stiff bristle brush.

**WARNING**

Particles blown by compressed air are hazardous. Make certain the airstream is directed away from user and other personnel in the area. To prevent injury, user must wear safety eye goggles or face shield when using compressed air. Blow out all tapped (threaded) holes with compressed air to remove dirt and cleaning fluids.

**ELECTRICAL CABLES, FLEXIBLE HOSE, AND OIL SEALS****CAUTION**

Washing oil seals, electrical cables, and flexible hoses with dry-cleaning solvents or mineral spirits will cause serious damage or destroy the material.

## **CLEANING INSTRUCTIONS - CONTINUED**

### **NOTE**

Wash electrical cables and flexible hose with water and soap solution, and wipe dry. Oil seals are generally damaged during removal. Cleaning will not be necessary because new seals will be used on assembly.

### **BEARINGS**

Refer to TM 9214 for instructions and procedures covering care and maintenance of antifriction bearings.

### **INSPECTION INSTRUCTIONS**

All components and parts must be carefully checked to determine if:

1. They are serviceable for reuse.
2. They can be repaired.
3. They must be scrapped.

### **DRILLED AND TAPPED (THREADED) HOLES**

Inspect for wear, distortion, cracks, or any other damage in or around holes

Inspect threaded areas for wear, distortion (stretched), or evidence of cross-threading.

Mark all damaged areas for repair or replacement.

### **METAL LINES, FLEXIBLE LINES (HOSES), AND METAL FITTINGS**

Inspect metal lines for sharp kinks, cracks, bad bends, or bad dents.

Inspect flexible lines for fraying, evidence of leakage, or loose metal fittings or connectors.

### **GEARS**

Inspect gear teeth for wear, chips, or breakage.

Inspect gear shafts for wear or grooving.

### **BUSHINGS**

Inspect bushings for excessive wear, elongation, or grooving.

## Section VII. ELECTRICAL SYSTEM MAINTENANCE

	Page		Page
Front Harness .....	4-36	Marker Light.....	4-23
General.....	4-21	Marker Light Lamp and Lens.....	4-22
License Plate Light.....	4-25	Rear Harness.....	4-42
License Plate Light Lamp and Lens.....	4-24	Resistors.....	4-34
Main Chassis Harness.....	4-28	Taillight.....	4-27
Main Chassis Harness Repair.....	4-32	Taillight Lens and Lamp .....	4-26

### GENERAL

This section provides instructions for organizational maintenance of the electrical system. The following initial setup information applies to all procedures.

Resources required are not listed unless they apply to the procedure

Personnel are listed only if the task requires more than one technician. If Personnel Required is not listed, one technician can do the task.

The normal standard equipment condition to start a maintenance task is power off. Equipment condition is not listed unless some other condition is required.

MARKER LIGHT LAMP AND LENS

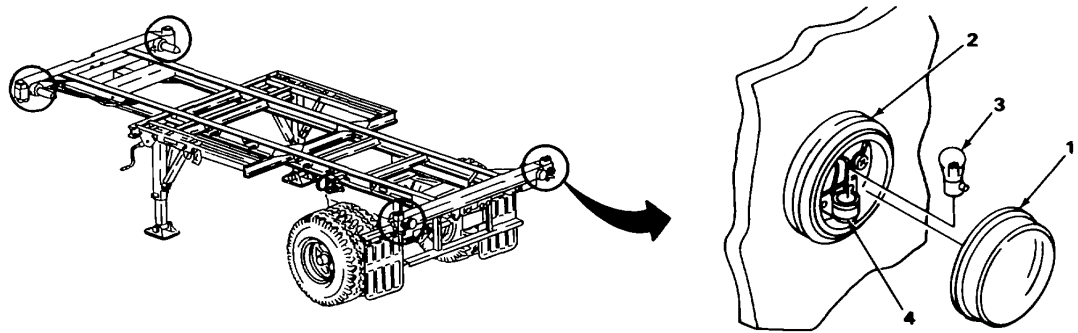
This task covers:

- a. Removal (page 4-22)
- b. Installation (page 4-22)

INITIAL SETUP

Tools	Materials/Parts
Screwdriver, flat-tip	Lamp

LOCATION	ITEM	ACTION	REMARKS
REMOVAL			
1. Marker light	Lens (1)	Using screwdriver, pry lens (1) off light base (2).	
2.	Lamp (3)	a. Push lamp (3) into socket (4) and turn counterclockwise. b. Remove lamp (3).	
INSTALLATION			
3.	Lamp (3)	Push lamp (3) into socket (4) and turn clockwise to secure.	
4.	Lens (1)	Place lens (1) on light base (2) and push to snap into place.	



TASK ENDS HERE

MARKER LIGHT

This task covers:

- a. Removal (page 4-23)
- b. Installation (page 4-23)

INITIAL SETUP

Tools

Screwdriver, flat-tip

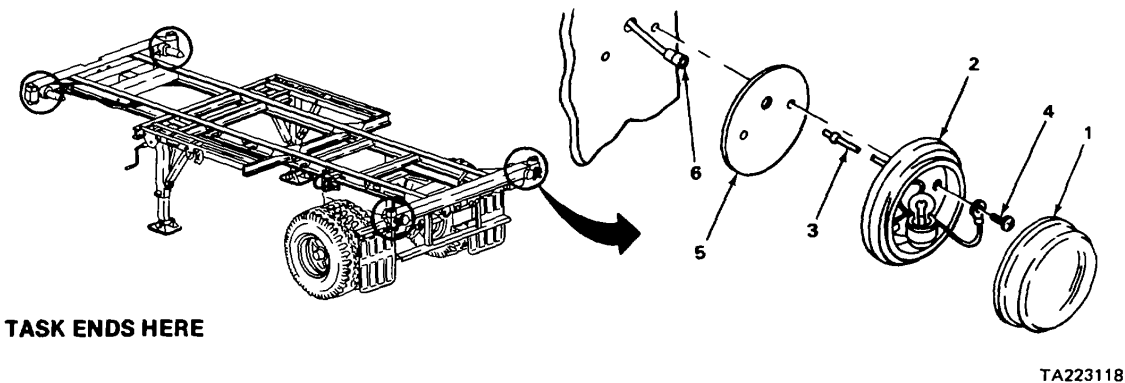
LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

REMOVAL

1.Marker light	Lens (1)	Using screwdriver, pry lens (1) off light base (2).	
2.	Terminal (3), screws (4), light base (2) and gasket (5)	<ul style="list-style-type: none"><li>a. Pull terminal (3) from harness connector (6).</li><li>b. Using screwdriver, remove two screws (4).</li><li>c. Remove light base (2) and gasket (5).</li></ul>	

INSTALLATION

3.	Gasket (5), light base (2), screws (4) and terminal (3)	<ul style="list-style-type: none"><li>a. Assemble parts</li><li>b. Using screwdriver, tighten two screws (4).</li><li>c. Push terminal (3) into harness connector (6).</li></ul>	
4.	Lens (1)	Place lens (1) on light base (2) and push to snap it into place.	



LICENSE PLATE LIGHT LAMP AND LENS

This task covers:

- a. Removal (page 4-24)
- b. Installation (page 4-24)

INITIAL SETUP

Tools	Materials/Parts
Screwdriver, flat-tip	Lamp

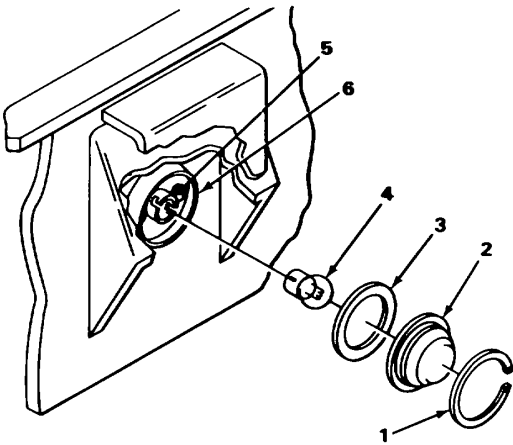
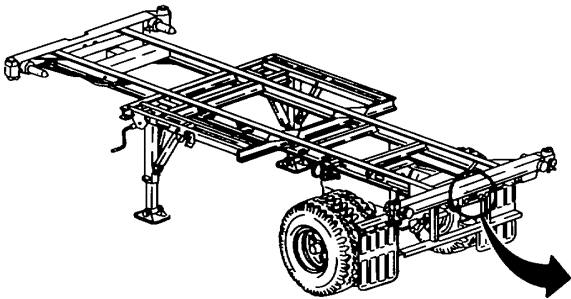
LOCATION	ITEM	ACTION	REMARKS
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REMOVAL

1. License plate light	Retaining ring (1), lens (2), gasket (3) and lamp (4)	a. Using screwdriver, pry off retaining ring (1). b. Remove lens (2) and gasket (3). c. Push lamp (4) into socket (5) and turn counterclockwise. d. Remove lamp (4).	
------------------------	---	---	--

INSTALLATION

2.	Lamp (4), gasket (3), lens (2) and retaining ring (1)	a. Push lamp (4) into socket (5) and turn clockwise to secure. b. Place gasket (3) and lens (2) on light base (6) with frosted surface of lens (2) toward ground. c. Snap retaining ring (1) into groove of light base (6).	
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TASK ENDS HERE

TA223119

LICENSE PLATE LIGHT

This task covers:

- a. Removal (page 4-25)
- b. Installation (page 4-25)

INITIAL SETUP

Tools

Screwdriver, flat-tip

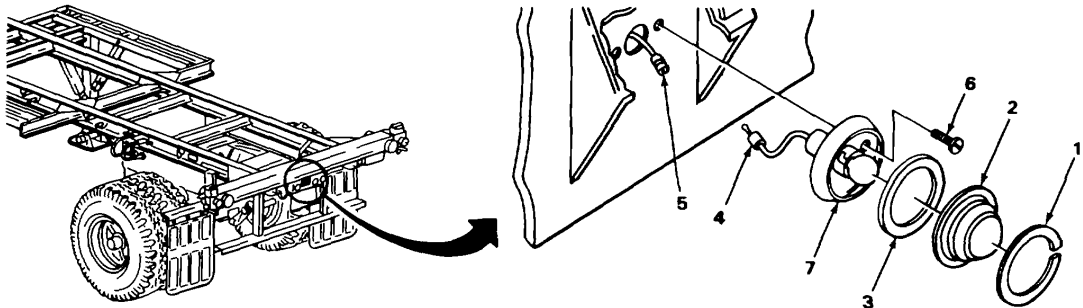
LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

REMOVAL

- |                        |   |  |
|------------------------|---|--|
| 1. License plate light | Retaining ring (1), lens (2), gasket (3), screws (6) and light base (7) | a. Using screwdriver, pry off retaining ring (1).<br>b. Remove lens (2) and gasket (3).<br>c. Pull terminal (4) from harness connector (5).<br>d. Using screwdriver, remove two screws (6) and light base (7). |
|------------------------|---|--|

INSTALLATION

- |    |   |   |
|----|---|---|
| 2. | Light base (7), screws (6), gasket (3), lens (2) and retaining ring (1) | a. Position light base (7) on chassis frame.<br>b. Using screwdriver, install two screws (6).<br>c. Push terminal (4) into harness connector (5).<br>d. Place gasket (3) and lens (2) on light base (7).<br>e. Snap retaining ring (1) into groove of light base (7). |
|----|---|---|



TASK ENDS HERE

TA223120

TAILLIGHT LENS AND LAMPS

This task covers:

- a. Removal (page 4-26)
- b. Installation (page 4-26)

INITIAL SETUP

Tools	Materials/Parts
Screwdriver, cross-tip	Lamps

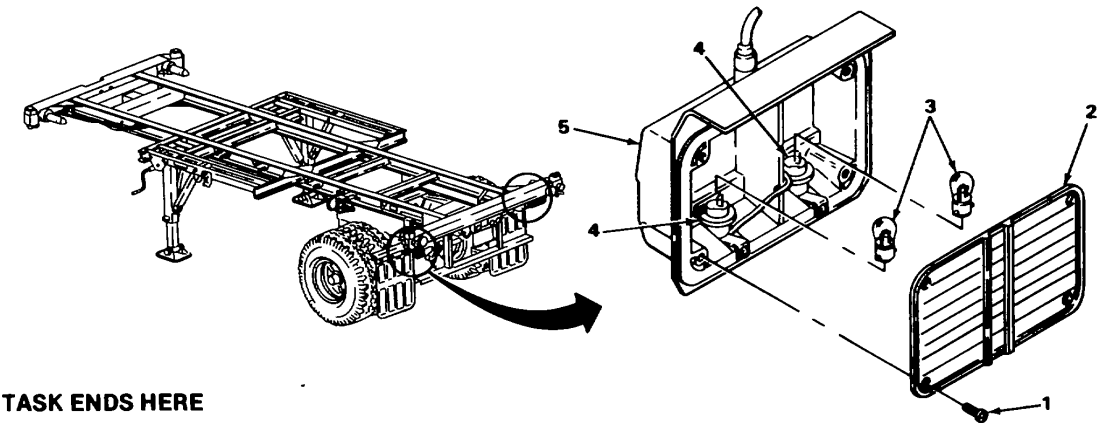
LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

REMOVAL

1. Taillight	Screws (1), lens (2) and lamps (3)	a. Using screwdriver, remove four screws (1) and lens (2). b. Push two lamps (3) into sockets (4) and turn counterclockwise. c. Remove lamps (3).
--------------	------------------------------------	---

INSTALLATION

2	Lamps (3), lens (2) and screws (1)	a. Push two lamps (3) into sockets (4) and turn clockwise to secure them. b. Place lens (2) in taillight (5). c. Using screwdriver, install four screws (1).
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TASK ENDS HERE

TAILLIGHT

This task covers:

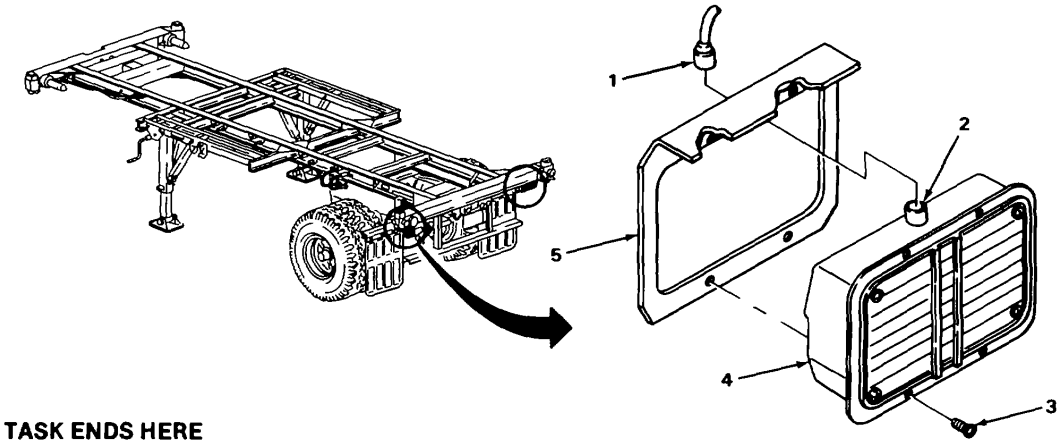
- a. Removal (page 4-27)
- b. Installation (page 4-27)

INITIAL SETUP

Tools

Screwdriver, cross-tip

LOCATION	ITEM	ACTION	REMARKS
REMOVAL			
1. Taillight	Harness connector (1)	Pull harness connector (1) from taillight receptacle (2).	
2.	Screws (3) and taillight (4)	Using screwdriver, remove four screws (3) and taillight (4).	
INSTALLATION			
3. Taillight	Taillight (4) and screws (3)	a. Position taillight (4) on taillight frame (5). b. Using screwdriver, install four screws (3).	
4.	Harness connector (1)	Push harness connector (1) into taillight receptacle (2).	



TASK ENDS HERE

TA223122

MAIN CHASSIS HARNESS

This task covers:

- a. Removal (page 4-28)
- b. Installation (page 4-30)

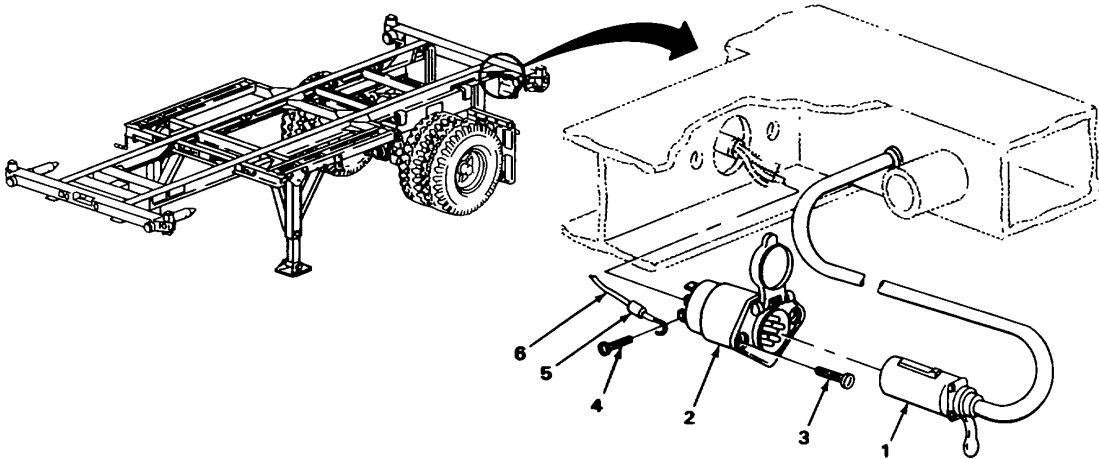
INITIAL SETUP

Tools	Materials/Parts
Screwdriver, cross-tip	Electrical tape
Screwdriver, flat-tip	Plastic sleeves
Tool kit, electrical connector	

LOCATION	ITEM	ACTION	REMARKS
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REMOVAL

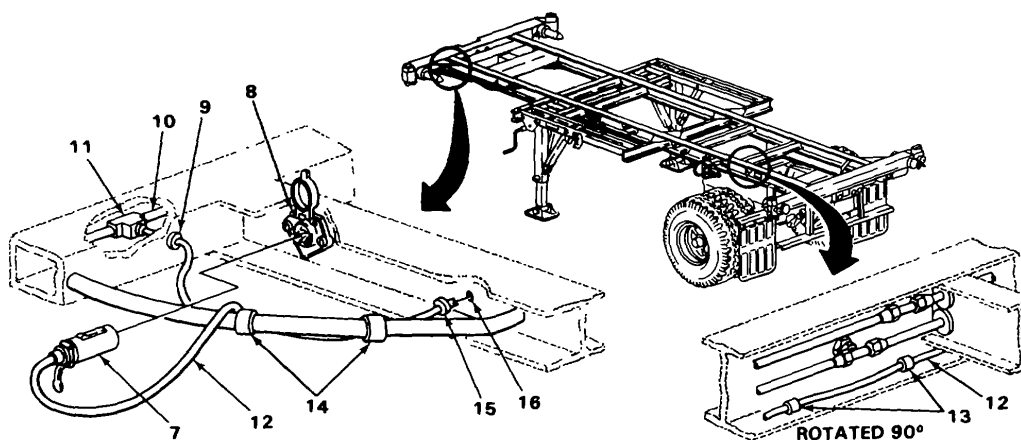
- |                        |                             |   |
|------------------------|-----------------------------|---|
| 1. Semitrailer Chassis | Rear harness plug (1)       | Pull plug (1) from receptacle (2).  |
| 2.                     | Main harness receptacle (2) | <ul style="list-style-type: none"><li>a. Using screwdriver, remove screws (3).</li><li>b. Pull receptacle (2) from chassis and remove electrical tape covering receptacle to harness attach screws (4).</li><li>c. Pull back plastic sleeves (5).</li><li>d. Using screwdriver, loosen five screws (4). Remove wires (6).</li><li>e. Remove receptacle (2).</li></ul> |



TA223123

## MAIN CHASSIS HARNESS - CONTINUED

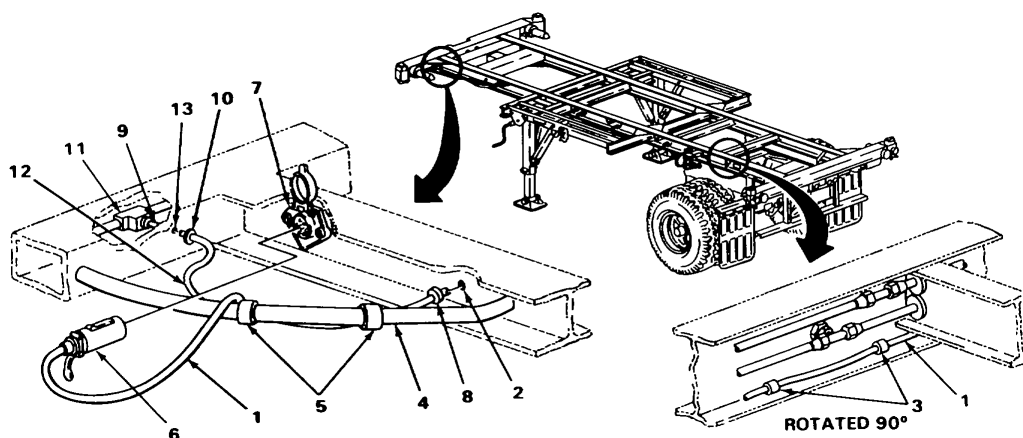
LOCATION	ITEM	ACTION	REMARKS
3. Semitrailer chassis	Main harness plug (7)	Pull plug (7) from receptacle (8)	
4. Chassis front crossmember	Grommet (9) and terminal (10)	a. Using screwdriver, pry grommet (9) from chassis crossmember b. Pull terminal (10) from three-way connector (11).	
5. Semitrailer chassis	Main harness (12)	a. Remove harness (12) from behind welded clamp (13). b. Remove harness (12) from support clips (14). c. Using screwdriver, pry out grommet (15). d. Pass harness (12) through hole (16) and remove harness from chassis.	



TA223124

## MAIN CHASSIS HARNESS - CONTINUED

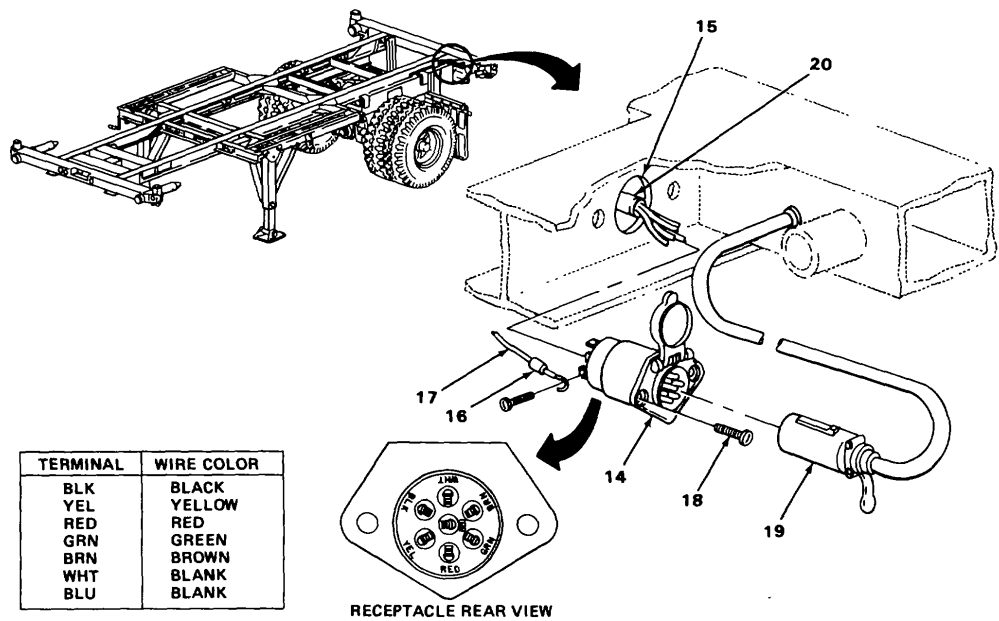
LOCATION	ITEM	ACTION	REMARKS
<b>INSTALLATION</b>			
6. Semitrailer chassis	Main harness (1) b.	a. Pass harness (1) through hole (2). Secure harness (1) with welded clamps (3). c. Support harness (1) on pipe (4) with support clips (5). d. Insert plug (6) in receptacle (7). e. Place grommet (8) around main harness (1) and work grommet (8) into hole (2).	
7. Chassis front crossmember	Terminal (9) and grommet (10)	a. Push terminal (9) into three-way connector (11). b. Place grommet (10) around wire (12) and work grommet (10) into hole (13).	



TA223125

MAIN CHASSIS HARNESS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
8. Semitrailer chassis	Main harness receptacle (14)	a. Pass end of harness (20) through hole (15). b. Install plastic tubing (16) over five wires (17). c. Using wire strippers, strip 1/2 inch (12.7 millimeters) from ends of wires (17) and form end into a hook. d. Using screwdriver, secure wires (17) to their respective terminals, as shown in the figure below. e. Slide plastic sleeve (16) over terminals. f. Using electrical tape, wrap terminal end of receptacle (14). g. Place receptacle (14) on chassis. h. Using screwdriver, install screws (18).	
9. Main harness receptacle (14)	Rear harness plug (19)	Push plug (19) into receptacle (14).	



TASK ENDS HERE

TA223126

CHASSIS HARNESS REPAIR

This task covers:

Repair

INITIAL SETUP

Tools	Materials/Parts
Pliers, diagonal cutting Tool kit, electrical connector	Tape, electrical Wire, 12-gage

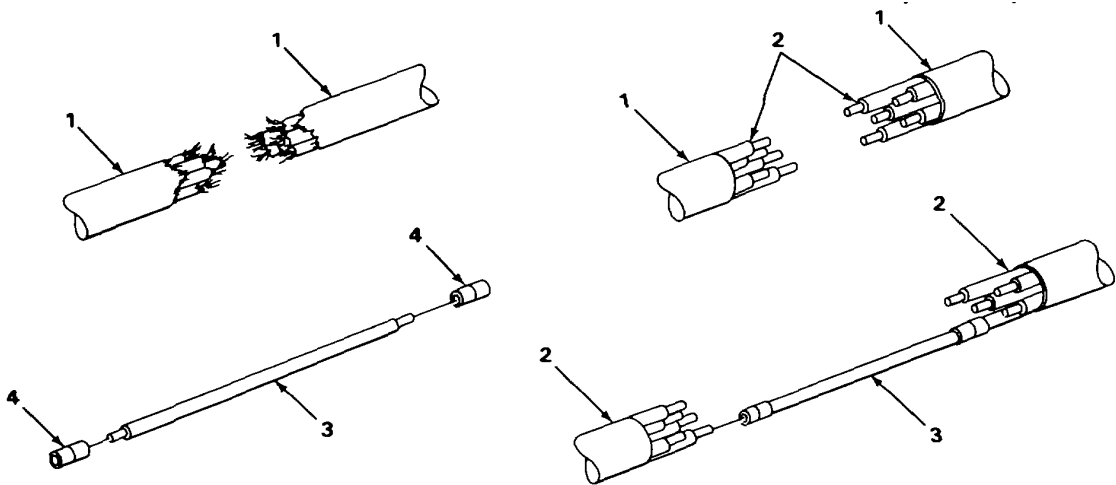
LOCATION	ITEM	ACTION	REMARKS
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NOTE			
This task can be used to repair front, main, or rear chassis wiring harnesses.			
1. Wire harness break	Wire harness (1)	a. Remove 6 inches (15.24 centimeters) of tape from wire harness (1). b. Using pliers, stagger trim wires (2). c. Using wire stripper, strip ends of wires (2).	
2.	Five jumpers (3)	a. Using wire stripper, strip both ends of jumper wires (3). b. Using crimping tool, crimp one splice (4) on each end of jumper (3). c. Using crimping tool, install five jumpers (3) on matching wires (2). Check splices for good electrical and mechanical connection. d. Using electrical tape, wrap each splice and wire.	

CHASSIS HARNESS REPAIR - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

e. Using electrical tape, wrap repaired wires together.  
**Be sure new tape overlaps old tape.**

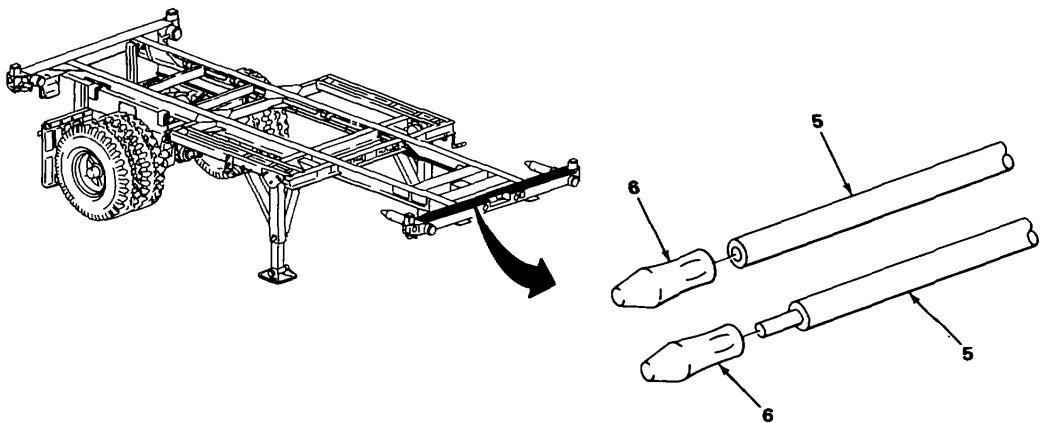


3. Wire harness                      Wire loom (5)

a.                      Using pliers, trim wire (5).  
b.                      Using wire strippers, strip end of wire (5)

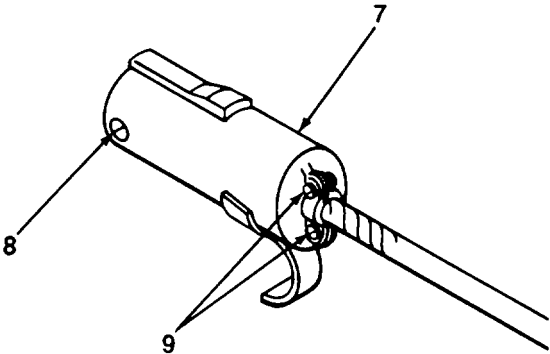
4.                      Bullet terminal (6)

Using crimping tool, install terminal (6).  
**Check terminal for good electrical and mechanical connection.**



CHASSIS HARNESS REPAIR - CONTINUED

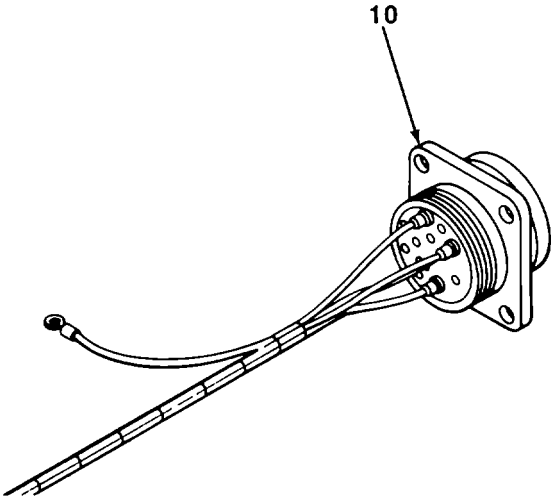
LOCATION	ITEM	ACTION	REMARKS
5	Receptacle (7)	a. Remove screw (8) b. Loosen two screws (9) c. Push harness and receptacle insert out of receptacle (7) d. Disconnect wires from receptacle (7) e. Connect wires to receptacle (7) f. Pull harness and receptacle Insert into receptacle (7) g. Tighten two screws (9) h. Install screw (8).	



TA508352 E

CHASSIS HARNESS REPAIR - CONTINUED

LOCATION	ITEM	ACTION REMARKS
6.	Receptacle (10)	a. Remove wires from receptacle (10) b. Install wires to receptacle (10)



TASK ENDS HERE

RESISTORS

This task covers:

- a. Removal (page 4-34)
- b. Installation (page 4-35)

INITIAL SETUP

Tools	Materials/Parts
Screwdriver, flat-tip	Resistor
Soldering iron	Solder
Wrench, box, 3/8-inch	

LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

NOTE

The following removal and installation procedure is for one resistor. Removal and installation of other resistors are similar.

REMOVAL

1. Chassis front crossmember	Resistor box (1)	a. Using screwdriver, remove two screws (2). b. Pull resistor box (1) out of chassis front crossmember.
2. Resistor box (1)	Resistors (3)	a. Using soldering Iron, unsolder wires (4). b. Using screwdriver and 3/8-inch wrench, remove screws (5), nuts (6), and spacers (7) c. Unstack and remove bad resistor. <b>Discard bad resistor.</b>

RESISTORS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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INSTALLATION

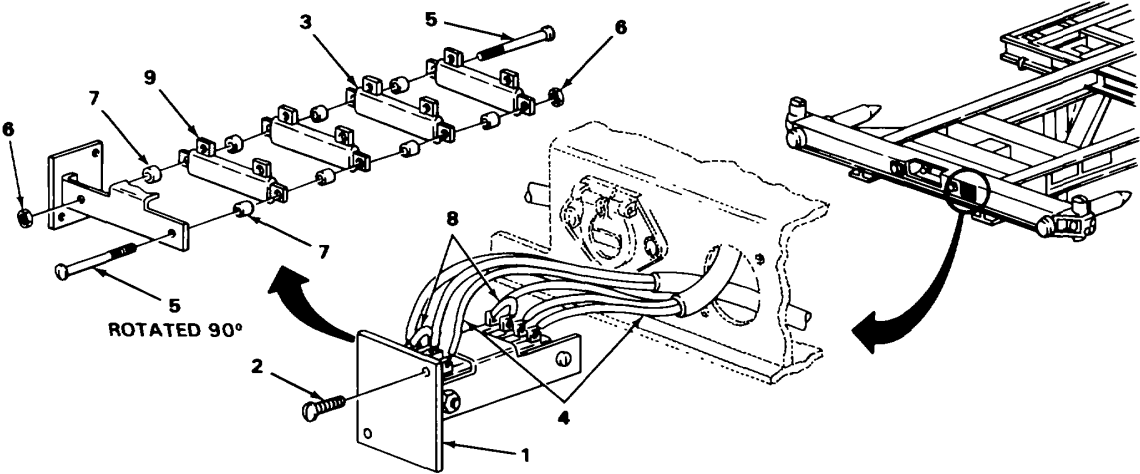
3.	Resistors (3)	a. Stack new resistor (3) on resistor box (1) using screws (5), spacers (7), and nuts (6). b. Using screwdriver and 318-inch box wrench, tighten screws (5). c. Using soldering iron, solder wires (4) to resistor (3).	
----	---------------	---	--

NOTE

When installing 4-ohm resistors, be sure to solder jumper leads across their contacts.

4.	Chassis front crossmember	Resistor box (1)	a. Position resistor box (1) on chassis front crossmember. b. Using screwdriver, install screws (2).
----	---------------------------	------------------	---

d. Using soldering iron, solder jumper lead (8) across resistor contact (9).



TASK ENDS HERE

FRONT HARNESS

This task covers:

- a. Removal (page 436)
- b. Installation (page 39)

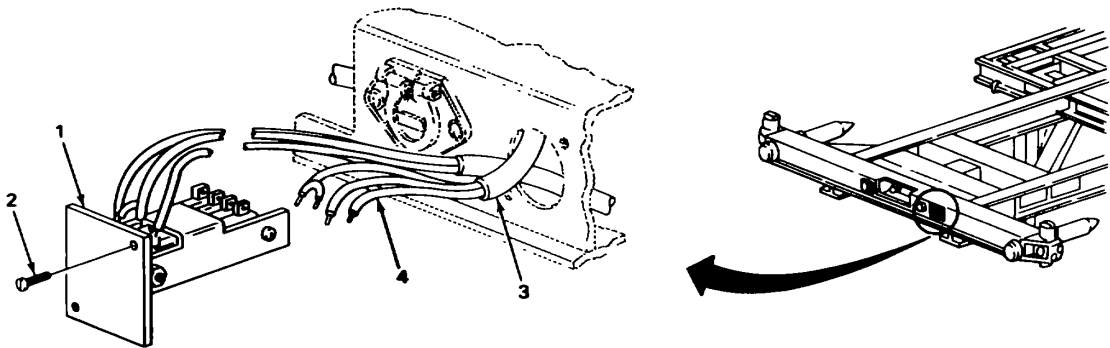
INITIAL SETUP

Tools	Materials/Parts
Screwdriver, flat-tip	Solder
Soldering iron	String
Tool kit, electrical connector	Tape, electrical
Wrench, box, 3/8inch	

LOCATION	ITEM	ACTION	REMARKS
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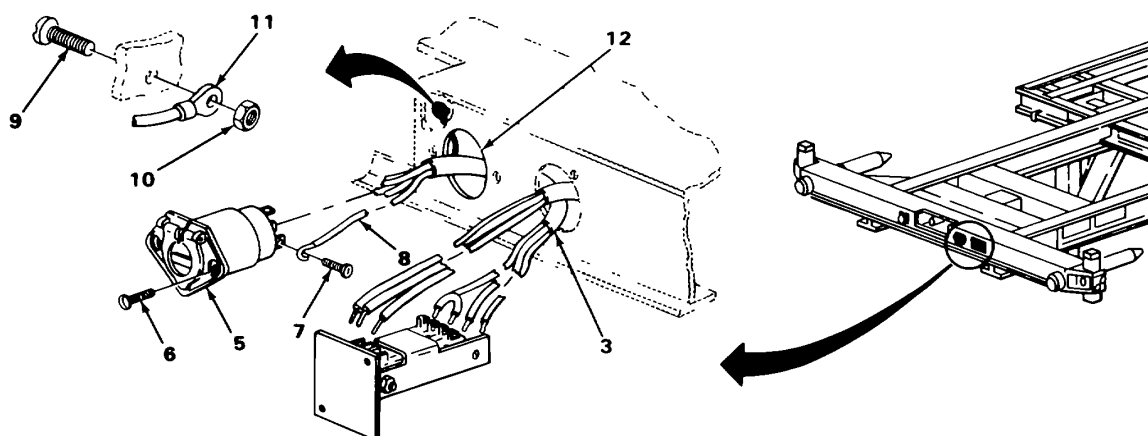
REMOVAL

- |                              |                        |  |
|------------------------------|------------------------|--|
| 1. Chassis front crossmember | Resistor box (1)       | a. Using screwdriver, remove two screws (2).   |
|                              |                        | b. Pull resistor box (1) out of chassis front crossmember.   |
| 2. Resistor box (1)          | Receptacle harness (3) | a. Using soldering iron, unsolder three wires (4) from resistor box (1).                                 |
|                              |                        | b. Tie a 4-foot (1.25meter) guide string on end of receptacle harness (3), and tie loose end to chassis. |



## FRONT HARNESS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
3. Chassis front crossmember	Receptacle (5)	a. Using screwdriver, remove two screws (6) b. Pull receptacle (5) out of chassis front crossmember c. Using screwdriver, loosen screws (7) and unhook wires (8). d. Using screwdriver and 3/8-inch wrench, remove screw (9), nut (10), and ground wire (11)	
4.	Receptacle harness (3)	a. Pull out of chassis through hole (12). b. Untie and remove guide string from receptacle harness (3)	<b>Leave guide string attached to chassis.</b>



TA223130

## FRONT HARNESS - CONTINUED

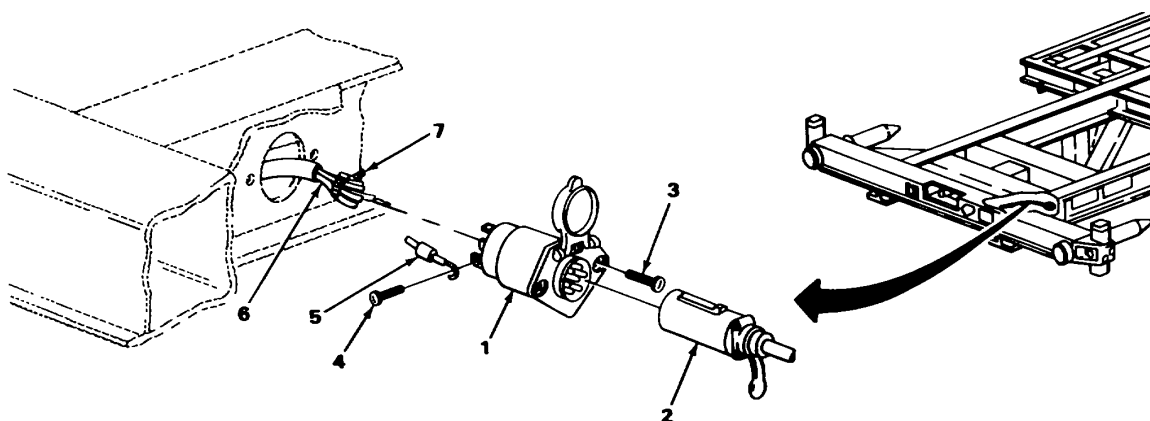
LOCATION	ITEM	ACTION	REMARKS
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## REMOVAL - CONTINUED

4. Chassis side rail

Receptacle (1)

- a. Pull main harness plug (2) out of receptacle (1).
- b. Using screwdriver, remove two screws (3).
- c. Pull receptacle (1) out of chassis side rail.
- d. Remove electrical tape covering screws (4).
- e. Pull plastic sleeves (5) off of screws (4).
- f. Using screwdriver, loosen five screws (4) and unhook wires (6).
- g. Tie a 4-foot (1.25meter) guide string (7) on end of wires (6).



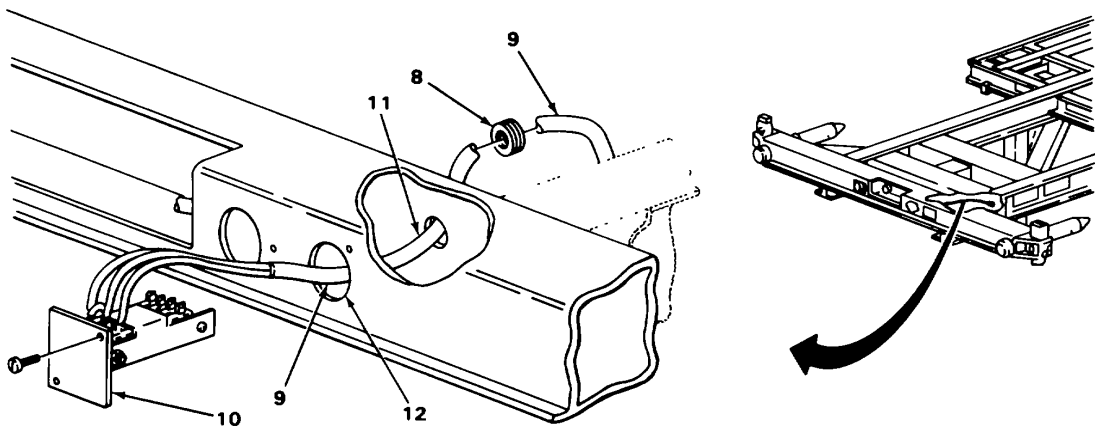
TA223131

FRONT HARNESS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
5. Front crossmember	Grommet (8)	a Using screwdriver, pry out. b Remove from front harness (9).	
6.	Front harness (9) and resistor box (10)	a Remove from chassis through holes (11) and (12) b Untie guide string from front harness (9). <b>Leave string attached to chassis.</b>	

INSTALLATION

7. Front crossmember	Front harness (9) and resistor box (10)	a Tie guide string to front harness (9) at end opposite resistor box (10). b Using guide string, draw front harness (9) into chassis through holes (12) and (11) c Remove guide string from front harness (9).	
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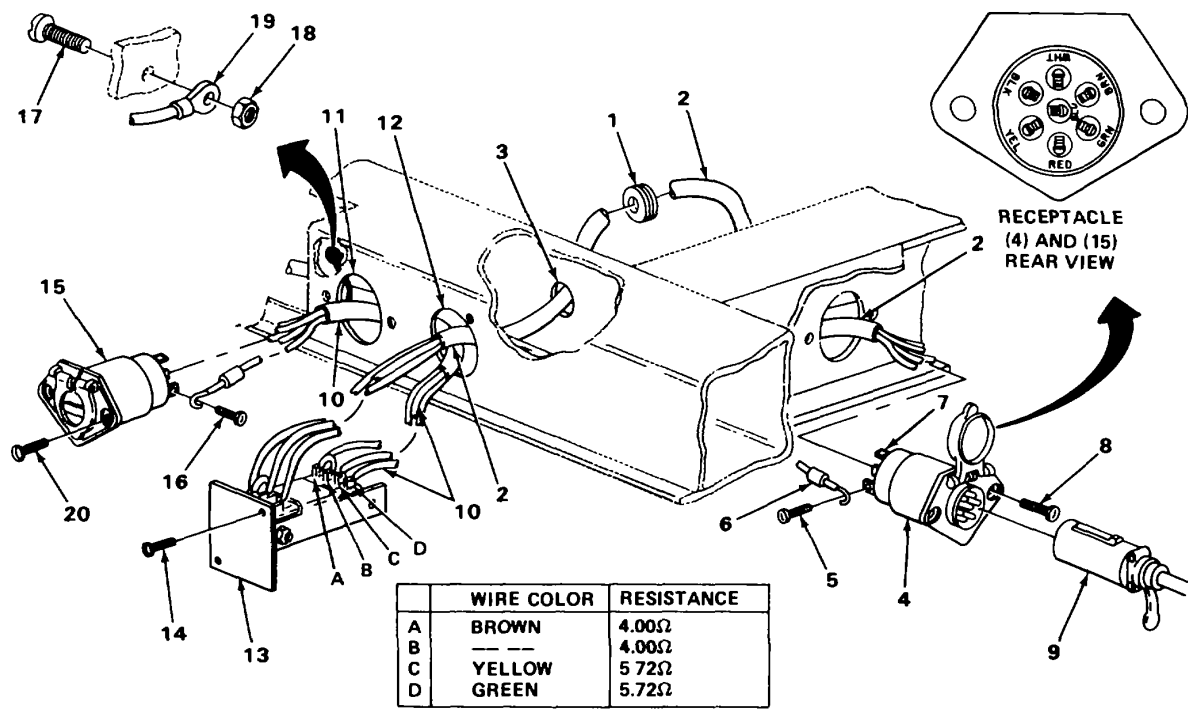
TA2231 32

## FRONT HARNESS - CONTINUED

LOCATION	ITEM	ACTION REMARKS
<b>INSTALLATION - CONTINUED</b>		
8. Front Crossmember	Grommet (1)	a. Install on front harness (2). b. Using flat-tip screwdriver, install in hole (3).
9. Chassis side rail	Receptacle (4)	a. Using flat-tip screwdriver, connect wires of front harness (2) with screws (5) to their respective terminals by color code. b. Slide plastic sleeves (6) over terminals (7). c. Using electrical tape, wrap terminal end of receptacle (4).
10.	Two screws (8)	Using flat-tip screwdriver, secure receptacle (4).
11.	Main harness plug (9)	Push into receptacle (4).
12. Front crossmember	Receptacle harness (10)	a. Tie guide string to receptacle harness (10) on resistor box-attaching end. b. Using guide string, draw receptacle harness (10) into chassis through holes (11) and (12).
13.	Resistor box (13)	Using soldering iron, connect wires of receptacle harness (10) to their respective terminals by color code.
14.	Two screws (14)	Using flat-tip screwdriver, secure resistor box (13).
15.	Receptacle (15)	Using flat-tip screwdriver, connect wires of receptacle harness (10) with screws (16) to their respective terminals by color code.

FRONT HARNESS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
16. Front crossmember	Screw (17), nut (18) and ground wire (19)	Using flat-tip screwdriver and 3/8-inch open-end wrench, install on chassis.	
17.	Two screws (20)	Using flat-tip screwdriver, secure receptacle (15) to chassis	



TASK ENDS HERE

## REAR HARNESS

---

This task covers:

- a. Removal (page 4-42)
  - b. Installation (page 4-42)
- 

### INITIAL SETUP

#### Tools

Screwdriver, flat-tip

#### Materials/Parts

String  
Tape, electrical

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LOCATION	ITEM	ACTION	REMARKS
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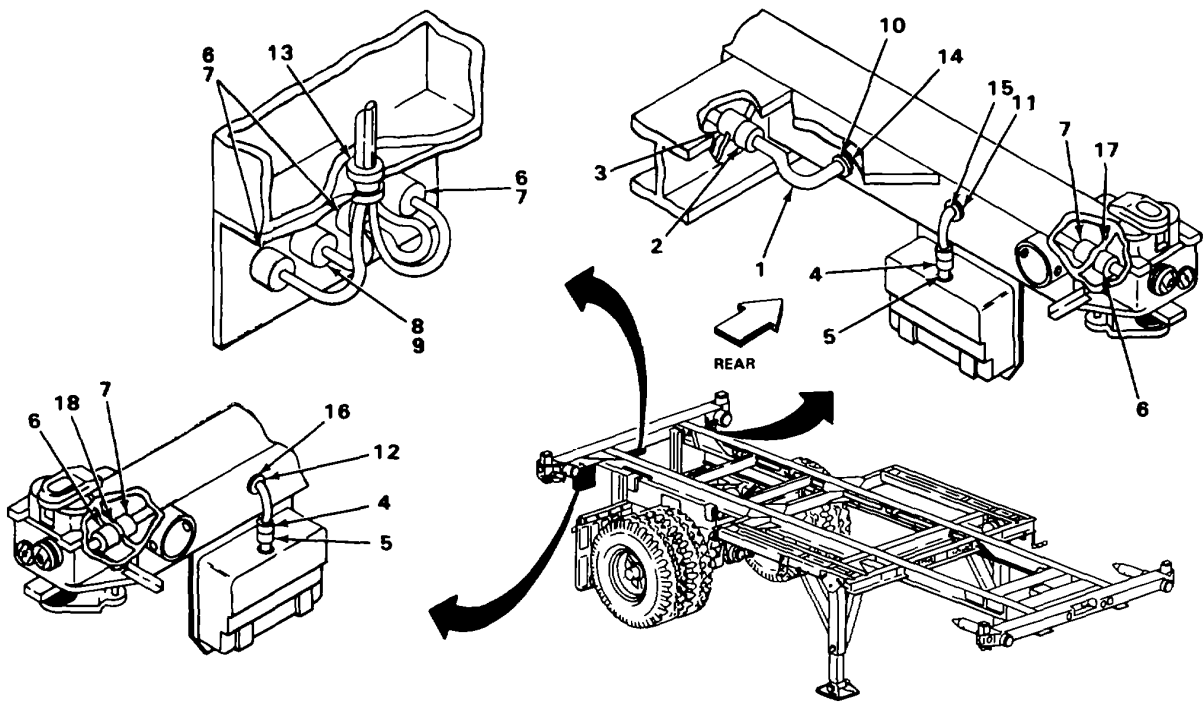
### REMOVAL

- |    |                          |                  |  |
|----|--------------------------|------------------|--|
| 1. | Rear chassis crossmember | Rear harness (1) | <ul style="list-style-type: none"> <li>a. Pull connector (2) from main harness receptacle (3).</li> <li>b. Pull connectors (4) from taillight receptacle (5).</li> <li>c. Pull marker light connectors (6) from rear harness receptacles (7).</li> <li>d. Pull license plate light connector (8) from rear harness receptacle (9).</li> <li>e. Tie guide string to each connector.</li> <li>f. Using screwdriver, remove grommets (10), (11), (12), and (13).</li> <li>g. Pull rear harness (1) out of rear chassis crossmember through hole (14).</li> <li>h. Untie guide strings.</li> </ul> |
|----|--------------------------|------------------|--|

### INSTALLATION

- |    |  |                  |  |
|----|--|------------------|--|
| 2. |  | Rear harness (1) | <ul style="list-style-type: none"> <li>a. Tie guide strings to harness (1).</li> <li>b. Draw new harness (1) through hole (14) and out of holes (15), (16), (17), and (18).</li> <li>c. Push connector (2) into receptacle (3).</li> <li>d. Push two connectors (4) into taillight receptacle (5).</li> <li>e. Push marker light connectors (6) into rear harness receptacles (7).</li> <li>f. Push license plate light connector (8) into rear receptacle (9).</li> </ul> |
|----|--|------------------|--|

REAR HARNESS - CONTINUED



TASK ENDS HERE

Section VIII. AXLE AND BOGIE ASSEMBLY MAINTENANCE

	Page		Page
Axle .....	4-44	Bogie Locking Pins .....	4-50
Bogie Assembly .....	4-46	Bogie Position Pull Handle .....	4-49

**AXLE**


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This task covers:

Alinement

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**INITIAL SETUP****Tools**

Handle, reversible, 112-inch square drive  
 Rule, 6-inch machinist  
 Socket, 314-inch by 1/2-inch square drive  
 Tape measure, 20 feet long  
 Wrench, open-end, 3/4-inch  
 Wrench, torque

**Materials/Parts**

Drycleaning solvent PD680 (item 1, appendix E)  
 Masking tape (item 5, appendix E)  
 Rags (item 2, appendix E)

**Personnel Required**

Two

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LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

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**WARNING**

Drycleaning solvent PD-680 is both toxic and flammable. Avoid prolonged breathing of vapor and avoid skin contact. Do not use near open flame or excessive heat. Flash point of solvent is 138°F (59°C).

