

## TECHNICAL MANUAL

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

#### FOR

### SEMITRAILER, LOWBED: 40-TON CONSTRUCTION EQUIPMENT TRANSPORTER

M870 (CCE)

(CMI/LOAD KING MODEL 403LF)

(NSN 2330-00-133-1731)

### SEMITRAILER, LOWBED: 40-TON CONSTRUCTION EQUIPMENT TRANSPORTER

M870A1 (NSN 2330-01-224-9245)

This publication supersedes TM 5-2330-378-14&P dated 18 May 1988  
and TM 5-2330-360-14&P dated 06 December 1984.

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HEADQUARTERS, DEPARTMENT OF THE ARMY

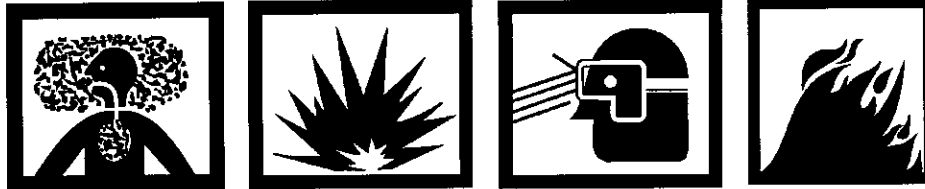
**JUNE 1999**



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

**WARNING**

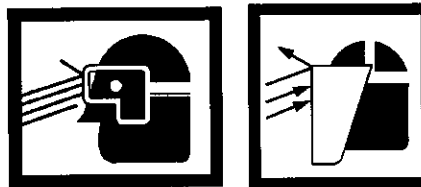
**DRYCLEANING SOLVENT**



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

**WARNING**

**AIR UNDER PRESSURE**



- Wear protective goggles when opening air reservoir drain cock. Avoid contact with the air stream. Failure to follow this warning may result in injury or death to personnel.
- 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.
- When opening drain cock, turn face away from exhaust air blast, to prevent eye injury.
- Wear eye protection when working with air under pressure. Failure to do so could result in eye injury.
- Particles blown by compressed air are hazardous. Failure to wear protective goggles when drying metal parts could cause serious eye injury.

**WARNING**

**COUPLING**

All persons not involved in coupling operations must stand clear of towing vehicle and semitrailer. Failure to follow this warning may result in injury or death to personnel.

**WARNING**

**HEAVY COMPONENTS**



- Placement of jacks is extremely important when working on lower link assembly. Failure to place jacks properly could result in injury or death.
- Keep fingers from between equalizer beam ends and spring ends while balancing axle as it is moved and lifted into place. Failure to do so could result in serious injury to personnel.

**WARNING**

**BRAKES**



- Hub may be hot. Before putting hand to hub and brakedrum, hold hand close to brakedrum to check for excessive heat radiation. This will prevent skin burns caused by hot metal.
- Brake linings may contain asbestos fibers. Protective mask must be worn while working on brake linings. Failure to do so could result in serious illness.

**WARNING**

**TIRES**



Whenever possible, use a cage for protection and observe caution when inflating tires. Make sure tires are properly seated on rims before inflating. Improperly seated tires can burst with explosive force sufficient to cause death.



**WARNING**

**LIGHTS**

**Do not operate semitrailer with burned out or missing running lights, stoplights, or turn lights. Failure to be seen could result in injury to personnel.**

**WARNING**

**SECURING SEMITRAILER**

**Be sure wheels are chocked before beginning any maintenance procedure. Failure to do so could result in injury to personnel.**

**WARNING**

**GOOSENECK AND HINGE PIN**



- **Do not work under the gooseneck without lockpins securely in place. Injury or death may result.**
- **Before removing hinge pin, the part being freed must be supported. If hinge pin is being removed from lower link arm, support end of lower link arm with dolly jack. If hinge pin is being removed from deck assembly, deck assembly must be supported by overhead hoist. Failure to heed this warning may result in injury or death.**

**WARNING**

**AIR HOSE**

**Make sure that service and emergency air hoses are correctly installed on towing vehicle and that air valves are open, in order to supply air pressure to trailer. Ignoring this warning will result in total brake failure, which may result in serious injury or death to personnel.**



TECHNICAL MANUAL  
NO. 9-2330-378-14&P

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

**OPERATOR'S, UNIT, DIRECT SUPPORT, AND  
GENERAL SUPPORT MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)  
FOR  
SEMITRAILER, LOWBED: 40-TON  
CONSTRUCTION EQUIPMENT TRANSPORTER  
M870 (NSN 2330-00-133-1731)  
M870A1 (NSN 2330-01-224-9245)**

**REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS**

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

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## HOW TO USE THIS MANUAL

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### SCOPE.

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1. This technical manual provides you with the information you will need to operate and maintain the M870 or M870A1 40-ton semitrailer. You must read and understand this manual BEFORE operating the M870 or M870A1 semitrailer.
2. The information contained in this manual is presented in five chapters and 11 appendixes, one of which is a repair parts and special tools list (RPSTL). Each chapter is divided into sections covering operating procedures and/or other information for specific systems or components.
3. Note that Appendix A of this manual gives the full title of every manual, form, pamphlet, or other document referenced in this manual.

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### INDEXING.

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

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

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### TEXT AND ILLUSTRATIONS.

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1. Each chapter is divided into sections; each section begins with a numerical listing of all paragraphs.
2. Each paragraph in the maintenance chapters (3,4, and 5) contains the following information, as appropriate:
  - The common or special tools and test equipment required to perform the procedures are listed under the heading "Tools/Test Equipment." Information (e.g., part numbers and national stock numbers) for all common and special tools is given in Appendix B.
  - Materials and mandatory replacement parts that will be discarded during performance of the procedure are listed under the heading "Materials/Parts." A materials/parts list does not contain items that *may* be replaced if found defective during inspection. Also, the list does not contain the item cited in the paragraph title. Information on materials is in Appendix F, and information on the mandatory replacement parts is in Appendix I.
  - If more than one person is required to perform the procedure, the number is specified under the heading "Personnel Required."
  - Procedures that must be followed prior to performing a maintenance procedure are listed under the heading "Equipment Conditions."



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**TEXT AND ILLUSTRATIONS (continued).**

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3. Maintenance procedures are to be performed in the sequence given in the text and illustrations.
4. Illustration callouts are numbered in the order that the parts they identify are removed in the procedure. For example:

Remove screw (1), lockwasher (2), washer (3), and bracket (4) from crankcase (5).
5. Be sure to read the entire paragraph before beginning a maintenance procedure. Also, read the general information in Chapter 1 before beginning a procedure

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**WARNINGS, CAUTIONS, AND NOTES.**

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

**WARNING**

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

**CAUTION**

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

**NOTE**

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

2. Warnings and cautions appear immediately preceding the step to which they pertain. It is important to read and thoroughly understand the warnings and/or cautions before beginning maintenance.
3. Notes may precede or follow the steps to which they pertain, depending on what makes the most sense.



# CHAPTER 1

## INTRODUCTION

### Section I. GENERAL INFORMATION

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1-8	Reporting Equipment Improvement Recommendations .....	1-3
1-9	Warranty Information .....	1-3
1-10	Safety, Care, and Handling .....	1-3
1-11	Corrosion Prevention and Control .....	1-4

#### **1-1. SCOPE.**

- a. This technical manual describes Operator's, Unit, Direct Support, and General Support instructions and maintenance and includes the repair parts and special tools list (RPSTL) for the following trailers:

M870, 40-ton lowbed semitrailer

M870A1, 40-ton lowbed semitrailer

- b. Throughout this manual, the terms "curbside" and "roadside" are used to describe views of the M870 and M870A1 semitrailers.

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

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

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

Refer to TM 750-244-6 for procedures on the destruction of military vehicles to prevent enemy use.

#### **1-4. PREPARATION FOR STORAGE OR SHIPMENT.**

For information on preparing the M870 or M870A1 semitrailer for storage or shipment, refer to Chapter 4, Section XII of this manual.

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## 1-5. QUALITY ASSURANCE.

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- a. No specific quality assurance manual pertains to the M870/M870A1.
- b. Defective material received through the supply system should be reported on SF Form 368. Instructions for preparing the reports are provided in AR 702-7. Mail your completed form directly to:

Commander  
U.S. Army Tank-automotive and Armaments Command  
ATTN: AMSTA-QRT  
Warren, MI 48397-5000

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## 1-6. NOMENCLATURE CROSS-REFERENCE INDEX.

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OFFICIAL NOMENCLATURE	COMMON NAME
air pressure relay valve, middle	multifunction valve
air pressure relay valve, rear	relay emergency valve
safety relief valve	emergency relay valve

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## 1-7. LIST OF ABBREVIATIONS AND ACRONYMS.

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AAL	additional authorization list
BII	basic issue items
BOI	basis of issue
CAGEC	Commercial and Government Entity Code
CARC	chemical agent resistant coating
COEI	components of end item
CPC	corrosion prevention and control
DA	Department of the Army
DOD	Department of Defense
E	empty
EIR	equipment improvement recommendation
ft	foot, feet
GAA	grease, automotive and artillery
H	hour
IAW	in accordance with
in.	inch
kg	kilogram
km	kilometer
kmh	kilometers per hour
kPa	kilopascal
L	liter
m	meter
MAC	maintenance allocation chart
mph	miles per hour
MOS	military occupational specialty
MTOE	Modified Tables of Organization and Equipment
NBC	nuclear, biological, and chemical
NIIN	national item identification number

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**1-7. LIST OF ABBREVIATIONS AND ACRONYMS (continued).**


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NSN	national stock number
p.	page
para	paragraph
PMCS	preventive maintenance checks and services
psi	pounds per square inch
Qty. Recm.	quantity recommended
Qty. Rqr.	quantity required
RPSTL	repair parts and special tools list
SMR	source, maintenance, and recoverability
SN	serial number
SRA	specialized repair activity
TAMMS	The Army Maintenance Management System
TMDE	test, measurement, and diagnostic equipment
TOE	Tables of Organization and Equipment
U/M	unit of measure
UOC	usable-on code
V dc	volts, direct current
W/	with
W/O	without

---

**1-8. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS.**


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If your M870 or M870A1 semitrailer needs improvement, let us know. Send us an equipment improvement recommendation (EIR). You, the user, are the only one who can tell us what you don't like about the equipment. Let us know why you don't like the design or performance. Put it on DA Form 2028 and mail it to:

Commander  
U.S. Army Tank-automotive Armaments Command  
ATTN: AMSTA-IM-OPIT  
Warren, MI 48397-5000

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**1-9. WARRANTY INFORMATION.**


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For M870A1 warranty information, see TB 5-2330-378-14. The M870 is not covered by a warranty.

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**1-10. SAFETY, CARE, AND HANDLING.**


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

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## **1-11. CORROSION PREVENTION AND CONTROL.**

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

## Section II. EQUIPMENT DESCRIPTION

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1-13	Location and Description of Major Components .....	1-6
1-14	Differences Between Models .....	1-9
1-15	Equipment Data .....	1-9

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**1-12. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES.**

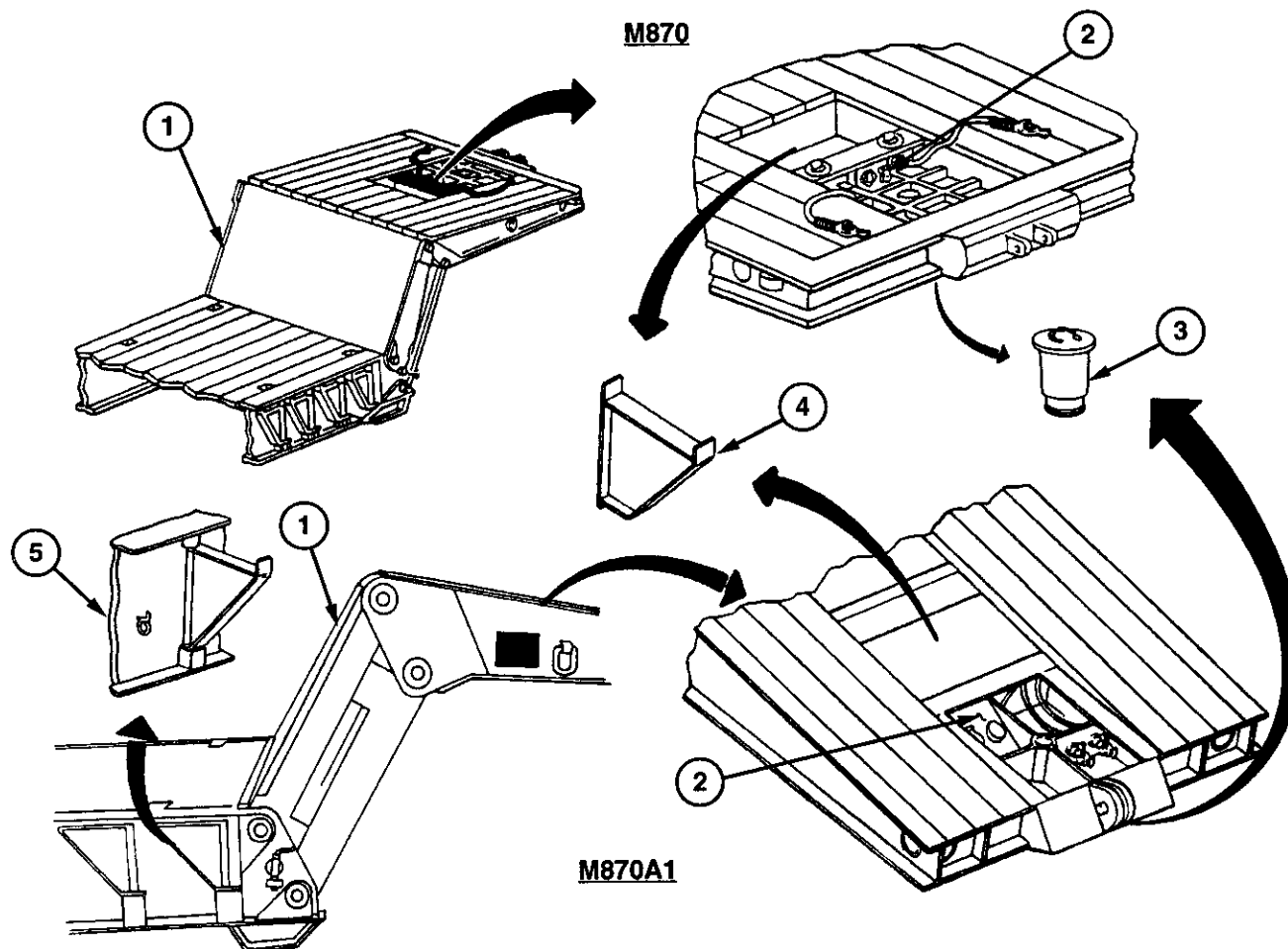

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## a. Capabilities

The M870 and M870A1 semitrailers are used to transport construction equipment and materiel and are towed by an M920 truck tractor. Either semitrailer can also be towed by an M916 truck tractor using the adaptation kit listed in TM 9-2320-270-34P.

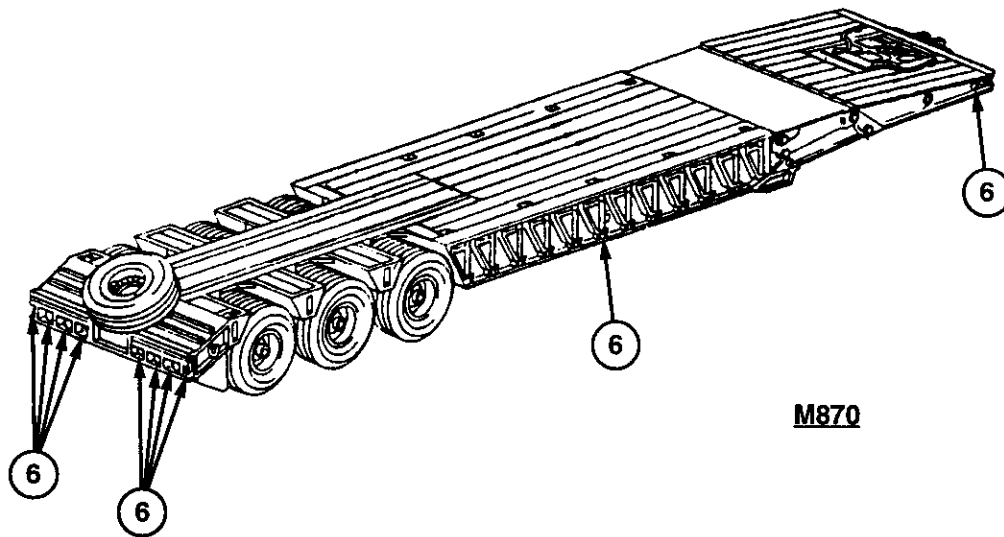
## b. Features

- (1) Forty-ton construction equipment transporter
- (2) Cross-country payload: 80,000 lb at 20 mph (36,300 kg at 32 kmh)
- (3) Highway payload: 80,000 lb at 40 mph (36,300 kg at 64 kmh)
- (4) Fifth-wheel plate and kingpin coupling
- (5) Gooseneck ramp for cargo or equipment loading
- (6) Three rear axles on leaf-spring suspension
- (7) Spare tire on rear of vehicle
- (8) Brake pressure and brake control supplied by truck tractor

**1-13. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS.**

Key	Component	Description
1	Gooseneck	Drops down to form a ramp for loading and unloading equipment.
2	Voltage Reduction Box	Provides 12- or 24-volt service to the semitrailer and is located in the stowage compartment on the gooseneck.
3	Kingpin	Extends below the fifth-wheel plate and attaches to the fifth wheel on the truck tractor for towing.
4	Front Outriggers	Hold extension boards on semitrailer to increase size of deck for large loads. Outriggers are stored in the open stowage compartment in the gooseneck.
5	Rear Outriggers	Swing out from the side of the semitrailer to support extension planks for large loads.



**1-13. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (continued).**

Key	Component	Description
6	Lights	<p><b>M870</b></p> <p>An amber clearance light and amber reflector are located on each side of the semitrailer gooseneck.</p> <p>An amber clearance light and amber reflector are located on each side near the middle of the semitrailer.</p> <p>A red reflector is located on each side at the rear of the semitrailer.</p> <p>A red clearance light is located on each rear corner of the semitrailer.</p> <p>Three red clearance lights are located in the rear center of the semitrailer.</p> <p>There are two pairs of combination stoplights and turn lights on the rear of the semitrailer.</p>



**1-8**

## 1-14. DIFFERENCES BETWEEN MODELS.

Refer to paragraph 1-15 to see the differences in size and bridge classification between the M870 and M870A1. Other differences between the models are listed below.

Vehicle Characteristic	Quantity: M870	Quantity: M870A1
Chock Block	2	0
Wheel Stud	10	6
Blackout Light	0	2

## 1-15. EQUIPMENT DATA.

Overall Dimensions	M870	M870A1
Length .....	41 ft, 11 in. (12.8 m)	42 ft, 6 in. (13.0 m)
Marine variation .....	40 ft, 7 in. (12.4 m)	
Width .....	8 ft, 0 in. (2.4 m)	8 ft, 0 in. (2.4 m)
Height .....	5 ft, 4 in. (1.6 m)	6 ft, 0.875 in. (1.9 m)
Ground clearance (40-ton load) .....	1 ft, 1.5 in. (0.335 m)	1 ft, 5.625 in. (0.4 m)
<b>Deck Dimensions</b>		
Length .....	18 ft, 0 in. (5.5 m)	18 ft, 0 in. (5.5 m)
Marine variation .....	17 ft, 0 in. (5.2 m)	
Width .....	8 ft, 0 in. (2.4 m)	8 ft, 0 in. (2.4 m)
Height (no load) .....	3 ft, 4 in. (1.0 m)	3 ft, 4 in. (1.0 m)
Marine variation .....	4 ft, 0 in. (1.22 m)	
<b>Weights</b>		
Curb (no load) .....	8.25 tons (7484 kg)	9.5 tons (8618 kg)
Maximum cargo .....	40 tons (36,287 kg)	40 tons (36,287 kg)
Gross (loaded) .....	48.25 tons (43,771 kg)	49.5 tons (44,905 kg)
<b>Bridge Classification</b>		
Unloaded .....	24 tons (21,772 kg)	21.8 tons (19,776 kg)
With 40-ton payload .....	60 tons (54,431 kg)	54.5 tons (49,442 kg)

**1-15. EQUIPMENT DATA (continued).**

<b>Weight Distribution</b>	<b>M870</b>	<b>M870A1</b>
Rear axle (empty) .....	5.5 tons (4990 kg)	5.2 tons (4717 kg)
Rear axle (loaded) .....	28.25 tons (25,627 kg)	29.3 tons (26,580 kg)
Fifth wheel of tractor trailer (loaded) .....	20 tons (18,143 kg)	20.3 tons (18,415 kg)
<b>Axles</b>		
Type .....	Tubular	Tubular
Quantity .....	3	3
<b>Wheel Bearings</b>		
Type .....	Tapered roller	Tapered roller
<b>Wheels</b>		
Type .....	Disk - 10 studs	3 spokes
Rim size .....	15 X 7.5 in.	15 X 7.5 in.
Rim type .....	Advance military	Tube
Rim spacer .....	None	Goodyear "K" type
<b>Tires</b>		
Quantity .....	13	13
Size .....	10 X 15 in.	10 X 15 in.
Ply .....	14	14
Type .....	Commercial	Commercial
Tread design .....	Highway tread	Highway tread
<b>Tire Air Pressure</b>		
Highway .....	85 psi (586 kPa)	90 psi (621 kPa)
Rough terrain .....	45 psi (310 kPa)	45 psi (310 kPa)
Sand or soft ground .....	35 psi (241 kPa)	35 psi (241 kPa)

**1-15. EQUIPMENT DATA (continued).**

<b>Airbrake System</b>	<b>M870</b>	<b>M870A1</b>
Type .....	S-cam, two-shoe, double anchor, interval expanding	S-cam, two-shoe, double anchor, interval expanding
Actuation .....	Air	Air
<b>Electrical System</b>		
Type .....	12-volt, 24-volt dual	12-volt, 24-volt dual
Blackout lights .....	None	24-volt
Other lights .....	None	12-volt
<b>Suspension</b>		
Type .....	Triaxle mechanical	Triaxle mechanical
<b>Speed</b>		
Empty .....	55 mph (89 kmh)	55 mph (89 kmh)
40-ton load .....	40 mph (64 kmh)	40 mph (64 kmh)

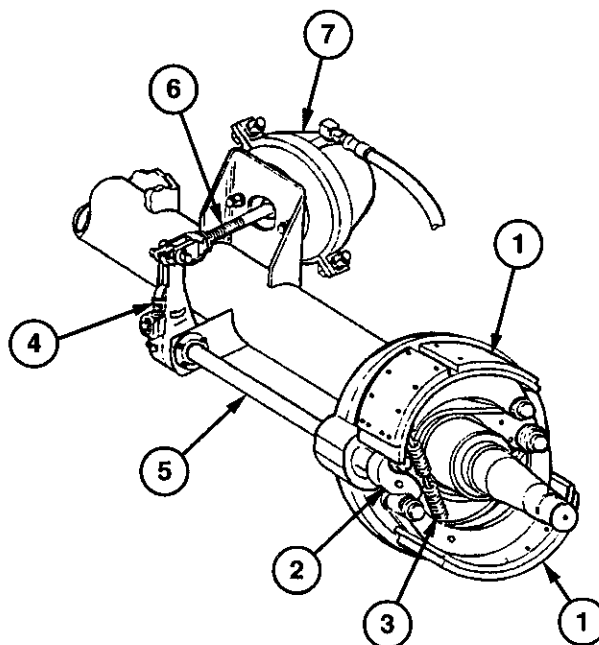
## Section III. PRINCIPLES OF OPERATION

Paragraph Number	Paragraph Title	Page Number
1-17	Airbrake System .....	1-12
1-18	Lighting System .....	1-15

**1-17. AIRBRAKE SYSTEM.**

The airbrake system of both the M870 and the M870A1 semitrailers consists of internal brakes, slack adjusters, service and emergency air lines, relay valves, multifunction valves, air reservoirs, airbrake chambers, spring brake chambers, and connections.

- a. INTERNAL BRAKES are located within the brakedrums. Each internal brake has two brakeshoes (1). The outer surfaces of the brakeshoes are fitted with brake linings. Each brakeshoe is anchored at one end on an anchor pin on which it pivots. The other end of each brakeshoe is free to be pushed out or pulled in.
- b. An S-SHAPED CAM (2) on the end of the camshaft is mounted between the free ends of the two brakeshoes (1). Rotation of the cam (2) forces the brakeshoes (1) out, causing the brake linings to contact the brakedrum.
- c. A BRAKESHOE TENSION SPRING (3), near the free ends of the brakeshoes (1), retracts the brakeshoes (1) from the brakedrum and holds them in a retracted position until the brakes are applied.
- d. SLACK ADJUSTER (4) is a lever mounted on the brake camshaft (5). Push rod (6) of the airbrake chamber or the spring brake chamber operates the slack adjuster (4); it in turn rotates the camshaft (5), causing the cam (2) to press the brakeshoes against the brakedrum.
- e. AIRBRAKE CHAMBERS (7) are mounted to the rear axle internal wheel brakes. The airbrake chambers convert air pressure into mechanical motion to operate the slack adjusters (4) when applying brakes.

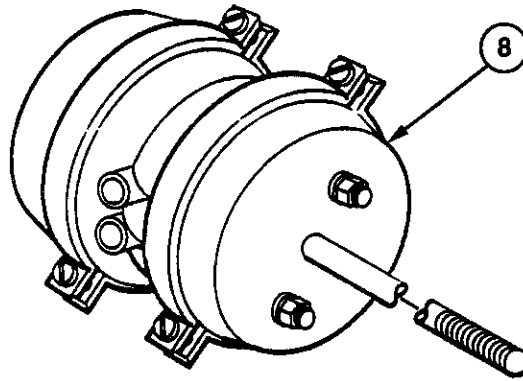


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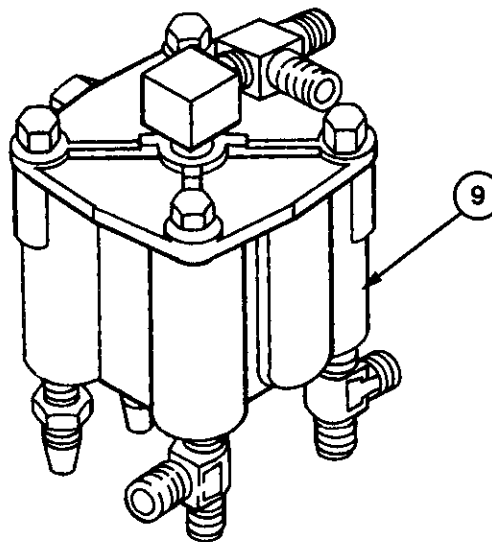
**1-17. AIRBRAKE SYSTEM (continued).**

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- f. SPRING BRAKE CHAMBERS (8) are mounted adjacent to the front and middle axle internal wheel brakes. The spring brake chambers (8) convert air pressure into mechanical motion to operate the slack adjusters when applying brakes. The spring brakes automatically lock in the event of air-pressure loss.

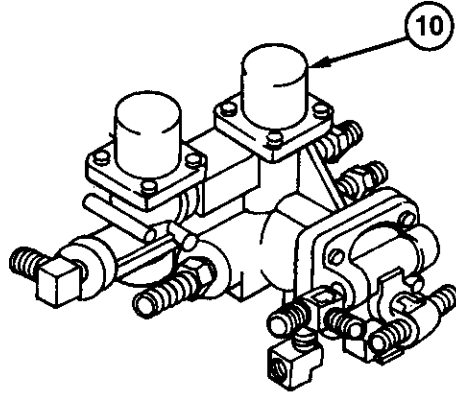


- g. A SERVICE AIR LINE extends from the air hose coupling (tagged SERVICE) on the right side of the semitrailer to the multifunction valve and to the relay valves. Its purpose is to transmit changes in air pressure originated in the truck tractor, which cause the relay valves to function.
- h. An EMERGENCY AIR LINE extends from the air hose coupling (tagged EMERGENCY) on the left side of the semitrailer to the multifunction valve and to the rear relay valve. This air line transmits compressed air to fill the semitrailer air reservoirs and maintain proper air pressure. The multifunction valve and the relay valves use this air pressure to apply the brakes on the semitrailer in case of an emergency.
- i. An EMERGENCY RELAY VALVE (9) controls the service brakes on the semitrailer. It speeds brake action by releasing air from the air reservoirs on the semitrailer directly to the service chamber brakes.

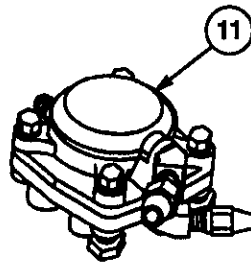


## 1-17. AIRBRAKE SYSTEM (continued).

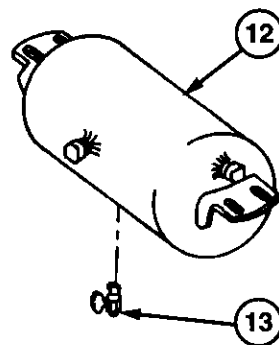
- j. A MULTIFUNCTION VALVE (10) controls the spring brake chambers by using the air reservoirs for normal service braking, but reserving sufficient air pressure in the center air reservoir to provide the required spring brake release in the event of a service system failure.



- k. A RELAY EMERGENCY VALVE (11) controls brake application to the rear axle by releasing reservoir air to the brake chambers. It automatically applies emergency braking to the rear axle if the semitrailer breaks away from the truck tractor.



- l. THREE AIR RESERVOIRS (12) are attached to the frame. They provide a supply of air—through the emergency relay valve, the multifunction valve, and the relay emergency valve—for applying the brakes. The air reservoirs are equipped with drain cocks (13) for draining accumulations of moisture and for releasing air pressure in the semitrailer airbrake system.





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**1-18. LIGHTING SYSTEM.**

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The lighting system of both the M870 and the M870A1 semitrailers receives electrical power from the towing vehicle through a voltage reduction box located in the gooseneck. The semitrailers operate on a 12-volt or 24-volt power supply. If a 24-volt supply is used, voltage is reduced to 12 volts by the voltage reduction box to all components but the 24-volt blackout lights on the M870A1 trailer.

- a. CLEARANCE LIGHTS are on the front, rear, and both sides of the M870 and the M870A1 semitrailers. They turn on and off with the service lights of the towing vehicle.
- b. STOPLIGHTS, TURN LIGHTS, AND TAILLIGHTS are on the rear of the M870 and M870A1 semitrailers and work with the towing vehicle service lights to indicate stops and turns and to mark the location of the rear of the semitrailers in low light conditions.
- c. BLACKOUT LIGHTS (M870A1) are on the rear of the semitrailer and work with the towing vehicle service lights to mark the location of the rear of the semitrailer in blackout conditions.



## CHAPTER 2

### OPERATING INSTRUCTIONS

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

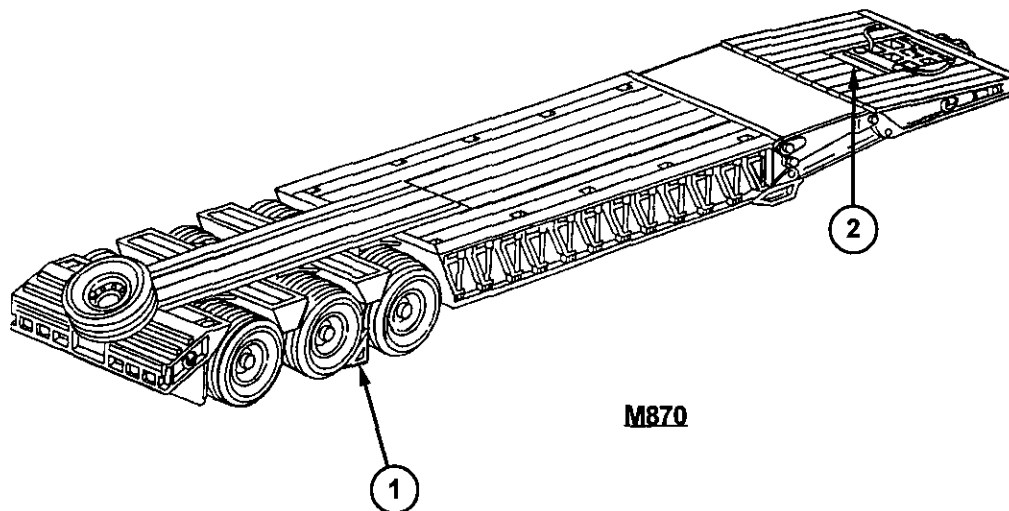
Paragraph Number	Paragraph Title	Page Number
2-1	General .....	2-1
2-2	Controls and Indicators .....	2-1

#### 2-1. GENERAL.

This section shows the location and function of all semitrailer controls and indicators. Review this section carefully before operating either semitrailer.

#### 2-2. CONTROLS AND INDICATORS.

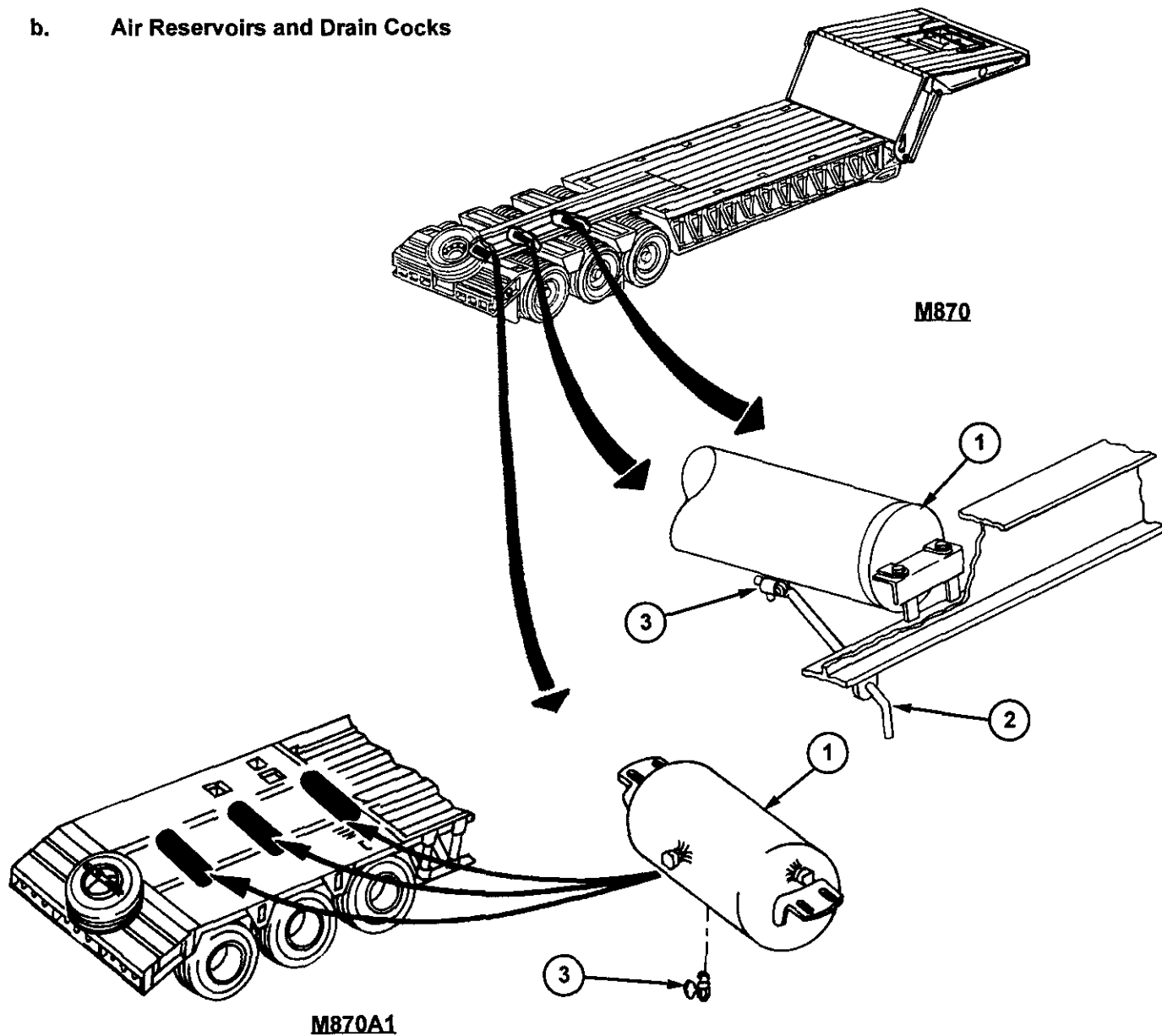
##### a. Chock Blocks



Key	Component	Description
1	Chock Blocks (M870)	Placed in front of or behind center tire on each side of semitrailer to keep it from moving.
2	Stowage Bin	Used to stow chock blocks when not in use.

## 2-2. CONTROLS AND INDICATORS (continued).

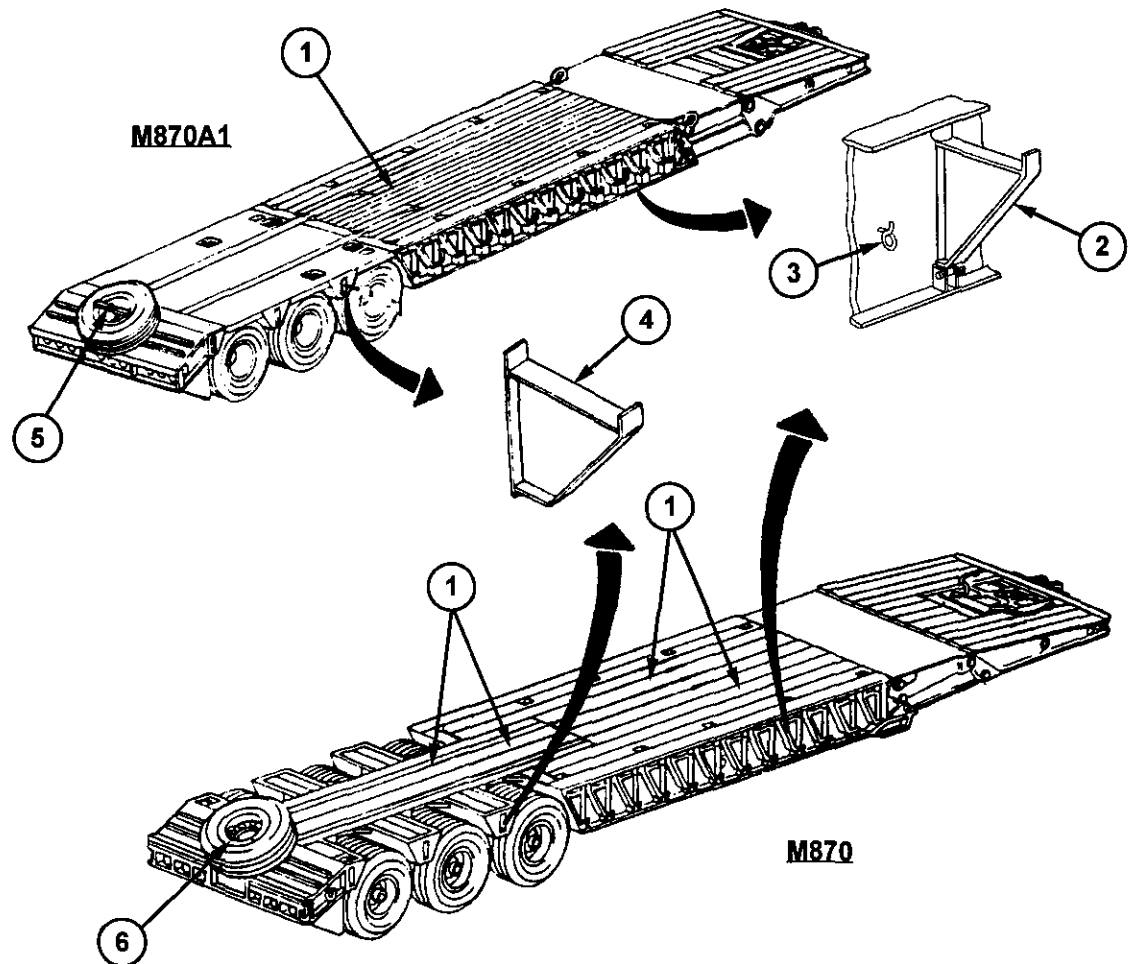
### b. Air Reservoirs and Drain Cocks



Key	Component	Description
1	Air Reservoirs	Hold semitrailer air supply.
2	Reservoir Drain Cock Control Rods (M870)	Rotated to open or close drain cock (found on front two tanks).
3	Drain Cocks	Used to drain moisture from air reservoirs.

## 2-2. CONTROLS AND INDICATORS (continued).

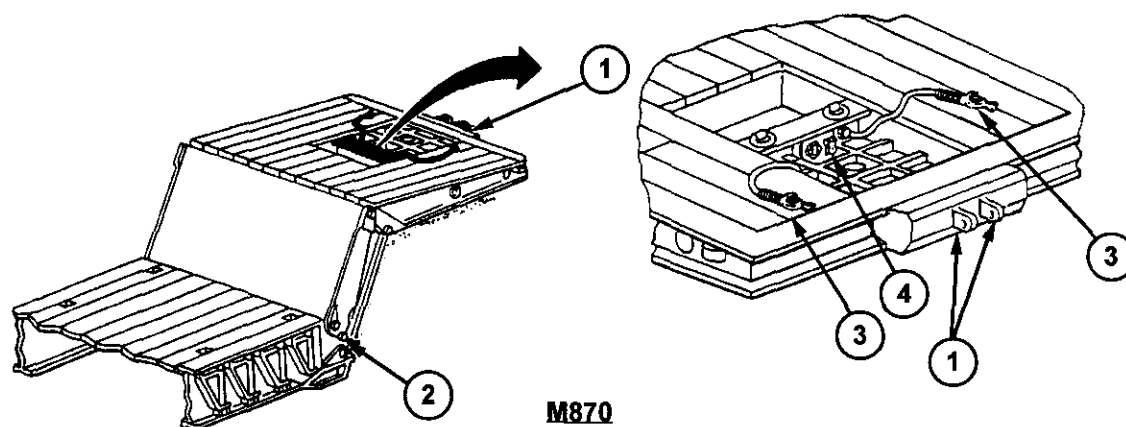
### c. Outriggers, Spare Tire, and Wheel Assembly



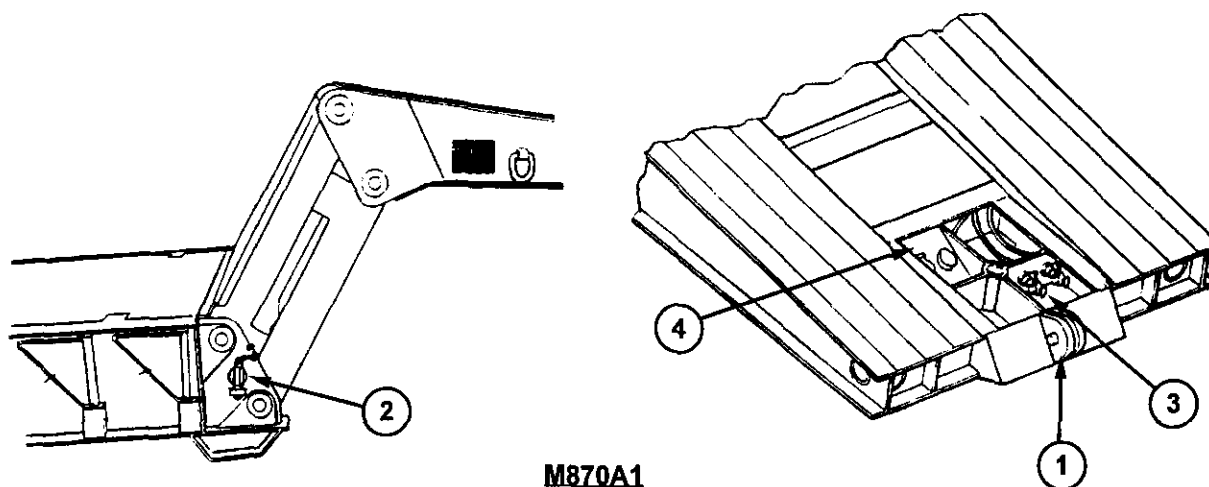
Key	Component	Description
1	Extension Planks	Put on top of outriggers when loading or unloading wide loads.
2	Front Outriggers	Hold side extension planks when loading or unloading wide loads. Fold against semitrailer when not in use.
3	Hook Fasteners	Hold front outriggers against semitrailer's side when not in use.
4	Rear Outriggers	Hold rear side extension planks when loading or unloading wide loads. Stored in gooseneck compartment.
5	Spare Tire Carrier (M870A1)	Holds spare tire for use in emergency conditions.
6	Lug Nuts (2) (M870)	Secure spare tire on mounting lugs.

## 2-2. CONTROLS AND INDICATORS (continued).

### d. Gooseneck Couplings and Connectors

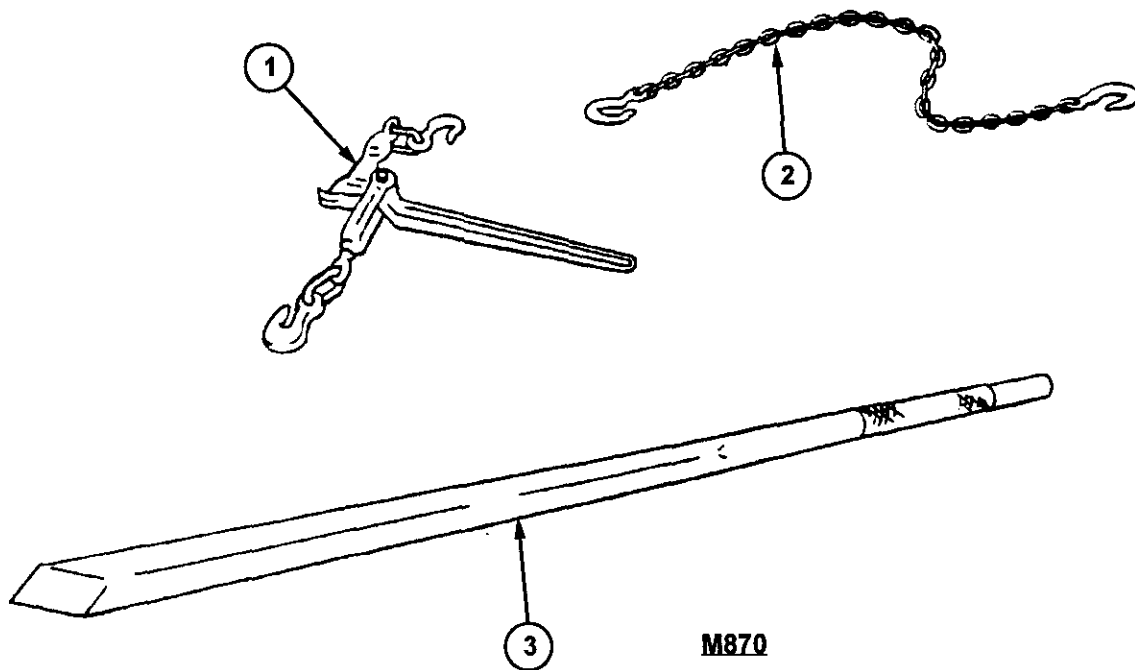


M870



M870A1

Key	Component	Description
1	Lifting Eye	Winch cable hookup point for truck tractor when raising or lowering gooseneck.
2	Lockpins	Lock gooseneck in up position for towing.
3	Gladhands	Provide emergency and service air supply from truck tractor to semitrailer for operation of semitrailer brakes.
4	Voltage Reduction Box	Provides hookup for 12-volt or 24-volt electric supply to operate lights on semitrailer.

**2-2. CONTROLS AND INDICATORS (continued).****e. Load Binders, Chain Assemblies, and Crowbar**

Key	Component	Description
1	Load Binders	Secure loads to semitrailer.
2	Chain Assemblies	Secure loads to semitrailer.
3	Crowbar (M870)	Used to move or pry objects.

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

Paragraph Number	Paragraph Title	Page Number
2-3	General .....	2-6
2-4	General PMCS Procedures .....	2-6
2-5	Specific PMCS Procedures .....	2-7
2-6	Leakage Definitions .....	2-7
Table 2-1	Operator/Crew PMCS for the M870 and M870A1 .....	2-9

**2-3. GENERAL.**

- a. To ensure that the M870 and M870A1 semitrailers are ready for operation at all times, they must be inspected on a regular basis so that defects may be found before they result in serious damage, equipment failure, or injury to personnel. This section contains systematic instructions on inspections, adjustments, and corrections to be performed by the operator/crew.
- b. While performing preventive maintenance checks and services (PMCS), read and follow all safety instructions found in the warning summary at the beginning of this manual. Keep in mind all WARNINGS and CAUTIONS.
- c. All defects that the operator cannot fix must be reported on a DA Form 2404 immediately after completing PMCS. If a serious problem is found, IMMEDIATELY report it to your supervisor.

**2-4. GENERAL PMCS PROCEDURES.****WARNING**

**Drycleaning 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 use near open flame or excessive heat.**

- a. Keep equipment clean. Dirt, oil, and debris may cover up a serious problem. Clean as you work and as needed. Use drycleaning solvent (Item 19, Appendix F) on all metal surfaces. Use soap and water to clean rubber, plastic, and painted surfaces.

- b. While performing specific PMCS procedures, inspect the following components.

**Bolts, Nuts, and Screws.** Make sure they are not missing, bent, or broken. Report loose or missing bolts, nuts, and screws to Unit maintenance.

**Welds.** Inspect for gaps where parts are welded together. Check for loose or chipped paint, rust, and cracks. Report bad welds to Unit maintenance.

**Electric Conduits, Wires, or Connectors.** Inspect for cracked or broken conduit insulation, bare wires, and loose or broken connectors. Report loose connections and faulty wiring to Unit maintenance.

**Hoses, Lines, Clamps, and Fittings.** Inspect for wear, damage, and leaks. Make sure clamps and fittings are tight. Report any damage, leaks, or loose fittings to Unit maintenance.



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## 2-5. SPECIFIC PMCS PROCEDURES.

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- a. Operator/Crew PMCS procedures are listed in Table 2-1 (p. 2-9). Always perform PMCS in the order listed. Once PMCS procedures become routine, spotting problems will become much easier.
- b. Before performing PMCS, read all the checks required for the applicable interval and prepare all tools needed for the task. Have several clean rags (Item 15, Appendix F) ready for use. Perform all inspections at the applicable intervals.
- c. If any problems are discovered through PMCS, perform the appropriate troubleshooting task found in Chapter 3. If any component or system is not serviceable, or if any service does not correct the problem, notify your supervisor.
- d. Explanations of the column headings in Table 2-1 are as follows:

**Item No.** The item number column of your PMCS table is to be used for reference. When completing DA Form 2404, include the item number for the check/service indicating a fault. Item numbers also appear in the order that you must do checks and services for the intervals listed.

**Interval.** This column of your PMCS table tells when to do a certain check or service.

**Item to Check/Service.** This column of your PMCS table names the item to be checked or serviced.

**Procedure.** This column of your PMCS tells you how to do the required checks and services. Carefully follow these instructions. If you do not have the tools, or if the procedure tells you to, have Unit maintenance do the work.

**Not Fully Mission Capable If:** This column tells you when and why your equipment cannot be used.

- e. Perform the PMCS procedures listed in Table 2-1 at the following intervals:
  - Perform *Before* PMCS just before operating the semitrailer.
  - Perform *During* PMCS while operating the semitrailer.
  - Perform *After* PMCS right after operating the semitrailer.
  - Perform *Weekly* PMCS once each week.
  - Perform *Monthly* PMCS once each month.
  - Perform *Annual* PMCS once each year.

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## 2-6. LEAKAGE DEFINITIONS.

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- a. It is important to know how fluid leaks affect the status of the semitrailer. The following are definitions of the 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.

Class I	Seepage of fluid (as indicated by wetness or discoloration) not great enough to form drops.
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## 2-6. LEAKAGE DEFINITIONS (continued).

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- |           |                                                                                                                          |
|-----------|--------------------------------------------------------------------------------------------------------------------------|
| Class II  | Leakage of fluid great enough to form drops, but not enough to cause drops to drip from the item being checked/serviced. |
| Class III | Leakage of fluid great enough to form drops that fall from the item being checked/serviced.                              |

### **CAUTION**

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

Table 2-1. Operator/Crew PMCS for the M870 and M870A1

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
			<p><b>NOTE</b></p> <ul style="list-style-type: none"> <li>Perform <i>Weekly</i> as well as <i>Before</i> if: <ul style="list-style-type: none"> <li>a. You are the assigned operator but have not used the semitrailer since the last PMCS.</li> <li>b. You are operating the semitrailer for the first time.</li> </ul> </li> <li>Perform inspections/checks 1-8 before connecting the semitrailer to the truck tractor.</li> </ul>	
1	Before	Chassis	Inspect chassis (1) for damaged or missing components.	
2	Before	Gooseneck	Inspect gooseneck ramp hinge points (2) for cracks, damage, or excessive wear.	Hinge points show excessive wear, cracks, or damage.
3	Before	Kingpin	<p>a. Inspect kingpin (3) for cracks or a bent condition.</p> <p>b. Inspect for chips, nicks, gouges, and wear.</p> <p>c. Inspect kingpin plate for cracks and dents.</p>	<p>a. Kingpin is bent or cracked.</p> <p>b. Nick or chip deeper than 1/8 inch is found anywhere on wear surface, or wear exceeds 1/16 inch over 25% of wear surface.</p> <p>c. Kingpin plate is cracked or dented.</p>

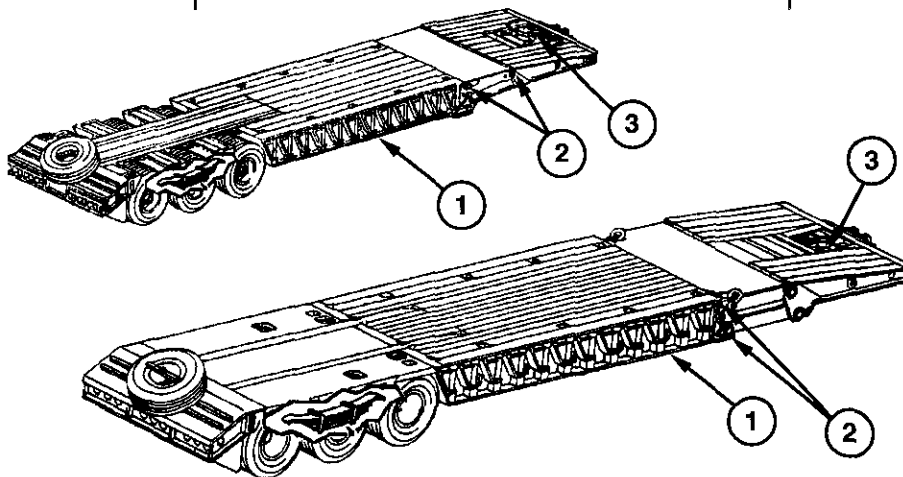


Table 2-1. Operator/Crew PMCS for the M870 and M870A1 (continued)

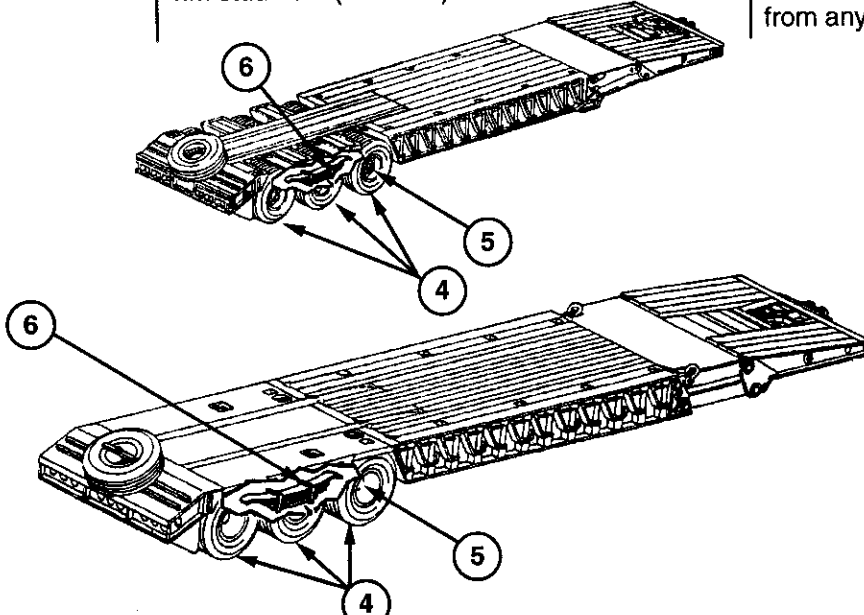
ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
4	Before	Air Hose Coupling	<p>a. Check air hoses and cables for cuts and breaks.</p> <p>b. Inspect gladhands (brake hose couplings) for secure mounting and damage or missing packing.</p>	<p>a. Air hoses or cables are broken or missing.</p> <p>b. Gladhand is missing, broken, or damaged. Packing is missing.</p>
5	Before	Tires	<p>a. Check all tires (4) for gouges, cracks, tread separation, and foreign objects lodged between wheels.</p> <p>b. Check pressure in all tires when they are cool. Recommended pressure for the M870 is 85 psi (586 kPa). Recommended pressure for the M870A1 is 90 psi (620 kPa).</p>	a. Any tire is flat, missing, or unserviceable.
6	Before	Wheels	<p>a. Check all wheels for damage.</p> <p>b. Look for missing or loose lug nuts (M870) or rim stud nuts (M870A1).</p>	<p>a. Two or more wheels per axle are damaged.</p> <p>b. Two or more lug nuts or rim stud nuts are missing from any wheel.</p>
				
7	Before	Wheel Bearings	Check wheel bearing oil level through sight glass (5). If oil level is between inner and out circle of sight glass, oil level is adequate. If oil level is below outer ring, check for leaks and notify Unit maintenance.	Class III leaks are found.
8	Before	Springs	Inspect springs (6) and related hardware for serviceability.	Spring leaf is broken or hardware is broken or missing.

Table 2-1. Operator/Crew PMCS for the M870 and M870A1 (continued)

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
9	Before	Lights	<p><b>NOTE</b></p> <p>Perform inspections/checks 9-13 with the tractor connected to the semitrailer.</p> <p>a. Inspect for damaged parts or components.</p> <p><b><u>WARNING</u></b></p> <p><b>Wear protective goggles when opening drain cocks on air reservoirs. Failure to wear protective goggles could cause serious eye injury.</b></p>	
10	Before	Air Reservoirs	a. Close drain chocks (1) on air reservoirs (2).	
11	Before	Brakes	a. Check for leaks in airbrake system by shutting off truck tractor engine when air pressure is at the maximum. Observe air pressure gage for one minute. Note any drop in air pressure.	Any leaks are evident.

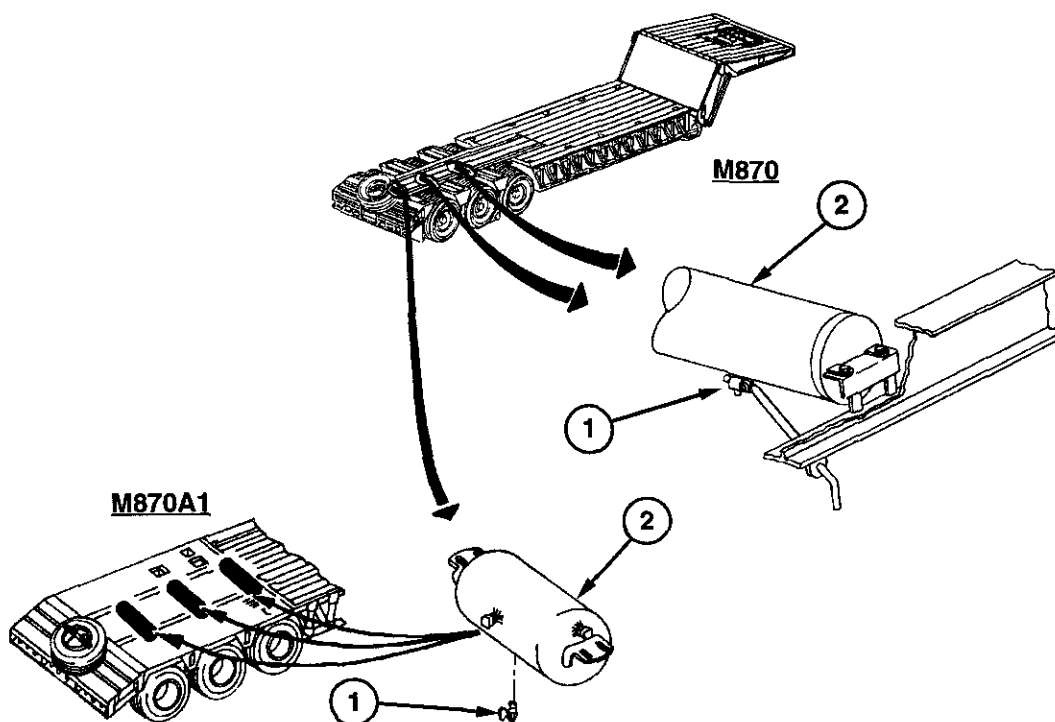


Table 2-1. Operator/Crew PMCS for the M870 and M870A1 (continued)

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
12	During	Lights	Check for proper operation and cleanliness.	
13	During	Brakes	<p>While an assistant actuates service brakes, listen for air leaks at the intervehicular connecting hoses, relay valve, and air reservoirs. Check for airbrake chamber pushrod movement.</p> <p><b><u>WARNING</u></b></p> <p>Hub may be hot. Before putting hand to hub, hold hand close to hub to check for excessive heat radiation. This will prevent skin burns caused by hot metal.</p>	Semitrailer brakes fail to hold or air leaks are found.

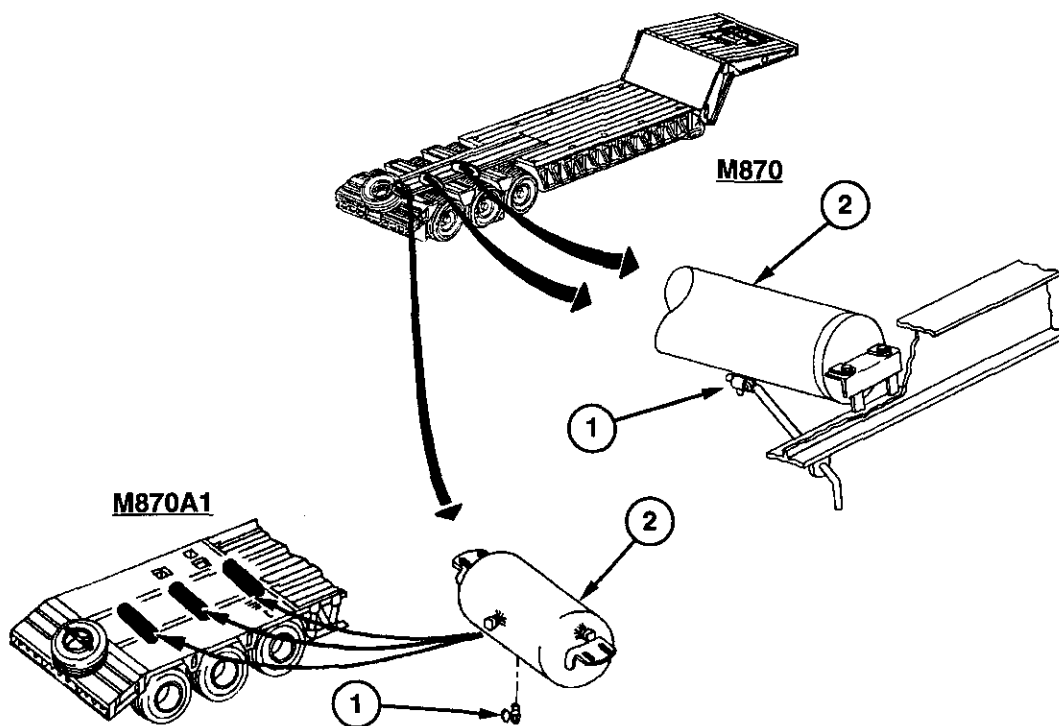


Table 2-1. Operator/Crew PMCS for the M870 and M870A1 (continued)

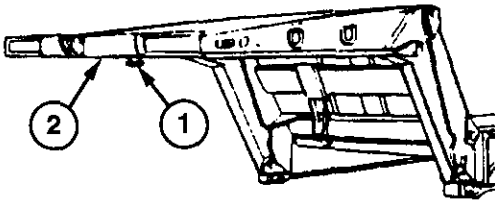
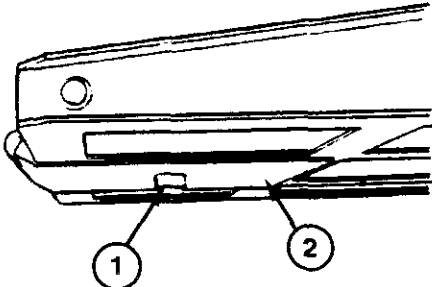
ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
14	After	Air Reservoirs	<p>Open drain cocks (1) on air reservoirs (2). Drain all moisture from reservoirs. Close drain cocks.</p> <p><b>NOTE</b></p> <p>An overheated hub indicates an improperly adjusted or defective service brake. An abnormally cool condition indicates an inoperative service brake.</p>	
15	After	Brakes	<p>Immediately after road use, check hubs for significant temperature variation.</p> <p><b><u>WARNING</u></b></p> <p><b>Do not work under the gooseneck unless lockpins are securely in place. Failure to secure lockpins may allow gooseneck to fall, causing serious injury or death.</b></p>	
16	Weekly	Kingpin	<p>Lubricate kingpin (1) and pickup plate (2) (refer to Appendix J).</p>  <p><b>M870</b></p>  <p><b>M870A1</b></p>	

Table 2-1. Operator/Crew PMCS for the M870 and M870A1 (continued)

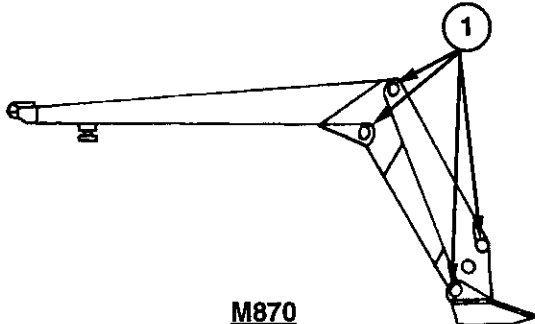
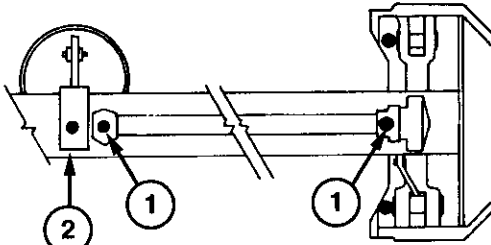
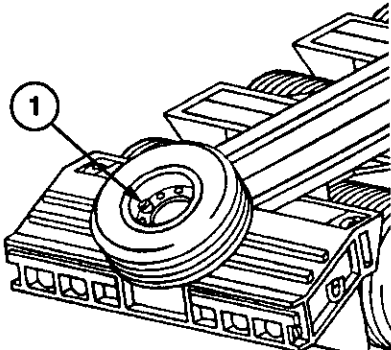
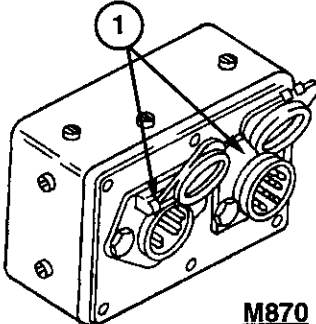
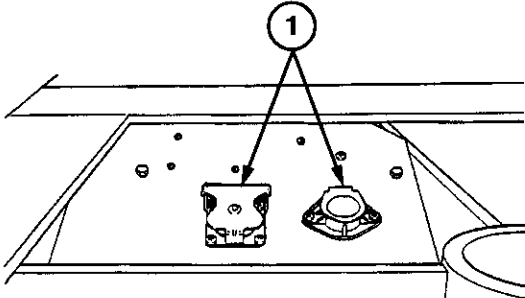
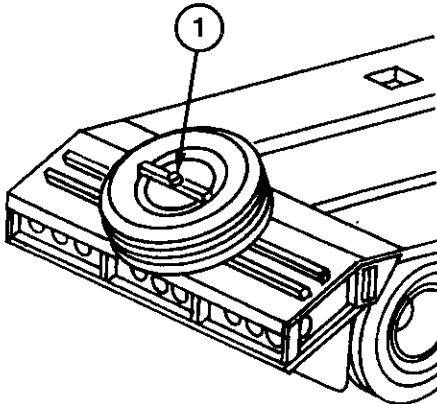
ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
17	Monthly	Gooseneck (M870)	<p><b><u>WARNING</u></b></p> <p>Do not work under the gooseneck unless lockpins are securely in place. Failure to secure lockpins may allow gooseneck to fall, causing serious injury or death.</p> <p>Lubricate hinge pins (1) (refer to Appendix J).</p>  <p><b><u>M870</u></b></p>	
18	Monthly	Brakes	<p>Lubricate camshaft bushings (1) and slack adjusters (2) (refer to Appendix J).</p> 	
19	Monthly	Spare Tire Wheel Lugs (M870)	<p>Lubricate spare tire wheel lugs (1) (refer to Appendix J).</p>  <p><b><u>M870</u></b></p>	



Table 2-1. Operator/Crew PMCS for the M870 and M870A1 (continued)

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
20	Monthly	Electrical Connector Hinges	<p>Lubricate electrical connector hinges (1) (refer to Appendix J).</p>  <p><b>M870</b></p>  <p><b>M870A1</b></p>	
21	Annual	Spare Tire	<p>Lubricate spare tire carrier nut (1) (refer to Appendix J).</p> 	

### Section III. OPERATION UNDER USUAL CONDITIONS

Paragraph Number	Paragraph Title	Page Number
2-7	General .....	2-16
2-8	Preparation for Use .....	2-16
2-9	Operating Procedures .....	2-22
2-10	After Use .....	2-23
2-11	Location and Contents of Data Plates .....	2-28

#### 2-7. GENERAL.

- a. This section contains instructions for safely operating the M870/M870A1 semitrailer under usual conditions. Unusual conditions are defined and described in Section IV of this chapter.
- b. Before operating a reconditioned trailer, make sure Unit maintenance services the vehicle.
- c. Perform all Before PMCS listed in Table 2-1 (p. 2-9) before operating the trailer.
- d. To prepare for coupling and uncoupling operations, review all towing instructions in the operator's manual for the towing vehicle.

