

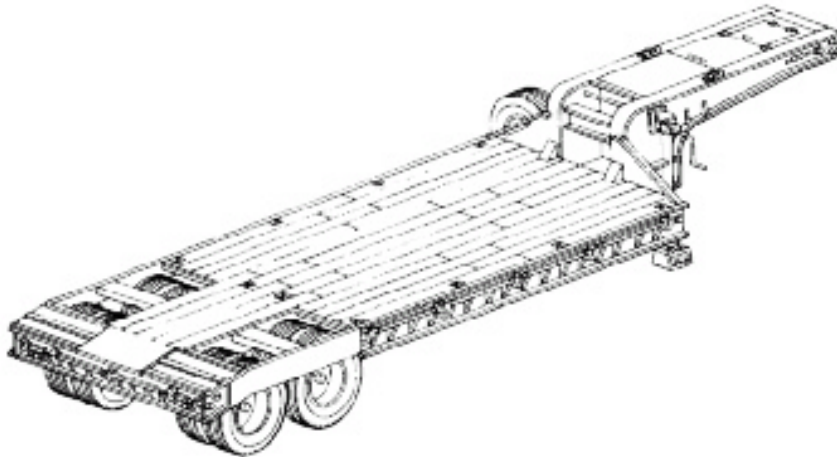
# TM 9-2330-211-14&P

## TECHNICAL MANUAL

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

#### FOR

SEMITRAILER, LOWBED: 25 TON,  
4 WHEEL, M172A1 (NSN 2330-00-317-6448)



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This manual supersedes TM 9-2330-211-14&P dated 5 September 1984, and all changes.

Approved for public release; distribution is unlimited.

HEADQUARTERS, DEPARTMENT OF THE ARMY

JULY 1991

CHANGE  
No. 2

HEADQUARTERS  
DEPARTMENT OF THE ARMY  
Washington D.C., 17 June 1999

**TECHNICAL MANUAL**  
**OPERATOR'S, UNIT, DIRECT SUPPORT, AND**  
**GENERAL SUPPORT MAINTENANCE MANUAL**  
**(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LISTS)**  
**FOR**  
**SEMITRAILER, LOWBED: 25 TON,**  
**4 WHEEL, M172A1 (NSN 2330-00-317-6448)**

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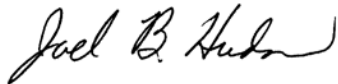
<i>Remove Pages</i>	<i>Insert Pages</i>
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Index 1 through Index 4	Index-1 through Index-4
2028's	2028's

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DENNIS J. REIMER  
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CHANGE 1

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OPERATOR'S, UNIT, DIRECT SUPPORT AND  
GENERAL SUPPORT MAINTENANCE MANUAL  
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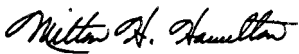
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DISTRIBUTION:

To be distributed IAW DA FORM 12-39-E (Block 0712) Operator, Unit, Direct Support and General Support maintenance requirements for TM 9-2330-211-14&P.

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

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**WARNING**

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**ASBESTOS HAZARD**

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

---

**WARNING**

---

**COMPRESSED AIR**

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

---

**WARNING**

---

**COUPLING AND UNCOUPLING OPERATIONS**

All persons not involved in coupling and uncoupling operations must stand clear of tractor and semitrailer to prevent possible injury.

---

**WARNING**

---

**DRY CLEANING SOLVENT**

Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38 °C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

---

**WARNING**

---

**HIGH PRESSURE AIR**

- Wear safety goggles when opening air reservoir draincock to protect eyes from high pressure air.
- Always release air from system before working on airbrake system. Failure to do so could result in personal injury.

---

**WARNING**

---

**NONOPERATIONAL LIGHTS**

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

TECHNICAL MANUAL

TM 9-2330-211-14&P

HEADQUARTERS  
DEPARTMENT OF THE ARMY  
Washington, D.C., 14 July 1991

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

**FOR**

**SEMITRAILER, LOWBED: 25 TON,  
4 WHEEL, M172A1 (NSN 2330-00-317-6448)**

Current as of 27 February 1991

**REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS**

You can help improve this manual. If you find any mistakes or 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, U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-AC-NML, Rock Island, IL 61299-7630. A reply will be furnished to you.

You may also provide DA Form 2028-2 information to TACOM via datafax or e-mail:

- TACOM's fax number is DSN 793-0726 or (309) 782-0726
- TACOM's e-mail address is amsta-ac-nml@ria-emh2.army.mil

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\* This manual supersedes TM 9-2330-211-14&P, dated 5 September 1984, and all changes.

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CHAPTER 1  
INTRODUCTION

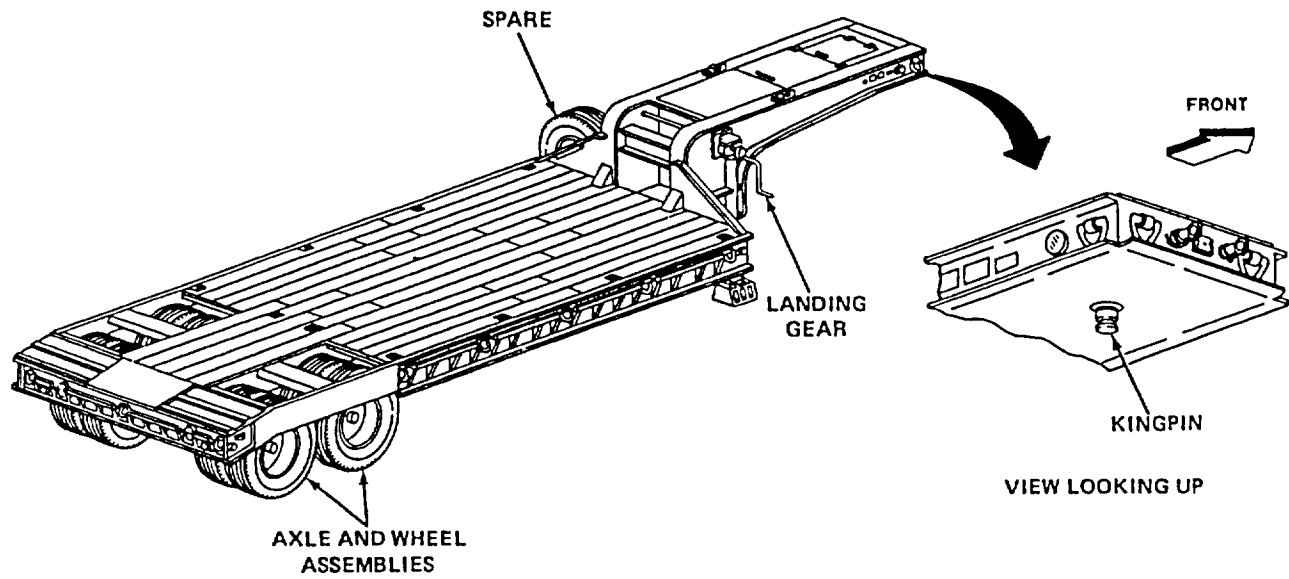
1-1. OVERVIEW

The purpose of this chapter is to acquaint you with the M172A1 semitrailer equipment, size, shape, and operation.

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1-2. SCOPE

*Type of Manual.* Operator's, Unit, Direct Support, and General Support Maintenance (Including Repair Parts and Special Tools Lists).

*Model Number and Equipment Name.* M172A1, 25 Ton Lowbed Semitrailer.

*Purpose of Equipment.* Carries equipment on highways and/or off-road.

1-3. MAINTENANCE FORMS, RECORDS, AND REPORTS

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

1-4. DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

Refer to TM 750-244-6, *Procedures for Destruction of Tank-Automotive Equipment to Prevent Enemy Use*.

1-5. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIRs)

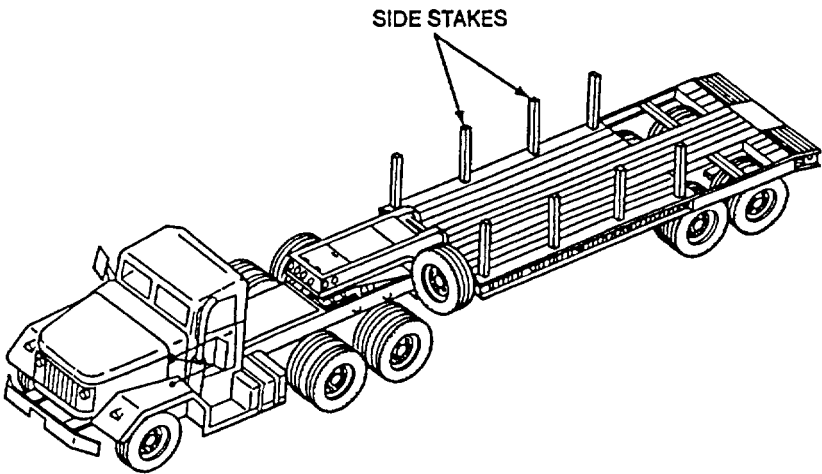
If your semitrailer needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know what you don't like about the design or performance. Put it on an SF Form 368 (Quality Deficiency Report). Mail it to us at: Commander, U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-IM-OPIL, Warren, MI 48397-5000. We will send you a reply.

Section II. EQUIPMENT DESCRIPTION AND DATA

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Equipment Characteristics, Capabilities, and Features .....	1-2	Location and Description of Data Plates.....	1-4
Equipment Data.....	1-5	Location and Description of Major Components.....	1-2

1-6. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES

The M172A1 Lowbed Semitrailer is designed to be pulled by a tractor equipped with a fifth wheel. Side stakes can be added to configure for various types of cargo.



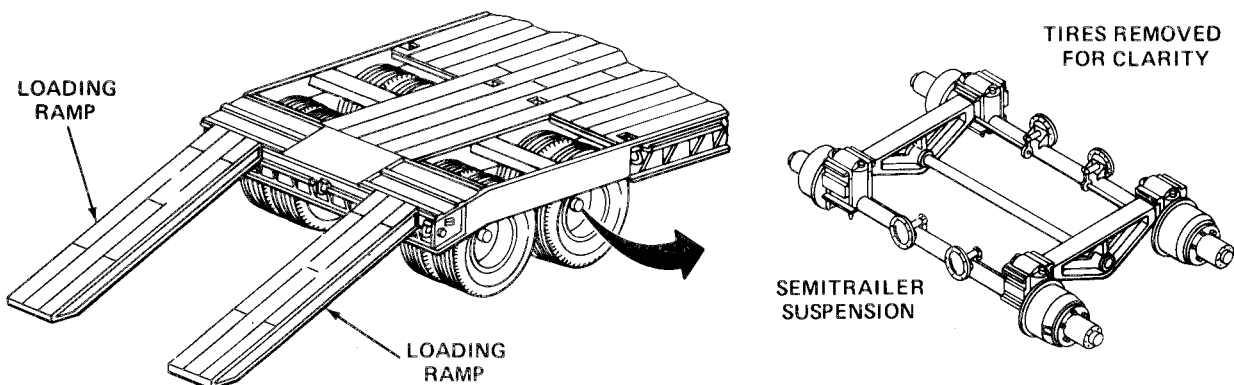
1-7. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

The semitrailer suspension has two rear-mounted axles that are attached to a walking beam assembly. The walking beam assembly is attached to the frame of the semitrailer.

Two loading ramps are furnished with the semitrailer. The ramps are used to load and unload the semitrailer.

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## 1-7. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Con't)



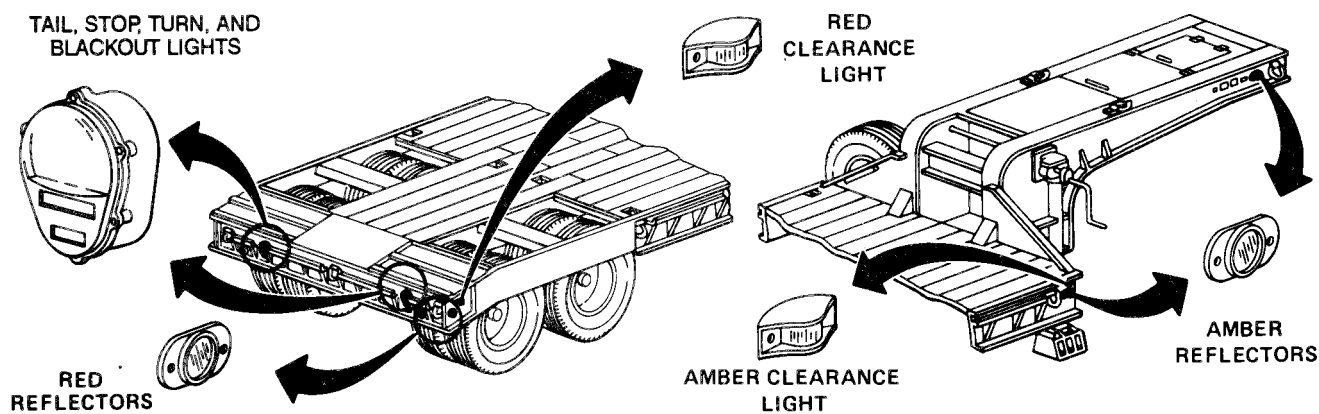
A composite service tail, stop, turn signal, and blackout light is mounted at both left and right rear of semitrailer.

A red clearance light is mounted on both left and right sides, at rear of semitrailer.

An amber clearance light is mounted on both left and right sides, near the front of the semitrailer.

There are two red reflectors at each rear corner of the semitrailer.

There are two amber reflectors at each front corner of the semitrailer, and one on the left and right side of the gooseneck.

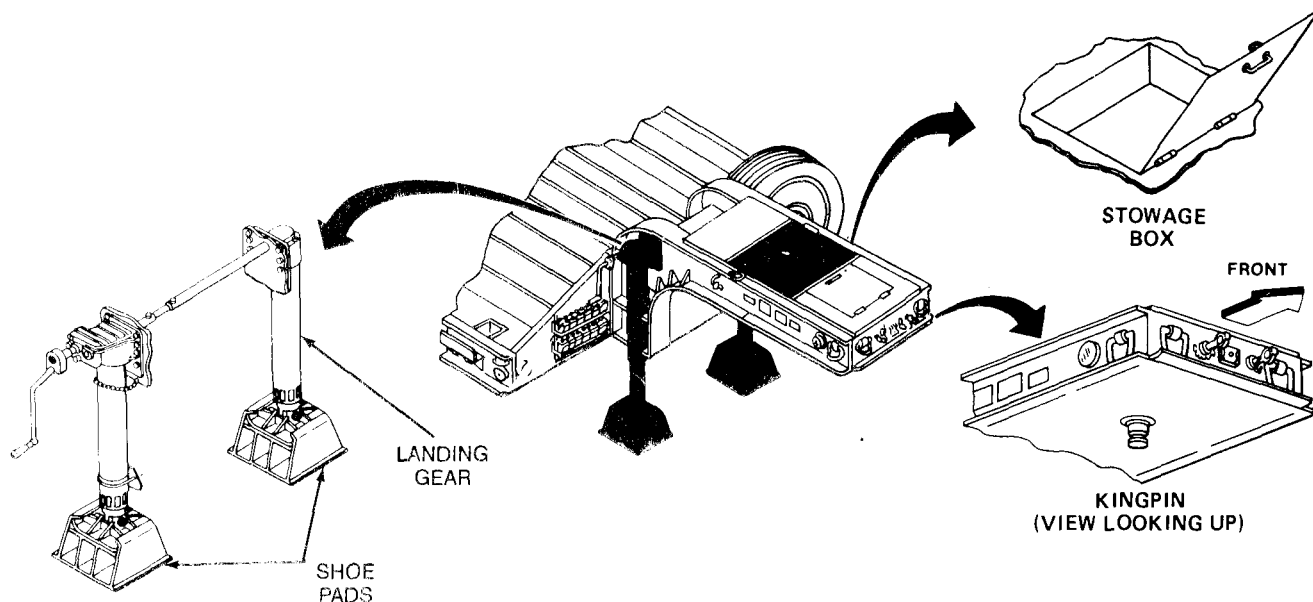


## 1-7. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Con't)

A stowage box that is opened with a pull handle is located on the top forward portion of the gooseneck.

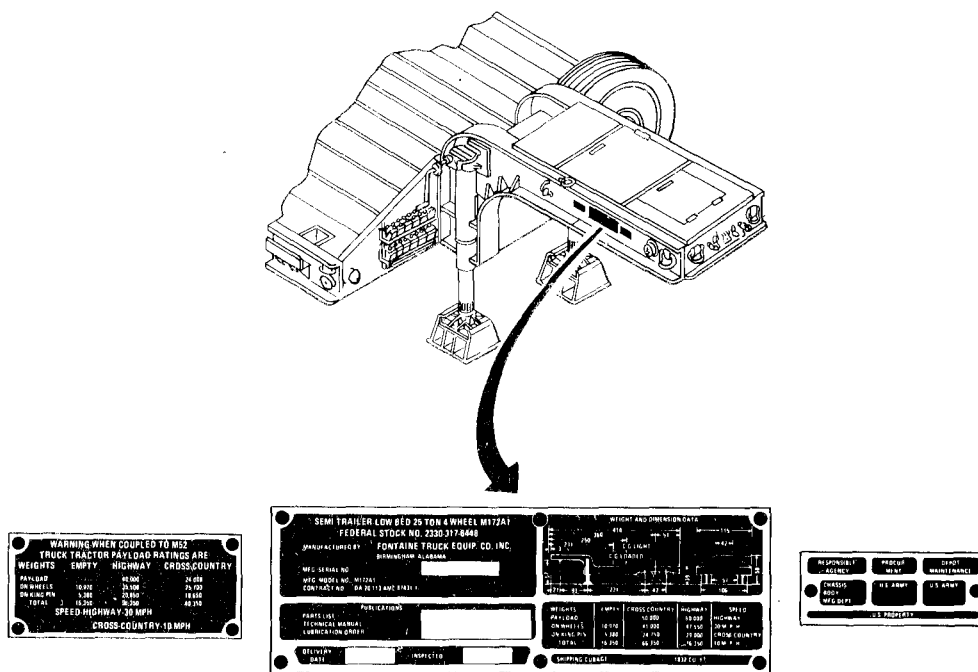
A kingpin extends below a fifth wheel upper plate and fits into the tractor fifth wheel when semitrailer is coupled.

A manually operated two speed landing gear supports the front of the semitrailer when not coupled. Shoe pads keep the landing gear legs from sinking into the ground.



## 1-8. LOCATION AND DESCRIPTION OF DATA PLATES

Data, payload, and service plates are located at the right side of the frame on the gooseneck.



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**1-9. EQUIPMENT DATA**

Equipment and performance data for the M172A1 semitrailer and major components are listed here. All weights and dimensions are approximate.

<b>Dimensions-Overall:</b>	
Length.....	414 in. (10.52 m)
Width.....	115 in. (2.92 m)
Height.....	68 in. (1.72 m)
<b>Dimensions-Deck:</b>	
Length.....	192 in. (4.88 m)
Width.....	115 in. (2.92 m)
Height, Normal.....	39 3/8 in. (100 cm)
<b>Weights:</b>	
Curb Weight (Complete)	
Vehicle Less Cargo.....	16,500 lb (7,491 kg)
Maximum Cargo Weight.....	50,000 lb (22,700 kg)
Gross Weight Including Cargo.....	66,500 lb (30,191 kg)
<b>Axles:</b>	
Quantity.....	2, Tubular
Wheel Bearing Manufacturer.....	Timken, Detroit Axle Co.
Type.....	Taper
Suspension.....	Tandem with Walking Beam
Hub Manufacturer.....	Timken, Detroit Axle Co.
Hub Quantity.....	2 with Left Studs 2 with Right Studs
<b>Wheels:</b>	
Type.....	Desi
Manufacturer.....	Budd Wheel
Rim Size.....	15 x 7.50
Rim Type.....	Advance Military
<b>Tires:</b>	
Quantity (Including Spare).....	9
Size.....	10.00R15
Ply.....	Radial
Type.....	Military Light Truck Rib
Tread Design.....	Highway
Recommended Air Pressure:	
Highway.....	80 psi (552 kPa)
Secondary.....	80 psi (552 kPa)
Off Road.....	Not Available
<b>Service Brakes:</b>	
Manufacturer.....	Standard Forge and Axle Co.
Type.....	S-cam, Two-shoe, Double Anchor, Internal Expanding
Actuation.....	Air
Airbrake System Manufacturer.....	Midland
Type.....	Airbrake Chamber Activated

**1-9. EQUIPMENT DATA (Con't)**

<b>Landing Gear:</b>	
Type .....	Vertical Screw
Manufacturer .....	Austin
Model .....	J3202
<b>Electrical System</b> .....	24 Volts, 12 Pin Receptacle

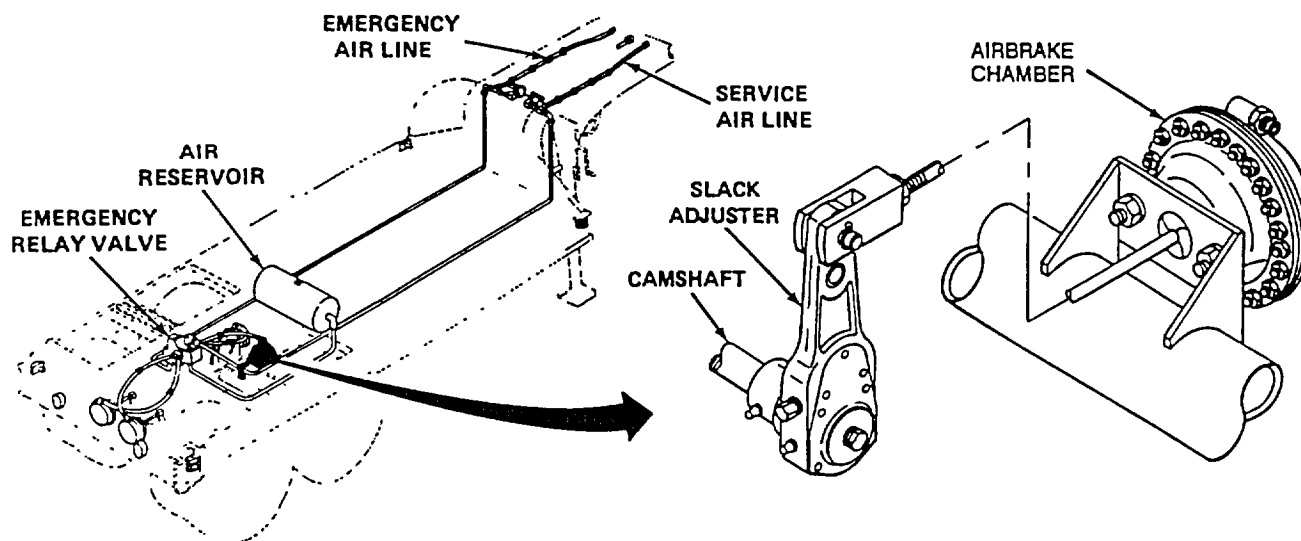
**Section III. PRINCIPLES OF OPERATION**

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Airbrake System .....	1-6	Lighting System .....	1-7

**1-10. AIRBRAKE SYSTEM**

Tractor air supply pressure should not be less than 50 psi (345 kPa) for proper brake application. When the brake air hose is connected between the tractor and the semitrailer, air flows through the emergency air line and emergency relay valve. Air pressure is built up to equal the pressure in the system of the tractor.

When pressure is applied to the brake pedal of the tractor, air pressure is directed through the service air line to the emergency relay valve. This valve releases reservoir air to the airbrake chambers. Air pressure behind the airbrake chamber diaphragms moves the slack adjusters. The slack adjusters operate the camshafts, which forces the brakeshoes against the drum. Brakeshoe and drum friction slows, stops, and/or holds the semitrailer until the brake pedal/lever is released, allowing applied air to vent.



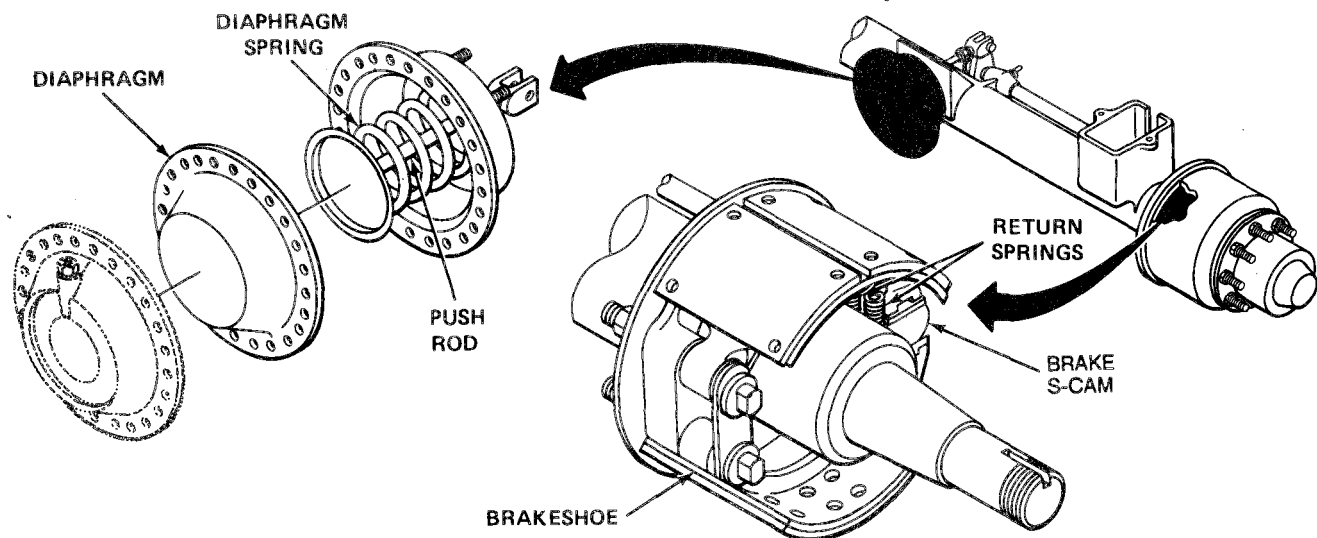
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## 1-10. AIRBRAKE SYSTEM (Con't)

**Emergency Relay Valve.** The emergency relay valve is located above and between the front and rear axles. It speeds up the brake application by releasing reservoir air to airbrake chambers for service brakes. It also automatically applies emergency braking if the semitrailer breaks away from the tractor. Available connections are to the emergency air line, service air line, air reservoir tanks, airbrake chambers, and to an exhaust port that vents the used compressed air.

**Airbrake Chamber Assembly.** There are four airbrake chambers, two on each axle. The airbrake chamber converts the energy of compressed air into the mechanical force and motion necessary to operate the brake. As air pressure enters the airbrake chamber behind the diaphragm of the chamber, the diaphragm pushes the push rod outward. The outward motion of the push rod rotates the slack adjuster.

**Brakeshoe Assembly.** There are two brakeshoes on each wheel and tire assembly. The rotating slack adjuster turns the camshaft and the brake S-cam. The brake S-cam pushes the brakeshoes outward to contact the inside of the drum. This action applies the brakes. When all air pressure is released from the airbrake chamber, the brakeshoe return spring and airbrake chamber spring return the brakeshoes to a released position.



## 1-11. LIGHTING SYSTEM

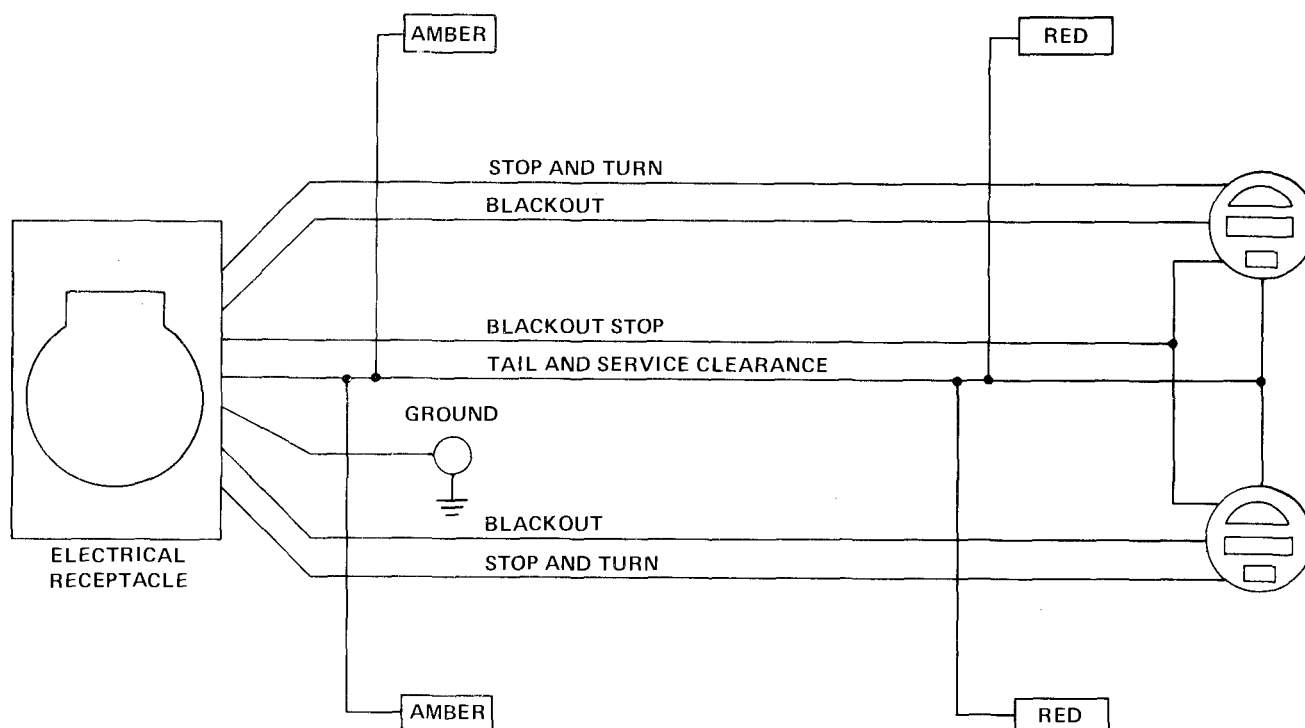
The intervehicular receptacle on the front of the semitrailer gooseneck receives lighting power from the tractor. The power is sent through a single wiring harness to the clearance lights and composite lights.

**Composite Tail, Turn, Stop, and Blackout Lights.** The composite tail, turn, stop, and blackout lights, located on left and right rear of semitrailer, have four bulbs each. One bulb functions as a taillight when the service lights are turned to ON, and one bulb functions as both turn and stoplight. The third and fourth bulbs function as blackout light and blackout stoplight when the blackout light switch is turned to ON. The blackout lights automatically turn off the tail, stop, turn, and clearance lights if both switches are on at the same time.



**1-11. LIGHTING SYSTEM (Con't)**

*Clearance Service Lights.* The clearance service lights are located at front and rear of both sides. They go on when either the tractor clearance lights or the service lights are turned to ON. They go off automatically when the blackout lights are turned to ON.



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## CHAPTER 2

### OPERATING INSTRUCTIONS

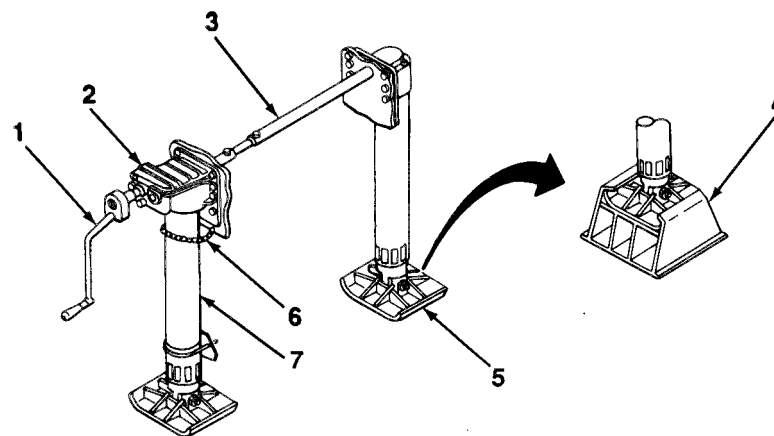
#### 2-1. OVERVIEW

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

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

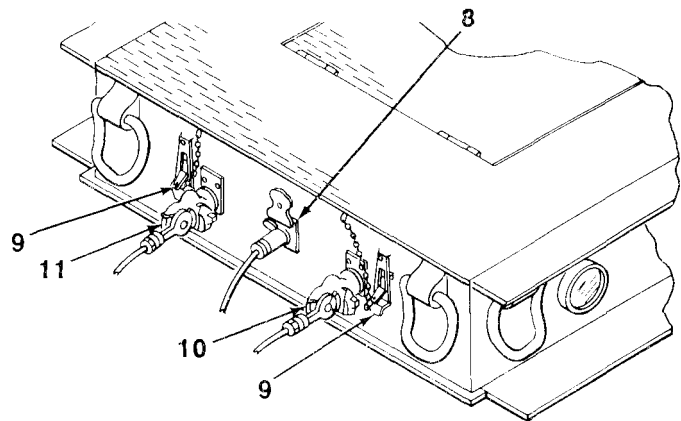
#### 2-2. CONTROLS AND INDICATORS



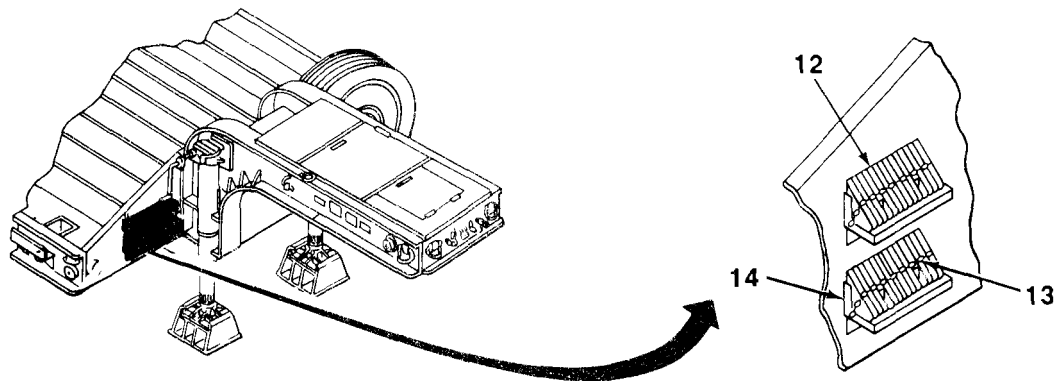
KEY	CONTROL OR INDICATOR	FUNCTION
1	Handcrank	Operates landing gear. Turning handcrank clockwise lowers landing gear; counterclockwise raises landing gear. Pull out handcrank for high speed, and push in for low speed operation.
2	Gearbox	Operated by handcrank. Moves legs up or down.
3	Shaft	When turned by gearbox, moves left leg.
4	Shoe Pad	Used to extend the length of landing gear legs.
5	Landing Gear Shoe	Keeps leg from sinking into the ground.
6	Handcrank Stow Chain	Stows handcrank when handcrank is not in use.
7	Leg	Two legs support weight of semitrailer.

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2-2. CONTROLS AND INDICATORS (Con't)

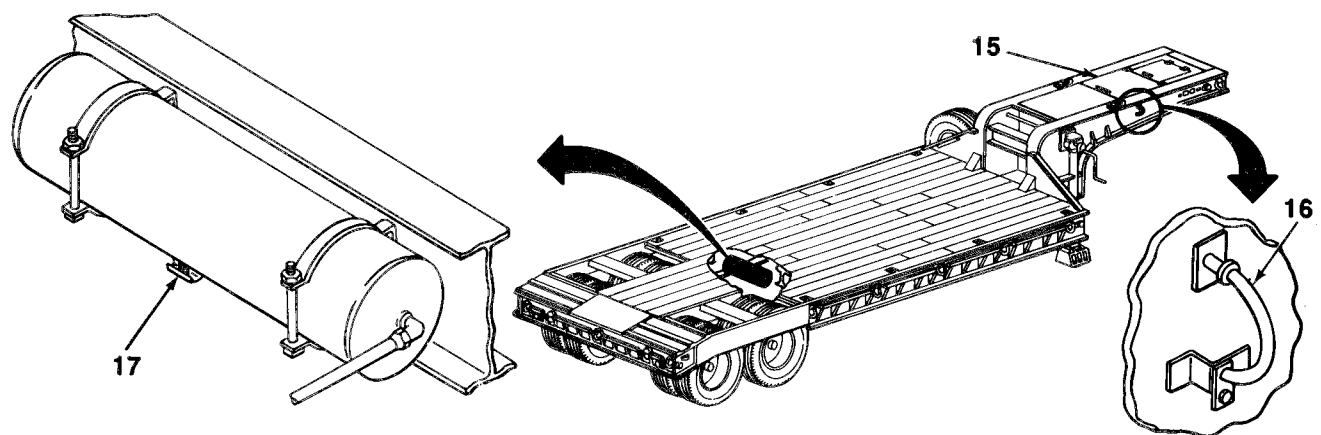


KEY	CONTROL OR INDICATOR	FUNCTION
8	Electrical Receptacle Connector	Provides connection between tractor electrical system and semitrailer 24 volt lights. A cover keeps foreign matter out when cable is disconnected.
9	Dummy Couplings	Cover emergency and service air couplings when not coupled to tractor. Keep foreign matter out of semitrailer air lines.
10	Emergency Air Coupling	Provides connection between semitrailer emergency brake system and tractor air supply system.
11	Service Air Coupling	Provides connection between semitrailer service brake system and tractor air supply system.



**2-2. CONTROLS AND INDICATORS (Con't)**

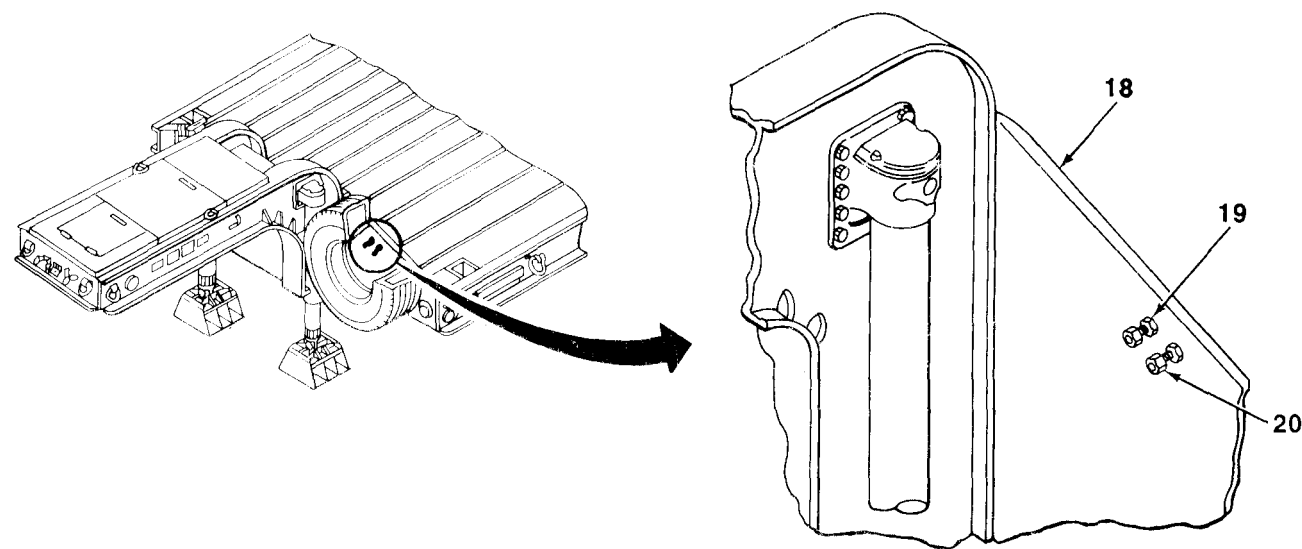
KEY	CONTROL OR INDICATOR	FUNCTION
12	Chock Blocks	One placed in front of each outer forward wheel and tire assembly. One placed behind each rear outer wheel and tire assembly to keep it from moving.
13	Chains	Fasten chock blocks to semitrailer to keep them from being misplaced.
14	Stowage Brackets	Stow chock blocks when not in use. Located on right front of semitrailer.

**STOWAGE BOX AND AIR RESERVOIR**

KEY	CONTROL OR INDICATOR	FUNCTION
15	Stowage Box Door	Hinged to fold flush with the floor deck.
16	Latches	Hold stowage box door closed. Located on right and left sides of the gooseneck.
17	Air Reservoir Draincock	Used to drain moisture and/or air from semitrailer brake system. Air reservoir located on frame ahead of forward rear axle.

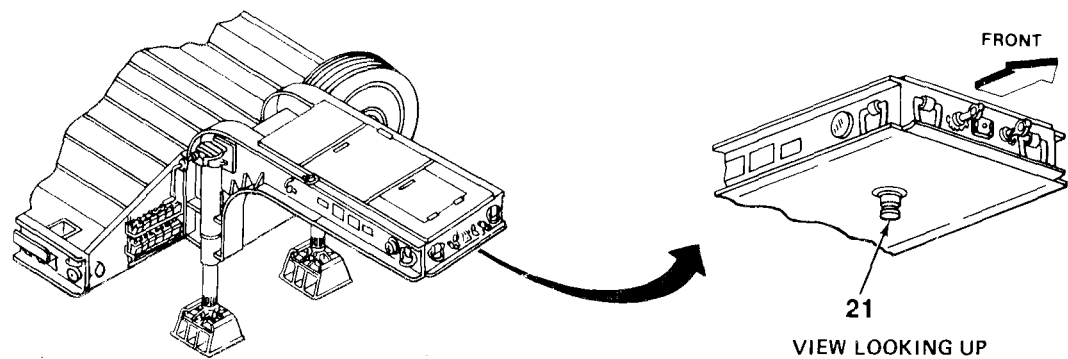
2-2. CONTROLS AND INDICATORS (Con't)

SPARE WHEEL AND TIRE CARRIER



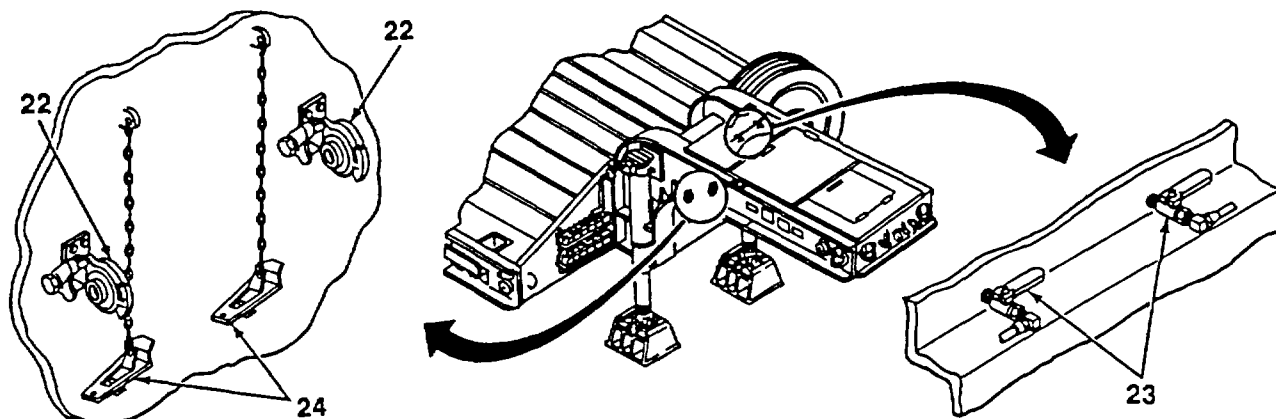
KEY	CONTROL OR INDICATOR	FUNCTION
18	Gooseneck Gusset	Mounting location for spare wheel and tire assembly.
19	Studs	Hold spare wheel and tire assembly in position.
20	Nuts	Fasten spare wheel and tire assembly to the studs.

KINGPIN



**2-2. CONTROLS AND INDICATORS (Con't)**

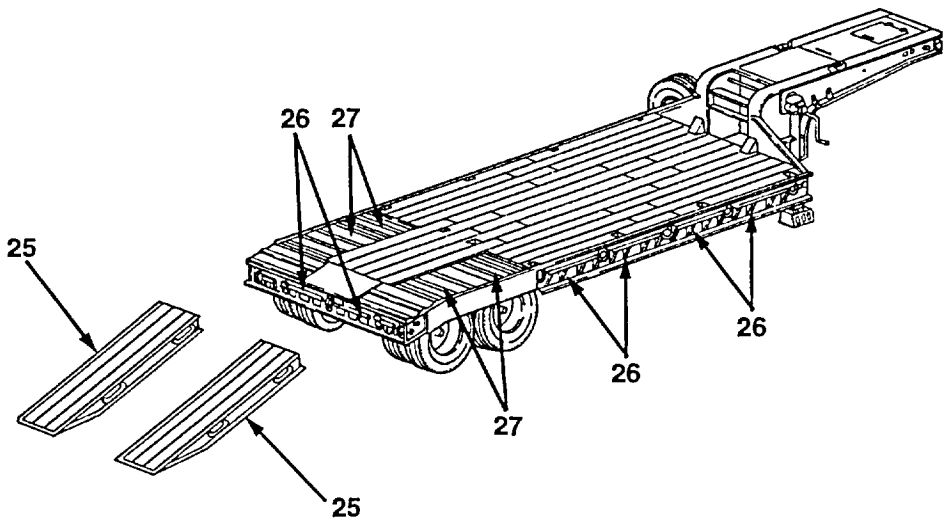
KEY	CONTROL OR INDICATOR	FUNCTION
21	Kingpin	Attaches to fifth wheel of tractor. Reversing kingpin provides either a 2 ½ or 3 ½ In. (6.4 or 8.9 cm) connection to the fifth wheel of tractor.

**DOLLY AIR COUPLINGS AND BALL VALVES**

KEY	CONTROL OR INDICATOR	FUNCTION
22	Dolly Air Couplings	Located at rear underside of gooseneck. Connect service and emergency air lines from dolly to semitrailer.
23	Ball Valves	Located In gooseneck well. Shut off air lines to dolly when hose couplings are disconnected.
24	Dummy Couplings	Cover dolly air couplings when not coupled to dolly. Keep foreign matter out of semitrailer air lines.

2-2. CONTROLS AND INDICATORS (Con't)

LOADING RAMP AND WHEEL COVER PLATES



KEY	CONTROL OR INDICATOR	FUNCTION
25	Loading Ramps	Furnished to load and unload semitrailer.
26	Ramp Clips	Two ramp clips are located on rear beam and four are located on each side member. Loading ramps rest on clips during loading and unloading. Clips are constructed so that when properly positioned, the loading ramp cannot tip.
27	Wheel Cover Plates	Depending on mission, wheel cover plates should be placed on load bed to cover wheel openings during loading and unloading operations.

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

	Page		Page
General .....	2-6	Specific PMCS Procedures.....	2-7
Operator/Crew Preventive Maintenance Checks and Services (PMCS), Table 2-1 .....	2-8		

2-3. GENERAL

Every mission begins and ends with paperwork. There isn't much of it, but you have to keep it up. The forms and records you fill out have several uses. They are a permanent record of the services, repairs, and modifications made on your vehicle. They are reports to Unit maintenance and to your commander. They are also a checklist for you when you want to know what is wrong with the vehicle after its last use, and whether those faults have been fixed. For the information you need on forms and records, refer to DA Pam 738-750.

## 2-3. GENERAL (Con't)

Perform your *Before* (B) PMCS just before you operate the vehicle. Pay attention to the CAUTIONs and WARNINGs.

Perform your *During* (D) PMCS while the equipment and/or its component systems are in operation. Pay attention to the CAUTIONs and WARNINGs.

Perform your *After* (A) PMCS right after operating the vehicle. Pay attention to the CAUTIONs and WARNINGs.

Perform your *Weekly* (W) PMCS once each week.

## 2-4. SPECIFIC PMCS PROCEDURES

Always perform your PMCS 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.

When you perform your PMCS, take along a rag or two.

The EQUIPMENT IS NOT READY/AVAILABLE IF column tells you why your equipment cannot be used if the ITEM TO BE INSPECTED does not meet PROCEDURE needs.

While performing PMCS, observe CAUTION and WARNING paragraphs preceding those operations that could endanger your safety or result in damage to the equipment.

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

If anything looks wrong and you can't fix it, write it on your DA Form 2404 (*Equipment Inspection and Maintenance Worksheet*). The ITEM NO. column is the source for the numbers used on the TM Item Number column on DA Form 2404. If you find something seriously wrong, report it immediately to unit maintenance.

### WARNING

**Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.**

**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 dry cleaning solvent (Item 13, Appendix E) to clean metal surfaces. Use soap (Item 4, Appendix E) 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 unit maintenance.

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

**Hoses.** Look for wear, damage, and leaks. Ensure that 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 unit maintenance.

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



**2-4. SPECIFIC PMCS PROCEDURES (Con't)****Leakage Definitions for Operator/Crew PMCS**

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

**CAUTION**

**When operating with Class I or Class II leaks, continue to check fluid levels in addition to that required in PMCS. Parts without fluid will stop working or may be damaged.**

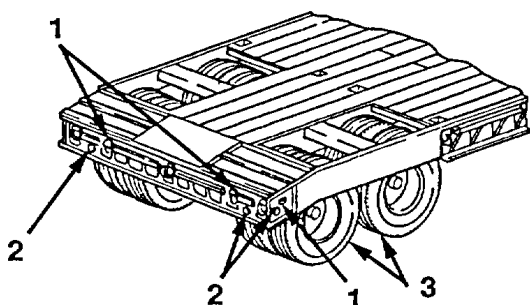
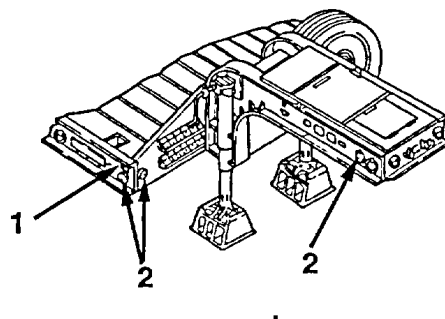
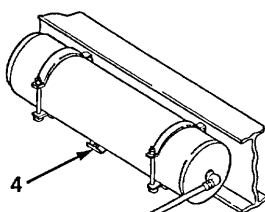
Equipment operation is allowed with minor (Class I or II) leakage. Fluid levels in an item/system affected with such leakage must be checked more frequently than required in PMCS. When in doubt, notify your supervisor.

Report Class III leaks IMMEDIATELY to your supervisor.

*Table 2-1. Operator/Crew Preventive Maintenance Checks and Services (PMCS).*

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 align="center"><b>NOTE</b></p> <p align="center">Perform (W) as well as (B) PMCS if:</p> <ul style="list-style-type: none"><li>- You are the assigned operator but have not used semitrailer since the last weekly.</li><li>- You are using the semitrailer for the first time.</li></ul> <p align="center">MAKE THE FOLLOWING WALKAROUND CHECKS</p> <p><b>BODY/ACCESSORIES</b></p> <ul style="list-style-type: none"><li>a. Visually check for loose, missing, or damaged parts.</li><li>b. Check lights (1) and reflectors (2) for conditions and proper operation.</li></ul>	Running, stop, or turn lights do not operate.	
	2				<p><b>FRAME</b></p> <ul style="list-style-type: none"><li>a. Visually check for bent, cracked or broken frame.</li><li>b. Visually check ramp outer rear clips for damage.</li></ul>		

Table 2-1. Operator/Crew Preventive Maintenance Checks and Services (PMCS) (Con't).

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															
3					<p style="text-align: center;"><b><u>WARNING</u></b></p> <p style="text-align: center;">Loading/unloading operations with wheel openings uncovered may cause serious injury or death to the operator.</p> <p><b>TIRES</b></p> <ul style="list-style-type: none"><li>• a. Visually check all tires (3) for gouges, cracks, tread separation, and foreign objects.</li><li>• b. Check tire pressure. Recommended radial-ply tire pressures are:  Highway ..... 80 psi (552 kPa) Secondary Road ..... 80 psi (552 kPa) Cross Country ..... Not Available</li></ul> <div></div> <div></div>										Two tires are flat, missing, or unserviceable.				
					<ul style="list-style-type: none"><li>• c. Inspect wheel nuts for tightness. Tighten if necessary. Have unit maintenance torque inner nuts to 300-350 lb.-ft. (407-475 N*m) and outer nuts to 450-500 lb.-ft. (610-678 N*m).</li></ul> <p><b>AIR RESERVOIR</b></p> <p style="text-align: center;"><b><u>WARNING</u></b></p> <p style="text-align: center;">Wear safety goggles when opening air reservoir draincock to protect eyes from high pressure air.</p> <ul style="list-style-type: none"><li>• a. Open draincock (4) and drain all moisture from the air reservoir.</li><li>• b. Close draincock (4).</li></ul> <div></div>										Two or more wheel nuts are missing from any one wheel.				
4																			



Section III. OPERATION UNDER USUAL CONDITIONS

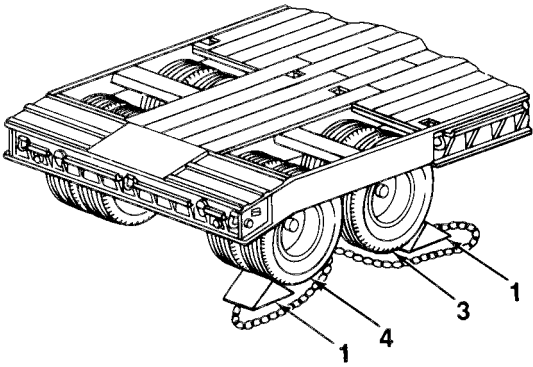
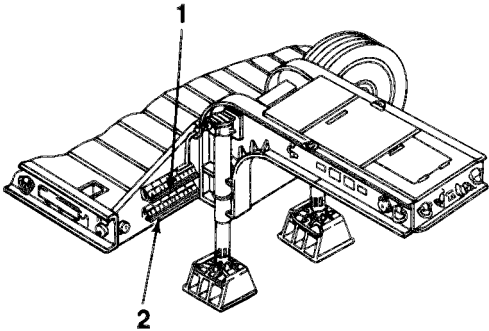
	Page		Page
After Use . . . . .	2-19	Preparation for Use . . . . .	2-11
Operation . . . . .	2-18		

2-5. PREPARATION FOR USE

Perform all *Before* (B) Operator/Crew Preventive Maintenance Checks and Services in Table 2-1 before doing the procedures below.

POSITIONING CHOCK BLOCKS

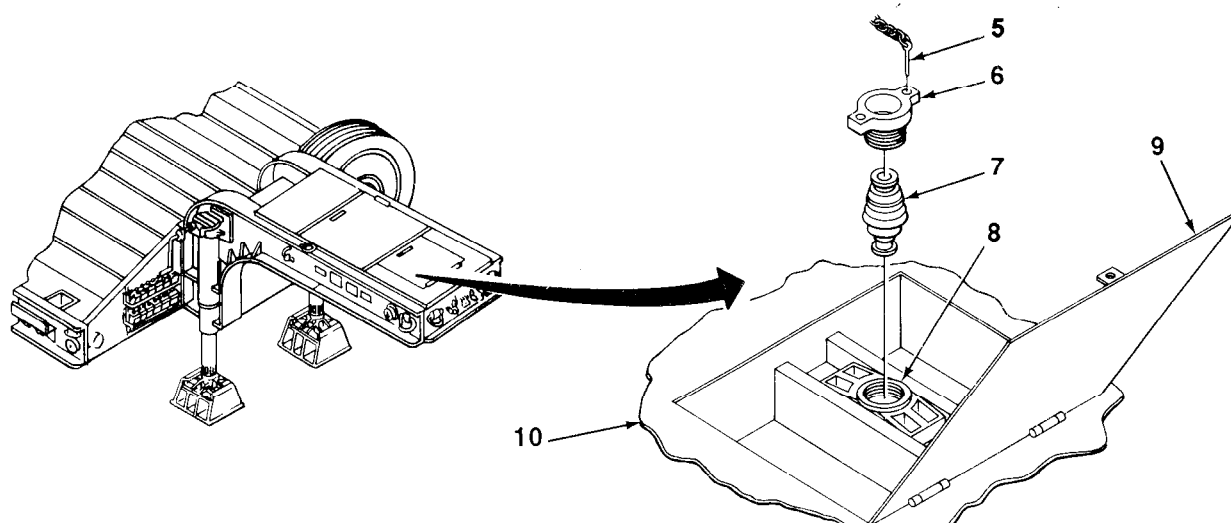
- 1. Take chock blocks (1) out of stowage brackets (2).
- 2. Place one chock block (1) in front the outer forward wheel and tire assembly (3) and one behind the outer rear wheel and tire assembly (4).
- 3. Repeat steps 1 and 2 for other side of semitrailer.



## 2-5. PREPARATION FOR USE (Con't)

### KINGPIN INSTALLATION

1. Ensure that proper size kingpin (7) is installed to match the tractor (para 2-2). Install kingpin for either a 2½ or 3½ in. (6.4 or 8.9 cm) coupling.
2. To change the kingpin (7), open hinged access door (9) on top of the gooseneck. Open access door by unlocking a bolt-type latch located in and operated through the stowage box door (10).
3. Place kingpin (7) into socket (8). Screw on clamp retainer (6) and lock into position with locking pin (5). Insert locking pin through holes in clamp retainer and socket.
4. Close access door (9) and secure latch.



### COUPLING

#### **WARNING**

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

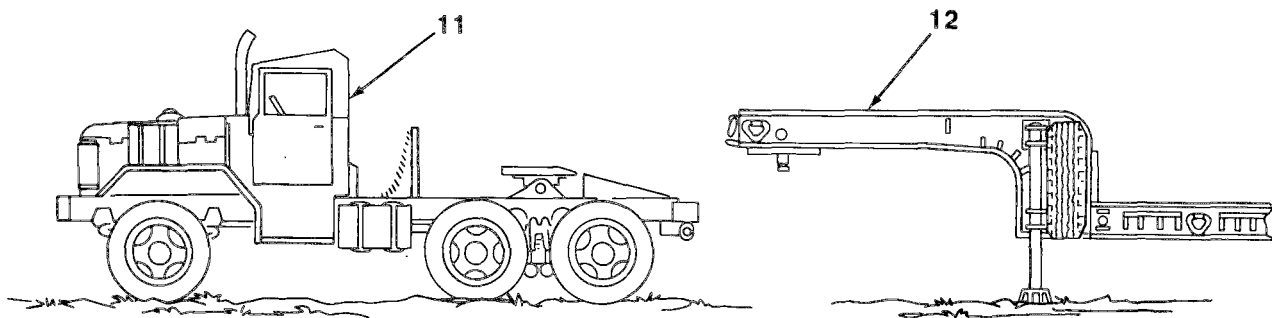
#### **NOTE**

**The 5 ton tractor is compatible with the M172A1 and is suitable for towing semitrailers with loads up to 15 tons. It is not suitable for loads exceeding 15 tons due to its limited towing and braking abilities. The 10 ton tractor is also compatible with the M172A1 and is capable of towing this vehicle with loads up to 25 tons.**

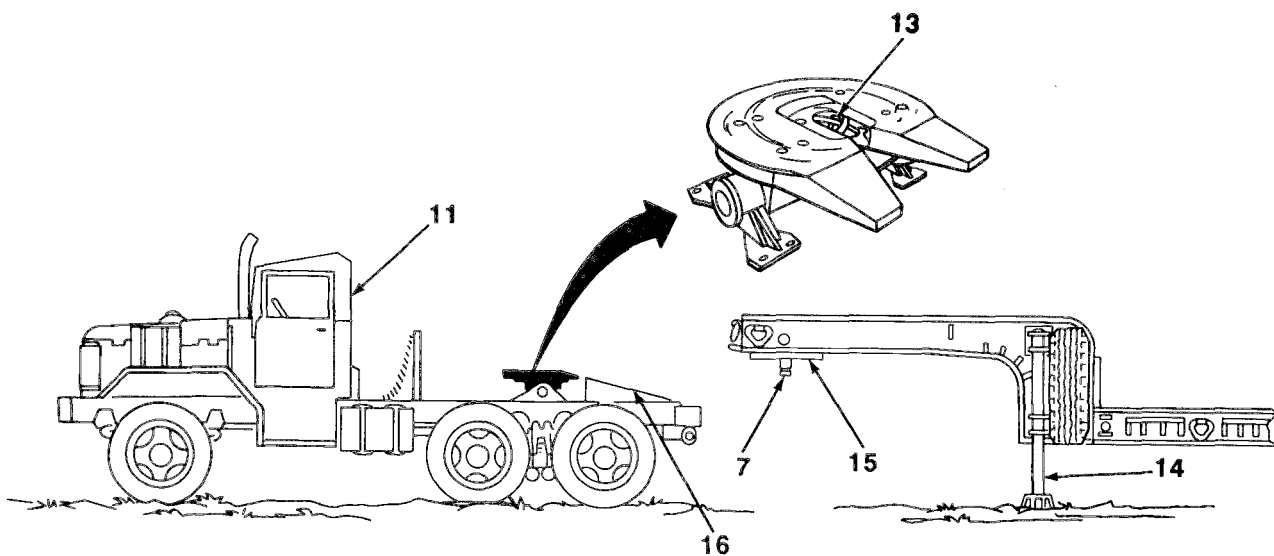
1. Aline tractor (11) with semitrailer (12).
2. Review and perform tractor operating procedures to prepare tractor for coupling. Refer to applicable tractor technical manual.

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## 2-5. PREPARATION FOR USE (Con't)



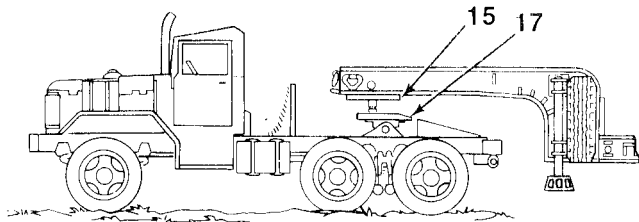
3. Slowly back tractor (11) into position. Ensure that kingpin (7) is aligned with fifth wheel jaws (13) and that fifth wheel jaws are open.
4. Before fifth wheel approach ramps (16) make contact with kingpin plate (15), perform the following:
  - a. Check that kingpin plate (15) is above approach ramps (16).
  - b. Adjust kingpin (7) height as needed by raising or lowering landing gear (14). Refer to RAISING LANDING GEAR in this paragraph or to paragraph 2-7.
5. Slowly back tractor (11) until fifth wheel jaws (13) engage kingpin (7).



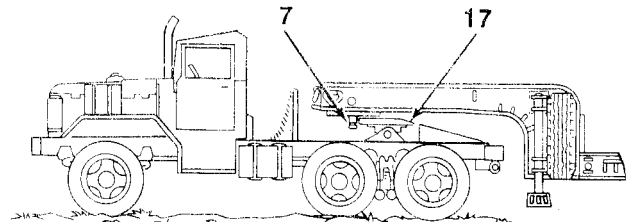
## 2-5. PREPARATION FOR USE (Con't)

### 6. Visually check coupling.

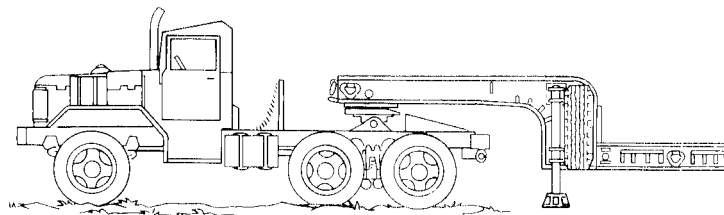
- a. There must be no daylight between kingpin plate (15) and fifth wheel (17).
- b. Kingpin (7) must not be hooked over front of fifth wheel (17).



INCORRECT

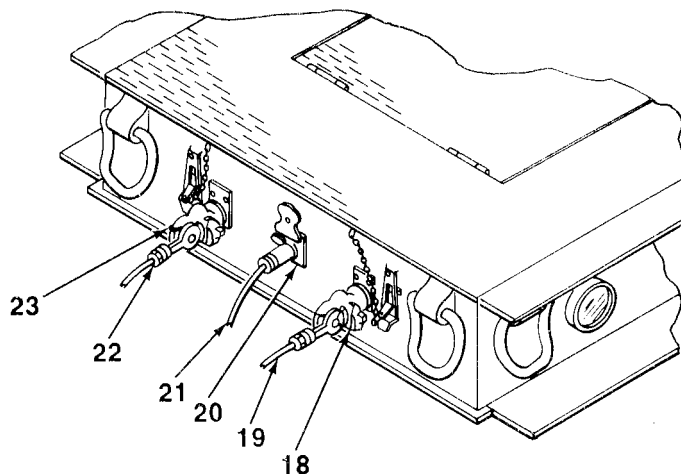


INCORRECT



CORRECT

7. Ease tractor forward to check coupling. If coupling is not locked, rock tractor back and forth slowly until kingpin is locked.
8. If coupling failed, repeat steps 1 through 7.
9. Raise cover on semitrailer electrical receptacle connector (20) and push electrical cable (21) straight in.
10. Connect service air line (22) to right semitrailer service air coupling (23).
11. Connect emergency air line (19) to left semitrailer emergency air coupling (18).
12. Check air lines (19 and 22) and electrical cable (21) to ensure that they are supported, and will not catch or chafe.
13. Turn on tractor air supply, and apply tractor brakes to pressurize semitrailer airbrake system.

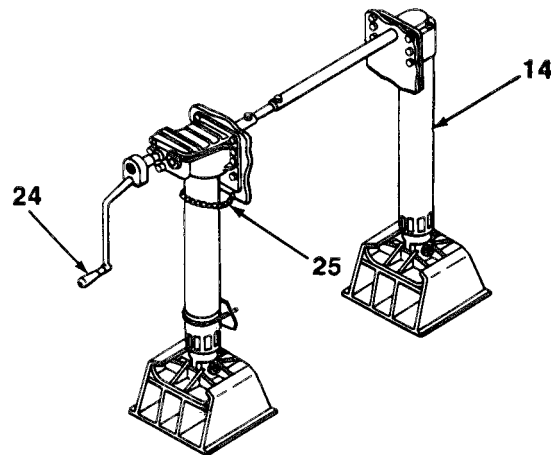


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## 2-5. PREPARATION FOR USE (Con't)

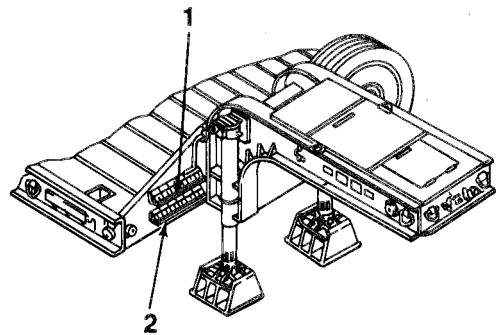
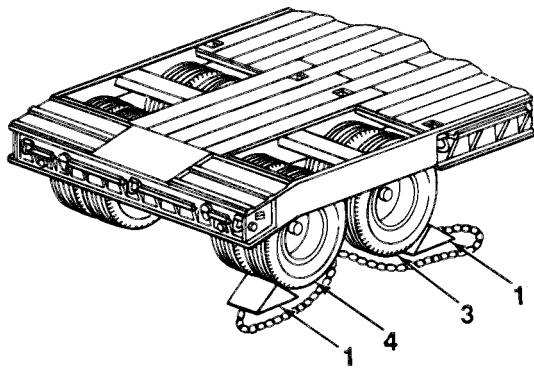
### RAISING LANDING GEAR

1. Check coupling lock by trying to ease tractor and semitrailer forward. If properly coupled, go to step 2. If not properly coupled, repeat COUPLING.
2. Unhook landing gear handcrank (24) from chain (25).
3. Pull handcrank (24) outward approximately 2 in. (5 cm) for high speed operation and turn counterclockwise until landing gear (14) is fully raised.
4. Lower handcrank (24) and stow chain (25).



### REMOVING CHOCK BLOCKS

1. Remove chock blocks (1) from outer forward wheel and tire assembly (3) and outer rear wheel and tire assembly (4).
2. Repeat step 1 for other side of semitrailer.
3. Place chock blocks (1) in stowage brackets (2) on right front of semitrailer and loop chains over bracket ends.



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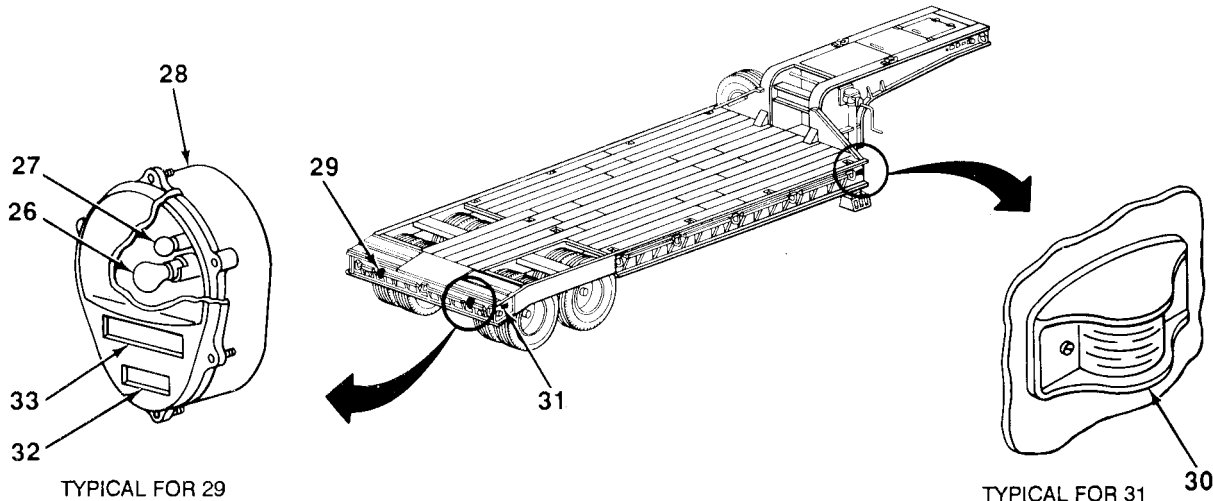
## 2-5. PREPARATION FOR USE (Con't)

### CHECKING LIGHTS

#### **WARNING**

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

1. Turn on service drive lights in tractor and check that amber and red clearance lights (30 and 31) are lit.
2. Check that service taillights (27) are lit.
3. Have an assistant apply service brakes while you check that both brake lights (26) are lit. Check that both brake lights go off when brakes are released.
4. Operate left turn signal and check that left turn signal light (29) flashes. Operate right turn signal and check that right turn signal light (28) flashes.
5. Select blackout lights in tractor. Check that amber and red clearance lights (30 and 31) go out and that both blackout taillights (33) are lit.
6. Have assistant apply service brakes. Check that blackout stoplights (32) become lit and that they go out when brake pedal is released.



### CHECKING BRAKES

1. Apply tractor's semitrailer handbrake control.
2. Have assistant watch semitrailer wheels as you move semitrailer forward. Semitrailer wheels should not move. If they move, check tractor-to-semi-trailer air line connections.

### LOADING RAMPS AND WHEEL COVER PLATES – INSTALLATION

1. Carry two loading ramps (34) into position with handles (39).

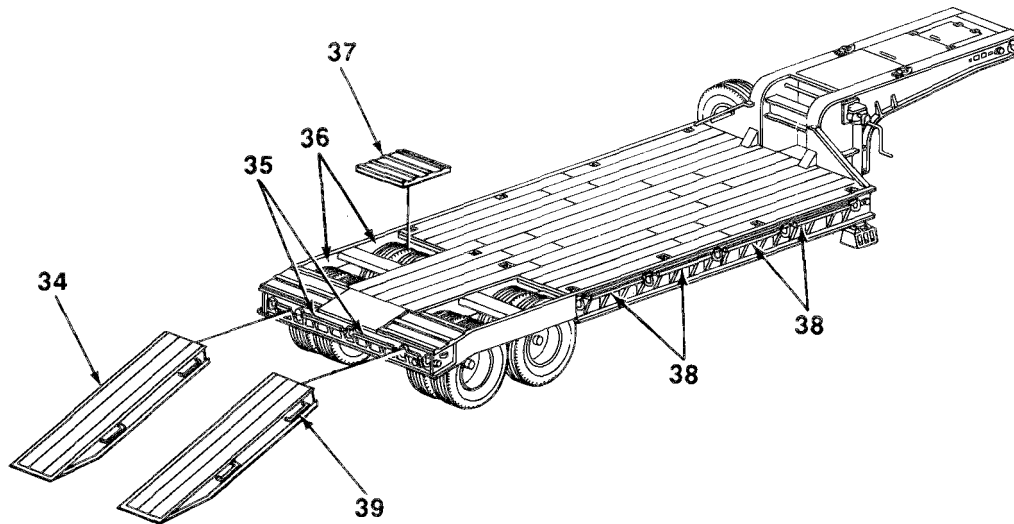
#### **NOTE**

**The equipment operator's manual will tell you from which side to load onto the semitrailer and how to secure your load.**

2. Place two loading ramps (34) on two ramp clips (35) or on two of the four ramp clips (38).
3. Place the four wheel cover plates (37) over the four wheel openings (36).

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## 2-5. PREPARATION FOR USE (Con't)



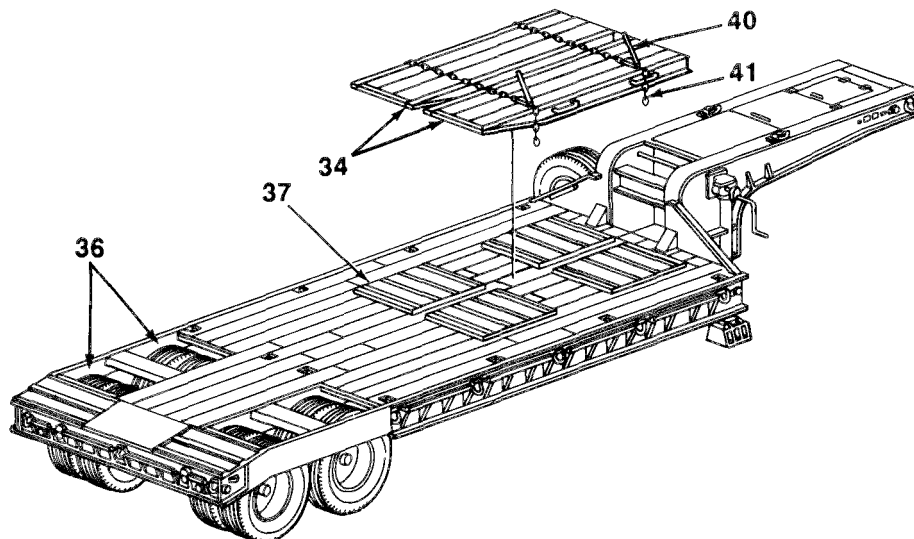
### LOADING RAMPS AND WHEEL COVER PLATES – STORAGE AFTER USE

1. Pick up and carry four wheel cover plates (37) from wheel openings (36) to the forward part of load bed. Position on load bed as shown.
2. Pickup and carry two loading ramps (34) and place on top of wheel cover plates (37). Position loading ramps so that wheel cover plates are directly underneath.

#### **WARNING**

**The loading ramps should always be lashed on top of the load bed when traveling. Falling ramps could result in damage to equipment or injury to personnel.**

3. Use lashing chains (41) and loadbinders (40) to secure loading ramps (34) and wheel cover plates (37) in place.



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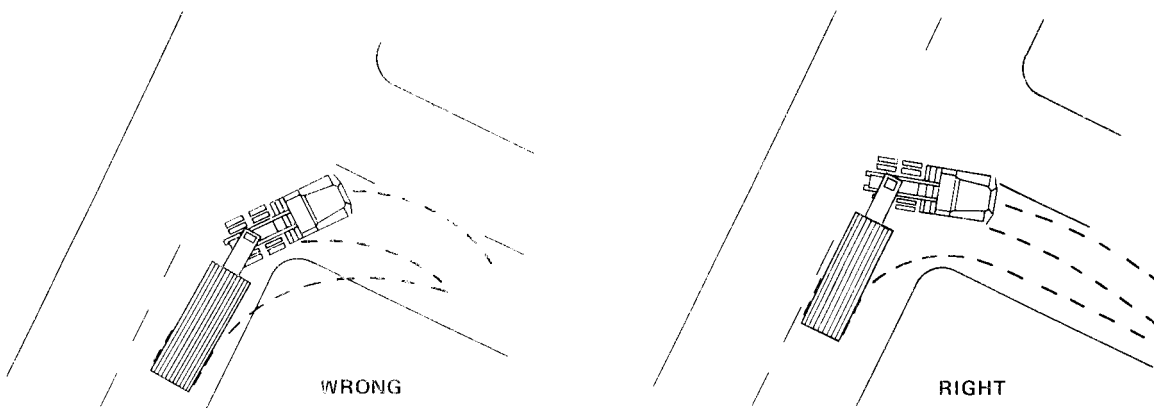
## 2-6. OPERATION

### DRIVING

When driving the tractor and semitrailer, the overall length of the unit must be kept in mind when passing other vehicles and when turning. Because the unit is hinged in the middle, backing is also affected.

### TURNING

When turning corners, allow for the fact that the semitrailer wheels turn inside the turning radius of the tractor. Make a right turn at a road intersection by driving the tractor about halfway into the intersection and then cut sharply to the right. This will keep the semitrailer off the curb.

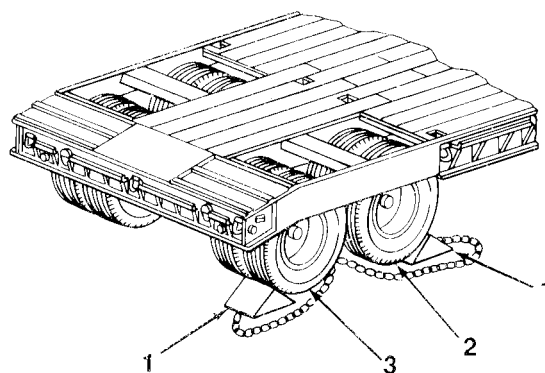


### STOPPING

The brakes of the tractor and the semitrailer are applied at the same time in normal operation when the driver steps on the brake pedal. Brake pressure must be applied gradually and smoothly. The semitrailer brakes may be applied separately by using the semitrailer handbrake control lever on the steering column. On steep downgrades or slippery surfaces, the semitrailer brakes must be applied before the tractor brakes. This will reduce the possibility of jackknifing the semitrailer.

### PARKING

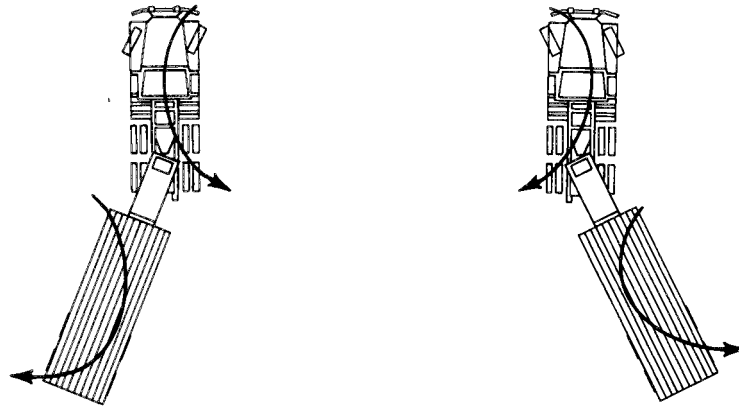
When parking tractor and semitrailer to leave unattended, set parking brake on tractor, and turn off engine before leaving cab. Block the semitrailer wheels with chock blocks (1). Block in front of the outer forward wheel and tire assembly (2), and behind the outer rear wheel and tire assembly (3).



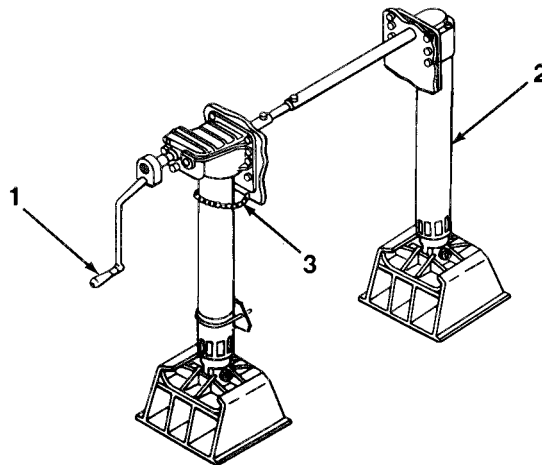
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**2-6. OPERATION (Con't)****BACKING**

When possible, use an assistant as a ground guide to direct you while backing. Adjust rearview mirrors before backing. When backing, the rear of the semitrailer will move in the opposite direction from which the front tractor wheels are turned. If the wheels are turned to the right, the semitrailer will go left. If the wheels are turned to the left, the semitrailer will go right.

**2-7. AFTER USE****LOWERING LANDING GEAR**

1. Unhook handcrank (1) from chain (3).
2. Turn handcrank (1) clockwise until legs (2) are extended.

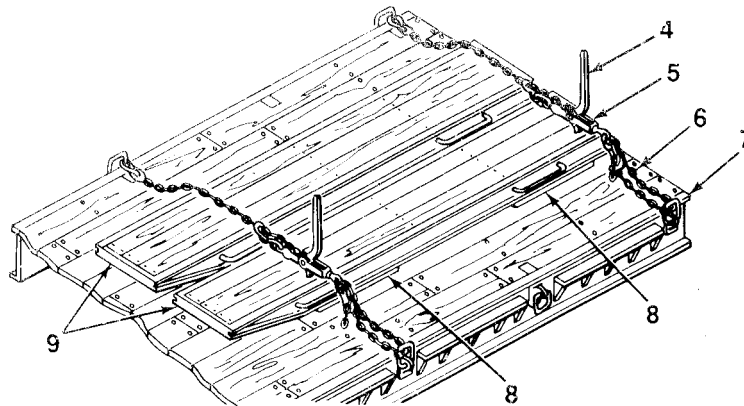
**POSITIONING CHOCK BLOCKS**

Refer to instructions in paragraph 2-5.

## 2-7. AFTER USE (Con't)

### LOADING RAMPS AND WHEEL COVER PLATES - REMOVAL FROM STORAGE

1. Release loadbinder handle (4) so the loadbinder (5) and lashing chain (6) are loose from the frame (7).
2. Remove loadbinders (5) and lashing chains (6) from loading ramps (9) and wheel cover plates (8).
3. Move loading ramps (9) and wheel cover plates (8) into position for unloading operations.
4. After use, return loading ramps (9) and wheel cover plates (8) to load bed for storage

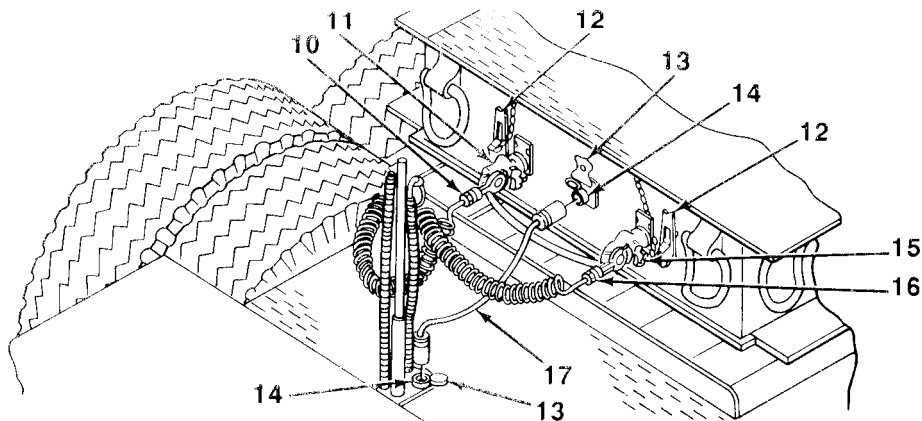


### UNCOUPLING

#### **WARNING**

**All persons not involved in uncoupling operation must stand clear of tractor and semitrailer to prevent possible injury.**

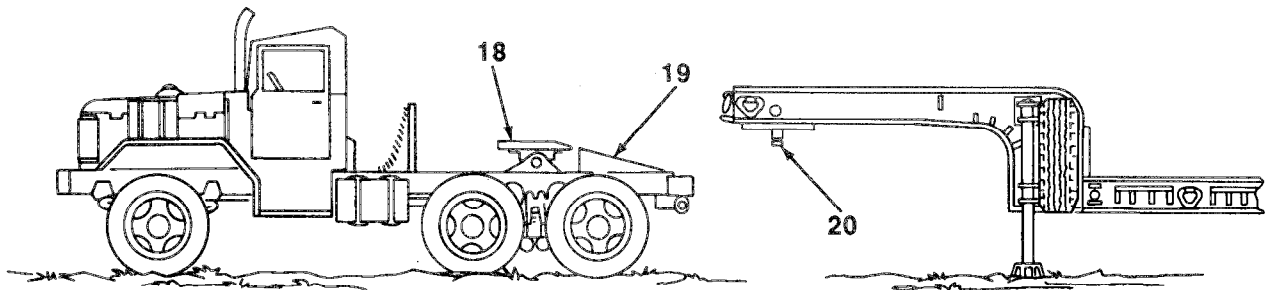
1. Shut off tractor-to-semitrailer air supply.
2. Disconnect service air line (10) and emergency air line (16) from semitrailer air couplings (11 and 15).
3. Place dummy couplings (12) on semitrailer air couplings (11 and 15) for protection.
4. Disconnect electrical cable (17) from semitrailer and tractor by pulling straight out from electrical receptacle connectors (14). Ensure that receptacle covers (13) are closed.



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2-7. AFTER USE (Con't)

- 5. Stow electrical cable (17).
- 6. Release semitrailer kingpin (20) from tractor fifth wheel (18). Refer to tractor operator's manual for instructions.
- 7. Slowly move tractor forward until semitrailer is clear of approach ramps (19).



Section IV. OPERATION UNDER UNUSUAL CONDITIONS

	Page		Page
Fording . . . . .	2-22	Operation on Rocky Terrain . . . . .	2-22
Operation in Extreme Cold . . . . .	2-21	Operation in Saltwater Areas . . . . .	2-22
Operation in Extreme Heat . . . . .	2-21	Operation in Sandy or Dusty Areas . . . . .	2-22
Operation in Mud . . . . .	2-22	Operation in Snow . . . . .	2-22
Operation in Rainy or Humid Conditions . . . . .	2-22		

2-8. OPERATION IN EXTREME HEAT

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

2-9. OPERATION IN EXTREME COLD

- 1. Extreme cold can cause lubricants to thicken or congeal, insulation to crack and cause electrical short circuits, and construction material 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 drums 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. If high, dry ground is not available for long-term parking, 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 shutdown.
- 8. Cover and shield the semitrailer with canvas, if available. Keep ends of canvas off the ground to keep from freezing to the ground.

## **2-10. OPERATION IN RAINY OR HUMID CONDITIONS**

Inspect, clean, and lubricate inactive equipment often to stop rust and fungus from forming on it.

## **2-11. OPERATION IN SANDY OR DUSTY AREAS**

### **CAUTION**

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

1. Clean, inspect, and lubricate more often in dusty or sandy areas.
2. Reduce tire pressure to 45 psi (310 kPa) while operating the semitrailer in beach and desert sand. Return tire pressure to 100 psi (690 kPa) after sand operation.

## **2-12. OPERATION IN SNOW**

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

## **2-13. OPERATION IN MUD**

### **CAUTION**

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

1. Reduce tire pressure to 60 psi (414 kPa) while operating the semitrailer in soft mud.
2. If one or more wheels sink into the mud, you may need to jack up the mired wheel and put planking or matting under it.
3. Clean off all mud after operation. Return tire pressure to 100 psi (690 kPa).

## **2-14. OPERATION IN SALTWATER AREAS**

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

## **2-15. OPERATION IN ROCKY TERRAIN**

1. Reduce tire pressure to 60 psi (414 kPa) when moving on rough or rocky terrain.
2. Before driving over stumps or rocks, ensure that the semitrailer can clear them. Such objects can damage components on the underside of the semitrailer. Beware of low hanging tree limbs that can damage cargo.
3. Do not operate without a serviceable spare wheel and tire assembly. There is a greater chance of tire puncture during operation on rough or rocky terrain.
4. Return tire pressure to 100 psi (690 kPa) after operation on rough or rocky terrain.

## **2-16. FORDING**

1. Before fording, check the bottom surface condition. If bottom surface is too soft, do not ford.
2. After fording, apply the brakes a few times to help dry out the brakeshoe linings. Ensure that the semitrailer brakes are working properly before driving at normal speeds.
3. Drain areas where water has accumulated and dry all wet surfaces.
4. Lubricate all unpainted surfaces. Dry all lubrication points and lubricate them (para 3-2).

## CHAPTER 3

### OPERATOR MAINTENANCE

#### 3-1. OVERVIEW

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

	<i>Page</i>
Section I Lubrication Instructions .....	3-1
Section II Operator/Crew Troubleshooting Procedures .....	3-8
Section III Operator Maintenance .....	3-14

### Section I. LUBRICATION INSTRUCTIONS

#### NOTE

These lubrication instructions are **MANDATORY**.

#### 3-2. 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

Refer to the following Lubrication Chart for lubrication under normal conditions. Refer to FM 9-207 for instructions on lubrication in weather below 0°F (-18°C). Refer to TM 9-238 for lubrication before and after fording. Clean and inspect all lubrication points after operating in mud, dust, sand, or other unusual conditions.



## LUBRICATION CHART

### SEMITRAILER, LOWBED: 25 TON, 4 WHEEL, M172A1 (2330-00-317-6448)

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

Dotted leader lines indicate lubrication is required on both sides of the equipment.

#### **WARNING**

**Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT**

**use near open flame or excessive heat. The solvent's flash point is 100°F - 138°F (38°C - 59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.**

Clean all fittings and area around lubrication points with dry cleaning solvent (Item 13, Appendix E) or equivalent before lubricating equipment. After lubrication, wipe off excess oil or grease to prevent accumulation of foreign matter.

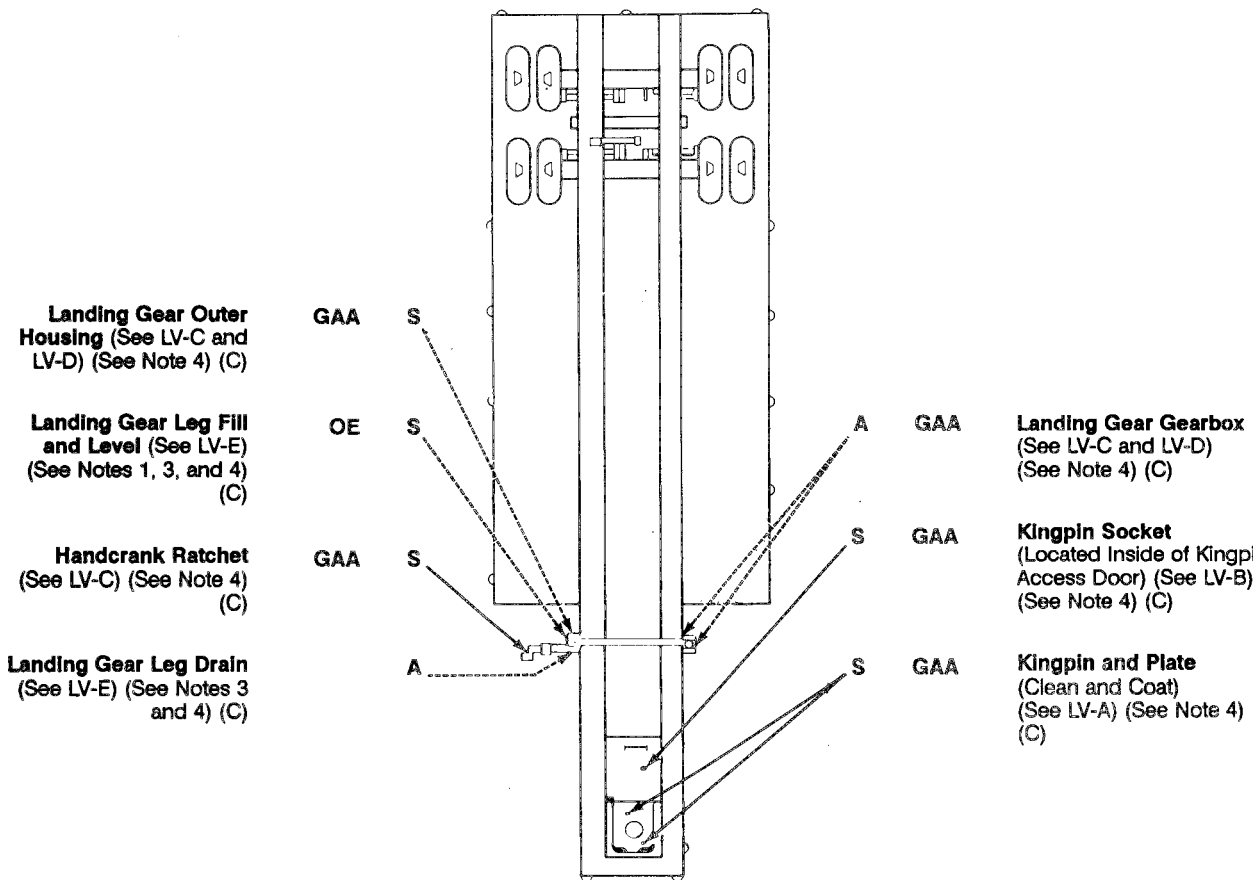
The lowest level of maintenance authorized to lubricate a point is indicated in parentheses by use of the following: (C) Operator/Crew; or (O) Unit Maintenance.

#### **NOTE**

**LV is Localized View.**

LUBRICANT • INTERVAL

INTERVAL • LUBRICANT



TOTAL MAN-HOURS*	
INTERVAL	MAN-HOUR
S	1.8
A	4.0

\* The man-hours time specified is the time you need to do all services prescribed for a particular interval.

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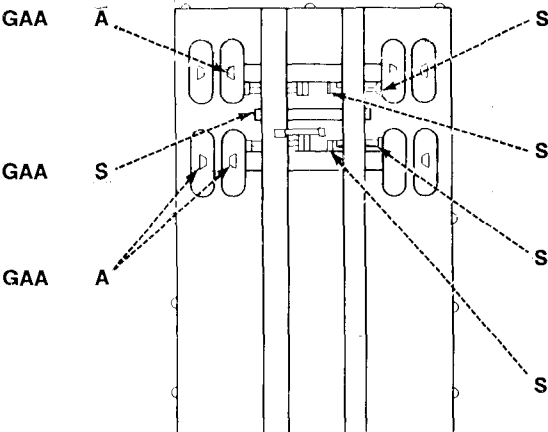
LUBRICANT • INTERVAL

INTERVAL • LUBRICANT

**Wheel Bearings**  
(Every 12,000 Miles or  
Annually, Remove, Clean,  
Dry, and Pack) (See LV-F)  
(See Note 4) (O)

**Trunnion Axle**  
(See LV-H) (See Note 4)  
(C)

**Wheel Bearings**  
(Every 12,000 Miles or  
Annually, Remove, Clean,  
Dry, and Pack) (See LV-F)  
(See Note 4) (O)



**GAA Camshaft**  
(2 Fittings Each  
Camshaft) (See LV-G)  
(See Note 4) (C)

**GAA Slack Adjuster**  
(1 Fitting) (See LV-G)  
(See Note 4) (C)

**GAA Camshaft**  
(2 Fittings Each  
Camshaft) (See LV-G)  
(See Note 4) (C)

**GAA Slack Adjuster**  
(1 Fitting) (See LV-G)  
(See Note 4) (C)

**TOTAL MAN-HOURS\***

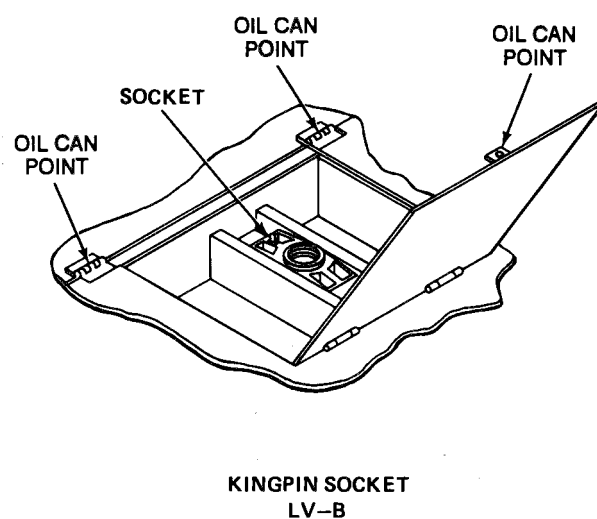
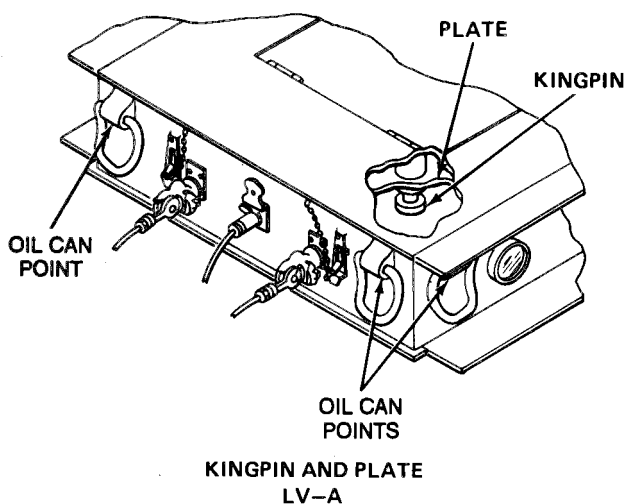
INTERVAL	MAN-HOUR
S	1.8
A	4.0

\* The man-hours time specified is the time you need to do all services prescribed for a particular interval.

## - KEY -

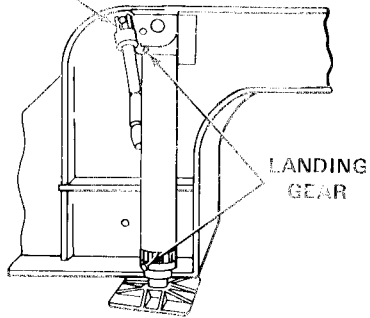
LUBRICANTS	EXPECTED TEMPERATURES			INTERVALS
	ABOVE +32°F (ABOVE 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-18°C to -54°C)	
OE/HDO (MIL-L-2104) Lubricating Oil, Internal Combustion Engine, Tactical Service	OE/HDO-30	OE/HDO-10	—	S – Semiannual  A – Annual
OEА (MIL-L-46167) Lubricating Oil, Internal Combustion, Arctic	—	—	OEА (Note 1)	
PL-M (MIL-L-3150) Lubricating Oil, Preservative	PL Medium	—	—	
PL-S (VV-L-800) Lubrication Oil, Preservative	—	PL Special	PL Special	
GAA (MIL-G-10924) Grease, Automotive and Artillery	GAA	GAA	GAA	

FOR ARCTIC OPERATIONS REFER TO FM 9-207.

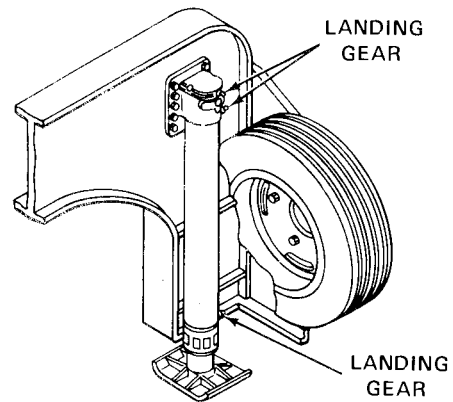


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HANDCRANK  
RATCHET

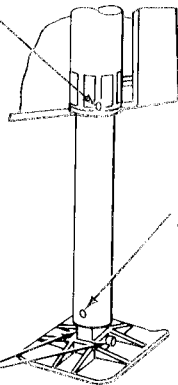


LANDING GEAR—RIGHT  
LV-C



LANDING GEAR—LEFT  
LV-D

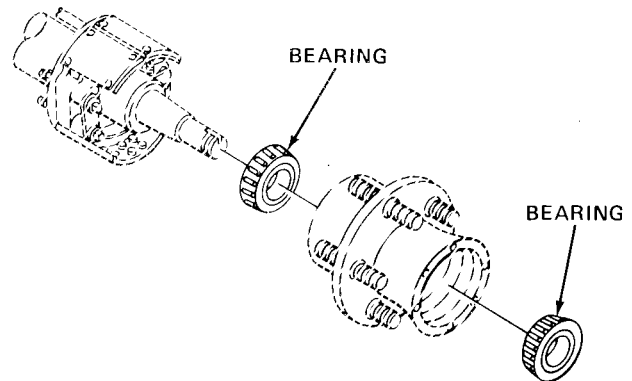
LEG FILL



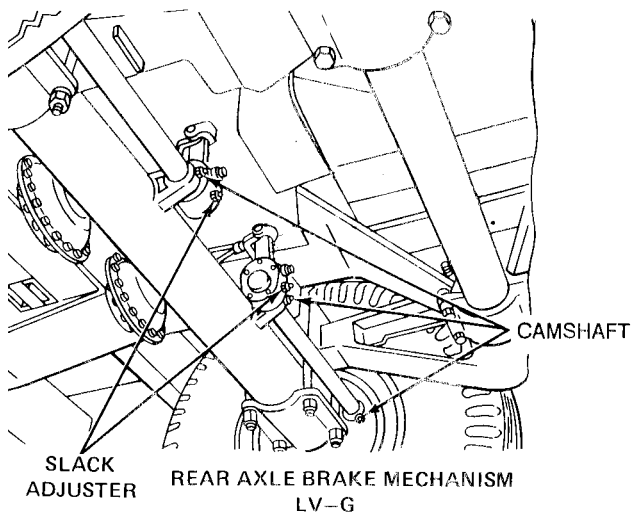
LEG  
DRAIN

OIL CAN  
POINTS

LANDING GEAR LEG FILL AND DRAIN  
LV-E

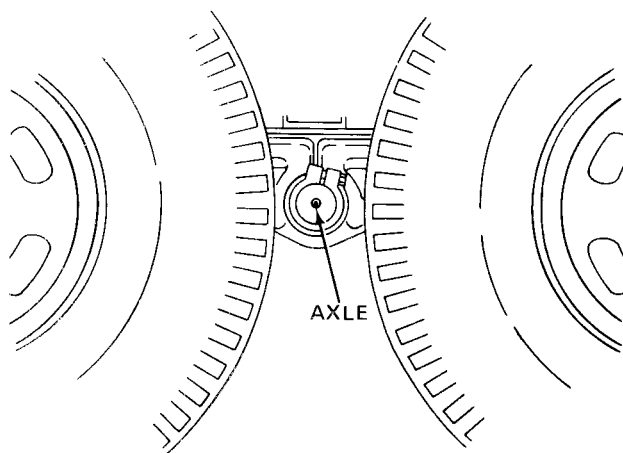


WHEEL BEARINGS  
LV-F



SLACK  
ADJUSTER

REAR AXLE BRAKE MECHANISM  
LV-G



TRUNNION AXLE  
LV-H

TA506810

**NOTES:**

**1. FOR OPERATION OF SEMITRAILER 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 dry cleaning solvent. Lubricate with lubricants specified in the key for temperature 0°F to -65°F (-18°C to -54°C).