- |    |             |  |  |
|----|-------------|--|--|
| 1. | Semitrailer | Kingpin (1)                            | Clean face of kingpin (1).   |
| 2. |             | Kingpin (1)                            | a. Apply masking tape to face of kingpin (1).<br>b. Using 6-inch rule draw a line across face of kingpin (1) at its largest diameter.<br>c. Turn rule 90 degrees and repeat step b.<br><b>Lines drawn will cross at center of kingpin (1).</b> |
| 3. | Semitrailer | Kingpin (1) to brakedrum (2) dimension | a. Using tape measure, measure distance from center of kingpin (1) to nearest point on machined surface of right brakedrum (2).<br><b>Record distance as A.</b><br>b. Repeat step a. for left wheel.<br><b>Record distance as B.</b>           |

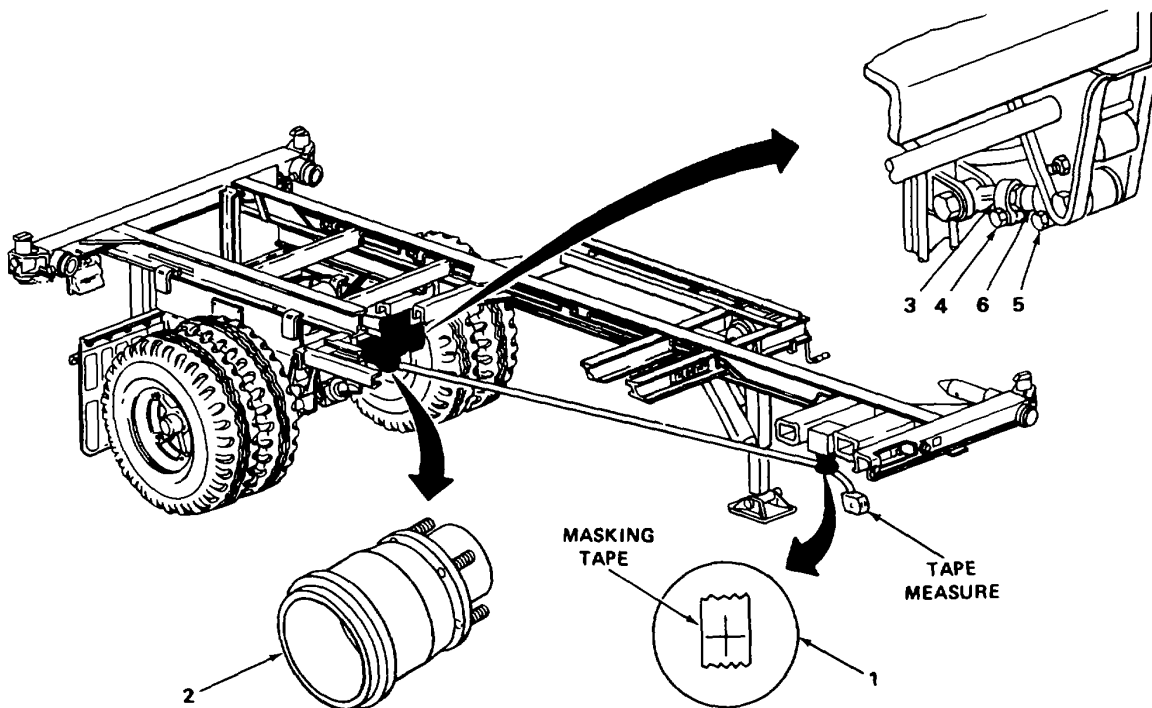
AXLE - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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NOTE

Dimensions A and B should be equal, however, allowable misalignment of left wheel to right wheel is zero inches forward, 1/8-inch toward rear of vehicle.

- |                |                       |  |
|----------------|-----------------------|--|
| <p>4. Axle</p> | <p>Torque rod (3)</p> | <p>a. Using 3/4-inch socket and 3/4-inch wrench, loosen nuts (4) and (5).</p> <p>b. Turn torque rod screw (6) until dimensions A and B are within limits. (See step 3.)</p> <p>c. Using 3/4-inch socket and 3/4-inch wrench, tighten nuts (4) and (5)</p> <p>d. Using torque wrench, torque nuts (4) and (5) to 45-55 ft lb (61-75 N•m).</p> |
|----------------|-----------------------|--|



TASK ENDS HERE

TA223135

**BOGIE ASSEMBLY**

This task covers:

- a. Removal (page 4-46)
- b. Installation (page 4-48)

**INITIAL SETUP****Tools**

Chain sling  
Jack stands (four each)  
Wrench, open-end, 9/16 inch

**Materials/Parts**

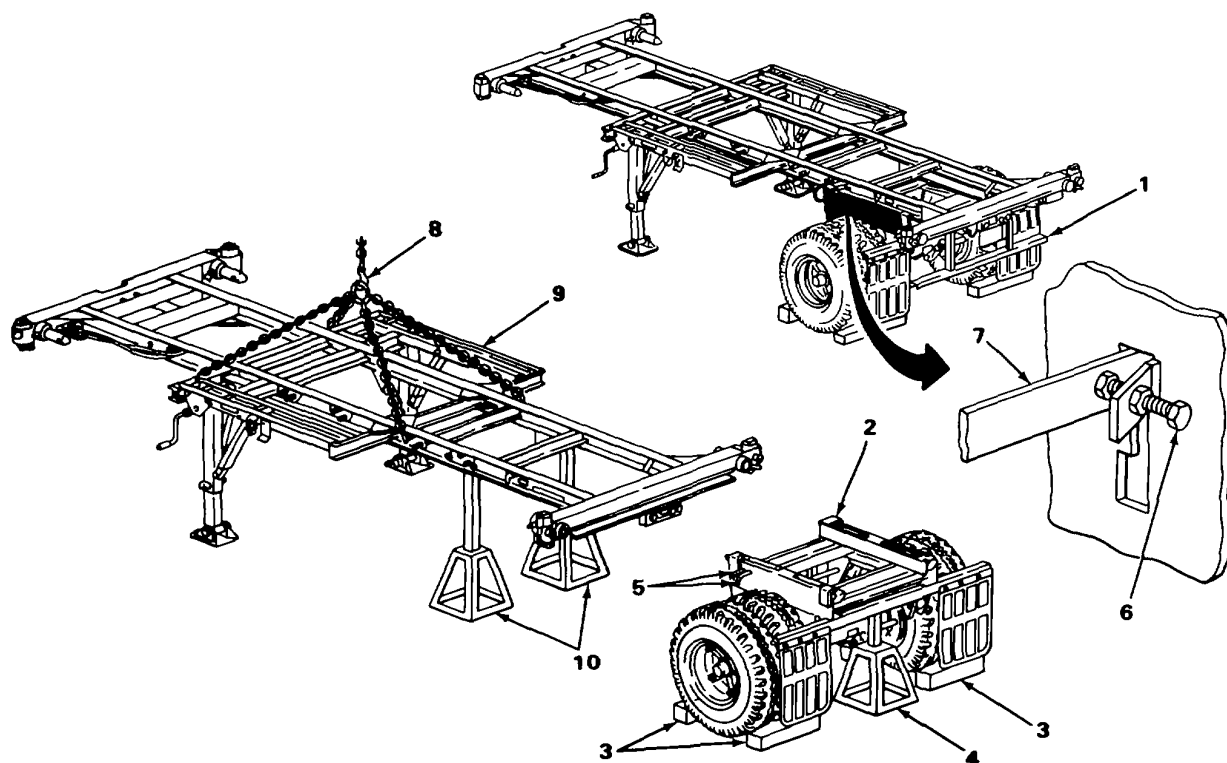
Chock blocks (four each)

LOCATION	ITEM	ACTION REMARKS
<b>REMOVAL</b>		
1. Chassis rear	Rear bumper (1)	Store rear bumper (1). <b>See page 3-15.</b>
2.	Bogie (2)	a. Place chocks (3) in front and back of wheels. b. Using jack stands (4), support bogie assembly (2). <b>Place one jack stand in front and one in back.</b>
3. Bogie (2)	Airhoses (5)	Uncouple airhoses (5) from semitrailer chassis fittings.
4.	Pull handle lock (6)	Using 9/16-inch wrench, unscrew enough to release pull handle (7).
5.	Pull handle (7)	Disengage pull handle (7), move downward and engage in lower slot to disengage bogie lockpins.  b. Slide bogie (2) off chassis (8).
6. Semitrailer chassis (8)	Chain sling (9)	Attach sling (9) to chassis (8). <b>Sling (9) is to lift chassis (8) in a level and balanced condition.</b>

# BOGIE ASSEMBLY - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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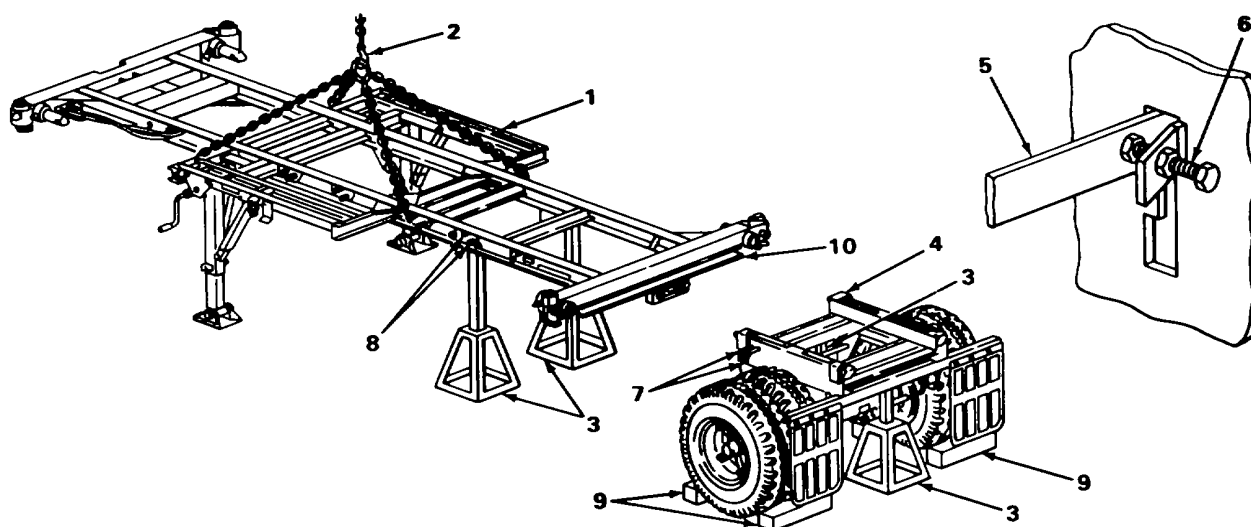
- |    |                         |   |  |
|----|-------------------------|---|--|
| 7. | Semitrailer chassis (8) | <ol style="list-style-type: none"> <li>Using a suitable hoist, lift weight of chassis (8) off bogie (2).</li> <li>Slide bogie (2) off chassis (8).</li> <li>Place chassis (8) on jack stands (10).</li> </ol> |  |
|----|-------------------------|---|--|



TA223136

## BOGIE ASSEMBLY - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
<b>INSTALLATION</b>			
8.	Semitrailer	a. Using suitable hoist, lift chassis (1) with chain sling (2). b. Remove jack stands (3). c. Slide chassis (1) onto bogie (4).	
9. Bogie (4)	Pull handle (5)	Pull pull handle (5) up and latch it in the bogie lockpin engage position.	
10.	Pull handle lock (6)	Using 9/16-inch open-end wrench, turn pull handle lock (6) screw against pull handle (5).	
11. Semitrailer chassis (1)	Airhoses (7)	Couple airhoses (7) onto chassis fitting (8) on side rail.	
12.	Chain sling (2)	Lower chassis (1) and remove chain sling (2).	
13. Bogie (4)	Jack stands (3) and blocks (9)	Remove.	
14. Semitrailer chassis (1)	Rear bumper (10)	Lower. <b>See page 3-15.</b>	



TASK ENDS HERE

TA223137

BOGIE POSITION PULL HANDLE

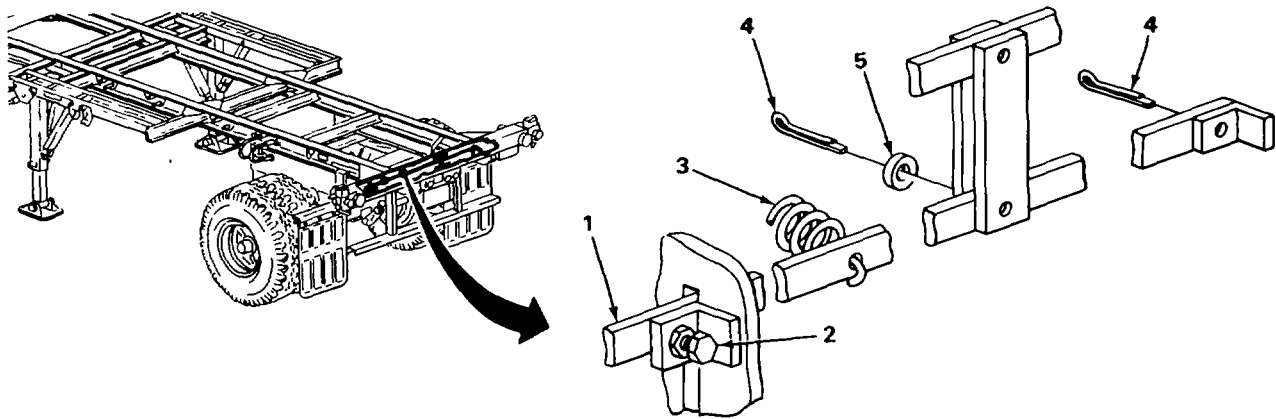
This task covers:

- a. Removal (page 4-49)
- b. Installation (page 4-49)

INITIAL SETUP

Tools	Materials/Parts
Pliers, diagonal cutting Wrench, open-end, 9/16-inch	Cotter pins

LOCATION	ITEM	ACTION	REMARKS
1. Bogie	Pull handle (1)	a. Using 9/16-inch wrench, unscrew lock (2) part way. b. Unhook spring (3) from pull handle (1). c. Using pliers, remove cotter pins (4) and washer (5). Discard cotter pins (4). d. Remove pull handle (1)	
2.	Pull handle (1)	a. Position pull handle (1) and install washer (5) and cotter pins (4). b. Using pliers, bend cotter pin (4) ends. c. Hook spring (3) to pull handle (1) d. Using 9/16-inch wrench, tighten lock (2)	



TASK ENDS HERE

BOGIE LOCKING PINS

This task covers:

- a. Removal (page 4-50)
- b. Installation (page 4-50)

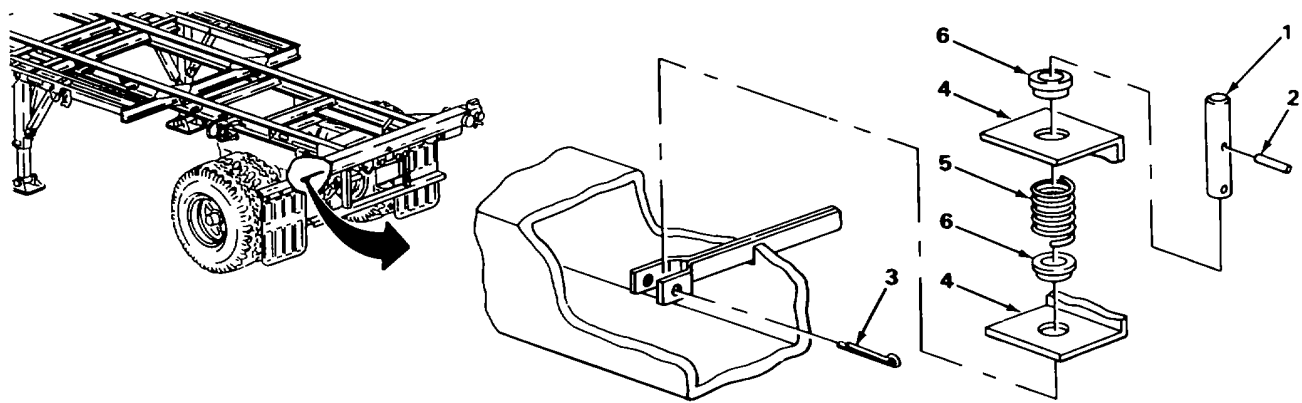
INITIAL SETUP

Tools	Materials/Parts
Hammer, ball-peen Pliers, diagonal cutting Punch, drive-pin, 1/4-inch	Cotter pin

LOCATION	ITEM	ACTION	REMARKS
1. Bogie	Locking pin (1)	a. Using hammer and punch, remove pin (2). b. Using pliers, remove pin (3) and discard. c. Pull pin (1) out of pin cage (4) Spring (5) and washers (6) stay in cage (4).	

INSTALLATION

2. Bogie	Locking pin (1)	a. Install spring (5) and washers (6) in cage (4). b. Insert locking pin (1) In cage (4), and insert cotter pin (3). c. Using pliers, bend ends of pin (3). d. Using hammer and punch, install pin (2).	
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TASK ENDS HERE

Section IX. BRAKE SYSTEM MAINTENANCE

	Page		Page
Air Lines, Hoses, and Fittings .....	4-71	Brakeshoes .....	4-62
Air Reservoir .....	4-66	Relay Valve - Service and	
Air Reservoir Draincock .....	4-77	Emergency .....	4-64
Brake Camshaft ..	4-54	Service Brake .....	4-51
Brake Camshaft Bushings .....	4-56	Slack Adjuster .....	4-59
Brake Chamber .....	4-68		

SERVICE BRAKE

This task covers'

- a. Removal (page 4-52)
- b. Cleaning (page 4-52)
- c. Inspection (page 4-53)
- d. Installation (page 4-53)

INITIAL SETUP

Tools

- Hammer, ball-peen
- Pliers, brake repair
- Pliers, retaining ring
- Punch, drive-pin
- Screwdriver, flat-tip

Equipment Condition

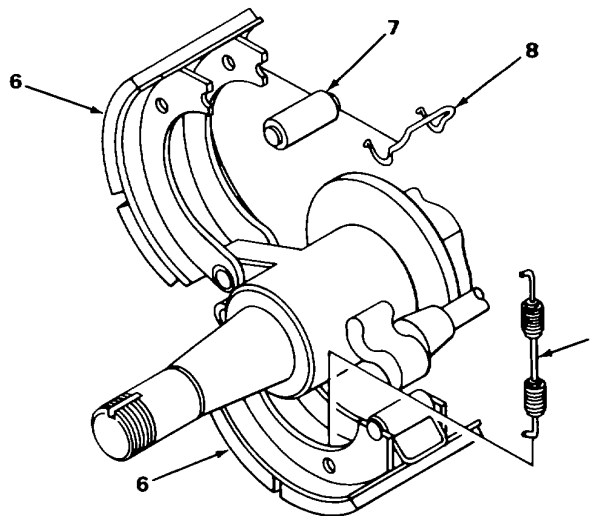
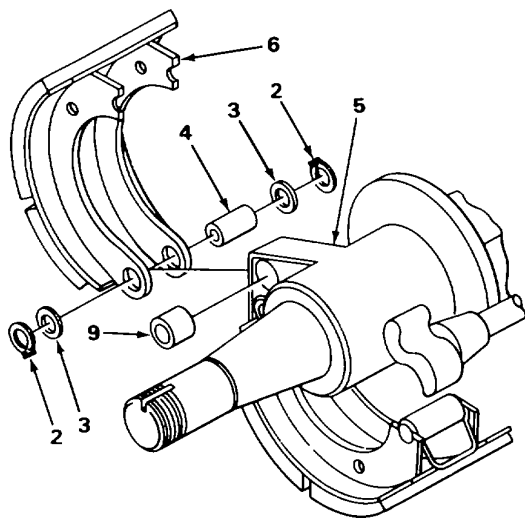
Brakedrum removed (page 4-80).

## SERVICE BRAKE - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
REMOVAL			
1.	Service brake	Return spring (1)	Using brake repair pliers, remove return spring (1).
NOTE			
If pins (4) are stuck in spider (5), use a hammer and punch to drive them out.			
2.	Anchor pins (4)	a. Using retaining ring pliers, remove retaining rings (2). b. Remove washers (3). c. Remove pins (4). d. Remove brakeshoes (6).	
3.	Cam rollers (7)	Using flat-tip screwdriver, unhook roller retainer (8) and rollers (7).	
NOTE			
Do step 4 only if inspection shows anchor pin bushings need replacing.			
4.	Axle spider	Anchor pin bushing (9)	Using hammer and punch, drive out bushing (9).
CLEANING			
5.	Service brakes	Clean all parts in accordance with the instructions on page 4-19.	

## SERVICE BRAKE - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
<b>INSPECTION</b>			
6.	Service brakes	<ol style="list-style-type: none"> <li>Inspect all parts in accordance with the instructions on page 4-20.</li> <li>Inspect brake linings for a minimum 1/8-inch (3.2 mm) thickness and a minimum 1/16-inch (1.6 mm) rivet head depth.</li> </ol>	
<b>INSTALLATION</b>			
7.	Axle spider	Bushing (9)	Using mallet, tap bushing (9) into spider (5).
8.	Service brakes	Cam rollers (7)	<ol style="list-style-type: none"> <li>Position rollers (7) on brakeshoes (6).</li> <li>Using flat-tip screwdriver, install retainer (8)</li> </ol>
9.	Brakeshoes (6)		<ol style="list-style-type: none"> <li>Position brakeshoes (6) on spider (5).</li> <li>Insert anchor pins (4) through brakeshoes (6) and spider (5).</li> <li>Using retaining ring pliers, install washers (3) and retaining rings (2).</li> </ol>
10.	Return spring (1)		Using brake repair pliers, install return spring (1).



TA223140

**SERVICE BRAKE - CONTINUED****NOTE****FOLLOW-ON MAINTENANCE:**

1. Install brakedrum (page 482).
2. Adjust brakeshoes (page 4-62).

**TASK ENDS HERE****BRAKE CAMSHAFT**

This task covers:

- a. Removal (page 4-54)
- b. Installation (page 4-55)

**INITIAL SETUP****Tools**

Pliers, brake repair  
Slack adjuster removed (page 4-59).

**Equipment Condition**

Spider and brakedrum removed (page 4-80).

**Materials/Parts**

Rags, (item 2, appendix E)  
Solvent, drycleaning, PD-680 (item 1, appendix E)

LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

**REMOVAL****WARNING**

Drycleaning solvent PD-80 is both toxic and flammable. Avoid prolonged breathing of vapors and avoid skin contact. Do not use near open flame or excessive heat. Flash point of solvent is 138°F (59°C).

**NOTE**

**Procedures given are for one camshaft.**

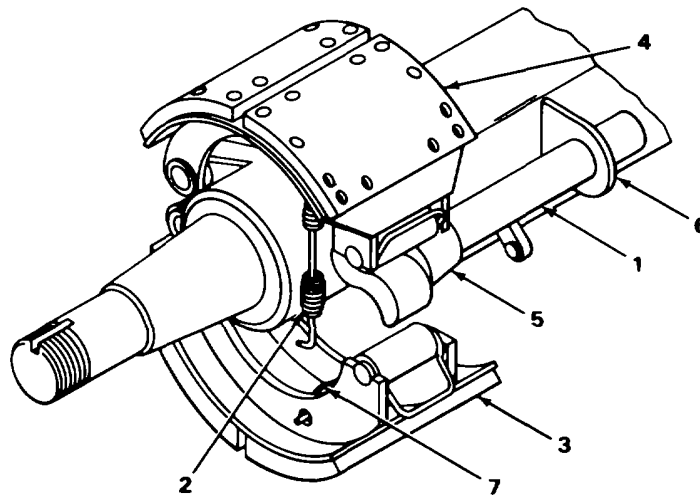
- |         |              |   |
|---------|--------------|---|
| 1. Axle | Camshaft (1) | a. Using rags and drycleaning solvent, clean camshaft (1) of all dirt and grease. |
|---------|--------------|---|

## BRAKE CAMSHAFT - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
		b.	Using brake repair pliers, remove spring (2). <b>Allow lower brakeshoe (3) to swing down.</b>
		c.	Raise upper brakeshoe (4) and pull camshaft (1) out through spider (5).

### INSTALLATION

- |    |                   |              |  |
|----|-------------------|--------------|--|
| 2. | Axle              | Camshaft (1) | <p>Raise upper brakeshoe (4) and slide camshaft (1) through spider (5) and camshaft support (6).</p> <p><b>Allow brakeshoe (4) to rest on camshaft (1).</b></p>                                      |
| 3. | Return spring (2) |              | <p>a. Hook spring (2) onto spring pin on upper brakeshoe (4)</p> <p>b. Raise lower brakeshoe (3) into position.</p> <p>c. Using brake repair pliers, install spring (2) on lower spring pin (7).</p> |



### NOTE

#### FOLLOW-ON MAINTENANCE

- 1 Install slack adjuster (page 4-60)
2. Install spider and brakedrum (page 4-82)
- 3 Adjust brakeshoes (page 4-62).

**TASK ENDS HERE**

TA223141

BRAKE CAMSHAFT BUSHINGS

This task covers:

- a. Removal (page 4-56)

b. Cleaning (page 4-57)
- c. Inspection (page 4-57)

d. Installation (page 4-58)

INITIAL SETUP

Tools	Materials/Parts
Hammer, ball-peen	Packing
Handle, reversible, 3/8-inch square drive	Equipment Condition
Mallet, soft-face	Brake camshaft removed (page 4-54).
Pliers, retaining ring	
Punch, straight, 3/4-inch	
Socket, 9/16- by 3/8-inch square drive	
Wrench, box, 9/16-inch	

LOCATION	ITEM	ACTION	REMARKS
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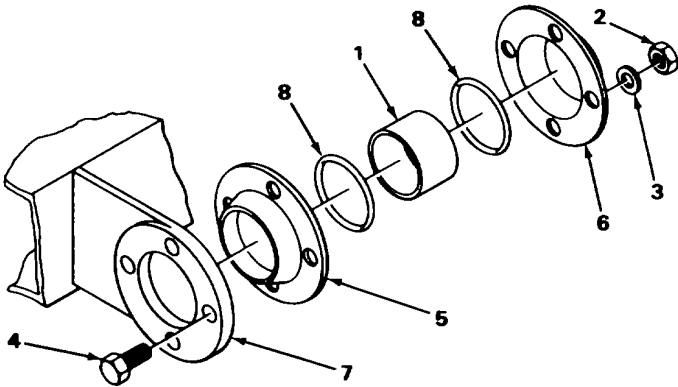
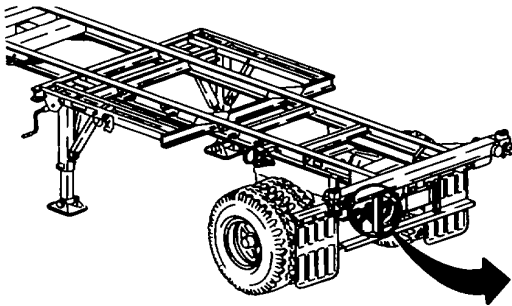
REMOVAL

1. Camshaft support bracket

Camshaft bushing (1)
- a. Using 9/16-inch socket and 9/16-inch box wrench, remove nuts (2), washers (3), and capscrews (4).

b. Remove bushing retainers (5) and (6) from support bracket (7) and separate.

c. Remove bushing (1) and packings (8) and discard.

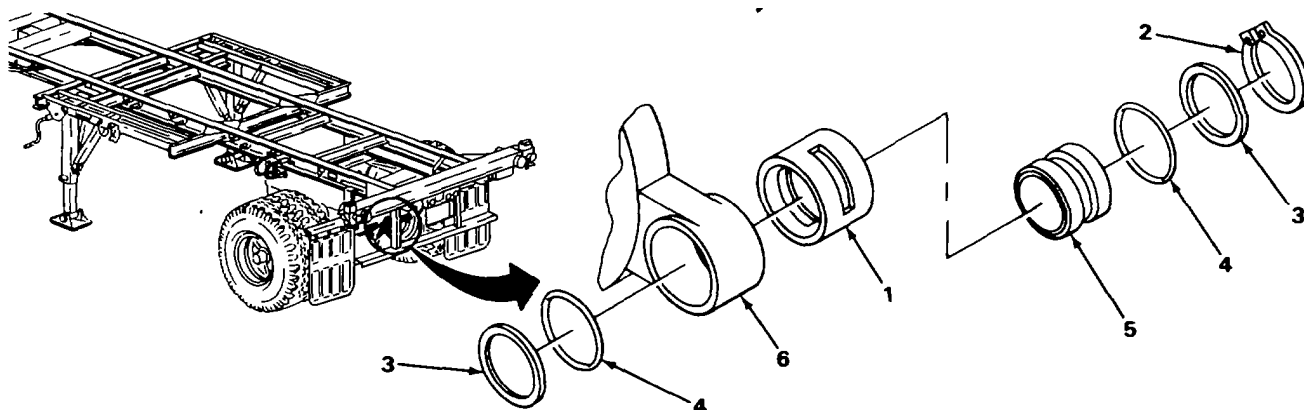


TA223142

## BRAKE CAMSHAFT BUSHINGS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

- |    |                  |                      |  |
|----|------------------|----------------------|--|
| 2. | Axle beam spider | Camshaft bushing (1) | <ul style="list-style-type: none"> <li>a. Using retaining ring pliers, remove retaining ring (2).</li> <li>b. Remove washers (3) and packings (4).</li> <li>c. Push plastic bushing (5) out of bushing (1)</li> <li>d. Using hammer and punch, drive bushing (1) out of spider (6).</li> </ul> |
|----|------------------|----------------------|--|



## CLEANING

- |    |   |  |
|----|---|--|
| 3. | Axle beam spider and camshaft support bracket and retainer assembly | Clean all parts in accordance with the instructions on page 4-19 |
|----|---|--|

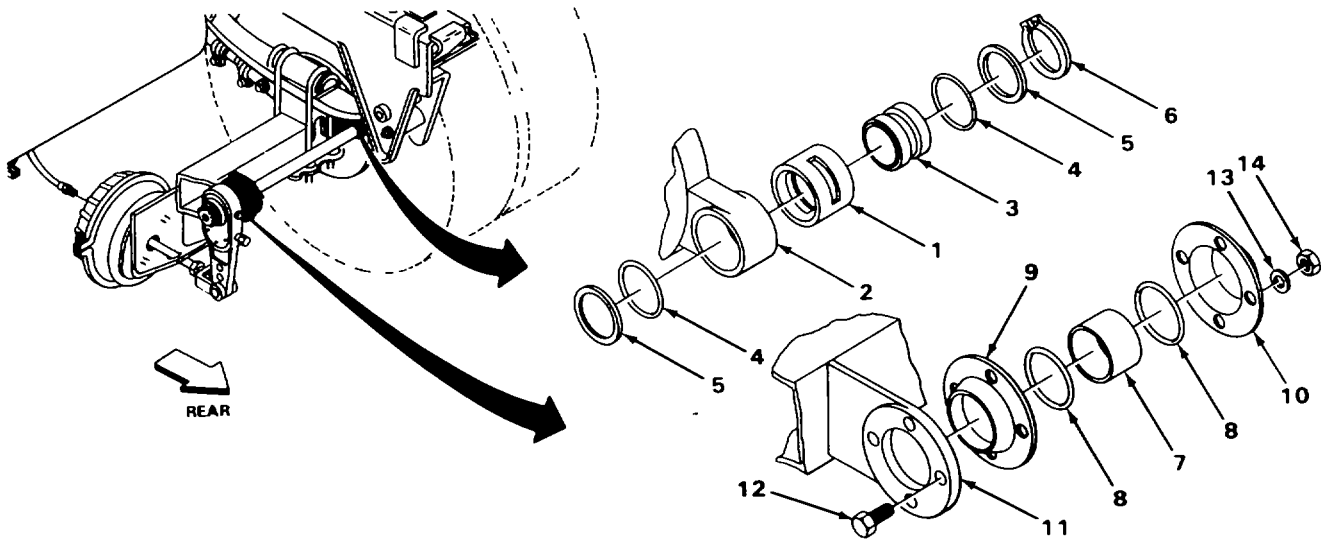
## INSPECTION

- |    |   |   |
|----|---|---|
| 4. | Axle beam spider and camshaft support bracket and retainer assembly | Inspect all parts in accordance with the instructions on page 4-20.<br><b>Replace parts that are unserviceable.</b> |
|----|---|---|

TA223143

# BRAKE CAMSHAFT BUSHINGS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
<b>INSTALLATION</b>			
5. Axle beam spider	Camshaft bushing (1)	a. Using soft-face mallet, tap bushing (1) into spider (2). b. Push plastic bushing (3) into bushing (1). c. Install packings (4) and washers (5) d. Using retaining ring pliers, install ring (6).	
6. Camshaft support bracket	Camshaft bushing (7)	a. Assemble bushing (7), packings (8), and retainers (9) and (10) onto camshaft support bracket (11). b. Using 9/16-inch socket and 9/16-inch box wrench, install capscrews (12), washers (13), and nuts (14)	



## NOTE

**FOLLOW-ON MAINTENANCE:** Install brake camshaft (page 4-55).

**TASK ENDS HERE**

SLACK ADJUSTER

This task covers.

- a. Removal (page 4-59)
- b. Installation (page 4-60)
- c Adjustment (page 4-60)

INITIAL SETUP

Tools	Tools - Continued
Hammer	Wrench, adjustable
Jack	Wrench, open-end, 13/16-inch
Jack stand	
Pliers, diagonal cutting	Materials/Parts
Pliers, retaining ring	Cotter pin

LOCATION	ITEM	ACTION	REMARKS
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REMOVAL

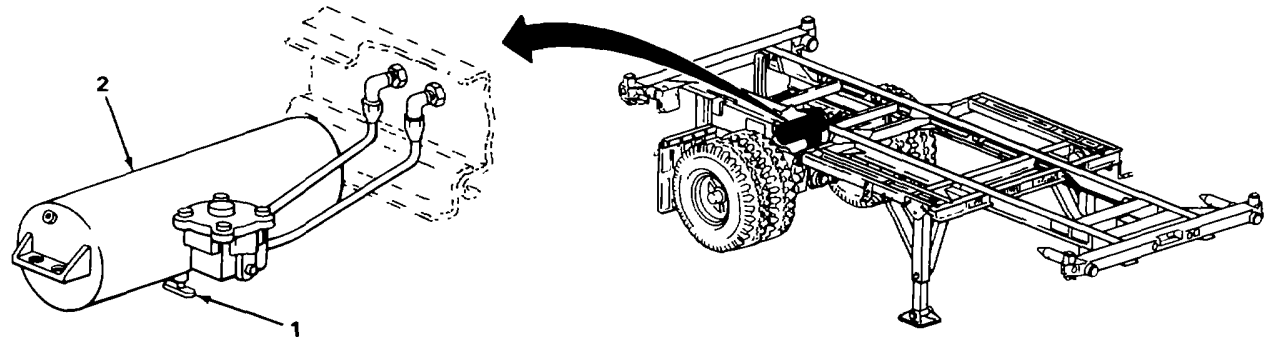
WARNING

Wear protective goggles when opening air reservoir draincock to prevent eye injury. Step away from airstream to prevent injuries

NOTE

Procedures given are for one slack adjuster

1. Air reservoir
- Draincock (1)
- Open draincock (1) and drain reservoir (2) completely.



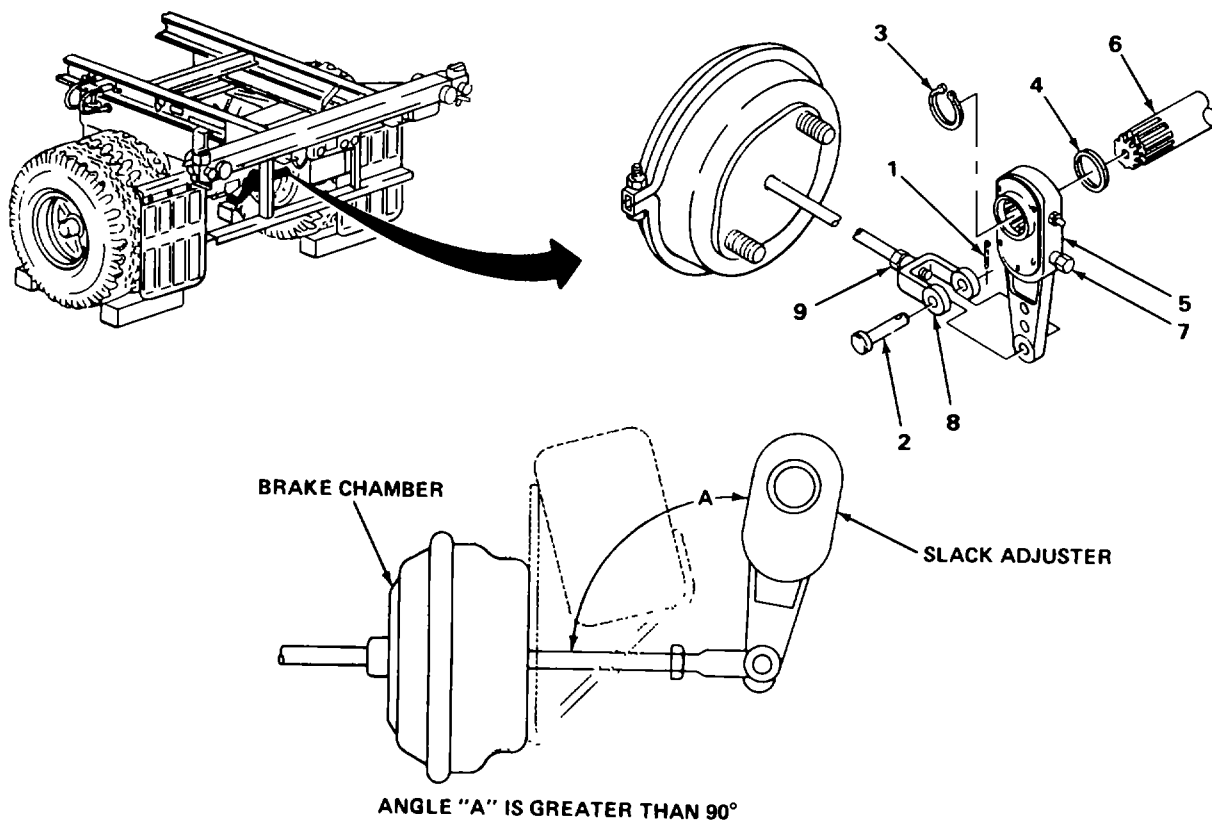
## SLACK ADJUSTER - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
<b>REMOVAL - CONTINUED</b>			
2.	Slack adjuster	Cotter pin (1) and pin (2)	a. Using cutting pliers, remove and discard cotter pin (1). b. Remove pin (2).
3.	Camshaft	Retaining ring (3), washer (4) and slack adjuster (5)	a. Using retaining ring pliers, remove ring (3). b. Using hammer, remove slack adjuster (5).
<b>INSTALLATION</b>			
4.	Camshaft	Slack adjuster (5), washer (4) and retaining ring (3)	a. Place slack adjuster (5) and washer (4) on camshaft (6). b. Using retaining ring pliers, install ring (3).
<b>ADJUSTMENT</b>			
<b>NOTE</b>			
<b>Slack adjuster must be adjusted initially so that, In its free state, it makes an angle with the brake chamber rod of slightly more than 90 degrees</b>			
5.	Slack adjuster	Adjusting nut (7)	Using an adjustable wrench, turn in the direction necessary to obtain a slack adjuster to brake chamber rod angle of slightly more than 90 degrees.
6.	Brake chamber	Clevis yoke (8) and locknut (9)	a. Using 13116-inch open-end and adjustable wrenches, loosen locknut (9). b. Turn clevis yoke in the required direction so that it lines up with the hole in slack adjuster (5). c. Tighten locknut (9).
7.		Pin (2) and new cotter pin (1)	a. Install pin (2). b. Using cutting pliers, install cotter pin (1).

SLACK ADJUSTER - CONTINUED

NOTE

FOLLOW-ON MAINTENANCE: Adjust brakes (page 4-62)



TASK ENDS HERE

## BRAKESHOES

This task covers.

Adjustment

### INITIAL SETUP

#### Tools

Feeler gage  
Jack  
Jack stand  
Wrench, adjustable

#### Equipment Condition

Semitrailer coupled to towing vehicle and  
brake system charged (page 2-14).  
Wheel bearings adjusted (page 4-83).

LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

#### NOTE

**Do not adjust brakes when drums are hot. Procedures given are for one slack adjuster.**

- |    |      |            |  |
|----|------|------------|--|
| 1. | Axle | Wheels (1) | a. Using jack (2), raise until clear of ground.<br>b. Support with jack stand (3) and remove jack (2). |
|----|------|------------|--|

#### NOTE

**All measurements should be taken as close as possible to the center of the brake lining.**

- |    |                   |   |
|----|-------------------|---|
| 2. | Brake linings (4) | Using a 0.035-in (1.34-mm) feeler gage, check measurement between brake linings (4) and brakedrum (5).    |
| 3. | Adjusting nut (6) | Using an adjustable wrench, turn adjusting nut in the direction required to obtain the required dimension |

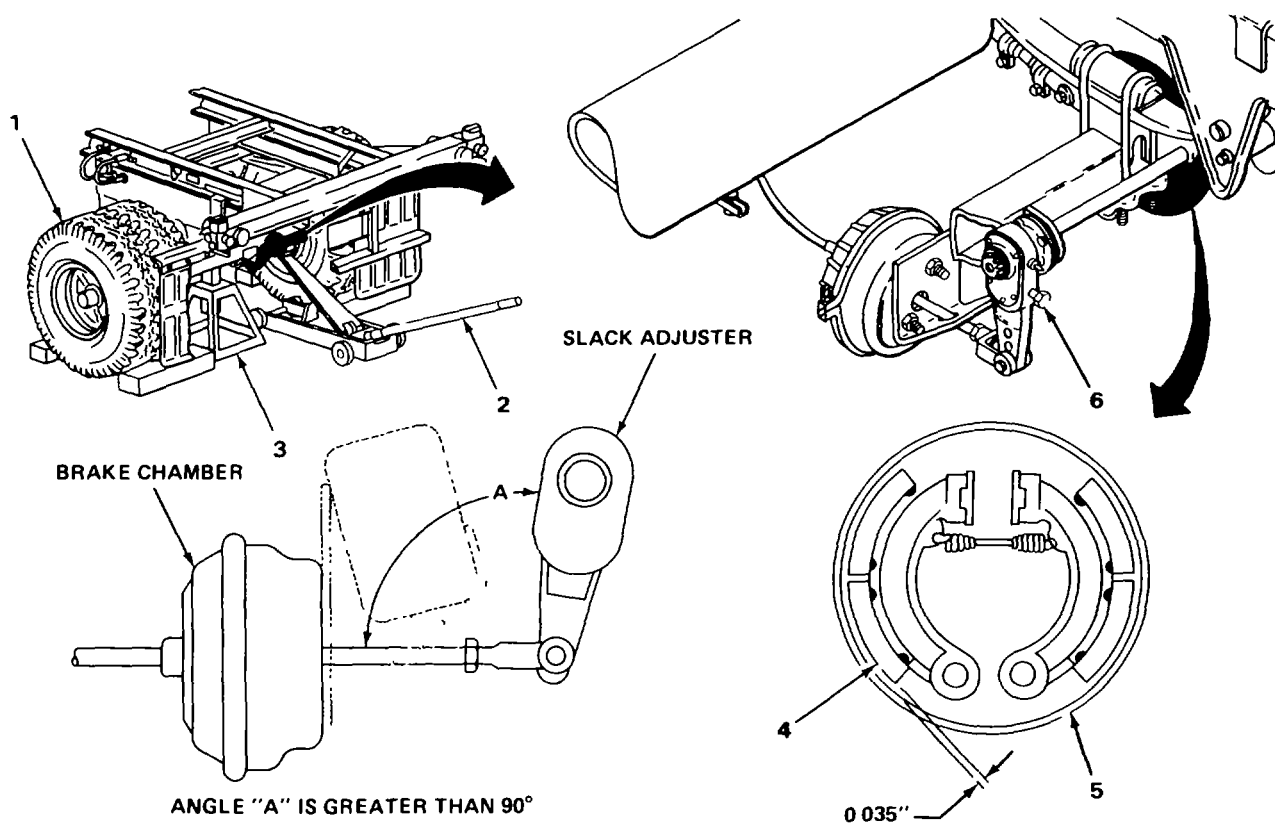
## BRAKESHOES - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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## NOTE

Apply service brakes. The angle between the slack adjuster and the brake chamber rod should be slightly greater than 90 degrees. If angle is 90 degrees or less, adjust slack adjuster (page 4-59).

- |    |      |            |   |
|----|------|------------|---|
| 4. | Axle | Wheels (1) | a. Using jack (2), raise and remove jack stand (3).<br>b. Remove jack stand (3) and jack (2). |
|----|------|------------|---|



TASK ENDS HERE

TA223147

## RELAY VALVE - SERVICE AND EMERGENCY

This task covers:

- a. Removal (page 4-64)
- b. Installation (page 4-64)

### INITIAL SETUP

#### Tools

Wrench, open-end, 5/8-inch  
Wrench, open-end, 7/8-inch  
Wrench, pipe

#### Materials/Parts

Compound, sealing (item 7, appendix E)

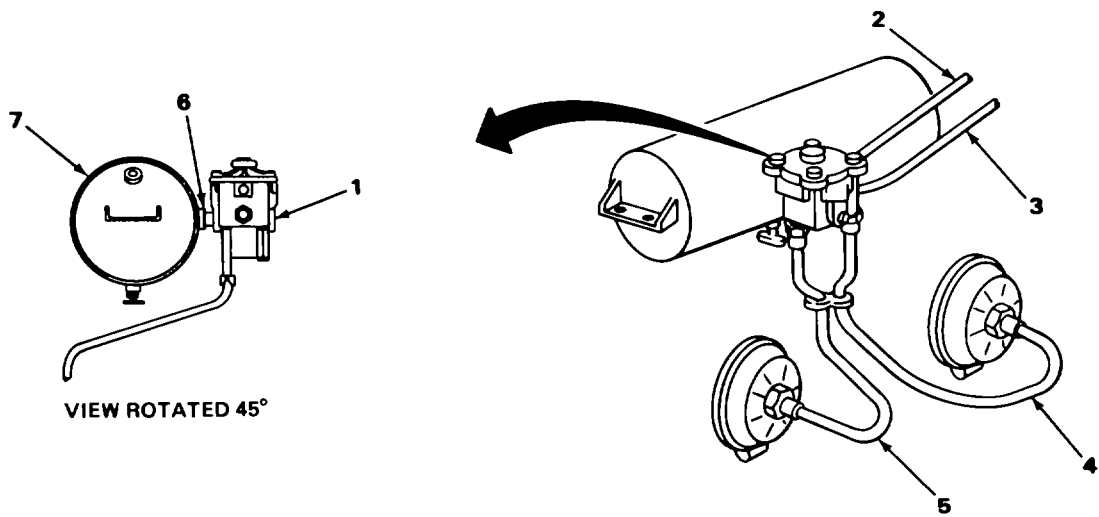
#### Equipment Condition

Air reservoir draincock opened.

LOCATION	ITEM	ACTION	REMARKS
<b>REMOVAL</b>			
1.	Relay valve (1)	Air lines (2) and (3) and air-hoses (4) and (5)	<ul style="list-style-type: none"> <li>a. Using 5/8-inch wrench, remove lines (2) and (3).</li> <li>b. Using 7/8-inch wrench, remove hoses (4) and (5).</li> </ul>
2.		Relay valve (1)	Using pipe wrench, remove nipple (6) with relay valve (1).
3.	Relay valve (1)	Nipple (6)	Using pipe wrench, remove nipple (6) from relay valve (1).
<b>INSTALLATION</b>			
4.	Relay valve (1)	Nipple (6)	Using pipe wrench and sealing compound on threads of nipple (6), install nipple (6) into relay valve (1).

RELAY VALVE - SERVICE AND EMERGENCY - CONTINUED

LOCATION		ITEM	ACTION	REMARKS
5.	Air reservoir (7)	Relay valve (1) and nipple (6)		Using pipe wrench and sealing compound on threads of nipple (6), install nipple (6) and relay valve (1) in air reservoir (7).
6.	Relay valve (1)	Airhoses (4) and (5)		Using 7/8-inch wrench and sealing compound on threads of hose end fittings, install hoses (4) and (5).
7.		Air lines (2) and (3)		Using 5/8-inch wrench and sealing compound, install lines (2) and (3)



NOTE

FOLLOW-ON MAINTENANCE:

- 1. Close air reservoir draincock
- 2. Charge air system and check for leaks

TASK ENDS HERE

## AIR RESERVOIR

This task covers'

- a. Removal (page 4-66)
- b. Installation (page 4-66)

### INITIAL SETUP

#### Tools

Extension, socket wrench, 6- by  
3/8-inch square drive  
Handle, ratchet, 3/8-inch square  
drive  
Socket, 9/16- by 3/8-inch square  
drive  
Wrench, box, 9116inch  
Wrench, open-end, 9/16-inch

#### Materials/Parts

Compound, sealing (item 7, appendix E)

#### Equipment Condition

Relay valve removed (page 4-64).

LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

### REMOVAL

1.	Bogie	Air reservoir (1), nuts (2), bolts (3), lockwashers (4) and grommets (5)	<ol style="list-style-type: none"> <li>a. Using 9/16-inch socket and 9/16-inch wrench, remove four nuts (2), four bolts (3) and lockwashers (4).</li> <li>b. Remove reservoir (1) from mount bracket (6).</li> <li>c. Using screwdriver, pry out four grommets (5).</li> </ol>
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### INSTALLATION

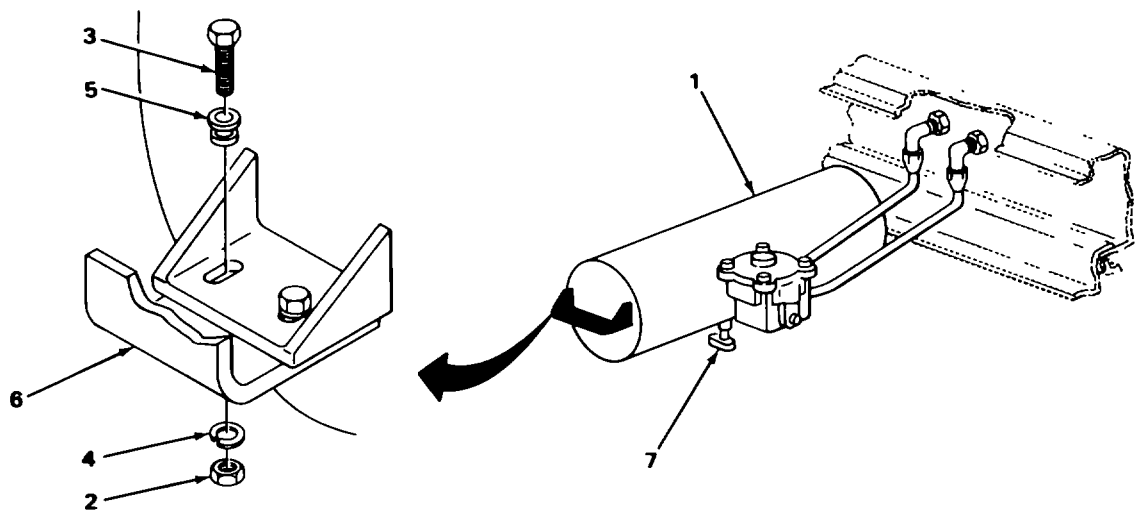
#### NOTE

**New reservoir is shipped with draincock wired onto reservoir.**

2.	Air reservoir (1)	Draincock (7)	Install draincock (7) using 9/16-inch wrench and sealing compound on threads of draincock (7).
3.		Grommets (5)	Work four grommets (5) into air reservoir mount flange.

AIR RESERVOIR - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
4. Bogie	Air reservoir (1), bolts (3), lock-washers (4) and nuts (2)	a Place reservoir on mount bracket (6). b Using 9/16-inch socket and 9116-inch wrench, install four bolts (3), lock-washers (4), and nuts (2)	



NOTE

FOLLOW-ON MAINTENANCE: Install relay valve - service and emergency (page 4-64)

TASK ENDS HERE

**BRAKE CHAMBER**

This task covers.