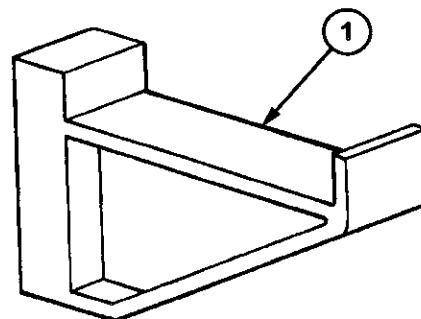
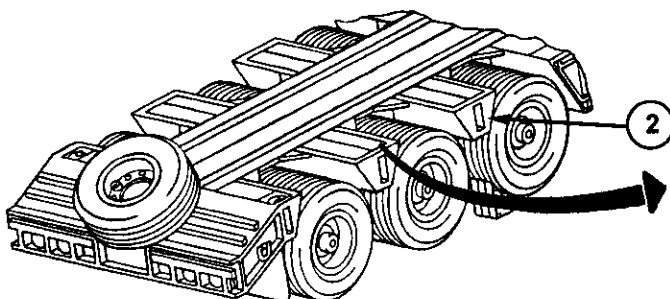
#### 2-8. PREPARATION FOR USE.

##### CAUTION

- To prevent damage to the equipment, coupling should be done by two people, one to operate the towing vehicle and one to operate the winch. Towing vehicle should not be left unattended with engine running.
- An adaptation kit must be installed on the M916 towing vehicle before it can be used with the semitrailer. Failure to do so will result in damage to the equipment.
- Cargo or equipment must be loaded over the gooseneck ramp only. Failure to do so could result in damage to the semitrailer frame.

##### a. Positioning Outriggers and Planks for Loading

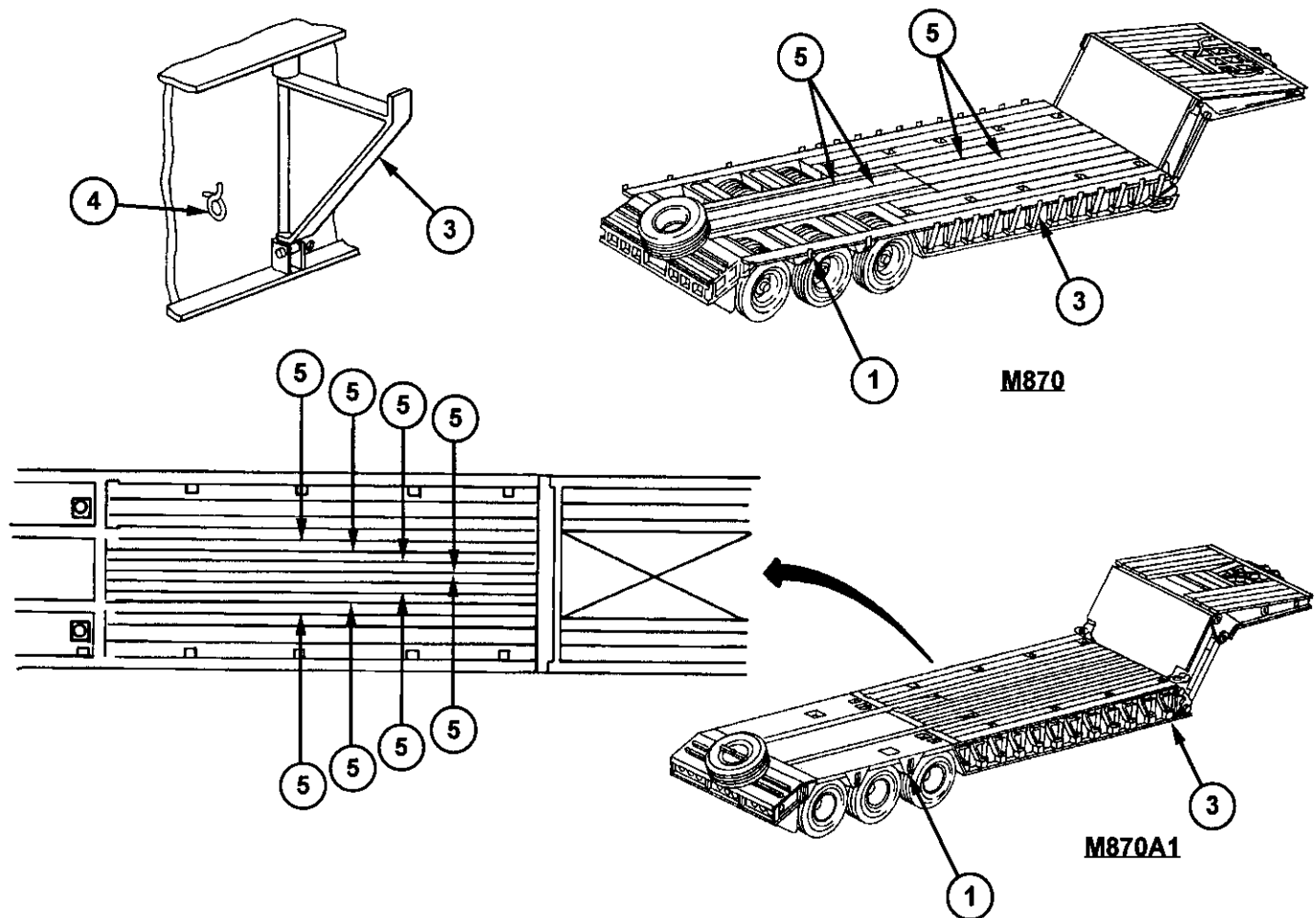
1. Remove six rear outriggers (1) from stowage bin in gooseneck.
2. Place six rear outriggers (1) in three mounting slots (2) on each side of semitrailer.



## 2-8. PREPARATION FOR USE (continued).

3. Unhook 24 front outriggers (3) by pulling out hook fasteners (4).
4. Swing out front outriggers (3) 90 degrees from semitrailer.
5. For the M870, remove four planks (5) from center of semitrailer. Put long planks on rear outriggers (1) and short planks on front outriggers (3).

For the M870A1, remove eight planks (5) from center of semitrailer. On right side of semitrailer, place one long board and one medium board on inside of front and rear outriggers (3 and 1). Place one short board and one long board on outside of front and rear outriggers (3 and 1). On left side of semitrailer, place one short board and one long board on inside of front and rear outriggers (3 and 1). Place one long board and one medium board on outside of front and rear outriggers (3 and 1).



### CAUTION

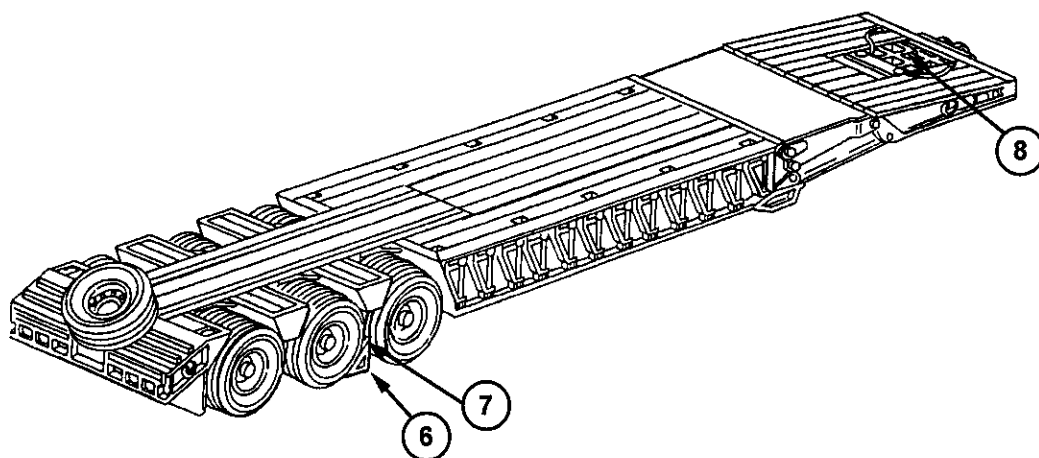
- Payload must be positioned over rear axles before doing coupling procedure. Failure to do so could cause damage to semitrailer.
- When loading or unloading over the front of the trailer, the terrain must allow full ground contact across front edge of gooseneck before loading begins. Failure to have full ground contact across front edge of gooseneck prior to loading or unloading will cause damage to semitrailer and void the warranty.

## 2-8. PREPARATION FOR USE (continued).

6. Load payload.

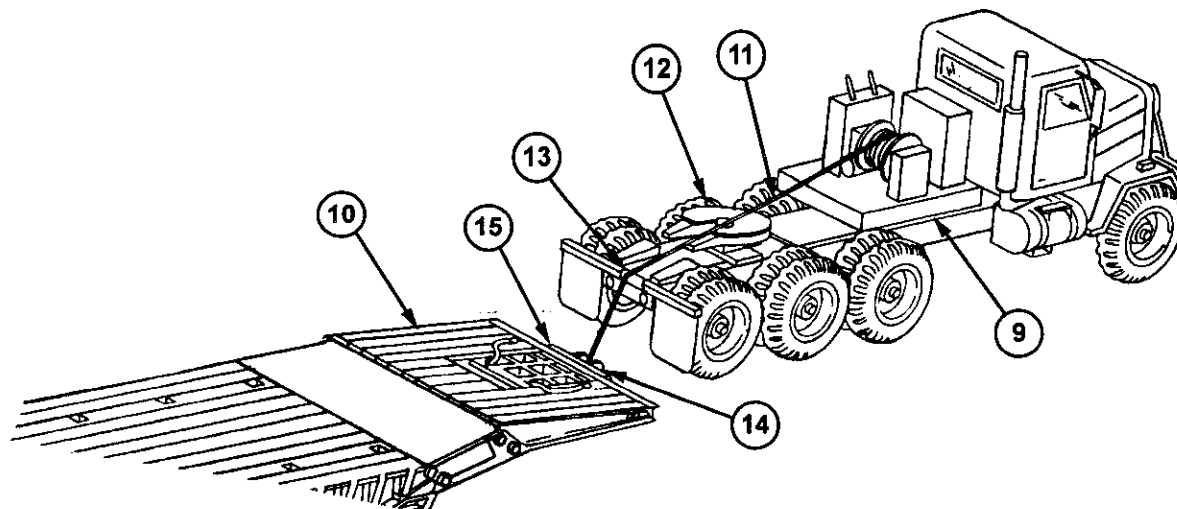
### b. Removal of Chock Blocks (M870)

1. Remove chock blocks (6) from wheel assemblies (7).
2. Put chock blocks (6) in stowage bin (8).
3. Repeat steps 1 and 2 for other side of semitrailer.



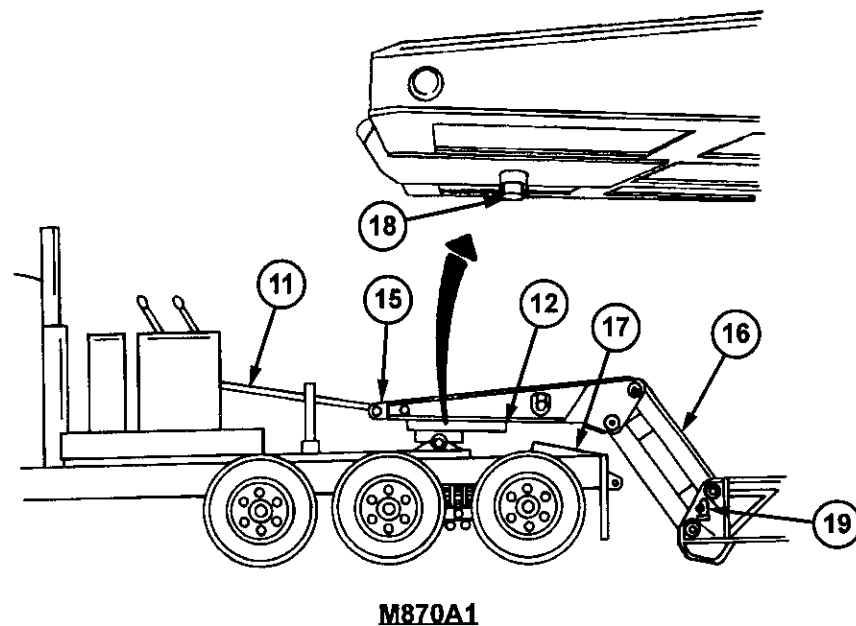
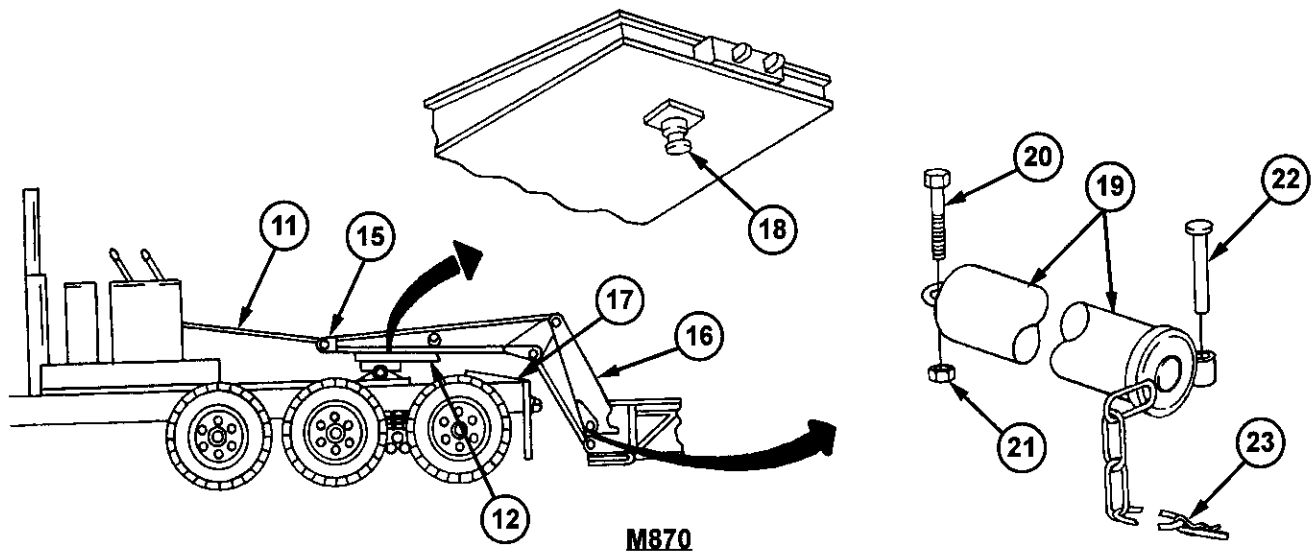
### c. Coupling of Semitrailer to Towing vehicle

1. Line up towing vehicle (9) with semitrailer (10).
2. Slowly back towing vehicle (9) to within three feet of front of semitrailer (10).
3. With towing vehicle (9) in neutral and power takeoff engaged, release winch cable (11).
4. Pass winch cable (11) over fifth wheel (12) and guide roller (13). Attach winch cable (11) to lifting eye (14) on semitrailer nose (15).



## 2-8. PREPARATION FOR USE (continued).

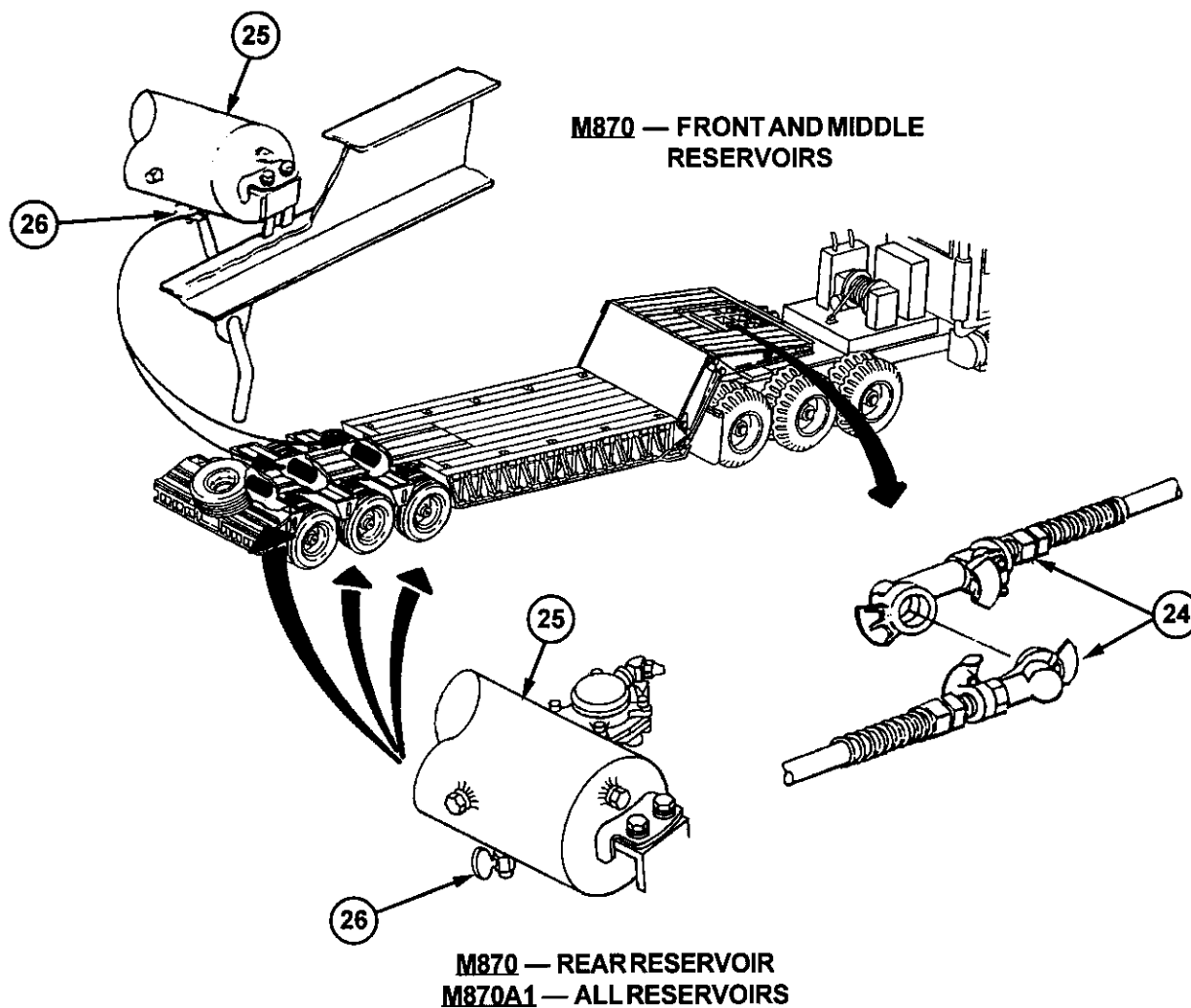
5. Take up winch cable (11) until gooseneck (16) is in maximum upright position. Allow semitrailer and towing vehicle to roll together.
6. Pull semitrailer nose (15) up the approach ramp (17) and into fifth wheel (12) until kingpin (18) engages and locks in place.
7. For the M870, put lockpins (19) on each side of gooseneck (16) and install safety bolts (20), nuts (21), safety locking pins (22), and safety clips (23).



For the M870A1, put lockpins (19) on each side of gooseneck (16). Make sure safety latches on locking pins lay flat against frame of semitrailer and in holder.

## 2-8. PREPARATION FOR USE (continued).

8. Connect gladhands (24) to towing vehicle air supply, and fill air reservoirs (25). Make sure reservoir drain cocks (26) are closed.



### CAUTION

The semitrailer is equipped with both 12-volt and 24-volt receptacles. To avoid equipment damage, be sure proper receptacle is used.

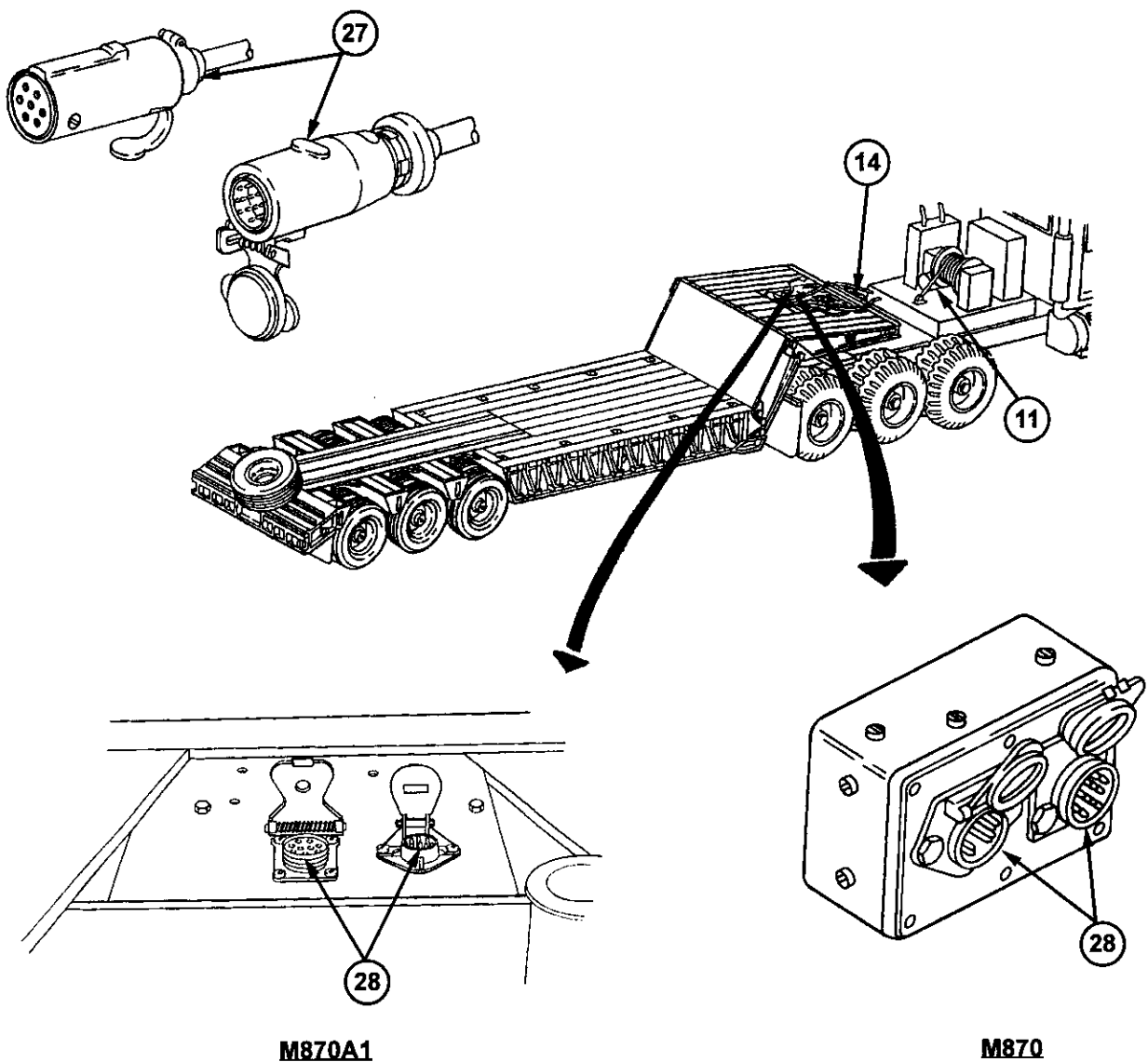
9. Connect intervehicular cable connector (27) to connector receptacle (28).

## 2-8. PREPARATION FOR USE (continued).

## NOTE

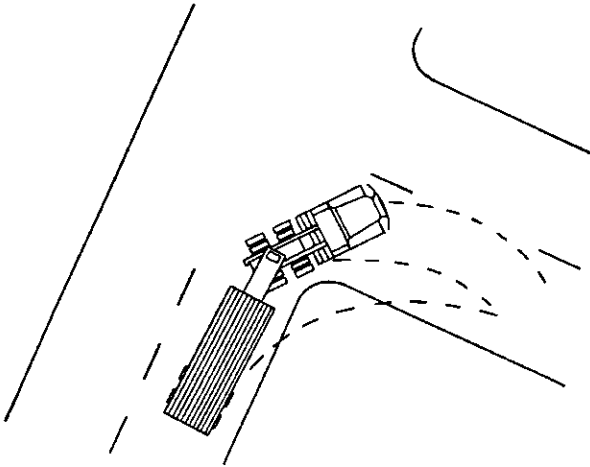
If 12-volt system is used for the M870A1, the blackout lights will not operate.

10. Turn on towing vehicle lights. Check to see that semitrailer brake lights, clearance lights, and turn lights work.
11. Release winch cable (11) from lifting eye (14), and secure winch cable (11).
12. Move load to forward position on semitrailer.
13. Tie down load with chain assemblies (Item 2, Appendix C, Section II) and load binders (Item 1, Appendix C, Section II). Semitrailer is now ready for travel.

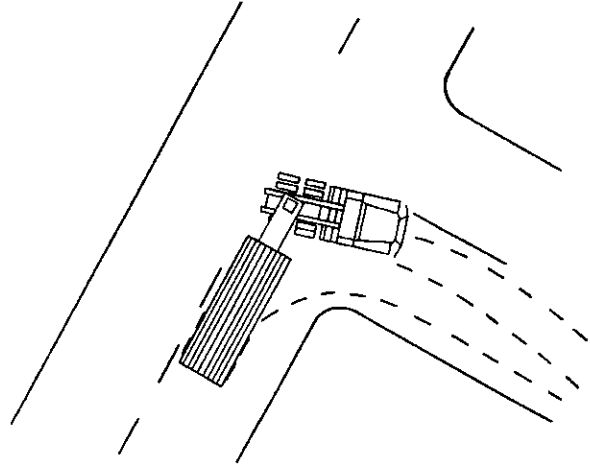


## 2-9. OPERATING PROCEDURES.

- a. **Driving.** When driving the towing vehicle and semitrailer, the overall length of the unit must be kept in mind when passing other vehicles and when turning. Because the unit is hinged in the middle, backing is also affected.
- b. **Turning.** When turning corners, allow for the semitrailer wheels turning inside the radius of the towing vehicle. Make a right turn by driving the towing vehicle about halfway into the intersection and then cutting sharply to the right.



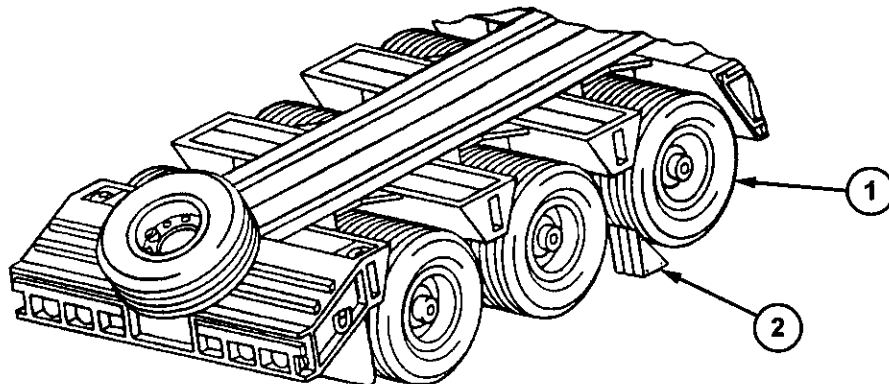
WRONG



RIGHT

- c. **Stopping.** During normal operation, the brakes of the towing vehicle and the semitrailer are applied at the same time when the driver steps on the brake pedal. Brake pressure should 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 should be applied slowly before the towing vehicle brakes. This will reduce the possibility of jackknifing the semitrailer.
- d. **Parking.** When the towing vehicle and semitrailer are to be parked and left unattended, set the parking brake on the towing vehicle. Apply the semitrailer handbrake control, and turn off the engine before leaving the cab.

For the M870, block the semitrailer wheels (1) with chock blocks (2). Block behind front wheels on uphill grades and in front of back wheels on downhill grades.



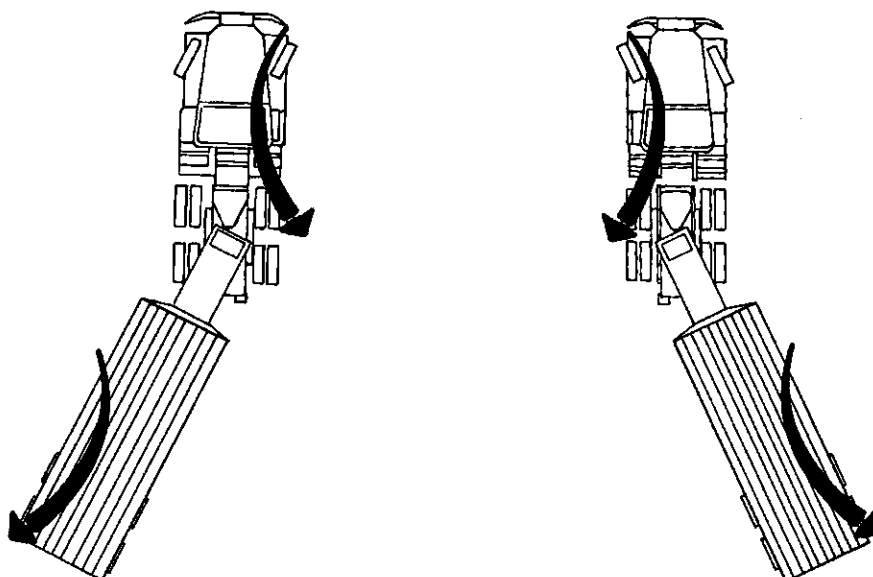


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## 2-9. OPERATING PROCEDURES (continued).

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- e. **Backing.** When backing, use an assistant as a ground guide to direct you. Adjust rearview mirrors before backing. When backing, the rear of the semitrailer will move in the opposite direction from the front towing vehicle wheels. 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.



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## 2-10. AFTER USE.

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- a. Uncoupling of Towing vehicle from Semitrailer

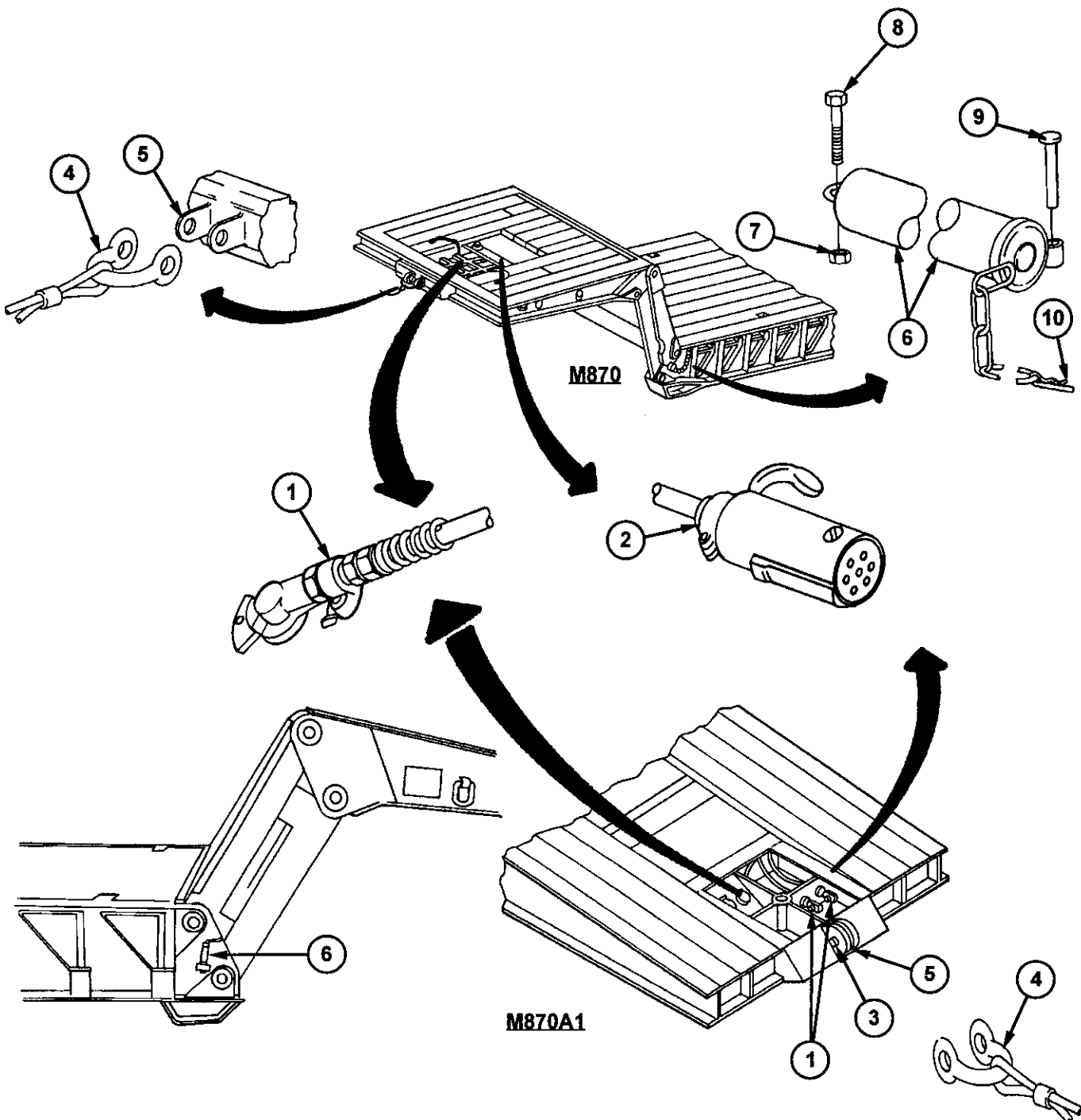
**CAUTION**

**Payload must be positioned over rear axles before doing uncoupling procedure.  
Failure to do so will cause damage to semitrailer.**

1. Untie payload and move it to rear of semitrailer.

## 2-10. AFTER USE (continued).

2. Unhook gladhands (1) and intervehicular cable connector (2) from towing vehicle.
3. Remove lifting-eye pin (3) (found only on the M870A1). Attach winch cable assembly (4) to lifting eye (5).
4. For the M870, remove two locking pins (6), one from each side of semitrailer. Install two safety nuts (7), bolts (8), safety locking pins (9), and safety clips (10) on locking pins (6), to prevent loss. For the M870A1, remove locking pin (6) from each side of trailer.



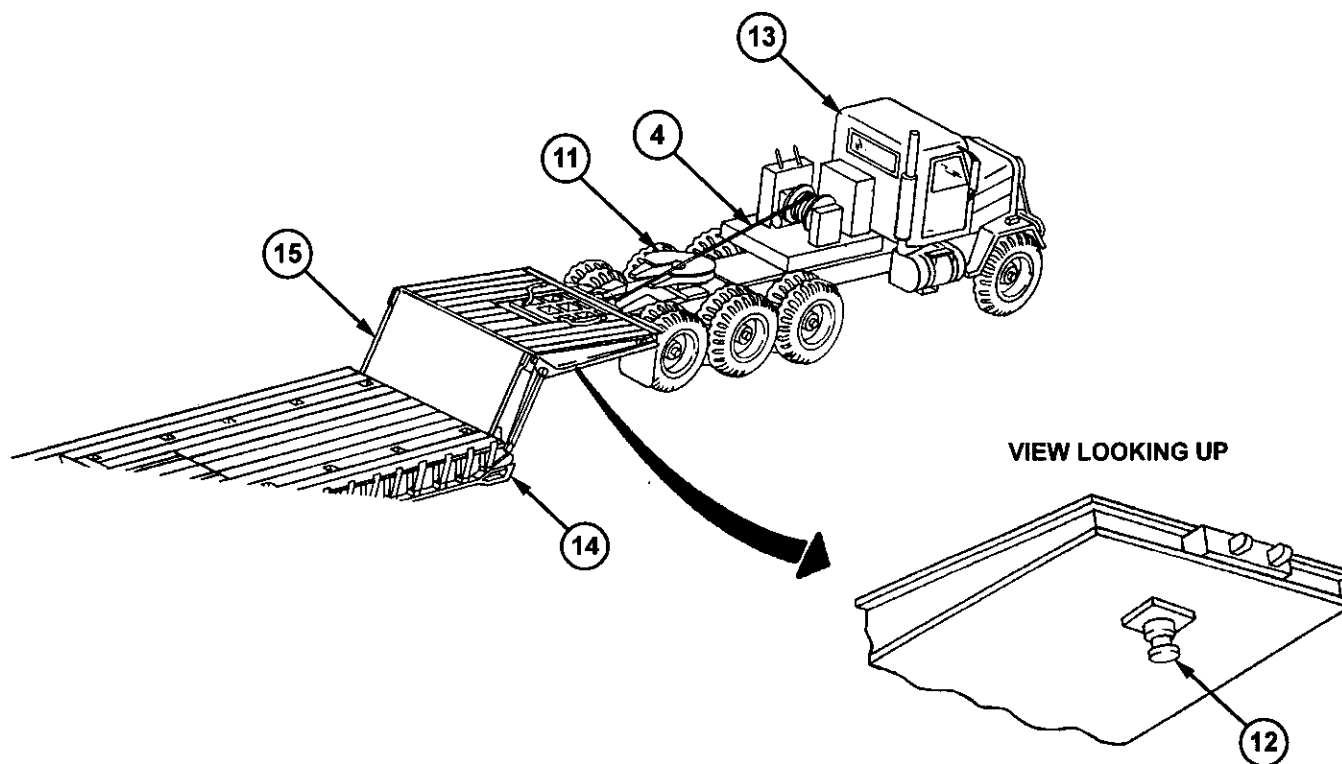
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**2-10. AFTER USE (continued).**

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**CAUTION**

- When loading or unloading over the front of the trailer, the terrain must allow full ground contact across front edge of gooseneck before loading begins. Failure to have full ground contact across front edge of gooseneck prior to loading or unloading will cause damage to semitrailer and void the warranty.
  - To prevent damage to the equipment, uncoupling should be done by two people, one to operate the towing vehicle and the other to operate the winch. Towing vehicle should not be left unattended with engine running.
  - When uncoupling on soft ground or rough terrain, towing vehicle may not roll forward as winch cable is released. It will be necessary to move towing vehicle forward each time more winch cable is released. Do not release too much cable before moving towing vehicle forward because gooseneck may damage towing vehicle taillights or towing pintle.
5. Unlock fifth wheel (11) from semitrailer kingpin (12).
  6. Release enough winch cable (4) to allow towing vehicle (13) to roll forward until semitrailer landing pads (14) touch the ground.
  7. Continue to release winch cable (4), and allow towing vehicle to roll forward as gooseneck (15) extends fully and reaches ground position.

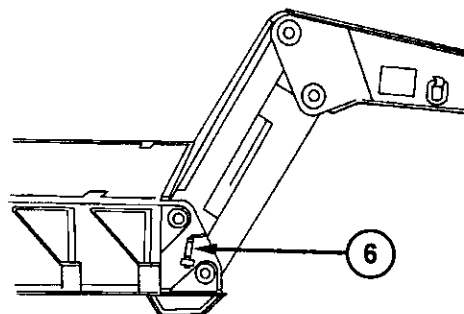
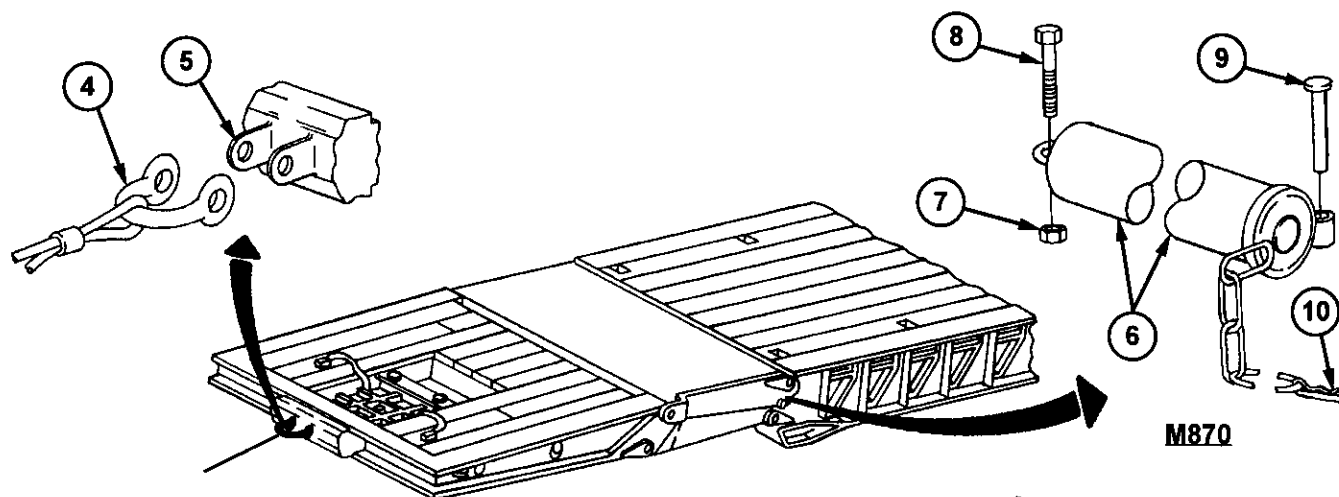


## 2-10. AFTER USE (continued).

8. For the M870, install two locking pins (6), safety nuts (7), bolts (8), safety locking pins (9), and safety clips (10) on semitrailer.

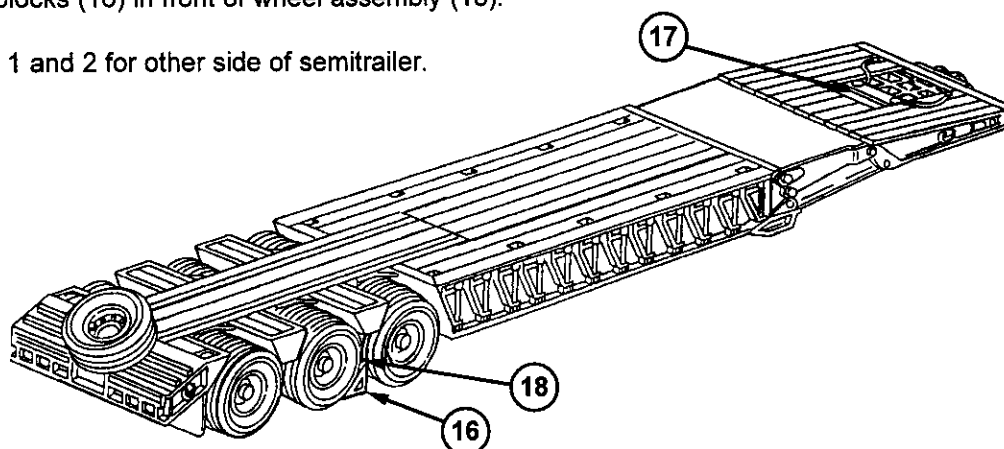
For the M870A1, install two locking pins (6) on semitrailer.

9. Unhook winch cable (4) from lifting eye (5). Move towing vehicle away from semitrailer.



### b. Placing of Chock Blocks (M870)

1. Remove chock blocks (16) from stowage bin (17).
2. Place chock blocks (16) in front of wheel assembly (18).
3. Repeat steps 1 and 2 for other side of semitrailer.



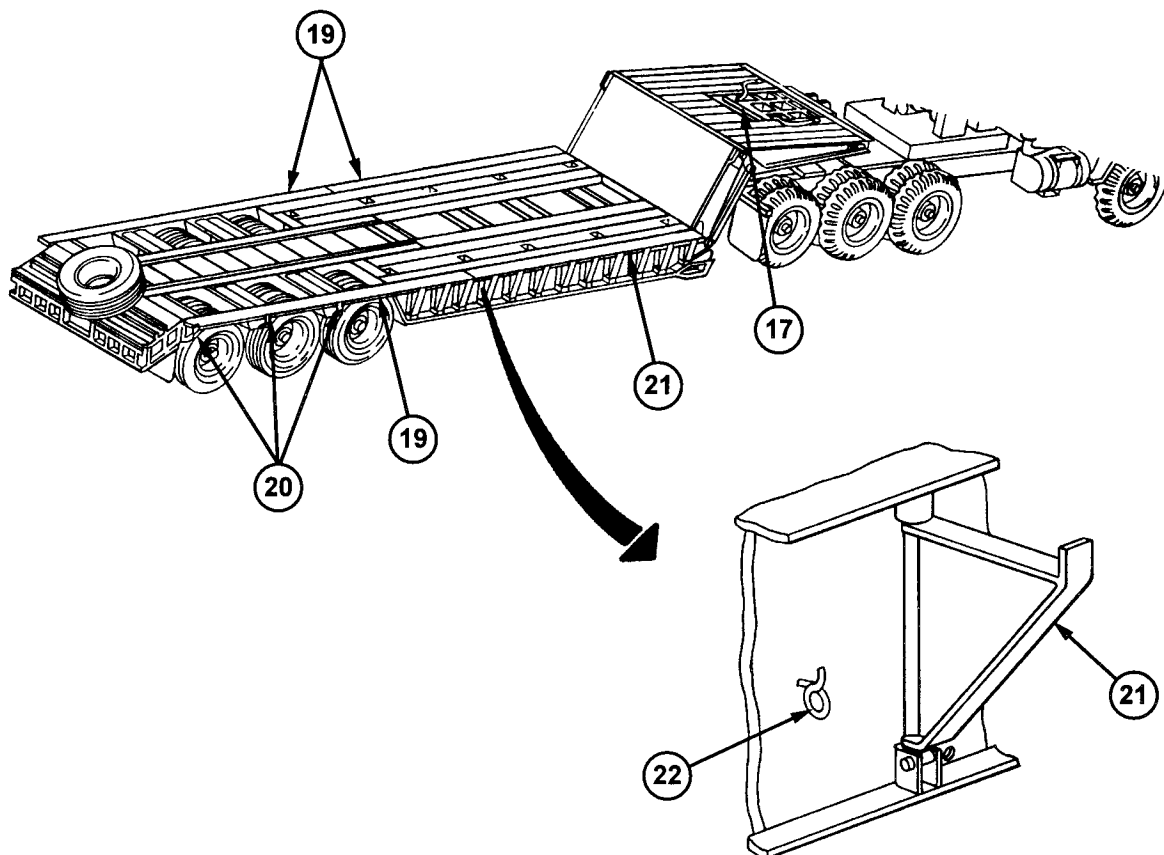
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**2-10. AFTER USE (continued).**

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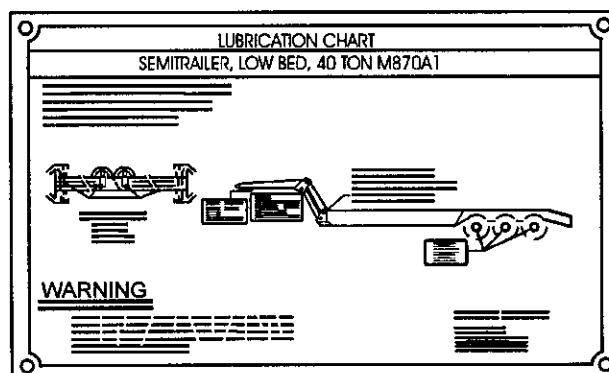
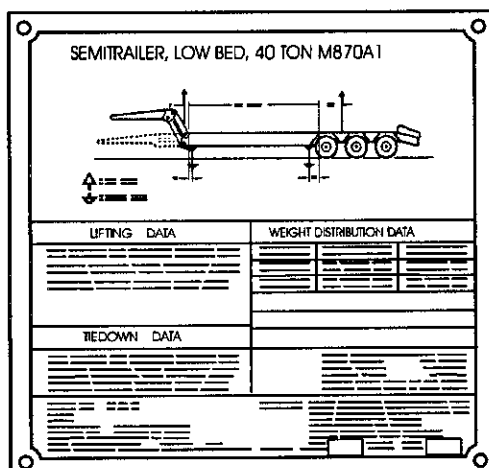
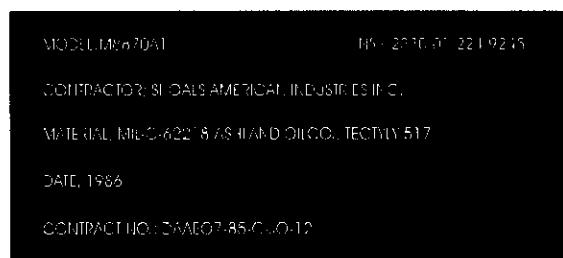
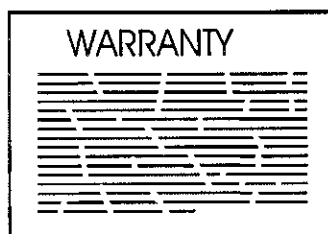
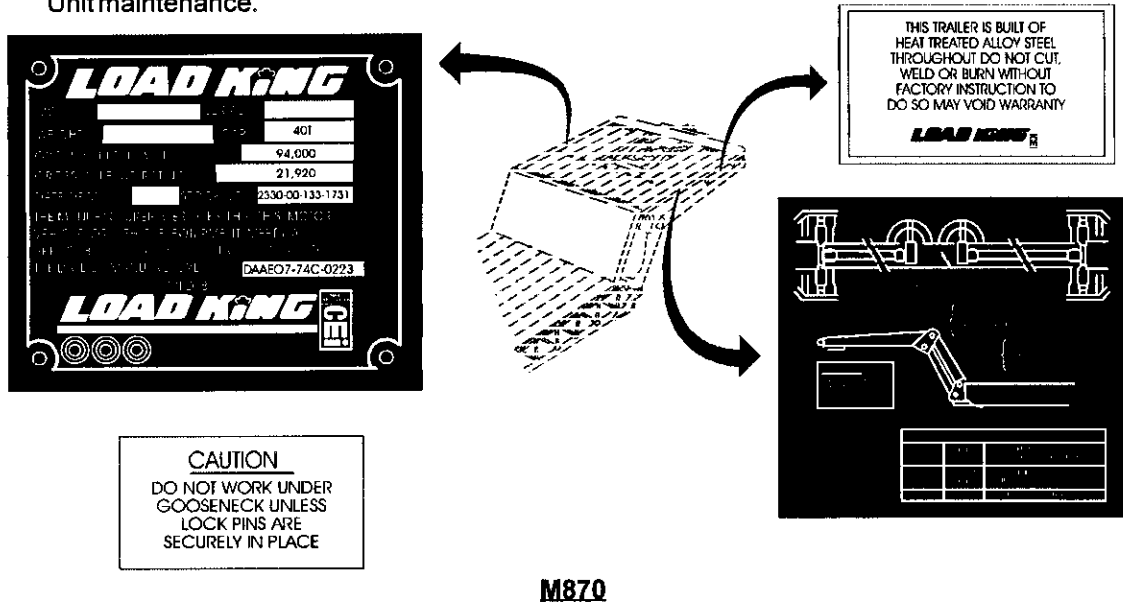
**c. Stowing Planks and Outriggers After Unloading.**

1. Unload cargo or equipment.
2. Remove planks (19) from rear outriggers (20).
3. Remove rear outriggers (20) from semitrailer and stow in stowage bin (17).
4. Remove planks (19) from front outriggers (21).
5. Fold front outriggers (21) against semitrailer and secure with hook fasteners (22).
6. Stow planks (19) in center of semitrailer.



## 2-11. LOCATION AND CONTENTS OF DATA PLATES.

- The M870 has a lubrication plate, a welding plate, an identification plate, and two gooseneck caution plates on the side of the gooseneck.
- The M870A1 has a lubrication plate, a warranty plate, a data plate, and a manufacturer's plate on the side on the gooseneck.
- Maintain data plates so that all information remains legible. If any data plate is missing or no longer legible, notify Unit maintenance.



**M870A1**

## Section IV. OPERATION UNDER UNUSUAL CONDITIONS

Paragraph Number	Paragraph Title	Page Number
2-12	General .....	2-29
2-13	Operation in Extreme Cold .....	2-29
2-14	Operation in Extreme Heat and High Humidity .....	2-30
2-15	Operation in Sandy or Dusty Areas .....	2-30
2-16	Operation in Mud and Snow .....	2-30
2-17	Operation in Saltwater Areas .....	2-31
2-18	Operation on Rocky Terrain .....	2-31
2-19	Fording .....	2-31

**2-12. GENERAL.**

- a. This section contains special instructions for operating and servicing the semitrailer under unusual conditions.
- b. In addition to performing all the usual PMCS procedures, special care must be taken in regard to cleaning and lubrication when extremes in temperature, humidity, and terrain conditions are present or anticipated. Proper cleaning, lubrication, storage, and handling ensures proper operation and function and also guards against excessive wear.
- c. When chronic failure of material results from subjection to extreme conditions, report the condition on SF Form 368.

**2-13. OPERATION IN EXTREME COLD.**

- a. Operation
  1. Insulation may crack and cause electrical short circuits. Construction materials can become hard, brittle, and easily damaged or broken. Handle construction materials with care in extreme cold.
  2. Tires may freeze to the ground or have a flat spot if underinflated.
  3. Brakeshoes may freeze to brakedrums and may need to be preheated 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. Refer to Appendix J for proper lubrication during extreme cold weather conditions.
- b. At-Halt Parking
  1. When parking short term, park in a sheltered area out of the wind.
  2. When parking long term, prepare a footing of planks or brush if high, dry ground is not available.
  3. Remove all buildup of ice and snow as soon as possible after shutdown.

---

## 2-13. OPERATION IN EXTREME COLD (continued).

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4. Cover and shield the semitrailer with canvas covers if available. Keep ends of covers off the ground to keep them from freezing to the ground.

---

## 2-14. OPERATION IN EXTREME HEAT AND HIGH HUMIDITY.

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- a. Refer to Appendix J for proper lubrication during extreme heat conditions. Adequate lubrication is essential. Extreme heat will cause oil films to evaporate, resulting in inadequate lubrication.
- b. Keep tires protected from direct sunlight to prevent increases in air pressure and deterioration of rubber.
- c. Cover inactive semitrailer with tarpaulins, if they are available and if there is no other available shelter. For several hours each week, shake out and air canvas covers or other items subject to deterioration from mildew or attacks by insects or vermin.
- d. If inactive for long periods in hot, humid weather, semitrailers are subject to rapid rusting and accumulation of fungi growth. Frequently inspect, clean, and lubricate to prevent excessive deterioration.

---

## 2-15. OPERATION IN SANDY OR DUSTY AREAS.

---

### CAUTION

**Do not tow, pull, or push semitrailer by the rear bumper. This may cause damage to the equipment.**

- a. Inspect, clean, and lubricate semitrailer frequently when operating in dusty or sandy areas. Refer to Appendix J for proper lubrication instructions.
- b. Reduce tire pressure to 35 psi (241.3 kPa) for operation in beach or desert sand.
- c. Be sure to return tire pressure to normal (90 psi [620 kPa] for the M870A1 or 85 psi [586 kPa] for the M870) after operation in sand.
- d. Make sure no dust or sand enters exposed mechanisms or lubrication fittings during inspections and repair operations. Cover exposed parts with tarpaulins or other suitable cover during disassembly and assembly.

---

## 2-16. OPERATION IN MUD AND SNOW.

---

### CAUTION

**Do not tow, pull, or push semitrailer by the rear bumper. This may cause damage to the equipment.**

### NOTE

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

- a. Frequently clean, inspect, and lubricate semitrailer. Refer to Appendix J for proper lubrication instructions.



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**2-16. OPERATION IN MUD AND SNOW (continued).**

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- b. Reduce tire pressure to 35 psi (241.3 kPa) while operating in soft mud, if practical.
- c. If one or more wheels sink into mud, you may need to jack up mired wheel and put planking or matting under it.
- d. After each operation remove ice, snow, and mud from underneath semitrailer and from hoses, lines, tubes, and electrical connections.
- e. Return tire pressure to normal (90 psi [620 kPa] for the M870A1 or 85 psi [586 kPa] for the M870) after operation in mud.

---

**2-18. OPERATION IN SALTWATER AREAS.**

---

- a. Wash salt deposits from all equipment with fresh water.
- b. Moist and salty areas can destroy the rust-preventative qualities of oils and greases. When equipment is active, exposed surfaces should be cleaned and lubricated daily. Refer to Appendix J for proper lubrication in high humidity and saltwater areas.
- c. When equipment is inactive, unpainted parts should be coated with lubricating oil (refer to Appendix J). All covers and caps should be in place.

---

**2-18. OPERATION ON ROCKY TERRAIN.**

---

- a. Tires must be fully inflated (90 psi [620 kPa] for the M870A1 or 85 psi [586 kPa] for the M870) when moving on rough or rocky terrain. Underinflated tires will cause internal ruptures of tires and damage to tubes.
- b. Before driving over stumps or rocks, make sure the semitrailer can clear them. Such objects can damage components on the underside of the semitrailer. Beware of low hanging limbs that can damage cargo.
- c. Be sure you have a serviceable spare tire and rim assembly because there is a greater than usual chance of tire puncture.

---

**2-19. FORDING.**

---

- a. Before Fording
  - 1. Refer to operating instructions in towing vehicle technical manual for information on fording operations. Towing vehicle fording instructions are also applicable.
  - 2. The fording depth of M870/M870A1 semitrailer is limited to the fording depth limit of the cargo or the towing vehicle, whichever is lower.
  - 3. Before entering the water, check bottom surface conditions. If bottom is too soft, do not ford.
  - 4. Cables and terminals must be protected by spraying with silicone compound (Item 17, Appendix F).

---

## 2-20. FORDING (continued).

---

b. After Fording

1. After coming out of the water, apply brakes a few times to help dry out brake linings. Make sure semitrailer brakes are working before driving at normal speeds.
2. Drain or dry all areas where water has collected.
3. Lubricate all unpainted surfaces. See lubrication chart (Appendix J).
4. Wheel bearings should be cleaned and filled with lubricant as specified on the lubrication chart (Appendix J).
5. Dry all lubrication points and lubricate. See lubrication chart (Appendix J).

## **CHAPTER 3 OPERATOR MAINTENANCE INSTRUCTIONS**

### **Section I. LUBRICATION INSTRUCTIONS**

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#### **3-1. LUBRICATION INSTRUCTIONS.**

---

Lubrication instructions are in Appendix J of this manual. All lubrication instructions are mandatory.

## Section II. OPERATOR/CREW TROUBLESHOOTING PROCEDURES

Paragraph Number	Paragraph Title	Page Number
3-2	General .....	3-2
3-3	Quick Guide to Troubleshooting .....	3-3
3-4	Troubleshooting Chart .....	3-4

**3-2. GENERAL.**

- a. This section provides information for identifying and correcting malfunctions that may develop while operating your semitrailer.
- b. The Quick Guide to Troubleshooting (para 3-3) lists common malfunctions that may occur and refers you to paragraph 3-4, Troubleshooting Chart, for the appropriate troubleshooting procedures. You should perform the tests/inspections and corrective actions in the order listed.
- c. If you are unsure of the location of an item mentioned in troubleshooting, refer to paragraph 1-13 or to the maintenance task where the item is replaced.
- d. Before performing troubleshooting, read and follow all safety instructions listed in the warning summary at the beginning of this manual.
- e. This section cannot list all the malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed or is not corrected by the corrective action listed, notify your supervisor or Unit maintenance.
- f. When troubleshooting a malfunction:
  - Locate the symptom(s) in the Quick Guide to Troubleshooting (para 3-3) that best describes the malfunction.
  - Turn to the page in the Troubleshooting Chart (para 3-4) where the troubleshooting procedures for the symptom(s) in question is described.
  - Perform each step in the order listed until the malfunction is corrected. DO NOT perform any maintenance task unless the troubleshooting procedure tells you to do so.

---

**3-3. QUICK GUIDE TO TROUBLESHOOTING.**

---

<b><u>ITEM</u></b>	<b><u>SYMPTOM</u></b>	<b><u>PARAGRAPH</u></b>
LIGHTS	NO LIGHTS WORK.	para 3-4a(1)
	ONE OR MORE (BUT NOT ALL) LIGHTS DO NOT WORK.	para 3-4a(2)
BRAKES	BRAKES WILL NOT APPLY OR WILL NOT RELEASE.	para 3-4b(1)
	BRAKES GRAB.	para 3-4b(2)
TIRES	TIRES ARE EXCESSIVELY WORN, SCUFFED, OR CUPPED.	para 3-4c(1)
GOOSENECK	GOOSENECK WILL NOT RAISE OR LOWER.	para 3-4d(1)

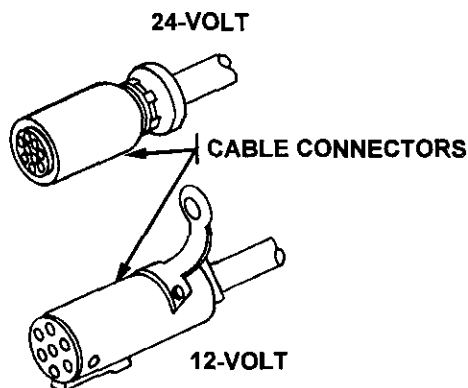
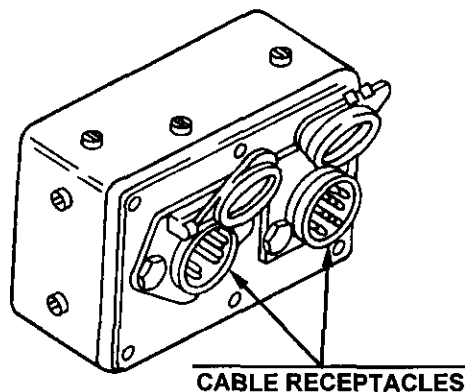
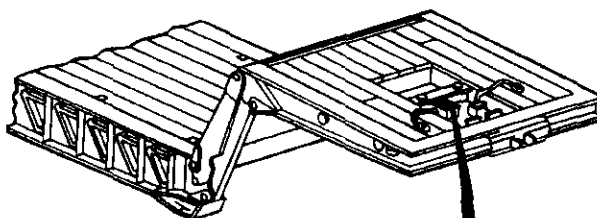
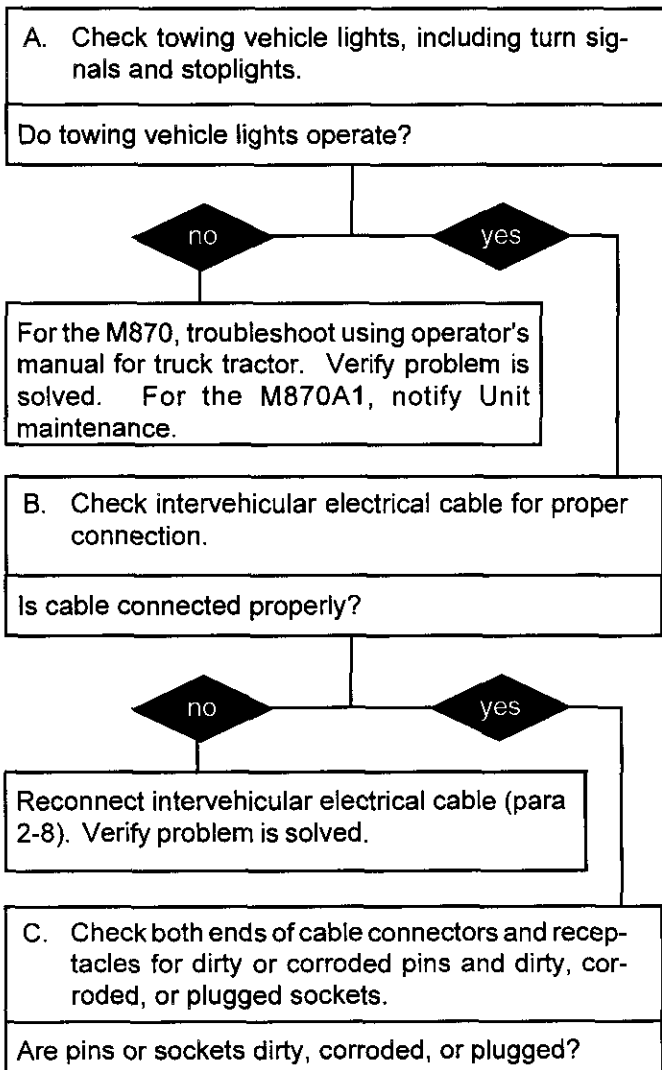
### 3-4. TROUBLESHOOTING CHART.

a. LIGHTS

(1) NO LIGHTS WORK.