**2. OIL CAN POINTS.** Every 1,000 miles (1,600 kilometers) or monthly, lubricate door hinges and latches, wheel lug threads, landing gear handcrank ratchet, landing gear shoe pins, lashing rings, and loadbinders with appropriate PL.

**3. LANDING GEAR LEGS.**

- a. Semiannually, extend, clean, and coat with appropriate PL.
- b. Semiannually, check oil level. Remove cotter pin, loosen gib plug, fully extend leg, and remove upper plug. Maintain oil level even with filler hole.
- c. Annually, remove bottom plug and drain all oil. Fill with oil to maintain level even with filler hole.

4. in sandy areas, halve lubrication interval.

Section II OPERATOR/CREW TROUBLESHOOTING PROCEDURES

	Page		Page
Explanation of Columns . . . . .	3-8	Operator/Crew Troubleshooting,	
General . . . . .	3-8	Table 3-1 . . . . .	3-9
		Troubleshooting Symptom Index . . . . .	3-8

3-3. GENERAL

Table 3-1 in this section lists the common malfunctions that you may find during operation of the semitrailer or its components. Perform the tester inspections and corrective actions 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 is not corrected by the listed corrective actions, notify your supervisor.

3-4. EXPLANATION OF COLUMNS

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

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

*Corrective Action.* Procedure to correct problem.

3-5. TROUBLESHOOTING SYMPTOM INDEX

This troubleshooting 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. It lists all the malfunctions covered in Table 3-1.

Troubleshooting  
Procedure  
Page

BRAKES

Brakes Do Not Apply . . . . .	3-10
Brakes Grab . . . . .	3-12

ELECTRICAL SYSTEM

All Lamps Do Not Light . . . . .	3-9
One or More Lamps (But Not All) Will Not Light . . . . .	3-10

LANDING GEAR

Landing Gear Is Difficult to Raise or Lower . . . . .	3-12
---	------

TIRES

Excessively Worn, Scuffed, or Cupped Tires . . . . .	3-13
--	------

NOTE

Semitrailer must be coupled to tractor when performing electrical or airbrake system tests.

Table 3-1. Operator/Crew Troubleshooting.

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

**ELECTRICAL SYSTEM****1. ALL LAMPS DO NOT LIGHT.**

Step 1. Turn on tractor lights and check their operation. Refer to tractor operator's manual.

If tractor lamps do not light, notify unit maintenance.

Step 2. Check tractor-to-semitrailer electrical cable (1) for proper connection (para 2-5).

If electrical cable (1) is not properly connected, disconnect and connect properly (para 2-5).

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

If pins (3) or sockets (4 and 6) are dirty or corroded, clean them (para 3-6).

If pins (3) are broken, notify unit maintenance.

If all lamps still do not light, notify unit maintenance.

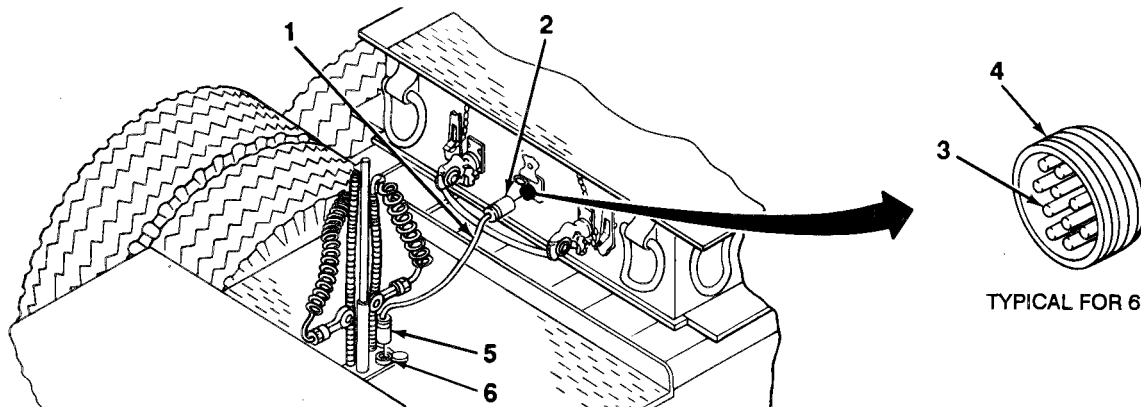




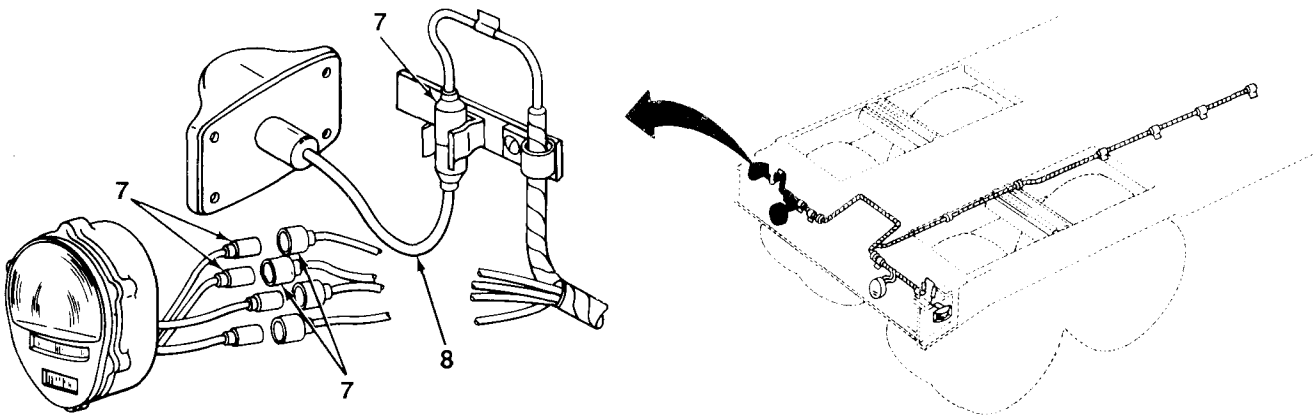
Table 3-1. Operator/Crew Troubleshooting (Con't).

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

2. ONE OR MORE LAMPS (BUT NOT ALL) WILL NOT LIGHT

Check for broken lead wires (8) or loose connectors (7).

If connectors (7) are loose, or if lead wires (8) are broken, notify unit maintenance.



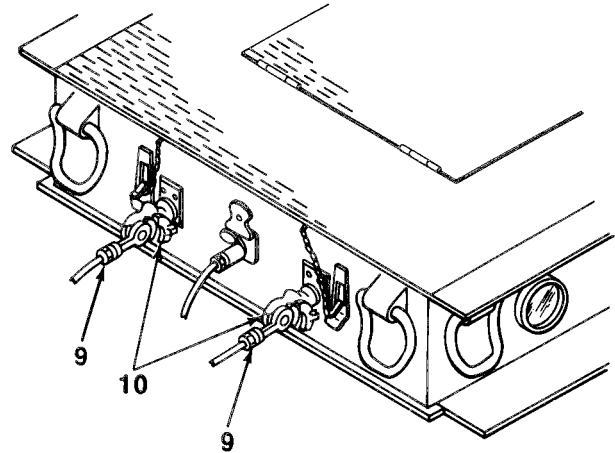
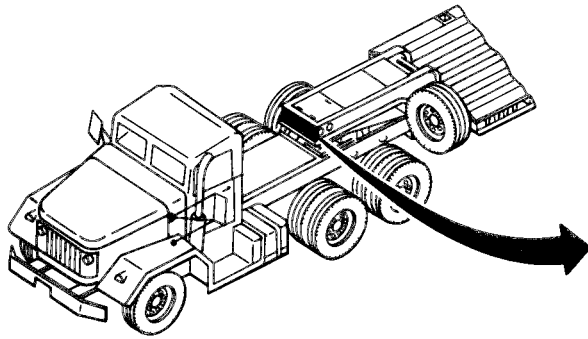
BRAKES

3. BRAKES DO NOT APPLY.

- Step 1. Check that air supply from tractor is turned on. Refer to tractor operator's manual.  
If air is turned off, turn on air.
- Step 2. Check air pressure in tractor. Refer to tractor operator's manual.  
If pressure is low or not present, troubleshoot tractor air system.
- Step 3. Check connection of air lines (9) to air couplings (10) (para 2-5).  
If air lines (9) are not properly connected, disconnect and connect properly (para 2-5).
- Step 4. Check for dirty, leaking, or damaged air couplings (10).  
If air couplings (10) are dirty, clean.  
If air couplings (10) are damaged or leaking, notify unit maintenance.

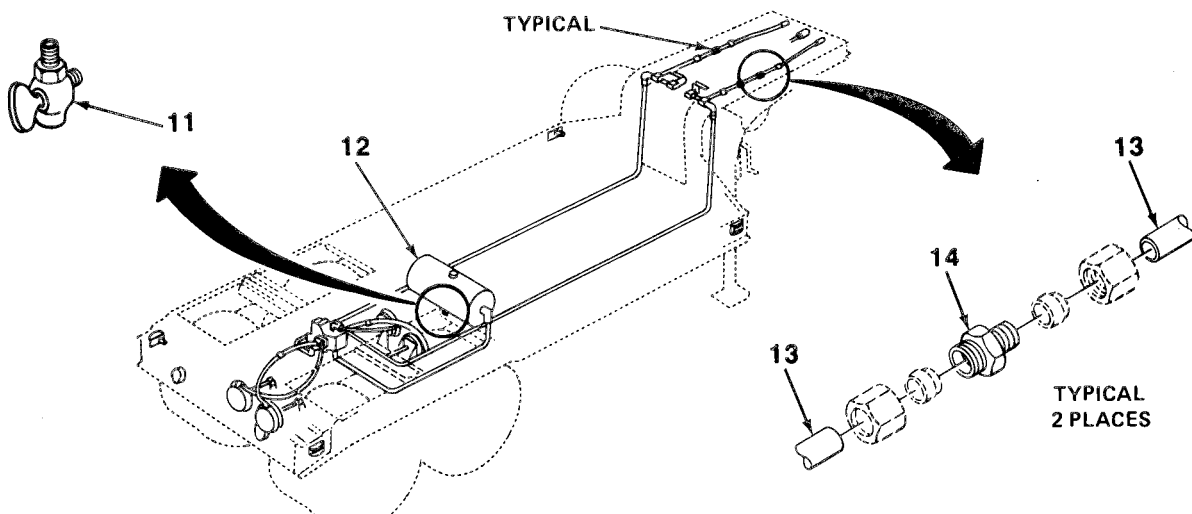
Table 3-1. Operator/Crew Troubleshooting (Con't).

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

**WARNING**

**Wear safety goggles when working with airbrake system to protect eyes from high pressure air.**

- Step 5. Check brake hoses (13) and fittings (14) for damage or leaking by listening for hissing sound while system is under pressure.
- Step 6. Check semitrailer air reservoir (12) for open draincock (11).
- If draincock (11) is open, close.
- If draincock (11) is closed and brakes still do not apply, notify unit maintenance.



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Table 3-1. Operator/Crew Troubleshooting (Con't).

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

## 4. BRAKES GRAB.

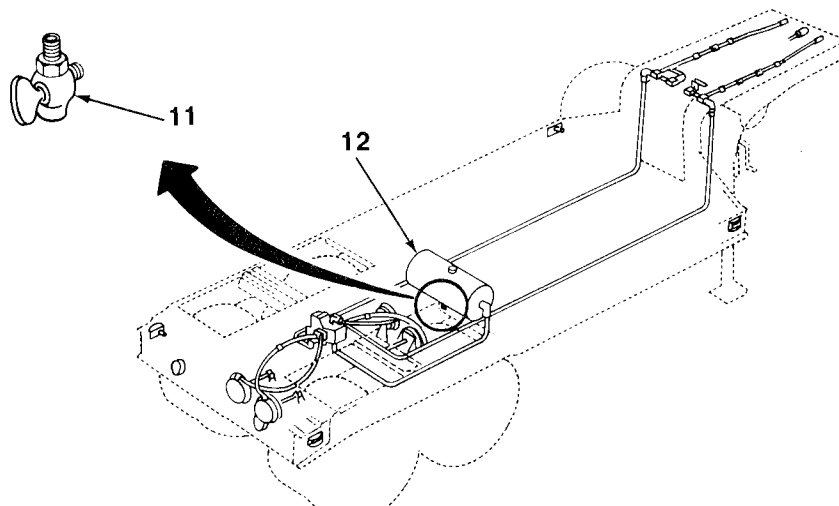
**WARNING**

**Wear safety goggles when opening air reservoir draincock to protect eyes from high pressure air.**

Check for moisture in semitrailer air reservoir (12) by opening draincock (11).

If moisture is in air reservoir (12), allow to drain and close draincock (11).

If air reservoir (12) is dry and brakes still grab, notify unit maintenance.

**LANDING GEAR**

## 5. LANDING GEAR IS DIFFICULT TO RAISE OR LOWER.

Step 1. Check for misaligned or broken handcrank (15).

If handcrank (15) is misaligned or broken, notify unit maintenance.

Step 2. Check for dirt on lower landing gear leg (17).

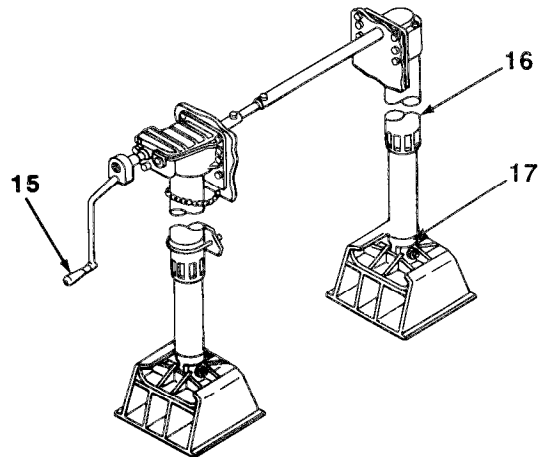
If lower landing gear leg (17) is dirty, clean (para 3-11).

Step 3. Check for misaligned, damaged, or bent landing gear legs (16 and 17).

If landing gear legs (16 and 17) are misaligned, damaged, or bent, notify unit maintenance.

Table 3-1. Operator/Crew Troubleshooting (Con't).

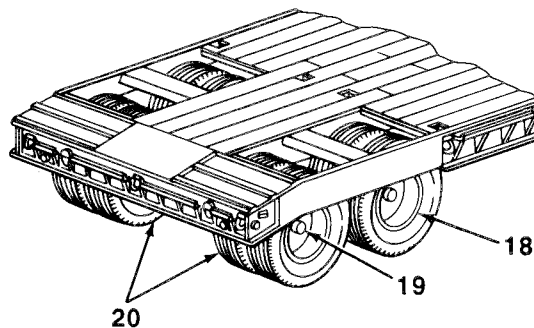
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
-------------	--------------------	-------------------



### TIRES

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

- Step 1. Check pressure of all tires (20).  
 If tire pressure is not 100 psi (690 kPa), inflate tires (20) to correct pressure.
- Step 2. Check for loose, cracked, or broken wheels (18).  
 If wheels (18) are loose, tighten nuts (19). Torque inner nuts to 300-350 lb.-ft. (407-475 N·m). Torque outer nut to 450-500 lb.-ft. (610-678 N·m).  
 If wheels (18) are cracked or broken, notify unit maintenance.
- Step 3. Check suspension system for damage and loose or missing bolts and nuts.  
 If suspension system is damaged or has loose or missing bolts and nuts, notify unit maintenance.
- Step 4. Check tracking for indication of axle misalignment.  
 If axle appears to be misaligned, notify unit maintenance.



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Section III. OPERATOR MAINTENANCE

	Page		Page
Air Couplings . . . . .	3-15	Landing Gear Legs . . . . .	3-23
Air Reservoir . . . . .	3-17	<b>Spare Wheel and Tire Assembly . . . . .</b>	3-22
Electrical Connectors . . . . .	3-14	Wheel and Tire Assembly . . . . .	3-18

3-6. ELECTRICAL CONNECTORS

*This Task Covers:*

Cleaning

*Initial Setup:*

Materials/Parts:

- Brush (Item 1, Appendix E)
- Dry cleaning solvent (Item 13, Appendix E)
- Rags (Item 11, Appendix E)

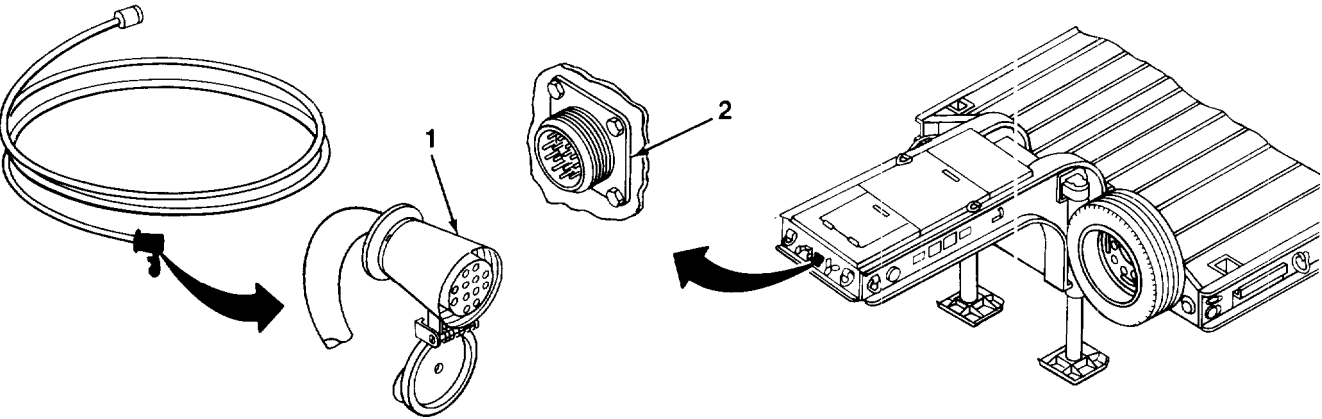
LOCATION	ITEM	ACTION	REMARKS
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CLEANING

Front of  
semitrailer

Tractor-to-semitrailer  
electrical cable  
connector (1) and  
semitrailer receptacle  
connector (2)

a. Using rags, wipe off any build-up of grease and dirt.



**3-6. ELECTRICAL CONNECTORS (Con't)**

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

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**WARNING**


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Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F - 138°F (38°C - 59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

- b. Clean, using brush and dry cleaning solvent.
- c. Allow to dry.

**TASK ENDS HERE****3-7. AIR COUPLINGS***This Task Covers:*

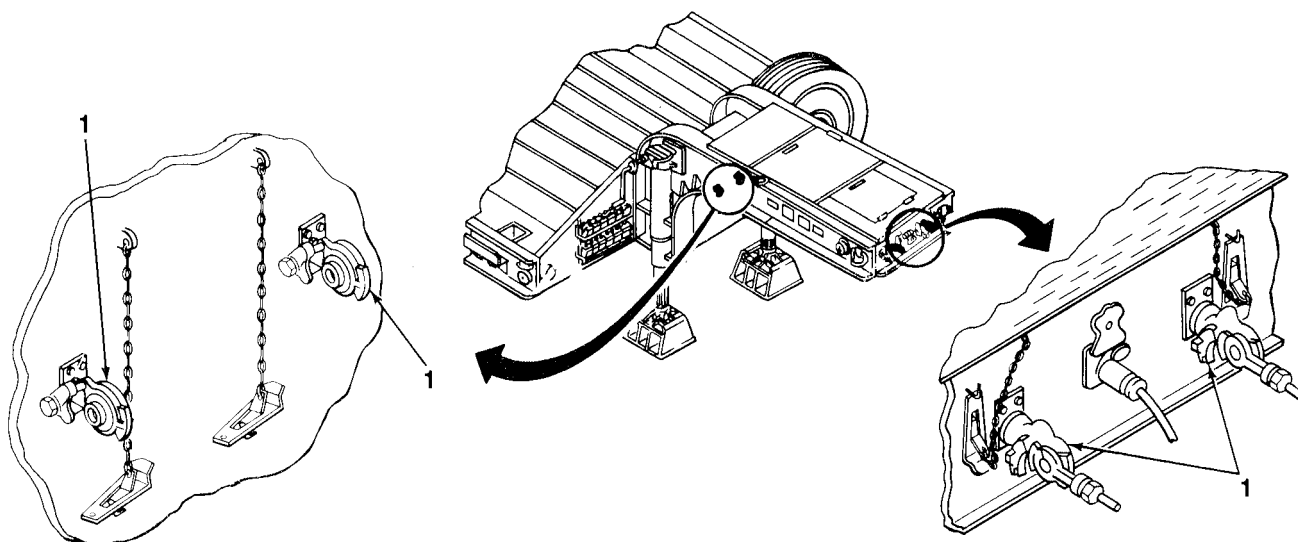
Cleaning

*Initial Setup:***Materials/Parts:**

- Dry cleaning solvent (Item 13, Appendix E)
- Rags (Item 11, Appendix E)

## 3-7. AIR COUPLINGS (Con't)

LOCATION	ITEM	ACTION	REMARKS
CLEANING			
Front of semitrailer and under gooseneck	Four air couplings (1)	a. Using rags, wipe off any build-up of grease and dirt.	

**WARNING**

Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F - 138°F (38°C - 59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

- b. Clean, using a rag moistened with dry cleaning solvent.
- c. Allow to dry.

TASK ENDS HERE

TA506817

### 3-8. AIR RESERVOIR

*This Task Covers:*

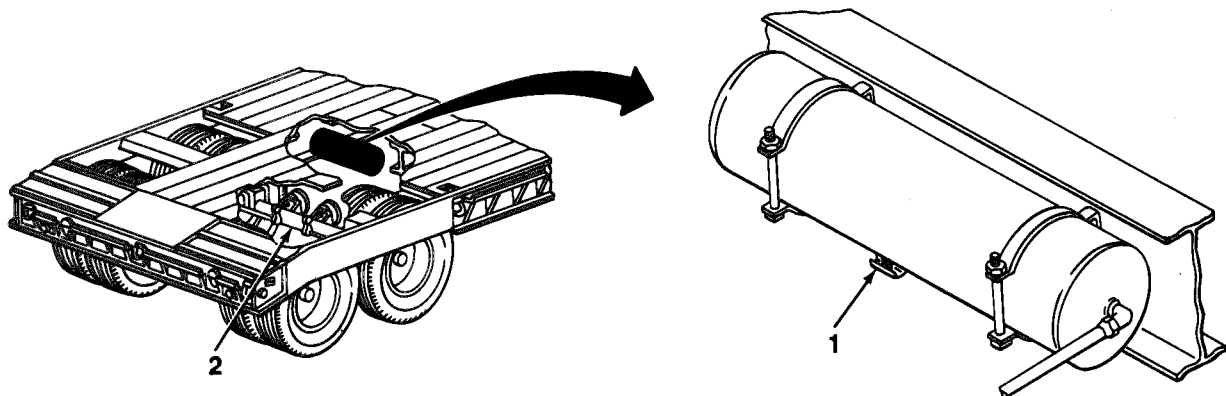
Servicing

*Initial Setup*

**Tools/Test Equipment:**

- Safety goggles

	LOCATION	ITEM	ACTION	REMARKS
SERVICING				
1.	Tractor	Semitrailer air supply	Turn off.	Refer to tractor operator's manual.
<p style="text-align: center;"><b>WARNING</b></p> <p style="text-align: center;">Wear safety goggles when opening air reservoir draincock to protect eyes from high pressure air.</p>				
2.	Rear of semitrailer above and in front of forward rear axle (2)	Air reservoir draincock (1)	a. Open and allow to drain completely. b. Close.	
3.	Tractor	Semitrailer air supply	Turn on.	Refer to tractor operator's manual.
4.	Rear of semitrailer above and in front of forward rear axle (2)	Air reservoir draincock (1)	Check for leaks.	If leaks are found, notify unit maintenance.



**TASK ENDS HERE**

TA506818



3-9. WHEEL AND TIRE ASSEMBLY

This Task Covers:

- |            |                 |
|------------|-----------------|
| a. Removal | b. Installation |
|------------|-----------------|

Initial Setup:

Materials/Parts:

- 4 x 4 x 6 wooden blocks

Personnel Required: Two

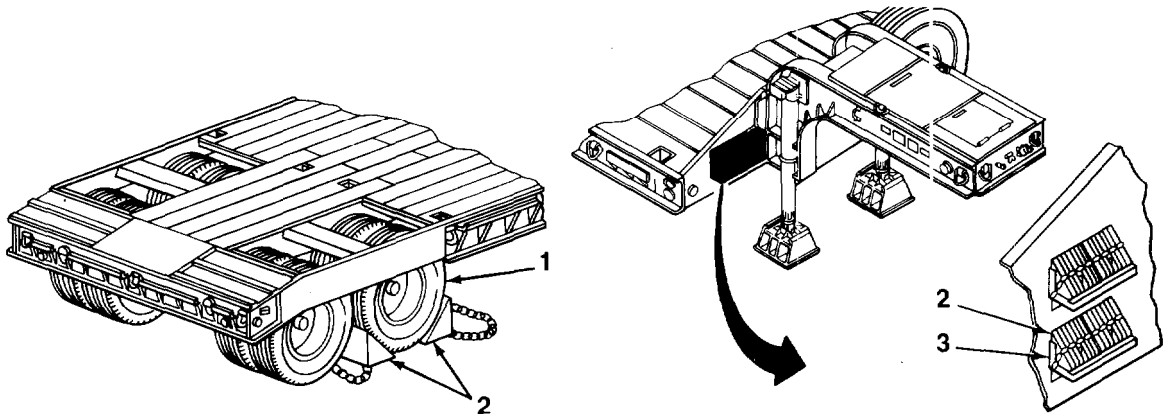
Tools/Test Equipment

- Jack and handle, hydraulic
- Wrench and handle, 1L g

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

REMOVAL

- |    |                               |                  |  |
|----|-------------------------------|------------------|--|
| 1. | Wheel and tire assemblies (1) | Chock blocks (2) | a. Take out of stowage bracket (3).<br>b. Block front and rear of wheel and tire assemblies (1) not being removed. |
|----|-------------------------------|------------------|--|



NOTE

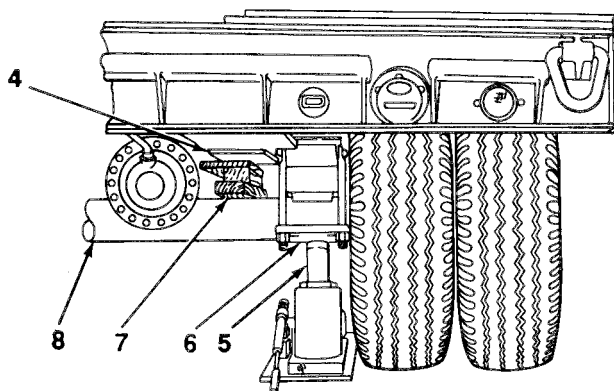
The inner and outer nuts are marked with either an R or L. The R stands for right-hand threads; right-hand nuts are turned counterclockwise for removal. The L stands for left-hand threads; left-hand nuts are turned clockwise for removal. Two types of nuts are shown, depending on the semitrailer.

- |    |                             |                    |  |
|----|-----------------------------|--------------------|--|
| 2. | Stop block (4) and axle (8) | Wooden blocks (7)  | Place between stop block (4) and axle (8).   |
| 3. | Shackle box bracket (6)     | Hydraulic jack (5) | a. Position under shackle box bracket (6).<br>b. Using handle, raise until it touches shackle box bracket (6). |

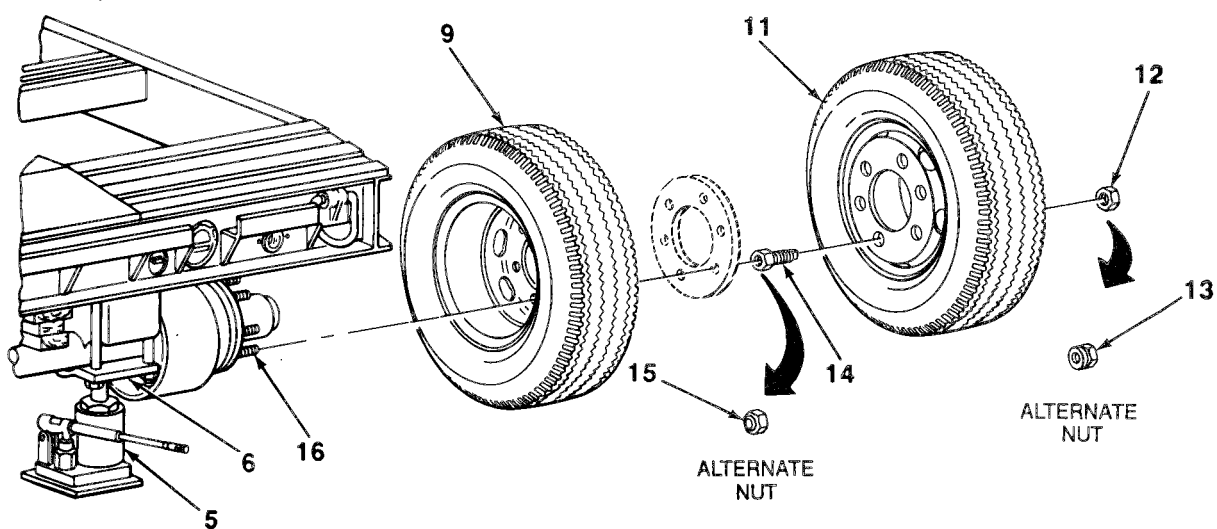
TA506819

## 3-9. WHEEL AND TIRE ASSEMBLY (Con't)

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



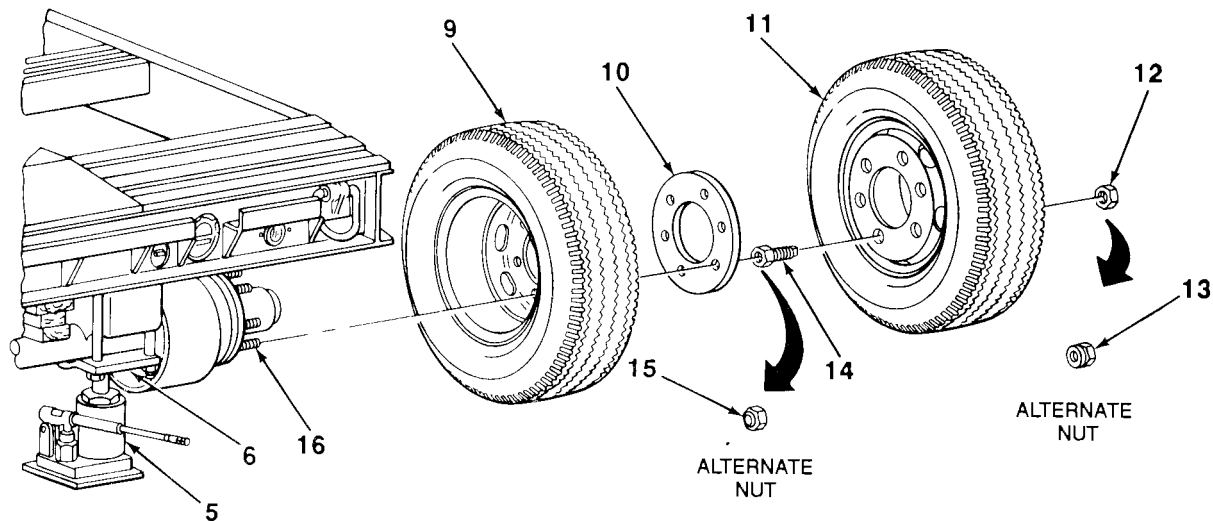
- |    |                            |                                       |  |
|----|----------------------------|---------------------------------------|--|
| 4. | Nuts (14)<br>or studs (16) | six nuts (12 or 13)                   | Using lug wrench, loosen.  |
| 5. | Shackle box<br>bracket (6) | Hydraulic jack (5)                    | Using handle, raise semitrailer until outer wheel and<br>tire assembly (11) is off ground. |
| 6. | Nuts (14)<br>or studs (16) | Six nuts (12 or 13)                   | Using lug wrench, unscrew and take off.  |
| 7. |                            | Outer wheel and tire<br>assembly (11) | With help of assistant, take off.  |



TA506820

3-9. WHEEL AND TIRE ASSEMBLY (Con't)

LOCATION	ITEM	ACTION	REMARKS
<b>NOTE</b> If inner wheel and tire assembly does not need to be removed, go to step 17.			
8.	Shackle box bracket (6)	Hydraulic jack (5)	Using handle, lower until inner wheel and tire assembly (9) is on the ground.
9.	Studs (16)	Six nuts (14 or 15)	Using lug wrench, loosen.
10.	Shackle box bracket (6)	Hydraulic jack (5)	Using handle, raise until inner wheel and tire assembly (9) is off the ground.
11.	Studs (16)	Six nuts (14 or 15)	Using lug wrench, unscrew and take off.
12.		Spacer plate (10)	Pull off from studs (16).
13.		Inner wheel and tire assembly (9).	With help of assistant, take off.



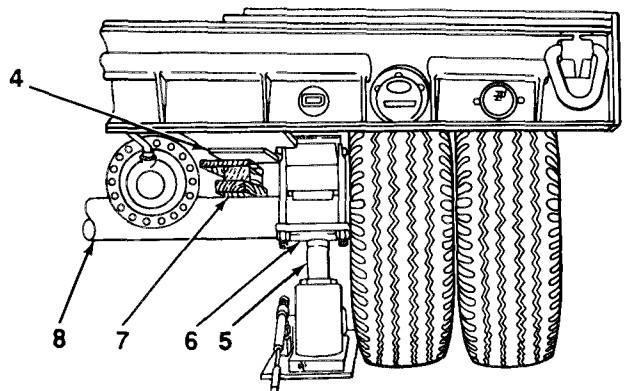
INSTALLATION

14.	Studs (16)	Inner wheel and tire assembly (9)	With help of assistant, place on studs (16).
15.		Spacer plate (10)	Slide over studs (16).
16.		Six nuts (14 or 15)	a. Have assistant hold inner wheel and tire assembly (9). b. Using lug wrench, screw on and tighten six nuts (14 or 15).

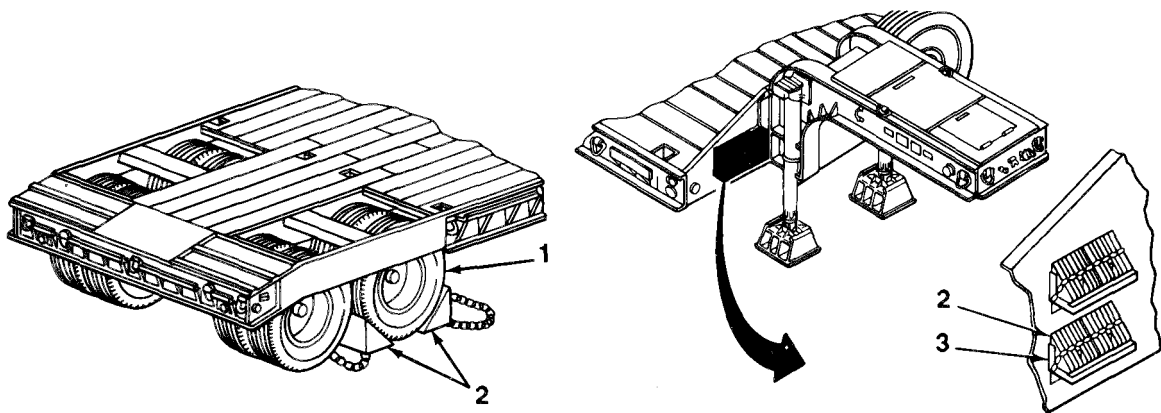
TA506821

3-9. WHEEL AND TIRE ASSEMBLY (Con't)

	LOCATION	ITEM	ACTION	REMARKS
17.	Nuts (14) or studs (16)	Outer wheel and tire assembly (11)	With help of assistant, place onto nuts (14) or studs (16).	
18.		Six nuts (12 or 13)	a. Have assistant hold outer wheel and tire assembly (11). b. Using lug wrench, screw on and tighten six nuts (12 or 13).	
19.	Shackle box bracket (6)	Hydraulic jack (5)	Using handle, lower until wheel and tire assemblies (9 and 11) are on the ground.	
20.	Stop block (4) and axle (8)	Wooden blocks (7)	Take out.	



- |     |                                   |                  |  |
|-----|-----------------------------------|------------------|--|
| 21. | Wheel and tire assemblies (1)     | Chock blocks (2) | Remove from front and rear of wheel and tire assemblies (1). |
| 22. | Right front corner of semitrailer | Chock blocks (2) | Put into stowage brackets (3).                               |



TA506822

3-9. WHEEL AND TIRE ASSEMBLY (Con't)

LOCATION	ITEM	ACTION	REMARKS
FOLLOW-ON MAINTENANCE:			
● Have unit maintenance torque inner nuts to 300-350 lb.-ft. (407-475 N•m) and outer nuts to 450-500 lb.-ft. (610-678 N•m).			
. Turn in wheel and tire assembly to unit maintenance.			

TASK ENDS HERE

3-10. SPARE WHEEL AND TIRE ASSEMBLY

This Task Covers:

a. Removal	b. Installation
------------	-----------------

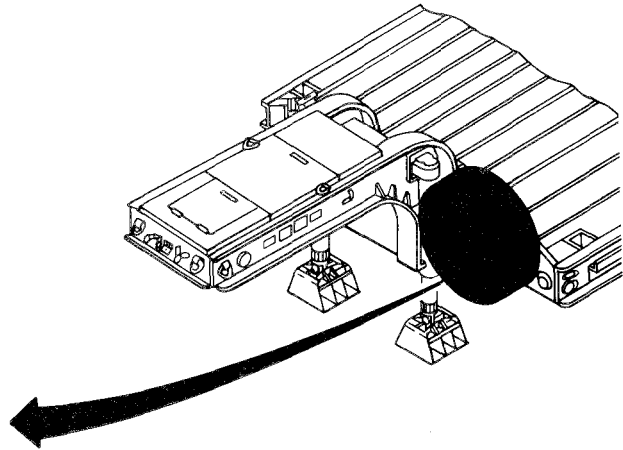
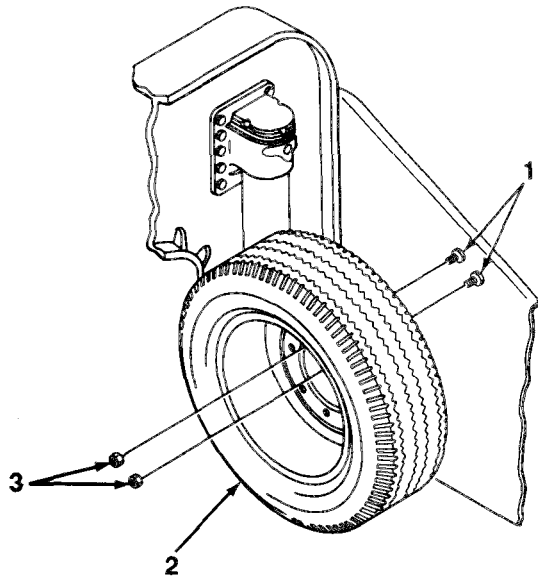
Initial Setup:

<b>Tools/Test Equipment:</b> <ul style="list-style-type: none"><li>•Wrench and handle, lug</li><li>•Wrench, stud nut</li></ul>	<b>Personnel Required: Two</b>
--	--------------------------------

LOCATION	ITEM	ACTION	REMARKS
REMOVAL			
1. Studs (1)	Two nuts (3)	Using lug wrench and handle, unscrew counterclockwise and take off.	
2. Studs (1)	Spare wheel and tire assembly (2)	With help of assistant, lift off.	
INSTALLATION			
3. Studs (1)	Spare wheel and tire assembly (2)	With help of assistant, place on.	
4.	Two nuts (3)	Using lug wrench and handle, screw on and tighten.	

### 3-10. SPARE WHEEL AND TIRE ASSEMBLY (Con't)

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



**TASK ENDS HERE**

### 3-11. LANDING GEAR LEGS

*This Task Covers:*

Cleaning

*Initial Setup:*

#### **Materials/Parts**

- Brush (Item 1, Appendix E)
- Dry cleaning solvent (Item 13, Appendix E)
- Rags (Item 11, Appendix E)

3-11. LANDING GEAR LEGS (Con't)

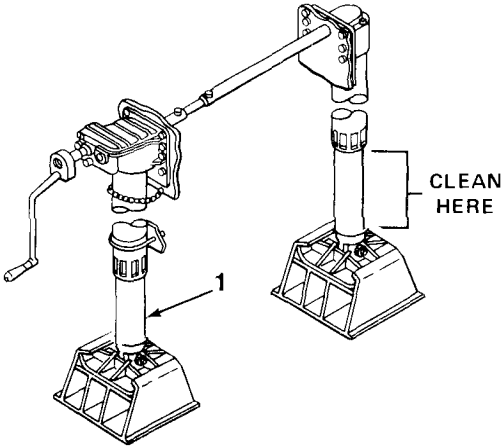
LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

CLEANING

Lower portion of  
landing gear leg  
(1) above shoe

Landing gear leg (1)

a. Using rags, wipe off any build-up of grease  
and dirt.



**WARNING**

Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F - 138°F (38°C - 59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

- b. Using brush and dry cleaning solvent, clean.
- c. Allow to dry.
- d. Lubricate in accordance with Lubrication Chart (para 3-2).

TASK ENDS HERE

## CHAPTER 4

### UNIT MAINTENANCE

#### 4-1. OVERVIEW

This chapter contains all of the maintenance authorized to be performed by unit maintenance. Included are Service Upon Receipt of Material, Preventive Maintenance Checks and Services (PMCS), and troubleshooting and maintenance procedures,

	<i>Page</i>
Section I      Repair Parts; Special Tools; Test, Measurement, and Diagnostic Equipment (TMDE); and Support Equipment . . . . .	4-1
Section II      Service Upon Receipt . . . . .	4-2
Section III     Unit Preventive Maintenance Checks and Services (PMCS) . . . . .	4-3
Section IV     Unit Troubleshooting Procedures . . . . .	4-9
Section V      Electrical System Maintenance . . . . .	4-21
Section VI     Brake System Maintenance . . . . .	4-49
Section VII    Wheel, Hub, and Drum Maintenance. . . . .	4-95
Section VIII   Frame and Towing Attachments Maintenance . . . . .	4-104
Section IX     Accessory Items Maintenance . . . . .	4-141
Section X      Preparation for Storage or Shipment ... . . . .	4-145

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

	<i>Page</i>		<i>Page</i>
Common Tools and Equipment . . . . .	4-1	Special Tools; Test, Measurement, and Diagnostic Equipment (TMDE); and Support Equipment . . . . .	4-1
Repair Parts . . . . .	4-1		

#### 4-2. COMMON TOOLS AND EQUIPMENT

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

#### 4-3. SPECIAL TOOLS; TEST MEASUREMENT AND DIAGNOSTIC EQUIPMENT (TMDE); AND SUPPORT EQUIPMENT

For a listing of all tools required to maintain the semitrailer refer to Section III of the Maintenance Allocation Chart (MAC), Appendix B of this manual.

#### 4-4. REPAIR PARTS

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



Section II. SERVICE UPON RECEIPT

	Page		Page
Preliminary Servicing and Adjustment of Equipment . . . . .	4-2	Service Upon Receipt of Material . . . . .	4-2

4-5. SERVICE UPON RECEIPT OF MATERIAL

LOCATION		ITEM	ACTION	REMARKS
1.	Attached to conspicuous part of semitrailer	DD Form 1397	Read and follow all instructions.	
2.		Metal strapping, plywood, tapes, seats, and wrappings	Remove.	
<div>WARNING</div> <p>Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F - 138°F (38°C - 59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.</p>				
3.		Coated exterior parts	Remove rust preventive compound with dry cleaning solvent (Item 13, Appendix E).	
4.		Semitrailer	a. Inspect for damage received during shipping. b. If damage is found, submit DD Form 6, <i>Package Improvement Report</i> .	
5.		Equipment packing slip	a. Check against equipment to see if shipment is complete. b. Report all discrepancies in accordance with instructions in DA Pam 738-750.	

4-6. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT

Perform the Operator/Crew and Unit Preventive Maintenance Checks and Services (PMCS) contained in Chapters 2 and 4 of this manual.

Lubricate all points as shown in the Lubrication Chart, regardless of interval (para 3-2).

Schedule the next Preventive Maintenance Checks and Services (PMCS) on DD Form 314, *Preventive Maintenance Schedule and Record*.

**4-6. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT (Con't)**

Report all deficiencies on DA Form 2407, *Maintenance Request*, if the deficiencies appear to involve unsatisfactory design.

Perform a break-in road test of 25 mi (40 km) at a maximum speed of 30 mi/h (48 km/h).

**Section III. UNIT PREVENTIVE MAINTENANCE CHECKS  
AND SERVICES (PMCS)**

	<i>Page</i>		<i>Page</i>
General .....	4-3	Specific PMCS Procedures.....	4-3
Unit Preventive Maintenance Checks and Services (PMCS), Table 4-1 .....	4-4		

**4-7. GENERAL**

To ensure that your vehicle is ready for operation at all times, inspect it systematically so you can discover any defects and have them corrected before they result in serious damage or failure. Table 4-1 contains your Unit PMCS. The item numbers indicate the sequence of minimum inspection requirements. If you're operating the vehicle and notice something wrong that could damage the equipment if you continue operation, stop operation immediately.

Record all deficiencies and shortcomings, along with the corrective action taken, on DA Form 2404, *Equipment Inspection and Maintenance Worksheet*. The Item Number column is the source for the numbers used on the TM Number column on DA Form 2404.

The item numbers of the table indicate the sequence of the PMCS. Perform at the interval shown below:

**[Text Deleted]**

Perform your *Semiannual (S)* PMCS once each six months.

If something doesn't work, troubleshoot it with the instructions in this manual or 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 down on your DA Form 2404. If you find something seriously wrong, report it to direct support as soon as possible.

**4-8. SPECIFIC PMCS PROCEDURES**

**WARNING**

- **Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.**
- **Compressed air used for cleaning or drying purposes, or for clearing restrictions, should never exceed 30 psi (207 kPa). Wear protective clothing (goggles/shield, gloves, etc.) and use caution to avoid injury to personnel.**

*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 dry cleaning solvent (Item 13, Appendix E) to clean metal surfaces. Use soap (Item 4, Appendix E) and water when you clean rubber or plastic material.

**4-8. SPECIFIC PMCS PROCEDURES (Con't)**

**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 ensure that the wires are in good condition.

**Hoses.** Look for wear, damage, and leaks. Ensure that 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 if authorized by the MAC (Appendix B) or report it to direct support.

**Lubrication.** If instructions in the Lubrication Chart have been followed, the semitrailer is considered to be adequately lubricated.

Table 4-1. Unit Preventive Maintenance Checks and Services (PMCS).

## S-SEMIANNUAL

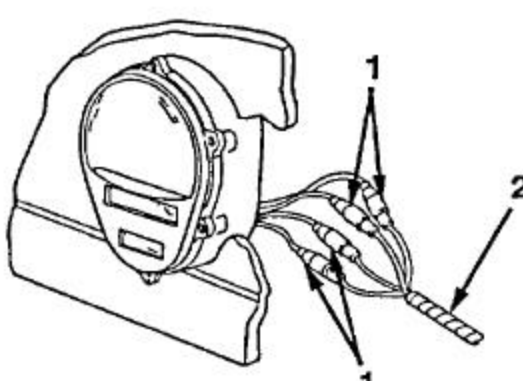
ITEM NO.	INTERVAL	PROCEDURE
	S	
		<p align="center"><b>NOTE</b></p> <p align="center"><b>Perform Operator/Crew PMCS prior to or in conjunction with Unit PMCS if:</b></p> <p align="center">a. There is a delay between the daily operation and the Unit PMCS. b. Regular operator is not assisting/participating.</p>
1		<p><b>LIGHTS AND REFLECTORS</b></p> <ul style="list-style-type: none"> <li>a. Check for loose mounting and electrical connectors (1).</li> <li>b. Check for bare wires and frayed insulation (2).</li> </ul>
		
2		<p><b>SERVICE BRAKES</b></p> <p align="center"><b>NOTE</b></p> <p align="center"><b>Brakes may require more frequent adjustment depending on how much use the semitrailer receives.</b></p> <ul style="list-style-type: none"> <li>a. Check brakeshoes (3) for wear and proper adjustment. If brakeshoe linings are worn within 0.03 in. (0.76 mm) of rivet or screw heads, replace brakeshoes. Check minor or major adjustment as required (para 4-20 or 4-22).</li> <li>b. Check brake components for proper operation.</li> </ul>

Table 4-1. Unit Preventive Maintenance Checks and Services (PMCS) (Con't).

S-SEMIANNUAL

ITEM NO.	INTERVAL S	PROCEDURE
3		<div> </div> <p><b>LANDING GEAR</b></p> <ul style="list-style-type: none"> <li>• a. Remove gearbox cover (4) and check for damaged gears and contaminated lubricant.</li> <li>• b. Check for damaged lower leg tubes (5), missing or damaged pins, or sheared woodruff keys.</li> </ul> <div> </div>

Table 4-1. Unit Preventive Maintenance Checks and Services (PMCS) (Con't).

## S-SEMIANNUAL

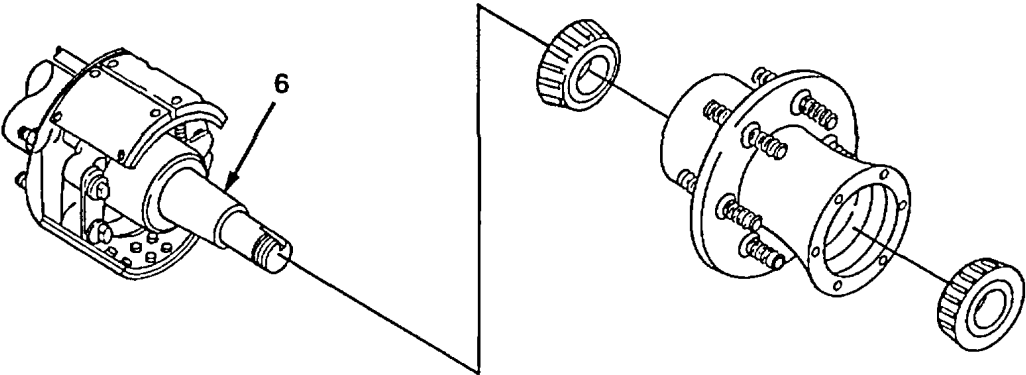
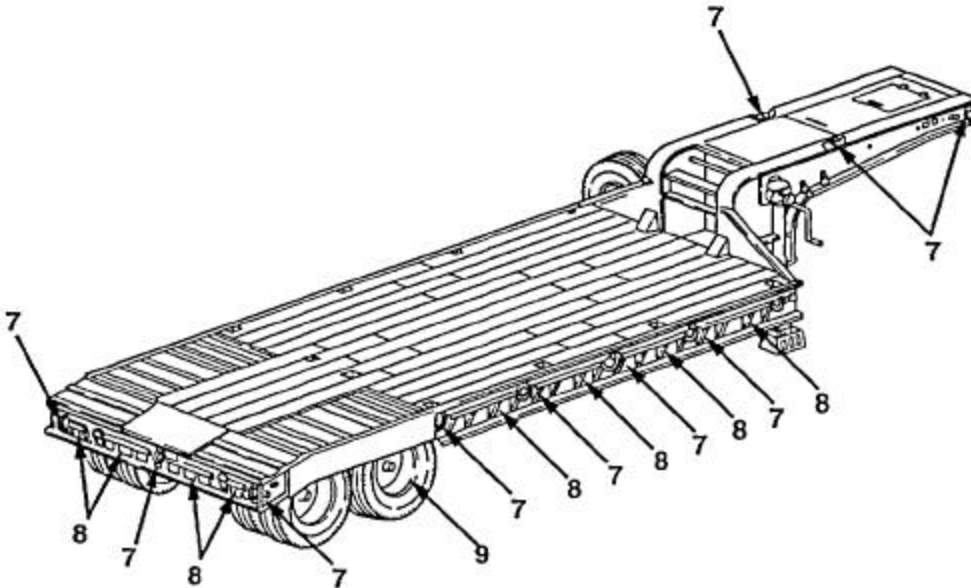
ITEM NO.	INTERVAL S	PROCEDURE
4	<ul style="list-style-type: none"> <li>•</li> </ul>	<p><b>AXLE</b></p> <p>Check for bent axle (6). Check for loose or missing U-bolts and nuts.</p>  <p>The diagram shows a side view of an axle assembly. A callout box highlights a specific part of the axle, labeled with the number 6, which is identified as the axle itself. The callout shows a bent axle, indicating the inspection point for damage.</p>
5	<p><b>LOADING AND LASHING EQUIPMENT</b></p> <ul style="list-style-type: none"> <li>•</li> </ul>	<p>Inspect for broken or missing lashing rings (7) and ramp clips (8).</p>  <p>The diagram shows a side view of a trailer. Lashing rings (7) and ramp clips (8) are labeled on the trailer. The lashing rings are located along the length of the trailer, and the ramp clips are located at the front of the trailer. The diagram illustrates the inspection points for these components.</p>

Table 4-1. Unit Preventive Maintenance Checks and Services (PMCS) (Con't).

S-SEMIANNUAL		
ITEM NO.	INTERVAL	PROCEDURE
	S	
6		<b>WHEELS</b> <ul style="list-style-type: none"><li>• a. Inspect wheels (9) for damage.</li><li>• b. Torque inner wheel nuts to 300-350 lb.-ft. (407-475 N•m). Torque outer wheel nuts to 450-500 lb.-ft. (610-678 N•m).</li></ul>
7		<b>KINGPIN</b> <ul style="list-style-type: none"><li>• a. Inspect the kingpin (10) for wear of 1/18 in. (1.6 mm) over 1/4 in. (6.4 mm) of the circumference of the pin. Check for wear over the kingpin surface causing the diameter to be reduced by 1/16 in. (1.6 mm). Inspect the retainer (13) for breaks or damage.</li><li>• b. Inspect locking pin (12) and chain (11) for broken links and loose or broken mounting pins or bolts.</li></ul>
8		<b>ROAD TEST</b> <ul style="list-style-type: none"><li>• a. Perform road test. Pay special attention to items that were repaired or adjusted.</li></ul>

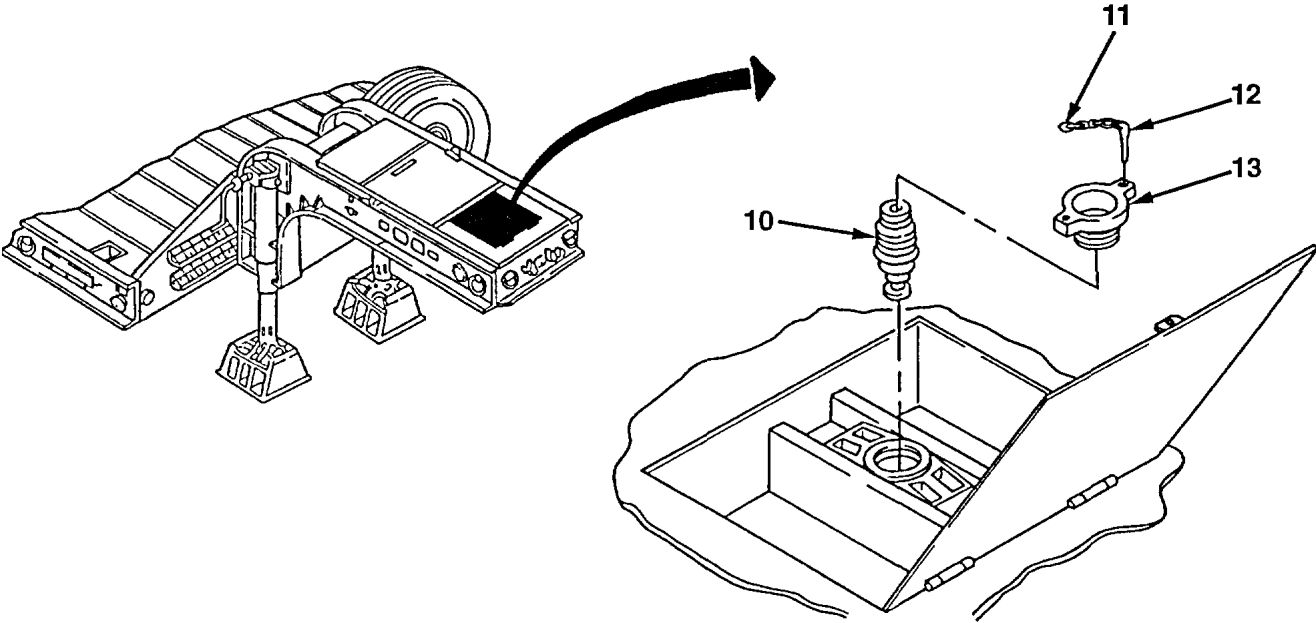
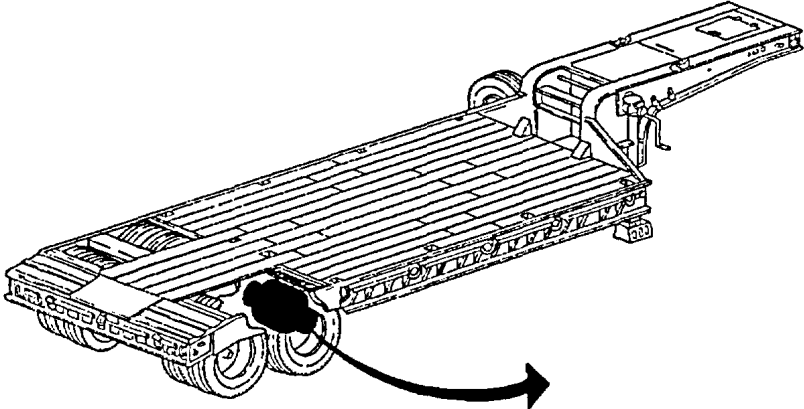
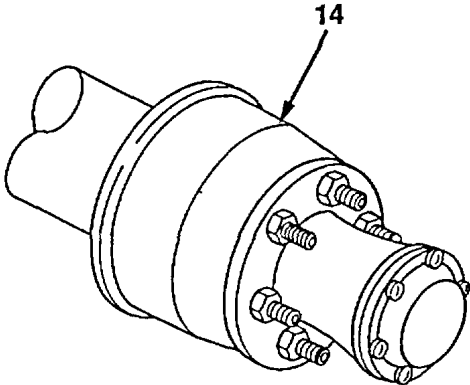


Table 4-1. Unit Preventive Maintenance Checks and Services (PMCS) (Con't).

S-SEMIANNUAL		
ITEM NO.	INTERVAL	PROCEDURE
	S	
8		<div><div>ROAD TEST (Con't)</div><div><div>WARNING</div><div>Cautiously feel each wheel hub and drum. Wheel hubs or drums may be hot. Failure to follow this warning may result in burns.</div></div><div><ul style="list-style-type: none"><li>b. Check drums and wheel hubs (14) immediately after road test; check for a drum and wheel hub that is hotter or cooler than the others. An overheated drum and wheel hub indicates an improperly adjusted or defective service brake or dry wheel bearing. An abnormally cool condition indicates an inoperative service brake.</li></ul></div></div>
<div><div></div><div></div></div>		

## Section IV. UNIT TROUBLESHOOTING PROCEDURES

	<i>Page</i>		<i>Page</i>
Explanation of Columns .....	4-9	Unit Troubleshooting, Table 4-2 .....	4-10
General .....	4-9	Troubleshooting Symptom Index .....	4-9

### 4-9. GENERAL

Table 4-2 in this section lists the common malfunctions that maybe found during the operation or maintenance of the semitrailer or components. You should perform the test or inspections and corrective actions 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 is not corrected by the listed corrective actions, notify your supervisor.

### 4-10. EXPLANATION OF COLUMNS

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

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

Corrective Action. Procedure to correct problem.

### 4-11. TROUBLESHOOTING SYMPTOM INDEX

This symptom index is provided as a quick way to get you to the part of the troubleshooting table that will help you solve the problem you are having. It lists all the malfunctions covered in Table 4-2.

### Troubleshooting Procedure Page

#### BRAKES

Brakes Drag (One or More Drums Running Hot) .....	4-18
Brakes Will Not Release .....	4-12
Grabbing Brakes .....	4-17
No Brakes or Weak Brakes .....	4-14
Slow Brake Application or Slow Release .....	4-16

#### ELECTRICAL SYSTEM

All Lamps Do Not Light.. .....	4-10
Dim or Flickering Lights .....	4-12
One or More Lamps (But Not All) Will Not Light .....	4-11

#### LANDING GEAR

Landing Gear is Difficult to Raise or Lower .....	4-19
---	------

#### NOTE

Semitrailer must be coupled to tractor when performing electrical or airbrake system tests.



Table 4-2. Unit Troubleshooting.

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

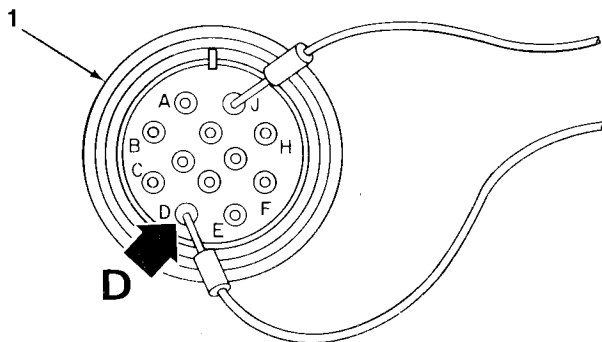
ELECTRICAL SYSTEM

1. ALL LAMPS DO NOT LIGHT.

Step 1. Check for open circuit in wiring.

With tractor lights turned on, check tractor-to-semitrailer connector (1) by measuring voltage between ground contact (D) and other contacts.

If measurement is not approximately 24 volts, refer to tractor operator's manual to perform tractor troubleshooting.

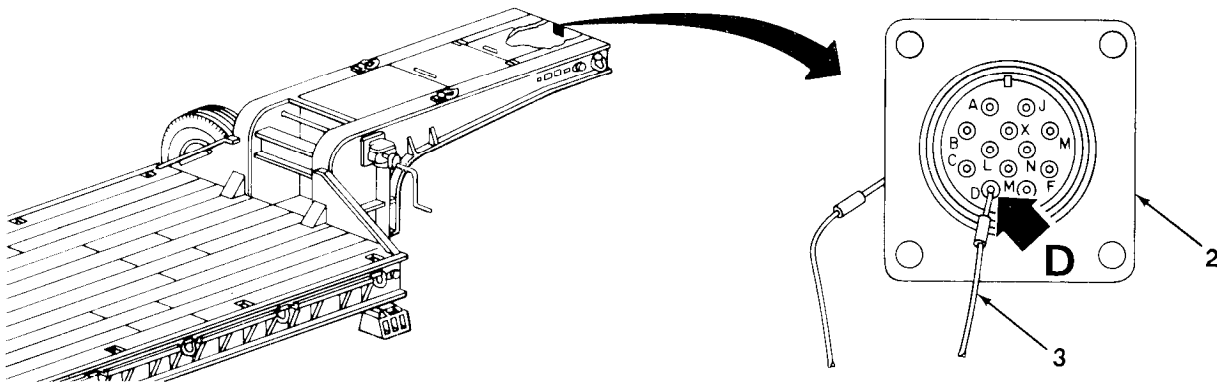


- A. LEFT B.O. TAIL
- B. LEFT SERVICE STOP
- C. RIGHT B.O. TAIL
- D. GROUND
- E. SERVICE TAIL AND CLEARANCE
- F. B.O. STOP
- H. B.O. CLEARANCE
- J. RIGHT SERVICE STOP

Check receptacle (2) by measuring continuity between ground contact (D) and other bare metal on semitrailer.

If measurement is not zero, remove, clean, and install ground wire (3).

If measurement is still not zero, replace receptacle (2) (para 4-18).



TA506830

Table 4-2. Unit Troubleshooting (Con't).

**MALFUNCTION****TEST OR INSPECTION****CORRECTIVE ACTION**

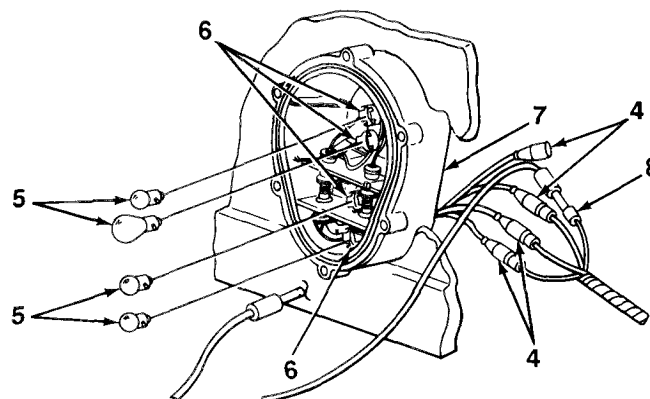
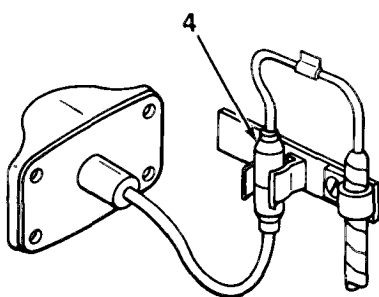
With semitrailer lights turned on, disconnect wiring harness connector (8) and measure voltage between wiring harness connector and other bare metal on semitrailer.

If measurement is not approximately 24 volts, replace wiring harness (para 4-14) or repair broken wire (para 4-16).

Step 2. Check all connectors (4), lamp sockets (6), and lamps (5) for corrosion and damage.

If connectors (4), sockets (6), or lamps (5) are corroded, scrape and clean off corrosion.

If connectors (4) are damaged, replace (para 4-15). If sockets (6) or lamps (5) are damaged, replace (para 4-12 or 4-13).



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

Step 1. Check for burned out lamp (5) and loose connectors (4).

If lamp (5) is burned out, replace (para 4-12 or 4-13).

If connector (4) is loose, tighten.

Step 2. Check for loose or broken light assembly (7).

If light assembly (7) is loose, tighten.

If light assembly (7) is broken, replace (para 4-12 or 4-13).

Step 3. Check for corroded and broken lamp contact and socket (6).

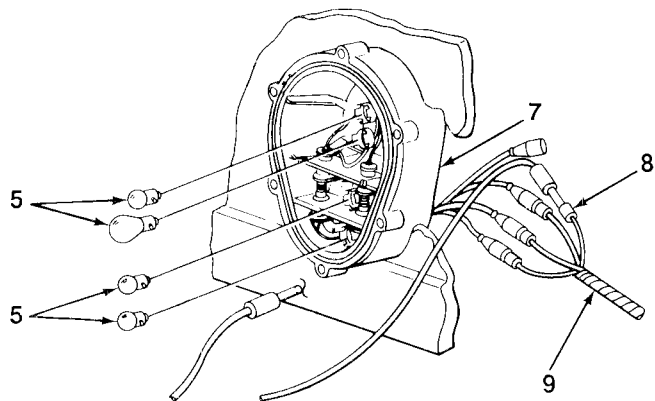
If contact or socket (6) is corroded, scrape and clean.

If contact or socket (6) is broken, replace (para 4-12 or 4-13).

TA506831

Table 4-2. Unit Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
	Step 4.	Check for broken cable.  Disconnect wiring harness connector (8) at inoperative lamp (5) and measure continuity between wiring harness connector and bulb contact.  If measurement is not zero, replace light assembly (7) (para 4-12 or 4-13).  Turn semitrailer lights on and measure voltage between wiring harness connector (8) and good metal ground.  If measurement is not approximately 24 volts, replace wiring harness or repair wiring harness wire (9) (para 4-14 or 4-16).



3. DIM OR FLICKERING LIGHTS.

Check for loose ground wire in electrical receptacle connector at front of semitrailer.  
If ground wire is loose, tighten.

BRAKES

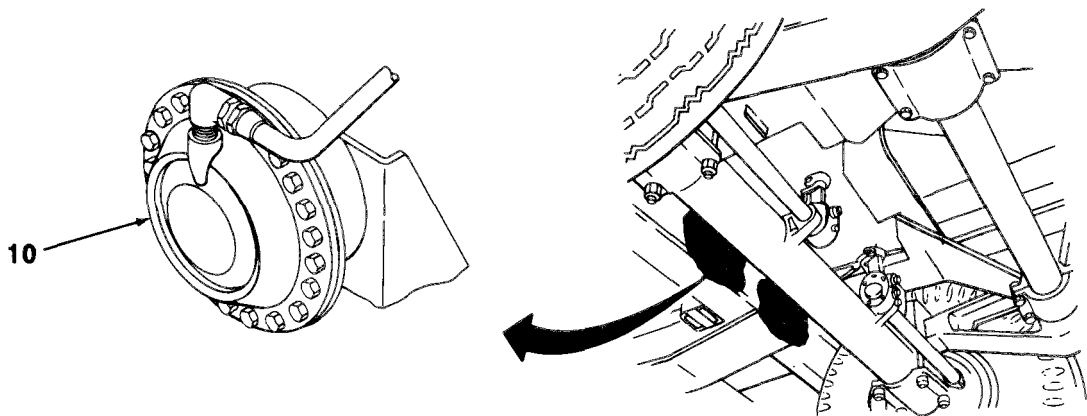
4. BRAKES WILL NOT RELEASE.

- Step 1. Check for restrictions in air lines and hoses.  
If air line or hoses have a restriction, repair (para 4-28).
- Step 2. Apply tractor brakes and release. Emergency relay valve should vent airbrake chamber (10) air through exhaust port when tractor brakes are released.  
If airbrake chamber (10) air is not vented when tractor brakes are released, replace emergency relay valve (para 4-31).

TA506832

Table 4-2. Unit Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 3. Check brakeshoe adjustment.

Jack up the axle so wheel rotates freely.

If wheel does not rotate freely, adjust the hex head (11) located on slack adjuster (para 4-23).

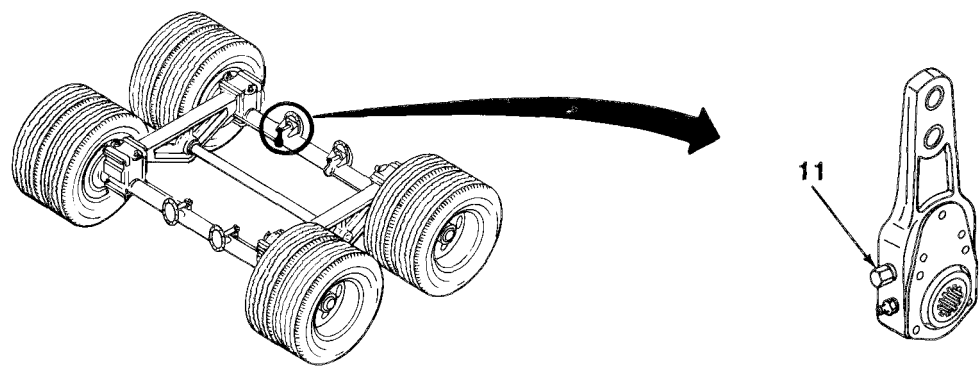


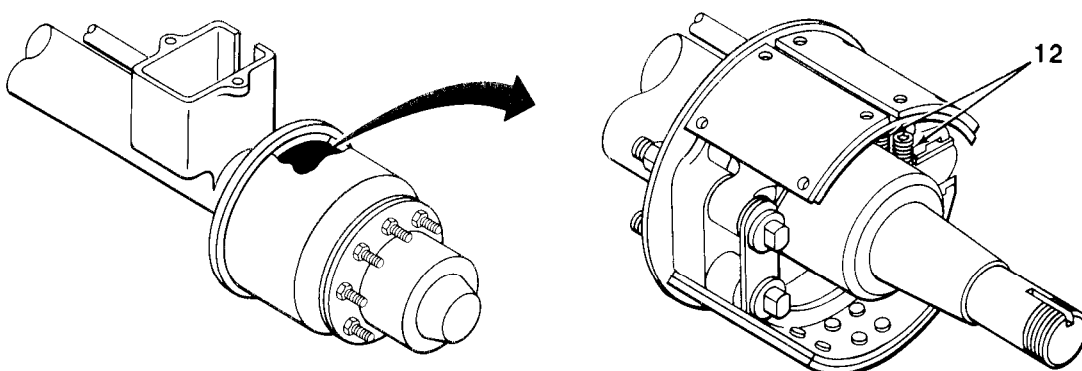
Table 4-2. Unit Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 4.	Remove wheel and drum, and check for distorted or broken brakeshoe return springs (12) (para 4-21).	
---------	---	--

If return springs (12) are distorted or broken, replace return springs (para 4-21).

If brakes still will not release, check camshaft (para 4-24).



## 5. NO BRAKES OR WEAK BRAKES.

Step 1. Check for restricted and leaking service air line (14).

If service air line (14) is restricted or damaged, repair (para 4-28).

Step 2. Disconnect service air line (14) at emergency relay valve (13). Apply and release service brakes. Air should escape when brakes are applied, and stop when brakes are released.

If airflow does not react as stated above, service air line (14) is clogged. Repair service air line (para 4-28).

Step 3. Visually inspect air line (16) between air reservoir (15) and emergency relay valve (13) for dents, cracks, and breaks.

If air line (16) is dented, cracked, or broken, repair (para 4-28).

Step 4. Cautiously loosen air reservoir fitting (17) at emergency relay valve (13) (para 4-28). Air should escape; no air means a clogged air line.

If air line is clogged, repair (para 4-28).

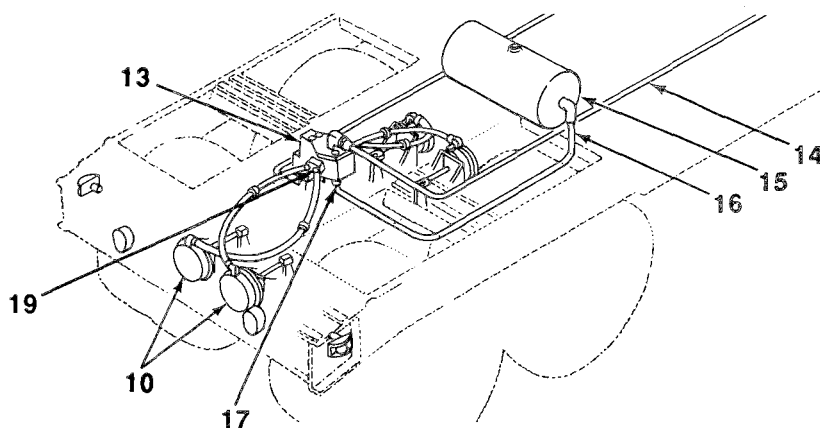
Step 5. Cautiously loosen air line fitting (19) at emergency relay valve (13) that supplies air to airbrake chambers (10). Have assistant apply brakes and note airflow to airbrake chambers.

If there is no airflow to airbrake chambers (10), emergency relay valve (13) is defective. Replace emergency relay valve (para 4-31).

TA506834

Table 4-2. Unit Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 6. Check for dented, cracked, and leaking air brake chamber (10).

If air brake chamber (10) is dented, cracked, or leaking, replace (para 4-30).

Step 7. Adjust brakes at slack adjuster (20) (para 4-20).

If brakes will not adjust, remove wheels, drum (21), and hub (22), and replace broken and worn brake components (para 4-21).

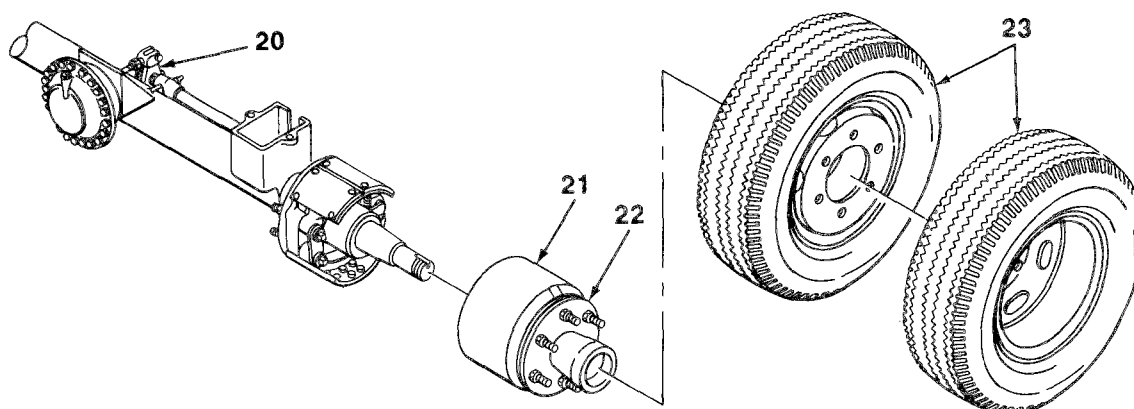


Table 4-2. Unit Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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**6. SLOW BRAKE APPLICATION OR SLOW RELEASE.**

Step 1. Check for restriction in air lines and hoses.

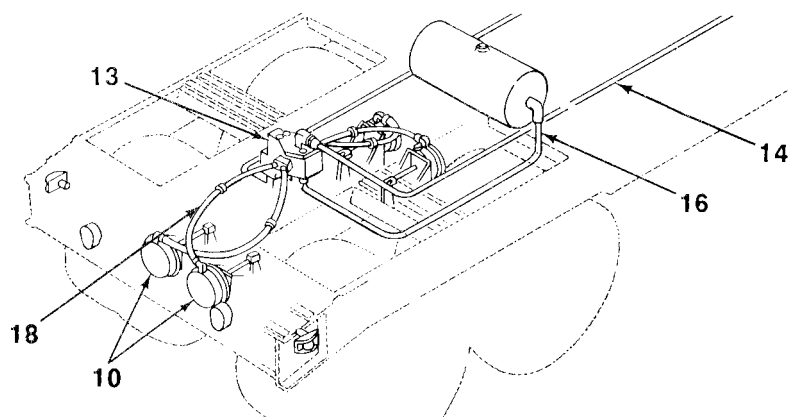
If air lines or hoses are restricted, repair (para 4-28).

Step 2. Loosen service air line (14) coming into emergency relay valve (13) and apply brakes. Air should leak when brakes are applied and stop when released.

If air does not leak when brakes are applied, service air line (14) is clogged. Repair service air line (para 4-28).

Step 3. Cautiously loosen air line (16) at emergency relay valve (13). Apply and release brakes.

If no air is leaking, air line (16) is clogged. Repair air line (para 4-28).



Step 4. Loosen air line (18) to airbrake chamber (10) at emergency relay valve (13). Apply and release brakes. Air should leak when brakes are applied and stop when released.

If air does not leak when brakes are applied, the emergency relay valve (13) is defective. Replace emergency relay valve (para 4-31).

Step 5. Check airbrake chambers (10) for dents and cracks.

If airbrake chambers (10) are dented or cracked, replace (para 4-30).

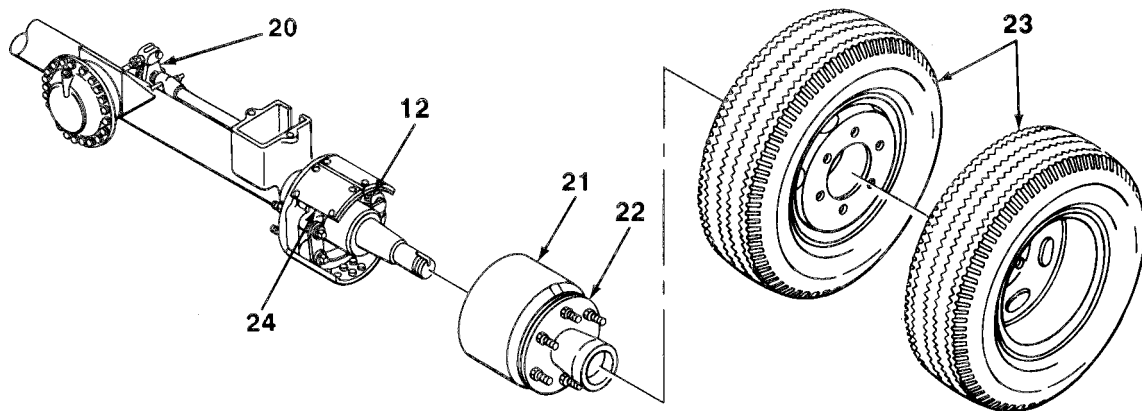
Step 6. Apply brakes. Listen and feel for airbrake chamber (10) leaks other than those caused by first applying brakes. If leak is not obvious, put soap (Item 4, Appendix E) solution on seams and check for bubbles.

If airbrake chambers (10) are leaking, replace (para 4-30).

TA506836

Table 4-2. Unit Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
Step 7.	Remove wheels (23), drum (21), and hub (22). Check for distorted or broken brakeshoe return springs (12) (para 4-21).	If return springs (12) are distorted or broken, replace (para 4-21).



## 7. GRABBING BRAKES.

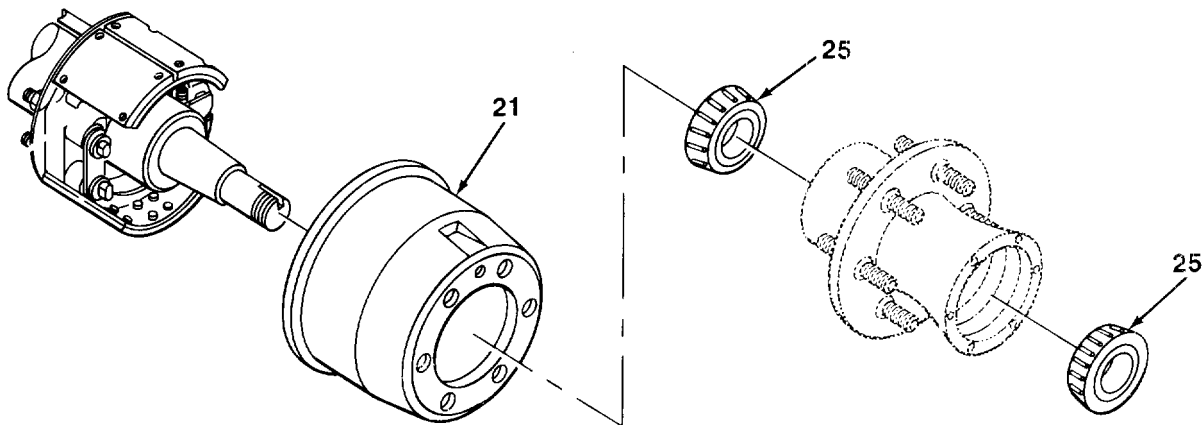
- Step 1. Jack up axle so wheels (23) rotate freely and check brake adjustment.  
If wheels (23) do not rotate freely, adjust hex head located on slack adjuster (20) (para 4-20).
- Step 2. Remove wheels (23), drum (21), and hub (22). Check for grease on brakeshoe linings (24).  
If grease is present, replace brakeshoes (para 4-21). Replace oil seal (para 4-33).
- Step 3. Check for loose or worn brakeshoe linings (24).  
If brakeshoe linings (24) are loose or worn close to head of screws, replace brakeshoes (para 4-21).
- Step 4. Check for cracked, scored, or deformed drum (21).  
If drum (21) is cracked, scored, or deformed, replace (para 4-33).



Table 4-2. Unit Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 5. Check for loose or worn wheel bearings (25) (para 4-33).  
If wheel bearings (25) are loose, adjust (para 4-33).  
If wheel bearings (25) are worn, replace (para 4-33).



8. BRAKES DRAG (ONE OR MORE DRUMS RUNNING HOT).

Step 1. Jack up axle so wheel (23) rotates freely. Check brake adjustment: (para 4-20).  
If wheel (23) does not rotate freely, adjust hex head(11) located on slack adjuster (para 4-20).

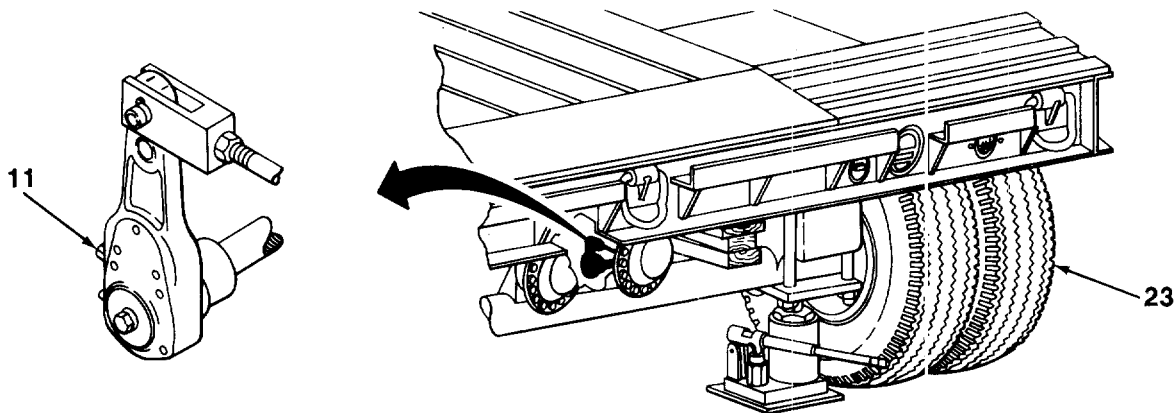
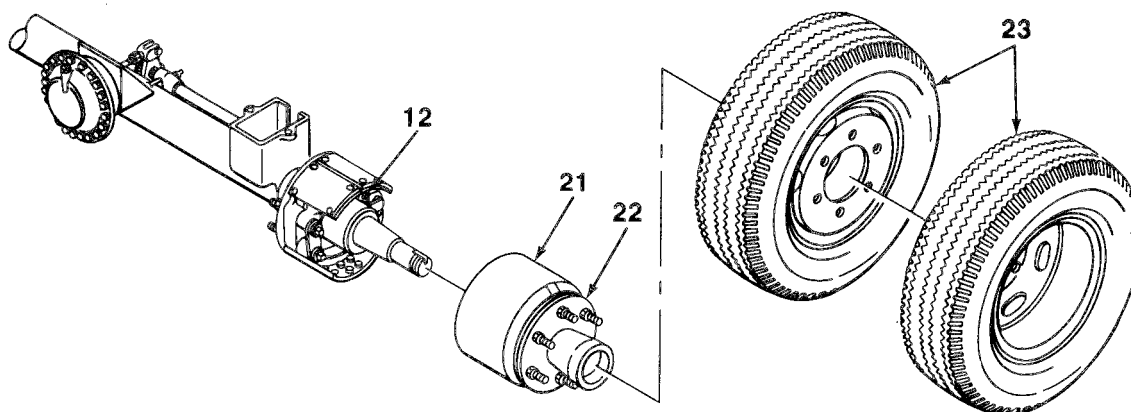


Table 4-2. Unit Troubleshooting (Con't).

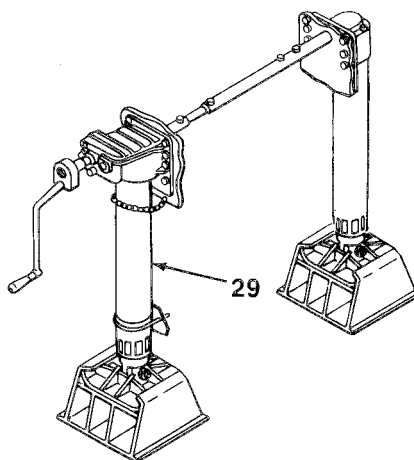
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
Step 2.	Remove wheels (23), drum (21), and hub (22). Check for distorted and broken brakeshoe return springs (12).	If return springs (12) are defective, replace (para 4-21).
Step 3.	Check for evidence of out-of-round drum (21) (para 4-33).	If drum (21) is out-of-round, replace (Para 4-33).



### LANDING GEAR

#### 9. LANDING GEAR IS DIFFICULT TO RAISE OR LOWER.

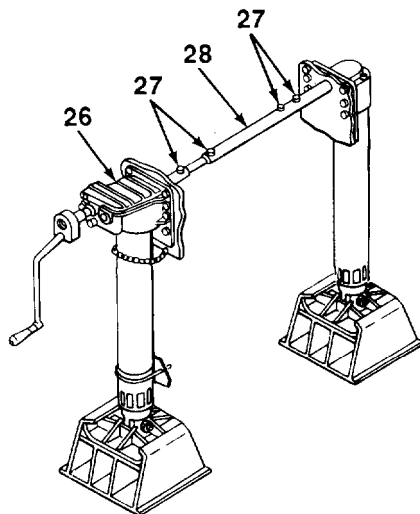
- Step 1. Check for misaligned or damaged landing gear leg (29).  
If landing gear leg (29) is misaligned or damaged, replace (para 4-38 or 4-39).



TA506839

Table 4-2. Unit Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
Step 2.	Check for bent shaft (28) or sheared retaining pins (27).	<p>If shaft (28) is bent, straighten.</p> <p>If retaining pins (27) are sheared, replace.</p>
Step 3.	Check gearbox (26) for binding or broken gear teeth.	<p>If gearbox (26) is binding or sounds like it has broken gear teeth, repair (para 4-39).</p>



Section V. ELECTRICAL SYSTEM MAINTENANCE

	Page		Page
Clearance Light Assemblies ... ..	4-23	Wire Connectors... . . . .	4-38
Composite Light Assemblies . . . . .	4-21	Wiring Diagram . . . . .	4-48
Ground Wire Repair . . . . .	4-44	Wiring Harness . . . . .	4-28
Receptacle . . . . .	4-46	Wiring Harness Repair . . . . .	4-41

4-12. COMPOSITE LIGHT ASSEMBLIES

This Task Covers:

- a. Lamp, Lens, and Door Assembly Replacement
- b. Removal of Composite Light Assembly
- c. Installation of Composite Light Assembly

Initial Setup:

Materials/Parts:

- Marker tags (Item 14, Appendix E)

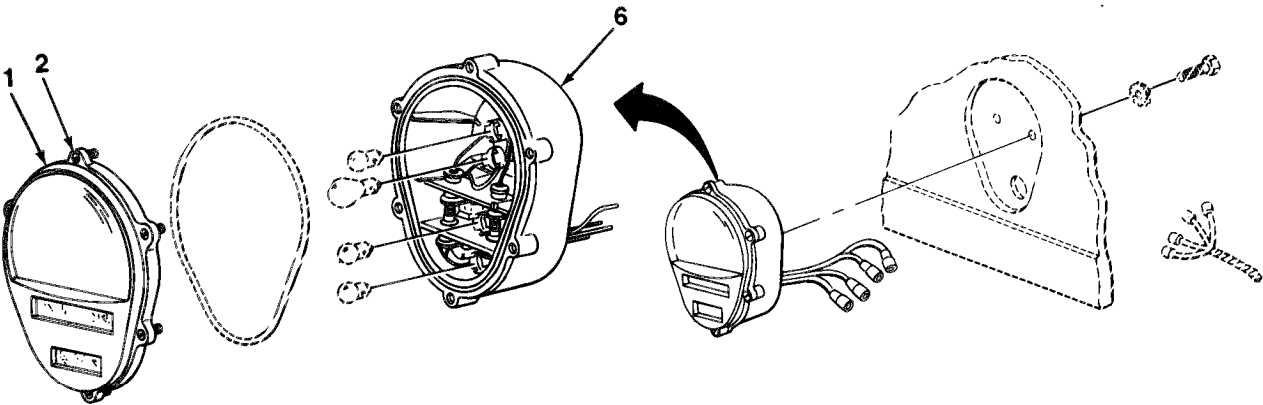
Tools/Test Equipment:

- Handle, ratchet, ½ in. drive
- Screwdriver, flat-tip
- Socket, ⅝ in., ½ in. drive

LOCATION	ITEM	ACTION	REMARKS
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LAMP, LENS, AND DOOR ASSEMBLY REPLACEMENT

1. Door and lens assembly (7) to composite light body (6)
- Six screws (2)
- Using screwdriver, unscrew. Screws (2) will stay in door and lens assembly (1).



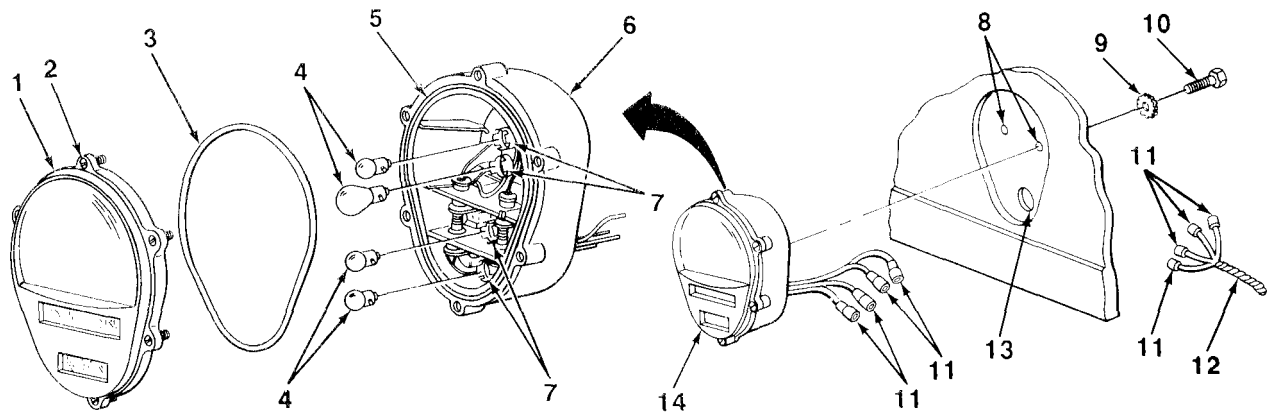
4-12. COMPOSITE LIGHT ASSEMBLIES (Con't)

LOCATION		ITEM	ACTION	REMARKS
2.		Door and lens assembly (1) and composite light body (6)	Separate.	
3.	Composite light body (6)	Preformed packing (3)	Take out of groove (5) and inspect.	<b>If damaged, discard preformed packing (3).</b>

NOTE

**Top lamp in composite light assembly is taillight, second lamp is stop-turn lamp, third down is blackout taillight, and bottom lamp is blackout stoplight.**

4.	Composite light body (6)	Four lamps (4)	a. Push in, turn ¼ turn counterclockwise and remove. b. Inspect for broken filament.	<b>If filament is broken, discard lamp (4).</b>
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5.		Four lamps (4)	Place in proper socket (7), push in, and turn ¼ turn clockwise.	
6.	Composite light body (6)	Preformed packing (3)	Place in groove (5).	
7.	Composite light body (6)	Door and lens assembly (1)	Place in position on composite light body (6).	
8.		Six screws (2)	Using screwdriver, screw in.	

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**4-12. COMPOSITE LIGHT ASSEMBLIES (Con't)**

LOCATION		ITEM	ACTION REMARKS
REMOVAL OF COMPOSITE LIGHT ASSEMBLY			
NOTE			
If wire identification tags are missing or are not readable, wires should be tagged to aid in installation.			
9.	Composite light assembly (14) to wiring harness (12).	Four electrical connectors (11)	Separate.
10.	Composite light assembly (14) to semitrailer	Two screws (10) and lockwashers (9)	Using socket and handle, unscrew and take out.
11.		Composite light assembly (14)	Carefully feed connector halves (11) through hole (13) in bracket and take off of semitrailer.
INSTALLATION OF COMPOSITE LIGHT ASSEMBLY			
12.		Composite light assembly (14)	a. Feed connector halves (11) through hole (13). b. Place into position and aline with screw holes (8).
13.		Two screws (10) and lockwashers (9)	Screw into back of light assembly (14) and tighten using socket and handle.
14.	Back of light assembly (14)	Four connector halves (11)	Match and connect to four wiring harness connector halves (11) with the same wire numbers. <b>Refer to wiring diagram (para 4-19).</b>

**FOLLOW-ON MAINTENANCE:**

- Check operation of lights.

**TASK ENDS HERE****4-13. CLEARANCE LIGHT ASSEMBLIES***This Task Covers:*

- |                                    |   |
|------------------------------------|---|
| a. Lamp and Lens Replacement       | c. Installation of Clearance Light Body |
| b. Removal of Clearance Light Body |   |

*Initial Setup:***Materials/Parts:**

- Abrasive cloth (Item 2, Appendix E)

**Tools/Test Equipment:**

- Screwdriver, cross-tip
- Screwdriver, flat-tip
- Wrench, open-end,  $\frac{3}{8}$  in.

4-13. CLEARANCE LIGHT ASSEMBLIES (Con't)

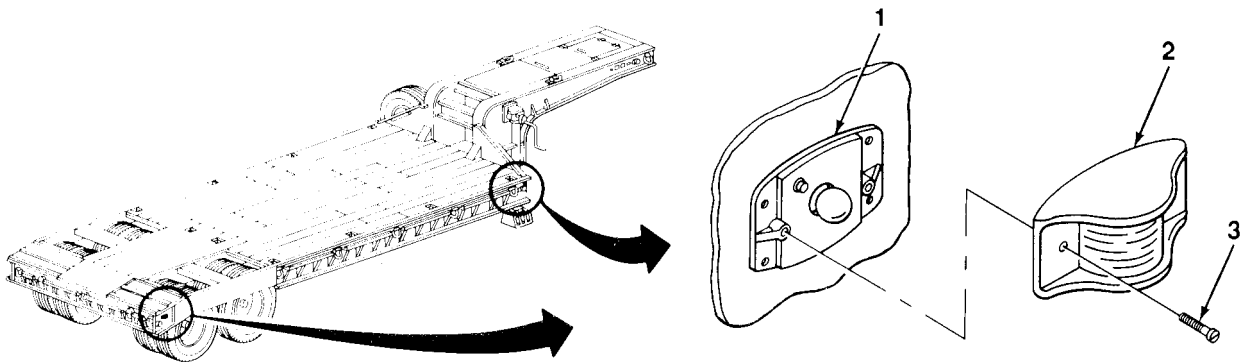
LOCATION	ITEM	ACTION	REMARKS
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LAMP AND LENS REPLACEMENT

NOTE

All clearance light lamps and lens are removed the same way. Only one light is shown in this paragraph.

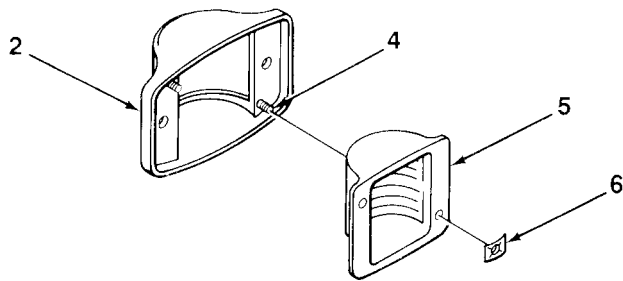
- |    |  |                   |   |
|----|--|-------------------|---|
| 1. | Lens retainer (2)<br>to light body (1) | Two screws (3)    | Using flat-tip screwdriver, unscrew and take out. |
| 2. |  | Lens retainer (2) | Take off light body (1).                          |



NOTE

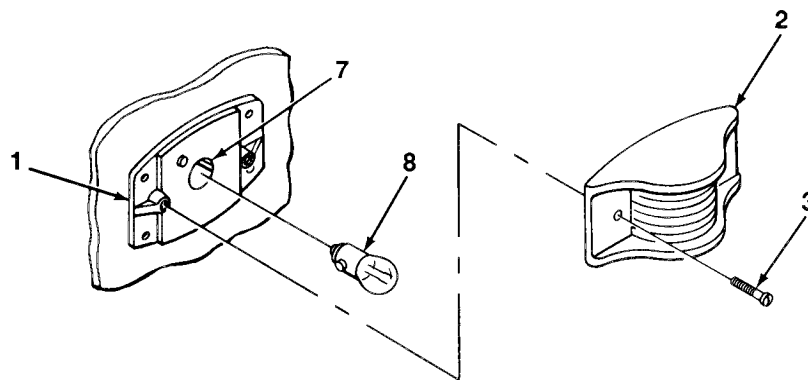
If replacing lens (5), perform steps 3 through 6.

- |    |                                   |                      |   |
|----|-----------------------------------|----------------------|---|
| 3. | Lens retainer (2)                 | Two push-on nuts (6) | Using flat-tip screwdriver, work off.             |
| 4. | Lens (5) and lens<br>retainer (2) |                      | Separate.<br>If lens (5) is broken, discard lens. |



## 4-13. CLEARANCE LIGHT ASSEMBLIES (Con't)

	LOCATION	ITEM	ACTION	REMARKS
5.		Lens (5)	Position in lens retainer (2).	
6.		Two push-on nuts (6)	Push onto studs (4).	
<b>NOTE</b>				
<b>If replacing lamp (8), perform steps 7 through 9.</b>				
7.	Light body (1)	Lamp (8)	a. Push in, turn ¼ turn counterclockwise and take out. b. Inspect for broken filament and corrosion.	<b>If filament is broken, discard lamp (8). If contacts are corroded, clean with abrasive cloth.</b>
8.	Light body (1)	Lamp socket (7)	Inspect for corrosion.	<b>If corroded, clean with abrasive cloth.</b>
9.	Light body (1)	Lamp (8)	Place in lamp socket (7), push in, and turn ¼ turn clockwise to detent.	
10.		Lens retainer (2)	Place on light body (1).	
11.		Two screws (3)	Screw into light body (1) using flat-tip screwdriver.	





4-13. CLEARANCE LIGHT ASSEMBLIES (Con't)

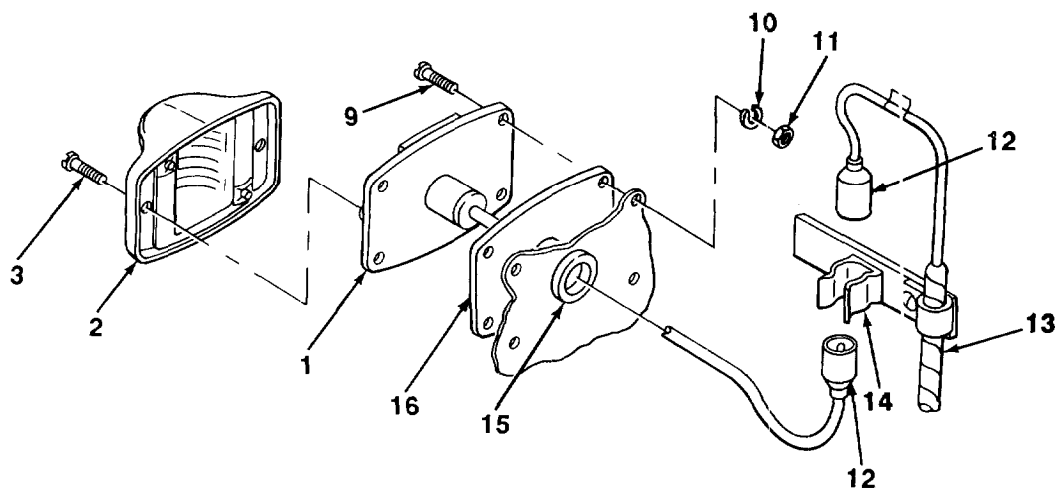
LOCATION	ITEM	ACTION	REMARKS
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REMOVAL OF CLEARANCE LIGHT BODY

NOTE

All clearance light assemblies are removed the same way.  
Only one light is shown in this paragraph.