- |                            |                             |
|----------------------------|-----------------------------|
| a. Removal (page 4-68)     | c. Assembly (page 4-70)     |
| b. Disassembly (page 4-68) | d. Installation (page 4-70) |

**INITIAL SETUP****Tools**

Pliers, diagonal cutting  
 Wrench, adjustable, 12-inch  
 Wrench, open-end, 5/8-inch  
 (two required)  
 Wrench, open-end, 3/4-inch  
 Wrench, open-end, 13/16-inch  
 Wrench, open-end, 7/8-inch

**Materials/Parts**

New diaphragm  
 Cotter pin (as required)

**Equipment Condition**

Air reservoir draincock opened.

<b>LOCATION</b>	<b>ITEM</b>	<b>ACTION</b>	<b>REMARKS</b>
-----------------	-------------	---------------	----------------

**REMOVAL****NOTE**

**Procedures given are for one brake chamber.**

- |           |                |                                      |  |
|-----------|----------------|--------------------------------------|--|
| <b>1.</b> | Brake chamber  | Airhose (1)                          | Using 3/4- and 7/8-inch open-end wrenches, remove hose (1) from brake chamber (2).                                 |
| <b>2.</b> | Slack adjuster | Cotter pin (3)<br>and clevis pin (4) | a. Using cutting pliers, remove and discard cotter pin (3).<br>b. Remove clevis pin (4).                           |
| <b>3.</b> | Axle           | Brake chamber (2)                    | a. Using 13/16-inch open-end wrench, remove two nuts (5) and two lock-washers (6).<br>b. Remove brake chamber (2). |

**DISASSEMBLY**

- |           |               |                                   |   |
|-----------|---------------|-----------------------------------|---|
| <b>4.</b> | Brake chamber | Clevis yoke (7)<br>and jamnut (8) | a. Using 13/16-inch open-end and adjustable wrenches, loosen jamnut (8).<br>b. Remove clevis yoke (7) and jamnut (8). |
|-----------|---------------|-----------------------------------|---|

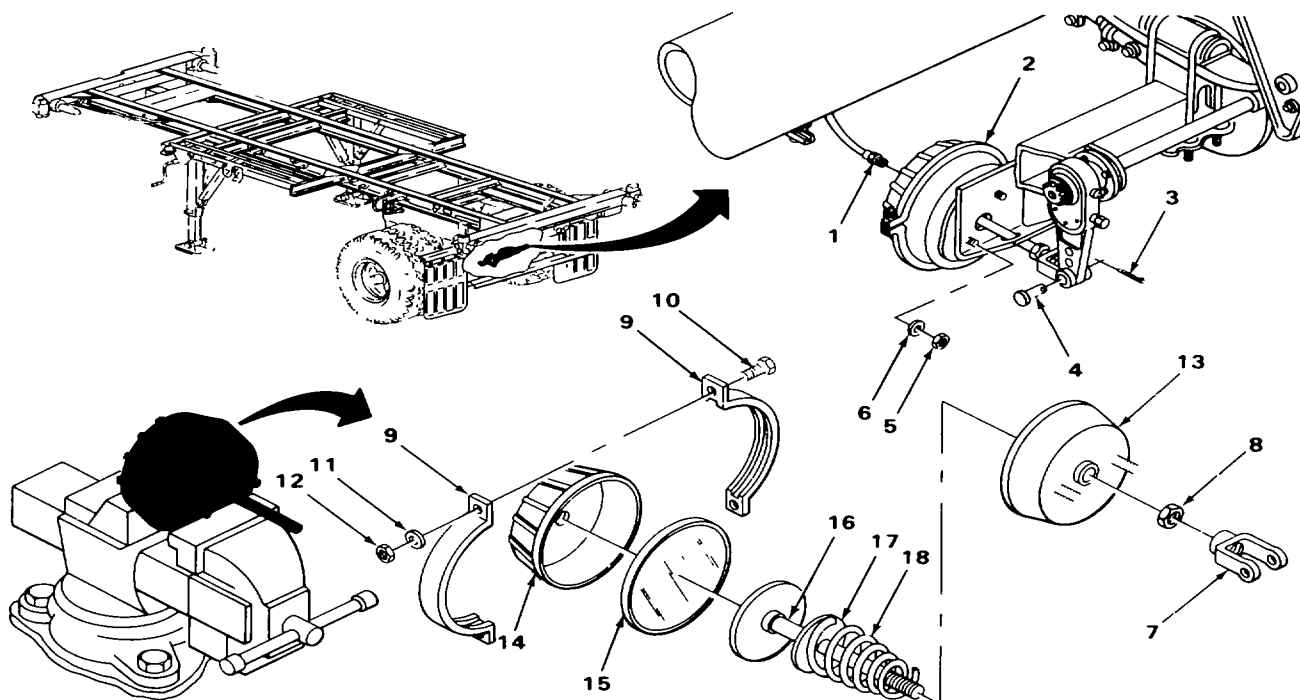
## BRAKE CHAMBER - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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**WARNING**

Brake chamber housing is under spring pressure. Secure the brake chamber in a suitable vise before removing housing clamps to prevent injuries

- |    |               |  |   |
|----|---------------|--|---|
| 5. | Brake chamber | Two housing clamps (9)   | a. Clamp brake chamber (2) in vise<br>b. Using two 518-inch open-end wrenches, remove nut (10), washer (11), and cap-screw (12)                 |
| 6. |               | Housings (13) and (14), diaphragm (15), rod (16), spring retainer (17) and spring (18) | a. Carefully open vise to relieve spring pressure and separate housings (13) and (14)<br>b. Disassemble parts<br><b>Discard diaphragm (15).</b> |



TA223150

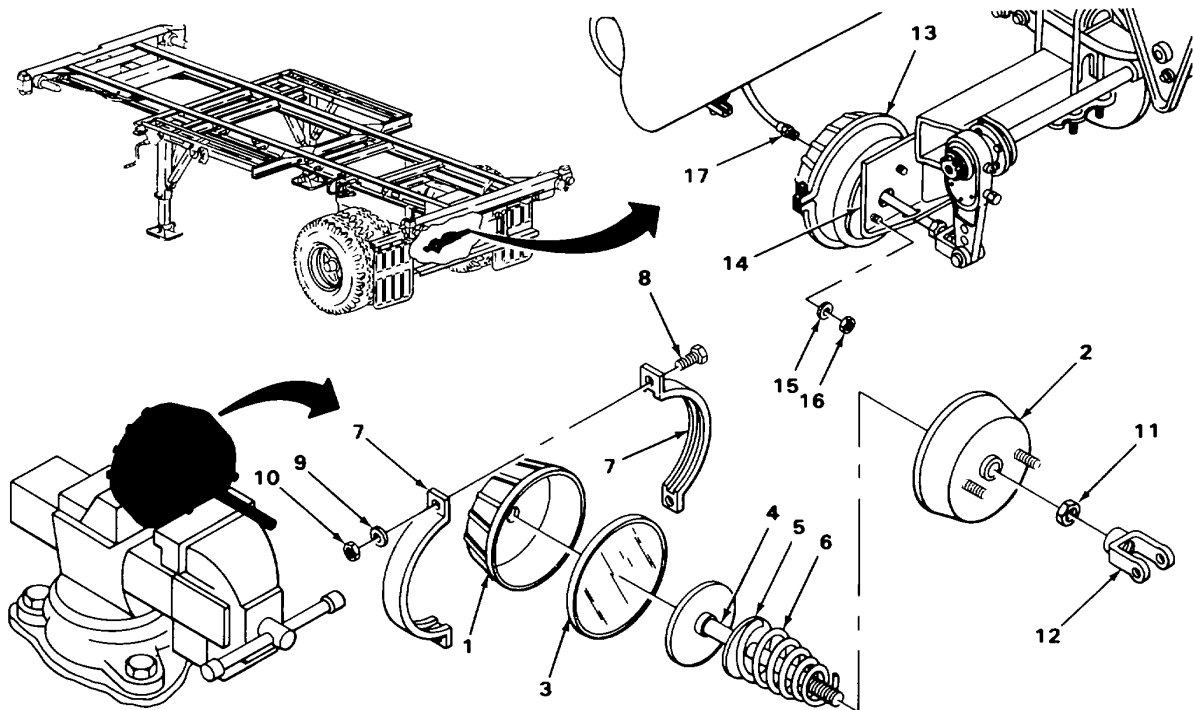
## BRAKE CHAMBER - CONTINUED

LOCATION	ITEM	ACTION REMARKS
<b>ASSEMBLY</b>		
7. Brake chamber	Housings (1) and (2), new diaphragm (3), rod (4), spring retainer (5) and spring (6)	a. Place spring retainer (5) on rod (4). b. Place spring (6) and rod (4) so that large end rests against spring retainer (5). c. Slide rod (4) through housing (2). d. Position diaphragm (3) in housing (1). e. Using vise, compress housing halves (1) and (2) together.
8.	Two housing clamps (7), capscrew (8), lockwasher (9) and nut (10)	Using two 518-inch open-end wrenches, assemble parts.
9.	Jamnut (11) and clevis yoke (12)	Install on rod (4). <b>Do not tighten.</b>
<b>INSTALLATION</b>		
10. Axle	Brake chamber (13)	a. Place brake chamber (13) on mounting bracket (14). b. Using 13/16-inch open-end wrench, install washers (15) and nuts (16)
11.	Airhose (17)	Install airhose (17) using 3/4- and 7/8-inch open-end wrenches.

**NOTE**

The brake chamber will be connected to the slack adjuster during the adjustment procedure.

## BRAKE CHAMBER - CONTINUED



### NOTE

#### FOLLOW-ON MAINTENANCE'

1. Adjust slack adjuster (page 4-59).
2. Adjust brakeshoes (page 4-62).

## TASK ENDS HERE

## AIR LINES, HOSES, AND FITTINGS

This task covers:

- a. Removal (page 4-72)
- b. Installation (page 4-74)

## INITIAL SETUP

### Tools

Screwdriver, flat-tip  
Wrench, open-end, 5/8-inch  
Wrench, open-end, 7/8-inch  
Wrench, open-end, 1-inch (2 each)

### Materials/Parts

Compound, sealing (Item 7, appendix E)

### Equipment Condition

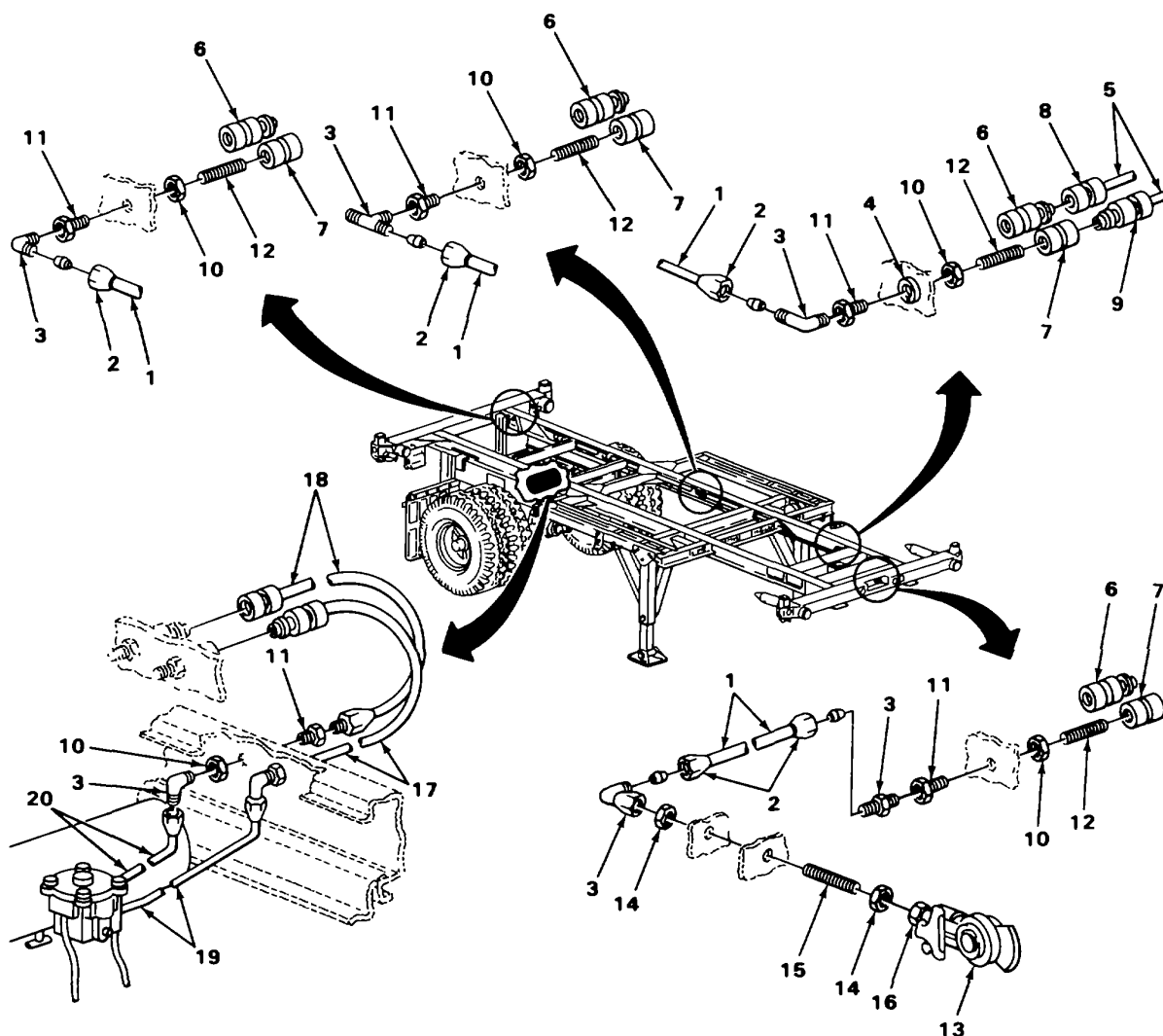
Air reservoir draincock opened.

## AIR LINES, HOSES, AND FITTINGS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
<b>REMOVAL</b>			
<p style="text-align: center;"><b>NOTE</b></p> <p style="text-align: center;">The procedures given are typical for all air lines and fittings.</p>			
1. Chassis side rail	Air lines (1)	a. Using 5/8-inch wrench, remove nuts (2) from fittings (3). b. Remove line (1) from chassis side rail (4).	
2.	Airhoses (5)	a. Uncouple hoses (5) from quick disconnects (6) and (7). b. Using 7/8-inch wrench, remove hoses (5) from quick disconnect fittings (8) and (9).	
3.	Fittings (3), quick disconnects (6) and/or (7), jamnuts (10), coupling (11) and nipples (12)	a. Using adjustable wrench, remove elbow fittings (3) from nuts (2). b. Using a 1-inch wrench, remove quick disconnects (6) and/or (7). c. Using two 1-inch wrenches, remove jam nut (10), coupling (11), and nipple (12).	
4. Chassis front crossmember	Gladhands (13), jamnuts (14), nipple (15) and reducer (16)	a. Using adjustable wrench, remove gladhands (13) from nipple (15). b. Using 1-inch wrench, remove nuts (13). c. Remove nipple (15) and reducer (16).	

# AIR LINES, HOSES, AND FITTINGS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
5. Bogie	Airhoses (17) and (18)	a. Uncouple hoses (17) and (18). b. Using 7/8-inch wrench, remove airhoses (17) and (18) from coupling (11)	
6.	Air lines (19) and (20), elbow (3), jamnut (10) and coupling (11)	a. Using 5/8-inch wrench, remove lines (19) and (20) from elbow fittings (3). b. Using adjustable wrench, remove elbow (3) from coupling (11) c. Using two 1-inch wrenches, remove nut (10) and coupling (11).	



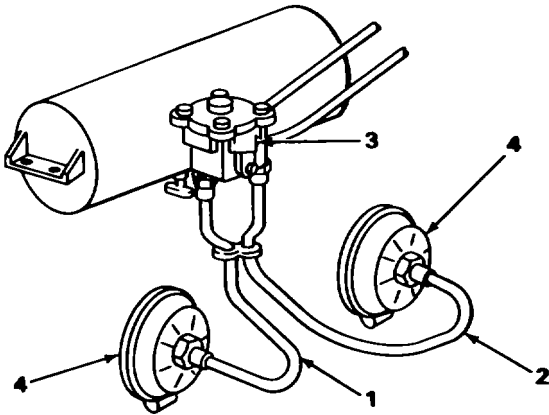
TA223152

AIR LINES, HOSES, AND SITTINGS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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REMOVAL - CONTINUED

7.	Bogie	Airhoses (1) and (2)	Using 7/8-inch wrench, remove hoses (1) and (2) from relay valve (3) and brake chambers (4).
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INSTALLATION

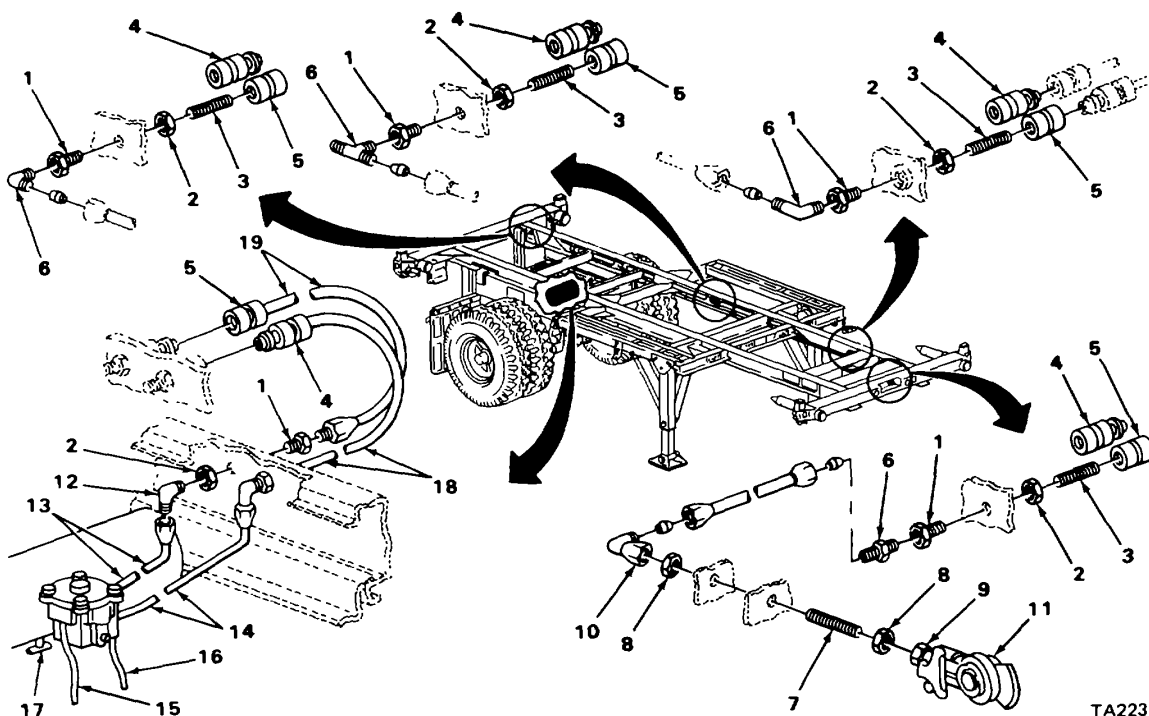
NOTE

The procedures given are typical for all air lines and fittings.

8.	Chassis side rail	Couplings (1), jamnuts (2), nipples (3), quick disconnects (4) and (5) and fittings (6)	<div>a. Using two 1-inch wrenches, install coupling (1) and jamnut (2).</div> <div>b. Using 1-inch wrench and sealing compound on threads, install nipples (3) and quick disconnects (4) and/or (5).</div> <div>c. Using an adjustable wrench and sealing compound on threads, install fittings (6).</div>
----	-------------------	---	--

## AIR LINES, HOSES, AND FITTINGS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
9. Chassis front crossmember	Nipples (7), jam-nuts (8), reducer (9), fitting (10) and gladhands (11)	<ol style="list-style-type: none"> <li>Using 1-inch wrench, install nipples (7) and jamnuts (8).</li> <li>Using an adjustable wrench and sealing compound on threads, install fitting (10) and reducer (9).</li> <li>Using an adjustable wrench and sealing compound on threads, install gladhands (11).</li> </ol>	
10. Bogie	Coupling (1), jamnut (2), fittings (12), air lines (13) and (14) and air lines (15) and (16)	<ol style="list-style-type: none"> <li>Using two 1-inch wrenches, install couplings (1) and jamnuts (2).</li> <li>Using an adjustable wrench and sealing compound on threads, install fittings (12)</li> <li>Using 5/8-inch wrench, install lines (13) and (14)</li> <li>Using 7/8-inch wrench, Install lines (15) and (16).</li> <li>Close reservoir draincock (17).</li> </ol>	
11.	Airhoses (18) and (19)	Using 7/8-inch wrench and sealing compound on threads, install hoses (18) and (19) and couple to quick disconnects (4) and (3).	



TA223154

AIR LINES, HOSES, AND FITTINGS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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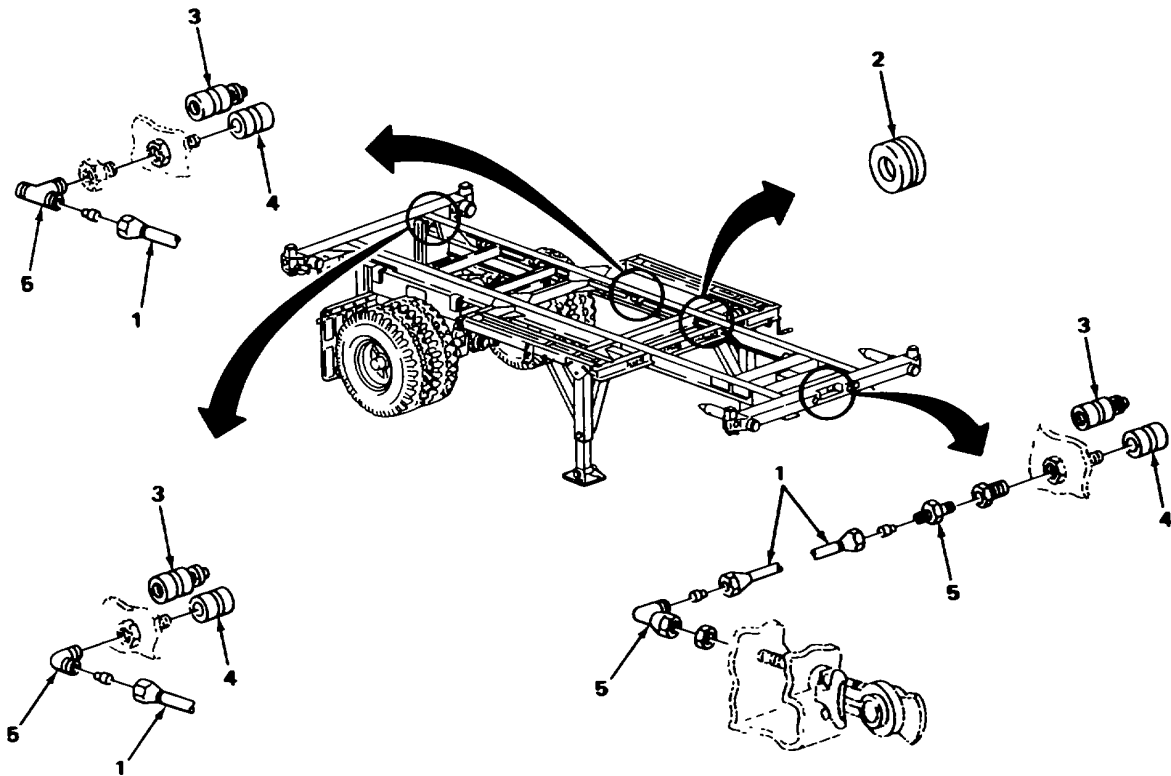
INSTALLATION - CONTINUED

12. Chassis side rail

Air lines (1), grommets (2) and quick disconnects (3) and (4)
- a. Using 5/8-inch wrench, install lines (1) onto fittings (5).

b. Using screwdriver, install grommets (2) around air lines (1) and work into chassis frame.

c. Using 7/8-inch wrench and sealing compound on threads, install quick disconnects (3) and (4).



NOTE

FOLLOW-ON MAINTENANCE:

1.

Close air reservoir draincock.
2.

Charge air system and check for leaks.

TASK ENDS HERE

TA223155

AIR RESERVOIR DRAINCOCK

This task covers:

- a. Removal (page 4-77)
- b. Installation (page4-77)

INITIAL SETUP

Tools	Equipment Condition
Wrench, open-end, 9/16-inch	Air reservoir draincock opened.
Materials/Parts	
Compound, sealing (item 7, appendix E)	

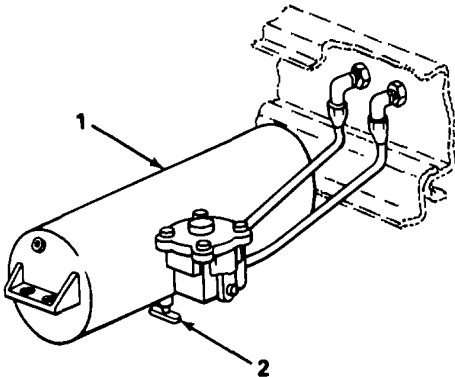
LOCATION	ITEM	ACTION	REMARKS
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REMOVAL

1.	Air reservoir (1)	Draincock (2)	Using 9/16-inch wrench, remove draincock (1)
----	-------------------	---------------	--

INSTALLATION

2.		Draincock (2)	Using 9/16-inch wrench and sealing compound on threads, install draincock (2) on reservoir (1).
----	--	---------------	---



NOTE

**FOLLOW-ON MAINTENANCE:** Close air reservoir draincock, charge air system and check for leaks.

TASK ENDS HERE

**Section X. WHEEL AND TIRE ASSEMBLY MAINTENANCE**

	<b>Page</b>		<b>Page</b>
Rims and Tires .....	4-78	Spider, Brakedrum, and Wheel	
Wheel Bearing .....	4-83	Bearings .....	4-80

**RIMS AND TIRES**


---

This task covers:

- a. Removal (page 4-78)
  - b. Installation (page 4-79)
- 

**INITIAL SETUP****Tools**

Handle, socket wrench, 3/4-inch  
square drive  
Hydraulic jack  
Jack stand  
Socket, 1 1/4- by 3/4-inch  
square drive

**Tools - Continued**

Torque wrench, 0 - 600 ft lb, 3/4-inch  
square drive  
Two wheel chocks

**Personnel Required**

Two

---

<b>LOCATION</b>	<b>ITEM</b>	<b>ACTION</b>	<b>REMARKS</b>
-----------------	-------------	---------------	----------------

---

**REMOVAL**

1.	Wheel assembly	Wheel chocks (1)	Chock wheels on opposite side of assembly being removed.
2.		Stud nuts (2)	Using 1 1/4-inch socket, loosen five nuts (2). Do not remove.
3.	Axle beam	Hydraulic jack (3) and jack stand (4)	a. Using jack (3), raise axle. b. Position jack stand (4) under axle beam (5).
4.	Wheel assembly	Stud nuts (2) and rim clamps (6)	Using 1 1/4-inch socket wrench, remove five stud nuts (2) and rim clamps (6).
5.	Rim and tire assemblies (7)	Spacer band (8)	Remove.

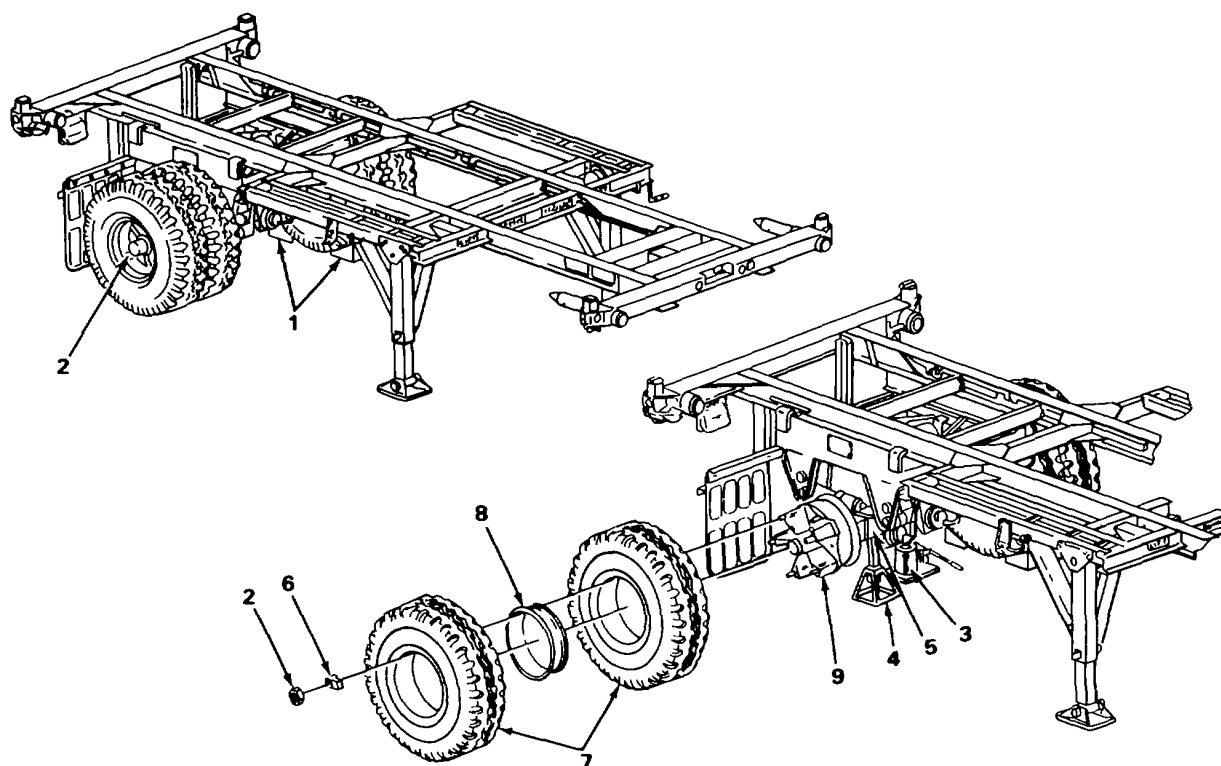
**NOTE**

For disassembly, repair, and reassembly of the tire, refer to TM 9-2610-200-14

Change 1 4-78

## RIMS AND TIRES - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
6. Wheel spider	Two rim and tire assemblies (7) and spacer band (8)	Place on spider (9) with tire valves 180 degrees opposed.	
<b>INSTALLATION</b>			
7. Wheel assembly	Five rim clamps (6) and stud nuts (2)	Place on spider (9) studs and tighten using 1 1/4-inch socket wrench.	
8.	Hydraulic jack (3) and jack stand (4)	a. Using jack (3), raise axle beam (5) off jack stand (4). b. Remove jack stand (4). c. Remove jack (3) after lowering axle beam (5).	
9. Wheel assembly	Stud nuts (2)	a. Using 1 1/4-inch socket and torque wrench, torque five stud nuts (2) to 450 - 500 ft lb (610 - 678 N•m). b. Remove wheel chocks (1).	



TASK ENDS HERE

**SPIDER, BRAKEDRUM, AND WHEEL BEARINGS**


---

This task covers:

- |                            |                             |
|----------------------------|-----------------------------|
| a. Removal (page 4-80)     | c. Assembly (page 4-82)     |
| b. Disassembly (page 4-81) | d. Installation (page 4-82) |
- 

**INITIAL SETUP**

## Tools

Hammer, ball-peen  
 Handle, reversible, 318-inch square drive  
 Handle, socket wrench, 314-inch square drive  
 Mallet, soft-face  
 Puller kit  
 Punch, straight, 3/4-inch  
 Socket, 3 5/16- by 314-inch square drive  
 Socket, 3 7/8- by 314-inch square drive  
 Socket, 1 1/8- by 314-inch square drive  
 Socket, 112- by 318-inch square drive  
 Torque wrench, 0 - 600 ft lb, 3/4-inch square drive  
 Wrench, box, 1 118-inch

## Materials/Parts

Grease, GAA (item 6, appendix E)  
 Grease seal  
 Drycleaning solvent PD-680 (item 1, appendix E)  
 Rags (item 2, appendix E)

## Personnel Required

Two

## Equipment Condition

Rims and tires removed (page 4-78).

## References

TM 9214, Inspection, Care, and Maintenance of Antifriction Bearings

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LOCATION	ITEM	ACTION	REMARKS
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**REMOVAL**

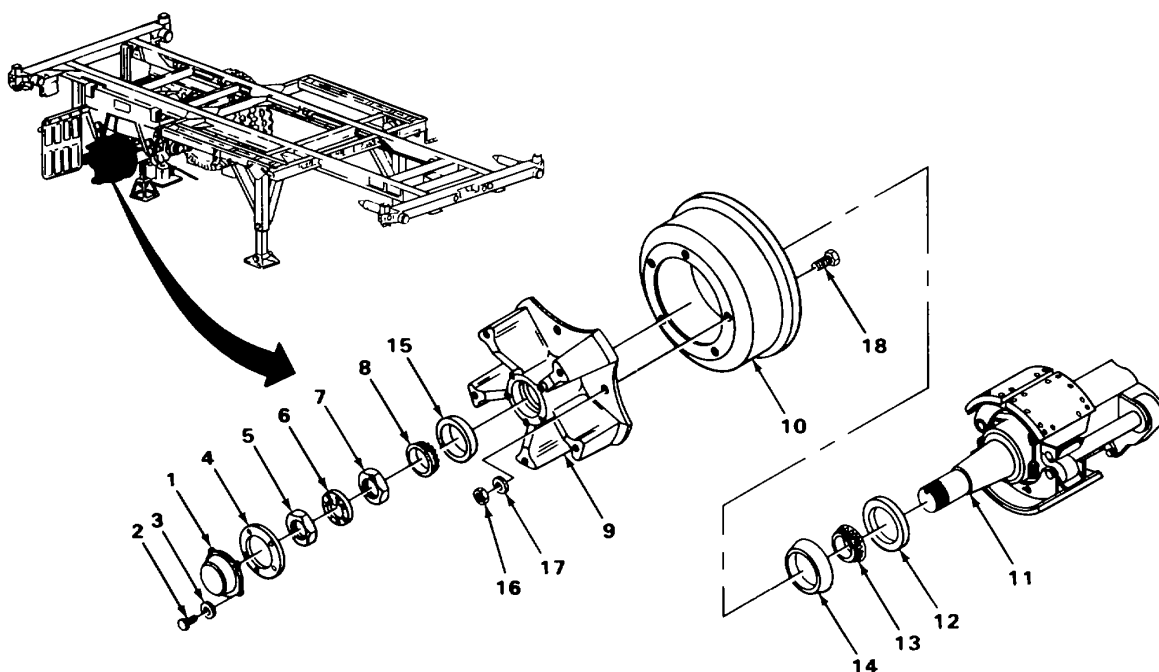
- |    |               |  |   |
|----|---------------|--|---|
| 1. | Wheel hub     | Hubcap (1), screws (2), lockwashers (3) and gasket (4) | Using 112-inch socket, remove five screws (2) and take off lockwashers (3), hubcap (1), and gasket (4). |
| 2. | Axle, spindle | Locknut (5) and lockwasher (6)                         | Using 3 5/16-inch socket, remove locknut (5) and lockwasher (6).  |

## SPIDER, BRAKEDRUM, AND WHEEL BEARINGS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
3.	Adjusting nut (7) and outer bearing cone (8)	a. Using 3 7/8-inch socket, remove nut (7). b. Remove outer bearing cone (8).	
4.	Wheel hub (9) and brakedrum (10)	Using an assistant, remove hub (9) and drum (10) from axle (11).	

## DISASSEMBLY

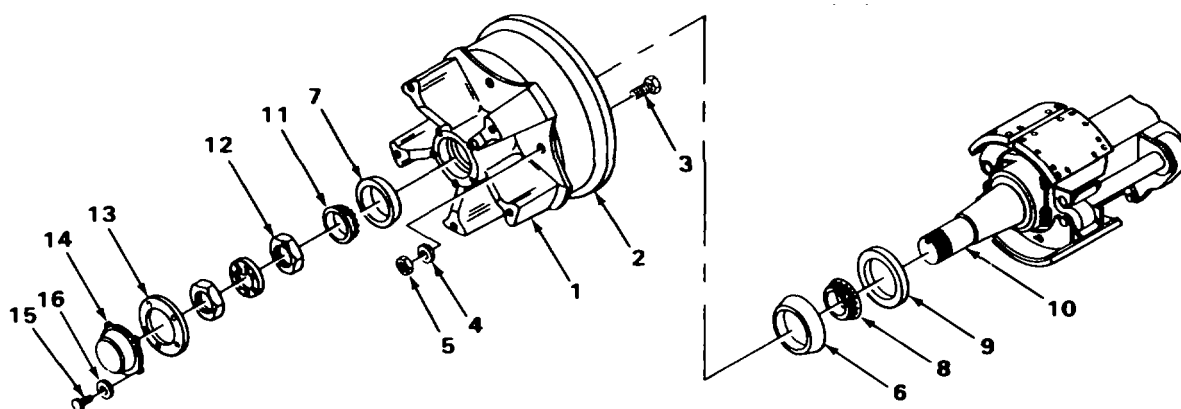
5.	Wheel hub	Grease seal (12) and inner bearing cone (13)	a. Using puller kit, remove seal (12). Discard seal (12). b. Remove bearing cone (13).
6.		Inner and outer bearing cups (14) and (15)	Using hammer and punch, remove bearing cups (14) and (15).
7.		Wheel hub (9) and brakedrum (10)	Using 1 1/8-inch socket and 1 1/8-inch wrench, remove nuts (16), washers (17), and capscrews (18). <b>Hub (9) and drum (10) will separate.</b>



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## SPIDER, BRAKEDRUM, AND WHEEL BEARINGS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
<b>ASSEMBLY</b>			
8.	Wheel hub (1) and brakedrum (2)	Using 1 18-inch socket, 1 1/4-inch wrench, and torque wrench, install five capscrews (3), washers (4), and nuts (5). Torque nuts (5) to 295 ft lb (400 N•m).	
9.	Bearing cups (6) and (7)	Using hammer and punch, install inner and outer bearing cups (6) and (7) in wheel hub (1).	
10.	Inner bearing cone (8) and grease seal (9)	a. Lubricate bearing (8) with GAA grease and place in hub (1). (See TM 9-214.) b. Using hammer, install grease seal (9).	
<b>INSTALLATION</b>			
11. Axle	Wheel hub (1) and brakedrum (2)	Using an assistant, place hub (1) and drum (2) on axle (10).	
12.	Outer bearing cone (11) and adjusting nut (12)	a. Lubricate bearing (11) with GAA grease and place in hub (1). (See TM 9-214.) b. Install adjusting nut (12) and adjust wheel bearings. See page 4-83.	
13. Wheel hub	Gasket (13), hub- cap (14), cap- screws (15) and lockwashers (16)	Place gasket (13) and hubcap (14) on wheel hub (1). Install five capscrews, washers and, using 11/2-inch socket, tighten screws (15).	

**NOTE**

**FOLLOW-ON MAINTENANCE** Install rims and tires (page 4-79) and adjust brakes (page 4-59).

**TASK ENDS HERE**

WHEEL BEARING

This task covers:

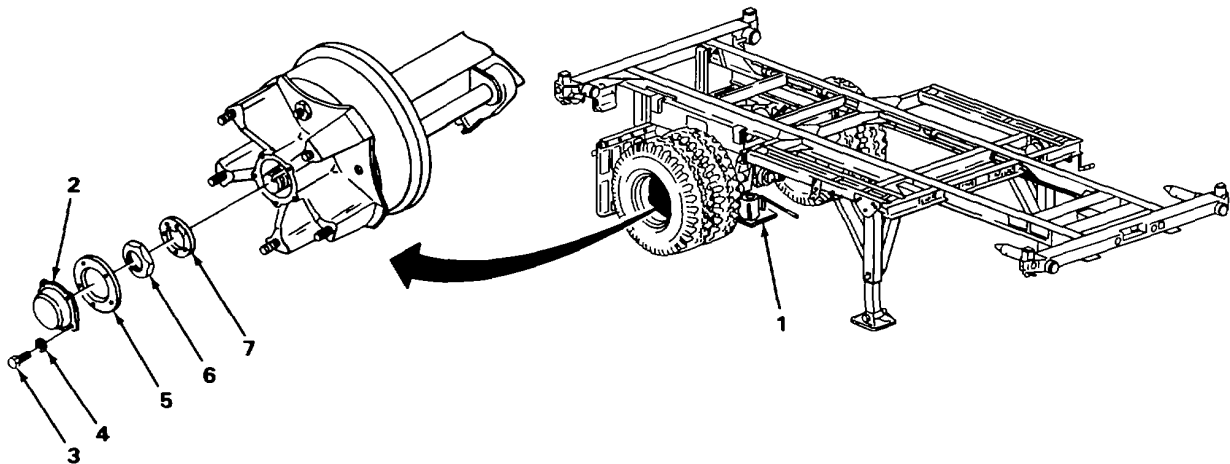
Adjustment

INITIAL SETUP

Tools  
Handle, socket wrench, 314-inch square drive  
Handle, reversible, 3/8-inch square drive

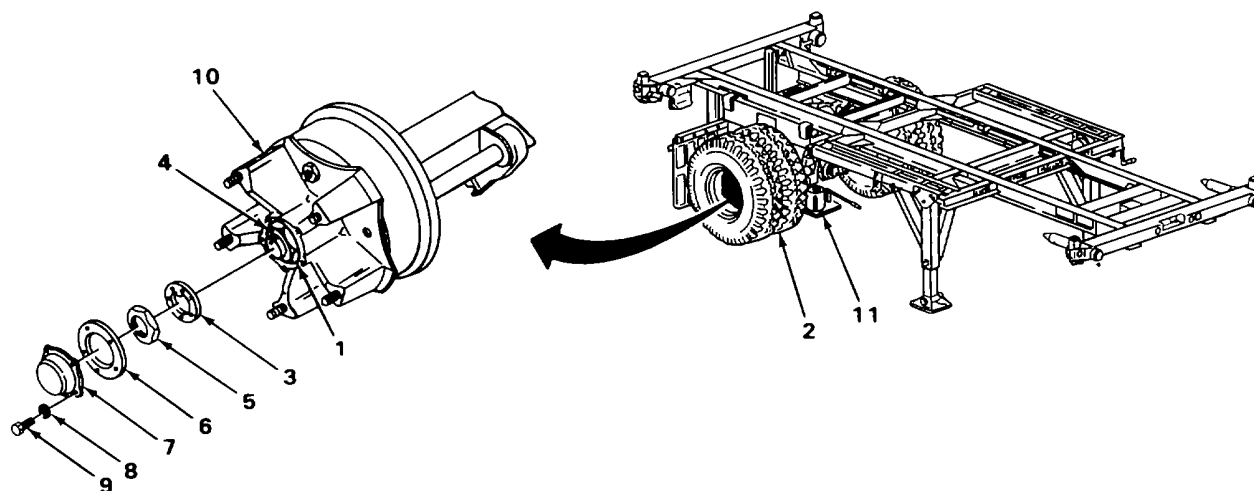
Tools - Continued  
Jack, hydraulic  
Socket, 3 5116- by 3/4-inch square drive  
Socket, 3 7/8- by 3/4-inch square drive  
Socket, 112- by 318-inch square drive  
Torque wrench, 0-600 ft lb, 3/4-inch square drive

LOCATION		ITEM	ACTION	REMARKS
1.	Axle	Hydraulic jack (1)	Using jack (1), raise trailer.	
2.	Wheel hub	Hubcap (2), cap-screws (3), lock-washers (4) and gasket (5)	a. Using 1/2-inch socket, remove five capscrows (3), lockwashers (4), and hubcap (2). b. Remove gasket (5). <b>Discard gasket (5).</b>	
3.		Locknut (6) and lockwasher (7)	Using 3 5/16-inch socket, remove nut (6) and lockwasher (7).	



## WHEEL BEARING - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
4. Wheel hub	Wheel bearings	a. Using 3 7/8-Inch socket, loosen adjusting nut (1) b. Turn wheel assembly (2) Tighten adjusting nut (1) with 3 7/8-inch socket and torque wrench, against bearing shoulder on spindle. Torque adjusting nut to 250-300 ft lb (339-407 N•m). <b>This torque will automatically adjust new bearings to a range of 0.005 tight to 0.007 loose.</b> c. Install lockwasher (3) on axle. d. Slide lockwasher (3) against adjusting nut (1) If dowel pin (4) does not enter hole in lockwasher (3), do step e. e. Remove lockwasher (3) Turn it over and reinstall. <b>If dowel pin (4) does not enter hole in lockwasher (3), repeat steps a thru e.</b> f. Using 3 5/16-inch socket and torque wrench, install locknut (5) and torque to 250-300 ft lb (339-407 N•m)	
5.	Gasket (6), hubcap (7), lockwashers (8)	a	Place gasket (6) and hubcap (7) on wheel hub (10) and Install five lock-and capscrews (9) washers (8) and capscrews (9)
6. Axle	Hydraulic jack (11)	b.	Using 1/2-inch socket, tighten cap-screws (9) Lower and remove jack (11).



TASK ENDS HERE

Section XI. LANDING GEAR MAINTENANCE

	Page		Page
Landing Gear Leg .....	4-85	Landing Gear Gearbox.....	4-91

LANDING GEAR LEG

This task covers

- a. Removal (page 4-85)

b. Disassembly (page 4-87)
- c. Assembly (page 4-88)

d. Installation (page 4-88)

INITIAL SETUP

Tools

- Hammer, ball-peen
- Jack stands (two required)
- Punch, drive-pin, 1/4-inch tip
- Ratchet handle, socket-wrench, 1/2-inch square drive
- Socket, 9/16- by 1/2-inch square drive

Tools - Continued

- Socket, 3/4- by 11/2-inch square drive
- Socket, 15/16- by 1/2-inch square drive
- Socket, 1 1/16- by 1/2-inch square drive
- Wrench, box-end, 9/16-inch
- Wrench, box-end, 3/4-inch
- Wrench, box-end, 15/16-inch

LOCATION	ITEM	ACTION	REMARKS
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REMOVAL

1.

Left and right wheels

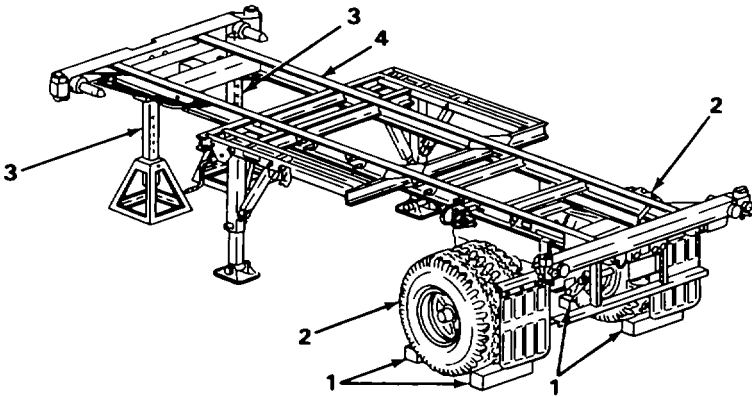
Four wheel chocks (1)

Place in front and back of wheels (2).
2.

Semitrailer chassis

Jack stands (3)

Using a hoist, raise chassis and place stands (3) under chassis frame (4).



## LANDING GEAR LEG - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
<b>REMOVAL - CONTINUED</b>			
<b>NOTE</b>			
<b>This is a typical procedure for the left or the right side landing legs.</b>			
3.	Landing gear leg cover (2)	Screws (1) and cover (2), and plug (3).	Using screwdriver, remove two screws (1),
4.	Pinion gear	Groove pin (4)	Using hammer and punch, remove groove pin (4).
5.	Landing gear leg	Nut (5), spacer (6), bolt (7) and support (8)	a. Using 15/16-inch socket and 15/16-inch wrench, remove nut (5), spacer (6), and bolt (7). b. Allow support (8) to swing clear of leg.
6.		Nut (9), bolt (10) and lateral support (11)	a. Using 15/16-inch socket and 15/16-inch wrench, remove nut (9) and bolt (10). b. Allow support (11) to swing clear of leg.
7.	Chassis frame	Landing gear leg (12)	a. Using 3/4-inch socket and 3/4-inch wrench, remove nuts (13), washers (14), capscrews (15), and mounting bracket (16). b. Slide landing gear leg (12) and pinion gear (18) off cross-shaft (17).
8.		Support (8) and pin (19)	a. Pull pin (19) out. b. Remove support (8)
9.		Lateral support (11), bolt (20) and nut (21)	a. Using 15/16-inch socket and box-end wrenches, remove nut (21) and bolt (20). b. Remove lateral support (11).

# LANDING GEAR LEG - CONTINUED

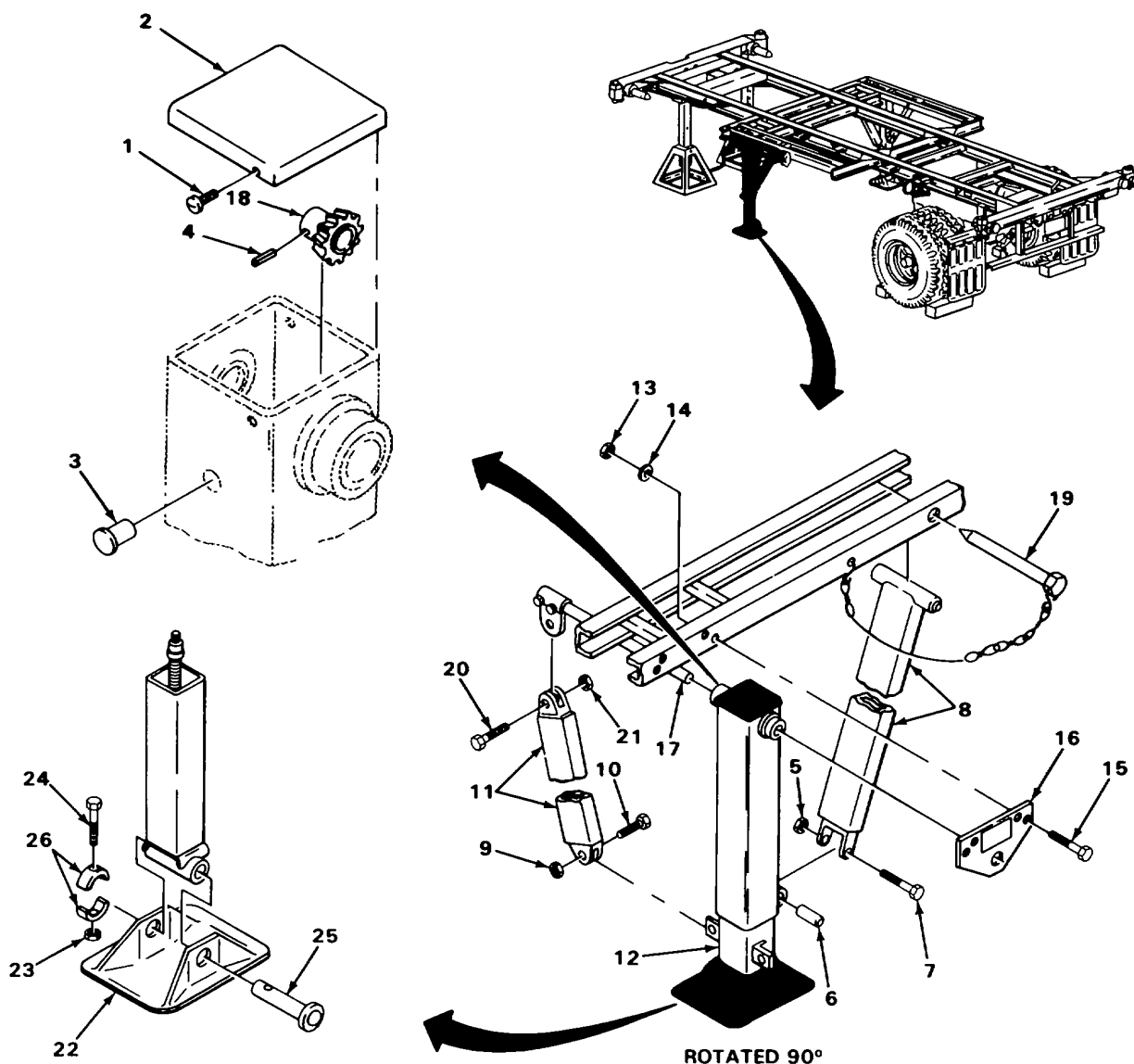
LOCATION	ITEM	ACTION	REMARKS
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## DISASSEMBLY

10. Landing gear leg

Sandshoe (22)

- Using 9/16-inch socket and 9116-inch box-end wrenches, remove nut (23) and capscrew (24).
- Remove axle (25), collar (26), and sandshoe (22).