#### **WARNING**

**Make sure all electrical power is disconnected before performing any maintenance on the electrical system. Serious injury or death may occur if safety precautions are not observed.**



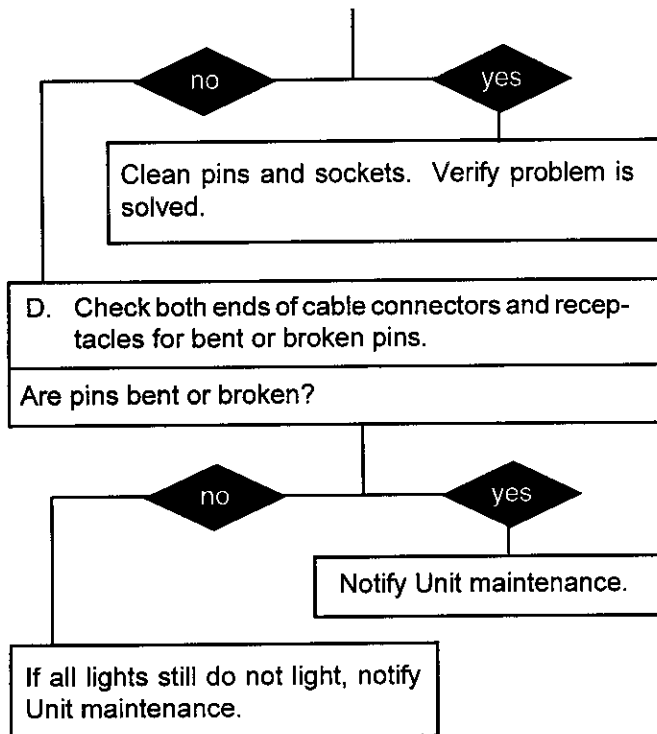
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### 3-4. TROUBLESHOOTING CHART (continued).

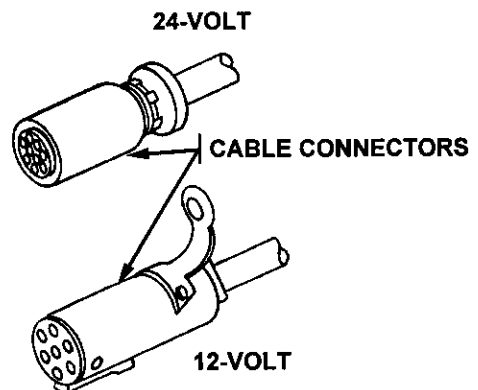
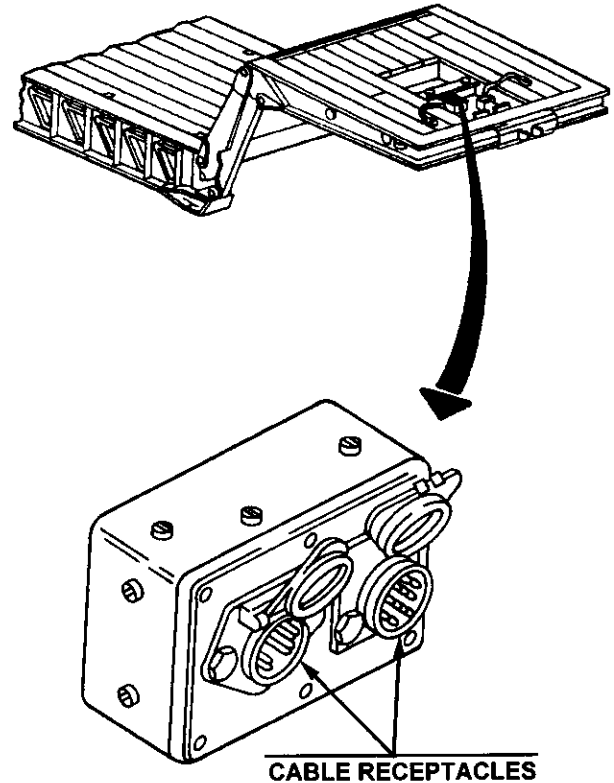
a. LIGHTS (continued)

(1) NO LIGHTS WORK (continued).

CONTINUED FROM C



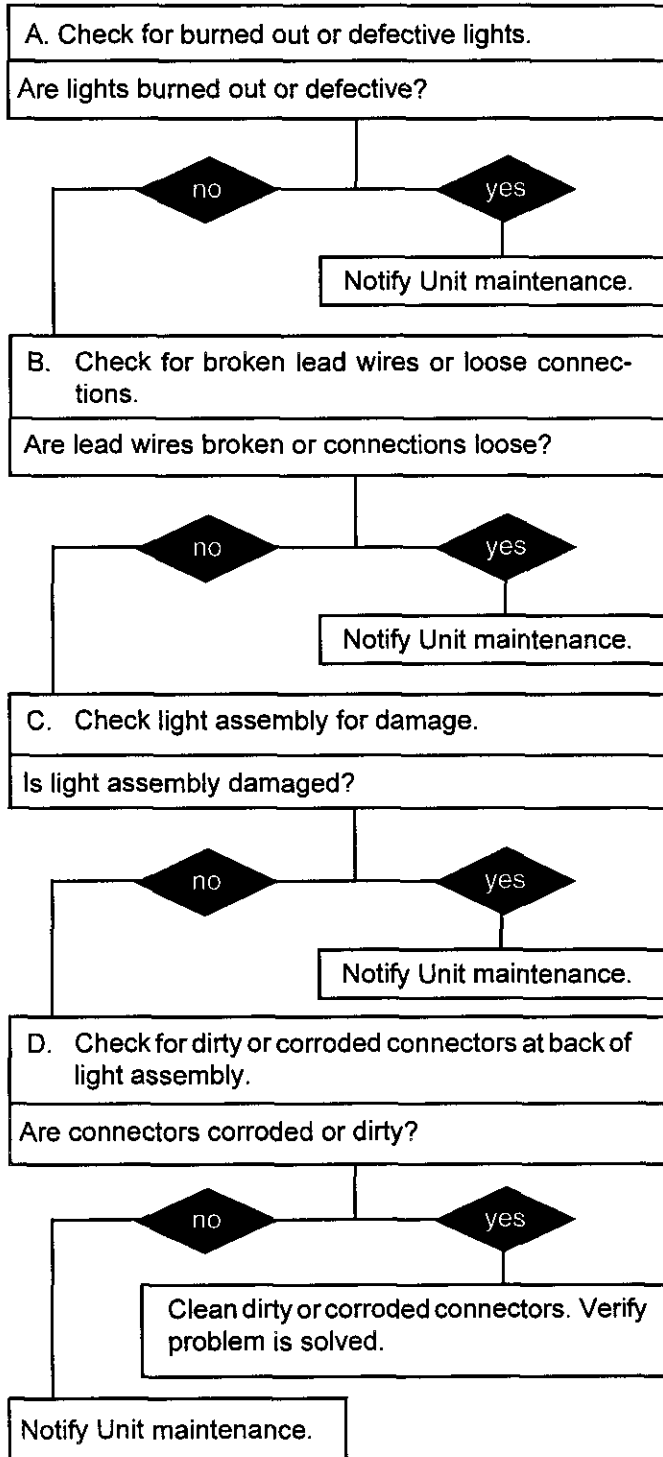
END OF TASK



### 3-4. TROUBLESHOOTING CHART (continued).

a. LIGHTS (continued)

(2) ONE OR MORE (BUT NOT ALL) LIGHTS DO NOT WORK.



END OF TASK



### 3-4. TROUBLESHOOTING CHART (continued).

#### b. BRAKES

(1) BRAKES WILL NOT APPLY OR WILL NOT RELEASE.

A. Check to see if air supply from truck tractor is turned on.

Is air supply turned on?

no

yes

Turn on air supply. Verify problem is solved.

B. Check air pressure on truck tractor.

Is air pressure on truck tractor low?

no

yes

Build up air pressure to normal level (refer to operator's manual for truck tractor). Verify problem is solved.

C. Check air-line connection at gladhands.

Are air lines properly connected (emergency to emergency and service to service)?

no

yes

Reconnect air lines properly (para 2-8). Verify problem is solved.

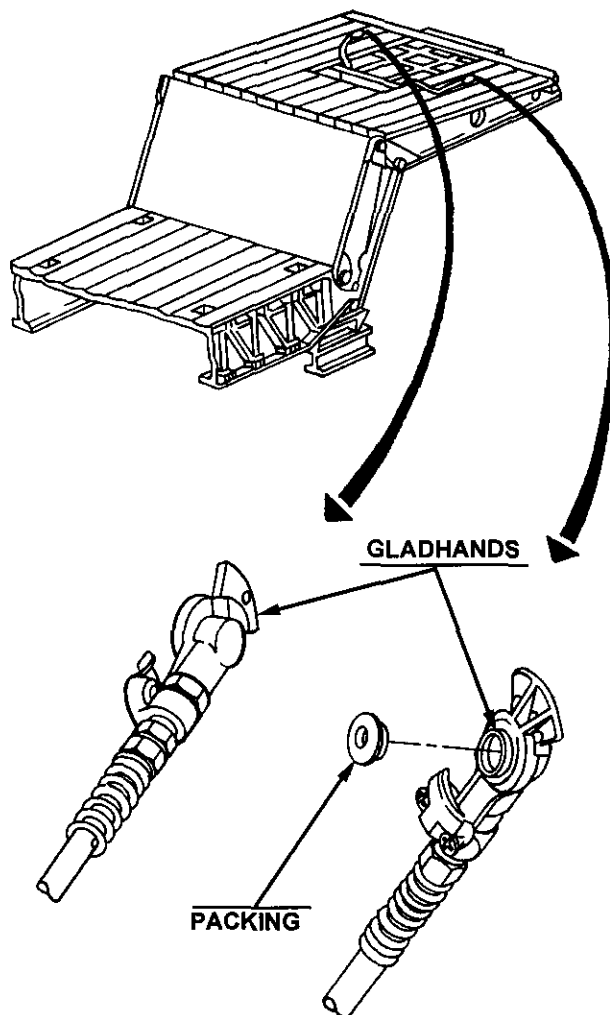
D. Check for dirty packing in gladhands.

Is packing dirty?

no

yes

Clean packing (para 3-7). Verify problem is solved.



continued on next page

### 3-4. TROUBLESHOOTING CHART (continued).

b. BRAKES (continued)

(1) BRAKES WILL NOT APPLY OR WILL NOT RELEASE (continued).

CONTINUED FROM D

E. Check for damaged or leaking gladhands.

Are gladhands damaged or leaking?

no

yes

Notify Unit maintenance.

F. Check brake hoses and connectors for damage or leaks by listening for hissing sound while system is under pressure.

Are brake hoses or connectors damaged or leaking?

no

yes

Notify Unit maintenance.

#### **WARNING**

**Wear eye protection when working with air under pressure. Failure to do so could result in eye injury.**

G. Check for open drain cock on each of three air reservoirs.

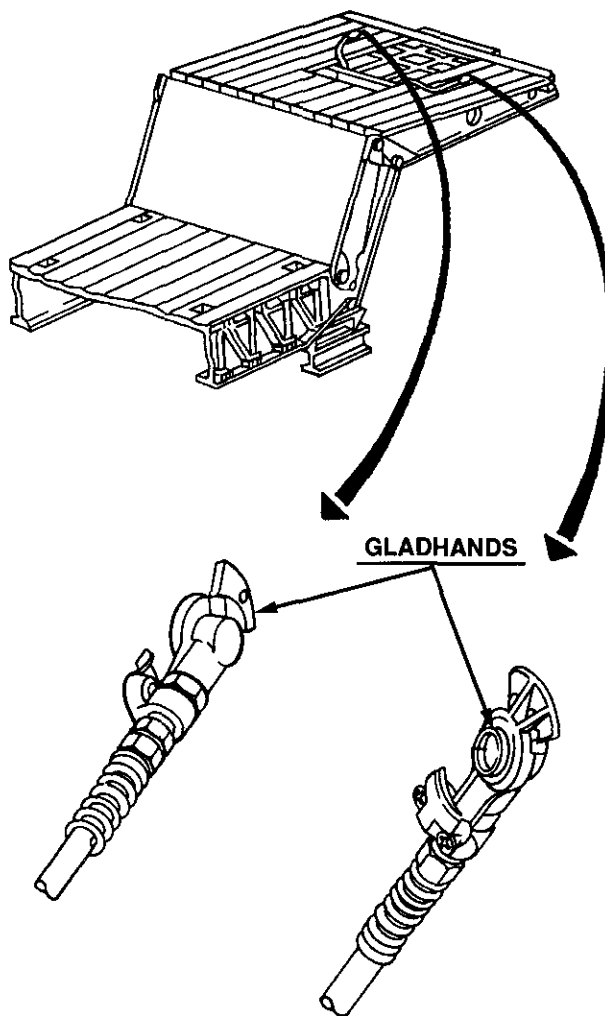
Are any drain cocks open?

no

yes

Close drain cock(s). Verify problem is solved.

If drain cocks are closed and brakes still do not apply or do not release, notify Unit maintenance.



END OF TASK

### 3-4. TROUBLESHOOTING CHART (continued).

b. BRAKES (continued)

(2) BRAKES GRAB.

#### **WARNING**

**Wear eye protection when working with air under pressure. Failure to do so could result in eye injury.**

Check for moisture in front, middle, and rear air reservoirs by opening drain cocks.

Is moisture present in any air reservoir?

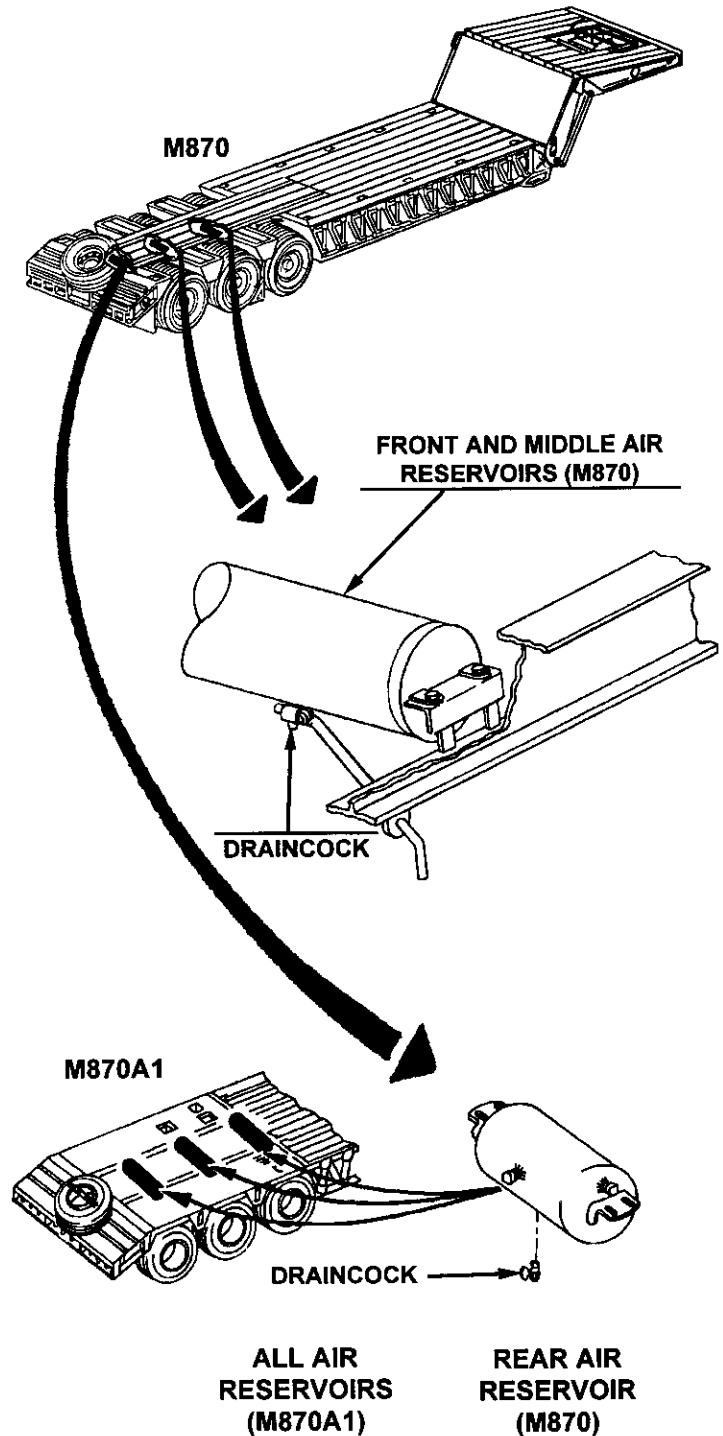
no

yes

Allow moisture to drain (para 3-8). Verify problem is solved.

If air reservoirs are dry and brakes still grab, notify Unit maintenance.

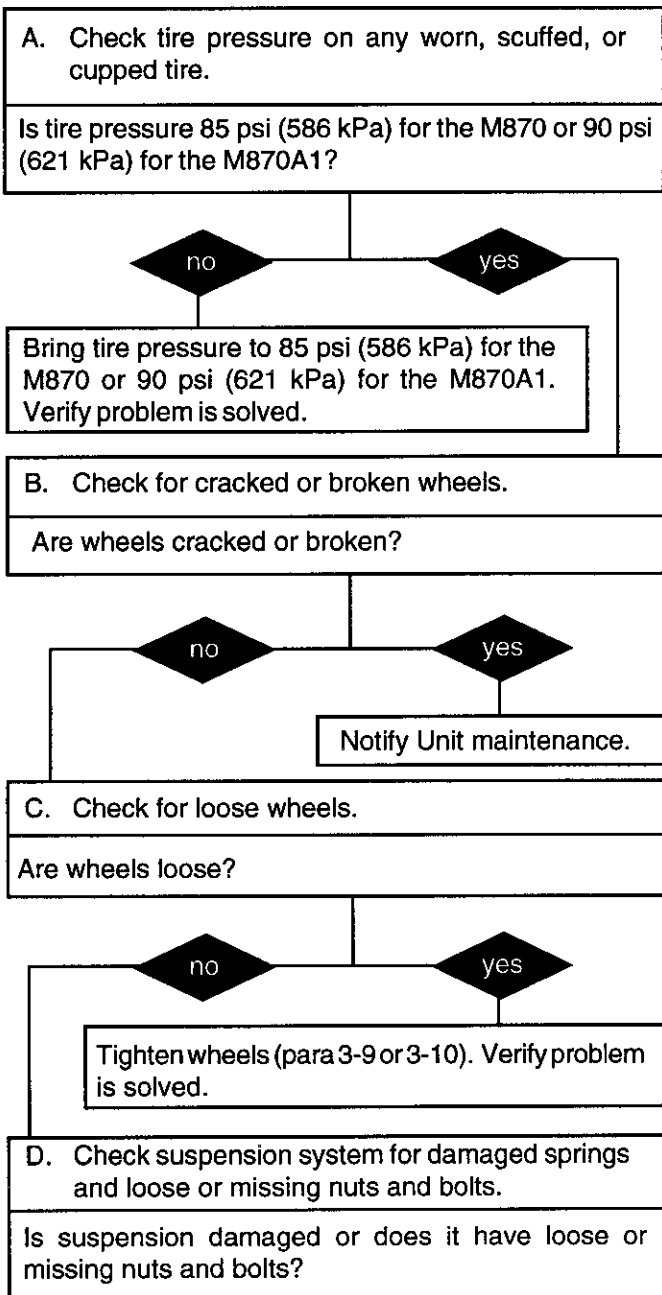
**END OF TASK**



### 3-4. TROUBLESHOOTING CHART (continued).

c. TIRES

(1) TIRES ARE EXCESSIVELY WORN, SCUFFED, OR CUPPED.



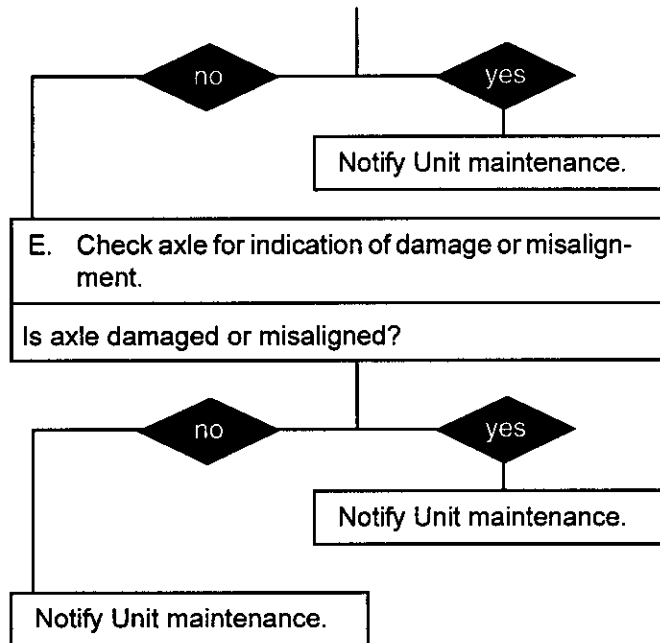
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### 3-4. TROUBLESHOOTING CHART (continued).

c. TIRES (continued)

(1) TIRES ARE EXCESSIVELY WORN, SCUFFED, OR CUPPED (continued).

CONTINUED FROM D

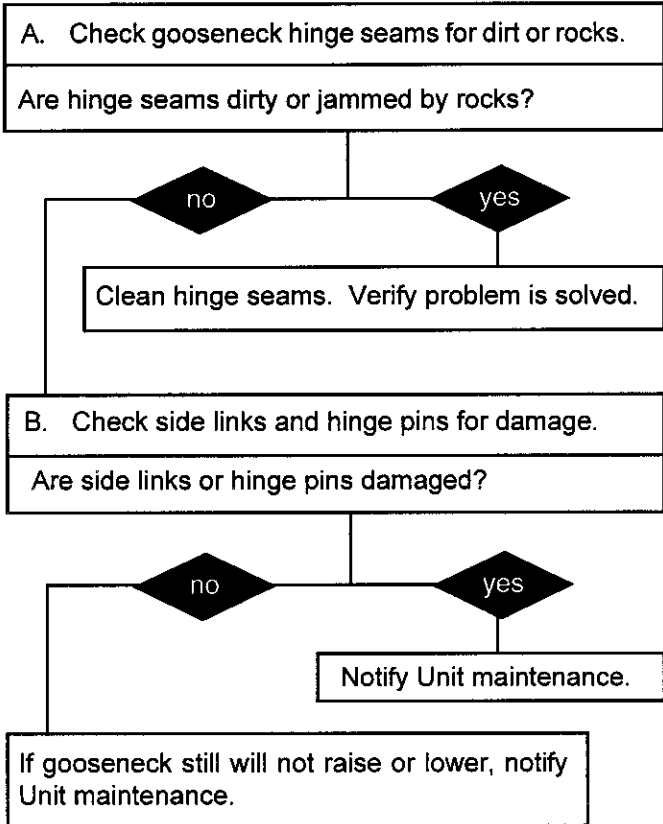


END OF TASK

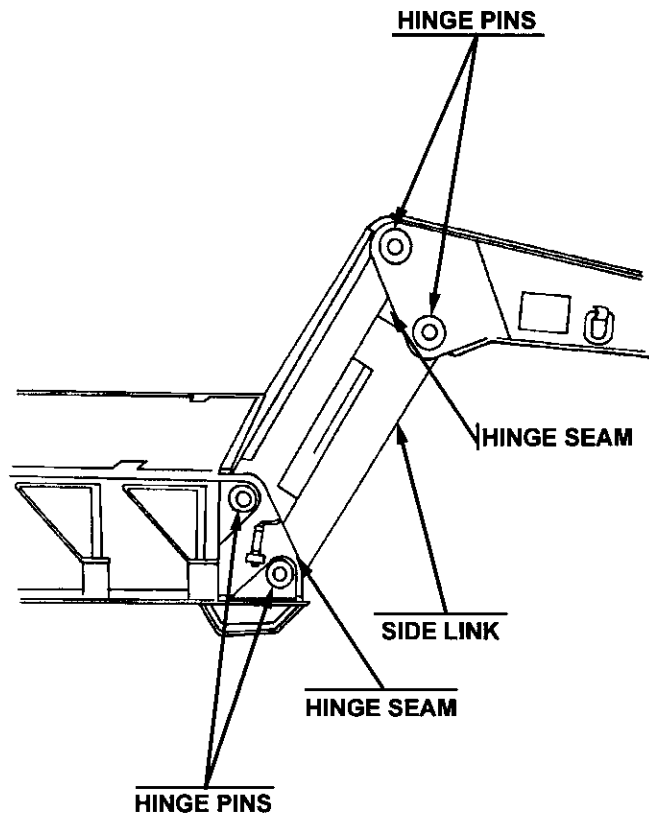
### 3-4. TROUBLESHOOTING CHART (continued).

d. GOOSENECK

(1) GOOSENECK WILL NOT RAISE OR LOWER.



END OF TASK



## Section III. OPERATOR MAINTENANCE PROCEDURES

Paragraph Number	Paragraph Title	Page Number
3-5	General .....	3-13
3-6	Electrical Connectors Service .....	3-13
3-7	Gladhands Service .....	3-15
3-8	Air Reservoirs Service .....	3-16
3-9	Tire and Wheel Assembly Replacement (M870) .....	3-18
3-10	Tire and Wheel Assembly Replacement (M870A1) .....	3-21
3-11	Spare Tire and Wheel Assembly Replacement (M870) .....	3-24
3-12	Spare Tire and Wheel Assembly Replacement (M870A1) .....	3-25

**3-5. GENERAL.**

This section provides maintenance instructions for those items that are the responsibility of the operator/crew. The maintenance functions are limited to those operations that are authorized by the maintenance allocation chart (MAC) (Appendix B).

**3-6. ELECTRICAL CONNECTORS SERVICE.**

*This Task Covers:*

Cleaning

*Initial Setup:*

**Materials/Parts:**

- Brush (Item 2, Appendix F)
- Detergent (Item 4, Appendix F)
- Rag (Item 15, Appendix F)

---

### 3-6. ELECTRICAL CONNECTORS SERVICE (continued).

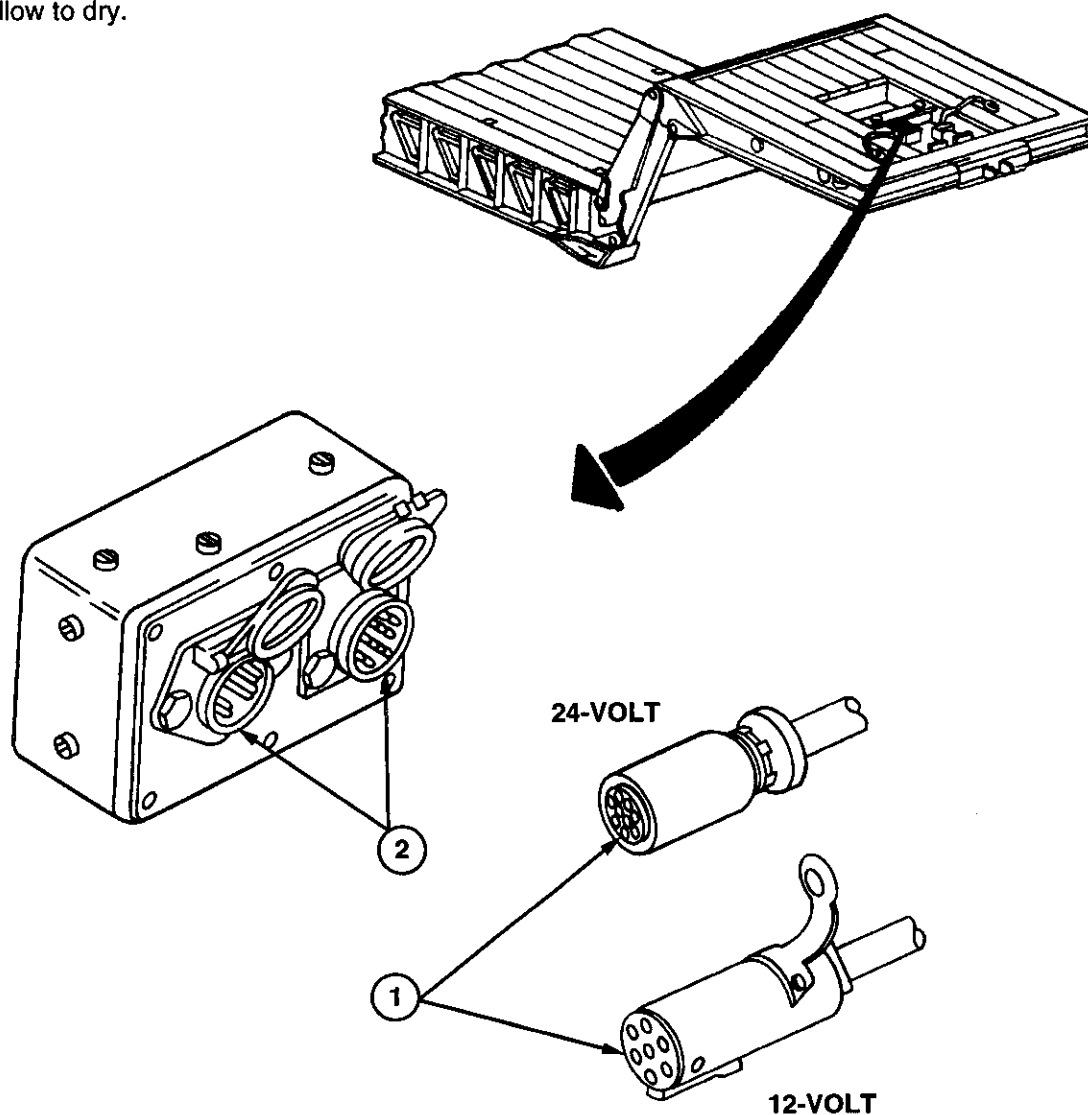
---

#### CLEANING

#### WARNING

**Make sure all electrical power is disconnected before performing any maintenance on the electrical system. Serious injury or death may occur if safety precautions are not observed.**

- a. Use a rag to remove any buildup of grease and dirt from electrical cable connectors (1) and connector receptacles (2).
- b. Using brush and detergent, clean metal surfaces.
- c. Allow to dry.



#### FOLLOW-ON TASKS:

- None



---

### 3-7. GLADHANDS SERVICE.

---

*This Task Covers:*

Cleaning

---

*Initial Setup:*

**Materials/Parts:**

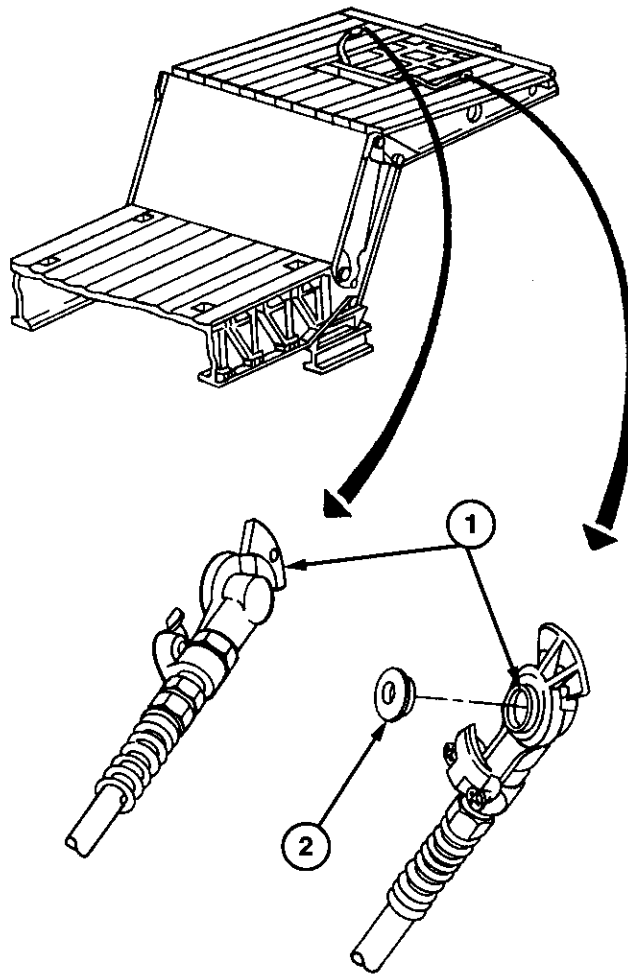
- Detergent (Item 4, Appendix F)

- Rag (Item 15, Appendix F)

---

#### CLEANING

- Use a rag to remove any buildup of grease and dirt on two gladhands (1).
- Use a rag and detergent to thoroughly clean packing (2) in two gladhands (1).
- Allow to dry.



**FOLLOW-ON TASKS:**

- None

---

### 3-8. AIR RESERVOIRS SERVICE.

---

*This Task Covers:*

Servicing

---

*Initial Setup:*

**Tools/Test Equipment:**

- Common no. 1 tool set (Item 6, Appendix B)
- 

#### SERVICING

- Turn off air supply to semitrailer.
- Unhook gladhands (1) from truck tractor air hose.

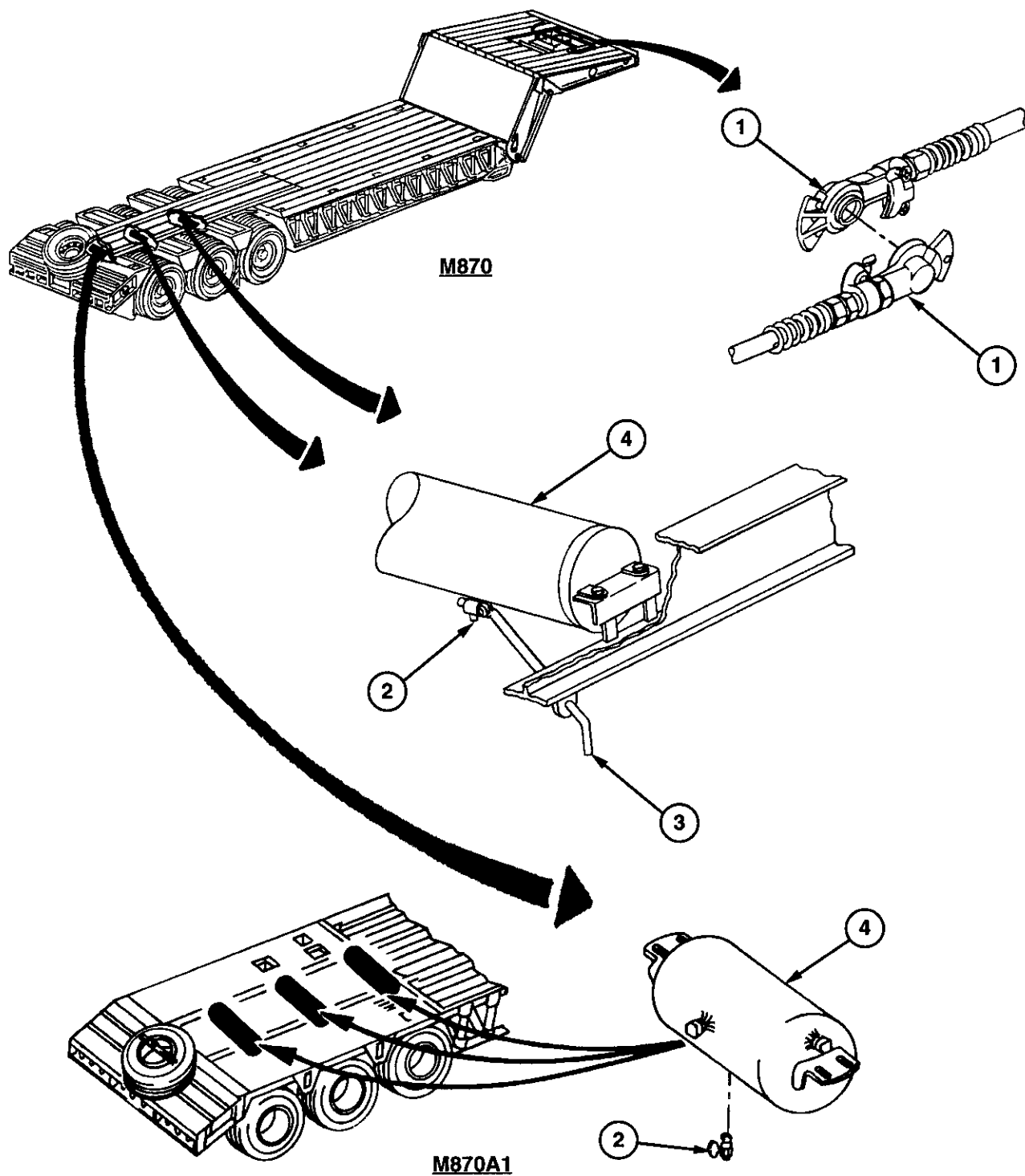
#### WARNING

**Wear protective goggles for draining pressurized air from air reservoirs. Failure to wear protective goggles when opening air reservoir drain cocks could cause eye injury.**

#### NOTE

- There are three air reservoirs on the semitrailer.
  - On the M870, the drain cocks on the front and middle air reservoirs are operated by turning control levers. The drain cock on the rear air reservoir on the M870 and the drain cocks on all three air reservoirs on the M870A1 are operated by turning the knob on the drain cock.
- Open drain cock (2). Use control levers (3) on M870 front and middle air reservoirs (4).
  - Allow air reservoir (4) to drain fully, then close drain cock (2). Repeat for other two air reservoirs (4).
  - Connect gladhands (1) to truck tractor air hose.
  - Turn on air supply to semitrailer at truck tractor.
  - Check all three drain cocks (2) for leaks by listening for hissing. If drain cocks (2) are leaking, notify Unit maintenance.

### 3-8. AIR RESERVOIRS SERVICE (continued).



#### FOLLOW-ON TASKS:

- None

### 3-9. TIRE AND WHEEL ASSEMBLY REPLACEMENT (M870).

***This Task Covers:***

- a. Removal**

**b. Installation**

**Initial Setup:**

**Tools/Test Equipment:**

- Common no. 1 tool set (Item 6, Appendix B)
- Trestle (Item 1, Appendix B)

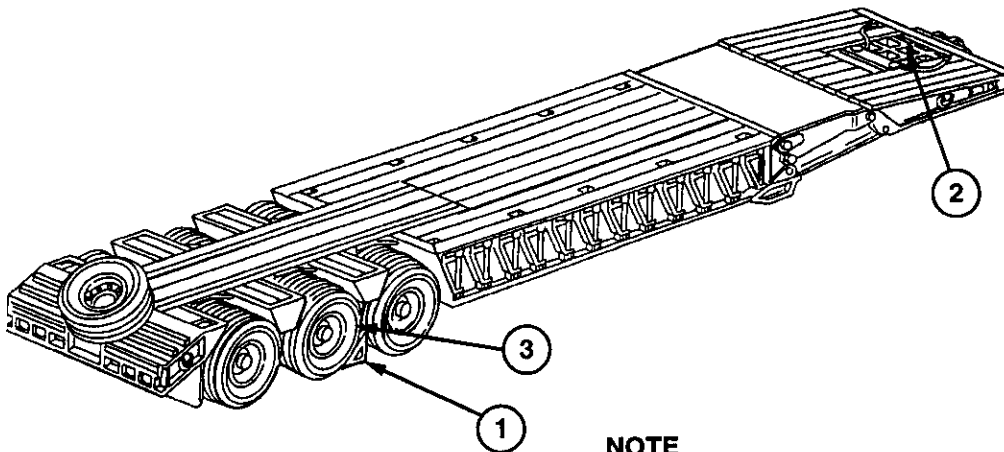
**Personnel Required:** Two

**a. REMOVAL**

### NOTE

- There are 12 tire and wheel assemblies. Use this task to remove any tire and wheel assembly.
- If removing inner and outer tire and wheel assemblies, do steps 1 through 8. If removing outer tire and wheel assembly only, do steps 1 through 6 only.

1. Take chock blocks (1) out of stowage bin (2), and block tires (3) not being removed.



### NOTE

Before loosening lug nuts, check lug-nut stamping to determine direction of rotation for removal.

2. Loosen, but do not remove, 10 lug nuts (4) from 10 stud nuts (5).
3. Place hydraulic hand jack (6) under axle (7) near tire and wheel assembly being removed (8 or 9). Jack up axle (7) until inner and outer tire and wheel assemblies (8 and 9) are off the ground.
4. Place trestle under axle (7) that has been raised with hydraulic hand jack (6).
5. Remove 10 lug nuts (4) from 10 stud nuts (5).

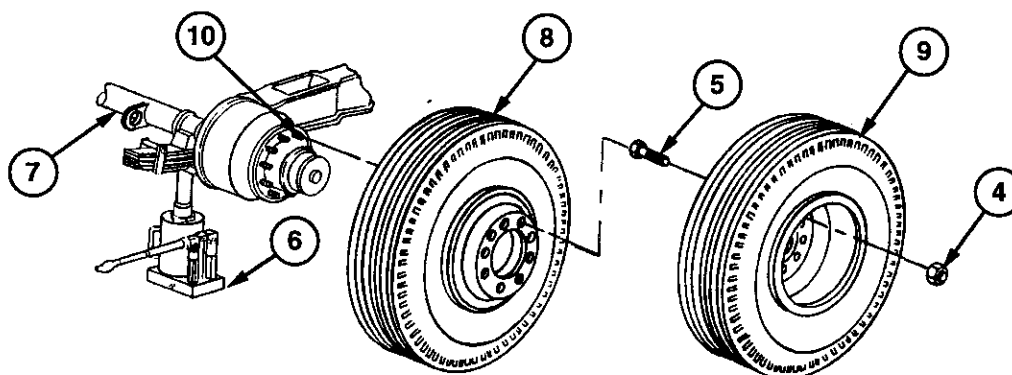
### 3-9. TIRE AND WHEEL ASSEMBLY REPLACEMENT (M870) (continued).

6. With the aid of an assistant, remove outer tire and wheel assembly (9) from 10 stud nuts (5).
7. Remove 10 stud nuts (5) from inner tire and wheel assembly (8).
8. With the aid of an assistant, remove inner tire and wheel assembly (8) from 10 lug bolts (10).

#### b. INSTALLATION

##### NOTE

- Use this task to install any tire and wheel assembly.
- If installing inner and outer tire and wheel assemblies, do steps 1 through 10. If installing outer tire and wheel assembly only, do steps 6 through 10 only.

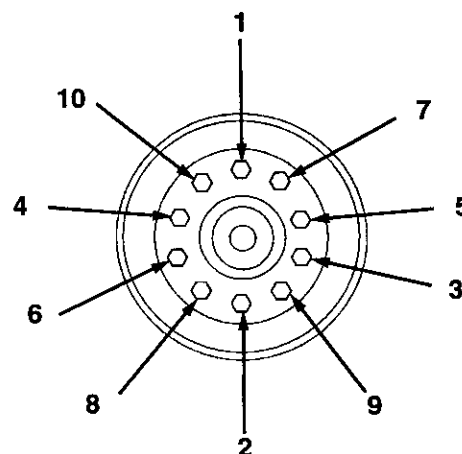


1. With the aid of an assistant, put inner tire and wheel assembly (8) on 10 lug bolts (10).

##### NOTE

Lug bolts are threaded right-hand or left-hand in the direction of forward wheel rotation. To tighten stud nuts on right side, turn clockwise. To tighten stud nuts on left side, turn counterclockwise.

2. Screw 10 stud nuts (5) onto 10 lug bolts (10) and tighten in the sequence shown.
3. Remove trestle. Lower inner tire and wheel assembly (8) to the ground.
4. Tighten 10 stud nuts (5).
5. With hydraulic hand jack (6), raise inner tire and wheel assembly (8) off the ground.
6. With the aid of an assistant, place outer tire and wheel assembly (9) on 10 stud nuts (5).
7. Screw 10 lug nuts (4) onto 10 stud nuts (5) and tighten.



---

### 3-9. TIRE AND WHEEL ASSEMBLY REPLACEMENT (M870) (continued).

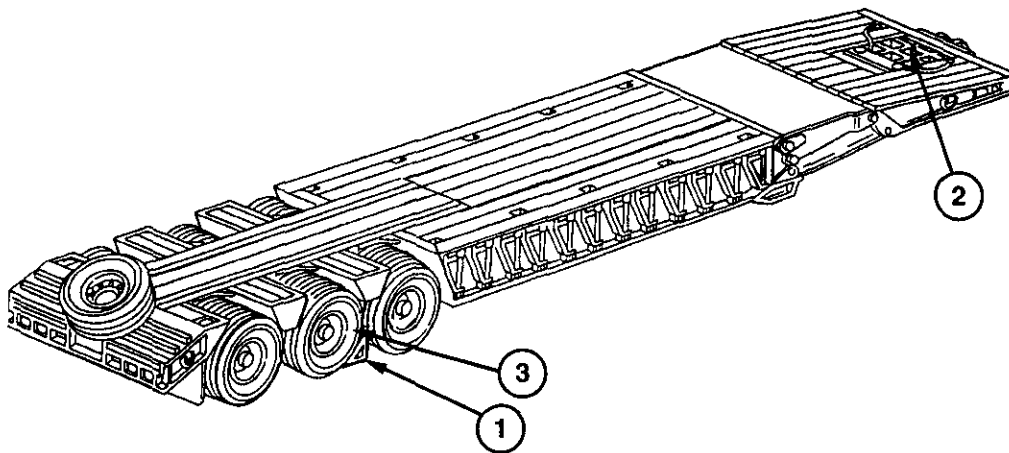
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8. Lower both tire and wheel assemblies (8 and 9) to the ground, and remove hydraulic hand jack (6) from under axle (7).

#### NOTE

As soon as possible, notify Unit maintenance of tire change. Have Unit maintenance torque stud nuts and lug nuts between 450 and 500 ft-lb (610 and 678 N•m).

9. Stow bad tire on spare tire lugs (para 3-11).
10. Take chock blocks (1) away from tires (3) and put in stowage bin (2).



#### FOLLOW-ON TASKS:

- None

### 3-10. TIRE AND WHEEL ASSEMBLY REPLACEMENT (M870A1).

***This Task Covers:***

- a. Removal**

**b. Installation**

**Initial Setup:**

**Tools/Test Equipment:**

- Common no. 1 tool set (Item 6, Appendix B)
- Trestle (Item 1, Appendix B)

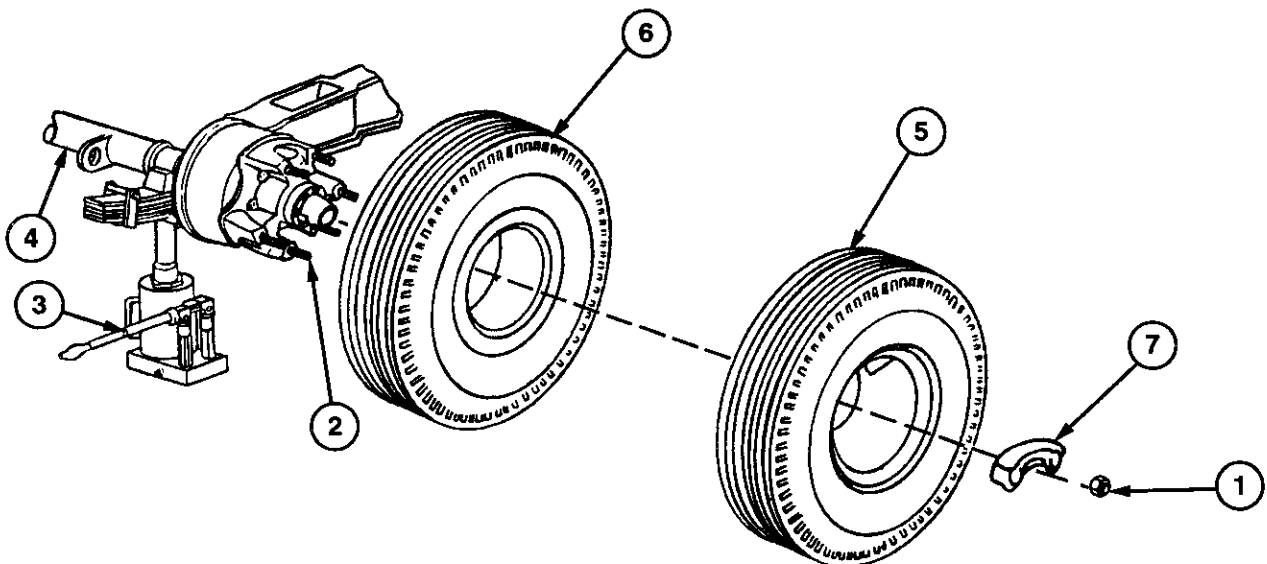
**Personnel Required: Two**

**a. REMOVAL**

## NOTE

- There are 12 tire and wheel assemblies. Use this task to remove any tire and wheel assembly.
- If removing inner and outer wheel assemblies, do steps 1 through 7. If removing outer tire and wheel assembly only, do steps 1 through 5 only.

1. Loosen, but do not remove, six rim stud nuts (1) from six studs (2).
2. Place hydraulic hand jack (3) under axle (4), near tire and wheel assembly (5 or 6) being removed. Jack up axle (4) until outer and inner tire and wheel assemblies (5 and 6) are off the ground.
3. Place trestle under axle (4) that has been raised with hydraulic hand jack (3).
4. Remove six rim stud nuts (1) and three rim clamps (7) from six studs (2).
5. With the aid of an assistant, remove outer tire and wheel assembly (5) from six studs (2).



### 3-10. TIRE AND WHEEL ASSEMBLY REPLACEMENT (M870A1) (continued).

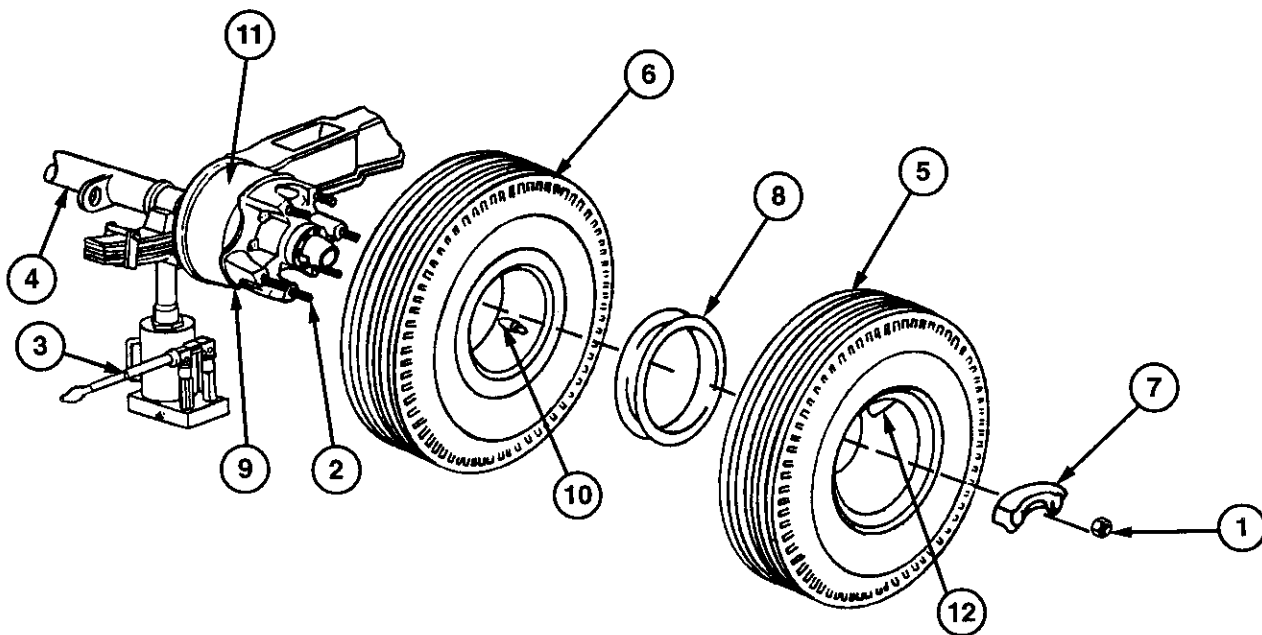
6. Remove rim spacer (8) from inner tire and wheel assembly (6).
7. With the aid of an assistant, remove inner tire and wheel assembly (6) from hub assembly (9).

## b. INSTALLATION

### NOTE

- Use this task to install any tire and wheel assembly.
- If installing inner and outer wheel assemblies, do steps 1 through 10. If installing outer tire and wheel assembly only, do steps 3 through 10 only.

1. With the aid of an assistant, install inner tire and wheel assembly (6) on hub assembly (9). Be sure inner valve stem (10) is pointing out and is in groove of brakedrum (11).
2. Slide rim spacer (8) over hub assembly (9) and against inner tire and wheel assembly (6).





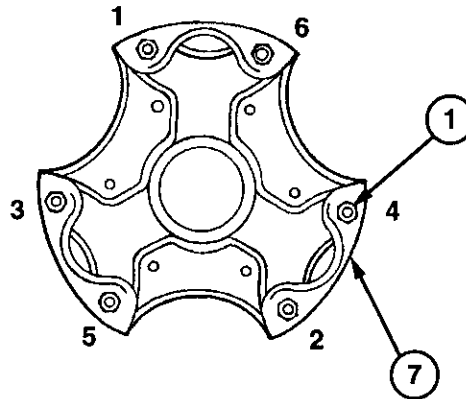
### 3-10. TIRE AND WHEEL ASSEMBLY REPLACEMENT (M870A1) (continued).

3. With the aid of an assistant, install outer tire and wheel assembly (5) on six studs (2). Be sure outer valve stem (12) is pointing in and is 120 degrees away from inner valve stem (10).
4. Install three rim clamps (7) and six rim stud nuts (1) on six studs (2).

#### NOTE

A torque wrench should be used to tighten rim stud nuts. If torque wrench is not available, tighten rim stud nuts with wrench and bar 12 to 15 inches in length, pushing down with full body weight.

5. Tighten six rim stud nuts (1) in the sequence shown.



6. After three rim clamps (7) are properly seated, tighten six rim stud nuts (1) one-quarter turn at a time, in the sequence shown. Torque rim stud nuts between 200 and 250 ft-lb (271 and 339 N•m).
7. Charge air system to proper pressure. Refer to operator's manual for truck tractor.
8. Check alignment of tire and wheel assemblies (5 and 6). Place block of wood or similar object on floor at side of tire, and rotate wheel. If variation in distance between tire and block of wood exceeds 1/16 inch for front wheels or 1/8 inch for rear wheels, rim is not properly mounted. To correct, loosen nut on the side with the greatest deviation and tighten nut on the opposite side. Recheck torque.

#### NOTE

Rim nuts should be checked for proper torque after the first 50 to 100 miles of service.

9. Remove trestle from under axle (4). Lower inner and outer tire and wheel assemblies (6 and 5). Remove and stow hydraulic hand jack (3).
10. As soon as possible, notify Unit maintenance of tire change and have rim nuts properly torqued.

#### FOLLOW-ON TASKS:

- None

---

### 3-11. SPARE TIRE AND WHEEL ASSEMBLY REPLACEMENT (M870).

---

*This Task Covers:*

- a. Removal
- b. Installation

---

*Initial Setup:*

**Tools/Test Equipment:**

- Common no. 1 tool set (Item 6, Appendix B)

**Personnel Required:** Two

---

**a. REMOVAL**

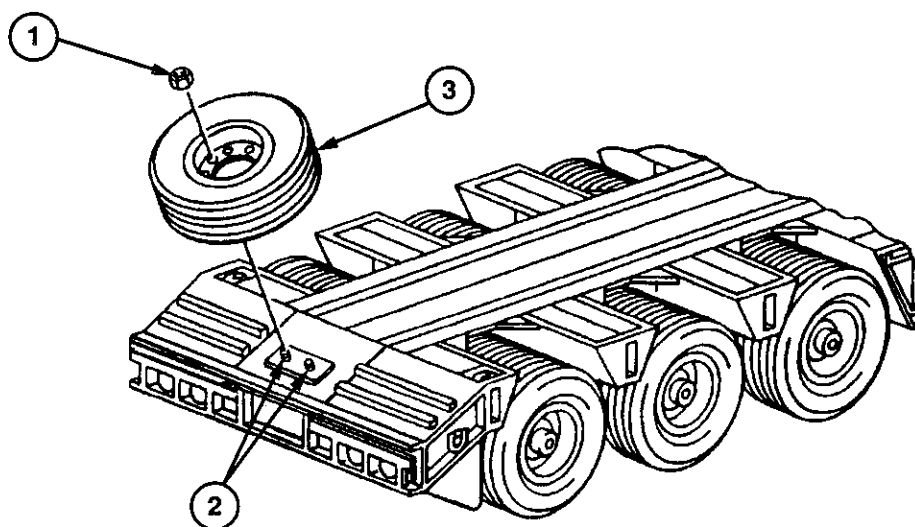
1. Remove two lug nuts (1) from two lugs (2).
2. With the aid of an assistant, remove spare tire and wheel assembly (3) from two lugs (2).

**b. INSTALLATION**

1. Install spare tire and wheel assembly (3) on semitrailer (para 3-9).
2. With the aid of an assistant, place bad tire and wheel assembly on two lugs (2).
3. Screw two lug nuts (1) onto two lugs (2) and tighten.

**NOTE**

As soon as possible, notify Unit maintenance of tire change. Have Unit maintenance repair defective tire.



**FOLLOW-ON TASKS:**

- None

### 3-12. SPARE TIRE AND WHEEL ASSEMBLY REPLACEMENT (M870A1).

*This Task Covers:*

a. Removal

b. Installation

*Initial Setup:*

**Tools/Test Equipment:**

- Common no 1. tool set (Item 6, Appendix B)

**Personnel Required:** Two

**a. REMOVAL**

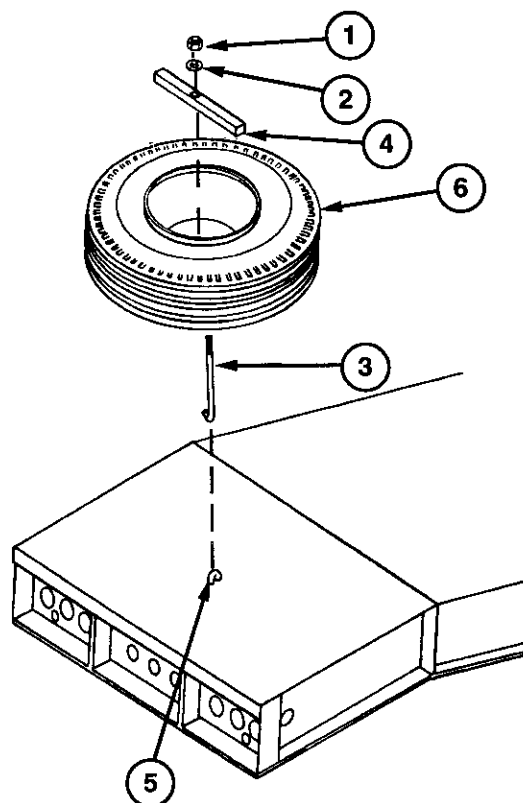
1. Remove nut (1) and washer (2) from hook bolt (3). Remove metal bar (4) and hook bolt (3) from spare tire carrier connector (5).
2. With the aid of an assistant, remove spare tire and wheel assembly (6) from spare tire carrier connector (5).

**b. INSTALLATION**

1. Install spare tire and wheel assembly on semitrailer (para 3-10).
2. With the aid of an assistant, place bad tire and wheel on spare tire carrier connector (5).
3. Install hook bolt (3) and metal bar (4) on spare tire carrier connector (5). Install washer (2) and nut (1) on hook bolt (3).

**NOTE**

As soon as possible, notify Unit maintenance of tire change. Have Unit maintenance repair defective tire.



**FOLLOW-ON TASKS:**

- None



## CHAPTER 4 UNIT MAINTENANCE

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

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

---

#### **4-1. GENERAL.**

---

This chapter describes the Unit maintenance tasks to be performed on the M870/M870A1 semitrailers.

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

---

Common tools and equipment are issued to Unit maintenance personnel for maintaining the M870/M870A1. Common tools and equipment should not be used for purposes other than those prescribed and should be properly stored when not in use. Refer to the Modified Tables of Organization and Equipment (MTOE) for authorized common tools and equipment applicable to your unit.

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#### **4-3. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT.**

---

The M870 requires no special tools, TMDE, or support equipment. See Appendix E, Section III, for special tools for the M870A1.

---

#### **4-4. REPAIR PARTS.**

---

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

## Section II. SERVICE UPON RECEIPT

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

**4-5. GENERAL.**

When a new, used, or reconditioned M870/M870A1 semitrailer is received, determine whether it has been properly prepared for service and is capable of carrying out its mission by performing the inspection instructions in paragraph 4-6 and the servicing instructions in paragraph 4-7.

**4-6. INSPECTION INSTRUCTIONS.**

- a. Refer to DD Form 1397 for procedures on unpacking the M870/M870A1 semitrailer.
- b. Remove all straps, plywood, tape, seals, and wrappings.

**WARNING**

**Drycleaning solvent 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.**

- c. Remove rust preventive compound from coated exterior parts of the M870/M870A1 semitrailer using drycleaning solvent (Item 19, Appendix F) and rags (Item 15, Appendix F).
- d. Inspect semitrailer for damage incurred during shipment. Also check to see if the equipment has been modified.
- e. Check the equipment against the packing list to make sure the shipment is complete. Report any discrepancies in accordance with instructions in DA Pam 738-750.

**4-7. SERVICING INSTRUCTIONS.**

- a. Perform all Operator/Crew and Unit preventive maintenance checks and services (PMCS) listed in Tables 2-1 and 4-1. Schedule the next PMCS on DD Form 314.
- b. Lubricate all lubrication points as described in Appendix J, regardless of interval.
- c. Report any problems on DA Form 2407.
- d. Perform a break-in road test of 25 miles (40.23 km) at a maximum speed of 55 miles per hour (88 kph).

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

Paragraph Number	Paragraph Title	Page Number
4-8	General .....	4-3
4-9	Service Intervals .....	4-3
4-10	Reporting Repairs .....	4-3
4-11	General PMCS Procedures .....	4-3
4-12	Specific PMCS Procedures .....	4-4
Table 4-1	Unit Preventive Maintenance Checks and Services (PMCS) for the M870/M870A1 .....	4-5

#### 4-8. GENERAL.

To ensure that the M870/M870A1 semitrailer is ready for operation at all times, it must be inspected systematically so that defects can be detected and corrected before they result in serious damage or failure. Table 4-1 (p. 4-5) contains a tabulated listing of preventive maintenance checks and services (PMCS) to be performed by Unit maintenance personnel.

#### 4-9. SERVICE INTERVALS.

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

- Perform *Monthly* PMCS procedures once each month.
- Perform *Semiannual* PMCS procedures once every six months.
- Perform *Annual* PMCS once each year.

#### 4-10. REPORTING REPAIRS.

Report all defects and corrective actions on DA Form 2404. If a serious problem is found, report it to your supervisor immediately.

#### 4-11. GENERAL PMCS PROCEDURES.

##### **WARNING**

**Drycleaning solvent 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.**

- a. Keep equipment clean. Dirt, oil, and debris may cover up a serious problem. Clean as you work and as needed. Use drycleaning solvent (Item 19, Appendix F) and rags (Item 15, Appendix F) on all metal surfaces. Use detergent (Item 4, Appendix F) and water on rubber, plastic, and painted surfaces.

---

#### 4-11. GENERAL PMCS PROCEDURES (continued).

---

- b. While performing PMCS, inspect the following components:

**Bolts, Nuts, and Screws.** Make sure they are not loose, missing, bent, or broken. Tighten any that are loose.

**Welds.** Inspect for gaps where parts are welded together. Report bad welds to your supervisor.

**Electrical Wires or Connectors.** Inspect for cracked or broken insulation, bare wires, and loose or broken connectors. Make repairs as required.

**Hoses, Lines, and Fittings.** Inspect for wear, damage, and leaks. Make sure clamps and fittings are tight. If a leak originates from a loose fitting or connector, tighten it. If a component is broken or worn out, correct the problem if authorized by the maintenance allocation chart (MAC) (Appendix B). If not authorized, report it to your supervisor.

---

#### 4-12. SPECIFIC PMCS PROCEDURES.

---

- a. Unit PMCS procedures are listed in Table 4-1. Always perform PMCS procedures in the order listed. Once your PMCS routine becomes a habit, anything that is not right can be spotted in a minute. If anything wrong is discovered through PMCS, perform the appropriate troubleshooting task listed in Section IV of this chapter. If any component or system is not serviceable or if the service given does not correct the problem, notify your supervisor.

- b. The PMCS procedures listed in Table 4-1 are to be performed at three intervals: monthly, semiannually, and annually. Before performing PMCS, read all the checks required for the applicable interval and prepare the tools needed to make all checks. Have several clean rags (Item 15, Appendix F) handy. Perform ALL inspections at the applicable intervals.

- c. Explanations of the column headings in Table 4-1 are as follows:

**Item No.** The item number column is to be used for reference. When completing DA Form 2404, include the item number for the check/service indicating a fault. Item numbers also appear in the order that you must do checks and services for the intervals listed.

**Interval** This column tells you when to do a certain check or service.

**Item To Check/Service** This column names the item to be checked or serviced.

**Procedure** This column tells you how to do the required checks and services. Carefully follow these instructions. If you do not have the tools, or if the procedure says to, have Direct Support maintenance do the work.

**Not Fully Mission Capable If:** Information in this column tells you what faults will keep the equipment from being capable of performing its mission. If PMCS reveals faults listed in this column, do not operate the equipment. Follow standard operating procedures for maintaining the equipment or reporting equipment failures.



Table 4-1. UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) FOR THE M870/M870A1

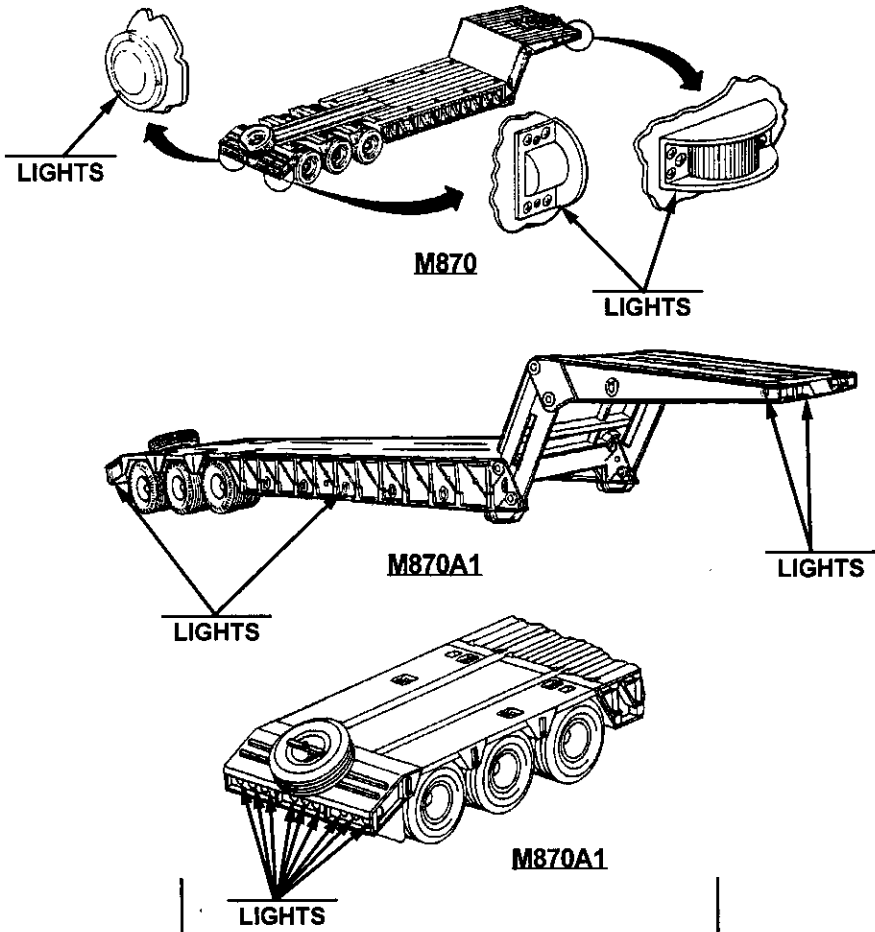
ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
1	Monthly	Lights, Reflectors, and Wiring Harnesses	<p><b>NOTE</b></p> <p>Perform Operator/Crew PMCS prior to or along with Unit PMCS.</p> <p>a. Check for loose mountings and electrical connections.</p> <p>b. Check for bare wire and frayed insulation.</p> 	Any lights do not work.
2	Monthly	Axle	Check for bent axle.	Axle is bent.