12.	Lens retainer (2) to light body (1)	Two screws (3)	Using flat-tip screwdriver, unscrew and take out.
13.		Lens retainer (2)	Take off of light body (1).
14.	Light body (1) to wiring harness (13)	Connector halves(12)	a. Remove from clip (4). b. Pull apart.
15.	Light body (1) to semitrailer	Four nuts (1 1), lockwashers (10), and screws (9)	Using cross-tip screwdriver and 3/8 in. wrench, unscrew and take out.
16.		Light body (1)	Guide connector half (12) through hole (15) and take out. Inspect gasket (16) for damage. Replace if damaged.



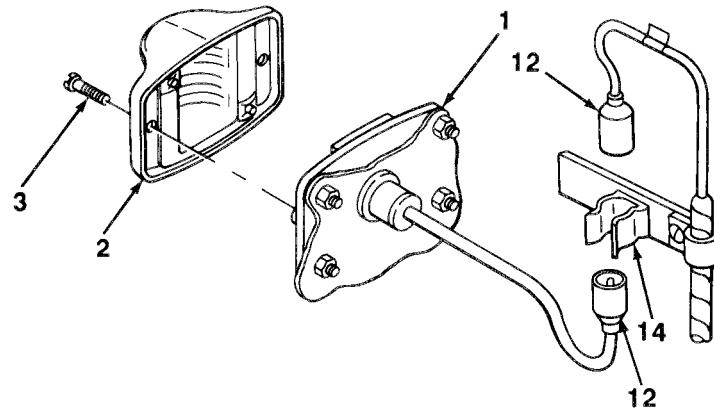
INSTALLATION OF CLEARANCE LIGHT BODY

17.	Semitrailer	Light body (1) and gasket (16).	Position gasket (16) at semitrailer. Guide connector half (12) through hole (15) and align screw holes.
18.		Four screws (9), lockwashers (10), and nuts (11 )	Screw in and tighten using cross-tip screwdriver and 3/8 in. wrench.

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**4-13. CLEARANCE LIGHT ASSEMBLIES (Con't)**

	LOCATION	ITEM	ACTION	REMARKS
19.		Connector halves (12)	Push together until seated.	
20.	Clip (14)	Connector halves (12)	Push into clip (14).	
21.		Lens retainer (2)	Place on light body (1).	
22.		Two screws (3)	Screw into light body (1) using flat-tip screwdriver.	

**FOLLOW-ON MAINTENANCE:**

- Check operation of lights.

**TASK ENDS HERE**

4-14. WIRING HARNESS

This Task Covers:

- |            |                 |
|------------|-----------------|
| a. Removal | b. Installation |
|------------|-----------------|

Initial Setup:

Equipment Conditions:

- Stowage box doors open (para 2-2).

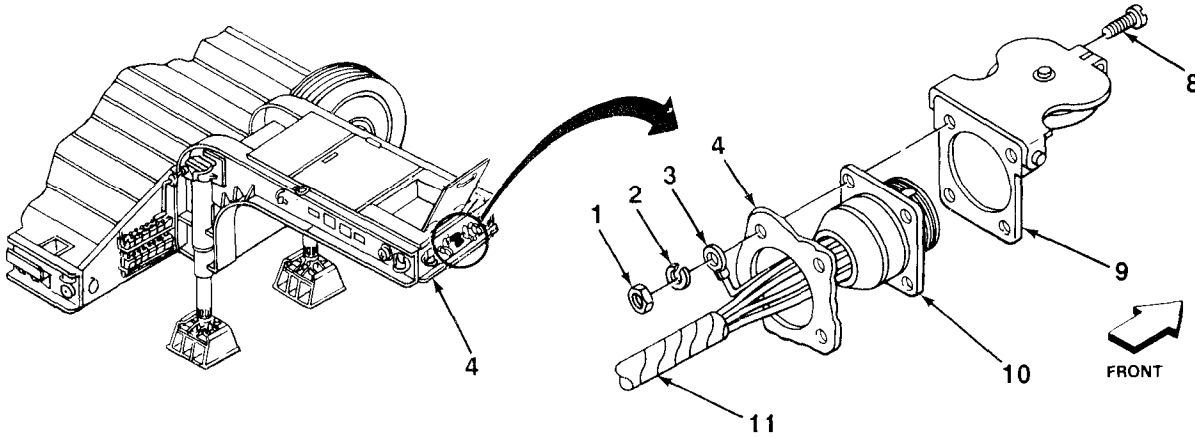
Materials/Parts:

- Marker tags (Item 14, Appendix E)

Personnel Required: Two

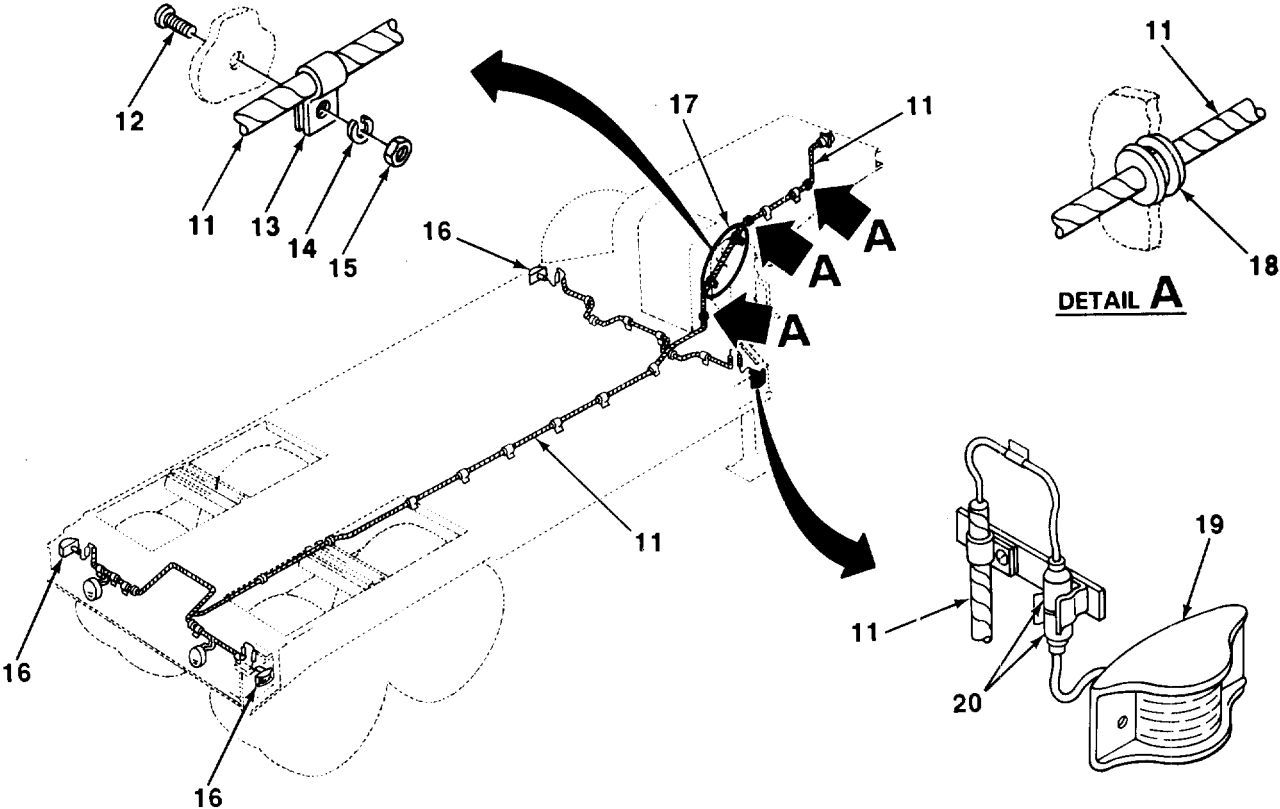
Tools/Test Equipment:

- Chisel
- Extension, 6 in. long, 3/8 in. drive
- Handle, ratchet, 3/8 in. drive
- Pliers, slip-joint
- Screwdriver, flat-tip
- Socket, 7/16 in., 3/8 in. drive
- Wrench, open-end, 7/16 in.

	LOCATION	ITEM	ACTION	REMARKS
REMOVAL				
1.	Cover (9) and receptacle assembly (10) to semitrailer (4)	Four nuts (1), lockwashers (2), ground wire (3), and screws (8)	Using screwdriver, 7/16 in. socket, 3/8 in. extension, and 3/8 in. handle, unscrew and take out.	
2.	Front of semitrailer (4)	Cover (9) and receptacle assembly (10)	Pull away from semitrailer (4) and separate.	
				
3.	Under right side of gooseneck (17), two clips (13)	Two nuts (15), lockwashers (14), and screws (12)	Using 7/16 in. wrench and flat-tip screwdriver, unscrew and remove.	
4.	Wiring harness (11)	Two clips (13)	Spread and remove.	

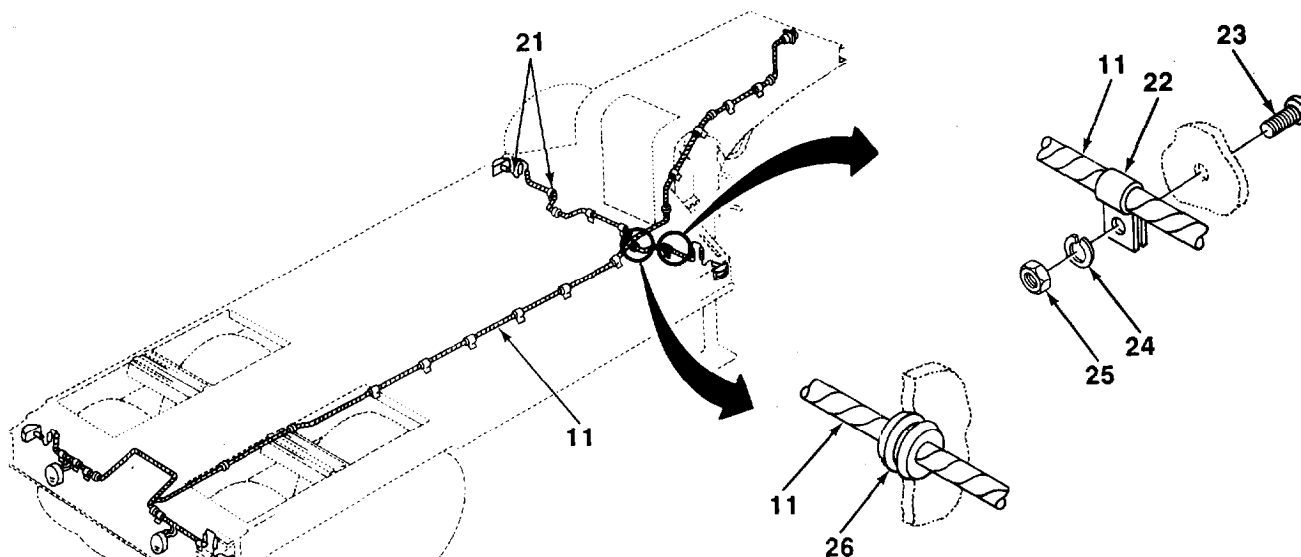
TA506847

4-14. WIRING HARNESS (Con't)

LOCATION	ITEM	ACTION	REMARKS
			
5.	Three grommets (18)	Pull out and remove from wiring harness (11) using pliers.	
<p><b>NOTE</b></p> <p>Remaining clearance lights-to-wiring harness connections are removed the same way as, the right front. Check tags for readability. If not readable, tag to aid in installation.</p>			
6.	Behind front right clearance light (19)	Two electrical connectors (20)	Remove from clip and pull apart halves.
7.	Remaining clearance lights (16)	Repeat step 6 for each clearance light (1 6).	

#### 4-14. WIRING HARNESS (Con't)

	LOCATION	ITEM	ACTION REMARKS
8.	Two clips (22) to right front crossbeam	Two screws (23), nuts (25), and lockwashers (24)	Using $\frac{7}{16}$ in. wrench and flat-tip screwdriver, unscrew and remove.
9.	Wiring harness (11 )	Two clips (22)	Spread and remove.
10.		One grommet (26)	Pull out and remove from wiring harness (11) using pliers.
11.	Two front left clearance light clips (21) to front crossbeam	Two screws (23), nuts (25), and lockwashers (24)	Using $\frac{7}{16}$ in. wrench and flat-tip screwdriver, unscrew and remove.
12.	Wiring harness (11)	Two clips (21)	Spread and remove.



13.	Wiring harness (11) and two clips (30)	Two screws (23), nuts (25), and lockwashers (24)	Using $\frac{7}{16}$ in. wrench and flat-tip screwdriver, unscrew and remove.
14.	Wiring harness (11)	Two clips (30)	Spread and remove.
15.		One grommet (33)	Pull out and remove from wiring harness (11) using pliers.
16.	Seven clips (28) to right main beam	Seven screws (23), nuts (25), and lockwashers (24)	Using $\frac{7}{16}$ in. wrench and flat-tip screwdriver, unscrew and remove.
17.	Wiring harness (11)	Seven clips (28)	Spread and remove.

TA506849

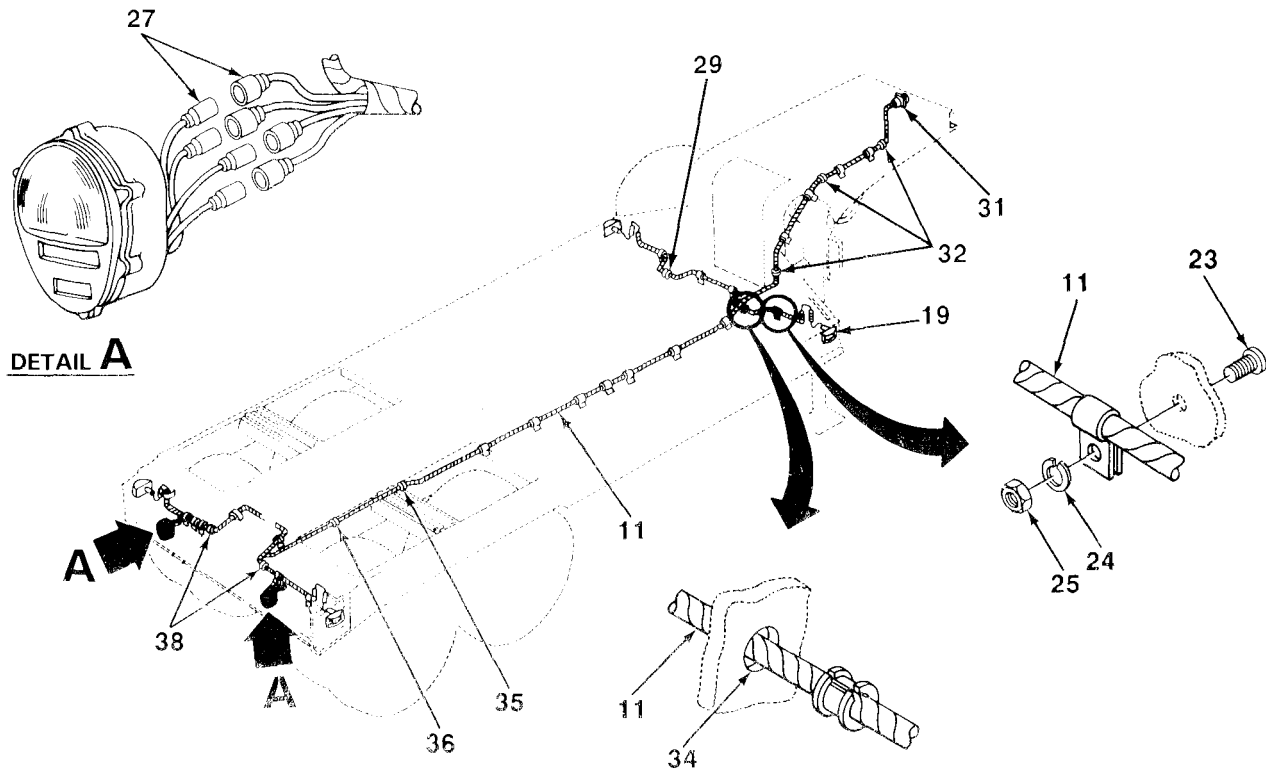
#### 4-14. WIRING HARNESS (Con't)

LOCATION	ITEM	ACTION	REMARKS
18.	Right main beam at axle crossbeam	One grommet (35)	Pull out and remove from wiring harness (11) using pliers.
19.	Eight clips (37) to crossbeam	Eight screws (23), nuts (25), and lockwashers (24)	Using $\frac{7}{16}$ in. wrench and flat-tip screwdriver, unscrew and remove.
20.	Rear crossbeam and wiring harness (11)	Eight clips (37)	Spread and remove.
21.	Rear of two main beams	Two grommets (38)	Pull out and remove from wiring harness (11) using pliers.
22.	Rear crossbeam	Grommet (36)	Pull out and remove from wiring harness (11) using pliers.
23.	Rear of semitrailer	Eight composite light electrical connectors (27)	a. Check wire markers for readability. <b>If not readable, tag to aid in assembly.</b> b. Pull apart four electrical connectors (27) on each.

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## 4-14. WIRING HARNESS (Con't)

LOCATION	ITEM	ACTION	REMARKS
24.	Rear of wiring harness (11)	Feed through two grommet (38) holes at rear of left and right main beams, through grommet (36) hole at crossbeam, and then through grommet (35) hole at axle crossbeam.	
25.	Clearance light wiring harness (11)	Pull through grommet holes (29 and 34) on left and right main beams.	
26.	Front of semitrailer	Wiring harness (11)	Feed forward through three grommet (32) holes.
27.	Wiring harness (11)	Pull entire harness through receptacle hole (31) in front of gooseneck until free.	



## INSTALLATION

## NOTE

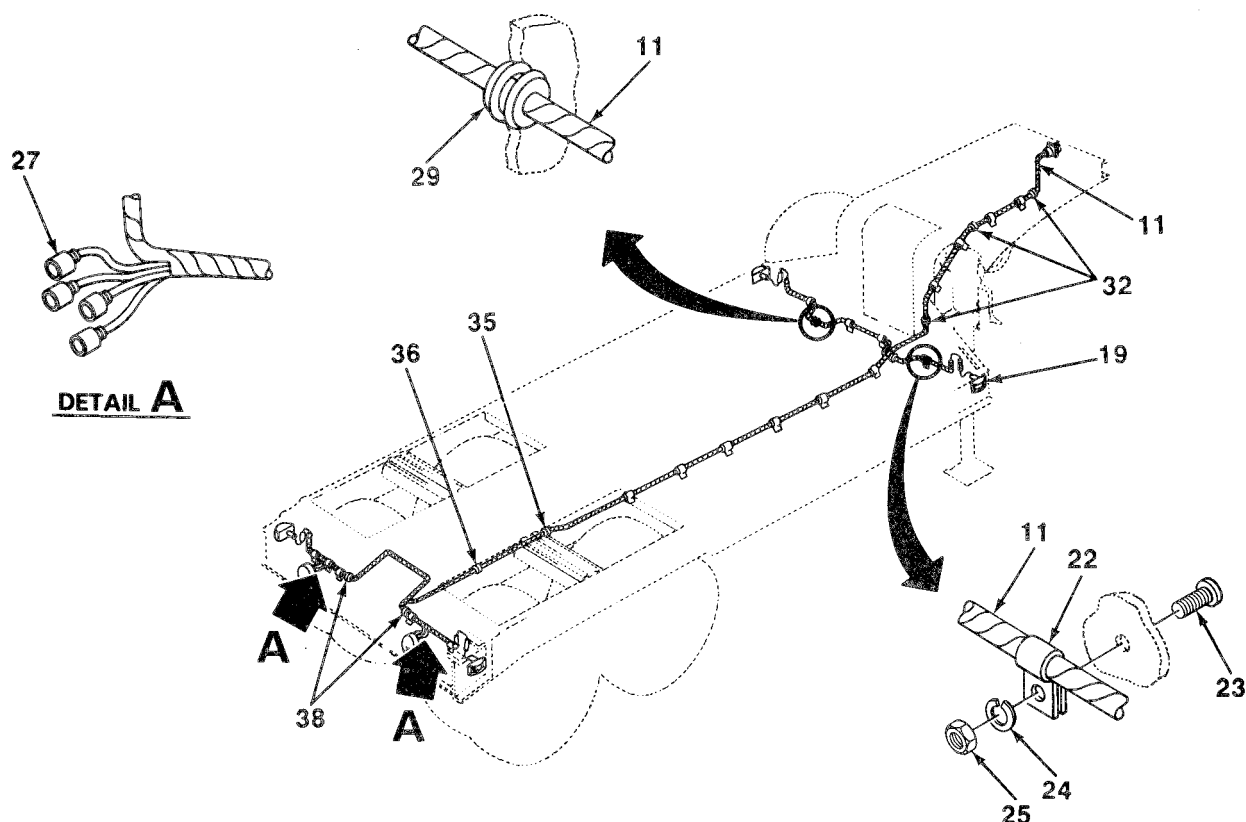
An assistant maybe needed to feed wiring harness through gooseneck, axle crossbeam, and rear crossbeam grommet holes.

- |     |                      |                     |   |
|-----|----------------------|---------------------|---|
| 28. | Front of semitrailer | Wiring harness (11) | a. Feed wiring harness (11) through receptacle hole (31) in front of gooseneck. Start with composite light connectors (27) and feed rearward through three grommet (32) holes in gooseneck. |
|-----|----------------------|---------------------|---|

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## 4-14. WIRING HARNESS (Con't)

	LOCATION	ITEM	ACTION	REMARKS
28.	(Con't)		b. Feed wiring harness (11) rearward along inside of right main beam through axle grommet (35) hole, crossbeam grommet (36), and grommet holes in left and right main beams. <b>Longer lead goes to the left side.</b> c. Feed clearance light branches of wiring harness (11) through left grommet (29) hole and right grommet hole (34) in main beam. <b>Longer lead goes to the left side.</b>	
29.	Back side of front right clearance light (19).	Wiring harness (11)	Pull wiring harness (11) along crossbeam to clearance light (19) and allow enough slack for connections.	
30.	Right front crossbeam	Two clips (22)	Put on wiring harness (11).	
31.	Two clips (22)	Two screws (23), lockwashers (24), and nuts (25)	Screw on and tighten using $\frac{7}{16}$ in. wrench and flat-tip screwdriver.	

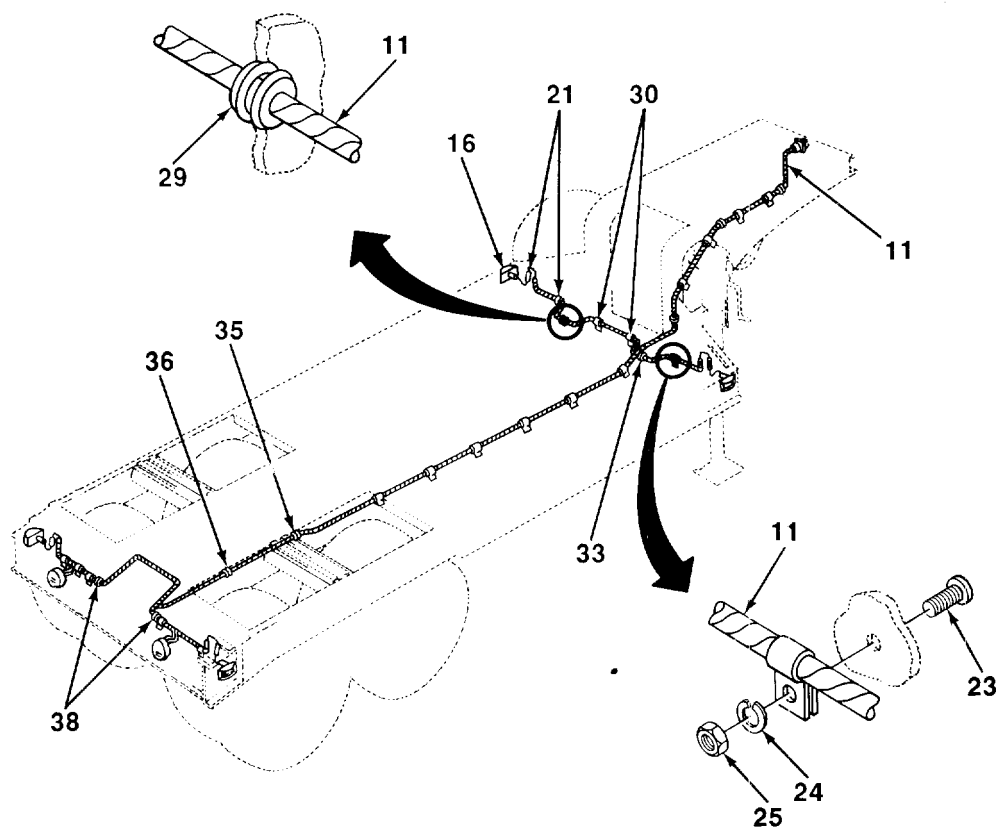


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## 4-14. WIRING HARNESS (Con't)

	LOCATION	ITEM	ACTION	REMARKS
32.	Right main beam	Grommet (33)	Put onto wiring harness (11 ) and push into place.	
33.	Back side of front left clearance light (16)	Wiring harness (11)	Pull wiring harness (11 ) along crossbeam to clearance light (16) and allow enough slack for connections.	
34.	Center front crossbeam	Two clips (30)	Put on wiring harness (11).	
35.	Two clips (30)	Two screws (23), lockwashers (24), and nuts (25)	Screw on and tighten using $\frac{7}{16}$ in. wrench and flat-tip screwdriver.	

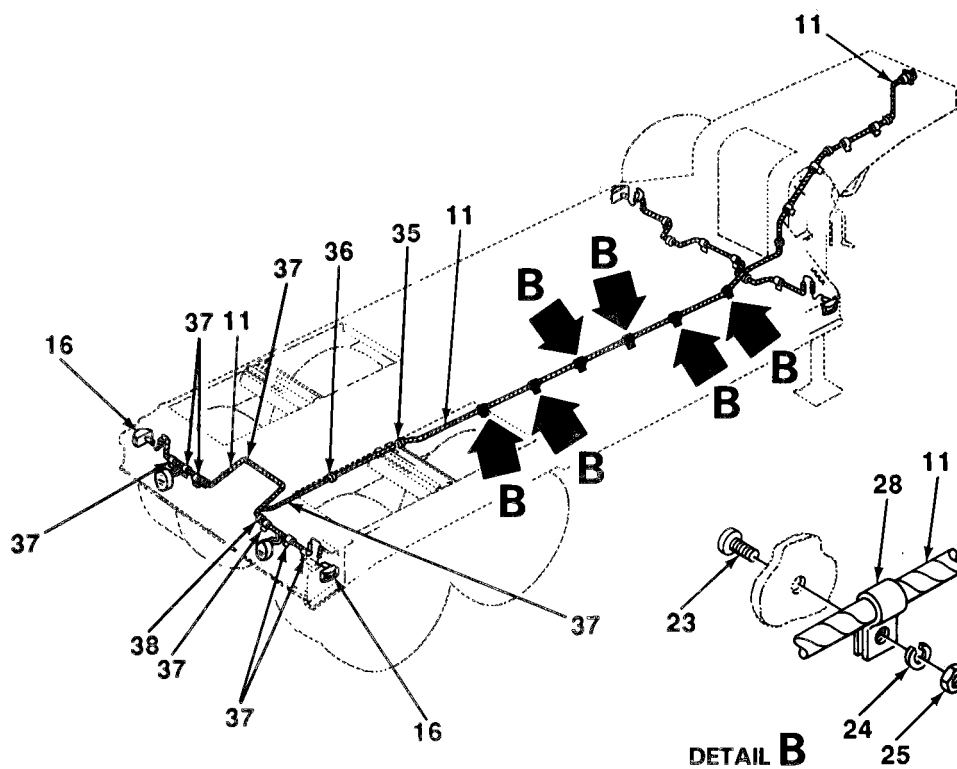


36.	Left main beam	Grommet (29)	Put onto wiring harness (11) and push into place.	
37.	Left front crossbeam	Two clips (21)	Put on wiring harness (1"),	
38.	Two clips (21)	Two screws (23), lockwashers (24), and nuts (25)	Screw in and tighten using $\frac{7}{16}$ in. wrench and flat-tip screwdriver.	
39.	Right main beam	Seven clips (28)	Put onto wiring harness (1 1).	

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## 4-14. WIRING HARNESS (Con't)

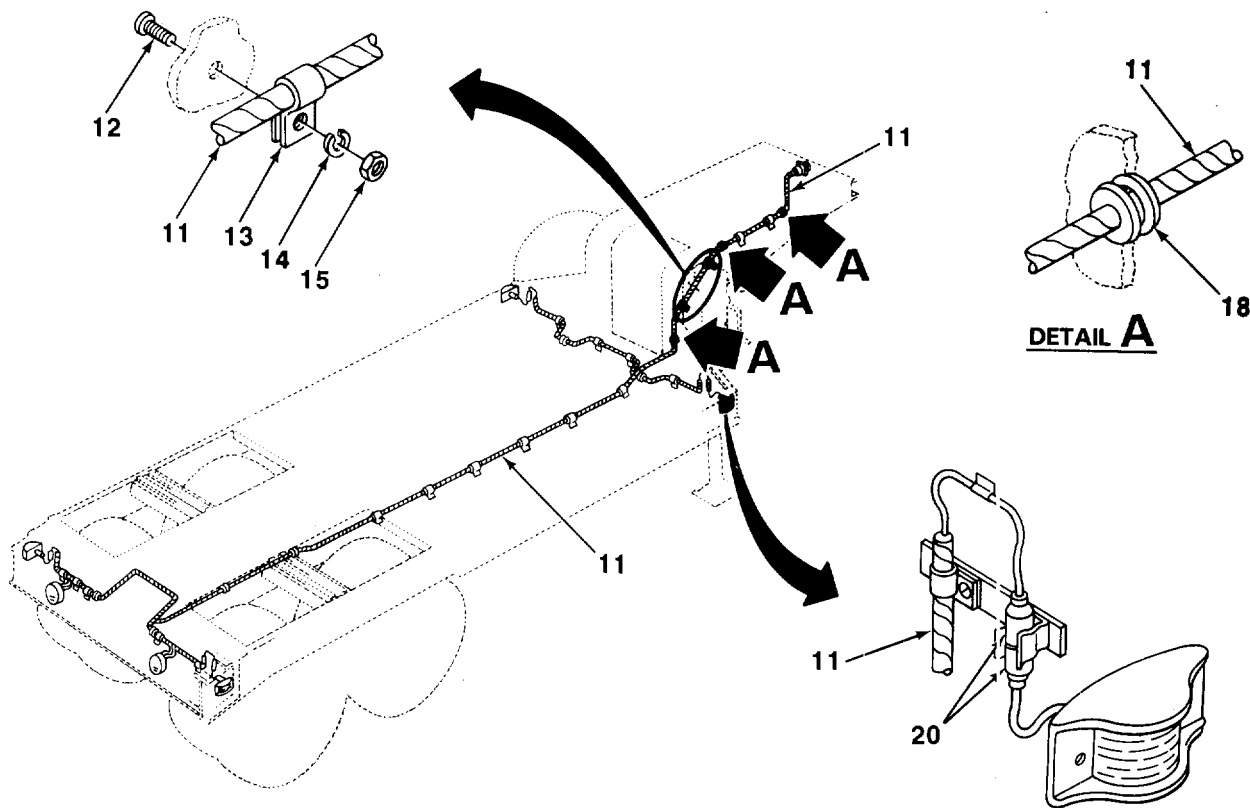
	LOCATION	ITEM	ACTION	REMARKS
40.	Seven clips (28)	Seven screws (23), lockwashers (24), and nuts (25)	Screw on and tighten using $\frac{3}{16}$ in. wrench and flat-tip screwdriver.	
41.	Rear of semitrailer	Wiring harness (11)	Starting at main beam, pull wiring harness (11) along crossbeam to left and right clearance lights (16).	
42.	Wiring harness (11) to rear of semitrailer	Eight clips (37)	Put onto wiring harness (11). <b>Ensure that there is enough slack for composite and clearance light connections.</b>	
43.	Eight harness clips (37)	Eight screws (23), lockwashers (24), and nuts (25)	Screw on and tighten using $\frac{3}{16}$ in. wrench and flat-tip screwdriver.	
44.	Grommet holes at rear of main beam, crossbeam, and axle crossbeam	Four grommets (38, 36, and 35)	Put onto wiring harness (11) and push into place.	



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4-14. WIRING HARNESS (Con't)

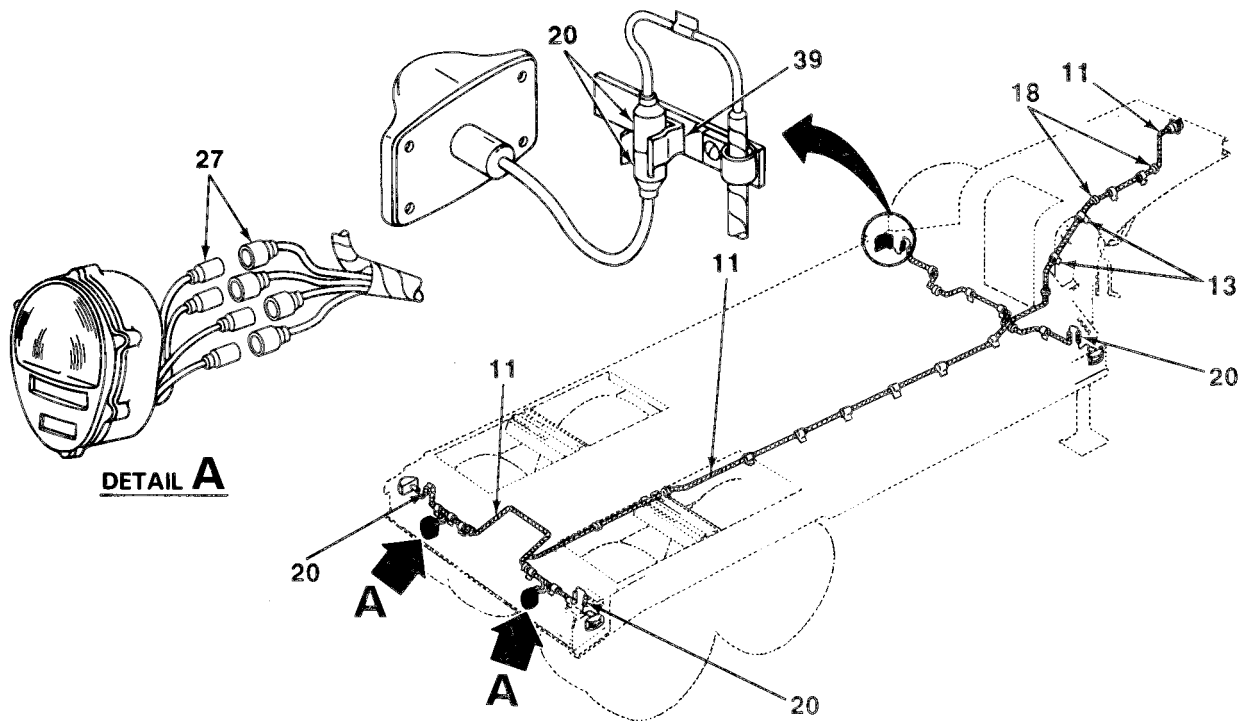
	LOCATION	ITEM	ACTION	REMARKS
45.	Inside gooseneck	Two clips (13)	Put onto wiring harness (11) and allow enough slack for connection.	
46.	Two clips (13)	Two screws (12), lockwashers (14), and nuts (15)	Screw on and tighten using 7/16 in. wrench and flat-tip screwdriver.	



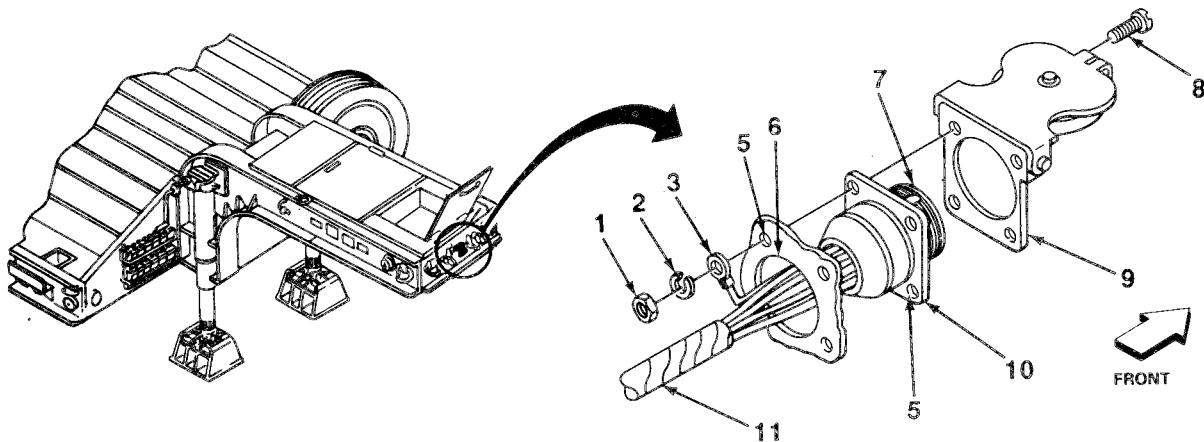
47.		Three grommets (18)	Put onto wiring harness (11) and push into place.	
48.	Front and rear of semitrailer	Four clearance light electrical connectors (20) and eight composite light light electrical connectors (27)	Match and connect to electrical connectors with same wire numbers. Wire number 24-484 goes to left blackout taillight, 22-461 to left service stop, 24-483 to right blackout tail, 21 to service taillights, 489 to service clearance, 23 to left and right blackout stop, and 22-460 to right service stop. <b>Refer to wiring diagram (para 4-19).</b>	
49.		Four clearance light and eight composite light clips (39)	Place electrical connectors (20 and 27') into clips (39).	

4-14. WIRING HARNESS (Con't)

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



- |     |   |   |  |
|-----|---|---|--|
| 50. | Front of semitrailer                                      | Receptacle assembly (10) and cover (9)                          | Push wiring harness (11) back into center hole (6) and align screw holes (5).<br><b>Ensure that grommet notch (7) is at top.</b> |
| 51. | Cover (9) and receptacle assembly (10) to screw holes (5) | Four screws (8), ground wire (3), lockwashers (2), and nuts (1) | screw in and tighten using wrench, socket, and handle.   |



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**4-14. WIRING HARNESS (Con't)**

LOCATION	ITEM	ACTION	REMARKS
<b>FOLLOW-ON MAINTENANCE:</b> <ul style="list-style-type: none"> <li>• Check operation of lights.</li> <li>• Close stowage box doors (para 2-2).</li> </ul>			

**TASK ENDS HERE****4-15. WIRE CONNECTORS***This Task Covers:*

- |                            |                            |
|----------------------------|----------------------------|
| a. Male Connector Repair   | c. Marker Band Replacement |
| b. Female Connector Repair |                            |

*Initial Setup:***Materials/Parts:**

- Contact (as required)
- Insulating compound (Item 3, Appendix E)
- Shell (as required)
- Terminal assembly (as required)

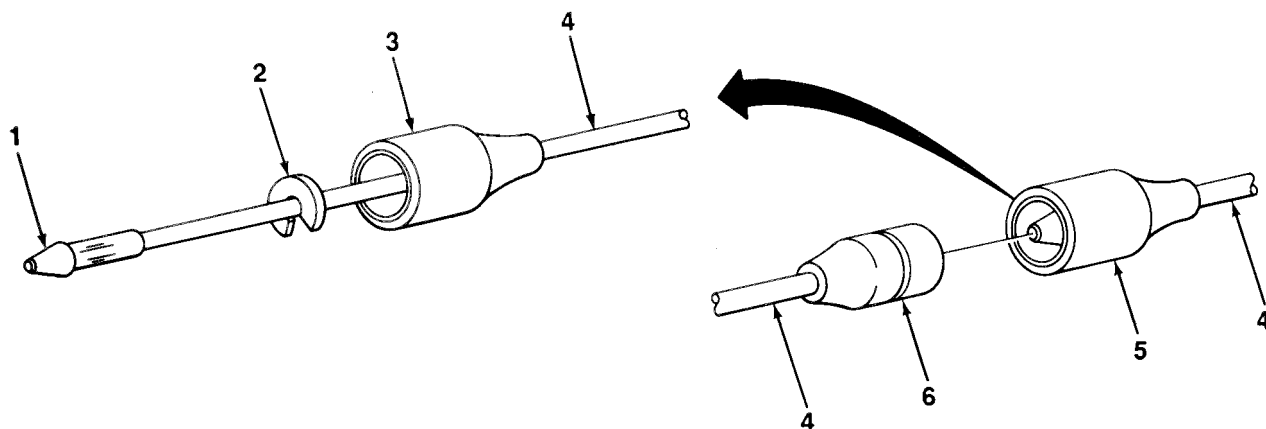
**Tools/Test Equipment:**

- Crimping tool
- Pliers, diagonal cutting
- Screwdriver, flat-tip
- Stripper, wire, hand

LOCATION	ITEM	ACTION	REMARKS
<b>MALE CONNECTOR REPAIR</b>			
1.	Wire lead (4)	Connectors (5 and 6)	Separate halves.
2.	Connector (5)	Shell (3)	Slide up wire lead (4) until clear of contact (1) and slotted washer (2).
3.		Slotted washer (2)	Slip off of wire lead (4).
4.	Wire lead (4)	Shell (3)	Slide off over contact (1).
5.	Wire lead (4)	Contact (1)	Cut off wire lead (4) using cutting pliers. Discard contact. <b>Ensure that enough wire remains to make connection after repair.</b>
6.	Wiring harness	Wire lead (4)	a. Using wire stripper, strip insulation at end equal to depth of new contact (1). b. Apply insulating compound to end and slide on shell (3). c. Slide end into new contact (1) and crimp using crimping tool.

# 4-15. WIRE CONNECTORS (Con't)

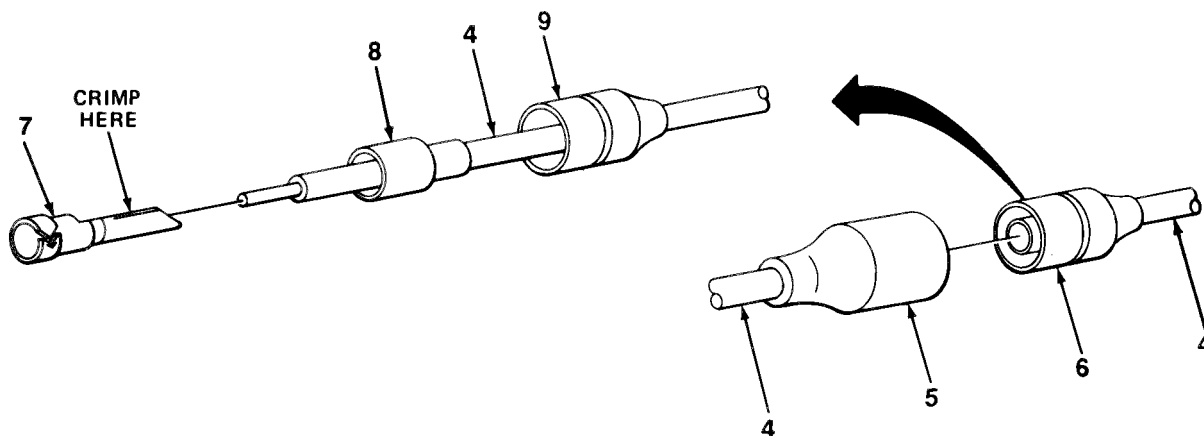
LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------



- |    |               |                    |  |
|----|---------------|--------------------|--|
| 7. |               | Shell (3)          | Slide down wire lead (4).              |
| 8. | Wire lead (4) | Slotted washer (2) | Place on wire lead (4) at contact (1). |

## FEMALE CONNECTOR REPAIR

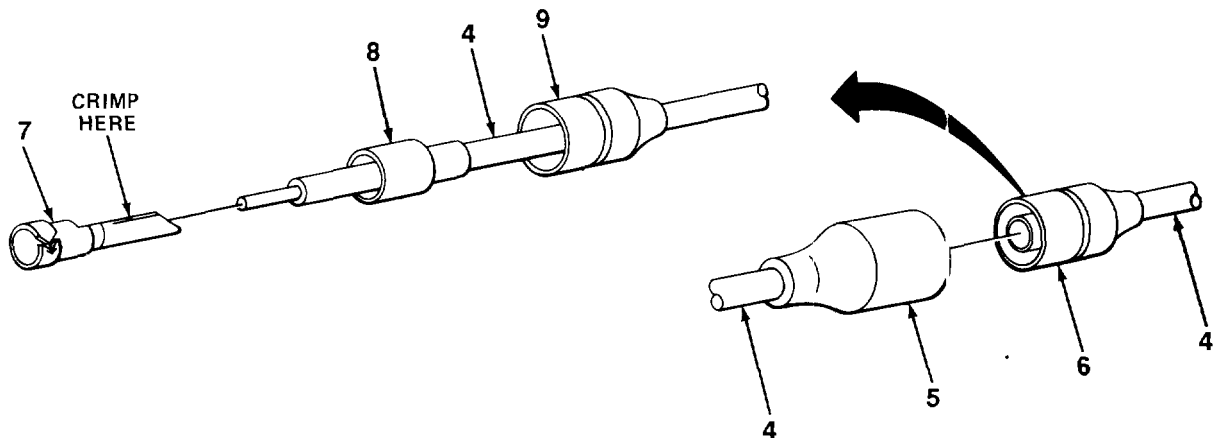
- |     |               |                             |   |
|-----|---------------|-----------------------------|---|
| 9.  | Wire lead (4) | Connectors (5 and 6)        | Separate halves.  |
| 10. | Connector (6) | Shell (9)                   | Slide up wire lead (4) until clear of terminal (7).   |
| 11. | Wire lead (4) | Terminal (7)                | Using cutting pliers, cut off wire lead (4). Discard terminal.<br><b>Ensure that enough wire remains to make connection after repair.</b> |
| 12. | Wire lead (4) | Shell (9) and insulator (8) | Slide off wire lead (4).  |



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4-15. WIRE CONNECTORS (Con't)

	LOCATION	ITEM	ACTION	REMARKS
13.		Wire lead (4)	a. Using wire stripper, strip insulation 1/8 in. (3.2 mm) from end. b. Apply insulating compound to end and slide on shell (9) and insulator (8).	
14.		New terminal (7)	Slide onto wire lead (4). Crimp end over insulation and center over bare wire using crimping tool.	
15.		Shell (9) and insulator (8)	Slide down over terminal (7) until seated.	
16.		Connectors (5 and 6)	Apply insulating compound to outside of male connector and push together until seated.	
17.	Semitrailer	Lights	Check for operation.	

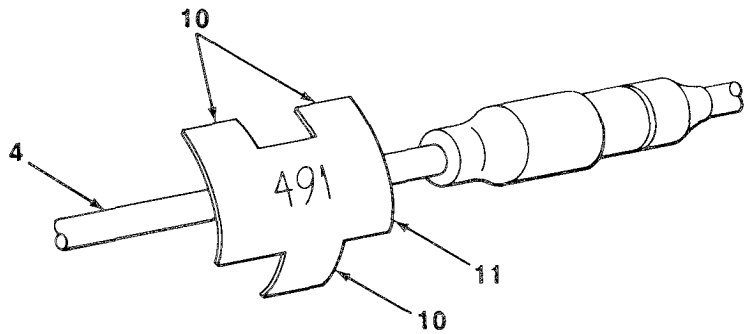


MARKER BAND REPLACEMENT

18.	Wire lead (4)	Marker band (11)	Using flat-tip screwdriver, open tab ends (10) and take off. <b>Note number on marker band (11) and discard.</b>
19.		<b>New</b> marker band (11)	Place on wire lead (4) and bend tab ends (10) over wire lead (4) using crimping tool. <b>Mark number of wire lead on new marker band.</b>

4-15. WIRE CONNECTORS (Con't)

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



TASK ENDS HERE

4-16. WIRING HARNESS REPAIR

This Task Covers:

Repair

Initial Setup:

Materials/Parts:

- Connectors (as required)
- Electrical wire (as required)

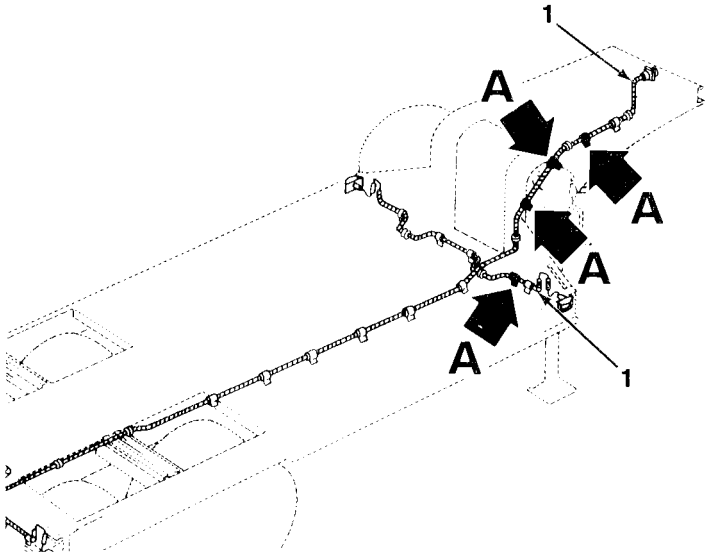
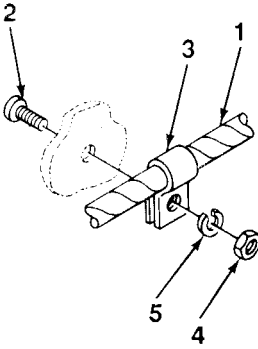
Personnel Required: Two

Tool/Test Equipment:

- Crimping tool
- Pliers, diagonal cutting
- Screwdriver, flat-tip
- Stripper, wire, hand
- Wrench, open-end, 7/16 in.



4-16. WIRING HARNESS REPAIR (Con't)

	LOCATION	ITEM	ACTION	REMARKS
REPAIR				
<div>NOTE</div> <div>All wiring harness repairs are similar to the repair covered in this paragraph.</div>				
1.	Wiring harness (1) and five clips (3)	Five screws (2), nuts (4), and lockwashers (5)	Using $\frac{7}{16}$ in. wrench and flat-tip screwdriver, unscrew and take off.	
2.	Wiring harness (1)	Five clips (3)	Spread apart and remove.	
<div>   <div>DETAIL A</div> </div>				
3.	Wiring harness (1)	Defective wire lead (6)	a. Cut wire lead (6) at each end of wiring harness (1) using cutting pliers. <b>Ensure that correct wire lead (6) is cut and that enough lead remains to make connection for repair.</b> b. Measure length of wiring harness (1) section to repair and cut new wire to match. Use cutting pliers.	
4.		Wire lead (7) to receptacle and wire lead (9) to light assembly	Using wire stripper, strip insulation from ends of wire leads (7 and 9) equal to depth of connector (10).	
5.		Replacement wire (8)	a. Using wire stripper, strip insulation from both ends of replacement wire (8) equal to depth of connector (10). b. Lay replacement wire (8) along wiring harness (1) section to repair. Feed through four grommets (11).	

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# 4-16. WIRING HARNESS REPAIR (Con't)

LOCATION	ITEM	ACTION	REMARKS
<p>The diagram illustrates the repair of a wiring harness. The main view shows a harness with several wires and components labeled with numbers. Arrows point to specific areas where repairs are needed. A detail view labeled 'DETAIL A' shows a close-up of a wire connection. Two sub-diagrams show the assembly of a replacement wire (8) with a connector (10) and its attachment to the harness (1) using clips (3), screws (2), lockwashers (5), and nuts (4).</p>			
6.	Replacement wire (8)	Connector (10)	<p>a. Slide one end of connector (10) onto end of replacement wire (8).</p> <p>b. Slide other end of connector (10) onto wire lead (7) to receptacle.</p> <p>c. Crimp connector (10) at both ends using crimping tool.</p> <p>d. Repeat a through c for other end of replacement wire (8) to light assembly wire lead (9).</p>
7.	Wiring harness (1) and replacement wire (8).	Five clips (3)	Put onto wiring harness (1) and replacement wire (8).
8.	Five clips (3)	Five screws (2), lockwashers (5), and nuts (4)	Screw on and tighten using $\frac{7}{16}$ in. wrench and flat-tip screwdriver.

## FOLLOW-ON MAINTENANCE:

- Check operation of lights.

TASK ENDS HERE

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4-17. GROUND WIRE REPAIR

This Task Covers:

Repair

Initial Setup:

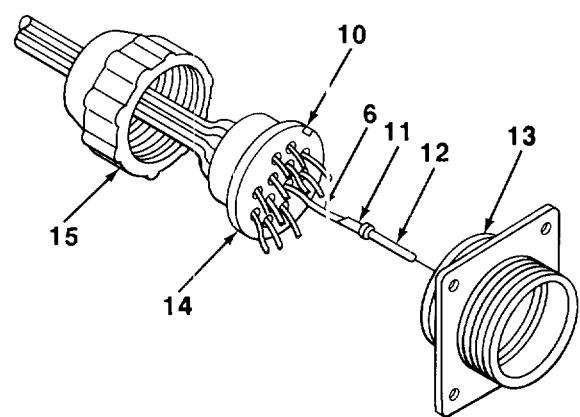
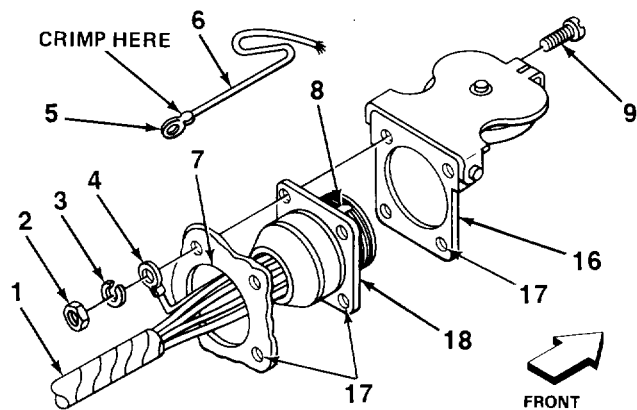
Materials/Parts:

- Connector (as required)
- Electrical wire (as required)
- Solder (Item 12, Appendix E)
- Terminal (as required)

Tools/Test Equipment:

- Crimping tool
- Extension, 6 in., 1/2 in. drive
- Handle, ratchet, 1/2 in. drive
- Pliers, diagonal cutting
- Screwdriver
- Socket, 7/16 in., 1/2 in. drive
- Stripper, wire, hand
- Wrench, open-end, 7/16 in.

	LOCATION	ITEM	ACTION REMARKS
REPAIR			
1.	Cover (16) and receptacle assembly (18)	Four nuts (2), lockwashers (3), ground wire (4), and four screws (9).	Using screwdriver, socket, extension, and handle, unscrew and take out.
2.	Front of semitrailer	Cover (16) and receptacle assembly (18)	Pull away from semitrailer until clear.
3.	Receptacle connector (13)	Nut (15)	Unscrew and remove.
4.	Receptacle connector (13)	Bushing (14)	Pull out of receptacle connector (13).



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**4-17. GROUND WIRE REPAIR (Con't)**

	LOCATION	ITEM	ACTION REMARKS
5.	Bushing (14)	Defective contact pin (12)	a. Using pliers, pull contact pin (12) out of bushing (14). b. Using soldering tool, heat solder well (11) and remove from ground wire (6). Discard contact pin (12). c. Measure length of ground wire (6) removed and cut new wire to match using cutting pliers.
6.		Replacement ground wire (6)	Using wire stripper, strip insulation from both ends of replacement ground wire (6) equal to depth of solder well (11) and ring terminal (5) to be installed.
7.	Replacement ground wire (6)	Replacement contact pin (12)	a. Place solder well (11) onto end of replacement ground wire (6) and solder using soldering tool. b. Push solder well (11) into bushing (14) until seated.
8.	Receptacle connector (13)	Bushing (14)	Push bushing (14) into receptacle connector (13). <b>Ensure that notch (10) is aligned with receptacle connector (13).</b>
9.		Nut (15)	Screw nut (15) onto receptacle connector (13).
10.	Replacement	Ring terminal (5)	a. Slide onto end of replacement ground wire (6). b. Crimp at wire end using crimping tool.
11.	Front of semitrailer	Cover (16) and receptacle assembly (18)	Push wiring harness (1) back into center hole (7) and align screw holes (17). <b>Ensure that notch (8) is at top.</b>
12.	Cover (16) and receptacle assembly (18) to screw holes (17)	Four screws (9), replacement ground wire (6), lockwashers (3), and nuts (2)	Screw in and tighten using wrench, socket and handle.

**FOLLOW-ON MAINTENANCE:**

- Check operation of lights.

**TASK ENDS HERE**

4-18. RECEPTACLE

This Task Covers:

- a. Removal

b. Replacement of Contact Pin
- c. Installation

Initial Setup:

Materials/Parts:

- Contact pin (as required)
- Solder (Item 12, Appendix E)

Personnel Required: Two

Tools/Test Equipment:

- Extension, 6 in., 1/2 in. drive
- Handle, ratchet, 1/2 in. drive
- Pliers, long round-nose
- Screwdriver, flat-tip
- Socket, 7/16 in., 1/2 in. drive
- Soldering gun
- Wrench, open-end, 7/16 in.

REMOVAL

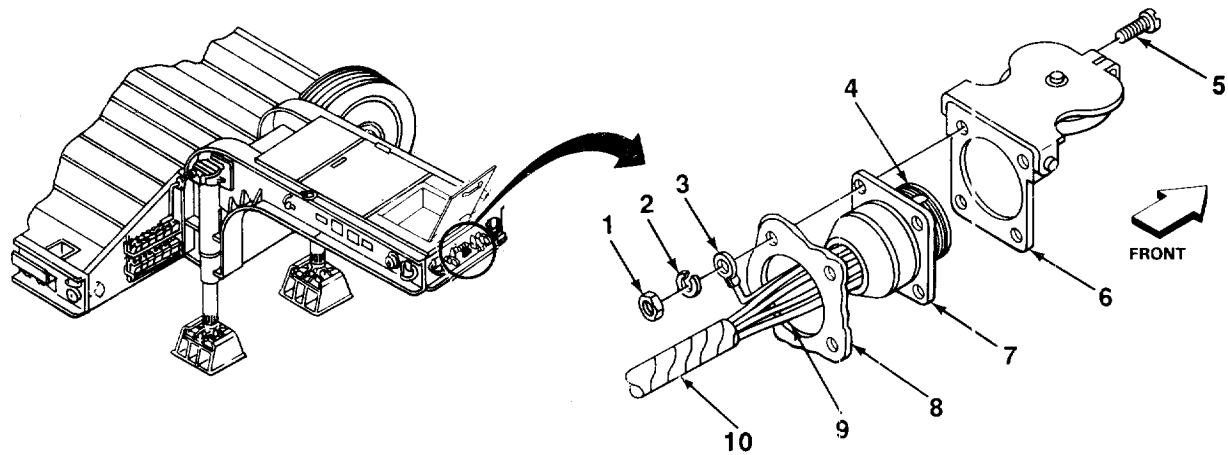
1. Cover (6) and receptacle assembly (7) to semitrailer (8)

Four nuts (1), lockwashers (2), ground wire (3), and screws (5)

Using screwdriver, socket, extension, and handle, unscrew and take out.
2. Front of semitrailer

Cover (6) and receptacle assembly (7)

Pull away from semitrailer until clear.



REPLACEMENT OF CONTACT PIN

3. Receptacle connector (15)

Nut (17)

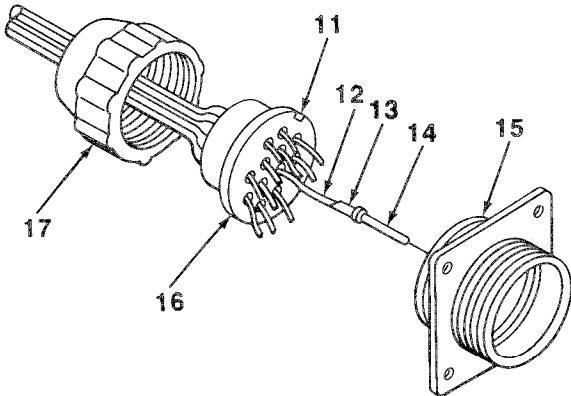
Unscrew and remove.
4. Receptacle connector (15)

Bushing (16)

Pull out of receptacle connector (1 5).

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4-18. RECEPTACLE (Con't)

LOCATION	ITEM	ACTION	REMARKS
			
5. Bushing (16)	Defective contact pin (14)	a. Using pliers, pull contact pin (14) out of bushing (16). b. Using soldering tool, heat solder well (13) and remove from wire (12).	
6. Wire (12)	Replacement contact pin (14)	a. Place solder well (13) onto wire (12) and solder using soldering tool. b. Push solder well (13) into bushing (16) until seated.	
7. Receptacle connector (15)	Bushing (16)	Push bushing (16) into receptacle connector (15). <b>Ensure that notch (11) is alined with receptacle connector (15).</b>	
8.	Nut (17)	Screw nut (17) onto receptacle connector (15).	
INSTALLATION			
9. Front of semitrailer	Cover (6) and receptacle assembly (7)	Push wiring harness (10) back into center hole (9) and aline screw holes. <b>Ensure that notch (4) is at top.</b>	
10. Cover (6) and receptacle assembly (7) to screw holes	Four screws (5), ground wire (3), lockwashers (2), and nuts (1)	Screw in and tighten using screwdriver, socket extension, and handle.	

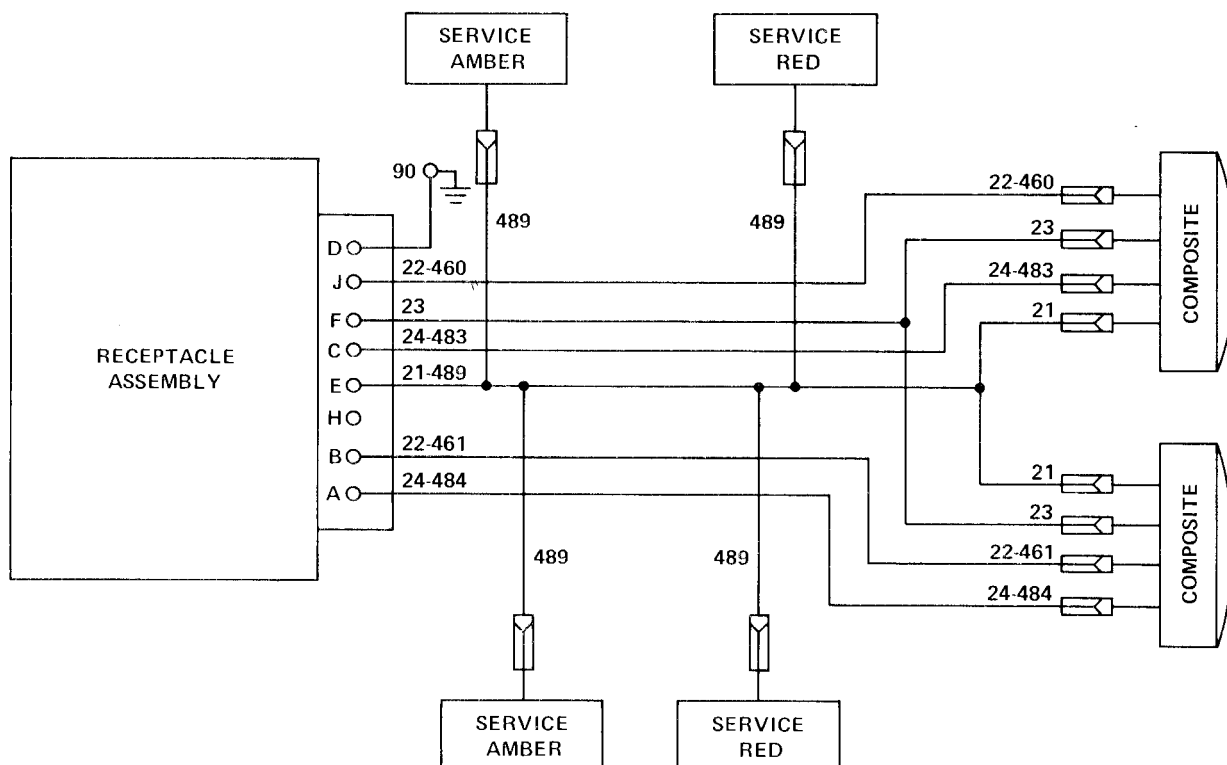
- FOLLOW-ON MAINTENANCE:**
- Check operation of lights.

TASK ENDS HERE

## 4-19. WIRING DIAGRAM

## NOTE

This paragraph contains the semitrailer wiring diagram. Refer to this diagram when performing electrical troubleshooting or when performing electrical repair and maintenance.



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## Section VI. BRAKE SYSTEM MAINTENANCE

	Page		Page
Airbrake Chamber . . . . .	4-83	Brakeshoes - Major Adjustment . . . . .	4-58
Air Coupling and Preformed Packing. . . . .	4-65	Brakeshoes - Minor Adjustment . . . . .	4-49
Air Filters . . . . .	4-67	Brakeshoes Replacement . . . . .	4-52
Air Lines and Fittings . . . . .	4-72	Camshaft . . . . .	4-62
Air Lines and Fittings - Leak Testing . . . . .	4-70	Emergency Relay Valve . . . . .	4-85
Air Reservoir and Draincock . . . . .	4-91	Slack Adjuster . . . . .	4-60
Brake Hose . . . . .	4-80		

### 4-20. BRAKESHOES - MINOR ADJUSTMENT

*This Task Covers:*

Minor Adjustment

*Initial Setup:*

#### Equipment Conditions:

- Chockblocks installed (para 2-5).
- Air released from system (para 3-8)

#### Materials/Parts:

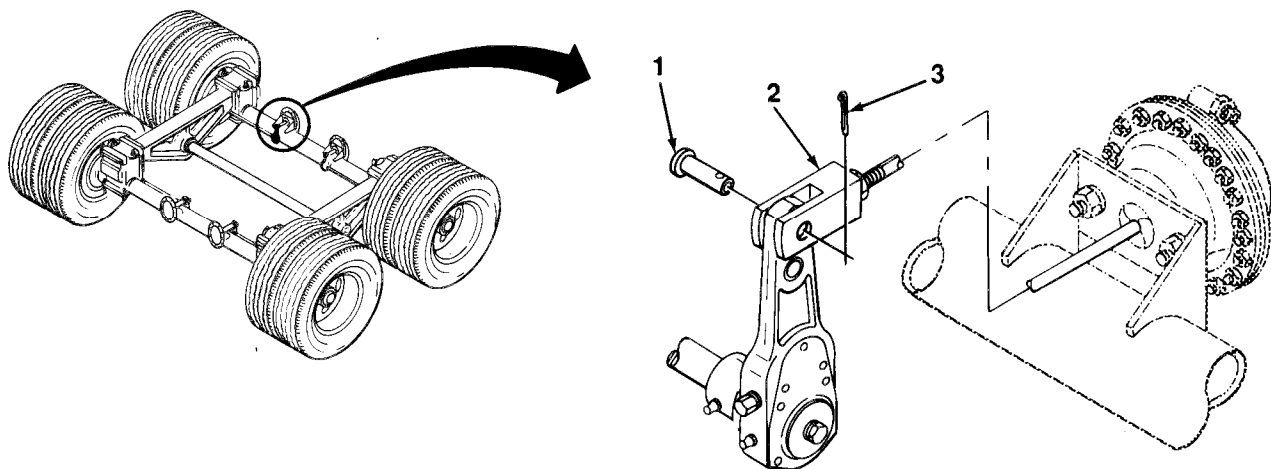
- Cotter pin
- 1 x 4 x 8 wooden block

#### Tools/Test Equipment:

- Hammer, ball-peen
- Hydraulic jack and handle
- Pliers, slip-joint
- Punch, drive-in
- Wrench, open-end,  $\frac{9}{16}$  in.

**Personnel Required:** Two

LOCATION	ITEM	ACTION	REMARKS
MINOR ADJUSTMENT			
1.	Clevis pin (1)	Cotter pin (3)	Using pliers, pull out and discard.
2.	Clevis (2)	Clevis pin (1)	Using hammer and punch, push out.



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**4-20. BRAKESHOES - MINOR ADJUSTMENT (Con't)**

LOCATION	ITEM	ACTION	REMARKS
3.	Slack adjuster (5)	Allow clevis (2) and slack adjuster (5) to rest in a neutral position.	
4.	Clevis (2) and slack adjuster (5)	Clevis pin (1)	a. Try to slide clevis pin (1) through clevis (2) and slack adjuster (5). b. If clevis pin (1) slides through clevis (2) and slack adjuster (5), go to step 6. c. If clevis pin (1) does not slide through clevis (2) and slack adjuster (5), go to step 5.
5.	Slack adjuster (5)	Hex head (4)	Using 9/16 in. wrench, turn hex head (4) in or out so that clevis pin ("1) slides through clevis (2) and slack adjuster (5).
6.	Clevis pin (1)	Cotter pin (3)	Using pliers, insert and bend.

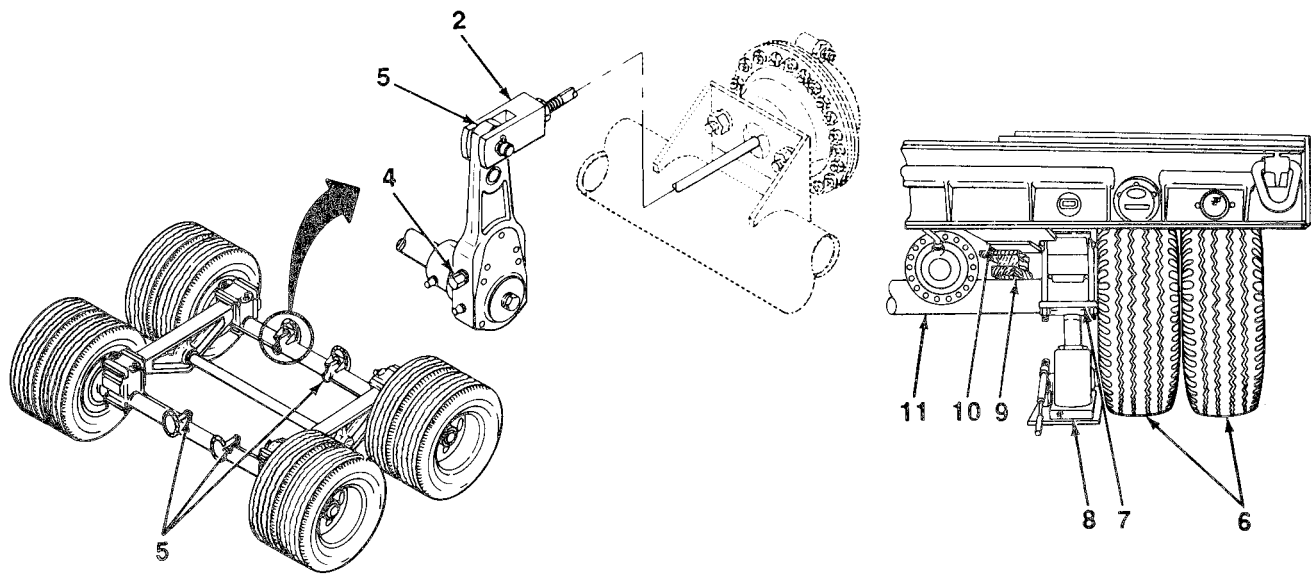
  
  

7.	Stop block (10) and axle (11)	Wooden block (9)	Place between stop block (10) and axle (11).
8.	Shackle box bracket (7)	Hydraulic jack (8)	a. Position under shackle box bracket (7'). b. Using handle, raise until wheel assemblies (6) are clear of ground.
9.	Slack adjuster (5)	Hex head (4)	a. Using 9/16 in. wrench, turn in hex head (4) until wheel assemblies (6) cannot be turned. b. Using 9/16 in. wrench, turn out hex head (4) until wheel assemblies (6) turn freely.
10.	Shackle box bracket (7)	Hydraulic jack (8)	Lower hydraulic jack (8) using handle, and take out from under shackle box bracket (7).

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4-20. BRAKESHOES – MINOR ADJUSTMENT (Con't)

LOCATION	ITEM	ACTION	REMARKS
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11.	Stop block (10) and axle (11)	Wooden block (9)	Remove from stop block (10) and axle (11).
12.		Other three slack adjusters (5)	Repeat steps 1 through 11 to adjust brakeshoes at other wheels.

- FOLLOW-ON MAINTENANCE:**
- Remove chock blocks (para 2-5).
  - Check brake operation.

TASK ENDS HERE

4-21. BRAKESHOES REPLACEMENT

This Task Covers:

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

Initial Setup:

Equipment Conditions:

- Wheel and tire assemblies removed (para 3-9).
- Hub and drum assembly removed (para 4-33).

Materials/Parts:

- 1Brakeshoe return springs (if required)
- 1Dry cleaning solvent (Item 13, Appendix E)

Tools/Test Equipment:

- Drift, brass
- Extension, 3 in., ½ in. drive
- Hammer, ball-peen
- Handle, ratchet, ½ in. drive
- Pliers, slip-joint
- Punch, drive-in
- Screwdriver, flat-tip
- Socket, ¾ in., ½ in. drive
- Wrench, open-end, 5⁄8 in.
- Wrench, open-end, ¾ in.
- Wrench, open-end, 1 ¼ in.

LOCATION	ITEM	ACTION	REMARKS
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REMOVAL

**WARNING**

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

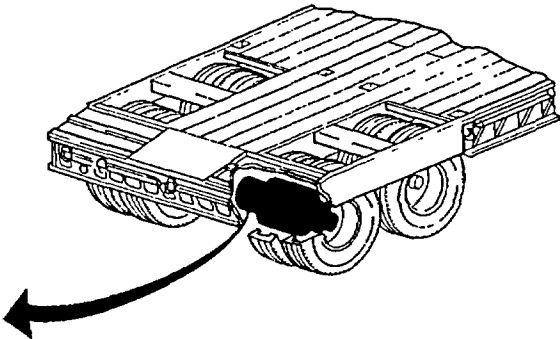
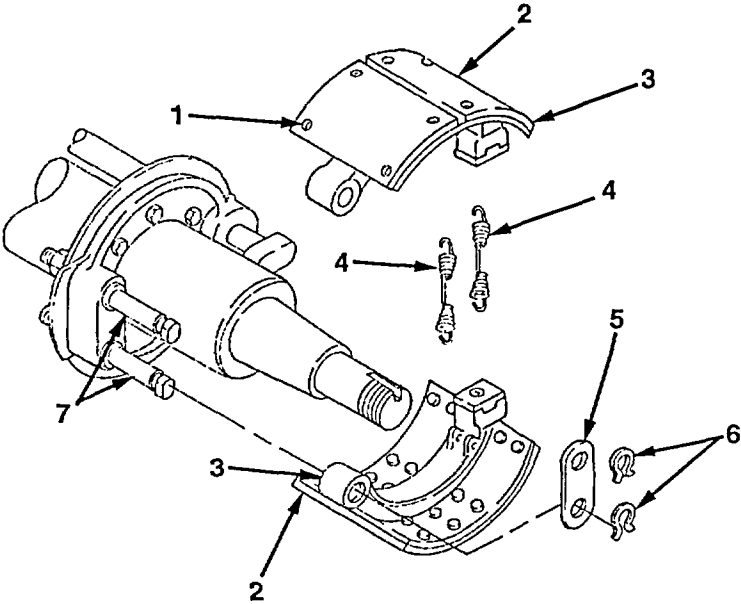
**CAUTION**

Do not get grease, oil, solvent, or fingerprints on lining surfaces. This will cause glazed linings and uneven braking, resulting in replacing otherwise good linings.

**NOTE**

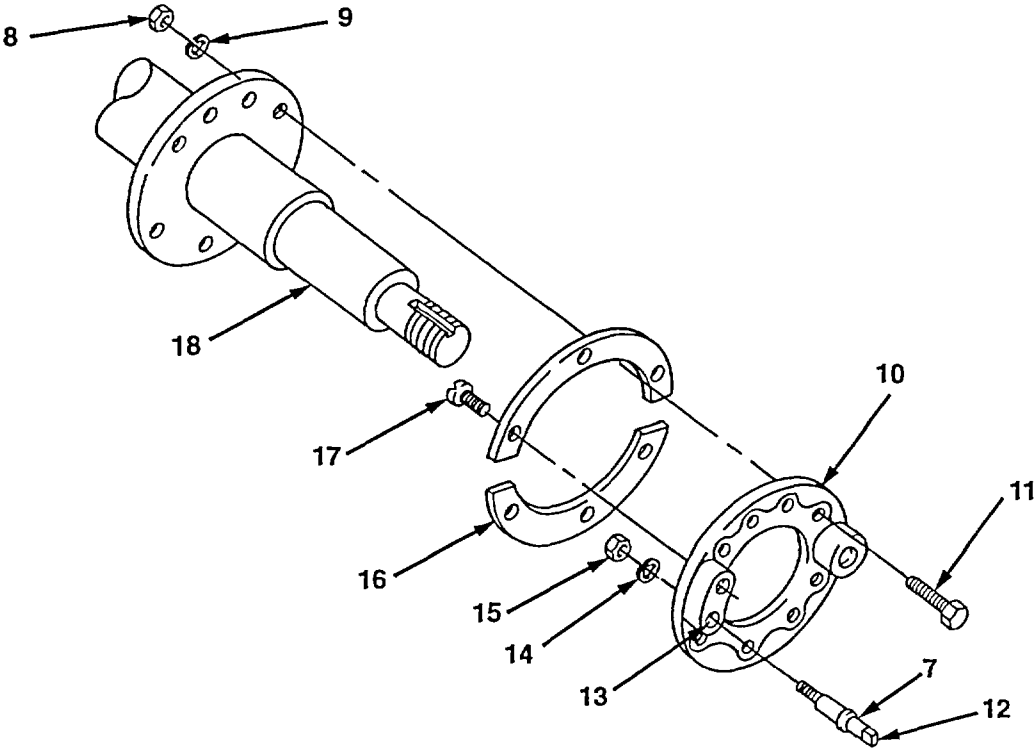
All four sets of brakeshoes and linings are removed the same way. Only one is covered in this procedure. Repeat the procedure for remaining sets of brakeshoes and linings.

4-21. BRAKESHOES REPLACEMENT (Con't)

	LOCATION	ITEM	ACTION	REMARKS
1.	Two brakeshoe assemblies (3)	Two brakeshoe linings (2)	a. Inspect for cracks or scoring. b. If cracked or scored, replace brakeshoe assemblies (3). c. If brakeshoe linings (2) are worn within 0.03 in. (0.762 mm) of rivet or screw heads (1), replace brakeshoe assemblies (3).	
2.	Two anchor pins (7)	Two retaining rings (6)	Using pliers, pull off.	
3.		Anchor pin link (5)	Take off of anchor pins (7).	
<div></div>				
4.		Two brakeshoe assemblies (3)	Using flat-tip screwdriver, pull off from two anchor pins (7).	
5.		Two return springs (4)	Using pliers, pull ends off brakeshoe assemblies (3).	
6.	Cam end of two brakeshoe assemblies (3)	Camshaft	Remove (para 4-24).	

4-21. BRAKESHOES REPLACEMENT (Con't)

	LOCATION	ITEM	ACTION	REMARKS
7.	Rear of spider (10)	Two anchor pin lockwashers (14) and nuts (15)	a. Hold flattened ends (12) of anchor pins (7) with 5/8 in. wrench. b. Using 1 1/8 in. wrench, unscrew and take off.	
8.		Two anchor pins (7)	Using brass drift and hammer, drive out.	
9.		Eight screws (11), lockwashers (9), and nuts (8)	Using 3/4 in. socket, extension, handle, and 3/4 in. wrench, unscrew and take out.	
10.		Spider (10)	Pull off axle (18).	
11.	Rear of spider (10)	Six screws (17)	Using flat-tip screwdriver, unscrew and take out.	
12.	Spider (10)	Shield (16)	Pull apart and separate.	



**4-21. BRAKESHOES REPLACEMENT (Con't)**

LOCATION	ITEM	ACTION	REMARKS
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## CLEANING AND INSPECTION

**WARNING**

- **DO NOT** handle brakeshoes, brakedrums, or other brake components unless area has been properly cleaned. There may be asbestos dust on these components which can be dangerous if you touch it or breathe it. Wear an approved filter mask and gloves. Never use compressed air or a dry brush to clean brake components. Dust may be removed using an industrial-type vacuum cleaner. Clean dust or mud away from brake components with water and a wet, soft brush or cloth. Failure to follow this warning may result in serious illness or death to personnel.
- Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and **DO NOT** breathe vapors. **DO NOT** use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

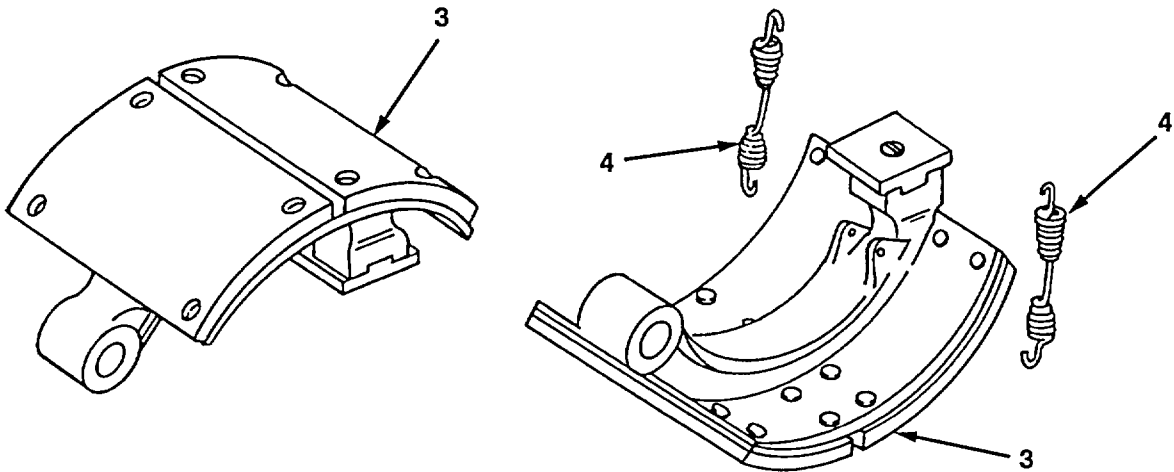
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|-----|-----------------|--|
| 13. | All metal parts | <ul style="list-style-type: none"> <li>a. Clean using dry cleaning solvent.</li> <li>b. Inspect for cracks or damage.</li> <li>c. If cracked or damaged, replace.</li> </ul> |
|-----|-----------------|--|

## INSTALLATION

- |     |                     |  |   |
|-----|---------------------|--|---|
| 14. | Spider (10)         | Shield (16)  | Place in position and align screw holes.  |
| 15. | Rear of spider (10) | Six screws (17)  | Using flat-tip screwdriver, screw in and tighten.   |
| 16. | Axle (18)           | Spider (10)  | Slide onto axle (18) and align screw holes.   |
| 17. | Spider (10)         | Eight screws (11),<br>lockwashers (9),<br>and nuts (8) | Using 3/4 in. socket, handle, and 3/4 in. wrench, screw in and tighten.   |
| 18. |                     | Two anchor pins (7)                                    | Push into two anchor pin holes (13).  |
| 19. | Two anchor pins (7) | Two anchor pin<br>lockwashers (14)<br>and nuts (15)    | <ul style="list-style-type: none"> <li>a. Screw on until fingertight.</li> <li>b. Hold flattened ends (12) of anchor pins (7) with 5/8 in. wrench.</li> <li>c. Using 1 1/8 in. wrench, screw in and tighten.</li> </ul> |

4-21. BRAKESHOES REPLACEMENT (Con't)

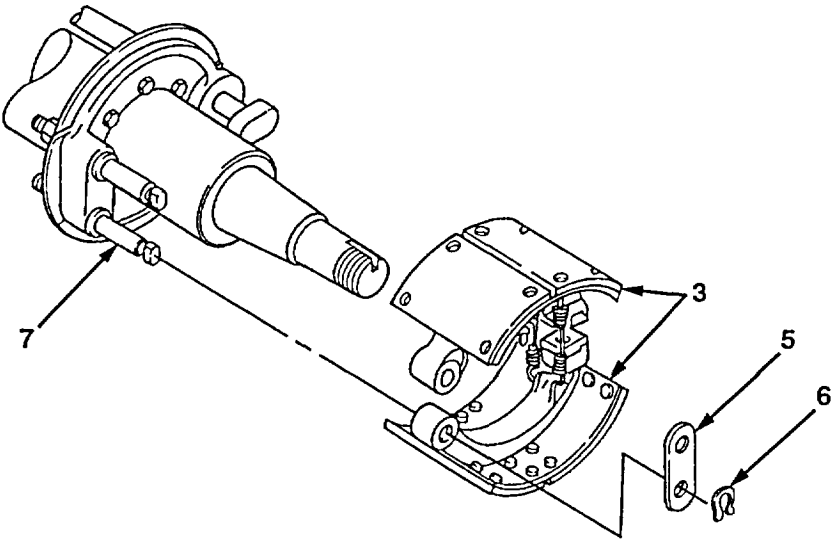
	LOCATION	ITEM	ACTION	REMARKS
20.	Cam end of two brakeshoe assemblies (3)	Camshaft	Install (para 4- 24).	
21.		Two return springs (4)	Using pliers, slip ends of return springs (4) onto brakeshoe assemblies (3). <b>The hooks face inward.</b>	



22.	Two anchor pins (7)	Two brakeshoe assemblies (3)	Push brakeshoe assemblies (3) onto anchor pins (7).	
23.		Anchor pin link (5)	Slip onto anchor pins (7).	
24.		Two retaining rings (6)	Using drive-pin punch and hammer, carefully tap onto anchor pins (7).	

4-21. BRAKESHOES REPLACEMENT (Con't)

LOCATION	ITEM	ACTION	REMARKS
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FOLLOW-ON MAINTENANCE:

- Install hub and drum assembly (para 4-33).
- Install wheel and tire assemblies (para 3-9).
- Check wheel bearing adjustment (para 4-33).
- Perform major adjustment (para 4-22).
- Perform minor adjustment (para 4-20).
- Remove chock blocks (para 2-5).
- Check brake operation.

TASK ENDS HERE



4-22. BRAKESHOES-MAJOR ADJUSTMENT

This Task Covers:

Major Adjustment

Initial Setup:

Equipment Conditions:

- Chock blocks installed (para 2-5).
- Air released from system (para 3-8).
- Wheel and tire assemblies removed (para 3-9).

Tools/Test Equipment:

- Gage, feeler
- Screwdriver, flat-tip
- Wrench, open-end, 7/16 in.
- Wrench, open-end, 5/8 in.
- Wrench, open-end, 1 1/8 in.

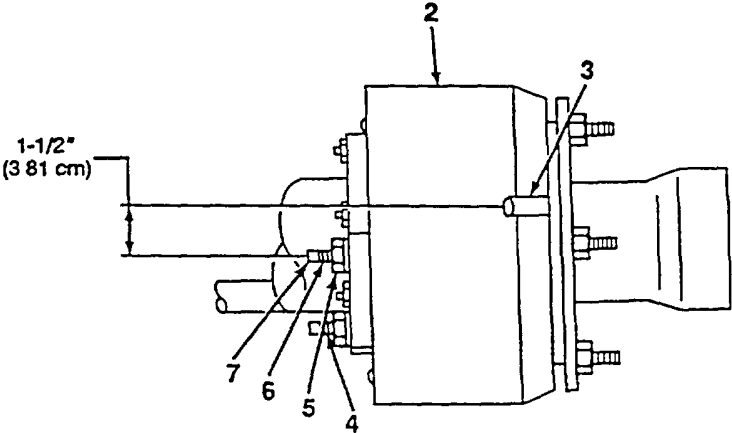
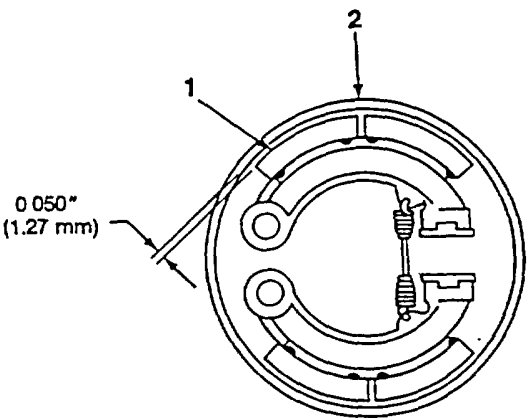
LOCATION	ITEM	ACTION	REMARKS
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MAJOR ADJUSTMENT

NOTE

- A major adjustment must be performed after new brakeshoe linings are installed.
- All four brakeshoes are adjusted the same way. Only one is covered in this procedure.

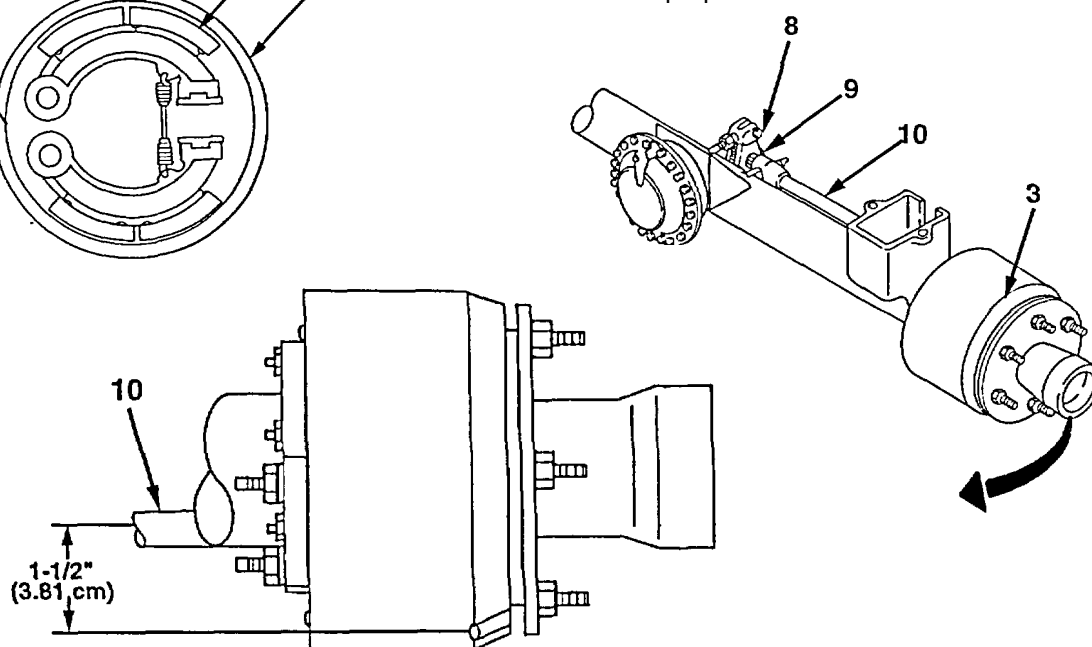
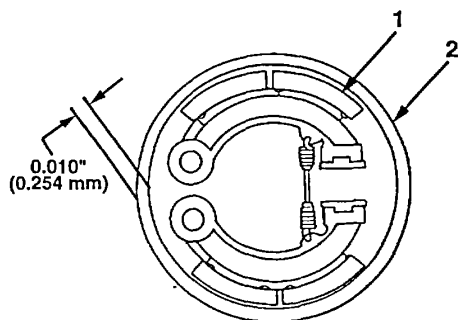
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|----|----------------------|---------------------|---|
| 1. | Upper anchor pin (6) | Nut (5)             | Using 1 1/8 In. wrench, unscrew partway.  |
| 2. | Drum (2)             | Inspection hole (3) | a. Rotate drum (2) until inspection hole (3) is 1 1/2 In. (3.81 cm) above upper anchor pin (6).<br>b. Put 0.050 in. (1.27 mm) feeler gage into inspection hole (3) to check clearance between surface of drum (2) and brakeshoe lining (1). |



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## 4-22. BRAKESHOES-MAJOR ADJUSTMENT (Con't)

	LOCATION	ITEM	ACTION	REMARKS
3.	Upper anchor pin (6)	Flattened ends (7)	Using 5/8 in. wrench, turn flattened ends (7) on upper anchor pin (6) until 0.050 in. (1.27 mm) clearance is obtained.	
4.	Flattened ends (7)	Nut (5)	Hold flattened ends (7) with 5/8 in. wrench, and with 1 1/8 in. wrench, screw in nut (5) and tighten.	
5.	Drum (2)	Inspection hole (3)	a. Using 0.50 in. (1.27 mm) feeler gage, check clearance between surface of drum (2) and brakeshoe lining (1). b. If not within tolerance, repeat steps 2 through 5a until proper clearance is obtained. c. Repeat steps 2 through 5 for lower anchor pin (4).	
6.	Camshaft (10)	Inspection hole (3)	a. Rotate drum (2) until inspection hole (3) is 1 1/2 in. (3.81 cm) below camshaft (10). b. Put 0.010 in. (0.254 mm) feeler gage into inspection hole (3) to check clearance between surface of drum (2) and brakeshoe lining (1).	
7.	Slack adjuster (8)	Hex head (9)	a. Using 7/16 wrench, turn hex head (9) in or out until 0.010 in. (0.254 mm) clearance is obtained between surface of drum (2) and brakeshoe lining (1). b. Check clearance between surface of drum (2) and brakeshoe lining (1) using 0.010 in. (0.254 mm) feeler gage. c. If not within tolerance, repeat steps 7a and 7b until proper clearance is obtained.	



**4-22. BRAKESHOES-MAJOR ADJUSTMENT (Con't)**

LOCATION	ITEM	ACTION	REMARKS
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**FOLLOW-ON MAINTENANCE:**

- Install wheel and tire assemblies (para 3-9).
- Perform minor brake adjustment (para 4-20).

**TASK ENDS HERE****4-23. SLACK ADJUSTER***This Task Covers:*

a. Removal

b. Installation

*Initial Setup:***Equipment Conditions:**

- Chock blocks installed (para 2-5).
- Air released from system (para 3-8).
- Wheel bearing adjustment checked (para 4-33).

**Materials/Parts:**

- Cotter pin

**Tools/Test Equipment:**

- Hammer, ball-peen
- Handle, ratchet, ½ in. drive
- Hydraulic jack and handle
- Pliers, slip-Joint
- Punch, drive-pin
- Socket, ½ In., ½ In. drive
- Wrench, open-end, 7/16 In.

**Personnel Required:** Two

LOCATION	ITEM	ACTION	REMARKS
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**NOTE**

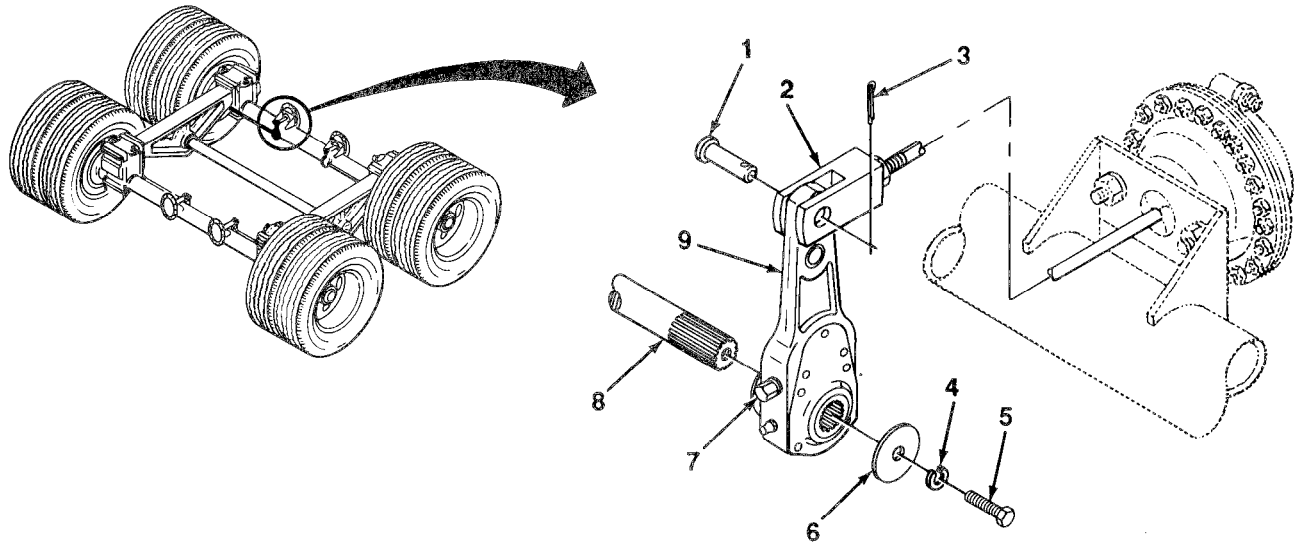
**All slack adjusters are replaced the same way. Only one is covered in this procedure.**

**REMOVAL**

1.	Clevis pin (1)	Cotter pin (3)	Using pliers, pull out and discard.
2.	Clevis (2)	Clevis pin (1)	Using drive-pin punch and hammer, push out.
3.	Camshaft (8)	Bolt (5), lockwasher (4), and keywasher (6)	Using ½ in. socket and handle, unscrew and take off.
4.		Slack adjuster (9)	Using hammer, hit and slide off end of camshaft (8).

**4-23. SLACK ADJUSTER (Con't)**

LOCATION	ITEM	ACTION	REMARKS
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**INSTALLATION**

5.	Camshaft (8)	Slack adjuster (9)	Slide slack adjuster (9) onto camshaft (8) so that slack adjuster is straight up.
6.	Clevis (2) and slack adjuster (9)	Clevis pin (1)	a. Aline clevis (2) with slack adjuster (9). b. Try to slide clevis pin (1) through clevis (2) and slack adjuster (9). c. If clevis pin (1) slides through clevis (2) and slack adjuster (9), go to step 8. d. If clevis pin (1) does not slide through clevis (2) and slack adjuster (9), go to step 7.
7.	Slack adjuster (9)	Hex head (7)	Using $\frac{7}{16}$ in. wrench, turn hex head (7) in or out so that clevis pin (1) slides through clevis (2) and slack adjuster (9).
8.	Clevis pin (1)	Cotter pin (3)	Using pliers, insert and bend.
9.	Camshaft (8)	Keywasher (6), lockwasher (4), and bolt (5)	Screw in and tighten using $\frac{1}{2}$ in. socket and handle.

**FOLLOW-ON MAINTENANCE:**

- Perform minor brake adjustment (para 4-20).
- Remove chock blocks (para 2-5).
- Check brake operation.

**TASK ENDS HERE****TA506875**

4-24. CAMSHAFT

This Task Covers:

- a. Removal
- b. Installation

Initial Setup:

Equipment Conditions:

- Chock blocks installed (para 2-5).
- Air released from system (para 3-8).
- Wheel and tire assemblies removed (para 3-9).
- Hub and drum assembly removed (para 4-33).
- Brakeshoes removed (para 4-21).
- Slack adjuster removed (para 4-23).

Materials/Parts:

- Dry cleaning solvent (Item 13, Appendix E)
- Grease (Item 5, Appendix E)
- Retaining rings (two required)

Tools/Test Equipment

- Drift, brass
- Hammer, ball-peen
- Screwdriver, flat-tip

LOCATION	ITEM	ACTION	REMARKS
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REMOVAL

NOTE

- All camshafts are removed the same way. Only one is covered in this procedure.
- Camshafts are right- and left-handed and are not interchangeable. Mark or identify properly.

1.

Camshaft (12)  
at bushing  
bracket (1)

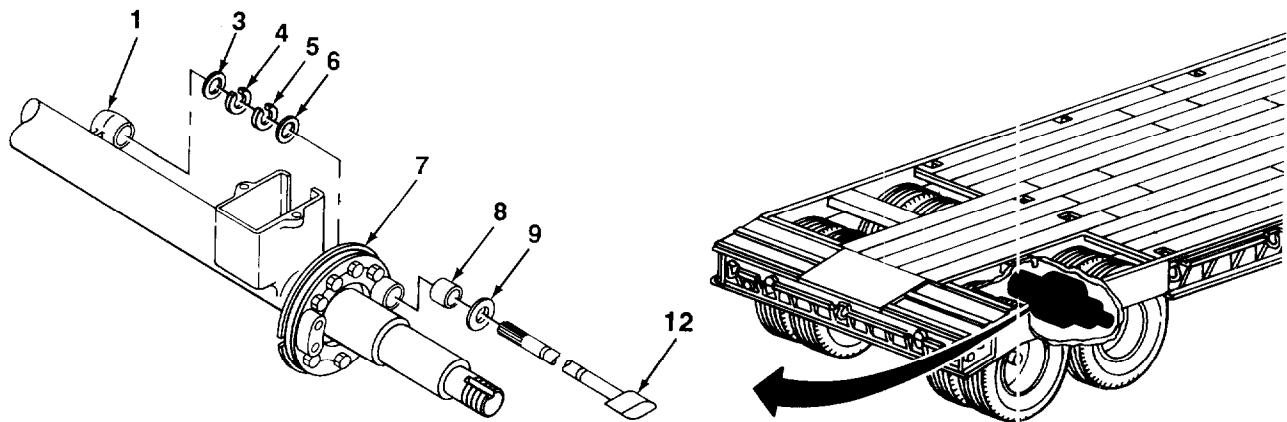
Retaining ring (4)

Using flat-tip screwdriver, pull off and discard.
2.

Camshaft (12)  
at rear of spider (7)

Retaining ring (5)

Using flat-tip screwdriver, pull off and discard.



**4-24., CAMSHAFT (Con't)**

	LOCATION	ITEM	ACTION REMARKS
3.	Bushing bracket (1)	Camshaft (12)	Using brass drift and hammer, push camshaft (12) through bushing bracket (1).
4.	Camshaft (12)	Two washers (3 and 6)	Slide off.
5.	Front of spider (7)	Camshaft (12)	Pull out.
6.	Camshaft (12)	Spacer washer (9)	Take off.
7.	Front of spider (7)	Sleeve bearing (8)	Using hammer and brass drift, take out.