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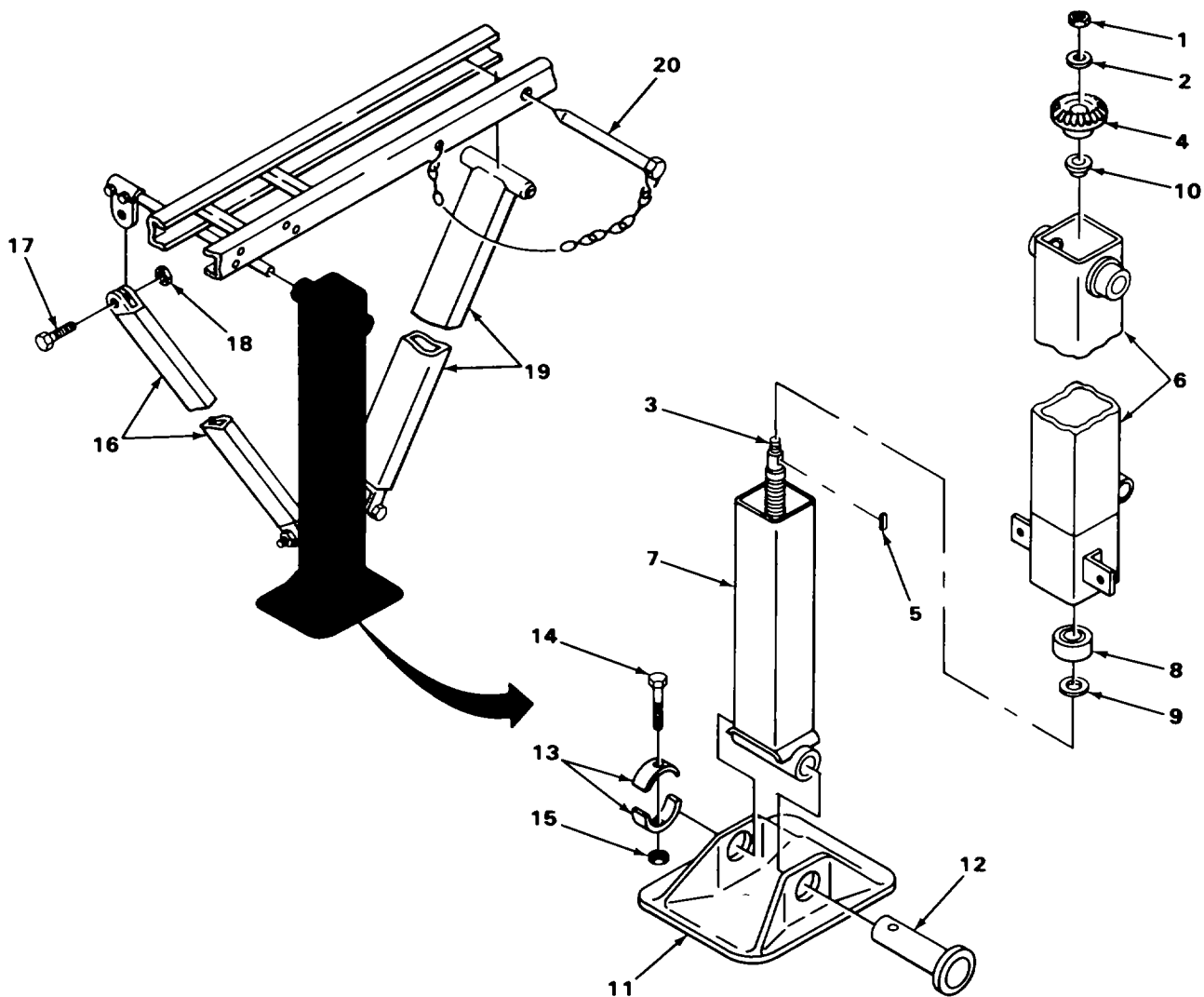
## LANDING GEAR LEG - CONTINUED

LOCATION	ITEM	ACTION REMARKS
<b>DISASSEMBLY - CONTINUED</b>		
11. Landing gear leg	Nut (1) and washer (2)	Using 1 1/16-inch socket, remove nut (1) and washer (2).
12. Jackscrew (3)	Bevel gear (4)	Using puller, remove gear (4) and key (5).
13. Outer leg (6)	Inner leg (7)	Pull inner leg (7) out of outer leg (6).
14.	Bearing (8) and washer (9)	Remove bearing (8) and washer (9) from jackscrew (5).
15.	Flange bearing (10)	Remove flange bearing (10) from outer leg (6).
<b>ASSEMBLY</b>		
16. Landing gear leg	Washer (2), bearing (8), flange bearing (10), inner leg (7) and outer leg (6)	a. Place washer (2) and bearing (8) on jackscrew (3). b. Place flange bearing (10) in outer leg (6). c. Insert inner leg (7) in outer leg (6).
17.	Bevel gear (4), key (5), washer (2) and nut (1)	a. Place bevel gear (4) on jackscrew (3), aligning slots for key (5). b. Using hammer and 1/4-inch punch, tap key (5) fully into slot. c. Using 1 1/16-inch socket, install washer (2) and nut (1).
18.	Sandshoe (11)	a. Position sandshoe (11) and insert axle (12). b. Place collars (13) on axle (12). c. Using 9/16-inch socket and 9/16-inch wrench, install capscrew (14), and nut (15).
<b>INSTALLATION</b>		
19. Semitrailer chassis	Lateral support (16)	a. Place lateral support (16) in position. b. Using 9/16-inch socket and box-end wrenches, install bolt (17) and nut (18)

# LANDING GEAR LEG - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

- |                         |                           |  |
|-------------------------|---------------------------|--|
| 20. Semitrailer chassis | Support (19) and pin (20) | a. Place support (19) in position.<br>b. Secure with pin (20). |
|-------------------------|---------------------------|--|

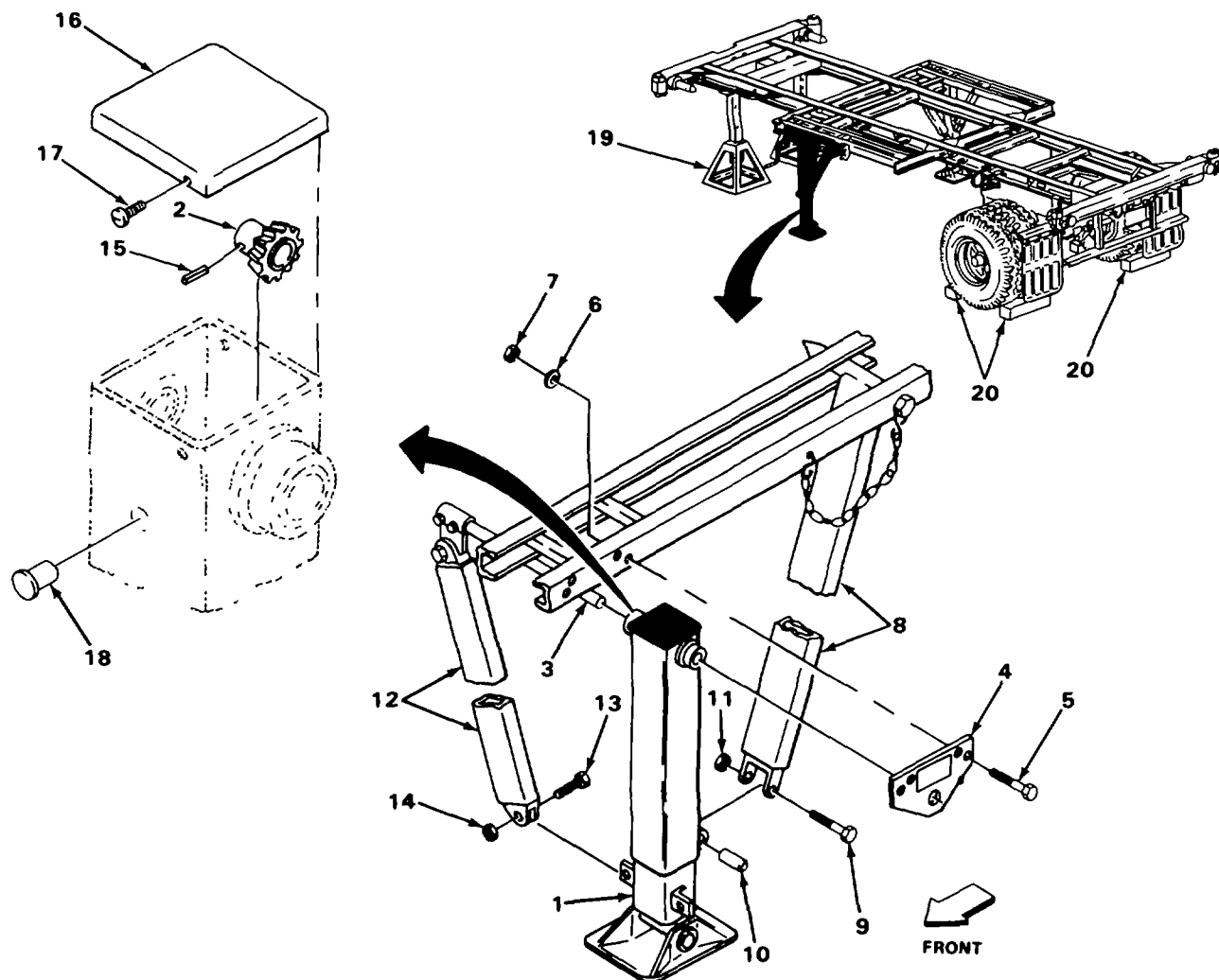


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## LANDING GEAR LEG - CONTINUED

LOCATION	ITEM	ACTION REMARKS
<b>INSTALLATION - CONTINUED</b>		
21. Chassis frame	Landing gear leg (1) and pinion gear (2)	a. Slide landing gear leg (1) on cross-shaft (3) part way. b. Place pinion gear (2) on cross-shaft (3) and slide landing gear leg (1) onto cross-shaft (3).
22.	Leg mounting bracket (4)	Using 3/4-inch socket wrench, install bracket (4), capscrews (5), washers (6), and nuts (7).
23. Landing gear leg	Support (8), bolt (9), spacer (10) and nut (11)	a. Position support (8) at leg (1). b. Using 15/16-inch socket wrench, install bolt (9), spacer (10), and nut (11).
24.	Lateral support (12), bolt (13) and nut (14)	a. Position support (12) at leg (1). b. Using 15/16-inch socket and wrench, install bolt (13) and nut (14).
25.	Groove pin (15), pinion gear (2) and cover (16)	a. Adjust legs the same length. b. Align holes in cross-shaft (3) and pinion gear (2). c. Using hammer and punch, install groove pin (15). d. Pack gear cavity with GAA grease. e. Using screwdriver, secure cover (16) with screws (17). f. Using hammer, install plug (18).
26.	Landing gear leg (1)	Perform operational check. a. Raise landing gear leg (1). <b>See page 2-16.</b> b. Lower landing gear leg (1). <b>See page 2-35.</b>
27.	Jack stands (19)	a. Using landing gear legs (1), raise chassis frame off jack stands (19). b. Remove jack stands (19)
28. Left and right wheels	Wheel chocks (20)	Remove four wheel chocks (20).

## LANDING GEAR LEG - CONTINUED

**TASK ENDS HERE**

## LANDING GEAR GEARBOX

This task covers:

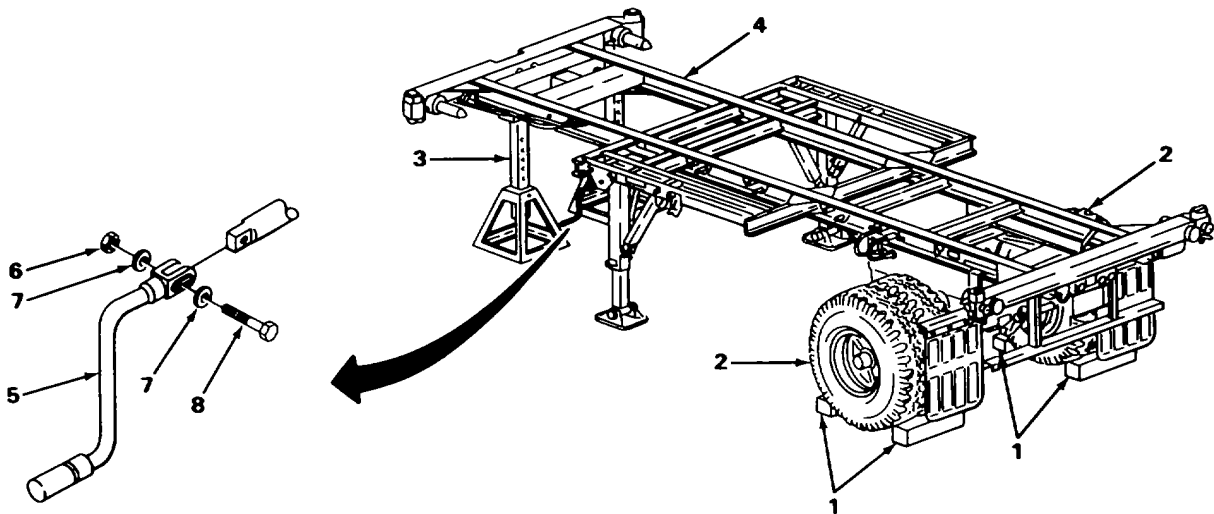
- a. Removal (page 4-92)
- b. Disassembly (page 4-94)
- c. Assembly (page 4-94)
- d. Installation (page 4-95)

LANDING GEAR GEARBOX - CONTINUED

INITIAL SETUP

Tools	Tools - Continued
Hammer, ball-peen	Socket, 9/16- by 3/8-inch square drive
Handle, reversible, 3/8-inch square drive	Socket, 3/4- by 3/8-inch square drive
Punch, drive-pin, straight 1/4-inch point	Wrench, box, 9/16-inch
Pliers, slipjoint	Wrench, box, 3/4-inch
Screwdriver, cross-tip	Materials/Parts
Screwdriver, flat-tip	Grease, GAA (item 6, appendix E)

LOCATION	ITEM	ACTION	REMARKS
REMOVAL			
1. Left and right wheels	Four wheel chocks (1)	Place in front and back of wheels (2).	
2.	Jack stands (3)	Using suitable hoist, raise chassis front and place jack stands (3) under chassis frame (4).	
3. Gearbox	Crank handle (5)	a. Using 9/16-inch socket and 9/16-inch wrench, remove nut (6), washers (7), and bolt (8). b. Remove handle (5).	



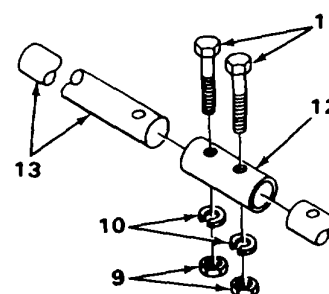
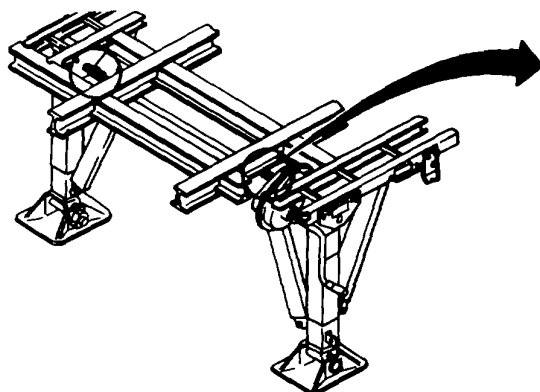
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## LANDING GEAR GEARBOX,- CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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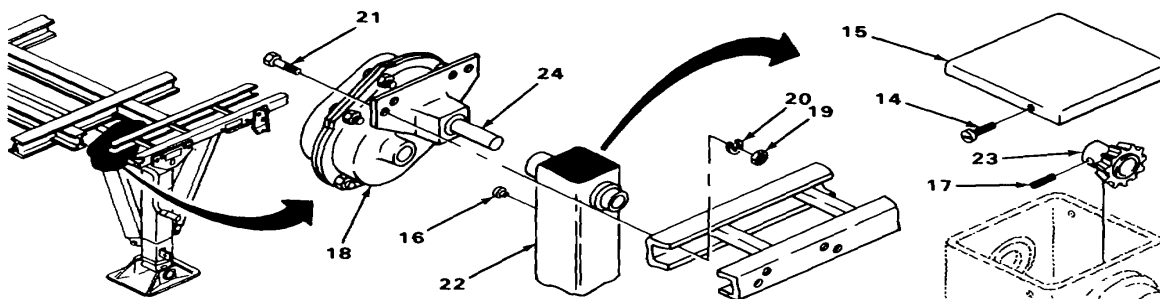
## REMOVAL - CONTINUED

- |    |                  |  |  |
|----|------------------|--|--|
| 4. | Connecting shaft | Nuts (9), washers (10) and cap-screws (11) | Using 9/16-inch socket and wrench, remove four nuts (9), washers (10), and capscrews (11). |
| 5. |                  | Couplings (12) and shaft (13)              | Slide two couplings (12) onto connecting shaft (13) and remove shaft (13).                 |



TYPICAL 2 PLACES

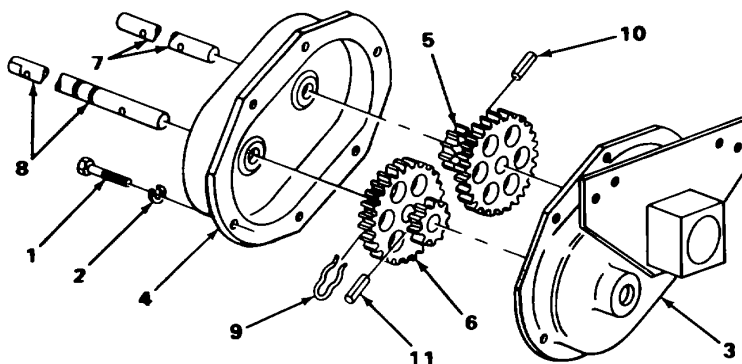
- |    |                       |                                       |   |
|----|-----------------------|---------------------------------------|---|
| 6. | Left landing gear leg | Screws (14), cover (15) and plug (16) | Using flat-tip screwdriver, remove two screws (14) and cover (15); pry off plug (16).   |
| 7. |                       | Groove pin (17)                       | Using hammer and punch, remove pin (17).  |
| 8. |                       | Gearbox (18)                          | a. Using 3/4-inch socket and wrench, remove nuts (19), washers (20), and capscrews (21).<br>b. Slide gearbox (18) out off leg (22) and remove pinion gear (23) from shaft (24). |



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## LANDING GEAR GEARBOX - CONTINUED

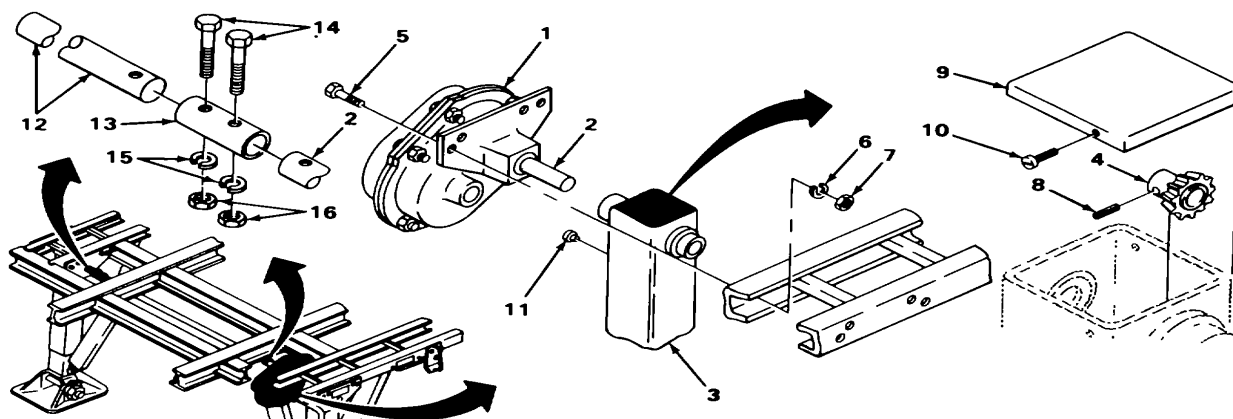
LOCATION	ITEM	ACTION	REMARKS
<b>DISASSEMBLY</b>			
9. Gearbox	Screws (1), washers (2) and covers (3) and (4)	Using cross-tip screwdriver, remove six screws (1) and washers (2) Separate cover (3) from cover (4)	
10.	Gears (5) and (6), and shafts (7) and (8)	<ol style="list-style-type: none"> <li>Pull gears (5) and (6) with shafts (7) and (8) out of cover (4).</li> <li>Using pliers, remove detent clip (9).</li> <li>Using hammer and punch, remove groove pins (10) and (11).</li> <li>Remove gears (5) and (6) from shafts (7) and (8).</li> </ol>	
<b>ASSEMBLY</b>			
11.	Gears (5) and (6) shafts (7) and (8), groove pins (10) and (11) and detent clip (9)	<ol style="list-style-type: none"> <li>Slide gears (5) and (6) onto shafts (7) and (8).</li> <li>Using hammer and punch, install pins (10) and (11).</li> <li>Using pliers, install detent clip (9) on shaft (8).</li> </ol>	
12.	Shafts (7) and (8), covers (3) and (4), washers (2) and screws (1)	<ol style="list-style-type: none"> <li>Using GAA grease, lubricate gears (5) and (6) and shafts (7) and (8).</li> <li>Slide shafts (7) and (8) through cover (4).</li> <li>Place cover (4) on cover (3).</li> <li>Using cross-tip screwdriver, install washers (2) and screws (1).</li> </ol>	



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## LANDING GEAR GEARBOX - CONTINUED

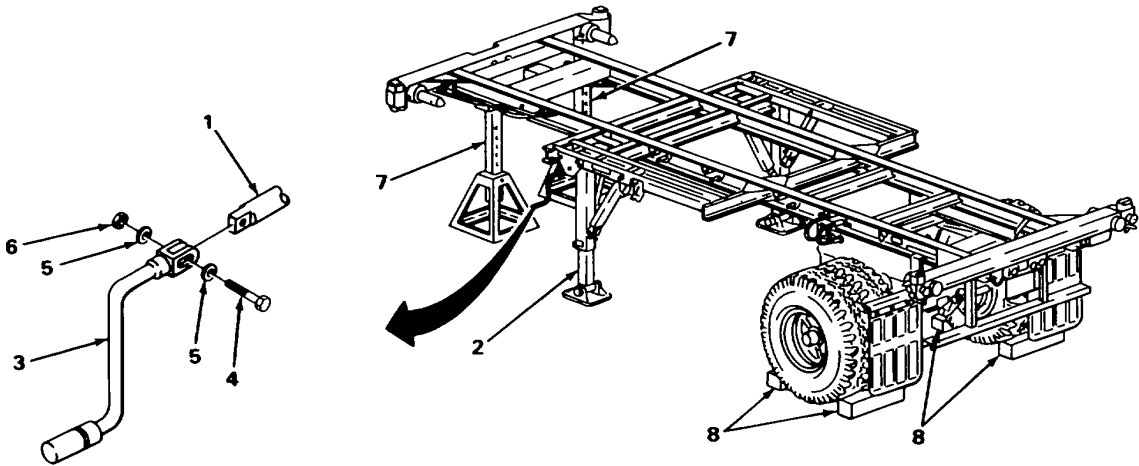
LOCATION	ITEM	ACTION	REMARKS
<b>INSTALLATION</b>			
13. Left landing gear leg	Gearbox (1) leg (3) and pinion gear (4).	a. Slide shaft (2) through landing gear b. Using 3/4-inch socket and 3/4-inch wrench, install capscrews (5), washers (6), and nuts (7)	
14.	Groove pin (8) pin (8).	Using hammer and punch, install groove	
15.	Cover (9) and screws (10)	Using flat-tip screwdriver, install cover (9) and two screws (10).	
16.	Plug (11)	Using hammer, install plug (11).	
17.	Connecting shaft (12), couplings (13), capscrews (14), washers (15) and nuts (16)	a. Place connecting shaft (12) between gearbox (1) and right landing leg. b. Slide couplings (13) over left and right cross-shafts (2). c. Using 9/16-inch socket and 9/16-inch wrench, Install capscrews (14), washers (15), and nuts (16).	



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LANDING GEAR GEARBOX - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
INSTALLATION - CONTINUED			
18. Gearbox	Crank handle (3)	a. Place handle (3) on cross-shaft (1). b. Using 9/16-inch socket and 9/16-inch wrench, install bolt (4), washers (5), and nut (6).	
19.	Landing gear legs (2)	Perform operational check. a. Raise landing gear legs (2). b. Lower landing gear legs (2).	<b>See page 2-16.</b> <b>See page 2-35.</b>
20. Rear axle	Jack stands (7) and wheel chocks (8)	a. Using landing gear legs (2), raise chassis frame off jack stands (7). b. Remove jack stands (7). c. Remove wheel chocks (8).	



TASK ENDS HERE

Section XII. TORQUE ARM MAINTENANCE

	Page
Torque Arm.....	4-97

TORQUE ARM

This task covers:

- a. Removal (page 4-97)
- b. Installation (page 4-97)

INITIAL SETUP

Tools	Tools - Continued
Handle, reversible, 3/4-inch square drive	Wrench, box, 1 1/2-inch
Socket, 1 1/2- by 3/4-inch square drive	Wrench, torque, 3/4-inch square drive

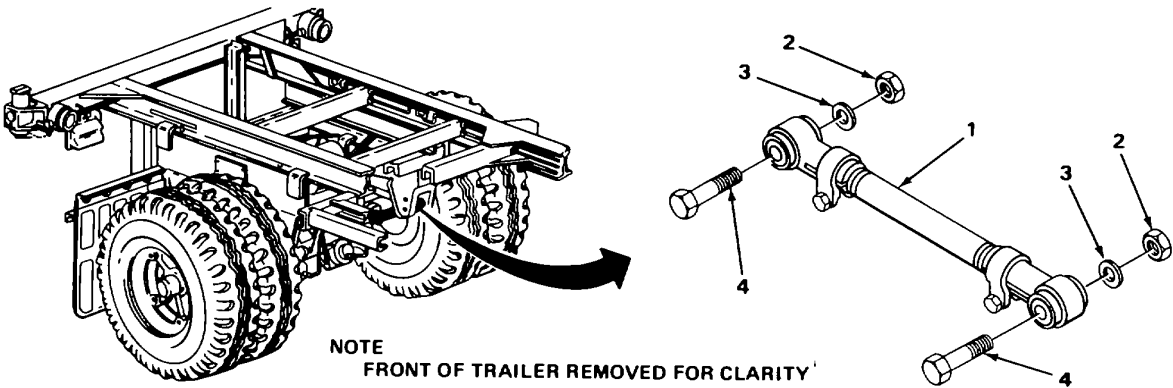
LOCATION	ITEM	ACTION	REMARKS
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REMOVAL

1. Bogie	Torque arm (1)	a. Using 1 1/2-inch socket and wrench, remove nuts (2), washers (3), and bolts (4). b. Remove torque arm (1).
----------	----------------	--

INSTALLATION

2. Bogie	Torque arm (1)	a. Position torque arm (1) b. Using 1 1/2-inch socket and box wrench, install bolts (4), washers (3), and nuts (2). c. Using torque wrench, torque nuts (2) to 350 - 375 ft lb (464 - 507 N•m). d. Align axle (page 4144).
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TASK ENDS HERE

Section XIII. FRAME AND BODY MAINTENANCE

	Page		Page
Frame and Body Repair and .....		Splash Guard .....	4-100
Maintenance .....	4-102	Uplock Assembly .....	4-101
Rear Bumper .....	4-98		

REAR BUMPER

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- This task covers:
- a. Removal (page 4-99)
  - b. Installation (page 4-99)
- 

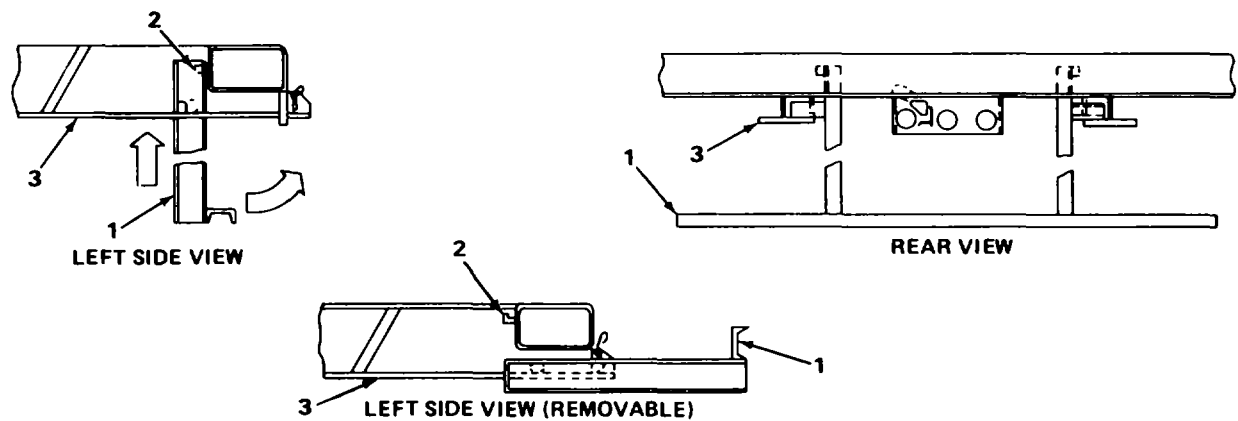
INITIAL SETUP

Personnel Required

Two

REAR BUMPER - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
REMOVAL			
1. Chassis rear	Rear bumper (1)	a. Lift bumper (1) off hooks (2) and swing up. b. Pull bumper (2) from rails (3).	
INSTALLATION			
2. Chassis rear	Rear bumper (1)	a. Slide bumper (1) onto rails (3). b. Lift bumper (1) and hang on hooks (2).	



NOTE

Repair of the rear bumper is limited to the welding of minor cracks. Refer to TM 9-237, Welding Theory and Application, Operator's Manual.

TASK ENDS HERE

SPLASH GUARD

This task covers:

- a. Removal (page 4-100)
- b. Installation (page 4-100)

INITIAL SETUP

Tools

- Handle, reversible, 1/2-inch square drive
- Socket, 9/16- by 112-inch square drive
- Wrench, box, 9116-inch

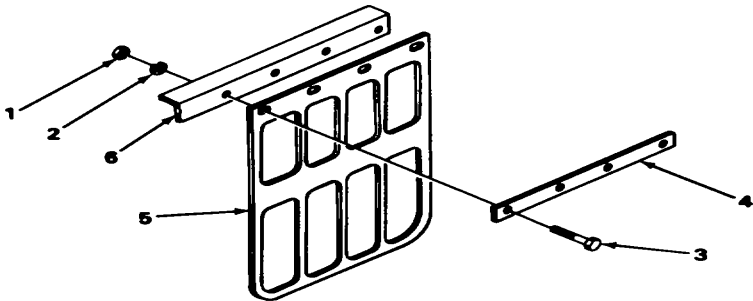
LOCATION	ITEM	ACTION	REMARKS
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REMOVAL

1.	Chassis rear end, mounting bracket	Nuts (1), lock-washers (2), screws (3), retainer plate (4) and splash guard (5)	Using 9/16-inch box wrench and 9/16-inch socket wrench, remove four nuts (1), lockwashers (2), screws (3), retainer plate (4), and guard (5).
----	------------------------------------	---	---

INSTALLATION

2.	Chassis rear end, mounting bracket	Nuts (1), lock-washers (2), screws (3), retainer plate (4) and splash guard (5)	<div>a. Assemble parts on mounting bracket (6).</div> <div>b. Using 9/16-inch box wrench and socket wrench, tighten nuts (1).</div>
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TASK ENDS HERE

UPLOCK ASSEMBLY

This task covers:

- a. Removal (page 4-101)
- b. Installation (page 4-101),

INITIAL SETUP

Tools

- Handle, reversible, 318-inch square drive
- Socket, 9/16- by 3/8-inch square drive
- Wrench, box, 9/16-inch

LOCATION	ITEM	ACTION	REMARKS
REMOVAL			
1. Chassis frame	Uplock latch (1)	a.	Using 9/16-inch socket and 9/16-inch wrench, remove nut (2), washers (3), spring (4), and capscrew (5).
	b.		Using 9116-inch socket, remove nuts (6), washers (7), and latch (1).
INSTALLATION			
2. Uplock latch (1)	a.	Using 9/16-inch socket, install latch (1), washers (7), and nuts (6).	
	b.		Using 9116-inch socket and 9/16-inch wrench, install capscrew (5), spring (4), washers (3), and nut (2).

TASK ENDS HERE

FRAME AND BODY REPAIR AND MAINTENANCE

Refer to TB 92300-247-40, Tactical Wheeled Vehicle Repair of Frame, for the repair and maintenance of the semitrailer chassis frame.

Section XIV. BODY ACCESSORY MAINTENANCE

	Page		Page
Reflectors.....	4-104	Data Plates.....	4-104

REFLECTOR

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This task covers:

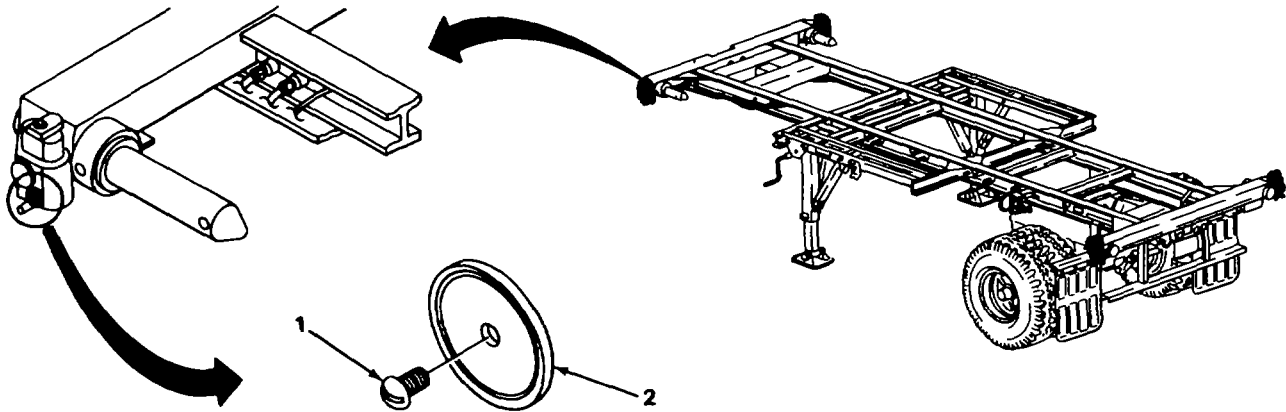
- a. Removal (page 4-103)
  - b. Installation (page 4-103)
- 

INITIAL SETUP

- Tools
- Screwdriver, flat-tip

REFLECTOR - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
REMOVAL			
1. Chassis frame reflector (2)	Screw (1) and reflector (2).	Using screwdriver, remove screw (1) and	
INSTALLATION			
2. Chassis frame reflector (2)	Screw (1) and and screw (1).	Using screwdriver, install reflector (2)	



TASK ENDS HERE

TA223174

DATA PLATES

This task covers:

- a. Removal (page 4-104)
- b. Installation (page 4-104)

INITIAL SETUP

Tools

Drill, electric, portable,  
114-inch jaw  
Drill, twist, 5132-inch

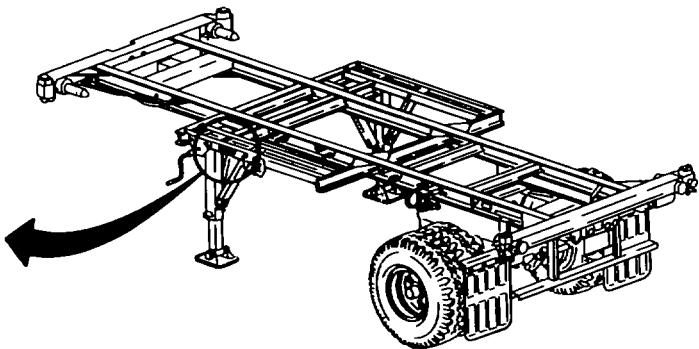
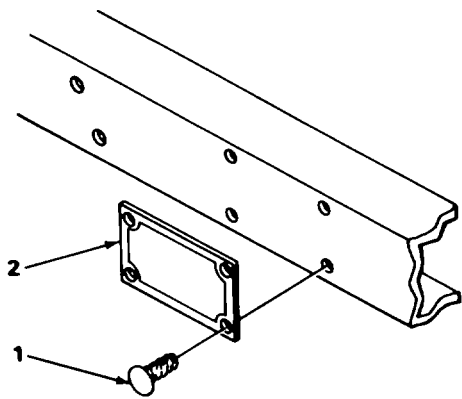
Tools - Continued

Hammer, ball-peen  
Punch, drive-pin, 3/16-inch

LOCATION	ITEM	ACTION	REMARKS
1.	Chassis side rail and data plate (2)	Drivescrews (1) off drivescrews (1). b.	a. Using 5/32-inch drill, drill heads  Using hammer and punch, drive out remainder of screws (1) and remove data plate (2).

INSTALLATION

- 2. Chassis side rail and data plate (2) screws (1).  
Drivescrews (1)  
a. Position data plate (2).  
b. Using hammer, drive in four drive-



TASK ENDS HERE

## Section XV. PREPARATION FOR STORAGE AND SHIPMENT

	Page		Page
Inspection During Storage .....	4-105	Preservation .....	4-105
Packing, Shipment, and Storage .....	4-106		

### PRESERVATION

Unit commanders are responsible for the proper care of the semitrailers.

When you receive a semitrailer already processed for domestic shipment, (as indicated on DD Form 1397), the semitrailer does not have to be reprocessed for storage unless corrosion and deterioration are found during the inspection upon receipt. List all discrepancies found, due to poor preservation, packaging, packing, marking, handling, loading, or storage, and for excessive preservation on an SF 364. Repairs that cannot be handled by the receiving unit are to have tags attached listing the repairs needed. Reports of these conditions will be submitted by the unit commander for action by an ordnance maintenance unit.

Semitrailers that are to be prepared for administrative storage must be given a technical inspection and processed as described in TM 740-90-1 (Administrative Storage of Equipment). Semitrailers may be placed in administrative storage for 90 days.

The preferred type of storage for semitrailers is under cover in open sheds or warehouses whenever possible.

#### NOTE

Use TM 55-200, TM 55-601 and TM 743-200-1 as references for processing, storage, and shipment of material with the instructions contained in this section.

### INSPECTION DURING STORAGE

A visual inspection is to be performed periodically on all semitrailers placed in storage. If corrosion is found, remove it. Clean, paint, and treat the area with the prescribed preservatives.

#### NOTE

Touchup painting will be in accordance with TM 43-0139, Painting Instructions for Field Use

When semitrailers are not issued or shipped to another unit upon expiration of administrative storage period, they must be reprocessed in accordance with TM 740-90-1

Semitrailers that are to be shipped and will reach their destination within the administrative storage period do not have to be reprocessed when removed from storage. If inspection reveals corrosion, or anticipated in-transit weather conditions make it necessary, reprocess in accordance with TM 740-90-1.

## **INSPECTION DURING STORAGE - CONTINUED**

Semitrailers that are to be placed in service are to be deprocessed in accordance with TM 740-90-1. Inspect and service the semitrailer in accordance with section III (Service Upon Receipt of Materiel), page 4-5.

Repair or replace all items tagged on inspection prior to preservation.

## **PACKING, SHIPMENT, AND STORAGE**

### **PREPARATION FOR SHIPMENT**

Protect the semitrailer against corrosion and damage. All unpainted metal surfaces are to be protected during shipment. Oil or grease, listed in the lubrication chart may be used for this purpose. Oil and grease are good only for a few days and semitrailers protected with oil and grease are to be watched closely for corrosion. Select a preservative that will not harm the surface to which it is applied. Prepare the semitrailer for shipment by processing it in accordance with TM 740-90-1.

## CHAPTER 5

DIRECT SUPPORT AND GENERAL SUPPORT  
MAINTENANCE INSTRUCTIONS

## OVERVIEW

This chapter contains Information covering repair parts; special tools; test, measurement, and diagnostic equipment (TMDE); support equipment; and direct support and general support maintenance instructions for the 12-ton semitrailer (MILVAN) coupleable chassis

	Page
Section I Repair Parts; Special Tools; Test, Measurement, and Diagnostic Equipment (TMDE); and Support Equipment .....	5-1
Section II Maintenance Procedures.....	5-2

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

	Page	Page
Common Tools and Equipment.....	5-1	
Repair Parts.....	5-1	
Special Tools, TMDE, and Support Equipment.....		5-1

## COMMON TOOLS AND EQUIPMENT

Refer to the Modified Table of Organization and Equipment (MTOE) for authorized common tools and equipment applicable to your unit.

## SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

No special tools, TMDE, or support equipment are required to maintain the semitrailer.

## REPAIR PARTS

Repair parts are listed and illustrated in appendix F of this manual. I

**Section II. MAINTENANCE PROCEDURES**

	Page		Page
Axle .....	5-3	General .....	5-2
Bogie Assembly .....	5-2	Kingpin .....	5-9
Brakedrum .....	5-7	Spring Leaf .....	5-11
Brakeshoes.....	5-6	Torque Arm Bushings .....	5-8
Chassis Frame .....	5-11	Twist Lock .....	5-10

**GENERAL**

This section provides instructions for direct support and general support maintenance of the 12-ton semitrailer (MILVAN) coupleable chassis. The following initial setup information applies to all procedures.

Resources required are not listed unless they apply to the procedure.

Personnel are listed only if the task requires more than one technician. If Personnel Required is not listed, one technician can do the task.

The normal standard equipment condition to start a maintenance task is power off. Equipment condition is not listed unless some other condition is required.

**BOGIE ASSEMBLY**

Repair of the bogie assembly at direct support and general support maintenance is limited to welding of minor cracks. Refer to TM 9237, Welding, Theory and Application, Operator's Manual.

AXLE BEAM

This task covers

- a. Removal (page 5-3)
- b. Installation (page 5-4)

INITIAL SETUP

Tools

- Jack, hydraulic, hand
- Jack stand (two required)
- Ratchet handle, socket, 314-inch drive
- Rule, folding, 6-foot
- Socket, 1 5/16- by 314-inch square drive
- Socket, 1 112- by 3/4-inch square drive
- Wrench, torque, 3/4-inch drive
- Wrench, box, 1 1/2-inch

Materials/Parts

- Rags, wiping (item 2, appendix E)
- Solvent, drycleaning, type PD-680 (item 1, appendix E)

Personnel Required

Two

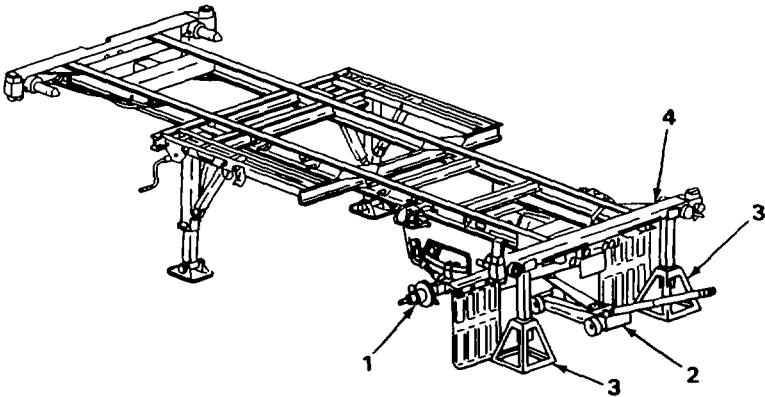
Equipment Condition

- Service brakes removed (page 4-52)
- Camshafts removed (page 4-54).
- Brake chambers removed (page 4-68).

LOCATION	ITEM	ACTION	REMARKS
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REMOVAL

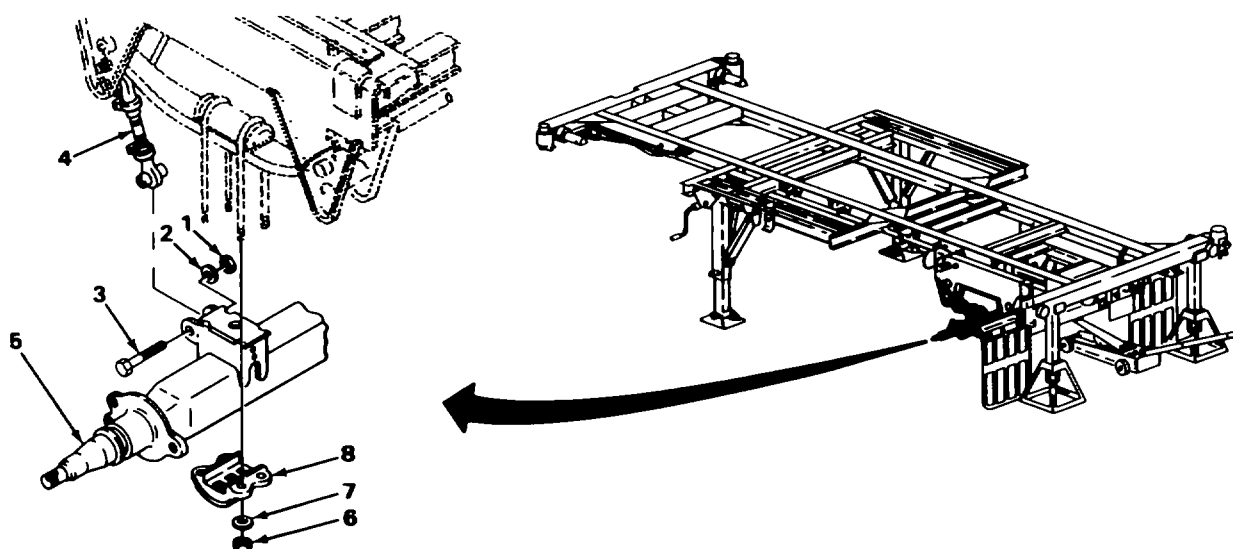
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|----|---------------------|----------|---|
| 1. | Semitrailer chassis | Axle (1) | a. Using jack (2), raise axle (1) clear of two jack stands (3). |
|    |                     | b.       | Move jack stands to under rear crossmember (4).                 |
|    |                     | c.       | Lower jack (2) so that semitrailer rests on jack stands (3).    |



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## AXLE BEAM - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
2. Bogie (2), bolts (3) and torque arms (4)	Nuts (1), washers beam (5). b. Using 1 1/2-inch socket, remove two nuts (1), two washers (2), and two bolts (3).	a. Using hydraulic jack, support axle	
3. Nuts (6), washers (7) and bottom plates (8)	Using 1 5/16-inch socket, remove eight nuts (6), eight washers (7), and two bot- tom plates (8).		



4. U-bolts (9), top plates (10) and liners (11)	a. Remove four U-bolts (9), two top plates (10) and two liners (11). b. Using hydraulic jack, lower axle beam (5). c. Remove axle beam (5) out from under chassis.		
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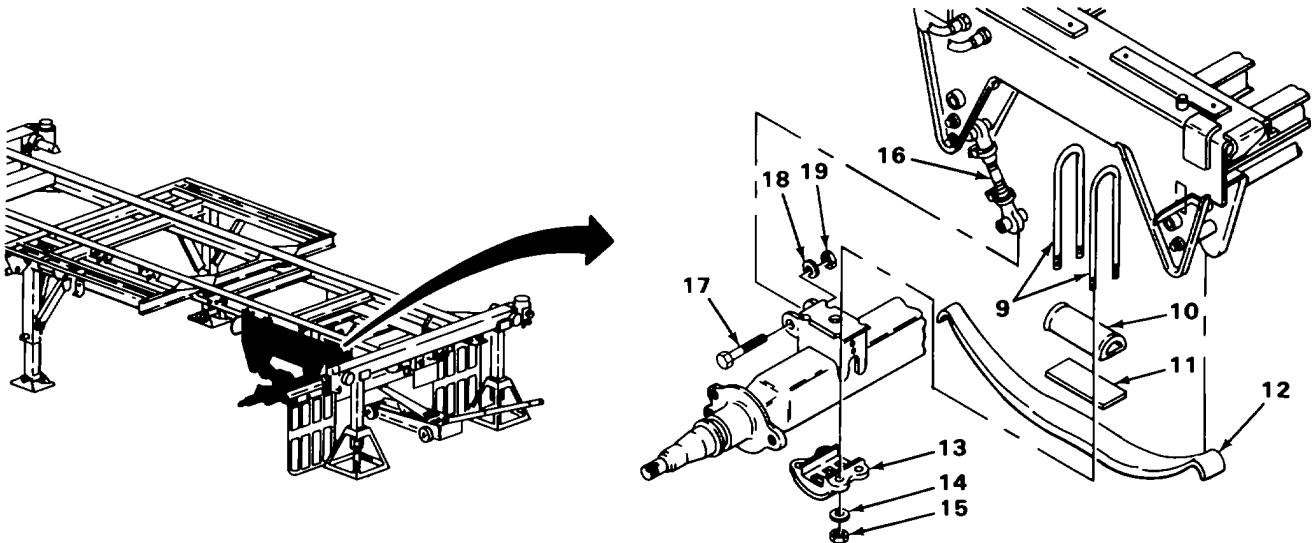
## INSTALLATION

5. Bogie liners (11) and	Axle beam (5), b. Using hydraulic jack, raise axle beam c.	a. Position beam (7) under chassis. b. Using hydraulic jack, raise axle beam two top plates (10) (5) to springs (12). Center axle beam (5) to bogie. Place two liners (11) and two top plates (1D) on springs (12).	
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# AXLE BEAM - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
6.	U-bolts (9), bottom plates (13), washers (14) and nuts (15)	a. Place four U-bolts (9) over top plates (10). b. Position two bottom plates (13) and install eight washers (14) and eight nuts (15). c. d.	Using 1 5/16-inch socket, tighten nuts (15). Using torque wrench, torque nuts (15) to 200 - 225 ft lb (271.2 - 305.1 N.m).
7.	Torque arms (16), bolts (17), washers (18) and nuts (19)	a. Position torque arms (16) and insert two bolts (17). b. Install two washers (18) and two c. d.	Using 1 1/2-inch socket and 1 1/2-inch box wrench, tighten nuts (19). Using torque wrench, torque nuts (19) to 350 - 375 ft lb (476.6 - 508.5 N.m).



## NOTE

### FOLLOW-ON MAINTENANCE.

1. Aline axle (page 4-44).
2. Install brake chamber (page 4-68).
3. Install camshaft (page 4-55)
4. Install service brake (page 4-53).
5. Install spider and drum (page 4-82).

TASK ENDS HERE  
Page 5-6 has been rescinded T

TA223178

**BRAKEDRUM**

This task covers:

- a. Inspection (page 5-7)
- b. Repair (page 5-7)

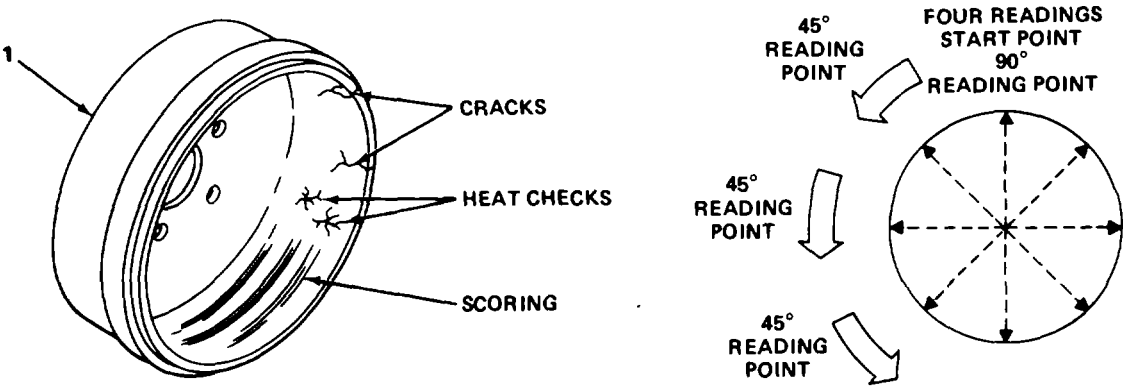
**INITIAL SETUP**

Tools	Equipment Condition
Inside micrometer Brake lathe	Brakedrum removed (page 4-80).