Table 4-1. UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) FOR THE M870/M870A1

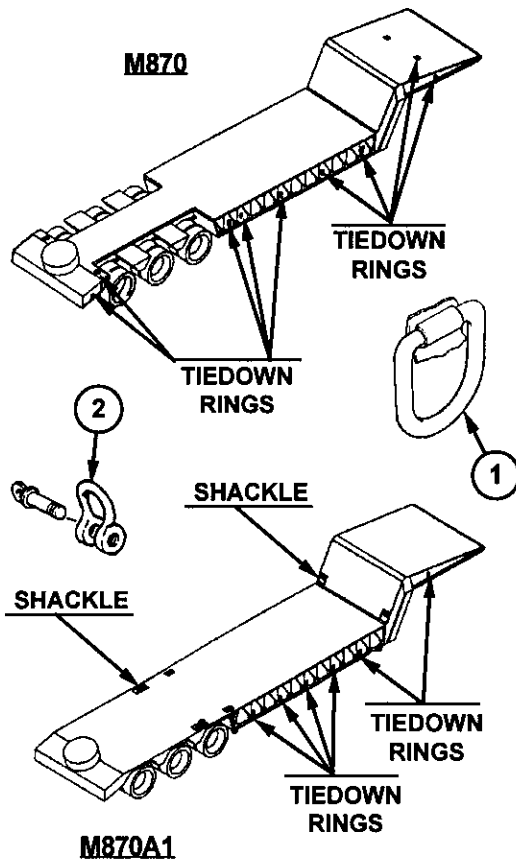
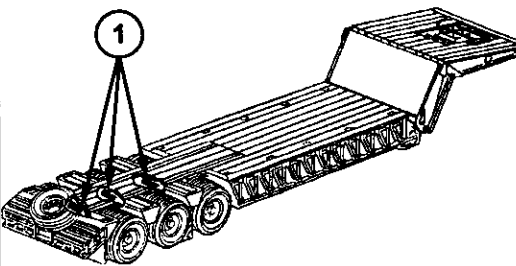
ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
3	Monthly	Loading and Lashing Equipment	<p>Inspect tiedown rings (1) or shackles (2) (M870A1) for serviceability.</p> 	
4	Semiannual	Air Reservoirs and Air Lines	<p>Check air reservoirs (1) and air lines for damage and tight connections.</p> 	Any air reservoir or air line is leaking, damaged, or missing.

Table 4-1. UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) FOR THE M870/M870A1

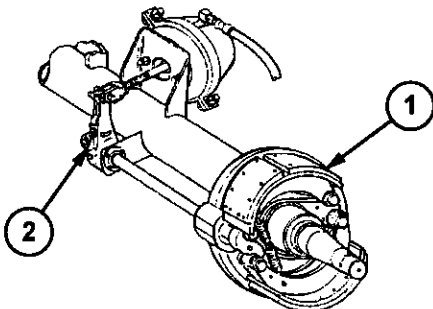
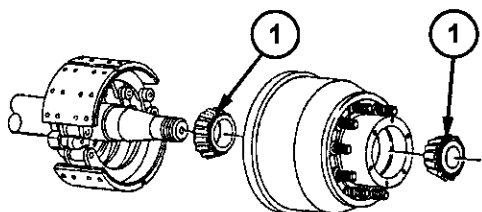
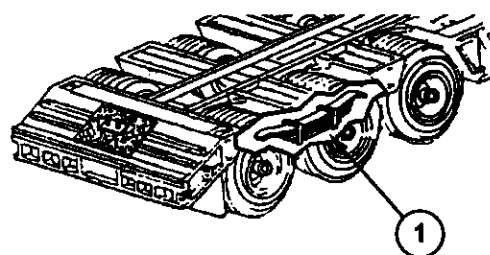
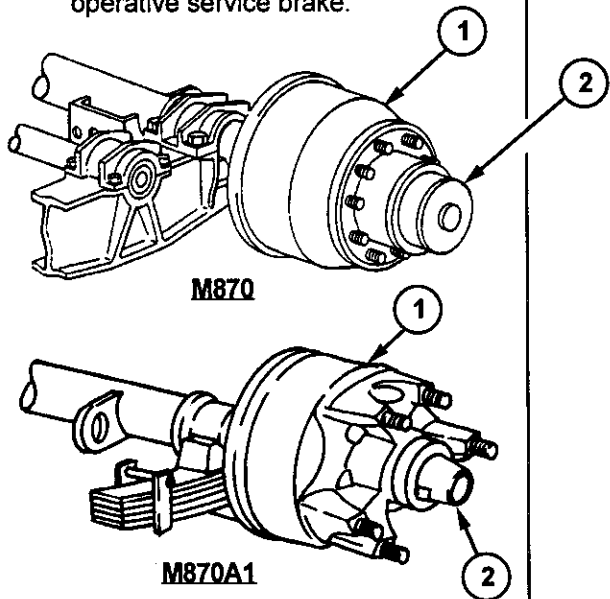
ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
5	Semiannual	Brakes	<p>a. Check brake components for proper operation.</p> <p>b. Check brakeshoes (1) for wear and proper adjustment (para 4-46).</p> <p>c. Check automatic slack adjusters (2) for proper operation and adjust as needed (para 4-49).</p> 	<p>a. Brakes do not operate properly.</p> <p>b. Brakes do not operate properly, are out of adjustment, or show excessive wear (less than 1/16 inch of brake lining above heads of rivets).</p> <p>c. Automatic slack adjusters do not operate properly.</p>
6	Semiannual	Axle	<p>Check wheel bearings (1) and all component parts (para 4-68).</p> 	Wheel bearings need to be replaced.
7	Semiannual	Springs	<p>a. Check springs (1) for any evidence of damage or sagging.</p> <p>b. Check for shifted leaf spring sections.</p> 	a. Any spring(s) is broken or sagging badly.

Table 4-1. UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) FOR THE M870/M870A1

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
8	Semiannual	Road Test	<p>a. Perform road test. Give special attention to items that were repaired or adjusted.</p> <p><b><u>WARNING</u></b></p> <p>Hub may be hot. To prevent skin burns caused by touching hot metal, hold hand close to hub to check for excessive heat radiation before putting hand on hub and brakedrum.</p> <p>b. Check brakedrums (1) and hubs (2) immediately after road test.</p> <p><b>NOTE</b></p> <p>An overheated hub and brakedrum indicate an improperly adjusted or defective service brake or dry wheel bearings. An abnormally cool condition indicates an inoperative service brake.</p>  <p>The diagram shows two views of a vehicle's wheel assembly. The top view is labeled 'M870' and the bottom view is labeled 'M870A1'. Both views show a hub and a brakedrum. Two numbered circles with arrows point to specific areas: '1' points to the brakedrum and '2' points to the hub. The M870A1 view shows additional components like the brake pedal and master cylinder.</p>	a. Brakes do not operate properly.
9	Annual	Wheel Bearings	Lubricate wheel bearings (Appendix J).	Any wheel bearings need to be replaced.

## Section IV. UNIT TROUBLESHOOTING

Paragraph Number	Paragraph Title	Page Number
4-13	General .....	4-9
4-14	Electrical Troubleshooting .....	4-9
4-15	Quick Guide to Troubleshooting .....	4-11
4-16	Troubleshooting Chart .....	4-12

### 4-13. GENERAL

- a. This section provides information for identifying and correcting malfunctions that may develop while operating or maintaining the M870/M870A1 semitrailer.
- b. The Quick Guide to Troubleshooting (para 4-15) lists common malfunctions of the semitrailer or its components and refers you to the appropriate subparagraph in the Troubleshooting Chart (para 4-16). You should perform tests/inspections and corrective actions in the order listed in the chart.
- c. If you are unsure of the location of an item mentioned in troubleshooting, refer to paragraph 1-13 or to the maintenance task where the item is replaced.
- d. Before performing troubleshooting, read and follow all safety instructions listed in the warning summary at the beginning of this manual.
- e. This section 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 corrective action listed, notify your supervisor.
- f. When troubleshooting a malfunction:
  - Locate the symptom or symptoms in the Quick Guide to Troubleshooting that best describe the malfunction.
  - Turn to the subparagraph in the Troubleshooting Chart where the troubleshooting procedures for the malfunction in question are described.
  - Perform each step in the order listed until the malfunction is corrected. DO NOT perform any maintenance task unless the troubleshooting procedure tells you to do so.

### 4-14. ELECTRICAL TROUBLESHOOTING.

- a. This paragraph provides instructions intended to give clear insight into general troubleshooting procedures for wiring harnesses and electrical components. Schematic diagrams can be found in Appendix K.
- b. When troubleshooting any electrical system or component, exercise extreme care in order to prevent electrical shock.

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#### 4-14. ELECTRICAL TROUBLESHOOTING (continued).

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##### WARNING

**Throughout troubleshooting of the electrical system or electrical components, be certain MASTER switch is set to OFF between every step unless otherwise directed. To prevent injury due to electrical shock, remove all jewelry and metal objects when working on the electrical system.**

- c. The multimeter is used throughout electrical troubleshooting.
- d. When performing a shorts test, make sure all connectors and/or leads are disconnected from their components. Probe the pins (or sockets) with a multimeter. This is done by placing the red probe on pin (or socket) A (or 1) and then placing the black probe on the next pin (or socket) in alphabetical (or numerical) order. Probe every pin (or socket) on the connector or lead with the black probe of the multimeter.
- e. When probing has been completed, place the red lead on the second pin (or connector) and do the probing with the black lead in order again. Do this until every pin has been probed with the red lead of the multimeter. Then place the black lead of the multimeter on the connector, and place the red lead on each pin (or socket) on the connector.
- f. If continuity is present between any two points, a short exists. Shorts must be repaired in order to continue any operation.
- g. If instructed in a procedure to skip a pin (or socket) during a shorts test, it is because the pin (or socket) is not used or is shielded.
- h. When a repair or replacement of a lead or wiring harness has been done, do the shorts test again to make sure the problem has been corrected.
- i. When performing a continuity check, connect the meter probes to both terminals of the circuit you are testing. Read the meter and interpret the results. A meter reading of 5 ohms or less indicates the circuit has continuity. A very high or infinite ( $\infty$ ) meter reading indicates the circuit is open. If the meter reading jumps or flickers, there is a loose connection.
- j. Check light bulbs for cracks and discoloration. Check the continuity of a light bulb by placing one probe of the meter on the metal button base connection of the bulb and one probe on the metal side of the base. A meter reading of 5 ohms or less indicates the circuit has continuity. A very high or infinite ( $\infty$ ) meter reading indicates the circuit is open, indicating a defect.

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**4-15. QUICK GUIDE TO TROUBLESHOOTING.**


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<b><u>ITEM</u></b>	<b><u>SYMPTOM</u></b>	<b><u>PARAGRAPH</u></b>
LIGHTS	NO TRAILER LIGHTS WORK (M870).	4-16a(1)
	NO TRAILER LIGHTS WORK (M870A1).	4-16a(2)
	ONE OR MORE CLEARANCE LIGHTS DO NOT WORK (M870).	4-16a(3)
	STOPLIGHTS DO NOT WORK (M870).	4-16a(4)
	TURN SIGNALS DO NOT WORK (M870).	4-16a(5)
	ONE OR MORE (BUT NOT ALL) LIGHTS DO NOT LIGHT (M870A1).	4-16a(6)
BRAKES	BRAKES DO NOT APPLY.	4-16b(1)
	BRAKES GRAB.	4-16 b(2)
	BRAKES DO NOT RELEASE.	4-16b(3)
	BRAKES ARE SLOW TO APPLY OR RELEASE.	4-16b(4)
	BRAKES DRAG WITH ONE OR MORE BRAKE-DRUMS RUNNING HOT.	4-16b(5)
GOOSENECK	GOOSENECK WILL NOT RAISE OR LOWER.	4-16c(1)
TIRES	TIRES ARE EXCESSIVELY WORN, CUPPED, OR SCUFFED.	4-16d(1)

## 4-16. TROUBLESHOOTING CHART.

### a. LIGHTS

(1) NO TRAILER LIGHTS WORK (M870).

#### *Initial Setup:*

##### **Tools/Test Equipment:**

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)
- Multimeter (Item 8, Appendix B)

- Parking brake applied (see operator's manual for towing vehicle).
- Wheels chocked (para 2-10).

##### **Equipment Conditions:**

- Semitrailer coupled to towing vehicle. Engine off (see operator's manual for towing vehicle).

### **WARNING**

**ALWAYS make sure all electrical power is disconnected before performing any maintenance on the electrical system. Serious injury or death may occur if safety precautions are not observed.**

A. Turn on towing vehicle service lights. Set multimeter at 30 V dc. Place red probe on socket pins of towing vehicle intervehicular connector socket, and ground black probe.

Does meter reading show low or no voltage?

no

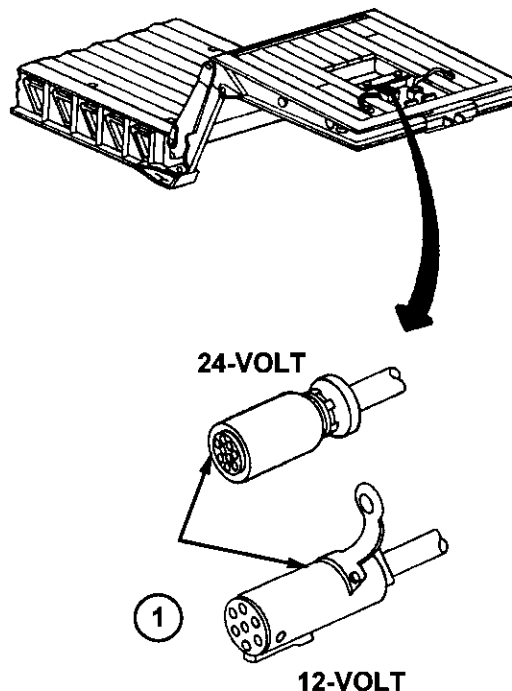
yes

Troubleshoot towing vehicle (refer to operator's manual for towing vehicle). Verify problem is solved.

B. Hook up intervehicular cable connector (1). Set multimeter at 30 V dc. Place red probe on connector socket at semitrailer end of intervehicular cable, and ground black probe.

Does multimeter show any voltage?

continued on next page



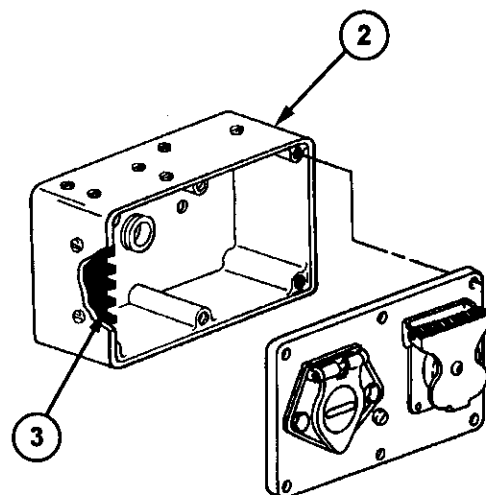
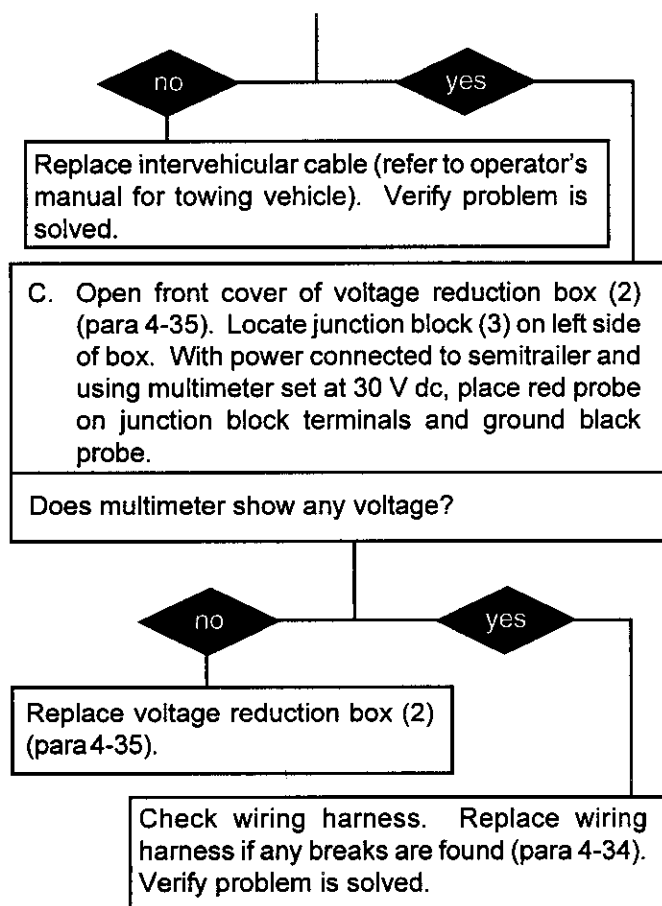


## 4-16. TROUBLESHOOTING CHART (continued).

a. LIGHTS (continued)

(1) NO TRAILER LIGHTS WORK (M870) (continued).

### CONTINUED FROM STEP B



END OF TASK

## 4-16. TROUBLESHOOTING CHART (continued).

a. LIGHTS (continued)

(2) NO TRAILER LIGHTS WORK (M870A1).

### Initial Setup:

#### Tools/Test Equipment:

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

- Parking brake applied (see operator's manual for towing vehicle).
- Wheels chocked (para 2-10).

#### Equipment Conditions:

- Semitrailer coupled to towing vehicle. Engine off (see operator's manual for towing vehicle).

### **WARNING**

**ALWAYS make sure all electrical power is disconnected before performing any maintenance on the electrical system. Serious injury or death may occur if safety precautions are not observed.**

A. Check intervehicular cable socket (1) and connector (2) for proper connections.

Are intervehicular cable socket (1) and connector (2) connected properly?

no

yes

Pull out intervehicular cable connector (2) and reinsert fully in cable socket (1). Verify problem is solved.

B. Check setting of light switch on towing vehicle.

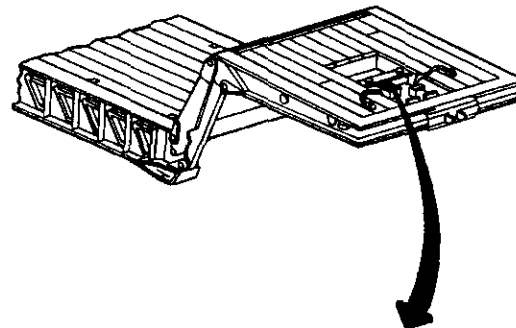
Is light switch set properly?

no

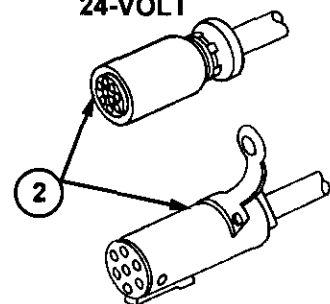
yes

Set light switch properly. Verify problem is solved.

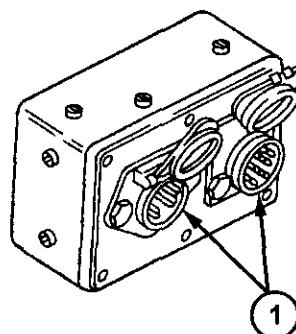
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24-VOLT



12-VOLT



**4-16. TROUBLESHOOTING CHART (continued).**

a. LIGHTS (continued)

(2) NO TRAILER LIGHTS WORK (M870A1) (continued).

**CONTINUED FROM STEP B**

C. Check circuit breaker on towing vehicle.

Is circuit breaker open?

no

yes

Reset circuit breaker (refer to operator's manual for towing vehicle). Verify problem is solved.

D. Check wiring for bare spots in insulation.

Repair wiring if defective. Verify problem is solved.

**END OF TASK**

## 4-16. TROUBLESHOOTING CHART (continued).

a. LIGHTS (continued)

(3) ONE OR MORE CLEARANCE LIGHTS DO NOT WORK (M870).

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

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)
- Multimeter (Item 8, Appendix B)

- Parking brake applied (see operator's manual for towing vehicle).
- Wheels chocked (para 2-10).

**Equipment Conditions:**

- Semitrailer coupled to towing vehicle. Engine off (see operator's manual for towing vehicle).

**WARNING**

**ALWAYS make sure all electrical power is disconnected before performing any maintenance on the electrical system. Serious injury or death may occur if safety precautions are not observed.**

A. Check which lights do not work and compare to electrical wiring diagram (Appendix K).

Are the lights that do not work all on the same circuit?

no

yes

GO TO STEP D

B. Remove lens from any clearance light that does not work (para 4-29). Remove bulb from socket. Set multimeter for continuity testing; place red probe on base terminal and black probe at side of light.

Does multimeter show continuity?

no

yes

Replace bulb (para 4-29). Verify problem is solved.

continued on next page

## 4-16. TROUBLESHOOTING CHART (continued).

a. LIGHTS (continued)

(3) ONE OR MORE CLEARANCE LIGHTS DO NOT WORK (M870) (continued).

### CONTINUED FROM STEP B

C. Open junction box for light. Cut wire at connector. Set multimeter at 30 V dc; place red probe into feeder wire, and ground black probe.

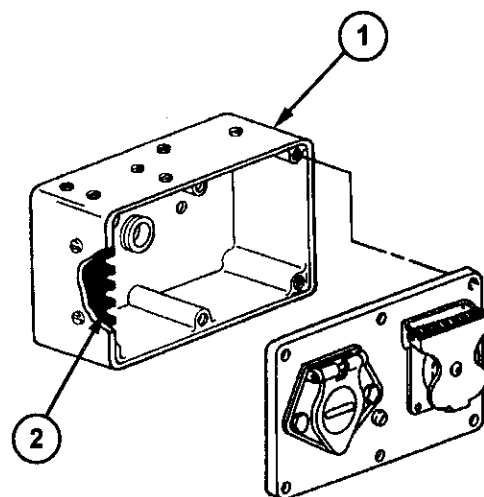
Does multimeter show any voltage?

no

yes

Replace feeder wire between light and main wiring harness (refer to wiring diagram, Appendix K). Verify problem is solved.

Replace lamp socket (para 4-29). Verify problem is solved.



### CONTINUED FROM STEP A

D. Open front cover of voltage reduction box (1) (para 4-35). Locate harness junction block (2). With power connected to semitrailer and using multimeter set at 30 V dc, place red probe on junction block terminals (refer to wiring diagram, Appendix K) and ground black probe.

Does multimeter show any voltage?

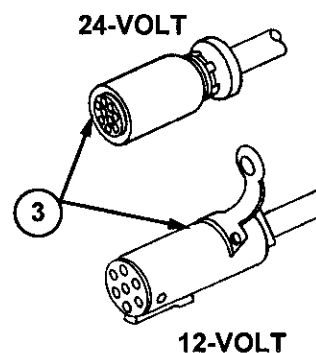
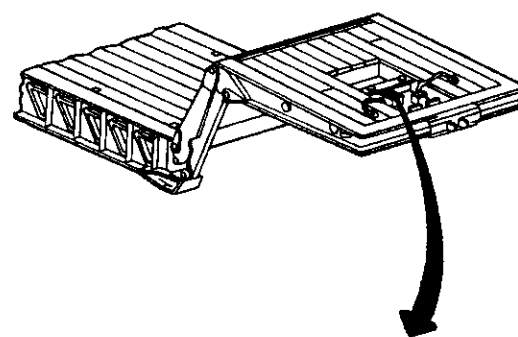
no

yes

Replace bad circuit (para 4-34). Verify problem is solved.

E. Unhook intervehicular cable connector (3). Using multimeter set at 30 V dc, place red probe on pin in intervehicular cable connector that connects to circuit with nonworking lights and place black probe on good ground on towing vehicle.

Does multimeter show any voltage?

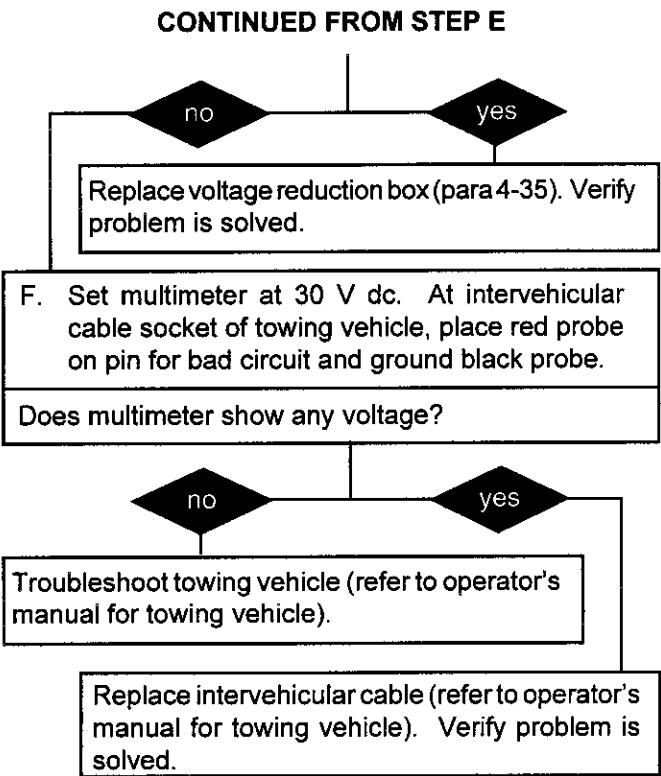


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4-16. TROUBLESHOOTING CHART (continued).

a. LIGHTS (continued)

(3) ONE OR MORE CLEARANCE LIGHTS DO NOT WORK (M870) (continued).



END OF TASK

## 4-16. TROUBLESHOOTING CHART (continued).

a. LIGHTS (continued)

(4) STOPLIGHTS DO NOT WORK (M870).

### Initial Setup:

#### Tools/Test Equipment:

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)
- Multimeter (Item 8, Appendix B)

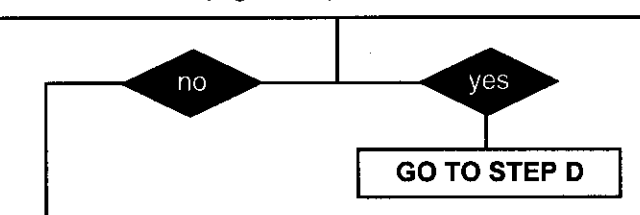
- Parking brake applied (see operator's manual for towing vehicle).
- Wheels chocked (para 2-10).

**Personnel Required:** Two

#### Equipment Conditions:

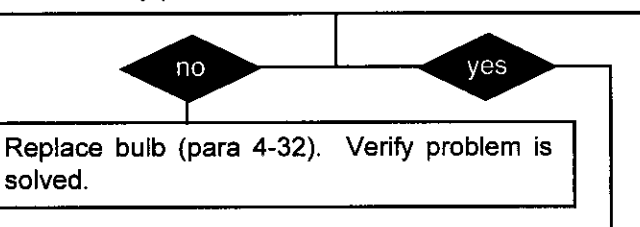
- Semitrailer coupled to towing vehicle. Engine off (see operator's manual for towing vehicle).

A. Are both stoplights inoperative?



B. Remove lens from light that does not work (para 4-32). Using multimeter set for continuity testing, place red probe on base terminal and black probe on side of light.

Is continuity present?



C. Remove light body from semitrailer. Cut red wires at connector. Using multimeter set at 30 V dc, place red probe on red circuit wire and ground black probe while assistant applies brakes.

Does multimeter show any voltage?

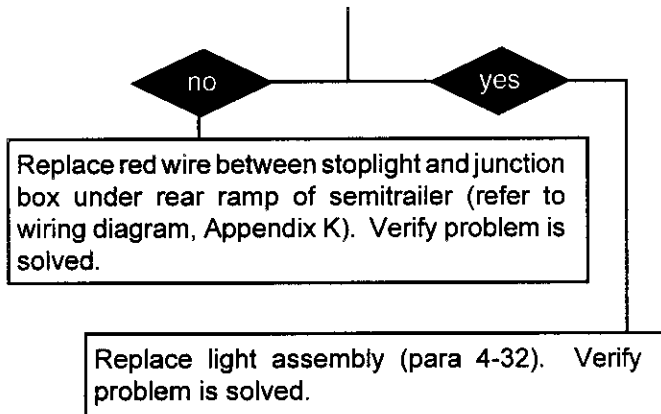
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## 4-16. TROUBLESHOOTING CHART (continued).

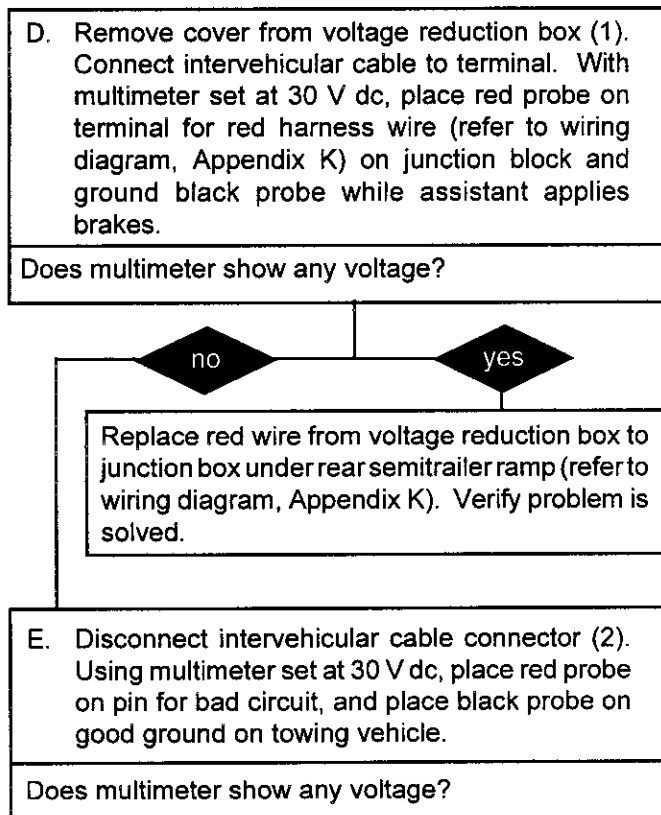
a. LIGHTS (continued)

(4) STOPLIGHTS DO NOT WORK (M870) (continued).

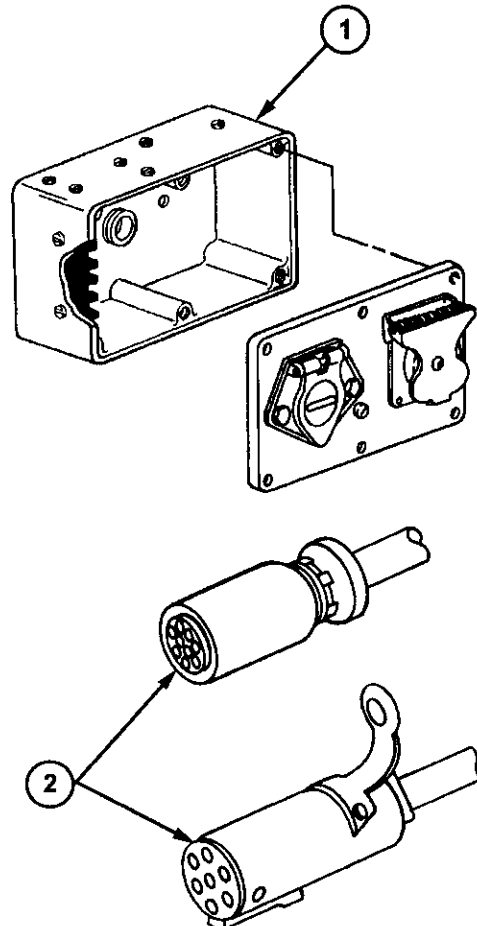
CONTINUED FROM STEP C



CONTINUED FROM STEP A



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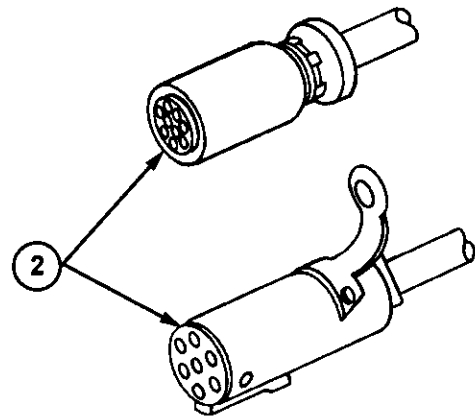
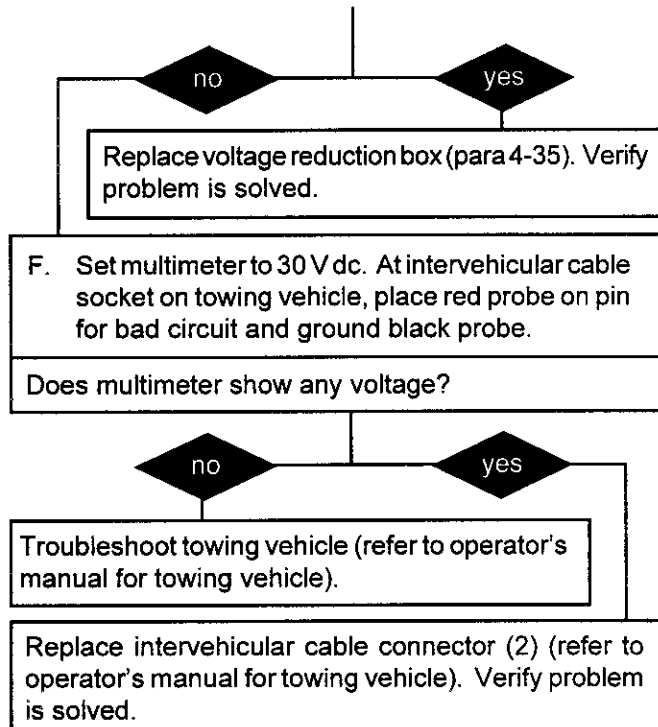


## 4-16. TROUBLESHOOTING CHART (continued).

a. LIGHTS (continued)

(4) STOPLIGHTS DO NOT WORK (M870) (continued).

CONTINUED FROM STEP E



END OF TASK

4-16. TROUBLESHOOTING CHART (continued).

a. LIGHTS (continued)	(5) TURN SIGNALS DO NOT WORK (M870).
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*Initial Setup:*

**Tools/Test Equipment:**

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)
- Multimeter (Item 8, Appendix B)

**Equipment Conditions:**

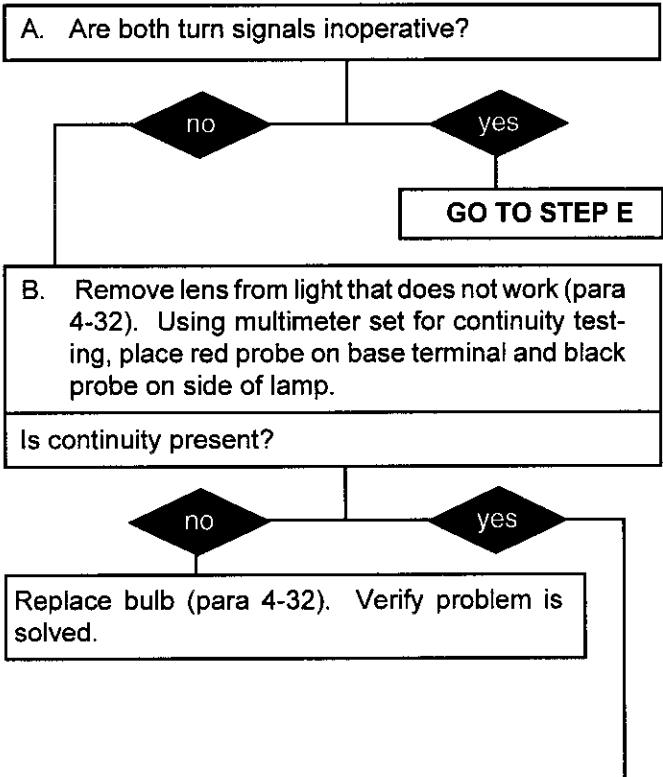
- Semitrailer coupled to towing vehicle. Engine off (see operator's manual for towing vehicle).

- Parking brake applied (see operator's manual for towing vehicle).
- Wheels chocked (para 2-10).

**Personnel Required:** Two

NOTE

The wires feeding turn-signal lights are color coded, and both feed wires are connected to red lead wire on turn-signal light housing. Left turn-signal light is coded white, and right turn-signal light is coded brown. This procedure applies to either turn-signal light.



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## 4-16. TROUBLESHOOTING CHART (continued).

a. LIGHTS (continued)

(5) TURN SIGNALS DO NOT WORK (M870) (continued).

### CONTINUED FROM STEP B

C. Remove light body from semitrailer (para 4-32). Cut brown or white wire from red lead wire (refer to wiring diagram, Appendix K). Using multimeter set at 30 V dc, place red probe on brown or white wire and ground black probe while assistant applies brakes.

Does multimeter show any voltage?

no

yes

Replace light assembly (para 4-32). Verify problem is solved.

D. Remove voltage reduction box cover (para 4-35). Connect intervehicular cable to terminal. With multimeter set at 30 V dc, place red probe on terminal for white or brown harness wire on junction box, and ground black probe while assistant applies brakes.

Does multimeter show any voltage?

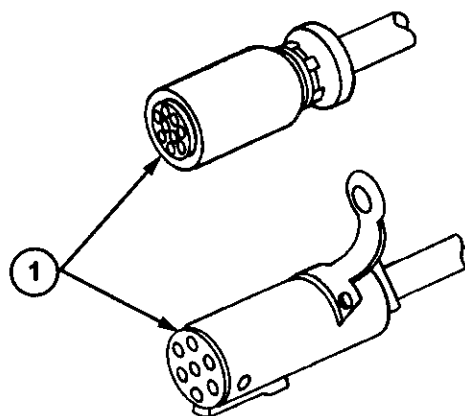
no

yes

Replace brown or white wire from voltage reduction box to left or right turn signal (para 4-34). Verify problem is solved.

E. Unhook intervehicular cable connector (1). Using multimeter set at 30 V dc, place red probe on two pins for turn signals and ground black probe on towing vehicle while assistant applies brakes.

Does multimeter show voltage on both pins?

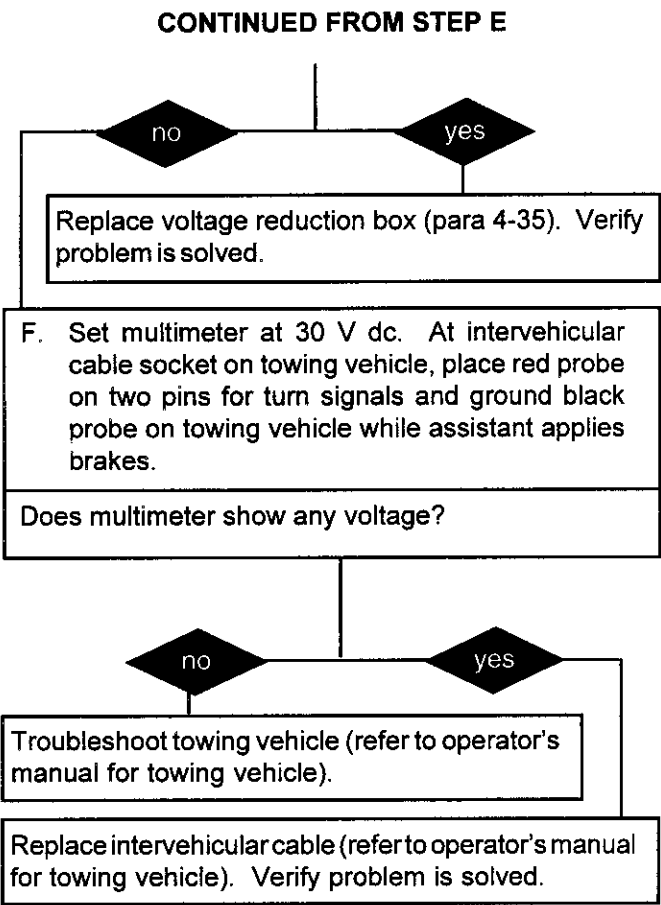


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4-16. TROUBLESHOOTING CHART (continued).

a. LIGHTS (continued)

(5) TURN SIGNALS DO NOT WORK (M870) (continued).



END OF TASK

## 4-16. TROUBLESHOOTING CHART (continued).

a. LIGHTS (continued)

(6) ONE OR MORE (BUT NOT ALL) LIGHTS DO NOT LIGHT (M870A1).

### Initial Setup:

#### Tools/Test Equipment:

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

- Parking brake applied (see operator's manual for towing vehicle).

- Wheels chocked (para 2-10).

#### Equipment Conditions:

- Semitrailer coupled to towing vehicle. Engine off (see operator's manual for towing vehicle).

A. Check for burned-out lamp.

Is lamp burned out?

no

yes

Replace lamp (para 4-27, 4-28, or 4-30). Verify problem is solved.

B. Check for broken or shorted wire in cable or loose connection in plug or receptacle.

Are wires in cable broken or shorted, or are connections in plug or receptacle loose?

no

yes

Tighten, repair, or replace parts as necessary. Verify problem is solved.

C. Check for damaged light assembly.

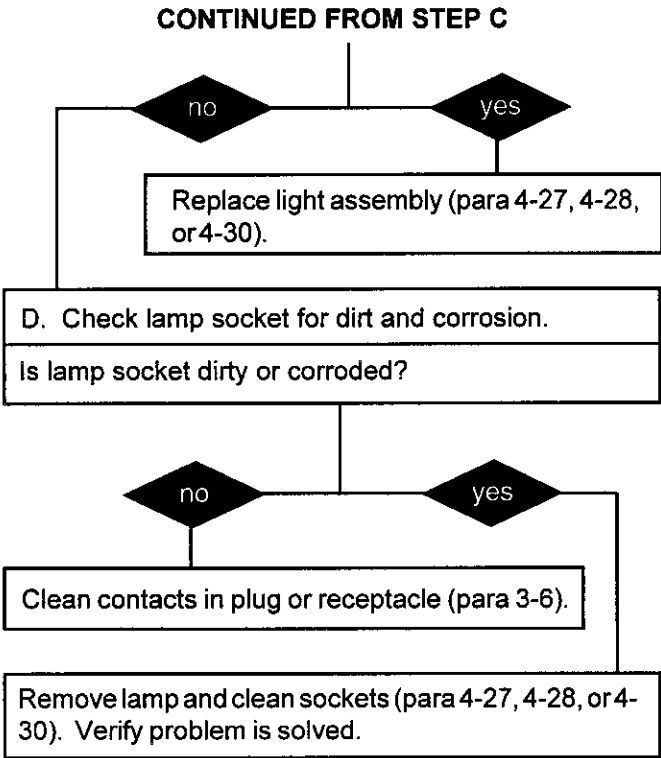
Is light assembly damaged?

continued on next page

4-16. TROUBLESHOOTING CHART (continued).

a. LIGHTS (continued)

(6) ONE OR MORE (BUT NOT ALL) LIGHTS DO NOT LIGHT (M870A1) (continued).



END OF TASK

## 4-16. TROUBLESHOOTING CHART (continued).

### b. BRAKES

(1) BRAKES DO NOT APPLY.

#### Initial Setup:

##### Tools/Test Equipment:

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)
- Multimeter (Item 8, Appendix B)

- Parking brake applied (see operator's manual for towing vehicle).
- Wheels chocked (para 2-10).

**Personnel Required:** Two

##### Equipment Conditions:

- Semitrailer coupled to towing vehicle. Engine off (see operator's manual for towing vehicle).

A. Check air-line valve of towing vehicle.

Is valve closed?

no

yes

Open valve. Verify problem is solved.

B. At front of semitrailer, check service and emergency gladhands (1) for damage or leaks by listening for hissing sound or by using a mild soap solution and watching for bubbles.

Are any gladhands (1) leaking?

no

yes

Clean gladhand (1) and replace packing (2) or replace gladhand (1) (para 4-50). Verify problem is solved.

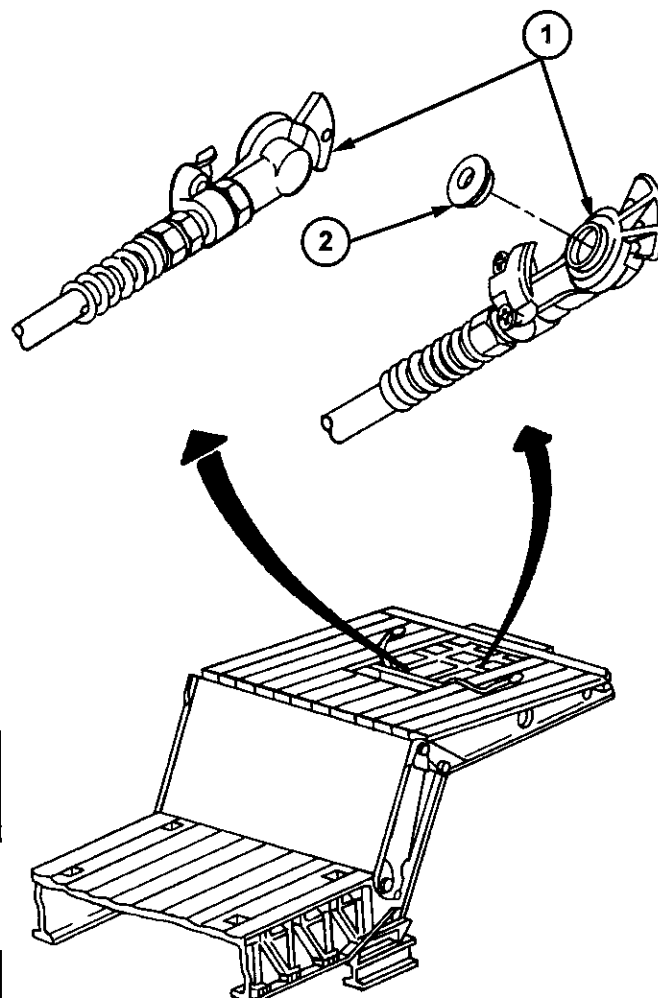
C. Check air reservoir draincocks.

Are any draincocks open?

no

yes

Close draincocks. Verify problem is solved.



continued on next page

## 4-16. TROUBLESHOOTING CHART (continued).

b. BRAKES

(1) BRAKES DO NOT APPLY (continued).

### CONTINUED FROM STEP B

D. Check emergency relay valve (refer to brake system schematic, Appendix K) for damage or leaks by listening for hissing sound or by using a mild soap solution and watching for bubbles.

Is emergency relay valve damaged or leaking?

no

yes

Replace emergency relay valve (para 4-58 or 4-59). Verify problem is solved.

E. Check emergency and service hoses and fittings from gladhands to air reservoir for damage or leaks by listening for hissing sound or by using mild soap solution and watching for bubbles.

Are any hoses and/or fittings damaged or leaking?

no

yes

Repair or replace hoses (para 4-51). Verify problem is solved.

F. Have assistant apply brakes in towing vehicle. Check slack adjusters and S-camshafts for damage.

Are any slack adjusters or S-camshafts damaged?

no

yes

1. Replace damaged slack adjusters (para 4-48).
2. Notify Direct Support maintenance about damaged S-camshafts. Verify problem is solved.

continued on next page



## 4-16. TROUBLESHOOTING CHART (continued).

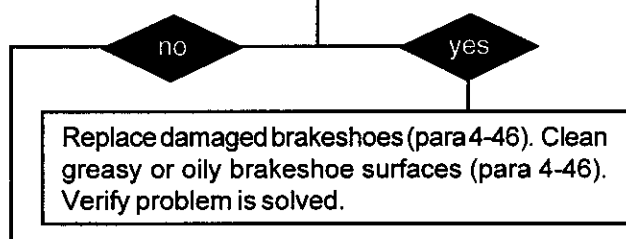
b. BRAKES

(1) BRAKES DO NOT APPLY (continued).

### CONTINUED FROM STEP F

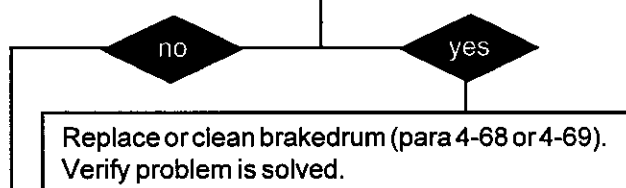
G. Remove tire and wheel assembly (para 3-9 or 3-10) and hub and brakedrum (para 4-68 or 4-69) from axle. Check brakeshoes for damage, grease, or oil on surface.

Are brakeshoes damaged, greasy, or oily?



H. Check brakedrum for damage and for grease or oil on surface.

Is brakedrum damaged, greasy, or oily?



I. Check airbrake chamber for damage or leaks by listening for hissing sound or by using a mild soap solution and watching for bubbles.

Is airbrake chamber damaged or leaking?

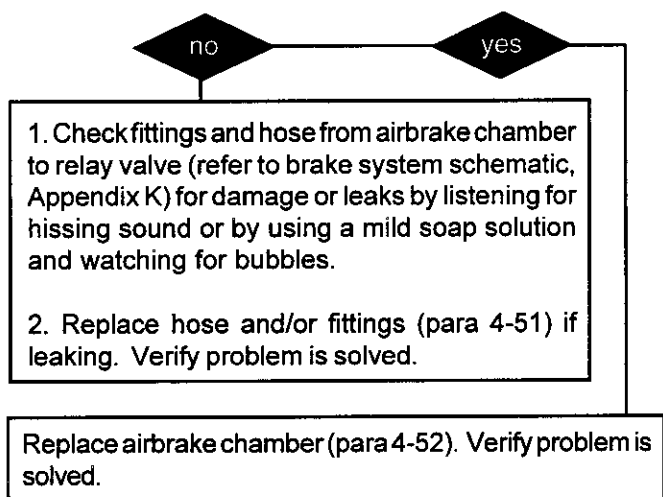
continued on next page

## 4-16. TROUBLESHOOTING CHART (continued).

b. BRAKES (continued)

(1) BRAKES DO NOT APPLY (continued).

CONTINUED FROM STEP I



END OF TASK

## 4-16. TROUBLESHOOTING CHART (continued).

b. BRAKES (continued)

(2) BRAKES GRAB.

### Initial Setup:

#### Tools/Test Equipment:

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)
- Multimeter (Item 8, Appendix B)

- Parking brake applied (see operator's manual for towing vehicle).
- Wheels chocked (para 2-10).

#### Equipment Conditions:

- Semitrailer coupled to towing vehicle. Engine off (see operator's manual for towing vehicle).

A. Check for moisture in air reservoirs.

Is moisture present in air reservoirs?

no

yes

Open drain cocks to drain moisture from air reservoirs (para 3-8). Verify problem is solved.

B. Check brake adjustment (para 4-47).

Are brakes adjusted properly?

no

yes

Adjust brakes (para 4-47). Verify problem is solved.

C. Check for grease on brake lining.

Is there grease on brake lining?

no

yes

Replace brakeshoes (para 4-46). Verify problem is solved.

continued on next page

## 4-16. TROUBLESHOOTING CHART (continued).

b. BRAKES (continued)

(2) BRAKES GRAB (continued).

### CONTINUED FROM STEP C

D. Check for loose or worn wheel bearings.

Are wheel bearings loose or worn?

no

yes

Replace wheel bearings (para 4-68 or 4-69). Verify problem is solved.

E. Check for loose or worn brake linings.

Are brake linings loose or worn?

no

yes

Replace brakeshoes (para 4-46).

F. Inspect for cracked, scored, or worn brakedrum.

Is brakedrum cracked, scored, or worn?

no

yes

1. Replace cracked brakedrum (para 4-68 or 4-69). Verify problem is solved.

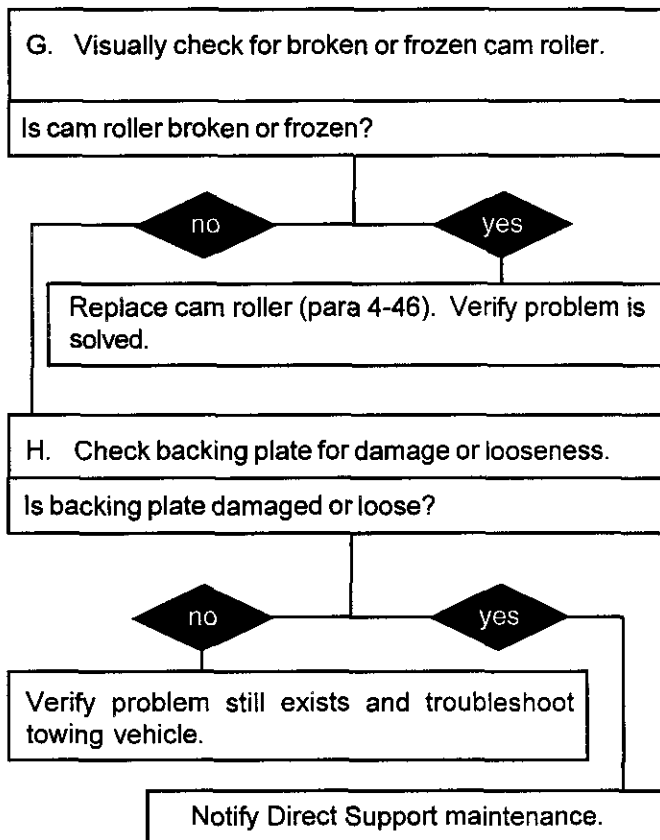
2. Notify Direct Support maintenance if brakedrum is scored or worn.

continued on next page

**4-16. TROUBLESHOOTING CHART (continued).**

b. BRAKES (continued)

(2) BRAKES GRAB (continued).

**CONTINUED FROM STEP F****END OF TASK**

## 4-16. TROUBLESHOOTING CHART (continued).

b. BRAKES (continued)

(3) BRAKES DO NOT RELEASE.

### Initial Setup:

#### Tools/Test Equipment:

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

- Parking brake applied (see operator's manual for towing vehicle).
- Wheels chocked (para 2-10).

#### Equipment Conditions:

- Semitrailer coupled to towing vehicle. Engine off (see operator's manual for towing vehicle).

A. Check for defective relay emergency valve and multifunction valve.

Is either valve defective?

no

yes

Replace defective valve (para 4-54, 4-55, or 4-56).  
Verify problem is solved.

B. Check air hose connections to towing vehicle.

Are air hoses connected properly?

no

yes

Connect air hoses properly. Verify problem is solved.

C. Check position of brake valve on towing vehicle.

Is brake valve in release position?

no

yes

Move brake valve to release position. Verify problem is solved.

continued on next page

**4-16. TROUBLESHOOTING CHART (continued).**

b. BRAKES (continued)

(3) BRAKES DO NOT RELEASE (continued).

**CONTINUED FROM STEP C**

D. Check for restriction in service air hose and emergency air hose.

Is either air hose restricted?

no

yes

Replace or repair as required (para 4-51). Verify problem is solved.

E. Check for closed shutoff valves on towing vehicle.

Are shutoff valves closed?

no

yes

1. Check for weak or broken brakeshoe tension spring.

2. Replace weak or broken brakeshoe tension spring (para 4-46). Verify problem is solved.

Open shutoff valves (refer to operator's manual for towing vehicle).

**END OF TASK**

## 4-16. TROUBLESHOOTING CHART (continued).

b. BRAKES (continued)

(4) BRAKES ARE SLOW TO APPLY OR RELEASE.

### Initial Setup:

#### Tools/Test Equipment:

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

- Parking brake applied (see operator's manual for towing vehicle).

- Wheels chocked (para 2-10).

#### Equipment Conditions:

- Semitrailer coupled to towing vehicle. Engine off (see operator's manual for towing vehicle).

A. Check for low air pressure indication on air pressure gage in towing vehicle. Check air lines and connectors for restrictions.

Does air pressure gage in towing vehicle indicate low air pressure?

no

yes

1. Tighten connections.
2. Remove any restrictions from hoses.
3. Repair or replace air hoses and connectors as necessary (para 4-51).
4. Verify problem is solved.

B. Check operation of emergency relay valve (para 4-58 or 4-59).

Is emergency relay valve operational?

no

yes

Replace emergency relay valve (para 4-58 or 4-59). Verify problem is solved.

continued on next page



**4-16. TROUBLESHOOTING CHART (continued).**

b. BRAKES (continued)

(4) BRAKES ARE SLOW TO APPLY OR RELEASE  
(continued).**CONTINUED FROM STEP B**C. Check for weak or broken brakeshoe tension  
spring.

Is brakeshoe tension spring weak or broken?

no

yes

Replace brakeshoe tension spring (para 4-46).  
Verify problem is solved.

D. Check for defective airbrake chambers.

Are airbrake chambers defective?

no

yes

1. Check for frozen or broken cam roller.
2. Replace cam roller if frozen or broken (para 4-48). Verify problem is solved.

Replace airbrake chambers (para 4-52). Verify problem  
is solved.**END OF TASK**

## 4-16. TROUBLESHOOTING CHART (continued).

b. BRAKES (continued)

(5) BRAKES DRAG WITH ONE OR MORE BRAKEDRUMS RUNNING HOT.

*Initial Setup:*

**Tools/Test Equipment:**

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

- Parking brake applied (see operator's manual for towing vehicle).
- Wheels chocked (para 2-10).

**Equipment Conditions:**

- Semitrailer coupled to towing vehicle. Engine off (see operator's manual for towing vehicle).

A. Check brake adjustment (para 4-47).

Are brakes out of adjustment?

no

yes

Adjust brakes (para 4-47). Verify problem is solved.

B. Check for weak or broken brakeshoe tension spring.

Is brakeshoe tension spring weak or broken?

no

yes

Replace brakeshoe tension spring (para 4-46). Verify problem is solved.

C. Check for broken or frozen cam roller.

Is cam roller broken or frozen?

no

yes

1. Replace any cracked or deformed brakedrum (para 4-68 or 4-69).
2. Notify Direct Support maintenance if brakedrum is scored.

Replace cam roller (para 4-46). Verify problem is solved.

**END OF TASK**

## 4-16. TROUBLESHOOTING CHART (continued).

c. GOOSENECK

(1) GOOSENECK WILL NOT RAISE OR LOWER.

### Initial Setup:

#### Tools/Test Equipment:

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

- Parking brake applied (see operator's manual for towing vehicle).
- Wheels chocked (para 2-10).

#### Equipment Conditions:

- Semitrailer coupled to towing vehicle. Engine off (see operator's manual for towing vehicle).

A. Check to see if two locking pins (1) are removed.

Are locking pins (1) removed?

no

yes

Remove two locking pins (1) (para 2-10). Verify problem is solved.

B. Check each of two hinge joints (2) for dirt or stones that could cause hinge joint to jam.

Is either hinge joint (2) jammed?

no

yes

Clean hinge joints (2). Verify problem is solved.

C. Check eight hinge pins (3) for damage or binding.

Are any hinge pins (3) damaged or binding?

no

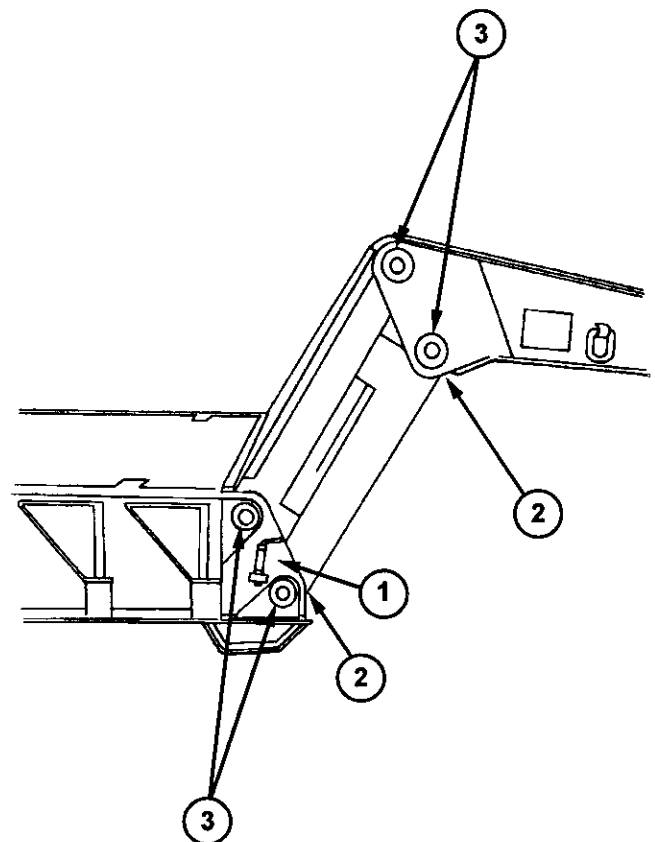
yes

Verify that problem still exists. Notify Direct Support maintenance.

1. If any hinge pins (1) are binding, lubricate (Appendix J).

2. If any hinge pins (1) are damaged, notify Direct Support maintenance.

END OF TASK



## 4-16. TROUBLESHOOTING CHART (continued).

d. TIRES

(1) TIRES ARE EXCESSIVELY WORN, CUPPED, OR SCUFFED.

*Initial Setup:*

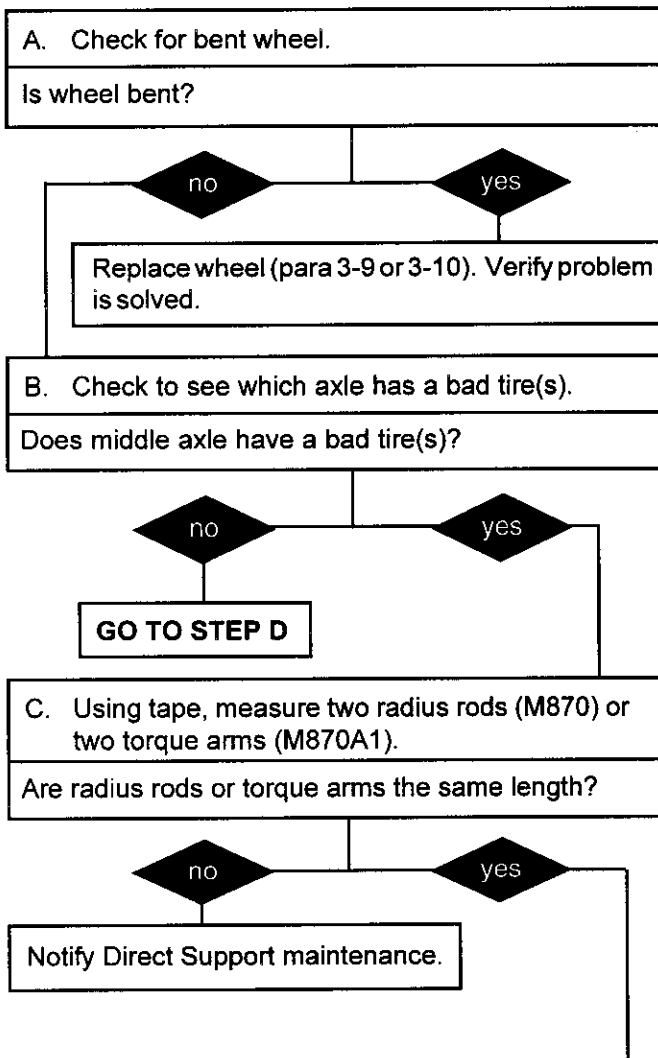
**Tools/Test Equipment:**

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

- Parking brake applied (see operator's manual for towing vehicle).
- Wheels chocked (para 2-10).

**Equipment Conditions:**

- Semitrailer coupled to towing vehicle. Engine off (see operator's manual for towing vehicle).



continued on next page

**4-16. TROUBLESHOOTING CHART (continued).**

d. TIRES (continued)

(1) TIRES ARE EXCESSIVELY WORN, CUPPED, OR SCUFFED (continued).

**CONTINUED FROM STEP C**

D. Check axle of bad tire for damaged, missing, or loose bolts or screws in mounting hardware.

Are bolts or screws damaged, loose, or missing?

no

yes

Notify Direct Support maintenance.

E. Check axle for damage or bending.

Is axle damaged or bent?

no

yes

Notify Direct Support maintenance.

F. Check for grabbing brakes.

Are brakes grabbing?

no

yes

Troubleshoot brakes (para 4-16b(2)).

Verify that problem still exists. Notify Direct Support maintenance.

**END OF TASK**

## Section V. GENERAL MAINTENANCE INSTRUCTIONS

Paragraph Number	Paragraph Title	Page Number
4-17	General .....	4-42
4-18	Work Safety .....	4-42
4-19	Cleaning Instructions .....	4-43
4-20	Inspection Instructions .....	4-44
4-21	Repair Instructions .....	4-45
4-22	Tagging Hoses and Tubes .....	4-45
4-23	Painting and Stenciling .....	4-46
4-24	Lubrication Instructions .....	4-46
4-25	Torque Values .....	4-46

**4-17. GENERAL.**

- a. These general maintenance instructions contain general shop practices and specific methods you must be familiar with to properly maintain your M870/M870A1 semitrailer. You should read and understand these practices and methods before performing any maintenance task.
- b. Before beginning a task, find out how much repair, modification, or replacement is needed to fix the equipment as described in this manual. Sometimes the reason for equipment failure can be seen right away and complete teardown is not necessary. Disassemble equipment only as far as necessary to repair or replace damaged or broken parts.
- c. The following "Initial Setup" information applies to all procedures:
  1. Resources are not listed unless they apply to the procedure.
  2. Personnel are listed only if more than one technician is required to complete the task. If "Personnel Required" is not listed, one technician can perform the task.
- d. All tags and forms attached to equipment must be checked to learn the reason for removal from service. Modification work orders and technical bulletins must also be checked for equipment changes and updates.
- e. In some cases, a part may be damaged by removal. If the part appears to be good and other parts behind it are not defective, leave it on and continue with the procedure. Here are a few simple rules:
  1. Do not remove dowel pins or studs unless loose, bent, broken, or otherwise damaged.
  2. Do not remove bearings or bushings unless damaged. If you need to remove them to access parts, pull out bearings and bushings carefully.
  3. Replace all gaskets, seals, lockwashers, cotter pins, preformed packings, and other locking hardware.

**4-18. WORK SAFETY.**

- a. Observe all WARNINGS and CAUTIONS. Always use power tools carefully.

---

**4-18. WORK SAFETY (continued).**

---

- b. Protect yourself against injury. Wear protective gear, such as safety goggles or lenses, safety shoes, rubber apron, or gloves.
- c. When lifting heavy parts, have someone help you. Make sure that lifting and jacking equipment is working properly, is suitable for the assigned task, and is secure against slipping.
- d. All maintenance should be performed with:
  - semitrailer parking brake engaged;
  - towing vehicle in neutral with parking brake engaged, if semitrailer is attached to towing vehicle; and
  - towing vehicle engine stopped, if semitrailer is attached to towing vehicle.