**WARNING**

Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F - 138°F (38°C - 59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

- |    |   |   |
|----|---|---|
| 8. | Camshaft (12), spacer washer (9), and two washers (3 and 6) | a. Clean using dry cleaning solvent.<br>b. Check camshaft (12) for chipped surfaces, cracks, or damage.<br>c. If camshaft (12) is chipped, cracked, or damaged, replace.<br>d. If washers (3 and 6) are damaged, replace. |
|----|---|---|

**INSTALLATION****WARNING**

Use of the wrong camshaft at any location will render the related brake inoperable, which may result in damage to equipment or injury to personnel.

**NOTE**

The correct locations for the camshaft, looking forward from the rear of the semitrailer are:

- NSN 2530-00-353-221, P/N 8687050  
Front axle - street side (left)  
Rear axle - curbside (right)
- NSN 2530-00-353-2211, P/N 8687051  
Front axle - curbside (right)  
Rear axle - street side (left)

- |    |                     |                    |  |
|----|---------------------|--------------------|--|
| 9. | Front of spider (7) | Sleeve bearing (8) | a. Using hammer and brass drift, put in place.<br>b. Apply thin coat of grease to inside of sleeve bearing (8), not more than $\frac{1}{16}$ in. (1.6 mm). |
|----|---------------------|--------------------|--|

4-24. CAMSHAFT (Con't)

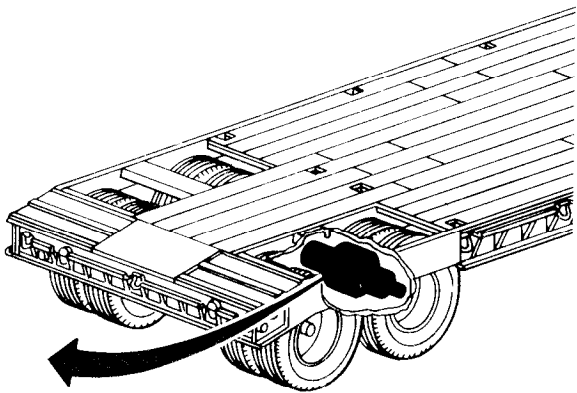
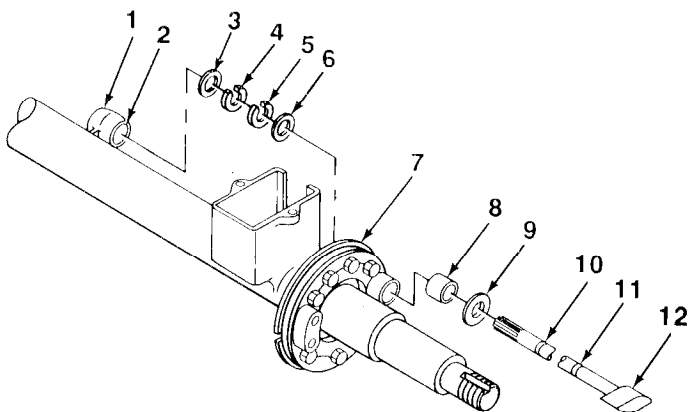
LOCATION		ITEM	ACTION	REMARKS
10.	Bushing bracket (1)	Bushing (2)		
11.	Camshaft (12)	Spacer washer (9)		
12.	Sleeve bearing (8)	Camshaft (12)		
13.	Camshaft (12) at rear of spider (7)	Washer (6) and retaining ring (5)		

Apply thin coat of grease to inside of bushing (2), not more than 1/16 in. (1.6 mm).

Slide onto cam end.

Push halfway through sleeve bearing (8).

Slide washer (6) then retaining ring (5) onto camshaft (12).



14.	Camshaft (12) at bushing bracket (1)	Retaining ring (4) and washer (3)		Slide retaining ring (4) then washer (3) onto camshaft (12).
15.	Front of spider (7)	Camshaft (12)		Push camshaft (12) into spider (7) as far as it will go.
16.	Rear of spider (7)	One washer (6) and retaining ring (5)		a. Hold washer (6) to rear of spider (7). b. Using flat-tip screwdriver, slip retaining ring (5) into retaining ring groove (11).
17.	Camshaft (12) at bushing bracket (1)	One retaining ring (4) and washer (3)		a. Hold washer (3) to bushing bracket (1). b. Using flat-tip screwdriver, slip retaining ring (4) into retaining ring groove (10).

**4-24. CAMSHAFT (Con't)**

LOCATION	ITEM	ACTION	REMARKS
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**FOLLOW-ON MAINTENANCE:**

- Lubricate camshaft (para 3-2).
- Install slack adjuster (para 4-23).
- install brakeshoes (para 4-21).
- Install hub and drum assembly (para 4-33).
- Install wheel and tire assemblies (para 3-9).
- Remove chock blocks (para 2-5).
- Check brake operation.

**TASK ENDS HERE****4-25. AIR COUPLING AND PREFORMED PACKING***This Task Covers:*

a. Removal

b. Installation

*Initial Setup:***Equipment Conditions:**

- Chock blocks installed (para 2-5).
- Air released from system (para 3-8).

**Materials/Parts:**

- Antiseize tape (Item 15, Appendix E)
- Rags (Item 11, Appendix E)

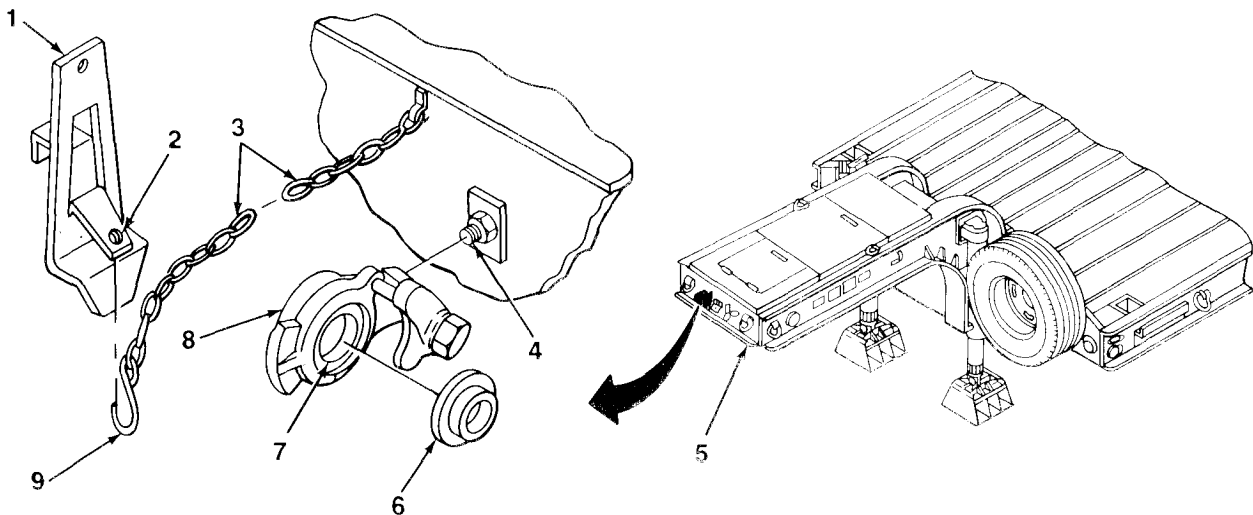
**Tools/Test Equipment:**

- Pliers, slip-joint
- Screwdriver, flat-tip
- Wrench, open-end 1 in.
- Wrench, open-end, 1 ¼ in. (two required)



4-25. AIR COUPLING AND PREFORMED PACKING (Con't)

LOCATION	ITEM	ACTION	REMARKS
REMOVAL			
<b>WARNING</b>			
Always release air from sustem before working on air coupling. Failure to do so could result in personal injury.			
<b>NOTE</b>			
Both air couplings and preformed packings are removed the same way. Only one is shown in this procedure.			
1.	Air coupling (8) to front of semitrailer (5)	Dummy air coupling (1)	Uncouple and let hang on chain (3) to allow for wrench clearance.
2.		Air coupling (8)	Using two 1 ¼ in. wrenches, unscrew and take off of nipple (4).
3.	Air coupling (8)	Preformed packing (6)	
4.	Chain (3) to front of semitrailer (5)	Dummy air coupling (1)	If replacement is required, use pliers to open one end of S-link (9) and remove dummy air coupling (1).



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**4-25. AIR COUPLING AND PREFORMED PACKING (Con't)**

LOCATION	ITEM	ACTION	REMARKS
<b>INSTALLATION</b>			
5.	Dummy air coupling (1)	a. Hook S-link (9) through hole (2). b. Close S-link (9) with pliers.	
6.	Air coupling (8)	Preformed packing (6)	a. Insert one end into groove(7) on air coupling (8). b. Using screwdriver, push preformed packing (6) down flat into groove (7). Preformed packing must be flat and free of twists or bulges.
7.	Air coupling (8)		a. Wrap threaded end of nipple (4) with anti seize tape. b. Hand screw air coupling (8) onto nipple (4) until fingertight. c. Tighten air coupling (8) using 1 1/4 in. and 15/16 in. wrenches.
8.	Dummy air coupling (1)	install on air coupling (8).	

**FOLLOW-ON MAINTENANCE:**

- Remove chock blocks (para 2-5).
- Check brake operation.

**TASK ENDS HERE****4-26. AIR FILTERS***This Task Covers:*

- |            |                       |
|------------|-----------------------|
| a. Removal | b. Splicing Air Lifes |
|------------|-----------------------|

*Initial Setup:***Equipment Conditions:**

- Chock blocks installed (para 2-5).
- Air released from system (para 3-8).

**Materials/Parts:**

- Antiseize tape (Item 15, Appendix E)
- Coupling nuts
- Detergent (Item 4, Appendix E)
- Nonmetallic hose

**Tools/Test Equipment:**

- Cutter, tube
- Handle, ratchet, 1/2 in. drive
- Socket, 9/16 in., 1/2 in. drive
- Tape, measuring
- Wrench, open-end, 5/8 in. (two required)
- Wrench, open-end, 9/16 in.

## 4-26. AIR COUPLINGS AND PREFORMED PACKING (Con't)

LOCATION	ITEM	ACTION	REMARKS
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### WARNING

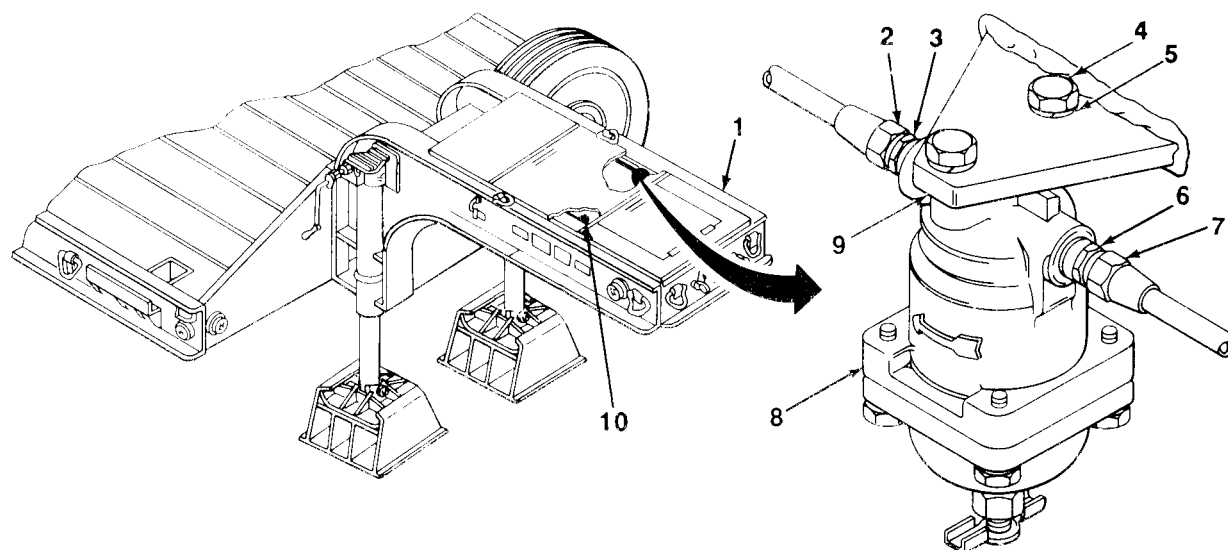
Always release air from system before working on air filter. Failure to do so could result in personal injury.

### NOTE

Air filters are no longer required. When air filters fail they will be permanently replaced with a piece of air line nonmetallic hose.

### REMOVAL

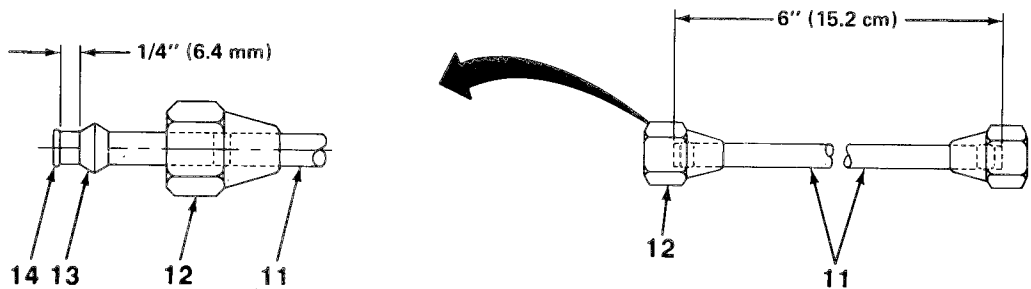
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|----|--|---|---|
| 1. | Emergency air filter (8) at underside of gooseneck (1) | Inbound coupling nut (7) and adapter (6)              | Using two $\frac{5}{8}$ in. wrenches, unscrew and separate.   |
| 2. |  | Adapter (6)   | Using $\frac{9}{16}$ in. wrench, unscrew and take out.  |
| 3. |  | Outbound coupling nut (2) and adapter (3)             | Repeat steps 1 and 2.   |
| 4. | Mounting bracket (9)                                   | Two screws (4) and lockwashers (5)                    | Using $\frac{9}{16}$ in. socket and handle, unscrew and take out. Discard screws (4), lockwashers (5), and air filter (8). Save adapters (3 and 6). |
| 5. |  | Service air filter (10) at underside of gooseneck (1) | Repeat steps 1 through 4.   |



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4-26. AIR FILTERS (Con't)

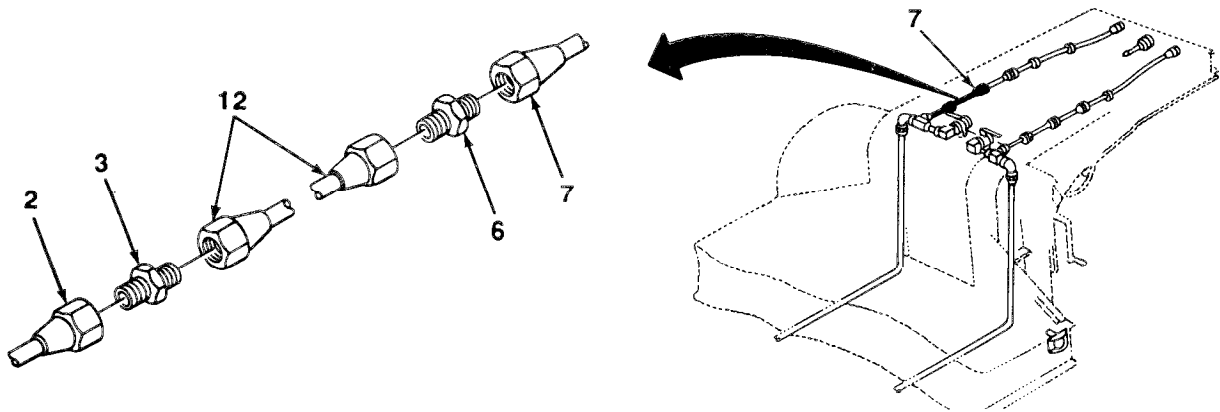
LOCATION	ITEM	ACTION	REMARKS
SPlicing AIR LINES			
6.	Nonmetallic hose (11)	Using measuring tape and tube cutter, cut 6 in. (15.2 cm) length of nonmetallic hose.	
7.	Nonmetallic hose (11)	Coupling nut (12)	Slide onto nonmetallic hose (11), small end first.
8.		Sleeve (13)	Slide onto nonmetallic hose (11) ¼ in. (6.4 mm) past end.
9.		Insert (14)	Slide into end of nonmetallic hose (11)



NOTE

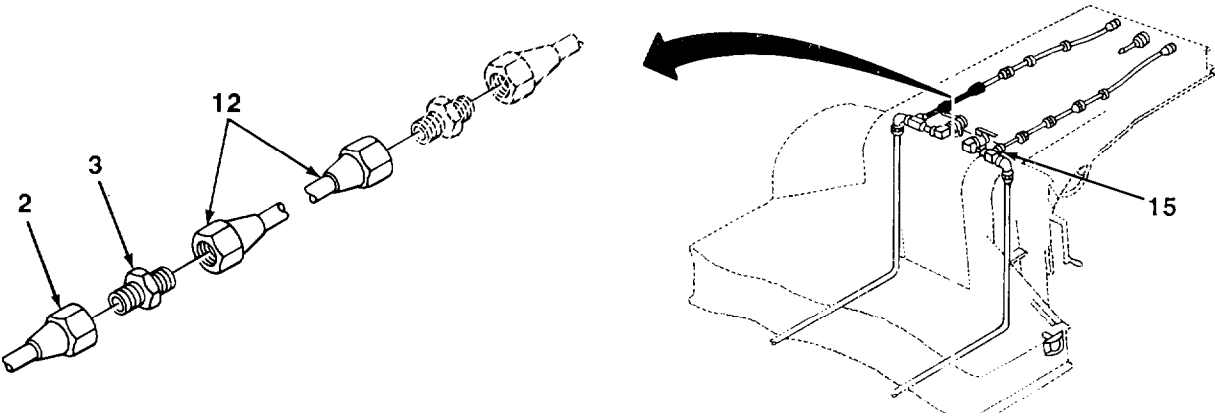
Repeat steps 7 through 9 for other end of nonmetallic hose.

- |     |   |                   |   |
|-----|---|-------------------|---|
| 10. | Emergency air line inbound coupling nut (7) | Adapter (6)       | a. Wrap adapter (6) threads with antiseize tape.<br>b. Hand screw in adapter (6) until fingertight.<br>c. Using two 5/8 in. wrenches, screw in and tighten. |
| 11. | Adapter (6)                                 | Coupling nut (12) | Install coupling nut (12) to adapter (6).   |



4-26. AIR FILTERS (Con't)

	LOCATION	ITEM	ACTION	REMARKS
12.	Emergency air line outbound coupling nut (2)	Adapter (3)	Repeat step 10.	
13.	Adapter (3)	Coupling nut (12)	Repeat step 11.	
14.		Service air line inbound coupling nut (15)	Repeat steps 10 through 13 to splice service air line.	



FOLLOW-ON MAINTENANCE:

- . Remove chock blocks (para 2-5).
- . Check for leaks (para 4-27).

TASK ENDS HERE

4-27. AIR LINES AND FITTINGS– LEAK TESTING

*This Task Covers:*

Leak Testing

*Initial Setup:*

**Equipment Conditions:**

- Air reservoir filled.

**Materials/Parts:**

- Brush (Item 1, Appendix E)
- Detergent (Item 4, Appendix E)

4-27. AIR LINES AND FITTINGS - LEAK TESTING (Con't)

LOCATION	ITEM	ACTION	REMARKS
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LEAK TESTING

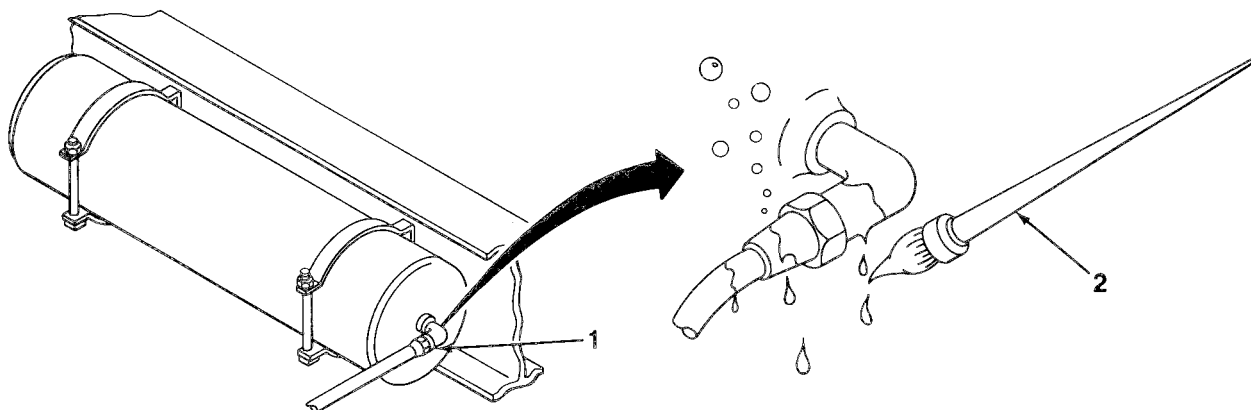
**NOTE**

If air line or fitting leakage is suspected, the sound of escaping air will give a general indication of the area of leakage. To find the exact location, perform the following procedure.

Air system

Area of suspected leak (1)

- Using brush (2), apply detergent to area of suspected leak (1).
- Watch for bubbles in detergent.
- Repeat as required to find leak.



**FOLLOW-ON MAINTENANCE:**

Repair leaking air line or fitting (para 4-28).

**TASK ENDS HERE**

## 4-28. AIR LINES AND FITTINGS

*This Task Covers:*

- |            |                 |
|------------|-----------------|
| a. Removal | c. Installation |
| b. Repair  |                 |

*Initial Setup:*

**Equipment Conditions:**

Air released from system (para 3-8).  
Wheels chocked (para 2-5).  
Air couplings removed (para 4-25).

**Materials/Parts:**

Antiseize tape (Item 15, Appendix E)

**Tools/Test Equipment:**

Handle, ratchet,  $\frac{3}{8}$  in. drive  
Socket,  $\frac{3}{8}$  in.,  $\frac{3}{8}$  in. drive  
Wrench, adjustable  
Wrench, open-end,  $\frac{9}{16}$  in.  
Wrench, open-end,  $\frac{5}{8}$  in.  
Wrench, open-end,  $\frac{3}{4}$  in.  
Wrench, open-end,  $\frac{7}{8}$  in.  
Wrench, open-end, 1  $\frac{1}{8}$  in.  
Wrench, open-end, 1  $\frac{3}{8}$  in. (two required)

LOCATION	ITEM	ACTION	REMARKS
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REMOVAL

**WARNING**

Always release air from system before working on air lines and fittings. Failure to do so could result in personal injury.

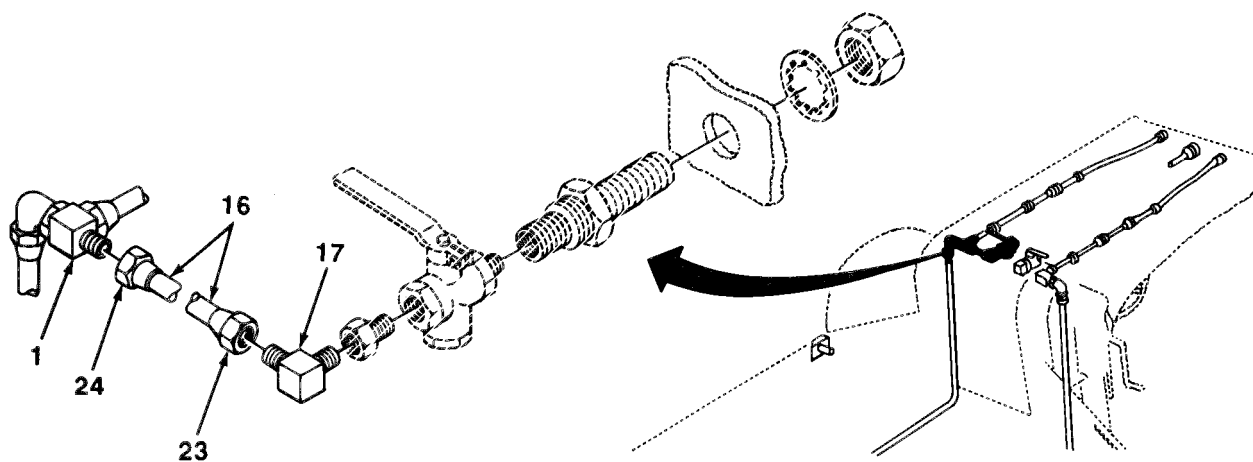
**NOTE**

- Air lines can either be replaced or repaired depending on the length of the damaged line. If the damaged line is short, replace it. If the damaged line is long, repair it. Leaking fittings can either be tightened or replaced, depending on the situation. Typical procedures are shown.
- It may not be necessary to perform this entire procedure to accomplish the needed repair. Perform only those steps that are necessary.

- |    |   |  |   |
|----|---|--|---|
| 1. | Front of gooseneck (7) and bulkhead fitting (9) | Nut (11) and lockwasher (10)                         | Using two $1\frac{3}{8}$ in. wrenches, unscrew and take off.  |
| 2. | Bulkhead fitting (9)                            | Nut (8)  | a. Using $1\frac{3}{8}$ in. wrench and $\frac{5}{8}$ in. wrench, unscrew and take apart.<br>b. Pull bulkhead fitting (9) out. |
| 3. | Gooseneck (7)                                   | Four nuts (12), two adapters (13), and air line (14) | Using a $\frac{5}{8}$ in. wrench and a $\frac{9}{16}$ in. wrench, unscrew and take off. Take out air line (14).               |
| 4. |   | Air line (6)   | Pull out towards rear of semitrailer.   |
| 5. |   | Two grommets (3)                                     | Using pliers, pull out.   |

## 4-28. AIR LINES AND FITTINGS (Con't)

LOCATION	ITEM	ACTION	REMARKS
6.	Tee (1)	Nut (2)	Using $\frac{5}{8}$ in. wrench, unscrew and take off.
7.	Gooseneck (7)	Air line (5)	Pull out.
8.		Grommet (4)	Using pliers, pull out.
9.	Tee (1)	Nut (24)	Using $\frac{5}{8}$ in. wrench and adjustable wrench, unscrew and take off.
10.	Elbow (17) and air line (16)	Nut (23)	a. Using $\frac{5}{8}$ in. wrench, unscrew and take out. b. Take out air line (16).

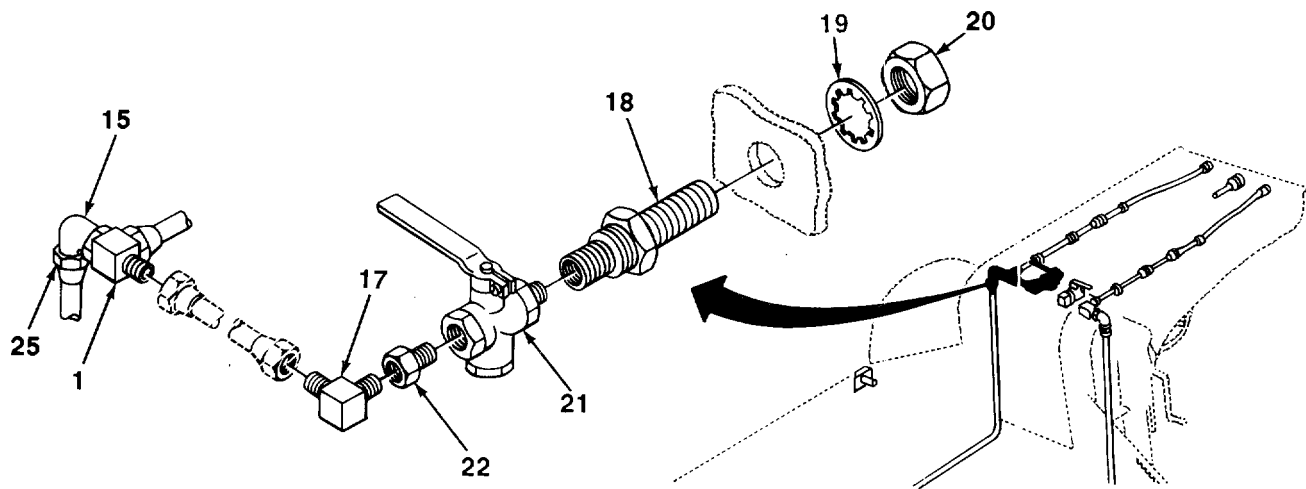


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## 4-28. AIR LINES AND FITTINGS (Con't)

	LOCATION	ITEM	ACTION	REMARKS
11.	Adapter (22)	Elbow (17)	Using 3/4 in. wrench and 7/8 in. wrench, unscrew and take out.	
12.	Ball valve (21)	Adapter (22)	Using 1 3/8 in. wrench and 7/8 in. wrench, unscrew and take out.	
13.	Bulkhead fitting (18)	Ball valve (21)	Using 1 3/8 in. wrench, unscrew and take out.	
14.		Nut (20) and lockwasher (19)	a. Using 1 3/8 in. wrench, unscrew and take out. b. Pull out bulkhead fitting (18).	
15.	Elbow (15)	Tee (1)	Using 5/8 in. wrench and 3/4 in. wrench, unscrew and take out.	
16.	Nut (23)	Elbow (17)	Using adjustable wrench and 5/8 in. wrench, unscrew and take out.	



17.	Adapter (34) and air line (32)	Nut (33)	a. Using 9/16 in. wrench and 5/8 in. wrench, unscrew and take out. b. Take out air line (32).	
18.	Bulkhead fitting (35)	Adapter (34)	Using 9/16 in. wrench and 1 1/8 in. wrench, unscrew and take out.	
19.	Elbow (38)	Nut (39)	Using 5/8 in. wrench, unscrew and take out.	
20.	Bulkhead fitting (35)	Elbow (38)	Using 1 1/8 in. wrench and 3/4 in. wrench, unscrew and take out.	

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## 4-28. AIR LINES AND FITTINGS (Con't)

	LOCATION	ITEM	ACTION	REMARKS
21.	Bulkhead (36)	Bulkhead fitting (35) and nut (37)	a. Using two $1\frac{1}{8}$ in. wrenches, unscrew and take off. b. Take bulkhead fitting (35) out of bulkhead (36).	
22.	Left main frame (27) and stud (28)	Nut (31) and lockwasher (30)	Using $\frac{3}{8}$ in. socket and handle, unscrew and take off.	
23.	Air line (40)	Clamp (29)	Spread and take off. <b>Repeat steps 22 and 23 for clamps (41, 42, and 43).</b>	
24.	Emergency relay valve (44)	Nut (26)	Unscrew and take off using $\frac{5}{8}$ in. wrench.	
25.	Left main frame (27)	Air line (40)	Pull out.	

REPAIR

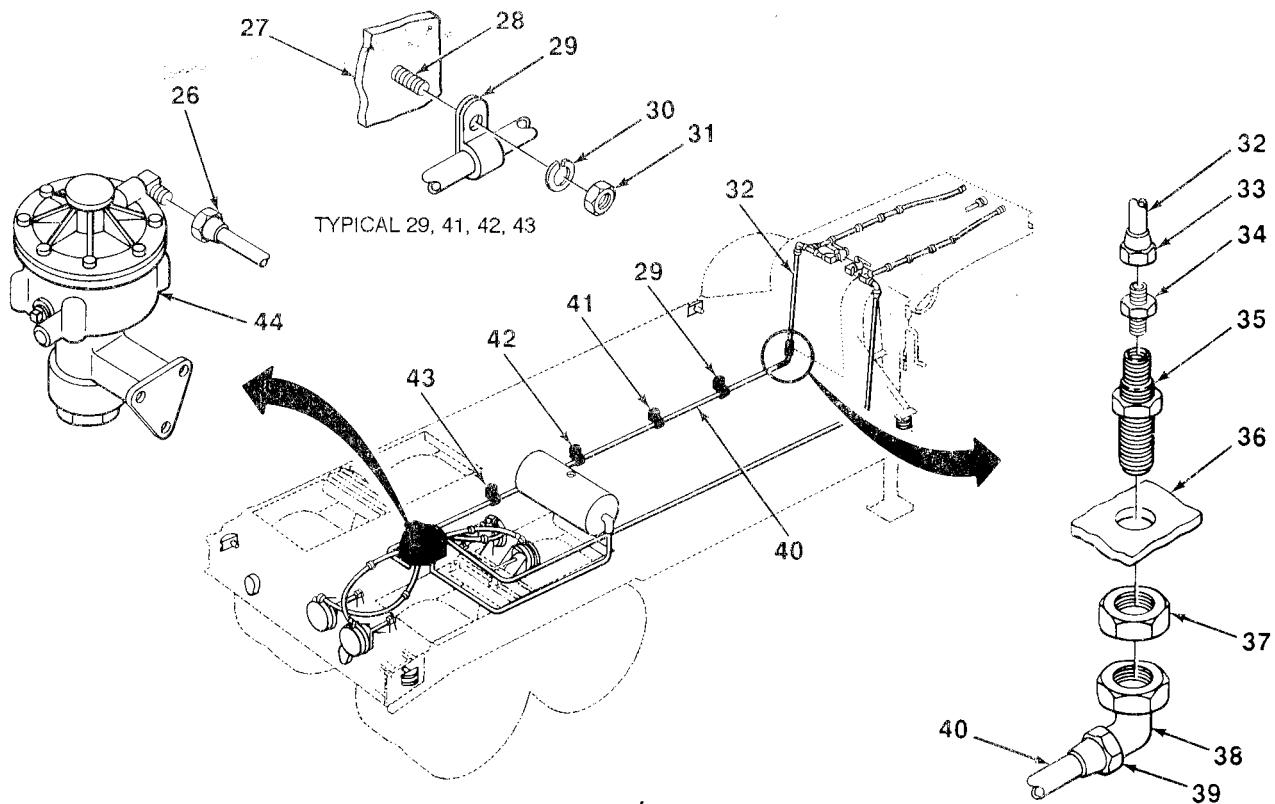
## NOTE

For information on procedures for splicing air lines, refer to paragraph 4-26.

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## 4-28. AIR LINES AND FITTINGS (Con't)

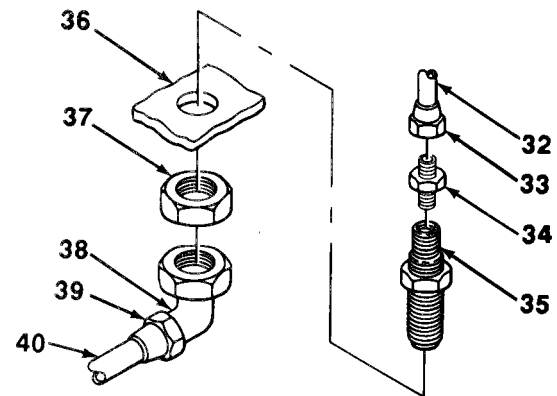
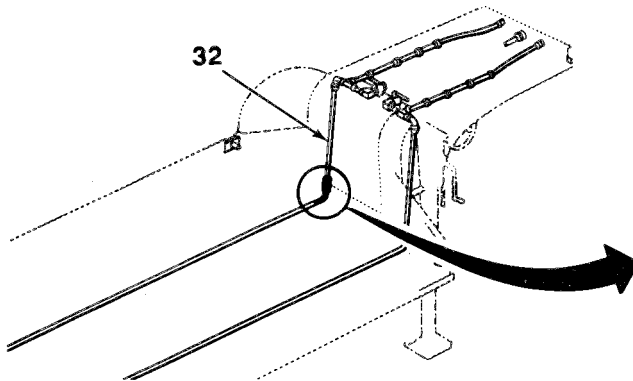
	LOCATION	ITEM	ACTION	REMARKS
INSTALLATION				
<p style="text-align: center;"><b>NOTE</b></p> <p style="text-align: center;"><b>Wrap all male air line and fitting threads two turns counterclockwise with antiseize tape before installing.</b></p>				
26.	Left main frame (27)	Air line (40)	Put in place.	
27.	Emergency relay valve (44)	Nut (26)	Put on and tighten using $\frac{5}{8}$ in. wrench.	
28.	Air line (40) and stud (28)	clamp (29)	a. Spread clamp (29) and put around air line (40). Squeeze shut. b. Put clamp (29) on stud (28).	
29.	Stud (28)	Nut (31) and lockwasher (30)	Put on and tighten using $\frac{3}{8}$ x in. socket and handle. <b>Repeat steps 28 and 29 for clamps (41, 42, and 43).</b>	



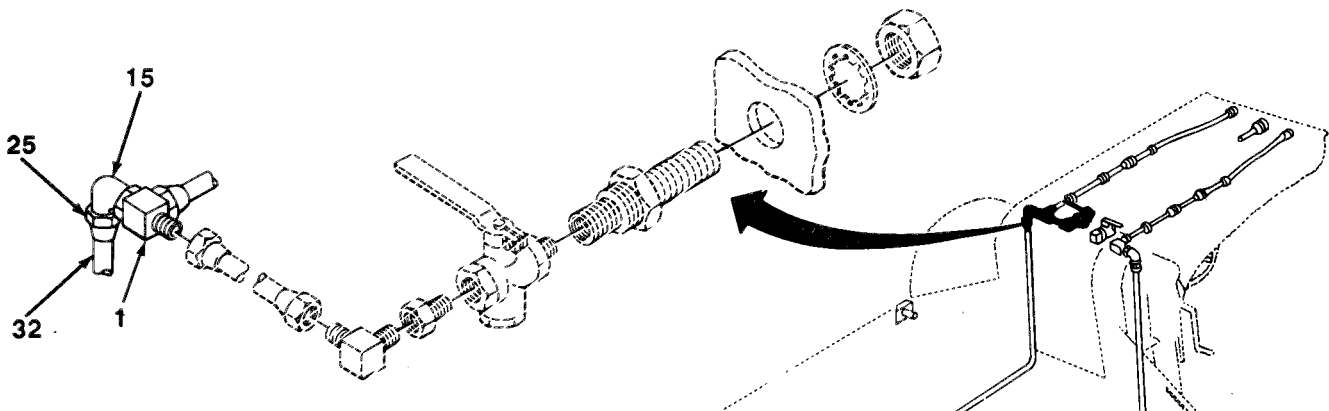
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## 4-28. AIR LINES AND FITTINGS (Con't)

	LOCATION	ITEM	ACTION	REMARKS
30.	Bulkhead (36)	Bulkhead fitting (35) and fitting nut (37)	a. Put bulkhead fitting (35) in bulkhead (36). b. Screw on and tighten nut (37) using two 1 $\frac{1}{8}$ in. wrenches.	
31.	Bulkhead fitting (35)	Elbow (38)	Put on and tighten using $\frac{3}{4}$ in. wrench and 1 $\frac{1}{8}$ in. wrench.	
32.	Elbow (38)	Nut (39)	Put on and tighten using $\frac{5}{8}$ in. wrench.	
33.	Bulkhead fitting (35)	Adapter (34)	Put on and tighten using $\frac{9}{16}$ in. wrench and 1 $\frac{1}{8}$ in. wrench.	
34.	Adapter (34)	Air line (32) and nut (33)	Put air line (32) in place and tighten slip nut (33) using $\frac{5}{8}$ in. wrench.	



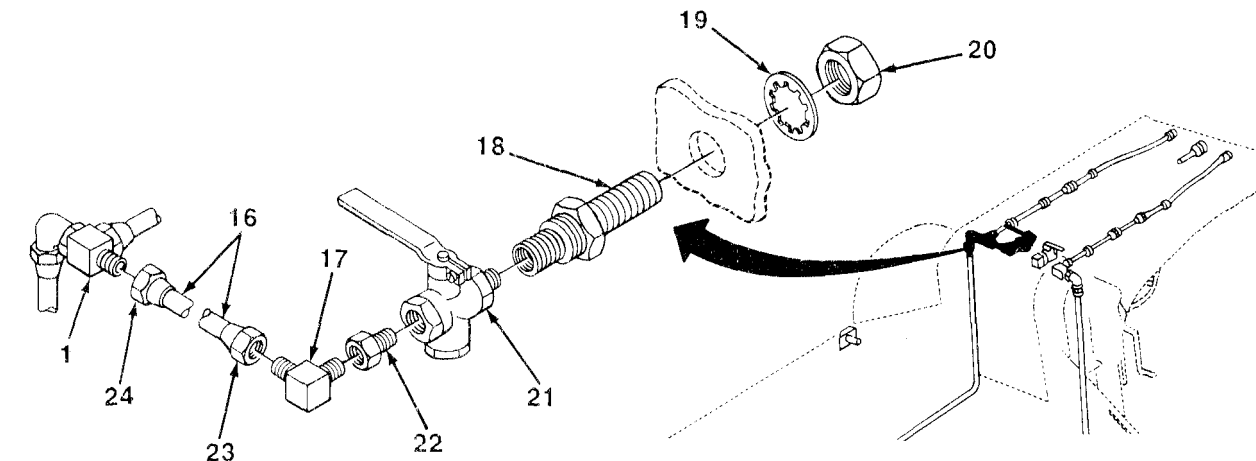
35.	Tee (1)	Elbow (15)	Put on and tighten using $\frac{5}{8}$ in. wrench and adjustable wrench.	
36.	Air line (32) and nut (25)	Elbow (15) and tee (1)	Put on and tighten using $\frac{5}{8}$ in. wrench and adjustable wrench.	



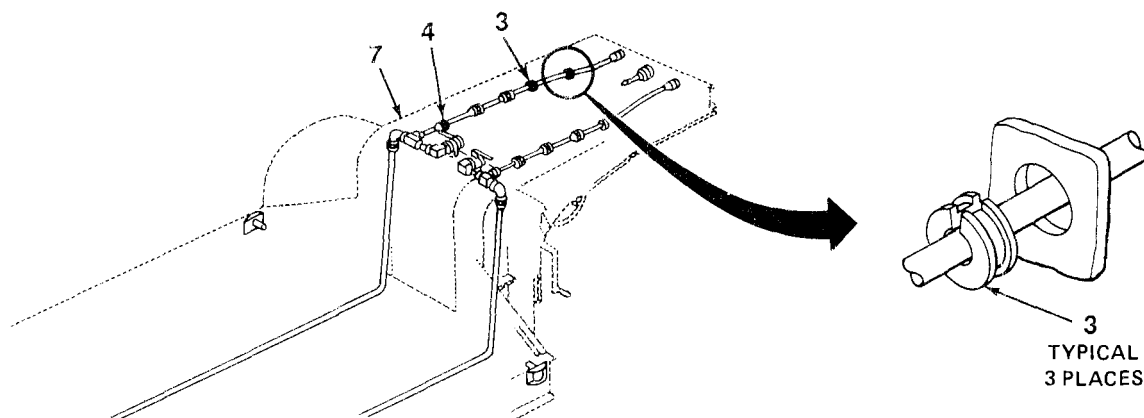
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4-28. AIR LINES AND FITTINGS (Con't)

	LOCATION	ITEM	ACTION	REMARKS
37.	Bulkhead fitting (18)	Lockwasher (19) and nut (20)	a. Put bulkhead fitting (18) through bulkhead. b. Put on lockwasher (19) and nut (20) and tighten using two $1\frac{3}{8}$ in. wrenches.	
38.	Bulkhead fitting (18)	Ball valve (21)	Screw in and tighten using $1\frac{3}{8}$ in. wrench and $\frac{7}{8}$ in. wrench.	
39.	Ball valve (21)	Adapter (22)	Put in and tighten using $1\frac{3}{8}$ in. wrench and $\frac{7}{8}$ in. wrench.	
40.	Adapter (22)	Elbow (17)	Put in and tighten using $\frac{3}{4}$ in. wrench.	
41.	Tee (1) and elbow (17)	Air line (15) and two nuts (23 and 24)	a. Put air line (16) in place. b. Tighten nuts (23 and 24) using $\frac{3}{4}$ in. wrench and $\frac{5}{8}$ in. wrench.	



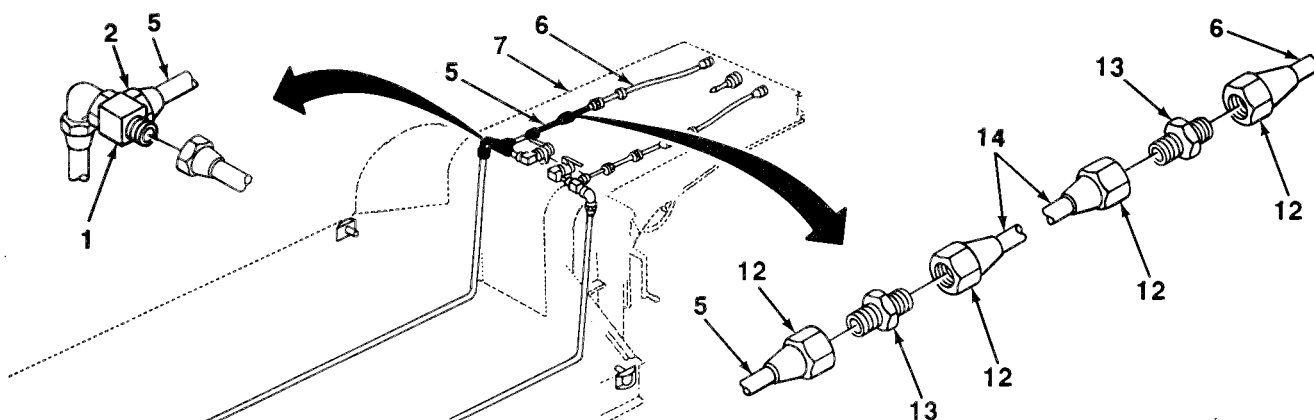
42. Gooseneck (7) Three grommets (3 and 4) Put in place.



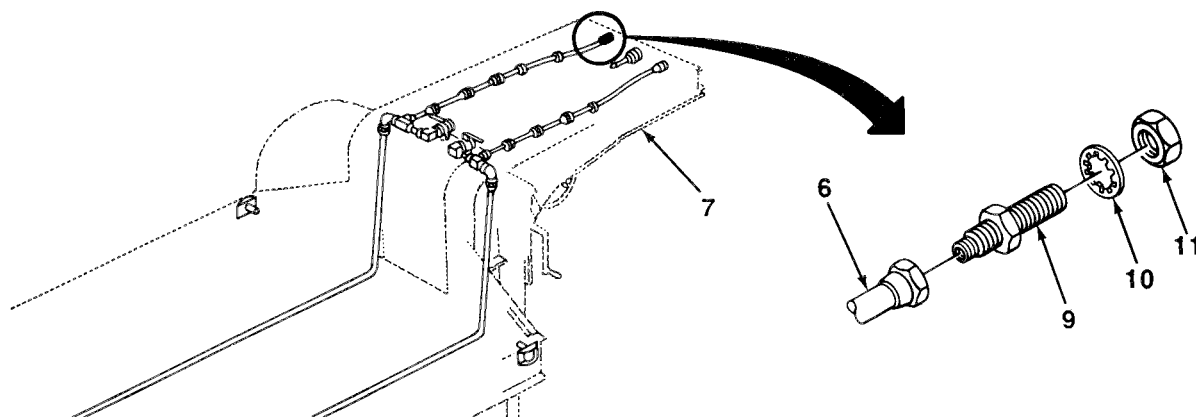
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## 4-28. AIR LINES AND FITTINGS (Con't)

	LOCATION	ITEM	ACTION	REMARKS
43.	Gooseneck (7)	Air line (5)	Put in place.	
44.	Tee (1)	Nut (2)	Put on and tighten using $\frac{5}{8}$ in. wrench.	
45.	Nut (12)	Adapter (13)	Put in and tighten using $\frac{9}{16}$ in. wrench and $\frac{5}{8}$ in. wrench.	
46.	Adapter (13)	Air line (14) and nut (12)	Put on and tighten using $\frac{9}{16}$ in. wrench and $\frac{5}{8}$ in. wrench.	
47.	Nut (12)	Adapter (13)	Put in and tighten using $\frac{9}{16}$ in. wrench and $\frac{5}{8}$ in. wrench.	
48.	Gooseneck (7)	Air line (6)	Put in place.	
49.	Adapter (13)	Nut (12)	Put on and tighten using $\frac{9}{16}$ in. wrench and $\frac{5}{8}$ in. wrench.	



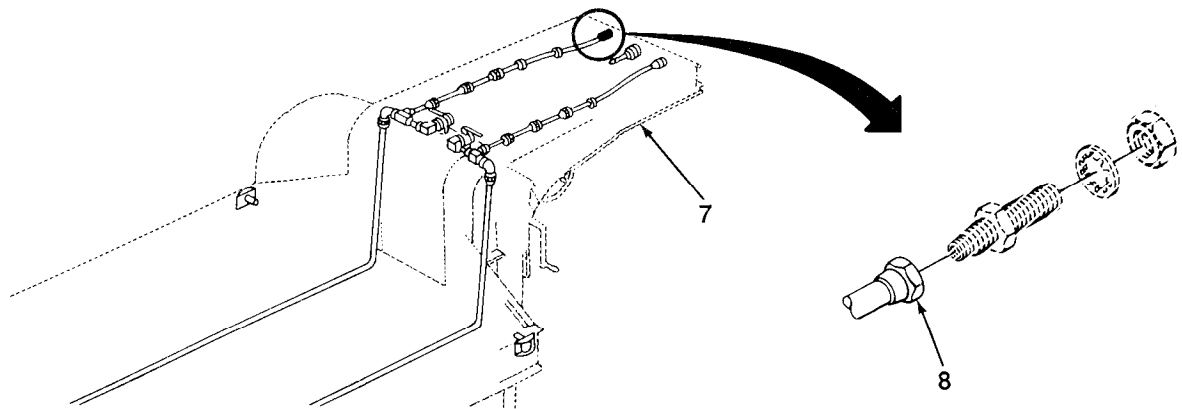
50. Gooseneck (7) Bulkhead fitting (9) Put in place.
51. Bulkhead fitting (9) Lockwasher (10) and nut (11) Put on and tighten using two  $1\frac{3}{8}$  in. wrenches.



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4-28. AIR LINES AND FITTINGS (Con't)

LOCATION	ITEM	ACTION	REMARKS
52.	Nut (8)	Put on and tighten using 1 3/8 in. wrench and 5/8 in. wrench.	



FOLLOW-ON MAINTENANCE:

- Install air couplings (para 4-25).
- Remove chock blocks (para 2-5).
- Check for leaks (para 4-27).
- Check brake operation.

TASK ENDS HERE

4-29. BRAKE HOSE

This Task Covers:

- |            |                 |
|------------|-----------------|
| a. Removal | b. Installation |
|------------|-----------------|

Initial Setup:

Equipment Conditions:

- Chock blocks installed (para 2-5).
- Air released from system (para 3-8).

Materials/Parts:

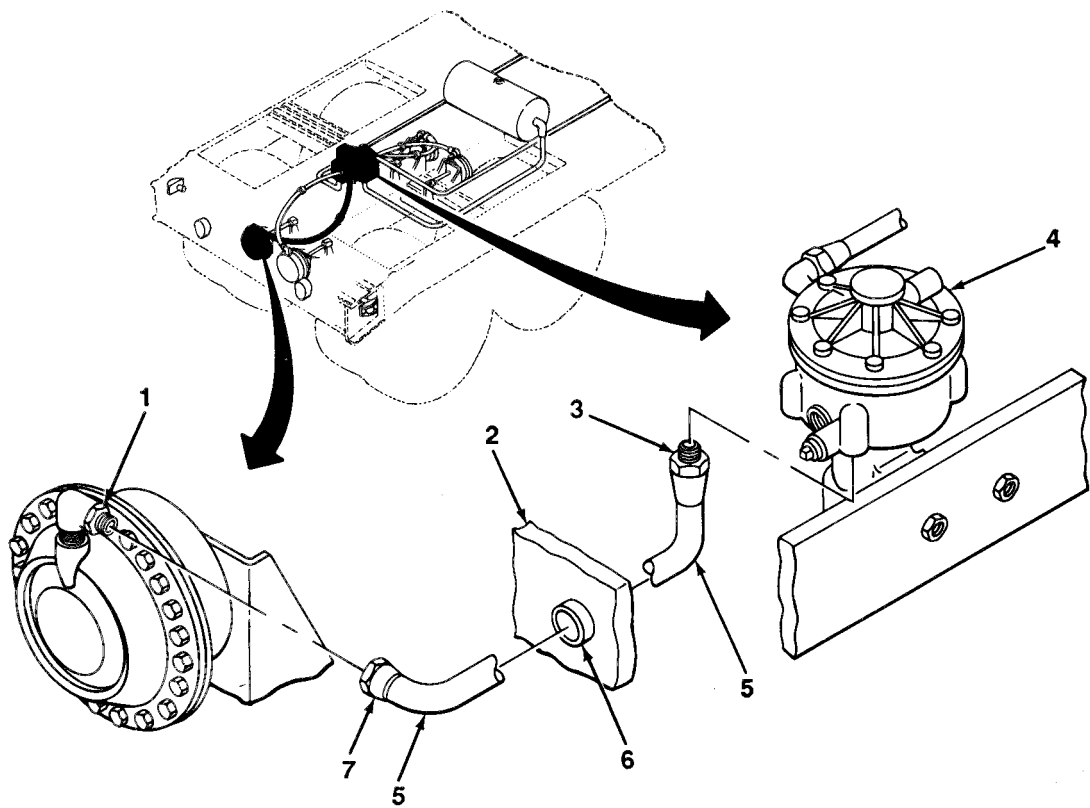
- Anti seize tape (Item 15, Appendix E)

Tools/Test Equipment:

- Wrench, open-end, 3/4 in.
- Wrench, open-end, 7/8 in.
- Wrench, pipe

4-29. BRAKE HOSE (Con't)

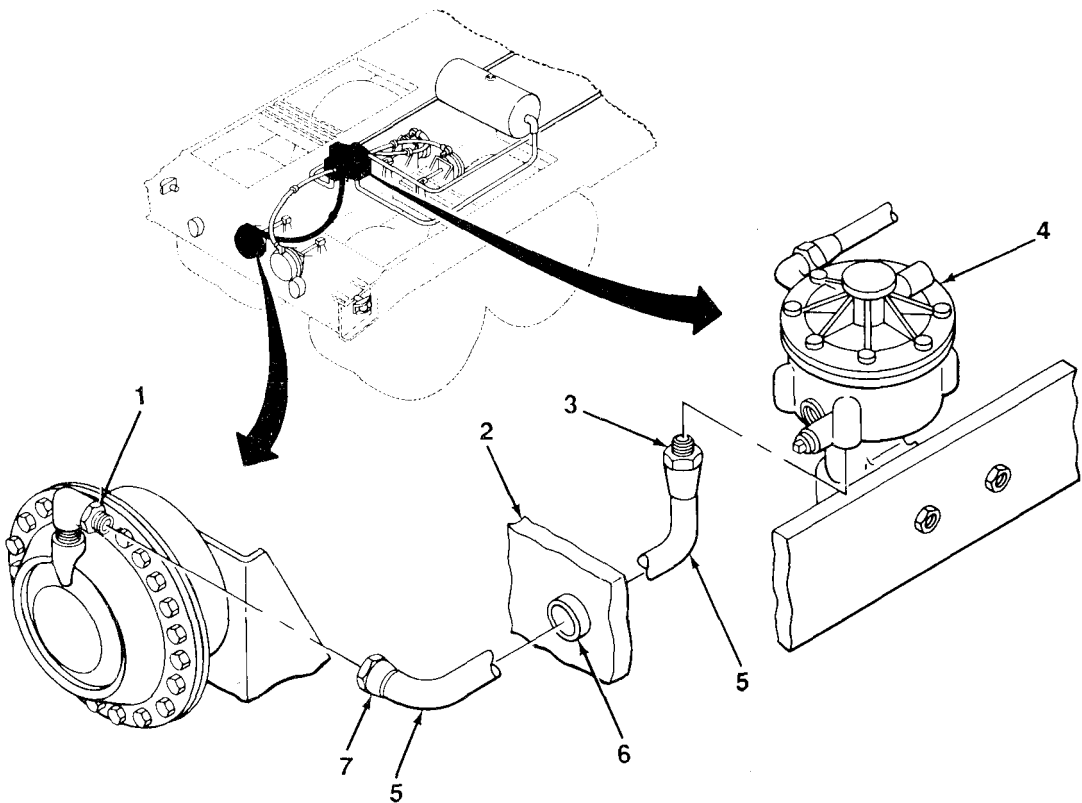
LOCATION		ITEM	ACTION	REMARKS
REMOVAL				
<div><div>WARNING</div><p>Always release air from system before working on brake hose or fittings. Failure to do so could result in personal injury.</p></div>				
1.	Adapter (1)	Nut (7)	Using 3/4 in. wrench and 7/8 in. wrench, hold adapter (1), unscrew nut (7), and remove.	
2.	Emergency relay valve (4)	Nut (3)	Using 7/8 in. wrench, unscrew and remove.	
3.	Grommet (6) at crossbeam (2)	Brake hose (5)	Pull through and discard.	





4-29. BRAKE HOSE (Con't)

LOCATION		ITEM	ACTION	REMARKS
INSTALLATION				
4.	Emergency relay valve (4)	Nut (3)	a. Wrap nut (3) threads with antiseize tape. b. Screw in nut (3) by hand until fingertight. c. Using 7⁄8 in. wrench, screw in and tighten.	
5.	Grommet (6) at crossbeam (2)	Brake hose (5)	Pull through.	
6.	Adapter (1)	Nut (7)	a. Wrap adapter (1) threads with anti seize tape. b. Screw in nut (7) by hand until fingertight. c. Using ¾ in. wrench and 7⁄8 in. wrench, screw in and tighten.	



FOLLOW-ON MAINTENANCE:

- Remove chock blocks (para 2-5).
- Check for leaks (para 4-27).

TASK ENDS HERE

## 4-30. AIRBRAKE CHAMBER

*This Task Covers:*

- |            |                 |
|------------|-----------------|
| a. Removal | b. Installation |
|------------|-----------------|

*Initial Setup:*

### Equipment Conditions:

- Chock blocks installed (Para 2-5)
- Air released from system (para 3-8).

### Materials/Parts:

- Antiseize tape (Item 15, Appendix E)
- Cotter pin
- Detergent (Item 4, Appendix E)

### Tools/Test Equipment:

- Extension, socket wrench, ½ in. drive
- Hammer, ball-peen
- Handle, ratchet, ½ in. drive
- Pliers, slip-joint
- Punch, drive-pin
- **Socket**, in., ½ in. drive
- Wrench, open-end, ¾ in.
- Wrench, open-end, 1 in.
- Wrench, pipe

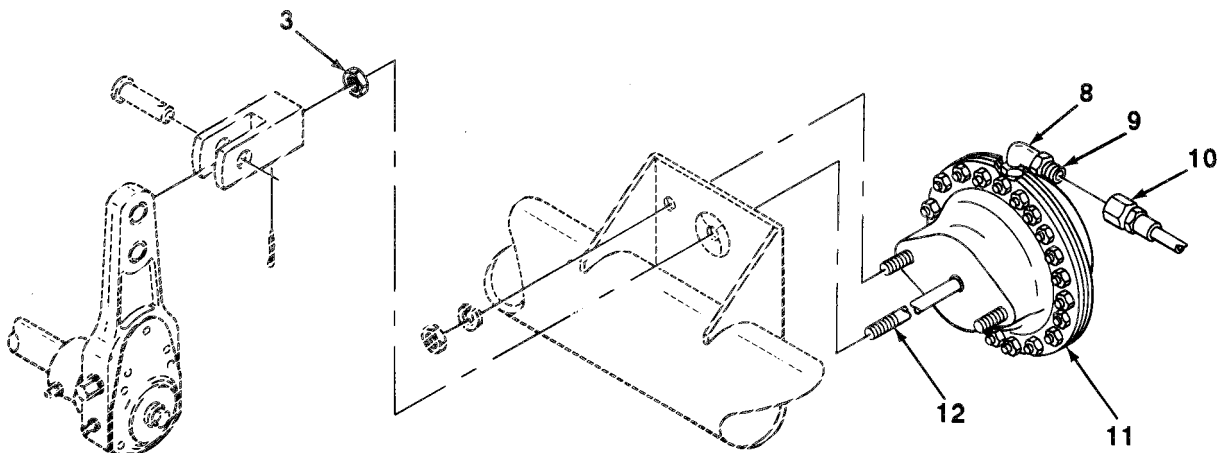
LOCATION	ITEM	ACTION	REMARKS
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### REMOVAL

### **WARNING**

**Always release air from system before working on airbrake chambers. Failure to do so could result in personal injury.**

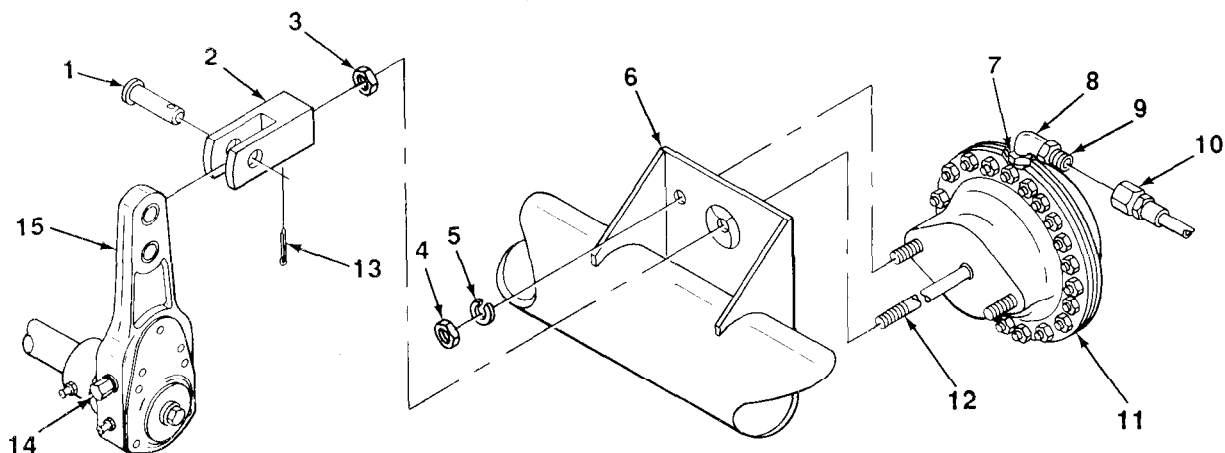
- |                          |                           |  |
|--------------------------|---------------------------|--|
| 1. Adapter (9)           | Outer union nut (10)      | Using ¾ in. wrench and ⅞ wrench, hold adapter (9), unscrew outer union nut (10), and remove. |
| 2. Airbrake chamber (11) | Elbow (8) and adapter (9) | Using pipe wrench, unscrew and remove as an assembly.  |
| 3. Pushrod (12)          | Nut (3)                   | Using 1 in. wrench, unscrew part way.  |



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## 4-30. AIRBRAKE CHAMBER (Con't)

	LOCATION	ITEM	ACTION	REMARKS
4.	(Clevis pin (1)	Cotter pin (13)	Using pliers, pull out and discard.	
5.	Slack adjuster (15)	Hex nut (14)	Using $\frac{7}{16}$ in. wrench, turn until clevis pin (1) is loose.	
6.		Clevis pin (1)	a. Using hammer and drive punch, push out. b. Using $\frac{7}{16}$ in. wrench, turn hex nut (14) until slack adjuster (15) is away from clevis (2).	
7.	Pushrod (12)	Clevis (2)	Using pliers, unscrew and remove.	
8.	Pushrod (12)	Nut (3)	Using 1 in. wrench, unscrew and remove.	
9.	Airbrake chamber (11) to mounting bracket (6)	Two nuts (4) and lockwashers (5)	Using $\frac{15}{16}$ in. socket, handle, and extension, unscrew and remove.	
10.		Airbrake chamber (11)	Slide out.	



## INSTALLATION

11.	Mounting bracket (6)	Airbrake chamber (11)	Slide into position. Hole (7) for elbow (8) goes on top.
12.		Two nuts (4) and lockwashers (5)	Using $\frac{15}{16}$ in. socket, handle, and extension, screw in and tighten.
13.	Pushrod (12)	Nut (3)	Using 1 in. wrench, screw on as far as possible.
14.	Airbrake chamber (11)	Elbow (8) and adapter (9)	a. Wrap elbow (8) threads with antiseize tape. b. Screw in elbow (8) until fingertight. c. Using pipe wrench, screw in and tighten.
15.	Adapter (9)	Outer union nut (10)	a. Wrap adapter (9) threads with antiseize tape. b. Screw in outer union nut (10) until fingertight. c. Using two $\frac{7}{8}$ in. wrenches, screw in and tighten.

**4-30. AIRBRAKE CHAMBER (Con't)**

	LOCATION	ITEM	ACTION REMARKS
16.	Pushrod (12)	Clevis (2)	Using pliers, screw on until two turns of thread are exposed.
17.	Clevis (2) and slack adjuster (15)	Clevis pin (1)	a. Aline clevis (2) with slack adjuster (15). b. Try to slide clevis pin (1) through clevis (2) and slack adjuster (15). c. If clevis pin (1) slides through clevis (2) and slack adjuster (15), go to step 19. d. If clevis pin (1) does not slide through clevis (2) and slack adjuster (15), go to step 18.
18.	Slack adjuster (15)	Hex head (14)	Using $\frac{7}{16}$ in. wrench, turn hex head (14) so that clevis pin (1) slides through clevis (2) and slack adjuster (15).
19.	Clevis pin (1)	Cotter pin (13)	Using pliers, insert and bend.
20.	Pushrod (12)	Nut (3)	Using $\frac{7}{16}$ in. wrench, tighten against clevis (2).

**FOLLOW-ON MAINTENANCE:**

- Perform minor brake adjustment (para 4-20).
- Remove chock blocks (para 2-5).
- Check brake operation.

**TASK ENDS HERE****4-31. EMERGENCY RELAY VALVE***This Task Covers:*

a. Removal

b. Installation

*Initial Setup:***Equipment Conditions:**

- Chock blocks installed (para 2-5)
- Air released from system (para 3-8).

**Materials/Parts:**

- Antiseize tape (Item 15, Appendix E)
- Marker tags (Item 14, Appendix E)

**Personnel Required: Two****Tools/Test Equipment:**

- Handle, ratchet,  $\frac{1}{2}$  in. drive
- Socket,  $\frac{9}{16}$  in.,  $\frac{1}{2}$  in. drive
- Wrench, open-end,  $\frac{9}{16}$  in.
- Wrench, open-end,  $\frac{5}{8}$  in.
- Wrench, open-end,  $\frac{3}{4}$  in.
- Wrench, open-end,  $\frac{7}{8}$  in.

4-31. EMERGENCY RELAY VALVE (Con't)

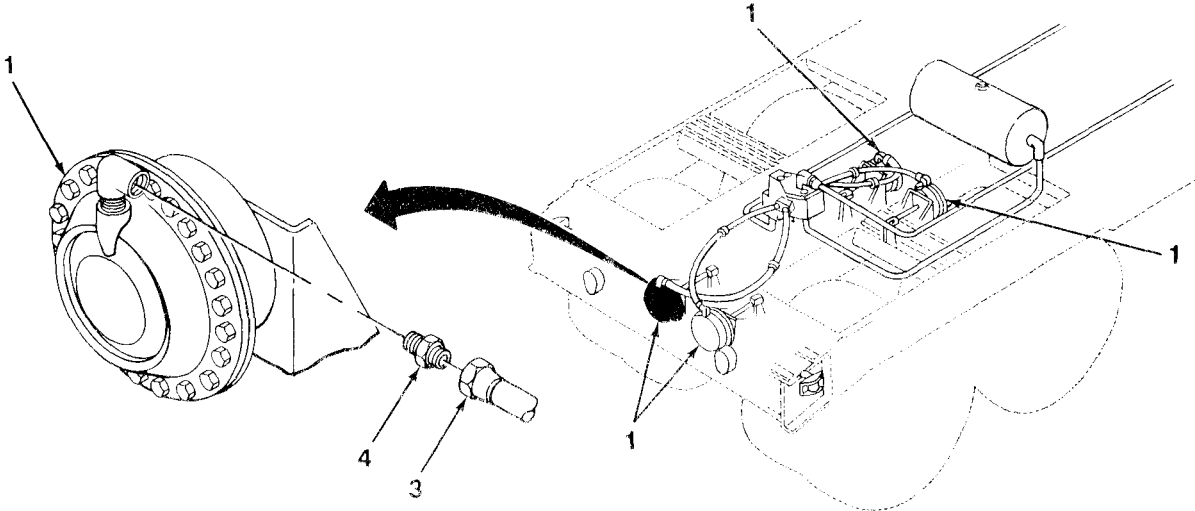
LOCATION	ITEM	ACTION	REMARKS
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REMOVAL

**WARNING**

Always release air from system before working on emergency relay valve. Failure to do so could result in personal injury.

- |    |   |                           |   |
|----|---|---------------------------|---|
| 1. | Four adapters (4) to four airbrake chambers (1) | Four outer union nuts (3) | Using 3/4 in. wrench and 7/8 in. wrench, hold adapters (4), unscrew outer union nuts (3), and remove. |
|----|---|---------------------------|---|



- |    |                           |                          |   |
|----|---------------------------|--------------------------|---|
| 2. | Emergency relay valve (6) | Four brake hose nuts (5) | a. Using 1 in. in. wrench, unscrew and separate.<br>b. Tag each brake hose to identify. |
|----|---------------------------|--------------------------|---|

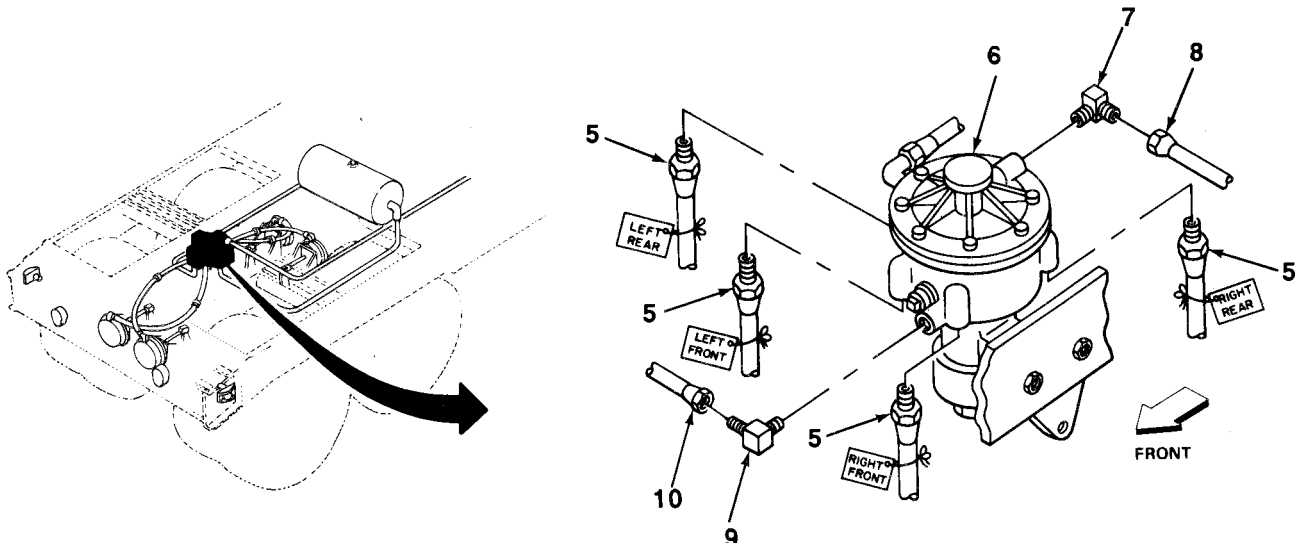
**CAUTION**

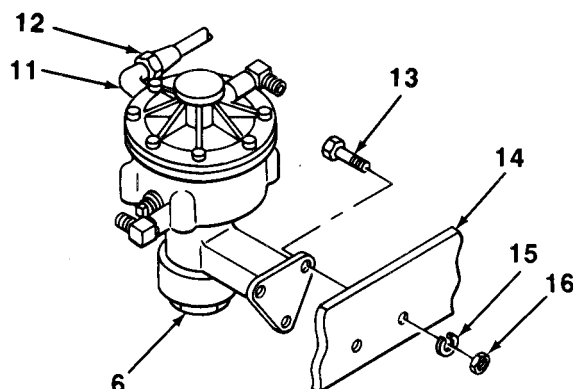
Use caution not to kink tubing or damage to tubing will result.

- |    |   |  |   |
|----|---|--|---|
| 3. | Service line elbow (9) and emergency line elbow (7) | Service line coupling nut (10) and emergency line Coupling nut (8) | a. Using 5/8 in. wrench and 9/16 in. wrench, unscrew and separate.<br>b. Push service and emergency lines aside. Do not kink tubing.<br>c. Tag each line to identify. |
|----|---|--|---|

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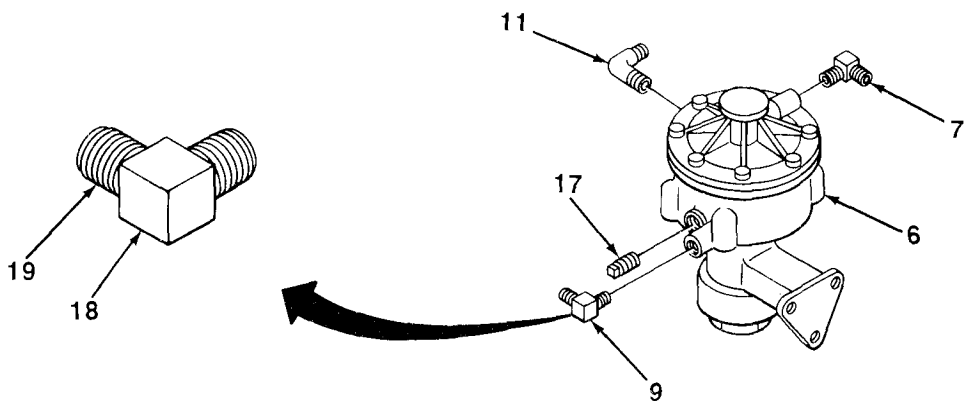
## 4-31. EMERGENCY RELAY VALVE (Con't)

LOCATION	ITEM	ACTION	REMARKS
			
4.	Air reservoir line elbow (11)	Air reservoir line coupling nut (12)	<p>a. Using <math>\frac{5}{8}</math> in. wrench and <math>\frac{7}{8}</math> in. wrench, unscrew and separate.</p> <p>b. Tag line to identify.</p>
5.	Emergency relay valve (6) at crossmember (14)	Two screws (13), lockwashers (15), and nuts (16)	<p>Using <math>\frac{3}{8}</math> in. socket, handle, and <math>\frac{3}{8}</math> in. wrench, unscrew and remove.</p> <p><b>Do not allow emergency relay valve (6) to drop.</b></p>



4-31. EMERGENCY RELAY VALVE (Con't)

	LOCATION	ITEM	ACTION	REMARKS
6.	Emergency relay valve (6)	Service line elbow (9) and emergency line elbow (7)	a. Using $\frac{9}{16}$ in. wrench. unscrew and take out. b. Check if threaded end (19) or wrench fitting (18) is cracked, worn, or rounded. c. Discard if cracked, worn, or rounded.	
7.		Air reservoir line elbow (11)	a. Using $\frac{5}{8}$ in. wrench, unscrew and remove. b. Check if cracked, worn, or rounded. c. Discard if cracked, worn, or rounded.	
8.		Square head plug (17)	a. Using $\frac{3}{8}$ in. wrench, unscrew and remove. b. Check if cracked, worn, or rounded. c. Discard if cracked, worn, or rounded.	



INSTALLATION

9.	Emergency relay valve (6)	Service line elbow (9) and emergency line elbow (7)	a. Wrap elbow (7 and 9) threads with antiseize tape. b. Screw in elbows (7 and 9) by hand until finger-tight. c. Using $\frac{9}{16}$ in. wrench, screw in and tighten.
10.		Air reservoir line elbow (11)	a. Repeat 9a and 9b b. Using $\frac{5}{8}$ in. wrench, screw in and tighten.
11.		Square head plug (17)	a. Repeat 9a and 9b. b. Using $\frac{3}{8}$ in. wrench, screw in and tighten.

## 4-31. EMERGENCY RELAY VALVE (Con't)

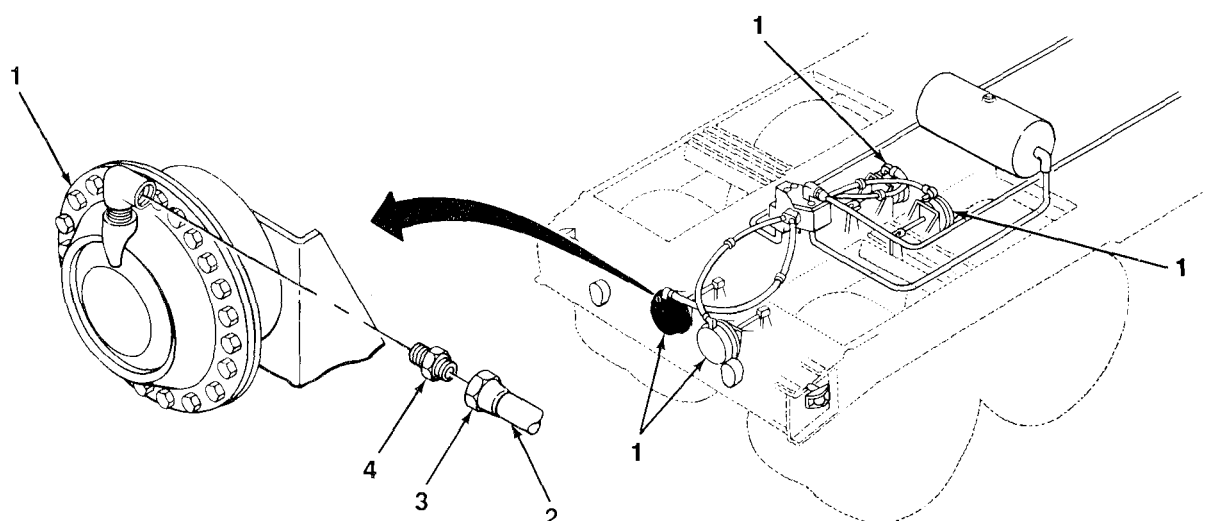
	LOCATION	ITEM	ACTION	REMARKS
12.	Crossbeam (14)	Emergency relay valve (6)	Place into position.	
13.	Emergency relay valve (6)	Two screws (13)	Slide into crossbeam (14).	
14.	Two screws (13)	Two nuts (16) and lockwashers (15).	Using $\frac{9}{16}$ in. socket, handle, and $\frac{9}{16}$ in. wrench, screw in and tighten.	
15.	Service line elbow (9)	Service line coupling nut (10)	a. Wrap service line elbow (9) threads with antiseize tape. b. Screw in service line coupling nut (10) by hand until fingertight. c. Tighten using $\frac{5}{8}$ in. wrench and $\frac{9}{16}$ in. wrench.	

16.	Emergency line elbow (7)	Emergency line coupling nut (8)	Repeat steps 15a through 15c.	
17.	Air reservoir line elbow (11)	Air reservoir line coupling nut (12)	a. Repeat steps 15a and 15b. b. Using $\frac{5}{8}$ in. wrench and $\frac{7}{8}$ in. wrench, screw in and tighten.	
18.	Emergency relay valve (6)	Four brake hose nuts (5)	a. Identify each tag. b. Wrap brake hose nut (5) threads with antiseize tape. c. Screw in brake hose nuts (5) by hand until fingertight. d. Tighten using $\frac{7}{8}$ in. wrench.	



# 4-31. EMERGENCY RELAY VALVE (Con't)

LOCATION	ITEM	ACTION	REMARKS
19.	Four adapters (4) to four airbrake chambers (1)	Four brake hose outer union nuts (3)	<p>a. Remove any kinks that may have formed on hose (2).</p> <p>b. Wrap adapter (4) threads with antiseize tape.</p> <p>c. Screw in brake hose outer union nuts (3) by hand until fingertight.</p> <p>d. Using <math>\frac{3}{4}</math> in. wrench and <math>\frac{7}{8}</math> in. wrench, screw in and tighten.</p>



## FOLLOW-ON MAINTENANCE:

- Remove chock blocks (para 2-5).
- Check for leaks (para 4-27).
- Check brake operation.

TASK ENDS HERE

4-32. AIR RESERVOIR AND DRAINCOCK

This Task Covers:

- a. Removal
- b. Installation

Initial Setup:

Equipment Conditions:

- Chock blocks installed (para 2-5)
- Air released from system (para 3-8).

Materials/Parts:

- Antiseize tape (Item 15, Appendix E)

Personnel Required: Two

Tools/Test Equipment:

- Handle, ratchet, ½ in. drive
- Socket, deep-well, 9/16 in., ½ in. drive
- Wrench, open-end, ½ in.
- Wrench, open-end, 9/16 in. (two required)
- Wrench, open-end, 7/8 in.
- Wrench, pipe

LOCATION	ITEM	ACTION	REMARKS
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REMOVAL

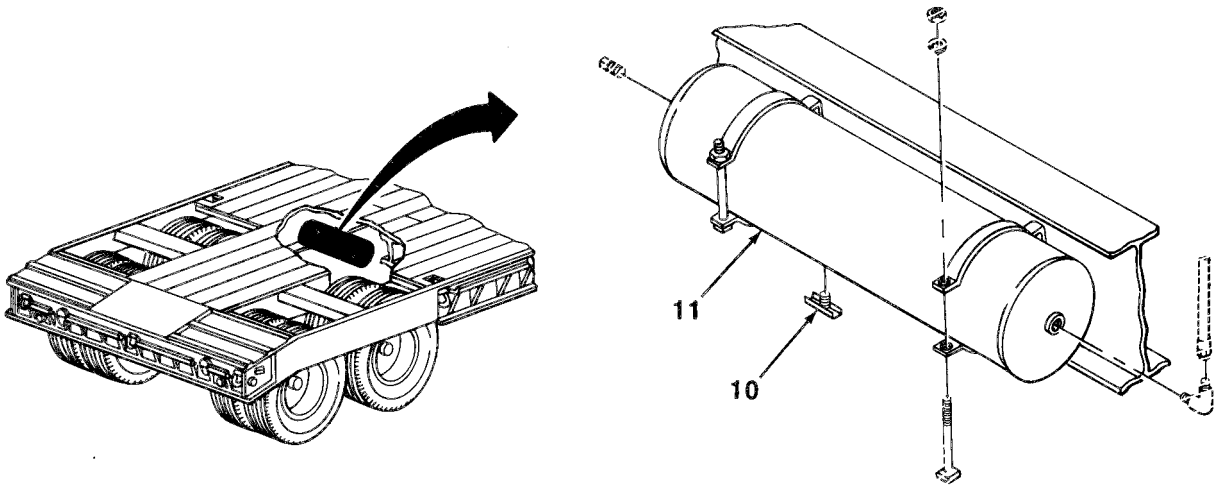
WARNING

Always release air from system before working on air reservoir. Failure to do so could result in personal injury.

NOTE

If only replacing draincock, perform steps 1 and 16.

1. Air reservoir (11)
- Draincock (10)
- Using 9/16 in. wrench, unscrew and remove.

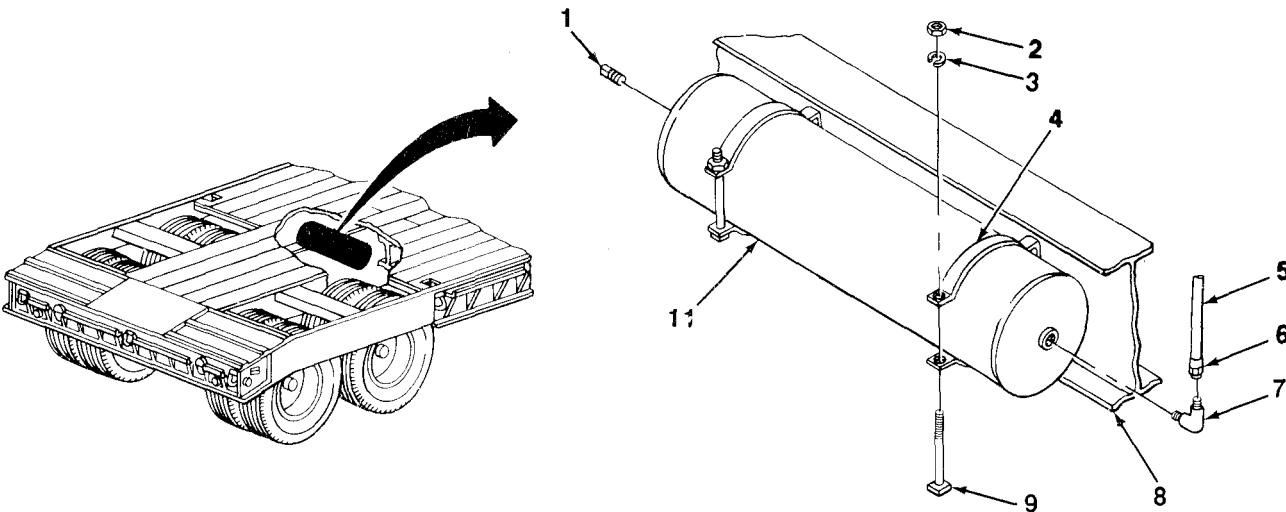


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## 4-32. AIR RESERVOIR AND DRAINCOCK (Con't)

LOCATION	ITEM	ACTION	REMARKS
<b>CAUTION</b>			
<b>Use caution not to kink airline or damage to air line will result.</b>			
2.	Elbow (7)	Air line coupling nut (6)	Using pipe wrench and $\frac{7}{8}$ in. wrench, unscrew and remove. <b>Do not kink air line (5).</b>
3.	Four retaining straps (4)	Two screws (9), lockwashers (3), and nuts (2)	a. Using $\frac{9}{16}$ in. socket, handle, and $\frac{9}{16}$ in. wrench, unscrew and remove. b. Pull two screws (9) off four retaining straps (4). <b>It maybe necessary to cut screws (9).</b>
4.	Four retaining straps (4)	Have assistant spread and hold retaining straps (4) apart.	



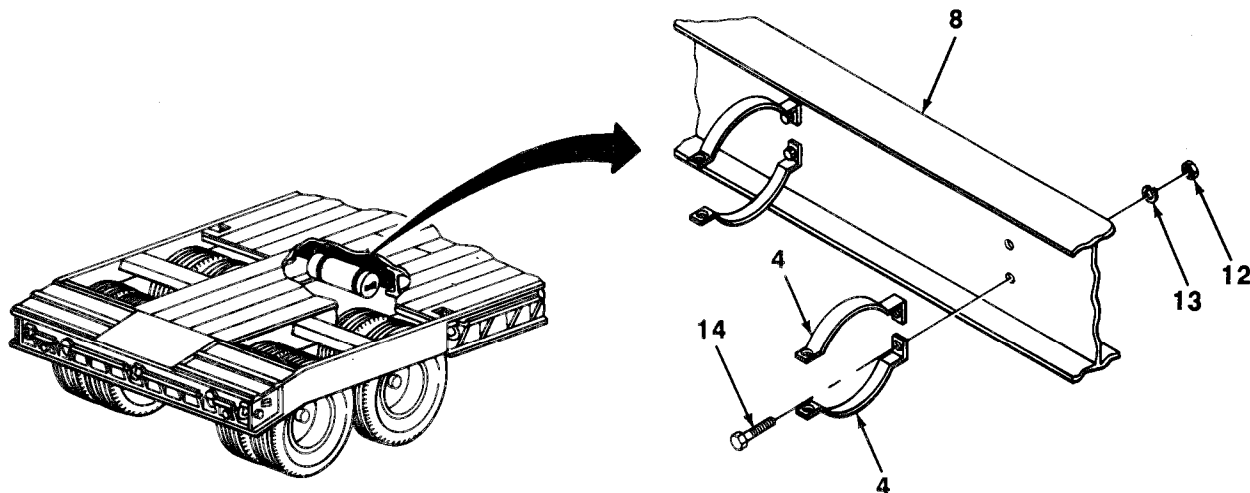
  

5.	Air reservoir (11)	Slide air reservoir (11) between retaining straps (4) and remove.	
6.	Air reservoir (11)	Elbow (7)	Using pipe wrench, unscrew and remove.
7.	Pipe plug (1)	Using $\frac{1}{2}$ in. wrench, unscrew and remove.	
8.	Four retaining straps (4) to frame (8)	Four screws (14), lockwashers (13), and nuts (12)	Using $\frac{9}{16}$ in. socket, handle, and $\frac{9}{16}$ in. wrench, unscrew and remove.

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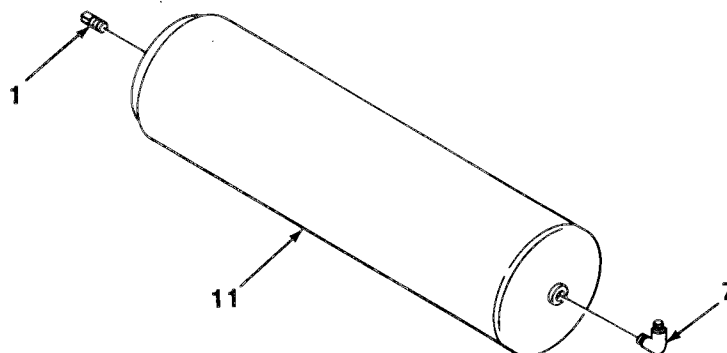
## 4-32. AIR RESERVOIR AND DRAINCOCK (Con't)

LOCATION	ITEM	ACTION	REMARKS
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## INSTALLATION

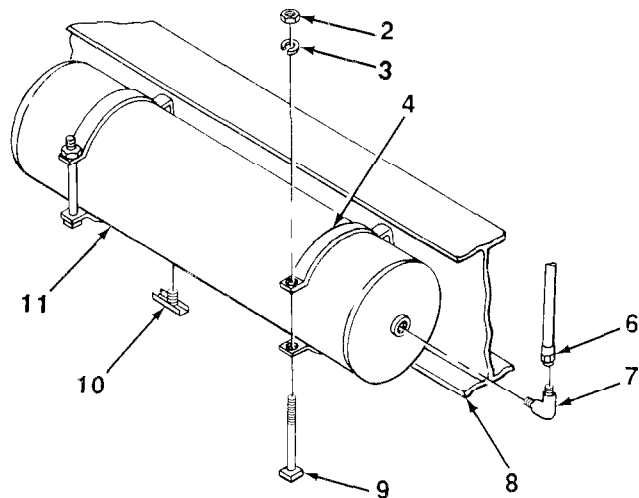
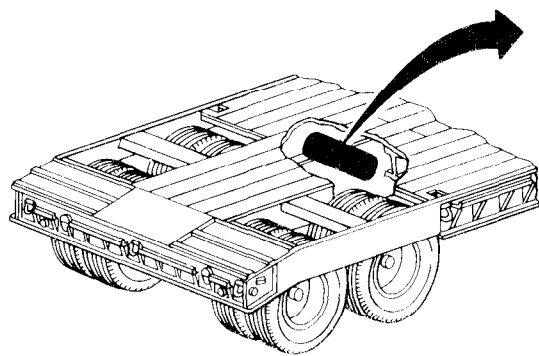
- |     |  |   |  |
|-----|--|---|--|
| 9.  | Four retaining straps (4) to frame (8) | Four screws (14), lockwashers (13), and nuts (12) | Using $\frac{9}{16}$ in. socket, handle, and $\frac{9}{16}$ in. wrench, screw in and tighten.  |
| 10. | Air reservoir (11)                     | Pipe plug (1)                                     | a. Wrap pipe plug (1) threads with antiseize tape.<br>b. Screw in pipe plug (1) until fingertight.<br>c. Tighten using $\frac{1}{2}$ in. wrench. |
| 11. |  | Elbow (7)   | a. Wrap elbow (7) threads with antiseize tape.<br>b. Screw in elbow (7) until fingertight.<br>c. Using pipe wrench, screw in and tighten.        |



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4-32. AIR RESERVOIR AND DRAINCOCK (Con't)

	LOCATION	ITEM	ACTION	REMARKS
12.	Frame (8)	Four retaining straps (4)	Have assistant spread and hold retaining straps (4) apart.	
13.	Four retaining straps (4)	Air reservoir (11)	Slide air reservoir (11) between retaining straps (4) and push in.	
14.		Two screws (9), lockwashers (3), and nuts (2)	a. Slide two screws (9) through four retaining straps with threaded end of screws on top. b. Using two $\frac{9}{16}$ in. wrenches, screw in tight.	
15.	Elbow (7)	Air line coupling nut (6)	a. Wrap elbow (7) threads with antiseize tape. b. Screw in air line coupling nut (6) until fingertight. c. Using pipe wrench and $\frac{7}{8}$ in. wrench, screw in and tighten.	
16.	Air reservoir (11)	Draincock (10)	a. Wrap draincock (10) threads with antiseize tape. b. Screw in draincock (10) by hand until fingertight. c. Tighten using $\frac{9}{16}$ in. wrench.	



FOLLOW-ON MAINTENANCE:

- 1. Remove chock blocks (para 2-5).
- 2. Check for leaks (para 4-27).
- 3. Check brake operation.

TASK ENDS HERE

## Section VII. WHEEL, HUB, AND DRUM MAINTENANCE

	Page		Page
Hub, Drum, Wheel Bearings, and Axle Seal .....	4-95	Wheel, Tire, and Tube .....	4-103

**4-33. HUB, DRUM, WHEEL BEARINGS, AND AXLE SEAL***This Task Covers:*

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

*Initial Setup:***Equipment Conditions:**

- Air released from system (para 3-8).
- Wheel and tire assemblies removed (para 3-9).

**Materials/Parts:**

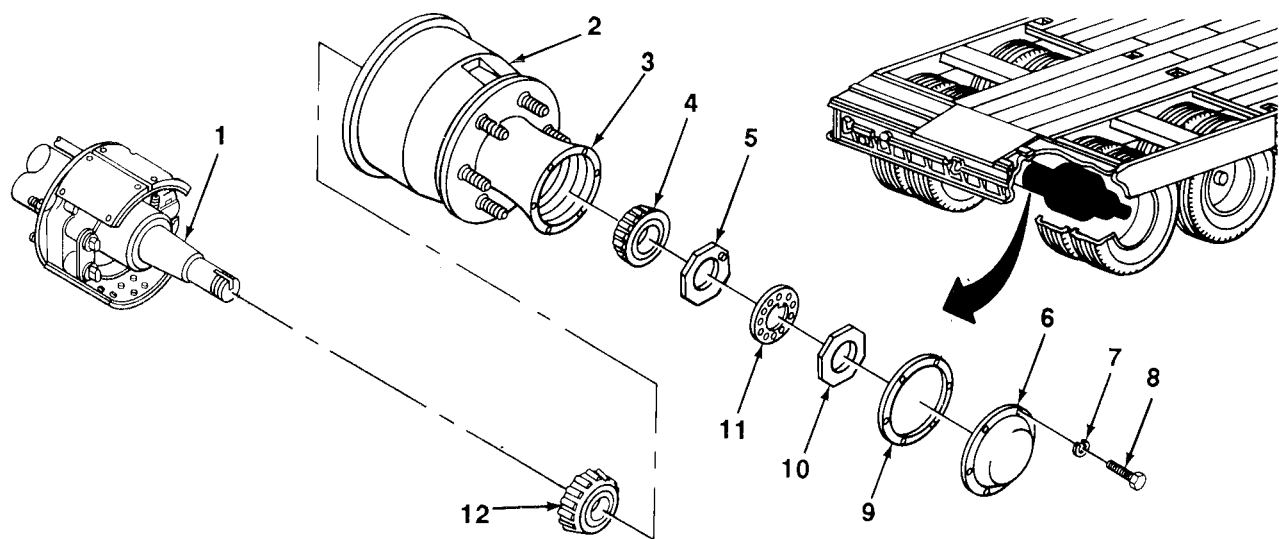
- Access cover gasket
- Axle seal
- Dry cleaning solvent (Item 13, Appendix E)
- Grease (Item 5, Appendix E)

**Personnel Required:** Two**References:** TM 9-214**Tools/Test Equipment:**

- Drift, brass
- Extension, 18 in., 3/4 in. drive
- Hammer, ball-peen
- Hammer, plastic face
- Handle, ratchet, 3/8 in. drive
- Handle, ratchet, 3/4 in. drive
- Punch, drive-pin
- Screwdriver, flat-tip
- Socket, 7/16 in., 3/8 in. drive
- Socket, 1 1/16 in., 3/4 in. drive
- Socket, locknut, 3 3/8 in.,  
8-point, 3/4 in. drive
- Socket, locknut, 3 3/4 in.,  
8-point, 3/4 in. drive

4-33. HUB, DRUM, WHEEL BEARINGS, AND AXLE SEAL (Con't)

LOCATION		ITEM	ACTION	REMARKS
REMOVAL				
1.	Access cover (6) at hub (3)	Six screws (8) and lockwashers (7)	Using $\frac{7}{16}$ in. socket and handle, unscrew and remove.	
2.	Hub (3)	Access cover (6) and gasket (9)	a. Remove. b. Discard gasket (9).	
3.	Axle spindle (1)	Jamnut (10)	Using $3\frac{3}{8}$ in. locknut socket and handle, unscrew and remove.	
4.		Keywasher (11)	Slide off.	
5.		Wheel bearing adjusting nut (5)	Using $3\frac{3}{4}$ in. locknut socket and handle, unscrew and remove. Remove outer bearing cone (4).	
6.		Hub (3) and drum (2)	a. Have assistant help in lifting and pulling off of axle spindle (1). b. Remove inner bearing cone (12) from axle spindle (1) or rear of hub (3).	

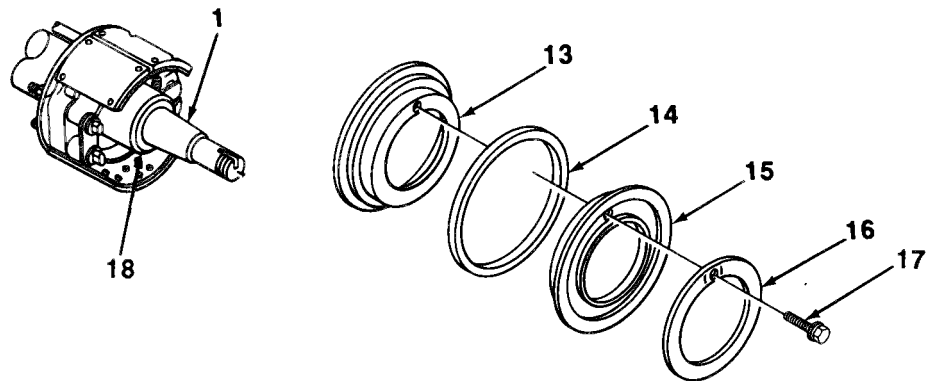


7.	Outer spacer (16)	Screw (17)	Using flat-tip screwdriver, unscrew and take off.
8.	Axle spindle (1)	Outer spacer (16), collar (15), gasket (14), axle seal (13), and ring (18)	a. Pull off. b. Discard items 13 through 17. c. Burn off tack weld and discard ring (18).

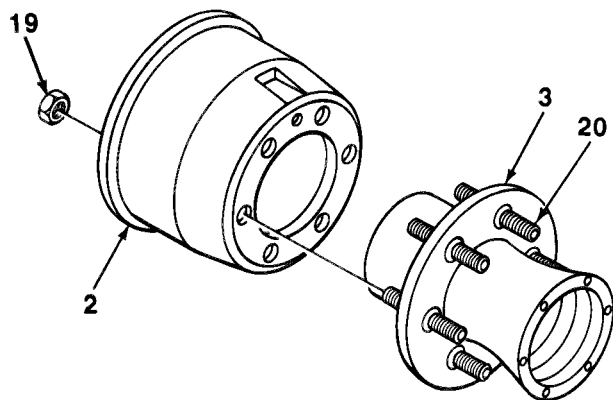
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4-33. HUB, DRUM, WHEEL BEARINGS, AND AXLE SEAL (Con't)

LOCATION	ITEM	ACTION	REMARKS
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- |     |  |                   |   |
|-----|--|-------------------|---|
| 9.  | Six studs (20)<br>at inside of<br>drum (2) | Six hex nuts (19) | a. Have assistant hold drum (2).<br>b. Using $1\frac{1}{8}$ in. socket extension and handle,<br>unscrew and remove. |
| 10. | Hub (3)                                    | Drum (2)          | Lift off drum (2) and separate.   |





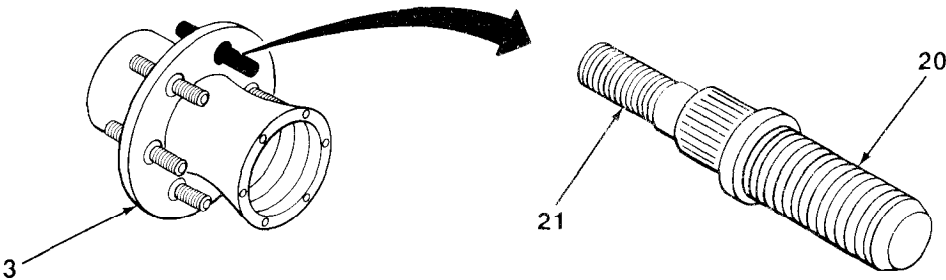
4-33. HUB, DRUM, WHEEL BEARINGS, AND AXLE SEAL (Con't)

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

NOTE

Remove only studs that are cracked, broken, or damaged.

11.	Hub (3)	Stud (20)	Using hammer, drive out. Hit stud (20) on short threaded end (21).
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CLEANING AND INSPECTION

WARNING

- DO NOT handle brakeshoes, brakedrums, or other brake components unless area has been properly cleaned. There may be asbestos dust on these components which can be dangerous if you touch it or breathe it. Wear an approved filter mask and gloves. Never use compressed air or a dry brush to clean brake components. Dust maybe removed using an industrial-type vacuum cleaner. Clean dust or mud away from brake components with water and a wet, soft brush or cloth. Failure to follow this warning may result in serious illness or death to personnel.
- Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F - 138°F (38°C - 59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

12.	All parts	Clean thoroughly using dry cleaning solvent.
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4-33. HUB, DRUM, WHEEL BEARINGS, AND AXLE SEAL (Con't)

LOCATION	ITEM	ACTION	REMARKS
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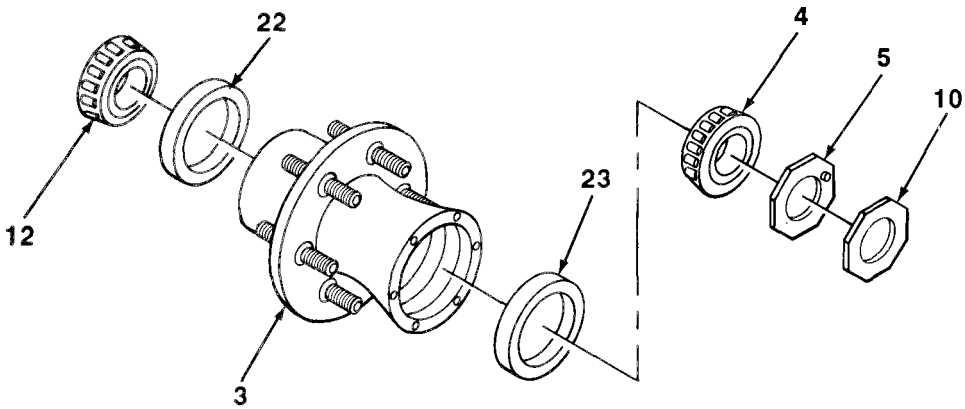
**CAUTION**

Do not dry bearing cones with compressed air. Spinning dry will damage bearing cones.