LOCATION	ITEM	ACTION	REMARKS
1. Brakedrum (1)	Using inside micrometer, check for out-of-round or tapered condition.		<b>Maximum out-of-round is 0.010 Inch (0.254 millimeter), maximum taper is 0.0004 inch (0.0102 millimeter).</b>

**REPAIR**

2. Brakedrum (1)	Using brake lathe, reface braking surface to remove all cracks, heat checking, and scoring.		<b>Remove a maximum of 0.010 Inch (0.254 millimeter) per cut. Discard drums with edge cracks or If inside diameter exceeds 16.630 inches (42.24 centimeters).</b>
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TASK ENDS HERE

TA2231 80

TORQUE ARM BUSHINGS

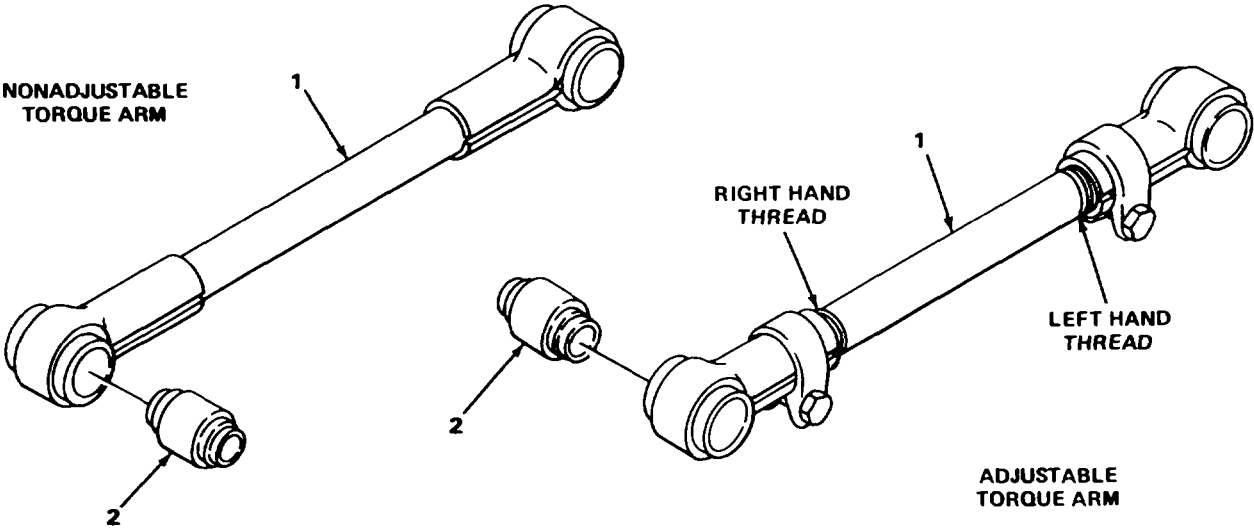
This task covers:

Replacement

INITIAL SETUP

Tools	Equipment Condition
Punch, drive-pin, 1 112-inch	Torque arm removed (page 4-99).
Materials/Parts	
Bushings (two required)	

LOCATION	ITEM	ACTION	REMARKS
1. Torque arm (1) bushings (2)	Two sleeve pin punch, press out sleeve	Using arbor press and 1 112-inch drive- pin punch, press out sleeve bushings (2). Discard sleeve bushings.	
2. Two sleeve bushings (2)	Using arbor press and 1 112-inch drive- pin punch, press in new sleeve	bushings (2).	



TASK ENDS HERE

KINGPIN

This task covers

- a. Removal (page 5-9)
- b. Installation (page 5-9)

INITIAL SETUP

Tools

Acetylene torch  
Arc welder  
Portable grinder

References

TM 9-237, Welding Theory and Application,  
Operator's Manual

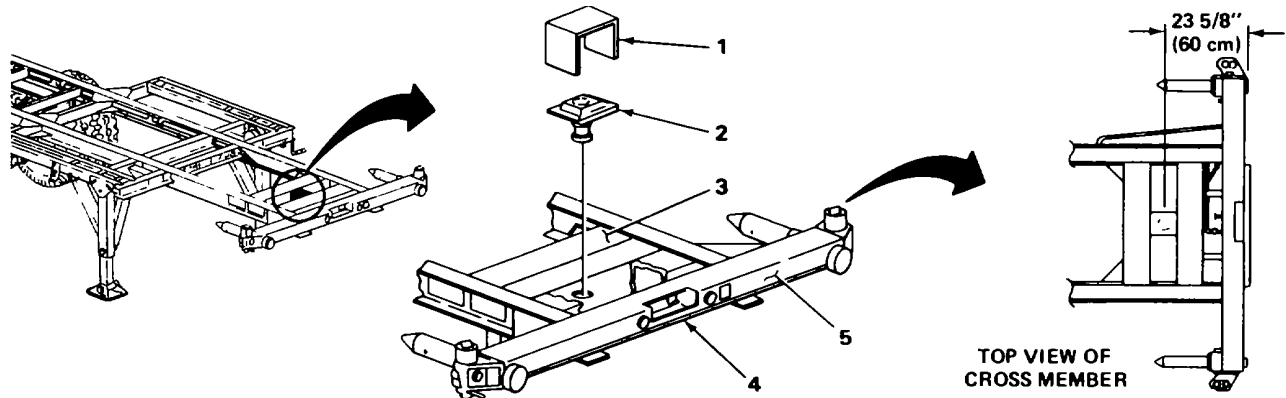
Materials/Parts

Bracket  
Kingpin

LOCATION	ITEM	ACTION	REMARKS
1.   Semitrailer chassis	Bracket (1) and kingpin (2) b.	a.   Using torch, cut welds securing bracket (1) and kingpin (2) and remove Using grinder, grind edges smooth	

INSTALLATION

- 2.   Kingpin (2) and bracket (1)
  - a.   Place kingpin (2) 23 5/8-inches (60 centimeters) from front of main chassis beam (5) and weld to fifth wheel plate (4)
  - b.   Weld bracket (2) to kingpin (1) on crossmember (3)



TASK ENDS HERE

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## TWIST LOCK

This task covers:

- a. Removal (page 5-10)
- b. Installation (page 5-10)

### INITIAL SETUP

#### Tools

Hammer, ball-peen, 2-pound  
Punch, drive-pin, 9/16-inch

#### Materials/Parts

Twist lock assembly

LOCATION	ITEM	ACTION	REMARKS
1. Twist lock housing insert (3) and handle (4)	Pin (1), twist lock head (2), out of twist lock head (2) and handle (4). c. d. e.	a. Raise twist lock head (2) fully. b. Using hammer and punch, drive pin (1)  Pull twist lock head (2) off. Pull insert (3) from housing (5). Unscrew handle (4).	

### INSTALLATION

#### NOTE

Lubricate insert, stem screw, and shaft before installing. See lubricating chart page 4-3 for grease specification.

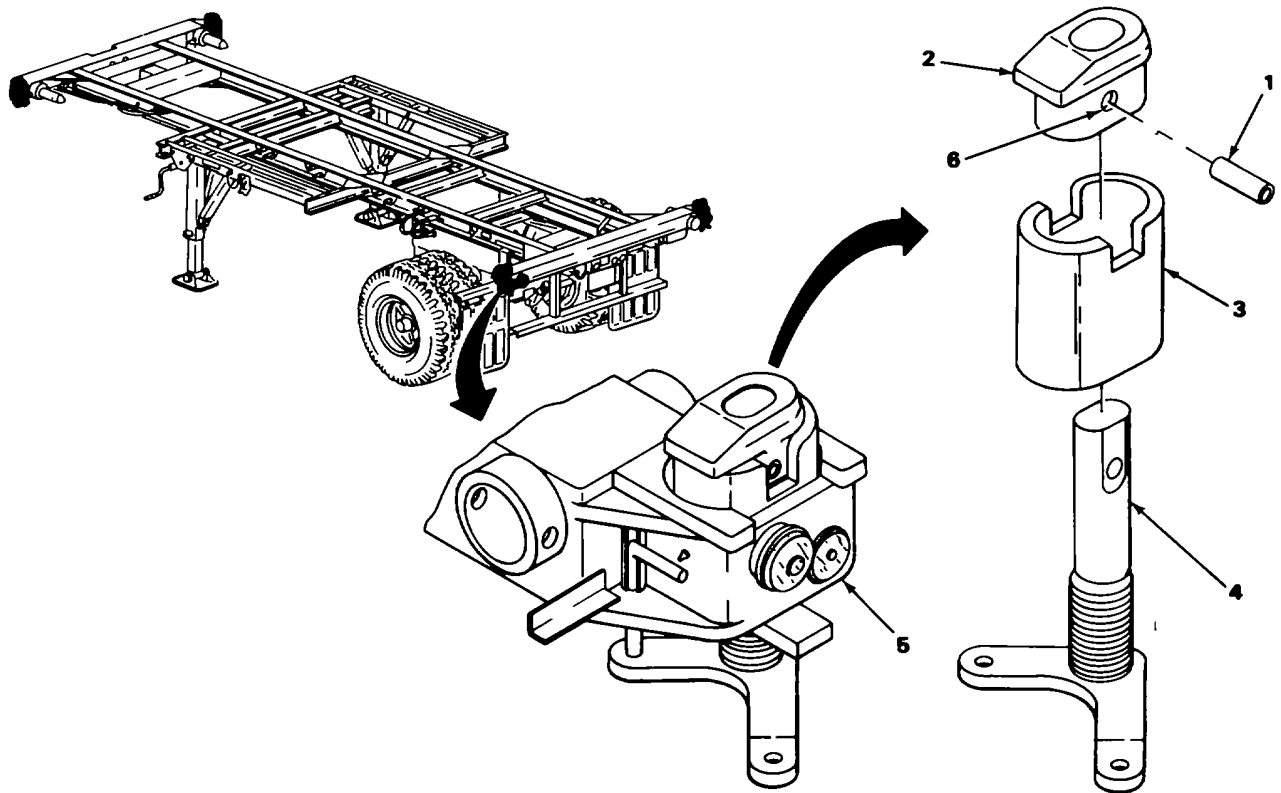
2. Twist lock housing	Handle(4), insert (3), twist lock head (2) and pin (1)	a. Screw handle (4) into housing (5). b. Install insert (3) in housing (5) with counter bore up. c. Place twist lock head on stem of handle (4) and align holes (6).	
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#### NOTE

Place pin (1) on dry ice or In freezer for 2 hours prior to installing.

- d. Place pin in hole (6).
- e. Using hammer and punch, drive pin (1) in fully. Pin should not protrude, twist lock head (2).

## TWIST LOCK - CONTINUED



## TASK ENDS HERE

## CHASSIS FRAME

Repair of the chassis frame will be accomplished in accordance with TB 9-2300-247-40, Tactical Wheeled Vehicles: Repair of frames.

## SPRING LEAF

This task covers:

- Removal (page 5-12)
- Installation (page 5-14)

TA223183

## SPRING LEAF - CONTINUED

### INITIAL SETUP

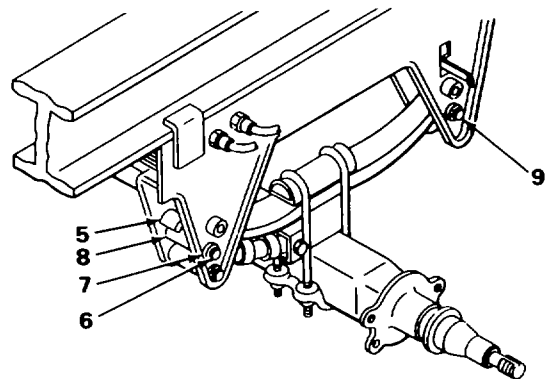
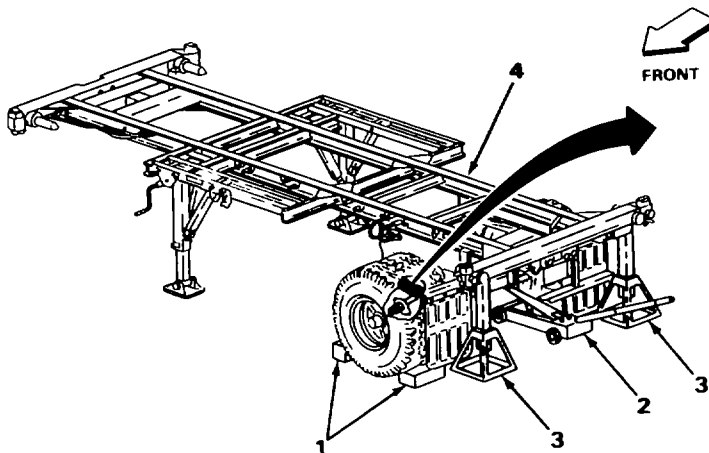
#### Tools

Adapter, socket wrench, 3/4-inch male square drive by 1/2-inch female square drive  
 Hydraulic jack  
 Jack stands (2 each)  
 Ratchet, reversible, 3/4-inch square drive  
 Socket, socket wrench, 1 1/16-inch by 3/4-inch square drive  
 Socket, socket wrench, 1 5/16 by 3/4-inch square drive  
 Wrench, box, 15/16-inch Two

#### Tools - Continued

Wrench, torque, 1/2-inch square drive, 0 - 175 ft lb  
 Wrench, torque, 3/4-inch square drive, 0 - 600 ft lb

LOCATION	ITEM	ACTION	REMARKS
<b>REMOVAL</b>			
1. Semitrailer chassis	Chocks (1), jack (2) and jack stands (3) c. d.	a. Place chocks (1) under wheels. b. Using jack, raise chassis (4). Place stands (1) at rear corners. Lower jack so jack stands hold weight of chassis off spring leaf (5) with wheels on ground.	
2. Bogie (7), screws (8) and spacers (9)	Nuts (6), washers move nuts (6), washers (7), screws (8), and spacers (9).	Using 15/16-inch socket and wrench, re-	

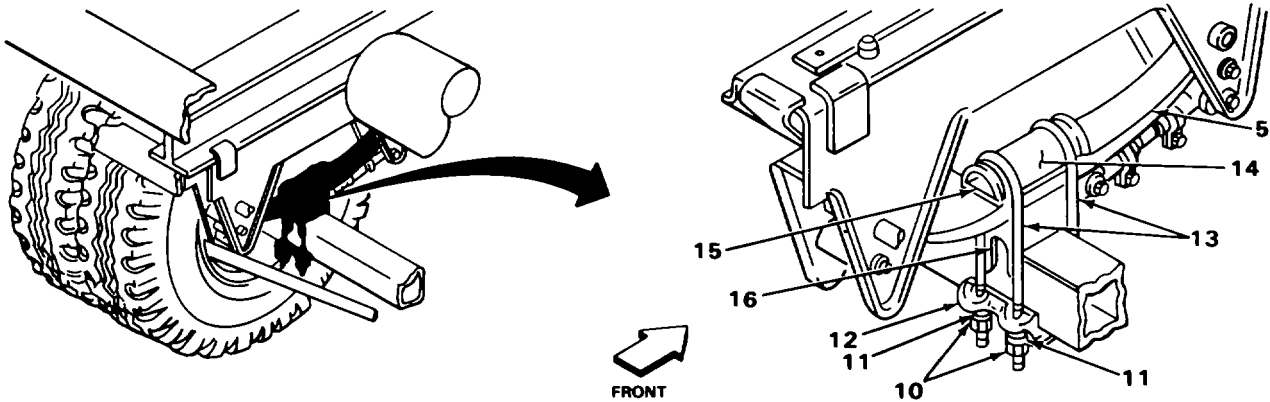


NOTE  
WHEELS REMOVED FOR CLARITY

TA223184

SPRING LEAF - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
3.	Axle beam (11) and bottom plate (12)	Nuts (10), washers (10), four washers (11), and bottom plate (12).	Using 1 5/16-inch socket, remove four nuts
4.	Two U-bolts (13), top plate (14) and liner (15)	Remove.	
5.	Spring leaf (5)	Remove spring leaf (5) off hi-seat (16) Use assistant to lift spring leaf (5).	



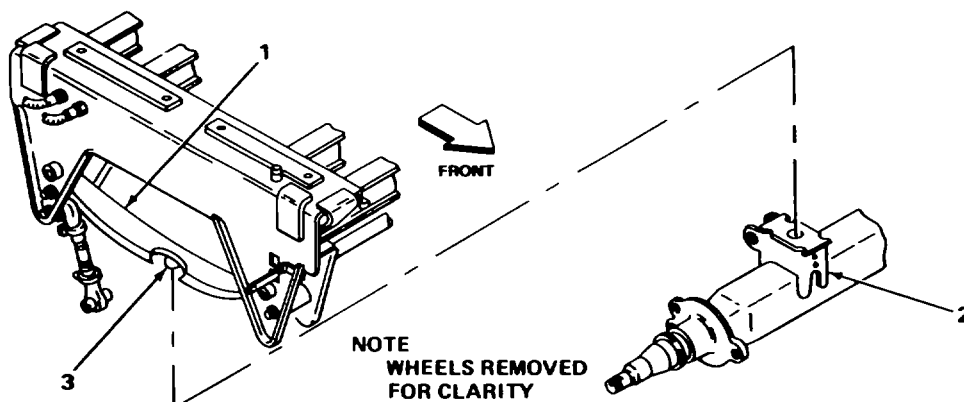
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## SPRING LEAF - CONTINUED

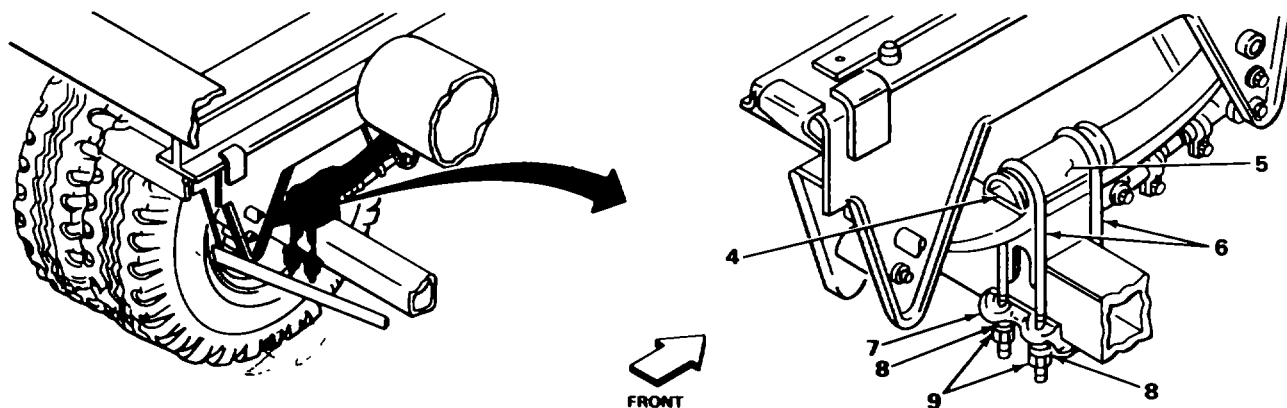
LOCATION	ITEM	ACTION	REMARKS
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## INSTALLATION

- |    |           |                                 |   |
|----|-----------|---------------------------------|---|
| 6. | Axle beam | Spring leaf (1)<br>a.<br><br>b. | Install.<br>Place spring leaf (1) over hi-seat (2) with tapered end forward.<br>Use assistant to lift spring leaf (1).<br>Seat stud (3) in hole on hi-seat (2). |
|----|-----------|---------------------------------|---|



- |    |  |  |   |
|----|--|--|---|
| 7. | Axle beam                                  | Liner (4), top   | a. Place liner (4) and top plate (5) on plate (5) and spring leaf (1).<br>U-bolts (6) b. Position two U-bolts (6) over top plate (5). |
| 8. | Bottom plate (7), washers (8) and nuts (9) | a. Place bottom plate (7) under axle beam and align U-bolts (6) through holes.<br>b. Using 1 5/16-inch socket, install four washers (8) and four nuts (9).<br>c. Using torque wrench, torque nuts (9) to 200 - 225 ft lb (271.2 - 305.1 N•m) |   |

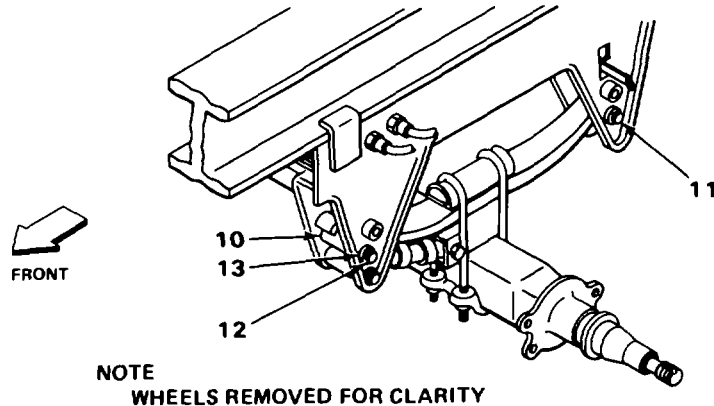




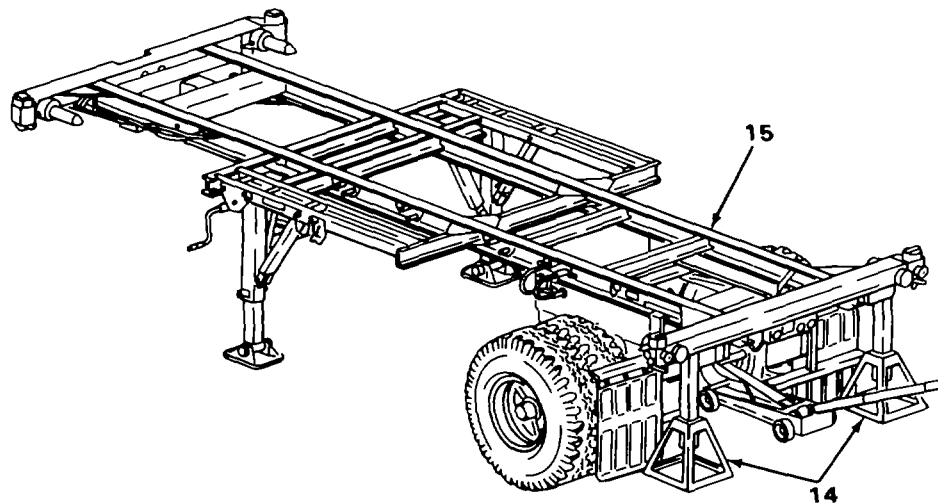
SPRING LEAF - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

- |    |  |  |  |
|----|--|--|--|
| 9. | Bogie<br>(10), screws (11),<br>washers (12) and<br>nuts (13) | Guide spacers<br>a. Using 15116-inch socket and wrench, in-<br>stall two spacers (10), two screws (11),<br>two washers (12), and two nuts (13).<br>b. Using torque wrench, torque to 75 - 90 ft<br>lb (101.7 - 122.0 N.m). |  |
|----|--|--|--|



- |     |                        |                                  |  |
|-----|------------------------|----------------------------------|--|
| 10. | Semitrailer<br>chassis | Jack stands (14)<br><br>b.<br>c. | Remove.<br>a. Using hydraulic jack, raise trailer<br>chassis (15) off of jack stands (14)<br>Remove jack stands (14).<br>Using hydraulic jack, lower trailer<br>chassis (15) |
|-----|------------------------|----------------------------------|--|



TASK ENDS HERE

TA223187

**APPENDIX A****REFERENCES****A-1. SCOPE.**

This appendix lists all forms, field manuals, technical manuals, and other publications referenced in this manual.

**A-2. PUBLICATION INDEX.**

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 relating to materiel covered in this technical manual

**A-3. FORMS.**

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

Equipment Inspection and Maintenance Worksheet DA Form 2404	
Equipment Log Assembly (Records).....	DA Form 2408
Maintenance Request Form .....	DA Form 2407
Organizational Control Record for Equipment .....	DA Form 2401
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
Product Quality Deficiency Report.....	SF Form 368
Recommended Changes to Equipment Technical Publications .....	DA Form 2028-2
Recommended Changes to Publications and Blank Forms.....	DA Form 2028
Report of Discrepancy (ROD).....	SF Form 364

**A-4. FIELD MANUALS.**

Army Motor Transport Units and Operations.....	FM 55-30
Basic Cold Weather Manual .....	FM 31-70
Camouflage .....	FM 5-20
Desert Operations .....	FM 90-3
Field Hygiene and Sanitation.....	FM 21-10
First Aid for Soldiers.....	FM 21-11
Manual for the Wheeled Vehicle Driver .....	FM 21-305
NBC Contamination Avoidance .....	FM 3-3
NBC Decontamination.....	FM 3-5
NBC Protection .....	FM 3-4
Operation and Maintenance of Ordnance Materiel in Cold Weather (0°F to -65°F) .....	FM 9-207

**A-5. TECHNICAL BULLETINS.**

All Wheeled Vehicles- Use of Swivel-Type Hook for Securing Tire Cross Chains .....	TB 9-2300-282-12
Color, Marking, and Camouflage Painting of Military Vehicles, Construction Equipment, and Material Handling Equipment .....	TB 43-0209
Equipment Improvement Report and Maintenance Digest (U S. Army Tank-Automotive Command) Tank-Automotive Equipment .....	TB 43-0001-39 Series

**A-5. TECHNICAL BULLETINS - CONTINUED.**

Hand Portable Fire Extinguishers Approved for Army Users.....	TB 5-4200-200-10
Tactical Wheeled Vehicles Repair of Frames .....	TB 9-2300-247-40

**A-6. TECHNICAL MANUALS.**

Administrative Storage of Equipment .....	TM 740-90-1
Firefighting and Rescue Procedures In Theaters of Operations .....	TM 5-315
Inspection, Care, and Maintenance of Anti-friction Bearings .....	TM 9-214
Materials Used For Cleaning, Preserving, Abrading, and Cementing	
Ordnance Materiel and Related Items Including Chemicals .....	TM 9-247
Operator's Manual for Welding Theory and Application .....	TM 9-237
Operator's, Unit, Direct Support, and General Support Maintenance	
Manual for Care, Maintenance, Repair and Inspection of Pneumatic	
Tires and Inner Tubes .....	TM 9-2610-200-14
Painting Instructions for Army Material .....	TM 43-0139
Principles of Automotive Vehicles .....	TM 9-8000
Procedures for Destruction of Tank-Automotive Equipment to Prevent Enemy Use .....	TM 750-244-6
Railcar Loading Procedures .....	TM 55-601
Railway Operating and Safety Rules .....	TM 55-21
Storage and Materials Handling .....	TM 743-200-1

**A-7. OTHER PUBLICATIONS.**

Army Logistics Readiness and Sustainability .....	AR 700-138
Army Medical Department Expendable/Durable Items.....	CTA 8-100
Expendable/Durable Items (Except Medical, Class V, Repair Parts, and Heraldic Items).....	CTA 50-970
Permits for Oversize, Overweight, or Other Special Military Movements	
on Public Highways in the United States .....	AR 55-162
Requisitioning, Receipt and Issue System .....	AR 725-50

## APPENDIX B

### MAINTENANCE ALLOCATION

#### Section I. INTRODUCTION

##### B-1. GENERAL.

a. This section provides a general explanation of all maintenance and repair functions authorized at various maintenance categories.

b. The Maintenance Allocation Chart (MAC) in section II designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions on the end item or component will be consistent with the capacities and capabilities of the designated maintenance categories.

c. Section III designates the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from section II.

d. Section IV contains supplemental instructions and explanatory notes for a particular maintenance function.

##### B-2. MAINTENANCE FUNCTIONS.

Maintenance functions will be 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 touch).

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. Operations required periodically to keep an item in proper operating condition, i.e., to clean (includes decontaminate, when required), to preserve, drain, paint, or replenish 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 and cause corrections to be made or to be adjusted on instruments or test, measuring, and diagnostic equipment used in precision measurement. 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.

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.

**B-2. MAINTENANCE FUNCTIONS - CONTINUED.**

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 code of the SMR code.

i. Repair. The application of 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. That maintenance effort (service/action) prescribed to restore an item to a completely serviceable/operational condition as required by maintenance standards in appropriate technical publications (i.e., DMWR). 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. Consists of 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 THE MAC, SECTION II.**

a. Column 1, Group Number. Column 1 lists functional group code numbers, the purpose of which, is to identify maintenance significant components, assemblies, subassemblies, and modules with the next higher assembly. End item group number shall be "00".

b. Column 2, Component/Assembly. Column 2 contains the names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. Column 3, Maintenance Function. Column 3 lists the functions to be performed on the item listed in Column 2. (See maintenance functions above for a detailed explanation of these functions.)

d. Column 4, Maintenance Category. Column 4 specifies, by the listing of a worktime figure in the appropriate subcolumn(s), the category 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 category of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance categories, appropriate worktime figures will be shown for each category. The number of task-hours specified by the worktime 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), addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. The symbol designations for the various maintenance categories are as follows:

- C - Operator or Crew
- O - Organizational Maintenance
- F - Direct Support Maintenance
- H - General Support Maintenance

**B-3. EXPLANATION OF COLUMNS IN THE MAC, SECTION II - CONTINUED.**

e. Column 5, Tools and Equipment. Column 5 specifies, by code, those common tool sets (not individual tools) and special tools, TMDE, and support equipment required to perform the designated function.

f. Column 6, Remarks. This column shall, when applicable, contain a letter code, in alphabetical order, that shall be keyed to the remarks contained in section IV.

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

a. Column 1, Reference Code. The tool and test equipment reference code correlates with a code used in the MAC, section II, column 5.

b. Column 2, Maintenance Category. The lowest category of maintenance authorized to use the tool or test equipment.

c. Column 3, Nomenclature. Name or identification of the tools or test equipment. d. Column 4, National Stock Number. The National stock number of the tool or test equipment.

e. Column 5, Tool Number. The manufacturer's part number.

**B-5. EXPLANATION OF COLUMNS IN REMARKS, SECTION IV.**

a. Column 1, Reference Code. The code recorded in column 6, section II.

b. Column 2, Remarks. This column lists information pertinent to the maintenance function being performed as indicated in the MAC, section II.

## Section II. MAINTENANCE ALLOCATION CHART

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQUIPMENT	(6) REMARKS
			C	O	F	H	D		
06	ELECTRICAL SYSTEM								
0609	Lights	Replace		0.2				1	
0613	Wiring Harness	Repair		2.0				1,3	
		Replace		4.0				1,3	
0613	Resistors	Replace		1 0				1,3	
0613	Receptacle	Inspect	0.1						
		Service		0 7					
		Replace		1.0				1,3	
11	AXLE								
1100	Bogie	Inspect	0.1						
		Repair			4 0			3,5,6	
		Replace		2.0				2	
	Position	Inspect	0.1						
	Adjustment	Service		0.2					
	Pull Handle	Replace		10 1					
	Bogie Locking	Inspect	0 1						
	Pins	Service		0.2					
		Replace		1.0				1	
1101	Axle Beam	Replace			8.0			3	
12	BRAKES								
1202	Brakeshoes	Inspect		1 0					
		Replace		4.0				1,2	
1206	Camshafts	Replace		3.0				1,2	
1206	Camshaft Bushings	Replace		35				1,2	
1208	Slack Adjuster	Inspect		0.1					
		Adjust		0.5				2	
		Replace		3.0				2	
1208	Brake Chamber	Repair		1.5				2	
		Replace		1 0				2	
1208	Reservoir	Replace		2.0				2	
1208	Draincock	Inspect	0.1						
		Replace		0.3				2	
1208	Emergency Relay Valve	Replace		1.0				2	
1208	Air Line Fittings and Hoses	Inspect	0.2						
		Test	0.5						
		Replace		4.0				2	
1208	Gladhands and Seals	Inspect	0.1						
		Replace		1.0				2	

## Section II. MAINTENANCE ALLOCATION CHART

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQUIPMENT	(6) REMARKS
			C	O	F	H	D		
13	WHEELS								
1311	Hub and Drum	Inspect		0.5					
		Repair			4.0			3	
		Replace		3.0				2	
1311	Bearings	Service		0.5					
		Adjust		0.5				1,2	
		Replace		2.0				1,2	
1311	Wheel Studs and Nuts	Replace		1.0				3	
1313	Wheels, Tires	Inspect	0.1						
		Service	0.1						
		Repair			2.0			3	
		Replace		1.0				2	
1313	Tubes								
		Replace		0.5				2	
15	FRAME AND ATTACHING PARTS								
1501	Frame	Inspect		0.2					
	Assembly	Repair				8.0		1,5,6	
1501	Rear Bumper	Repair		2.0	1,5,6				
		Replace		1.0					
1501	Twist Locks	Inspect	0.2						
		Service	0.5						
		Replace			1.0			1,3	
1503	Sleeves, Coupling Rods	Inspect	0.2						
		Replace		0.5					
1503	Rods, Chassis	Inspect	0.1						
	Coupling	Replace	0.2					1,5,6	
1503	Airhose and Electric Harness	Inspect	0.1						
	Support	Replace	1.0					1,5,6	
1503	Kingpin	Inspect	0.1						
		Replace			4.0			1,5,6	
1507	Landing Leg	Inspect	0.2						
		Repair		6.0				1,2	
		Replace		4.0				1,2	
1507	Landing Leg Gearbox	Inspect		0.2					
		Repair		4.0				1,2	
		Replace		3.0				1,2	

## MAINTENANCE ALLOCATION CHART - CONTINUED

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQUIPMENT	(6) REMARKS
			C	O	F	H	D		
16	SPRINGS								
1601	Spring	Inspect	0.2						
		Replace			4.0			3	
1605	Torque Arms	Adjust		1.0				3	
		Repair			3.0			3,4	
		Replace		2.0				3	
18	BODY, CAB, AND HOOD								
1801	Splash Guard	Inspect	0.1						
		Replace		0.5				2	
22	ACCESSORY ITEMS								
2201	Reflectors	Replace		0.3				1	
2210	Data Plates	Replace		0.3				1,3	

## Section III. TOOLS AND TEST EQUIPMENT REQUIREMENTS

(1) REF. CODE	(2) MAINT. LEVEL	(3) NOMENCLATURE	(4) NATIONAL/NATO STOCK NUMBER	(5) TOOL NUMBER
1	O,F,H	Tool Kit, Mechanics: Automotive	5180-00-177-7033	
2	O	Shop Equipment, Auto- motive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power	4910-00-754-0654	
3	O	Shop Equipment, Auto- motive Maintenance and Repair: Organizational Maintenance, Common No. 2, Less Power	4910-00-754-0650	
4	F	Shop Equipment, Auto- motive Maintenance and Repair: Field Maintenance Common No. 1	4910-00-754-0661	
5	F	Tool Kit, Welder's	5180-00-754-0661	
6	F	Shop Equipment, Welding, Field Maintenance	3470-00-357-7268	

## Section IV. REMARKS

None

B-7/(Blank)

**APPENDIX C**

**COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS**

Appendix C is not applicable to the semitrailer (MILVAN).

**C-1/(C-2 blank)**

**APPENDIX D  
ADDITIONAL AUTHORIZATION**

Appendix D is not applicable to the semitrailer (MILVAN)

**D-1/(D-2 blank)**

**APPENDIX E**  
**EXPENDABLE SUPPLIES AND MATERIALS**  
**Section I. INTRODUCTION**

**E-1. SCOPE.**

This appendix lists expendable supplies and materials you will need to operate and maintain the semitrailer (MILVAN). These items are authorized to you by CTA 50-970, Expendable Items (except Medical, Class V, Repair Parts, and Heraldic Items).

**E-2. EXPLANATION OF COLUMNS.**

a. Column 1, Item Number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., "Use cleaning compound, item 5, appendix E").

b. Column 2, Level. This column identifies the lowest level of maintenance that requires the listed item.

- C - Operator/Crew
- O - Organizational Maintenance
- F - Direct Support Maintenance
- H - General Support Maintenance

c. Column 3, National Stock Number. This is the national stock number assigned to the item; use it to request or requisition the item.

d. Column 4, Description. Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the Federal Supply Code for Manufacturer (FSCM) in parenthesis followed by the part number.

e. Column 5, Unit of Measure (U/M). Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

**Section II. EXPENDABLE SUPPLIES AND MATERIALS LIST**

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION (FSCM)	(5) U/M
1	O	6850-00-664-5685	Dry-cleaning solvent PD-680	gal.
2	C	7920-00-205-1711	Rags, wiping A-A-531 (58536) 50 lb	bale
3	O	7920-00-282-9699	Detergent, GP, liq, ws, A MIL-D-16791 (81349)	gal.
4	O	Electrical tape	roll	
5	O	Masking tape	roll	
6	O	9150-00-190-0904	Grease, GAA, MIL-G-10924	
7	O		Sealing compound MIL-T-27730	

E-1/(E-2 blank)

## APPENDIX F REPAIR PARTS AND SPECIAL TOOLS LISTS

### Section I. INTRODUCTION

#### F-1. SCOPE.

This RPSTL lists and authorizes spares and repair parts; special tools; special test, measurement, and diagnostic equipment (TMDE), and other special support equipment required for performance of organizational, direct support, and general support maintenance of the Couple able Chassis Semitrailer. It authorizes the requisitioning, issue, and disposition of spares, repair parts and special tools as indicated by the source, maintenance and recoverability (SMR) codes

#### F-2. GENERAL.

In addition to Section I, Introduction, this Repair Parts and Special Tools List 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 which must be removed for replacement of the authorized 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 reparable special tools are also listed In this section Items listed are shown on the associated illustration(s)/figure(s)

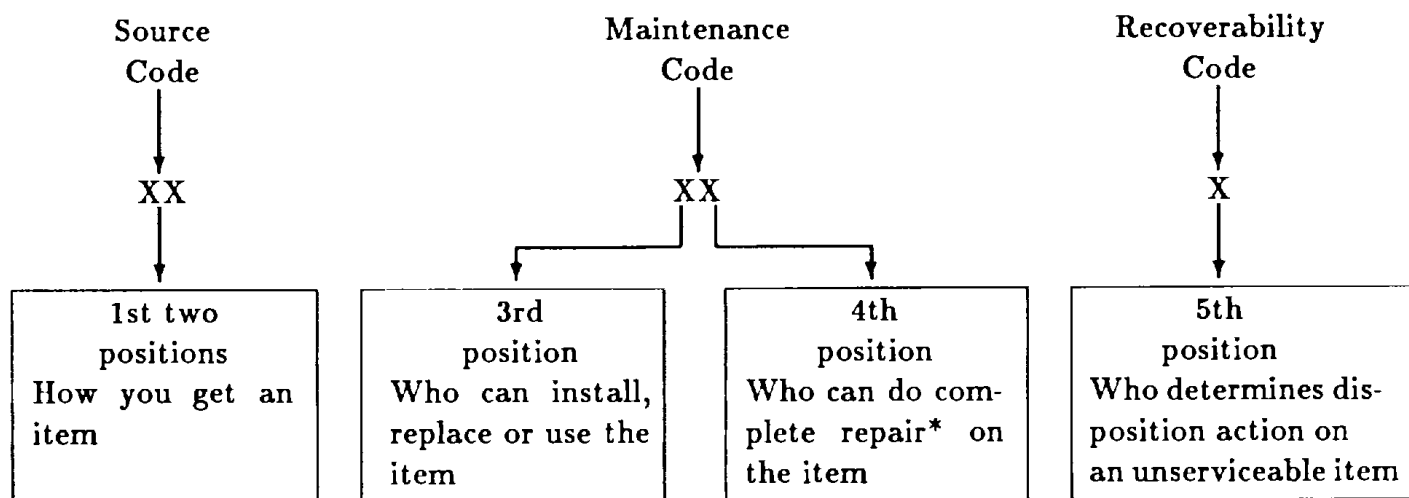
b. **Section III. Special Tools List.** A list of special tools, special TMDE, and other special support equipment authorized by this RPS IL [as indicated by Basis of Issue (BOI) information in the DESCRIPTION AND USABLE ON CODE column] for the performance of maintenance.

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 and part numbers are cross referenced to each illustration/figure and item number appearance The figure and item number Index lists figure and item numbers in alphanumeric sequence and cross-references NSN, CAGE, and part numbers.

#### F-3. EXPLANATION OF COLUMNS (SECTIONS II AND III).

a. ITEM NO. [Column (1)]1. Indicates the number used to identify items called out in the illustration

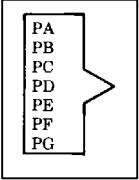
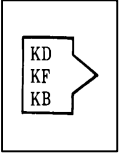
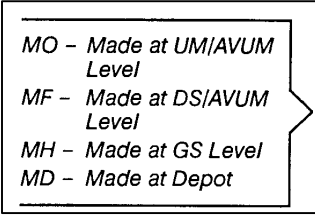
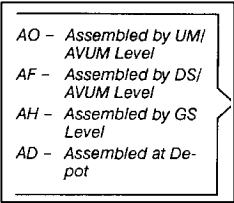
b. SMR CODE [Column (2)]. The Source, Maintenance, and Recoverability (SMR) code Is a 5position code containing supply/requisitioning information, maintenance category authorization criteria, and disposition instruction, as shown in the following breakout'



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

### F-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>
	<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 3d position of the SMR code.</p> <p>** Items coded PC are subject to deterioration.</p> <p>.....</p>
	<p>Items with these codes are not to be requested/requisitioned Individually They are part of a kit which is authorized to the maintenance category indicated in the 3d position of the SMR code The complete kit must be requisitioned and applied.</p> <p>.....</p>
	<p>Items with these codes are not to be requested/requisitioned individually They must be made from bulk materiel which is identified by the part number in the DESCRIPTION AND USABLE ON CODE (UOC) column and listed in the bulk materiel group of the repair parts list in this RPSTL If the item is authorized to you by the 3d 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> <p>.....</p>
	<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 indicted by the source code. If the 3d 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 pot level of maintenance.</p>

#### NOTE

**Cannibalization or controlled exchange, when authorized, may be used as a source of supply for Items with the above 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 CAGE and part number given.

### F-3. EXPLANATION OF COLUMNS (SECTIONS II AND III) - CONTINUED.

XC - Installation drawing, diagram, Instruction sheet, 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 CAGE 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>
C	- Crew or operator maintenance done within unit maintenance or aviation unit maintenance.
O	- Unit maintenance or aviation unit can remove, replace, and use the Item
F	- Direct support or aviation Intermediate level can remove, replace, and use the item
H	- General support level can remove, replace, and use the Item
L	- Specialized repair activity can remove, replace, and use the item
D	- Depot level can remove, replace, and use the Item

#### NOTE

**Some limited repair may be done on the Item at a lower level of maintenance, if authorized by the Maintenance Allocation Chart (MAC) and SMR codes.**

- (b) The maintenance code entered in the fourth position tells whether or not 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,

<u>Code</u>	<u>Application/Explanation</u>
O	- Unit maintenance or aviation unit is the lowest level that can do complete repair of the item.
F	- Direct support or aviation intermediate is the lowest level that 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	- Nonreparable. 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

**F-3. EXPLANATION OF COLUMNS (SECTIONS II AND III) - CONTINUED.**

(3) Recoverability Code. Recoverability codes are assigned to Item 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	-Nonreparable Item When unserviceable, condemn and dispose of the item at the level of maintenance shown in the 3d position of the SMR code
O	- Reparable item When uneconomically reparable, condemn and of the item at unit maintenance or aviation unit level
dispose	
F	- Reparable Item When uneconomically reparable, condemn and of the Item at the direct support or aviation Intermediate level
dispose	
H	- Reparable item. When uneconomically reparable, condemn and dispose of the item at the general support level.
D	- Reparable Item When beyond lower level repair capability, return to depot Condemnation and disposal of item not authorized below depot level
L	- Reparable item Condemnation and disposal of Item not authorized below specialized repair activity (SRA)
A	- Item requires special handling or condemnation procedures because of specific reasons (e g, precious metal content, high dollar value, critical material, or hazardous material). Refer to appropriate manuals/directives for specific Instructions

c. **CAGEC [Column (3)]**. The Commercial and Government Entity (CAGE) Code (C) is a 5-digit alphanumeric code which is used to Identify the manufacturer, distributor, or Government agency, etc., that supplies the item

**NOTE**

**When you use an NSN to requisition an Item, the Item you receive may have a different part number from the part ordered.**

d. **PART NUMBER [Column (4)]**. 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 (5)]**. 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) Not Applicable
- (7) The usable on code, when applicable (see paragraph F-5, Special Information)

**F-3. EXPLANATION OF COLUMNS (SECTIONS II AND III) - CONTINUED.**

(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 equipment supported exceeds density spread indicated in the Basis of Issue, 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 (6)].** 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.

**F-4. EXPLANATION OF COLUMNS (SECTION IV).**a. **National Stock Number (NSN) Index.**

(1) STOCK NUMBER column. This column lists the NSN by National Item Identification Number (NIIN) sequence. The NIIN consists of the last nine digits of the NSN (i.e.,

NSN

5305-01-674-1467 ) When using this column to locate an item, ignore the first 4 digits 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 which 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 Commercial and Government Entity (CAGE) Code (C) 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 CAGE 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.

c. **Figure and Item Number Index.**

(1) **FIG column.** This column lists the number of the figure where the item is identified/located in Sections II and III.

(2) **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.

(3) **STOCK NUMBER column.** This column lists the NSN for the item.

**F-4. EXPLANATION OF COLUMNS (SECTION IV) - CONTINUED.**

(4) **CAGE column.** The Commercial and Government Entity (CAGE) is a 5-digit alphanumeric code used to identify the manufacturer, distributor, or Government agency, etc, that supplies the item

(5) **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

**F-5. SPECIAL INFORMATION.**

a. **Usable On Code.** The usable on code appears In the lower left corner of the Description column heading Not Applicable

b. **Fabrication Instructions.** Bulk materials required to manufacture Items are listed In the Bulk Materiel Functional Group of this RPS I L Part numbers for bulk materials 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** Line Item entries for repair parts kits appear In group 9401 In Section II Not Applicable

e. **Index Numbers.** Items which have the word BULK in the FIG column will have an index number shown in the Item column I his index number Is a cross-reference between the National Stock Number/Part Number Index and the bulk materiel list In Section II

**F-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 since 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 use the Figure and Item Number Index to find the NSN

b. **When National Stock Number or Part Number Is Known:**

(1) **First.** Using the National Stock Number or Part Number Index, find the pertinent National Stock Number or Part Number The NSN Index is in National Item Identification Number (NIIN) sequence [see paragraph F-4 a(1)] The part numbers in the Part Number Index are listed in ascending alphanumeric sequence (see paragraph F-4 b) Both indexes cross-reference you to the illustration/figure and item number of the Item you are looking for

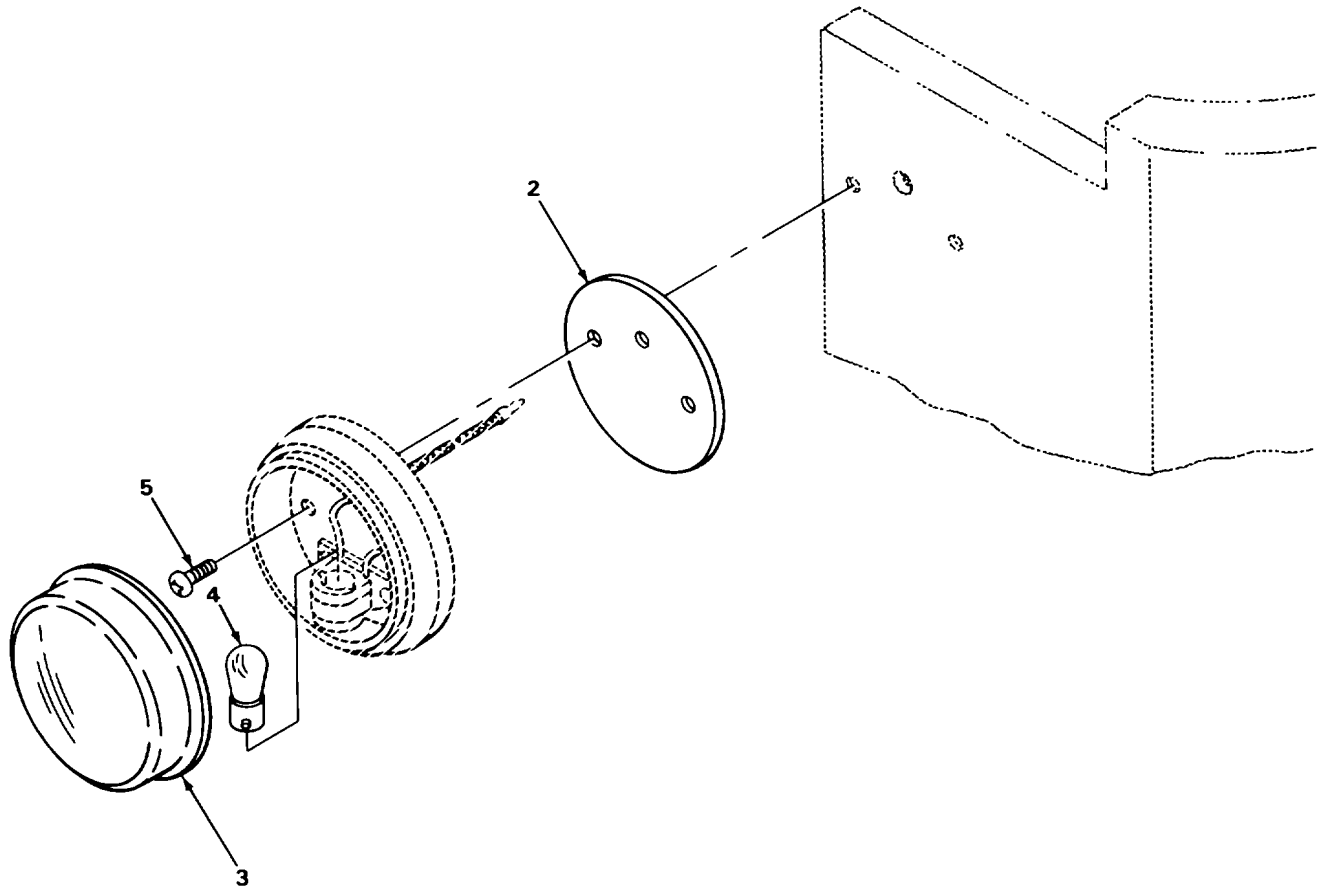
(2) **Second.** Turn to the figure and item number, verify that the Item is the one you're looking for, then locate the Item number in the repair parts list for the figure

**F-7. ABBREVIATIONS.**

For standard abbreviations see MIL-STD-12D, Military Standard Abbreviations for Use on Drawings, Specifications, Standards, and In Technical Documents.