---

**4-19. CLEANING INSTRUCTIONS.**

---

**WARNING**

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

**a. General.**

Cleaning instructions will be the same for a majority of the parts and components that make up the M870/M870A1 semitrailer. The following should apply to all cleaning, inspection, repair, and assembly operations:

1. Clean all parts before inspection, after repair, and before assembly.
2. Keep hands free of grease, which can collect dust, dirt, and grit.
3. After cleaning, cover or wrap all parts to protect them from dust and dirt. Parts that are subject to rust should be lightly oiled.

**b. Steam-Cleaning.**

1. Before steam-cleaning exterior of semitrailer, protect all electrical equipment that could be damaged by steam or moisture.
2. Place disassembled parts in a suitable container to steam-clean. Parts that are subject to rust should be dried and lightly oiled after cleaning.

**c. Castings, Forgings, and Machined Metal Parts.****WARNING**

**Drycleaning solvent 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.**

1. Clean inner and outer surfaces with drycleaning solvent (Item 19, Appendix F).

---

#### 4-19. CLEANING INSTRUCTIONS (continued).

---

2. Remove grease and accumulated deposits with a stiff-bristled brush.

##### **WARNING**

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

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

##### **CAUTION**

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

- d. **Oil Seals, Electrical Cables, and Flexible Hoses.** Wash electrical cables and flexible hoses with solution of water and detergent (Item 4, Appendix F), and wipe dry.
- e. **Bearings.** Clean bearings in accordance with TM 9-214.

---

#### 4-20. INSPECTION INSTRUCTIONS.

---

##### **NOTE**

All damaged areas should be marked for repair or replacement.

- a. All components and parts must be checked carefully to determine if they are serviceable for reuse, can be repaired, or must be scrapped.
- b. Inspect drilled and tapped (threaded) holes for the following:
  1. In or around holes—wear, distortion, cracks, and any other damage.
  2. Threaded areas—wear, distortion (stretching), and evidence of cross-threading.
- c. Inspect metal lines, flexible lines (hoses), and metal fittings and connectors for the following:
  1. Metal lines—sharp kinks, cracks, bad bends, and dents.
  2. Flexible lines—fraying, evidence of leakage, and loose metal fittings or connectors.
  3. Metal fittings and connectors—thread damage and worn or rounded hex heads.
- d. Inspect castings, forgings, and machined metal parts for the following:
  1. Machined surfaces—nicks, burrs, raised metal, wear, and other damage.
  2. Inner and outer surfaces—breaks and cracks.



---

**4-20. INSPECTION INSTRUCTIONS (continued).**

---

- e. Inspect air lines, fittings, and connectors for leaks by coating fittings and connectors with solution of detergent (Item 4, Appendix F) and water. No leakage is permissible.
- f. Inspect bearings in accordance with TM 9-214.

---

**4-21. REPAIR INSTRUCTIONS.**

---

- a. Any repair procedure peculiar to a specific part or component is covered in the section or paragraph relating to that item. After repair, clean all parts thoroughly to prevent dirt, metal chips, or other foreign material from entering any working parts.
- b. Repair castings, forgings, and machined parts using the following instructions:
  - 1. Refer to TC 9-237 for instructions on repairing minor cracked castings or forgings.

**WARNING**

**Drycleaning solvent 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.**

- 2. Repair minor damage to machined surfaces with a fine mill file or abrasive cloth dipped in drycleaning solvent (Item 19, Appendix F).
  - 3. Replace any deeply nicked machined surface that could affect the assembled operation.
  - 4. Repair minor damage to threaded capscrew holes with thread tap of same size, to prevent cutting oversize.
- c. Refer to paragraph 4-51 for maintenance on metal lines, flexible lines (hoses), and metal fittings.

---

**4-22. TAGGING HOSES AND TUBES.**

---

- a. As soon as first hose or tube is disconnected, write the number "1" on two tags (Item 20, Appendix F). Secure one tag to the hose or tube and the other tag to the nipple or fitting. After disconnecting the second hose or tube, write the number "2" on two tags. Secure one tag to the hose or tube and the other tag to the nipple or fitting. Do the same for all hoses and tubes.
- b. Note which numbers you used, in pencil, on the art in this manual. This will help you retag properly when you remove tags from some parts to perform cleaning and maintenance work.
- c. Remove all tags when finished.

---

#### **4-23. PAINTING AND STENCILING.**

---

- a. General instruction for painting and stenciling are in TB 43-0209 and TM 43-0139.
- b. Spot painting and stenciling will be performed under the control of Unit maintenance personnel.
- c. Painting of a complete semitrailer can be authorized and performed only by Direct Support maintenance or by higher support levels.

---

#### **4-24. LUBRICATION INSTRUCTIONS.**

---

To prevent corrosion, apply a light coat of lubricating oil to metal parts after they are cleaned but before they are assembled. Lubricate components and systems in accordance with the instructions in PMCS (Table 2-1) and Appendix J.

---

#### **4-25. TORQUE VALUES.**

---

Torque values given in the maintenance procedures apply to unlubricated threads. Follow the torque values given in the maintenance procedures; if no torque value is given, refer to Appendix H.

## Section VI. ELECTRICAL SYSTEM MAINTENANCE

Paragraph Number	Paragraph Title	Page Number
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4-27	Blackout Light Replacement (M870A1) .....	4-47
4-28	Taillight Replacement (M870A1) .....	4-50
4-29	Clearance Light Replacement (M870) .....	4-51
4-30	Clearance Light Replacement (M870A1) .....	4-55
4-31	Rear Corner Clearance Light Replacement (M870) .....	4-57
4-32	Stoplight-Taillight Replacement (M870) .....	4-59
4-33	Composite Light Assembly Repair (M870 Marine Corps Variation) .....	4-61
4-34	Wiring Harness Replacement (M870) .....	4-63
4-35	Voltage Reduction Box Replacement (M870) .....	4-81
4-36	12-Volt Receptacle Replacement (M870A1) .....	4-83
4-37	24-Volt Receptacle Replacement (M870A1) .....	4-85
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4-39	Eight-Point Terminal Strip Replacement (M870A1) .....	4-89
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4-41	Front Wiring Harness Replacement (M870A1) .....	4-93
4-42	Middle Wiring Harness Replacement (M870A1) .....	4-95
4-43	Rear Wiring Harness Replacement (M870A1) .....	4-96
4-44	Main Wiring Harness Replacement (M870A1) .....	4-98

**4-26. GENERAL.**

This section provides information for performing Unit maintenance electrical repairs on the M870 and M870A1 semitrailers.

**4-27. BLACKOUT LIGHT REPLACEMENT (M870A1).***This Task Covers:*

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

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

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

**Materials/Parts:**

- Lockwasher (2) (Item 14, Appendix I)

---

## 4-27. BLACKOUT LIGHT REPLACEMENT (M870A1) (continued).

---

### a. REMOVAL

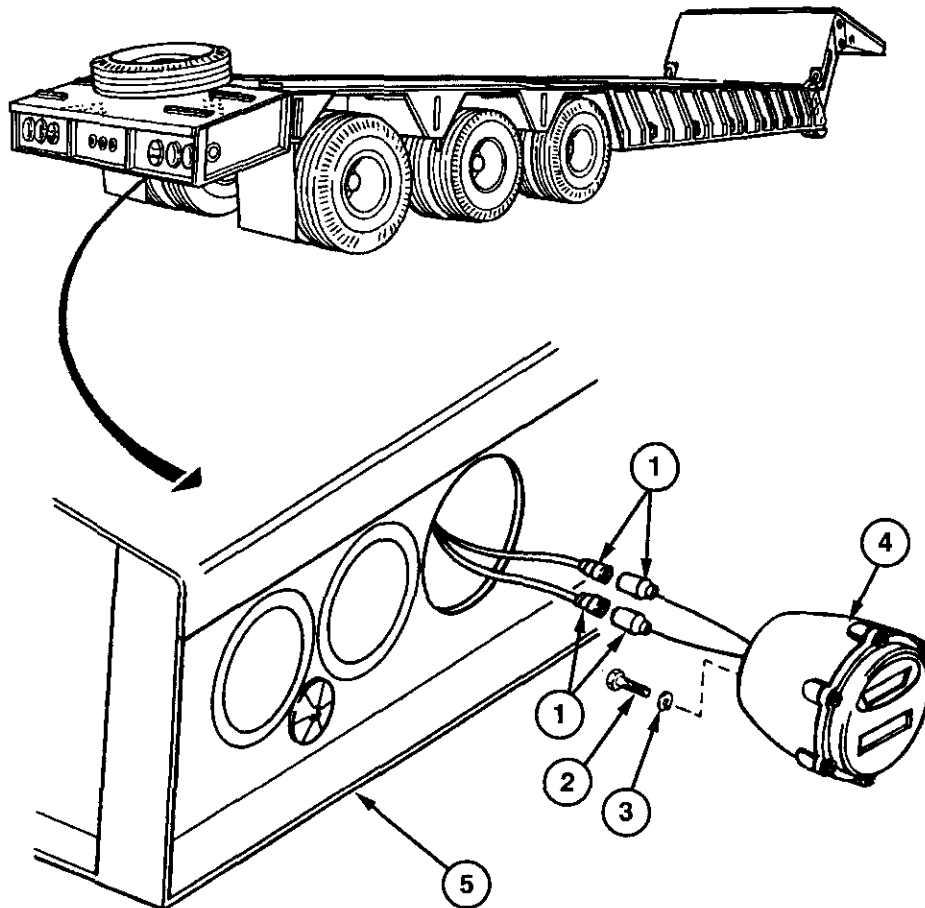
#### WARNING

Disconnect all outside power before performing any maintenance on electrical system. Failure to do so could result in serious injury or death.

#### NOTE

The procedure for replacing the blackout light is the same for left side and right side.

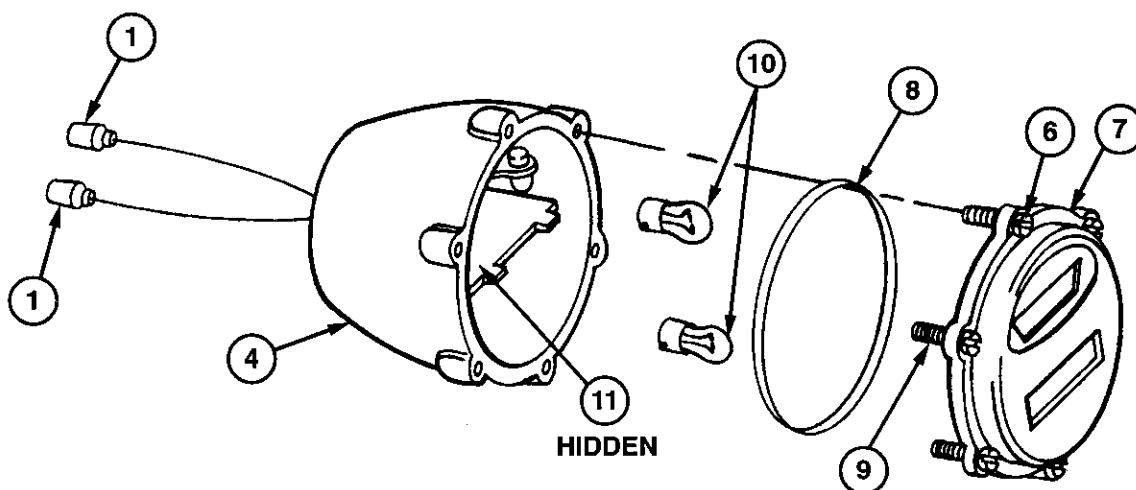
1. Tag and pull apart two connectors (1).
2. Remove two screws (2) and lockwashers (3) holding blackout light assembly (4) to frame (5). Discard lockwashers.
3. Remove blackout light assembly (4) from frame (5).



## 4-27. BLACKOUT LIGHT REPLACEMENT (M870A1) (continued).

### b. DISASSEMBLY

1. Unscrew six captive screws (6) on door (7) of blackout light assembly (4).
2. Remove door (7) and gasket (8) from blackout light assembly (4). Captive screws (6) are fitted with retaining rings (9) and will remain with door (7).
3. Remove two 24-volt lamps (10) from sockets (11).



### c. CLEANING AND INSPECTION

See paragraphs 4-19 and 4-20 for general cleaning and inspection instructions.

### d. ASSEMBLY

1. Install two 24-volt lamps (10) in sockets (11).
2. Install gasket (8) in door (7).
3. Tighten six captive screws (6) on door (7).

### e. INSTALLATION

1. Install blackout light assembly (4) on frame (5) and secure with two lockwashers (3) and screws (2).
2. Connect two connectors (1).

#### FOLLOW-ON TASKS:

- None

## 4-28. TAILLIGHT REPLACEMENT (M870A1).

*This Task Covers:*

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

*Initial Setup:*

### Tools/Test Equipment:

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

### a. REMOVAL

#### **WARNING**

**Disconnect all outside power before performing any maintenance on the electrical system. Failure to do so could result in serious injury or death.**

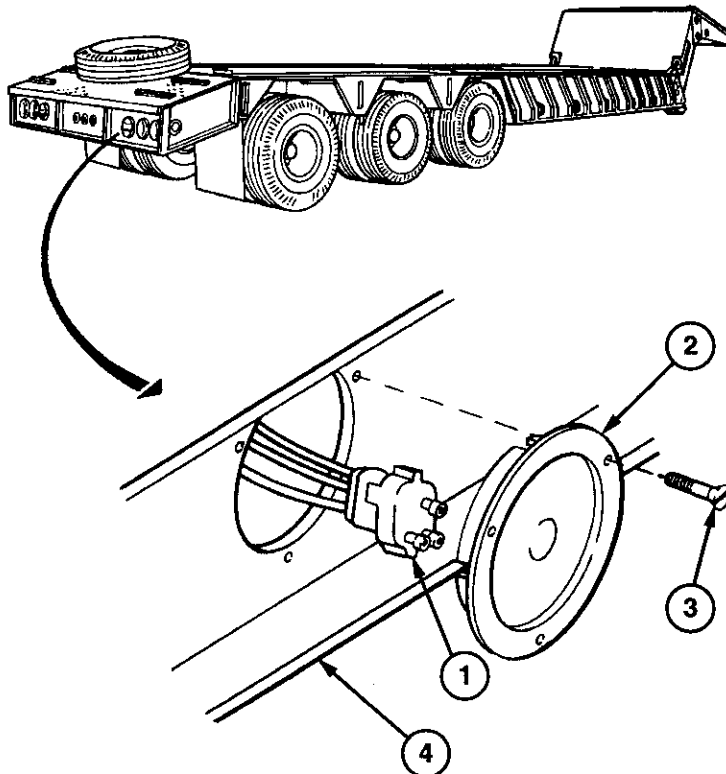
#### **NOTE**

There are four taillights located on the rear of the semitrailer. This procedure shows replacement for one taillight.

1. Pull connector (1) from rear of taillight (2).
2. Remove three screws (3) holding taillight (2) to frame (4).
3. Remove taillight (2) from frame (4).

### b. INSTALLATION

1. Install new taillight (2) in frame (4).
2. Install connector (1) on rear of taillight (2).
3. Secure taillight (2) to frame (4) with three screws (3).



### FOLLOW-ON TASKS:

- None

#### 4-29. CLEARANCE LIGHT REPLACEMENT (M870).

***This Task Covers:***

- a. Removal

b. Installation

**Initial Setup:**

**Tools/Test Equipment:**

- Common no. 1 tool set (Item 6, Appendix B)
- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

**Personnel Required:** Two

### Materials/Parts:

- Lockwasher (4) (Item 11, appendix I)

**a. REMOVAL**

## WARNING

**Disconnect all outside power before performing any maintenance on the electrical system. Failure to do so could result in serious injury or death.**

### NOTE

- There are two types of clearance lights found on the M870 semitrailers: clearance lights and clearance marker lights. This procedure can be used to replace either type.
- There are seven clearance lights on the semitrailer. Two amber clearance lights are located on the sides of the gooseneck and two more are located on the sides of the semitrailer at about the middle. Three red clearance light are located on the rear of the semitrailer. This procedure describes the replacement of one clearance light.

## 4-29. CLEARANCE LIGHT REPLACEMENT (M870) (continued).

### NOTE

If replacing lamps only, do steps 1 through 3 only.

1. Remove two screws (1), clearance light cover (2), and lens (3) from base plate (4).

### NOTE

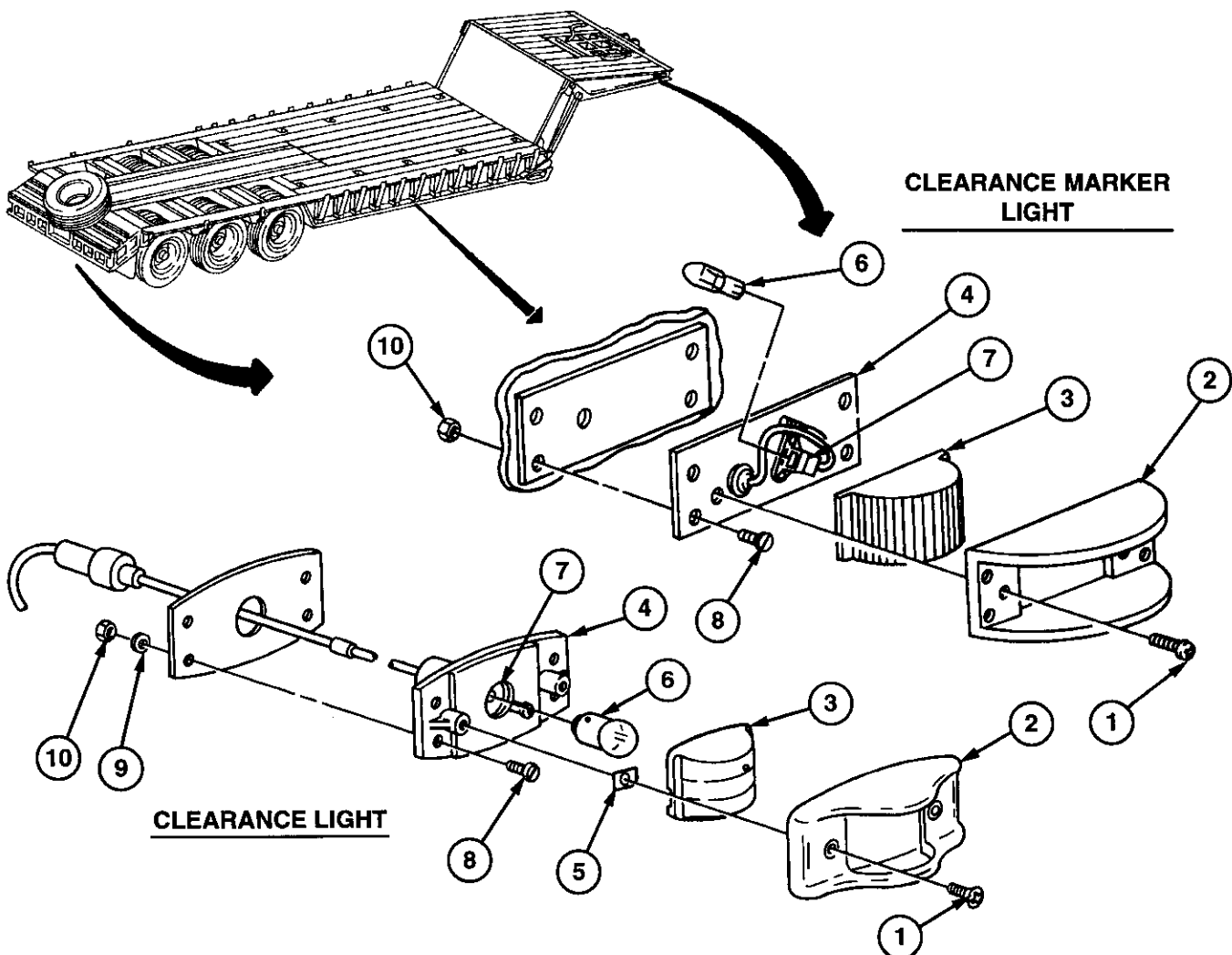
Clearance marker lights do not have clips to hold lens in place on clearance light cover.

2. Remove clips (5) holding lens (3) in place on door (2). Separate clearance light cover (2) and lens (3).
3. Remove lamp (6) from socket (7).

### NOTE

It may be necessary to have an assistant behind frame to keep nuts from turning.

4. Remove four screws (8), lockwashers (9), and nuts (10) from base plate (4). Discard lockwashers.





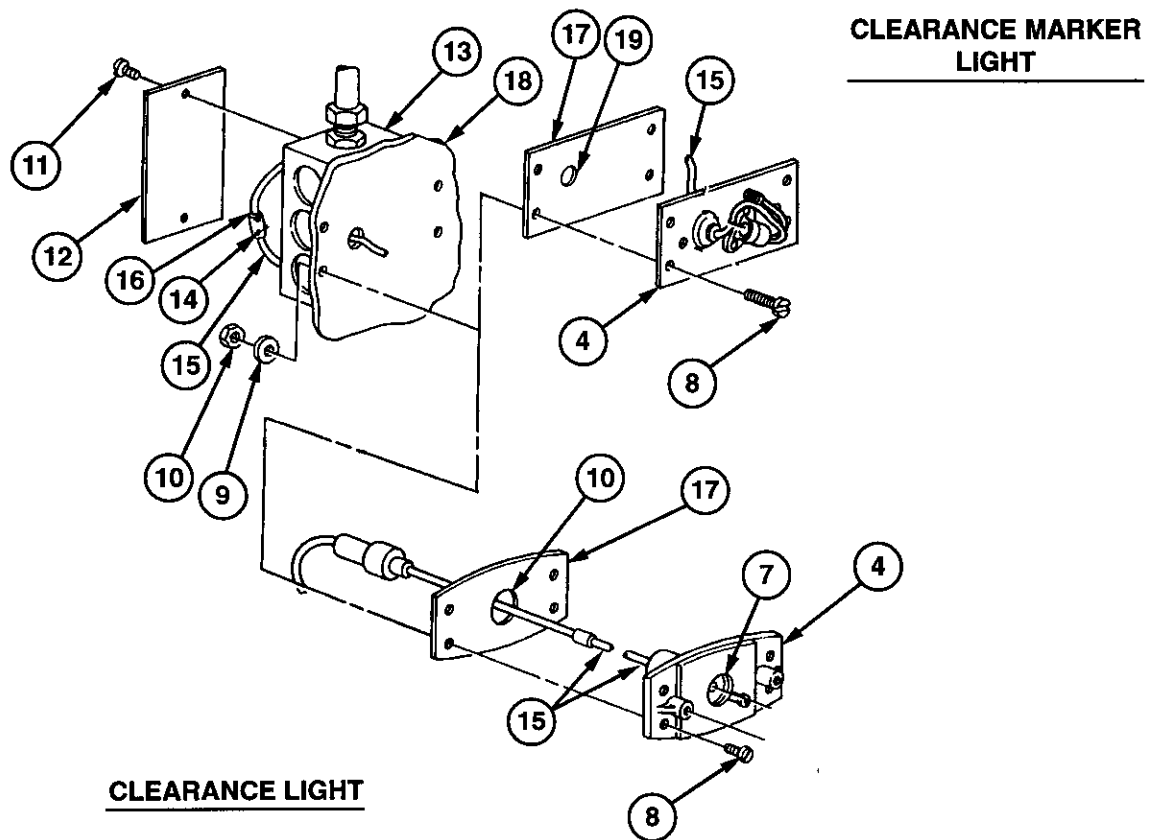
**4-29. CLEARANCE LIGHT REPLACEMENT (M870) (continued).**

5. Remove two screws (11) and cover plate (12) from junction box (13).
6. Cut connector (14) from between two wires (15 and 16).
7. Remove base plate (4) and mechanical felt (17) from frame (18).

**b. INSTALLATION****NOTE**

If replacing lamps only, do steps 8 through 11 only.

1. Install mechanical felt (17) on frame (18).
2. Thread wire (15) through hole (19) in mechanical felt (17).
3. Attach baseplate (4) and mechanical felt (17) to frame (18) with four screws (8), new lockwashers (9), and nuts (10).



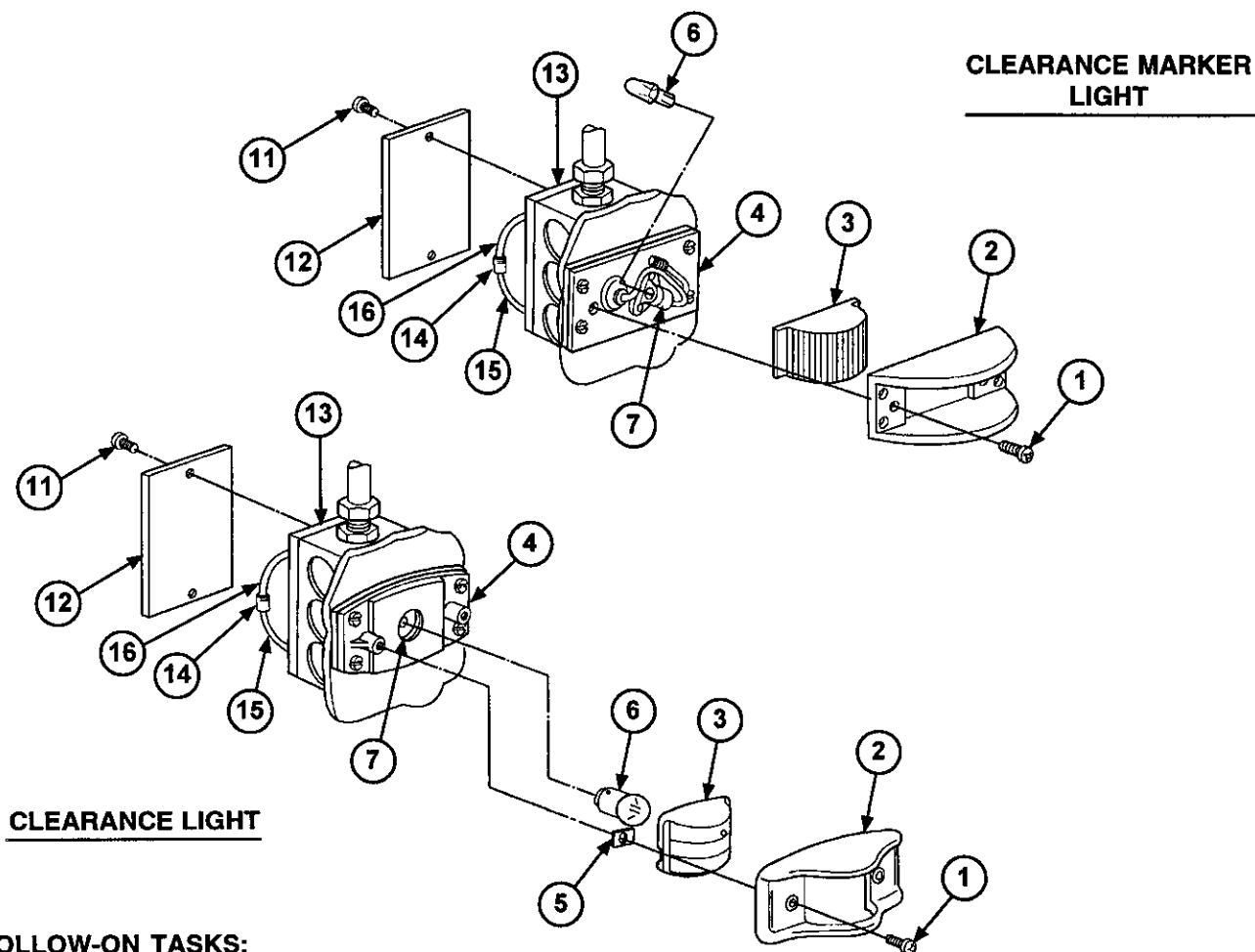
## 4-29. CLEARANCE LIGHT REPLACEMENT (M870) (continued).

4. Strip insulation from two wires (15 and 16) in junction box (13) to depth of connector (14).
5. Install connector (14) on wire (15) and crimp.
6. Install connector (14) on wire (16) and crimp.
7. Install cover plate (12) on junction box (13) using two screws (11).
8. Push lamp (6) into socket (7).
9. Join lens (3) and clearance light cover (2).

### NOTE

Clearance marker lights do not have clips to hold lens in place on door.

10. Place clips (5) in position and install two screws (1) into clearance light cover (2) and clips (5) just far enough to hold lens (3) in place.
11. Using two screws (1), install clearance light cover (2) and lens (3) on base plate (4).



### FOLLOW-ON TASKS:

- None

#### 4-30. CLEARANCE LIGHT REPLACEMENT (M870A1).

***This Task Covers:***

- a. Removal

b. Installation

**Initial Setup:**

**Tools/Test Equipment:**

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

### Materials/Parts:

- Grease (Item 6, Appendix F)

**a. REMOVAL**

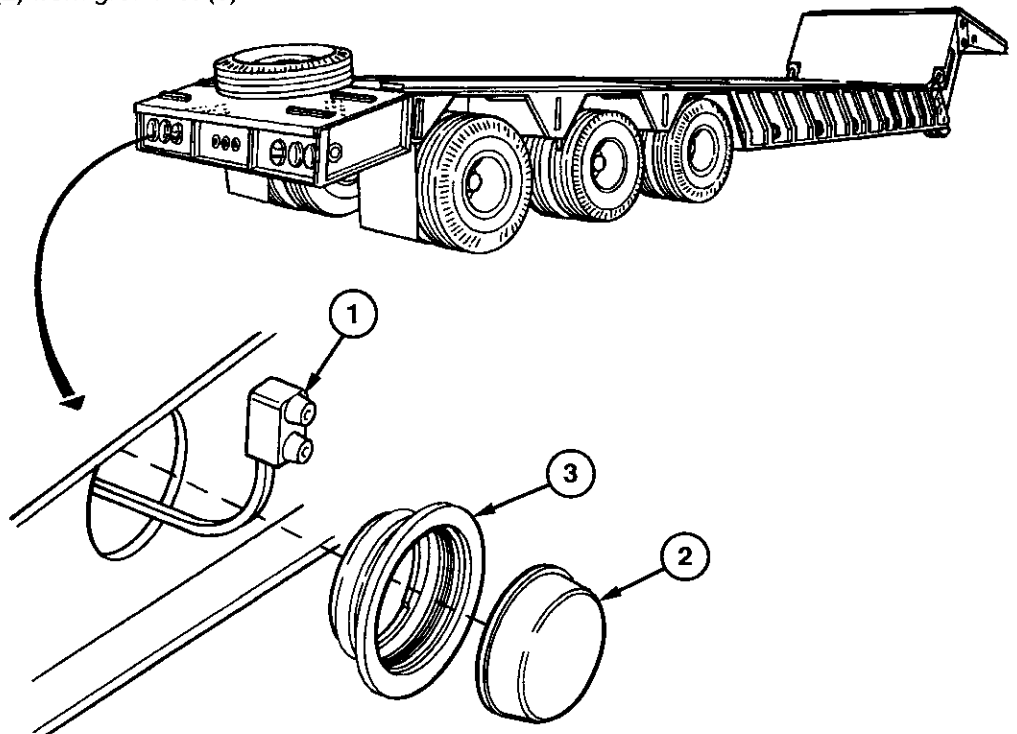
## **WARNING**

**Disconnect all outside power before performing any maintenance on the electrical system. Failure to do so could result in serious injury or death.**

### NOTE

There are 11 clearance lights on the M870A1 semitrailer: two amber lights on the front of the gooseneck, an amber light on each side of the gooseneck, an amber light on each side of the semitrailer, a red light on each rear corner of the semitrailer, and three red lights on the rear of the semitrailer.

1. Disconnect cable connector (1) from clearance light (2).
2. Pry clearance light (2) from grommet (3).



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## 4-30. CLEARANCE LIGHT REPLACEMENT (M870A1) (continued).

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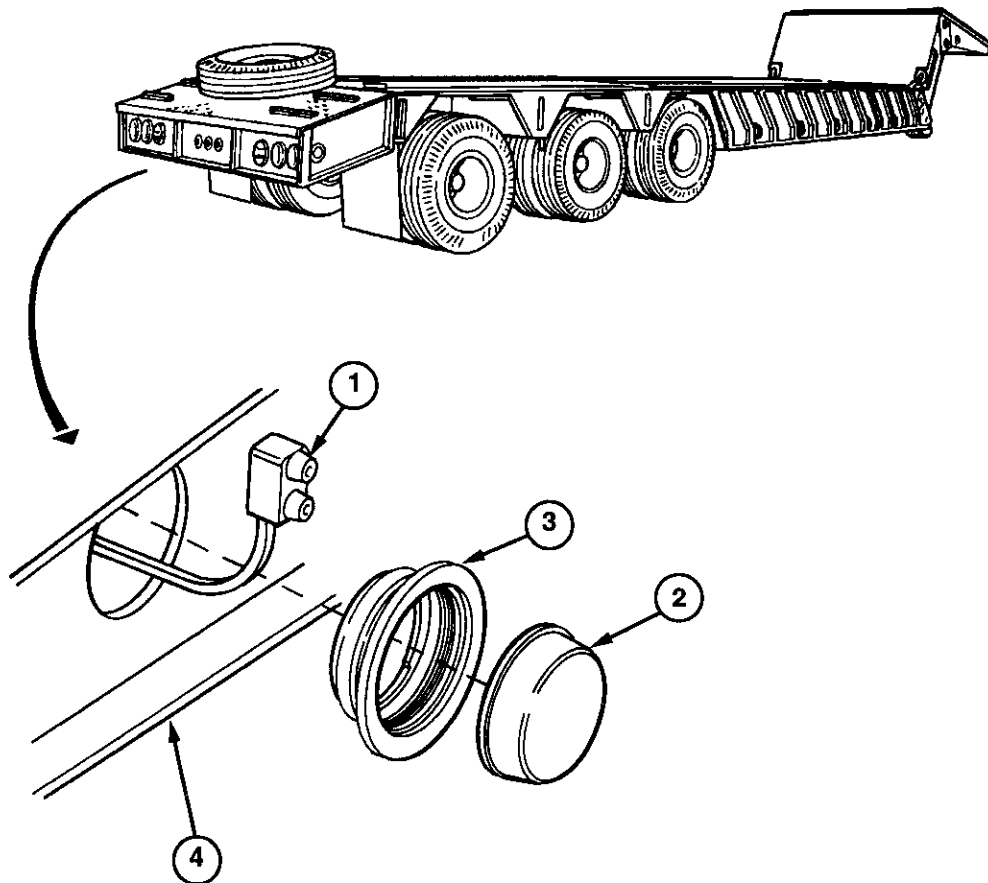
### NOTE

It is not necessary to replace grommet unless damaged.

3. Remove grommet (3) from frame (4).

### b. INSTALLATION

1. Coat grommet (3) with a light film of grease and install in frame (4).
2. Connect cable connector (1) to clearance light (2).
3. Snap clearance light (2) into position in grommet (3).



### FOLLOW-ON TASKS:

- None

## 4-31. REAR CORNER CLEARANCE LIGHT REPLACEMENT (M870).

*This Task Covers:*

a. Removal

b. Installation

*Initial Setup:*

### Tools/Test Equipment:

• Common no. 1 tool set (Item 6, Appendix B)

• Tool kit, general mechanic's: automotive (Item 7, Appendix B)

### NOTE

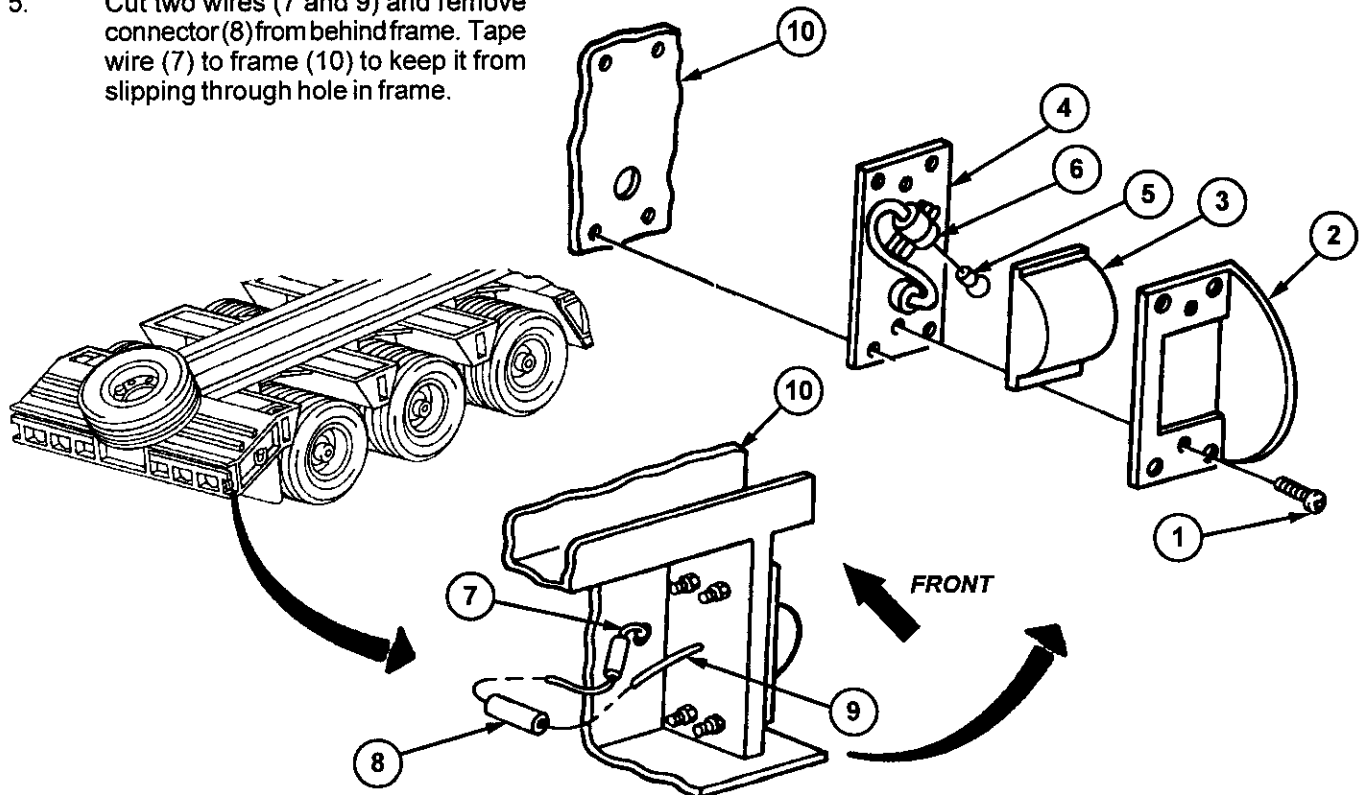
If replacing lamps only, do steps 1 through 3 only.

### a. REMOVAL

### WARNING

**Disconnect all outside power before performing any maintenance on the electrical system. Failure to do so could result in serious injury or death.**

1. Remove two screws (1), clearance light cover (2), and lens (3) from base plate (4).
2. Separate clearance light cover (2) from lens (3).
3. Remove lamp (5) from socket (6).
4. Pull wire (7), connector (8), and wire (9) through hole in frame (10).
5. Cut two wires (7 and 9) and remove connector (8) from behind frame. Tape wire (7) to frame (10) to keep it from slipping through hole in frame.

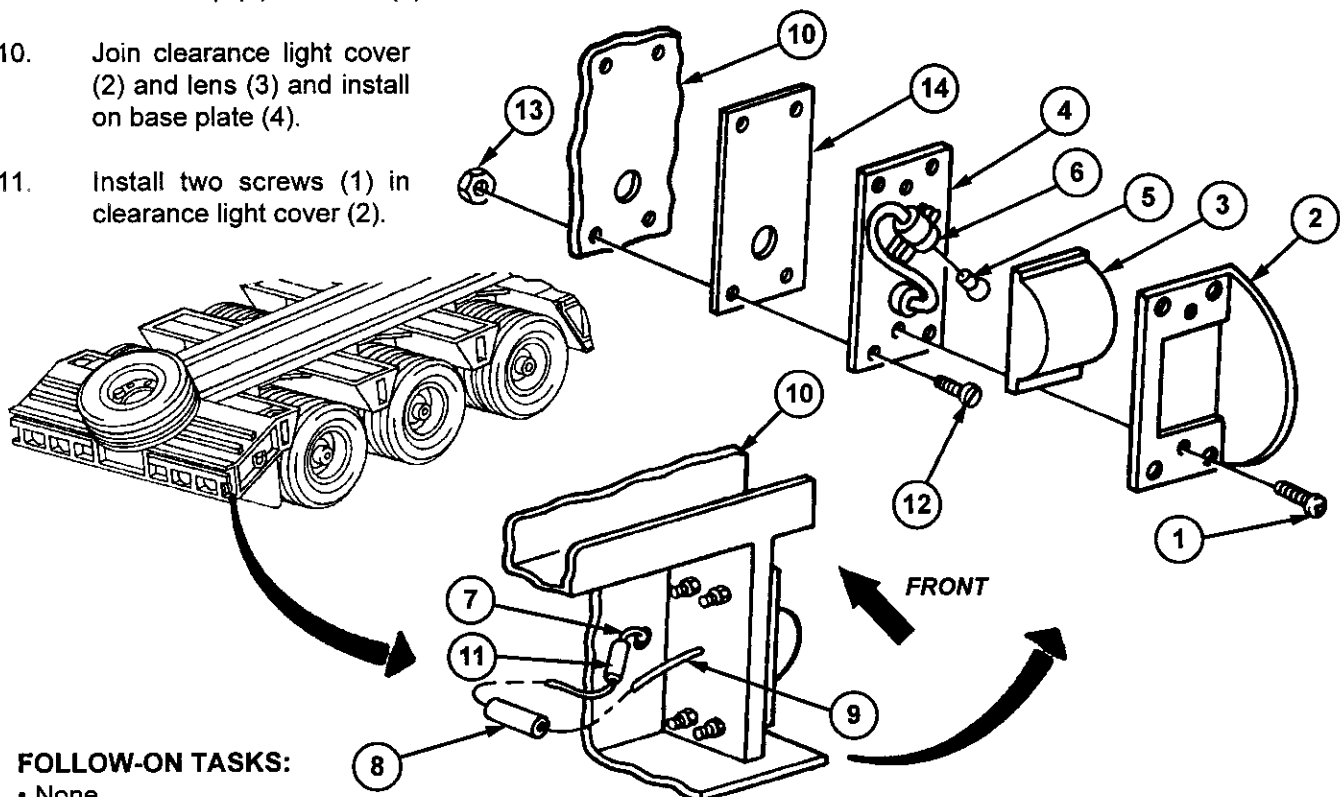


#### 4-31. REAR CORNER CLEARANCE LIGHT REPLACEMENT (M870) (continued).

6. Remove rubber sleeve (11) from wire (7).
7. Remove four screws (12) and nuts (13) from base plate (4).
8. Remove base plate (4) from mechanical felt (14).
9. Remove mechanical felt (14) from frame (10).

##### b. INSTALLATION

1. Put mechanical felt (14) and base plate (4) in place on frame (10).
2. Thread wire (9) from base plate (4) through hole in mechanical felt (14) and frame (10).
3. Install four screws (12) and nuts (13) in base plate (4).
4. Install rubber sleeve (11) on wire (7).
5. Strip two wires (7 and 9) to depth of connector (8).
6. Install connector (8) on wire (7) and crimp.
7. Install connector (8) on wire (9) and crimp.
8. Push wire (7), connector (8), and wire (9) into hole in frame (10).
9. Install lamp (5) in socket (6).
10. Join clearance light cover (2) and lens (3) and install on base plate (4).
11. Install two screws (1) in clearance light cover (2).



**FOLLOW-ON TASKS:**  
• None

## 4-32. STOPLIGHT-TAILLIGHT REPLACEMENT (M870).

*This Task Covers:*

a. Removal

b. Installation

*Initial Setup:*

**Tools/Test Equipment:**

- Common no. 1 tool set (Item 6, Appendix B)

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

### a. REMOVAL

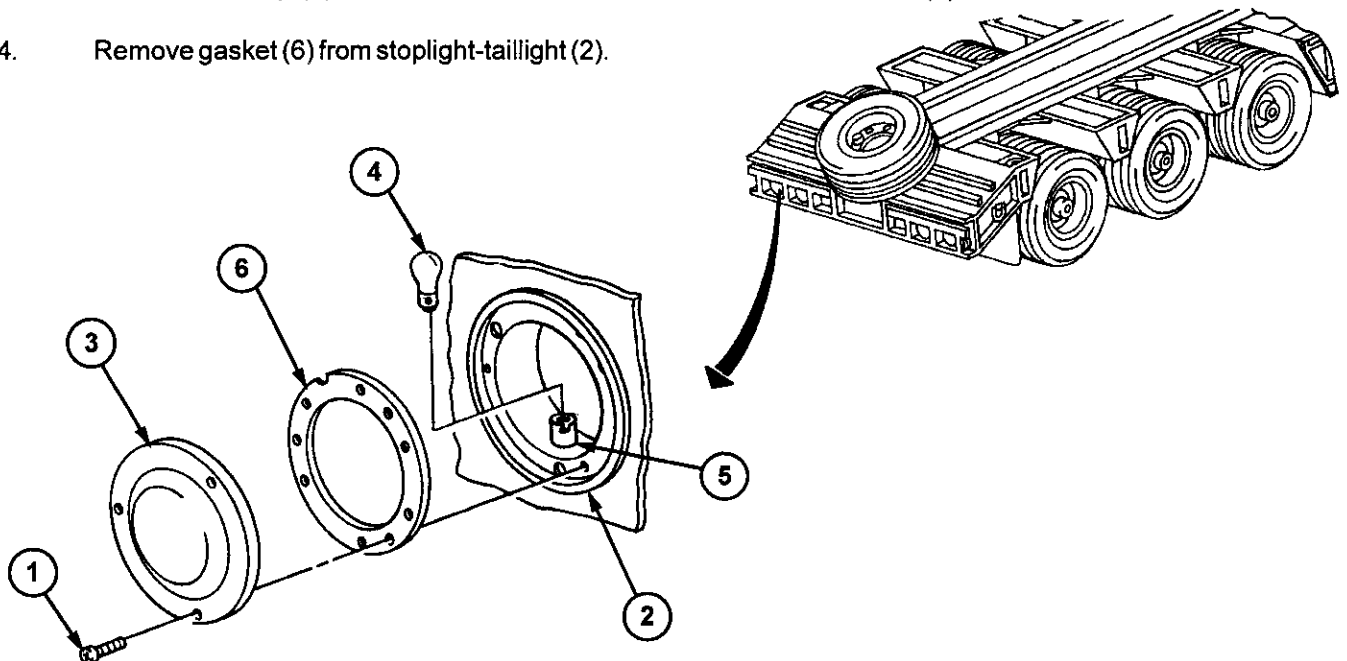
#### NOTE

- There are four stoplight-taillights on the semitrailer. This procedure shows the replacement of one stoplight taillight.
- If replacing lamp only, do steps 1 through 3 only.

#### WARNING

**Disconnect all outside power before performing any maintenance on the electrical system. Failure to do so could result in serious injury or death.**

1. Remove three screws (1) from stoplight-taillight (2).
2. Remove lens (3) from stoplight-taillight (2).
3. Push down lamp (4) and turn counterclockwise to remove from socket (5).
4. Remove gasket (6) from stoplight-taillight (2).



# **4-32. STOPLIGHT-TAILLIGHT REPLACEMENT (M870) (continued).**

5. Remove three nuts (7) from studs (8).
6. Pull stoplight-taillight (2) out of mounting hole (9).

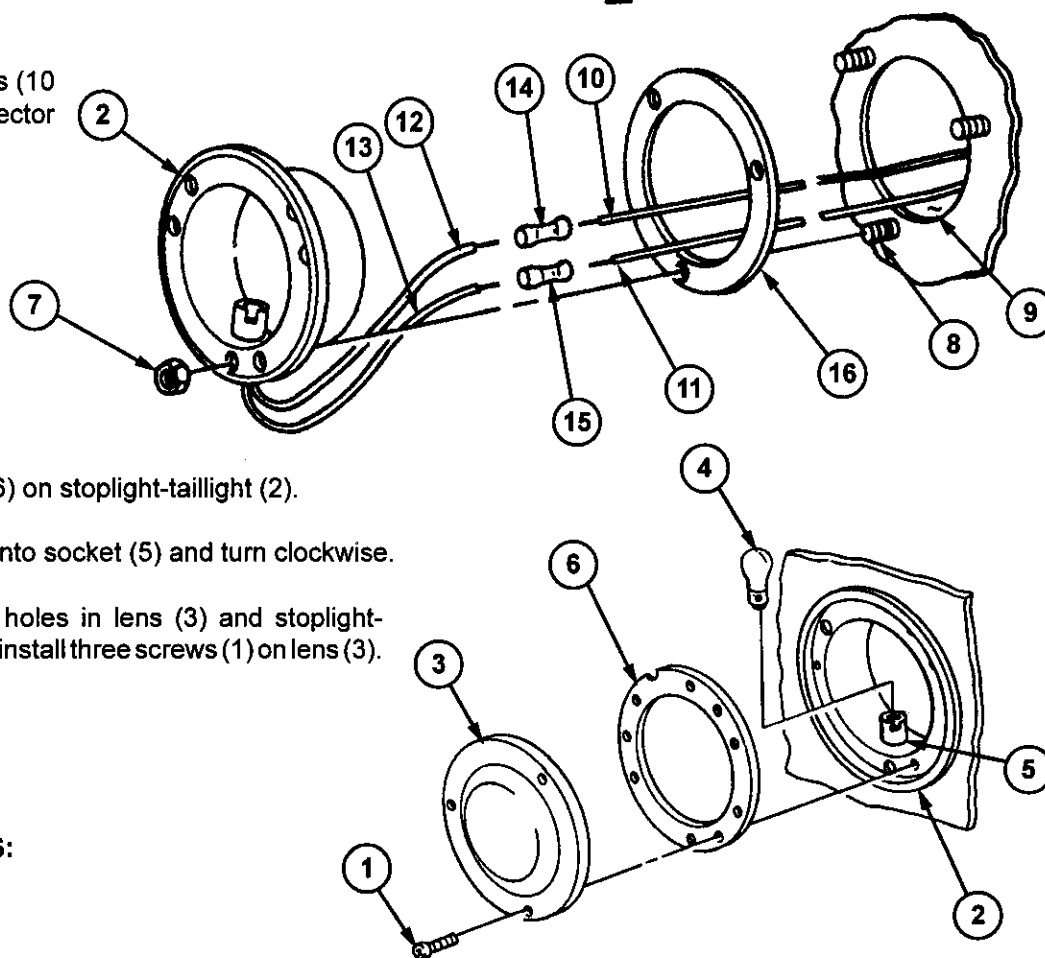
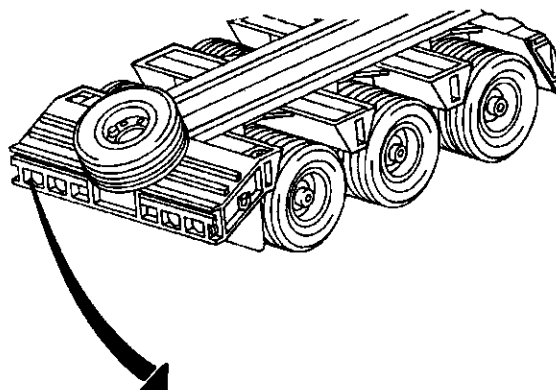
## **NOTE**

Before cutting wires, tag wires to aid in installation. Refer to electrical wiring diagram (Appendix K) for proper installation, if tags get lost.

7. Cut four wires (10–13) from two connectors (14 and 15).
8. Remove gasket (16) from mounting hole (9).

## **b. INSTALLATION**

1. Put gasket (16) in place on mounting hole (9).
2. Strip insulation from four wires (10–13) to depth of connectors (14 and 15).
3. Install two wires (13 and 11) into connector (15) and crimp.
4. Install two wires (10 and 12) in connector (14) and crimp.
5. Install stoplight-taillight (2) in mounting hole (9).
6. Install three nuts (7) on studs (8).
7. Install gasket (6) on stoplight-taillight (2).
8. Push lamp (4) into socket (5) and turn clockwise.
9. Line up screw holes in lens (3) and stoplight-taillight (2), and install three screws (1) on lens (3).



## **FOLLOW-ON TASKS:**

- None



## 4-33. COMPOSITE LIGHT ASSEMBLY REPAIR (M870 MARINE CORPS VARIATION).

*This Task Covers:*

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

*Initial Setup:*

### Tools/Test Equipment:

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

### Materials/Parts:

- Lockwasher (2) (Item 14, Appendix I)

## a. REMOVAL

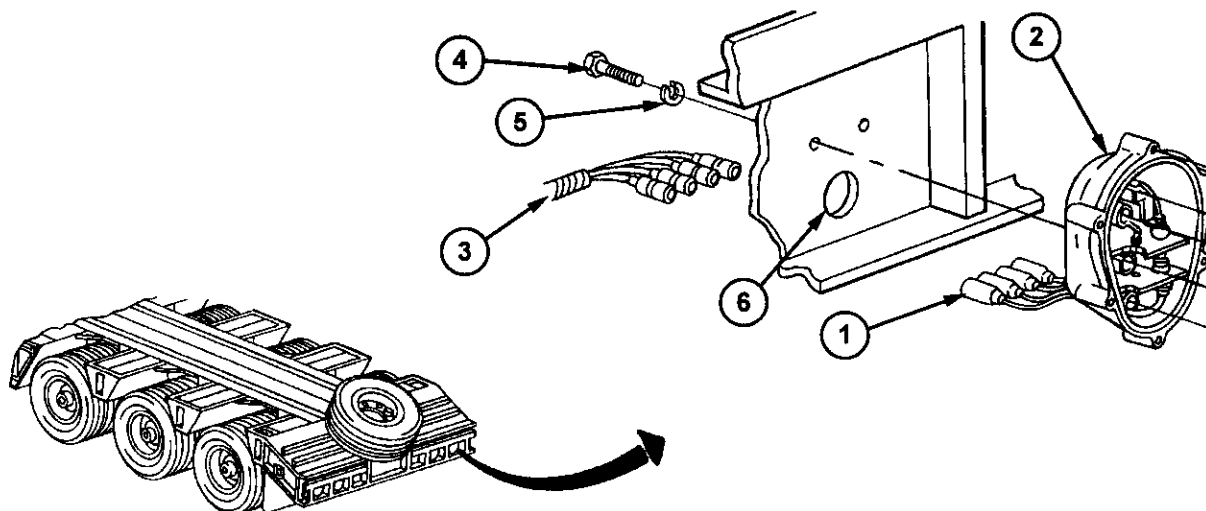
### WARNING

**Disconnect all outside power before performing any maintenance on the electrical system. Failure to do so could result in serious injury or death.**

### NOTE

- It is not necessary to remove composite light assembly from semitrailer frame for lamp, lens, or door assembly replacement. If wire identification tags are missing or not readable, wires should be retagged to aid in assembly.
- Top lamp in light assembly is taillight; second lamp is stop turn lamp; third down is blackout taillight; and bottom lamp is blackout stoplight.

1. Separate four electrical connectors (1) between composite light assembly (2) and wiring harness (3).
2. Remove two bolts (4) and lockwashers (5) from composite light assembly (2). Discard lockwashers.
3. Feed four connectors (1) through hole (6), and remove composite light assembly (2) from semitrailer.



## 4-33. COMPOSITE LIGHT ASSEMBLY REPAIR (M870 MARINE CORPS VARIATION) (continued).

### b. DISASSEMBLY

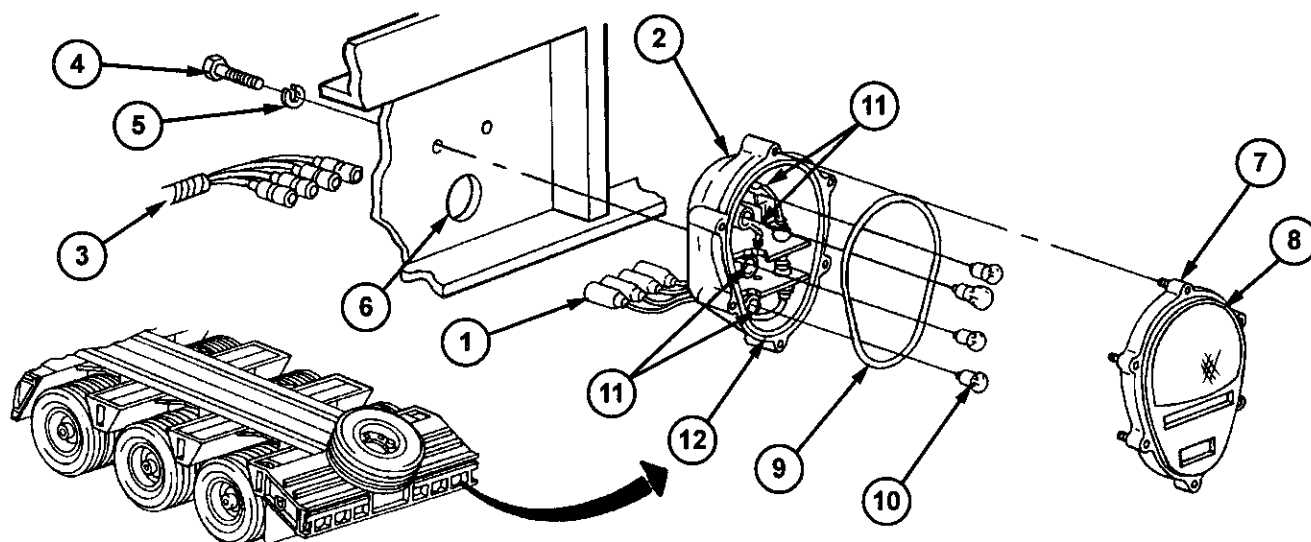
1. Unscrew six captive screws (7) in door and lens assembly (8). Captive screws (7) will stay in door and lens assembly (8).
2. Remove door and lens assembly (8) from composite light assembly (2).
3. Remove and discard preformed packing (9) from door and lens assembly (8) only if preformed packing (9) is damaged.
4. Remove four lamps (10) from four sockets (11) by pushing in and turning one-quarter turn counterclockwise. Discard any lamp (10) that has a broken filament. Clean corrosion from sockets (11) if necessary.

### c. ASSEMBLY

1. Place each of four lamps (10) in its proper socket (11). Push in each lamp (10) and turn it clockwise.
2. If needed, place new preformed packing (9) in groove (12) in composite light assembly (2).
3. Install door and lens assembly (8) on composite light assembly (2) by screwing in six captive screws (7).

### d. INSTALLATION

1. Put four connectors (1) through hole (6) in frame of semitrailer.
2. Install composite light assembly (2) on semitrailer using two bolts (4) and new lockwashers (5).
3. Match tags and connect four connectors (1) to wiring harness (3).



#### FOLLOW-ON TASKS:

- None

## 4-34. WIRING HARNESS REPLACEMENT (M870).

*This Task Covers:*

a. Removal

b. Installation

*Initial Setup:*

### Tools/Test Equipment:

- Common no. 1 tool set (Item 6, Appendix B)
- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

- Grease (Item 6, Appendix F)
- Solder (Item 18, Appendix F)
- Tape, insulation, electrical (Item 22, Appendix F)

### Materials/Parts:

- Alcohol, denatured (Item 1, Appendix F)
- Brush, acid swabbing (Item 2, Appendix F)
- Flux, solder (Item 5, Appendix F)

### Equipment Conditions:

- Semitrailer unloaded (para 2-12).

**Personnel Required:** Two

### a. REMOVAL

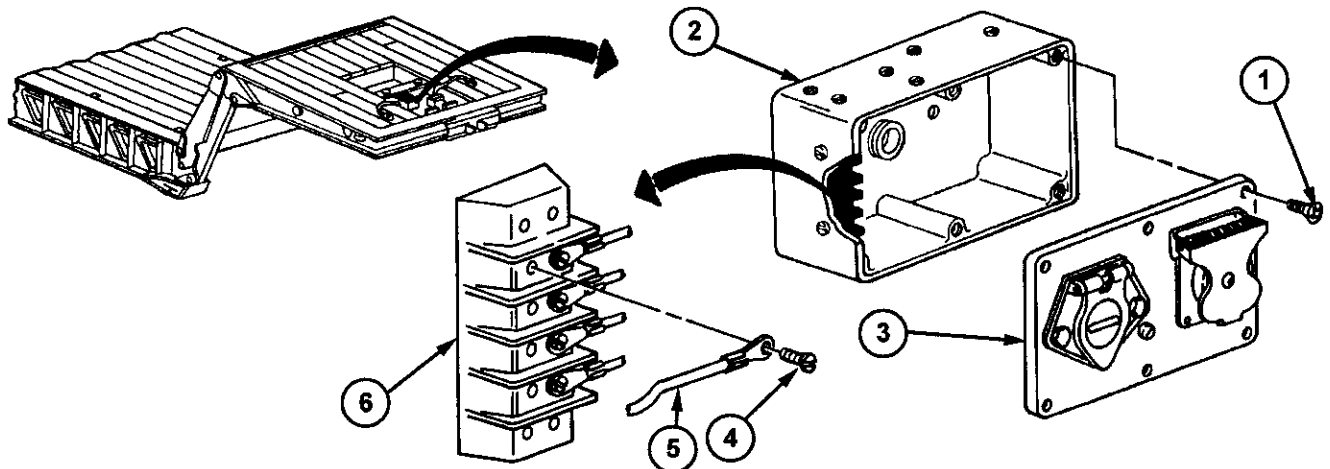
#### WARNING

**Disconnect all outside power before performing any maintenance on the electrical system. Failure to do so could result in serious injury or death.**

#### **NOTE**

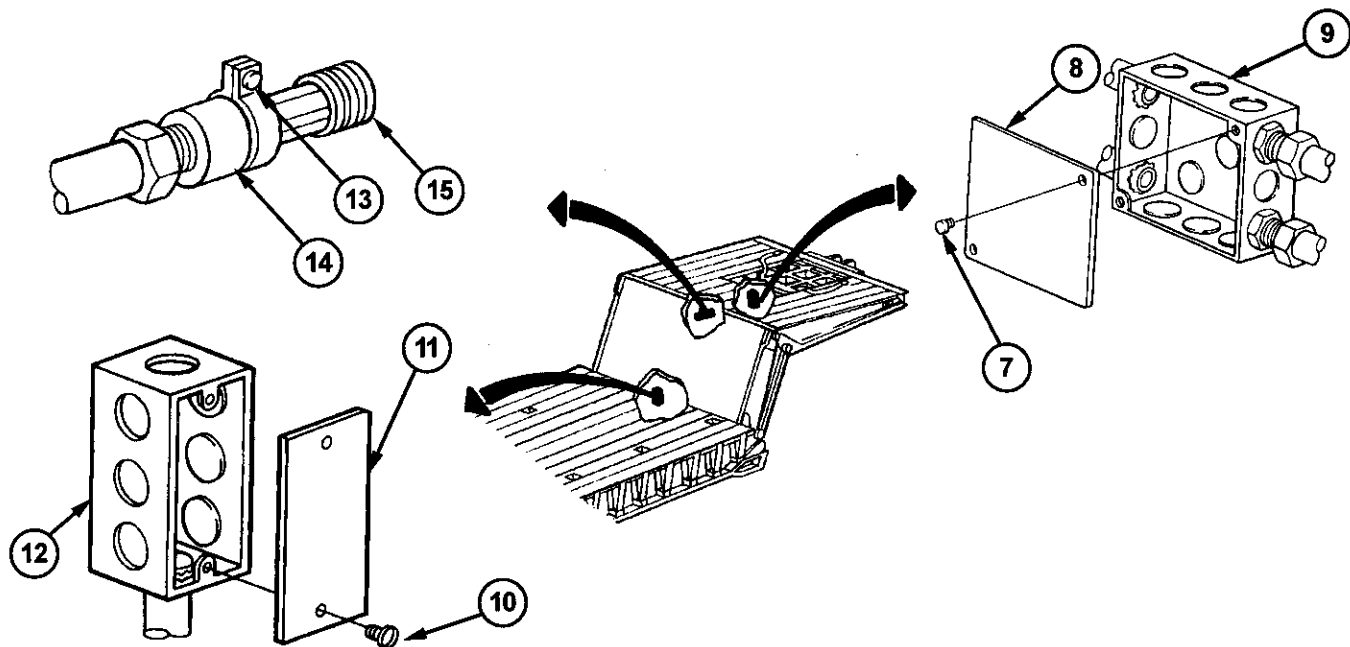
All circuit wires in the wiring harness are replaced the same way. This procedure is for the black electric circuit for the service lights. Refer to electrical wiring diagram (Appendix K) for correct color code and routing for replacement of other circuits. See Appendix G for wire lengths of circuit being replaced. This procedure requires one 54-foot wire, one 14-foot wire, one 12-foot wire, and four 1.5-foot wires.

1. Remove six screws (1) from voltage reduction box (2).
2. Remove box cover (3) from voltage reduction box (2).
3. Remove black terminal wire screw (4) and 54-foot black circuit wire (5) from junction block (6).

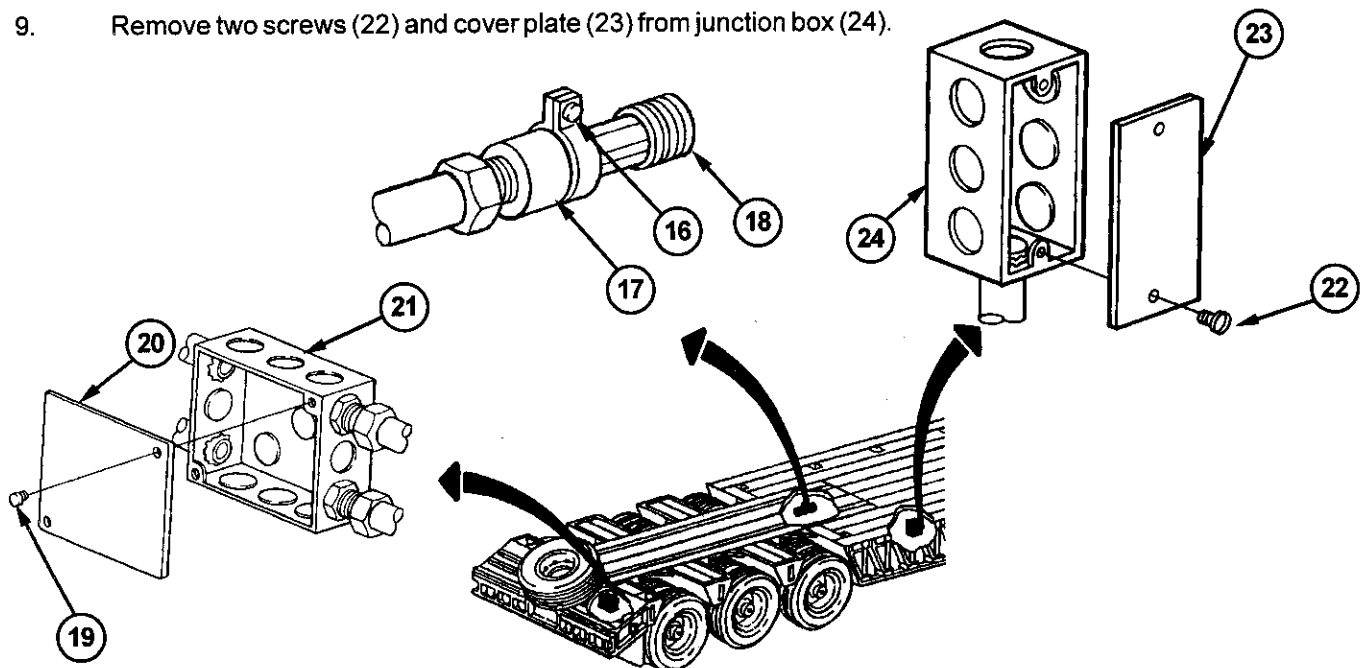


#### 4-34. WIRING HARNESS REPLACEMENT (M870) (continued).

4. Remove two screws (7) and cover plate (8) from junction box (9).
5. Remove two screws (10) and cover plate (11) from junction box (12).
6. Loosen screw (13) on flexible tube connector (14), and pull flexible tube (15) out of flexible tube connector (14).