**NOTE**

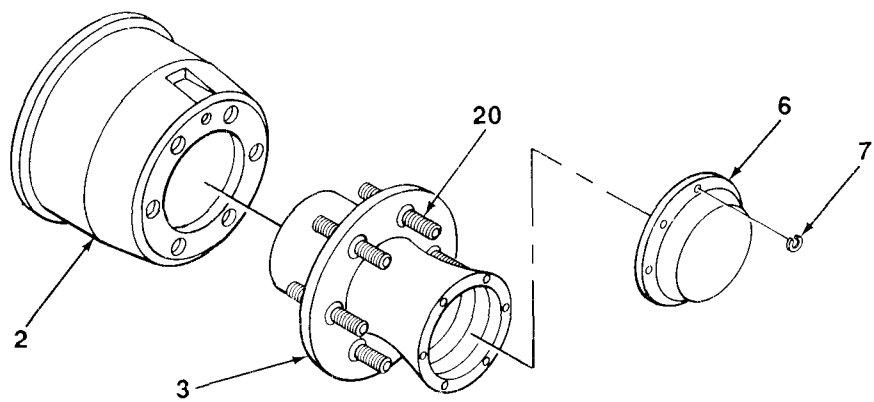
If replacing a bearing cone, the bearing cup must also be replaced. If replacing a bearing cup, the bearing cone must also be replaced.

- |     |         |                              |   |
|-----|---------|------------------------------|---|
| 13. | Hub (3) | Two bearing cones (4 and 12) | a. Inspect in accordance with TM 9-214,<br>b. If damaged, replace.    |
| 14. |         | Two bearing cups (22 and 23) | a. Inspect in accordance with TM 9-214.<br>b. If damaged, replace.    |
| 15. |         | Two nuts (5 and 10)          | a. Inspect threads for damage.<br>b. If threads are damaged, replace. |



4-33. HUB, DRUM, WHEEL BEARINGS, AND AXLE SEAL (Con't)

LOCATION	ITEM	ACTION	
		REMARKS	
16.	Studs (20)	a. Inspect threads for damage. b. If threads are damaged, chase with die.	
17.	Access cover (6)	a. Inspect for damage. b. If damaged, replace.	
18.	Hub (3)	a. Inspect flange and hub areas for cracks. b. If cracked, replace.	
19.	Drum (2)	a. Inspect for cracks and scoring. b. If cracked or scored, replace. c. Check for obvious out-of-round condition. If out-of-round, replace.	
20.	Six lockwashers (7)	a. Inspect for damage. b. If damaged, replace.	



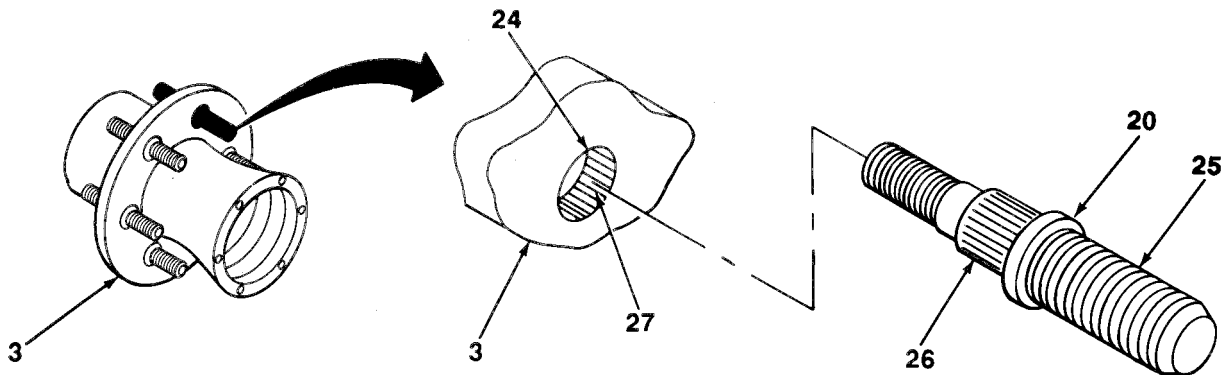
21.	Axle spindle	a. Inspect bearing surfaces for pitting or grooves. b. If bearing surface is pitted or grooved, notify direct support maintenance. c. Inspect for stripped threads. d. If threads are stripped, notify direct support maintenance.
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INSTALLATION

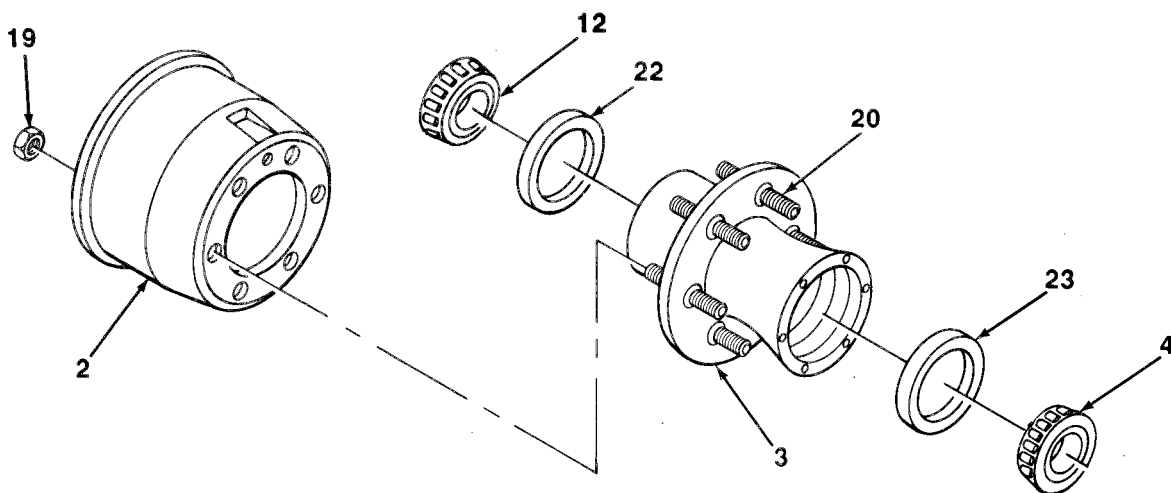
22.	Hub (3)	New stud (20)	a. Aline flutes (27) in hole (24) with flutes (26) on stud (20). b. Using brass drift and hammer, drive in, hitting on large end (25).
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## 4-33. HUB, DRUM, WHEEL BEARINGS, AND AXLE SEAL (Con't)

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



- |     |                                      |                              |  |
|-----|--------------------------------------|------------------------------|--|
| 23. |                                      | Two bearing cups (22 and 23) | a. Using brass drift and hammer, tap inner bearing cup (22) into position.<br>b. Turn hub (3) over and repeat step a for outer bearing cup (23). |
| 24. | Drum (2)                             | Hub (3)                      | a. Lift and align studs (20) on hub (3) with holes in drum (2).<br>b. Slide together.  |
| 25. | Six studs (20) at inside of drum (2) | Six hex nuts (19)            | a. Have helper hold hub (3).<br>b. Using 1 $\frac{1}{16}$ in. socket and handle, screw in and tighten.   |
| 26. | Hub (3)                              | Two bearing cups (22 and 23) | Apply thin coating of grease.  |
| 27. |                                      | Two bearing cones (4 and 12) | Pack with grease.  |



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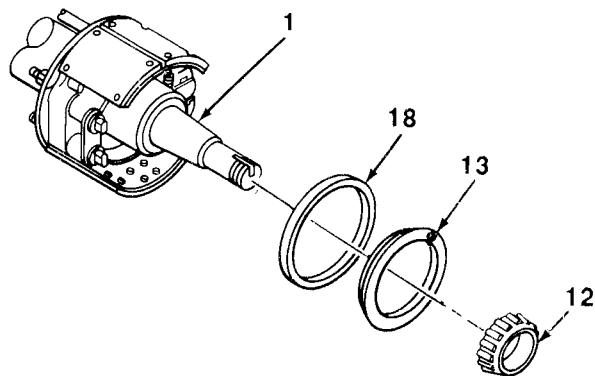
4-33. HUB, DRUM, WHEEL BEARINGS, AND AXLE SEAL (Con't)

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

NOTE

One-part seal (13) replaces old four-part seal.

28.	Ring (18) and axle seal (13)	a. Slide ring (18) on axle spindle (1) and seat with ball-peen hammer and drift. b. Slide axle seal (13) on axle spindle (1) as far as it will go.	
29.	Inner bearing cone (12)	Slide on.	



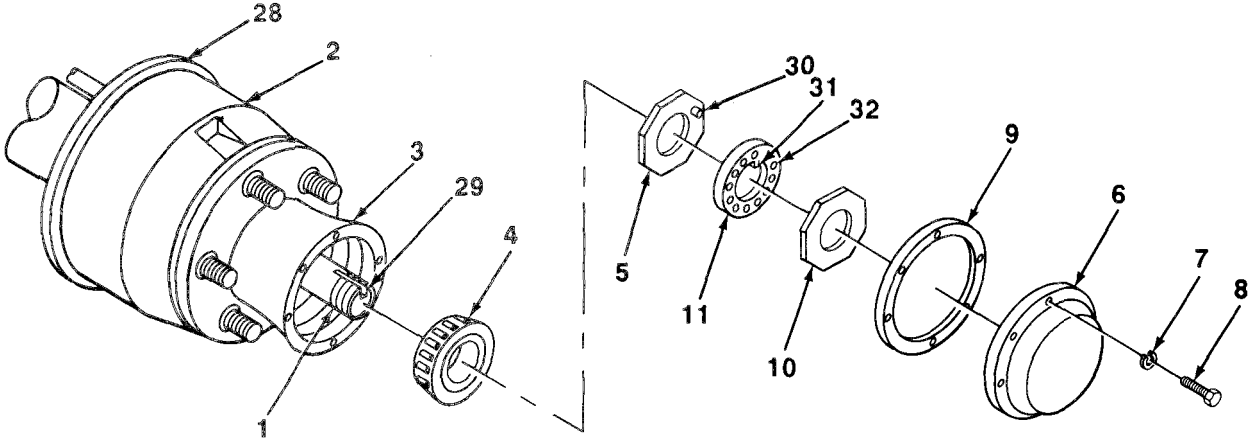
NOTE

Studs in hub are marked either R or L. The R stands for right-hand threads; the L stands for left-hand threads. Hubs with right-hand threads must go on the right side. Hubs with left-hand threads must go on the left side.

30.	Axle spindle (1)	Hub (3), drum (2), and outer bearing cone (4)	a. Have assistant help lift and slide hub (3) and drum (2) onto axle spindle (1) as far as it will go. b. Be careful not to damage axle spindle (1) threads. c. Slide outer bearing cone (4) on axle spindle (1).
31.		Wheel bearing adjusting nut (5)	a. Screw on by hand. The dowel (30) faces outward. b. Using 3¾ in. locknut socket and handle, screw in until hub (3) binds on axle spindle (1). c. Unscrew wheel bearing adjusting nut (5) ⅛ turn. d. Check adjustment by rocking drum (2) on axle spindle (1). e. If properly adjusted, movement between drum (2) and top edge of spider (28) will be hardly visible. f. If not properly adjusted, repeat steps 31b through 31e until properly adjusted.

TA506910

4-33. HUB, DRUM, WHEEL BEARINGS, AND AXLE SEAL (Con't)

LOCATION	ITEM	ACTION	REMARKS
			
32.	Axle spindle (1)	Keywasher(11)	a. Aline keywasher tab (31) with axle spindle keyway (29). b. Slide on. c. Keywasher hole (32) must aline with dowel (30). d. If keywasher hole (32) does not aline with dowel (30), slide keywasher (11) off axle spindle (1). e. Using 3¾ in. locknut socket and handle, unscrew wheel bearing adjusting nut (5) so that dowel (30) alines with next hole (32) on keywasher(11).
33.		Jamnut (10)	Using 3¼ in. locknut socket and handle, screw in and tighten.
34.	Hub (3)	Gasket (9)	a. Coat lightly with grease. b. Place on hub (3) with holes alined.
35.	Gasket (9)	Access cover (6)	Place on gasket (9) and aline holes.
36.	Access cover (6)	Six screws (8) and lockwashers (7)	Using 7/16 in. socket and handle, screw in and tighten.

**FOLLOW-ON MAINTENANCE:**

1. Perform major brake adjustment (para 4-22).
2. Install wheel and tire assembly (para 3-9).

**TASK ENDS HERE**

**4-34. WHEEL, TIRE, AND TUBE**

Refer to TM 9-2610-200-24 for information on wheel, tire, and tube maintenance.

TA506911

## Section VIII. FRAME AND TOWING ATTACHMENTS MAINTENANCE

	Page		Page
Kingpin and Retainer . . . . .	4-104	Left Landing Gear Leg . . . . .	4-113
Landing Gear Handcrank . . . . .	4-106	Right Landing Gear Leg . . . . .	4-126
Landing Gear Shoes . . . . .	4-110	Spare Wheel Carrier . . . . .	4-139

### 4-35. KINGPIN AND RETAINER

*This Task Covers:*

- |            |                 |
|------------|-----------------|
| a. Removal | b. Installation |
|------------|-----------------|

*Initial Setup:*

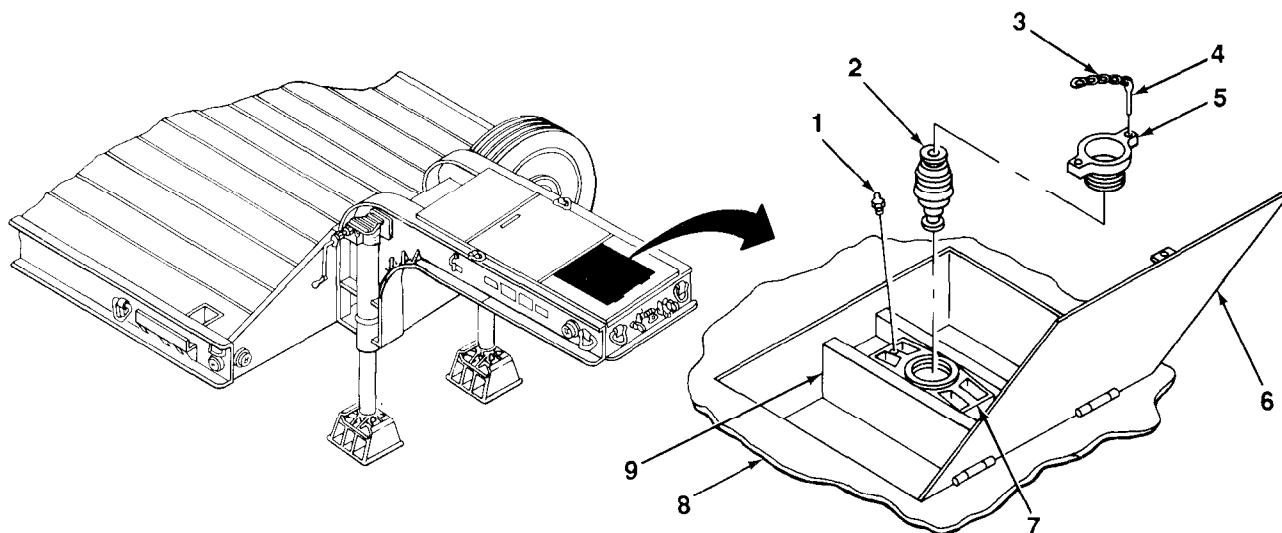
#### Tools/Test Equipment:

- Torch, acetylene cutting
- Wrench, open-end,  $\frac{7}{16}$  in.

#### References:

- TM 9-237

LOCATION	ITEM	ACTION	REMARKS
<b>REMOVAL</b>			
1.	Frame (8)	Kingpin access door (6)	Open.
2.	Retainer (5)	Lockpin (4)	Pull out.
3.		Retainer (5)	Unscrew and remove.
4.	Socket (7)	Kingpin (2)	Remove.



TA506912

**4-35. KINGPIN AND RETAINER (Con't)**

	LOCATION	ITEM	ACTION	REMARKS
5.	Socket (7)	Lubrication fitting (1)	Using $\frac{7}{16}$ in. wrench, unscrew and remove.	
6.	Crossbeam (9)	Lockpin chain (3)	Using torch, cut off.	
INSTALLATION				
7.	Socket (7)	Lubrication fitting (1)	Screw in and tighten using $\frac{7}{16}$ in. wrench.	
<p style="text-align: center;"><b>NOTE</b></p> <p style="text-align: center;"><b>Match the kingpin with the tractor. The kingpin is reversible for either 2½ or 3½ in. (6.4 or 8.9 cm) tractor connections. Ensure that kingpin is installed to match the tractor coupling.</b></p>				
8.	Socket (7)	Kingpin (2)	Put in.	
9.	Kingpin (2) and socket (7)	Retainer (5)	Screw in and tighten.	
10.	Socket (7)	Lockpin (4)	Put in.	
11.	Crossbeam (9)	Lockpin chain (3)	Put in position and weld (TM 9-237).	
12.	Frame (8)	Kingpin access door (6)	Close.	

**TASK ENDS HERE**



4-36. LANDING GEAR HANDCRANK

This Task Covers:

- a. Removal

b. Disassembly

c. Cleaning
- d. Inspection and Replacement

e. Assembly

f. Installation

Initial Setup:

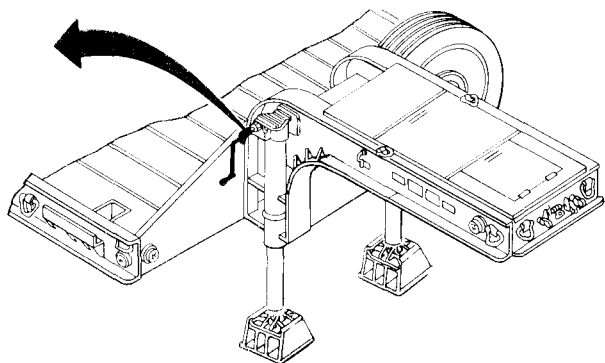
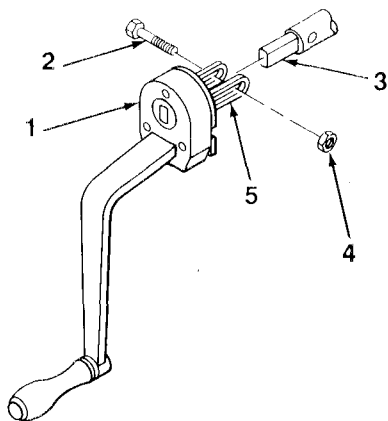
Materials/Parts:

- IDry cleaning solvent (Item 13, Appendix E)
- IRags (Item 11, Appendix E)
- IRivet

Tools/Test Equipment:

- Drift, 3/8 in.
- Grinder, portable
- Hammer, hand
- Handle, ratchet, 3/8 in. drive
- Pliers, slip-joint, angle nose
- Screwdriver, flat-tip
- Socket, 7/16 in., 3/8 in. drive
- Wrench, box-end, 7/16 in.
- Wrench, box-end, 9/16 in.
- Wrench, open-end, 9/16 in.

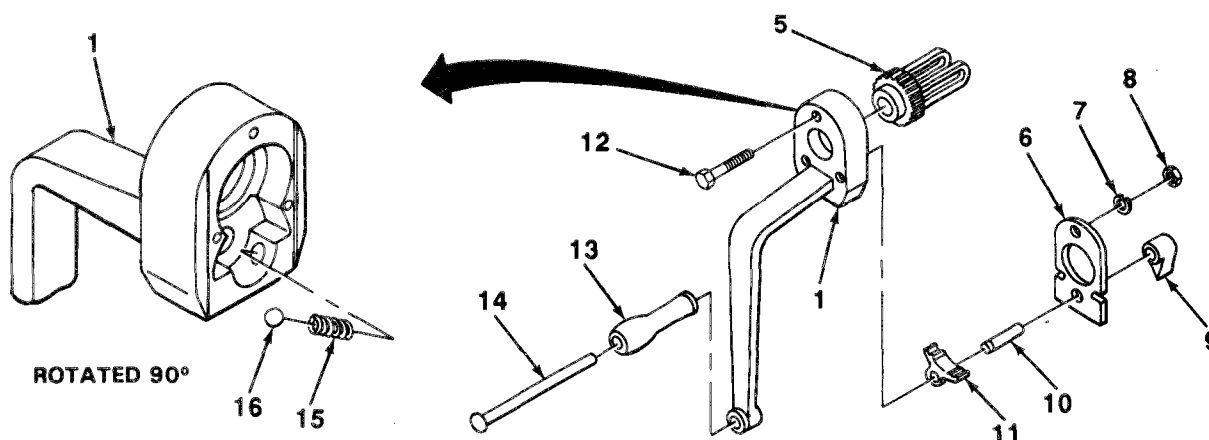
LOCATION		ITEM	ACTION	REMARKS
REMOVAL				
1.	Crank ratchet (5) and pin (3)	Bolt (2) and self-locking nut (4)	Using two 9/16 in. wrenches, unscrew and remove.	
2.	Pin (3)	Handcrank assembly	Remove.	



TA506913

## 4-36. LANDING GEAR HANDCRANK (Con't)

	LOCATION	ITEM	ACTION	REMARKS
<b>DISASSEMBLY</b>				
3.	Handcrank (1) and cover plate (6)	Three Screws (12), lockwashers (7) and nuts (8)	Using $\frac{7}{16}$ in. socket, handle, and $\frac{7}{16}$ in. wrench, unscrew and remove.	
4.	Handcrank (1)	Control lever (9) and cover plate (6)	Remove.	
5.	Control lever (9)	Roll pin (10)	Using hammer and drift, drive out.	
6.		Pawl (11) and crank ratchet (5)	Remove.	
7.		Spring (15) and ball (16)	Take out.	
8.	Handle (13)	Rivet (14)	a. Using grinder, grind off rivet head. b. Using drift and hammer, drive out.	
9.	Handcrank (1)	Handle (13)	Remove.	



## CLEANING

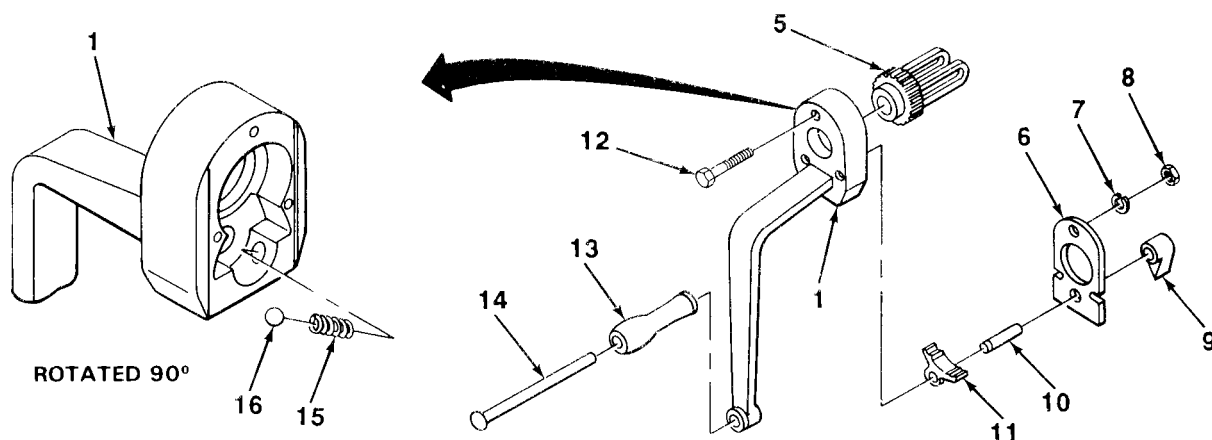
**WARNING**

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- |     |           |  |
|-----|-----------|--|
| 10. | All parts | a. Clean in dry cleaning solvent.<br>b. Wipe dry with clean, dry rags. |
|-----|-----------|--|

## 4-36. LANDING GEAR HANDCRANK (Con't)

LOCATION	ITEM	ACTION	REMARKS
INSPECTION AND REPLACEMENT			
<p style="text-align: center;"><b>NOTE</b></p> <p style="text-align: center;"><b>Replace damaged or defective parts as needed.</b></p>			
11.	Crank ratchet (5) and pawl (11)	Look for chipped and broken teeth. <b>If either part is damaged, replace both parts.</b>	
12.	Handcrank (1) and handle (13)	Look for cracks, breaks, and bad dents.	
13.	Spring (15)	Look for permanent set.	
14.	Ball (16)	Look for out-of-round condition.	



## ASSEMBLY

15.	Handcrank (1)	Handle (13)	Place in position.
16.	Handle (13) and handcrank (1)	Rivet (14)	a. Put in. b. Using hammer, flatten end until handle is secure.
17.	Handcrank (1)	Ball (16) and spring (15)	Put in and hold down spring (15).
18.		Crank ratchet (5) and pawl (11)	Put in position.
19.	Crank ratchet (5) and pawl (11)	Cover plate (6)	Put on.
20.	Cover plate (6)	Control lever (9)	Place in position.

TA506915

4-36. LANDING GEAR HANDCRANK (Con't)

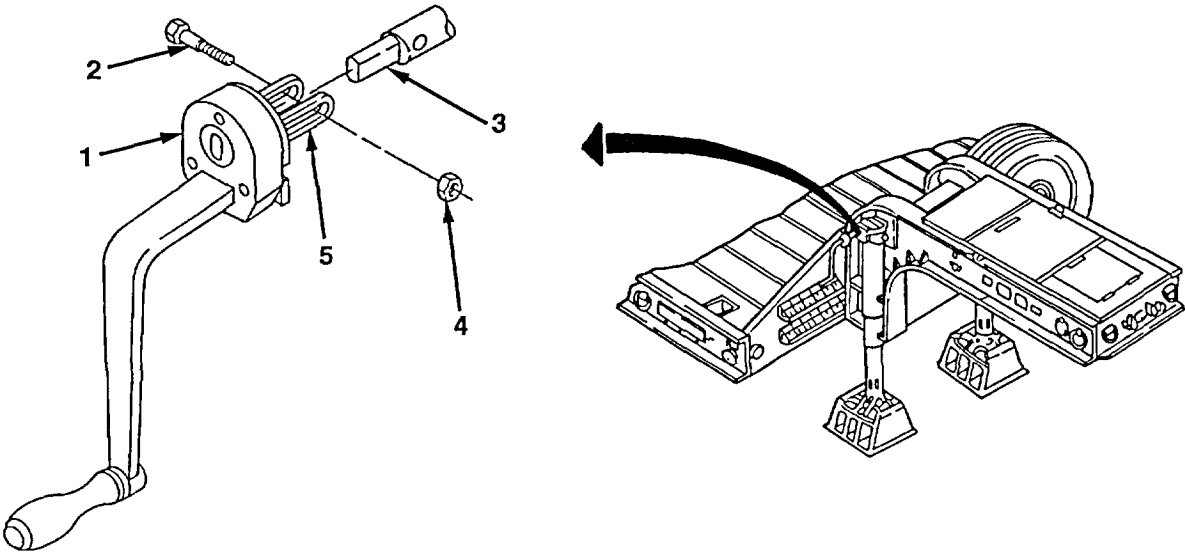
LOCATION		ITEM	ACTION	REMARKS
21.	Control lever (9)	Roll pin (10)	a. Put in through control lever (9), cover plate (6), pawl (11), and seat into handcrank (1). b. Using hammer, seat roll pin (10).	
22.	Cover plate (6)	Three screws (12), lockwashers (7), and nuts (8)	Screw in and tighten using 7/16 in. socket, handle, and 7/16 in. wrench.	

INSTALLATION

NOTE

Use flat washers (P/N PP0016-03) with optional handcrank (P/N LG0083-03).

23.	Pin (3)	Handcrank assembly	Place in position.
24.	Crank ratchet (5) and pin	Bolt (2) and self-locking nut (4)	Screw in and tighten using two 9/16 in. wrenches.



TASK ENDS HERE

4-37. LANDING GEAR SHOES

This Task Covers:

- a. Removal
- b. Cleaning
- c. inspection and Replacement
- d. Installation

Initial Setup:

Materials/Parts:

- Dry cleaning solvent (Item 13, Appendix E)
- Rags (Item 11, Appendix E)

Personnel Required: Two

Tools/Test Equipment:

- Brush, wire, cleaning
- Hammer, hand
- Jack, hydraulic hand, 10 ton
- Punch, drive-pin, 3/8 In.
- Trestle, automotive maintenance, 10 ton
- Wrench, open-end, 15/16 in. (two required)

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

NOTE

This procedure covers replacement of one landing gear shoe. The procedure for the other shoe is the same.

REMOVAL

1.

Semitrailer (1)

Comer (13)

a. Using Jack, raise semitrailer until shoe (4) and pad assembly (5) are off ground.  
b. Use Jackstand for support.
2.

Lower leg (10) and shoe (4)

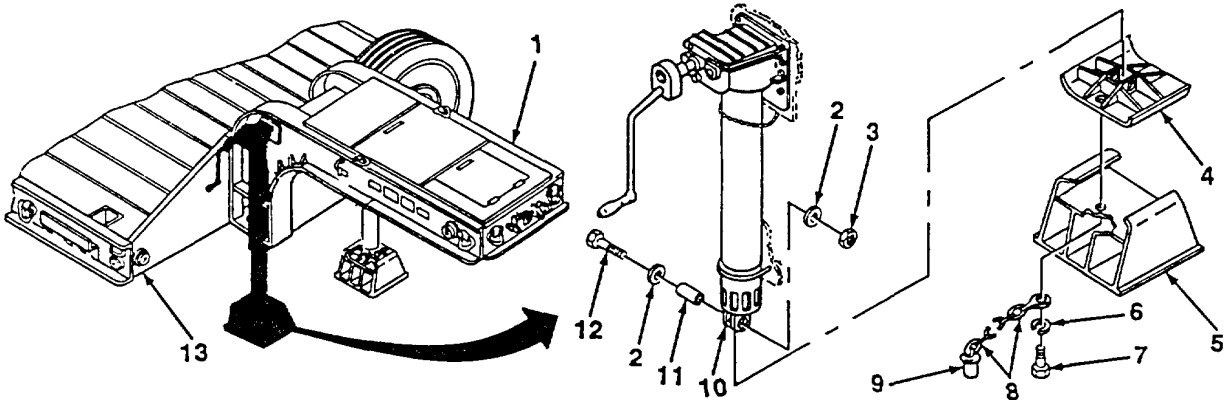
Screw (12), two washers (2), and self-locking nut (3)

Using two wrenches, with the aid of an assistant, unscrew and remove.
3.

Lower leg (10)

Shoe (4) and pad assembly (5)

With the aid of an assistant, remove.



TA506917

**4-37. LANDING GEAR SHOES (Con't)**

LOCATION		ITEM	ACTION REMARKS
4.		Pin (11)	Using hammer and punch, drive out.
5.	Shoe (4)	Pin (9)	Pull out.
6.		Pad assembly (5)	With the aid of an assistant, slide off.
7.	Pad assembly (5)	Screw (7), lockwasher (6), chain (8), and pin (9).	Using wrench, unscrew and remove.

**CLEANING****WARNING**

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- |    |           |  |
|----|-----------|--|
| 8. | All parts | a. Using brush, remove dirt and debris.<br>b. Clean in dry cleaning solvent.<br>c. Wipe dry with clean rags. |
|----|-----------|--|

**INSPECTION AND REPLACEMENT****NOTE**

**Replace damaged or defective parts as needed.**

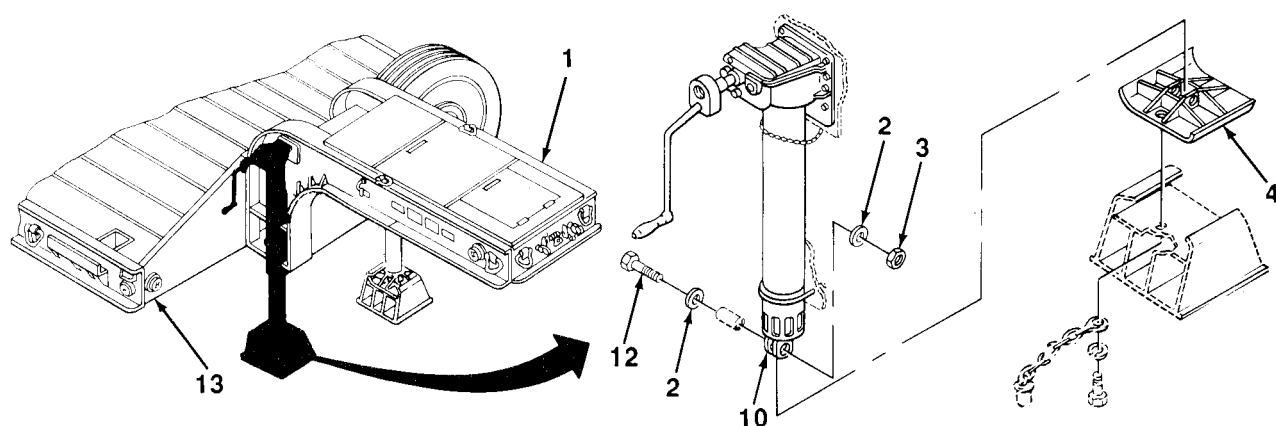
- |     |                                  |   |
|-----|----------------------------------|---|
| 9.  | Shoe (4) and<br>pad assembly (5) | a. Look for cracks, breaks, and bad dents.<br>b. Check that bottom is flat. |
| 10. | Pin (11)                         | Check for cracks, bends, and breaks.  |

**INSTALLATION**

- |     |                  |   |                                    |
|-----|------------------|---|------------------------------------|
| 11. | Pad assembly (5) | Pin (9), chain (8),<br>lockwasher (6),<br>and screw (7) | Screw in and tighten using wrench. |
| 12. | Shoe (4)         | Pad assembly (5)  | Put on.                            |
| 13. |                  | Pin (9)   | Put in.                            |
| 14. | Lower leg (10)   | Pin (11)  | Using hammer and punch, drive in.  |
| 15. |                  | Shoe (4) and pad<br>assembly (5)                        | Place in position.                 |

# 4-37. LANDING GEAR SHOES (Con't)

	LOCATION	ITEM	ACTION	REMARKS
16.	Shoe (4) and lower leg (10)	Screw (12), two washers (2), and self-locking nut (3)	Screw in and tighten using two wrenches.	
17.	Semitrailer (1)	Corner (13)	a. Using jack, support semitrailer and take out jackstand. b. Lower semitrailer and remove jack.	



TASK ENDS HERE

4-38. LEFT LANDING GEAR LEG

This Task Covers:

- a. Removal

b. Disassembly

c. Cleaning
- d. Inspection and Replacement

e. Assembly

f. Installation

Initial Setup:

Materials/Parts:

- Dry cleaning solvent (Item 13, Appendix E)
- Grease (Item 5, Appendix E)
- Rags (Item 11, Appendix E)

Personnel Required: Two

References: TM 9-214

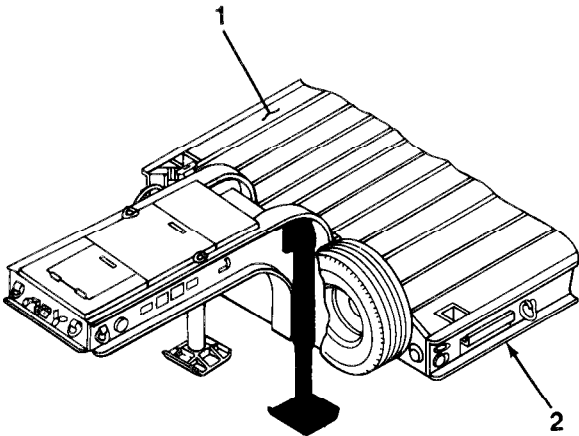
Tools/Test Equipment:

- Container, 1 gallon capacity
- Drift, brass, 3/4 in.
- Hammer, hand, ball-peen, 3 pound
- Handle, ratchet, 3/4 in. drive

Tools/Test Equipment (Con't):

- Hex key, socket-head, 3/16 in.
- Hoist, 5 ton, with cables
- Pliers, slip-joint, angle nose
- Puller kit, mechanical
- Punch, drive-pin, 3/16 in.
- Retrieving tool, magnetic
- Screwdriver, flat-tip
- Socket, 1 5/16 in., 3/4 in. drive
- Socket, 1 1/4 in., 3/4 in. drive
- Wrench, open-end, 5/16 in.
- Wrench, open-end, 7/16 in.
- Wrench, open-end, 9/16 in. (two required)
- Wrench, open-end, 15/16 in.

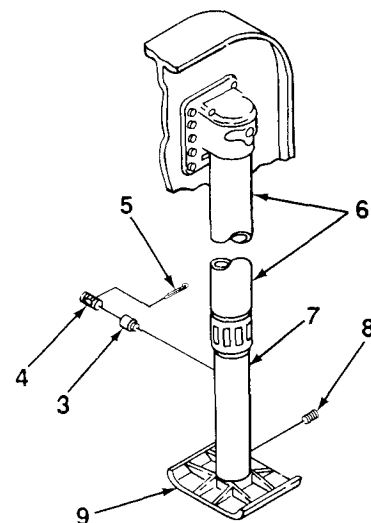
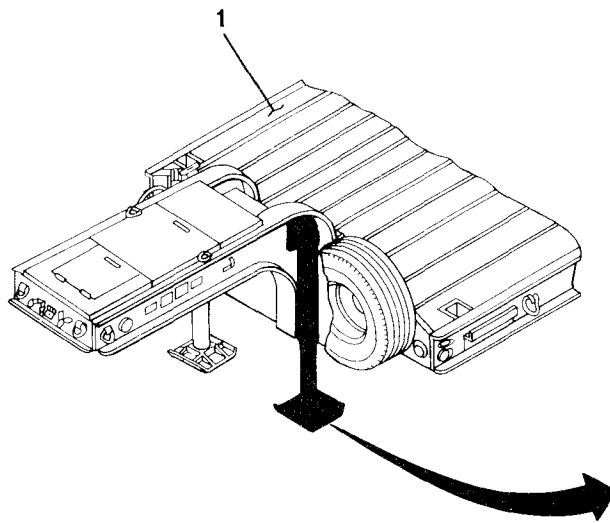
LOCATION		ITEM	ACTION	REMARKS
REMOVAL				
1.	Semitrailer (1)	Corners (2)	a. Block rear wheels with chock blocks (para 2-5). b. Using hoist, lift front of semitrailer until both corners (2) are 38 in. (96.5 cm) off ground.	





**4-38. LEFT LANDING GEAR LEG (Con't)**

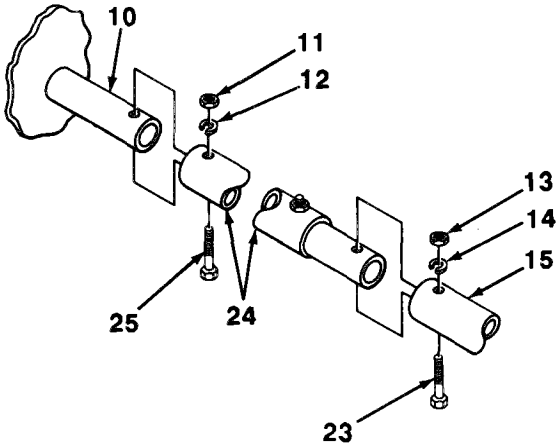
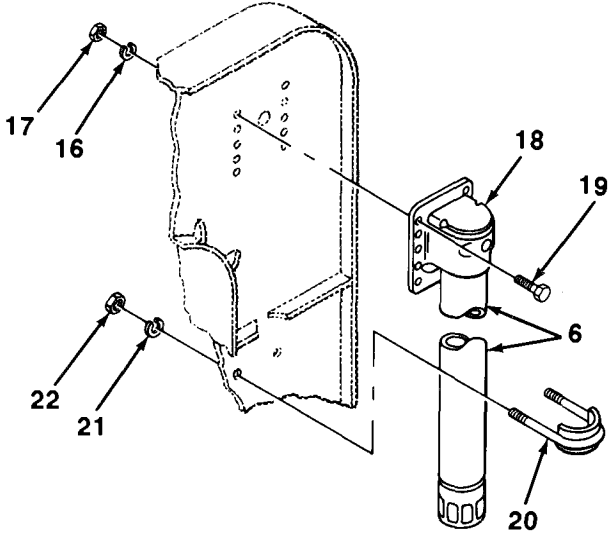
	LOCATION	ITEM	ACTION	REMARKS
2.	Landing gear	Lower leg tube (7)	Extend as far as possible.	
3.	Lower leg tube (7)	shoe (9)	Remove (para 4-37).	
4.		Plug (8)	a. Place container underneath to catch oil. b. Using key, unscrew and remove. c. Allow oil to drain.	
5.	Upper leg (6)	Cotter pin (5)	Using pliers, straighten cotter pin (5) and pull out.	
6.	Gib (3)	Plug (4)	Using screwdriver, unscrew and remove.	
7.	Upper leg (6)	Gib (3)	Using magnet, remove.	
8.	Upper leg (6)	Lower leg tube (7)	Support the weight of lower leg tube (7) with a long plank, used as a lever. Rotate lower leg tube to unscrew and remove.	



9.	Shaft (15)	Two bolts (23), lockwashers (14), and nuts (13)	Using two $\frac{9}{16}$ in. wrenches, unscrew and remove.
10.	Intermediate shaft (24)	Bolt (25), lockwasher (12), and nut (11)	Using two $\frac{9}{16}$ in. wrenches, unscrew and remove.
11.	Shaft (10)	Intermediate shaft (24) and shaft (15)	a. Take out together. b. Take apart.

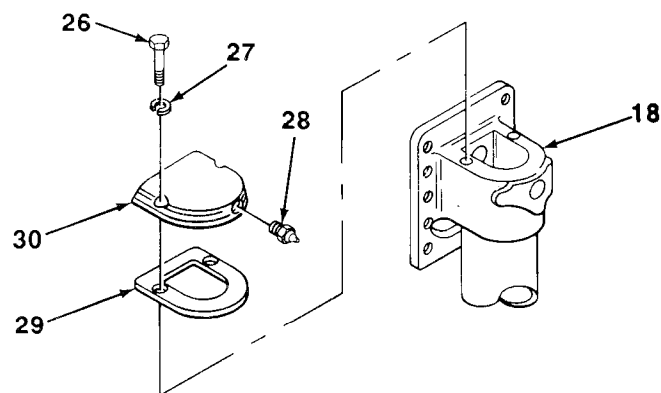
TA506920

4-38. LEFT LANDING GEAR LEG (Con't)

	LOCATION	ITEM	ACTION	REMARKS
				 
12.	Upper leg (6)	U-bolt (20), two lockwashers (21), and nuts (22)	Using $\frac{7}{8}$ in. socket and handle, unscrew and takeoff. <b>You may have to tap threaded ends of U-bolt to remove.</b>	
<p style="text-align: center;"><b>WARNING</b></p> <p><b>Landing gear leg is heavy and lifting can cause serious injury to personnel. Two people are needed to remove hardware and landing gear leg.</b></p>				
13.	Gearbox (18)	Eight screws (19), lockwashers (16), and nuts (17)	Using $\frac{15}{16}$ in. socket, handle with $\frac{3}{4}$ in. drive, and $\frac{15}{16}$ in. wrench, unscrew and remove.	
14.	Semitrailer (1)	Left landing gear leg assembly	Remove.	

4-38. LEFT LANDING GEAR LEG (Con't)

LOCATION		ITEM	ACTION	REMARKS
DISASSEMBLY				
15.	Cover (30)	Two screws (26) and lockwashers (27)	Using screwdriver, unscrew and take off.	
16.	Gearbox (18)	Cover (30) and gasket (29)	Remove	
17.	Cover (30)	Lubrication fitting (28)	Using $\frac{5}{16}$ in. wrench, unscrew and take out.	



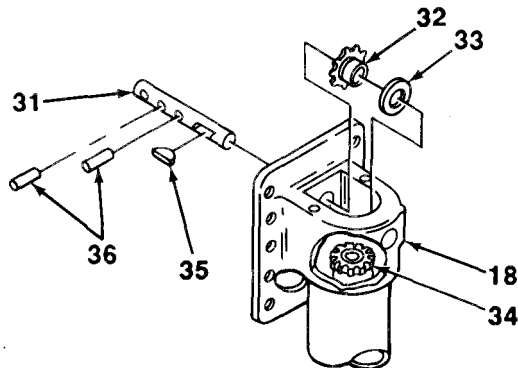
**WARNING**

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18.		Gearbox (18)	Using clean rag dampened with dry cleaning solvent, wipe grease from working parts.
19.	Bevel gear-shaft (31)	Two pins (36)	a. Turn bevel gearshaft (31) until pins (36) are visible. b. Using hammer and punch, drive out pins (36).

4-38. LEFT LANDING GEAR LEG (Con't)

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



- |     |              |                                     |           |
|-----|--------------|-------------------------------------|-----------|
| 20. | Gearbox (18) | Bevel gear shaft (31 ) and key (35) | Pull out. |
| 21. |              | Bevel gear (32) and washer (33)     | Remove.   |

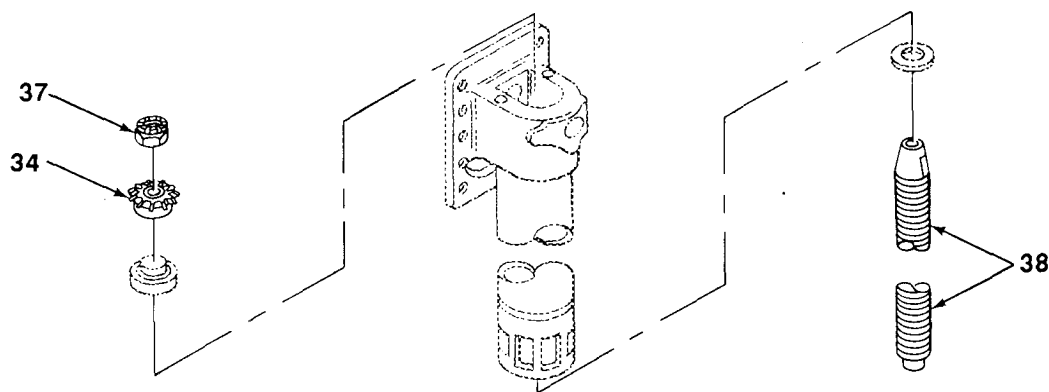
**WARNING**

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- |     |                 |   |
|-----|-----------------|---|
| 22. | Bevel gear (34) | <ul style="list-style-type: none"> <li>a. Using clean rag dampened with dry cleaning solvent, wipe away grease.</li> <li>b. Jam bevel gear (34) with a block of wood so that it will not turn.</li> </ul> |
|-----|-----------------|---|

## 4-38. LEFT LANDING GEAR LEG (Con't)

	LOCATION	ITEM	ACTION	REMARKS
23.	Screw (38)	Locknut (37)	a. Place board or padding underneath upper leg so screw (38) will not be damaged if it falls out. b. Using 1 ¼ in. socket and handle with ¾ in. drive, unscrew and take out.	
24.	Bevel gear (34)	Screw (38)	Using hammer and drift, drive out from hub of bevel gear (34).	
25.	Gearbox (18)	Bevel gear (34)	a. Take out block of wood. b. Lift out bevel gear (34).	



26.	Upper leg (6)	Screw (38) and bearing (41)	Take out from bottom of leg.
27.	Screw (38)	Key (42)	Remove using magnet.

**NOTE**

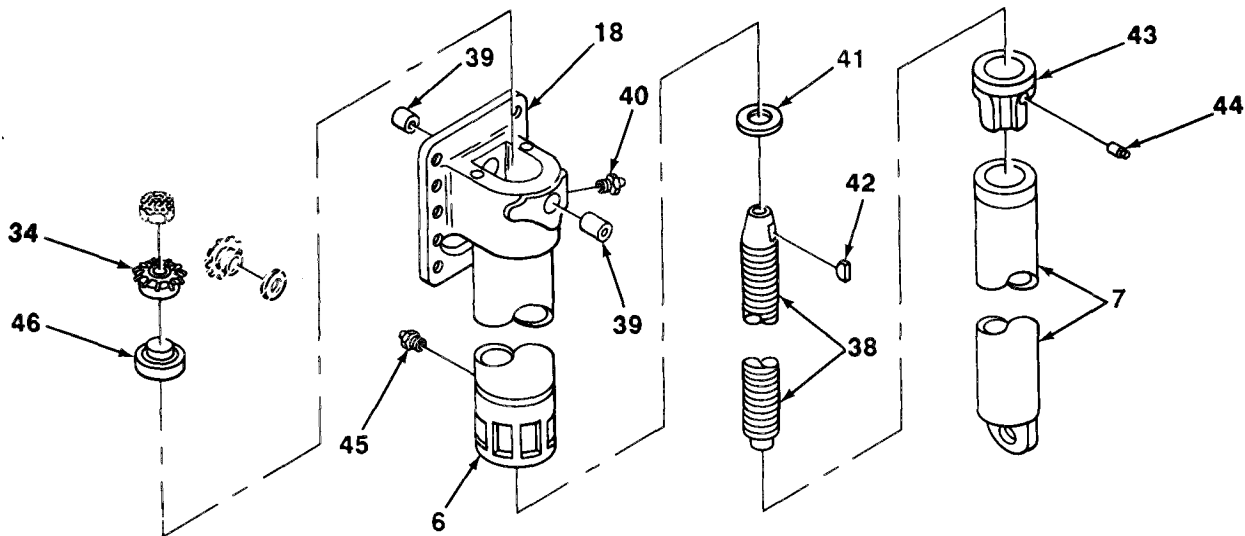
**Do not remove bearing (46) or bushings (39) unless they are damaged.**

28.	Gearbox (18)	Bearing (46)	Using bearing puller, take out.
29.		Two bushings (39)	Using brass drift and hammer, drive out.
30.		Lubrication fitting (40)	Using 7/16 in. wrench, unscrew and take out.
31.	Upper leg (6)	Lubrication fitting (45)	Using 7/16 in. wrench, unscrew and take out.

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4-38. LEFT LANDING GEAR LEG (Con't)

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



- |     |                    |               |         |
|-----|--------------------|---------------|---------|
| 32. | Nut (43)           | Two pins (44) | Remove. |
| 33. | Lower leg tube (7) | Nut (43)      | Remove. |

CLEANING

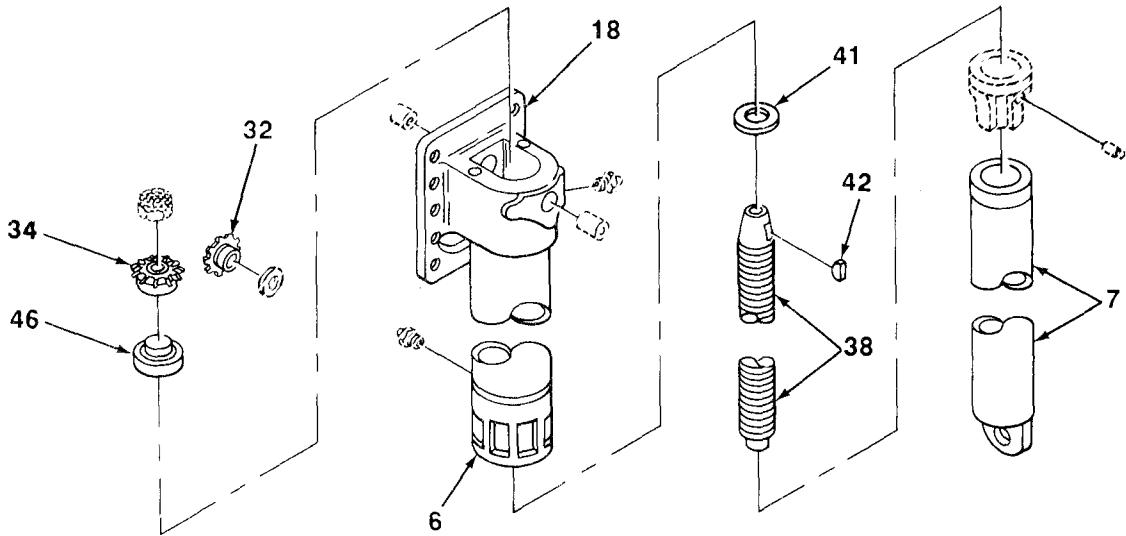
**WARNING**

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- |     |   |   |
|-----|---|---|
| 34. | All metal parts except bearings (41 and 46) | a. Clean in dry cleaning solvent.<br>b. Wipe dry with clean dry rags. |
| 35. | Bearings (41 and 46)                        | Clean (TM 9-214).   |

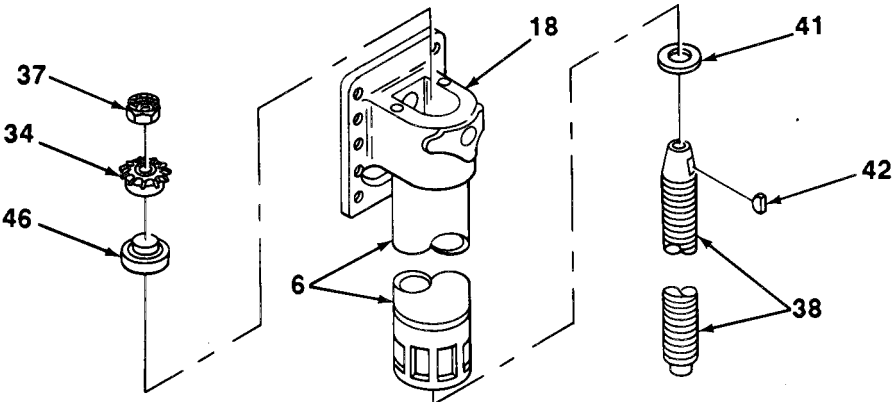
4-38. LEFT LANDING GEAR LEG (Con't)

LOCATION	ITEM	ACTION	REMARKS
INSPECTION AND REPLACEMENT			
<b>NOTE</b> Replace damaged or defective parts as needed.			
36.	Bearings (41 and 46)	Inspect (TM 9-214).	
37.	Bevel gears (32 and 34)	Look for chipped and broken teeth. <b>If either bevel gear (32 or 34) is damaged, replace both bevel gears.</b>	
38.	Screw (38)	a. Look for cracks, breaks, scoring, and other signs of wear. b. Look for damaged threads. c. Look for damaged key slot.	
39.	Gearbox (18) and upper leg (6)	Look for cracks, dents, and broken welds. <b>Gearbox (18) with welded upper leg (6) must be replaced as an assembly.</b>	
40.	Lower leg tube (7)	Look for cracks, dents, and bends.	
41.	All threaded parts	Look for crossed threads.	
42.	All other parts	Look for breaks, cracks, damaged threads, and broken welds.	



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## 4-38. LEFT LANDING GEAR LEG (Con't)

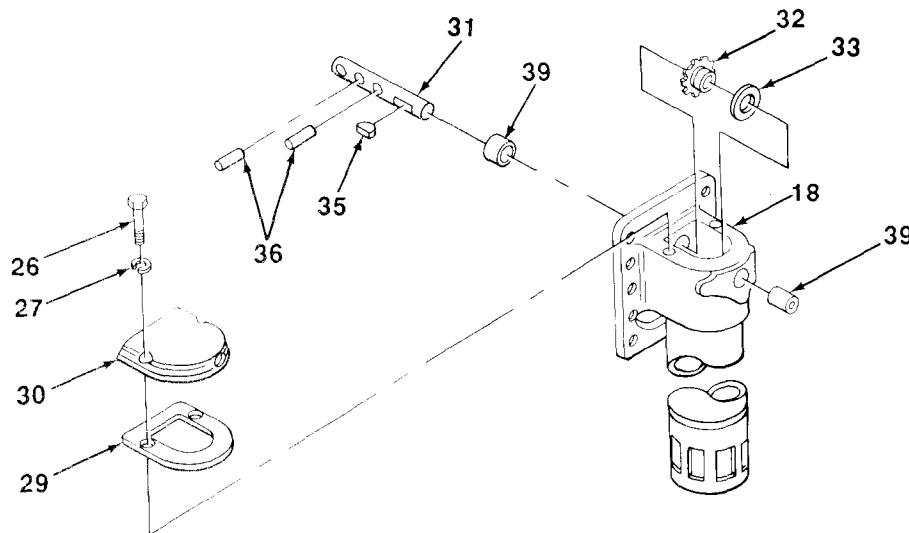
LOCATION	ITEM	ACTION	REMARKS
<b>ASSEMBLY</b>			
43.	Screw (38)	Bearing (41)	a. Hand pack with grease. b. Seat on shoulder of screw (38).
44.	Gearbox (18)	Bearing (46)	a. Hand pack with grease. b. Using hammer and drift, seat in bearing cup in gearbox (18).
45.	Upper leg (6)	Screw (38)	a. Turn upper leg (6) upside down. b. Install screw (38) through bottom of upper leg (6) and seat bearing (41) against bottom of gearbox (18). c. Lay upper leg (6) on its side.
			
46.	Screw (38)	Key (42)	Put in slot.
47.		Bevel gear (34)	a. Line up slot in bevel gear (34) with key (42). b. Put bevel gear (34) on screw (38).
48.		Locknut (37)	a. Jam bevel gear (34) with block of wood so it cannot turn. b. Screw on locknut (37) and tighten using $1\frac{3}{8}$ in. socket and handle with $\frac{3}{4}$ in. drive. <b>Tighten until there is no end play between bevel gear (34) and screw (38).</b> c. Take out block of wood.

TA506927



## 4-38. LEFT LANDING GEAR LEG (Con't)

	LOCATION	ITEM	ACTION	REMARKS
49.	Gearbox (18)	Two bushings (39)	Using hammer and brass drift, drive in.	
50.		Bevel gear-shaft (31)	Slide in part way from back of gearbox (18).	
51.	Bevel gear-shaft (31)	Key (35)	Put in.	
52.		Bevel gear (32) and washer (33)	Slide on.	
53.	Bushing (39)	Bevel gear-shaft (31)	Put in.	

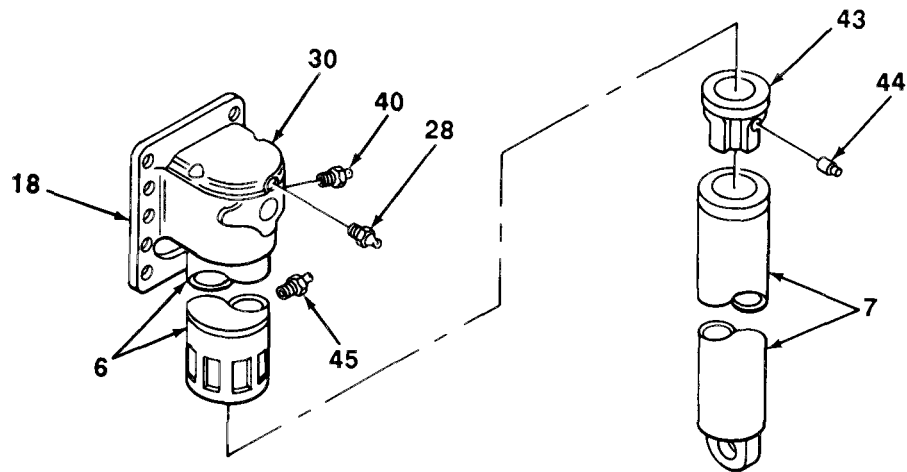


54.	Bevel gear (32) and bevel gear-shaft (31)	Two pins (36)	a. Line up holes. b. Using hammer and $\frac{3}{16}$ in. punch, drive in.	
55.	Gearbox (18)	Gasket (29) and cover (30)	a. Pack gearbox (18) with grease. b. Place gasket (29) and cover (30) in position.	
56.	Cover (30)	Two lockwashers (27) and screws (26)	Screw in and tighten using screwdriver.	
57.	Gearbox (18), cover (30), and upper leg (6)	Three lubrication fittings (28, 40, and 45)	Screw in and tighten using $\frac{7}{16}$ in. wrench and $\frac{5}{16}$ in. wrench.	
58.	Lower leg tube (7)	Nut (43)	Put in and line up holes.	
59.		Two pins (44)	Put in.	

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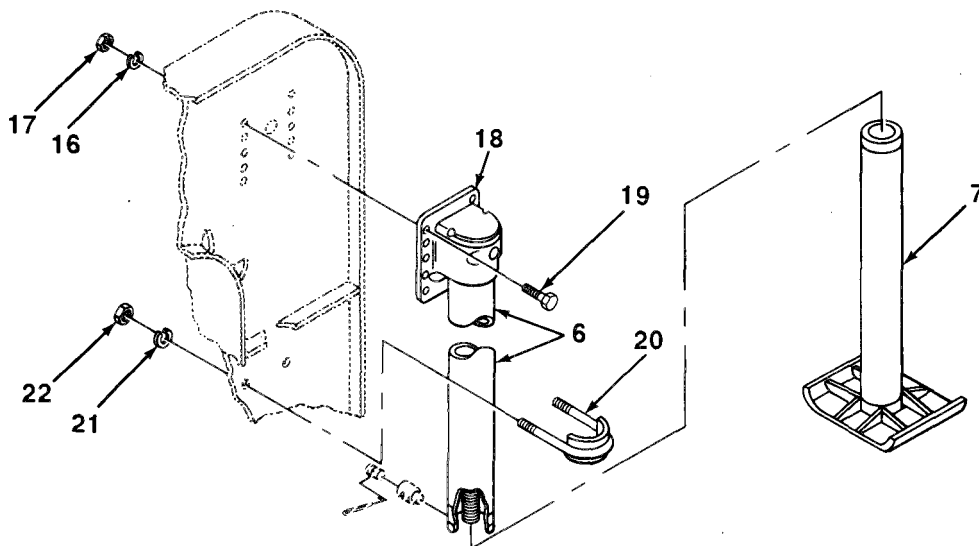
## 4-38. LEFT LANDING GEAR LEG (Con't)

LOCATION	ITEM	ACTION	REMARKS
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## INSTALLATION

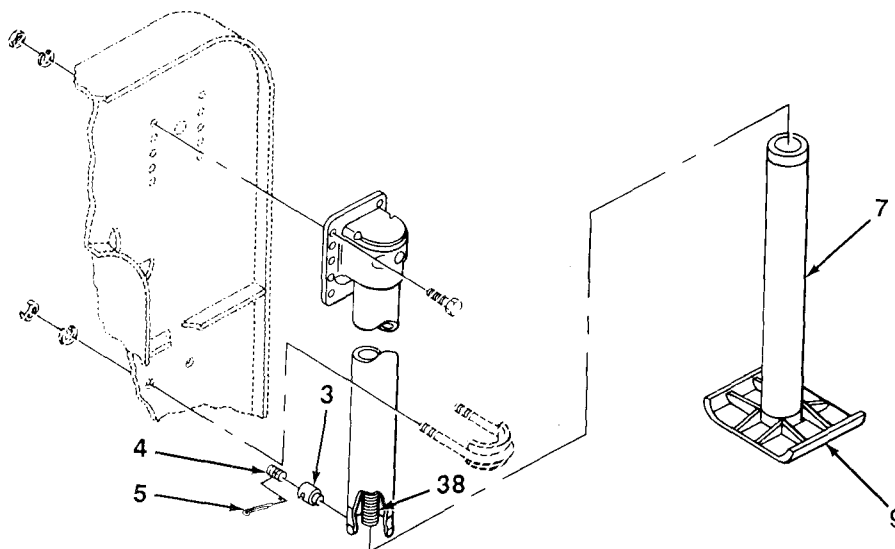
- |     |               |  |   |
|-----|---------------|--|---|
| 60. | Semitrailer   | Gearbox (18)                                       | With the aid of an assistant, place in position.  |
| 61. | Gearbox (18)  | Eight screws (19), lockwashers (16), and nuts (17) | With the aid of an assistant, screw in and tighten using $1\frac{5}{16}$ in. socket, handle with $\frac{3}{4}$ in. drive, and $1\frac{5}{16}$ in. wrench. |
| 62. | Upper leg (6) | U-bolt (20), two lockwashers (21), and nuts (22)   | Screw in and tighten using $\frac{7}{8}$ in. socket and handle.   |



TA506929

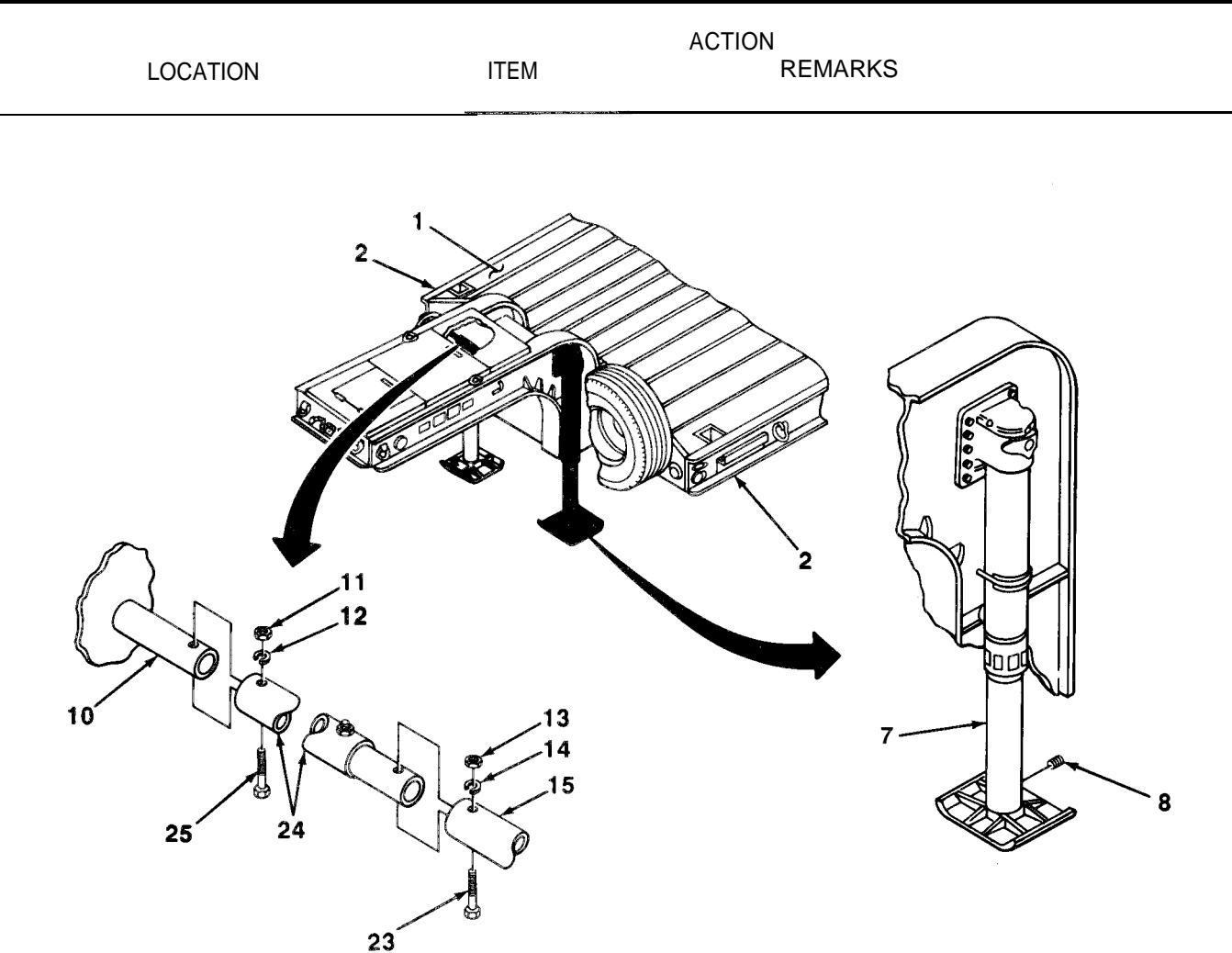
## 4-38. LEFT LANDING GEAR LEG (Con't)

LOCATION	ITEM	ACTION	REMARKS
63.	Lower leg tube (7)	a. Put in. b. Turn counterclockwise to catch on screw (38). c. Screw in until top of milled groove on lower leg tube (7) reaches and is aligned with gib (3) opening in leg.	
64.	Gib (3)	Put in.	
65.	Gib (3)	Plug (4) and cotter pin (5)	a. Screw in and tighten using screwdriver. b. Back off plug (4) until slot lines up with holes. c. Put in cotter pin (5) and using pliers, bend ends over plug (4).
66.	Lower leg tube (7)	Shoe (9)	Install (para 4-37).
67.	Shaft (10)	Shaft (15) and intermediate shaft (24)	Slide on and line up holes.
68.	Intermediate shaft (24)	Bolt (25), lockwasher (12), and nut (11)	Screw in and tighten using two $\frac{9}{16}$ in. wrenches.
69.	Shaft (15)	Two bolts (23), lockwashers (14), and nuts (13)	Screw in and tighten using two $\frac{9}{16}$ in. wrenches.
70.	Lower leg tube (7)	Plug (8)	Screw in and tighten using $\frac{3}{16}$ in. key.



TA506930

4-38. LEFT LANDING GEAR LEG (Con't)



- |     |                 |             |  |
|-----|-----------------|-------------|--|
| 71. | Semitrailer (1) | Corners (2) | a. Using hoist, lower semitrailer until it rests on landing gear.<br><b>Make sure both legs are extended to the same length and are resting on the ground.</b><br>b. Remove hoist.<br>c. Remove chock blocks (para 2-5). |
|-----|-----------------|-------------|--|

FOLLOW-ON MAINTENANCE:

- Lubricate landing gear leg (para 3-2).
- Check operation of landing gear (para 2-5).

TASK ENDS HERE

4-39. RIGHT LANDING GEAR LEG

This Task Covers:

- a. Removal

b. Disassembly

c. Cleaning
- d. Inspection and Replacement

e. Assembly

f. Installation

Initial Setup:

Materials/Parts:

- Dry cleaning solvent (Item 13, Appendix E)
- Grease (Item 5, Appendix E)
- Rags (Item 11, Appendix E)

Personnel Required: Two

References: TM 9-214

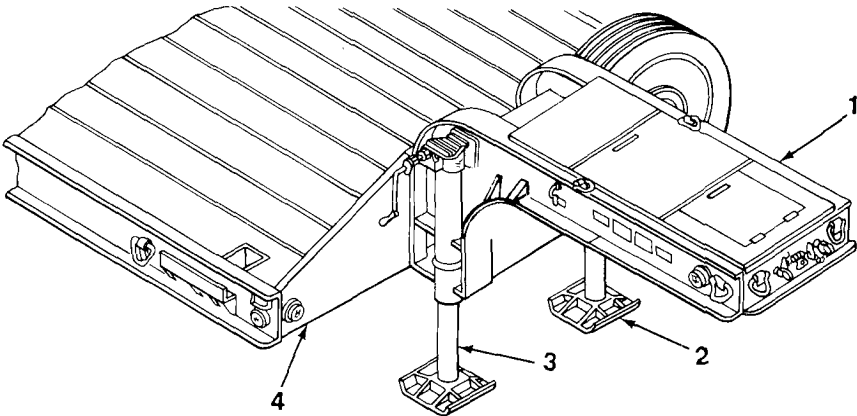
Tools/Test Equipment:

- Container, 1 gallon capacity
- Drift, brass, 3/4 in.
- Hammer, hand, ball-peen, 3 pound
- Handle, ratchet, 3/4 in. drive

Tools/Test Equipment (Con't):

- Hoist, 5 ton, with cables
- Key, socket-head, 3/16 in.
- Pliers, slip-joint, angle nose
- Puller kit, mechanical
- Punch, drive-pin, 3/16 in.
- Retrieving tool, magnetic
- Screwdriver, flat-tip
- Socket, 1 5/16 in., 3/4 in. drive
- Socket, 1 1/4 in., 3/4 in. drive
- Wrench, open-end, 3/8 in.
- Wrench, open-end, 7/16 in.
- Wrench, open-end, 9/16 in. (two required)
- Wrench, open-end, 1 5/16 in.

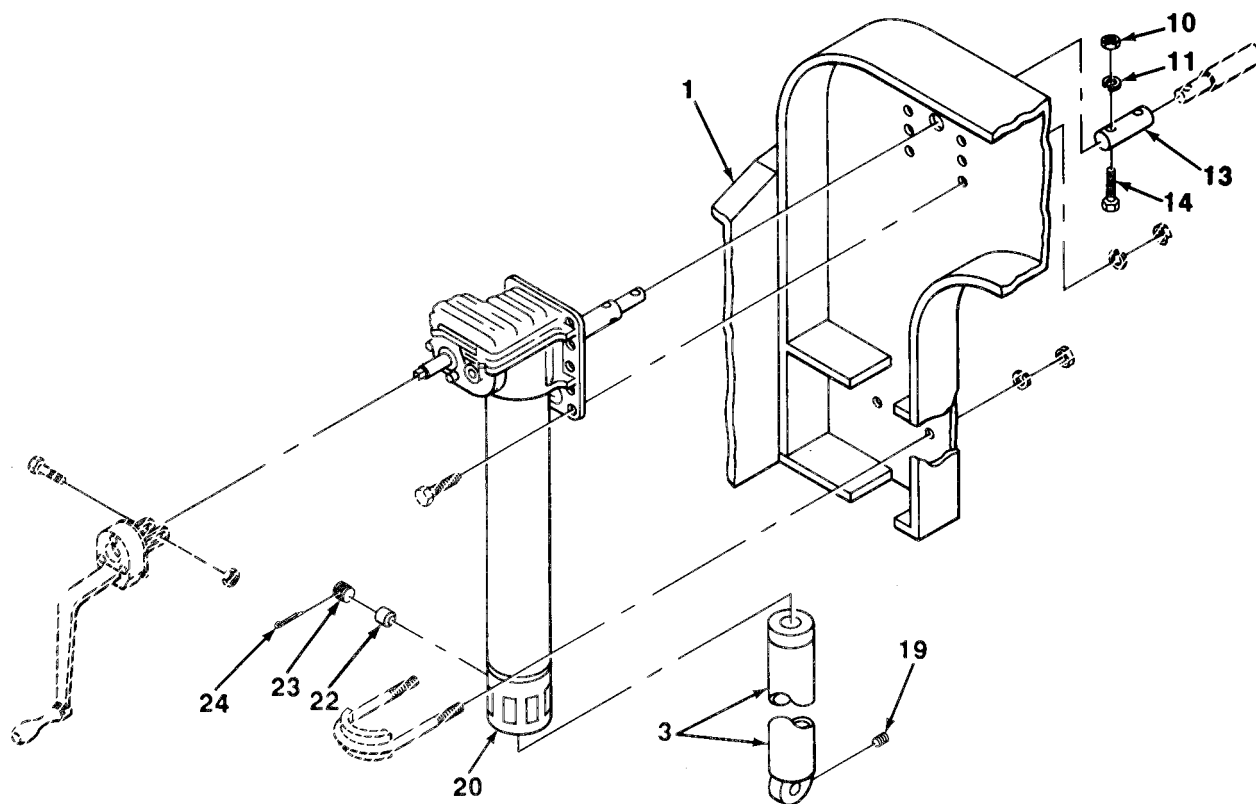
LOCATION		ITEM	ACTION	REMARKS
REMOVAL				
1.	Semitrailer (1)	Corners (4)	a. Block rear wheels with chock blocks (para 2-5). b. Using hoist, lift front of semitrailer until both corners (4) are approximately 38 in. (96.5 cm) off ground.	
2.	Landing gear	Lower leg tube (3)	Extend as far as possible	



TA506932

**4-39. RIGHT LANDING GEAR LEG (Con't)**

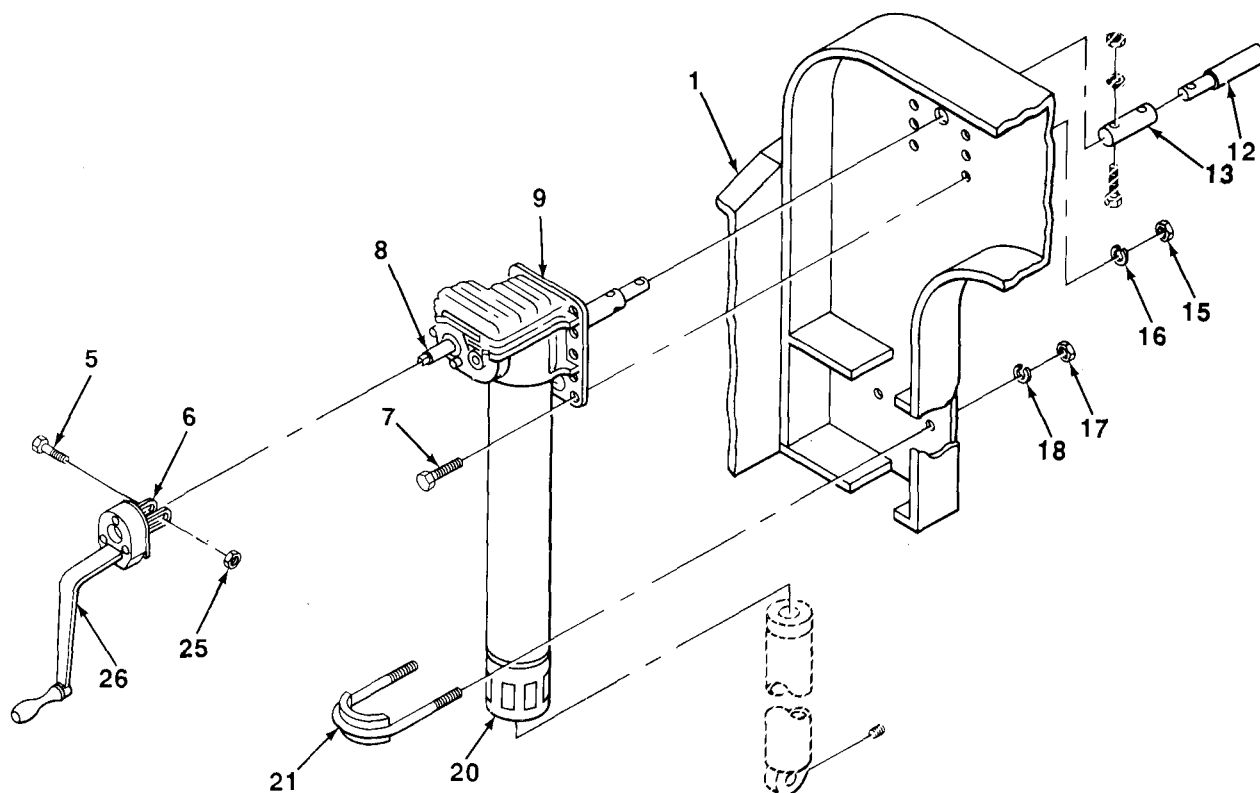
	LOCATION	ITEM	ACTION	REMARKS
3.	Lower leg tube (3)	Shoe (2)	Remove (para 4-37).	
4.	Lower leg tube (3)	Plug (19)	a. Place container underneath to catch oil. b. Using $\frac{3}{16}$ in. hex key, unscrew and take out. c. Allow oil to drain.	
5.	Upper leg (20)	Cotter pin (24)	Using pliers, straighten cotter pin (24) and pull out.	
6.	Gib (22)	Plug (23)	Using screwdriver, unscrew and take out.	
7.	Upper leg (20)	Gib (22)	Using magnet, take out.	
8.		Lower leg tube (3)	Support weight of lower leg tube (3) with a long plank, used as a lever rotate lower leg tube to unscrew and take out.	
9.	Shaft (13)	Two bolts (14), lockwashers (11), and nuts (10)	Using two $\frac{9}{16}$ in. wrenches, unscrew and take out.	



TA506933

4-39. RIGHT LANDING GEAR LEG (Con't)

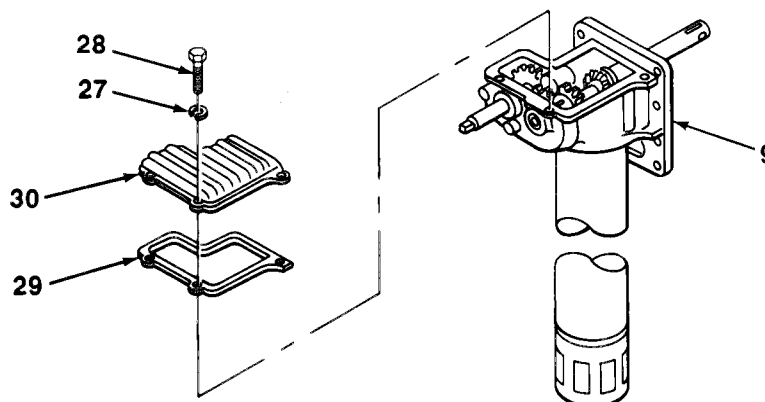
	LOCATION	ITEM	ACTION	REMARKS
10.	Intermediate shaft (12)	Shaft (13)	Slide onto.	
11.	Upper leg (20)	U-bolt (21), two lockwashers (18), and nuts (17)	Using $\frac{7}{8}$ in. socket and handle, unscrew and take out. <b>You may have to tap threaded ends with hammer to take off U-bolt (21).</b>	
12.	Crankshaft (8) and ratchet (6)	Bolt (5) and self-locking nut (25)	Using two $\frac{9}{16}$ in. wrenches, unscrew and take out.	
13.	Crankshaft (8)	Handcrank (26)	Take off.	



TA506934

## 4-39. RIGHT LANDING GEAR LEG (Con't)

LOCATION	ITEM	ACTION	REMARKS
<p style="text-align: center;"><b>WARNING</b></p> <p>Landing gear leg is heavy and lifting can cause serious injury to personnel. Two people are needed to remove hardware and landing gear leg.</p>			
14.	Gearbox (9)	Eight screws (7), lockwashers (16), and nuts (15)	Using $1\frac{5}{16}$ in. socket, handle, and $1\frac{5}{16}$ in. wrench, unscrew and take out.
15.	Semitrailer (1)	Right landing gear assembly	Take off.
DISASSEMBLY			
16.	Cover (30)	Four screws (28) and lockwashers (27)	Using screwdriver, unscrew and take out.
17.	Gearbox (9)	Cover (30) and gasket (29)	Take off.
<p style="text-align: center;"><b>WARNING</b></p> <p>Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F - 138°F (38°C - 59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.</p>			
18.	Gearbox (9)		Using rag dampened with dry cleaning solvent, wipe away grease.

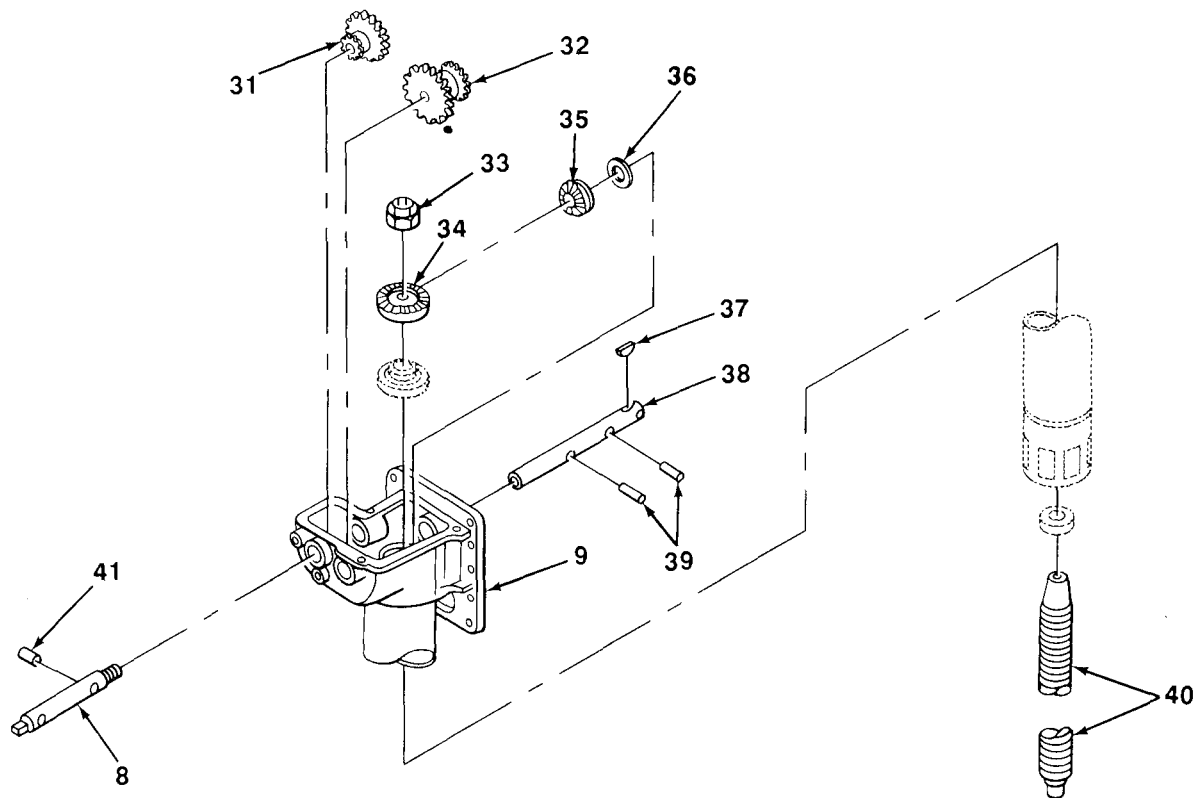


TA506935



4-39. RIGHT LANDING GEAR LEG (Con't)

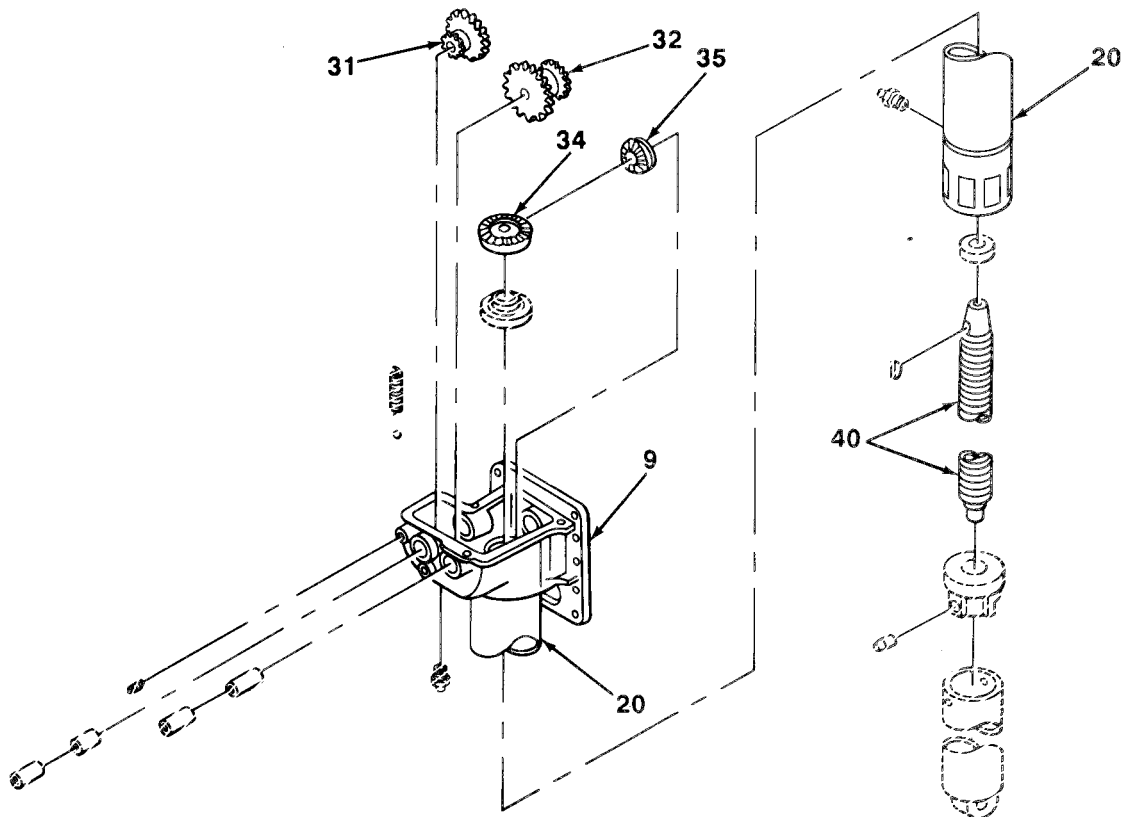
	LOCATION	ITEM	ACTION	REMARKS
19.	Crankshaft (8)	Pin (41)	Using $\frac{3}{16}$ in. punch and hammer, drive out.	
20.	Gear cluster (31)	Crankshaft (8) and pin (41)	a. Pull out. b. Take out pin.	
21.	Gearbox (9)	Gear cluster (31)	Take out.	
22.	Bevel gear- shaft (38)	Two pins (39)	Using hammer and $\frac{3}{16}$ in. punch, drive out.	
23.	Gearbox (9)	Bevel gear- shaft (38)	Slide out.	
24.		Bevel gear (35), rigid gear cluster (32), washer (36), and two pins (39)	Take out.	
25.	Bevel gear- shaft (38)	Key (37)	Take out.	



TA506936

## 4-39. RIGHT LANDING GEAR LEG (Con't)

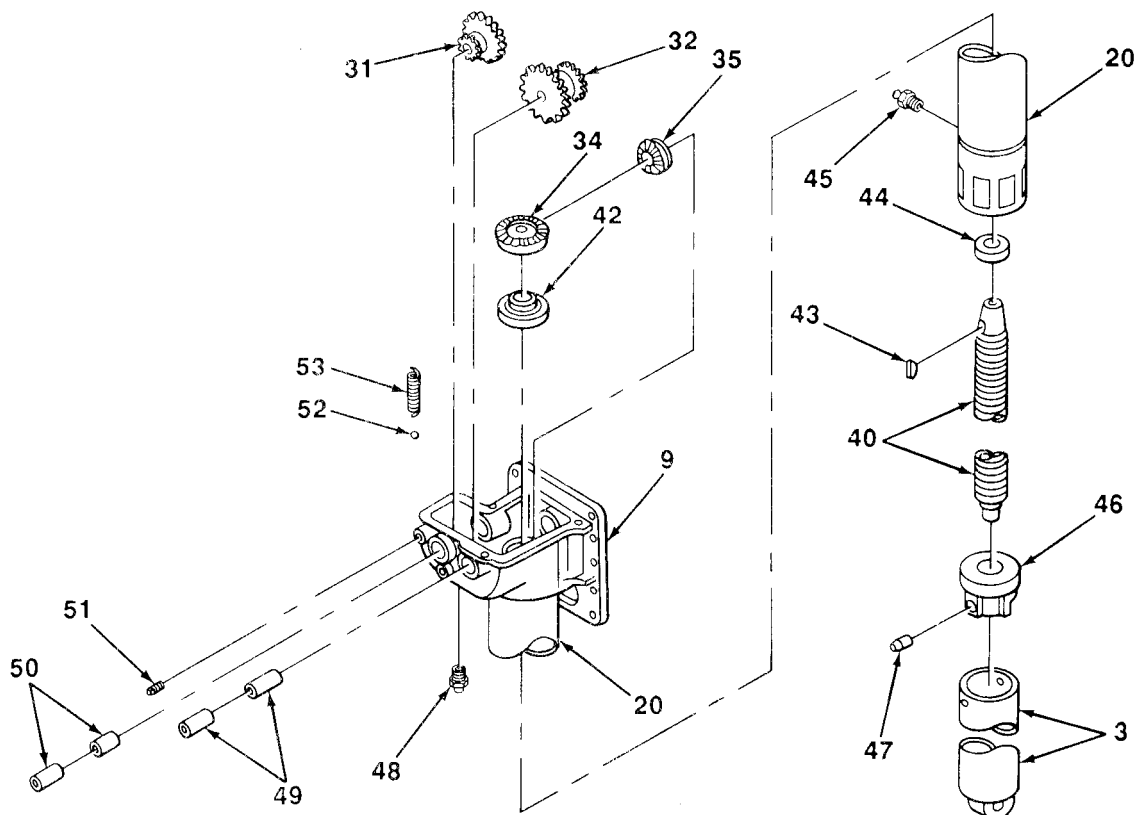
LOCATION	ITEM	ACTION	REMARKS
<p style="text-align: center;"><b>WARNING</b></p> <p>Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F - 138°F (38°C - 59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.</p>			
26.	Gearbox (9)	Bevel gear (34)	a. Using rag dampened with dry cleaning solvent, wipe away grease. b. Jam bevel gear (34) with a block of wood so it will not turn.
27.	Screw (40)	Locknut (33)	using 1¼in. socket and handle, unscrew and take off.
28.	Bevel gear (34) and upper leg (20)	Screw (40)	a. Position board or padding underneath. b. Using hammer and drift, drive out. c. Take out from bottom of upper leg (20).



TA506937

4-39. RIGHT LANDING GEAR LEG (Con't)

LOCATION	ITEM	ACTION	REMARKS
29.	Screw (40)	Key (43) and bearing (44)	a. Take off key (43) using magnet. b. Take off bearing (44).
<p><b>NOTE</b></p> <p><b>Do not remove bearings (42 and 49) or bushings (50) unless they are damaged.</b></p>			
30.	Gearbox (9)	Bearing (42)	Using puller, take out.
31.		Two bearings (49)	Using $\frac{3}{4}$ in. punch and hammer, drive out.
32.		Two bushings (50)	Using $\frac{3}{4}$ in. punch and hammer, drive out,
33.		Spring (53) and ball (52)	Take out.
34.		Two plugs (51)	Using $\frac{3}{8}$ in. wrench, unscrew and take out.



TA506938

**4-39. RIGHT LANDING GEAR LEG (Con't)**

	LOCATION	ITEM	ACTION	REMARKS
35.	Gearbox (9) and upper leg (20)	Two lubrication fittings (45 and 48)	Using $\frac{7}{16}$ in. wrench, unscrew and take out.	
36.	Lower leg tube (3) and nut (46)	Two pins (47)	Take out.	
37.	Lower leg tube (3)	Nut (46)	Take off.	

**CLEANING****WARNING**

Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F - 138°F (38°C - 59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

- |     |  |   |
|-----|--|---|
| 38. | All metal parts except bearings (42, 44, and 49) | a. Clean in dry cleaning solvent.<br>b. Wipe dry with clean dry rags. |
| 39. | Bearings (42, 44, and 49)                        | Clean (TM 9-214).   |

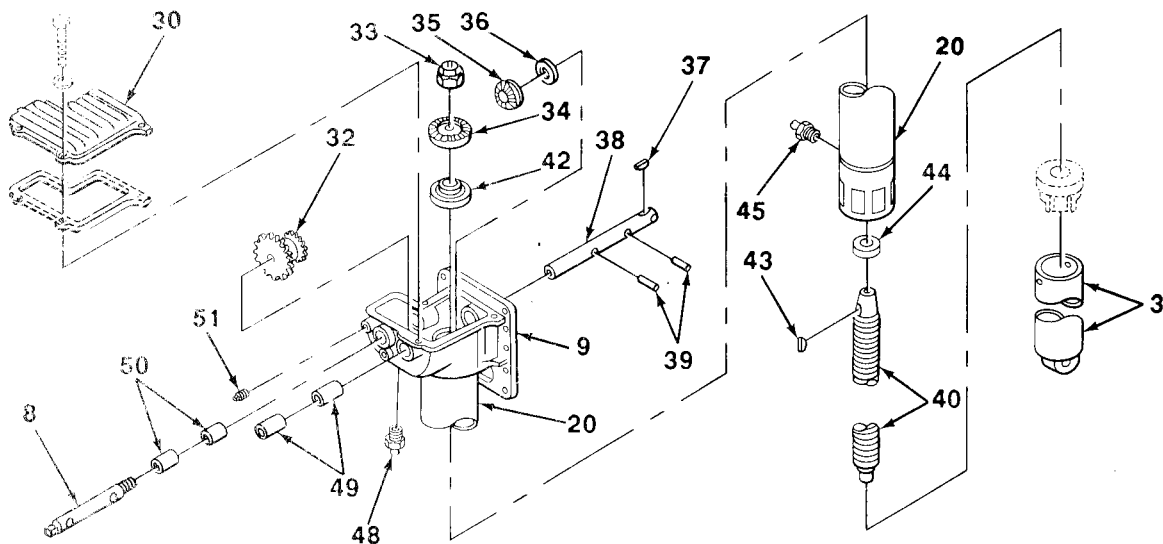
**INSPECTION AND REPLACEMENT****NOTE**

**Replace damaged or defective parts as needed.**

- |     |  |   |
|-----|--|---|
| 40. | Bearings (42, 44, and 49)  | Inspect (TM 9-214).   |
| 41. | Bevel gear (35 and 34), rigid gear cluster (32), and gear cluster (31) | a. Look for cracked, chipped, nicked, and broken teeth.<br>b. Look for score marks and other signs of wear in shaft bores.  |
| 42. | Screw (40)   | a. Look for cracks, breaks, score marks, and signs of wear.<br>b. Look for damaged threads.<br>c. Look for broken key slot. |

**4-39. RIGHT LANDING GEAR LEG (Con't)**

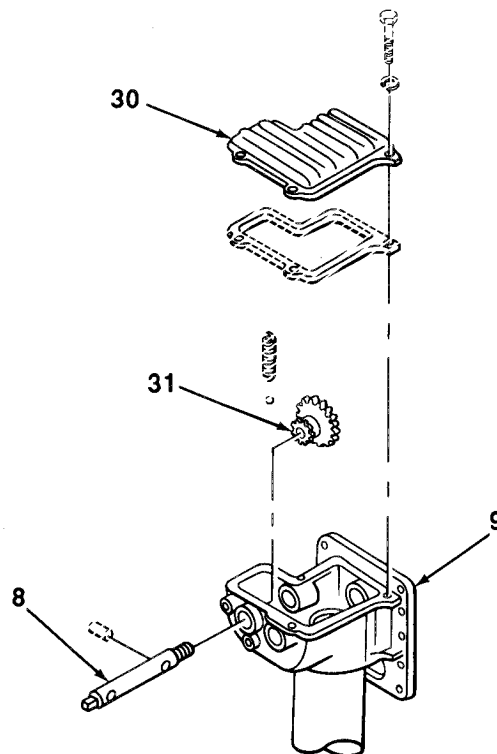
LOCATION	ITEM	ACTION	REMARKS
43.	Crankshaft (8) and bevel gearshaft (38)	Look for cracks, breaks, and dents.	
44.	Gearbox (9), upper leg (20), lower leg tube (3), cover (30)	Look for cracks and dents.	
45.	All threaded parts	Look for damaged threads.	

**ASSEMBLY**

46.	Gearbox (9)	Two plugs (51)	Screw in and tighten using $\frac{3}{8}$ in. wrench.
47.	Gearbox (9) and upper leg (20)	Two lubrication fittings (45 and 48)	Screw in and tighten using $\frac{7}{16}$ in. wrench.
48.	Gearbox (9)	Two bushings (50)	Drive in using hammer and brass drift.
49.		Two bearings (49)	Drive in using hammer and brass drift.
50.		Bearing (42)	Put in.
51.	Screw (40)	Bearing (44)	a. Hand pack with grease. b. Put on.
52.		Key (43)	Put in.
53.	Upper leg (20)	Screw (40) and bearing (44)	Put in from bottom.

## 4-39. RIGHT LANDING GEAR LEG (Con't)

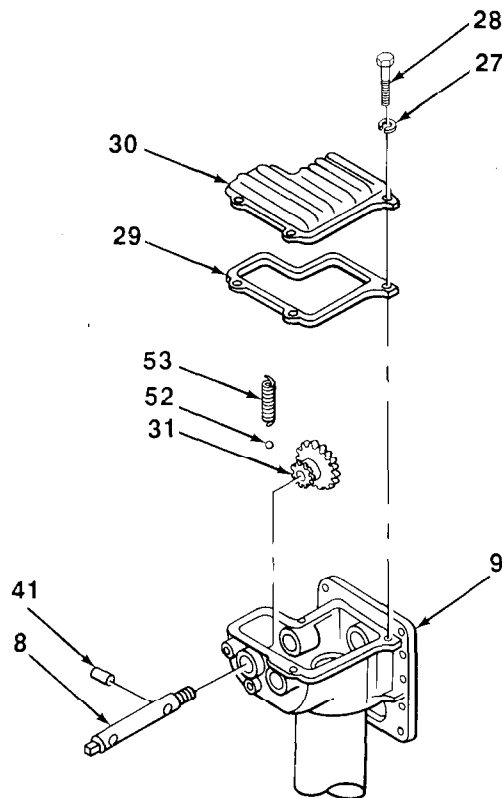
	LOCATION	ITEM	ACTION REMARKS
54.	Screw (40)	Bevel gear (34)	a. Lineup slot in bevel gear (34) with key (43). b. Put bevel gear (34) on screw (40). c. Jam bevel gear (34) with block of wood so it cannot turn.
55.		Locknut (33)	Screw on and tighten using 1¼ in. socket and handle. <b>Tighten until there is no end play between bevel gear (34) and screw (40).</b>
56.	Gearbox (9)	Bevel gearshaft (38)	Slide in part way from back of gearbox (9).
57.	Bevel gearshaft (38)	Key (37)	Put in slot.
58.		Washer (36), bevel gear (35), and rigid gear cluster (32)	Slide on.
59.	Gearbox (9)	Bevel gearshaft (38)	Seat into bushing (50) in front of gearbox (9).
60.	Bevel gearshaft (38)	Two pins (39)	Using hammer and ⅜ in. punch, drive in.
61.	Gearbox (9)	Crankshaft (8)	Slide in part way.
62.	Crankshaft (8)	Gear cluster (31)	Slide on.



TA506940

4-39. RIGHT LANDING GEAR LEG (Con't)

	LOCATION	ITEM	ACTION	REMARKS
63.	Gearbox (9)	Crankshaft (8)	Seat into bearing in rear of gearbox (9).	
64.	Gear cluster (31)	Pin (41)	Line up with holes in crankshaft (8) and drive in using hammer and $\frac{3}{16}$ in. punch.	
65.	Gearbox (9)	Ball (52) and spring (53)	Put in.	
66.		Gasket (29) and cover (30)	a. Pack gearbox (9) with grease. b. Place gasket (29) and cover (30) in position.	
67.	Cover (30)	Four lockwashers (27) and screws (28)	Screw in and tighten using screwdriver.	