Abbreviations	Explanation
NIIN .....	National Item Identification Number
.....	(consists of the last 9 digits of the NSN)
RPSTL .....	Repair Parts and Special Tools Lists

1  
2 THRU 4



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FIGURE 1 MARKER LIGHTS

SECTION II				TM 9-2330-297-14&P	
(1)	(2)	(3)	(4)	(5)	(6)
ITEM	SMR		PART		
NO	CODE	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY

**GROUP 06 ELECTRICAL SYSTEM**

**GROUP 0609 LIGHTS**

**FIG. 1 MARKER LIGHTS**

1	PAOOO	19207	11662247-1	LIGHT,MARKER,CLEARA FRCNT,AMBER .....	4
1	PAOOO	19207	11662247-2	LIGHT,MARKER,CLEARA REAR RED .....	5
2	XAOZZ	19207	11642247-7	GASKET .....	1
3	PAOZZ	19207	11662247-4	LENS,LIGHT AMBER FRONT,USE WITH P/ .....	1
				N 11662247-.....	
3	PAOZZ	19207	11662247-5	LENS,LIGHT REE REAR,USE WITH F/N .....	1
				11662247-2 .....	
4	PAOZZ	08108	194	LAMP,INCANDESCENT 12 VCLTC .....	1
5	PAOZZ	96906	MS35214-56	SCREW,MACHINE .....	18

**END OF FIGURE**

1  
2 THRU 5

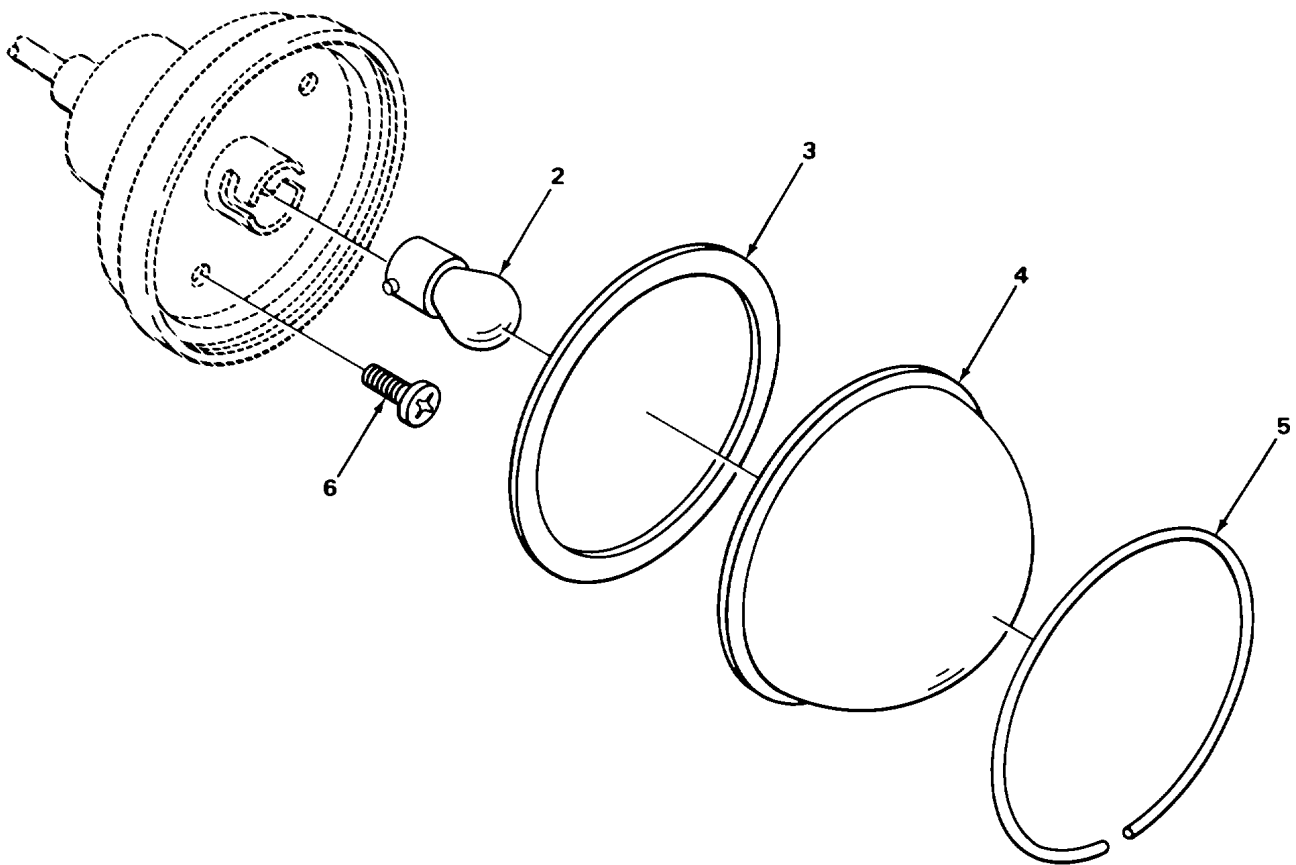


FIGURE 2 LICENSE PLATE LIGHT

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## SECTION II

TM 9-2330-297-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
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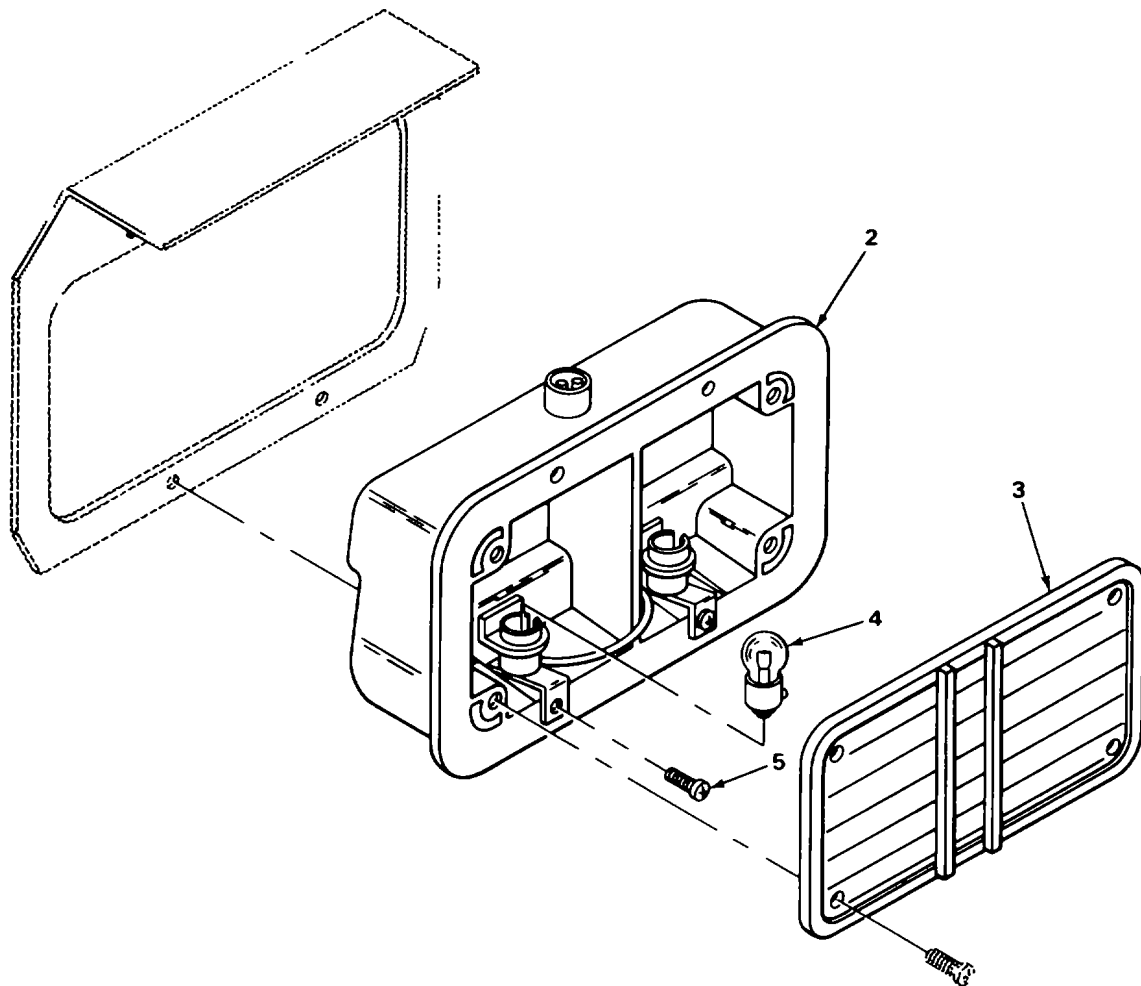
GROUP 0609 LIGHTS

FIG. 2 LICENSE FLATE LIGHT

1	PAOOO	19207	11662111	LIGHT,LICENSE PLATE .....	1
2	PAOZZ	08108	97	. LAMP,INCANDESCENT.....	1
3	XOOZZ	19207	11662111-3	. GASKET .....	1
4	XDCZZ	19207	11662111-1	. FROSIED LENS.....	1
5	XDOZZ	19207	11662111-2	. RING,RETAINING.....	1
6	PAOZZ	96906	MS51959-3C	SCREW,MACHINE .....	2

END OF FIGURE

1  
2 THRU 4



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FIGURE 3. STOPLIGHT, TAILLIGHT

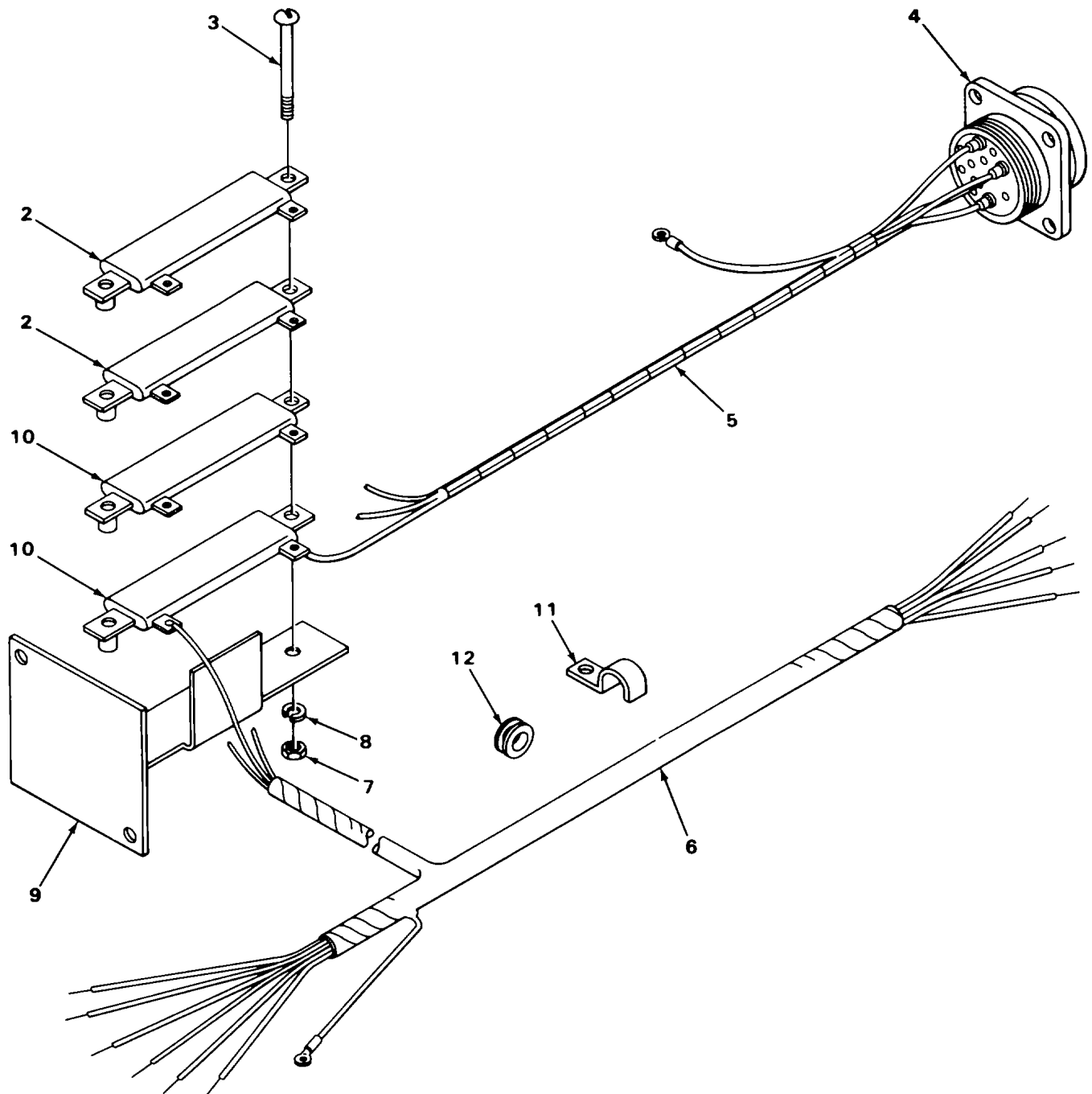
SECTION II					
(1)	(2)	(3)	(4)	(5)	(6)
ITEM	SMR		PART		
NO	CODE	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY

**GROUP 0609 LIGHTS**  
**FIG. 3 STOPLIGHTT TAILLIGHT**

1	PAOOO	19207	11662253-1	STOP LIGHT-IAILLIGH RIGHT .....	1
1	PAOOO	19207	11662253-2	STOP LIGHT-TAILLIGHT LEFT .....	1
2	XACZZ	19207	11662253-3	HOLSING USE WITH P/N 11662253-1 .....	1
2	XAOZZ	19207	11662253-4	HOLSING USE WITH P/N 11662253-2 .....	1
3	PAOZZ	12662	430-25	LENS,LIGH .....	1
4	PAOZZ	08108	1157	LAVP,INCANDECEKT 12-VOLT.....	2
5	PAOZZ	88044	AN504C1C32R8	SCREW, TAPPING,TREA.....	8

END OF FIGURE

1  
2 THRU 10



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FIGURE 4 FRONT HARNESS AND RESISTOR ASSEMBLY

SECTION II				TM 9-2330-297-14&P	
(1)	(2)	(3)	(4)	(5)	(6)
ITEM NO	SMR CODE	CAGEC	PART NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY
<b>GROUP 0613 HULL CR CHASSIS WIRING HARNESS</b>					
<b>FIG. 4 FRONT HARNESS AND RESISTOR ASSEMBLY</b>					
1	PAOOO	19207	11662149	WIRING HARNESS9BRAN FPCRONT HARNESS .. AND RESISTOR ASSEMBLY .....	1
2	PAOZZ	81349	RW22V3R	. RESISTOR, FIXED, WIRE 3.90 CHMS, 55 .....	2
3	PAOZZ	96906	MS35207-272	WATT CAPACITY-LIGHT CIRCUIT, 24 VOLT.	
4	PAOZZ	77820	60-36030-51P	. SCREW, MACHINE .....	2
5	PAOZZ	19207	11662166	. CONNECIOR, RECEPTACL .....	1
6	PAOZZ	19207	1166210E	. WIRING HARESS, BPA .....	1
7	PAOZZ	96906	NS35650-3C2	. WIRING HARNESS, BRAN FRONT .....	1
8	PAOZZ	96906	MS35338-43	. NI, PLAIN, HEXAGC .....	2
9	PAOZZ	19207	11662107	. WAHER, LOCK .....	2
10	PAOZZ	81349	RW22V5R6	. BRACKET ASSEMBLYRE .....	
11	XDCZZ	19207	5303139	. RESISTOR, FIXED, WIRE 5.72 OHMS 55 .....	2
12	PFOZZ	96906	MS35489-8E	WATT CAPACITY-LIGHT CIRCUIT 24 VOLT. CLAMP .....	1
				GROMMET, NONETALLIC .....	1

END OF FIGURE

1  
2 THRU 4

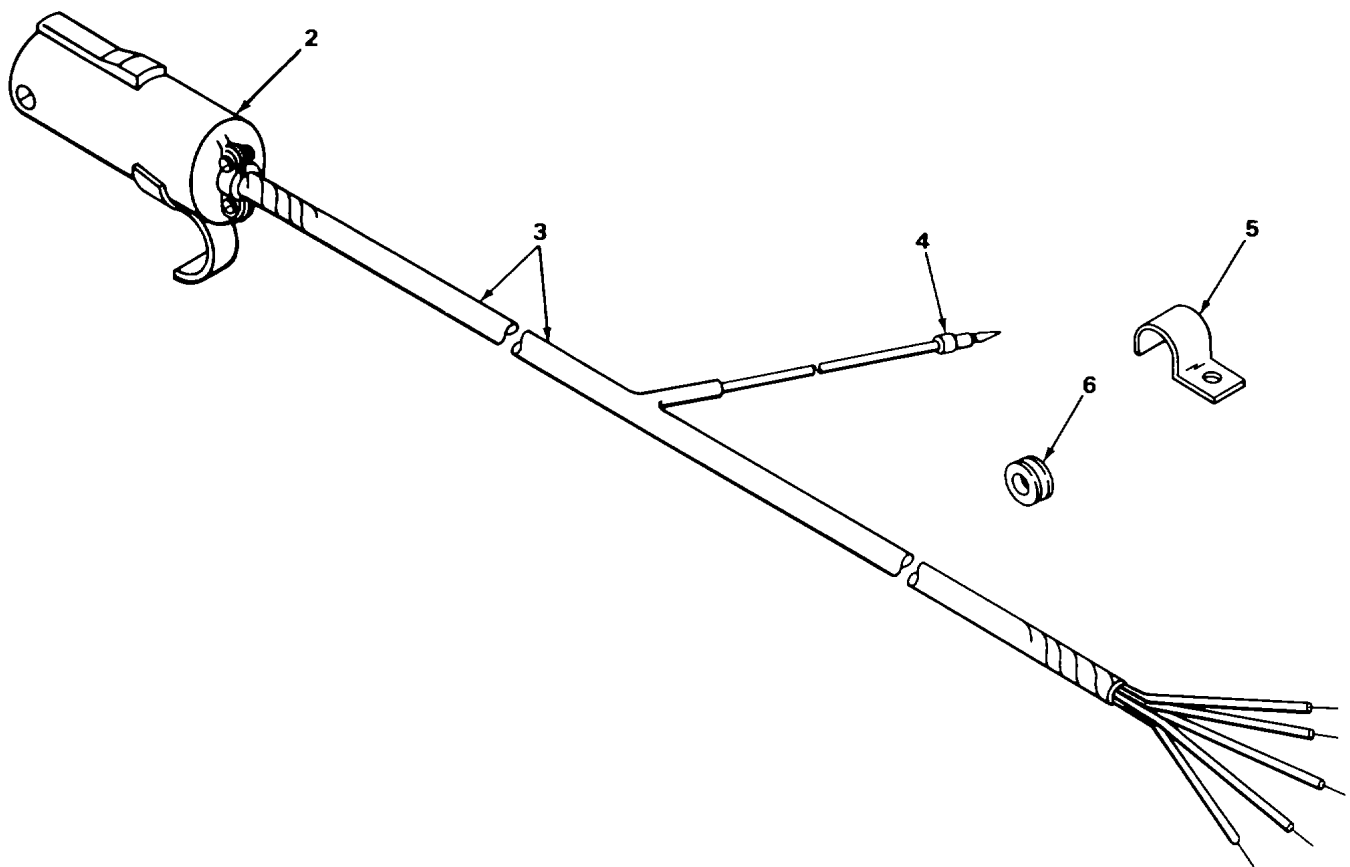


FIGURE 5 MAIN WIRING HARNESS ASSEMBLY

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SECTION II				TM 9-2330-297-14&P	
(1)	(2)	(3)	(4)	(5)	(6)
ITEM	SMR		PART		
NO	CODE	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY

**GROUP 0613 HLLL CR CHASSIS WIRING  
HARNESS**

**FIG. 5 MAIN WIRING HARNESS ASSEMBLY**

1	PAOOO	19207	11662109	WIRING HARNESS BRAN.....	1
2	PAOZZ	24617	2962160	CCNNEC IOR,PLG,ELEC .....	1
3	XDOZZ	19207	11662105-1	HARNESS ASSEMBLY .....	1
4	PAOZZ	19207	11621L0-2	TERMINAL,QUICK DISC.....	1
5	XDOZZ	19207	5303139	CLAMP.....	8
6	PFOZZ	96906	MS35489-8E	GROMMET, NONPETALLIC .....	1

END OF FIGURE

1  
2 THRU 5

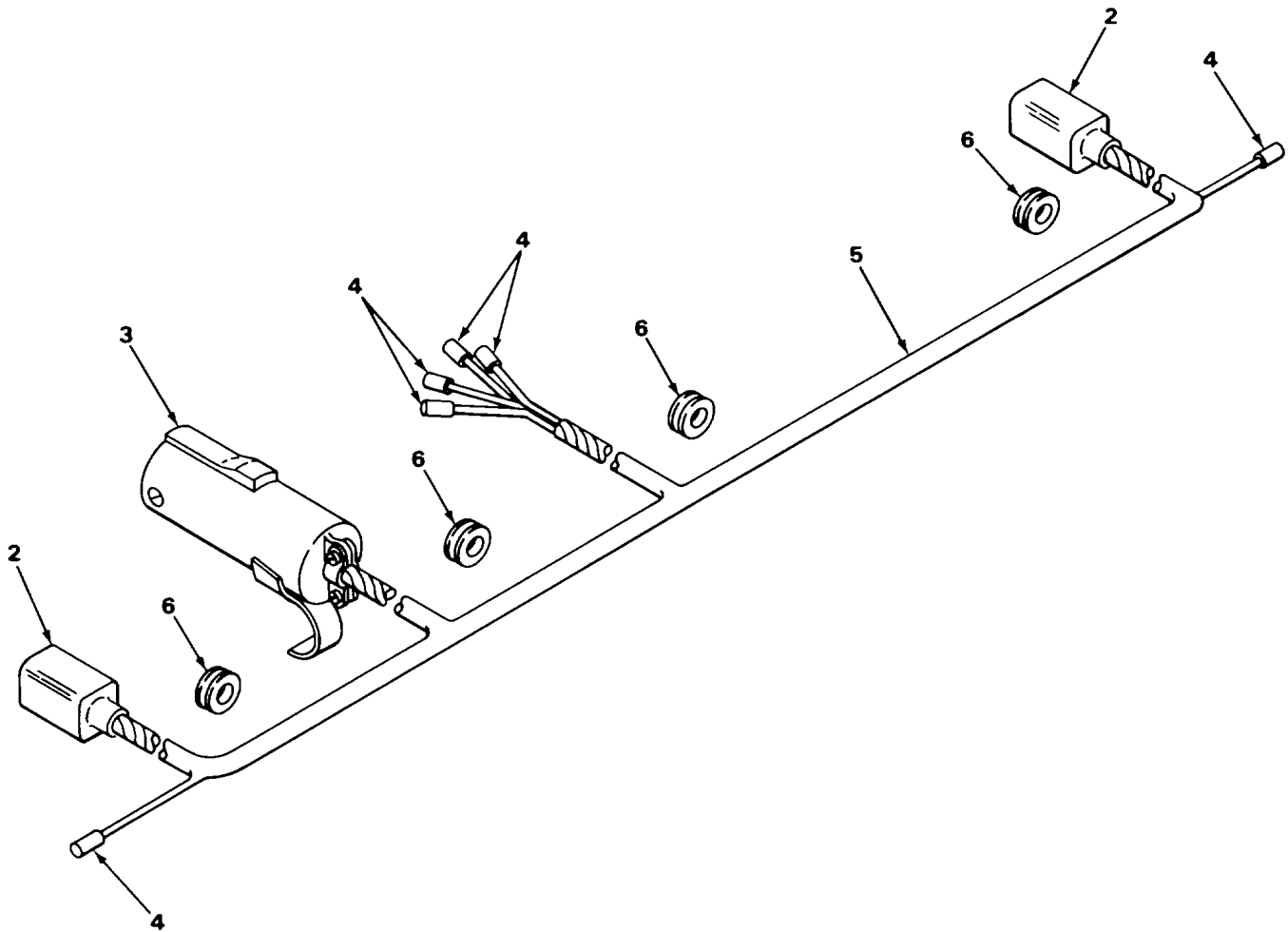


FIGURE 6 REAR WIRING HARNESS

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SECTION II				TM 9-2330-297-14&P	
(1)	(2)	(3)	(4)	(5)	(6)
ITEM	SMR		PART		
NO	CODE	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY

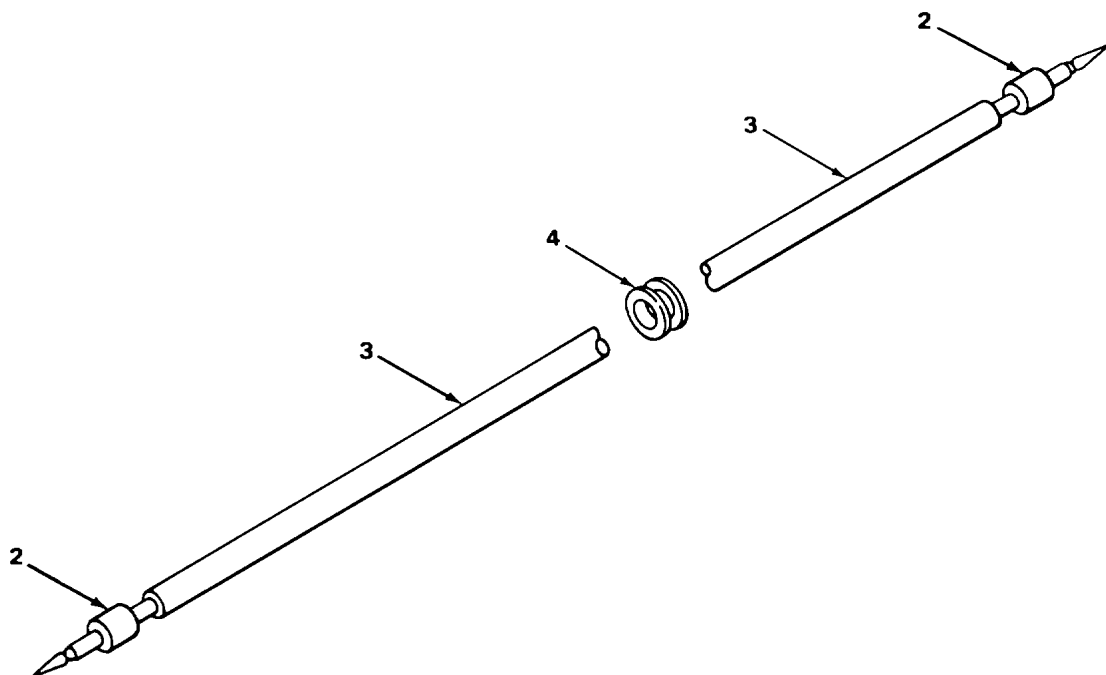
**GROUP 0613 HULL OR CHASSIS WIRING  
HARNESS**

**FIG. 6 REAR WIRING HARNESS**

1	PAOOO	19207	11662110	WIRING HARNESS,BRAN REAR .....	1
2	PAOZZ	19207	11662392	CONNECTOR PLUG,ELEC.....	2
3	PAOZZ	24617	2962160	CONNECTOR,PLUG,ELEC.....	1
4	PAOZZ	19207	11662110-2	CONNECTOR,RECEPTACL .....	6
5	XDOZZ	19207	11662110-1	HARNESS ASSEMBLY .....	1
6	PFOZZ	96906	MS35489-BE	GRONMEI1NONPETALLIC .....	4

END OF FIGURE

1  
2 AND 3



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FIGURE 7. SINGLE WIRING HARNESS

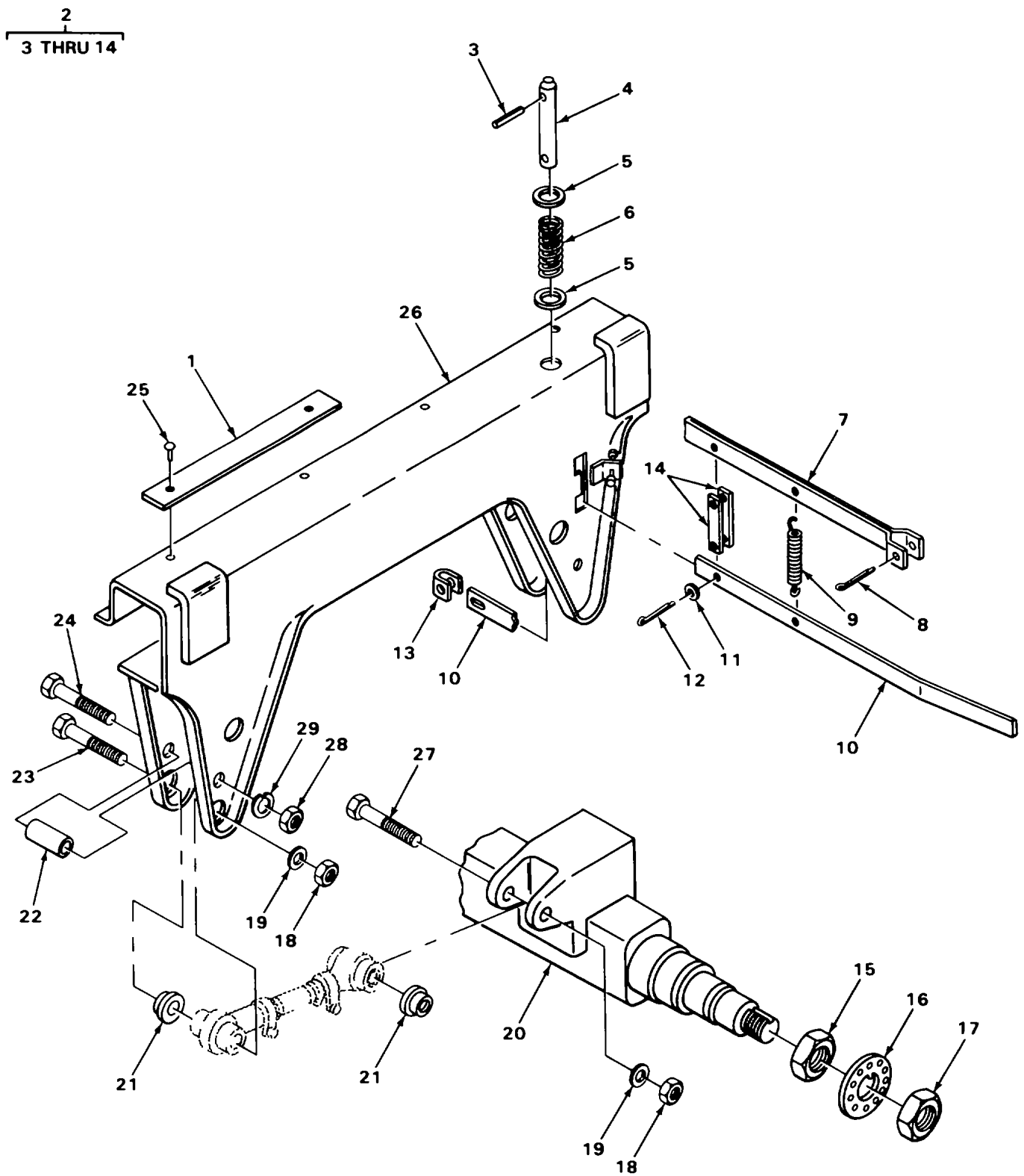
SECTION II					
(1)	(2)	(3)	(4)	(5)	(6)
ITEM	SMR		PART		
NO	CODE	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY

GROUP 0613 HLLL CR CHASSIS WIRING  
HARNESS

FIG. 7 SINGLE WIRING HARNESS

1	AOOO	19207	11662242	SINGLE WIRE PARNESS.....	1
2	XOOZZ	81263	51322	TERMINAL .....	2
3	MGGZZ	19207	11662242-1	HARNESS,SINGLE WIRE LEFT,WAKE.....	1
				FROM WIRE P/h 05086/3-14-9 .....	
3	NOOZZ	19207	11662242-2	HARNESS,SINGLE WIRE PAKE FRCM .....	1
				WIRE P/N M5086/7-14-9 .....	
4	PFOZZ	96906	MS35489-88	GROMMET, NONMETALLIC .....	1

END OF FIGURE

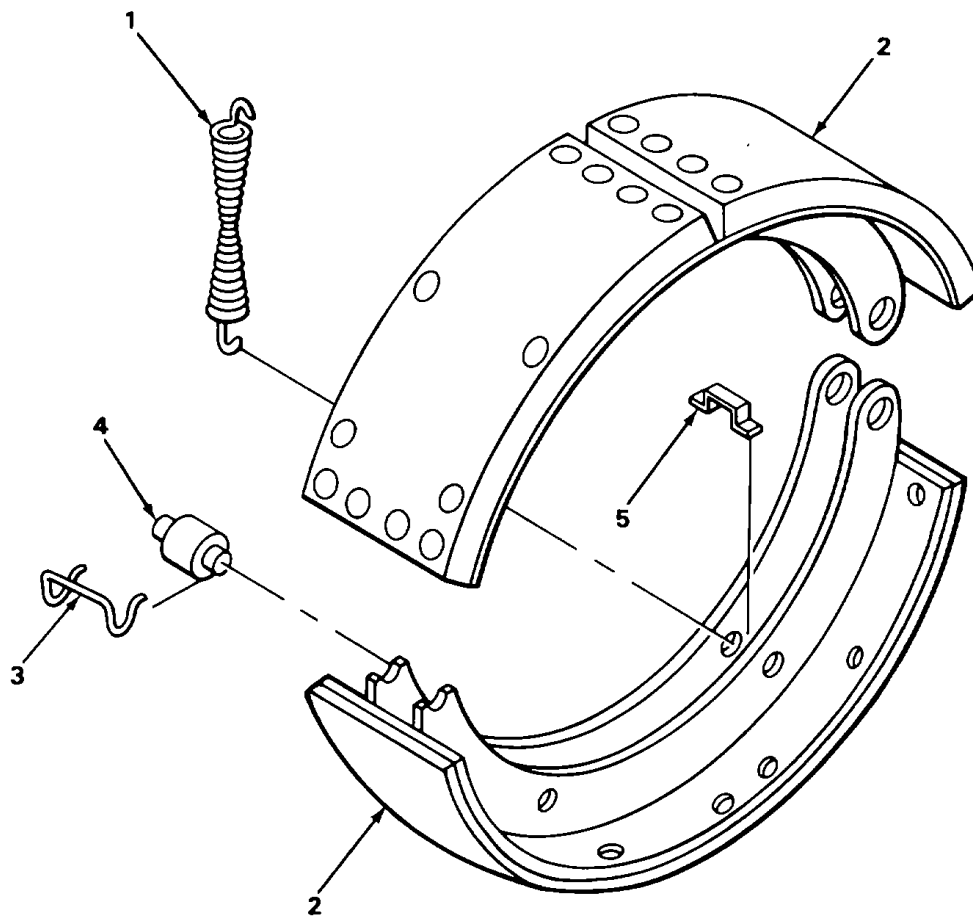


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FIGURE 8. REAR AXLE ASSEMBLY

SECTION II					
(1)	(2)	(3)	(4)	(5)	(6)
ITEM	SMR		PART	DESCRIPTION AND USABLE ON CODES (UOC)	QTY
NO	CODE	CAGEC	NUMBER		
<b>GROUP 11 REAR AXLE</b>					
<b>GROUP 1100 REAR AXLE ASSEMBLY</b>					
<b>FIG. 8 REAR AXLE ASSEMBLY</b>					
1	PAFZZ	19207	11662309	SLIDER BEARING STRI .....	4
2	XDOOO	19207	11662311	LOCKING PIN ASSEPBL .....	1
3	PAOZZ	96906	MS16562-69	. PIN, SPRING .....	2
4	PAOZZ	19207	11662329	. PIN, STRAIGH, HEADLE .....	2
5	PAOZZ	19207	11662393-2	. WASHER,FLAT.....	4
6	PACZZ	19207	11662318	. SPRINGCHELICAL,CCYF.....	2
7	PAOZZ	19207	11662310	. CONNECTING LINI,RIG .....	1
8	PAOZZ	96906	MS24665-751	. PIN,COTTER .....	2
9	PAOZZ	19207	11662317	. SPRING,HELICAL,EXTE.....	1
10	FAOZZ	19207	11662314	. PULL HANDLE,BCGIE,V.....	1
11	PAOZZ	96906	MS27183-14	. WATER,FLAT .....	4
12	PAOZZ	96906	HS24665-747	. PIN,COTTER .....	3
13	PAOZZ	92967	1-13-283	. STRAP,RETAINNC-.....	1
14	PAOZZ	19207	11662316	. CONNECTING LINK,RIG .....	2
15	PAFZZ	11207	11662296-7	NUT,PLAIN,OCTAGON.....	2
16	XDFZZ	19207	1Ef2296-5	WASHER .....	2
17	PAFZZ	19207	1166229E-4	NUI,PLAIN,OCTAGON.....	2
18	PAFZZ	19207	10870133	NUT,SELF-LOCKINGE .....	4
19	PAFZZ	19207	11662393-4	WASHERFLAT.....	4
20	XDFZZ	19207	11662296-E	BEAM,RN AXLE .....	1
21	XDFZZ	19207	11662342	BUS(ING .....	4
22	PAFZZ	19207	1166235S	SPACER,SLEEVE.....	4
23	PAFZZ	19207	11662344	SCREW,CAP,HEXAGON H .....	2
24	PAFZZ	96906	MS90727-176	SCREW,CAP,HEXAGON H .....	4
25	PAFZZ	96906	MS20600-MP8W6	RIVETBLIND .....	8
26	XDFZZ	19207	11662302	SIDE MEMBER ASSEPBL .....	1
27	PAFZZ	19207	11662343	SCREW,CAP.HEXAGON H .....	2
28	PAFZZ	96906	MS51968-20	NUT,PLAIN,HEXAGIN.....	4
29	PAFZZ	96906	MS35333-45	WASHER,LOCK.....	4

END OF FIGURE



TA508362

FIGURE 9. SERVICE BRAKE ASSEMBLY

SECTION II				TM 9-2330-297-14&P	
(1)	(2)	(3)	(4)	(5)	(6)
ITEM	SMR		PART		
NO	CODE	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY

**GROUP 12 BRAKES**  
**GROUP 1202 SERVICE EPAKES**

**FIG. 9 SERVICE BRAKE ASSEMBLY**

1	PACZZ	19207	11662296-1	SPRING,HELICAL,EXTE.....	2
2	PAOZZ	78500	C90-3722-N-66	BRAKE SOE .....	4
3	PACZZ	19207	1166226-22	RETAINER,BRAKE SHCE .....	4
4	PACZZ	78500	1779R18	RGLLER,LINEAR-ROTAR.....	4
5	PAOZZ	19207	11662296-24	PI[NRETURN SPRING.....	4

END OF FIGURE

13  
14 THRU 17

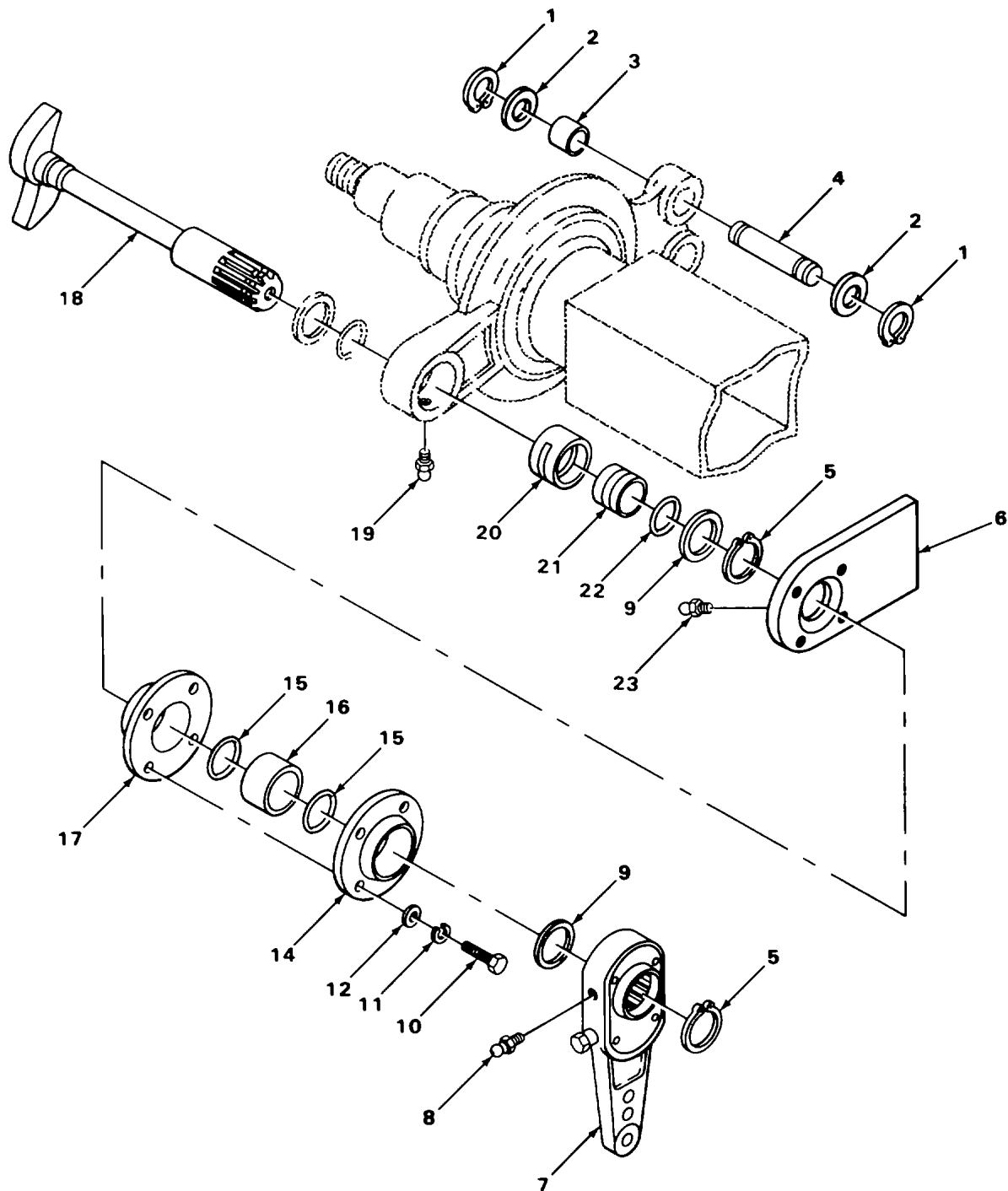


FIGURE 10. BRAKE ACTUATOR ASSEMBLY

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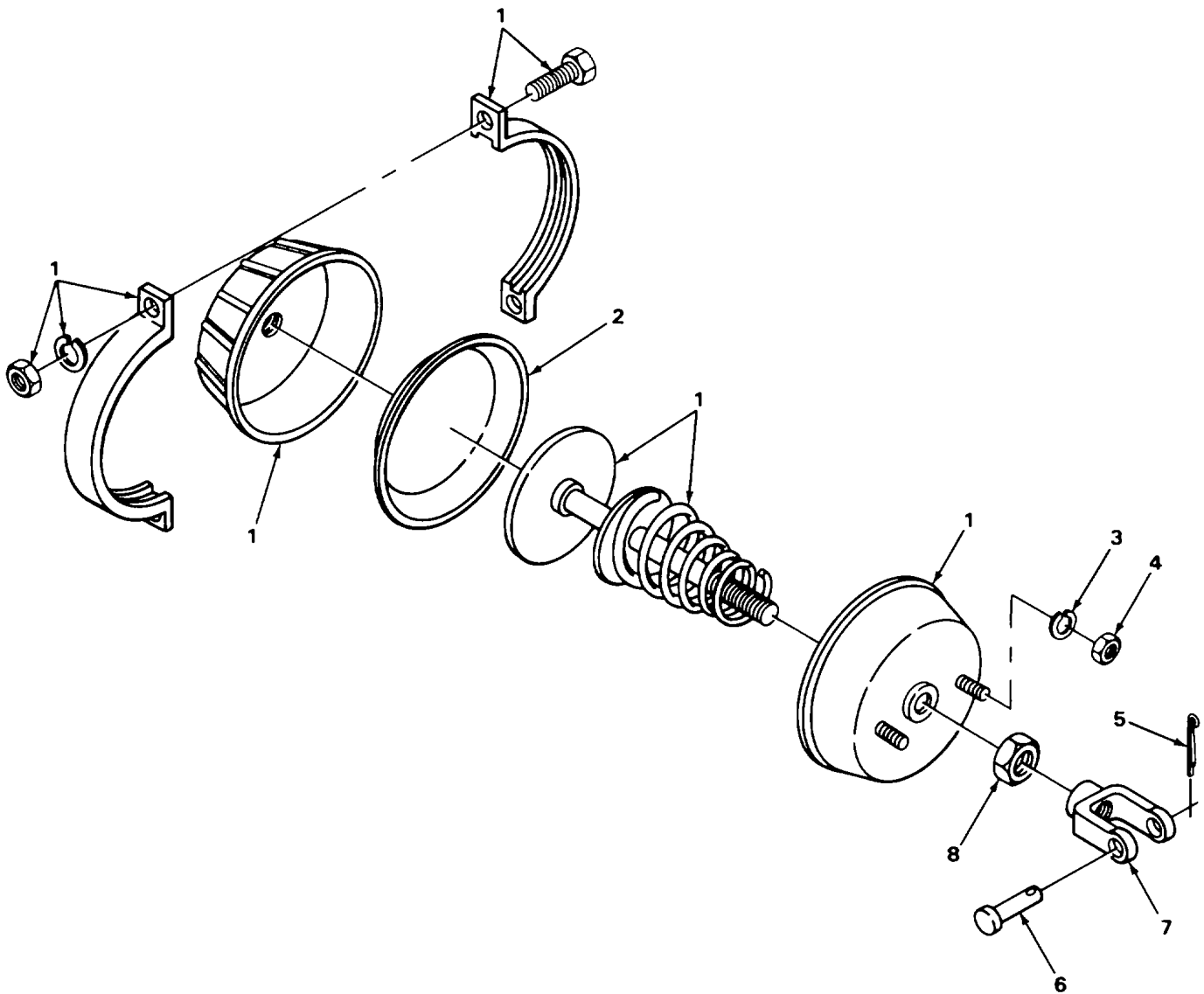
SECTION II					
(1)	(2)	(3)	(4)	(5)	(6)
ITEM	SMR		PART		
NO	CODE	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY

## GROUP 1206 MECHANICAL BRAKE SYSTEM

## FIG. 10 BRAKE ACTUATOR ASSEMBLY

1	PAOZZ	96906	NS16624-1125	RING,RETAINING .....	4
2	PAOZZ	19207	116t22S-1C	WASER ,FLAT .....	4
3	PAOZZ	19207	11662296-34	BUSHING,ANCIOR P1t.....	2
4	XDOZZ	19207	11662296-21	PIN.....	2
5	XDOZZ	19207	7725637	RINGPREIAINIHG.....	4
6	XDOZZ	19207	11662296-11	BRACKET .....	2
7	XDOZZ	19207	1166224C	ADJLSTERTSLACK,BRA .....	2
8	PAOZZ	96906	MHS15001-1	FII1ING,LUBRICATICH.....	2
9	PAOZZ	19207	7534865	SPACER,RING.....	4
10	XDOZZ	78500	S766	CAP SCREW .....	8
11	PAOZZ	96906	MS35338-46	WAS ER,LCKK .....	8
12	PAOZZ	96906	MS27183-14	WAS-ER,FLAT .....	8
13	PAOO	19207	11662291-12	RETAINER ASSEMBLY BRAKE CAMSHAFT .....	2
14	XDOZZ	19207	11662296-16	RETAINER .....	1
15	PAOZZ	78500	1205X72t	PACKING,PREFORIEC .....	2
16	XDOZZ	19207	11662296-15	BUSHING.....	2
17	XDOZZ	19207	11662296-13	REIAINER .....	1
18	XDCZZ	60528	2210-F-3554	CAMSHAFT,ACTUATING, RIGHT .....	1
18	PAOZZ	78500	2210-G-35S5	CAMSHAFT,ACTUATING, LEFT.....	1
19	PAOZZ	19207	11662296-29	FIT7INC,LUBRICATION .....	2
20	PAOZZ	78500	1225A781	BUSHING.....	2
21	PAOZZ	19207	11662296-31	BUSHING,PLASTIC .....	2
22	PAOZZ	19207	11662296-28	PACKING PREFOR ED .....	2
23	PAOZZ	19207	116622S6-33	FITTING,LUBRICATION .....	2

END OF FIGURE

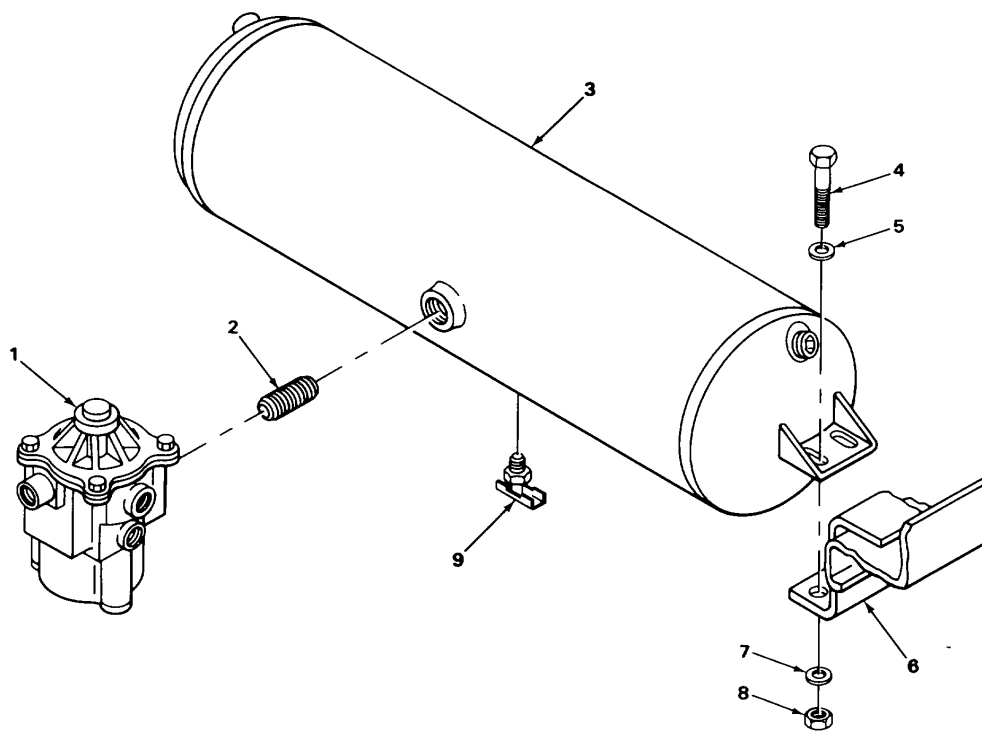
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FIGURE 11. BRAKE CHAMBER ASSEMBLY

SECTION II				TM 9-2330-297-14&P	
(1)	(2)	(3)	(4)	(5)	(6)
ITEM	SMR		PART		
NO	CODE	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY
1	PAOOO	98343	19345-053-4	CHAMBER, AIR BRAE.....	2
2	PAOZZ	06853	234101	OIAPHPACM, C-AMER, B OPTICKAL .....	1
2	PAOZZ	98343	11830G	OIAPHRAGM, CHA/BER,.....	1
3	PAOZZ	40342	193008	WASHER, LOCK.....	2
4	PAOZZ	40342	193009	NUT,PLAIN,HEXAGON .....	2
5	PAOZZ	96906	MS24665-353	PIN, COTTER.....	2
6	PAOZZ	98343	194003-5	PIN.....	2
7	PAOZZ	19207	8336720	CLEVIS, ROD END .....	2
8	PAOZZ	40342	193012	NUT, PLAIN, HEXAGCN .....	2

END OF FIGURE



TA508365

FIGURE 12. RESERVOIR AND EMERGENCY RELAY VALVE ASSEMBLY

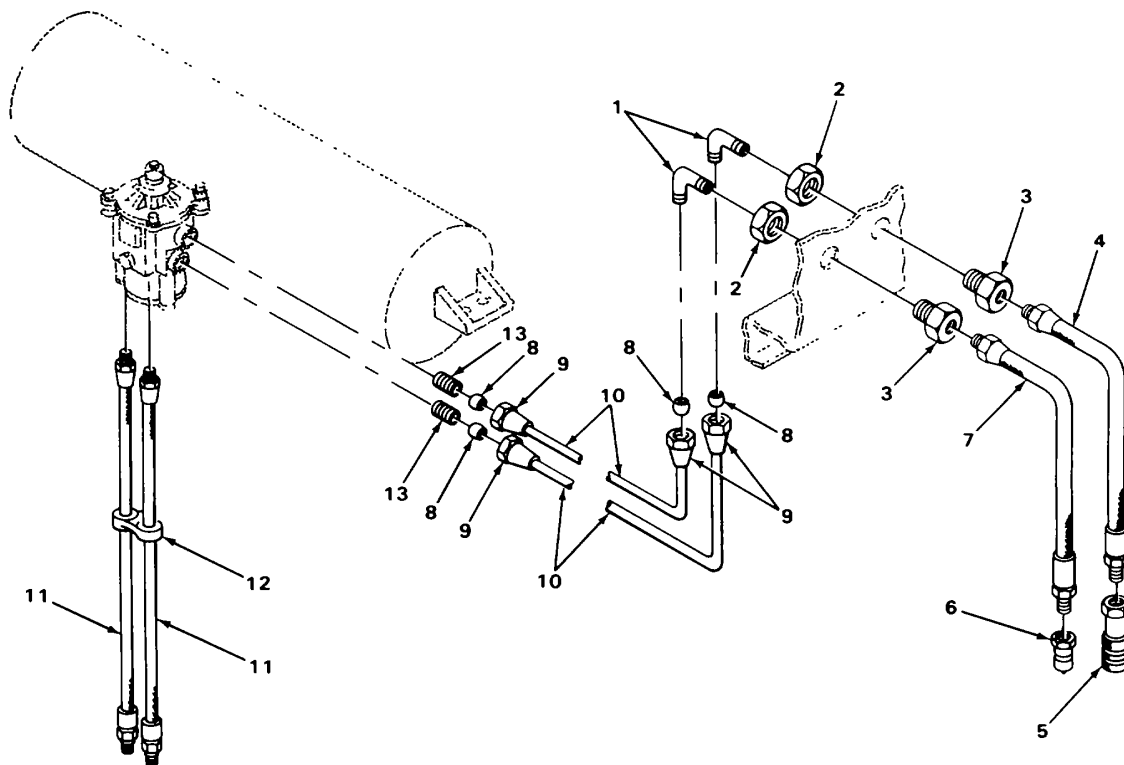
SECTION II					
(1)	(2)	(3)	(4)	(5)	(6)
ITEM	SMR		PART		
NO	CODE	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY

## GROUP 1208 AIRBRAKE SYSTEM

FIG. 12 RESERVOIR ANC EMERGENCY  
RELAY VALVE ASSEMBLY

1	PAOZZ	19207	11662236	VALVE, RAKE, SERVICE.....	1
2	XDOZZ	79470	C-3069-12	NIPPLE, PIPE .....	1
3	PAOZZ	06853	276222	RESERVOIR, BRAKE ASS .....	1
4	PAOZZ	96906	MS90726-62	SCREW, CAP, HEXAGON H .....	4
5	PAOZZ	96906	MS35489-71	GROMMET,NON,METALLIC .....	4
6	PAOZZ	19207	11662155	BRACKET, DOUBLE ANGL .....	2
7	PAOZZ	96906	MS27183-14	WASHER, FLAT.....	4
8	PAOZZ	96906	MS51968-8	NUT, PLAIN, HEXAGON .....	4
9	PAOZZ	96906	MS35782-5	COCK,DRAIN.....	1