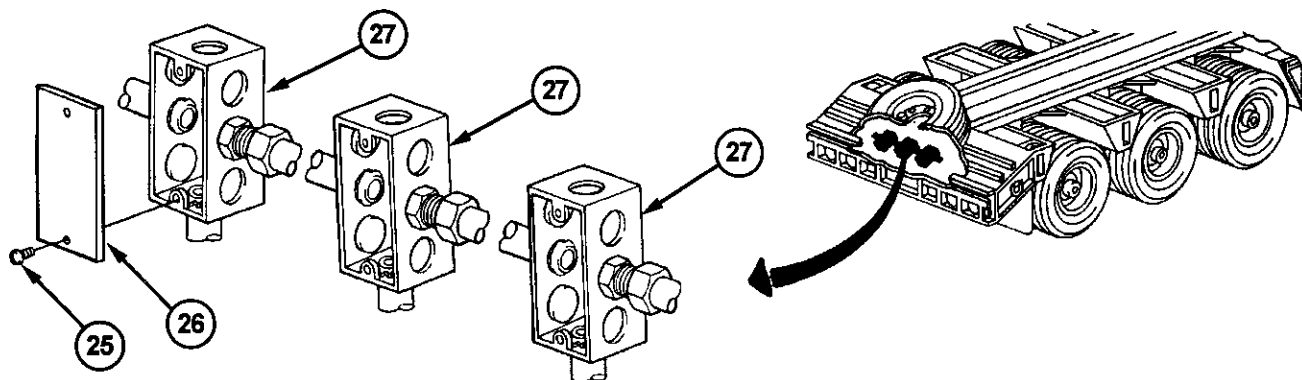


7. Loosen screw (16) on flexible tube connector (17), and pull flexible tube (18) out of flexible tube connector (17).
8. Remove two screws (19) and cover plate (20) from junction box (21).
9. Remove two screws (22) and cover plate (23) from junction box (24).

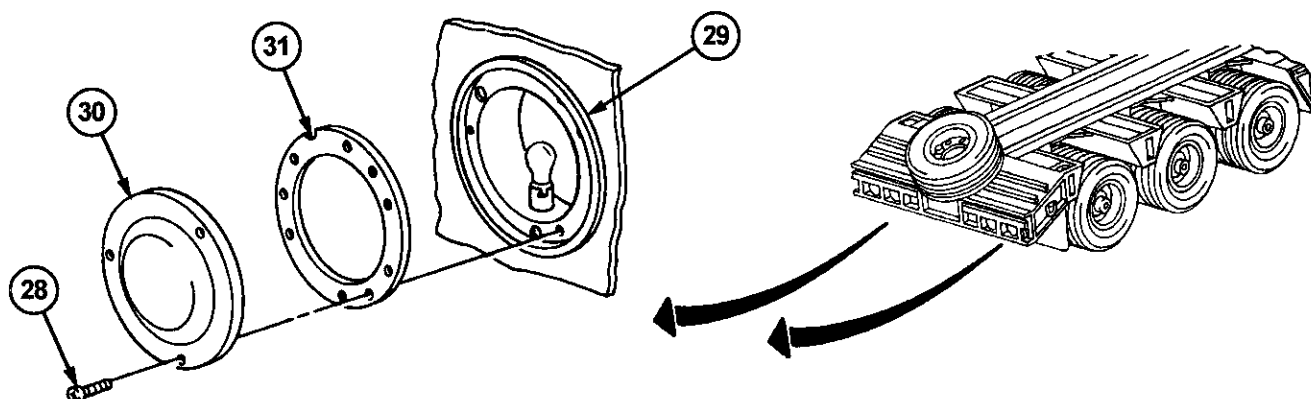


**4-34. WIRING HARNESS REPLACEMENT (M870) (continued).**

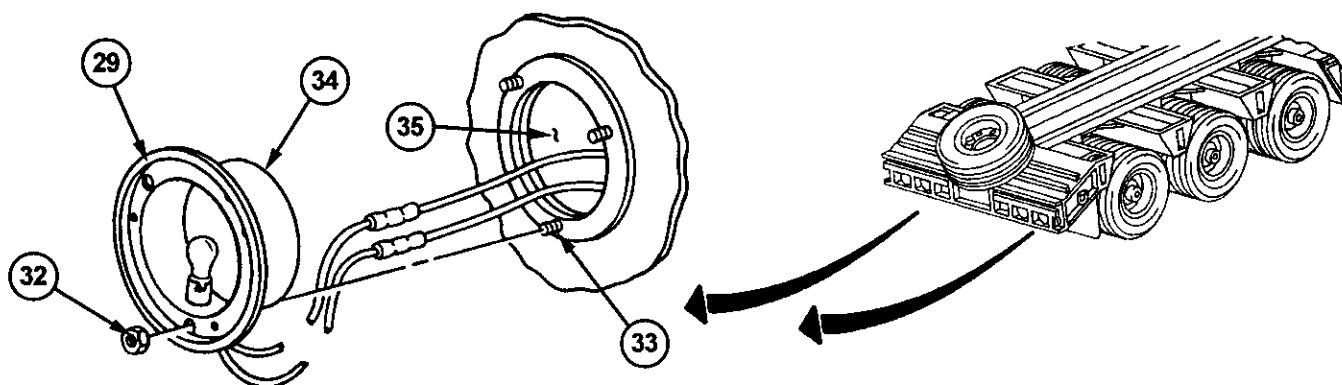
10. Remove six screws (25) and three cover plates (26) from three junction boxes (27).



11. Remove 12 screws (28) from two left and two right stoplight-taillights (29).
12. Remove four lenses (30) and gaskets (31) from two left and two right stoplight-taillights (29).



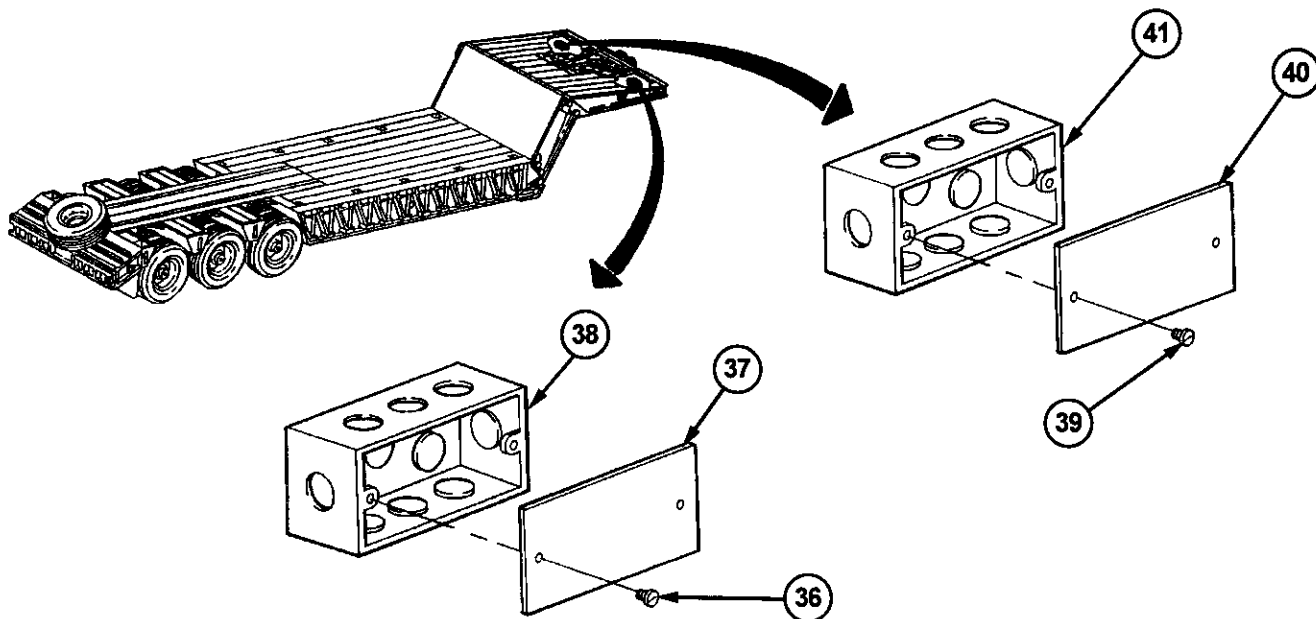
13. Remove 12 nuts (32) from 12 studs (33) on two left and two right stoplight-taillights (29).
14. Pull four light bodies (34) out of four mounting holes (35).



#### 4-34. WIRING HARNESS REPLACEMENT (M870) (continued).

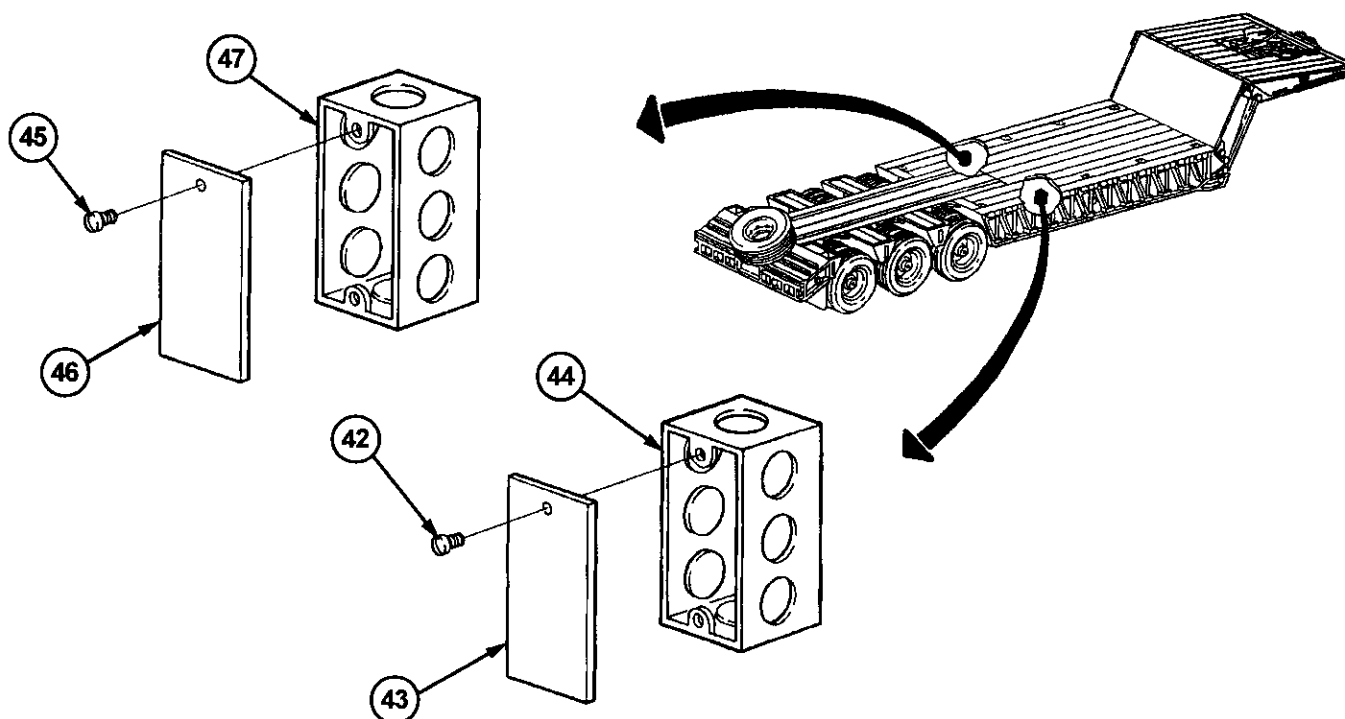
15. Remove two screws (36) and cover plate (37) from junction box (38).

16. Remove two screws (39) and cover plate (40) from junction box (41).



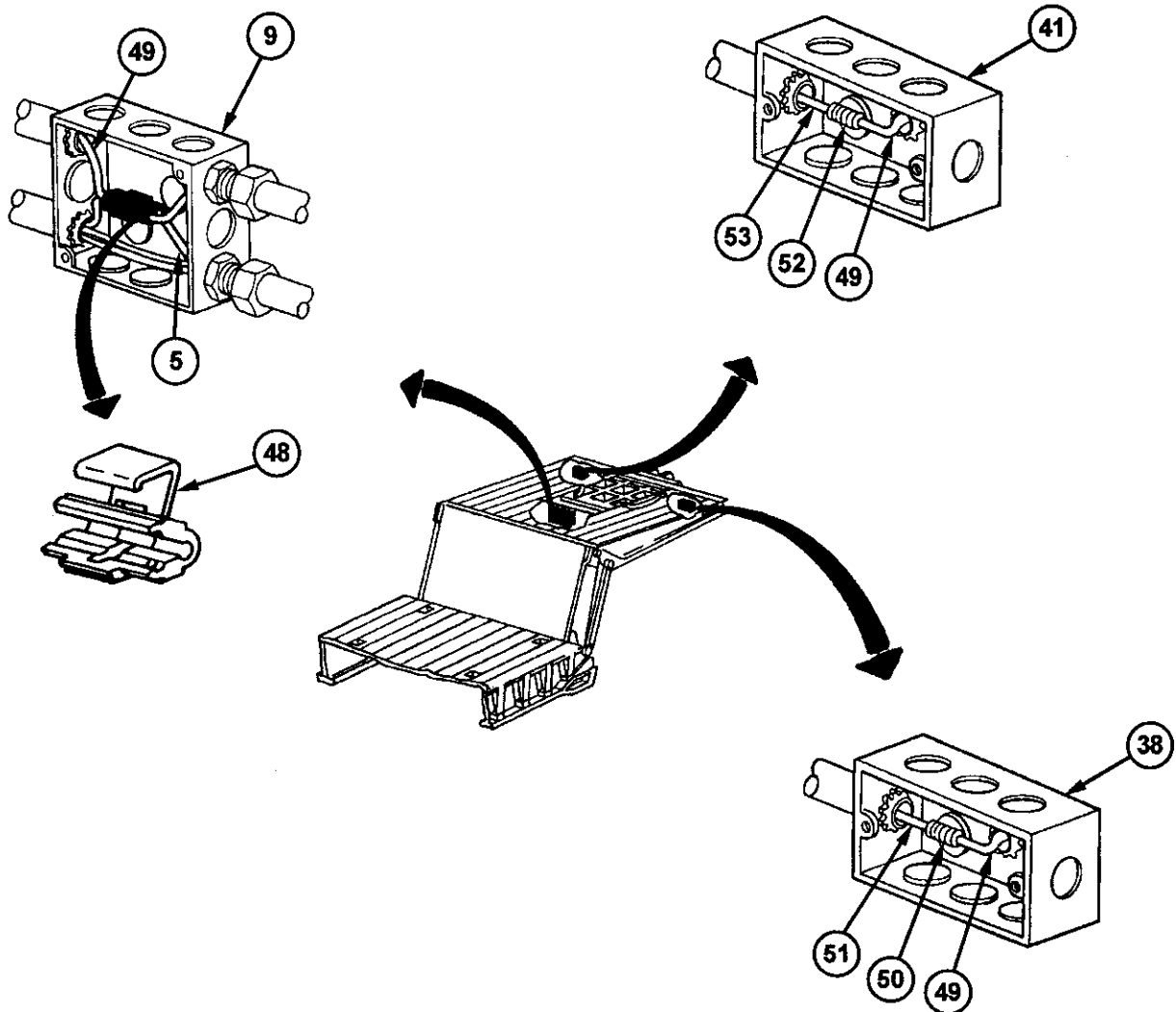
17. Remove two screws (42) and cover plate (43) from junction box (44).

18. Remove two screws (45) and cover plate (46) from junction box (47).



**4-34. WIRING HARNESS REPLACEMENT (M870) (continued).**

19. In junction box (9), pry open and remove wire connector (48) connecting 14-foot black circuit wire (49) and 54-foot black circuit wire (5).
20. In junction box (38), cut wire connector (50) from between circuit wire (49) and lead wire (51).
21. In junction box (41), cut wire connector (52) from between circuit wire (49) and black lead wire (53).

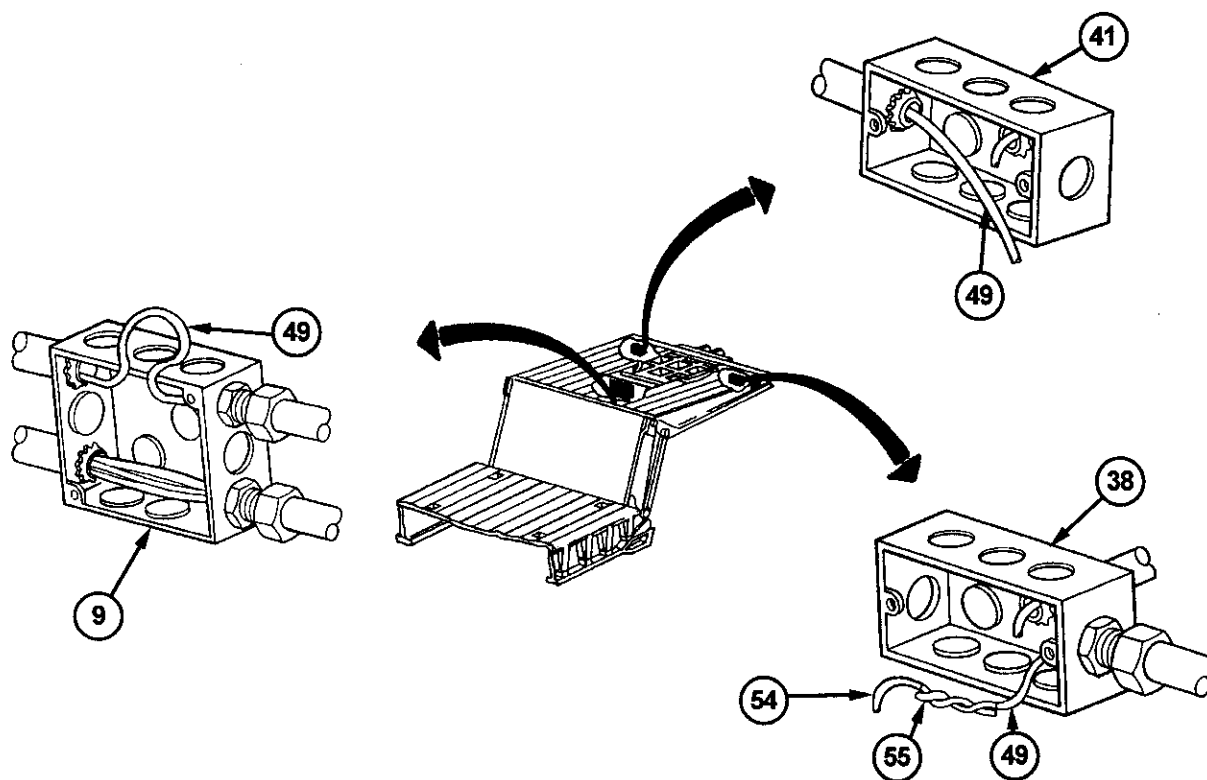


## 4-34. WIRING HARNESS REPLACEMENT (M870) (continued).

### NOTE

Use acid swabbing brush and denatured alcohol as necessary to clean soldered connections during wiring harness splicing procedures.

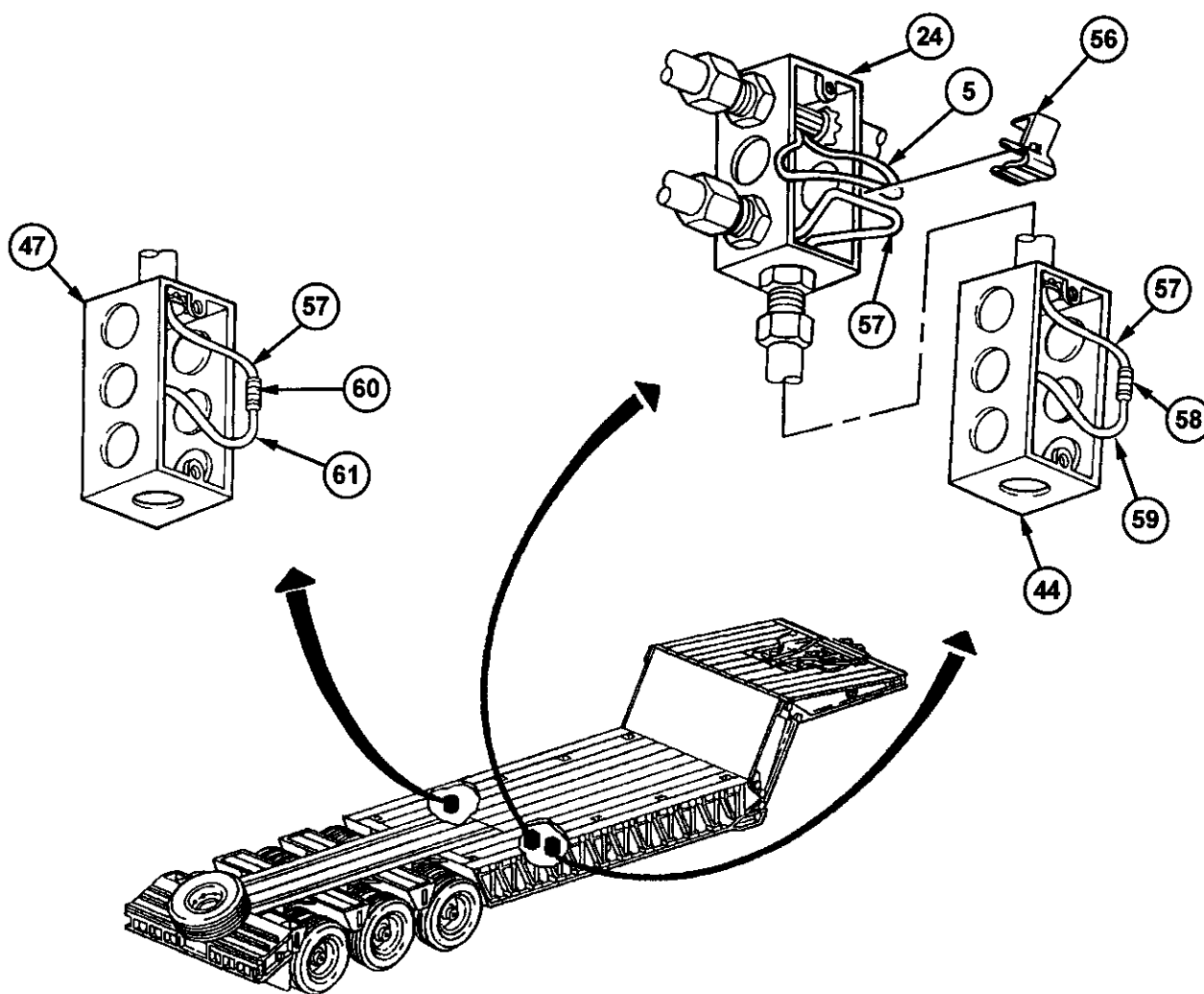
22. In junction box (38), strip one inch of insulation from new 14-foot black circuit wire (54) and from old circuit wire (49).
23. Twist wire ends (55) together and connect circuit wires (49 and 54) using solder and flux.
24. Tape soldered wire ends (55) with electrical insulation tape.
25. Pull circuit wire (49) from junction box (9) while assistant applies grease at junction box (38), until 12 inches of new circuit wire (54) are left exposed at junction box (38).
26. Pull circuit wire (49) at junction box (41) while assistant applies grease at junction box (9), until slack is gone.
27. Cut old circuit wire (49) and wire ends (55) from new circuit wire (54) at junction box (41).





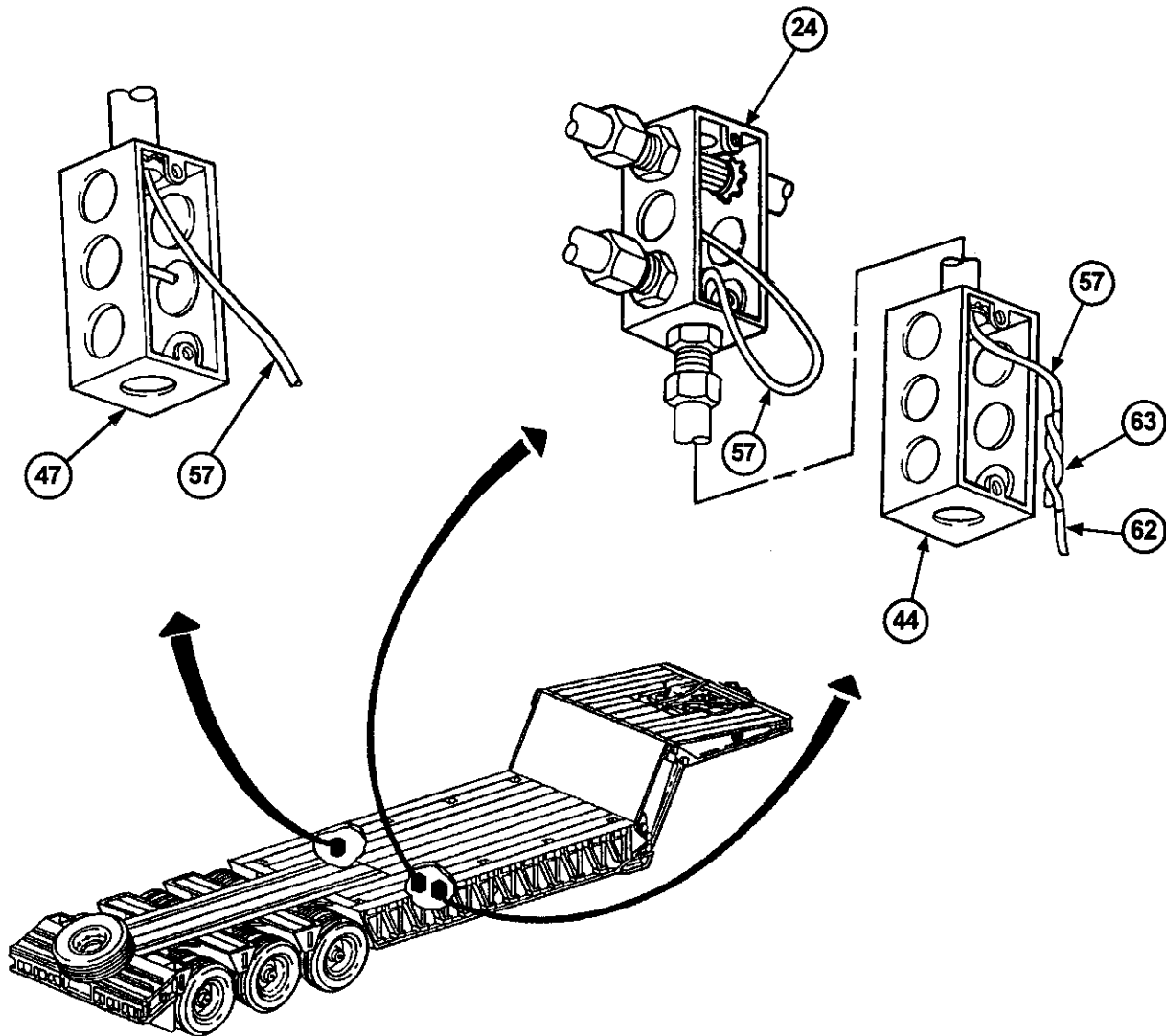
**4-34. WIRING HARNESS REPLACEMENT (M870) (continued).**

28. In junction box (24), pry open and remove wire connector (56) connecting 54-foot black circuit wire (5) to 12-foot black circuit wire (57).
29. In junction box (44), cut wire connector (58) from circuit wire (57) and lead wire (59).
30. In junction box (47), cut wire connector (60) from circuit wire (57) and lead wire (61).



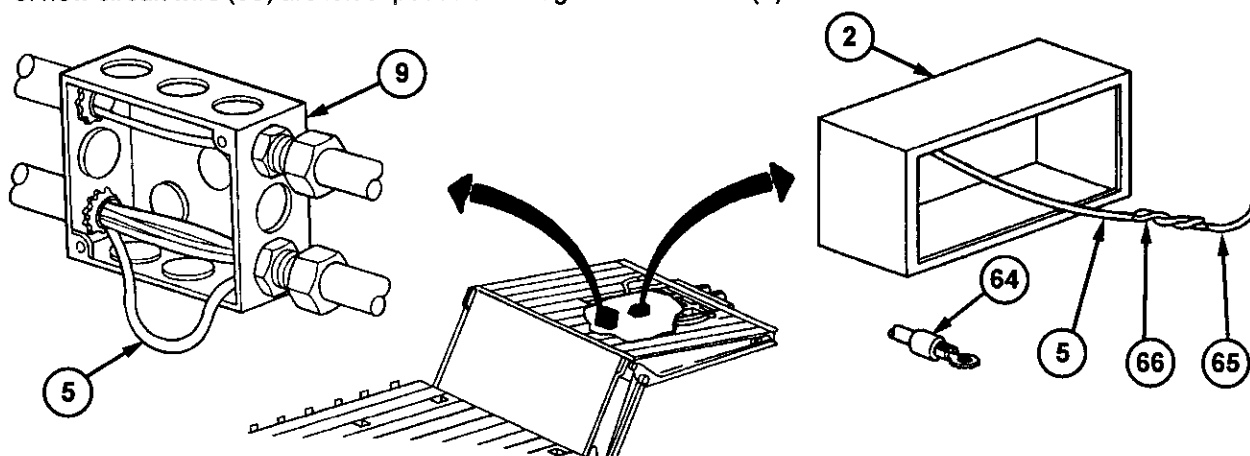
#### 4-34. WIRING HARNESS REPLACEMENT (M870) (continued).

31. In junction box (44), strip one inch of insulation from old 12-foot black circuit wire (57) and new 12-foot black circuit wire (62).
32. Twist wire ends (63) together, and connect two circuit wires (57 and 62) using solder and flux.
33. Tape soldered wire ends (63) with electrical insulation tape.
34. Pull circuit wire (57) at junction box (24) while assistant applies grease at junction box (44), until 12 inches of new wire are left exposed at junction box (44).
35. Pull circuit wire (57) at junction box (47) while assistant applies grease at junction box (24), until slack is gone.
36. Cut old circuit wire (57) and wire ends (63) from new circuit wire (62) at soldered wire ends (63).

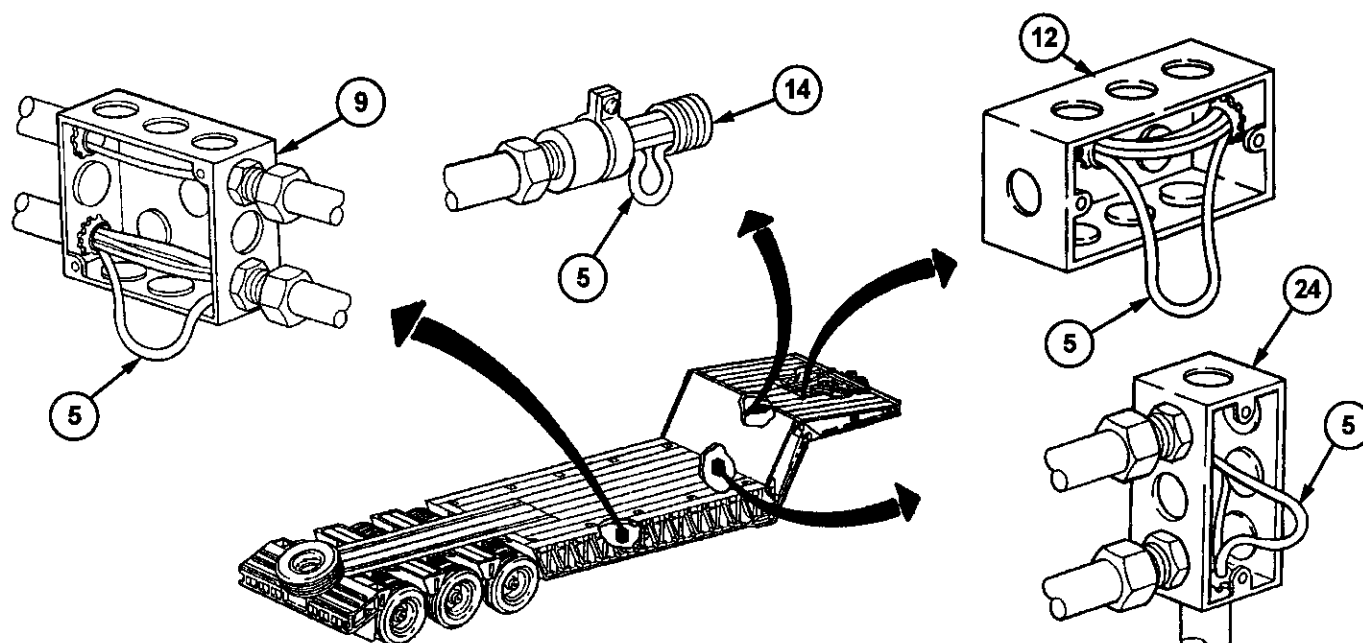


**4-34. WIRING HARNESS REPLACEMENT (M870) (continued).**

37. Cut off connector (64) of old 54-foot black circuit wire (5) at voltage reduction box (2).
38. Strip one inch of insulation from old circuit wire (5) and from new 54-foot black circuit wire (65).
39. Twist wire ends (66) together, and connect two circuit wires (5 and 65) using solder and flux.
40. Tape soldered wire ends (66) with electrical insulation tape.
41. Pull circuit wire (5) from junction box (9) while assistant applies grease at voltage reduction box (2), until 12 inches of new circuit wire (65) are left exposed at voltage reduction box (2).

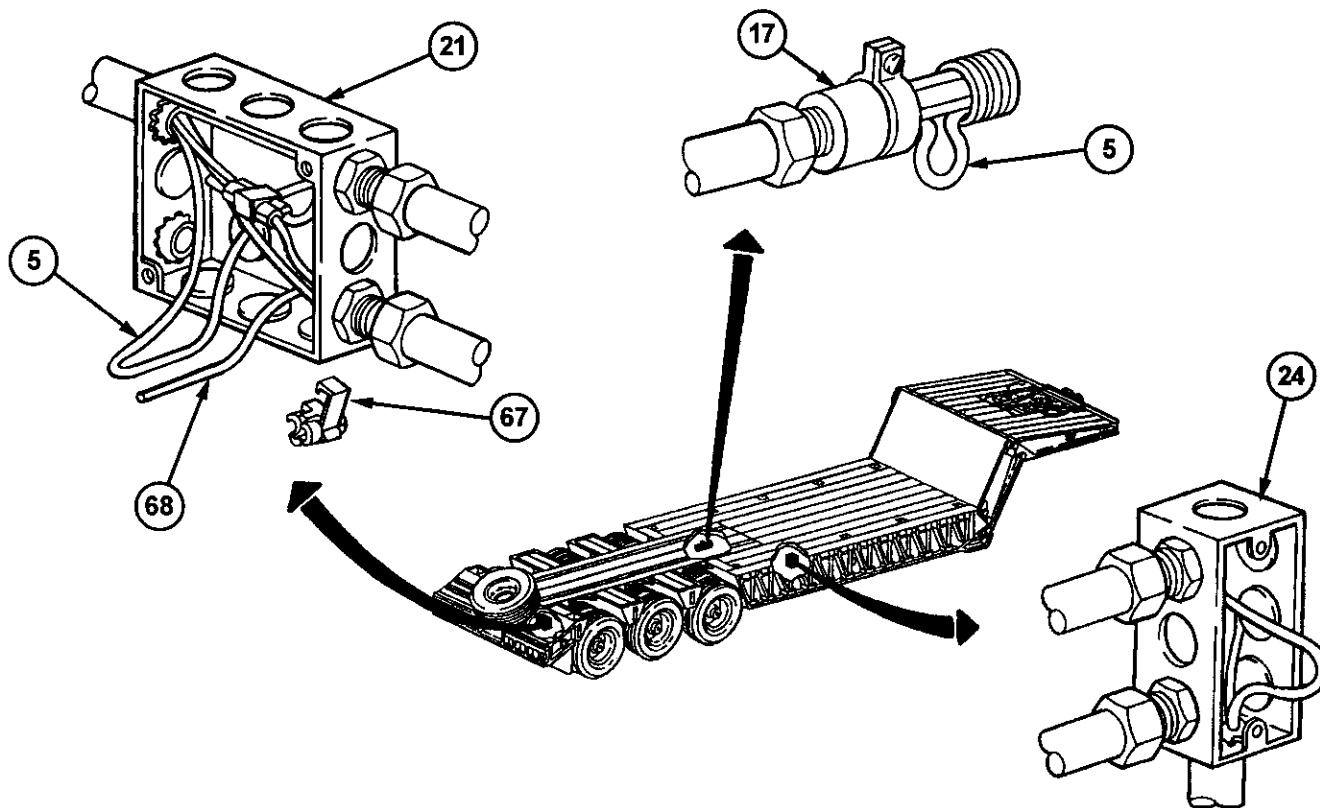


42. Pull circuit wire (5) at flexible tube connector (14) while assistant applies grease at junction box (9), until slack is gone.
43. Pull circuit wire (5) at junction box (12) while assistant applies grease at flexible tube connector (14), until slack is gone.
44. Pull circuit wire (5) at junction box (24) while assistant applies grease at junction box (12), until slack is gone.

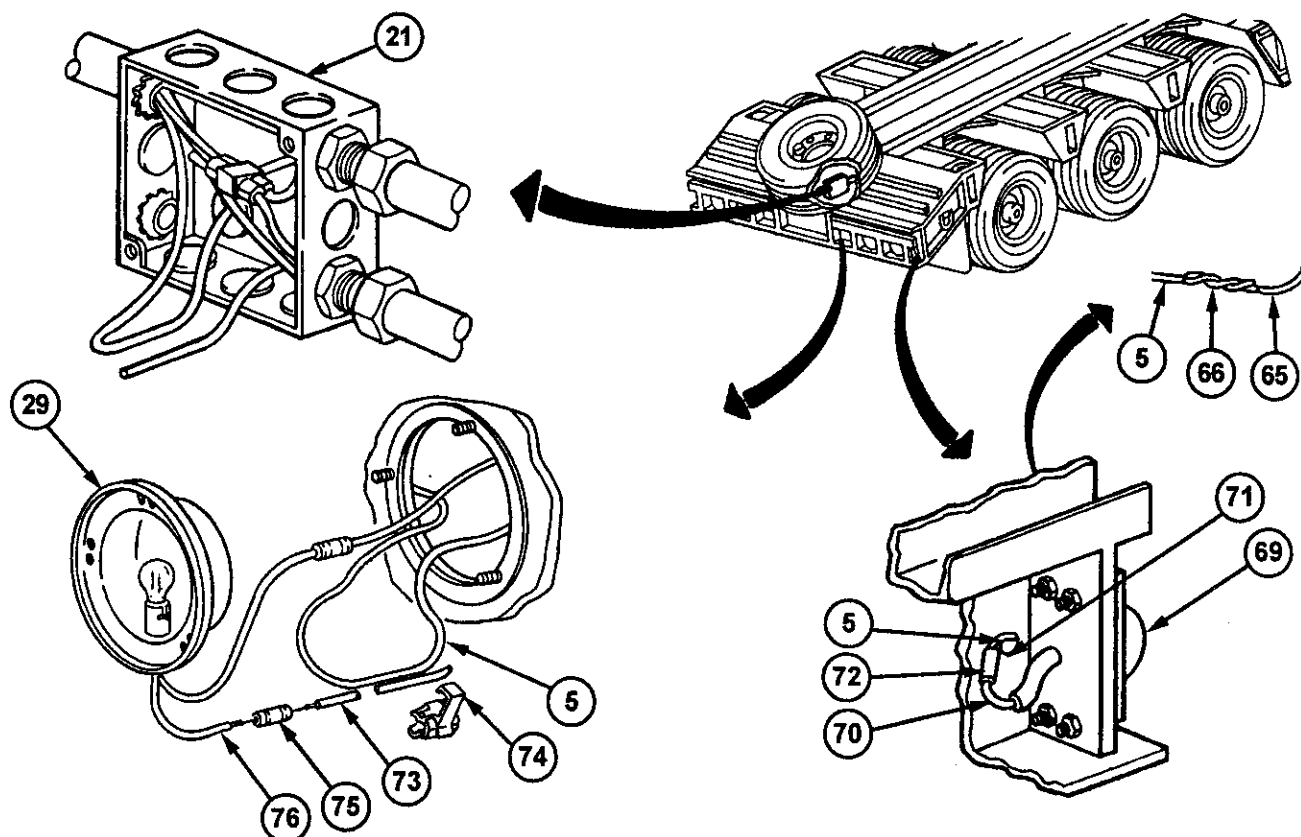


#### 4-34. WIRING HARNESS REPLACEMENT (M870) (continued).

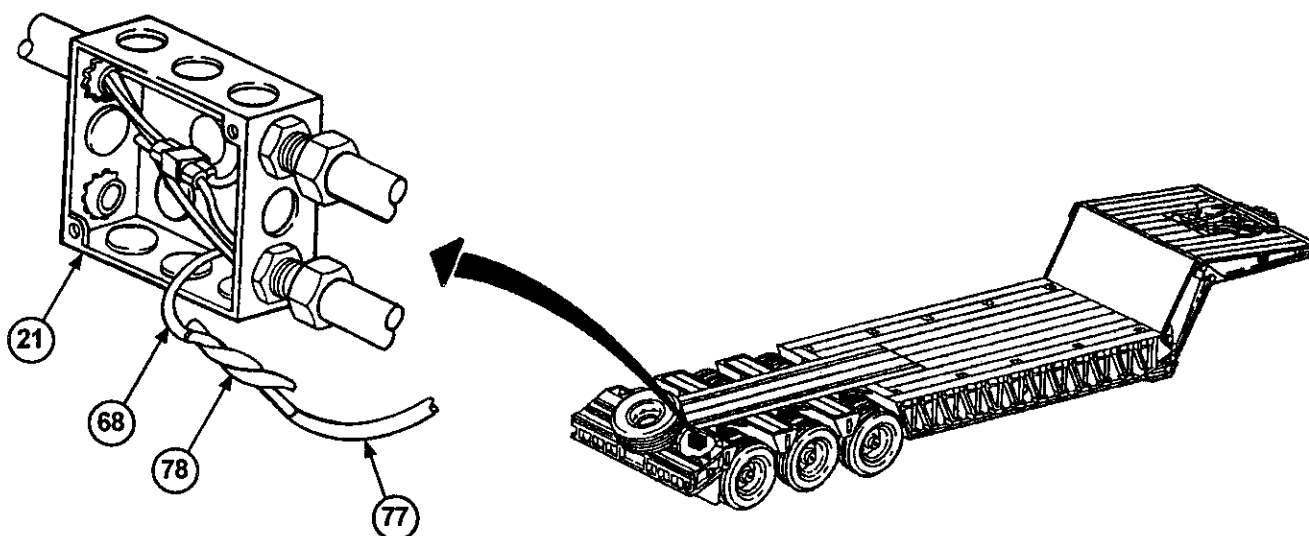
45. Pull circuit wire (5) at flexible tube connector (17) while assistant applies grease at junction box (24), until slack is gone.
46. At junction box (21), pry off and remove wire connector (67) connecting circuit wire (5) and 7-foot black circuit wire (68).
47. Pull circuit wire (5) at junction box (21) while assistant applies grease at flexible tube connector (17), until slack is gone.



48. At right rear corner clearance light (69), pull black lead wire (70) from hole (71) in frame until connector (72) is exposed.
49. Cut out connector (72) from between circuit wire (5) and lead wire (70).
50. At two right stoplight-taillights (29), pull out two black lead wires (73) until two connectors (74) and attached circuit wire (5) are exposed.
51. Pry open and remove two connectors (74) connecting two 18-inch lead wires (73) and circuit wire (5).
52. Cut out two connectors (75) from between two black lead wires (76) and two 18-inch lead wires (73).
53. At right rear corner clearance light (69), pull circuit wire (5) through hole (71) in frame while assistant applies grease at junction box (21).
54. Cut old circuit wire (5) and wire ends (66) from new circuit wire (65) at right rear corner clearance light (69).

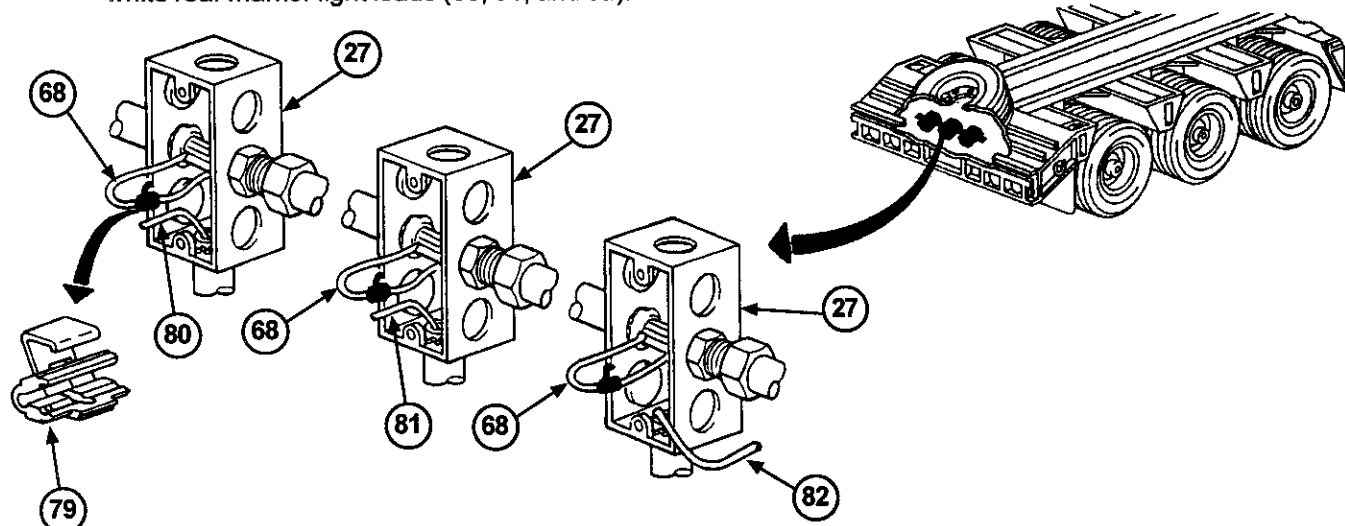
**4-34. WIRING HARNESS REPLACEMENT (M870) (continued).**

55. At junction box (21), strip one inch of insulation from new seven-foot black circuit wire (77) and from old circuit wire (68).
56. Twist wire ends (78) together, and connect two circuit wires (68 and 77) using solder and flux.
57. Tape soldered wire ends (78) with electrical insulation tape.

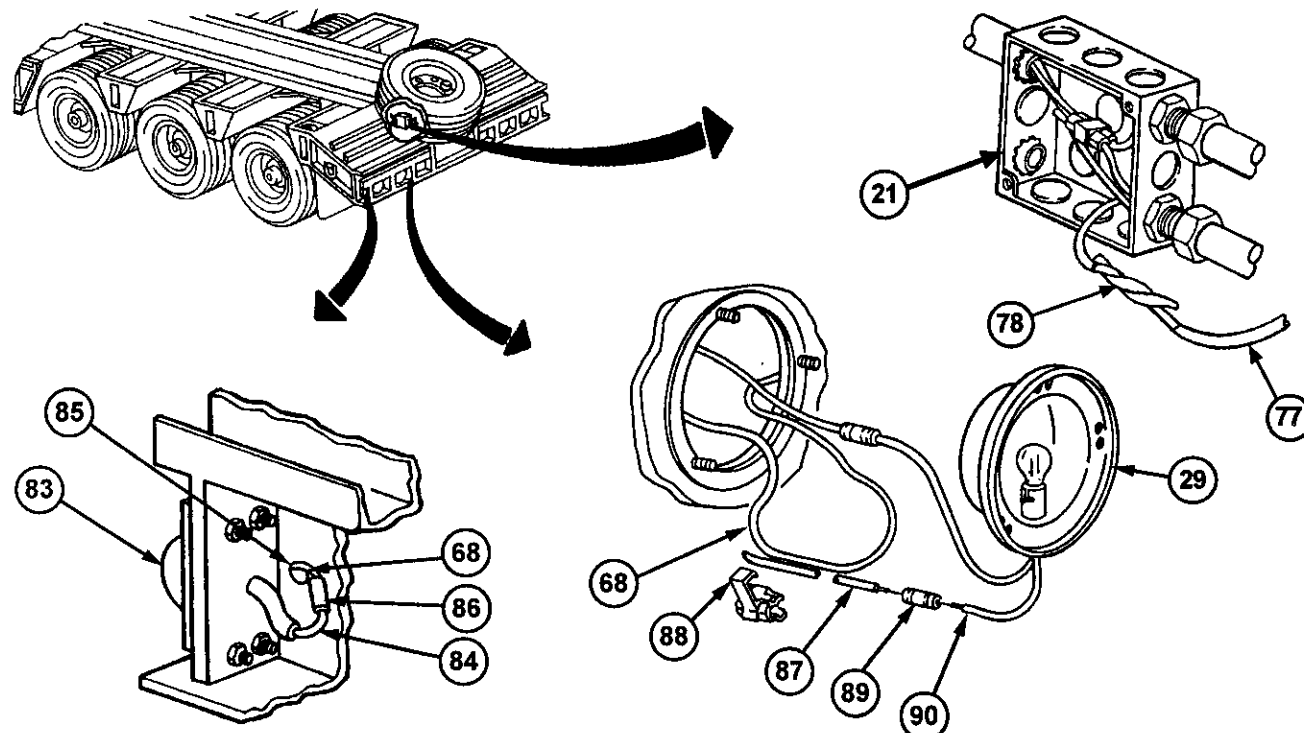


## 4-34. WIRING HARNESS REPLACEMENT (M870) (continued).

58. Pry open and remove three connectors (79) from three junction boxes (27), separating circuit wire (68) from three white rear marker light leads (80, 81, and 82).



59. At left rear corner clearance light (83), pull black lead wire (84) from hole (85) in frame until connector (86) is exposed.
60. Cut out connector (86) between circuit wire (68) and lead wire (84).
61. At two left stoplight-taillights (29), pull out two 18-inch lead wires (87) until two wire connectors (88) and attached circuit wire (68) are exposed.
62. Pry open and remove two wire connectors (88) connecting two 18-inch lead wires (87) and circuit wire (68).

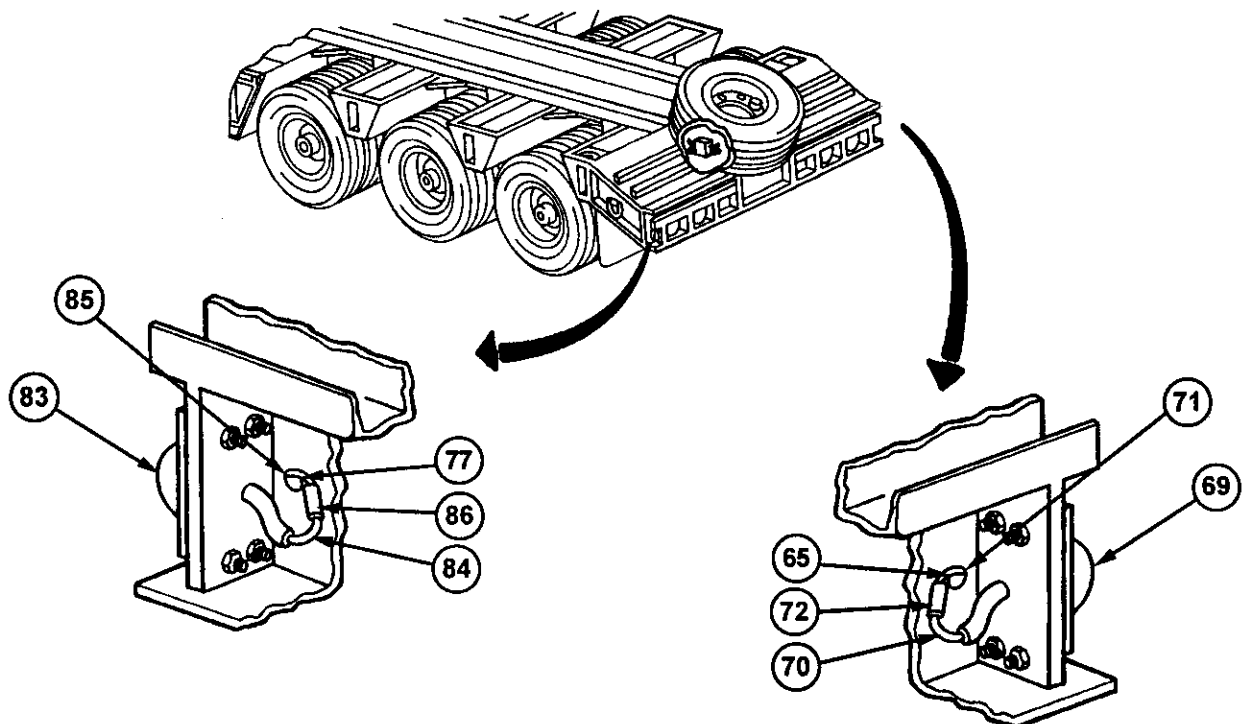


**4-34. WIRING HARNESS REPLACEMENT (M870) (continued).**

63. Cut out two wire connectors (89) from between two black lead wires (87) and black lead wires (90).
64. At left rear corner clearance light (83), pull circuit wire (68) through hole (85) in frame while assistant applies grease at junction box (21).
65. Cut old circuit wire (68) and wire ends (78) from new circuit wire (77).

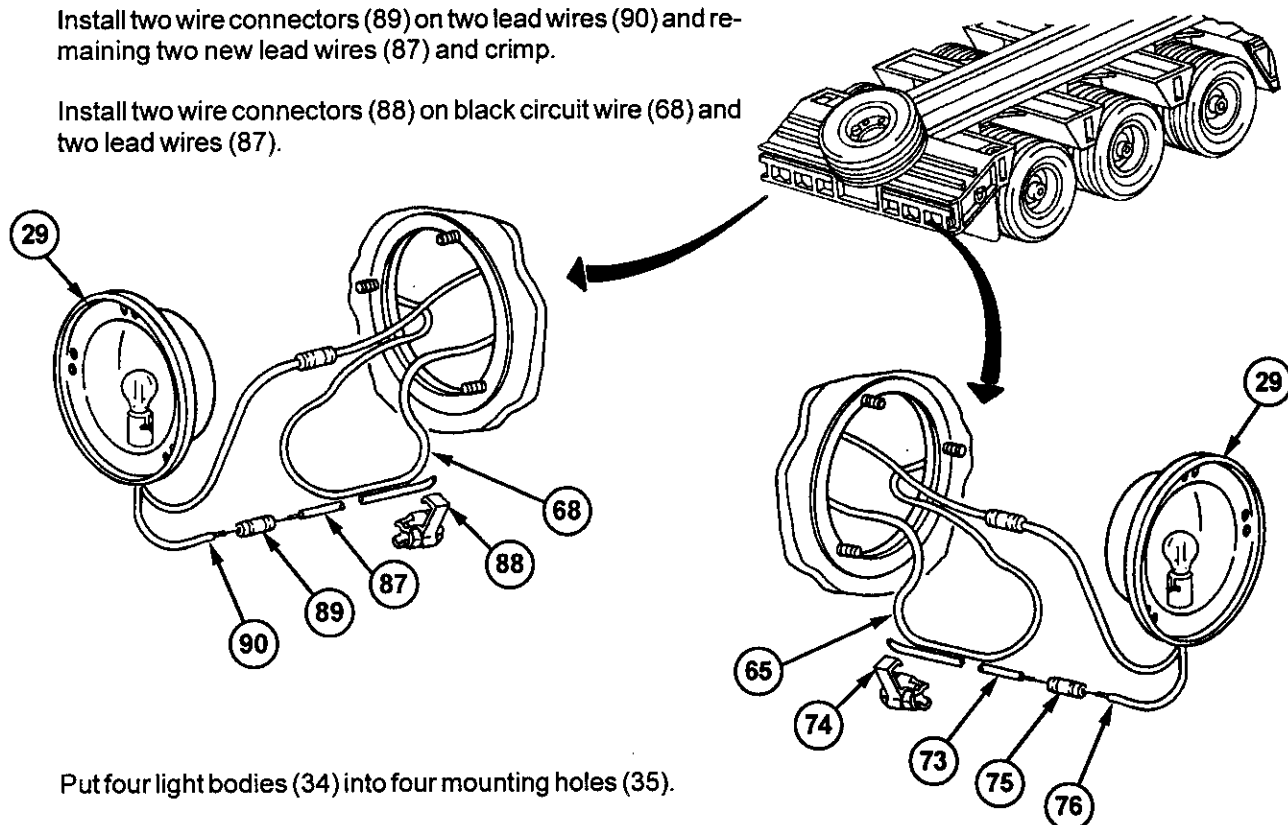
**b. INSTALLATION**

1. At left rear corner clearance light (83), strip insulation from end of lead wire (84) to depth of connector (86).
2. Strip insulation from circuit wire (77) to depth of connector (86).
3. Install connector (86) on lead wire (84) and circuit wire (77) and crimp.
4. Push excess wire into hole (85) in frame.
5. At right rear corner clearance light (69), strip insulation from end of lead wire (70) to depth of connector (72).
6. Strip insulation from circuit wire (65) to depth of connector (72).
7. Install connector (72) on lead wire (70) and circuit wire (65) and crimp.
8. Push excess circuit wire (65) into hole (71) in frame.

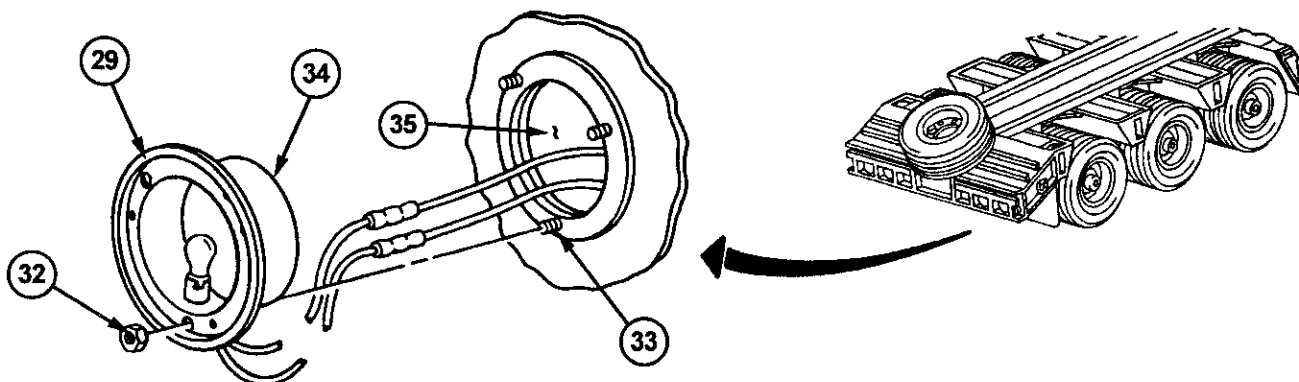


#### 4-34. WIRING HARNESS REPLACEMENT (M870) (continued).

9. Strip insulation from one end of each of four new 18-inch lead wires (73 and 87) to depth of connector (75).
10. Strip insulation on two black lead wires (76) from two right stoplight-taillights (29) to depth of connector (75).
11. Install two connectors (75) on two lead wires (76) and new lead wires (73) and crimp.
12. Install two connectors (74) on circuit wire (65) and two lead wires (73).
13. Strip insulation on two black lead wires (90) from two left stoplight-taillights (29) to depth of wire connector (89).
14. Install two wire connectors (89) on two lead wires (90) and remaining two new lead wires (87) and crimp.
15. Install two wire connectors (88) on black circuit wire (68) and two lead wires (87).



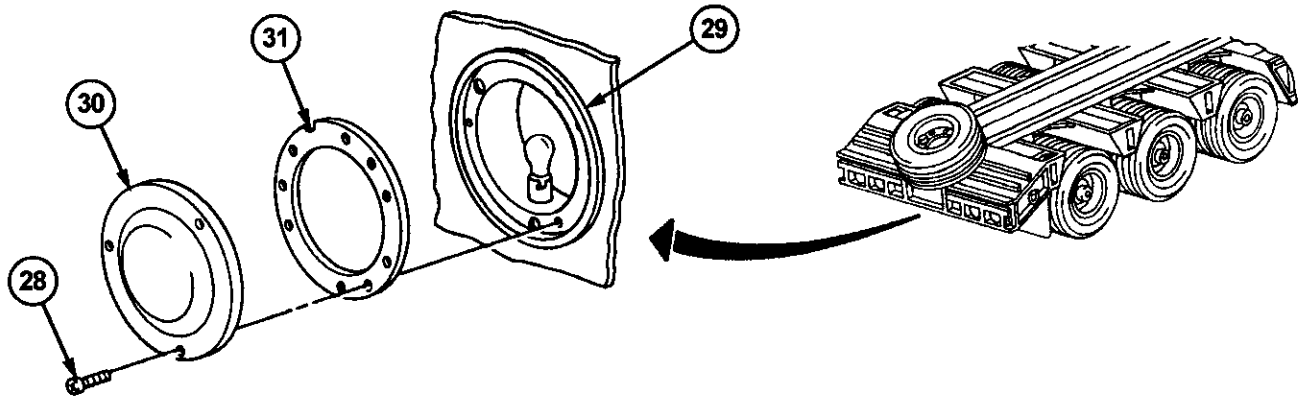
16. Put four light bodies (34) into four mounting holes (35).
17. Install 12 nuts (32) on 12 studs (33) on two left and two right stoplight-taillights (29).



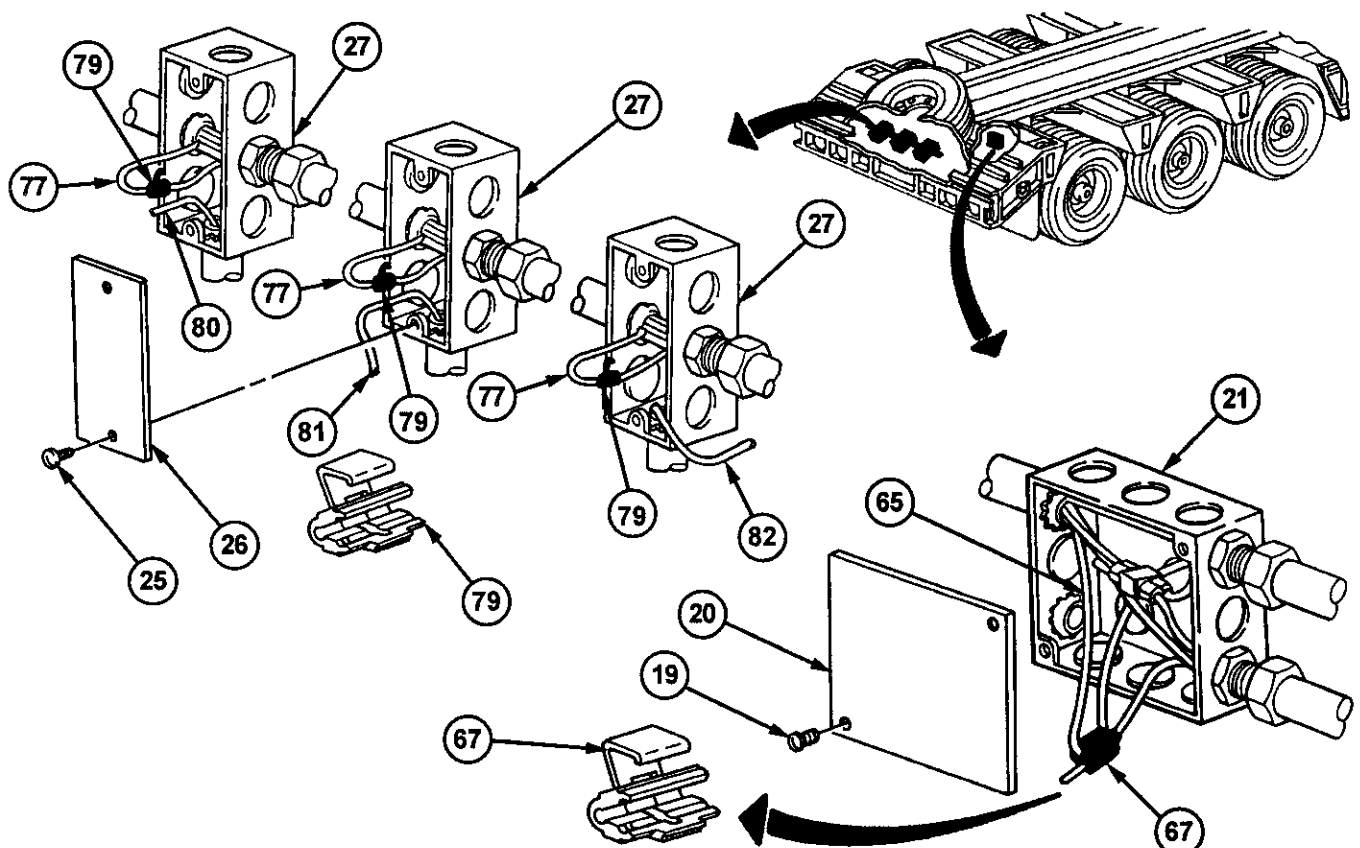


**4-34. WIRING HARNESS REPLACEMENT (M870) (continued).**

18. Using 12 screws (28), install four gaskets (31) and lenses (30) on two left and two right stoplight-taillights (29).

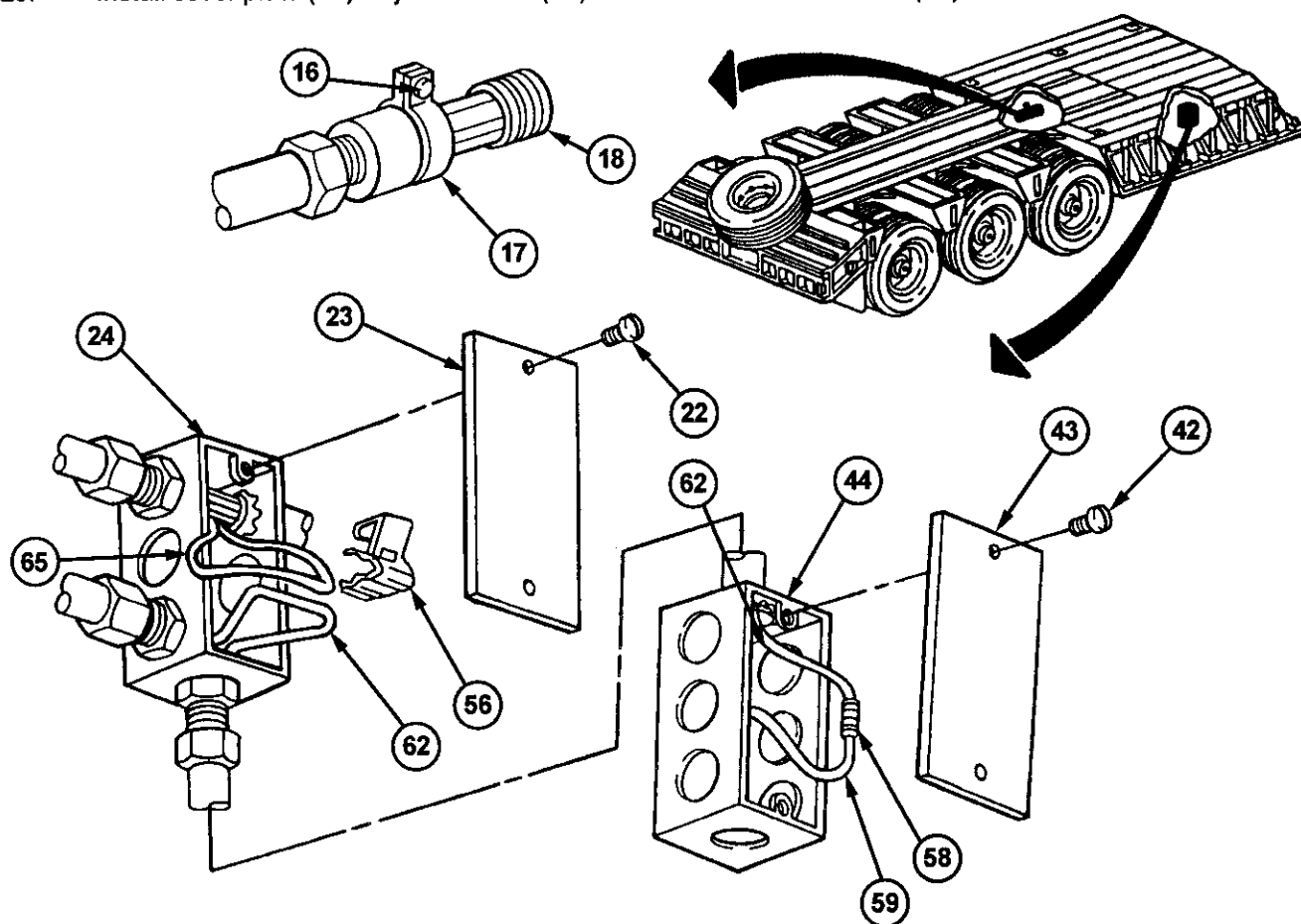


19. Install three connectors (79) on three white rear marker light leads (80, 81, and 82) and circuit wire (77).
20. Install three cover plates (26) on three junction boxes (27) with six screws (25).
21. At junction box (21), use wire connector (67) to connect circuit wire (65) and circuit wire (77).
22. Install cover plate (20) on junction box (21) with two screws (19).