INSTALLATION

68.	Semitrailer (1)	Gearbox (9)	With the aid of an assistant, place in position and hold.
69.	Gearbox (9)	Eight screws (7), lockwashers (16), and nuts (15)	Screw in and tighten using two $\frac{15}{16}$ in. socket, handle, and $\frac{15}{16}$ in. wrench.

## 4-39. RIGHT LANDING GEAR LEG (Con't)

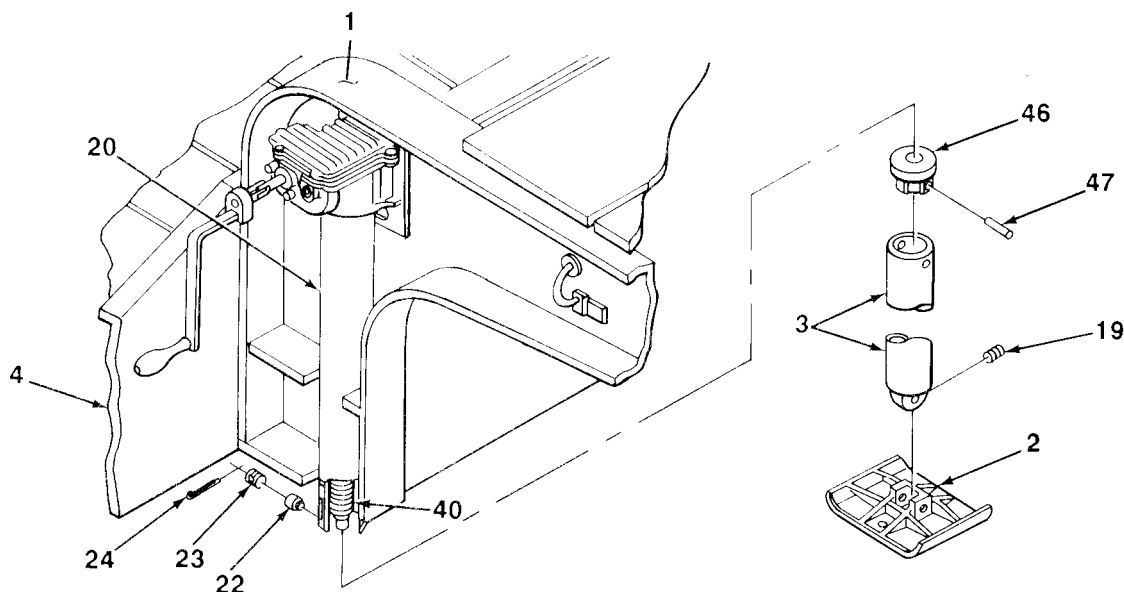
	LOCATION	ITEM	ACTION	REMARKS
70.	Upper leg (20)	U-bolt (21), two lockwashers (18), and nuts (17)	Screw in and tighten using $\frac{7}{8}$ in. socket and handle.	
71.	Crankshaft (8)	Handcrank (26)	Put in position.	
72.	Crankshaft (8) and ratchet (6)	Bolt (5) and self-locking nut (25)	Screw in and tighten using two $\frac{9}{16}$ in. wrenches.	
73.	Intermediate shaft (12)	Shaft (13)	Slide into position.	
74.	Shaft (13)	Two bolts (14), lockwashers (11), and nuts (10)	Screw in and tighten using two $\frac{9}{16}$ in. wrenches.	

TA506942



## 4-39. RIGHT LANDING GEAR LEG (Con't)

	LOCATION	ITEM	ACTION	REMARKS
75.	Lower leg tube (3)	Nut (46)	Put on and line up holes.	
76.	Nut (46)	Two pins (47)	Put in.	
77.	Screw (40)	Lower leg tube (3)	Screw on until top of milled groove on lower leg tube (3) can be seen through gib (22) opening.	
78.	Upper leg (20)	Gib (22)	Put in.	
79.	Gib (22)	Plug (23)	a. Screw in and tighten with screwdriver. b. Back off plug (23) until slot lines up with holes for cotter pin (24).	



- |     |                    |                 |   |
|-----|--------------------|-----------------|---|
| 80. | Upper leg (20)     | Cotter pin (24) | Put in; using pliers, bend both ends of cotter pin (24).  |
| 81. | Lower leg tube (3) | Shoe (2)        | Install (para 4-37).  |
| 82. |                    | Plug (19)       | Screw in and tighten using $\frac{3}{16}$ in. hex key.  |
| 83. | Semitrailer (1)    | Corners (4)     | a. Using hoist, lower semitrailer and remove hoist.<br><div style="margin-left: 40px;"> <b>Make sure both legs are extended to the same length and are resting on the ground.</b> </div> b. Remove chock blocks (para 2-5). |

TA506943

4-39. RIGHT LANDING GEAR LEG (Con't)

LOCATION	ITEM	ACTION	REMARKS
<b>FOLLOW-ON MAINTENANCE:</b>			
<ul style="list-style-type: none"><li>• Lubricate landing gear leg (para 3-2).</li><li>• Check operation of landing gear (para 2-5).</li></ul>			

TASK ENDS HERE

4-40. SPARE WHEEL CARRIER

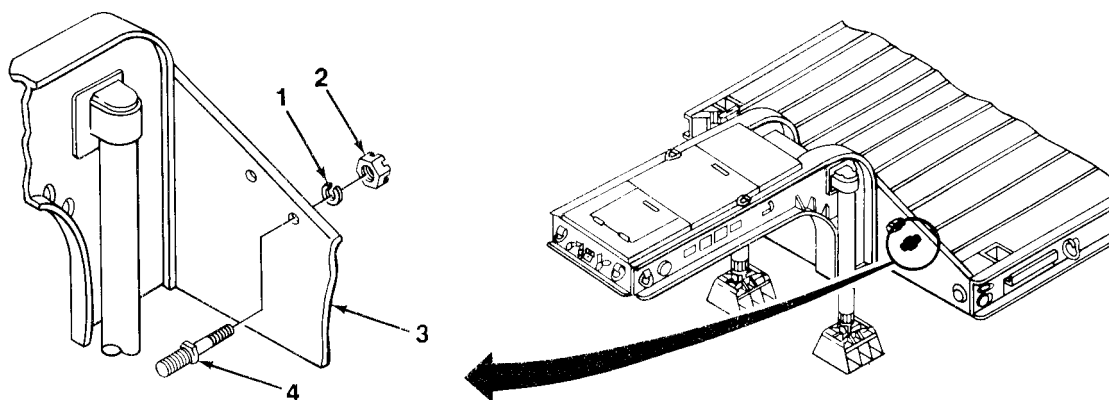
<i>This Task Covers:</i>	
a. Removal	b. Installation
<i>Initial Setup:</i>	
<b>Equipment Conditions:</b>	<b>Tools/Test Equipment:</b>
<ul style="list-style-type: none"><li>• Spare wheel and tire assembly removed (para 3-10).</li></ul>	<ul style="list-style-type: none"><li>• Wrench, box-end, 1 ⅛ in.</li><li>• Wrench, box-end, 1½ in.</li></ul>

## 4-40. SPARE WHEEL CARRIER (Con't)

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

## REMOVAL

- |    |               |   |  |
|----|---------------|---|--|
| 1. | Two studs (4) | Two self-locking nuts (2) and lockwashers (1) | Using 1 $\frac{1}{8}$ in. box-end wrench and 1 $\frac{1}{2}$ in. box-end wrench, unscrew and take off. |
| 2. | Frame (3)     | Two studs (4)                                 | Take Off.  |



## INSTALLATION

- |    |               |   |  |
|----|---------------|---|--|
| 3. | Frame (3)     | Two studs (4)                                 | Put in place.  |
| 4. | Two studs (4) | Two lockwashers (1) and self-locking nuts (2) | Using 1 $\frac{1}{8}$ in. box-end wrench and 1 $\frac{1}{2}$ in. box-end wrench, screw in and tighten. |

**FOLLOW-ON MAINTENANCE:**

- Install spare wheel and tire assembly (para 3-10).

**TASK ENDS HERE**

# Section IX. ACCESSORY ITEMS MAINTENANCE

	Page		Page
Data Plates . . . . .	4-142	Reflectors . . . . .	4-141

## 4-41. REFLECTORS

*This Task Covers:*

- |            |                 |
|------------|-----------------|
| a. Removal | b. Installation |
|------------|-----------------|

*Initial Setup:*

### Tools/Test Equipment:

- Screwdriver, flat-tip
- Wrench, open-end,  $\frac{7}{16}$  in.

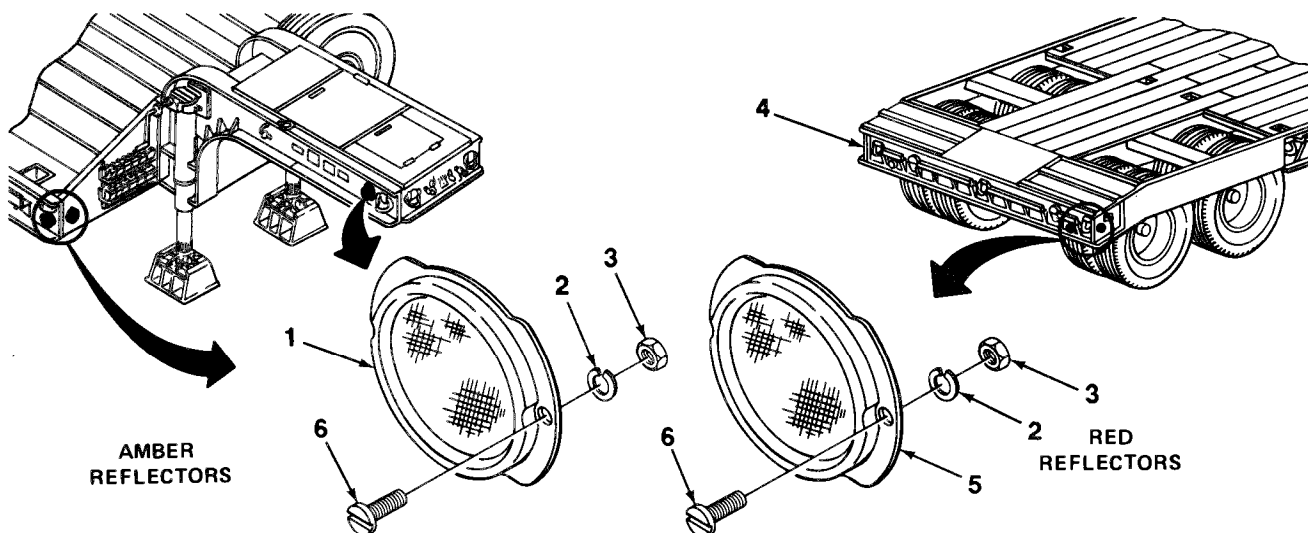
LOCATION	ITEM	ACTION	REMARKS
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### NOTE

- There are two red reflectors at each rear corner of the semitrailer. There are two amber reflectors at each front corner and one on the left and right side of the gooseneck.
- All reflectors are removed the same way.

### REMOVAL

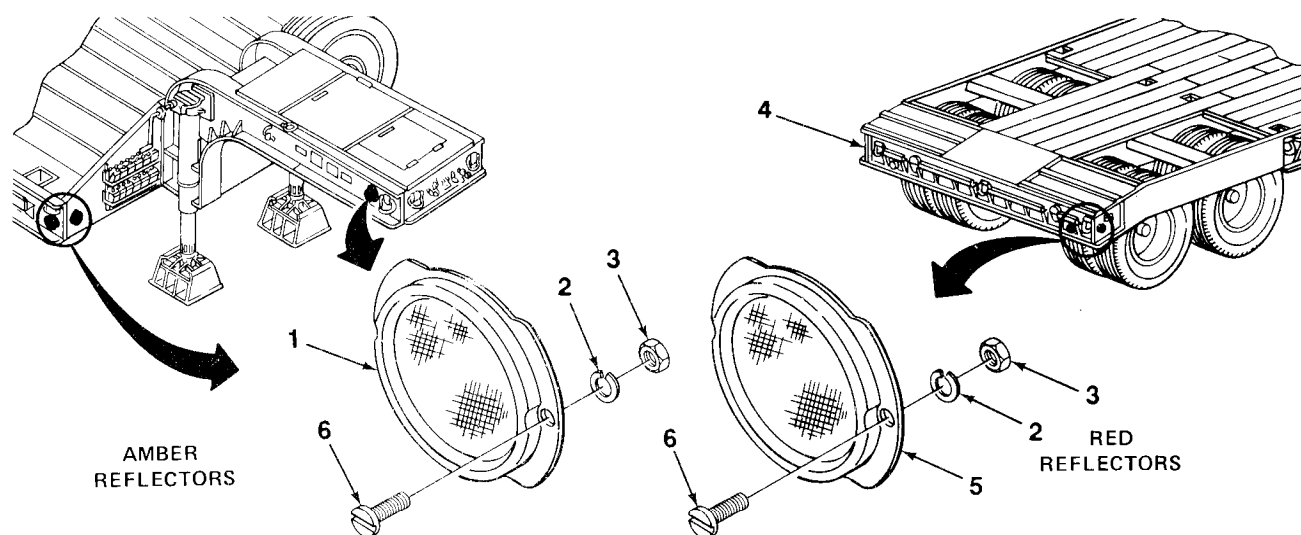
- |    |                                    |   |  |
|----|------------------------------------|---|--|
| 1. | Reflector (1 or 5)<br>to frame (4) | Two screws (6),<br>lockwashers (2),<br>and nuts (3) | Using flat-tip screwdriver and $\frac{7}{16}$ in. wrench, unscrew<br>and remove. |
| 2. | Reflector (1 or 5)                 |   | Pull off.  |



TA506945

**4-41. REFLECTORS (Con't)**

LOCATION	ITEM	ACTION REMARKS
INSTALLATION		
3. Frame (4)	Reflector (1 or 5)	a. Place in position. b. Aline screw holes.
4. Reflector (1 or 5)	Two screw (6), lockwashers (2), and nuts (3)	Using flat-tip screwdriver and $\frac{7}{16}$ in. wrench, screw in and tighten.

**TASK ENDS HERE****4-42. DATA PLATES***This Task Covers:*

a. Removal

b. Installation

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

- Hammer, ball-peen
- Punch, center-solid
- Screwdriver, Phillips

4-42. DATA PLATES (Con't)

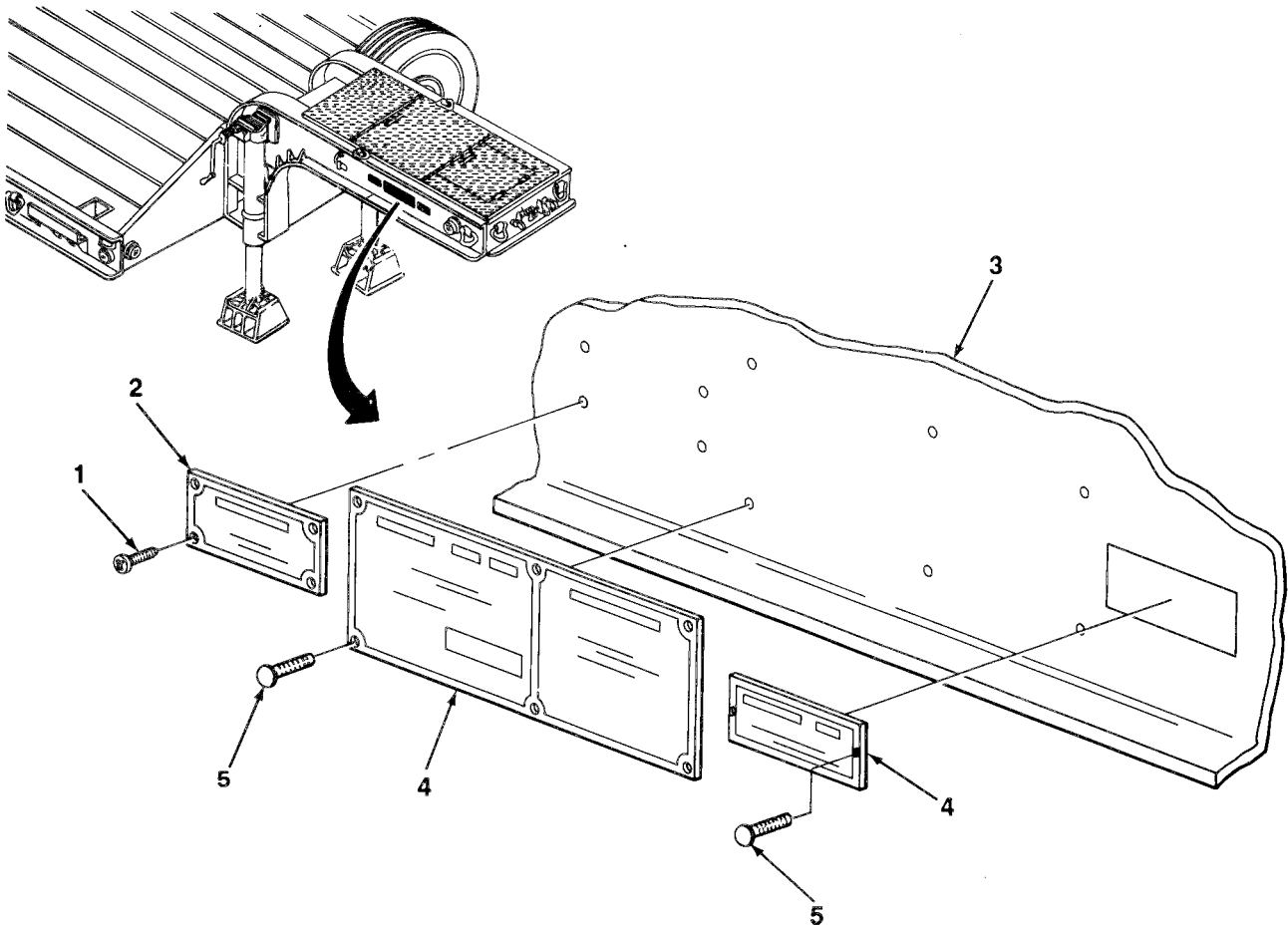
LOCATION	ITEM	ACTION	REMARKS
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NOTE

Various arrangements of data plates are used depending on the semitrailer. Data plates are fastened by either self-tapping or drive screws.

REMOVAL

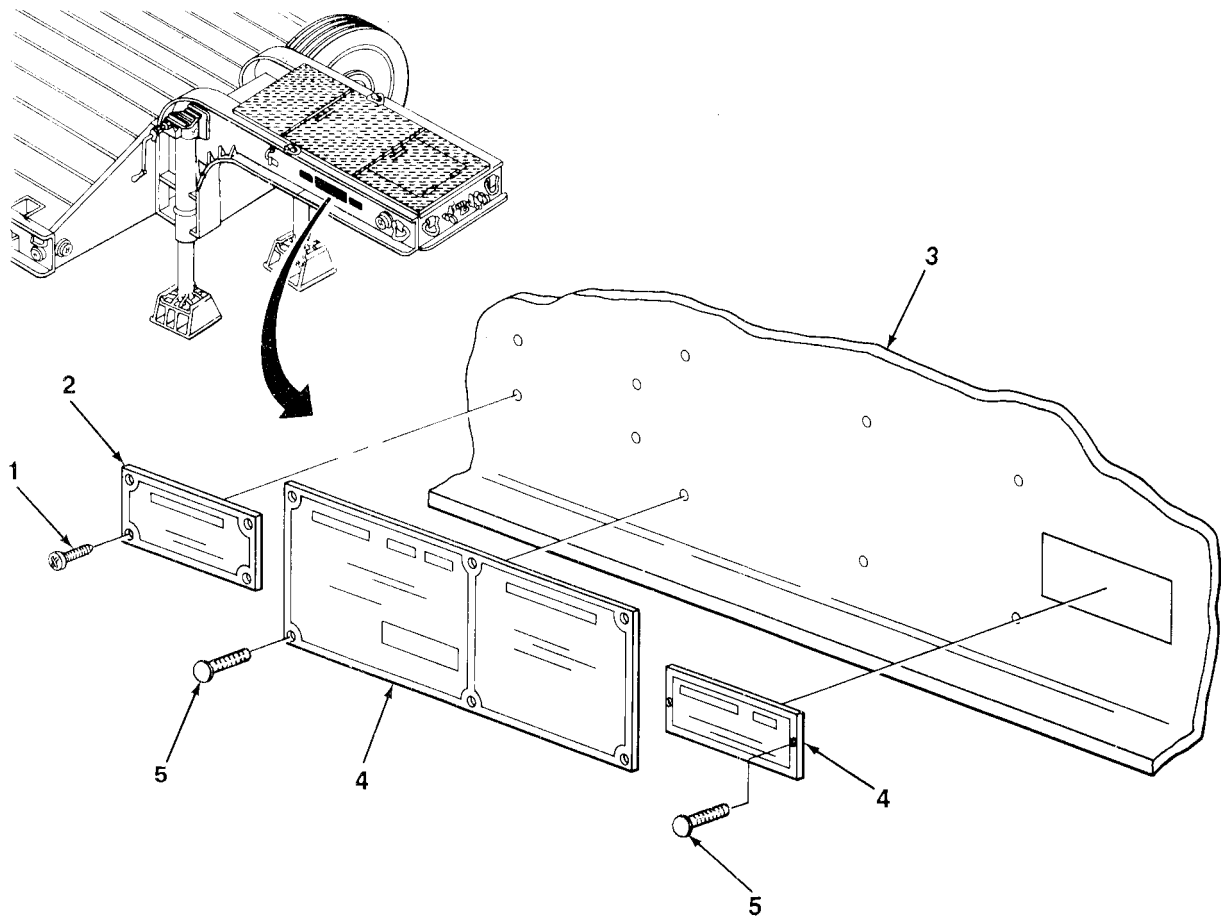
1.	Instruction plate (2) to right side of gooseneck (3)	Four screws (1)	Using screwdriver, unscrew and take out.
2.		Instruction plate (2)	Remove.
3.	Instruction plate (4) to right side of gooseneck (3)	Drive screws (5)	Using punch and hammer, remove.
4.		Identification plate (4)	Remove.



TA506947

4-42. DATA PLATES (Con't)

LOCATION	ITEM	ACTION	REMARKS
INSTALLATION			
5.	Right side of gooseneck (3)	Identification plate (4)	a. Place on right side of gooseneck (3). b. Aline screw holes and hold.
6.	Identification plate (4)	Drive screws (5)	Using hammer, drive in.
7.	Flight side of gooseneck (3)	Instruction plate (2)	a. Place on right side of gooseneck (3). b. Aline screw holes and hold.
8.	Instruction plate (2)	Four screws (1)	Using screwdriver, install.



TASK ENDS HERE

**Section X. PREPARATION FOR STORAGE OR SHIPMENT**

	<i>Page</i>		<i>Page</i>
Care of Equipment in Administrative Storage .....	4-146	Preparation of Equipment for Shipment . . . . .	4-148
Definition of Administrative Storage . . . . .	4-145	Procedures for Common Components and Miscellaneous Items . . . . .	4-147
Exercise Schedule, Table 4-3 . . . . .	4-147	Removal of Equipment from Administrative Storage . . . . .	4-148
General.. . . .	4-145		
Preparation of Equipment for Administrative Storage . . . . .	4-145		

**4-43. GENERAL**

This section contains requirements and procedures for administrative storage of equipment that is issued to and in use by Army activities worldwide.

The requirements specified herein are necessary to maintain equipment in administrative storage in such a way as to achieve the maximum readiness condition.

Equipment that is placed in administrative storage should be capable of being readied to perform its mission within a 24 hour period, or as otherwise may be prescribed by the approving authority. Before equipment is placed in administrative storage, a current Preventive Maintenance Checks and Services (PMCS) should be completed and deficiencies corrected.

Report equipment in administrative storage as prescribed for all reportable equipment.

Perform inspections, maintenance services, and lubrication as specified herein.

Records and reports to be maintained for equipment in administrative storage are those prescribed by DA Pam 738-750, for equipment in use.

A 10% variance is acceptable on time, running hours, or mileage used to determine the required maintenance actions.

Accomplishment of applicable PMCS, as mentioned throughout this section, will be on a quarterly basis.

**4-44. DEFINITION OF ADMINISTRATIVE STORAGE**

The placement of equipment in administrative storage can be for short periods of time when a shortage of maintenance effort exists. Items should be ready for use within the time factors as determined by the directing authority. During the storage period, appropriate maintenance records will be kept.

**4-45. PREPARATION OF EQUIPMENT FOR ADMINISTRATIVE STORAGE***Storage Site.*

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

*Storage Plan.*

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



#### 4-45. PREPARATION OF EQUIPMENT FOR ADMINISTRATIVE STORAGE (Con't)

##### *Maintenance Services and Inspection,*

1. Maintenance Services. Prior to storage, perform the next scheduled unit PMCS.
2. Inspection. Inspect and approve the equipment prior to storage. Do not place equipment in storage in a nonmission-capable condition.

##### *Auxiliary Equipment and Basic Issue Items.*

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

*Correction of Shortcomings and Deficiencies.* Correct all shortcomings and deficiencies prior to storage, or obtain a deferment from the approving authority.

*Lubrication.* Lubricate equipment in accordance with instructions in Chapter 3, Section I.

*General Cleaning, Painting, and Preservation.*

#### CAUTION

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

1. Cleaning. Clean the equipment of dirt, grease, and other contaminants, but do not use vapor decreasing.
2. Painting. Remove rust and damaged paint by scraping, wire brushing, sanding, or buffing. Sand to a smooth finish and spot paint as necessary (TB 43-0209).
3. Preservation. After cleaning and drying, immediately coat unpainted metal surfaces with oil or grease, as appropriate (Chapter 3, Section I).

#### CAUTION

**Place a piece of barrier material between desiccant bags and metal surfaces.**

#### NOTE

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

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

#### 4-46. CARE OF EQUIPMENT IN ADMINISTRATIVE STORAGE

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

*Inspection.* Inspection will usually be visual and must consist of at least a walkaround examination of all equipment to detect any deficiencies. Inspect equipment in open storage weekly and equipment in covered storage monthly.

**4-46. CARE OF EQUIPMENT IN ADMINISTRATIVE STORAGE (Con't)**

Inspect all equipment immediately after any severe storm or environmental change. The following are examples of things to look for during a visual inspection:

1. Low or flat tires.
2. Condition of preservatives, seals, and wraps.
3. Torn, frayed, or split canvas covers and tops.
4. Corrosion or other deterioration.
5. Missing or damaged parts.
6. Water in compartments.
7. Any other readily recognizable shortcomings or deficiencies.

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

**Exercising.** Exercise equipment in accordance with Table 4-3, *Exercise Schedule*, and the following instructions.

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

**Table 4-3. Exercise Schedule.**

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

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

**4-47. PROCEDURES FOR COMMON COMPONENTS AND MISCELLANEOUS ITEMS**

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

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

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

#### **4-48. REMOVAL OF EQUIPMENT FROM ADMINISTRATIVE STORAGE**

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

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

#### **4-49. PREPARATION OF EQUIPMENT FOR SHIPMENT**

Refer to TM 55-200, TM 55-601, and TM 743-200-1 for additional instructions on processing, storage, and shipment of materiel.

Semitrailers that have been removed from storage for shipment do not have to be reprocessed if they will reach their destination within the administrative storage period. Reprocess only if inspection reveals any corrosion, or if anticipated in-transit weather conditions make it necessary.

When a semitrailer is received and has already been 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 on SF 364 all discrepancies found because of poor preservation, packaging, packing, marking, handling, loading, storage, or excessive preservation. Repairs that cannot be handled by the receiving unit must have tags attached listing needed repairs. A report of these conditions will be submitted by the unit commander for action by an ordnance maintenance unit.

## CHAPTER 5

### DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE

#### 5-1. OVERVIEW

This chapter contains information covering repair parts; special tools; test, measurement, and diagnostic equipment (TMDE); support equipment; general maintenance instructions; and detailed maintenance tasks that direct support and general support maintenance personnel may perform to maintain the semitrailer.

	<i>Page</i>
Section I Repair Parts; Special Tools; Test, Measurement, and Diagnostic Equipment (TMDE); and Support Equipment . . . . .	5-1
Section II General Maintenance Instructions . . . . .	5-1
Section III Rear Axle Maintenance . . . . .	5-3
Section IV Brakeshoe Maintenance . . . . .	5-14
Section V Drum and Tire Maintenance . . . . .	5-17
Section VI Body Maintenance . . . . .	5-20

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

	<i>Page</i>	<i>Page</i>
Common Tools and Equipment . . . . .	5-1	
Repair Parts . . . . .	5-1	
		Special Tools; Test, Measurement, and Diagnostic Equipment (TMDE); and Support Equipment . . . . . 5-1

#### 5-2. COMMON TOOLS AND EQUIPMENT

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

#### 5-3. SPECIAL TOOLS; TEST, MEASUREMENT AND DIAGNOSTIC EQUIPMENT (TMDE); AND SUPPORT EQUIPMENT

For a listing of all tools required to maintain the semitrailer, refer to Section III of the Maintenance Allocation Chart (MAC), Appendix B of this manual.

#### 5-4. REPAIR PARTS

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

#### Section II. GENERAL MAINTENANCE INSTRUCTIONS

	<i>Page</i>	<i>Page</i>
General Information . . . . .	5-2	
Inspection . . . . .	5-3	
		Scope . . . . . 5-1
		Work Safety . . . . . 5-2

#### 5-5. SCOPE

These general maintenance instructions contain general shop practices and specific methods you must be familiar with to properly maintain the semitrailer. You should read and understand the procedures here before starting direct support and general support tasks on the semitrailer.

## 5-6. WORK SAFETY

Before you start a task, think about the risks and hazards to your personal safety and the safety of others. Wear protective gear such as safety goggles or lenses, safety shoes, rubber apron, or gloves. Protect yourself against injury.

When lifting heavy parts, have someone help you. Make sure that lifting/jacking tool is working properly, that it meets the weight requirement of the part to be lifted, and that it is securely fastened to the part.

Always use power tools carefully.

Observe all WARNINGS and CAUTIONS found in this manual.

## 5-7. GENERAL INFORMATION

Before you begin a task, you should find out how much repair, modification, or replacement is needed to fix the equipment as described in this manual. Sometimes the reason for equipment failure can be seen right away, and therefore complete teardown is not necessary for repair. Disassemble equipment only as far as necessary to repair or replace broken parts.

All tags and forms attached to the equipment must be checked to learn the reason for removal from service. Also, check all Modification Work Orders (MWO) and Technical Bulletins (TB) for equipment changes and updates.

In some cases you may damage a part just by removing it. If the part appears to be good, and other parts behind it are not defective, leave it on and continue with procedure.

Here are a few simple rules:

1. Don't take out dowel pins or studs unless loose, bent, broken, or otherwise damaged.
2. Don't pull bearings or bushings unless damaged. If you have to get at parts behind them, pull off bearings or bushings very carefully.
3. Replace all gaskets, seals, and O-rings.

## 5-8. CLEANING

All parts should be cleaned before inspection and assembly and after repair. Wipe off dirt, grease, and grime from parts before removal.

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### WARNING

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- **Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F - 138°F (38°C - 59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.**
- **Compressed air used for cleaning or drying purposes, or for clearing restrictions, should never exceed 30 psi (207 kPa). Wear protective clothing (goggles/shield, gloves, etc.) and use caution to avoid injury to personnel.**

Clean inside and outside surfaces of metallic parts and all areas that get greasy and oily with dry cleaning solvent (Item 13, Appendix E). Clean out sludge and gum with stiff brush. Put small metal parts in a wire mesh basket before dipping in dry cleaning solvent. Use steam cleaning to take off grease and dirt build-up after dry cleaning solvent has been applied. Dry parts with clean dry rags. Clean off rust on metallic parts with a wire brush, abrasive cloth, or sandpaper. Use low pressure compressed air to clear away rust, cloth particles, and sand.

Clean bearings and bearing cups in accordance with TM 9-214, *Inspection, Care, and Maintenance of Antifriction Bearings*.

## 5 - 8 . CLEANING (Con't)

For additional information on cleaning procedures and materials, refer to TM 3-247, *Materials Used for Cleaning, Preserving, Abrading, and Cementing Ordnance Materiel and Related Items Including Chemicals*.

Cover parts after cleaning to protect them from dust and debris. Parts that can rust should be lightly oiled.

### 5-9. INSPECTION

Inspect parts to find out which parts can be used and which parts must be replaced. Specifications and tolerances are given in this manual, but sometimes you, the inspector, must make the decision which parts are good, and which parts must be replaced.

To find out if you can use a part that is otherwise in good condition, check the clearance between mating surfaces. If clearance is within tolerance, the part may be used.

Carefully look at all machined surfaces and polished areas. Use a strong light to shine across polished surfaces to check for score marks, cracks, and other signs of wear.

Inspect gears for cracked, chipped, and worn down teeth. Look for metal-to-metal wear marks and pitting. When a gear is found to be damaged, replace it and its mating gear.

## Section III. REAR AXLE MAINTENANCE

	Page		Page
Axle and Shackle Boxes . . . . .	5-6	Trunnion Axle and Walking Beams . . . . .	5-10
Tandem Axle Assembly . . . . .	5-3		

### 5-10. TANDEM AXLE ASSEMBLY

---

*This Task Covers:*

- |            |                 |
|------------|-----------------|
| a. Removal | b. Installation |
|------------|-----------------|
- 

*Initial Setup:*

#### Equipment Conditions:

- Air released from system (para 3-8).
- Chock blocks removed (para 2-5).

#### Materials/Parts:

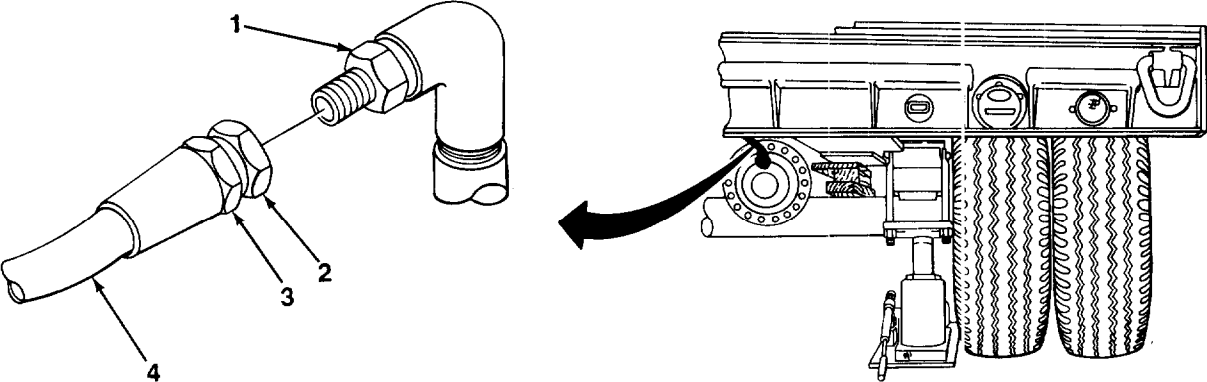
- Dry cleaning solvent (item 13, Appendix E)
- Rags (item 11, Appendix E)

Personnel Required: Three

#### Tools/Test Equipment:

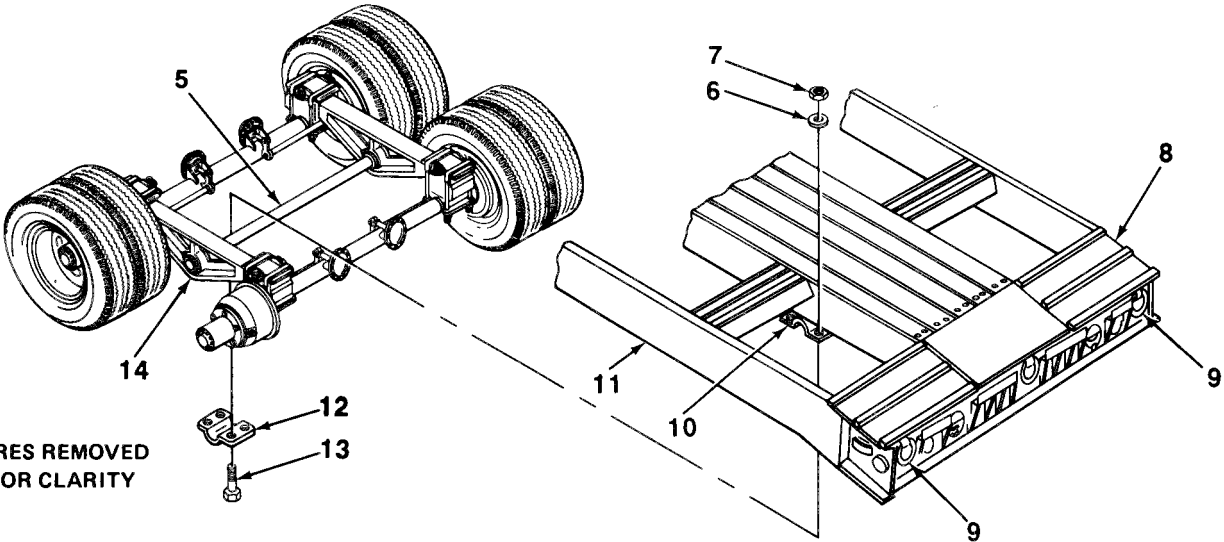
- Handie, socket wrench, 3/4 in. drive, 18 in.
  - Hoist, 10 ton
  - Jack, hydraulic hand, 20 ton (two required)
  - Pipe, 1 in. ID, 30 in.
  - Pliers, long round-nose
  - Socket, 15/16 in. 3/4 in. drive
  - Trestle, motor vehicle maintenance, 20 ton
  - Wrench, open-end, 3/4 in.
  - Wrench, open-end, 7/8 in. (two required)
  - Wrench, open-end, 15/16 in.
-

5-10. TANDEM AXLE ASSEMBLY (Con't)

LOCATION		ITEM	ACTION	REMARKS
REMOVAL				
1.	Four adapters (1)	Four outer union nuts (2), inner union nuts (3), and hoses (4)	a. Using two 7/8 in. wrenches, hold inner union nut (3) and unscrew outer union nut (2) until it is free of adapter(1). b. Using 3/4 in. and 7/8 in. wrenches, unscrew outer union nut (2) and remove. c. Move hose (4) away from adapter (1).	
				
2.	Two housing bearing units (1 O) and housing bearing units (12)	Eight screws (13), lockwashers (6), and nuts (7)	Using 3/4 in. socket, handle, pipe, and 3/4 in. wrench, unscrew and take out.	
3.	Trunnion axle (5)	Two housing bearing units (12)	Remove.	
4.	Semitrailer (8)	Two lashing rings (9)	Attach hoist chains and cable. Lift rear end of semitrailer (8). Using two assistants, roll tandem axle assembly (14) from under semitrailer.	
5.		Two main beams (11)	a. Place two jacks under main beams (11), just forward of tandem axle assembly (14). b. Lower semitrailer (8) until supported by jacks.	
6.		Tandem axle assembly (14)	Roll tandem axle assembly (14) backward to clear semitrailer (8).	
INSTALLATION				
7.	Semitrailer (8)	Two lashing rings (9)	Raise semitrailer (8) using hoist and chain until tandem axle assembly (14) can be placed under semitrailer.	
8.	Two housing bearing units (1 O)	Tandem axle assembly (14)	Using two assistants, roll tandem axle assembly(14) under semitrailer (8) and position trunnion axle (5) directly under housing bearing units (10).	

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## 5-10. TANDEM AXLE ASSEMBLY (Con't)

LOCATION	ITEM	ACTION	REMARKS
 <p>TIRES REMOVED FOR CLARITY</p>			
9.	Two main beams (11)	Take out jacks.	
10.	Tandem axle assembly (14)	Semitrailer (8)	Using hoist, lower onto tandem axle assembly (14).
11.	Trunnion axle (5)	Two housing bearing units (12)	Place in position and hold.
12.	Two housing bearing units (10) and housing bearing units (12)	Eight screws (13), lockwashers (6), and nuts (7)	Screw in and tighten using $\frac{15}{16}$ in. socket, handle, pipe, and $\frac{15}{16}$ in. wrench.
13.	Four adapters (1)	Four hoses (4)	Move into position.
14.	Four outer union nuts (2) and inner union nuts (3)	a. Screw on outer union nut (2) and tighten using $\frac{3}{4}$ in. and $\frac{7}{8}$ in. wrenches. b. Tighten inner union nut (3) to outer union nut (2) using two $\frac{7}{8}$ in. wrenches.	

**FOLLOW-ON MAINTENANCE:**

- Install chock blocks (para 2-5).
- Check for air leaks (para 4-28).

**TASK ENDS HERE**



5-11. AXLE AND SHACKLE BOXES

This Task Covers:

- a. Removal

b. Disassembly

c. Cleaning
- d. Inspection and Replacement

e. Assembly

f. Installation

Initial Setup:

Equipment Conditions:

- Tandem axle assembly removed (para 5-10).

Materials/Parts:

- Dry cleaning solvent (Item 13, Appendix E)
- Rags (Item 11, Appendix E)

References: TM 9-237

Personnel Required: Two

Tools/Test Equipment:

- Hammer, sledge
- Handle, socket wrench, 18 in., ¾ in. drive
- Hoist, with lifting sling, 5 ton
- Pipe, 1 in. ID, 30 in.
- Socket, 1⅝ in., ¾ in. drive
- Socket, 1¼ in., ¾ in. drive
- Torch outfit, cutting and welding
- Trestle, motor vehicle maintenance, 10 ton (two required)
- Wrench, open-end, 1⅝ in.

LOCATION		ITEM	ACTION	REMARKS
REMOVAL				
1.	Tandem axle assembly (10)	Two walking beams (1)	Attach lifting sling to walking beams (1) and secure sling to hoist.	
2.	Two access covers (5 and 13)	Four U-bolts (4), eight lockwashers (11), and nuts (12)	Using 1¼ in. socket, handle, and pipe, unscrew and take out.	

TIRES REMOVED FOR CLARITY

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**5-11. AXLE AND SHACKLE BOXES (Con't)**

	LOCATION	ITEM	ACTION REMARKS
3.	Axle (10)	Two access covers (13)	Remove.
4.	Two access covers (5)	Four bolts (14), lockwashers (2), and nuts (3)	Using $1\frac{5}{16}$ in. socket, handle, and pipe, unscrew and take off.
5.	Shackle box bracket (9)	Two access covers (5) and top linings (6)	Remove.
6.	Axle (10)	Walking beams (1)	a. Using hoist, raise until axle (10) can be rolled out from under walking beams (1). b. Roll axle away from walking beams (1). c. Lower walking beams (1) onto jacks.
<b>DISASSEMBLY</b>			
7.		Camshaft	Remove (para 4-25).
8.		Airbrake chamber	Remove (para 4-30).
9.	Two shackle box brackets (9)	Four rubber strips (7) and two bottom linings (8)	Take out.
10.	Axle (10)	Two shackle box brackets (9)	a. Using torch outfit, cut off. b. Remove axle (10) from jacks.

**CLEANING****WARNING**

**Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F - 130°F (38°C - 59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.**

- |     |           |   |
|-----|-----------|---|
| 11. | Axle (10) | a. Clean with dry cleaning solvent and wire brush.<br>b. Wipe dry with clean, dry rags. |
|-----|-----------|---|

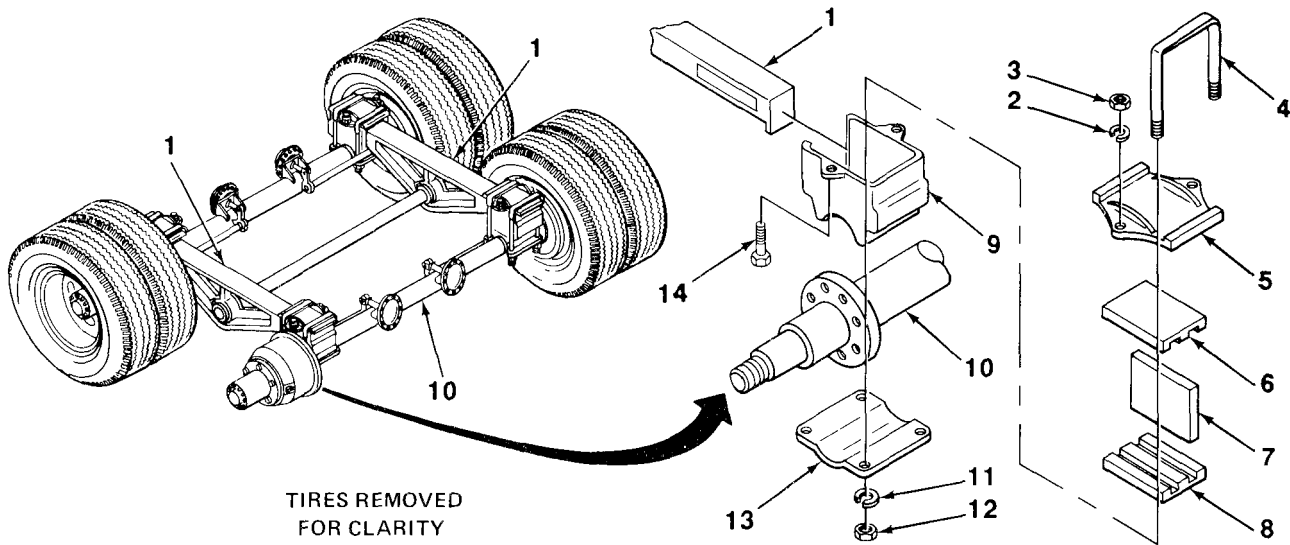
**INSPECTION AND REPLACEMENT****NOTE**

**Replace damaged or defective parts as needed.**

- |     |           |   |
|-----|-----------|---|
| 12. | Axle (10) | a. Check threaded ends for damage, burrs, distortion, and evidence of cross-threading.<br>b. Check bearing seat surfaces for scoring, galling, nicks, raised metal, and discoloration caused by heat. |
|-----|-----------|---|

5-11. AXLE AND SHACKLE BOXES (Con't)

LOCATION		ITEM	ACTION	REMARKS
12.	(Con't)		c. Check spindles for bending and cracks. d. Check axle tube for bad dents, cracks, and bends.	
13.		Two top linings (6), bottom linings (8), and four rubber strips (7)	Check for wear and brittleness.	
14.	Jacks	New axle (10)	Place new axle (10) on jacks.	
ASSEMBLY				
15.		Camshaft	Install (para 4-24).	
16.		Airbrake chamber	Install (para 4-30).	
17.	Axle (10)	Shackle box brackets (9)	Put in position and weld (TM 9-237)	



INSTALLATION

18.		Walking beams (1)	a. Using hoist, raise walking beams (1) off jacks. b. Position axle (10) under walking beams (1).	
19.	Two shackle box brackets (9)	Two bottom linings (8) and four rubber strips (7)	Put in place.	
20.	Axle (10)	Two shackle box brackets (9)	Put in position, directly under walking beams (1).	

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**5-11. AXLE AND SHACKLE BOXES (Con't)**

	LOCATION	ITEM	ACTION REMARKS
21.	Walking beam assembly (1)	Two shackle box brackets (9)	a. Using hoist, lower walking beams (1) until firmly seated into shackle box brackets (9), with lip of each beam inserted into slot of shackle box brackets. b. Using hoist, lower walking beam assembly until shackle box brackets (9) bear full weight of assembly, and lifting sling is slack.
22.	Two shackle box brackets (9) and walking beam assembly (1)	Two top linings (6) and access covers (5)	Put on.
23.	Two access covers (5) and shackle box brackets (9)	Four bolts (14), lockwashers (2), and nuts (3)	Screw in and tighten using $1\frac{5}{16}$ in. socket and handle.
24.	Axle (10)	Two access covers (13)	Place in position.
25.	Two access covers (5 and 13)	Four U-bolts (4), eight lockwashers (11), and nuts (12)	Screw in and tighten, using $1\frac{1}{4}$ in. socket and handle.
28.	Tandem axle assembly (10)	Walking beam assembly (1)	Take off lifting sling and hoist.

**FOLLOW-ON MAINTENANCE:**

- Install tandem axle assembly (para 5-10).

**TASK ENDS HERE**

5-12. TRUNNION AXLE AND WALKING BEAMS

This Task Covers:

- a. Removal
- b. Installation

Initial Setup:

Equipment Conditions:

- Tandem axle assembly removed (para 5-10).

Materials/Parts:

- Dry cleaning solvent (Item 13, Appendix E)
- Rags (Item 11, Appendix E)

Personnel Required: Two

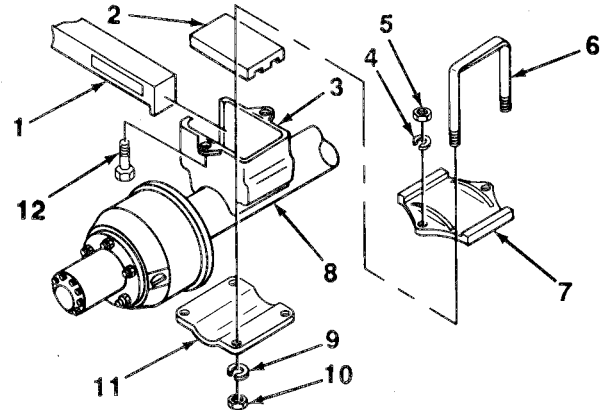
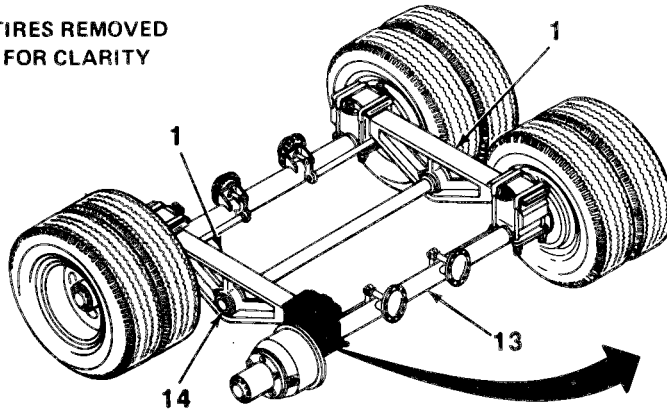
Tools/Test Equipment:

- Drift, brass
- Hammer, ball-peen
- Hammer, sledge
- Handle, socket wrench, 18 in., ¾ in. drive
- Hoist, with lifting sling
- Pipe, 1 in. ID, 30 in.
- Press, arbor
- Socket, 15/16 in., ¾ in. drive
- Socket, 1 in., ¾ in. drive
- Socket, 1¼ in., ¾ in. drive
- Trestle, motor vehicle maintenance, 10 ton (four required)
- Wrench, open-end, 7/16 in.
- Wrench, open-end, 15/16 in.
- Wrench, pipe

LOCATION		ITEM	ACTION	REMARKS
REMOVAL				
1.	Tandem axle assembly (13)	Two walking beams (1)	a. Attach and secure lifting sling. b. Using hoist, lift sling until slack is out of cables.	
2.	Four access covers (7 and 11)	Eight U-bolts (6), 16 lockwashers (9), and nuts (10)	Using 1¼ in. socket, handle, and pipe, unscrew and take off.	
3.	Two axles (8)	Four access covers (11)	Remove.	
4.	Four access covers (7) and shackle box brackets (3)	Eight bolts (12), lockwashers (4), and nuts (5)	Using 15/16 in. socket, handle, and 15/16 in. wrench, unscrew and take off.	
5.	Four shackle box brackets (3)	Four access covers (7) and top linings (2)	Remove.	
6.	Tandem axle assembly (13)	Two walking beams (1)	a. Using hoist, lift walking beams (1) off tandem axle assembly (13), move out of way, and set down on four jackstands. b. Take off lifting sling. c. Attach sling to trunnion axle (14).	

## 5-12. TRUNNION AXLE AND WALKING BEAMS (Con't)

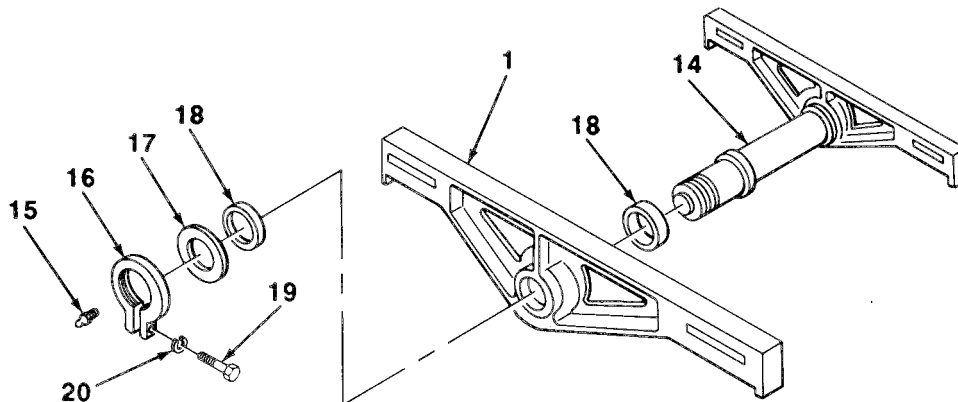
LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

TIRES REMOVED  
FOR CLARITY

## NOTE

Steps 7 through 10 cover removal of one walking beam;  
procedure is same for other walking beam.

- |     |                                   |                                |  |
|-----|-----------------------------------|--------------------------------|--|
| 7.  | Trunnion axle (14) and clamp (16) | Screw (19) and lockwasher (20) | Using 1 in. socket and handle, unscrew and takeoff.  |
| 8.  | Trunnion axle (14)                | Clamp (16) and washer (17)     | Using pipe wrench, unscrew and take off.   |
| 9.  |                                   | Lubrication fitting (15)       | Using $\frac{7}{16}$ in. wrench, unscrew and take off.   |
| 10. |                                   | Walking beam (1)               | With help from assistant, pull off.<br><b>You may have to tap walking beam (1) with hammer to free walking beam.</b> |
| 11. | Walking beam (1)                  | Two sleeve bushings (18)       | Using arbor press, press out.  |



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## 5-12. TRUNNION AXLE AND WALKING BEAMS (Con't)

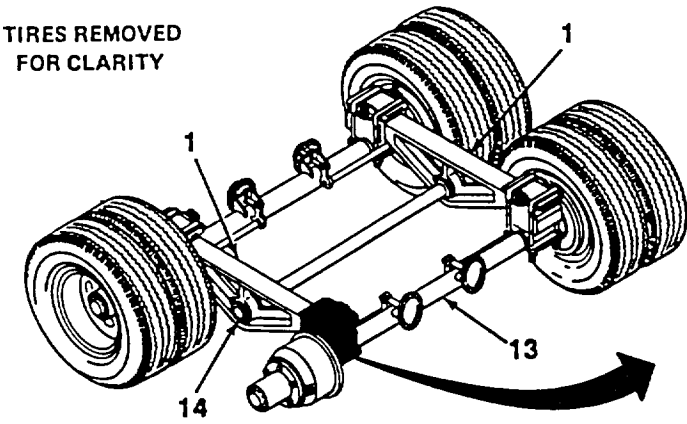
	LOCATION	ITEM	ACTION	REMARKS
INSTALLATION				
12.	Walking beam (1)	Two sleeve bushings (18)	Using arbor press, press in.	
13.	Trunnion axle (14)	Walking beam (1)	a. With help of an assistant, slide walking beam (1) onto trunnion axle (14). b. Put two jackstands under walking beam (1).	
14.		Washer (17) and clamp (16)	Screw on and tighten using pipe wrench.	
15.	Clamp (16)	Lockwasher (20) and screw (19)	Screw in and tighten using 1 in. socket and handle.	
16.	Trunnion axle (14)	Lubrication fitting (15)	Screw in and tighten using $\frac{7}{16}$ in. wrench.	

17.	Tandem axle assembly (13)	Two walking beams (1)	a. Attach lifting sling to walking beams (1). b. Move into position over tandem axle assembly (13).	
18.	Four shackle box brackets (3)	Two walking beams (1)	Using hoist, lower into shackle box brackets (3). <b>Lip of each walking beam (1) should seat and lock into slot in shackle box bracket (3).</b>	
19.		Four top linings (2) and four access covers (7)	Put on.	
20.	Four access covers (7)	Eight bolts (12), lockwashers (4), and nuts (5)	Screw on and tighten using $\frac{15}{16}$ in. wrench, $\frac{15}{16}$ in. socket, and handle.	
21.	Two axles (8)	Four access covers (11)	Put in position	

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5-12. TRUNNION AXLE AND WALKING BEAMS (Con't)

LOCATION		ITEM	ACTION	REMARKS
				
22.	Four access covers (7 and 11)	Eight U-bolts (6), 16 lockwashers (9), and nuts (10)	Screw on and tighten using 1 1/4 In. socket and handle.	
23.	Tandem axle assembly (13)	Two walking beams (1)	Take off lifting sling.	

FOLLOW-ON MAINTENANCE:

- Install tandem axle assembly (para 5-10).
- Lubricate tandem axle assembly (para 3-2).

TASK ENDS HERE



#### **Section IV. BRAKESHOE MAINTENANCE**

**[Paragraph 5-13 Deleted]**

[Paragraph 5-13 Deleted]

[Paragraph 5-13 Deleted]

[Paragraph 5-13 Deleted]

Section V. DRUM AND TIRE MAINTENANCE

	Page		Page
Drum.....	5-17	Tires .....	5-19

5-14. DRUM

*This Task Covers:*

- a. Cleaning
- b. Inspection and Repair

Initial Setup:

**Equipment Conditions:**

- Drum removed (para 4-33).

**Tools/Test Equipment:**

- Micrometer, inside, with extensions

**Materials/Parts:**

- Abrasive cloth (Item 2, Appendix E)
- Dry cleaning solvent (Item 13, Appendix E)
- Rags (Item 11, Appendix E)

5-14. DRUM (Con't)

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

CLEANING

**WARNING**

- DO NOT handle brakeshoes, brakedrums, or other brake components unless area has been properly cleaned. There may be asbestos dust on these components which can be dangerous if you touch it or breathe it. Wear an approved filter mask and gloves. Never use compressed air or a dry brush to clean brake components. Dust may be removed using an Industrial-type vacuum cleaner. Clean dust or mud away from brake components with water and a wet, soft brush or cloth. Failure to follow this warning may result in serious illness or death to personnel.
- Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

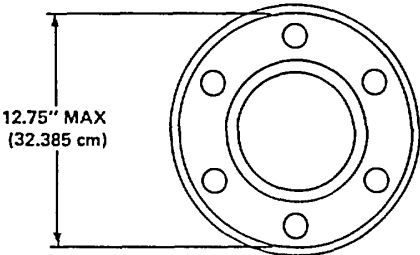
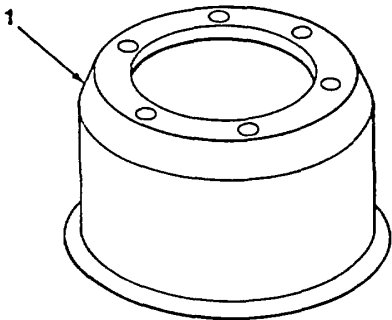
- Drum (1)
- a. Clean in dry cleaning solvent.
  - b. Allow to dry.
- Do not use compressed air.**

INSPECTION AND REPAIR

**NOTE**

For more information on how to inspect and repair parts, refer to Chapter 5, Section II, General Maintenance Instructions.

- 2.
- Drum (1)
- a. Check stud holes for wear, cracks, and any other damage.



**5-14. DRUM (Con't)**

	LOCATION	ITEM	ACTION	REMARKS
2.	(Con't)		b.	Check for heat discoloration, scoring, warping, and cracks on braking surface. <b>Cracked drums must be replaced.</b>
				<b>NOTE</b>
			-	Slight scoring can be rubbed out by polishing with abrasive cloth. Heavy scoring and out-of-round conditions must be corrected by turning the drum on a refinishing lathe.
			-	When one drum on one axle is refinished, the other drum on that axle must be turned to the same specification.
3.		Drum (1)	a.	Using micrometer, check runout of braking surface. <b>Runout must not be greater than 0.01 in. (0.254 mm).</b>
			b.	Refinish braking surface on lathe if runout exceeds tolerance. <b>Replace drum if inside diameter of braking surfaces is greater than 12.75 in. (32.385 cm).</b>
				<b>FOLLOW-ON MAINTENANCE:</b>
			-	Install drum (paras 4-33).
			-	Adjust brakes (para 4-22).

**TASK ENDS HERE****5-15. TIRES**

Repair semitrailer tires In accordance with Instructions in TM 9-2610-200-24.

Section VI. BODY MAINTENANCE

	Page		Page
Deck and Loading Ramp.....	5-20	Frames Reinforcement Installation .....	5-22

5-16. DECK AND LOADING RAMP

This Task Covers:

- a. Removal
- b. Installation

Initial Setup:

Tools/Test Equipment:

- Hammer, hand, carpenter's
- Pliers, slip-joint, straight-nose
- Wrench, open-end, 3/4 in.

Personnel Required: Two

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

NOTE

This procedure covers replacement of one deck board on deck and loading ramp.  
The procedure is similar for all deck boards.

REMOVAL

1.

Deck board (1)  
and frame  
crossmember (3)

Bolt (2), bridge  
clip (4),  
lockwasher (5),  
and nut (6)

a. Using pliers, bend tab (7) up.

b. Using 3/4 in. wrench, unscrew nut (6) and remove.

c. Take off lockwasher (5) and bridge clip (4).

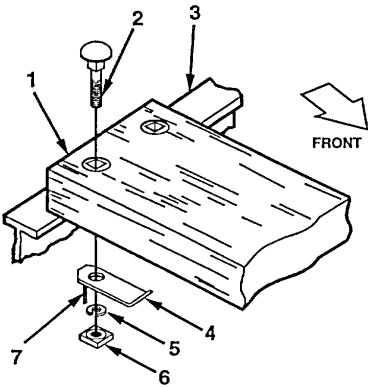
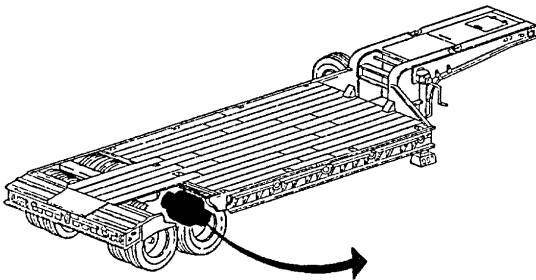
d. Using hammer, tap up on bolt (2) and take out.

e. Perform steps a through d as many times as necessary to remove all hardware to free deck board (1) from frame.
2.

Frame crossmember (3)

Deck board (1)

Lift off.



**5-16. DECK AND LOADING RAMP (Con't)**

LOCATION		ITEM	ACTION	REMARKS
3.	Frame crossmember (3)	Deck board (1)	a. Using the old deck board (1) as a template, cut the new deck board to proper length. Drill and countersink bolt holes. b. Place in position.	
4.	Deck board (1) and frame crossmember (3)	Bolt (2), bridge clip (4), lockwasher (5), and nut (6)	a. Screw in and tighten using 3/4 in. wrench. Make sure lip of bridge clip (4) is under frame crossmember (3). b. Using pliers, bend tab (7) down so nut (6) cannot move. c. Perform steps a and b as many times as necessary to install all hardware.	

**TASK ENDS HERE**



5-17. FRAME REINFORCEMENT INSTALLATION

*This Task Covers:*

Installation

*Initial Setup:*

**Materials/Parts:**

- Steel, Class B, Grade 2, Spec MIL-5-13281, Optional Material SAE950

**Personnel Required:** Two

**Tools/Test Equipment:**

- Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance Common No. 2 Less Power

LOCATION	ITEM	ACTION	REMARKS
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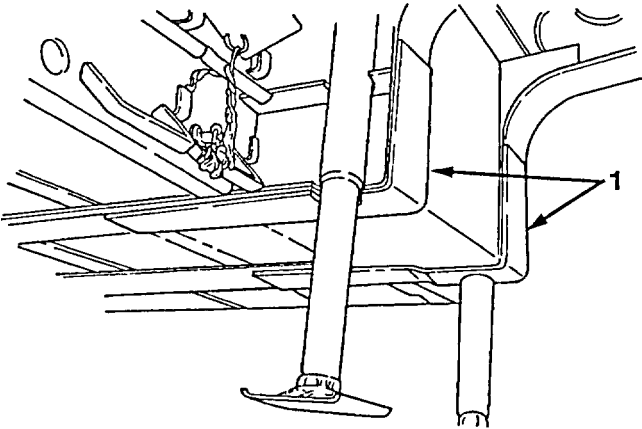
INSTALLATION

**NOTE**

- These procedures are not mandatory although highly recommended should your semitrailer need reinforcing.
- Use a series of drawings-"Kit, Reinforcement Frame, Pedestal, and Gooseneck" Available, TACOM part number 11625411.
- Fabrication details of frame reinforcements are in Appendix G, Illustrated List of Manufactured Items.
- All welding will be done in accordance with instructions in TM 9-237.
- Make sure surfaces are free of paint and foreign matter.

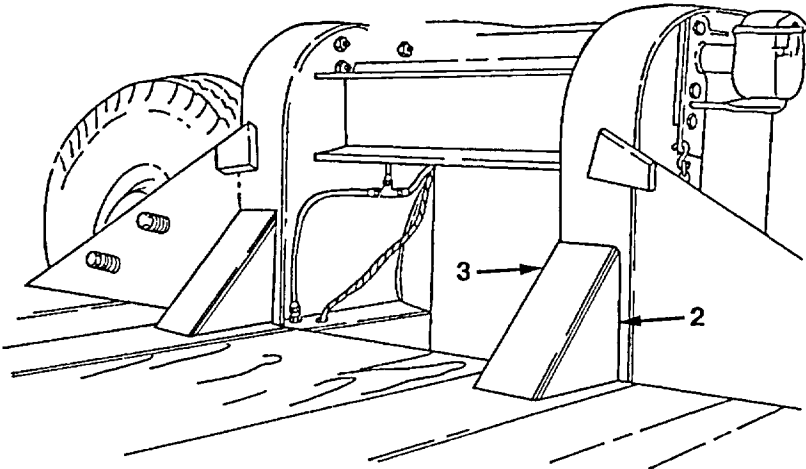
1. Gooseneck

Position and weld gooseneck reinforcement plates (1).



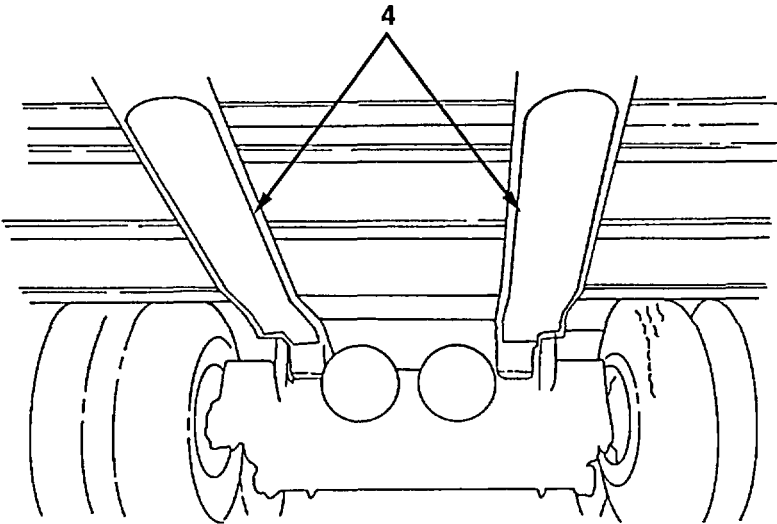
5-17. FRAME REINFORCEMENT INSTALLATION (Con't)

LOCATION	ITEM	ACTION	REMARKS
2.	Gooseneck	Position and weld gooseneck upper gussets (2) and cover plates (3).	

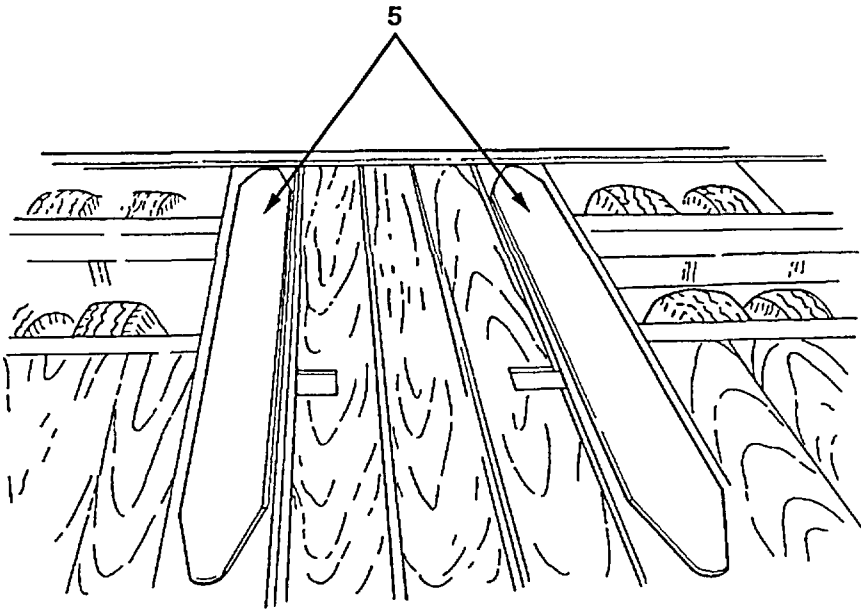


5-17. FRAME REINFORCEMENT INSTALLATION (Con't)

LOCATION	ITEM	ACTION	REMARKS
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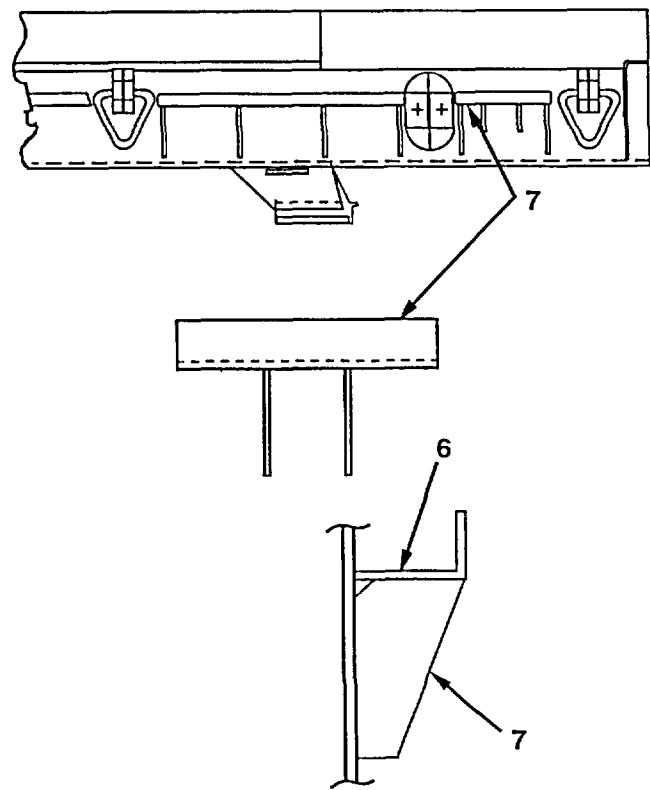


3.	Main Frame Rails	Position and weld main frame rail lower reinforcement plates (4). Weld main frame rail upper buildup plates (5).
----	------------------	--



5-17. FRAME REINFORCEMENT INSTALLATION (Con't)

	LOCATION	ITEM	ACTION	REMARKS
4.	Ramp Outer Rear Clip Angle (6)		Weld two support angles (7) on each side of semitrailer. Use continuous 3/16 weld fillet on both sides of support angle.	



TASK ENDS HERE

## APPENDIX A

### REFERENCES

#### A-1. SCOPE

This appendix lists indexes and general references, field manuals, technical bulletins, and technical manuals required for use with this manual.

#### A-2. PUBLICATION INDEXES AND GENERAL REFERENCES

Indexes should be consulted frequently for latest changes or revisions to references given in this appendix and for new information relating to materiel covered in this publication.

##### a. Military Publication Indexes.

Consolidated Index of Army Publications and Blank Forms . . . . . DA Pam 25-30

##### b. General References.

Operational Terms and Symbols . . . . . FM 101-5-1

#### A-3. FORMS

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

#### A-4. OTHER PUBLICATIONS

The following publications contain information pertinent to the major item materiel and associated equipment.

##### a. Camouflage.

Camouflage . . . . . FM 5-20

Color, Marking, and Camouflage Painting of Military Vehicles,  
Construction Equipment, and Materials Handling Equipment . . . . . TB 43-0209

Painting Instructions for Army Materiel . . . . . TM 43-0139

##### b. Decontamination.

NBC Decontamination . . . . . FM 3-5

##### c. General.

Basic Cold Weather Manual . . . . . FM 31-70

Deepwater Fording of Ordnance Materiel . . . . . TM 9-238

Army Motor Transport Units and Operations . . . . . FM 55-30

Equipment Improvement Report and Maintenance Digest

(U.S. Army Tank-Automotive Command) Tank-Automotive Equipment . . . . . TB 43-0001-39 Series

First Aid for Soldiers . . . . . FM 21-11

Manual for the Wheeled Vehicle Driver . . . . . FM 21-305

Northern Operations . . . . . FM 31-71

Operation and Maintenance of Ordnance Materiel in Cold Weather (0°F to -65°F) . . . . . FM 9-207

Procedures for Destruction of Tank-Automotive Equipment to Prevent Enemy Use . . . . . TM 750-244-6

Railcar Loading Procedures . . . . . TM 55-601

**A-4. OTHER PUBLICATIONS (Con't)**

Railway Operating and Safety Rules ..... TM 55-200  
Storage and Materials Handling .....TM 743-200-1

d. **Maintenance and Repair.**

Description, Use, Bonding Techniques, and Properties of Adhesives ..... TB ORD 1032  
Inspection, Care, and Maintenance of Antifriction 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  
Organizational, Direct Support and General Support Maintenance Care,  
Maintenance, and Repair of Pneumatic Tires and Inner Tubes .....TM 9-2610-200-24  
Tactical Wheeled Vehicles: Repair of Frames .....TB 9-2300-247-40

## APPENDIX B

### MAINTENANCE ALLOCATION CHART

#### Section I. INTRODUCTION

##### B-1. GENERAL

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

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 to the end item or component will be consistent with the capacities and capabilities of the designated maintenance levels.

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

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 feel).

b. **Test.** To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. **Service.** Operations required periodically to keep an item in proper operating condition, i.e., to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to 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. **Aline.** 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 equipments 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.

h. **Replace.** To remove an unserviceable item and install a serviceable counterpart in its place. "Replace" is authorized MAC and is shown as the third position 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.

## B-2. MAINTENANCE FUNCTIONS (Con't)

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 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. For a detailed explanation of these functions, refer to paragraph B-2.)

d. **Column 4, Maintenance Level.** Column 4 specifies, by the listing of a *work time* figure in the appropriate subcolumn(s), the level of maintenance authorized to perform the function listed in Column 3. This figure represents the active time required to perform that maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance levels, appropriate work time figures will be shown for each level. The work time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the Maintenance Allocation Chart. The symbol designations for the various maintenance levels are as follows:

C . . . . . Unit (Operator or Crew)  
 0 . . . . . Unit Maintenance  
 F . . . . . Direct Support Maintenance  
 H . . . . . General Support Maintenance  
 D . . . . . Depot Maintenance

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 alphabetic order, which shall be keyed to the remarks contained in Section IV.

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

a. **Column 1, Tool or Test Equipment 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 Level.** The lowest level of maintenance authorized to use the tool or test equipment.

c. **Column 3, Nomenclature.** Name or identification of the tool or test equipment.

d. **Column 4, National/NATO Stock Number.** The National or NATO 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 Level					(5) Tools and Equipment	(6) Remarks
			Unit		DS	GS	Depot		
			C	O	F	H	D		
<b>06</b>	<b>ELECTRICAL SYSTEM</b>								
0609	Lights								
	Lamps and Lamp Unit	Replace		0.3					
0613	Hull or Chassis Wiring Harness	Replace		2.0					
		Repair		1.0					
	Coupling, Trailer Electric	Replace		1.0					
<b>11</b>	<b>REAR AXLE</b>								A
1100	Rear Axle Assembly								
	Tandem Axle	Replace			6.0				
	Shackle Box	Replace			1.0				
1108	Walking Beams, Stub Axles and Parts								
	Walking Beam	Replace			6.0				
<b>12</b>	<b>BRAKES</b>								A
1202	Service Brakes	Inspect		0.5					
		Adjust		1.0					
		Replace		4.0					
	Brakeshoe Assembly	Replace		4.0					
		Repair			2.0				
1206	Mechanical Brake System								
	Slack Adjuster	Replace		0.3					
1208	Airbrake System								
	Coupling, Air	Replace		0.5					
		Repair		0.1					
	Lines and Fittings	Test		0.3					
		Replace		2.0					
		Repair		1.0					

## Section II. MAINTENANCE ALLOCATION CHART (Con't)

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Unit		DS	GS	Depot		
			C	O	F	H	D		
1208	<i>Airbrake System (Con't)</i>								
	Chamber, Airbrake	Adjust	0.3						
		Replace	1.0						
	Valves	Replace	2.0						
	Reservoir, Air	Replace	2.5						
	Draincock	Replace	0.3						
13	<b>WHEELS</b>								
1311	<i>Wheel Assembly</i>								
	Hub	Inspect	0.5					1, 2, 3 4, 5, 6, 7	A
		Replace	1.5						
		Repair	1.5						
	Drum	Inspect	0.5						
		Replace	1.5						
		Repair	1.5						
	Bearing and Seal	Inspect	0.5						
		Adjust	0.3						
		Replace	1.5						
	Wheel	Replace	0.5						
1313	<i>Tires and Tubes</i>								
	Tires	Service	0.5						
		Replace	0.5						
		Repair	0.5						
	Tubes	Replace	0.5						
		Repair	0.5						
15	<b>FRAME AND TOWING ATTACHMENTS</b>								
1501	<i>Frame Assembly</i>	Repair	8.0						
1504	<i>Spare Wheel Carrier</i>	Replace	0.3						
1506	<i>Fifth Wheel</i>								
	Kingpin	Service	0.2						
		Replace	0.3						
	Retainer	Replace	0.3						
1507	<i>Landing Gear and Leveling Jacks</i>	Replace	3.0						
		Repair	4.0						

## Section II. MAINTENANCE ALLOCATION CHART (Con't)

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remark
			Unit		DS	GS	Depot		
			C	O	F	H	D		
1507	Landing Gear and Leveling Jacks (Con't)								
	Gearbox	Replace		1.3					
		Repair		2.0					
18	<b>BODY</b>								
1810	Cargo Body								
	Deck	Repair			8.0				A
22	<b>ACCESSORY ITEMS</b>								
2202	Accessory Items								
	Reflectors	Replace		0.3				1,2,3	
2210	Data Plates and Instruction Holders								
	Plates, Vehicle Data	Replace		0.3					

(1) TOOL OR TEST EQUIPMENT REFERENCE CODE	(2) MAINTENANCE LEVEL	(3) NOMENCLATURE COMMON TOOLS:	(4) NATIONAL/NATO STOCK NUMBER	(5) TOOL NUMBER
1	O	TOOL KIT, GENERAL MECHANIC'S AUTOMOTIVE	5180-00-177-7033	W33004
2	O	SHOP EQUIPMENT, AUTOMOTIVE MAINTENANCE AND REPAIR: ORGANIZATIONAL MAINTENANCE COMMON NO. 1, LESS POWER	4910-00-754-0654	W32593
3	O	SHOP EQUIPMENT, AUTOMOTIVE MAINTENANCE AND REPAIR: ORGANIZATIONAL MAINTENANCE COMMON NO. 2, LESS POWER	4910-00-754-0650	W32730
4	F	SHOP EQUIPMENT, AUTOMOTIVE MAINTENANCE AND REPAIR: FIELD MAINTENANCE SUPPLEMENTAL NO. 1	4910-00-754-0706	T25619
5	F	TOOL KIT, WELDER'S  SPECIAL TOOLS:	5 80-00-754-0661	W58075
6	C	WRENCH, SOCKET	5 20-00-316-9217	
7	O	SOCKET, SOCKET WRENCH	5 20-00-261-2821	

## Section IV. REMARKS

(1) REFERENCE CODE	(2) REMARKS
A	DIRECT SUPPORT (F) MAINTENANCE INCLUDES REPLACEMENT OF REPAIRABLE ASSEMBLIES, REPAIR OR COMPONENTS OF ASSEMBLIES CONSIDERED UNECONOMICAL TO EVACUATE FURTHER; PERFORMS ADJUSTMENTS OF SYSTEMS FOR WHICH UNIT MAINTENANCE DOES NOT POSSESS SKILLS OR TEST EQUIPMENT.

## APPENDIX C COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS

### Section I. INTRODUCTION

#### C-1. SCOPE

This appendix lists Components of End item and Basic Issue items for the M172A1 Lowbed Semitrailer to help you inventory items required for safe and efficient operation.

#### C-2. GENERAL

The Components of End Item and Basic Issue items Lists are divided Into the following sections:

a. **Section II. Components of End Item (COEI).** The listing is for Informational purposes only, and is not authority to requisition replacements. These items are part of the end item, but are removed and separately packaged for transportation or shipment. As part of the end Item, these items must be with the end item whenever it is issued or transferred between property accounts. Illustrations are furnished to assist you in identifying the items.

b. **Section III. Basic Issue Items (BII).** These are the minimum essential items required to place the semitrailer in operation, operate it, and perform emergency repairs. Although shipped separately packaged, BII must be with the semitrailer during operation and whenever it is transferred between property accounts. The illustrations will assist you with hard-to-identify items. This manual is your authority to request/requisition replacement BII, based on TOE/MTOE authorization of the end item.

#### C-3. EXPLANATION OF COLUMNS

The following provides an explanation of columns found in the tabular listings:

a. **Column 1, Illustration Number (Illus No.).** This column indicates the number of the Illustration In which the item is shown.

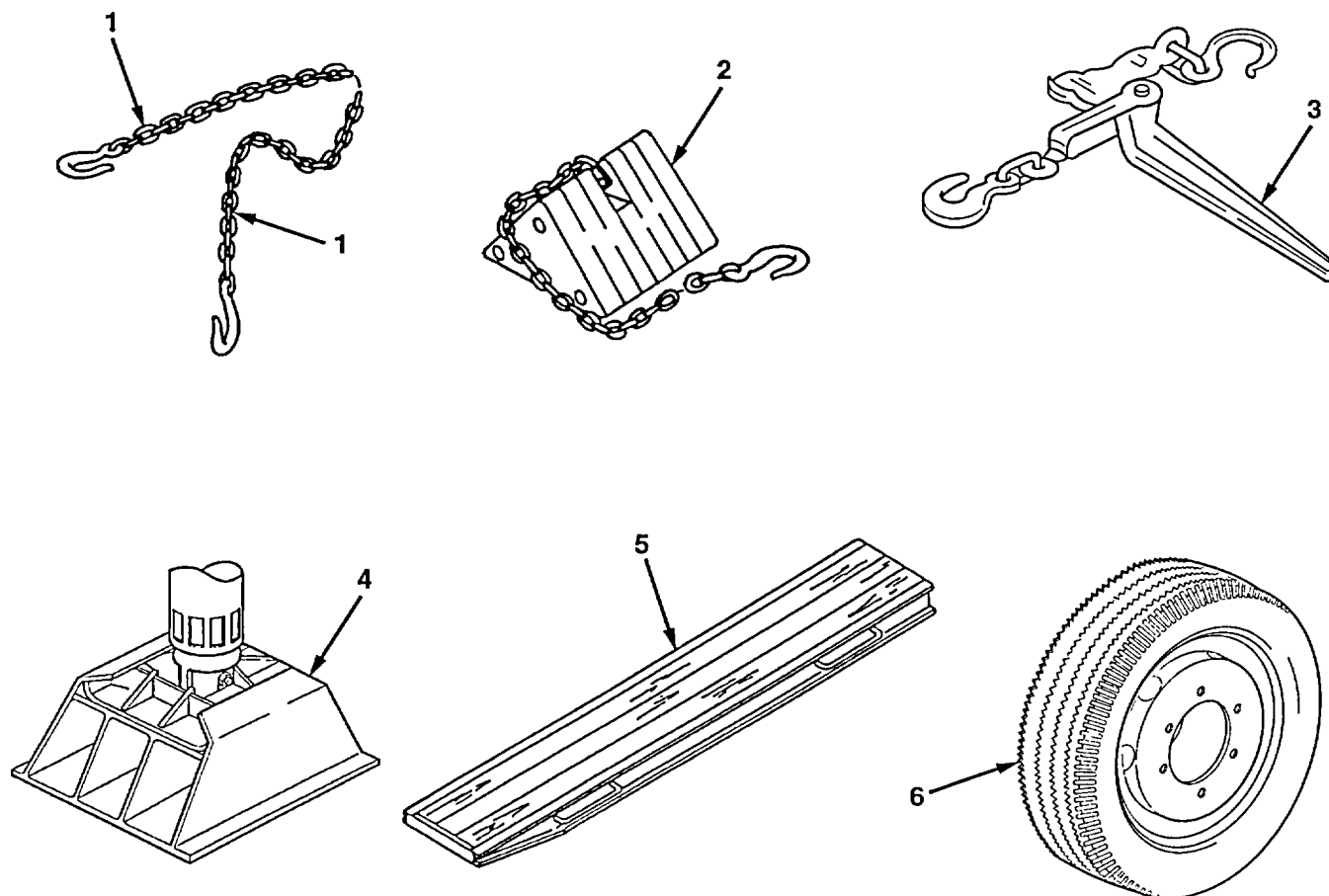
b. **Column 2, National Stock Number.** Indicates the National Stock Number assigned to the item and will be used for requisitioning purposes.

c. **Column 3, Description.** Indicates the Federal item name and, If required, a minimal description to identify and locate the item. The last line for each item Indicates the Commercial and Government Entity (CAGE) Code, in parentheses, followed by the part number.

d. **Column 4, Unit of Measure (U/M).** Indicates the measure used in performing the actual operation/maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in., pr).

e. **Column 5, Quantity Required (Qty Reqd).** Indicates the quantity of the item authorized to be used with/on the equipment.

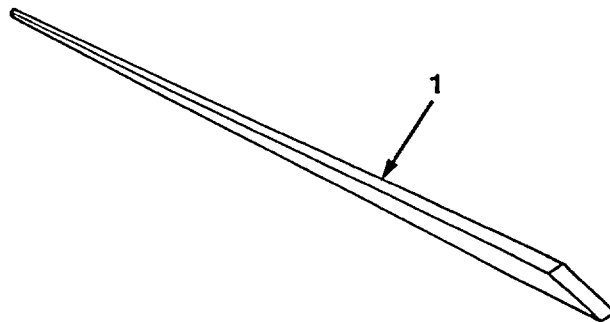
## Section II. COMPONENTS OF END ITEM



(1) Illus No.	(2) National Stock Number	(3) Description CAGE and Part Number	(4) U/M	(5) Qty Reqd
1	4010-00-803-8858	Chain Assembly, Single Leg (81328) RRC271	ea	4
2	2540-00-678-3469	Chock, Wheel-Track (19207) 8343584	ea	4
3	3990-01-213-1746	Binder, Load (27404) R-45	ea	4
4	2590-00-678-4099	Pad Assembly, Shoe (19207) 8336638	ea	2
5	3990-00-353-6354	Ramp, Loading, Vehicle (19207) 8379503	ea	2

**Section II. COMPONENTS OF END ITEM (Con't)**

(1) Illus No.	(2) National Stock Number	(3) Description CAGE and Part Number	(4) U/M	(5) Qty Reqd
6		Wheel and Tire Assembly (Radial)		
	2610-00-052-7969	Inner Tube, Pneumatic	ea	1
	2610-01-325-1934	Tire, Pneumatic	ea	1
	2530-01-125-4084	Wheel, Pneumatic Tire	ea	1
	2610-01-254-5392	Flap, Inner Tube, Pneumatic	ea	1

**Section III. BASIC ISSUE ITEMS**

(1) Illus No.	(2) National Stock Number	(3) Description CAGE and Part Number	(4) U/M	(5) Qty Reqd
1	5120-00-224-1390	Crowbar (80064) 1833244	ea	1

## APPENDIX D

### Additional AUTHORIZATION LIST

#### Section I. INTRODUCTION

##### D-1. SCOPE

- a. This appendix lists additional items you are authorized for the support of the M172A1 Lowbed Semitrailer.
- b. This list identifies items that do not have to accompany the M172A1 Lowbed Semitrailer and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

##### D-2. EXPLANATION OF LISTING

National Stock Numbers, descriptions, and quantities are provided to help you identify and request the additional items you require to support this equipment. The items are listed in alphabetical sequence by item name.

#### Section II. ADDITIONAL AUTHORIZATION LIST

(1) National Stock Number	(2) Description CAGE and Part Number	(3) U/M	(4) Qty Auth
2540-00-201-8757	Plate , Wheel Cover (19207) 8336539	ea	4
	<p style="text-align: center;"><b>NOTE</b></p> <p style="text-align: center;"><b>Manufacturing Instructions for Wrench, Lugnut, Altered can be found in Appendix G.</b></p> <p>Wrench, Lugnut, Altered</p>	ea	1



## APPENDIX E

### EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

#### Section I. INTRODUCTION

##### E-1. SCOPE

This appendix lists expendable/durable supplies and materials you will need to operate and maintain the M172A1 Lowbed Semitrailer. These items are authorized to you by CTA 50-970, *Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items)* or CTA 8-100, *Army Medical Department Expendable/Durable 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 initial setup narrative instructions to identify the material.

b. **Column 2, Level.** This column identifies the lowest level of maintenance that requires the listed item.

C - Operator/Crew  
O - Unit 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 Commercial and Government Entity (CAGE) Code, in parentheses, followed by the part number.

e. **Column 5, Unit of Measure (U/M).** Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in., qt). 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/DURABLE SUPPLIES AND MATERIALS LIST

(1)	(2)	(3)	(4)	(5)
ITEM NUMBER	LEVEL	NATIONAL STOCK NUMBER	DESCRIPTION	U/M
1	C		BRUSH,ACID SWABBING (81348) 11B-643	
		7920-00-514-2417	BOX OF 144	EA
2	O		CLOTH,ABRASIVE (81348)P-C-458	
		5350-00-22 1-0872	50 SHEET PACKAGE	SH
3	O		COMPOUND,INSULATING ELECTRICAL (04347) PC28STD	
		5970-00-005-3340	AEROSOL CAN	OZ
4	O		DETERGENT, GENERAL PURPOSE (81349)MIL-D-16791	
		7930-00-282-9699	1 GALLON CAN	GL
5	C		GREASE,AUTOMOTIVE AND ARTILLERY (81349) MIL-G-10924	
		9150-00-935-1017	14 OUNCE CAN	OZ
		9150-00-190-0904	1.75 POUND CAN	LB
		9150-00-190-0905	6.5 POUND CAN	LB
6	C		OIL, LUBRICATING, OE/HDO10 (81349)MIL-L-2104	
		9150-00-189-6727	1 QUART CAN	QT
		9150-00-186-6668	5 GALLON CAN	GL
		9150-00-191-2772	55 GALLON DRUM	GL
7	C		OIL, LUBRICATING,OE/HDO 30 (81349) MIL-L-2104	
		9150-00-186-6681	1 QUART CAN	QT
		9150-00-188-9858	5 GALLON CAN	GL
		9150-00-189-6729	55 GALLON DRUM	GL
8	C		OIL, LUBRICATING,OEA (81349)MIL-L-46167	
		9150-00-402-4478	1 QUART CAN	QT
		9150-00-402-2372	5 GALLON CAN	GL
		9150-00-491-7197	55 GALLON DRUM	GL

## SECTION II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (CON'T)

(1)	(2)	(3)	(4)	(5)
ITEM NUMBER	LEVEL	NATIONAL STOCK NUMBER	DESCRIPTION	U/M
9	C		OIL,LUBRICATING, PRESERVATIVE PL-M (81349)MIL-L-3150	
		9150-00-231-2361	1 QUART CAN	QT
		9150-00-231-2356	5 GALLON CAN	GL
		9150-00-231-2357	55 GALLON DRUM	GL
10	C		OIL,LUBRICATING, PRESERVATIVE PL-S (81348) VV-L-800	
		9150-00-231-6689	1 QUART CAN	QT
		9150-00-231-9062	5 GALLON CAN	GL
		9150-00-281-2060	55 GALLON DRUM	GL
11	C		RAG,WIPING (58536) A-A531	
		7920-00-205-1711	50 POUND BALE	LB
12	O		SOLDER,LEAD (81348) QQ-S-571	
		3439-00-003-8601	1 POUND SPOOL	LB
13	C		SOLVENT,DRY CLEANING,TYPE II (81348)P-D-680	
		6850-00-664-5685	1 QUART CAN	QT
		6850-00-281-1985	1 GALLON CAN	GL
		6850-00-285-8011	55 GALLON DRUM	GL
14	O		TAG,MARKER (81349)MIL-T-12755	
		9905-00-537-8954	BOX OF 50	EA
15	O		TAPE,ANTISEIZE 1/4IN.WIDE (81349)MIL-T-27730	
		8030-00-889-3534	260 IN.ROLL	IN

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 unit, direct support, and general support maintenance of the M172A1 Lowbed 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:

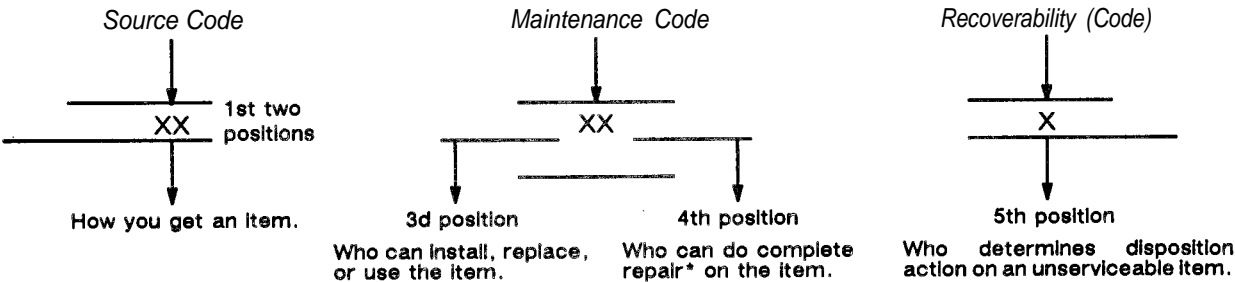
a. **Section II. Repair Parts List.** A list of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. The list also includes parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in ascending alphanumeric 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 RPSTL [as indicated by Basis of Issue (BOI) information in the *DESCRIPTION AND USABLE ON CODE* column] for the performance of maintenance.

c. **Section IV. National Stock Number and Part Number Index.** A list, in National Item identification Number (NIIN) sequence, of all part numbers 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)].** 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 5-position 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) (Con't)

(1) Source Code. The source code tells you how to get an item needed for maintenance, repair, or overhaul of an end item/equipment. Explanations of source codes follow:

<u>Code</u>	<u>Application/Explanation</u>
<div>PA</div> <div>PB</div> <div>PC**</div> <div>PD</div> <div>PE</div> <div>PF</div> <div>PG</div>	<p>Stocked items; use the applicable NSN to request/requisition items with these source codes. They are authorized to the category indicated by the code entered in the 3d position of the SMR code.</p> <p>.....</p> <p><b>** Items coded PC are subject to deterioration.</b></p> <p>.....</p>
<div>KD</div> <div>KF</div> <div>KB</div>	<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>
<div>MO - Made at UM/AVUM Level</div> <div>MF - Made at DS/AVUM Level</div> <div>MH - Made at GS Level</div> <div>MD - Made at Depot</div>	<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 <i>DESCRIPTION AND USABLE ON CODE (UOC)</i> 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>
<div>AO - Assembled by UM/AVUM Level</div> <div>AF - Assembled by DS/AVUM Level</div> <div>AH - Assembled by GS Level</div> <div>AD - Assembled at Depot</div>	<p>Items with these codes are not to be requested/requisitioned individually. The parts that make up the assembled item must be requisitioned or fabricated and assembled at the level of maintenance indicated by the source code. If the 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 level of maintenance.</p>

NOTE

**Cannibalization or controlled exchange, when authorized, maybe 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) (Con't)**

- 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>
<i>C</i>	- Crew or operator maintenance done within unit maintenance or aviation unit maintenance.
<i>O</i>	- Unit maintenance or aviation unit can remove, replace, and use the item.
<i>F</i>	- Direct support or aviation intermediate level can remove, replace, and use the item.
<i>H</i>	- General support level can remove, replace, and use the item.
<i>L</i>	- Specialized repair activity can remove, replace, and use the item.
<i>D</i>	- 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>
<i>O</i>	- Unit maintenance or aviation unit is the lowest level that can do complete repair of the item.
<i>F</i>	- Direct support or aviation intermediate is the lowest level than can do complete repair of the item.
<i>H</i>	- General support is the lowest level that can do complete repair of the item.
<i>L</i>	- Specialized repair activity is the lowest level that can do complete repair of the item.
<i>D</i>	- Depot is the lowest level that can do complete repair of the item.
<i>Z</i>	- Nonreparable. No repair is authorized.
<i>B</i>	- 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) (Con't)**

(3) Recoverability Code. Recoverability codes are assigned to items to indicate the disposition action on unserviceable items. The recoverability code is entered in the fifth position of the SMR code as follows:

<u>Code</u>	<u>Application/Explanation</u>
Z	- 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 dispose of the item at unit maintenance or aviation unit level.
F	- Reparable item. When uneconomically reparable, condemn and dispose of the item at the direct support or aviation intermediate level.
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	- Repairable 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).

**F-3. EXPLANATION OF COLUMNS (SECTIONS II AND III) (Con't)**

(7) The usable on code, when applicable. (See paragraph F-5, Special Information)

(8) In the Special Tools List section, the Basis of Issue (BOI) appears as the last line(s) in the entry for each special tool, special TMDE, and other special support equipment. When density of equipments supported exceeds density spread indicated in the 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  
NIIN

). When using this column to locate an item, ignore the first 4 digits of the NSN. However,

er, 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. EXPLANATIONS OF CLOUMNS (SECTION IV) (Con't)

(4) CAGE Column. The Commercial and Government Entity (CAGE) is a 5-digit numeric 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. Usable on codes are shown as "UOC: . . . . . ." in the Description column (justified left) on the first line applicable item description/nomenclature. Uncoded items are applicable to all models. Not Applicable.

b. Fabrication Instructions. Bulk materials required to manufacture items are listed in the Bulk Materiel Functional Group of this RPSTL. 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 makeup 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. This 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.

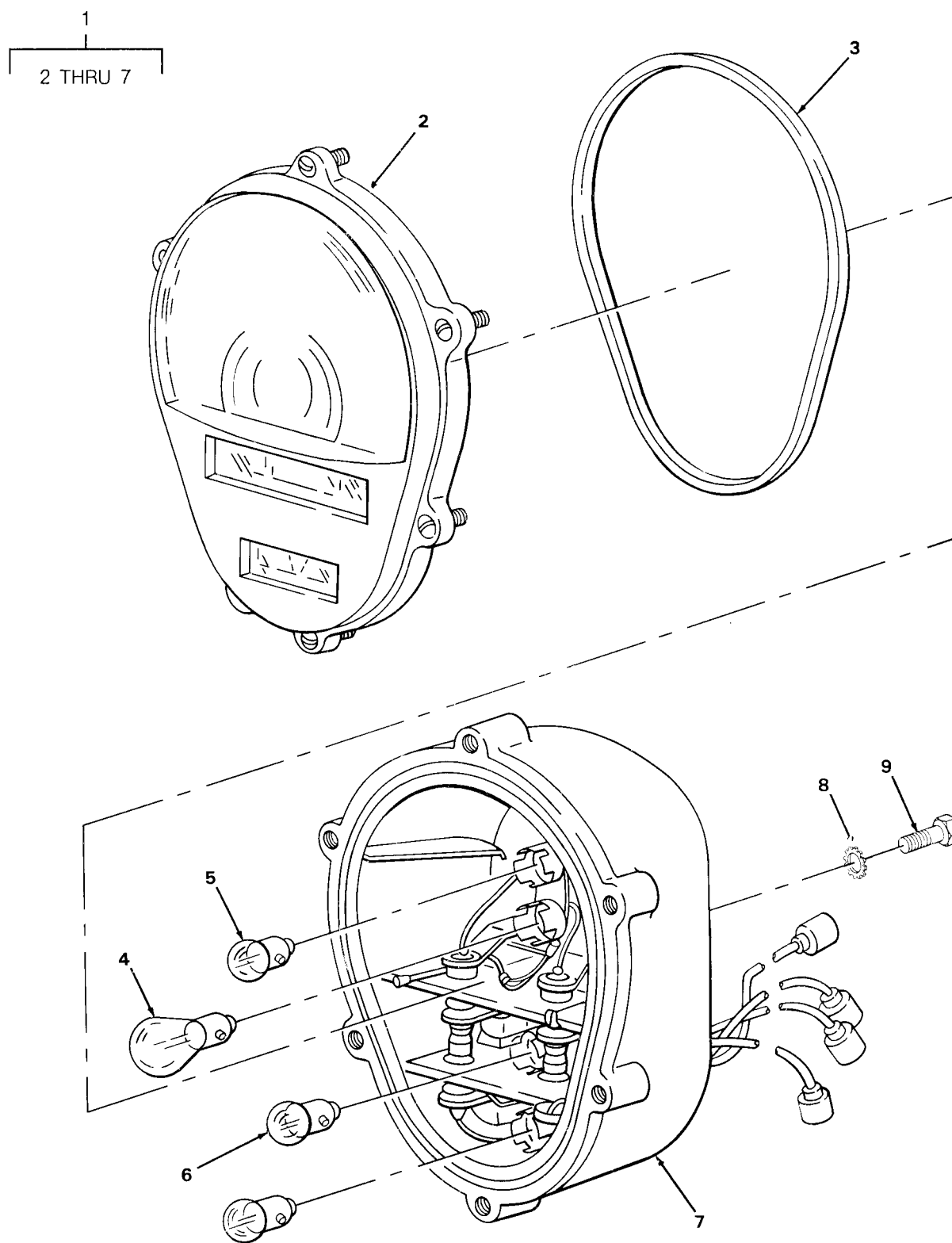
##### b. When National Stock Number or Part Number is Known:

(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 the repair parts list for the figure.