END OF FIGLRE



TA508366

FIGURE 13. AIRBRAKE PIPING, BOGIE SECTION

SECTION II						
(1)	(2)	(3)	(4)	(5)	(6)	
ITEM	SMR		PART			
NO	CODE	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY	
<b>GROUP 1208 AIRBRAKE SYSTEM</b>						
<b>FIG. 13 AIRBRAKE PIPING, BOGIE SECTION</b>						
1	PAOZZ	81343	6-4 1202C2BA (LONG NUT)	ELBOW,PIPE TO TUBE.....	2	
2	PAOZZ	96906	MS35691-6S	NUT,PLAIN,HEXAGON.....	2	
3	PAOZZ	19207	5232954	COUPLING, PIPE GLADHAND FRAME.....	16	
				ANCHOR (2) HOOK-UP HOSE (2) BOGIE CONNECTIONS(10) REAR CHASSIS COUPLING (2)		
4	PAOZZ	19207	8327011-1	HOSE ASSEMBLY, NONME EMERGENCY .....	1	
				BRAKE CONNECTION BOGIE TO SIDE RAIL.		
5	PAOZZ	19207	11662113	COUPLING HALF, QUICK. ....	1	
6	PAOZZ	19207	11662114	COUPLING HALF, QUICK .....	1	
7	PAOZZ	19207	8327011-2P	HOSE ASSEMBLY, NONE SERVICE BRAKE.....	1	
				CONNECTION BOGIE TO SIDE RAIL		
8	PAOZZ	96906	MS39197-3	SLEEVE, COMPRESSION,.....	4	
9	PAOZZ	81343	4 1201118	NUT, TUBE COUPLING.....	4	
10	MOOZZ	19207	11662156-1	TUBE ASSEMBLY MAKE FROM TUBING P/N .....	2	
				7002538 .....		
11	PAOZZ	19207	8327011-3	HOSE ASSEMBLY, NONME RELAY VALVE TO .....	2	
				BRAKE CHAMBER .....		
12	PAOZZ	19207	11662234	SEPARATOR,HOSE .....	1	
13	PAOZZ	81343	6-4 120102BA	ADAPTER,STRAIGHT, PI .....	2	

END OF FIGURE

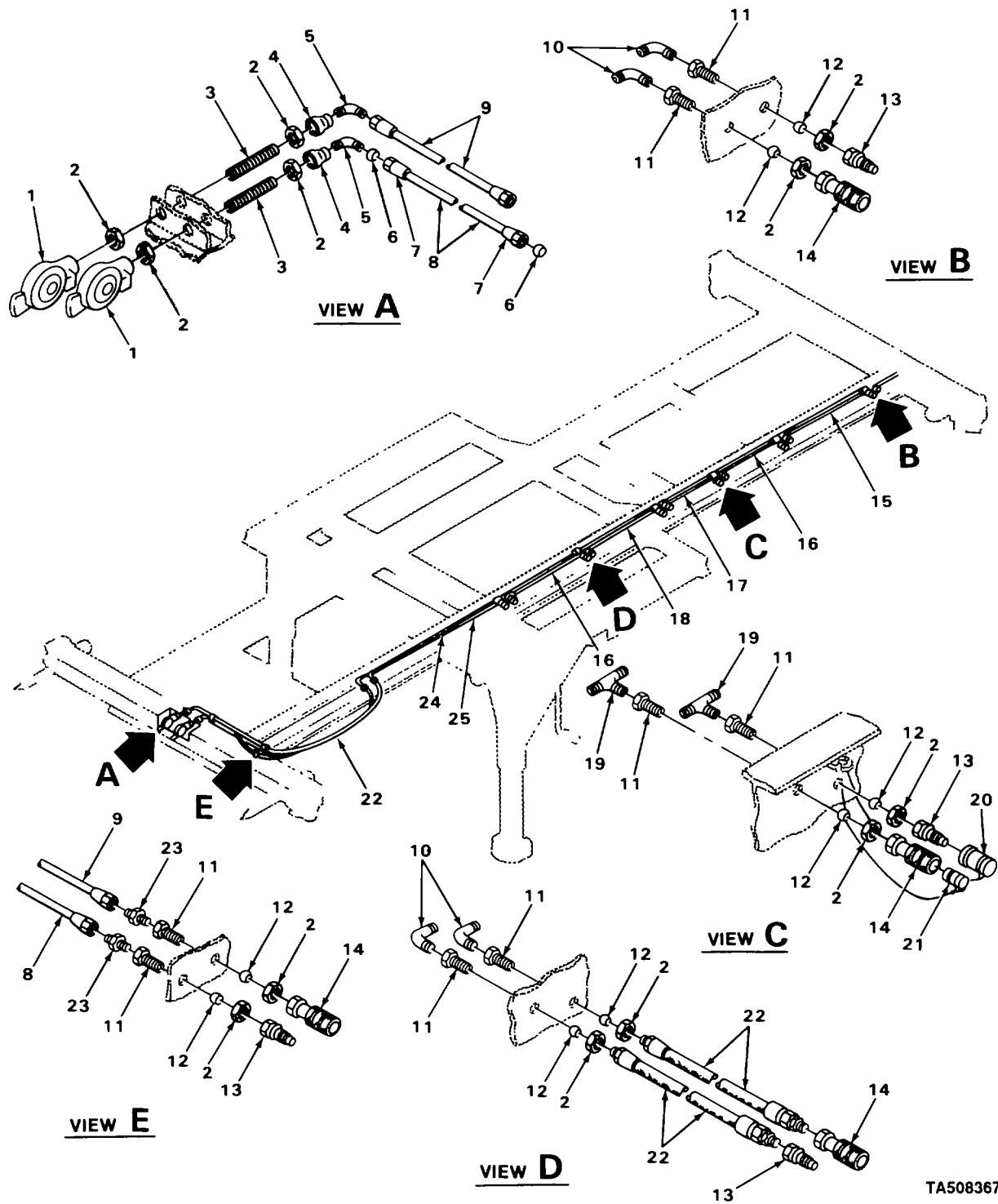


FIGURE 14. AIRBRAKE PIPING, CHASSIS SECTION

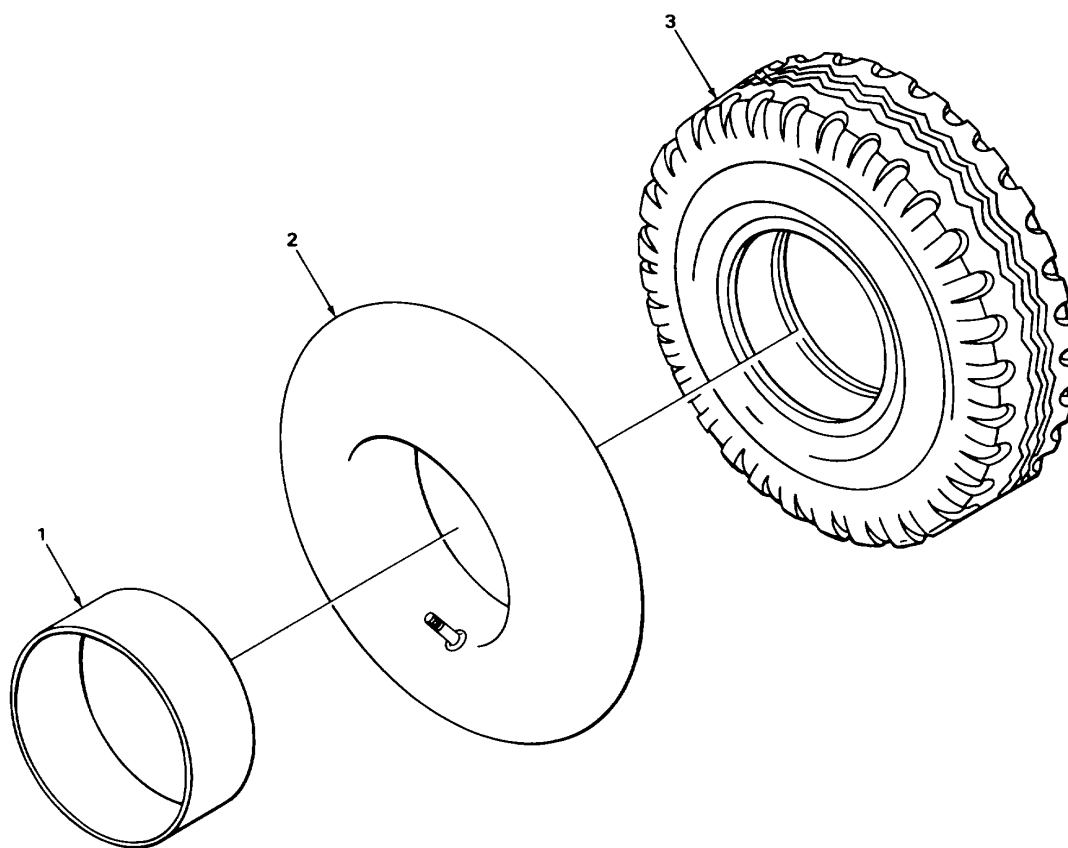
SECTION II						
(1)	(2)	(3)	(4)	(5)	(6)	
ITEM	SMR	CAGEC	PART	DESCRIPTION AND USABLE ON CODES (UOC)	QTY	
NO	CODE		NUMBER			
<b>GROUP 1208 AIRBRAKE SYSTEM</b>						
<b>FIG. 14 AIRERAKE PIPING, CHASSIS SECTION</b>						
1	PAOZZ	96906	MS35746-1	COUPLING HALF, QUICK .....	2	
2	PAOZZ	96906	MS35691-6S	NUT,PLAIN,HEXAGON .....	10	
3	PAOZZ	19207	11662167	COUPLING PIPE .....	2	
4	PAOZZ	96906	MS39232-4	REDUCER,PIPE .....	2	
5	PAOZZ	96906	MS3918B2-5	ELBC, PIPE TO TUBE .....	2	
6	PAOZZ	96906	MS391S7-3	SLEEVE,COMPRESSION .....	36	
7	PAOZZ	81343	4 120111B	NUT, TUBE COUPLING .....	52	
8	MOOZZ	19207	11662099-5	TUBE, MEIALLIC MAKE FROM TUBING P/N .....	1	
				7002538 .....		
9	MOOZZ	19207	11662099-6	TUBE, ME1ALLIC MAKE FROM TUBING P/N .....	1	
				7002538 .....		
10	PAOZZ	81343	6-4 120202BA (LONG NUT)	ELBOW,PIPE TO TUBE.....	4	
11	PAOZZ	19207	5232954	COUPLING,PIPE .....	16	
12	PAOZZ	96906	MS51953-25	NIPPLE, PIPE .....	16	
13	PAOZZ	19207	11662114	COUPLING HALF,QUICK .....	8	
14	PACZZ	19207	11662113	COUPLING HALF , QUICK .....	8	
15	MOOZZ	19207	1166209-7	TUBE, METALLIC MAGE FPRCM TUBING P/N .....	2	
				7002538 .....		
16	MOOZZ	19207	11662099-2	TUBING MAKE FROM TUBING P/N 7002538.....	4	
17	MOOZZ	19207	11662099-1	TUBE,METALLIC PAKE FROM TUBING P/N .....	2	
				7002538 .....		
18	MOOZZ	19207	11662095-3	TUBE, METALLIC MAKE FROM. P/N .....	2	
				7002538 (19207) .....		
19	PAOZZ	96906	MS39190-2	TEE, PIPE TO TUBE.....	10	
20	PAGZZ	19207	11662116	CAP, QUICK DISCONNEC WITH CABLE .....	7	
21	PACZZ	19207	11662117	PLUG,QUICK DISCONNE WITH CABLE .....	7	
22	PACZZ	19207	8327011-4	HOSE ASSEMBLY,NONME CHASSIS TO.....	2	
				CHASSIS OR SIDE RAIL TO GLADHAND .....		
23	PAOZZ	81343	6-4 120102BA	ADAPTEP2STRAIGT, PI .....	2	
24	MOOZZ	19207	11662099-8	TUBE, METALLIC MAKE FROM TUBING P/N .....	1	
				7002538 .....		
25	MOOZZ	19207	11662099-4	TUBE, METALLIC MAKE FROM TUBING P/N .....	1	
				7002538 .....		
END OF FIGURE						



FIGURE 15. WHEEL AND DRUM ASSEMBLY

SECTION II					
(1)	(2)	(3)	(4)	(5)	(6)
ITEM	SMR		PART		
NO	CODE	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY
<b>GROUP 13 WHEELS AND TRACKS</b>					
<b>GROUP 1311 WHEEL ASSEMBLY</b>					
<b>FIG. 15 WHEEL AND DRUM ASSEMBLY</b>					
1	PAOZZ	19207	11662230	CLAMP, RIM CLENCHING.....	20
2	PAOOO	73842	7520LBD	RIM, WHEEL, PNEUMATIC .....	4
3	XAOZZ	19207	11662227-1	.BASE WHEEL ASSEPBL.....	1
4	XAOZZ	19207	11662227-2	.RING.....	1
5	XDOZZ	19207	11662228	BAND, SPACER.....	4
6	XDOZZ	19207	11662229	WHEEL,HUB, CAP.....	4
7	PAOZZ	62707	M10HG108	GASKET .....	4
8	PAOZZ	96906	MS35338-45	WASER , LOCK .....	20
9	PAOZZ	96906	MS90725-31	BOLT, MACHINE .....	20
10	PAOZZ	19207	11662220-4	GASKET .....	4
11	PAOZZ	19207	11662220-4	GASKET .....	8
12	PAOZZ	96906	MS19081-113	BEARING, ROLLER,TAPE OUTER WHEEL .....	4
				BEARING .....	
13	PAOZZ	19207	11602374-20	BEARING, ROLLER, TAPE INNER WHEEL .....	4
				BEARING .....	
14	PAOFF	19207	11662224	BRAKE DRUM .....	4
15	PAOZZ	19207	11662233	.NUT, PLAIN,HEXAGON .....	5
16	PAOZZ	96906	MS90725-1E7	.SCREW, CAP ,HEXAGON H .....	5
17	XDOFF	60528	7-4-240	.BRAKE DRUM .....	1
18	PAOZZ	19207	11662226	.SPIDER, WHEEL .....	1
19	PAOZZ	96906	NS51922-57	.NUT, SELF-LOCKING, HE .....	5
20	XDOZZ	19207	11662393-3	.WASHER , FLAT.....	5
21	PAOZZ	19207	11662231	.STUD,PLAIN .....	5

END OF FIGURE



TA508369

FIGURE 16. TIRE AND TUBE ASSEMBLY

SECTION II				TM 9-2330-297-14&P
(1)	(2)	(3)	(4)	(5)
ITEM	SMR		PART	
NO	CODE	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)
				QTY

GROUP 1313 TIRES. TUBES, TIRE CHAINS

FIG. 16 TIRE AND TUBE ASSEMBLY

1	PAOZZ	73808	20R	FLAP, INNER TUBE PNE.....	4
2	PAOZZ	81348	GROUP2/10.00-20/	INNER TUBE, PNEUMATI .....	4
			TR444/TR464/ONC T		
3	PAOZZ	19207	11662389-1	TIRE,PNEUMATIC .....	4

END OF FIGURE

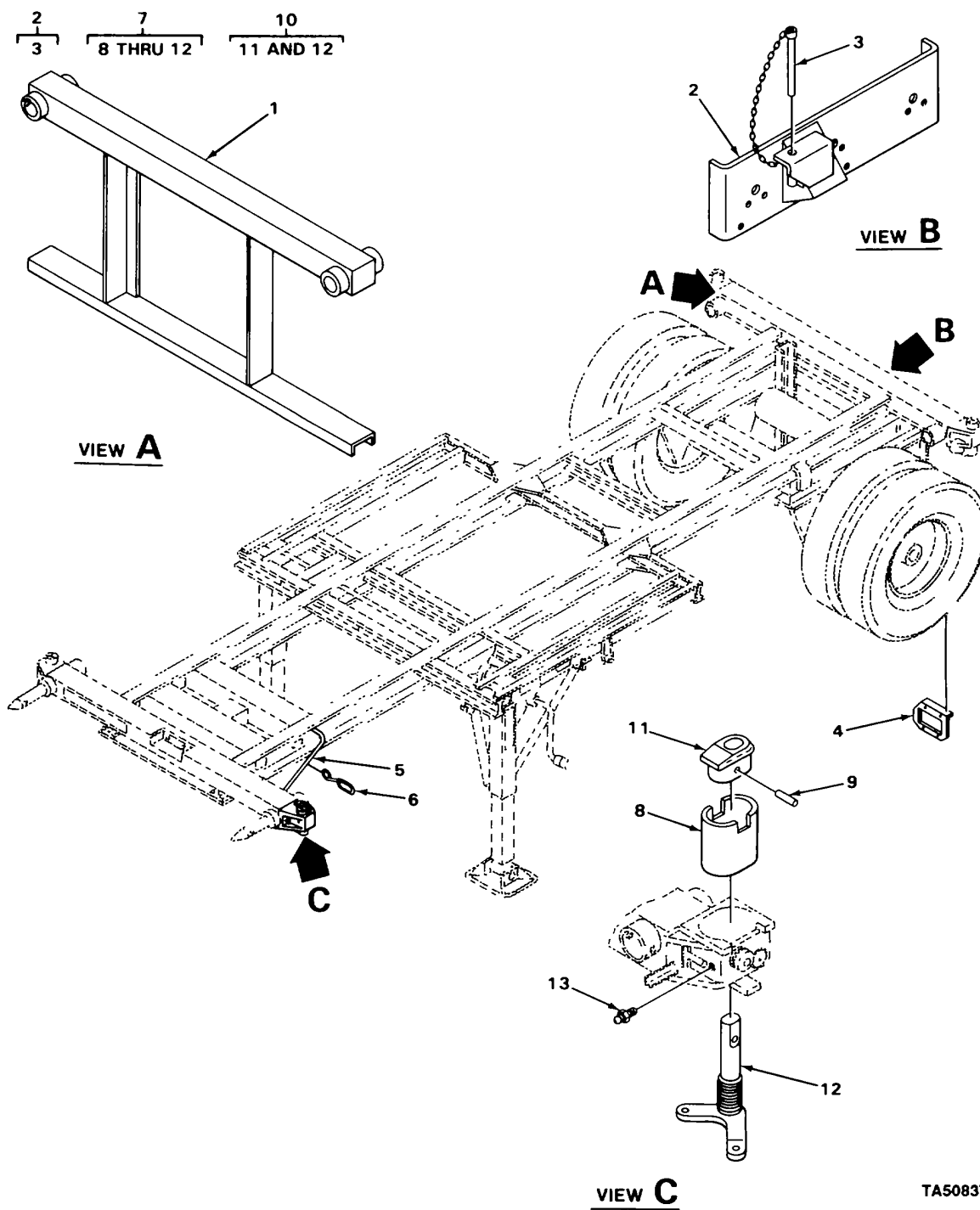
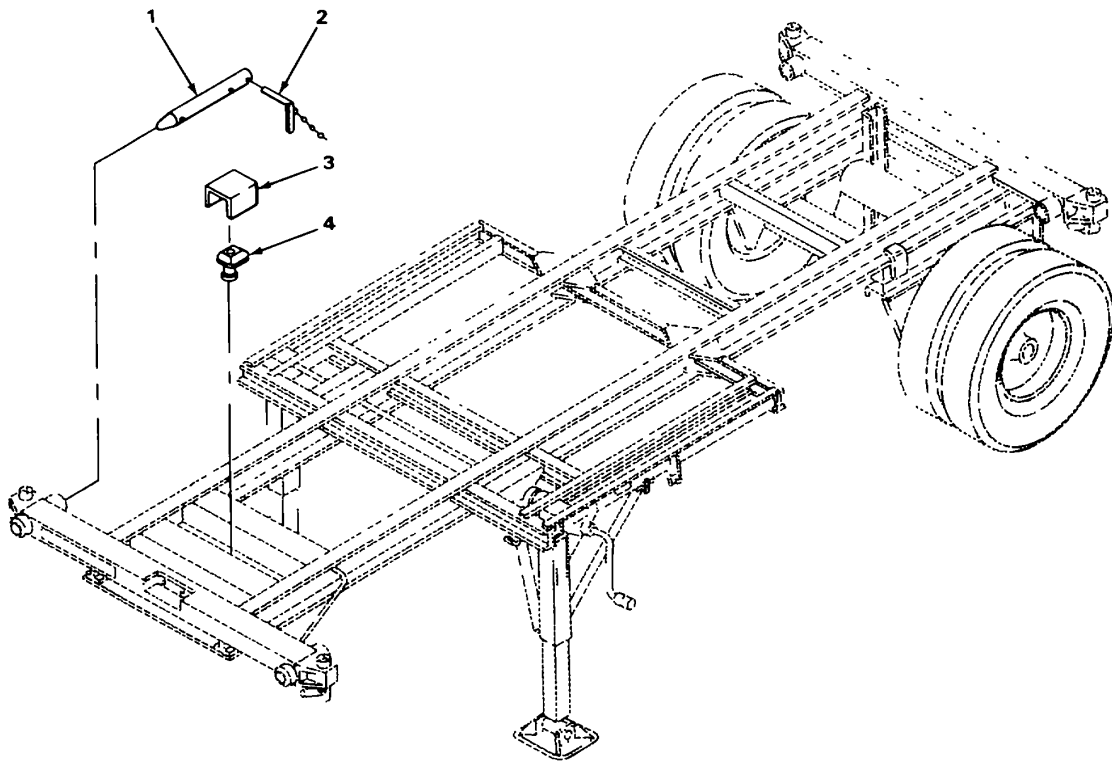


FIGURE 17. FRAME ASSEMBLY

SECTION II						
(1)	(2)	(3)	(4)	(5)	(6)	
ITEM	SMR		PART			
NO	CODE	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY	
<b>GROUP 15 FRAME, TOWING ATTACHMENTS, DRAWBARS, AND ARTICULATION SYSTEMS</b>						
<b>GROUP 1501 FRAME ASSEMBLY</b>						
<b>FIG. 17 FRAME ASSEMBLY</b>						
1	PAOZZ	19207	11662135	BUMPER, VEHICULAR.....	1	
2	PAOOO	19207	11662127	BRACKET, LICENSE PLA.....	1	
3	PAOZZ	19207	11661977	.PIN, STRAIGHT, HEADED.....	1	
4	PAOZZ	19207	11662103-1	BRACKET, TAILLIGHT STOP LIGHT, LEFT.....	1	
4	PAOZZ	19207	11662103-2	BRACKET, LIGHT RETEN STOP LIGHT, ..... RIGHT.....	1	
5	PAOZZ	19207	11662140	SUPPORT, AIR AND ELE.....	1	
6	PAOZZ	19207	11662141	CLIP, SPRING TENSION.....	4	
7	PAFFF	19207	11662381	LOCK. TWIST, FRAME ADJUSTABLE, REAR,..... RIGHT.....	1	
7	PAFFF	19207	11662378	LOCK, TWIST, FRAME ADJUSTABLE, ..... FRONT, LEFT.....	1	
7	PAFFF	19207	11662379	LOCK, TWIST, FRAME ADJUSTABLE, ..... FRONT, RIGHT.....	1	
7	PAFFF	82304	970-498-389	LOCK ASSEMBLY, DOOR.....	1	
8	XDFZZ	19207	11662083	.INSERT.....	1	
9	XDFZZ	19207	11662090	.PIN.....	1	
10	XDFFF	19207	11662384	.HEAD AND HANDLE ASSEMBLY, REAR, ..... LEFT HAND.....	1	
10	XDFFF	19207	11662385	.HEAD AND HANDLE ASSEMBLY, REAR, ..... RIGHT HAND.....	1	
10	XDFFF	19207	11662382	.HEAD AND HANDLE ASSEMBLY, FRONT, ..... LEFT HAND.....	1	
10	XDFFF	19207	11662383	.HEAD AND HANDLE ASSEMBLY, FRONT, ..... RIGHT HAND.....	1	
11	XDFZZ	19207	11662084-2	..HEAD LEFT HAND.....	1	
11	XDFZZ	19207	11662084-1	..HEAD RIGHT HAND.....	1	
12	XAFZZ	19207	11662387	..HANDLE ASSEMBLY LEFT HAND.....	1	
12	XAFZZ	19207	11662386	..HANDLE ASSEMBLY RIGHT HAND.....	1	
13	PAOZZ	96906	MS15003-1	FITTING, LUBRICATION.....	2	

END OF FIGURE



TA508371

FIGURE 18. TOWING ATTACHMENTS.

SECTION II				TM 9-2330-297-14&P	
(1)	(2)	(3)	(4)	(5)	(6)
ITEM	SMR		PART		
NO	CODE	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY
GROUP 1503 PINTLES AND TOWING ATTACHMENTS					
FIG. 18 TOWING ATTACHMENTS					
1	PAOZZ	19207	11662079	ROD, STRAIGHT, HEADLE CHASSIS.....	2
				ATTACHMENT.....	
2	PAOZZ	19207	1162097	PIN, STRAIGHT HEADED.....	4
3	PAFZZ	19207	11662102	BRACKET,MOUNTING,KI.....	1
4	XDFZZ	19207	1166221S	KINGPIN,FIFTH WHEEL.....	1
END OF FIGURE					

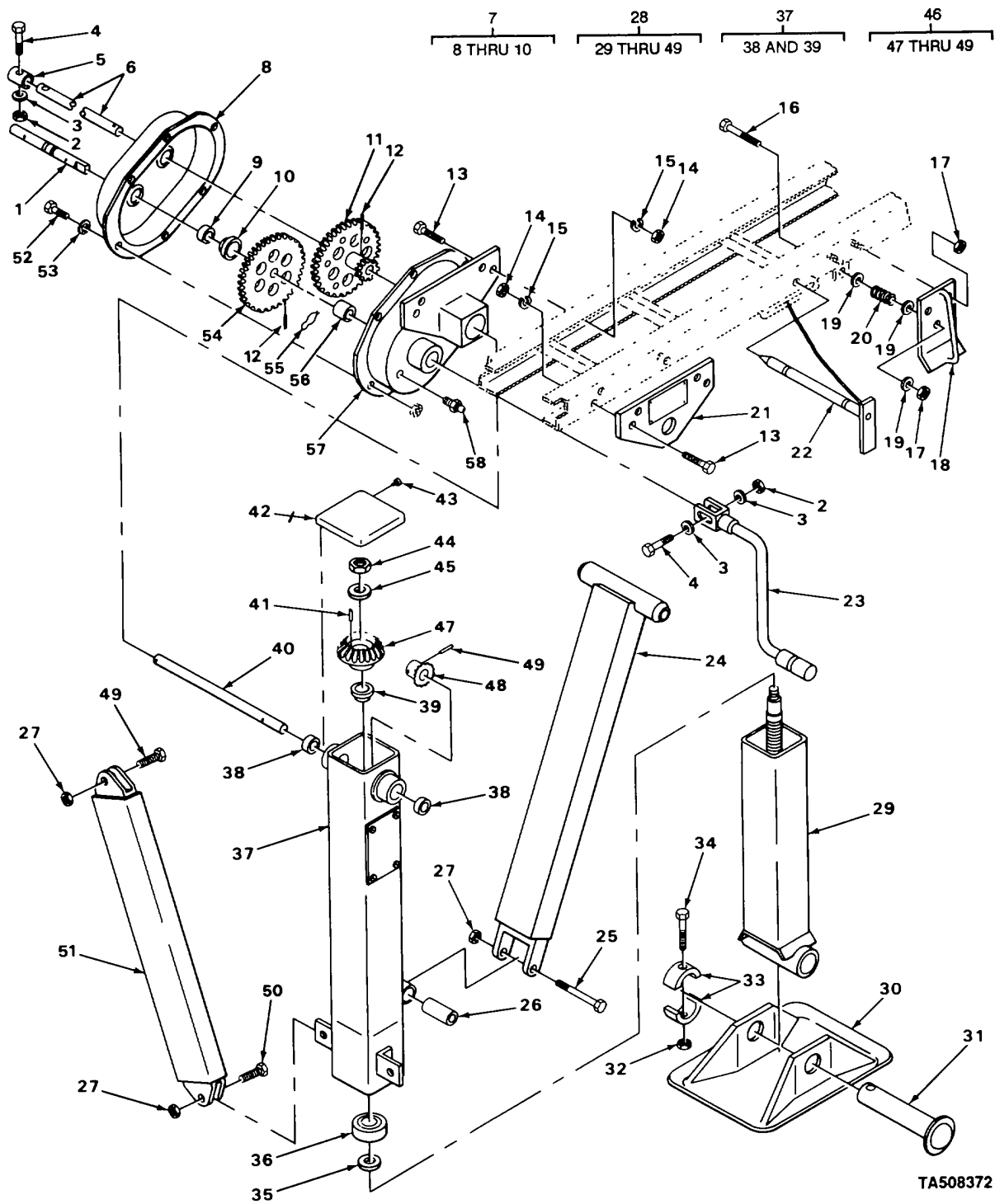
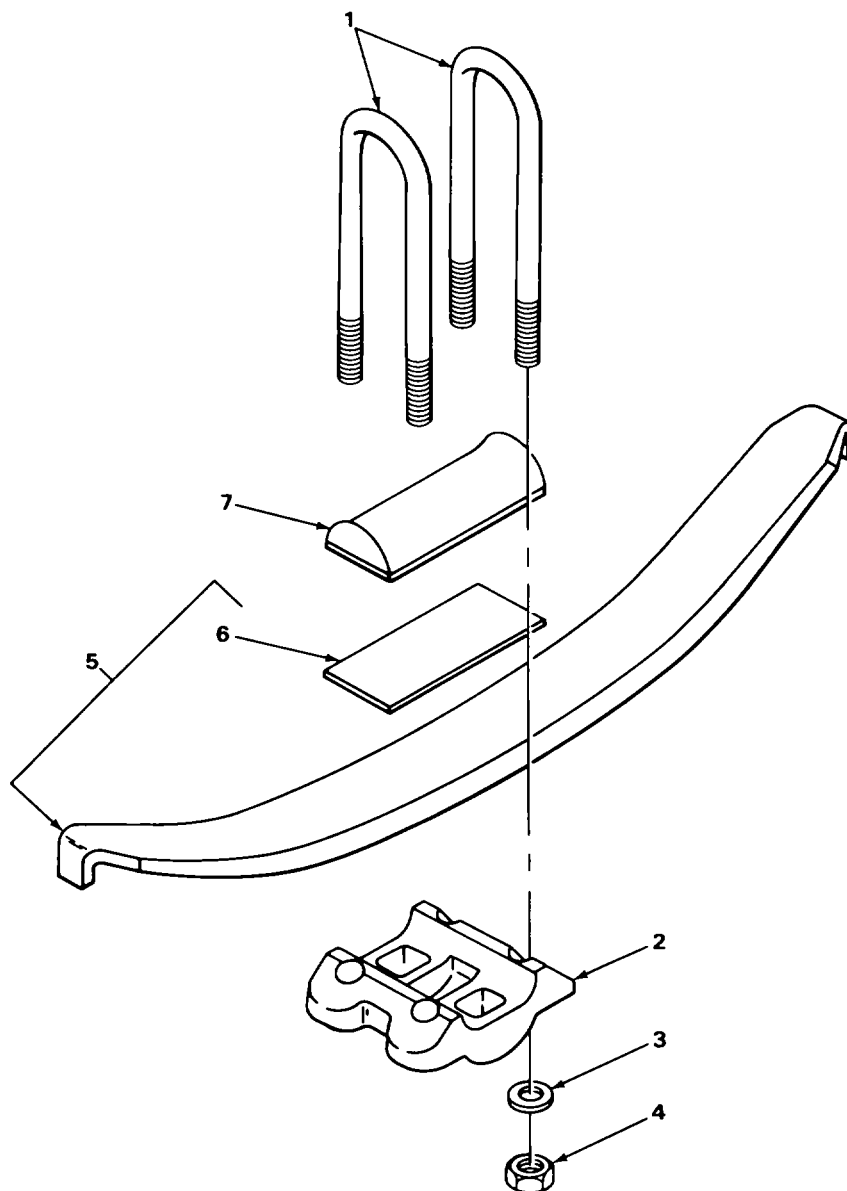


FIGURE 19. LANDING GEAR ASSEMBLY

SECTION II					
(1)	(2)	(3)	(4)	(5)	(6)
ITEM	SMR		PART	DESCRIPTION AND USABLE ON CODES (UOC)	QTY
NO	CODE	CAGEC	NUMBER		
<b>GROUP 1507 LANDING GEAR, LEVELING JACKS</b>					
<b>FIG. 19 LANDING GEAR ASSEMBLY</b>					
1	PAOZZ	19207	11662040	SHAFT, STRAIGHT .....	1
2	PAOLZ	96906	MS51943-36	NUT, SELF-LOCKING, HE .....	5
3	PACZZ	96906	MS27183-14	WASHER, FLAT .....	5
4	PAOZZ	96906	MS90727-66	SCREW, CAP, HEXAGON H .....	5
5	PAOZZ	19207	11662007	CONNECTOR, JACK, LEVE .....	2
6	PAOZZ	19207	116, 200D	CONNECTING LINK, RIG .....	1
7	PAOOO	19207	11662048	HOUSING, MECHANICAL .....	1
8	XAOZZ	19207	11662037	GEAR BOX HALF COVER .....	1
9	XACZZ	19207	116t18E	BEARING SUPPORT .....	2
10	PACZZ	19207	11661975-2	BEARING, SLEEVE .....	1
11	PAOZZ	19207	1166201E	GEAR CLUSTER .....	1
12	PAOZZ	19207	11661981	PIN, GROOVED, HEADLES .....	2
13	PAOZZ	96906	MS18154-113	SCREW, CAP, HEXAGON H .....	4
14	PACZZ	96906	MS51967-14	NUT, PLAIN, HEXAGON .....	4
15	PAOZZ	01276	210104-85	WASHER, LOCK .....	4
16	PAOZZ	96906	MS90727-65	SCREW, CAP, HEXAGON .....	2
17	PAOZZ	96906	MS51922-21	NUT, SELF-LOCKING, HE .....	6
18	PAGZZ	19207	11662030	BRACKET, ANGLE .....	2
19	PAOZZ	96906	MS27183-13	WASER, FLAT .....	6
20	PAOZZ	19207	10896716	SPRING, HELICAL, COMP .....	2
21	PAOZZ	19207	11682454	BRACKET, MOUNTING .....	1
22	PAOZZ	19207	11682423	HANDLE PIN, LEVELING .....	2
23	PAOZZ	19207	11662014	CRANK, HAND .....	1
24	PAOZZ	19207	1168243C	SUPPORT, SINGLE LEG .....	2
25	PAOZZ	96906	MS90726-113	SCREW, CAP, HEXAGON H .....	2
26	PAOZZ	19207	11662003	SPACER, SLEEVE .....	2
27	PAOZZ	96906	MS21083N10	NUT, SELF-LOCKING, HE .....	6
28	PAOOO	19207	11682463	SUPPORT, RETRACTABLE LANDING LEG, .....	1
				LEFT .....	
28	PACOG	19207	11682464	SUPPORT, RETRACTABLE LANDING LEG, .....	1
				RIGHT .....	
29	XAOZZ	19207	11662051	LEG ASSEMBLY, INNER .....	
30	PAOZZ	19207	11682436	SHOE, JACK SUPPORT .....	1
31	PACZZ	80776	C29-0040523	AXLE ASSEMBLY, SAND .....	1
32	PAOZZ	96906	MS21083-N6	NUT, SELF-LOCKING, HE .....	1
33	PAOZZ	19207	11661985	COLLAR, SHAFT LANDING LEG SAND .....	1
				SHOE AXLE .....	
34	PAOZZ	96906	MS90726-69	SCREW, CAP, HEXAGON H .....	1
35	XDOZZ	19207	11662393-6	WASHER .....	1
36	PAOZZ	96906	MS17169-12	BEARING, ROLLER, THRU .....	1
37	PAOOO	19207	11682455	LEG, SEMITRAILER RET CUTER LEG .....	1
				ASSY, LEFT .....	
37	PAOOD	19207	11682456	LEG, SEMITRAILER RET CUTER LEG .....	1
				ASSY, RIGHT .....	
38	PAOZZ	19207	11661975	BEARING, SLEEVE .....	2
39	PAOZZ	19207	11661980	BEARING, SLEEVE .....	1
40	PAOZZ	19207	1166200E	SHAF1, STRAIGHT USE WITH P/N .....	1

SECTION II					
(1)	(2)	(3)	(4)	(5)	(6)
ITEM	SMR		PART		
NO	CODE	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY
40	PAOZZ	19207	11662029	11682463 ..... .SHAFT,STRAIGHT USE WITH P/N1	
41	PAOZZ	19207	11661978	1162464 ..... .KEY,MACHINE.....	1
42	PAOZZ	19207	11662024	.COVER,JACK LEVELING .....	1
43	PAOZZ	96906	MS24630-35	.SCREW,TAPPING,THREA .....	2
44	PAOZZ	96906	MS17826-12	.NUT,SELF-LOCKING,SL.....	1
45	PAOZZ	96906	MS27183-23	.WASHER,FLAT.....	1
46	FAOZZ	19207	12255476	.GEAR SET,BEVEL,MATC.....	1
47	PAOZZ	19207	11662011	..GEAR,BEVEL .....	1
48	PAOZZ	19207	11662020	..GEAR, BEVEL .....	1
49	PAOZZ	19207	11661976	..PIN,GROOVED,HEADLES.....	1
50	PAOZZ	96906	MS90727-164	SCREW,CAP, HEXAGON H .....	4
51	PAOZZ	19207	11682429	SUPPORT, SINGLE LEG .....	2
52	PAOZZ	96906	MS24629-5E	SCREW, TAPPING, THREA .....	6
53	PAOZZ	96906	MS35335-33	WASHER, LOCK LANDING LEG GEAR BOX..... COVER .....	6
54	PAOZZ	19207	11662017	GEAR CLUSTER LANDING LEG CROSS1 SHAFT .....	
55	FAOZZ	19207	116619S1	CLIP,RETAINING.....	1
56	PAOZZ	19207	11661975-1	BEARING, SLEEVE .....	1
57	PAOZZ	19207	11662046	HOUSING,MECHANICAL .....	1
58	PAOZZ	96906	MS15720-1	FITTING,LUBRICATION.....	1

END OF FIGURE



TA508373

FIGURE 20. SPRING.

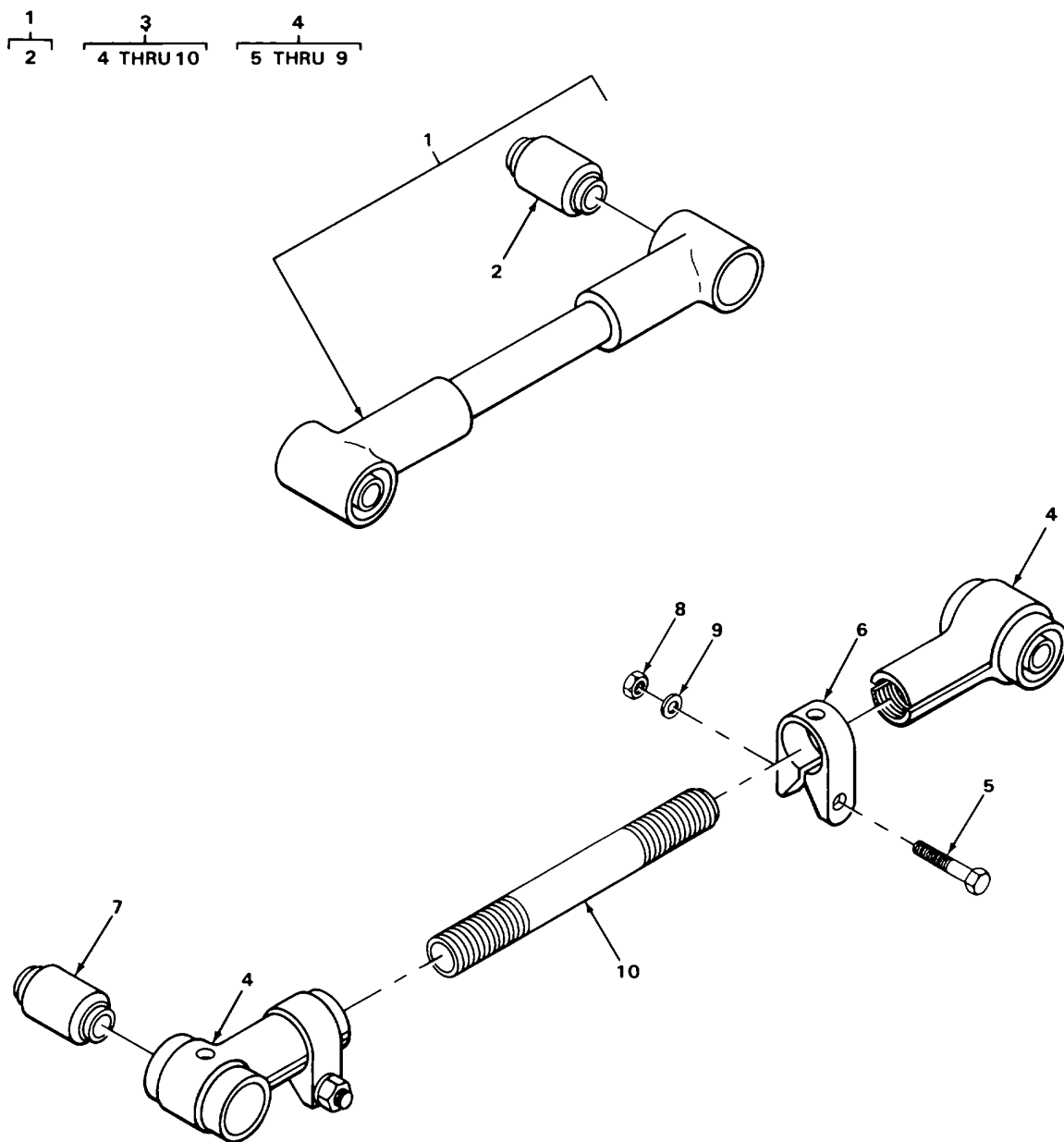
SECTION II				TM 9-2330-297-14&P	
(1)	(2)	(3)	(4)	(5)	(6)
ITEM	SMR		PART		
NO	CODE	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY

**GROUP 16 SPRINGS ANC SHOCK ABSORBERS**  
**GROUP 1601 SPRINGS**

**FIG. 20 SPRINGS**

1	PAFZZ	19207	11662327	BOLT,U .....	4
2	XDFZZ	19207	11662321	PLATE,CLAMP.....	2
3	PAFZZ	19207	1160181G	WASHER,FLAT.....	8
4	PAFZZ	96906	MS51922-68	NUT, SELF-LOCKING, HE .....	8
5	PAFFF	19207	11662320	SPRING, LEAF .....	2
6	PAFZZ	35311	H7052	SPRING ASSEMBLY, LEA.....	2
7	PAFZZ	19207	11662345	HANGER,SPRING, VEHIC.....	2

END OF FIGURE



TA508374

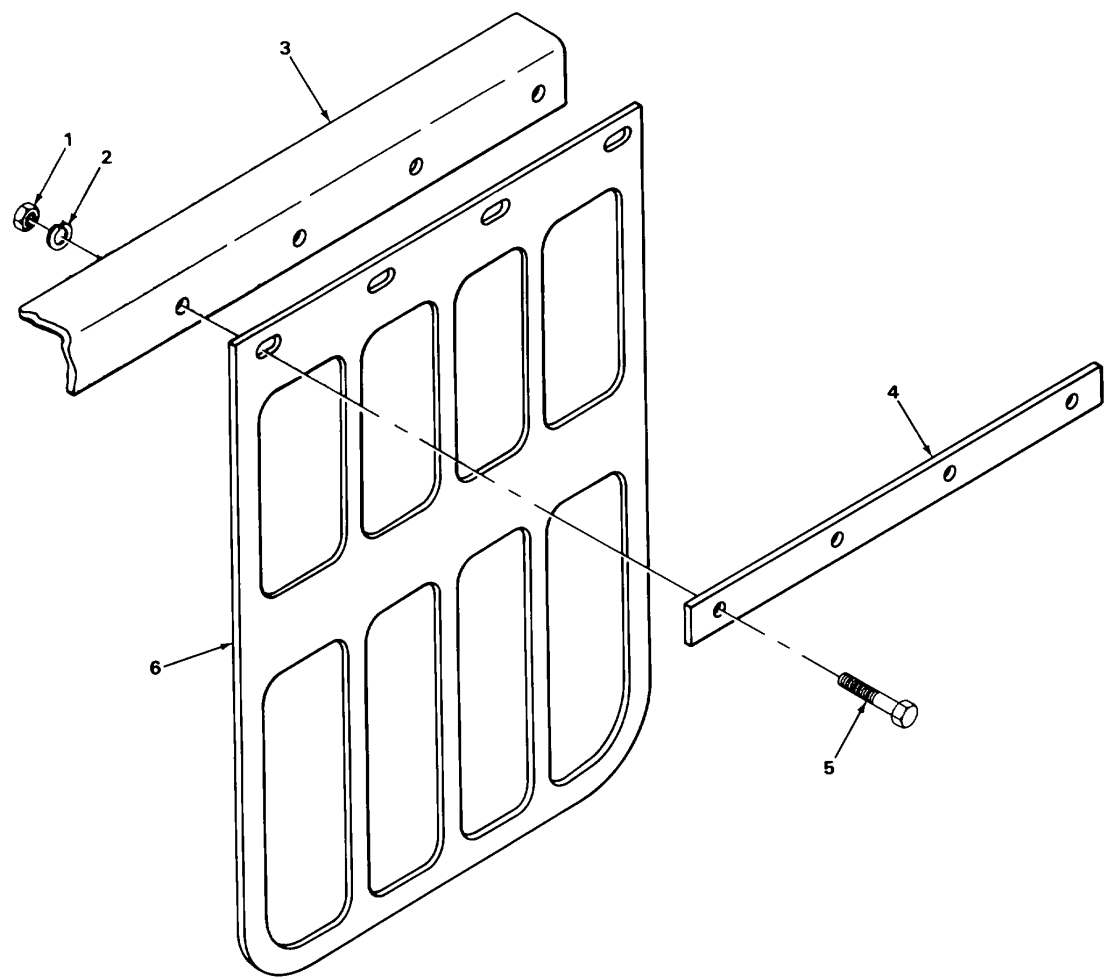
FIGURE 21. TORQUE ARM ASSEMBLY.