#### 4-34. WIRING HARNESS REPLACEMENT (M870) (continued).

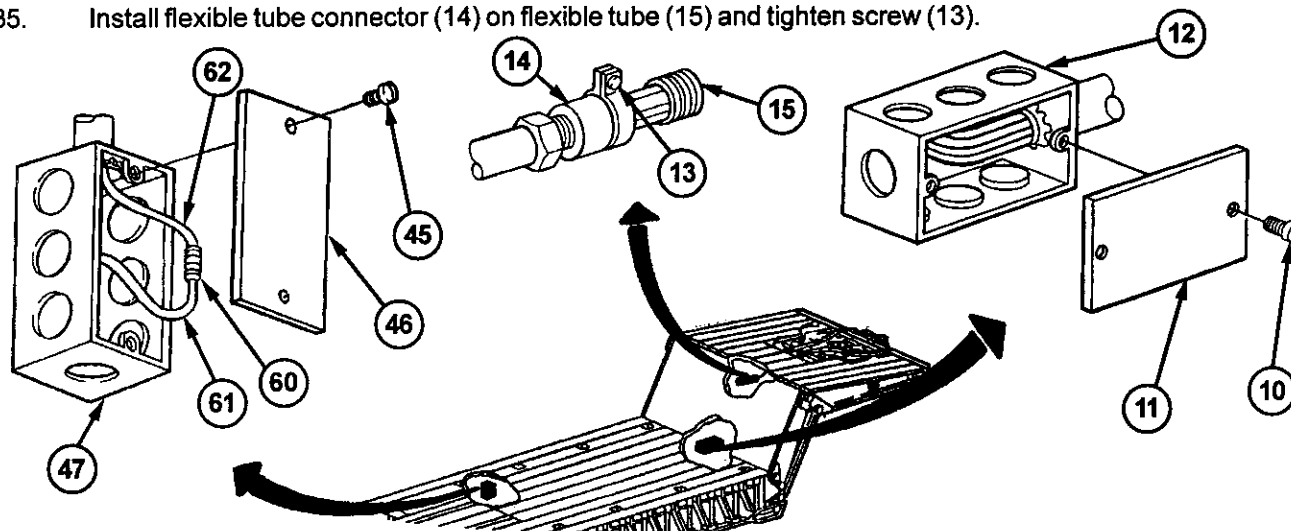
23. Install flexible tube connector (17) on flexible tube (18) and tighten screw (16).
24. In junction box (24), put wire connector (56) on black circuit wire (65) and black circuit wire (62).
25. Install cover plate (23) on junction box (24) with two screws (22).
26. In junction box (44), strip insulation from end of black circuit wire (62) to depth of wire connector (58).
27. Strip insulation from end of lead wire (59) to depth of wire connector (58).
28. Install wire connector (58) on lead wire (59) and circuit wire (62) and crimp.
29. Install cover plate (43) on junction box (44) and secure with two screws (42).



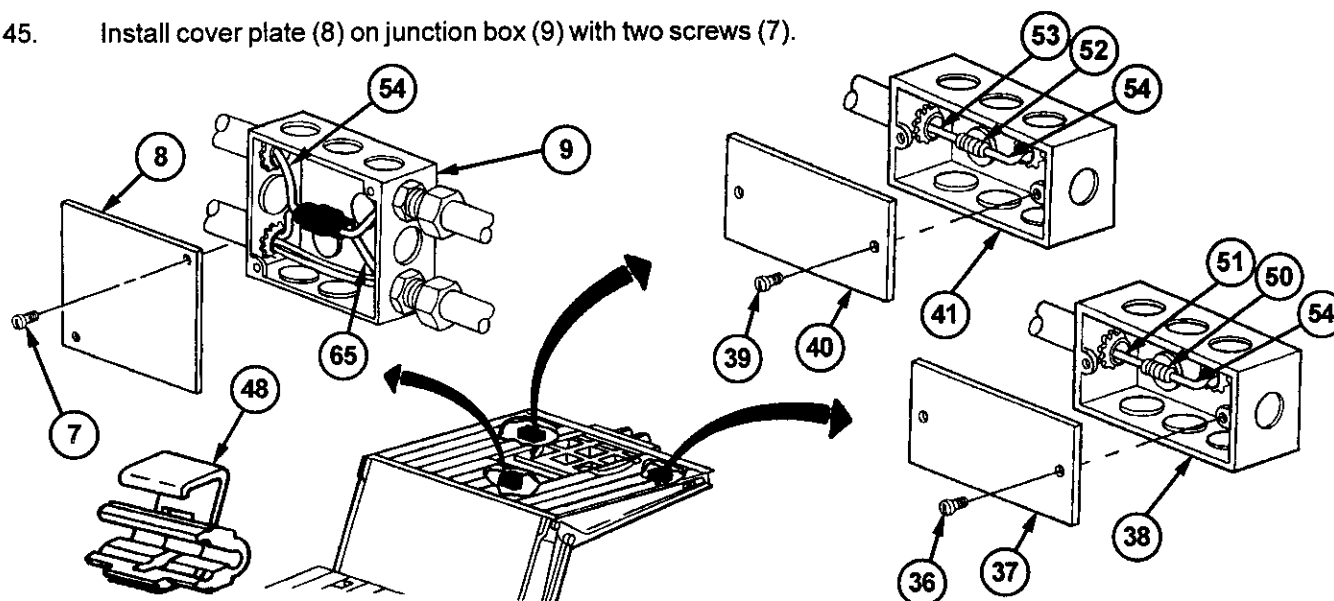
30. In junction box (47), strip insulation from end of black circuit wire (62) to depth of wire connector (60).
31. Strip insulation from end of lead wire (61) to depth of wire connector (60).
32. Install wire connector (60) on lead wire (61) and circuit wire (62) and crimp.
33. Install cover plate (46) on junction box (47) and secure with two screws (45).
34. Install cover plate (11) on junction box (12) and secure with two screws (10).

**4-34. WIRING HARNESS REPLACEMENT (M870) (continued).**

35. Install flexible tube connector (14) on flexible tube (15) and tighten screw (13).

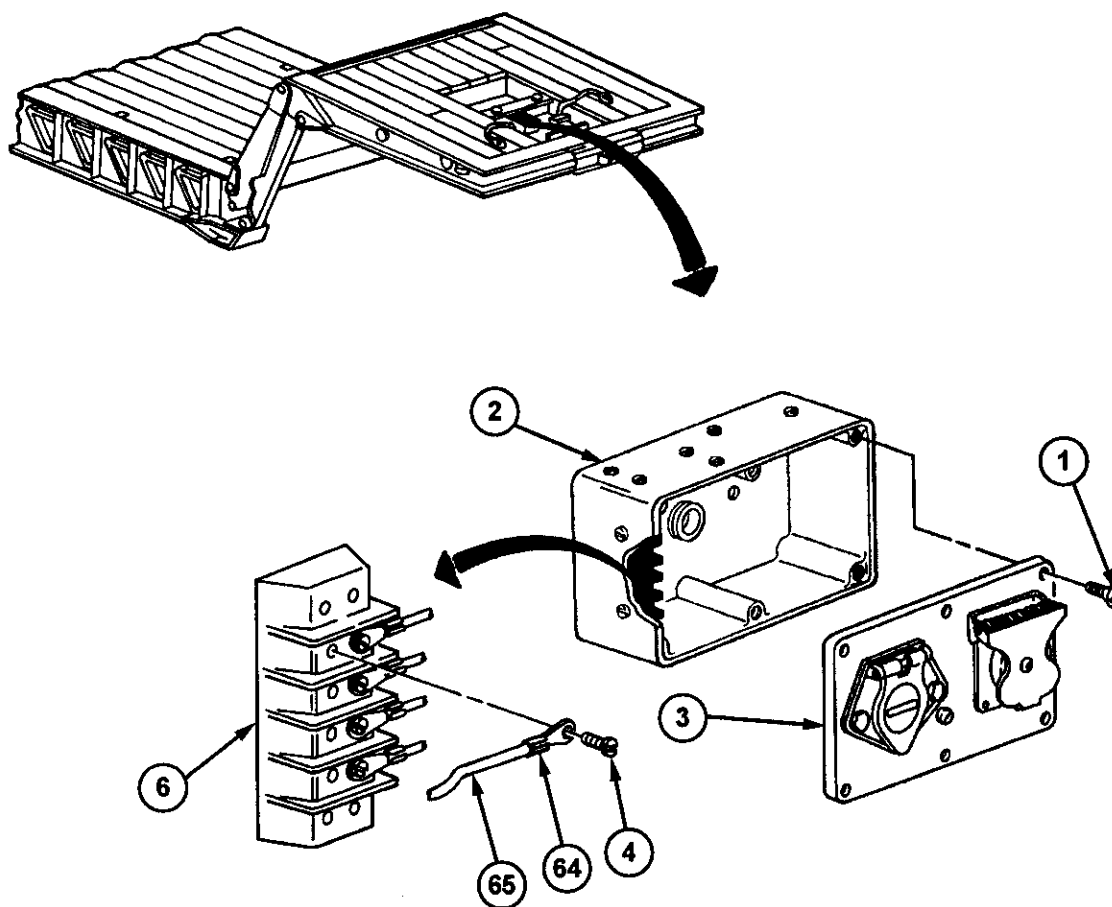


36. In junction box (41), strip insulation from end of black circuit wire (54) to depth of wire connector (52).
37. Strip insulation from end of black lead wire (53) to depth of wire connector (52).
38. Install wire connector (52) on lead wire (53) and black circuit wire (54) and crimp.
39. Install cover plate (40) on junction box (41) and secure with two screws (39).
40. In junction box (38), strip insulation from end of circuit wire (54) to depth of wire connector (50).
41. Strip insulation from end of lead wire (51) to depth of wire connector (50).
42. Install wire connector (50) on lead wire (51) and circuit wire (54) and crimp.
43. Install cover plate (37) on junction box (38) and secure with two screws (36).
44. At junction box (9), use wire connector (48) to connect circuit wire (54) and circuit wire (65).
45. Install cover plate (8) on junction box (9) with two screws (7).



#### 4-34. WIRING HARNESS REPLACEMENT (M870) (continued).

46. Strip insulation from end of black circuit wire (65) at voltage reduction box (2) to depth of connector (64).
47. Install connector (64) on black circuit wire (65) and crimp.
48. Put connector (64) in place on junction block (6), and install black terminal wire screw (4) on connector (64) and junction block (6).
49. Install box cover (3) on voltage reduction box (2) and secure with six screws (1).



#### FOLLOW-ON TASKS:

- None

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**4-35. VOLTAGE REDUCTION BOX REPLACEMENT (M870).**

---

*This Task Covers:*

a. Removal

b. Installation

---

*Initial Setup:*

**Tools/Test Equipment:**

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)
- 

**a. REMOVAL**

**WARNING**

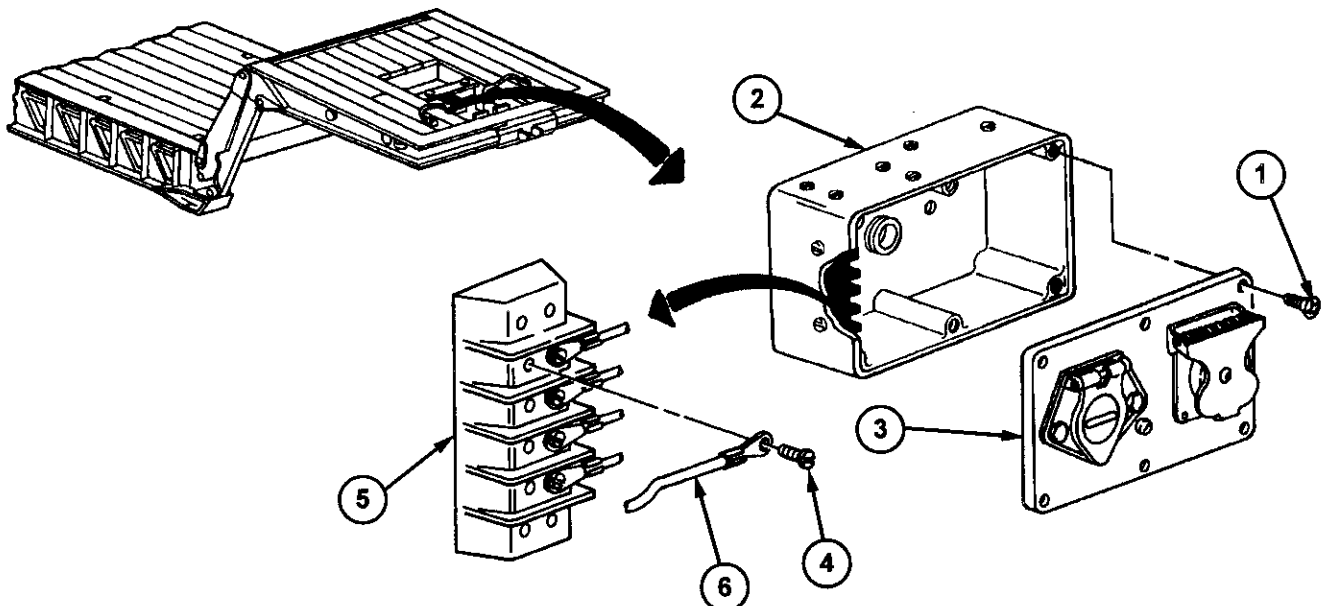
**Disconnect all outside power before performing any maintenance on the electrical system. Failure to do so could result in serious injury or death.**

1. Remove six screws (1) from voltage reduction box (2).
2. Remove box cover (3) from voltage reduction box (2).
3. Remove four terminal screws (4) from junction block (5).

**NOTE**

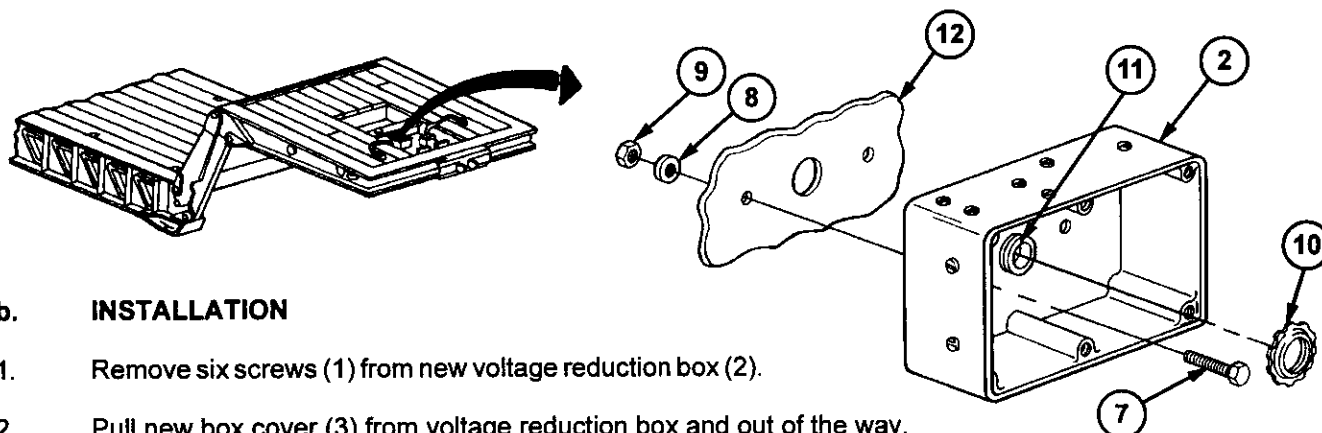
Before removing wiring harness wires from junction box, tag or mark wires for proper installation.

4. Remove four wiring harness wires (6) from junction block (5), and put four terminal screws (4) back in place on junction block (5).



## 4-35. VOLTAGE REDUCTION BOX REPLACEMENT (M870) (continued).

5. Remove two screws (7), washers (8), and nuts (9) from voltage reduction box (2).
6. Remove conduit fitting locknut (10) from conduit fitting (11).
7. Remove voltage reduction box (2) from frame member (12).



### b. INSTALLATION

1. Remove six screws (1) from new voltage reduction box (2).
2. Pull new box cover (3) from voltage reduction box and out of the way.

#### NOTE

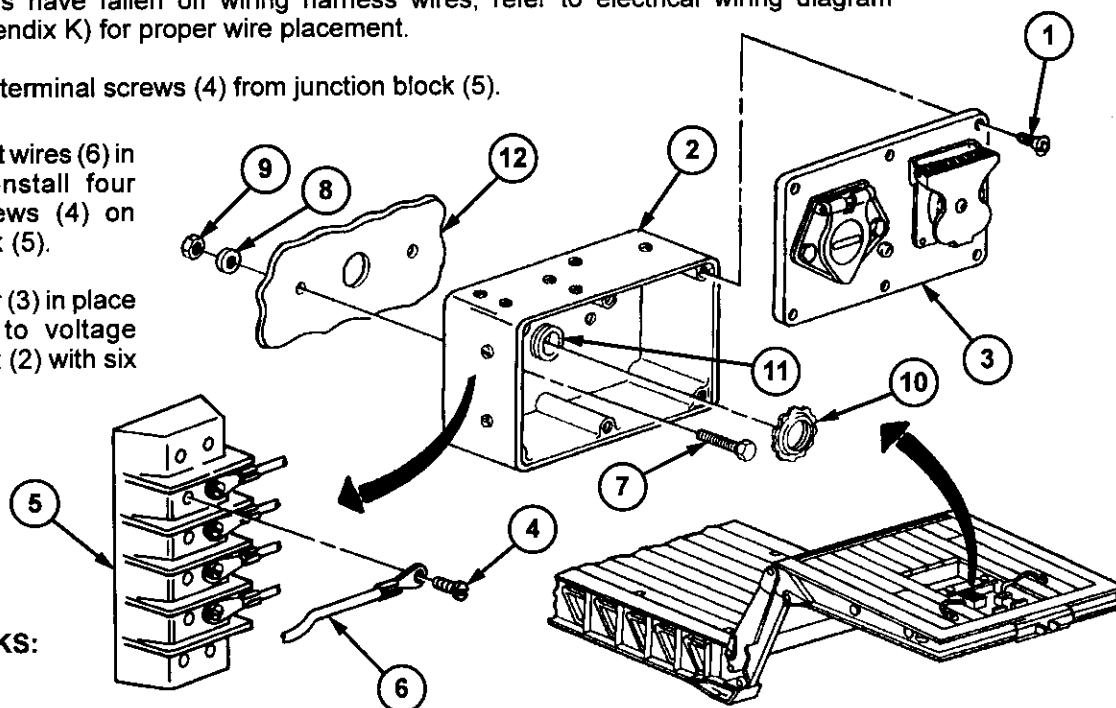
When putting new voltage reduction box in place, make sure wiring harness wire ends do not get stuck between box and frame member.

3. Secure voltage reduction box (2) to frame member (12) with two nuts (9), washers (8), and screws (7).
4. Install conduit fitting locknut (10) on conduit fitting (11) and tighten.

#### NOTE

If tags have fallen off wiring harness wires, refer to electrical wiring diagram (Appendix K) for proper wire placement.

5. Remove four terminal screws (4) from junction block (5).
6. Put four circuit wires (6) in place, and install four terminal screws (4) on junction block (5).
7. Put box cover (3) in place and secure to voltage reduction box (2) with six screws (1).



#### FOLLOW-ON TASKS:

- None

## 4-36. 12-VOLT RECEPTACLE REPLACEMENT (M870A1).

*This Task Covers:*

a. Removal

b. Installation

*Initial Setup:*

### Tools/Test Equipment:

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

### Equipment Conditions:

- Semitrailer unloaded (para 2-10).

### Materials/Parts:

- Lockwasher (2) (Item 12, Appendix I)

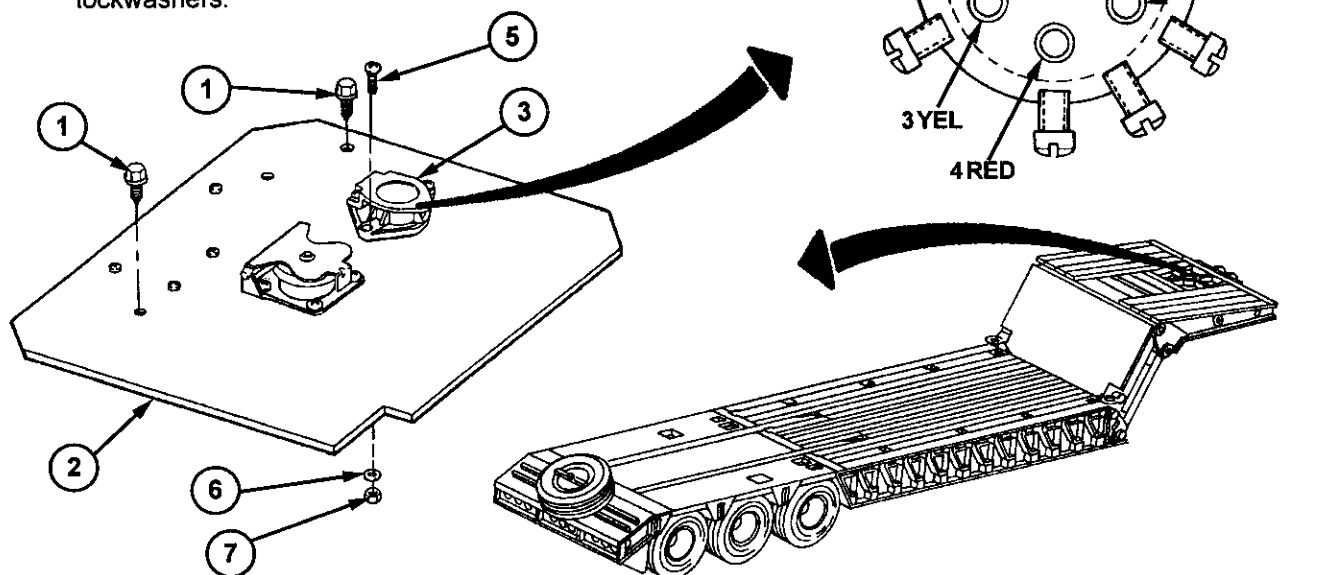
Personnel Required: Two

### a. REMOVAL

#### WARNING

**Disconnect all outside power before performing any maintenance on the electrical system. Failure to do so could result in serious injury or death.**

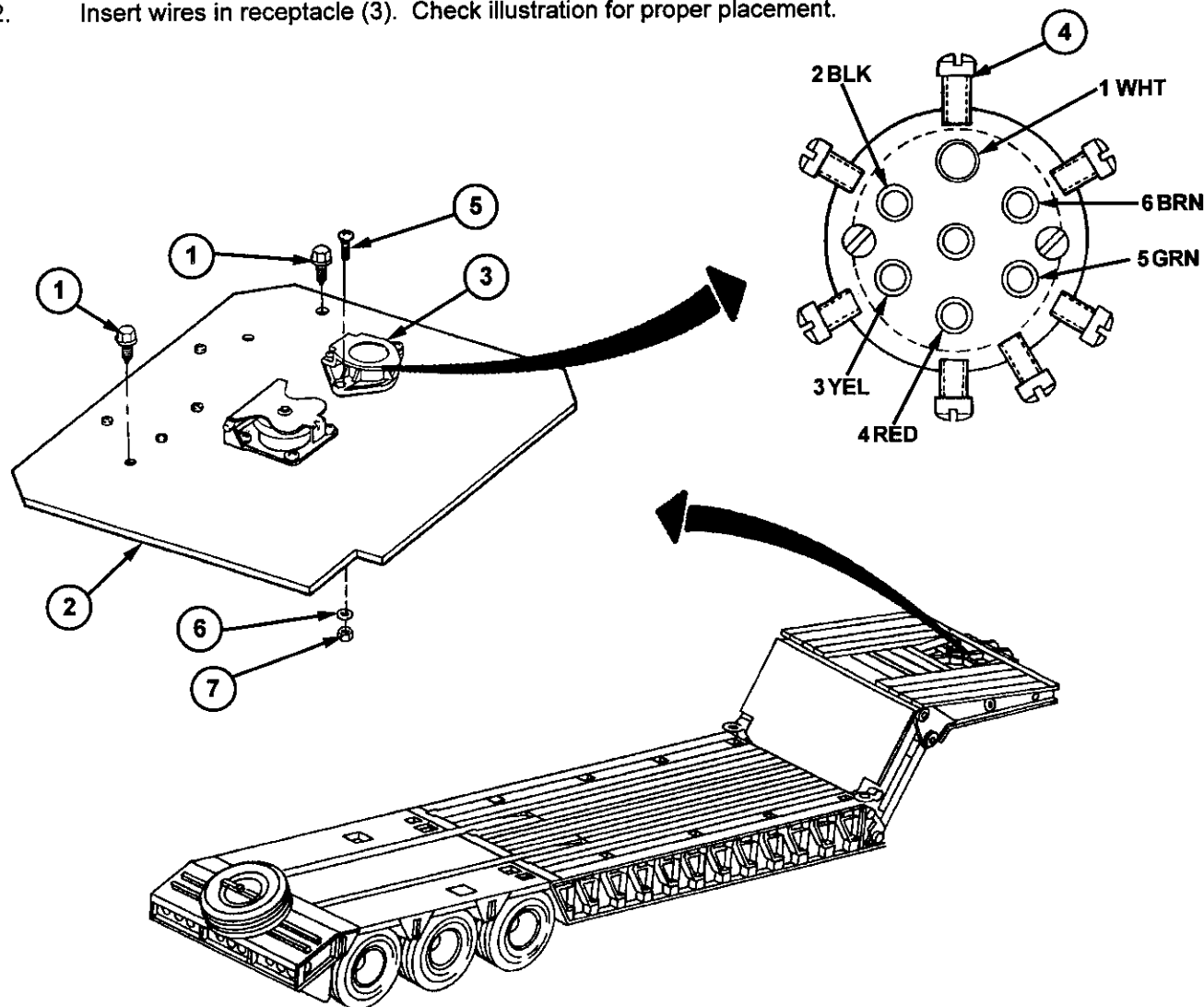
1. Remove two bolts (1) from voltage reduction box cover (2). Turn over box cover (2).
2. Tag wires to 12-volt receptacle (3).
3. Unscrew, but do not remove, seven screws (4) on receptacle (3).
4. Withdraw wires from receptacle (3).
5. Remove two bolts (5), lockwashers (6), and nuts (7) from receptacle (3). Remove receptacle (3) from box cover (2). Discard lockwashers.



## 4-36. 12-VOLT RECEPTACLE REPLACEMENT (M870A1) (continued).

### b. INSTALLATION

1. Install new 12-volt receptacle (3) in box cover (2). Secure receptacle (3) to box cover (2) with two nuts (7), new lockwashers (6), and bolts (5).
2. Insert wires in receptacle (3). Check illustration for proper placement.



3. Tighten seven screws (4) on receptacle (3).
4. Install box cover (2) on semitrailer. Secure box cover (2) to semitrailer with two bolts (1).
5. With the aid of an assistant, connect semitrailer electrical connectors to towing vehicle and verify that trailer lights work.

### FOLLOW-ON TASKS:

- None



## 4-37. 24-VOLT RECEPTACLE REPLACEMENT (M870A1).

*This Task Covers:*

a. Removal

b. Installation

*Initial Setup:*

### Tools/Test Equipment:

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

**Personnel Required:** Two

### Equipment Conditions:

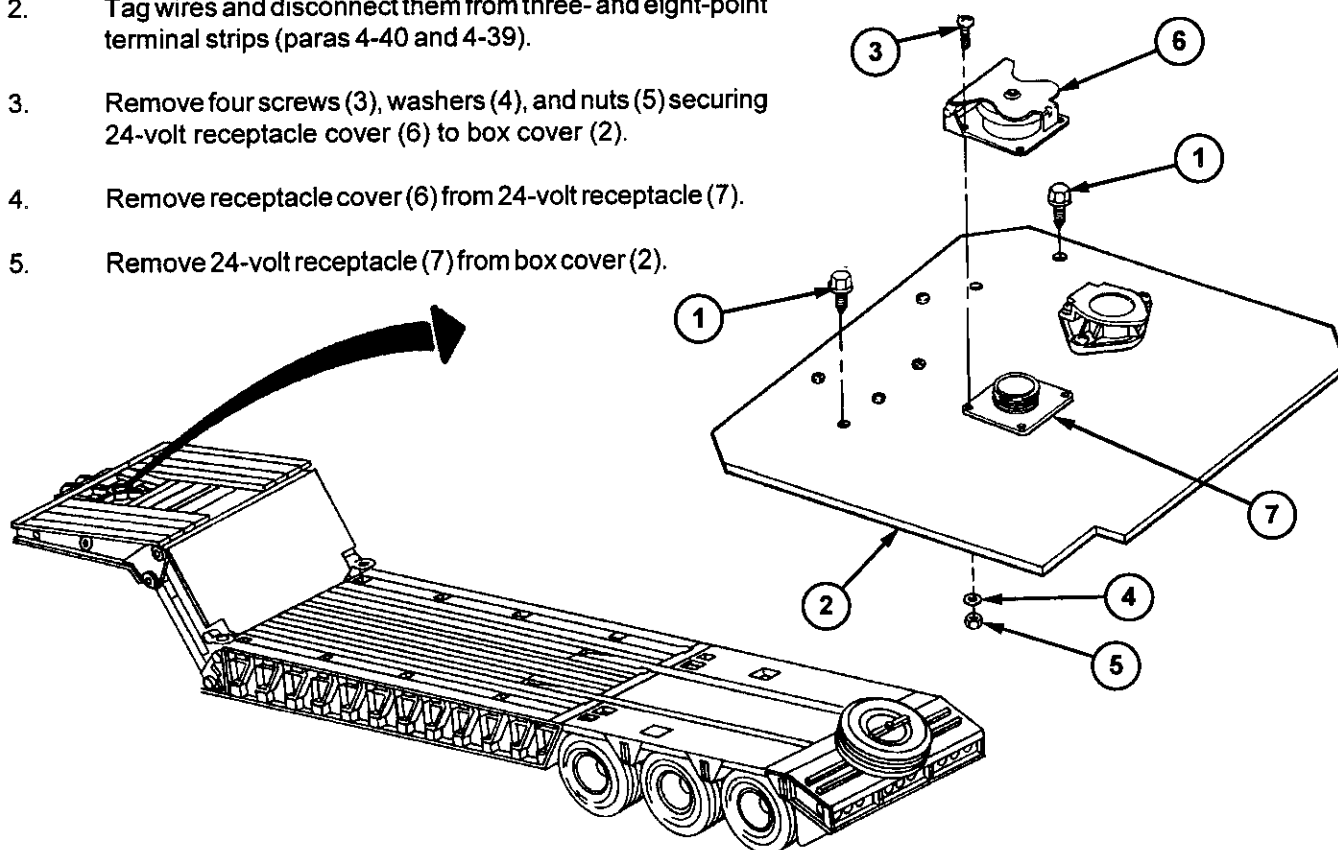
- Semitrailer unloaded (para 2-10).

### a. REMOVAL

#### WARNING

**Disconnect all outside power before performing any maintenance on the electrical system. Failure to do so could result in serious injury or death.**

1. Remove two bolts (1) from voltage reduction box cover (2). Turn over box cover (2).
2. Tag wires and disconnect them from three- and eight-point terminal strips (paras 4-40 and 4-39).
3. Remove four screws (3), washers (4), and nuts (5) securing 24-volt receptacle cover (6) to box cover (2).
4. Remove receptacle cover (6) from 24-volt receptacle (7).
5. Remove 24-volt receptacle (7) from box cover (2).



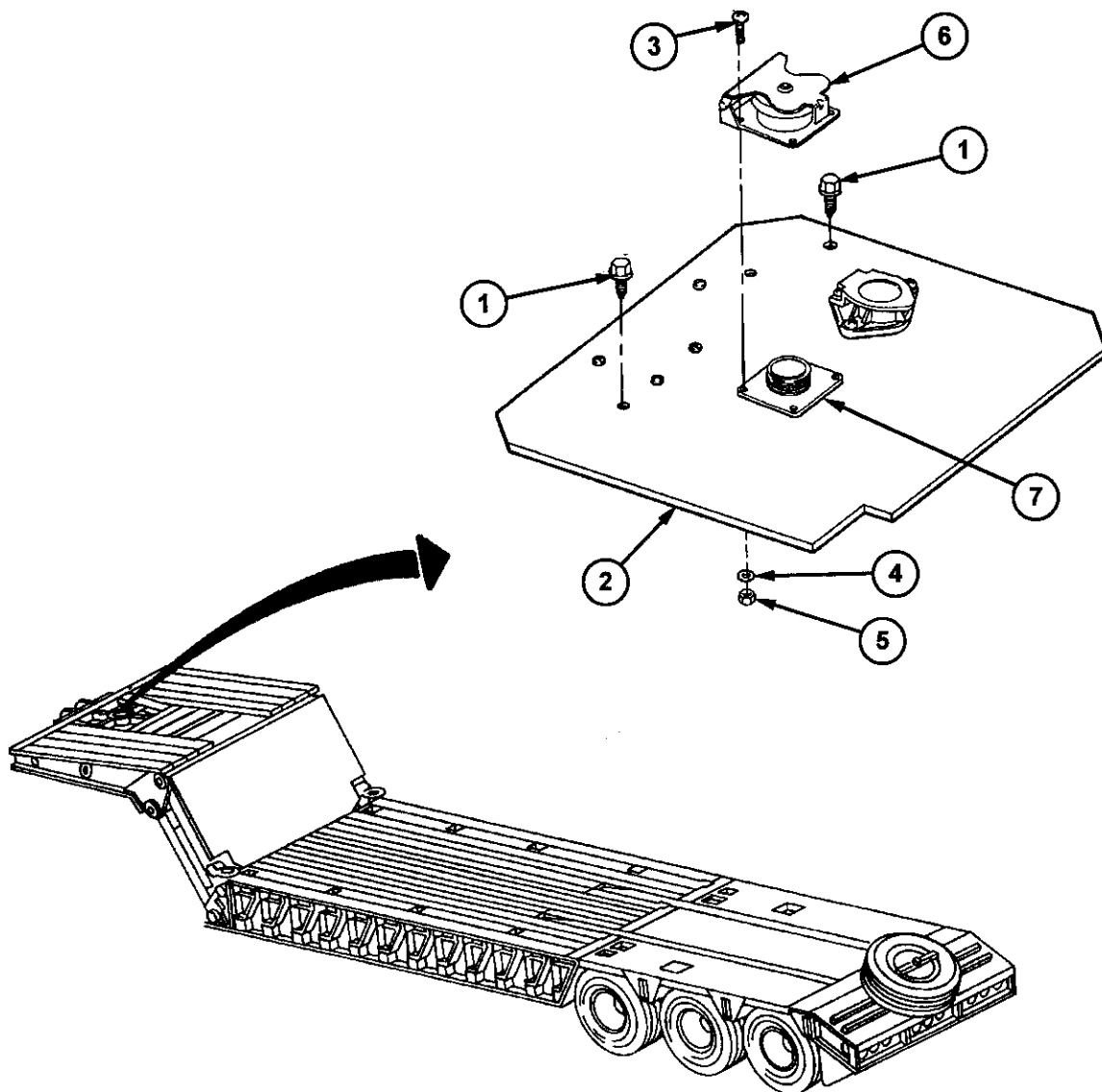
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## 4-37. 24-VOLT RECEPTACLE REPLACEMENT (M870A1) (continued).

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### b. INSTALLATION

1. Install new 24-volt receptacle (7).
2. Install receptacle cover (6) on 24-volt receptacle (7) and secure with four nuts (5), washers (4), and screws (3).
3. Connect wires to three- and eight-point terminal strips (paras 4-40 and 4-39).
4. Install box cover (2) on semitrailer. Secure box cover (2) to semitrailer with two bolts (1).
5. With the aid of an assistant, connect semitrailer electrical connectors to towing vehicle and verify that 24-volt blackout lights work.



### FOLLOW-ON TASKS:

- None

#### 4-38. RESISTOR REPLACEMENT (M870A1).

***This Task Covers:***

- a. Removal**

**b. Installation**

**Initial Setup:**

**Tools/Test Equipment:**

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

**Equipment Conditions:**

- **Semitrailer unloaded (para 2-10).**

**Personnel Required: Two**

**a. REMOVAL**

## WARNING

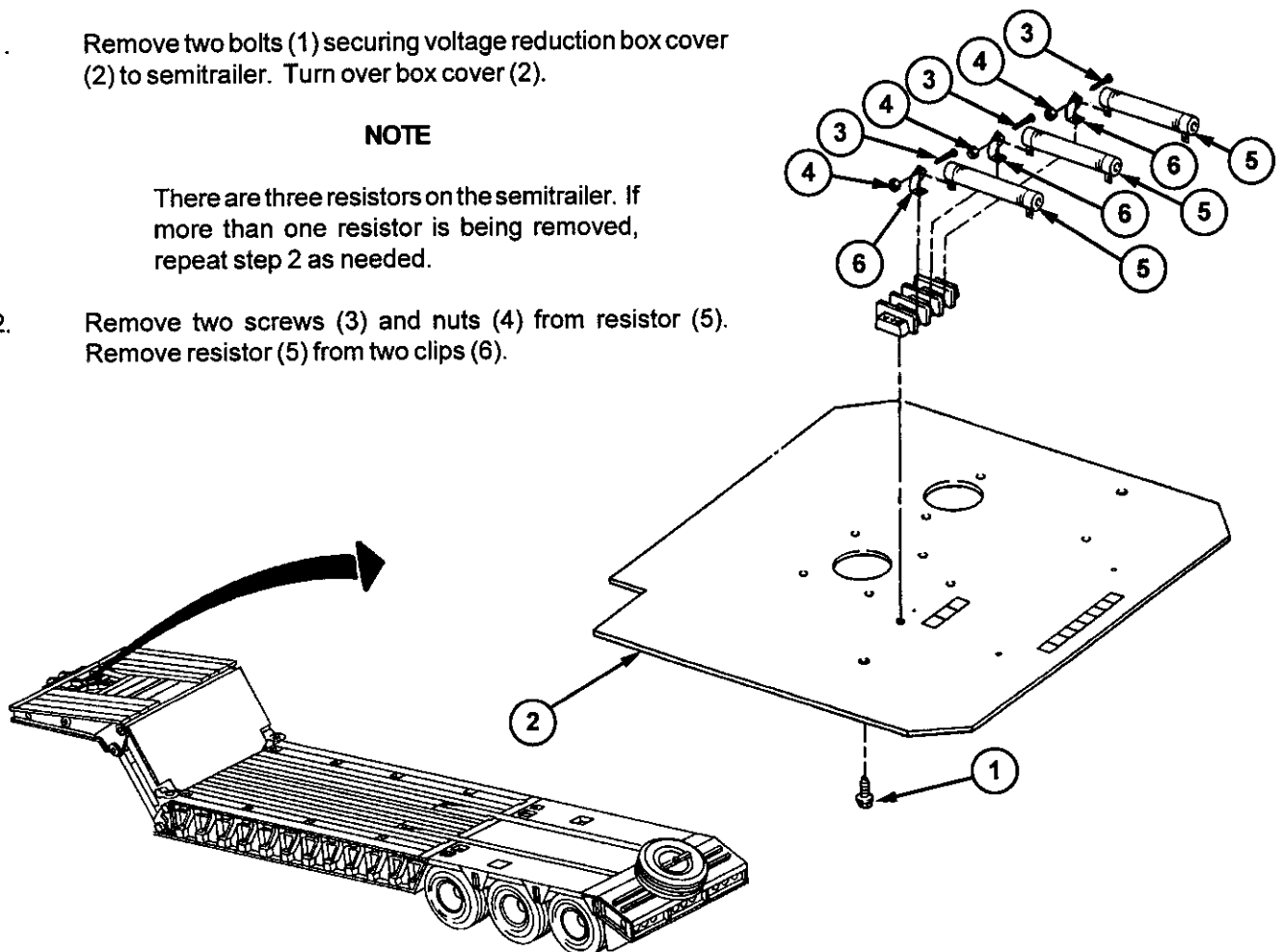
**Disconnect all outside power before performing any maintenance on the electrical system. Failure to do so could result in serious injury or death.**

1. Remove two bolts (1) securing voltage reduction box cover (2) to semitrailer. Turn over box cover (2).

### NOTE

There are three resistors on the semitrailer. If more than one resistor is being removed, repeat step 2 as needed.

- Remove two screws (3) and nuts (4) from resistor (5). Remove resistor (5) from two clips (6).



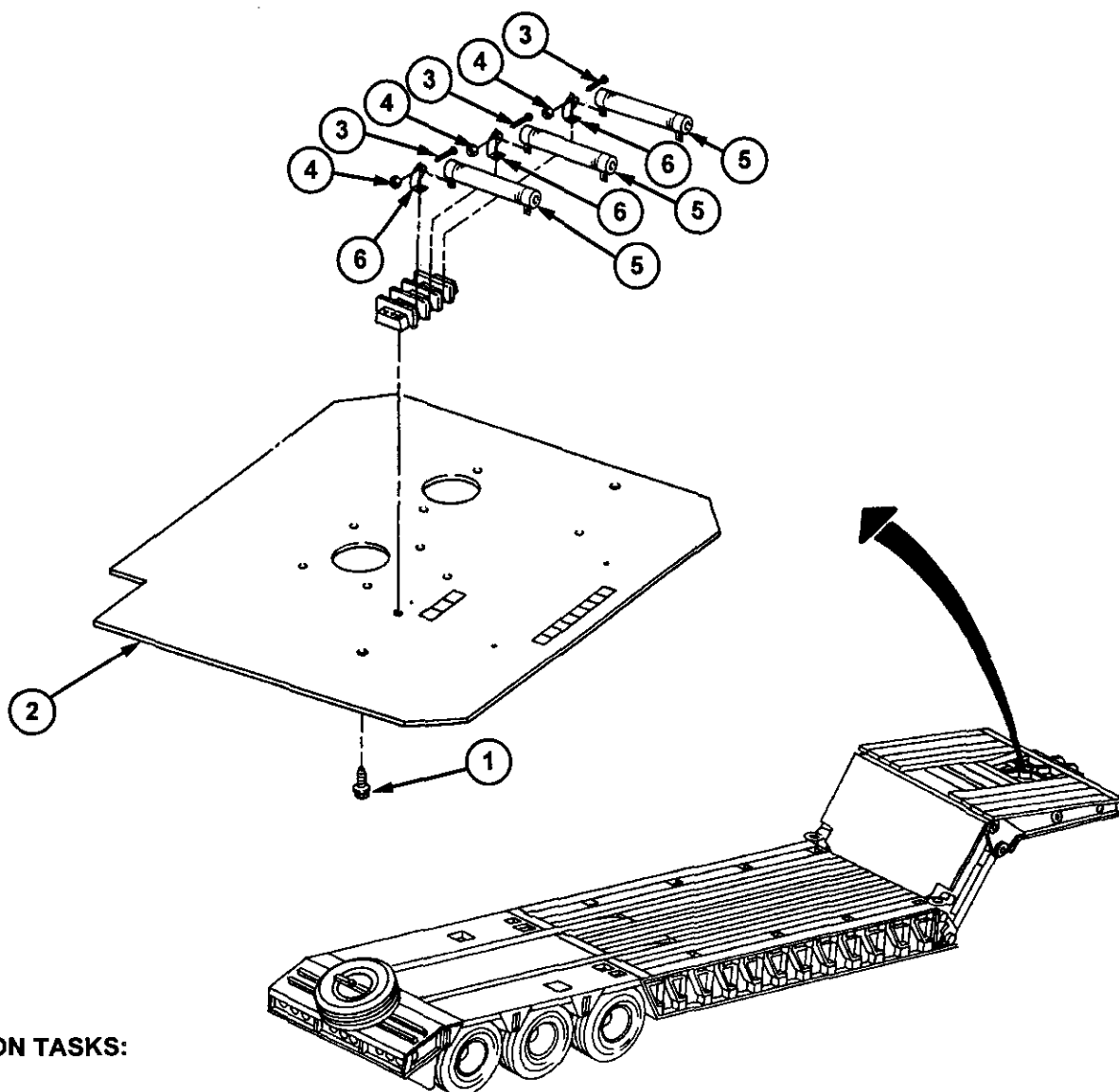
## 4-38. RESISTOR REPLACEMENT (M870A1) (continued).

### b. INSTALLATION

#### NOTE

There are three resistors on the semitrailer. If more than one resistor is being installed, repeat step 1 as needed.

1. Install resistor (5) on two clips (6). Secure resistor (5) to clips (6) with two nuts (4) and screws (3).
2. Install voltage reduction box cover (2) on semitrailer. Install two bolts (1) to secure box cover (2) to semitrailer.
3. With the aid of an assistant, connect semitrailer electrical connector to towing vehicle and test lights for proper operation.



#### FOLLOW-ON TASKS:

- None

## 4-39. EIGHT-POINT TERMINAL STRIP REPLACEMENT (M870A1).

*This Task Covers:*

a. Removal

b. Installation

*Initial Setup:*

### Tools/Test Equipment:

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

### Equipment Conditions:

- Semitrailer unloaded (para 2-10).

### Materials/Parts:

- Self-locking nut (2) (Item 27, Appendix I)

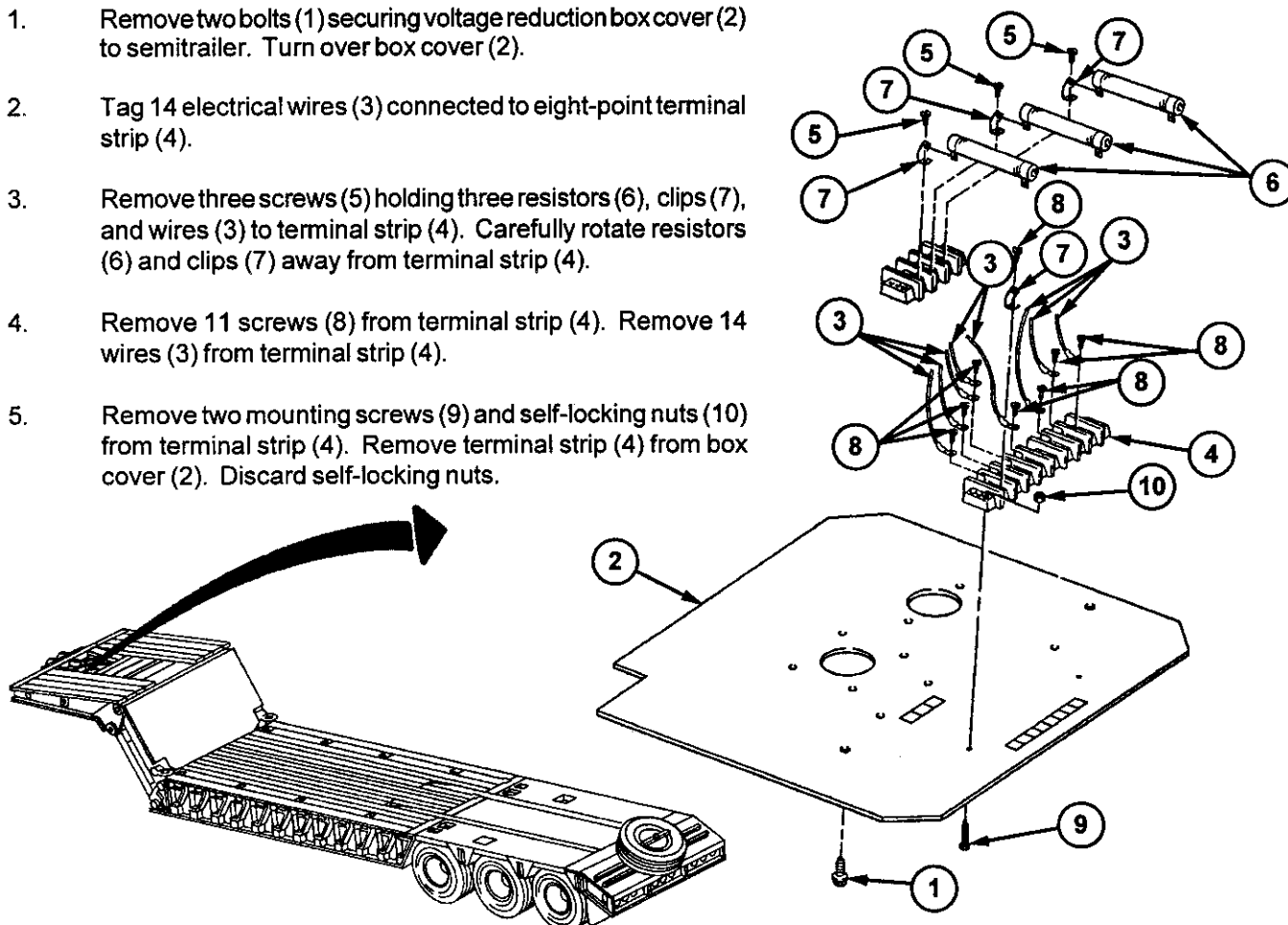
**Personnel Required:** Two

### a. REMOVAL

#### **WARNING**

**Disconnect all outside power before performing any maintenance on the electrical system. Failure to do so could result in serious injury or death.**

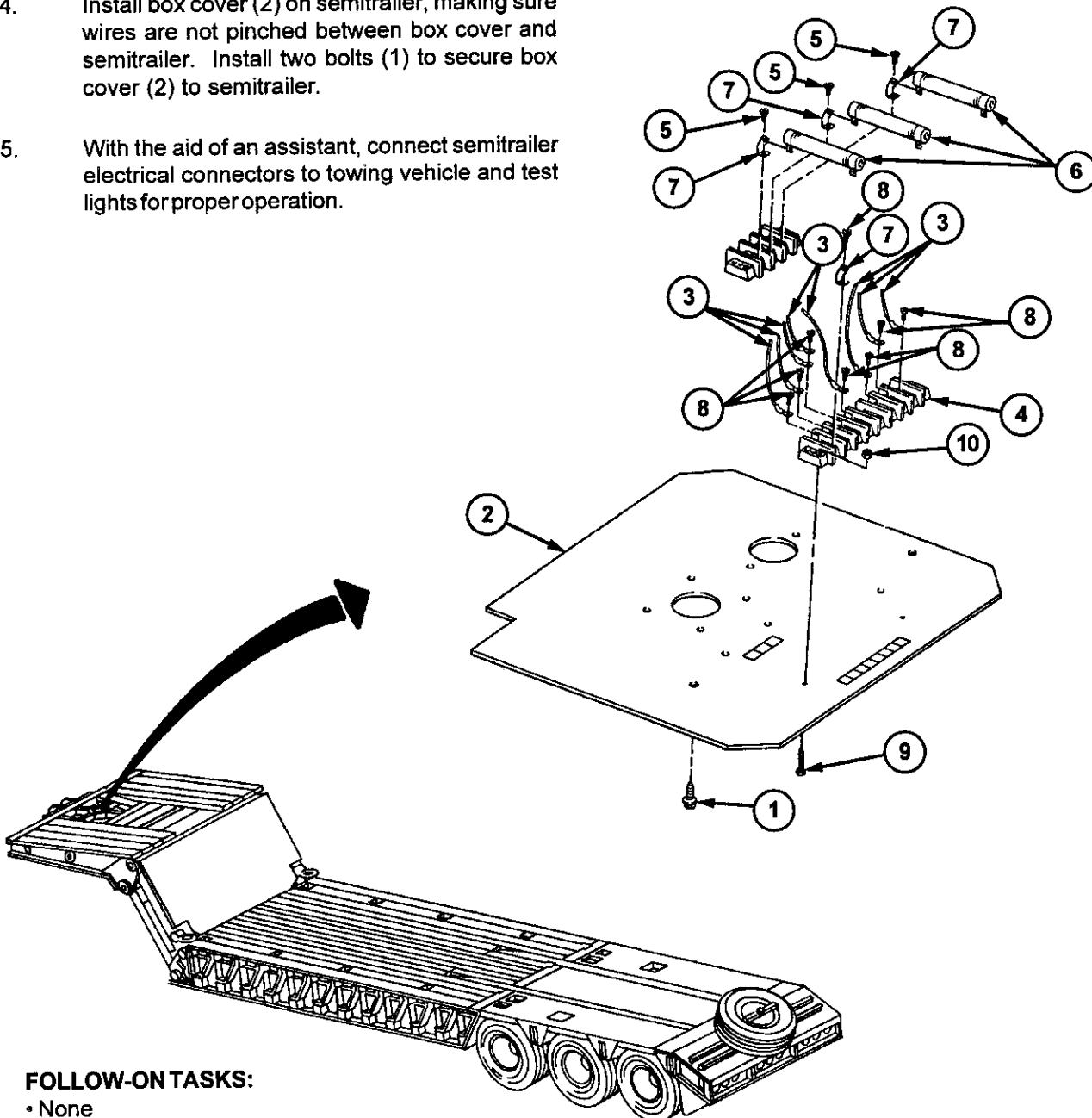
1. Remove two bolts (1) securing voltage reduction box cover (2) to semitrailer. Turn over box cover (2).
2. Tag 14 electrical wires (3) connected to eight-point terminal strip (4).
3. Remove three screws (5) holding three resistors (6), clips (7), and wires (3) to terminal strip (4). Carefully rotate resistors (6) and clips (7) away from terminal strip (4).
4. Remove 11 screws (8) from terminal strip (4). Remove 14 wires (3) from terminal strip (4).
5. Remove two mounting screws (9) and self-locking nuts (10) from terminal strip (4). Remove terminal strip (4) from box cover (2). Discard self-locking nuts.



## 4-39. EIGHT-POINT TERMINAL STRIP REPLACEMENT (M870A1) (continued).

### b. INSTALLATION

1. Position terminal strip (4) on box cover (2). Secure terminal strip (4) to box cover (2) with two new self-locking nuts (10) and mounting screws (9).
2. Install 14 wires (3) on terminal strip (4). Secure 11 wires (3) not positioned under resistors with 11 screws (8).
3. Carefully rotate three resistors (6) and clips (7) over remaining three wires (3) and secure with three screws (5).
4. Install box cover (2) on semitrailer, making sure wires are not pinched between box cover and semitrailer. Install two bolts (1) to secure box cover (2) to semitrailer.
5. With the aid of an assistant, connect semitrailer electrical connectors to towing vehicle and test lights for proper operation.



### FOLLOW-ON TASKS:

- None

## 4-40. THREE-POINT TERMINAL STRIP REPLACEMENT (M870A1).

*This Task Covers:*

a. Removal

b. Installation

*Initial Setup:*

### Tools/Test Equipment:

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

### Equipment Conditions:

- Semitrailer unloaded (para 2-10).

### Materials/Parts:

- Self-locking nut (2), (Item 27, Appendix I)

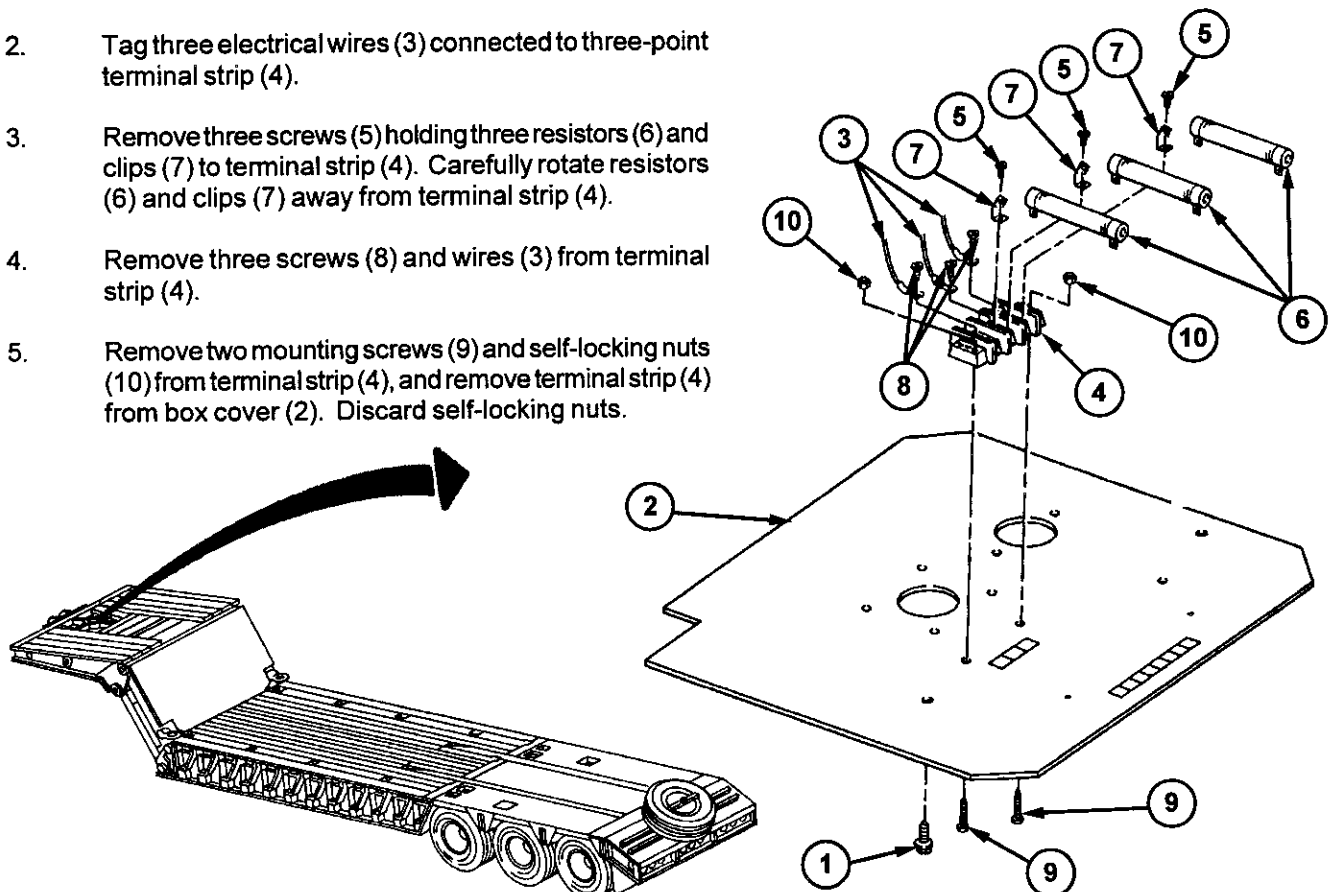
**Personnel Required:** Two

### a. REMOVAL

#### **WARNING**

**Disconnect all outside power before performing any maintenance on the electrical system. Failure to do so could result in serious injury or death.**

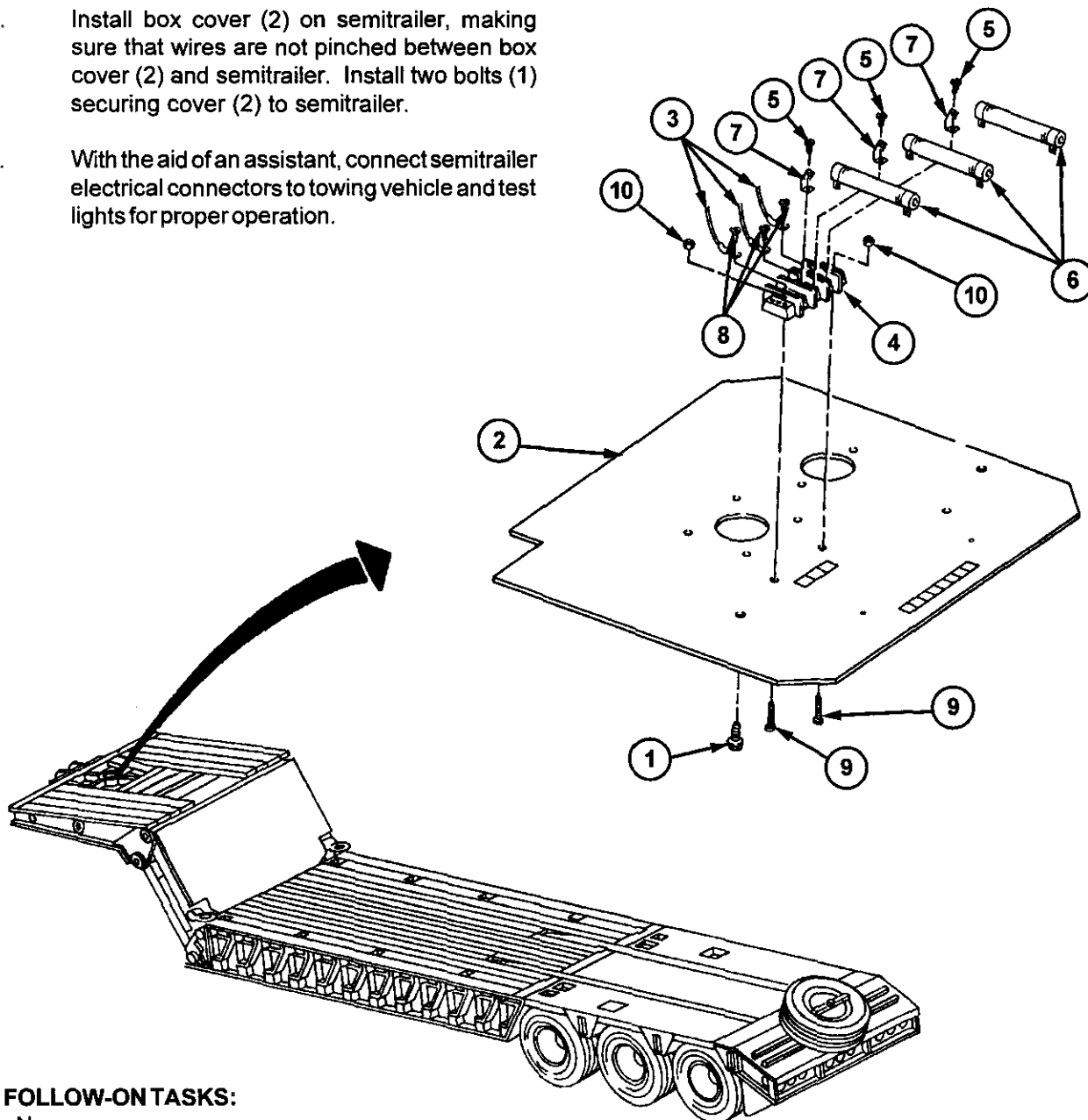
1. Remove two bolts (1) securing voltage reduction box cover (2) to semitrailer. Turn over box cover (2).
2. Tag three electrical wires (3) connected to three-point terminal strip (4).
3. Remove three screws (5) holding three resistors (6) and clips (7) to terminal strip (4). Carefully rotate resistors (6) and clips (7) away from terminal strip (4).
4. Remove three screws (8) and wires (3) from terminal strip (4).
5. Remove two mounting screws (9) and self-locking nuts (10) from terminal strip (4), and remove terminal strip (4) from box cover (2). Discard self-locking nuts.



## 4-40. THREE-POINT TERMINAL STRIP REPLACEMENT (M870A1) (continued).

### b. INSTALLATION

1. Position terminal strip (4) on box cover (2). Secure terminal strip (4) to box cover (2) with two new self-locking nuts (10) and mounting screws (9).
2. Install three wires (3) on terminal strip (4). Secure wires (3) to terminal strip (4) with three screws (8).
3. Carefully rotate three resistors (6) and clips (7) over terminal strip (4) and secure with three screws (5).
4. Install box cover (2) on semitrailer, making sure that wires are not pinched between box cover (2) and semitrailer. Install two bolts (1) securing cover (2) to semitrailer.
5. With the aid of an assistant, connect semitrailer electrical connectors to towing vehicle and test lights for proper operation.



### FOLLOW-ON TASKS:

- None



## 4-41. FRONT WIRING HARNESS REPLACEMENT (M870A1).

*This Task Covers:*

a. Removal

b. Installation

*Initial Setup:*

### Tools/Test Equipment:

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

### Equipment Conditions:

- Semitrailer unloaded (para 2-10).