#### F-7. ABBREVIATIONS

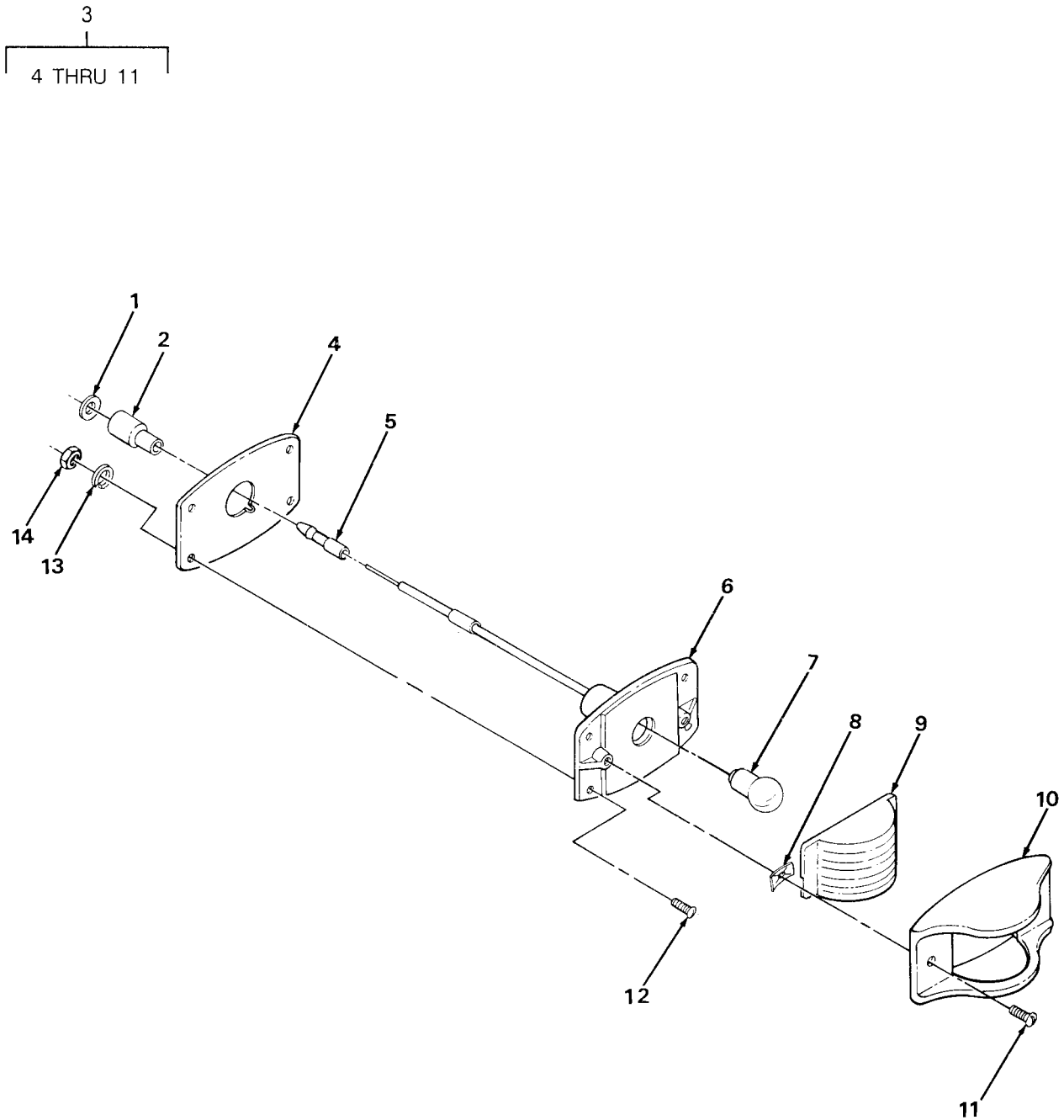
For standard abbreviations see MIL-STD-12D, *Military Standard Abbreviations for Use on Drawings, Specifications, Standards, and in Technical Documents*.



TA505755

FIGURE 1. COMPOSITE MARKER LIGHT.

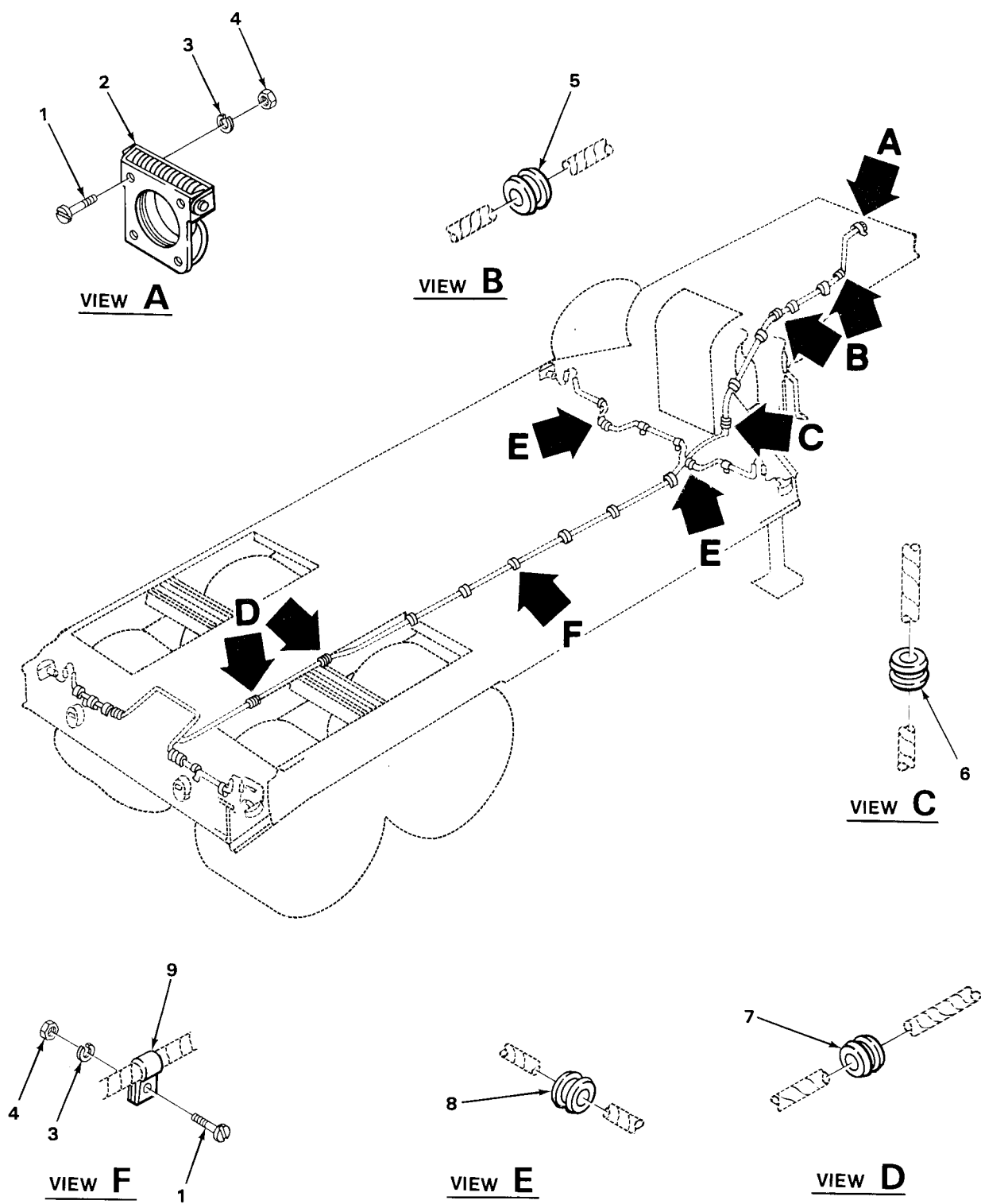
SECTION II			TM9-2330-211-14&P		
(1)	(2)	(3)	(4)	(5)	(6)
ITEM	SMR		PART		
NO	CODE	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY
GROUP 06 ELECTRICAL SYSTEM					
GROUP 0609 LIGHTS					
FIG. 1 COMPOSITE MARKER LIGHT					
1	PFOOO	96906	MS52125-2	STOP LIGHT-TAILLIGHT	2
2	PAOZZ	19207	11639535	.LENS, LIGHT	1
3	PAOZZ	19207	11639519-2	.PACKING, PREFORMED	1
4	PAOZZ	96906	MS35478-1683	.LAMP, INCANDESCENT	1
5	PAOZZ	96906	MS15570-623	.LAMP, INCANDESCENT	1
6	PAOZZ	96906	MS15570-1251	.LAMP, INCANDESCENT	2
7	PAOZZ	19207	11639520	.BODY ASSEMBLY	1
8	PAOZZ	96906	MS35335-35	WASHER, LOCK	2
9	PAOZZ	96906	MS18154-58	SCREW, CAP, HEXAGON H	2
END OF FIGURE					



TA505756

FIGURE 2. CLEARANCE LIGHTS.

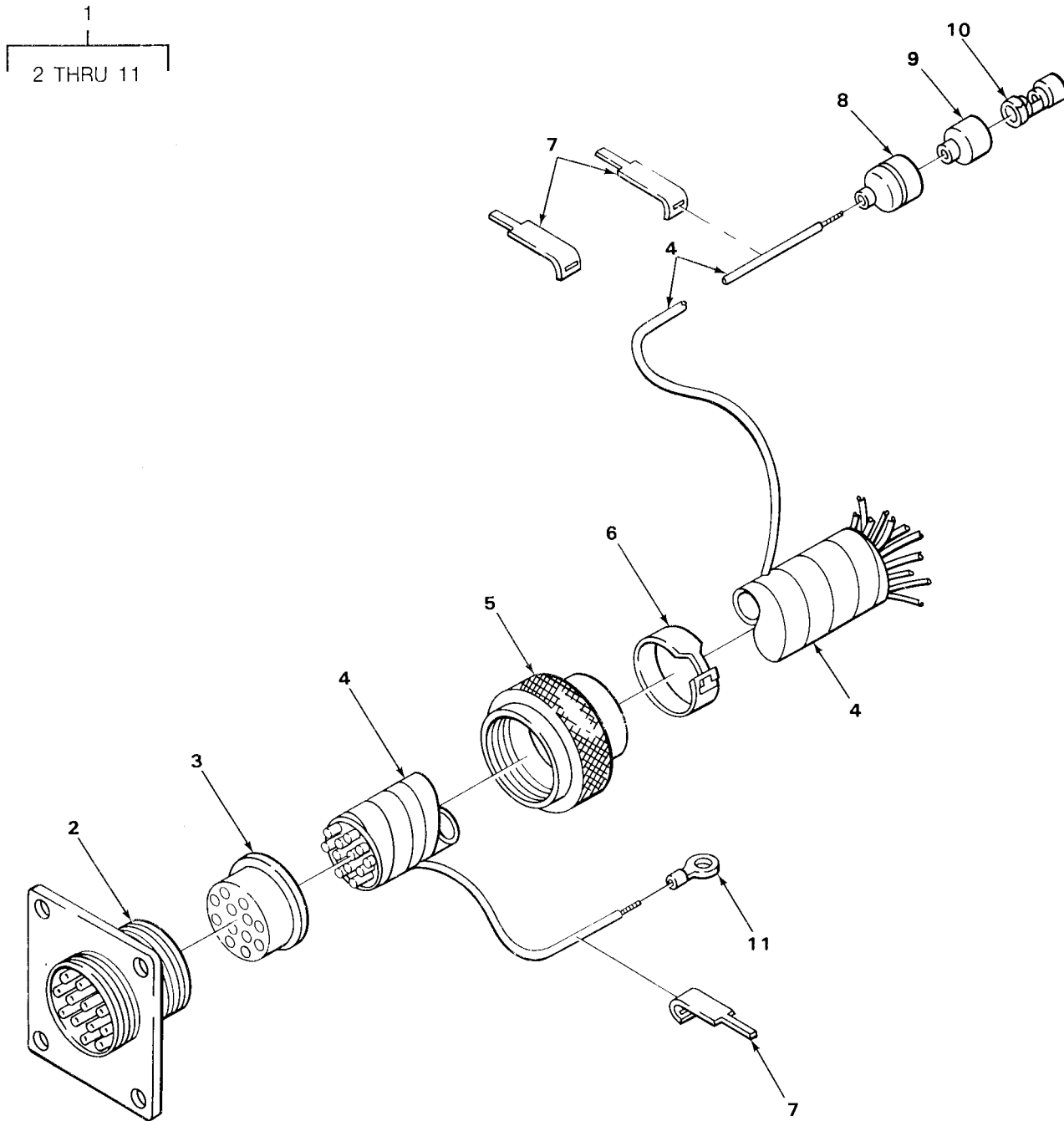
SECTION II (1)	ITEM (2)	SMR (3)	TM9-2330-211-14&P (4)	PART (5)	DESCRIPTION AND USABLE ON CODES (UOC)	QTY (6)
NO	CODE	CAGEC	NUMBER			
GROUP 0609 LIGHTS						
FIG. 2 CLEARANCE LIGHTS						
1	PAOZZ	19207	8338567		WASHER, SLOTTED BR, 0.152 IN HOLE DIA, 0.437 CD 0.032 THK	6
2	PAOZZ	19207	8338568		CONNECTOR, PLUG, ELEC	1
3	PFOOO	96906	MS35423-2		LIGHT, MARKER, CLEARA RED	4
3	PAOOO	96906	MS35423-1		LIGHT, MARKER, CLEARA AMBER	2
4	PAOZZ	73331	5939841		. GASKET	1
5	PAOZZ	96906	MS27148-2		. PIN, CONTACT	1
6	PAOZZ	73331	5939831		. PLATE, MOUNTING, LAMP	1
7	PAOZZ	96906	MS15570-1251		. LAMP, INCANDESCENT	1
8	PAOZZ	78553	01059-014-1		. NUT, PUSH-ON	2
9	PAOZZ	96906	MS35421-1		. LENS, LIGHT AMBER	1
9	PAOZZ	96906	MS35421-2		. LENS, LIGHT RED	1
10	PAOZZ	73331	5939830		. RETAINER, LENS	1
11	PAOZZ	96906	MS35190-289		. SCREW, MACHINE	12
12	PAOZZ	96906	MS35206-265		SCREW, MACHINE	4
13	PAOZZ	96906	MS35338-43		WASHER, LOCK	4
14	PAOZZ	96906	MS35649-202		NUT, PLAIN, HEXAGON	4
END OF FIGURE						



TA505757

FIGURE 3. WIRING HARNESS.

SECTION II	TM9-2330-211-14&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. 3 WIRING HARNESS	
1	PAOZZ	96906	MS35206-281	SCREW,MACHINE	24
2	PAOZZ	19207	7731428	COVER,ELECTRICAL CO	1
3	PAOZZ	15235	KL5296	WASHER,LOCK	24
4	PAOZZ	96906	MS51967-2	NUT,PLAIN,HEXAGON	24
5	PAOZZ	94135	MS35489-106	GROMMET,NONMETALLIC	3
6	PAOZZ	19207	8742791	GROMMET,NONMETALLIC	3
7	PAOZZ	96906	MS35489-77	GROMMET,NONMETALLIC	3
8	PAOZZ	19207	8742790	GROMMET,NONMETALLIC	6
9	PAOZZ	19207	8742391	CLIP ASSEMBLY	20
				END OF FIGURE	

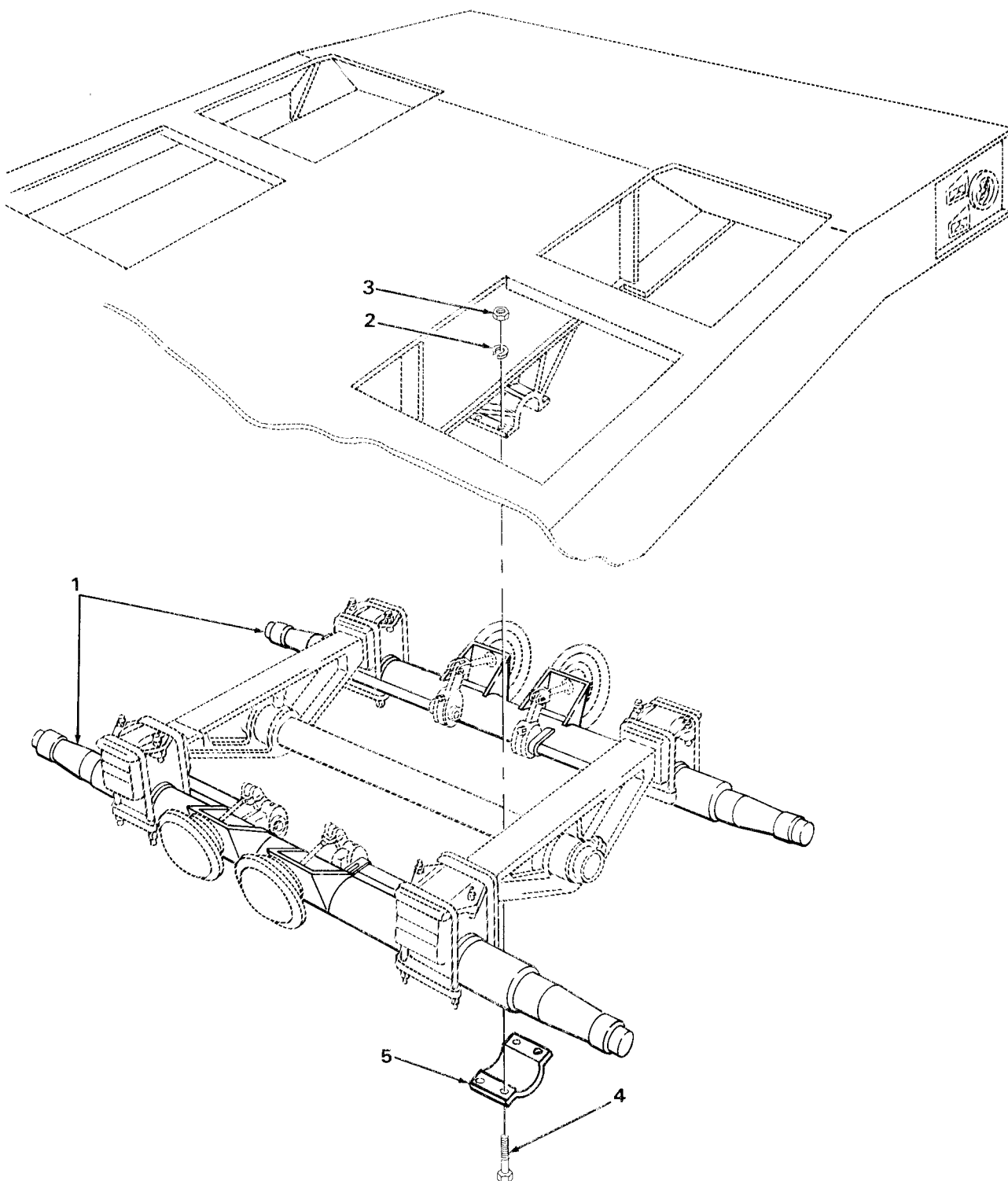


TA505758

FIGURE 4. CABLE ASSEMBLY.



SECTION II				TM9-2330-211-14&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. 4 CABLE ASSEMBLY		
1	PAOZZ	19207	8742779	CABLE ASSEMBLY, SPEC		1
2	PAOZZ	96906	MS75021-1	.CONNECTOR, RECEPTACLE		1
3	PAOZZ	19207	7722333	.BUSHING, RUBBER		1
4	PAOZZ	81349	M13486-1-7	.WIRE, ELECTRICAL		1
5	PAOZZ	72869	7723309	.NUT, PLAIN, KNURLED		1
6	PFOZZ	96906	MS39020-2	.BAND, MARKER		1
7	PFOZZ	96906	MS39020-1	.BAND, MARKER		28
8	PAOZZ	19207	8338561	.SHELL, ELECTRICAL CO		12
9	PADZZ	19207	8338562	.INSULATOR, BUSHING		12
10	PAOZZ	19207	8338564	.TERMINAL ASSEMBLY		12
				O(INTERCHANGABLE WITH P/N 7982997)		
10	PAOZZ	19207	7982997	.TERMINAL, SOLDERED F		12
				O(INTERCHANGEABLE WITH P/N 8338564)		
11	PAOZZ	21450	506209	.TERMINAL, LUG		1
				END OF FIGURE		



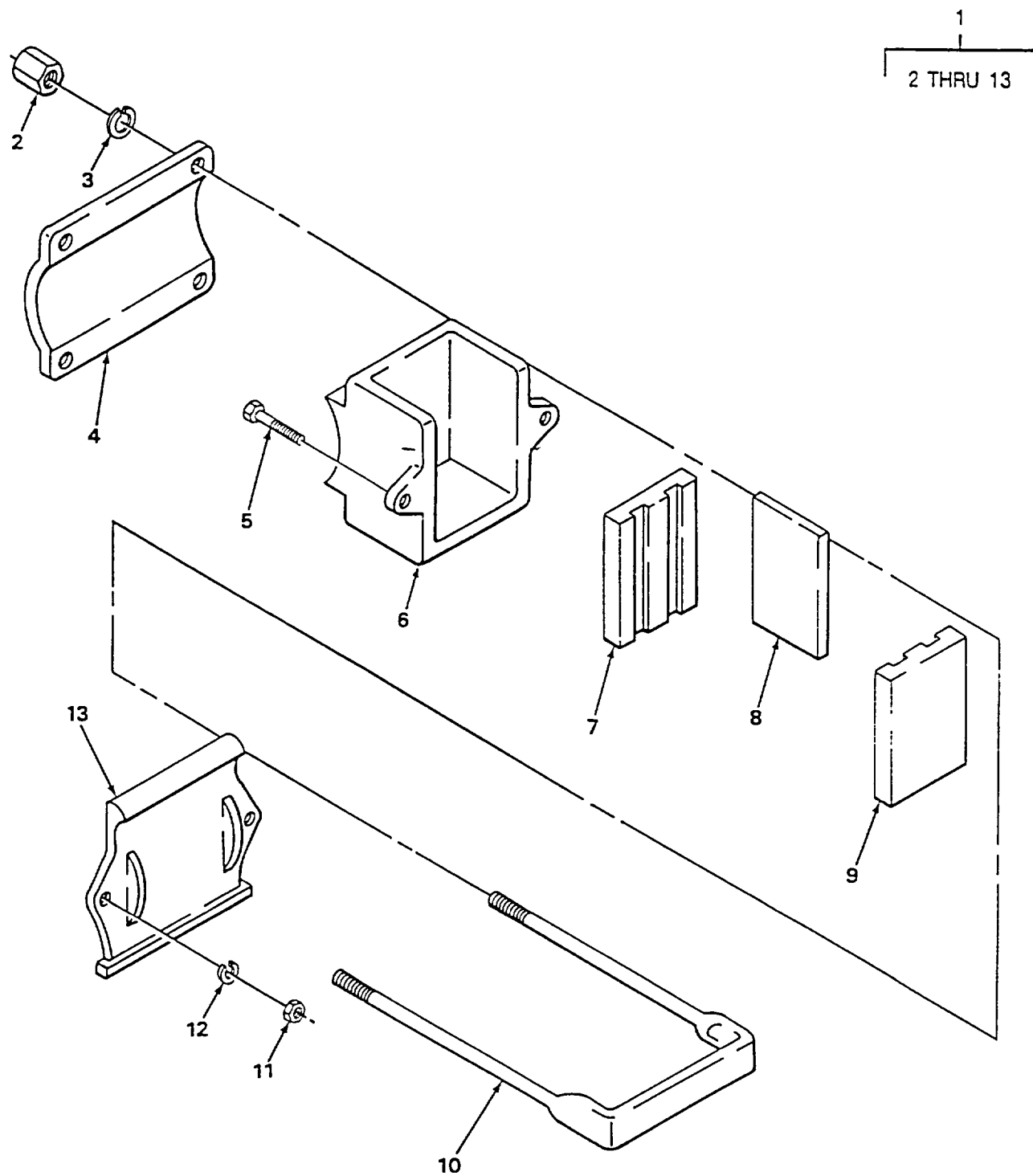
TA505759

FIGURE 5. TANDEM AXLE.

## SECTION II

TM 9-2330-211-14&P  
C02

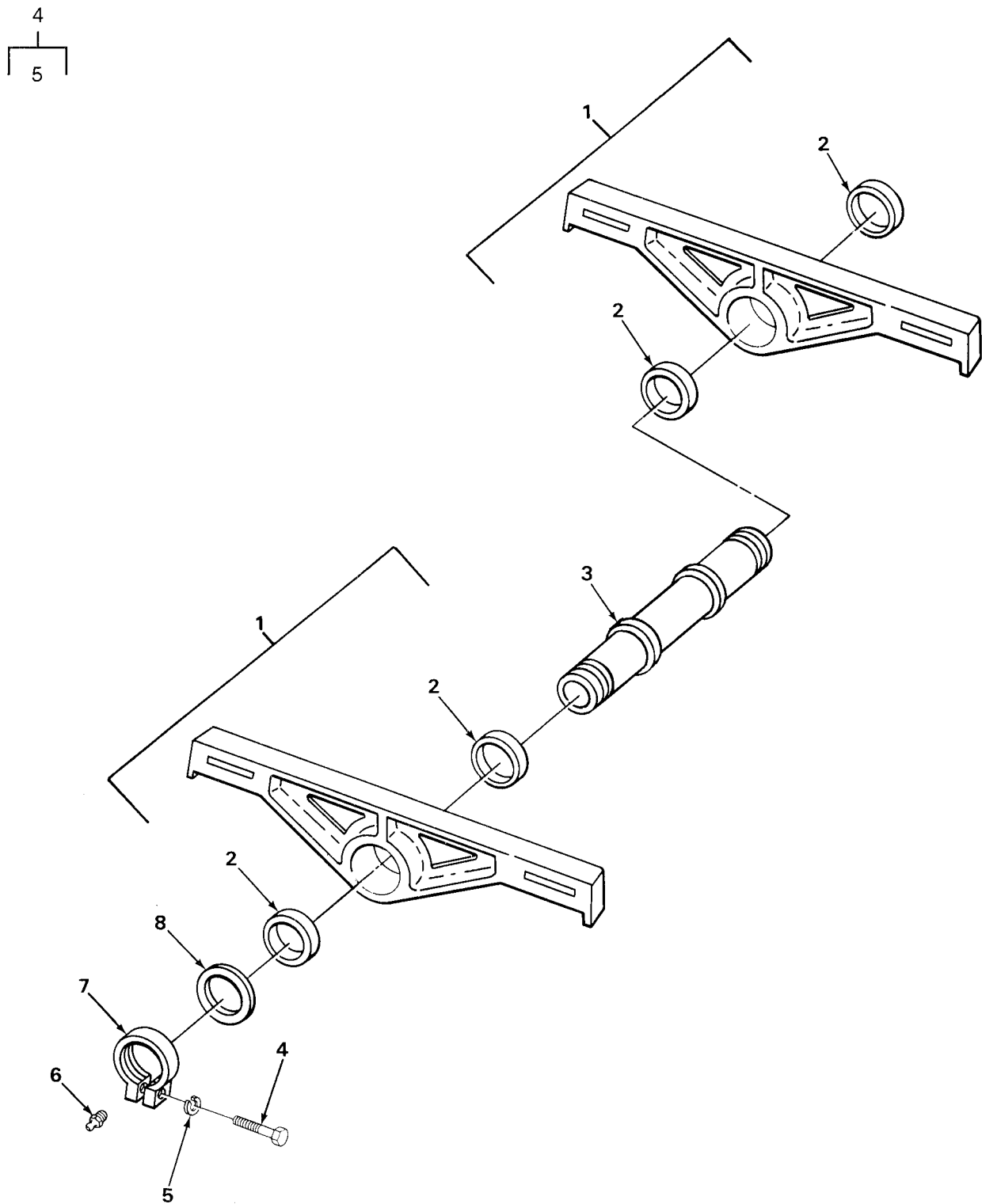
(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP 11 REAR AXLE					
GROUP 1100 REAR AXLE ASSEMBLY					
FIG. 5 TANDEM AXLE					
1	PAFZZ	19207	8336982	AXLE, VEHICULAR, NOND.....	2
2	PAFZZ	96906	MS35338-50	WASHER LOCK .....	8
3	PAFZZ	96906	MS35690-1024	NUT, PLAIN, HEXAGON .....	8
* 4	PAFZZ	80204	B1821BH063F225N	SCREW, CAP, HEXAGON H .....	8
5	PAFZZ	81336	8170-10-5	HOUSING, BEARING, UNIT .....	4
END OF FIGURE					



TA505760

FIGURE 6. SHACKLE BOX.

SECTION II (1) ITEM NO	(2) SMR CODE	(3) CAGEC	TM9-2330-211-14&P (4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP 1100 REAR AXLE ASSEMBLY					
FIG. 6 SHACKLE BOX					
	XDFFF	19207	8336799	BOX ASSEMBLY, SHACKLE	4
	PAFZZ	19207	8379659	.NUT,PLAIN,HEXAGON	4
3	PAFZZ	96906	MS35338-51	.WASHER,LOCK	4
4	PAFZZ	19207	8379822	.COVER,ACCESS	1
5	PFFZZ	96906	MS90727-166	.SCREW,CAP,HEXAGON H	2
6	PAFZZ	19207	8379820	.BRACKET,MOUNTING	1
7	PAFZZ	19207	8379656	.LINGIN,WALKING BEAM	1
8	PAFZZ	19207	8379658	.RUBBER STRIP	1
9	PAFZZ	81336	8167-1-5	.NONMETALLIC SPECIAL LINING	1
10	PAFZZ	19207	8379660	.BOLT,U	2
11	PAFZZ	96906	MS51968-20	.NUT,PLAIN,HEXAGON	2
12	PAFZZ	96906	MS35338-50	.WASHER, LOCK	2
13	PAFZZ	19207	8379821	.COVER,ACCESS	1
END OF FIGURE					



TA505761

FIGURE 7. WALKING BEAM.

## SECTION II

TM 9-2330-211-14&P  
C02

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP 1108 WALKING BEAMS, STUB AXLES AND PARTS					
FIG. 7 WALKING BEAM					
* 1	PAFFF	19207	11597645	FRAME SECTION, STRUC.....	2
2	PAFZZ	19207	11597646	.BUSHING, AXLE .....	4
3	PBFZZ	19207	8336792	AXLE, TRUNNION.....	1
4	PFFZZ	96906	MS90727-167	SCREW, CAP, HEXAGON.....	2
5	PAFZZ	96906	MS35338-50	WASHER LOCK .....	2
6	PAFZZ	96906	MS15003-1	FITTING, LUBRICATION.....	2
7	PAFZZ	19207	8379662	CLAMP, LOOP .....	2
8	PAFZZ	19207	8379689	WASHER, FLAT.....	2
END OF FIGURE					

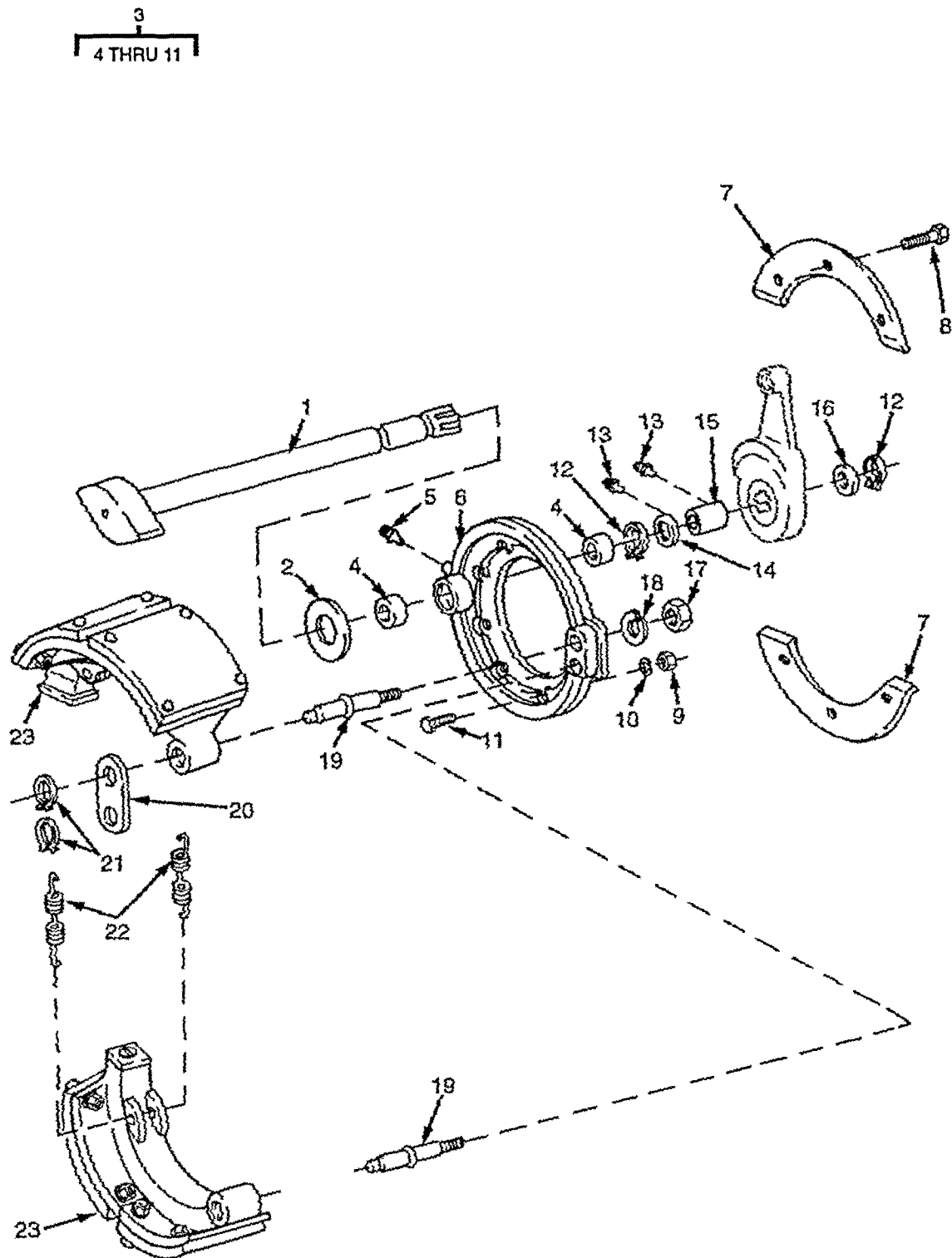


FIGURE 8. BRAKE MECHANISM

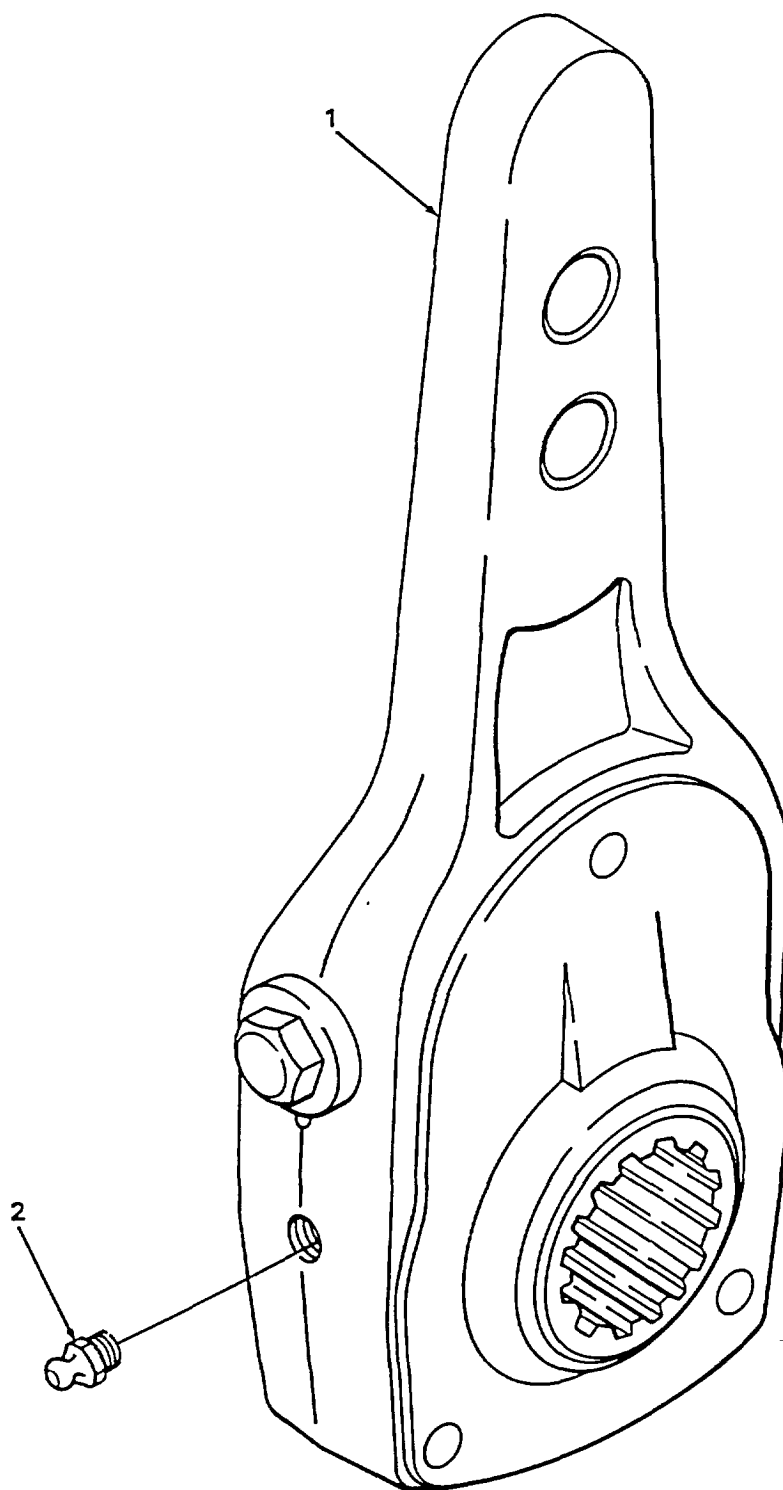


## SECTION II

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C02

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP 12 BRAKES					
GROUP 1202 SERVICE BRAKES					
FIG. 8 BRAKE MECHANISM					
1	PAOZZ	19207	8687050	CAMSHAFT, ACTUATING, CURBSIDE ..... REAR/STREETSIDE FRONT	2
1	PAOZZ	19207	8687051	CAMSHAFT STREETSIDE REAR/CURBSIDE ..... FRONT	2
2	PAOZZ	19207	8687034	WASHER, BRAKE CAM SP .....	4
3	PAOOO	19207	8687057	PLATE, BACKING, BRAKE W/BEARING, ..... ASSEMBLY	4
4	PAOZZ	19207	11625220	.BEARING, SLEEVE .....	2
5	PAOZZ	96906	MS15001-1	.FITTING, LUBRICATION.....	1
6	PAOZZ	19207	8687058	.SPIDER, UTILITY BRAKE W/O BEARINGS .....	1
7	PAOZZ	19207	8687041	.SHIELD, DUST, BRAKE.....	1
8	PAOZZ	96906	MS24629-56	.SCREW, TAPPING, THREA.....	8
9	PFOZZ	96906	MS51968-14	.NUT, PLAIN, HEXAGON .....	8
10	PFOZZ	96906	MS35333-44	.WASHER, LOCK .....	8
11	PAOZZ	96906	MS90726-113	.SCREW, CAP, HEXAGON H.....	8
12	PAOZZ	96906	MS16624-1150	RING, RETAINER.....	4
13	PAOZZ	96906	MS15001-1	FITTING, LUBRICATION.....	4
14	PAOZZ	19207	5168890	WASHER, FLAT.....	4
15	PAOZZ	78550	UB1179	BUSHING, SLEEVE.....	4
16	PAOZZ	19207	7088740	WASHER, KEY .....	4
17	PAOZZ	96906	MS35691-61	NUT, PLAIN, HEXAGON.....	8
18	PAOZZ	96906	MS35338-51	WASHER, LOCK .....	8
19	PAFZZ	19207	8687040	PIN .....	8
20	PAFZZ	56697	UB-2208	CONNECTING LINK, RIG .....	4
21	PAOZZ	56697	UB2206	RING, RETAINING.....	8
22	PAOZZ	56697	UB2205	SPRING, HELICAL, EXTE .....	8
* 23	PAOZZ	56697	UB2232	BRAKE SHOE .....	8

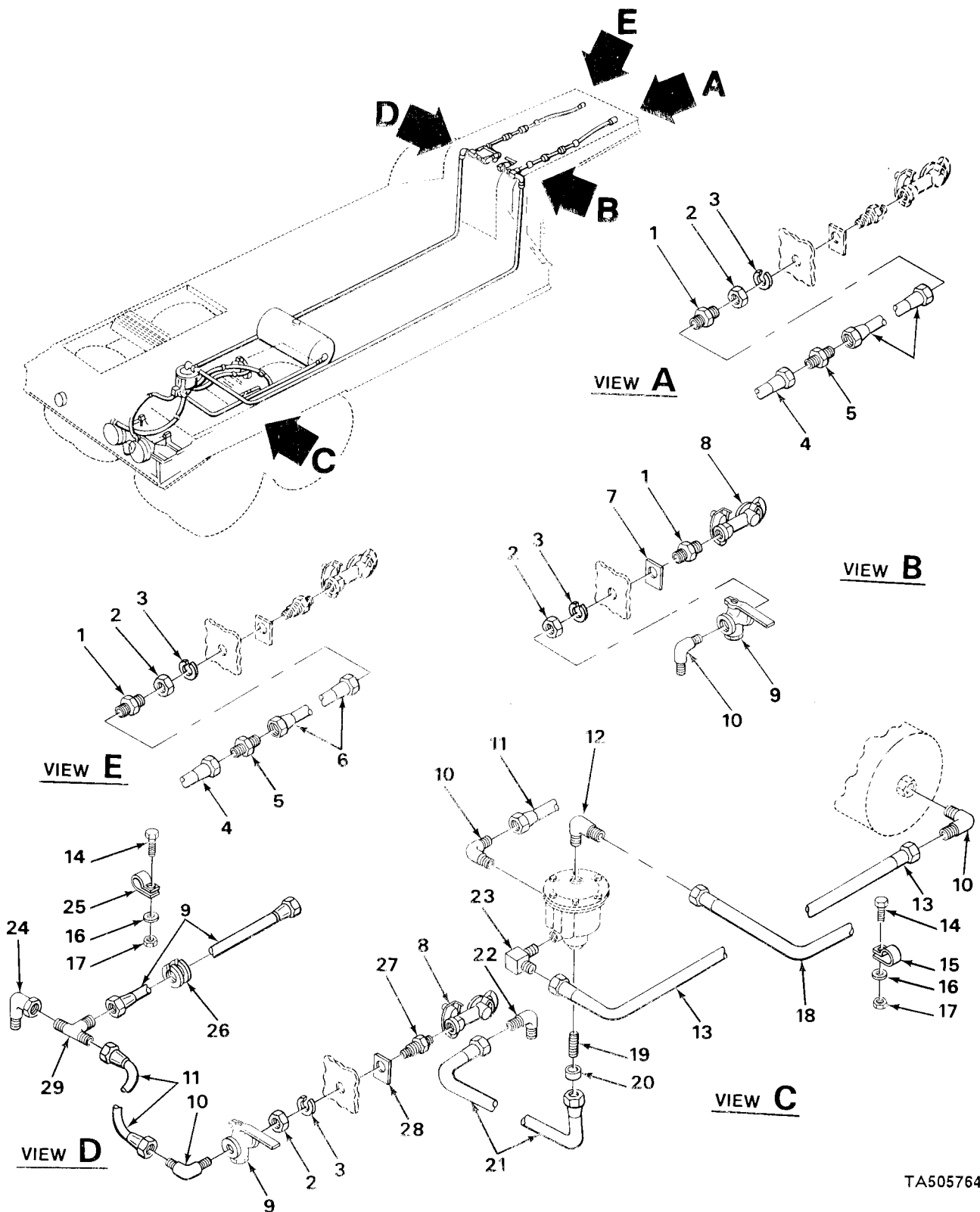
END OF FIGURE



TA505763

FIGURE 9. SLACK ADJUSTER.

SECTION II (1) ITEM NO	(2) SMR CODE	(3) CAGEC	TM9-2330-211-14&P (4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 1206 MECHANICAL BRAKE SYSTEM	
				FIG. 9 SLACK ADJUSTER	
1	PAOZZ	19207	8336779	ADJUSTER, SLACK, BRAK	4
2	PAOZZ	96906	MS15003-1	FITTING, LUBRICATION	4
				END OF FIGURE	



TA505764

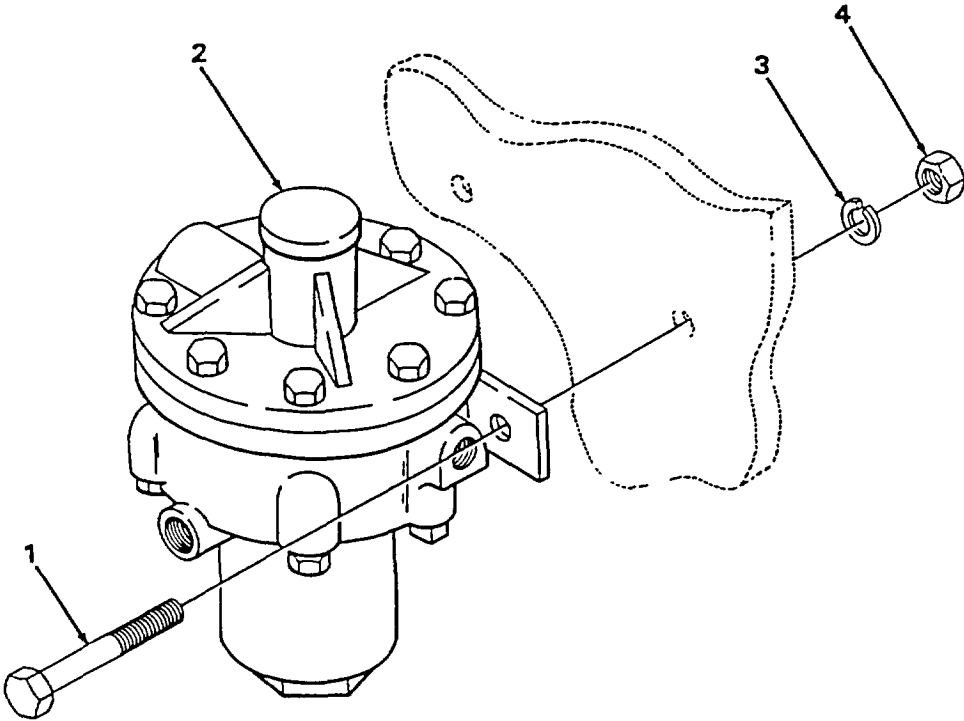
FIGURE 10. AIRBRAKE LINES.

## SECTION II

TM 9-2330-211-14&P  
C02

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP 1208 AIRBRAKE SYSTEM					
FIG. 10 AIRBRAKE LINES					
1	PAOZZ	40342	8330281	NIPPLE, PIPE .....	4
2	PAOZZ	30612	24569D	NUT, PLAIN, HEXAGON.....	4
3	PAOZZ	96906	MS35333-49	WASHER, LOCK .....	4
4	PAOZZ	19207	11597647	TUBE, BENT, METALLIC .....	4
5	PAOZZ	96906	MS51814-5	NIPPLE, TUBE .....	8
6	PAOZZ	19207	8336706	TUBE, BENT, METALLIC .....	4
7	PAOZZ	96906	MS53007-1	PLATE, IDENTIFICATIO SERVICE .....	1
8	PAOZZ	96906	MS35746-1	COUPLING HALF, QUICK.....	2
9	PAOZZ	06853	285172	VALVE, BALL.....	2
10	PAOZZ	96906	MS39182-5	ELBOW, PIPE TO TUBE.....	2
11	MOOZZ	19207	8388858	TUBE MAKE FROM P/N 305087-0116.....	1
12	PAOZZ	81343	6-4 120202BA	ELBOW, PIPE TO TUBE.....	1
13	MOOZZ	19207	8388856	TUBE MAKE FROM P/N 8689210.....	1
14	PAOZZ	96906	MS90727-8	SCREW, CAP, HEXAGON H.....	10
15	PAOZZ	96906	MS21333-38	CLAMP, LOOP .....	1
16	PAOZZ	15235	KL5296	WASHER, LOCK .....	1
17	PFOZZ	96906	MS51968-2	NUT, PLAIN, HEXAGON.....	1
18	MOOZZ	19207	8388857	TUBE MAKE FROM P/N 30587-0116.....	1
19	PAOZZ	40342	N13128	CONNECTOR, MULTIPLIER.....	4
20	PFOZZ	96906	MS35489-110	GROMMET, NONMETALLIC.....	4
21	PAOZZ	40342	N13463D	HOSE ASSEMBLY, NONME .....	4
* 22	PAOZZ	81343	6-4 120203BA	ELBOW, PIPE .....	2
23	PAOZZ	89222	330-20223265	ELBOW, PIPE TO TUBE.....	2
* 24	PAOZZ	96906	MS39230-2	ELBOW, PIPE TO TUBE.....	4
25	PAOZZ	96906	MS21333-36	CLAMP, LOOP .....	4
26	PAOZZ	94135	MS35489-106	GROMMET, NONMETALLIC.....	6
27	PAOZZ	96906	MS51819-7	ADAPTER, STRAIGHT, PI .....	1
28	PAOZZ	96906	MS53007-2	PLATE, IDENTIFICATIO IDENTIFICATION .....	1
				EMERGENCY	
29	PAOZZ	96906	MS39191-2	TEE, PIPE TO TUBE.....	2

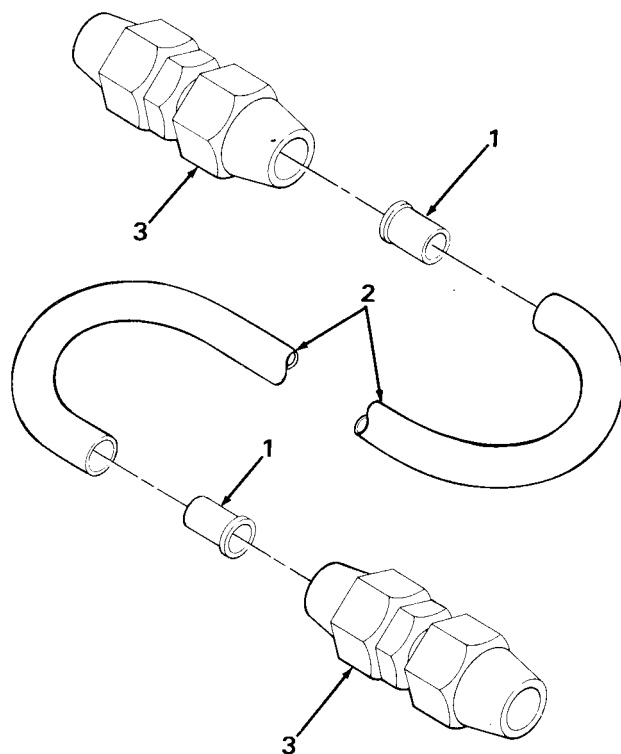
END OF FIGURE



TA505765

FIGURE 11. EMERGENCY RELAY VALVE.

SECTION II				TM9-2330-211-14&P		
(1)	(2)	(3)	(4)	(5)		(6)
ITEM	SMR		PART			
NO	CODE	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)		QTY
				GROUP 1208 AIRBRAKESYSTEM		
				FIG. 11 EMERGENCY RELAY VALVE		
1	PAOZZ	96906	MS90726-62	SCREW,CAP,HEXAGON H		2
2	PAOZZ	96906	MS53004-2	PARTS KIT,RELAY VAL		1
3	PAOZZ	96906	MS35338-46	WASHER,LOCK		2
4	PAOZZ	96906	MS51968-8	NUT,PLAIN,HEXAGON		2
				END OF FIGURE		

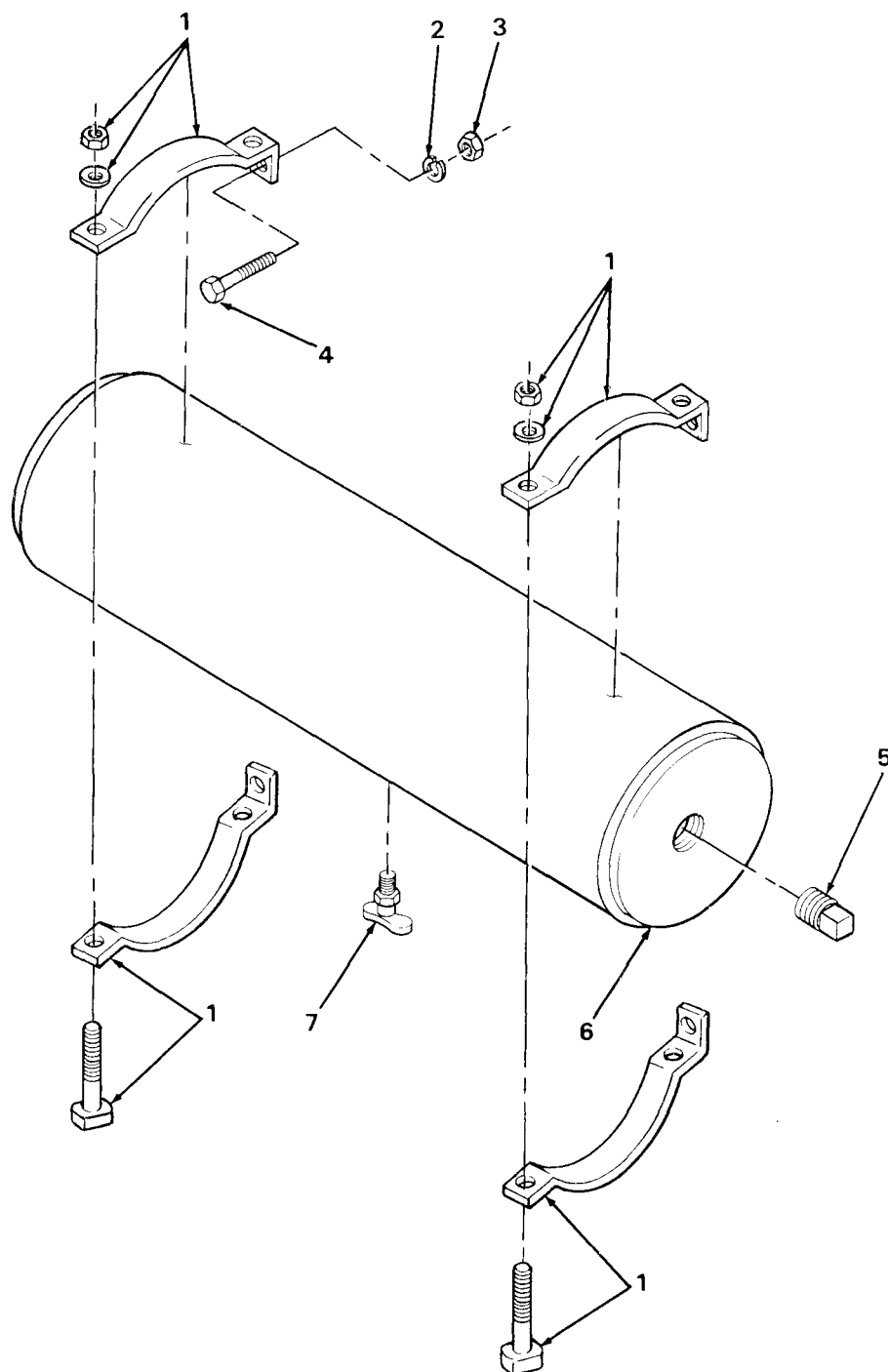


TA505766

FIGURE 12. AIR FILTER LINE.



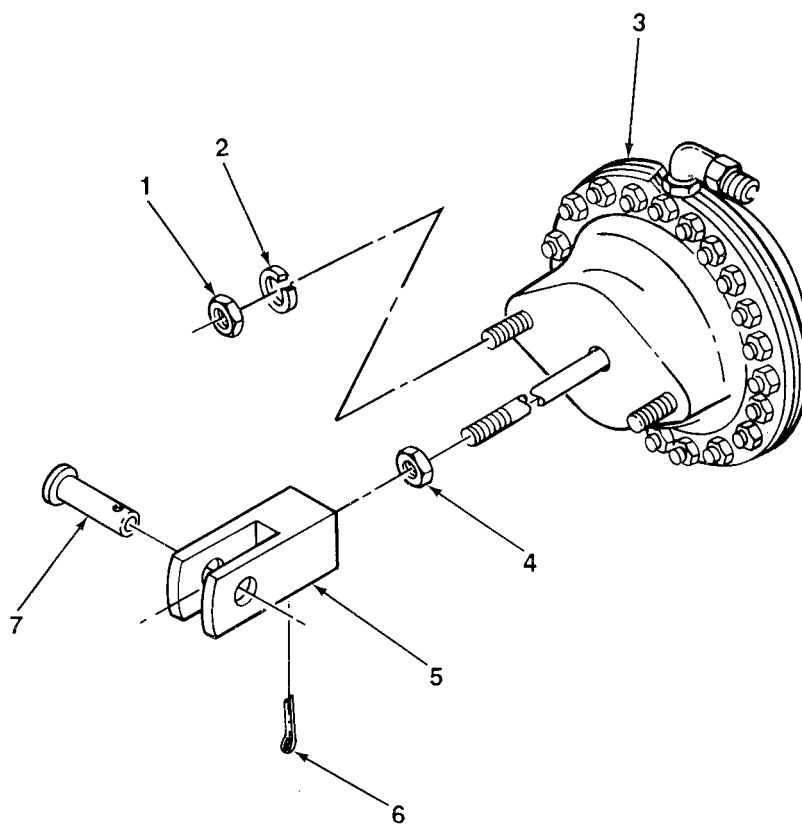
SECTION II				TM9-2330-211-14&P	
(1)	(2)	(3)	(4)	(5)	(6)
ITEM	SMR		PART		
NO	CODE	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY
GROUP 1208 AIRBRAKE SYSTEM					
FIG. 12 AIR FILTER LINE					
1	XDOZZ	19207	CPR10232-1	INSERT	2
2	MOOZZ	19207	0144915	HOSE MAKE FROM P/N246115	1
3	PAOZZ	14397	MS39187-2	NIPPLE,TUBE	2
END OF FIGURE					



TA505767

FIGURE 13. AIR RESERVOIR.

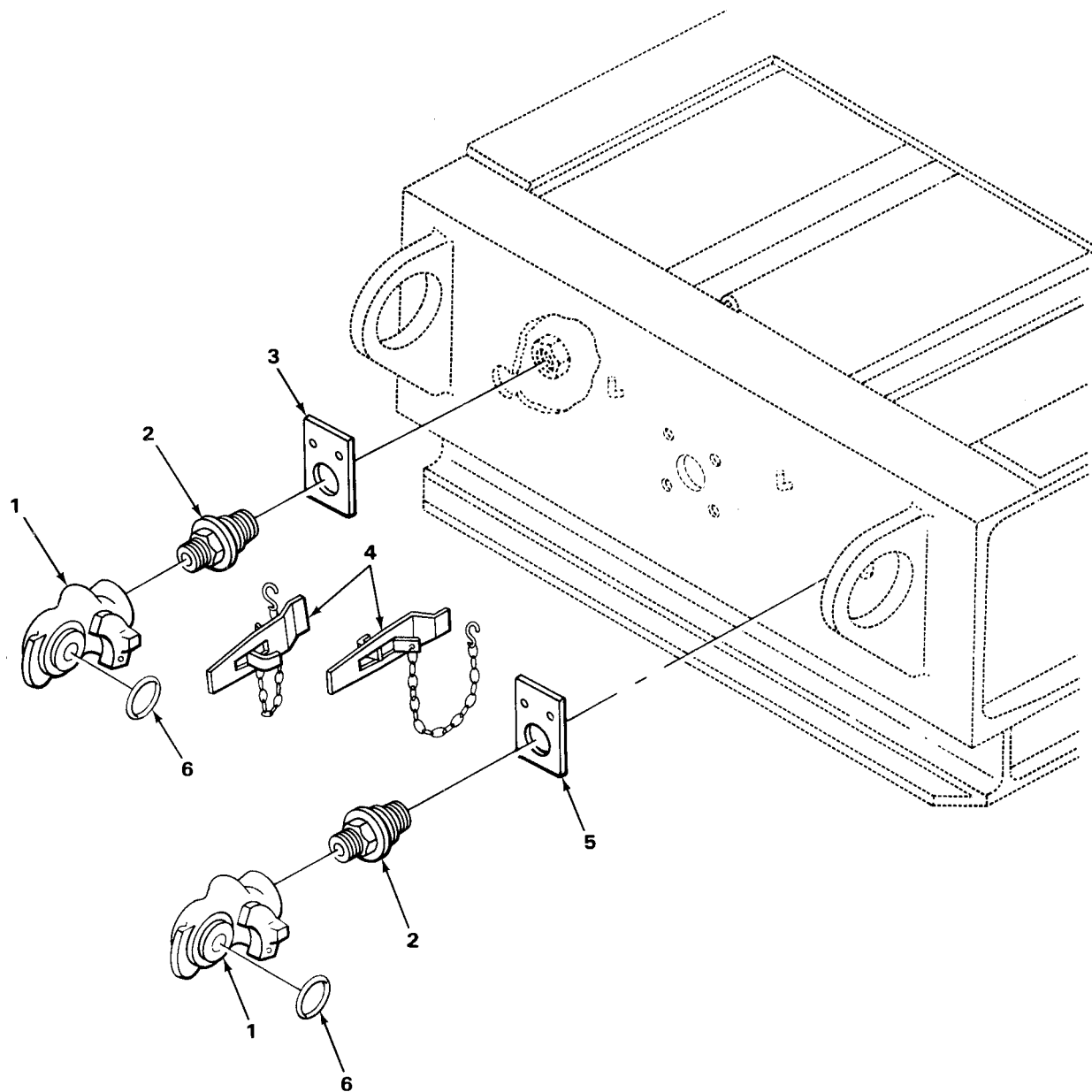
SECTION II				TM9-2330-211-14&P		
(1)	(2)	(3)	(4)	(5)		(6)
ITEM	SMR		PART			
NO	CODE	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)		QTY
GROUP 1208 AIRBRAKE SYSTEM						
FIG. 13 AIR RESERVOIR						
1	PAOZZ	19207	8336722	STRAP,RETAINING		2
2	PAOZZ	12603	23E06	WASHER,LOCK		4
3	PAOZZ	96906	MS51968-8	NUT,PLAIN,HEXAGON		4
4	PAOZZ	96906	MS90726-61	SCREW,CAP,HEXAGON		4
5	PAOZZ	29510	20972R1	PLUG,PIPE		1
6	PAOZZ	19207	8336707	TANK,PRESSURE		1
7	PAOZZ	96906	MS35782-5	COCK,DRAIN		1
END OF FIGURE						



TA505768

FIGURE 14. AIRBRAKE CHAMBER.

SECTION II (1) ITEM NO	(2) SMR CODE	(3) CAGEC	TM9-2330-211-14&P (4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP 1208 AIRBRAKE SYSTEM					
FIG. 14 AIRBRAKE CHAMBER					
1	PAOZZ	96906	MS35690-1024	NUT,PLAIN,HEXAGON	8
2	PAOZZ	96906	MS35340-50	WASHER,LOCK	8
3	PAOZZ	19207	8336712	CHAMBER,AIR BRAKE	4
4	PAOZZ	96906	MS51968-20	.NUT,PLAIN,HEXAGON	1
5	PAOZZ	40342	N11257	.CLEVIS,ROD END	1
6	PAOZZ	96906	MS24665-353	.PIN,COTTER	1
7	PAOZZ	19207	583553	.PIN,STRAIGHT,HEADLE	1
END OF FIGURE					



TA505769

FIGURE 15. AIRBRAKE COUPLINGS.

## SECTION II

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(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP 1208 AIRBRAKE SYSTEM					
FIG. 15 AIRBRAKE COUPLINGS					
1	PAOZZ	96906	MS35746-1	COUPLING HALF, QUICK.....	2
2	PAOZZ	40342	8330281	NIPPLE, PIPE .....	2
3	PAOZZ	96906	MS53007-1	PLATE, IDENTIFICATIO SERVICE .....	1
4	PAOZZ	16662	AD2583	DUMMY COUPLING, AUTO W/CHAIN.....	4
5	PAOZZ	96906	MS53007-2	PLATE, IDENTIFICATIO EMERGENCY .....	1
6	PAOZZ	96906	MS35748-1	PACKING, PREFORMED.....	2
END OF FIGURE					

10  
11 THRU 16

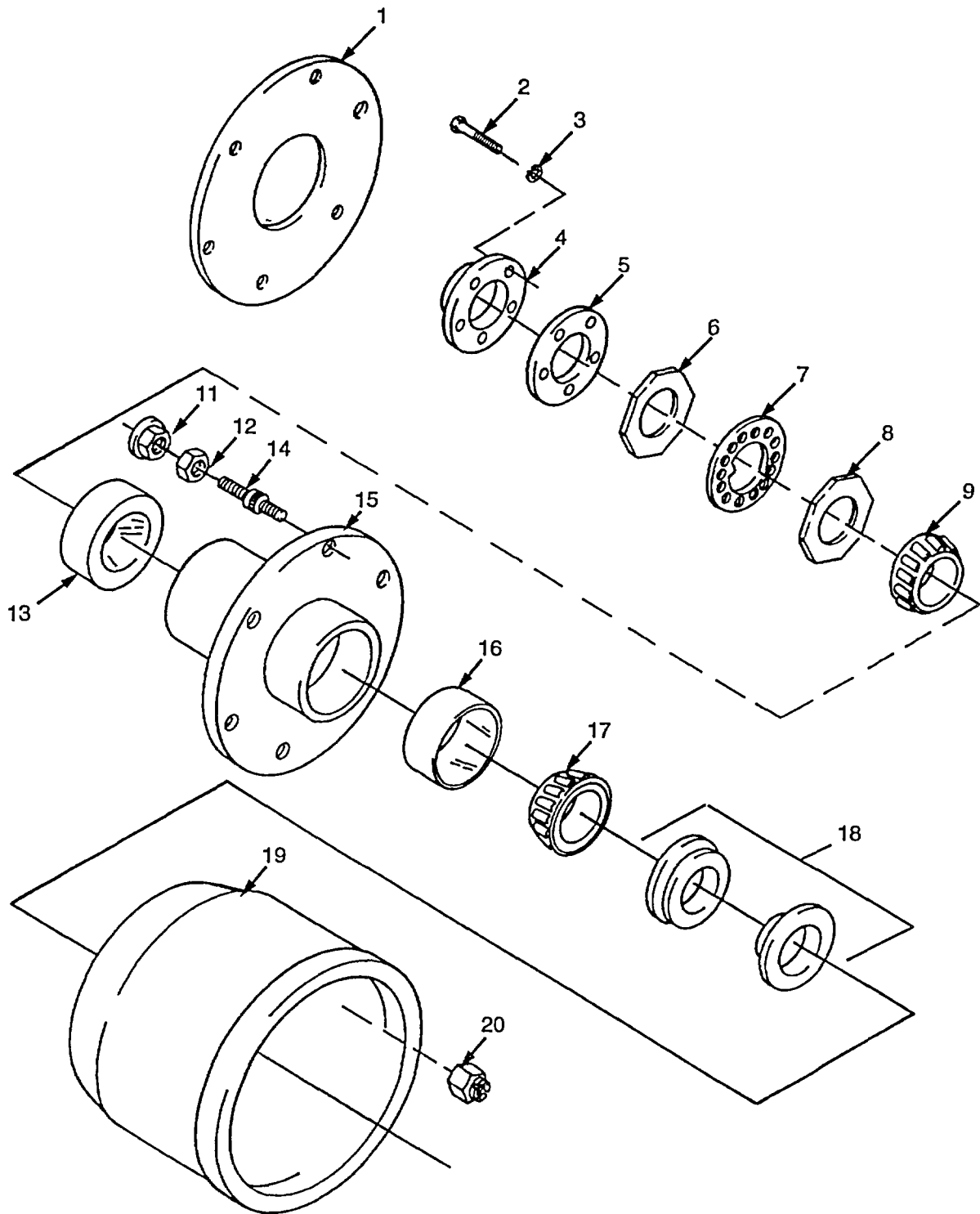


FIGURE 16. HUB AND DRUM

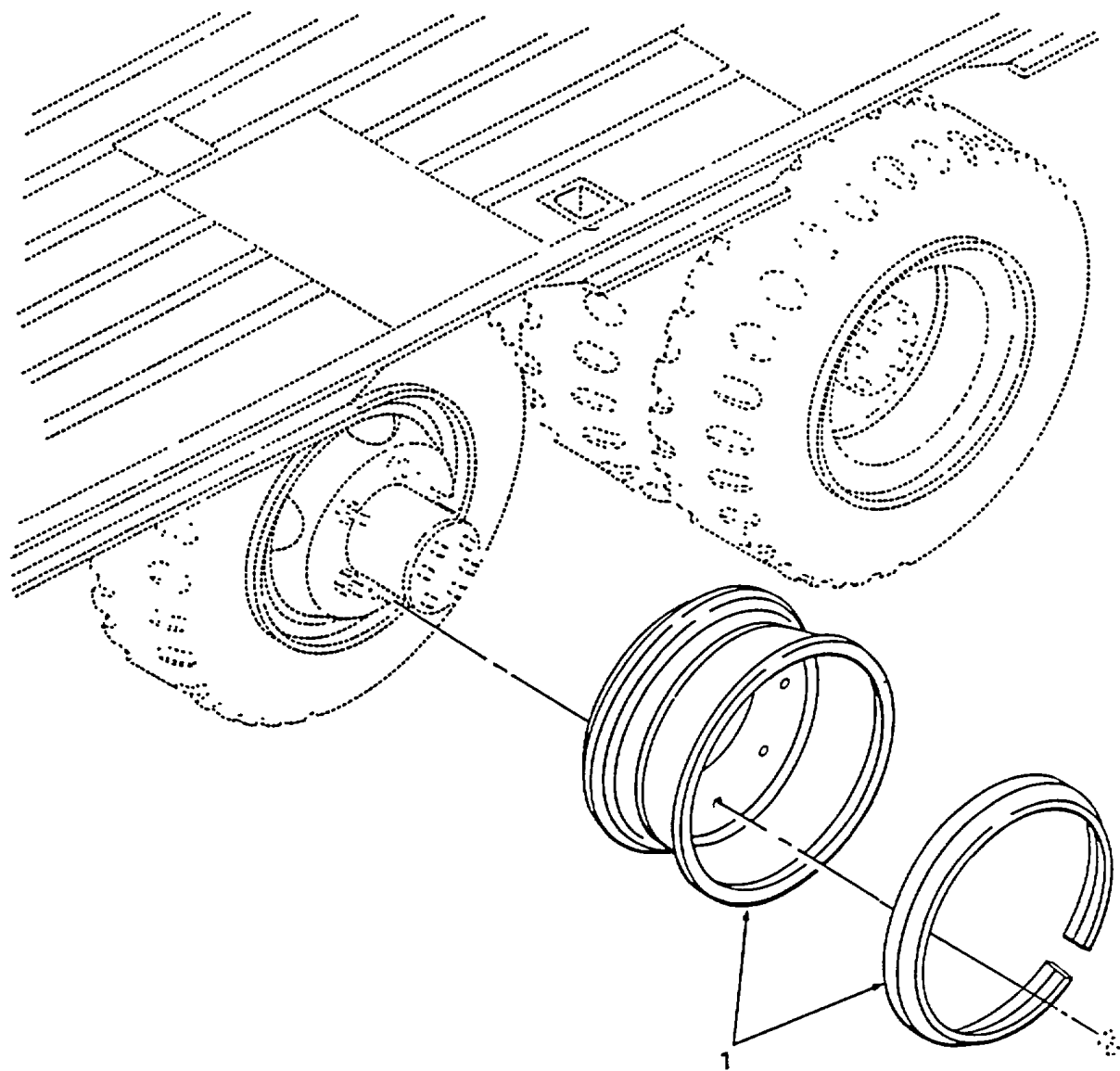


## SECTION II

TM 9-2330-211-14&P  
C02

(1) ITEM NO	(2) SMR CODE	(3) PART CAGEC	(4)  NUMBER	(5)  DESCRIPTION AND USABLE ON CODES (UOC)	(6)  QTY
GROUP 13 WHEELS					
GROUP 1311 WHEEL ASSEMBLY					
FIG. 16 HUB AND DRUM					
1	PAOZZ	19207	10929888	SPACER, PLATE .....	1
2	PAOZZ	96906	MS90728-4	SCREW, CAP, HEXAGON H .....	12
3	PAOZZ	15235	KL5296	WASHER, LOCK .....	12
4	PAOZZ	78500	3262Q95	COVER, ACCESS .....	1
5	PAOZZ	19207	11597656	GASKET .....	2
6	PAOZZ	19207	7088737	NUT, PLAIN, OCTAGON .....	2
7	PAOZZ	19207	7088739	WASHER, KEY .....	2
8	PAOZZ	19207	7088738	NUT, PLAIN, OCTAGON .....	2
* 9	PAOZZ	08162	643	CONE AND ROLLER, TA .....	2
10	PAOOO	19207	10944309-1	HUB, BODY LEFT HAND .....	1
10	PAOOO	19207	10944309-2	HUB, ASSEMBLY RIGHT HAND .....	1
11	PAOZZ	19207	8712220	.NUT, PLAIN, EXTENDED RIGHT HAND .....	6
11	PAOZZ	09386	69913	.NUT, PLAIN, EXTENDED LEFT HAND .....	6
12	PAOZZ	09386	89327	.NUT, PLAIN, SINGLE BA RIGHT HAND .....	6
12	PAOZZ	09386	89328	.NUT, PLAIN, SINGLE BA LEFT HAND .....	6
* 13	PAOZZ	04741	4FA0142	.CUP, TAPERED ROLLER INNER.....	2
* 14	PAOZZ	19207	8738089-2	.STUD, LOCKED IN SHOULDERED, LEFT.....	6
				HAND	
* 14	PAOZZ	19207	8738089-1	.STUD, LOCKED IN SHOULDERED, RIGHT.....	6
				HAND	
15	PAOZZ	09386	68732D	.HUB, WHEEL, VEHICULAR .....	1
* 16	PAOZZ	00447	426528	.CUP, TAPERED ROLLER, OUTER.....	2
* 17	PAOZZ	00447	5P1321	CONE AND ROLLERS, TA.....	2
* 18	PAOZZ	26151	372-7091	SEAL AXLE .....	2
19	PAOZZ	78500	3219C1251	DRUM.....	1
20	PAOZZ	96906	MS35692-62	NUT, PLAIN, SLOTTED, H.....	6

END OF FIGURE



TA505771

FIGURE 17. WHEELS.

## SECTION II

TM 9-2330-211-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 1311 WHEEL ASSEMBLY	
				FIG. 17 WHEELS	
1	PAOZZ	19207	11669686	WHEEL, PNEUMATIC TIR W/RING .....	8
				END OF FIGURE	

2  
3 THRU 5

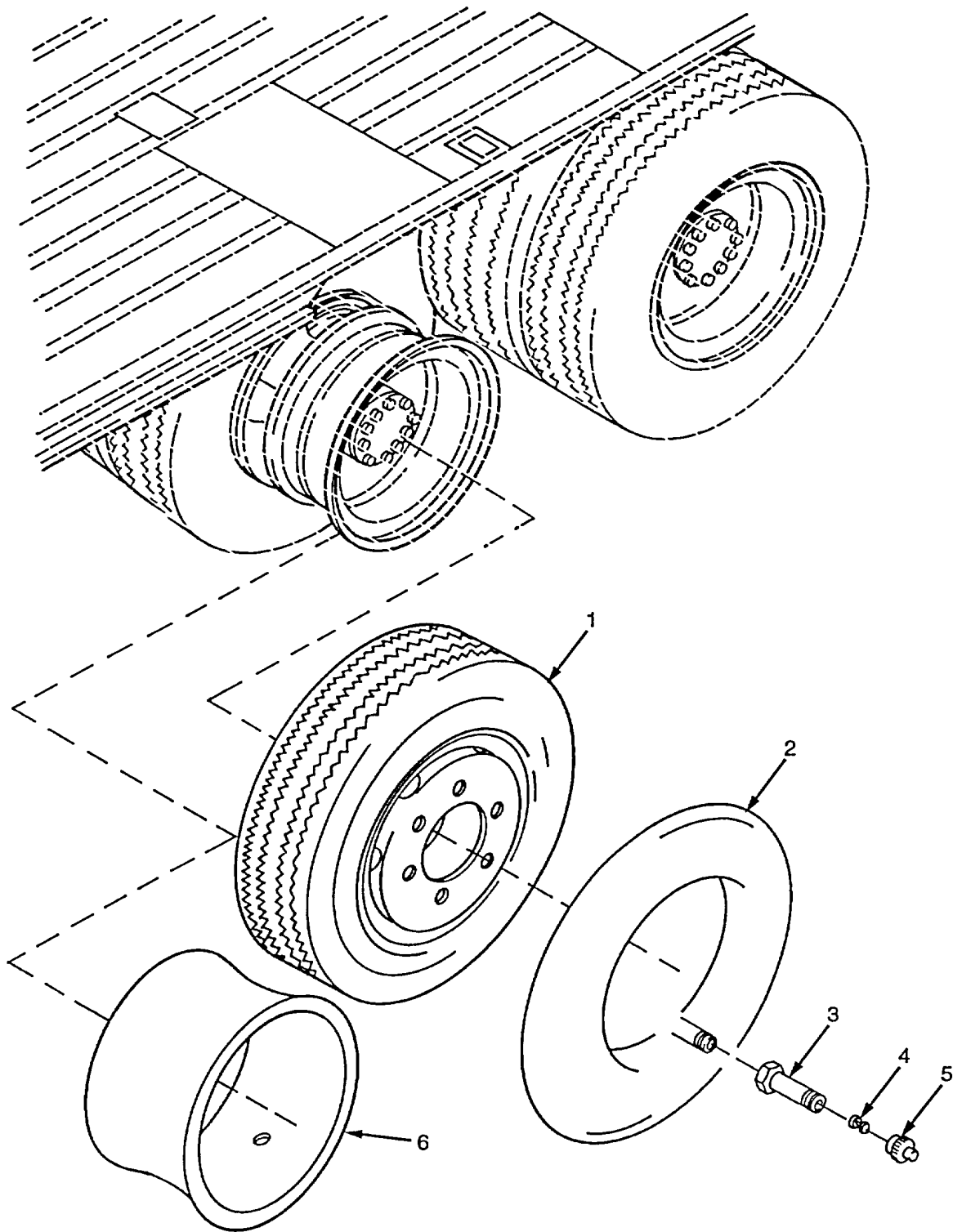


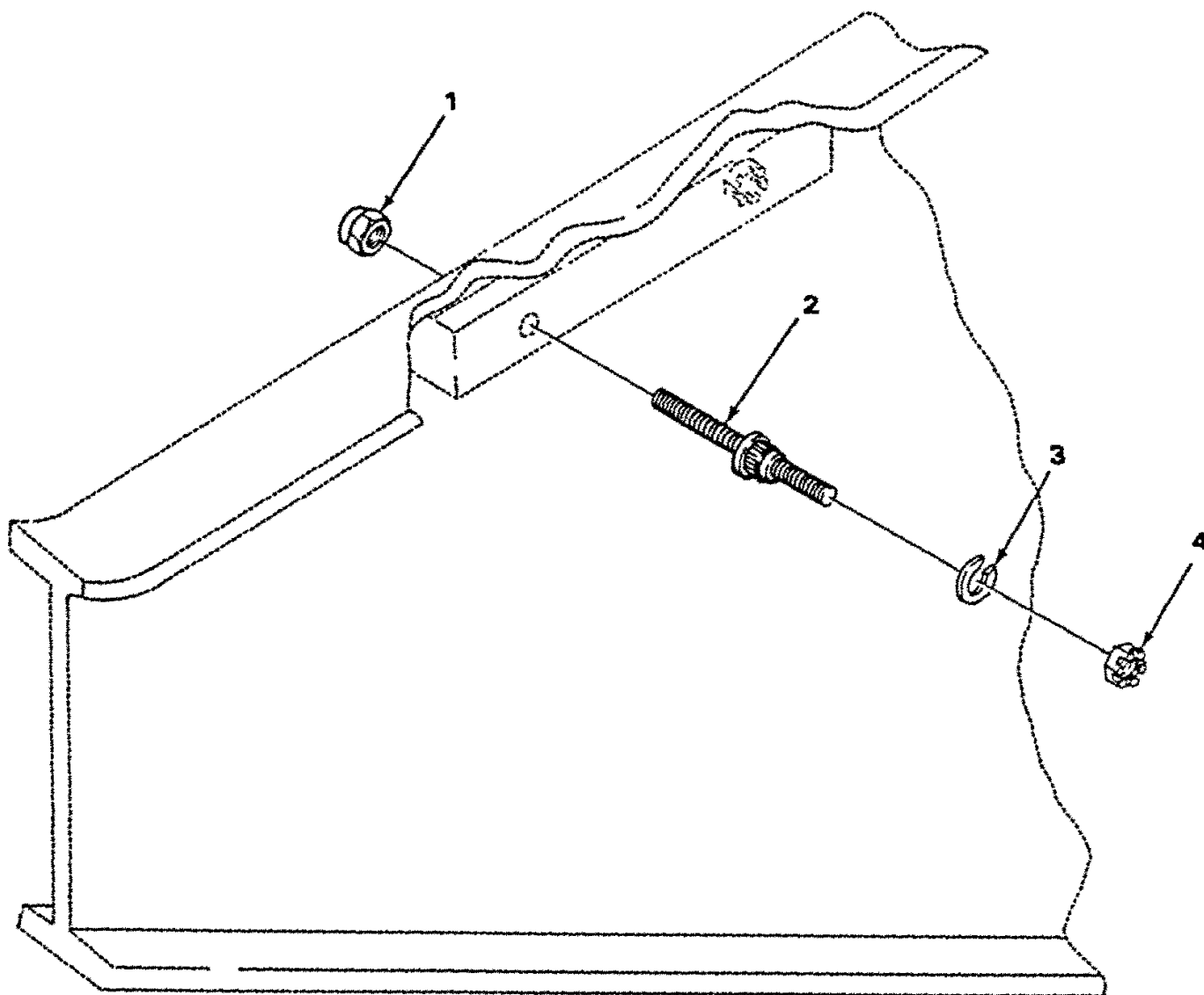
FIGURE 18. TIRES

## SECTION II

TM 9-2330-211-14&P  
C02

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP 1313 TIRES AND TUBES					
FIG. 18 TIRES					
1	PAOFH	81348	GP2STYLXTYRBCLR/ TIRE, PNEUMATIC .....		8
			T/10.00R15/J/LTR		
2	PFOZZ	96906	FEDSTD308B	INNER TUBE, PNEUMATI .....	8
3	PAOZZ	19207	8379685	.VALVE EXTENSION, TIR .....	1
4	PAOZZ	17875	100AA	.VALVE CORE .....	1
5	PAOZZ	53477	880MB	.CAP, PNEUMATIC VALVE .....	1
* 6	PAOZZ	80540	15-7.5	FLAP, INNER, TUBE, PNUEMATIC .....	8

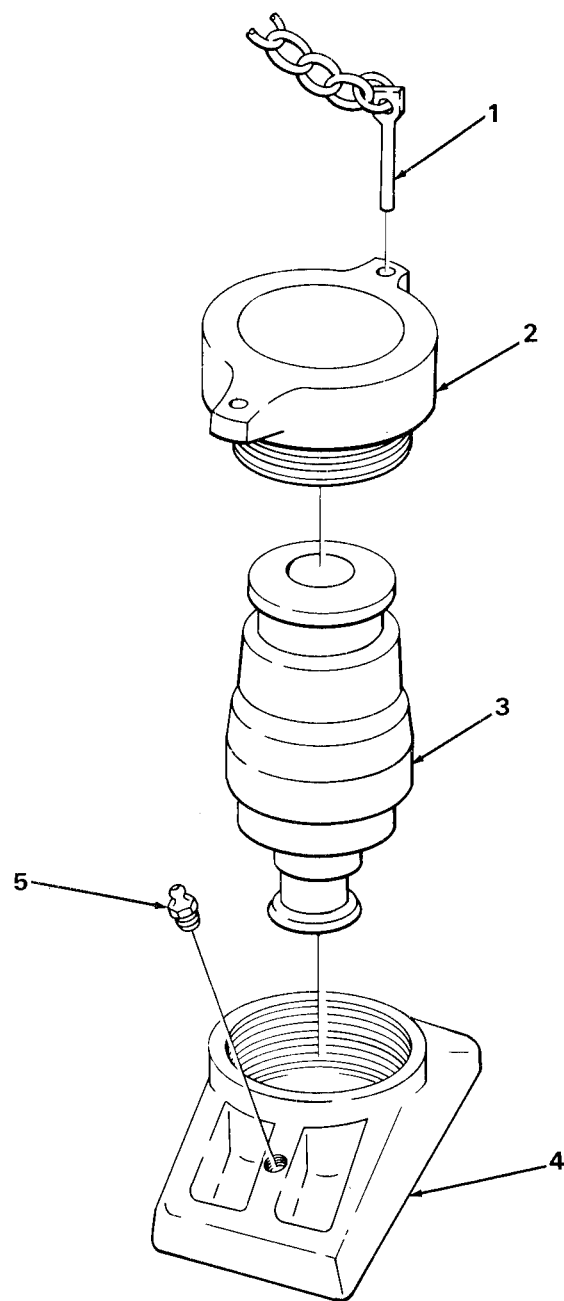
END OF FIGURE



TA505773

FIGURE 19. SPARE WHEEL CARRIER.

SECTION II				TM9-2330-211-14&P	
(1)	(2)	(3)	(4)	(5)	(6)
ITEM	SMR		PART		
NO	CODE	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY
GROUP 15 FRAME AND TOWING ATTACHMENTS					
GROUP 1504 SPARE WHEEL CARRIER					
FIG. 19 SPARE WHEEL CARRIER					
1	PAOZZ	96906	MS51983-2	NUT,PLAIN,SINGLE BA	2
2	PAOZZ	21450	537867	STUD,SHOULDED	2
3	PAOZZ	96906	MS35338-51	WASHER,LOCK	2
4	PAOZZ	24617	451031	NUT,SELF-LOCKING,HE	2
END OF FIGURE					



TA505774

FIGURE 20. KINGPIN.



## SECTION II

TM 9-2330-211-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 1506 FIFTH WHEEL	
				FIG. 20 KINGPIN	
1	PAOZZ	19207	8379676	CHAIN ASSEMBLY, SING .....	1
2	PAOZZ	96906	MS53040-1	RETAINER.....	1
3	PAOZZ	19207	8379674	KINGPIN, FIFTH WHEEL .....	1
4	PAOZZ	19207	8379620	SOCKET, KING PIN, FIF .....	1
5	PAOZZ	96906	MS15003-1	FITTING, LUBRICATION .....	1

END OF FIGURE

1  
2 THRU 18

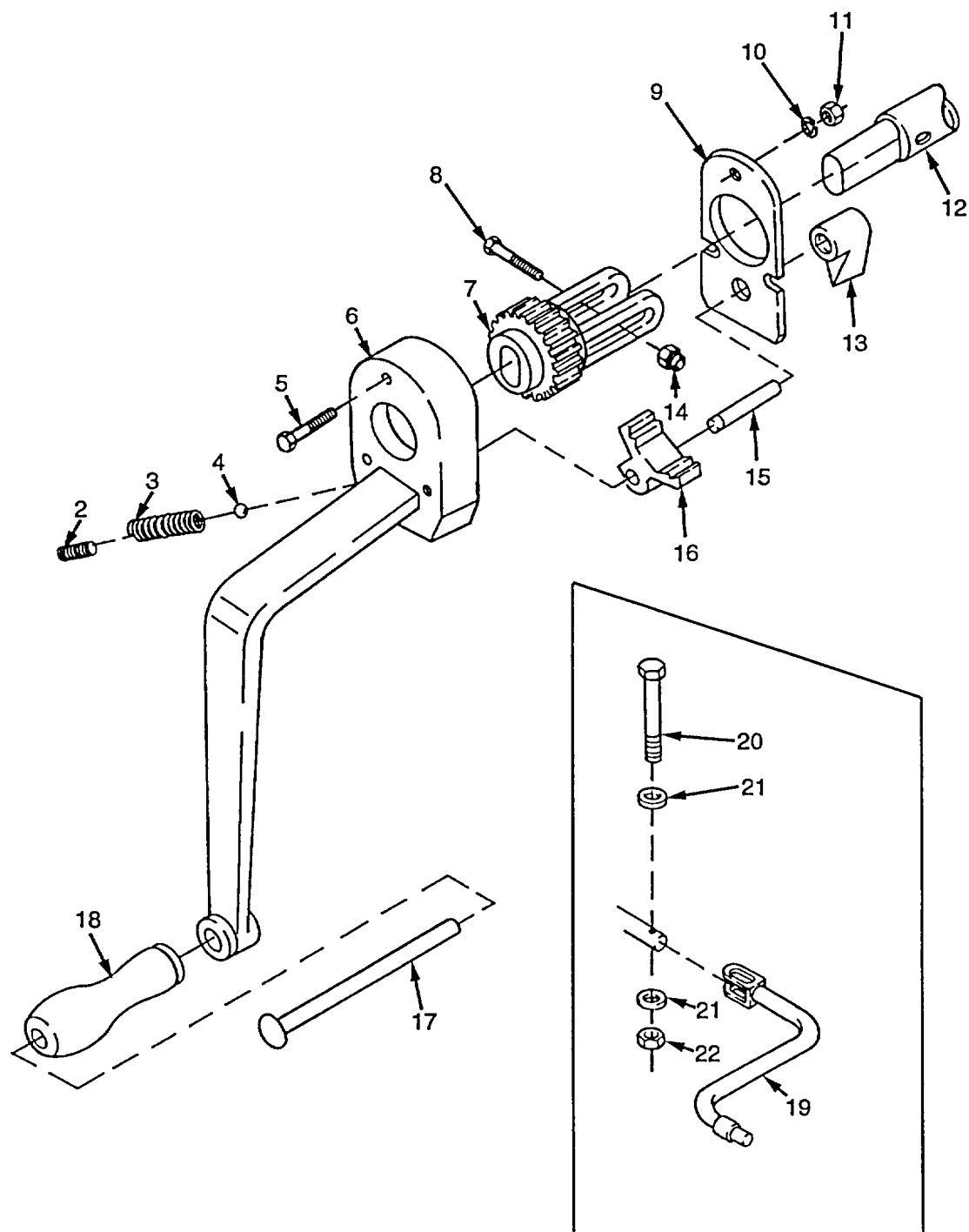


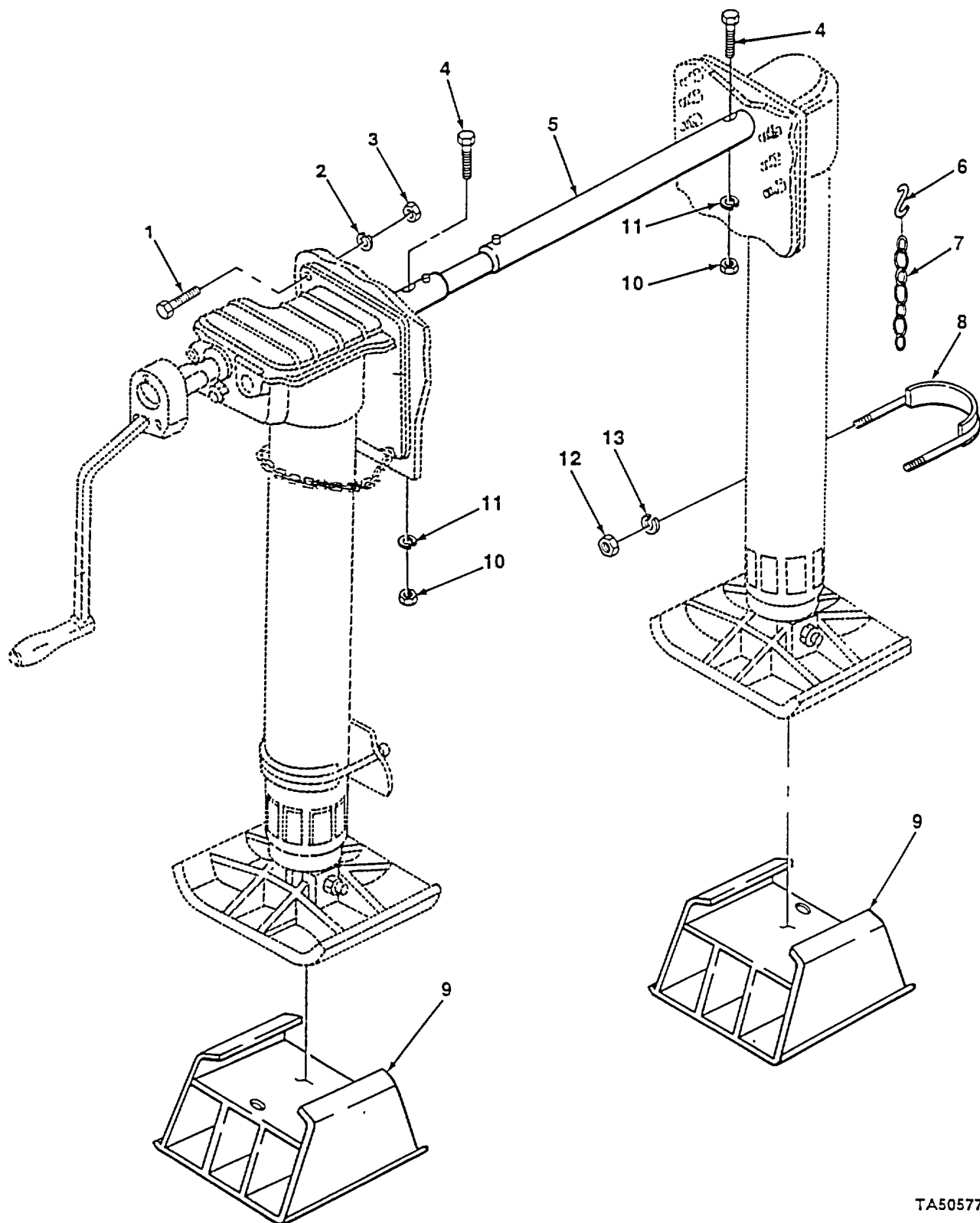
FIGURE 21. LANDING GEAR HANDCRANK

## SECTION II

TM 9-2330-211-14&P  
C02

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP 1507 LANDING GEAR AND LEVELING JACKS					
FIG. 21 LANDING GEAR HANDCRANK					
1	PAOOO	80837	J3279	CRANK ASSEMBLY, PARK OPTIONAL .....	1
2	PAOZZ	21450	501586	.PLUG, EXPANSION .....	1
3	PAOZZ	19207	8379626	.SPRING, HELICAL, COMP.....	1
4	PAOZZ	88663	2A605	.BALL, BEARING .....	1
5	PFOZZ	96906	MS90725-14	.SCREW, CAP, HEXAGON, H .....	1
6	PAOZZ	80837	J3280	.CRANK, HAND .....	1
7	PAOZZ	19207	8376604	.RATCHET, CRANK, FRAME .....	1
8	XDOZZ	18816	122194	.BOLT, MACHINE .....	1
9	XDOZZ	19207	8376606	.PLATE, COVER .....	1
10	PAOZZ	15235	KL5296	.WASHER, LOCK .....	1
11	PAOZZ	96906	MS51967-2	.NUT, PLAIN, HEXAGON .....	1
12	XDOZZ	21450	586174	.PIN .....	1
13	PAOZZ	80837	J3284-2	.LEVER, MANUAL CONTRO .....	1
14	PAOZZ	96906	MS51943-35	.NUT, SELF-LOCKING, HE .....	1
15	XDOZZ	83328	586023	.PIN, ROLL .....	1
16	PAOZZ	80837	J3282	.PAWL .....	1
17	XDOZZ	19207	H101-0217282	.RIVET, SOLID .....	1
18	PAOZZ	80837	TA653	.HANDLE, CRANK .....	1
* 19	PAOZZ	99411	LG0083-03	CRANK HAND OPTIONAL .....	1
* 20	PAOZZ	99411	PP0050-36	SCREW, CAP, HEXAGON H USE WITH PN: .....	1
				LG0083-03.....	
* 21	PAOZZ	99411	PP0016-03	WASHER, FLAT USE WITH PN: LG0083-3.....	2
* 22	PAOZZ	99411	PP0012-22	NUT SELF-LOCKING, HE USE WITH PN: .....	1
				LG0083-3.....	

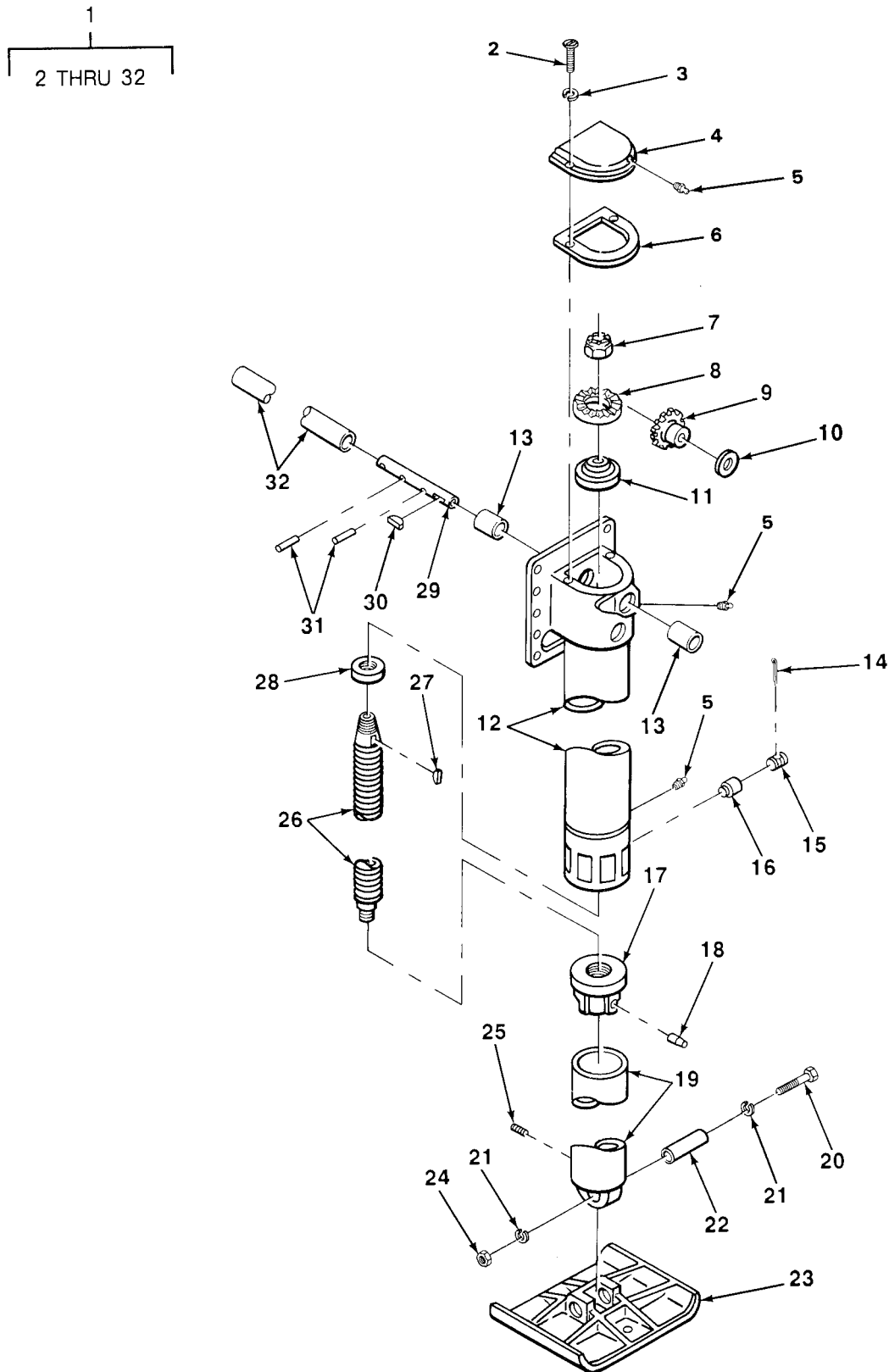
END OF FIGURE



TA505776

FIGURE 22. LANDING GEAR ATTACHING PARTS.

SECTION II (1) ITEM NO	(2) SMR CODE	(3) CAGEC	TM9-2330-211-14&P (4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP 1507 LANDING GEAR AND LEVELING JACKS					
FIG. 22 LANDING GEAR ATTACHING PARTS					
1	PAOZZ	96906	MS90728-164	SCREW,CAP,HEXAGON H	15
2	PAOZZ	81348	FFW84	WASHER,LOCK	15
3	PAOZZ	96906	MS35691-49	NUT,PLAIN,HEXAGON	15
4	PAOZZ	96906	MS90725-65	SCREW,CAP,HEXAGON	2
5	PAOZZ	19207	8336571	SHAFT,SHOULDERED	1
6	PAOZZ	18876	506886	HOOK,CHAIN,S	2
7	XDOZZ	21450	42C15120-215	CHAIN MAKE FROM P/N 7979367	2
8	PAOZZ	19207	8730460	BOLT,U	2
9	PAOZZ	19207	8336638	PAD ASSY SHOE JACK	2
10	PAOZZ	96906	MS35692-605	NUT(1),PLAIN,SLOTTE	2
11	PAOZZ	96906	MS27185-15	WASHER,FLAT	2
12	PFOZZ	96906	MS51968-17	NUT,PLAIN,HEXAGON	4
13	PAOZZ	96906	MS35338-49	WASHER,LOCK	4
END OF FIGURE					

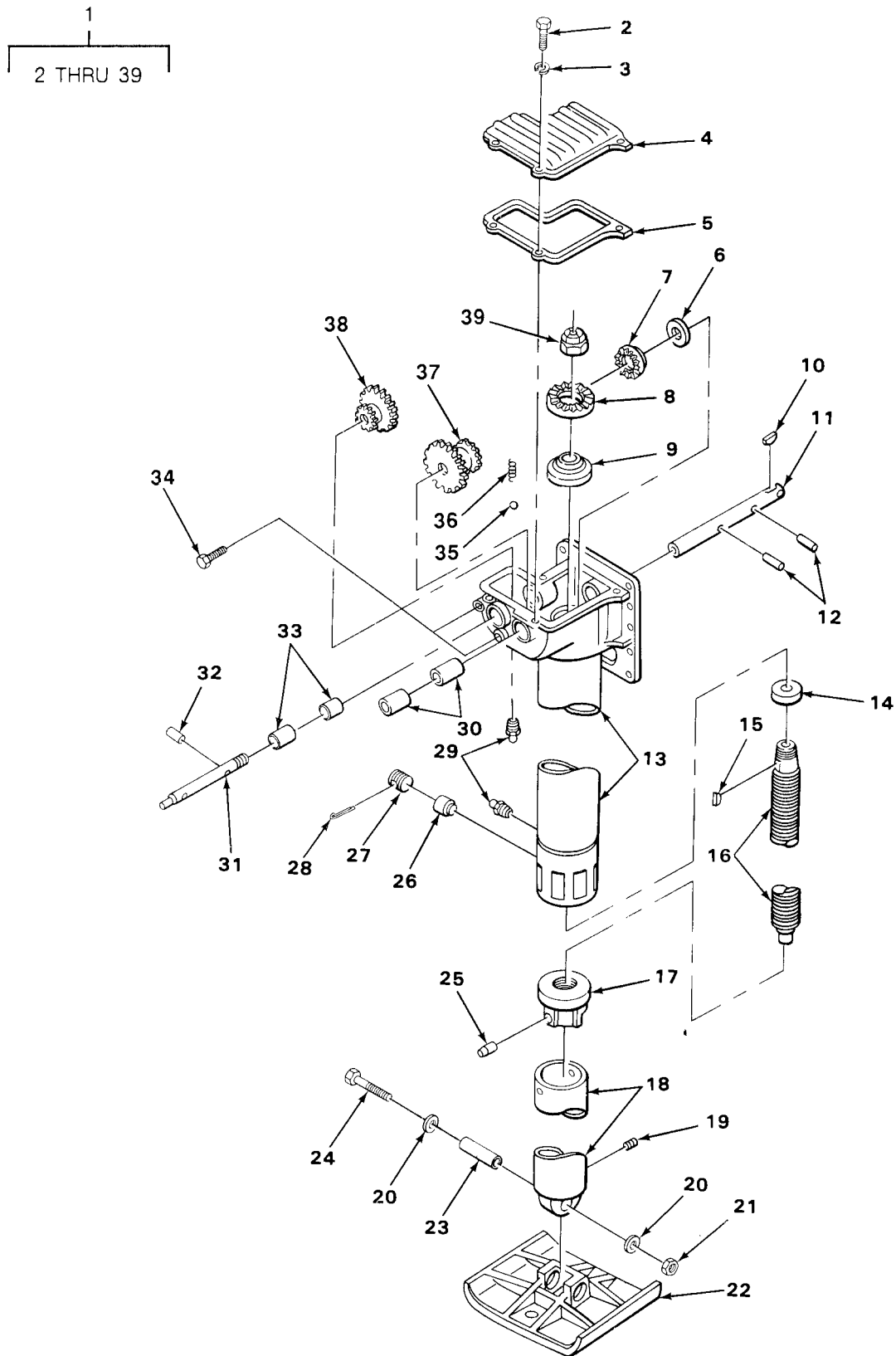


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FIGURE 23. LEFT LANDING GEAR.