GROUP 1605 TORCUE, RADIUS, AND  
STABILIZER RODS

FIG. 21 TORQUE ARP ASSEMBLY

1	PAOZZ	92967	7715-01	TORQUE ROD,TANDEM A NON ADJUSTABLE.....	1
2	PAOZZ	19207	11662341	.BUSHING .SLEEVE .....	2
3	PAOFF	19207	11662335	TORQUE ROD,TANDEM A ADJUSTABLE,LEFT.....	1
4	XDOFF	19207	11662330	.TIE ROD END,STERIN RIGHT HAND .....	1
4	XDOFF	19207	11662331	.TIE ROD END, STEERIN LEFT HAND .....	1
5	PAOZZ	96906	MS90726-119	..SCREW,CAP,HEXAGON H .....	2
6	PAFZZ	19207	11662337	..CLAMP, LOOP.....	2
7	PAFZZ	19207	11662341	..BUSHING, SLEEVE .....	2
8	PAOZZ	96906	MS51967-2	..NUT, PLAIN, HEXAGON .....	2
9	PAOZZ	96906	MS27183-18	..WASHER, FLAT.....	2
10	PAFZZ	19207	11662339	.TUBE THREADED .....	1

END OF FIGURE



TA508375

FIGURE 22. SPLASH GUARD ASSEMBLY

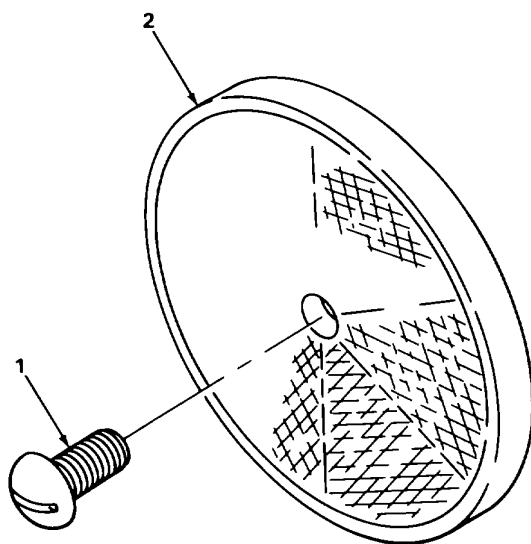
SECTION II				TM 9-2330-297-14&P	
(1)	(2)	(3)	(4)	(5)	(6)
ITEM	SMR		PART		
NO	CODE	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY

GROUP 18 BODY, CAB, HOOD, AND HULL  
GROUP 1801 BODY CAB, HOOD, AND HULL  
ASSEMBLIES

**FIG. 22 SPLASH GUARO ASSEMBLY**

1	PAOZZ	96906	MS51968-8	NUT,PLAIN,HEXAGON .....	8
2	XDOZZ	96906	MS35338-46	WASHER,LOCK.....	8
3	XDOZZ	19207	11662207	BRACKET,MOUNTING .....	1
4	PAOZZ	19207	11662175	PLATE,RETAINING,SPL.....	2
5	PAOZZ	96906	MS90726-62	SCREW,CAP,HEXAGON H .....	8
6	PAOZZ	96906	MS51331-6	GUARD,SPLASH,VEHICU .....	2

END OF FIGURE



TA508376

FIGURE 23. REFLECTOR ASSEMBLY

SECTION II				TM 9-2330-297-14&P	
(1)	(2)	(3)	(4)	(5)	(6)
ITEM	SMR		PART		
NO	CODE	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY

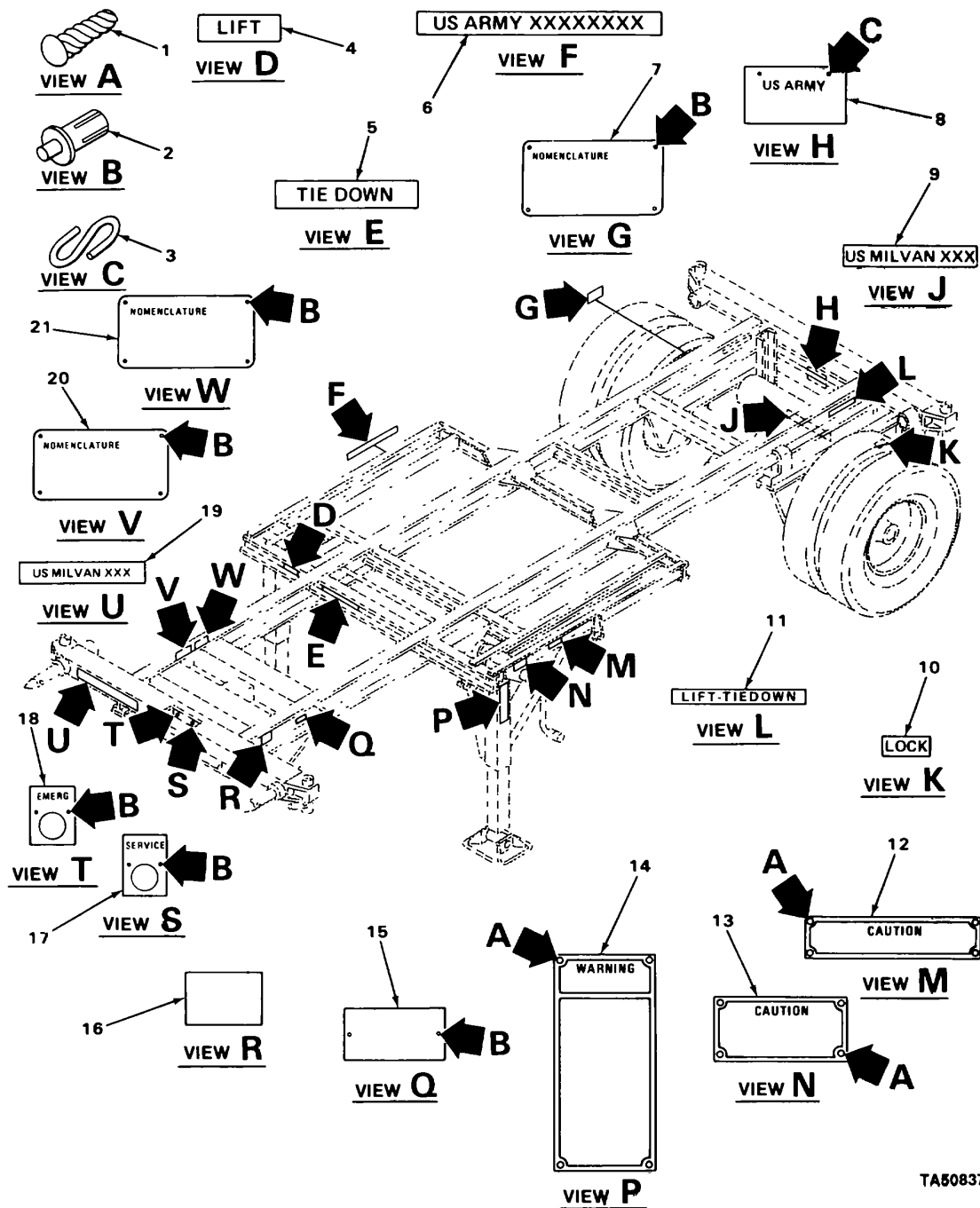
**GROUP 22 BODY, CHASSIS, AND HULL  
ACCESSORY ITEMS**

**GROUP 2202 ACCESSORY ITEMS**

**FIG. 23 REFLECTOR ASSEMBLY**

1	XDOZZ	19207	9408176	SCREW .....	4
2	PAOZZ	12662	B477RED	REFLECTOR,INDICATIN RED,REAR.....	2
2	XDOZZ	12662	B477AMBER	REFLECTOR,INDICATIN AMER,FRONT .....	2

END OF FIGURE



TA508377

FIGURE 24. DATA PLATES

SECTION II					
(1)	(2)	(3)	(4)	(5)	(6)
ITEM	SMR		PART		
NO	CODE	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY
<b>GROUP 2210 DATA PLATES AND INSTRUCTION HOLDERS</b>					
<b>FIG. 24 DATA PLATES</b>					
1	PAOZZ	96906	MS21318-27	SCREW,DRIVE .....	12
2	PAOZZ	96906	MS24662-76	RIVET, BLIND .....	18
3	PFOZZ	96906	MS87006-13	HOOK,CHAINS,S.....	2
4	PAOZZ	19207	116t2210-1	DECAL .....	2
5	XDOZZ	19207	11662210-2	DECAL .....	2
6	XDOZZ	19207	11662161	DECAL .....	2
7	PFOZZ	19207	11662174	PLATE,IDENTIFICATIO .....	1
8	PFOZZ	19207	11662162	PLATE,IDENTIFICATIO .....	1
9	XDOZZ	19207	11662176	DECAL .....	1
10	PAOZZ	19207	11662210-4	DECAL .....	1
11	PAOZZ	19207	11662210-3	DECAL .....	2
12	PAOZZ	19207	11682425	PLATE,INSTRUCTION CAUTION,LANDING .....	2
				LEG LOCK PIN .....	
13	PFOZZ	19207	11682424	PLATE,INSTRUCTION.....	1
14	PFOZZ	19207	11682426	PLATE,INSTRUCTION.....	2
15	XDOZZ	19207	11662264	PLATE,INSTRUCTION COMPLIANCE.....	1
16	PFOZZ	19207	11662391	DECAL CAUTION,HOSE AND HARNESS .....	1
				CONNECTION INSTRUCTIONS.....	
17	PAOZZ	96906	MS53007-1	PLATE,IDENTIFICATIO SERVICE .....	1
18	PAOZZ	96906	MS53007-2	PLATE,IDENTIFICATIO EMERGENCY .....	1
19	XDOZZ	19207	11662171	DECAL .....	2
20	PAOZZ	19207	11662173	PLATE,INSTRUCTION.....	11
21	PFOZZ	19207	11662172	PLATE,IDENTIFICATIO .....	1

END OF FIGURE

SECTION II				TM 9-2330-297-14&P	
(1)	(2)	(3)	(4)	(5)	(6)
ITEM	SMR		PART		
NO	CODE	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY

GROUP 95 GENERAL USE STANDARDIZED PARTS

GROUP 9501 BULK MATERIEL

FIG. BULK

1	PAOZZ	19207	7002538	TUBE, METALLIC .....	V
2	PAOZZ	81349	M5086/3-14-9	WIRE,ELECTRICAL,.....	V
3	PAOZZ	81349	M5086/7-14-9	WIRE,ELECTRICAL.....	V

END OF FIGURE

BULK-1

## SECTION IV

TM 9-2330-297-14&amp;P

CROSS- REFERENCE-INDEXES  
NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
3120-00-001-4721	19	35	5310-00-0671-356	15	19
5310-00-001-4844	15	15	4730-00-069-1186	13	13
3120-00-001-6753	19	38		14	23
2530-00-003-0998	11	1	5310-00-079-1973	20	3
6220-00-003-3342	1	1	5310-00-080-6004	8	11
6220-00-003-3343	1	1		10	12
6220-00-003-3344	1	3		12	7
6220-00-003-3355	1	3		19	3
5310-00-003-4094	19	15	5310-00-087-7493	19	19
4730-00-003-5230	13	6	3040-00-089-6639	19	33
	14	13	4720-00-095-1011	13	11
3040-00-004-4281	19	7	4720-00-096-8797	13	7
3040-00-004-6844	19	40	4720-00-096-8802	13	4
5307-00-005-1022	15	21	4720-00-108-5989	14	22
2590-00-005-4956	19	31	3110-00-117-0759	19	36
3040-00-005-5094	19	57	25S0-00-127-4802	19	24
2530-00-005-7356	15	18	2590-00-127-4805	19	28
2510-00-005-7664	20	5	5340-00-127-9525	1S	51
5340-00-005-8177	21	10	2590-00-127-9527	19	30
2530-00-006-0050	21	1	2590-00-127-9530	19	28
3020-00-006-1609	19	11	5310-00-150-1745	8	17
5340-00-006-4866	19	55	2640-00-158-5617	16	1
3020-00-006-6094	19	48	9905-00-159-0025	24	20
2530-00-007-2271	10	13	5340-00-161-1207	15	1
4730-00-007-2275	10	23	3110-00-163-7713	15	13
2530-00-007-2277	12	3	9905-00-165-7172	23	2
2540-00-007-2352	17	7	5315-00-169-8096	19	41
5340-00-007-2358	19	23	6220-00-172-3736	3	1
5315-00-007-2991	8	4	6220-00-172-3737	3	1
5360-00-007-3002	8	9	5935-00-173-3580	6	2
5360-00-007-3003	8	6	9905-00-177-3454	24	14
4730-00-007-4677	14	20	9905-00-181-8190	24	7
5315-00-007-6096	19	12	SS05-00-187-4627	24	12
4730-00-007-9411	14	21	9905-00-187-4690	24	13
4730-00-007-9429	13	5	5315-00-187-9594	8	12
	14	14	2530-00-198-6277	15	2
5310-00-007-9941	8	15	5306-00-205-3386	20	1
5315-00-009-7778	19	49	5330-00-205-3583	10	15
5340-00-031-0658	18	1	5330-00-208-2208	10	22
3120-00-036-6734	21	2	5310-00-209-0786	19	53
	21	7	5310-00-209-1510	8	29
5510-00-045-3296	4	8	5315-00-211-8065	17	3
5310-00-047-2965	19	44	3120-00-221-9792	10	21
4730-00-050-4203	10	8	3120-00-221-9793	10	20
4730-00-050-4208	10	15	5310-00-225-6409	20	4
	17	13	5306-00-225-8496	15	9
5905-00-051-6944	4	10	4730-00-231-5647	14	4
5305-00-052-6922	19	52	5330-00-235-0977	15	10
5305-00-052-9050	19	43		15	11
2610-00-060-9960	16	3	5305-00-253-5618	24	1

## SECTION IV

TM 9-2330-297-14&amp;P

CROSS- REFERENCE-INDEXES  
NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
3120-00-255-6042	10	3	5365-00-721-6876	10	1
2610-00-260-7345	16	2	5305-00-726-2551	19	50
5305-00-269-2805	12	4	5305-00-726-2567	8	24
	22	5	5310-00-732-0559	12	8
5305-00-269-2813	19	34		22	1
5305-00-269-3242	19	4	5365-00-753-4865	10	9
5305-00-269-3245	19	16	5325-00-754-1154	12	5
4730-00-278-6319	13	3	5310-00-761-6882	21	8
	14	11	7650-00-762-1735	24	16
4730-00-278-8825	13	9	5310-00-763-8905	8	28
	14	7	2590-00-764-7974	4	6
9905-00-279-8202	24	8	3040-00-767-7359	19	1
9905-00-279-8329	24	21	2590-00-767-7360	5	1
4730-00-289-0155	14	5	2590-00-767-7361	6	1
2530-00-293-4373	11	2	2590-00-767-7362	4	5
4730-00-293-7108	13	8	5310-00-768-0318	19	14
	14	6	4030-00-780-9350	24	3
3120-00-322-6430	9	4	5340-00-783-7161	17	7
2530-00-332-5729	9	3	5340-00-783-7176	17	7
2590-00-376-0007	19	37	2510-00-783-7259	17	7
2590-00-376-0031	19	37	5315-00-784-0637	9	5
5340-00-388-9964	19	18	6145-00-809-3660	BULK	2
5340-00-388-9965	19	22	5310-00-809-5998	21	9
2530-00-388-9972	15	14	5310-00-809-8533	19	45
5340-00-392-9227	19	5	5360-00-813-7813	19	20
2590-00-392-9384	19	42	5310-00-814-0672	19	2
3040-00-392-9410	15	40	3110-00-829-0575	15	12
7690-00-392-9570	24	4	5505-00-835-3888	4	2
7690-00-392-9596	24	11	5315-00-83S-5822	11	5
7690-00-39 2-9608	24	10	5315-00-844-5840	8	3
6220-00-394-9740	17	4	5935-00-846-388	4	4
5340-00-397-3309	18	3	4820-00-849-1220	12	9
5340-00-397-3354	17	2	5935-00-856-3513	5	2
6220-00-404-6249	3	3		6	3
5310-00-407-9566	15	8	5315-00-878-8209	8	8
3120-00-423-4096	19	10	2530-00-888-0720	12	1
5360-00-427-2195	9	1	6240-00-889-1799	3	4
5365-00-432-0077	19	26	5325-00-907-1183	4	12
3040-00-433-6981	19	6		5	6
4730-00-494-6580	14	19		6	6
5340-00-521-9914	17	6		7	4
5340-00-531-0111	21	6	6240-00-914-5572	2	2
4730-00-595-0083	14	1	5305-00-915-8087	19	13
5340-00-596-4021	12	6	4730-00-916-3368	19	58
5310-00-637-9541	10	11	2540-00-921-5066	22	6
5305-00-655-9655	19	25	3020-00-922-0362	19	54
5340-00-678-6192	11	7	5315-00-922-0370	18	2
5305-00-685-7217	3	5	5310-00-925-9642	19	27
5305-00-716-8180	21	5	5310-00-926-1852	19	32
5305-00-719-5064	2	6	5310-00-930-3447	8	18

**SECTION IV**

**TM 9-2330-297-14&P**

**CROSS- REFERENCE-INDEXES  
NATIONAL STOCK NUMBER INDEX**

<b>STOCK NUMBER</b>	<b>FIG.</b>	<b>ITEM</b>	<b>STOCK NUMBER</b>	<b>FIG.</b>	<b>ITEM</b>
5310-00-934-9751	4	7	3020-01-280-4132	19	46
3020-00-937-1956	19	47			
5305-00-939-9204	15	16			
6240-00-944-1264	1	4			
5305-00-951-5643	1	5			
5305-00-95E-0585	4	3			
5310-00-959-1488	19	17			
5320-00-959-4941	24	2			
2530-00-959-6855	11	2			
5310-00-971-7990	13	2			
	14	2			
9905-00-999-7369	24	18			
9905-00-999-7370	24	17			
6145-01-003-9737	BULK	3			
2530-01-017-0616	9	2			
2510-01-044-8851	8	1			
5310-01-052-1795	8	5			
5340-01-091-9011	22	4			
5320-01-098-3836	8	25			
5305-01-099-6438	8	23			
5305-01-09S-6439	8	27			
5330-01-101-4860	15	7			
4730-01-104-2268	14	12			
4730-01-104-8953	13	12			
5340-01-106-2072	8	10			
4710-01-106-2073	17	5			
6220-01-106-2074	17	4			
4730-01-106-2211	14	3			
5360-01-106-2219	20	6			
5365-01-106-2224	8	22			
5310-01-106-2226	8	19			
5935-01-106-2230	6	4			
3040-01-106-2247	8	14			
3040-01-106-2248	8	7			
2920-01-106-2307	4	1			
2540-01-111-2286	17	1			
5315-01-133-4386	11	6			
5310-01-133-5373	10	2			
5340-01-150-9848	8	13			
4710-01-152-2550	BULK	1			
2510-01-167-9176	20	7			
2590-01-176-4676	19	21			
5310-01-176-4689	11	8			
5310-01-176-4690	11	4			
2530-01-176-4717	21	3			
5940-01-176-4788	5	4			
5310-01-176-6495	11	3			
5905-01-178-7375	4	9			
3120-01-268-5838	19	56			
2530-01-275-9198	10	18			

# CROSS-REFERENCE INDEXES

## PART NUMBER INDEX

CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
88044	AN504C1032R8	5305-00-685-7217	3	5
12662	B477AMBER		23	2
12662	B477RED	9905-00-165-7172	23	2
79470	C-3069-12		12	2
80776	C29-0040523	2590-00-005-4956	19	31
78500	C90-3722-N-66	2530-01-017-0616	9	2
81348	GROUP2/10.00-20/ TR444/TR464/ONCT	2610-00-260-7345	16	2
35311	H7052	5300-01-106-2219	20	6
96906	MS15001-1	4730-00-050-4203	10	8
96906	MS15003-1	4730-00-050-4208	17	13
96906	MS15720-1	4730-00-916-3368	19	58
96906	MS16562-69	5315-00-844-5840	8	3
96906	MS16624-1125	5365-00-721-6876	10	1
96906	MS17169-12	3110-00-117-0759	19	36
96906	MS17826-12	5310-00-047-2965	1s	44
96906	MS18154-113	5305-00-915-8087	19	13
96906	MS19081-113	3110-00-829-0575	15	12
96906	MS20600-MP8W6	5320-01-098-3836	8	25
96906	MS21083-N6	5310-00-926-1852	19	32
96906	MS21083N10	5310-00-925-9642	19	27
96906	MS21318-27	5305-00-253-5618	24	1
96906	MS24629-58	5305-00-052-6922	19	52
96906	MS24630-35	5305-00-052-9050	19	43
96906	MS24662-76	5320-00-959-4941	24	2
96906	MS24665-353	5315-00-839-5822	11	5
96906	MS24665-747	5315-00-187-9594	8	12
96906	MS24665-751	5315-00-878-8209	8	8
96906	MS27183-13	5310-00-087-7493	19	19
96906	MS27183-14	5310-00-080-6004	8	11
			10	12
			12	7
			19	3
96906	MS27183-18	5310-00-809-5998	21	9
96906	MS27183-23	5310-00-809-8533	19	45
96906	MS35207-272	5305-00-958-0585	4	3
96906	MS35214-56	5305-00-954-5643	1	5
96906	MS35333-45	5310-00-209-1510	8	29
96906	MS35335-33	5310-00-209-0786	19	53
96906	MS35338-43	5310-00-045-3296	4	8
96906	MS35338-45	5310-00-407-9566	15	8
96906	MS35338-46	5310-00-637-9541	10	11
			22	2
96906	MS35489-71	5325-00-754-1154	12	5
96906	MS35489-88	5325-00-907-1183	4	12
			5	6
			6	6
			7	4
96906	MS35650-302	5310-00-934-9751	4	7
96906	MS35691-69	5310-00-971-7990	13	2
			14	2

# CROSS-REFERENCE INDEXES PART NUMBER INDEX

CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
96906	MS35746-1	4730-00-595-0083	14	1
96906	MS35782-5	4820-00-849-1220	12	9
96906	MS39182-5	4730-00-289-0155	14	5
96906	MS39190-3	4730-00-494-6580	14	19
96906	MS39197-3	4730-00-293-7108	13	8
			14	6
96906	MS39232-4	4730-00-231-5647	14	4
96906	MS51331-6	2540-00-921-5069	22	6
96906	MS51922-21	5310-00-959-1488	19	17
96906	MS51922-57	5310-00-067-6356	15	19
96906	MS51922-68	5310-00-225-6409	20	4
96906	MS51943-36	5310-00-814-0672	19	2
96906	MS51953-25	4120-01-104-2268	14	12
96906	MS51959-30	5305-00-719-5064	2	6
96906	MS51967-14	5310-00-768-0318	19	14
96906	MS51967-2	5310-00-761-6882	21	8
96906	MS51968-20	5310-00-763-8905	8	28
96906	MS51968-8	5100-00-132-0559	12	8
			22	1
96906	MS53007-1	9905-00-999-7370	24	17
96906	MS53007-2	9905-00-999-7369	24	18
96906	MS87006-13	4030-00-780-9350	24	3
96906	MS90725-187	5305-00-539-9204	15	16
96906	MS90725-31	5306-00-225-8496	15	9
96906	MS90726-119	5305-00-716-8180	21	5
96906	MS90726-113	5305-00-655-9655	19	25
96906	MS90726-62	5305-00-269-2805	12	4
			22	5
96906	MS90726-69	5305-00-269-2813	19	34
96906	MS90727-164	5305-00-726-2551	19	50
96906	MS90727-176	5305-00-726-2567	8	24
96906	MS90727-66	5305-00-269-3242	19	4
96906	MS90727-69	5305-00-269-3245	19	16
62707	M10HG108	5330-01-101-4860	15	7
81349	M5086/3-14-9	6145-00-809-3660	BULK	2
81349	M5086/7-14-9	6145-01-003-9737	BULK	3
81349	RW22V3R9	5905-00-835-3888	4	2
81349	RW22V5R6	5905-00-051-6944	4	10
78500	S766		10	10
92967	1-13-283	5340-01-150-9848	8	13
19207	10870133	5310-00-930-3447	8	18
19207	10896716	5360-00-813-7813	19	20
08108	1157	6240-00-889-1799	3	4
19207	11601810	5310-00-079-1973	20	3
19207	11602374-20	3110-00-163-7713	15	13
19207	11661975	3120-00-001-6753	19	38
19207	11661975-1	3120-01-268-5838	19	56
19207	11661975-2	3120-00-423-4096	19	10
19207	11661976	5315-00-009-7778	19	49
19207	11661977	5215-00-211-8065	17	3
19207	11661978	5315-00-169-8096	19	41

# CROSS-REFERENCE INDEXES

## PART NUMBER INDEX

CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
19207	11661980	3120-00-001-4721	19	39
19207	11661981	5315-00-007-6096	19	12
19207	11661985	3040-00-089-6639	19	33
19207	11661988		19	9
19207	11661991	5340-00-006-4866	19	55
19207	11662003	5365-00-432-0077	19	26
19207	11662006	3040-00-433-6981	19	6
19207	11662007	5340-00-392-9227	19	5
19207	11662008	3040-00-392-9410	19	40
19207	11662011	3020-00-937-1956	19	47
19207	11662014	5340-00-007-2358	19	23
19207	11662017	3020-00-922-0362	19	54
19207	11662018	3020-00-006-1609	19	11
19207	11662020	3020-00-006-6094	19	48
19207	11662024	25S0-00-392-9384	19	42
19207	11662029	3040-00-004-6844	19	40
19207	11662030	5340-00-388-9964	19	18
19207	11662037		19	8
19207	11662040	3040-00-767-7359	1S	1
19207	11662046	3040-00-005-5094	19	57
19207	11662048	3040-00-004-4281	19	7
19207	11662051		19	29
19207	11662079	5340-00-031-0658	18	1
19207	11662083		17	8
19207	11662084-1		17	11
19207	11662084-2		17	11
19207	11662090		17	9
19207	11662097	5315-00-922-0310	18	2
19207	11662099-1		14	17
19207	11662099-2		14	16
19207	11662099-3		14	18
19207	11662099-4		14	25
19207	11662099-5		14	8
19207	11662099-6		14	9
19207	11662099-7		14	15
19207	11662099-8		14	24
19207	11662102	5340-00-397-3309	18	3
19207	11662103-1	6220-01-106-2074	17	4
19207	11662103-2	6220-00-394-9740	17	4
19207	11662107	5905-01-178-7375	4	9
19207	11662108	2590-00-764-7974	4	6
19207	11662109	2590-00-767-7360	5	1
19207	11662109-1		5	3
19207	11662109-2	5940-01-176-4788	5	4
19207	11662110	2590-00-767-7361	6	1
19207	11662110-1		6	5
19207	11662110-2	5935-01-106-2230	6	4
19207	11662111		2	1
19207	11662111-1		2	4
19207	11662111-2		2	5
19207	11662111-3		2	3

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
19207	11662113	4730-00-007-9429	13	5
			14	14
19207	11662114	4730-00-003-5230	13	6
			14	13
19207	11662116	4730-00-007-4677	14	20
19207	11662117	4730-00-007-9411	14	21
19207	11662127	5340-00-397-3354	17	2
19207	11662135	2540-01-111-2286	17	1
19207	11662140	4710-01-106-2073	17	5
19207	11662141	5340-00-521-9914	17	6
19207	11662149	2920-01-106-2307	4	1
19207	11662155	5340-00-596-4021	12	6
19207	11662156-1		13	10
19207	11662161		24	6
19207	11662162	9905-00-279-8202	24	8
19207	11662166	2590-00-767-7362	4	5
19207	11662167	4730-01-106-2211	14	3
19207	11662171		24	19
19207	11662172	9905-00-279-8329	24	21
19207	11662173	9905-00-159-0025	24	20
19207	11662174	9905-00-181-8190	24	7
19207	11662175	5340-01-091-9011	22	4
19207	11662176		24	9
19207	11662207		22	3
19207	11662210-1	7690-00-392-9570	24	4
19207	11662210-2		24	5
19207	11662210-3	7690-00-392-9596	24	11
19207	11662210-4	7650-00-392-9608	24	10
19207	11662219		18	4
19207	11662220-4	5330-00-235-0977	15	10
			15	11
19207	11662224	2530-00-388-9972	15	14
19207	11662226	2530-00-005-7356	15	18
19207	11662227-1		15	3
19207	11662227-2		15	4
19207	11662228		15	5
19207	11662229		15	6
19207	11662230	5340-00-161-1207	15	1
19207	11662231	5307-00-005-1022	15	21
19207	11662233	5310-00-001-4844	15	15
19207	11662234	4730-01-104-8953	13	12
19207	11662236	2530-00-888-0720	12	1
19207	11662240		10	7
19207	11662242		7	1
19207	11662242-1		7	3
19207	11662242-2		7	3
19207	11662247-1	6220-00-003-3343	1	1
19207	11662247-2	6220-00-003-3342	1	1
19207	11662247-4	6220-00-003-3355	1	3
19207	11662247-5	6220-00-003-3344	1	3
19207	11662247-7		1	2

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
19207	11662253-1	6220-00-112-3737	3	1
19207	11662253-2	6220-00-172-3736	3	1
19207	11662253-3		3	2
19207	11662253-4		3	2
19207	11662264		24	15
19207	11662296-1	5360-00-427-2195	9	1
19207	11662296-10	5310-01-133-5373	10	2
19207	11662296-11		10	6
19207	11662296-12	2530-00-007-2271	10	13
19207	11662296-13		10	17
19207	11662296-15		10	16
19207	11662296-16		10	14
19207	11662296-21		10	4
19207	11662296-22	2530-00-332-5729	9	3
19207	11662296-24	5315-00-784-0637	9	5
19207	11662296-28	5330-00-208-2208	10	22
19207	11662296-29	4730-00-050-4208	10	19
19207	11662296-31	3120-00-221-9792	10	21
19207	11662296-33	4730-00-007-2275	10	23
19207	11662296-34	3120-00-255-6042	10	3
19207	11662296-4	5310-00-150-1745	8	17
19207	11662296-5		8	16
19207	11662296-7	5310-00-007-9941	8	15
19207	11662296-8		8	20
19207	11662302		8	26
19207	11662309	2510-01-044-8851	8	1
19207	11662310	3040-01-106-2248	8	7
19207	11662311		8	2
19207	11662314	5340-01-106-2072	8	10
19207	11662316	3040-01-106-2247	8	14
19207	11662317	5360-00-007-3002	8	9
19207	11662318	5360-00-007-3003	8	6
19207	11662320	2510-00-005-7664	20	5
19207	11662321		20	2
19207	11662327	5306-00-205-3386	20	1
19207	11662329	5315-00-007-2991	8	4
19207	11662330		21	4
19207	11662331		21	4
19207	11662335	2530-01-176-4717	21	3
19207	11662337	5340-00-531-0111	21	6
19207	11662339	5340-00-005-8177	21	10
19207	11662341	3120-00-036-6734	21	2
			21	7
19207	11662342		8	21
19207	11662343	5305-01-099-6439	8	27
19207	11662344	5305-01-099-6438	8	23
19207	11662349	2510-01-167-9176	20	7
19207	11662359	5365-01-106-2224	8	22
19207	11662378	5340-00-783-7161	17	7
19207	11662379	5340-00-783-7176	17	7
19207	11662381	2510-00-783-7259	17	7

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
19207	11662382		17	10
19207	11662383		17	10
19207	11662384		17	10
19207	11662385		17	10
19207	11662386		17	12
19207	11662387		17	12
19207	11662389-1	2610-00-060-9960	16	3
19207	11662391	7690-00-762-1735	24	16
19207	11662392	5535-00-173-3560	6	2
19207	11662393-2	5310-01-052-1795	8	5
19207	11662393-3		15	20
19207	11662393-4	5310-01-106-2226	8	19
19207	11662393-6		19	35
19207	11682423	5340-00-388-9565	19	22
19207	11682424	9905-00-187-4690	24	13
19207	11682425	9905-00-187-4627	24	12
19207	11682426	9905-00-177-3454	24	14
19207	11682429	5340-00-127-9525	19	51
19207	11682430	2590-00-127-4802	19	24
19207	11682436	2590-00-127-9527	19	30
19207	11682454	2590-01-176-4676	19	21
19207	11682455	2590-00-376-0007	19	37
19207	11682456	2590-00-376-0031	19	37
19207	11682463	2590-00-127-9530	19	28
19207	11682464	2590-00-127-4805	19	28
98343	11830G	2530-00-959-6855	11	2
78500	1205X726	5330-00-205-3583	10	15
78500	1225A781	3120-00-221-9793	10	20
19207	12255476	3120-01-280-4132	19	46
78500	1779R18	3120-00-322-6430	9	4
40342	193008	5310-01-176-6495	11	3
40342	193009	5310-01-176-4690	11	4
40342	193012	5310-01-176-4689	11	8
98343	19345-053-4	2530-00-003-0998	11	1
08108	194	6240-00-944-1264	1	4
98343	194003-5	5315-01-133-4386	11	6
73808	20R	2640-00-158-5617	16	1
01276	210104-8S	5310-00-003-4094	19	15
60528	2210-F-3594		10	18
78500	2210-G-3595	2530-01-215-9198	10	18
06853	234101	2530-00-293-4373	11	2
06853	276222	2530-00-007-2277	12	3
24617	2962160	5535-00-856-3513	5	2
			6	3
81343	4 120111B	4730-00-278-8825	13	9
			14	7
12662	430-25	6220-00-404-6249	3	3
81263	51322		7	2
19207	5232954	4730-00-278-6319	13	3
			14	11
19207	5303139		4	11

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
19207	5303139		5	5
81343	6-4 120102BA	4730-00-0069-1186	13	13
			14	23
81343	6-4 120202BA(LON G NUT)		13	1
			14	10
77820	60-36030-51P	5935-00-846-3883	4	4
60528	7-4-240		15	17
19207	7002538	4710-01-152-2550	BULK	1
73842	7520L8D	2530-00-198-6277	15	2
19207	7534865	5365-00-153-4865	10	9
92967	7715-01	2530-00-006-0050	21	1
19207	7725637		10	5
19207	8327011-1	4720-00-096-8802	13	4
19207	8327011-2	4720-00-096-8797	13	7
19207	8327011-3	4120-00-095-1011	13	11
19207	8327011-4	4120-00-108-5989	14	22
19207	8336720	5340-00-678-6192	11	7
19207	9408176		23	1
08108	97	6240-00-914-5572	2	2
82304	970-498-389	2540-00-007-2352	17	7

## CROSS REFERENCE INDEXES

FIG.	ITEM	FIGURE AND ITEM NUMBER INDEX STOCK NUMBER	CAGEC	PART NUMBER
BULK	1	4710-01-152-2550	19207	7002538
BULK	2	6145-00-809-3660	81349	M5086/3-14-9
BULK	3	6145-01-003-9737	8134	M5086/7-14-9
1	1	6220-00-003-3342	19207	11662247-2
1	1	6220-00-003-3343	19207	11662247-1
1	2		19207	11662247-7
1	3	6220-00-003-3344	19207	11662247-5
1	3	6220-00-003-3355	19207	11662247-4
1	4	6240-00-944-1264	08108	194
1	5	5305-00-954-5643	96906	MS35214-56
2	1		19207	11662111
2	2	6240-00-914-5572	08108	97
2	3		19207	11662111-3
2	4		19207	11662111-1
2	5		19207	11662111-2
2	6	5305-00-719-5064	96906	MS51S59-30
3	1	6220-00-172-3736	19207	11662253-2
3	1	6220-00-172-3737	19207	11662253-1
3	2		19207	11662253-3
3	2		19207	1162253-4
3	3	6220-00-404-6249	12662	430-25
3	4	6240-00-889-1179	08108	1157
3	5	5305-00-685-7217	88044	AN504C1032R8
4	1	2920-01-106-2307	19207	11662149
4	2	5905-00-835-3888	81349	RW22V3R9
4	3	5305-00-958-0585	96906	MS35207-272
4	4	5935-00-146-3883	77820	60-36030-51P
4	5	2590-00-767-7362	19207	11662166
4	6	2590-00-764-7974	19207	11662108
4	7	5310-00-934-9751	96906	MS35650-302
4	8	5310-00-045-3296	96906	MS35338-43
4	9	5905-01-178-7375	19207	11662107
4	10	5905-00-051-6944	81349	RW22V5R6
4	11		19207	5303139
4	12	5325-00-907-1183	96906	MS35489-88
5	1	2590-00-767-7360	19207	11662109
5	2	5935-00-856-3513	24617	2962160
5	3		19207	11662109-1
5	4	5940-01-176-4788	19207	11662109-2
5	5		19207	5303139
5	6	5325-00-907-1183	96906	MS35489-88
6	1	2590-00-767-7361	19207	11662110
6	2	5935-00-173-3580	19207	11662392
6	3	5935-00-856-3513	24617	2962160
6	4	5935-01-106-2230	19207	11662110-2
6	5		19207	11662110-1
6	6	5325-00-907-1183	96906	MS35489-88
7	1		19207	11662242
7	2		81263	51322
7	3		19207	11662242-1
7	3		19207	11662242-2

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FIG.	ITEM	FIGURE AND ITEM NUMBER INDEX STOCK NUMBER	CAGEC	PART NUMBER
7	4	5325-00-907-1183	96906	MS35489-88
8	1	2510-01-044-8851	19207	11662309
8	2		19207	11662311
8	3	5315-00-844-5840	96906	MS16562-69
8	4	5315-00-007-2991	19207	11662329
8	5	5310-01-052-1795	19207	11662393-2
8	6	5360-00-007-3003	19207	11662318
8	7	3040-01-106-2248	19207	11662310
8	8	5315-00-878-8209	96906	MS24665-751
8	9	5360-00-007-3002	19207	11662317
8	10	5340-01-106-2072	19207	11662314
8	11	5310-00-080-6004	96906	MS27113-14
8	12	5315-00-187-9594	96906	MS24665-747
8	13	5340-01-150-9848	92967	1-13-283
8	14	3040-01-106-2247	19207	11662316
8	15	5310-00-007-9941	19207	11662296-7
8	16		19207	11662296-5
8	17	5310-00-150-1745	19207	11662296-4
8	18	5310-00-930-3447	19207	10870133
8	19	5310-01-106-2226	19207	11662393-4
8	20		19201	11662296-8
8	21		19207	11662342
8	22	5365-01-106-2224	19207	11662359
8	23	5305-01-099-6438	19207	11662344
8	24	5305-00-726-2567	96906	MS90727-176
8	25	5320-01-098-3836	96906	MS20600-MP8W6
8	26		19207	11662302
8	27	5305-01-099-6439	19207	11662343
8	28	5310-00-763-8905	96906	MS51S68-20
8	29	5310-00-209-1510	96906	MS35333-45
9	1	5360-00-427-2195	192017	11662296-1
9	2	2530-01-017-0616	78500	090-3722-N-66
9	3	2530-00-332-5729	19207	11662296-22
9	4	3120-00-322-6430	78500	1779R18
9	5	5315-00-784-0637	19207	11662296-24
10	1	5365-00-721-6876	96906	MS16624-1125
10	2	5310-01-133-5373	19207	11662296-10
10	3	3120-00-255-6042	19201	11662296-34
10	4		19207	11662296-21
10	5		19207	7725637
10	6		19207	11662296-11
10	7		19207	11662240
10	8	4730-00-050-4203	96906	MS15001-1
10	9	5365-00-753-4865	19207	7534865
10	10		78500	S766
10	11	5310-00-637-9541	96906	MS35338-46
10	12	5310-00-080-6004	96906	MS27183-14
10	13	2530-00-007-2271	19207	11662296-12
10	14		19207	11662296-16
10	15	5330-00-205-3583	78500	1205X726
10	16		19207	11662296-15

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FIG.	ITEM	FIGURE AND ITEM NUMBER INDEX STOCK NUMBER	CAGEC	PART NUMBER
10	17		19207	11662296-13
10	18		60528	2210-F-3594
10	18	2530-01-275-9198	78500	2210-G-3595
10	19	4730-00-050-4208	19207	11662296-29
10	20	3120-00-221-9793	78500	1225A781
10	21	3120-00-221-9792	19207	11662296-31
10	22	5330-00-208-2208	19207	11662296-28
10	23	4730-00-007-2215	19207	11662296-33
11	1	2530-00-003-0998	98343	19345-053-4
11	2	2530-00-293-4373	06853	234101
11	2	2530-00-959-6855	98343	11830G
11	3	5310-01-176-6495	40342	193008
11	4	5310-01-176-4690	40342	193009
11	5	5315-00-839-5822	96906	MS24665-353
11	6	5315-01-133-4386	98343	194003-5
11	7	5340-00-678-6192	19207	8336720
11	8	5310-01-176-4689	40342	193012
12	1	2530-00-888-0720	19207	11662236
12	2		79470	C-3069-12
12	3	2530-00-007-2277	06853	276222
12	4	5305-00-269-2805	96906	MS90726-62
12	5	5325-00-754-1154	96906	MS35489-71
12	6	5340-00-596-4021	19207	11662155
12	7	5310-00-080-6004	96906	MS27183-14
12	8	5310-00-732-0559	96906	MS51968-8
12	9	4820-00-849-1220	96906	MS35782-5
13	1		81343	6-4 120202BA(LON G NUT)
13	2	5310-00-971-7990	96906	MS35691-69
13	3	4730-00-278-6319	19207	5232954
13	4	4720-00-096-8802	19207	8327011-1
13	5	4730-00-007-9429	19207	11662113
13	6	4730-00-003-5230	19207	11662114
13	7	4720-00-096-8797	19207	8327011-2
13	8	4730-00-293-7108	96906	MS39197-3
13	9	4730-00-278-8825	81343	4 120111B
13	10		19207	11662156-1
13	11	4720-00-095-1011	19207	8327011-3
13	12	4730-01-104-8953	19207	11662234
13	13	4730-00-069-1186	81343	6-4 120102BA
14	1	4730-00-595-0083	96906	MS35746-1
14	2	5310-00-971-7990	96906	MS35691-69
14	3	4730-01-106-2211	19207	11662167
14	4	4730-00-231-5647	96906	MS39232-4
14	5	4730-00-289-0155	96906	MS39182-5
14	6	4730-00-293-7108	96906	MS39197-3
14	7	4730-00-278-8825	81343	4 120111B
14	8		19207	11662099-5
14	9		19207	11662099-6
14	10		81343	6-4 120202BA(LON G NUT)

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FIG.	ITEM	FIGURE AND ITEM NUMBER INDEX STOCK NUMBER	CAGEC	PART NUMBER
14	11	4730-00-278-6319	19207	5232954
14	12	4730-01-104-2268	96906	MS51953-25
14	13	4730-00-003-5230	19207	11662114
14	14	4730-00-007-5429	19207	11662113
14	15		19207	11662099-7
14	16		19207	11662099-2
14	17		19207	11662099-1
14	18		19207	11662059-3
14	19	4730-00-494-6580	96906	MS39190-3
14	20	4730-00-001-4677	19207	11662116
14	21	4730-00-007-9411	19207	11662117
14	22	4720-00-108-5989	19207	8327011-4
14	23	4730-00-069-1186	81343	6-4 120102BA
14	24		19207	11662099-8
14	25		19207	11662099-4
15	1	5340-00-161-1207	19207	11662230
15	2	2530-00-198-6277	73842	7520LBD
15	3		19207	11662227-1
15	4		19207	11662227-2
15	5		19207	11662228
15	6		19207	11662229
15	7	5330-01-101-4860	62707	M10HG108
15	8	5310-00-407-9566	96906	MS35338-45
15	9	5306-00-225-8496	96906	MS90725-31
15	10	5330-00-235-0977	19207	11662220-4
15	11	5330-00-235-0977	19207	11662220-4
15	12	3110-00-829-0575	96906	MS19081-113
15	13	3110-00-163-7713	19207	11602374-20
15	14	2530-00-388-9972	19207	11662224
15	15	5310-00-001-4844	19207	11662233
15	16	5305-00-939-9204	96906	MS90725-187
15	17		60528	7-4-240
15	18	2530-00-005-7356	19207	11662226
15	19	5310-00-067-6356	96906	MS51922-57
15	20		19207	11662393-3
15	21	5307-00-00-1022	19207	11662231
16	1	2640-00-158-5617	73808	20R
16	2	2610-00-260-7345	81348	GR0UP2/10.00-20/ TR444/TR464/ON0T
16	3	2610-00-060-9960	19207	11662389-1
17	1	2540-01-111-2286	19207	11662135
17	2	5340-00- 397-3354	19207	11662127
17	3	5315-00-211-8065	19207	11661977
17	4	6220-00-394-9740	19207	11662103-2
17	4	6220-01-106-2074	19207	11662103-1
17	5	4710-01-106-2073	19207	11662140
17	6	5340-00-521-9914	19207	11662141
17	7	2510-00-783-7259	19207	11662381
17	7	2540-00-007-2352	82304	970-498-389
17	7	5340-00-783-7161	19207	11662378
17	7	5340-00-783-7176	19207	11662379

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17	10		19207	11662383
17	10		19201	11662384
17	10		19207	11662385
17	11		19207	11662084-1
17	11		19207	11662084-2
17	12		19207	11662386
17	12		19207	11662387
17	13	4730-00-050-4208	96906	MS15003-1
18	1	5340-00-031-0658	19207	11662079
18	2	5315-00-922-0310	19207	11662097
18	3	5340-00-397-3309	19207	11662102
18	4		19207	11662219
19	1	3040-00-767-7359	19207	11662040
19	2	5310-00-814-0672	96906	MS51943-36
19	3	5310-00-080-6004	96906	MS27183-14
19	4	5305-00-269-3242	96906	MS90727-66
19	5	5340-00-352-9227	19207	11662007
19	6	3040-00-433-6981	19207	11662006
19	7	3040-00-004-4281	19207	11662048
19	8		19207	11662037
19	9		19207	11661588
19	10	3120-00-423-4096	19207	11661975-2
19	11	3020-00-006-1609	192 07	11662018
19	12	5315-00-007-6096	19207	11661981
19	13	5305-00-915-8087	96906	MS18154-113
19	14	5310-00-768-0318	96906	MS51967-14
19	15	5310-00-003-4094	01276	210104-8S
19	16	5305-00-269-3245	96906	MS90727-69
19	17	5310-00-959-1488	96906	MS51922-21
19	18	5340-00-388-9964	19207	11662030
19	19	5310-00-087-7493	96906	MS27183-13
19	20	5360-00-813-7813	19207	10896716
19	21	2590-01-176-4676	19207	11682454
19	22	5340-00-388-9965	19207	11682423
19	23	5340-00-007-2358	19207	11662014
19	24	2590-00-127-4802	19207	11682430
19	25	5305-00-655-9655	96906	MS90726-173
19	26	5365-00-432-0077	19207	11662003
19	27	5310-00-925-9642	96906	MS21083N10
19	28	2590-00-127-4805	19207	11682464
19	28	2590-00-127-9530	19207	11682463
19	29		19207	11662051
19	30	2590-00-127-9527	19201	11682436
19	31	2590-00-005-4956	80776	C29-0040523
19	32	5310-00-926-1852	96906	MS21083-N6
19	33	3040-00-089-6639	19207	11661985
19	34	5305-00-269-2813	96906	MS90726-69
19	35		19207	11662393-6

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19	37	2590-00-376-0007	19207	11682455
19	37	2590-00-376-0031	19207	11682456
19	38	3120-00-001-6753	19207	11661975
19	39	3120-00-001-4721	19207	11661980
19	40	3040-00-004-6844	19207	11662029
19	40	3040-00-392-9410	19207	11662000
19	41	5315-00-165-8096	19207	11661978
19	42	2590-00-392-9384	19207	11662024
19	43	5305-00-052-9050	96906	MS24630-35
19	44	5310-00-047-2965	96906	MS17826-12
19	45	5310-00-809-8533	96906	MS27183-23
19	46	3020-01-280-4132	19207	12255476
19	47	3020-00-937-1956	19207	11662011
19	48	3020-00-006-6094	19207	11662020
19	49	5315-00-009-7778	19207	11661976
19	50	5305-00-726-2551	96906	MS90727-164
19	51	5340-00-127-9525	19207	11682429
19	52	5305-00-052-6522	96906	MS24629-58
19	53	5310-00-209-0786	96906	MS35335-33
19	54	3020-00-922-0362	19207	11662017
19	55	5340-00-006-4866	19207	11661991
19	56	3120-01-268-5838	19207	11661975-1
19	57	3040-00-005-5094	19207	11662046
19	58	4730-00-916-3368	96906	MS15720-1
20	1	5306-00-205-3386	19207	11662327
20	2		19207	11662321
20	3	5310-00-079-1973	19207	11601810
20	4	5310-00-225-6409	96906	MS51922-68
20	5	2510-00-005-7664	19207	11662320
20	6	5360-01-106-2219	35311	H7052
20	7	2510-01-167-9176	19207	11662349
21	1	2530-00-006-0050	92967	7715-01
21	2	3120-00-036-6734	19207	11662341
21	3	2530-01-176-4717	19207	11662335
21	4		19207	11662330
21	4		19207	11662331
21	5	5305-00-716-8180	96906	MS90726-119
21	6	5340-00-531-0111	19207	11662337
21	7	3120-00-036-6734	19207	11662341
21	8	5310-00-761-6882	96906	MS51967-2
21	9	5310-00-809-5998	96906	MS27183-18
21	10	5340-00-005-8177	19207	11662339
22	1	5310-00-732-0559	96906	MS51968-8
22	2		96906	MS35338-46
22	3		19207	11662207
22	4	5340-00-091-9011	19207	11662175
22	5	5305-00-269-2805	96906	MS90726-62
22	6	2540-00-921-5069	96906	MS51331-6
23	1		19207	9408176
23	2		12662	B477AMBER

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23	2	9905-00-165-7172	12662	B477RED
24	1	5305-00-253-5618	96906	MS21318-27
24	2	5320-00-955-4941	96906	MS24662-76
24	3	4030-00-780-9350	96906	MS87006-13
24	4	7690-00-392-9570	19207	11662210-1
24	5		19207	11662210-2
24	6		19207	11662161
24	7	9905-00-181-8190	19207	11662174
24	8	9905-00-275-8202	19207	11662162
24	9		19207	11662176
24	10	7690-00-392-9608	19207	11662210-4
24	11	7690-00-392-9596	19207	11662210-3
24	12	9905-00-187-4627	19207	11682425
24	13	9905-00-187-4690	19207	11682424
24	14	9905-00-177-3454	19201	11682426
24	15		19207	11662264
24	16	7690-00-762-1735	19207	11662391
24	17	9905-00-999-7310	96906	MS53007-1
24	18	9905-00-999-7369	96906	MS53007-2
24	19		19207	11662171
24	20	9905-00-159-0025	19207	11662173
24	21	9905-00-279-8329	19207	11662172

**APPENDIX G****MANUFACTURED ITEMS LIST****Section I. INTRODUCTION**

This appendix includes complete instructions for making items authorized to be manufactured or fabricated at organizational maintenance

A part number index in numeric order is provided for cross referencing the part number of the item to be manufactured to the figure which covers the fabrication criteria

<b>Part Number</b>	<b>Name</b>	<b>Figure Number</b>
11662099-1	Tubing, Airbrake	1
11662099-2	Tubing, Airbrake	1
11662099-3	Tubing, Airbrake	1
11662099-4	Tubing, Airbrake	1
11662099-5	Tubing, Airbrake	1
11662099-6	Tubing, Airbrake	1
11662099-7	Tubing, Airbrake	1
11662099-8	Tubing, Airbrake	1
11662156-1	Tubing, Airbrake	1
	Wheel Chocks	2
11662242-1	Single Wiring Harness	3
11662242-2	Single Wiring Harness	3

**Section II. MANUFACTURED ITEMS**

This section includes the illustrations and fabrication criteria for the manufactured items.

**Change 1 G-1**

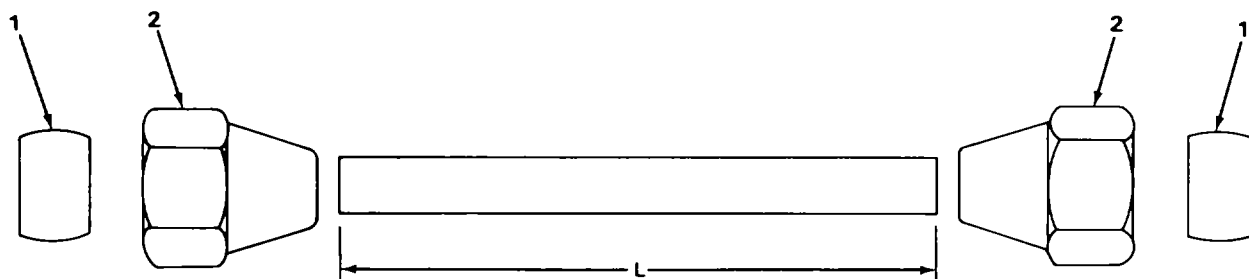
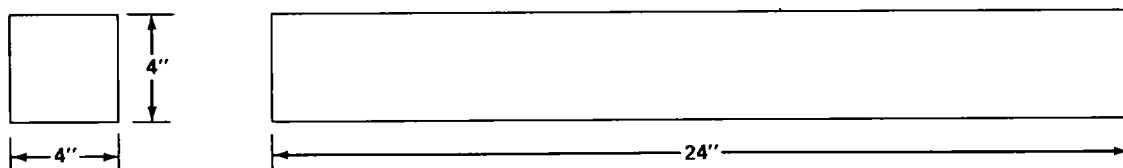


Figure 1. Airbrake tubing

PIN*	Length/inches (L)	Collar (1)	Nut (2)
11662099-1	22	MS39197-3	MS39196-3
11662099-2	25	(Two required to	(Two required to
11662099-3	28	complete tube	complete tube
11662099-4	55	assembly)	assembly)
11662099-5	15		
11662099-6	21		
11662099-7	26.25		
11662099-8	52		
11662156-1	30		

\*Make from part number 8689208 copper tubing



MANUFACTURE FROM 4" x 4" WOOD STOCK  
WHEEL CHOCKS

Figure 2. Wheel chocks

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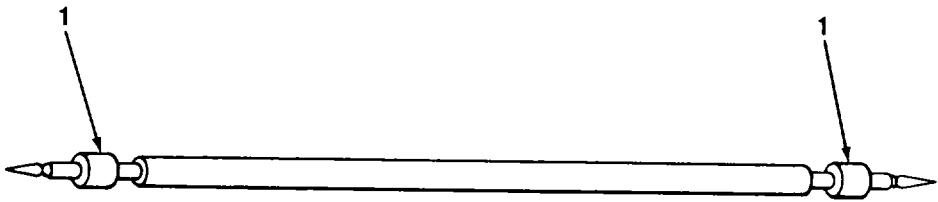



Figure 3. Single wiring harness

P/N	Make from P/N	Terminal (2)
11662242-1	M5086/3-14-9	51322
11662242-2	M5086/7-14-9	(Two required)

Cut to length, install and crimp terminals to wire ends










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Change 1 G-3/(G-4 blank)

## APPENDIX H

## TORQUE LIMITS

## CAPSCREW MARKING

Current Usage	Much Used	Much Used	Used at Times	Used at Times
Quality of Material	Indeterminate	Minimum Commercial	Medium Commercial	Best Commercial
SAE Grade Number	1 or 2	5	6 or 7	8
Capscrew Head Markings			6  7 	 
Manufacturer's marks may vary				
These are all SAE Grade 5 (3 line)	  			

## TORQUE VALUES

**CAUTION**

If replacement capscrews are of a higher grade than originally supplied, use torque specifications for that placement. This will prevent equipment damage due to over torquing.

Capscrew Body Size (Inches) - (Thread)		Torque Ft Lb (N•m)		Torque Ft Lb (N•m)		Torque Ft Lb (N•m)		Torque Ft Lb (N•m)	
1/4	20	5	(7)	8	(11)	10	(14)	12	(16)
		28	6	(8)	10	(14)	14	(19)	
5/16	18	11	(15)	17	(23)	19	(26)	24	(33)
	24	13	(18)	19	(26)			27	(37)
3/8	16	18	(24)	31	(42)	34	(46)	44	(60)
	24	20	(27)	35	(47)			49	(66)
7/16	14	28	(38)	49	(66)	55	(75)	70	(95)
	20	30	(41)	55	(75)			78	(106)
1/2	13	39	(53)	75	(102)	85	(115)	105	(142)
	20	41	(56)	85	(115)			120	(163)
9/16	12	51	(69)	110	(149)	120	(163)	155	(210)
	18	55	(75)	120	(163)			170	(231)
5/8	11	83	(113)	150	(203)	167	(226)	210	(285)
	18	95	(129)	170	(231)			240	(325)
3/4	10	105	(142)	270	(366)	280	(380)	375	(508)
	16	115	(156)	295	(400)			420	(569)
7/8	9	160	(217)	395	(536)	440	(597)	605	(820)
	14	175	(237)	435	(590)			675	(915)
1	8	235	(319)	590	(800)	660	(895)	910	(1234)
	14	250	(339)	660	(895)			990	(1342)

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## TORQUE VALUES - CONTINUED

### NOTE

**Always use the torque values listed above when specific torque values are not available.**

Do not use above values in place of those specified in other sections of this manual; special attention should be observed when using SAE Grade 6, 7, and 8 capscrews.

The above is based on use of clean, dry threads.

Reduce torque by 10 percent when engine oil is used as a lubricant.

Reduce torque by 20 percent if new plated capscrews are used.

Capscrews threaded into aluminum may require reductions in torque of 30 percent or more of Grade 5 capscrews torque and must attain two capscrew diameters of thread engagement.

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By Order of the Secretary of the Army:

JOHN A. WICKHAM, JR.  
General, United States Army  
Chief of Staff

**Official:**

DONALD J DELANDRO  
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The Adjutant General

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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 = 1,000 Millimeters =  
39.37 Inches  
1 Kilometer = 1,000 Meters = 0.621 Miles

### SQUARE MEASURE

1 Sq Centimeter = 100 Sq Millimeters = 0.155 Sq Inches  
1 Sq Meter = 10,000 Sq Centimeters = 10.76 Sq Feet  
1 Sq Kilometer = 1,000,000 Sq Meters = 0.386 Sq Miles

### CUBIC MEASURE

1 Cu Centimeter = 1,000 Cu Millimeters = 0.06 Cu Inches  
1 Cu Meter = 1,000,000 Cu Centimeters = 35.31 Cu Feet

### LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces  
1 Liter = 1,000 Milliliters = 33.82 Fluid Ounces

### TEMPERATURE

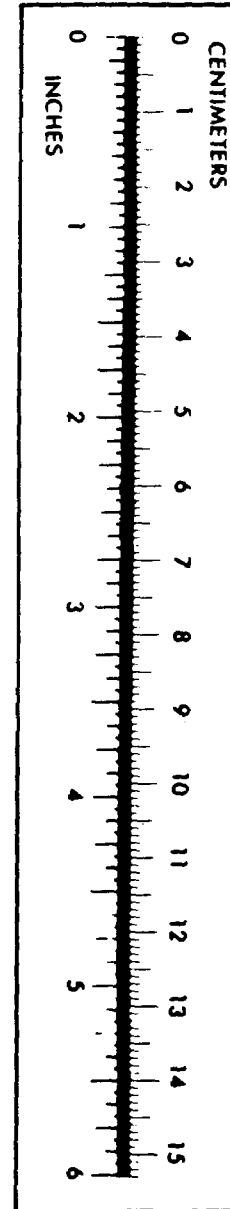
$5/9 (^{\circ}\text{F} - 32) = ^{\circ}\text{C}$   
212° Fahrenheit is equivalent to 100° Celsius  
90° Fahrenheit is equivalent to 32.2° Celsius  
32° Fahrenheit is equivalent to 0° Celsius  
 $9/5 ^{\circ}\text{C} + 32 = ^{\circ}\text{F}$

### WEIGHTS

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

### 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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