SECTION II (1)	ITEM (2)	SMR (3)	TM9-2330-211-14&P (4)	PART (5)	DESCRIPTION AND USABLE ON CODES (UOC)	QTY (6)
NO	CODE	CAGEC	NUMBER			
					GROUP 1507 LANDING GEAR AND LEVELING JACKS	
					FIG. 23 LEFT LANDING GEAR	
1	PAOOO	19207	8700957		SUPPORT, RETRACTABLE	1
2	PAOZZ	96906	MS35206-281		.SCREW, MACHINE	2
3	PAOZZ	15235	KL5296		.WASHER, LOCK	2
4	PAOZZ	19207	7974886		.COVER, BEVEL GEAR	1
5	PAOZZ	96906	MS15003-1		.FITTING, LUBRICATION	1
6	PAOZZ	19207	7014983		.GASKET	1
7	PAOZZ	80205	NAS1022A17		.NUT, SELF-LOCKING, HE	1
8	PAOZZ	19207	8379855		.GEAR, BEVEL	1
9	PAOZZ	19207	7014980		.GEAR, BEVEL	1
10	PAOZZ	66640	27D252		.WASHER, FLAT	1
11	PAOZZ	66821	K12528		.BEARING, ROLLER, TAPE	1
12	XAOZZ	19207	8701079		.LEG ASSY	1
13	PAOZZ	19207	7014995		.BEARING, SLEEVE	1
14	PAOZZ	96906	MS24665-464		.PIN, COTTER	1
15	PAOZZ	80837	J1206A		.PLUG, MACHINE THREAD	1
16	PAOZZ	80837	J-1276		.GIB, LEVELING	1
17	PAOZZ	80837	J3265		.NUT, SLEEVE	1
18	PAOZZ	19207	8376596		.PIN, SHOULDER, HEADLE	1
19	PAOZZ	80837	J3269-11		.LEG ASSEMBLY	1
20	PAOZZ	96906	MS90728-125		.SCREW, CAP, HEXAGON H	1
21	PAOZZ	29215	JD1492		.WASHER, FLAT	2
22	PAOZZ	19207	7365938		.PIN, LANDING GEAR WH	1
23	PAOZZ	80837	J1386		.SHOE, JACK SUPPORT	1
24	PAOZZ	96906	MS35692-33		.NUT, PLAIN, SLOTTED, H	1
25	PAOZZ	24617	444687		.PLUG, PIPE	1
26	PAOZZ	80837	J673-6		.SCREW	1
27	PAOZZ	80837	J3237		.KEY, MACHINE	1
28	PAOZZ	96906	MS17169-12		.BEARING, ROLLER, THRU	2
29	PAOZZ	19207	8376584		.SHAFT, BEVEL GEAR	1
30	PAOZZ	96906	MS35756-15		.KEY, WOODRUFF	1
31	PAOZZ	96906	MS35671-55		.PIN, GROOVED, HEADLES	2
32	PAOZZ	19207	7367721		.SHAFT	1

END OF FIGURE



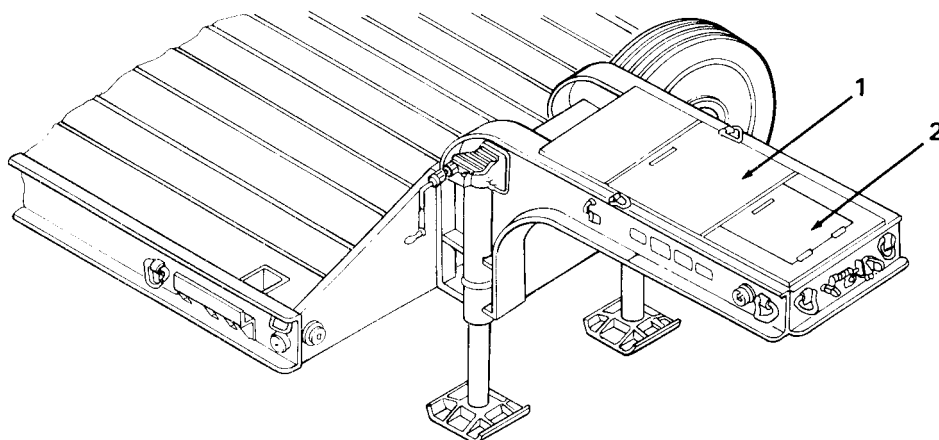
TA505778

FIGURE 24. RIGHT LANDING GEAR.



SECTION II (1) ITEM NO	(2) SMR CODE	(3) CAGEC	TM9-2330-211-14&P (4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP 1507 LANDING GEAR AND LEVELING JACKS					
FIG. 24 RIGHT LANDING GEAR					
1	PAOOO	19207	8700958	LEG,SEMITRAILER RET	1
2	PAOZZ	96906	MS35206-281	.SCREW,MACHINE	4
3	PAOZZ	15235	KL5296	.WASHER,LOCK	4
4	PAOZZ	19207	7974887	.COVER,ACCESS	1
5	PAOZZ	80837	J3203G	.GASKET "STATE NO SUBSTITUTIONS"	1
6	PAOZZ	66640	27D252	.WASHER,FLAT	1
7	PAOZZ	19207	7014980	.GEAR,BEVEL	1
8	PAOZZ	19207	8379855	.GEAR,BEVEL	1
9	PAOZZ	80837	1102A3-4	.BEARING,ROLLER,TAPE	1
10	PAOZZ	96906	MS35756-15	.KEY,WOODRUFF	1
11	PAOZZ	80837	J3207-1	.SHAFT,STRAIGHT	1
12	PAOZZ	61038	M21872	.PIN,GROOVED,HEADLES	2
13	PAOZZ	19207	8376598	.LEG ASSEMBLY,UPPER,	1
14	PAOZZ	96906	MS17169-12	.BEARING,ROLLER,THRU	1
15	PAOZZ	80837	J3237	.KEY,MACHINE	1
16	PAOZZ	80837	J673-6	.SCREW	1
17	PAOZZ	80837	J3265	.NUT,SLEEVE	1
18	PAOZZ	80837	J3269-11	.LEG ASSEMBLY	1
19	PAOZZ	81348	WW-P-471AASBCA	.PLUG,PIPE	1
20	PAOZZ	96906	MS27183-19	.WASHER,FLAT	2
21	PAOZZ	96906	MS51943-39	.NUT,SELF-LOCKING,HE	1
22	PAOZZ	80837	J1386	.SHOE,JACK SUPPORT	1
23	PAOZZ	19207	7365938	.PIN,LANDING GEAR WW	1
24	PAOZZ	96906	MS90728-125	.SCREW,CAP,HEXAGON H	1
25	PAOZZ	19207	8376596	.PIN,SHOULDER,HEADLE	1
26	PAOZZ	80837	J-1276	.GIB,LEVELING	1
27	PAOZZ	80837	J1206A	.PLUG,MACHINE THREAD	1
28	PAOZZ	96906	MS24665-464	.PIN,COTTER	1
29	PAOZZ	96906	MS15003-1	.FITTING,LUBRICATION	2
30	PAOZZ	19207	7014995	.BEARING,SLEEVE	2
31	PAOZZ	80837	J3208-1	.SHAFT,CRANK	1
32	PAOZZ	96906	MS35671-64	.PIN,GROOVED,HEADLES	2
33	PAOZZ	04632	J1116	.BEARING,SLEEVE	2
34	PAOZZ	96906	MS90726-104	.SCREW,CAP,HEXAGON	2
35	PAOZZ	96906	MS19059-2419	.BALL,BEARING	1
36	PAOZZ	80837	J3205	.SPRING,HELICAL,COMP	1
37	PAOZZ	19207	8376610	.GEAR CLUSTER	1
38	PAOZZ	19207	8376611	.GEAR CLUSTER	1
39	PAOZZ	80205	NAS1022A17	.NUT,SELF-LOCKING,HE	1

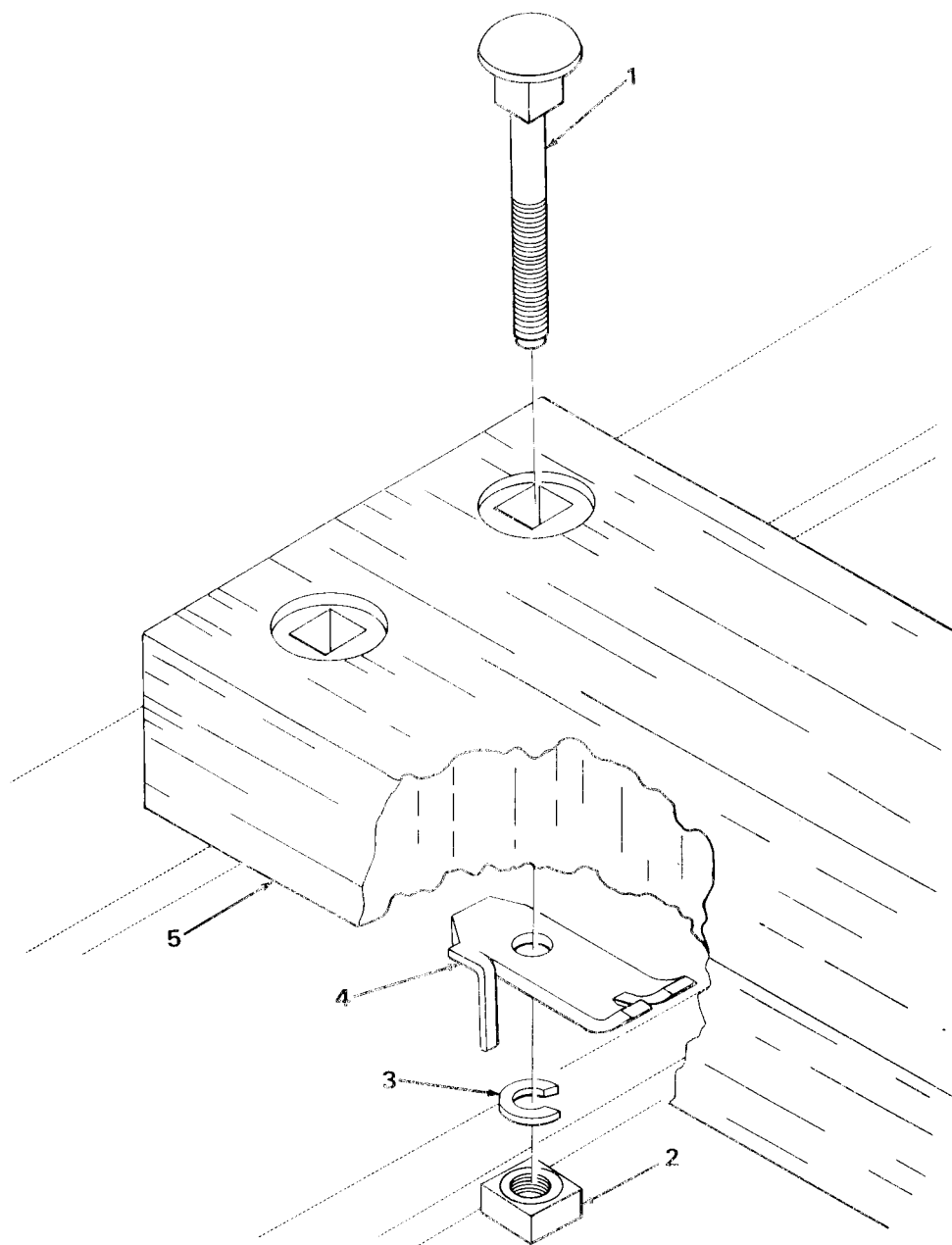
END OF FIGURE



TA505779

FIGURE 25. STOWAGE.

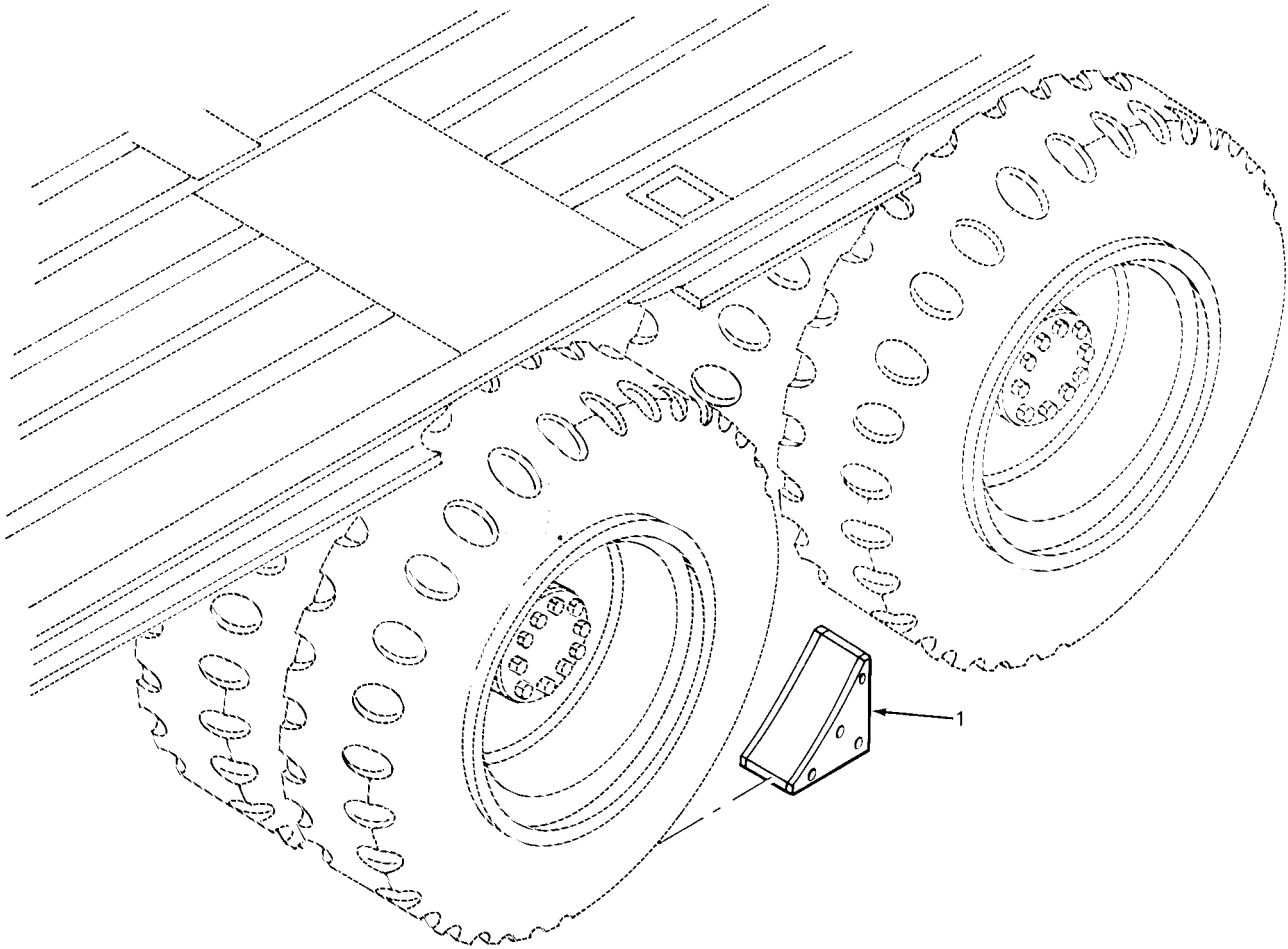
SECTION II				TM9-2330-211-14&P		
(1)	(2)	(3)	(4)	(5)		(6)
ITEM	SMR		PART			
NO	CODE	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)		QTY
				GROUP 18 BODY		
				GROUP 1808 STOWAGERACKS,BOXES, STRAPS, CARRYING CASES, CABLE REELS, HOSE REELS, ETC.		
				FIG. 25 STOWAGE		
1	XBFZZ	19207	8336567	DOOR ASSY		1
2	XBFZZ	19207	8742593	PLATE ASSY		1
				END OF FIGURE		



TA505780

FIGURE 26. DECKING HARDWARE.

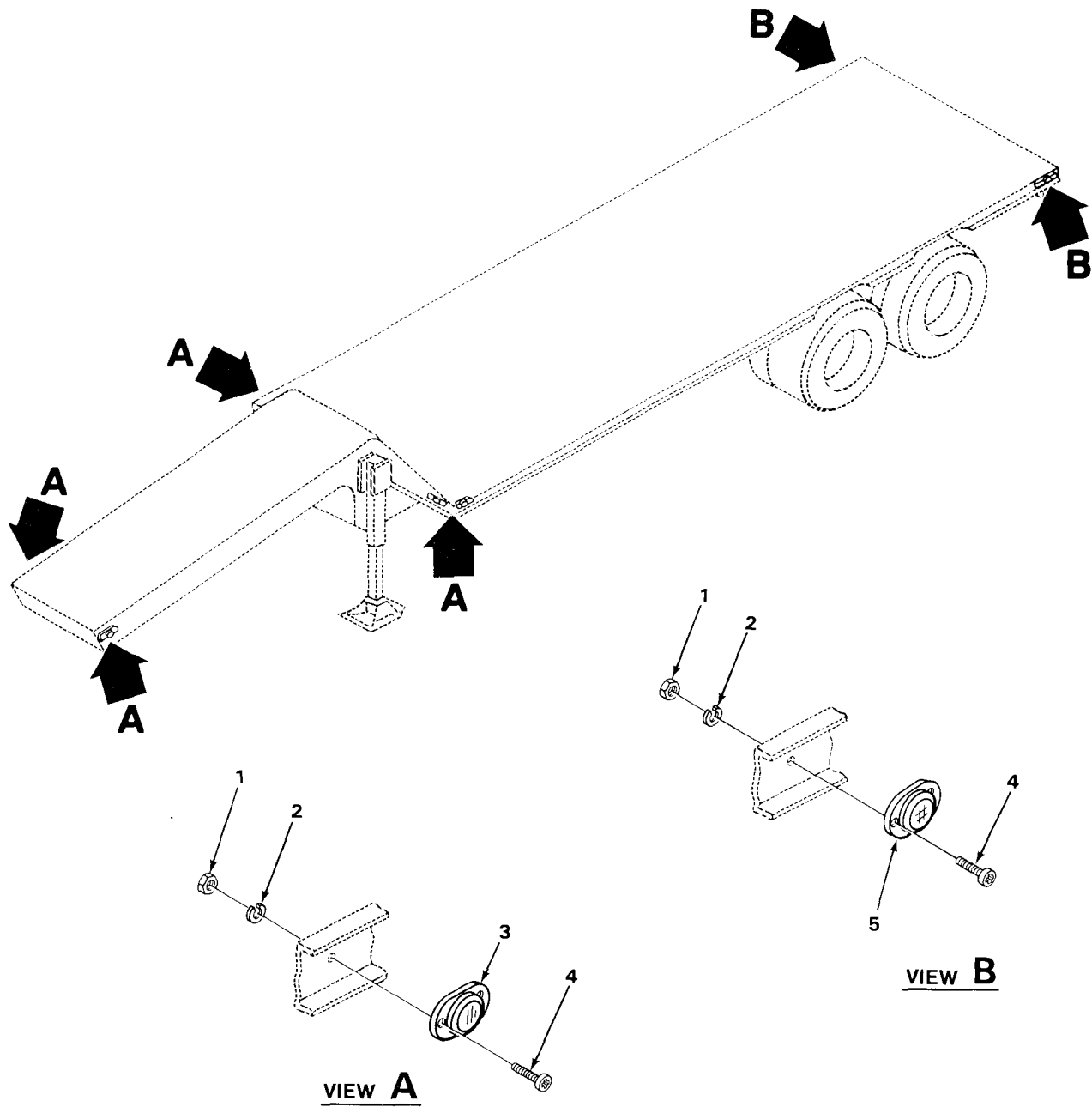
SECTION II				TM9-2330-211-14&P		
(1)	(2)	(3)	(4)	(5)		(6)
ITEM	SMR		PART			
NO	CODE	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)		QTY
				GROUP 1810 CARGO BODY: (DUMP, STAKE, AND PLATFORM)		
				FIG. 26. DECKING HARDWARE		
1	PAFZZ	96906	MS35754-40	BOLT, SQUARE NECK		212
2	PAFZZ	96906	MS27040-14	NUT, PLAIN, SQUARE		212
3	PAFZZ	96906	MS35338-48	WASHER, LOCK		16
4	PAFZZ	82465	60507	CLIP, BRIDGE FLOOR		196
5	MFFZZ	19207	2744994-1	HARDWOOD MAKE FROM LUMBER P/N 15608		V
				END OF FIGURE		



TA505781

FIGURE 27. WHEEL CHOCKS.

SECTION II (1) ITEM NO	(2) SMR CODE	(3) CAGEC	TM9-2330-211-14&P (4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 22 BODY AND CHASSIS ACCESSORY ITEMS	
				GROUP 2202 ACCESSORY ITEMS	
				FIG. 27 WHEEL CHOCKS	
1	PAOZZ	19207	8343584	CHOCK,WHEEL TRACK	2
				END OF FIGURE	



TA505782

FIGURE 28. REFLECTORS.



SECTION II		TM9-2330-211-14&P			
(1)	(2)	(3)	(4)	(5)	(6)
ITEM	SMR		PART		
NO	CODE	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY
GROUP 2202 ACCESSORY ITEMS					
FIG. 28 REFLECTORS					
1	PAOZZ	96906	MS51967-2	NUT, PLAIN, HEXAGON	20
2	PAOZZ	15235	KL5296	WASHER, LOCK	20
3	PAOZZ	96906	MS35387-2	REFLECTOR, INDICATING AMBER	6
4	PAOZZ	96906	MS35206-281	SCREW, MACHINE	20
5	PAOZZ	96906	MS35387-1	REFLECTOR, INDICATING RED	4
END OF FIGURE					

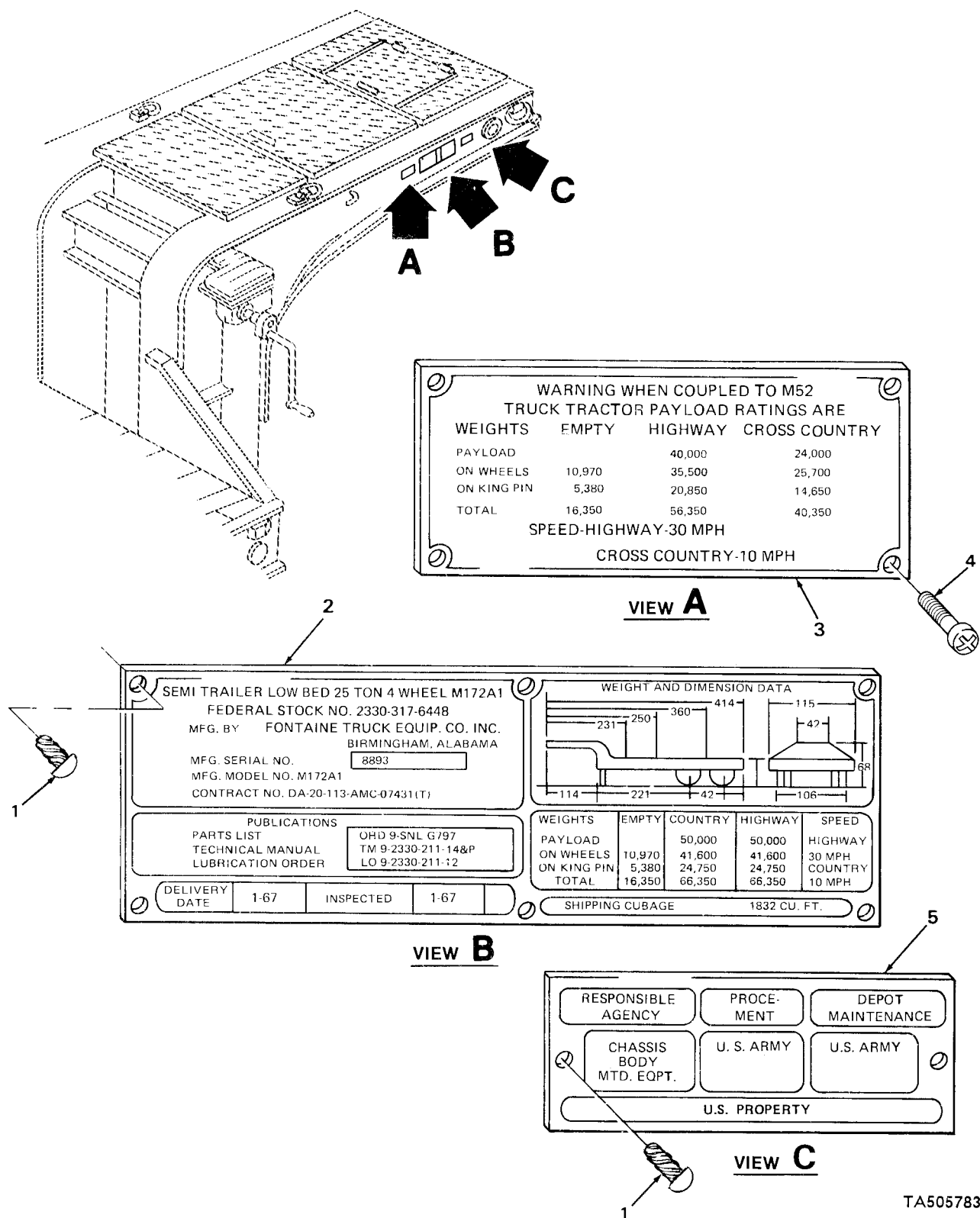


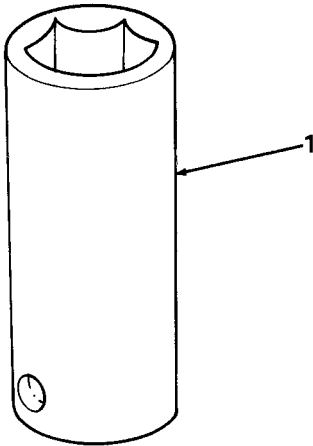
FIGURE 29. DATA PLATES.

TA505783

SECTION II				TM9-2330-211-14&P		
(1)	(2)	(3)	(4)	(5)		(6)
ITEM	SMR		PART			
NO	CODE	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)		QTY
				GROUP 2210 DATA PLATES AND INSTRUCTION HOLDERS		
				FIG. 29 DATA PLATES		
1	PAOZZ	96906	MS21318-57	SCREW,DRIVE		8
2	PAOZZ	19207	8336801	PLATE IDENTIFICATIO		1
3	PAOZZ	19207	8683503	PLATE, INSTRUCTION		1
4	PAOZZ	96906	MS24629-45	SCREW,TAPPING,THREA		4
5	PAOZZ	19207	7979373	PLATE,IDENTIFICATIO		1
				END OF FIGURE		

SECTION II				TM9-2330-211-14&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 BULKMATERIEL		
				FIG. BULK		
1	PAOZZ	06853	246115	HOSE, NONMETALLIC		V
2	PAOZZ	19207	7979367	LINK, CHAIN, END		V
3	PAFZZ	80049	15608	LUMBER, HARDWOOD		V
4	PAOZZ	95535	55229	TUBE, METALLIC		V
5	PAOZZ	17590	305087-0116	TUBE, METALLIC		V
				END OF FIGURE		

BULK-1



TA505784

FIGURE 30. SPECIAL TOOLS

SECTION III (1) ITEM NO	(2) SMR CODE	(3) CAGEC	TM9-2330-211-14&P (4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 26 TOOLS AND TEST EQUIPMENT	
				GROUP 2604 SPECIAL TOOLS	
				FIG. 30 SPECIAL TOOLS	
1	PEOZZ	03914	13-348	SOCKET, SOCKET WRENC	2
				END OF FIGURE	

## CROSS-REFERENCE INDEXES

## NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
5310-00-004-3099	26	2	5310-00-078-7025	16	12
5310-00-010-3030	5	3	5310-00-078-7026	16	12
5310-00-010-3030	14	1	2530-00-089-8289	8	3
5315-00-014-2521	24	12	5330-00-090-2128	15	6
5315-00-014-2543	24	32	5365-00-090-5426	4	3
4730-00-018-9566	23	25	3110-00-100-0333	16	13
4730-00-018-9566	24	19	3110-00-100-0337	16	16
6240-00-019-0877	1	6	3110-00-100-0663	16	9
6240-00-019-0877	2	7	3110-00-100-0683	16	17
6240-00-019-3093	1	5	3110-00-100-6004	23	11
2530-00-021-2366	11	2	3110-00-100-6004	24	9
5306-00-021-8156	26	1	3110-00-100-6164	24	35
5310-00-021-9760	10	2	5305-00-115-9526	1	9
3040-00-030-6942	23	29	2510-00-116-9223	7	1
2590-00-030-6943	23	23	3110-00-117-0759	23	28
2590-00-030-6943	24	22	3110-00-117-0759	24	14
2590-00-040-2855	23	19	2530-00-156-9142	16	10
2590-00-040-2855	24	18	5340-00-157-0724	13	1
2530-00-040-2856	21	1	5310-00-167-0680	22	13
5340-00-040-2857	21	6	4010-00-171-9736	BULK	2
3040-00-040-2858	21	16	5340-00-177-8101	6	6
4010-00-040-2869	20	1	5365-00-177-9262	16	1
5310-00-044-6230	23	21	3110-00-185-6305	21	4
6240-00-044-6914	1	4	4730-00-187-4202	13	5
5310-00-045-1031	19	4	5315-00-187-9396	23	14
5310-00-045-3296	2	13	5315-00-187-9396	24	28
5310-00-045-5001	14	2	5310-00-194-1483	8	10
2640-00-050-1229	18	4	5360-00-200-5414	21	3
5315-00-050-1586	21	2	9905-00-202-3639	28	3
4730-00-050-4203	8	5	5325-00-202-4005	10	20
4730-00-050-4203	8	13	4710-00-203-3172	BULK	5
4730-00-050-4208	7	6	2530-00-204-3214	16	19
4730-00-050-4208	9	2	9905-00-205-2795	28	5
4730-00-050-4208	20	5	5310-00-208-7127	6	2
4730-00-050-4208	23	5	5310-00-220-6848	23	10
4730-00-050-4208	24	29	5310-00-220-6848	24	6
5940-00-050-6209	4	11	5305-00-225-3844	16	2
5305-00-052-6920	8	8	2530-00-247-3276	8	7
2610-00-052-7969	18	2	4730-00-253-4412	10	24
5315-00-058-3553	14	7	5305-00-253-5631	29	1
5315-00-060-5074	23	31	5120-00-261-2821	30	1
5305-00-068-0515	10	14	5310-00-262-5479	8	16
5305-00-071-2081	23	20	5305-00-269-2804	13	4
5305-00-071-2081	24	24	5305-00-269-3215	22	4
5305-00-071-2237	21	5	5305-00-269-3238	11	1
5307-00-075-7185	16	14	2530-00-270-3878	15	4
5307-00-075-7186	16	14	4030-00-270-5435	22	6
5510-00-275-2544	BULK	3	5365-00-427-2209	8	21
5325-00-276-6056	3	5	3040-00-427-2211	8	20
5325-00-276-6056	10	26	3040-00-445-5360	24	11
4730-00-278-3213	12	3	2510-00-455-5759	20	4
4730-00-278-3832	10	22	5330-00-462-0907	1	3
9905-00-282-7489	29	5	5310-00-488-3889	24	21

## CROSS-REFERENCE INDEXES

## NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
5340-00-286-2494	10	25	2530-00-496-2578	21	18
4730-00-289-0155	10	10	2590-00-510-8829	23	16
4730-00-289-0155	10	12	2590-00-510-8829	24	26
4730-00-289-0155	10	23	5340-00-512-2071	16	4
5325-00-290-3777	3	7	5330-00-513-9933	24	5
6220-00-299-7425	2	9	5315-00-515-0495	23	27
6220-00-299-7426	2	9	5315-00-515-0495	24	15
5315-00-316-1063	23	18	4720-00-540-1729	10	21
5315-00-316-1063	24	25	5325-00-543-3725	3	8
2510-00-318-1203	20	3	3120-00-544-1535	24	33
2530-00-318-1234	14	3	2530-00-562-0484	6	7
5340-00-318-6649	26	4	5330-00-562-0485	6	8
3020-00-319-6011	23	8	3020-00-562-0487	24	37
3020-00-319-6011	24	8	3020-00-562-0488	24	38
5340-00-321-6481	7	7	9390-00-567-3239	6	- 9
2510-00-321-6482	20	2	5935-00-569-4715	2	2
4710-00-324-4311	10	4	6220-00-577-3434	2	3
4710-00-324-4312	10	6	5310-00-582-5965	3	3
2530-00-328-5438	8	6	5310-00-582-5965	10	16
3120-00-331-2640	8	4	5310-00-582-5965	16	3
5306-00-333-0473	22	8	5310-00-582-5965	21	10
4730-00-334-5550	10	5	5310-00-582-5965	23	3
4730-00-335-4728	10	1	5310-00-582-5965	24	3
4730-00-335-4728	15	2	5310-00-582-5965	28	2
5305-00-335-4761	23	26	5310-00-582-6714	10	3
5305-00-335-4761	24	16	5310-00-584-5272	26	3
5306-00-337-9672	6	10	5310-00-584-7888	6	3
2640-00-338-2705	18	3	5310-00-584-7888	8	18
5330-00-353-0959	2	4	5310-00-584-7888	19	3
4730-00-353-2036	10	19	5310-00-586-1767	23	17
2530-00-353-2210	8	1	5310-00-586-1767	24	17
2530-00-353-2211	8	1	5310-00-594-8038	19	1
6250-00-371-4018	2	6	4730-00-595-0083	10	8
2530-00-372-4100	9	1	4730-00-595-0083	15	1
2530-00-374-1771	16	15	5310-00-596-8169	2	8
3130-00-374-7856	5	5	5315-00-616-5530	23	30
5310-00-393-6685	4	5	5315-00-616-5530	24	10
5940-00-399-6676	4	10	5310-00-616-6857	23	7
4820-00-420-5499	10	9	5310-00-616-6857	24	39
4710-00-424-2694	BULK	4	5310-00-627-6128	1	8
5360-00-427-2208	8	22	5310-00-637-9541	11	3
5310-00-637-9541	13	2	5310-00-761-6882	28	1
5340-00-657-9792	3	9	5310-00-763-8905	6	11
2590-00-678-4099	22	9	5310-00-763-8905	14	4
9905-00-678-6126	29	2	5310-00-763-8911	22	12
5315-00-678-6127	8	19	5310-00-768-0319	10	17
3120-00-678-6132	8	15	5935-00-773-1428	3	2
2530-00-678-6133	8	23	3040-00-773-9380	22	5
5340-00-678-6192	14	5	9905-00-777-3070	29	3
5365-00-678-6872	23	15	5310-00-797-4501	7	8
5365-00-678-6872	24	27	1015-00-798-2997	4	10
5995-00-679-1425	4	1	5365-00-803-7299	8	12
2530-00-679-5657	5	1	5340-00-808-3897	6	4



## CROSS-REFERENCE INDEXES

NATIONAL STOCK NUMBER INDEX					
STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
5360-00-679-5658	24	36	5310-00-809-3079	24	20
5310-00-682-5757	22	10	5340-00-809-5127	10	15
5325-00-685-0746	3	6	4730-00-813-7811	10	29
5340-00-689-3373	6	13	5310-00-820-6653	5	2
5340-00-689-6180	23	4	5310-00-820-6653	6	12
3040-00-693-0974	24	31	5310-00-820-6653	7	5
3020-00-693-0990	21	7	5310-00-820-6653	22	2
2590-00-693-0994	23	1	4730-00-833-0508	10	27
2590-00-693-0995	24	1	5935-00-833-8561	4	8
5310-00-701-4891	8	14	5970-00-833-8562	4	9
3020-00-701-4980	23	9	5310-00-833-8567	2	1
3020-00-701-4980	24	7	5315-00-839-5822	14	6
5330-00-701-4983	23	6	5310-00-841-2041	23	24
3120-00-701-4995	23	13	9905-00-841-4445	4	6
3120-00-701-4995	24	30	5310-00-842-1190	8	17
6145-00-705-6678	4	4	5307-00-843-4249	19	2
5310-00-708-8737	16	6	5935-00-846-3883	4	2
5310-00-708-8738	16	8	5310-00-847-2733	16	11
5310-00-708-8739	16	7	4820-00-849-1220	13	7
3040-00-710-1754	21	13	5310-00-850-6993	16	20
5305-00-716-8194	24	34	5310-00-851-2677	22	3
5305-00-724-7222	22	1	5305-00-855-0958	29	4
5305-00-725-4183	8	11	5310-00-861-9125	16	11
6220-00-726-1916	2	3	5340-00-893-4100	24	4
5305-00-726-2552	5	4	2530-00-912-4356	16	10
5305-00-726-2553	6	5	5310-00-927-3236	8	2
5305-00-726-2554	7	4	2530-00-933-4194	7	3
5310-00-732-0559	11	4	5365-00-933-4195	7	2
5310-00-732-0559	13	3	5330-00-933-4196	16	5
5310-00-732-0560	8	9	5310-00-934-9758	2	14
3040-00-736-7721	23	32	5310-00-935-9021	21	14
9905-00-752-4649	4	7	5305-00-958-5246	2	11
6220-00-752-6516	2	10	5305-00-984-6212	2	12
5310-00-761-6882	3	4	5305-00-988-1725	3	1
5310-00-761-6882	21	11	5305-00-988-1725	23	2
5305-00-988-1725	24	2	2530-01-125-4084	17	1
5305-00-988-1725	28	4	5310-01-174-0431	21	21
9905-00-999-7369	10	28	5310-01-175-0484	21	22
9905-00-999-7369	15	5	5340-01-175-0564	21	19
9905-00-999-7370	10	7	5305-01-175-0568	21	20
9905-00-999-7370	15	3	2610-01-254-5392	18	6
4720-01-014-4915	BULK	1	2610-01-325-1934	18	1
2530-01-054-4384	13	6	6220-01-359-2870	1	2
4730-01-079-8821	12	1	6220-01-372-3883	1	1
2590-01-091-7620	23	22	5999-01-408-5205	2	5
2590-01-091-7620	24	23	5330-01-417-5137	16	18

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CAGEC	PART NUMBER	PART NUMBER INDEX		FIG.	ITEM
			STOCK NUMBER		
16662	AD2583		2530-00-270-3878	15	4
80204	B1821BH050C450N		5305-00-071-2081	23	20
			5305-00-071-2081	24	24
80204	B1821BH063C200N		5305-00-724-7222	22	1
80204	B1821BH063F225N		5305-00-726-2552	5	4
19207	CPR102321-1		4730-01-079-8821	12	1
78553	C1059-014-1		5310-00-596-8169	2	8
96906	FEDSTD308B		2610-00-052-7969	18	2
81348	GP2STYLXTYRBCLR/ T/10.00R15/J/LTR		2610-01-325-1934	18	1
19207	H101-0217282			21	17
80837	J-1166		3120-00-544-1535	24	33
80837	J-1276		2590-00-510-8829	23	16
			2590-00-510-8829	24	26
29215	JD1492		5310-00-044-6230	23	21
80837	J1206A		5365-00-678-6872	23	15
			5365-00-678-6872	24	27
80837	J1386		2590-00-030-6943	23	23
			2590-00-030-6943	24	22
80837	J3203G		5330-00-513-9933	24	5
80837	J3205		5360-00-679-5658	24	36
80837	J3207-1		3040-00-445-5360	24	11
80837	J3208-1		3040-00-693-0974	24	31
80837	J3237		5315-00-515-0495	23	27
			5315-00-515-0495	24	15
80837	J3265		5310-00-586-1767	23	17
			5310-00-586-1767	24	17
80837	J3269-11		2590-00-040-2855	23	19
			2590-00-040-2855	24	18
80837	J3279		2530-00-040-2856	21	1
80837	J3280		5340-00-040-2857	21	6
80837	J3282		3040-00-040-2858	21	16
80837	J3284-2		3040-00-710-1754	21	13
80837	J673-6		5305-00-335-4761	23	26
			5305-00-335-4761	24	16
15235	KL5296		5310-00-582-5965	3	3
			5310-00-582-5965	10	16
			5310-00-582-5965	16	3
			5310-00-582-5965	21	10
			5310-00-582-5965	23	3
			5310-00-582-5965	24	3
			5310-00-582-5965	28	2
66821	K12528		3110-00-100-6004	23	11
99411	LG0083-03		5340-01-175-0564	21	19
96906	MS15001-1		4730-00-050-4203	8	5
			4730-00-050-4203	8	13
96906	MS15003-1		4730-00-050-4208	7	6
			4730-00-050-4208	9	2
			4730-00-050-4208	20	5
			4730-00-050-4208	23	5
			4730-00-050-4208	24	29
96906	MS15570-1251		6240-00-019-0877	1	6

## CROSS-REFERENCE INDEXES

CAGEC	PART NUMBER	PART NUMBER INDEX		FIG.	ITEM
			STOCK NUMBER		
			6240-00-019-0877	2	7
96906	MS15570-623		6240-00-019-3093	1	5
96906	MS16624-1150		5365-00-803-7299	8	12
96906	MS17169-12		3110-00-117-0759	23	28
			3110-00-117-0759	24	14
96906	MS19059-2419		3110-00-100-6164	24	35
96906	MS21318-57		5305-00-253-5631	29	1
96906	MS21333-36		5340-00-286-2494	10	25
96906	MS21333-38		5340-00-809-5127	10	15
96906	MS24629-45		5305-00-855-0958	29	4
96906	MS24629-56		5305-00-052-6920	8	8
96906	MS24665-353		5315-00-839-5822	14	6
96906	MS24665-464		5315-00-187-9396	23	14
			5315-00-187-9396	24	28
96906	MS27148-2		5999-01-408-5205	2	5
96906	MS27183-19		5310-00-809-3079	24	20
96906	MS27185-15			22	11
96906	MS35190-289		5305-00-958-5246	2	11
96906	MS35206-265		5305-00-984-6212	2	12
96906	MS35206-281		5305-00-988-1725	3	1
			5305-00-988-1725	23	2
			5305-00-988-1725	24	2
			5305-00-988-1725	28	4
96906	MS35333-44		5310-00-194-1483	8	10
96906	MS35333-49		5310-00-582-6714	10	3
96906	MS35335-35		5310-00-627-6128	1	8
96906	MS35338-43		5310-00-045-3296	2	13
96906	MS35338-46		5310-00-637-9541	11	3
96906	MS35338-48		5310-00-584-5272	26	3
96906	MS35338-49		5310-00-167-0680	22	13
96906	MS35338-50		5310-00-820-6653	5	2
			5310-00-820-6653	6	12
			5310-00-820-6653	7	5
96906	MS35338-51		5310-00-584-7888	6	3
			5310-00-584-7888	8	18
			5310-00-584-7888	19	3
96906	MS35340-50		5310-00-045-5001	14	2
96906	MS35387-1		9905-00-205-2795	28	5
96906	MS35387-2		9905-00-202-3639	28	3
96906	MS35421-1		6220-00-299-7425	2	9
96906	MS35421-2		6220-00-299-7426	2	9
96906	MS35423-1		6220-00-577-3434	2	3
96906	MS35423-2		6220-00-726-1916	2	3
96906	MS35478-1683		6240-00-044-6914	1	4
94135	MS35489-106		5325-00-276-6056	3	5
			5325-00-276-6056	10	26
96906	MS35489-110		5325-00-202-4005	10	20
96906	MS35489-77		5325-00-290-3777	3	7
96906	MS35649-202		5310-00-934-9758	2	14
96906	MS35671-55		5315-00-060-5074	23	31
96906	MS35671-64		5315-00-014-2543	24	32
96906	MS35690-1024		5310-00-010-3030	5	3

## CROSS-REFERENCE INDEXES

CAGEC	PART NUMBER	PART NUMBER INDEX		FIG.	ITEM
			STOCK NUMBER		
			5310-00-010-3030	14	1
96906	MS35691-49		5310-00-851-2677	22	3
96906	MS35691-61		5310-00-842-1190	8	17
96906	MS35692-33		5310-00-841-2041	23	24
96906	MS35692-605		5310-00-682-5757	22	10
96906	MS35692-62		5310-00-850-6993	16	20
96906	MS35746-1		4730-00-595-0083	10	8
			4730-00-595-0083	15	1
96906	MS35748-1		5330-00-090-2128	15	6
96906	MS35754-40		5306-00-021-8156	26	1
96906	MS35756-15		5315-00-616-5530	23	30
			5315-00-616-5530	24	10
96906	MS35782-5		4820-00-849-1220	13	7
96906	MS39020-1		9905-00-752-4649	4	7
96906	MS39182-5		4730-00-289-0155	10	10
96906	MS39191-2		4730-00-813-7811	10	29
96906	MS39230-2		4730-00-253-4412	10	24
96906	MS51814-5		4730-00-334-5550	10	5
96906	MS51819-7		4730-00-833-0508	10	27
96906	MS51943-35		5310-00-935-9021	21	14
96906	MS51943-39		5310-00-488-3889	24	21
96906	MS51967-2		5310-00-761-6882	3	4
			5310-00-761-6882	21	11
			5310-00-761-6882	28	1
96906	MS51968-14		5310-00-732-0560	8	9
96906	MS51968-17		5310-00-763-8911	22	12
96906	MS51968-2		5310-00-768-0319	10	17
96906	MS51968-20		5310-00-763-8905	6	11
			5310-00-763-8905	14	4
96906	MS51968-8		5310-00-732-0559	11	4
			5310-00-732-0559	13	3
96906	MS51983-2		5310-00-594-8038	19	1
96906	MS53004-2		2530-00-021-2366	11	2
96906	MS53007-1		9905-00-999-7370	10	7
			9905-00-999-7370	15	3
96906	MS53007-2		9905-00-999-7369	10	28
			9905-00-999-7369	15	5
96906	MS53040-1		2510-00-321-6482	20	2
96906	MS75021-1		5935-00-846-3883	4	2
96906	MS90725-14		5305-00-071-2237	21	5
96906	MS90725-58		5305-00-115-9526	1	9
96906	MS90725-65		5305-00-269-3215	22	4
96906	MS90726-104		5305-00-716-8194	24	34
96906	MS90726-113		5305-00-725-4183	8	11
96906	MS90726-61		5305-00-269-2804	13	4
96906	MS90727-166		5305-00-726-2553	6	5
96906	MS90727-167		5305-00-726-2554	7	4
96906	MS90727-62		5305-00-269-3238	11	1
96906	MS90727-8		5305-00-068-0515	10	14
96906	MS90728-4		5305-00-225-3844	16	2
81349	M13486-1-7		6145-00-705-6678	4	4
61038	M21872		5315-00-014-2521	24	12

## CROSS-REFERENCE INDEXES

CAGEC	PART NUMBER	PART NUMBER INDEX		FIG.	ITEM
			STOCK NUMBER		
81349	M43436/1-2		9905-00-841-4445	4	6
80205	NAS1022A17		5310-00-616-6857	23	7
			5310-00-616-6857	24	39
40342	N11257		5340-00-678-6192	14	5
40342	N13128		4730-00-353-2036	10	19
40342	N13463D		4720-00-540-1729	10	21
99411	PP0012-22		5310-01-175-0484	21	22
99411	PP0016-03		5310-01-174-0431	21	21
99411	PP0050-36		5305-01-175-0568	21	20
80837	TA653		2530-00-496-2578	21	18
56697	UB-2208		3040-00-427-2211	8	20
78550	UB1179		3120-00-678-6132	8	15
56697	UB2205		5360-00-427-2208	8	22
56697	UB2206		5365-00-427-2209	8	21
56697	UB2232		2530-00-678-6133	8	23
81348	WW-P-471AASBCC		4730-00-187-4202	13	5
81348	WW-P-471ACABCA		4730-00-018-9566	24	19
19207	0144915			12	2
94697	091-54603DZ008C2	5310-00-004-3099		26	2
	05				
17875	100AA	2640-00-050-1229		18	4
24617	103325	5310-00-820-6653		22	2
19207	10929888	5365-00-177-9262		16	1
19207	10944309-1	2530-00-156-9142		16	10
19207	10944309-2	2530-00-912-4356		16	10
80837	1102A3-4	3110-00-100-6004		24	9
19207	11597645	2510-00-116-9223		7	1
19207	11597646	5365-00-933-4195		7	2
19207	11597647	4710-00-324-4311		10	4
19207	11597656	5330-00-933-4196		16	5
19207	11625220	3120-00-331-2640		8	4
19207	11639519-2	5330-00-462-0907		1	3
19207	11669686	2530-01-125-4084		17	1
18816	122194			21	8
19207	12375837	6220-01-372-3883		1	1
19207	12375838			1	7
19207	12375841	6220-01-359-2870		1	2
03914	13-348	5120-00-261-2821		30	1
80540	15-7.5	2610-01-254-5392		18	6
80049	15608	5510-00-275-2544	BULK		3
88663	2A605	3110-00-185-6305	21		4
12603	23E06	5310-00-637-9541	13		2
30612	24569D	5310-00-021-9760	10		2
06853	246115	4720-01-014-4915	BULK		1
66640	27D252	5310-00-220-6848	23		10
		5310-00-220-6848	24		6
19207	2744994-1		26		5
06853	285172	4820-00-420-5499	10		9
17590	305087-0116	4710-00-203-3172	BULK		5
78500	3219C1251	2530-00-204-3214	16		19
78500	3262Q95	5340-00-512-2071	16		4
89222	330-20223265	4730-00-289-0155	10		23

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CAGEC	PART NUMBER	PART NUMBER INDEX		FIG.	ITEM
			STOCK NUMBER		
26151	372-7091		5330-01-417-5137	16	18
04741	4FA0142		3110-00-100-0333	16	13
21450	42C15120-215			22	7
00447	426528		3110-00-100-0337	16	16
73342	444687		4730-00-018-9566	23	25
24617	451031		5310-00-045-1031	19	4
00447	5P1321		3110-00-100-0683	16	17
21450	501586		5315-00-050-1586	21	2
21450	506209		5940-00-050-6209	4	11
18876	506886		4030-00-270-5435	22	6
19207	5168890		5310-00-701-4891	8	14
21450	537867		5307-00-843-4249	19	2
95535	55229		4710-00-424-2694	BULK	4
19207	583553		5315-00-058-3553	14	7
83328	586023			21	15
21450	586174			21	12
73331	5939830		6220-00-752-6516	2	10
73331	5939831		6250-00-371-4018	2	6
73331	5939841		5330-00-353-0959	2	4
81343	6-4 120202BA		4730-00-289-0155	10	12
81343	6-4 120203BA		4730-00-278-3832	10	22
81343	6-6 120101BA		4730-00-278-3213	12	3
82465	60507		5340-00-318-6649	26	4
08162	643		3110-00-100-0663	16	9
09386	68732D		2530-00-374-1771	16	15
09386	69913		5310-00-861-9125	16	11
19207	7014980		3020-00-701-4980	23	9
			3020-00-701-4980	24	7
19207	7014983		5330-00-701-4983	23	6
19207	7014995		3120-00-701-4995	23	13
			3120-00-701-4995	24	30
19207	7088737		5310-00-708-8737	16	6
19207	7088738		5310-00-708-8738	16	8
19207	7088739		5310-00-708-8739	16	7
19207	7088740		5310-00-262-5479	8	16
19207	7365938		2590-01-091-7620	23	22
			2590-01-091-7620	24	23
19207	7367721		3040-00-736-7721	23	32
19207	7722333		5365-00-090-5426	4	3
72869	7723309		5310-00-393-6685	4	5
19207	7731428		5935-00-773-1428	3	2
19207	7974886		5340-00-689-6180	23	4
19207	7974887		5340-00-893-4100	24	4
19207	7979367		4010-00-171-9736	BULK	2
19207	7979373		9905-00-282-7489	29	5
19207	7982997		1015-00-798-2997	4	10
81336	8167-1-5		9390-00-567-3239	6	9
81336	8170-10-5		3130-00-374-7856	5	5
40342	8330281		4730-00-335-4728	10	1
			4730-00-335-4728	15	2
19207	8336567			25	1
19207	8336571		3040-00-773-9380	22	5

## CROSS-REFERENCE INDEXES

CAGEC	PART NUMBER	PART NUMBER INDEX		FIG.	ITEM
			STOCK NUMBER		
19207	8336638		2590-00-678-4099	22	9
19207	8336706		4710-00-324-4312	10	6
19207	8336707		2530-01-054-4384	13	6
19207	8336712		2530-00-318-1234	14	3
19207	8336722		5340-00-157-0724	13	1
19207	8336779		2530-00-372-4100	9	1
19207	8336792		2530-00-933-4194	7	3
19207	8336799			6	1
19207	8336801		9905-00-678-6126	29	2
19207	8336982		2530-00-679-5657	5	1
19207	8338561		5935-00-833-8561	4	8
19207	8338562		5970-00-833-8562	4	9
19207	8338564		5940-00-399-6676	4	10
19207	8338567		5310-00-833-8567	2	1
19207	8338568		5935-00-569-4715	2	2
19207	8343584			27	1
19207	8376584		3040-00-030-6942	23	29
19207	8376596		5315-00-316-1063	23	18
			5315-00-316-1063	24	25
19207	8376598			24	13
19207	8376604		3020-00-693-0990	21	7
19207	8376606			21	9
19207	8376610		3020-00-562-0487	24	37
19207	8376611		3020-00-562-0488	24	38
19207	8379620		2510-00-455-5759	20	4
19207	8379626		5360-00-200-5414	21	3
19207	8379656		2530-00-562-0484	6	7
19207	8379658		5330-00-562-0485	6	8
19207	8379659		5310-00-208-7127	6	2
19207	8379660		5306-00-337-9672	6	10
19207	8379662		5340-00-321-6481	7	7
19207	8379674		2510-00-318-1203	20	3
19207	8379676		4010-00-040-2869	20	1
19207	8379685		2640-00-338-2705	18	3
19207	8379689		5310-00-797-4501	7	8
19207	8379820		5340-00-177-8101	6	6
19207	8379821		5340-00-689-3373	6	13
19207	8379822		5340-00-808-3897	6	4
19207	8379855		3020-00-319-6011	23	8
			3020-00-319-6011	24	8
19207	8388856			10	13
19207	8388857			10	18
19207	8388858			10	11
19207	8683503		9905-00-777-3070	29	3
19207	8687034		5310-00-927-3236	8	2
19207	8687040		5315-00-678-6127	8	19
19207	8687041		2530-00-247-3276	8	7
19207	8687050		2530-00-353-2210	8	1
19207	8687051		2530-00-353-2211	8	1
19207	8687057		2530-00-089-8289	8	3
19207	8687058		2530-00-328-5438	8	6
19207	8700957		2590-00-693-0994	23	1

## CROSS-REFERENCE INDEXES

CAGEC	PART NUMBER	PART NUMBER INDEX		FIG.	ITEM
		STOCK NUMBER			
19207	8700958	2590-00-693-0995		24	1
19207	8701079			23	12
19207	8712220	5310-00-847-2733		16	11
19207	8730460	5306-00-333-0473		22	8
19207	8738089-1	5307-00-075-7185		16	14
19207	8738089-2	5307-00-075-7186		16	14
19207	8742391	5340-00-657-9792		3	9
19207	8742593			25	2
19207	8742779	5995-00-679-1425		4	1
19207	8742790	5325-00-543-3725		3	8
19207	8742791	5325-00-685-0746		3	6
53477	880MB			18	5
09386	89327	5310-00-078-7025		16	12
09386	89328	5310-00-078-7026		16	12



## CROSS-REFERENCE INDEXES

FIG.	ITEM	FIGURE AND ITEM NUMBER INDEX		PART NUMBER
		STOCK NUMBER	CAGEC	
BULK	1	4720-01-014-4915	06853	246115
BULK	2	4010-00-171-9736	19207	7979367
BULK	3	5510-00-275-2544	80049	15608
BULK	4	4710-00-424-2694	95535	55229
BULK	5	4710-00-203-3172	17590	305087-0116
1	1	6220-01-372-3883	19207	12375837
1	2	6220-01-359-2870	19207	12375841
1	3	5330-00-462-0907	19207	11639519-2
1	4	6240-00-044-6914	96906	MS35478-1683
1	5	6240-00-019-3093	96906	MS15570-623
1	6	6240-00-019-0877	96906	MS15570-1251
1	8	5310-00-627-6128	96906	MS35335-35
1	9	5305-00-115-9526	96906	MS90725-58
2	1	5310-00-833-8567	19207	8338567
2	2	5935-00-569-4715	19207	8338568
2	3	6220-00-577-3434	96906	MS35423-1
2	3	6220-00-726-1916	96906	MS35423-2
2	4	5330-00-353-0959	73331	5939841
2	5	5999-01-408-5205	96906	MS27148-2
2	6	6250-00-371-4018	73331	5939831
2	7	6240-00-019-0877	96906	MS15570-1251
2	8	5310-00-596-8169	78553	C1059-014-1
2	9	6220-00-299-7425	96906	MS35421-1
2	9	6220-00-299-7426	96906	MS35421-2
2	10	6220-00-752-6516	73331	5939830
2	11	5305-00-958-5246	96906	MS35190-289
2	12	5305-00-984-6212	96906	MS35206-265
2	13	5310-00-045-3296	96906	MS35338-43
2	14	5310-00-934-9758	96906	MS35649-202
3	1	5305-00-988-1725	96906	MS35206-281
3	2	5935-00-773-1428	19207	7731428
3	3	5310-00-582-5965	15235	KL5296
3	4	5310-00-761-6882	96906	MS51967-2
3	5	5325-00-276-6056	94135	MS35489-106
3	6	5325-00-685-0746	19207	8742791
3	7	5325-00-290-3777	96906	MS35489-77
3	8	5325-00-543-3725	19207	8742790
3	9	5340-00-657-9792	19207	8742391
4	1	5995-00-679-1425	19207	8742779
4	2	5935-00-846-3883	96906	MS7502171
4	3	5365-00-090-5426	19207	7722333
4	4	6145-00-705-6678	81349	M13486-1-7
4	5	5310-00-393-6685	72869	7723309
4	6	9905-00-841-4445	81349	M43436/1-2
4	7	9905-00-752-4649	96906	MS39020-1
4	8	5935-00-833-8561	19207	8338561
4	9	5970-00-833-8562	19207	8338562
4	10	1015-00-798-2997	19207	7982997
4	10	5940-00-399-6676	19207	8338564
4	11	5940-00-050-6209	21450	506209
5	1	2530-00-679-5657	19207	8336982
5	2	5310-00-820-6653	96906	MS35338-50
5	3	5310-00-010-3030	96906	MS35690-1024

## CROSS-REFERENCE INDEXES

FIG.	ITEM	FIGURE AND ITEM NUMBER INDEX		PART NUMBER
		STOCK NUMBER	CAGEC	
5	4	5305-00-726-2552	80204	B1821BH063F225N
5	5	3130-00-374-7856	81336	8170-10-5
6	2	5310-00-208-7127	19207	8379659
6	3	5310-00-584-7888	96906	MS35338-51
6	4	5340-00-808-3897	19207	8379822
6	5	5305-00-726-2553	96906	MS90727-166
6	6	5340-00-177-8101	19207	8379820
6	7	2530-00-562-0484	19207	8379656
6	8	5330-00-562-0485	19207	8379658
6	9	9390-00-567-3239	81336	8167-1-5
6	10	5306-00-337-9672	19207	8379660
6	11	5310-00-763-8905	96906	MS51968-20
6	12	5310-00-820-6653	96906	MS35338-50
6	13	5340-00-689-3373	19207	8379821
7	1	2510-00-116-9223	19207	11597645
7	2	5365-00-933-4195	19207	11597646
7	3	2530-00-933-4194	19207	8336792
7	4	5305-00-726-2554	96906	MS90727-167
7	5	5310-00-820-6653	96906	MS35338-50
7	6	4730-00-050-4208	96906	MS15003-1
7	7	5340-00-321-6481	19207	8379662
7	8	5310-00-797-4501	19207	8379689
8	1	2530-00-353-2210	19207	8687050
8	1	2530-00-353-2211	19207	8687051
8	2	5310-00-927-3236	19207	8687034
8	3	2530-00-089-8289	19207	8687057
8	4	3120-00-331-2640	19207	11625220
8	5	4730-00-050-4203	96906	MS15001-1
8	6	2530-00-328-5438	19207	8687058
8	7	2530-00-247-3276	19207	8687041
8	8	5305-00-052-6920	96906	MS24629-56
8	9	5310-00-732-0560	96906	MS51968-14
8	10	5310-00-194-1483	96906	MS35333-44
8	11	5305-00-725-4183	96906	MS90726-113
8	12	5365-00-803-7299	96906	MS16624-1150
8	13	4730-00-050-4203	96906	MS15001-1
8	14	5310-00-701-4891	19207	5168890
8	15	3120-00-678-6132	78550	UB1179
8	16	5310-00-262-5479	19207	7088740
8	17	5310-00-842-1190	96906	MS35691-61
8	18	5310-00-584-7888	96906	MS35338-51
8	19	5315-00-678-6127	19207	8687040
8	20	3040-00-427-2211	56697	UB-2208
8	21	5365-00-427-2209	56697	UB2206
8	22	5360-00-427-2208	56697	UB2205
8	23	2530-00-678-6133	56697	UB2232
9	1	2530-00-372-4100	19207	8336779
9	2	4730-00-050-4208	96906	MS15003-1
10	1	4730-00-335-4728	40342	8330281
10	2	5310-00-021-9760	30612	24569D
10	3	5310-00-582-6714	96906	MS35333-49
10	4	4710-00-324-4311	19207	11597647
10	5	4730-00-334-5550	96906	MS51814-5

## CROSS-REFERENCE INDEXES

FIG.	ITEM	FIGURE AND ITEM NUMBER INDEX STOCK NUMBER	CAGEC	PART NUMBER
10	6	4710-00-324-4312	19207	8336706
10	7	9905-00-999-7370	96906	MS53007-1
10	8	4730-00-595-0083	96906	MS35746-1
10	9	4820-00-420-5499	06853	285172
10	10	4730-00-289-0155	96906	MS39182-5
10	12	4730-00-289-0155	81343	6-4 120202BA
10	14	5305-00-068-0515	96906	MS90727-8
10	15	5340-00-809-5127	96906	MS21333-38
10	16	5310-00-582-5965	15235	KL5296
10	17	5310-00-768-0319	96906	MS51968-2
10	19	4730-00-353-2036	40342	N13128
10	20	5325-00-202-4005	96906	MS35489-110
10	21	4720-00-540-1729	40342	N13463D
10	22	4730-00-278-3832	81343	6-4 120203BA
10	23	4730-00-289-0155	89222	330-20223265
10	24	4730-00-253-4412	96906	MS39230-2
10	25	5340-00-286-2494	96906	MS21333-36
10	26	5325-00-276-6056	94135	MS35489-106
10	27	4730-00-833-0508	96906	MS51819-7
10	28	9905-00-999-7369	96906	MS53007-2
10	29	4730-00-813-7811	96906	MS39191-2
11	1	5305-00-269-3238	96906	MS90727-62
11	2	2530-00-021-2366	96906	MS53004-2
11	3	5310-00-637-9541	96906	MS35338-46
11	4	5310-00-732-0559	96906	MS51968-8
12	1	4730-01-079-8821	19207	CPR102321-1
12	3	4730-00-278-3213	81343	6-6 120101BA
13	1	5340-00-157-0724	19207	8336722
13	2	5310-00-637-9541	12603	23E06
13	3	5310-00-732-0559	96906	MS51968-8
13	4	5305-00-269-2804	96906	MS90726-61
13	5	4730-00-187-4202	81348	WW-P-471AASBCC
13	6	2530-01-054-4384	19207	8336707
13	7	4820-00-849-1220	96906	MS35782-5
14	1	5310-00-010-3030	96906	MS35690-1024
14	2	5310-00-045-5001	96906	MS35340-50
14	3	2530-00-318-1234	19207	8336712
14	4	5310-00-763-8905	96906	MS51968-20
14	5	5340-00-678-6192	40342	N11257
14	6	5315-00-839-5822	96906	MS24665-353
14	7	5315-00-058-3553	19207	583553
15	1	4730-00-595-0083	96906	MS35746-1
15	2	4730-00-335-4728	40342	8330281
15	3	9905-00-999-7370	96906	MS53007-1
15	4	2530-00-270-3878	16662	AD2583
15	5	9905-00-999-7369	96906	MS53007-2
15	6	5330-00-090-2128	96906	MS35748-1
16	1	5365-00-177-9262	19207	10929888
16	2	5305-00-225-3844	96906	MS90728-4
16	3	5310-00-582-5965	15235	KL5296
16	4	5340-00-512-2071	78500	3262Q95
16	5	5330-00-933-4196	19207	11597656
16	6	5310-00-708-8737	19207	7088737

## CROSS-REFERENCE INDEXES

FIG.	ITEM	FIGURE AND ITEM NUMBER INDEX STOCK NUMBER	CAGEC	PART NUMBER
16	7	5310-00-708-8739	19207	7088739
16	8	5310-00-708-8738	19207	7088738
16	9	3110-00-100-0663	08162	643
16	10	2530-00-156-9142	19207	10944309-1
16	10	2530-00-912-4356	19207	10944309-2
16	11	5310-00-861-9125	09386	69913
16	11	5310-00-847-2733	19207	8712220
16	12	5310-00-078-7025	09386	89327
16	12	5310-00-078-7026	09386	89328
16	13	3110-00-100-0333	04741	4FA0142
16	14	5307-00-075-7185	19207	8738089-1
16	14	5307-00-075-7186	19207	8738089-2
16	15	2530-00-374-1771	09386	68732D
16	16	3110-00-100-0337	00447	426528
16	17	3110-00-100-0683	00447	5P1321
16	18	5330-01-417-5137	26151	372-7091
16	19	2530-00-204-3214	78500	3219C1251
16	20	5310-00-850-6993	96906	MS35692-62
17	1	2530-01-125-4084	19207	11669686
18	1	2610-01-325-1934	81348	GP2STYLXTYRBCLR/ T/10.00R15/J/LTR
18	2	2610-00-052-7969	96906	FEDSTD308B
18	3	2640-00-338-2705	19207	8379685
18	4	2640-00-050-1229	17875	100AA
18	6	2610-01-254-5392	80540	15-7.5
19	1	5310-00-594-8038	96906	MS51983-2
19	2	5307-00-843-4249	21450	537867
19	3	5310-00-584-7888	96906	MS35338-51
19	4	5310-00-045-1031	24617	451031
20	1	4010-00-040-2869	19207	8379676
20	2	2510-00-321-6482	96906	MS53040-1
20	3	2510-00-318-1203	19207	8379674
20	4	2510-00-455-5759	19207	8379620
20	5	4730-00-050-4208	96906	MS15003-1
21	1	2530-00-040-2856	80837	J3279
21	2	5315-00-050-1586	21450	501586
21	3	5360-00-200-5414	19207	8379626
21	4	3110-00-185-6305	88663	2A605
21	5	5305-00-071-2237	96906	MS90725-14
21	6	5340-00-040-2857	80837	J3280
21	7	3020-00-693-0990	19207	8376604
21	10	5310-00-582-5965	15235	KL5296
21	11	5310-00-761-6882	96906	MS51967-2
21	13	3040-00-710-1754	80837	J3284-2
21	14	5310-00-935-9021	96906	MS51943-35
21	16	3040-00-040-2858	80837	J3282
21	18	2530-00-496-2578	80837	TA653
21	19	5340-01-175-0564	99411	LG0083-03
21	20	5305-01-175-0568	99411	PP0050-36
21	21	5310-01-174-0431	99411	PP0016-03
21	22	5310-01-175-0484	99411	PP0012-22
22	1	5305-00-724-7222	80204	B1821BH063C200N
22	2	5310-00-820-6653	24617	103325

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FIG.	ITEM	FIGURE AND ITEM NUMBER INDEX		PART NUMBER
		STOCK NUMBER	CAGEC	
22	3	5310-00-851-2677	96906	MS35691-49
22	4	5305-00-269-3215	96906	MS90725-65
22	5	3040-00-773-9380	19207	8336571
22	6	4030-00-270-5435	18876	506886
22	8	5306-00-333-0473	19207	8730460
22	9	2590-00-678-4099	19207	8336638
22	10	5310-00-682-5757	96906	MS35692-605
22	12	5310-00-763-8911	96906	MS51968-17
22	13	5310-00-167-0680	96906	MS35338-49
23	1	2590-00-693-0994	19207	8700957
23	2	5305-00-988-1725	96906	MS35206-281
23	3	5310-00-582-5965	15235	KL5296
23	4	5340-00-689-6180	19207	7974886
23	5	4730-00-050-4208	96906	MS15003-1
23	6	5330-00-701-4983	19207	7014983
23	7	5310-00-616-6857	80205	NAS1022A17
23	8	3020-00-319-6011	19207	8379855
23	9	3020-00-701-4980	19207	7014980
23	10	5310-00-220-6848	66640	27D252
23	11	3110-00-100-6004	66821	K12528
23	13	3120-00-701-4995	19207	7014995
23	14	5315-00-187-9396	96906	MS24665-464
23	15	5365-00-678-6872	80837	J1206A
23	16	2590-00-510-8829	80837	J-1276
23	17	5310-00-586-1767	80837	J3265
23	18	5315-00-316-1063	19207	8376596
23	19	2590-00-040-2855	80837	J3269-11
23	20	5305-00-071-2081	80204	B1821BH050C450N
23	21	5310-00-044-6230	29215	JD1492
23	22	2590-01-091-7620	19207	7365938
23	23	2590-00-030-6943	80837	J1386
23	24	5310-00-841-2041	96906	MS35692-33
23	25	4730-00-018-9566	73342	444687
23	26	5305-00-335-4761	80837	J673-6
23	27	5315-00-515-0495	80837	J3237
23	28	3110-00-117-0759	96906	MS17169-12
23	29	3040-00-030-6942	19207	8376584
23	30	5315-00-616-5530	96906	MS35756-15
23	31	5315-00-060-5074	96906	MS35671-55
23	32	3040-00-736-7721	19207	7367721
24	1	2590-00-693-0995	19207	8700958
24	2	5305-00-988-1725	96906	MS35206-281
24	3	5310-00-582-5965	15235	KL5296
24	4	5340-00-893-4100	19207	7974887
24	5	5330-00-513-9933	80837	J3203G
24	6	5310-00-220-6848	66640	27D252
24	7	3020-00-701-4980	19207	7014980
24	8	3020-00-319-6011	19207	8379855
24	9	3110-00-100-6004	80837	1102A3-4
24	10	5315-00-616-5530	96906	MS35756-15
24	11	3040-00-445-5360	80837	J3207-1
24	12	5315-00-014-2521	61038	M21872
24	14	3110-00-117-0759	96906	MS17169-12

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FIG.	ITEM	FIGURE AND ITEM NUMBER INDEX		PART NUMBER
		STOCK NUMBER	CAGEC	
24	15	5315-00-515-0495	80837	J3237
24	16	5305-00-335-4761	80837	J673-6
24	17	5310-00-586-1767	80837	J3265
24	18	2590-00-040-2855	80837	J3269-11
24	19	4730-00-018-9566	81348	WW-P-471ACABCA
24	20	5310-00-809-3079	96906	MS27183-19
24	21	5310-00-488-3889	96906	MS51943-39
24	22	2590-00-030-6943	80837	J1386
24	23	2590-01-091-7620	19207	7365938
24	24	5305-00-071-2081	80204	B1821BH050C450N
24	25	5315-00-316-1063	19207	8376596
24	26	2590-00-510-8829	80837	J-1276
24	27	5365-00-678-6872	80837	J1206A
24	28	5315-00-187-9396	96906	MS24665-464
24	29	4730-00-050-4208	96906	MS15003-1
24	30	3120-00-701-4995	19207	7014995
24	31	3040-00-693-0974	80837	J3208-1
24	32	5315-00-014-2543	96906	MS35671-64
24	33	3120-00-544-1535	80837	J-1166
24	34	5305-00-716-8194	96906	MS90726-104
24	35	3110-00-100-6164	96906	MS19059-2419
24	36	5360-00-679-5658	80837	J3205
24	37	3020-00-562-0487	19207	8376610
24	38	3020-00-562-0488	19207	8376611
24	39	5310-00-616-6857	80205	NAS1022A17
26	1	5306-00-021-8156	96906	MS35754-40
26	2	5310-00-004-3099	94697	091-54603DZ008C2 05
26	3	5310-00-584-5272	96906	MS35338-48
26	4	5340-00-318-6649	82465	60507
28	1	5310-00-761-6882	96906	MS51967-2
28	2	5310-00-582-5965	15235	KL5296
28	3	9905-00-202-3639	96906	MS35387-2
28	4	5305-00-988-1725	96906	MS35206-281
28	5	9905-00-205-2795	96906	MS35387-1
29	1	5305-00-253-5631	96906	MS21318-57
29	2	9905-00-678-6126	19207	8336801
29	3	9905-00-777-3070	19207	8683503
29	4	5305-00-855-0958	96906	MS24629-45
29	5	9905-00-282-7489	19207	7979373
30	1	5120-00-261-2821	03914	13-348

## CROSS-REFERENCE INDEXES

FIGURE AND ITEM NUMBER INDEX				
FIG	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
24	33		04632	J1116
24	34	5305-00-716-8194	96906	MS90726-104
24	35	3110-00-100-6164	96906	MS19059-2419
24	36	5360-00-679-5658	80837	J3205
24	37	3020-00-562-0487	19207	8376610
24	38	3020-00-562-0488	19207	8376611
24	39	5310-00-616-6857	80205	NAS1022A17
25	1		19207	8336567
25	2		19207	8742593
26	1	5306-00-021-8156	96906	MS35754-40
26	2	5310-00-982-4940	96906	MS27040-14
26	3	5310-00-584-5272	96906	MS35338-48
26	4	5340-00-318-6649	82465	60507
26	5		19207	2744994-1
27	1		19207	8343584
28	1	5310-00-761-6882	96906	MS51967-2
28	2	5310-00-582-5965	15235	KL5296
28	3	9905-00-202-3639	96906	MS35387-2
28	4	5305-00-988-1725	96906	MS35206-281
28	5	9905-00-205-2795	96906	MS35387-1
29	1	5305-00-253-5631	96906	MS21318-57
29	2	9905-00-678-6126	19207	8336801
29	3	9905-00-777-3070	19207	8683503
29	4	5305-00-855-0958	96906	MS24629-45
29	5	9905-00-282-7489	19207	7979373
30	1	5120-00-261-2821	03914	13-348

## APPENDIX G

## ILLUSTRATED LIST OF MANUFACTURED ITEMS

## Section I. INTRODUCTION

## G-1. SCOPE

- a. This appendix includes complete instructions for making items authorized to be manufactured or fabricated.
- b. Bulk materials needed for manufacture of an item are listed by National Stock Number (NSN), part number, or specification number in the manufacturing instructions.
- c. All dimensions given in Section III, *Manufacturing Instructions*, are in standard units.

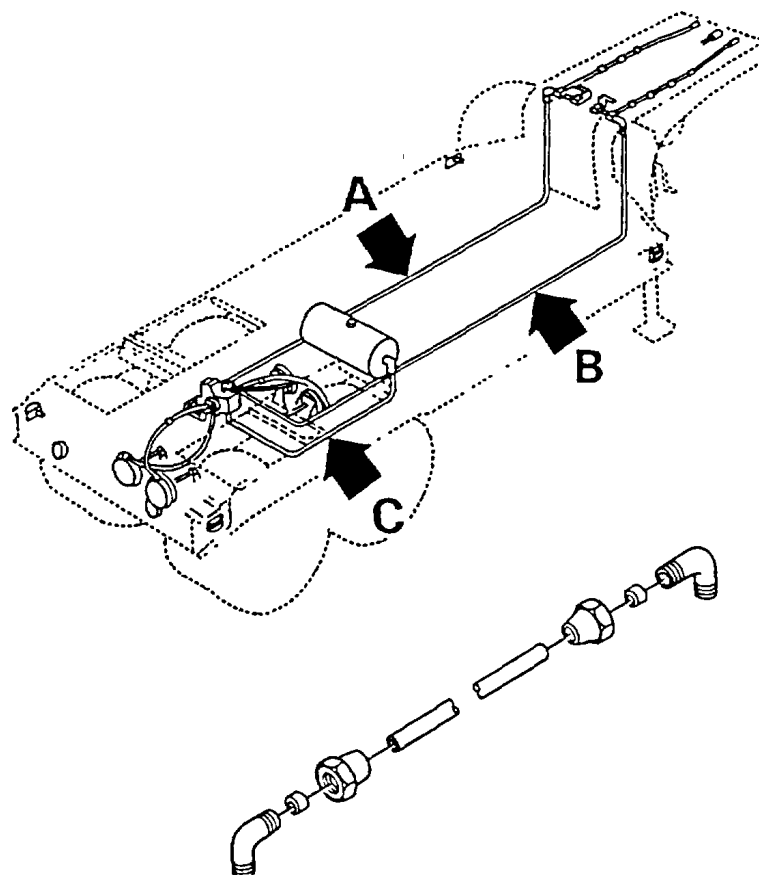
Table G-1. *Manufactured Items Index.*

Description	Page Number
Tube Assembly	G-2
Tube Assembly	G-2
Tube Assembly	G-2
Wrench, Lugnut, Altered	G-3
Frame, Reinforcement	G-4
Ramp Outer Rear Clip Angle	G-8



## Section II. MANUFACTURING ILLUSTRATIONS

## G-2. TUBE ASSEMBLIES



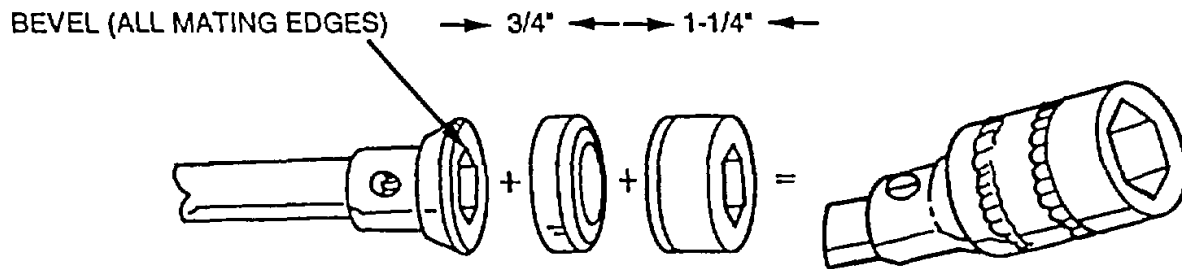
## FABRICATE FROM:

- NSN 4710-00-203-3172 - Tube, Metallic  
 Brake Line A 273 In.  
 Brake Line B 291 In.
- NSN 4710-00-277-5529 - Tube, Metallic  
 Brake Line C 34 In.
- NSN 4730-00-289-0155 - Elbow, Pipe To Tube  
 Brake Line A 1 Required
- NSN 4730-00-069-1187 - Elbow, Pipe To Tube  
 Brake Line A 1 Required  
 Brake Line B 2 Required
- NSN 4730-00-289-0051 - Elbow, Pipe To Tube  
 Brake Line C 2 Required
- NSN 4730-00-293-7108 - Sleeve, Compression  
 Brake Line A 2 Required  
 Brake Line B 2 Required
- NSN 4730-00-054-2571 - Sleeve, Compression  
 Brake Line C 2 Required
- NSN 4730-00-278-8825 - Nut, Tube Coupling  
 Brake Line A 2 Required  
 Brake Line B 2 Required
- NSN 4730-00-054-2572 - Nut, Tube Coupling  
 Brake Line C 2 Required

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## Section II. MANUFACTURING ILLUSTRATIONS (Con't)

### G-3. WRENCH, LUGNUT, ALTERED



- a. Cut 1 1/8 in. off hex end of lugnut wrench.
- b. Weld a 3/4 in. piece of tubing to hex piece cut off from lugnut wrench.
- c. Weld remaining end of tubing to lugnut wrench.

## Section III. MANUFACTURING INSTRUCTIONS

### FRAME REPAIR

- a. General. No definite rules are established for repair and reinforcements required on frame members that are bent, cracked, or broken. If damage is extensive, return semitrailer to a higher maintenance level.
- b. Reinforcement of Main Frame Rails and Gooseneck
  1. Use 108 x 1/2-inch alloy steel to fabricate two main frame rail upper buildup plates.
  2. Use 12 x 8 1/2 x 1/2-inch alloy steel to fabricate four gooseneck upper gussets
  3. Use 12 x 5 x 1/2-inch alloy steel to fabricate two gusset cover plates.

### Ramp Outer Rear Clip Angle

#### a. Minor Alterations

1. Weld two support angles on each side of semitrailer. Use continuous 3/16-inch weld fillet on both sides of support angle.

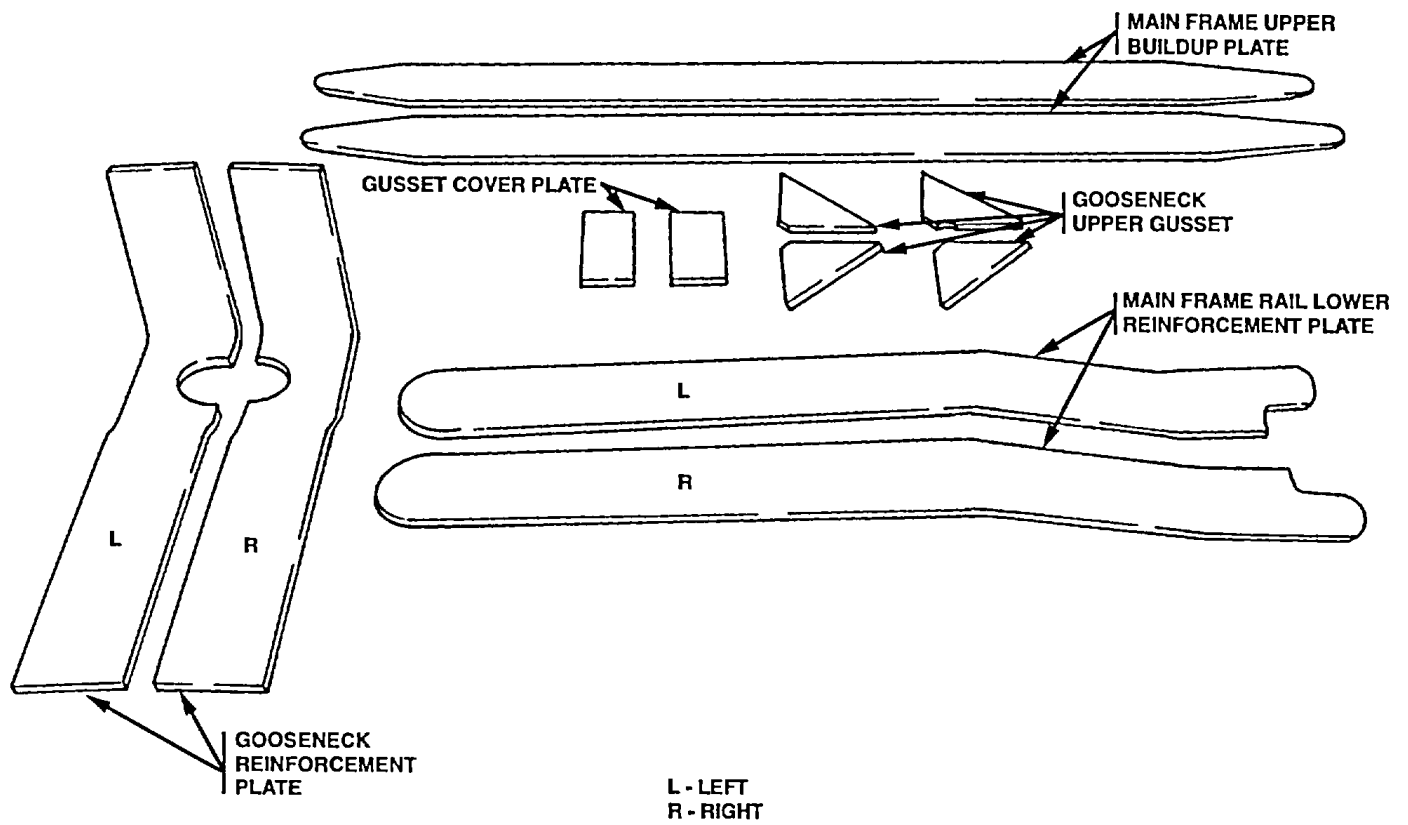


Figure G-1. Main Frame Rail and Gooseneck Reinforcement Parts

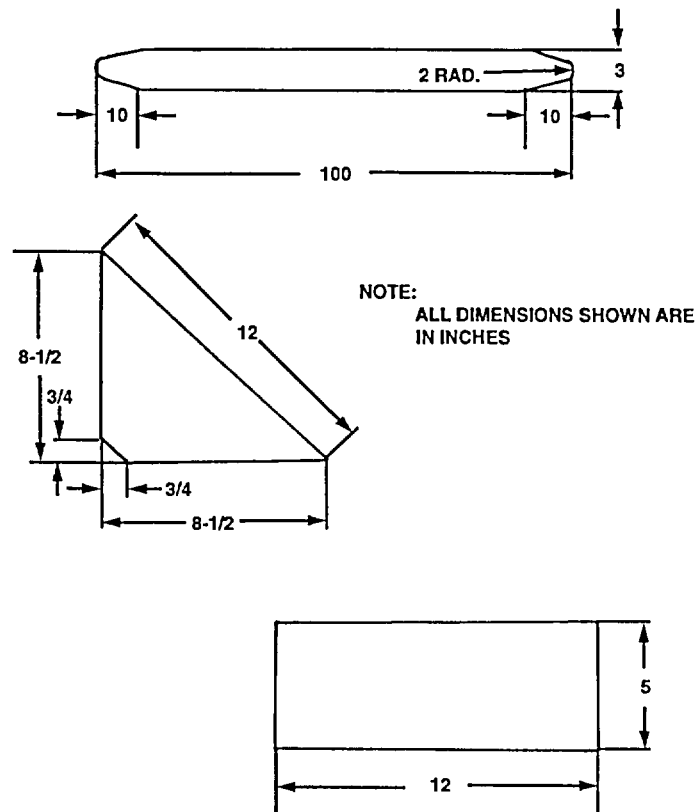


Figure G-2. Main Frame Rail Upper Plates and Gussets

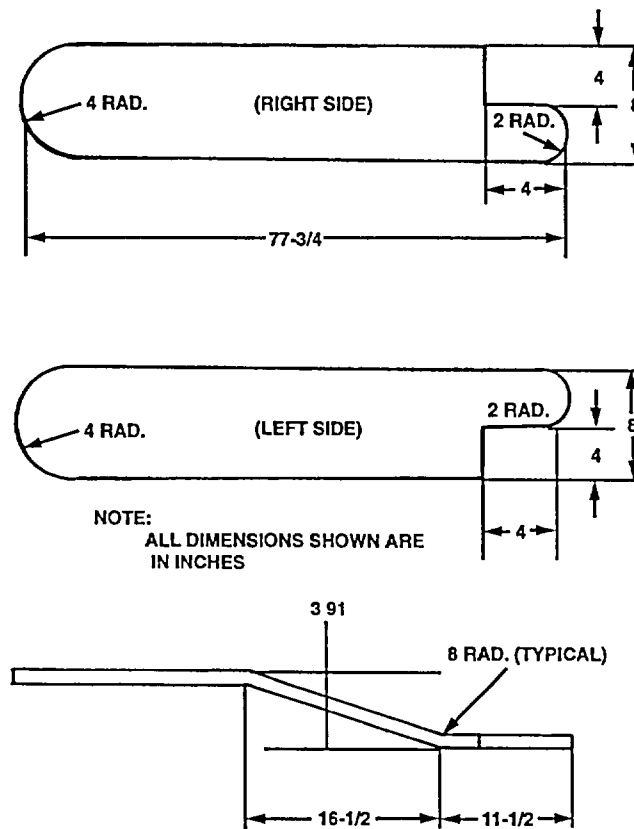


Figure G-3. Main Frame Rail Lower Plates

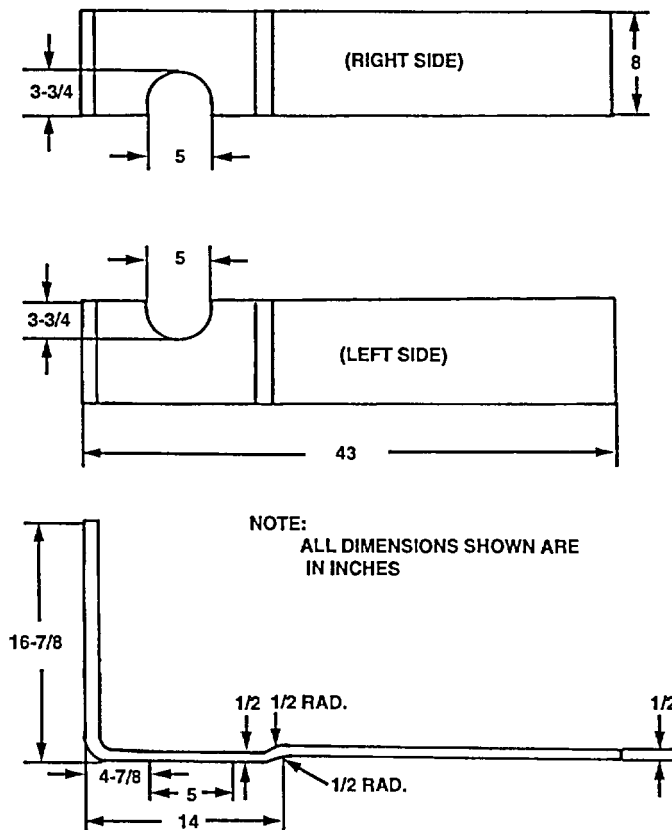


Figure G-4. Gooseneck Reinforcement Plates

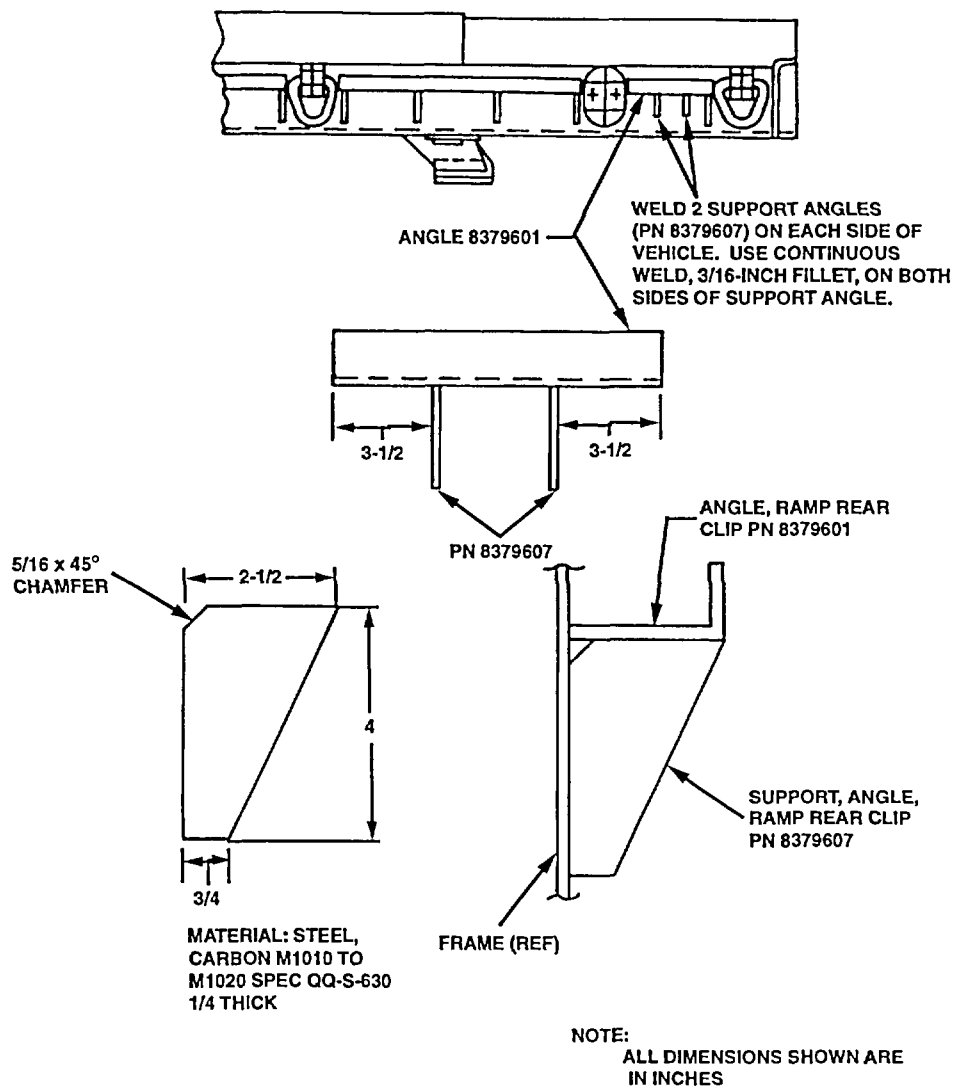


Figure G-5. Ramp Outer Rear Clip Angle

## APPENDIX H

### TORQUE LIMITS

#### H-1. SCOPE

This appendix lists standard torque values, as shown in Table H-1, and provides general information for applying torque. Special torque values and tightening sequences are indicated in the maintenance procedures for applicable components.

#### H-2. GENERAL

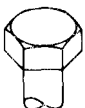

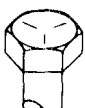

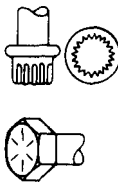
- a. Always use the torque values listed in Table H-1 when the maintenance procedure does not give a specific torque value.
- b. Unless otherwise specified, standard torque tolerance shall be  $\pm 10\%$ .
- c. Torque values are based on clean, dry threads. Reduce torque by 10% when engine oil is used as a lubricant. Reduce torque by 20% if new plated capscrews are used.
- d. Capscrews threaded into aluminum may require reductions in torque of 30% or more of Grade 5 capscrew torque. Capscrew threaded into aluminum must also attain two capscrew diameters of thread engagement.



**CAUTION**

If replacement capscrews are of a higher grade than originally supplied, use torque specifications for the original. This will prevent equipment damage due to overtorquing.

Table H-1. Torque Limits

Current Usage	Much Used	Much Used	Used at Times	Used at Times
Quality of Material	Indeterminate	Minimum Commercial	Medium Commercial	Best Commercial
<b>SAE Grade Number</b>  <b>Capscrew Head Markings</b>  <b>Manufacturer's marks may vary</b>  <b>These are all SAE Grade 5 (3 line)</b>	1 or 2    	5  	6 or 7  	8  
Capscrew Body Size Inches - Thread	Torque lb.-ft. (N·m)	Torque lb.-ft. (N·m)	Torque lb.-ft. (N·m)	Torque lb.-ft. (N·m)
$\frac{1}{4}$ 20	5 (7)	8 (11)	10 (14)	12 (16)
28	6 (8)	10 (14)		14 (19)
$\frac{5}{16}$ 18	11 (15)	17 (23)	19 (26)	24 (33)
24	13 (18)	19 (26)		27 (37)
$\frac{3}{8}$ 16	18 (24)	31 (42)	34 (46)	44 (60)
24	20 (27)	35 (47)		49 (66)
$\frac{7}{16}$ 14	28 (38)	49 (66)	55 (75)	70 (95)
20	30 (41)	55 (75)		78 (106)
$\frac{1}{2}$ 13	39 (53)	75 (102)	85 (115)	105 (142)
20	41 (56)	85 (115)		120 (163)
$\frac{9}{16}$ 12	51 (69)	110 (149)	120 (163)	155 (210)
18	55 (75)	120 (163)		170 (231)
$\frac{5}{8}$ 11	83 (113)	150 (203)	167 (226)	210 (285)
18	95 (129)	170 (231)		240 (325)
$\frac{3}{4}$ 10	105 (142)	270 (366)	280 (380)	375 (509)
16	115 (156)	295 (400)		420 (570)
$\frac{7}{8}$ 9	160 (217)	395 (536)	440 (597)	605 (820)
14	175 (237)	435 (590)		675 (915)
1	235 (319)	590 (800)	660 (895)	910 (1234)
14	250 (339)	660 (895)		990 (1342)

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By Order of the Secretary of the Army:

GORDON R. SULLIVAN  
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*Chief of Staff*

Official:

PATRICIA P. HICKERSON  
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Distribution:

To be distributed IAW DA Form 12-39-E (Block No. 0712) Operator, Unit, Direct Support and General Support maintenance requirements for TM 9-2330-211-14&P.

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

Item 10. Change illustration. Reason: Tube end  
shown assembled on wrong side of lever cam.

Item 3. The NSN and P/N are not listed on the  
AMDF nor the MCRL. Request correct NSN  
and P/N be furnished.

Preventive Maintenance Checks and Services.  
Item 7 under "Items to be inspected" should  
be changed to read as follows: Firing  
linkage and firing mechanism pawl.

Since there are both 20- and 30- round  
magazines for this rifle, data on both  
should be listed.

**SAMPLE**

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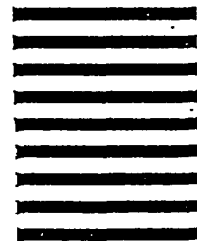
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TEAR ALONG PERFORATED LINE



## THE METRIC SYSTEM AND EQUIVALENTS

### LINEAR MEASURE

1 Centimeter=10 Millimeters=0.01 Meters=0.3937 Inches  
 1 Meter=100 Centimeters=1000 Millimeters=39.37 Inches  
 1 Kilometer=1000 Meters=0.621 Miles

### WEIGHTS

1 Gram=0.001 Kilograms=1000 Milligrams=0.035 Ounces  
 1 Kilogram=1000 Grams=2.2 Lb  
 1 Metric Ton=1000 Kilograms=1 Megagram=1.1 Short Tons

### LIQUID MEASURE

1 Milliliter=0.001 Liters=0.0338 Fluid Ounces  
 1 Liter=1000 Milliliters=33.82 Fluid Ounces

### SQUARE MEASURE

1 Sq Centimeter=100 Sq Millimeters=0.155 Sq Inches  
 1 Sq Meter=10,000 Sq Centimeters=10.76 Sq Feet  
 1 Sq Kilometer=1,000,000 Sq Meters=0.386 Sq Miles

### CUBIC MEASURE

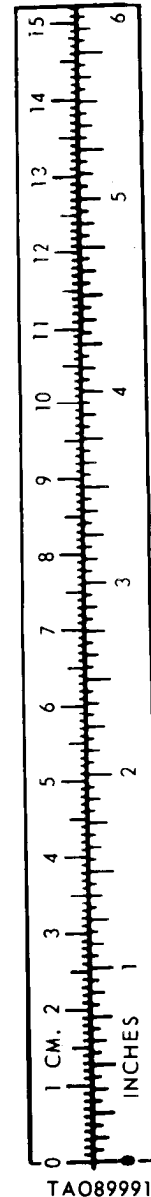
1 Cu Centimeter=1000 Cu Millimeters=0.06 Cu Inches  
 1 Cu Meter=1,000,000 Cu Centimeters=35.31 Cu Feet

### TEMPERATURE

5°9 (°F - 32) = °C  
 212° Fahrenheit is equivalent to 100° Celsius  
 90° Fahrenheit is equivalent to 32.2° Celsius  
 32° Fahrenheit is equivalent to 0° Celsius  
 9°5 C° +32=F°

## APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches . . . . .	Centimeters . . . . .	2.540
Feet . . . . .	Meters . . . . .	0.305
Yards . . . . .	Meters . . . . .	0.914
Miles . . . . .	Kilometers . . . . .	1.609
Square Inches . . . . .	Square Centimeters . . . . .	6.451
Square Feet . . . . .	Square Meters . . . . .	0.093
Square Yards . . . . .	Square Meters . . . . .	0.836
Square Miles . . . . .	Square Kilometers . . . . .	2.590
Acres . . . . .	Square Hectometers . . . . .	0.405
Cubic Feet . . . . .	Cubic Meters . . . . .	0.028
Cubic Yards . . . . .	Cubic Meters . . . . .	0.765
Fluid Ounces . . . . .	Milliliters . . . . .	29.573
Pints . . . . .	Liters . . . . .	0.473
Quarts . . . . .	Liters . . . . .	0.946
Gallons . . . . .	Liters . . . . .	3.785
Ounces . . . . .	Grams . . . . .	28.349
Pounds . . . . .	Kilograms . . . . .	0.454
Short Tons . . . . .	Metric Tons . . . . .	0.907
Pound-Feet . . . . .	Newton-Meters . . . . .	1.356
Pounds 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



(FOR REFERENCE ONLY)