### Materials/Parts:

- Lockwasher (2) (Item 12, Appendix I)

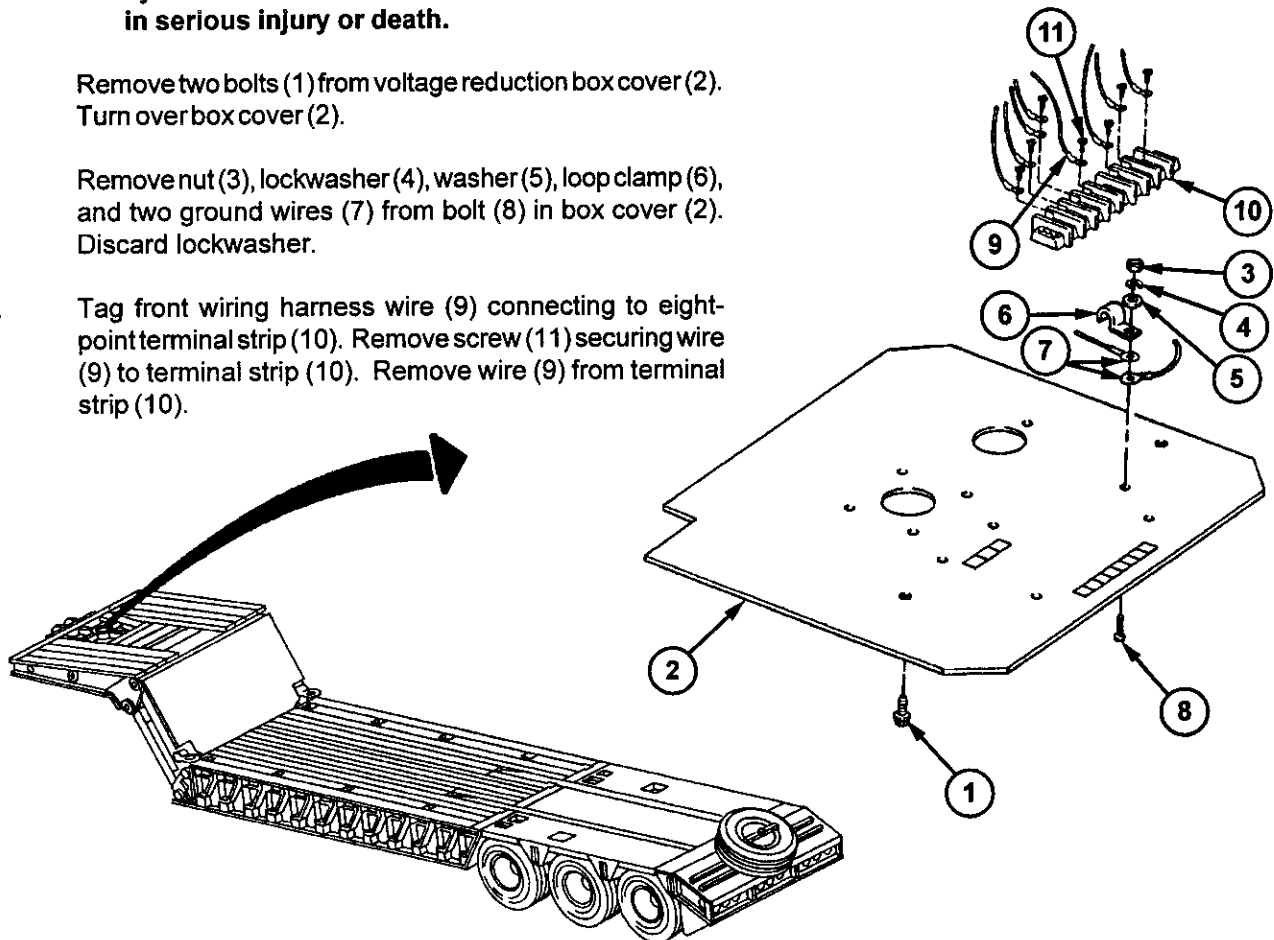
**Personnel Required: Two**

### a. REMOVAL

#### **WARNING**

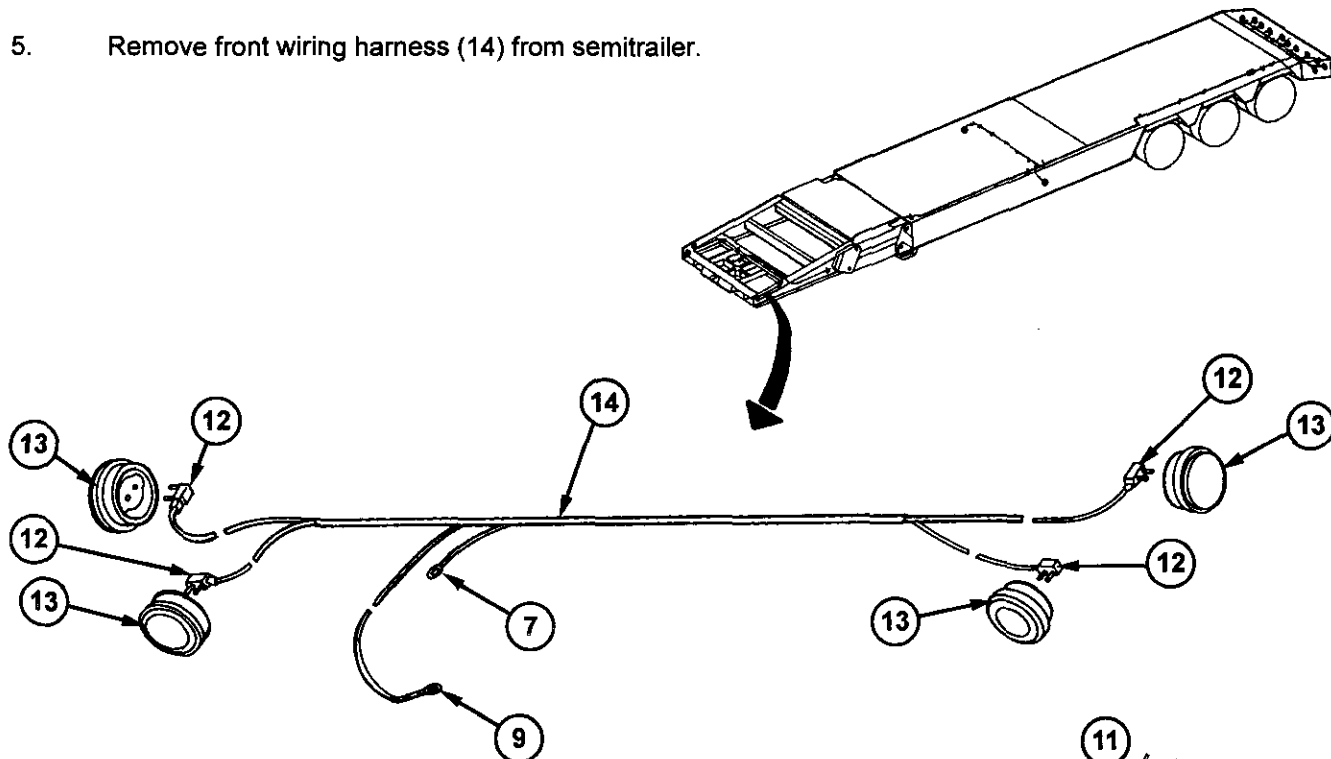
**Disconnect all outside power before performing any maintenance on the electrical system. Failure to do so could result in serious injury or death.**

1. Remove two bolts (1) from voltage reduction box cover (2). Turn over box cover (2).
2. Remove nut (3), lockwasher (4), washer (5), loop clamp (6), and two ground wires (7) from bolt (8) in box cover (2). Discard lockwasher.
3. Tag front wiring harness wire (9) connecting to eight-point terminal strip (10). Remove screw (11) securing wire (9) to terminal strip (10). Remove wire (9) from terminal strip (10).



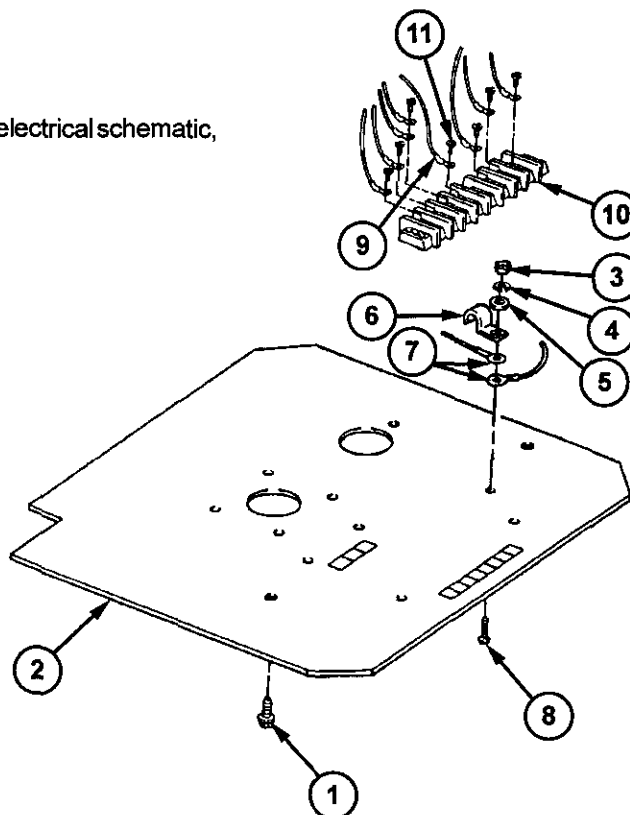
## 4-41. FRONT WIRING HARNESS REPLACEMENT (M870A1) (continued).

4. Disconnect four clearance light cable connectors (12) from four gooseneck clearance lights (13) (refer to electrical schematic, Appendix K).
5. Remove front wiring harness (14) from semitrailer.



### b. INSTALLATION

1. Install front wiring harness (14) on semitrailer (refer to electrical schematic, Appendix K).
2. Connect four clearance light cable connectors (12) to four gooseneck clearance lights (13).
3. Install front wiring harness wire (9) on terminal strip (10) and secure with screw (11).
4. Install nut (3), new lockwasher (4), washer (5), loop clamp (6), and two ground wires (7) on bolt (8) in box cover (2).
5. Install box cover (2) on semitrailer and secure with two bolts (1).
6. With the aid of an assistant, connect semitrailer electrical connectors to towing vehicle and test gooseneck clearance lights for proper operation.



### FOLLOW-ON TASKS:

- None

## 4-42. MIDDLE WIRING HARNESS REPLACEMENT (M870A1).

*This Task Covers:*

a. Removal

b. Installation

*Initial Setup:*

### Tools/Test Equipment:

- Tool kit, General mechanic's: automotive (Item 7, Appendix K)

**Personnel Required:** Two

### Equipment Conditions:

- Semitrailer unloaded (para 2-10).

### a. REMOVAL

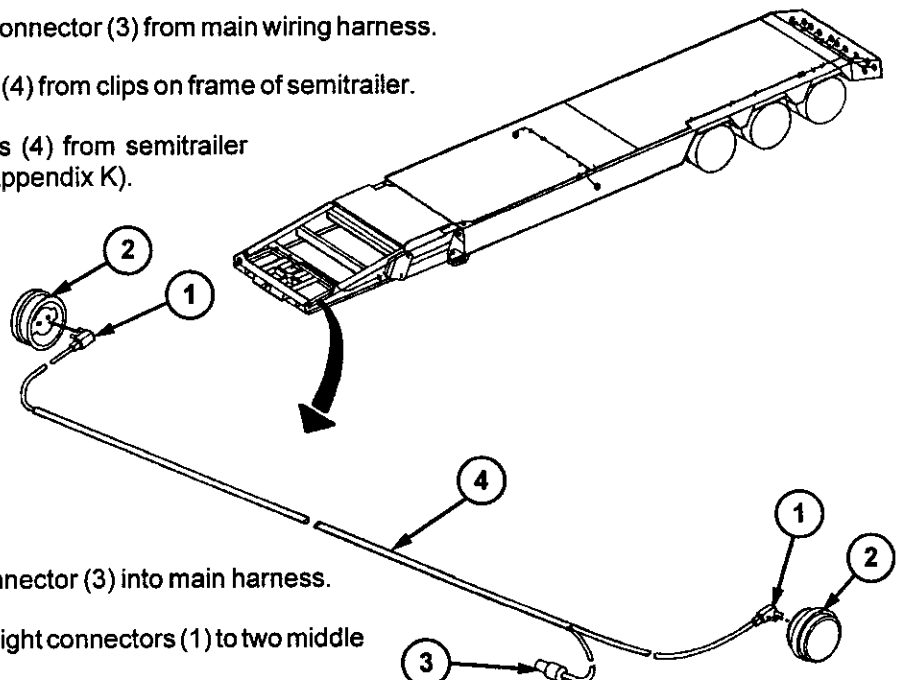
#### **WARNING**

**Disconnect all outside power before performing any maintenance on the electrical system. Failure to do so could result in serious injury or death.**

1. Disconnect two middle clearance light connectors (1) from two middle clearance lights (2) (refer to electrical schematic, Appendix K).
2. Unplug middle wiring harness connector (3) from main wiring harness.
3. Remove middle wiring harness (4) from clips on frame of semitrailer.
4. Remove middle wiring harness (4) from semitrailer (refer to electrical schematic, Appendix K).

### b. INSTALLATION

1. Install middle wiring harness (4) in semitrailer (refer to electrical schematic, Appendix K).
2. Install middle wiring harness (4) in clips on frame of semitrailer.
3. Plug middle wiring harness connector (3) into main harness.
4. Connect two middle clearance light connectors (1) to two middle clearance lights (2).
5. With the aid of an assistant, connect semitrailer electrical connectors to towing vehicle and test middle clearance lights for proper operation.



### FOLLOW-ON TASKS:

- None

## 4-43. REAR WIRING HARNESS REPLACEMENT (M870A1).

*This Task Covers:*

- a. Removal
- b. Installation

*Initial Setup:*

### Tools/Test Equipment:

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

**Personnel Required: Two**

### Equipment Conditions:

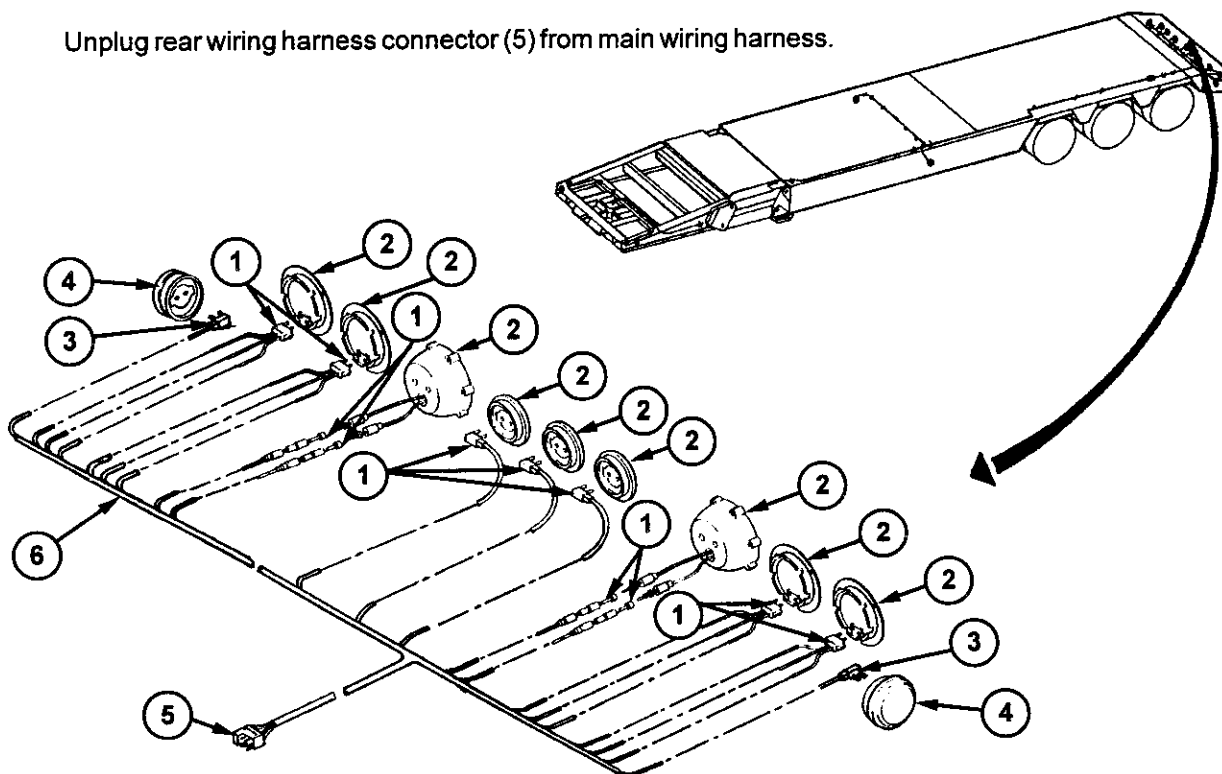
- Semitrailer unloaded (para 2-10).

### a. REMOVAL

#### **WARNING**

**Disconnect all outside power before performing any maintenance on the electrical system. Failure to do so could result in serious injury or death.**

1. Disconnect 11 blackout, taillight-stoplight, and clearance light connectors (1) from all nine lights (2) on rear of semitrailer (refer to electrical schematic, Appendix K).
2. Disconnect two rear side clearance light connectors (3) from two rear side clearance lights (4).
3. Unplug rear wiring harness connector (5) from main wiring harness.



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**4-43. REAR WIRING HARNESS REPLACEMENT (M870A1) (continued).**

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4. Remove rear wiring harness (6) from clips on frame of semitrailer.
5. Remove rear wiring harness (6) from semitrailer (refer to electrical schematic, Appendix K).

**b. INSTALLATION**

1. Install rear wiring harness (6) on semitrailer (refer to electrical schematic, Appendix K).
2. Install rear wiring harness (6) in clips on frame of semitrailer.
3. Connect rear wiring harness connector (5) to main wiring harness.
4. Connect two rear side clearance light connectors (3) to two rear side clearance lights (4).
5. Connect 11 blackout, taillight-stoplight, and clearance light connectors (1) to nine lights (2) on rear of semitrailer.
6. With the aid of an assistant, connect semitrailer electrical connectors to towing vehicle and test blackout lights, taillight-stoplights, and clearance lights for proper operation.

**FOLLOW-ON TASKS:**

- None

## 4-44. MAIN WIRING HARNESS REPLACEMENT (M870A1).

*This Task Covers:*

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

*Initial Setup:*

**Tools/Test Equipment:**

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

**Equipment Conditions:**

- Semitrailer unloaded (para 2-10)

**Materials/Parts:**

- Lockwasher (Item 12, Appendix I)

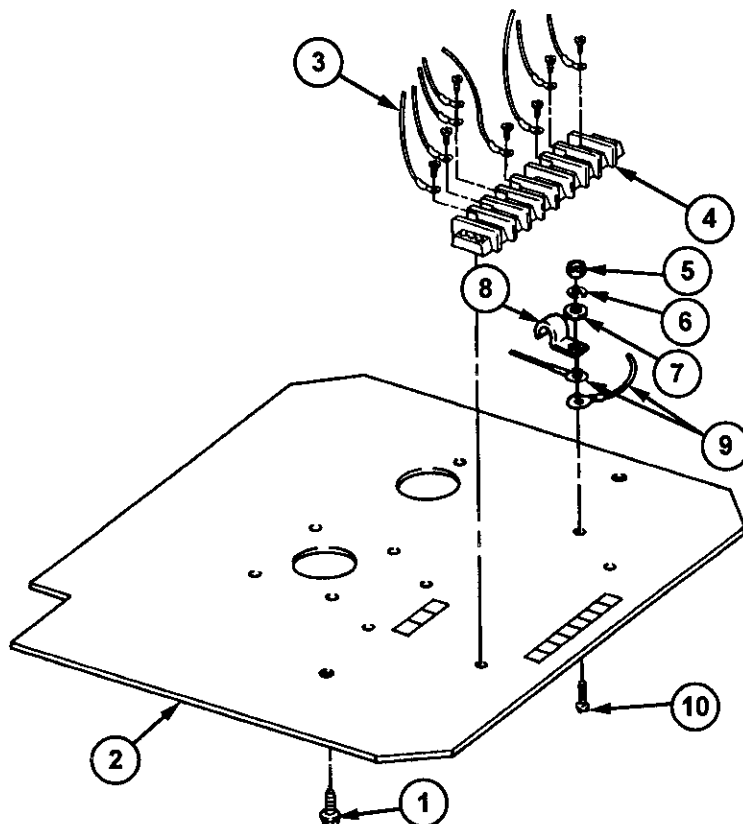
**Personnel Required:** Two

### a. REMOVAL

#### WARNING

**Disconnect all outside power before performing any maintenance on the electrical system. Failure to do so could result in serious injury or death.**

1. Remove two bolts (1) from voltage reduction box cover (2). Turn over box cover (2).
2. Tag and disconnect seven wires (3) from eight-point terminal strip (4).

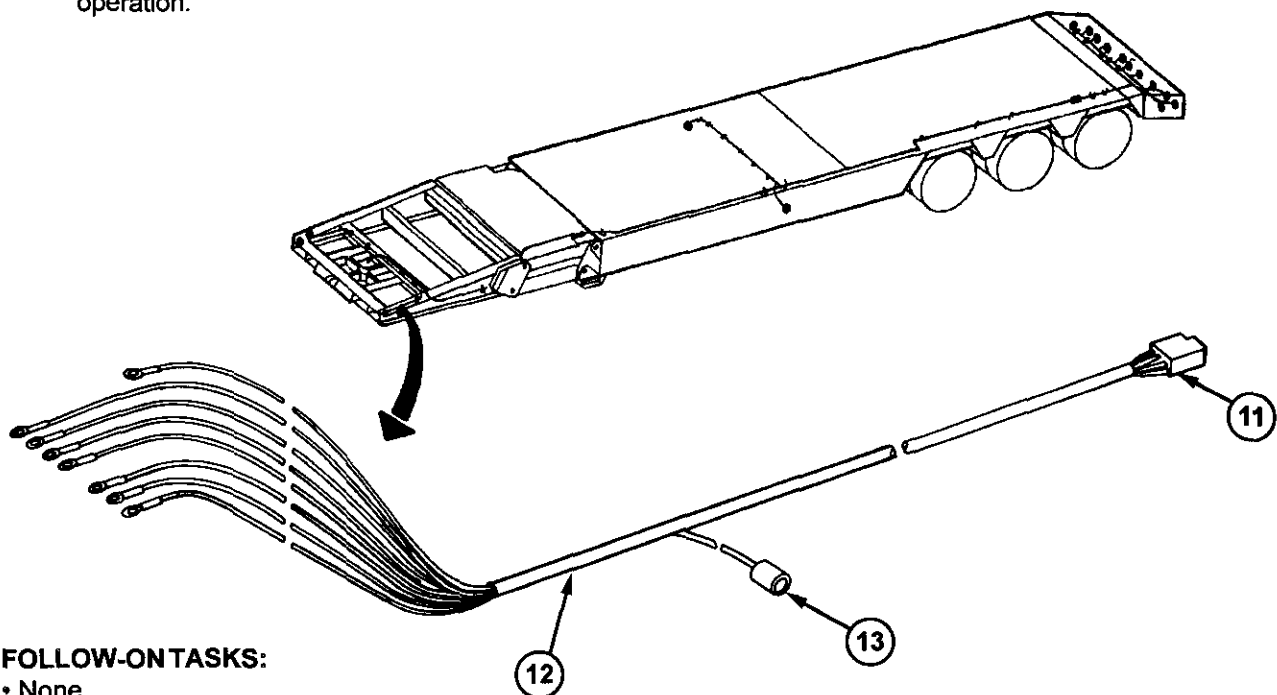


**4-44. MAIN WIRING HARNESS REPLACEMENT (M870A1) (continued).**

3. Remove nut (5), lockwasher (6), washer (7), loop clamp (8), and two ground wires (9) from bolt (10) in box cover (2). Discard lockwasher.
4. Disconnect plug (11) between main wiring harness (12) and rear wiring harness (refer to electrical schematic, Appendix K).
5. Disconnect plug (13) between main wiring harness (12) and middle wiring harness (refer to electrical schematic, Appendix K).
6. Remove main wiring harness (12) from semitrailer (refer to electrical schematic, Appendix K).

**b. INSTALLATION**

1. Install main wiring harness (12) on semitrailer (refer to electrical schematic, Appendix K).
2. Install two ground wires (9) on bolt (10) in box cover (2). Install loop clamp (8), washer (7), new lockwasher (6), and nut (5) on bolt (10).
3. Connect seven wires (3) to eight-point terminal strip (4).
4. Install box cover (2) on semitrailer and secure with two bolts (1).
5. Connect plug (13) between main wiring harness (12) and middle wiring harness (refer to electrical schematic, Appendix K).
6. Connect plug (11) between main wiring harness (12) and rear wiring harness (refer to electrical schematic, Appendix K).
7. With the aid of an assistant, connect semitrailer electrical connector to towing vehicle and test for lights for proper operation.

**FOLLOW-ON TASKS:**

- None

## Section VII. BRAKE SYSTEM MAINTENANCE PROCEDURES

Paragraph Number	Paragraph Title	Page Number
4-45	General .....	4-100
4-46	Brakeshoe Replacement and Maintenance .....	4-101
4-47	Brake Adjustment .....	4-104
4-48	Slack Adjuster Replacement .....	4-106
4-49	Slack Adjuster Test .....	4-107
4-50	Gladhand Replacement .....	4-108
4-51	Air Hoses and Fittings Maintenance .....	4-110
4-52	Airbrake Chamber Replacement .....	4-111
4-53	Spring Brake Chamber Replacement .....	4-114
4-54	Relay Emergency Valve Replacement, Operating Test, and Leakage Test .....	4-118
4-55	Multifunction Valve Replacement and Operating Test (M870) .....	4-120
4-56	Multifunction Valve Replacement and Operating Test (M870A1) .....	4-122
4-57	Multifunction Valve Mounting Bracket Replacement (M870) .....	4-124
4-58	Emergency Relay Valve Replacement, Operating Test, and Leakage Test (M870) .....	4-125
4-59	Emergency Relay Valve Replacement, Operating Test, and Leakage Test (M870A1) .....	4-127
4-60	Front Air Reservoir and Drain Cock Replacement (M870) .....	4-129
4-61	Middle Air Reservoir and Drain Cock Replacement (M870) .....	4-132
4-62	Rear Air Reservoir and Drain Cock Replacement (M870) .....	4-135
4-63	Front Air Reservoir and Drain Cock Replacement (M870A1) .....	4-137
4-64	Middle Air Reservoir and Drain Cock Replacement (M870A1) .....	4-139
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4-66	Air Reservoir Serviceability Test .....	4-143

**4-45. GENERAL.**

This section provides information for performing Unit maintenance brake system repairs on the M870 and M870A1 semitrailers.



## 4-46. BRAKESHOE REPLACEMENT AND MAINTENANCE.

*This Task Covers:*

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

*Initial Setup:*

### Tools/Test Equipment:

- Common no. 1 tool set (Item 6, Appendix B)
- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

### Materials/Parts:

- Brush, acid swabbing (Item 2, Appendix F)
- Drycleaning solvent (Item 19, Appendix F)

- Retaining clip (2) (Item 23, Appendix I)
- Retaining ring (4) (Item 25, Appendix I)

### Equipment Conditions:

- Tire and wheel assembly removed (para 3-9 or 3-10).
- Hub and brakedrum removed (para 4-68 or 4-69).

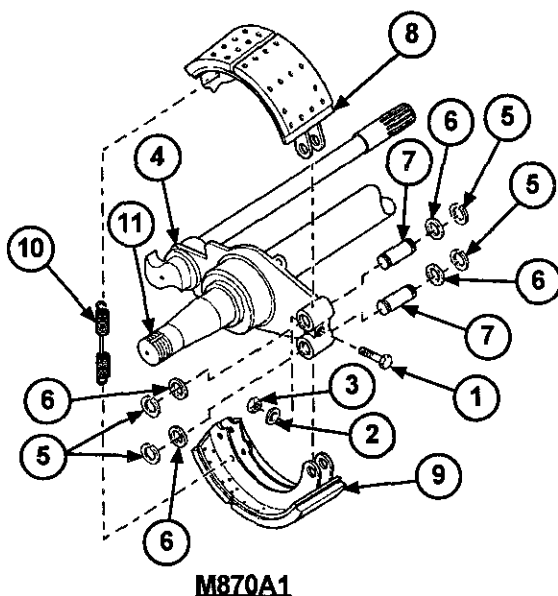
**Personnel Required:** Two

### a. REMOVAL

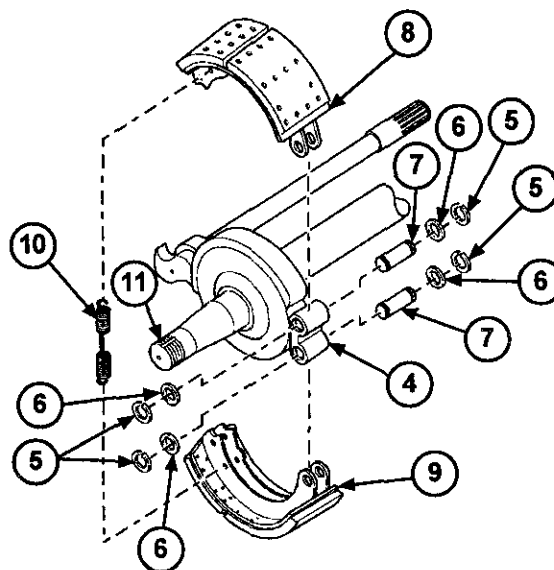
#### NOTE

There are six pairs of brakeshoes on the semitrailer, one pair behind each wheel assembly. This procedure is for repairing and replacing one pair of brakeshoes. Repeat for the other five pairs.

1. On the M870A1, remove bolt (1), washer (2), and nut (3) from brake backing plate (4).
2. Remove four anchor pin retaining rings (5) and anchor pin washers (6) from two anchor pins (7).
3. Drive two anchor pins (7) out of upper brakeshoe (8) and lower brakeshoe (9).
4. Remove spring (10) from upper brakeshoe (8) and lower brakeshoe (9).
5. Pull apart brakeshoes (8 and 9) and remove from axle (11).



**M870A1**



**M870**

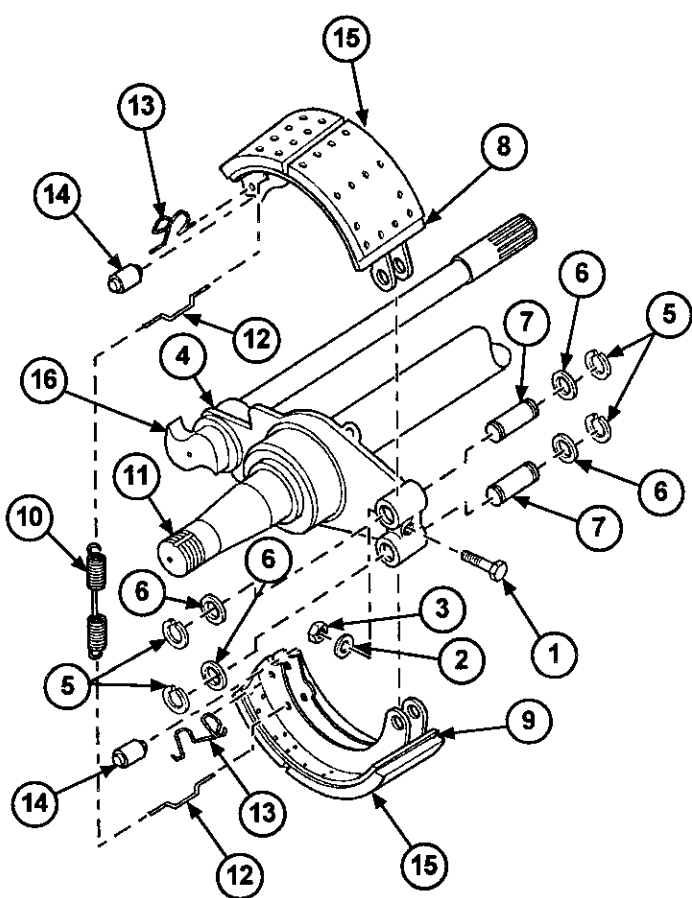
## 4-46. BRAKESHOE REPLACEMENT AND MAINTENANCE (continued).

6. Remove two brake spring retainer pins (12) from two brakeshoes (8 and 9).
7. Remove two roller retainers (13) from two cam rollers (14).
8. Remove two cam rollers (14) from two brakeshoes (8 and 9).

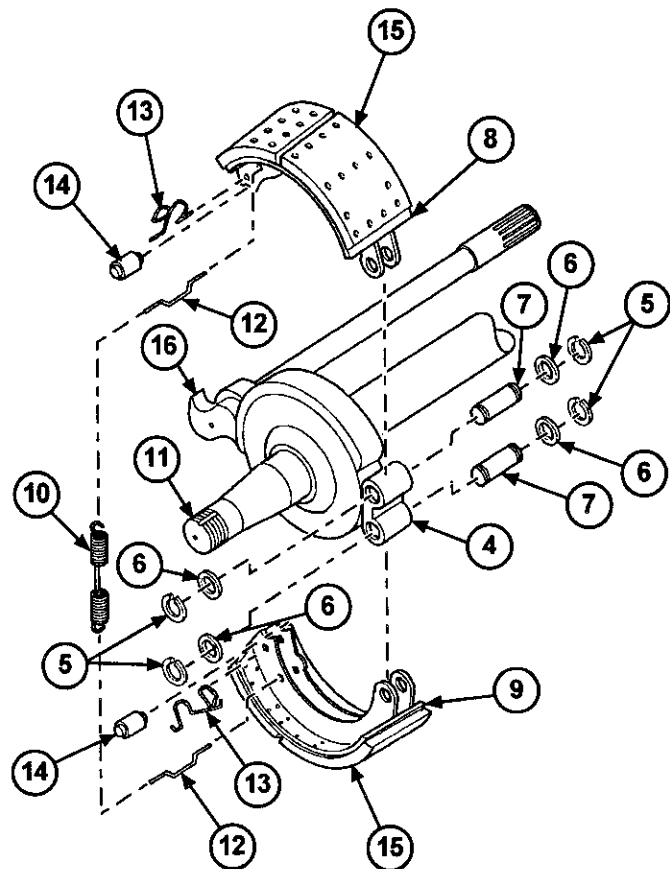
### b. CLEANING AND INSPECTION

#### **WARNING**

- Drycleaning solvent is toxic and flammable. Always wear protective goggles and gloves and use only in a well-ventilated area. Avoid contact with eyes, skin, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat.
- Brake linings contain asbestos fibers. Protective mask must be worn while replacing and maintaining brakeshoes. Failure to do so could result in serious illness.



**M870A1**



**M870**

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**4-46. BRAKESHOE REPLACEMENT AND MAINTENANCE (continued).**

---

**CAUTION**

**Do not get grease, oil, solvent, or fingerprints on brake lining surfaces. Grease or oil will glaze the brake linings and result in uneven braking.**

1. Using drycleaning solvent and brush, clean spring (10), two anchor pins (7), and cam rollers (14).
2. Inspect brake linings (15) for damage and wear. If brake linings are worn to within 1/16 inch of rivet heads, replace brakeshoes (8 and 9).
3. Inspect S-cam (16) for wear or damage. If worn or damaged, notify Direct Support maintenance.

**c. INSTALLATION**

1. On the M870A1, install nut (3), washer (2), and bolt (1) on backing plate (4).
2. Install two cam rollers (14) and roller retainers (13) on two brakeshoes (8 and 9).
3. Install two brake spring retainer pins (12) on two brakeshoes (8 and 9).
4. Install spring (10) on two brake spring retainer pins (12).
5. Have assistant hold brakeshoes (8 and 9) in position on axle (11). Install two anchor pins (7) on two brakeshoes (8 and 9) and brake backing plate (4).
6. Install four anchor pin washers (6) and anchor pin retaining rings (5) on two anchor pins (7).
7. On M870A1, torque nut (3) and bolt (1) on backing plate between 100 and 120 ft-lb (136 and 163 N•m).

**FOLLOW-ON TASKS:**

- Install hub and brakedrum (para 4-68 or 4-69).
- Install tire and wheel assembly (para 3-9 or 3-10).
- Adjust brakes (para 4-47).
- Check operation of brakes (para 2-9).

## 4-47. BRAKE ADJUSTMENT.

*This Task Covers:*

Adjustment

*Initial Setup:*

### Tools/Test Equipment:

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

### Equipment Conditions:

- Front and rear semitrailer wheels chocked (para 2-10).
- Semitrailer coupled to truck tractor (para 2-8).

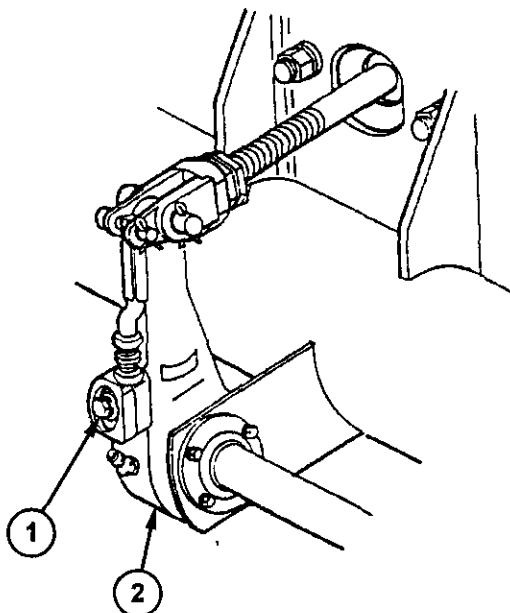
## ADJUSTMENT

### **WARNING**

**Truck tractor and semitrailer must be on a flat surface or level ground, with wheels chocked prior to adjusting brakes. Failure to chock wheels and park on level ground could result in injury to personnel.**

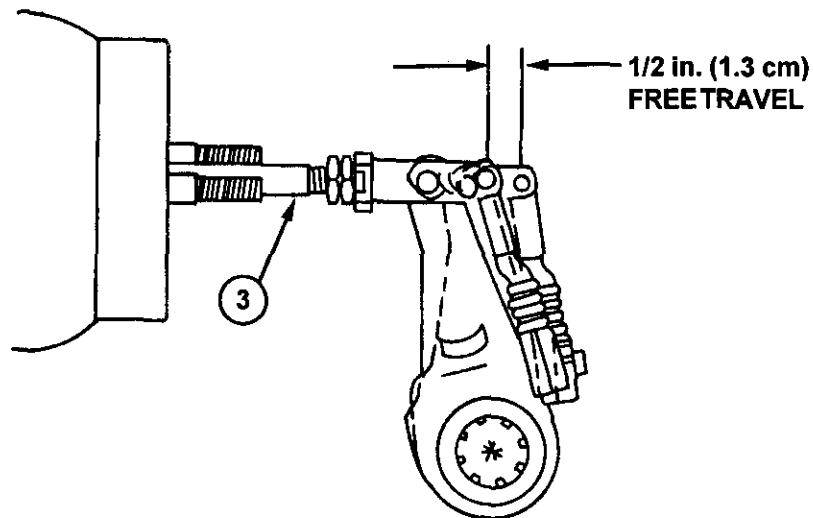
### **NOTE**

- There are six sets of brakes on the semitrailer. This procedure is for adjusting one set of brakes. Repeat the procedure for the other five. Brake adjustment is the same for spring brakes and service brakes except that spring brakes must be released to allow adjustment.
  - Brakes must be at ambient temperature prior to adjustment.
  - To release slack adjuster and camshaft, apply air to brake chambers. Do not apply brakes.
- Place jack under end of axle on brake being adjusted. Release parking brake. Raise axle on brake being adjusted until wheels clear the ground.
  - Rotate adjusting nut (1) on slack adjuster (2) clockwise until brake linings are snug against brakedrum.
  - Turn adjusting nut (1) counterclockwise 1/4 turn (approximately 70 ft-lb [95 N•m] of effort is required to override automatic slack adjusting mechanism).

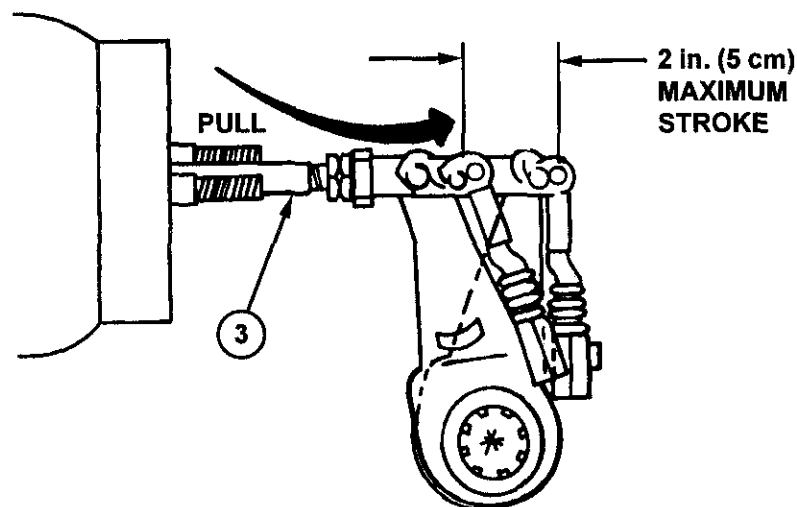


**4-47. BRAKE ADJUSTMENT (continued).**

- d. Pull air chamber push rod (3) to confirm whether approximately 1/2 inch (1.3 cm) of free travel stroke exists. If not, check slack adjuster (para 4-49).



- e. Apply between 90 and 95 psi (620.6 and 655 kPa) air pressure from truck tractor air gage. Make and hold a full brake application. Measure push rod (3) stroke; two inches (5 cm) is the maximum desired stroke.



- f. If stroke exceeds the two-inch (5 cm) limit, check brakeshoes (4-46) and slack adjuster (4-49), spring brake chamber (4-53), or airbrake chamber (4-52).

**FOLLOW-ON TASKS:**

- Unchock wheels (para 2-8).

## 4-48. SLACK ADJUSTER REPLACEMENT.

*This Task Covers:*

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

*Initial Setup:*

**Tools/Test Equipment:**

- Common no. 1 tool set (Item 6, Appendix B)

**Materials/Parts:**

- Rag (Item 15, Appendix F)
- Retaining ring (Item 26, Appendix I)

**Equipment Conditions:**

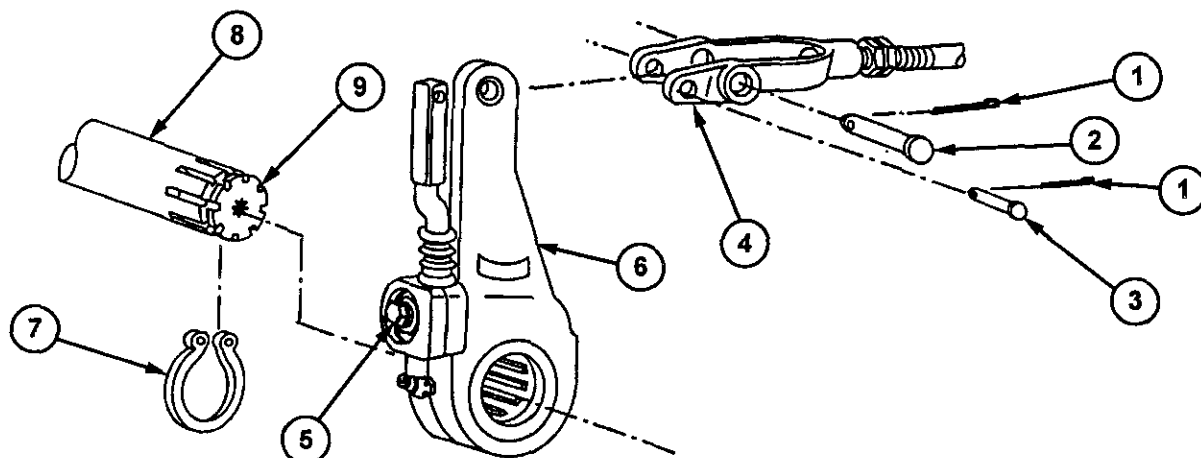
- Brakes released (refer to operator's manual for truck tractor).
- Wheels chocked (para 2-10).

### a. REMOVAL

1. Remove two cotter pins (1), link pin (2), and clevis pin (3) from clevis (4). Turn adjustment nut (5) and rotate slack adjuster (6) out of clevis (4).
2. Remove retaining ring (7) from end of camshaft (8).
3. Remove slack adjuster (6) from camshaft (8).

### b. INSTALLATION

1. Clean splines (9) of camshaft (8).
2. Install slack adjuster (6) on camshaft (8). Turn adjustment nut (5) and rotate slack adjuster (6) into clevis (4).
3. Install retaining ring (7) on camshaft (8).
4. Install clevis pin (3), link pin (2), and two cotter pins (1) on clevis (4).



**FOLLOW-ON TASKS:**

- Adjust brakes (para 4-47).
- Unchock wheels (para 2-8).

## 4-49. SLACK ADJUSTER TEST.

*This Task Covers:*

Operational Check

*Initial Setup:*

**Tools/Test Equipment:**

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

- Wheels chocked (para 2-10).
- Brakes released (refer to operator's manual for towing vehicle).

**Equipment Conditions:**

- Semitrailer coupled to truck tractor (para 2-10).

**Personnel Required:** Two

### OPERATIONAL CHECK

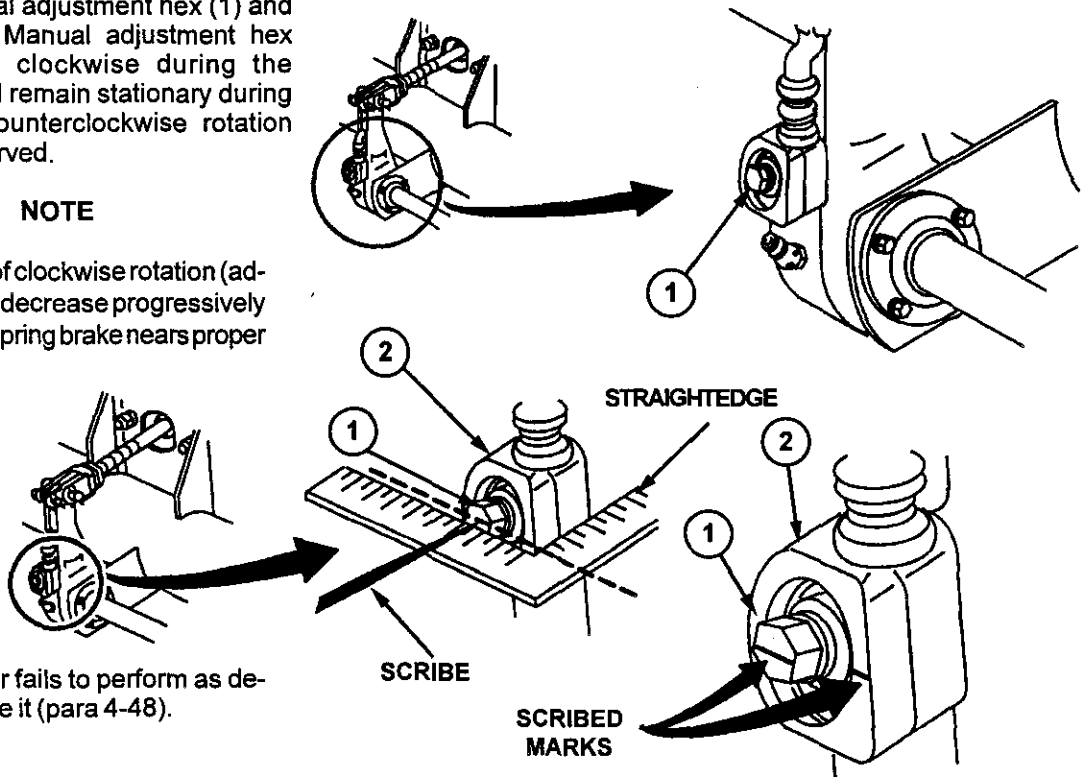
#### NOTE

Considerable torque is required to rotate manual adjustment hex counterclockwise. The required torque may be as high as 70 ft-lb (95 N·m).

- Rotate manual adjustment hex (1) counterclockwise approximately one-half to one turn.
- Using a straightedge, scribe a line across manual adjustment hex (1) head and slack adjuster (2) body.
- While assistant applies and completely releases service brakes several times, observe manual adjustment hex (1) and scribed line. Manual adjustment hex should rotate clockwise during the application and remain stationary during release; no counterclockwise rotation should be observed.

#### NOTE

The amount of clockwise rotation (adjustment) will decrease progressively as service or spring brake nears proper adjustment.



- If slack adjuster fails to perform as described, replace it (para 4-48).

**FOLLOW-ON TASKS:**

- Adjust brakes (para 4-47).

## 4-50. GLADHAND REPLACEMENT.

*This Task Covers:*

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

*Initial Setup:*

**Tools/Test Equipment:**

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

**Materials/Parts:**

- Tape, antiseizing (Item 21, Appendix F)

- Lockwasher (M870) (Item 7, Appendix I)
- Lockwasher (M870A1) (Item 17, Appendix I)

**Equipment Conditions:**

- Gooseneck raised (para 2-8).
- Drain cocks open (para 3-8).

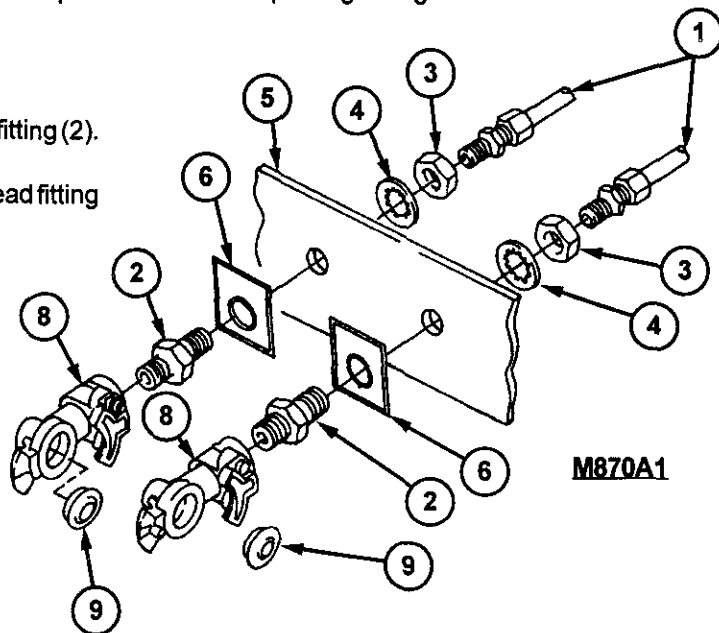
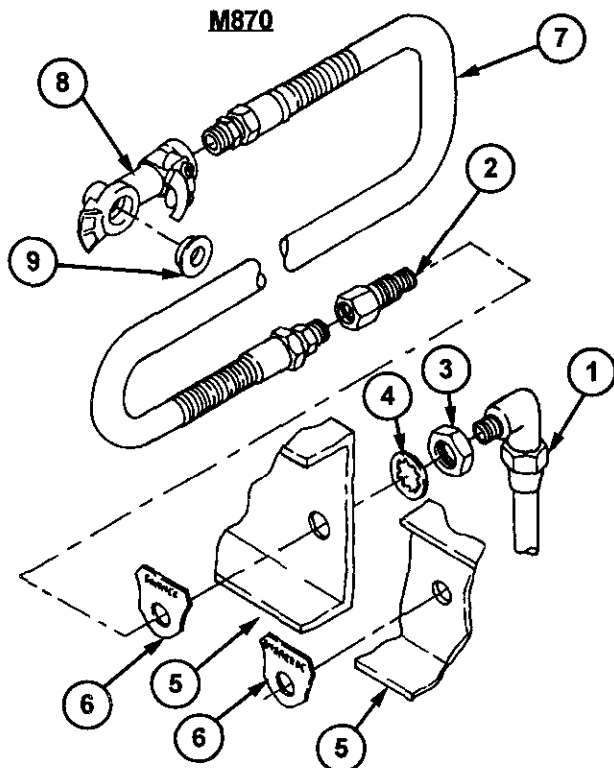
**NOTE**

The semitrailer has two gladhands. This procedure is for replacing one gladhand. Repeat for other gladhand.

**a. REMOVAL**

1. Tag and disconnect air hose (1) from bulkhead fitting (2).
2. Remove nut (3) and lockwasher (4) from bulkhead fitting (2). Discard lockwasher.

**NOTE**



The M870 has a hose between gladhand and bulkhead fitting.

3. Remove bulkhead fitting (2) from semitrailer frame (5).
4. Remove service or emergency tag (6) from semitrailer frame (5).
5. For the M870, remove air hose (7) and gladhand (8) from bulkhead fitting (2). For the M870A1, remove gladhand (8) from bulkhead fitting (2).



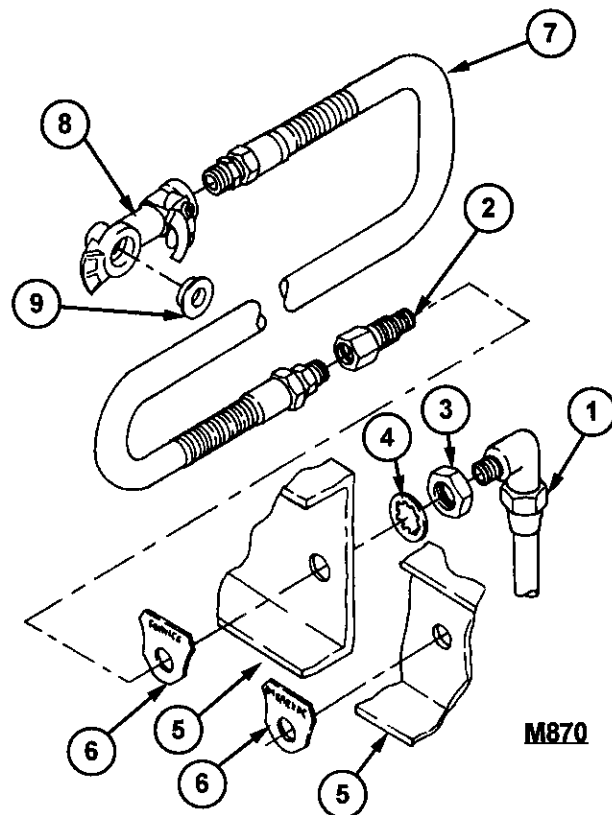
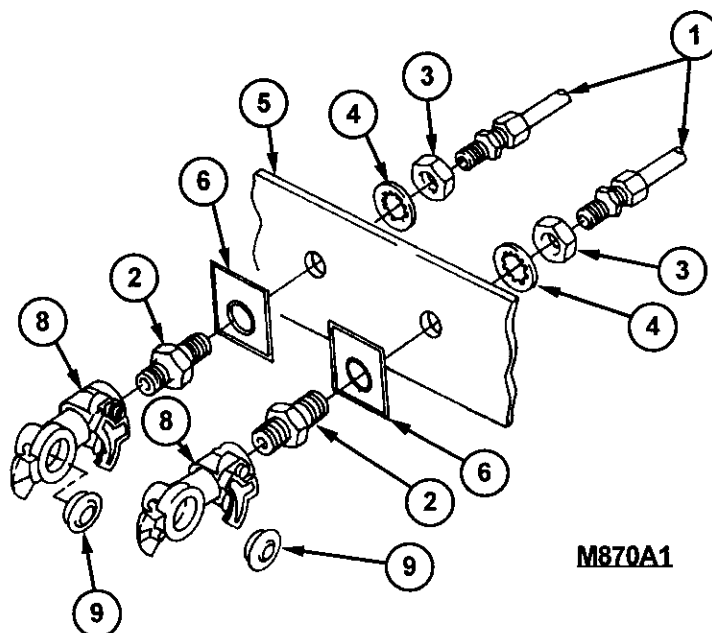
**4-50. GLADHAND REPLACEMENT (continued).**

6. Pry out packing (9) from gladhand (8).

**b. INSTALLATION****NOTE**

Wrap threaded ends of all brass fittings with two turns of anti-seizing tape.

1. Install packing (9) in gladhand (8).
2. For the M870, install gladhand (8) and air hose (7) on bulkhead fitting (2). For the M870A1, install gladhand (8) on bulkhead fitting (2).
3. Install service or emergency tag (6) on semitrailer frame (5).
4. Install bulkhead fitting (2) on semitrailer frame (5).
5. Install new lockwasher (4) and nut (3) on back of bulkhead fitting (2).
6. Connect air hose (1) to bulkhead fitting (2).

**M870****M870A1****FOLLOW-ON TASKS:**

- Close drain cocks (para 3-8).
- Pressurize air system (para 3-8).
- Check airbrake system for leaks (Table 2-1, item numbers 11 and 13).
- Check operation of brakes (para 4-54c).

---

## 4-51. AIR HOSES AND FITTINGS MAINTENANCE.

---

*This Task Covers:*

Replacement/Repair

---

*Initial Setup:*

**Tools/Test Equipment:**

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

**Equipment Conditions**

- Drain cocks open (para 3-8).

**Materials/Parts**

- Tape, antiseizing (Item 21, Appendix F)
- 

**NOTE**

Air hoses can be replaced or repaired, depending on the length of the damaged section. If damaged air hose is short, replace it. If damaged air hose is long, repair it.

**REPLACEMENT/REPAIR**

Air hoses and air-hose fittings are not ordinarily removed except if they need to be replaced. Badly damaged air hoses and fittings must be replaced. Air hoses must be tightly attached and connected. See brake system schematics (Appendix K) and manufacturing instructions (Appendix G).

**FOLLOW-ON TASKS:**

- Close drain cocks (para 3-8).
- Pressurize air system (para 3-8)
- Check airbrake system for leaks (Table 2-1, item numbers 11 and 13)

## 4-52. AIRBRAKE CHAMBER REPLACEMENT.

*This Task Covers:*

a. Removal

b. Installation

*Initial Setup:*

### Tools/Test Equipment:

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

### Materials/Parts:

- Tape, antiseizing (Item 21, Appendix F)
- Lockwasher (M870) (2) (Item 9, Appendix I)

- Lockwasher (M870A1) (2) (Item 15, Appendix I)

### Equipment Conditions:

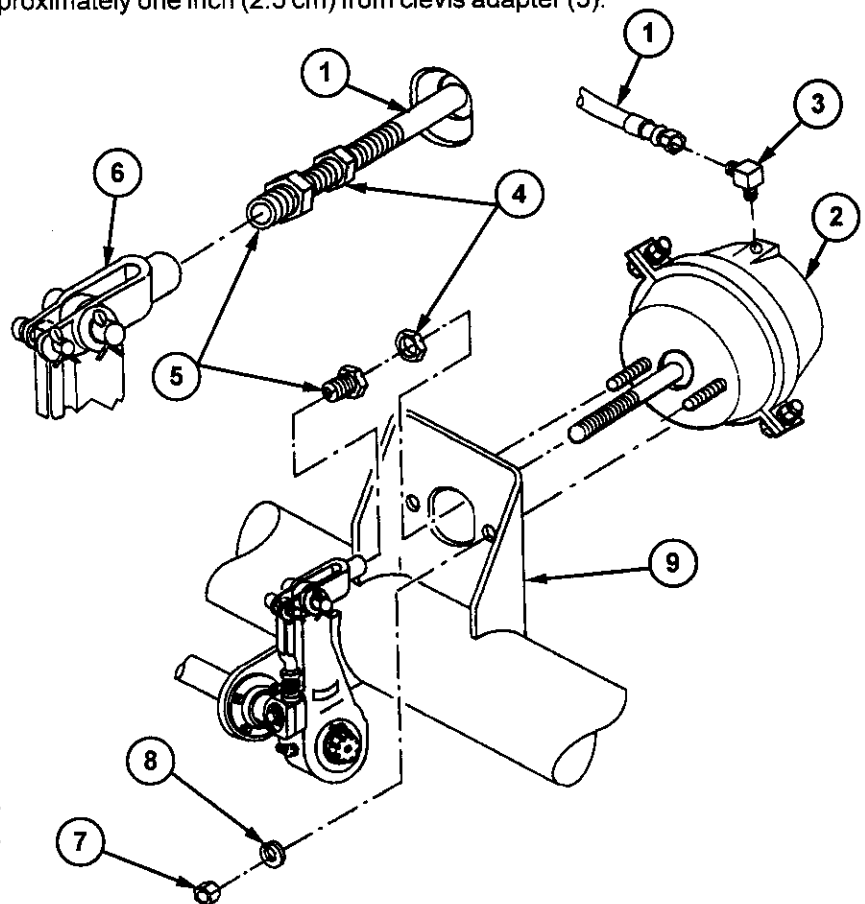
- Drain cock open on rear air reservoir (para 3-8).
- Planks removed from stowed position (M870) (para 2-8).

### a. REMOVAL

#### NOTE

Two airbrake chambers located on rear axle of semitrailer provide air to service brakes. This procedure is for replacement of one airbrake chamber; repeat the procedure for the other airbrake chamber.

1. Tag air hose (1) to air brake chamber (2). Disconnect air hose (1) from elbow (3).
2. Loosen and position jamnut (4) approximately one inch (2.5 cm) from clevis adapter (5).
3. Unscrew clevis adapter (5) from clevis (6).
4. Remove two mounting nuts (7) and lockwashers (8) from airbrake chamber (2) and axle mounting bracket (9). Discard lockwashers.
5. Remove airbrake chamber (2) from axle mounting bracket (9).
6. Remove elbow (3) and clevis adapter (5) from airbrake chamber (2).



### b. INSTALLATION

#### NOTE

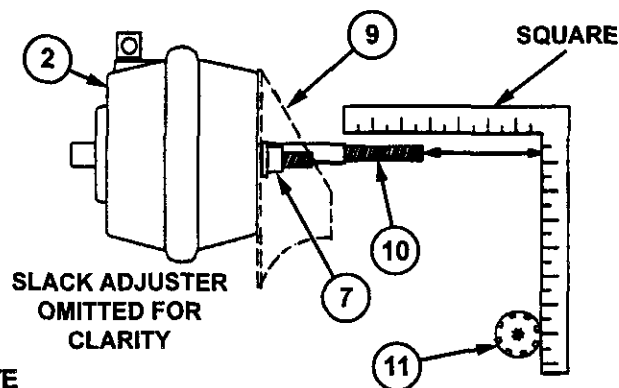
Wrap threaded ends of all brass fittings with two turns of antiseizing tape.

1. Install elbow (3) on airbrake chamber (2).
2. Install airbrake chamber (2) on axle mounting bracket (9) using two new lockwashers (8) and nuts (7). Hand-tighten nuts (7).

## 4-52. AIRBRAKE CHAMBER REPLACEMENT (continued).

3. Place a square (or equivalent object) so one edge is parallel with brake chamber push rod (10) and the other edge is against camshaft (11).
4. Measure the distance from end of push rod (10) to vertical edge of square.

5. If measurement is less than  $2\frac{11}{16}$  inches (6.83 cm) for the M870, or less than  $1\frac{15}{16}$  inches (4.92 cm) for the M870A1, push rod (10) must be shortened (steps 6 and 7). If measurement is greater than  $3\frac{25}{32}$  inches (9.6 cm) for the M870, or  $3\frac{15}{16}$  inches (10 cm) for the M870A1, push rod (10) is too short; replace airbrake chamber (2) by following steps 1 through 4.



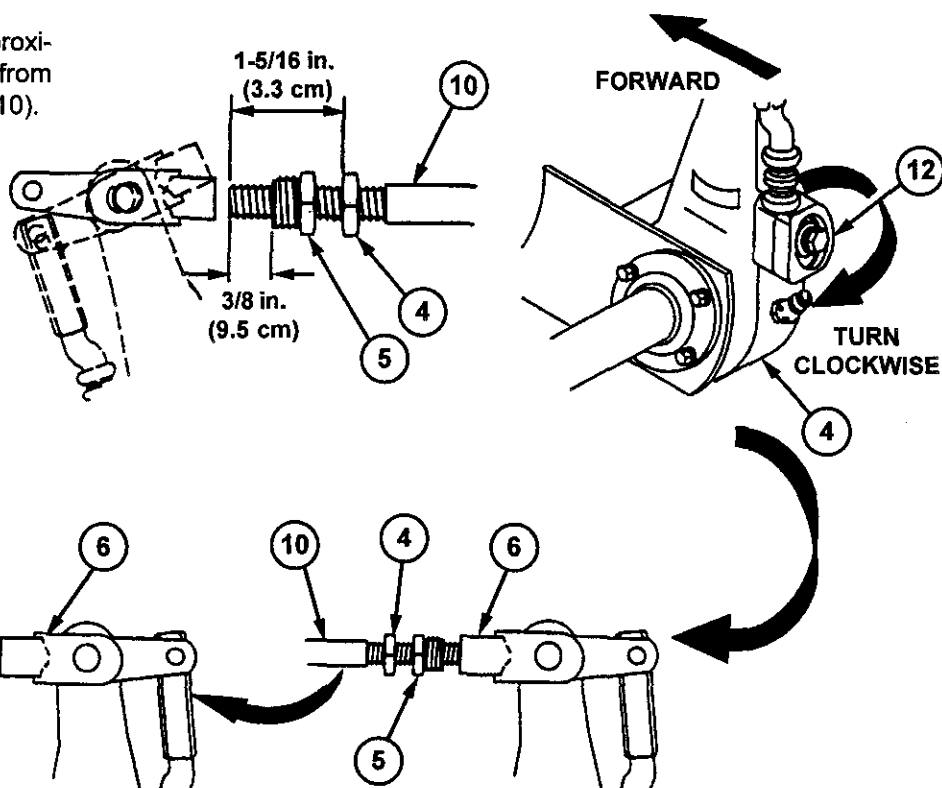
NOTE

If push rod is the correct length, proceed to step 9.

6. Mark where push rod (10) is to be cut, and remove airbrake chamber (2) from axle mounting bracket (9).
7. Cut push rod (10) at the mark, and reinstall airbrake chamber (2) on axle mounting bracket (9).
8. Tighten two nuts (7) to required torque (see Appendix H).
9. Install jamnut (4) approximately  $1\frac{5}{16}$  inches (3.3 cm) from threaded end of push rod (10).

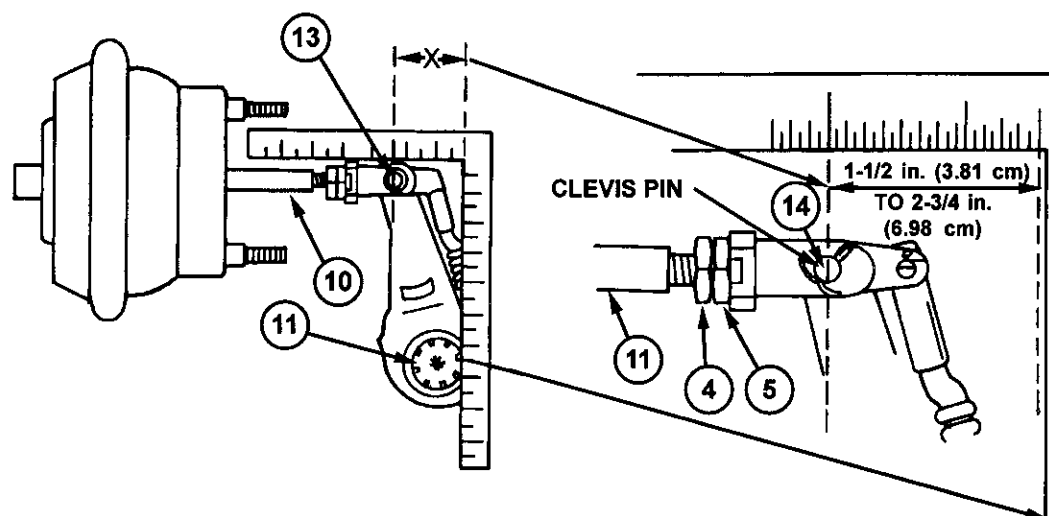
10. Install clevis adapter (5) approximately  $\frac{3}{8}$  inch (9.5 cm) from threaded end of push rod (10).

11. Turn adjusting hex (12) clockwise until clevis adapter (5) extends into clevis (6) approximately  $\frac{1}{8}$  inch (0.3 cm). Thread clevis adapter (5) into clevis (6) until snug.

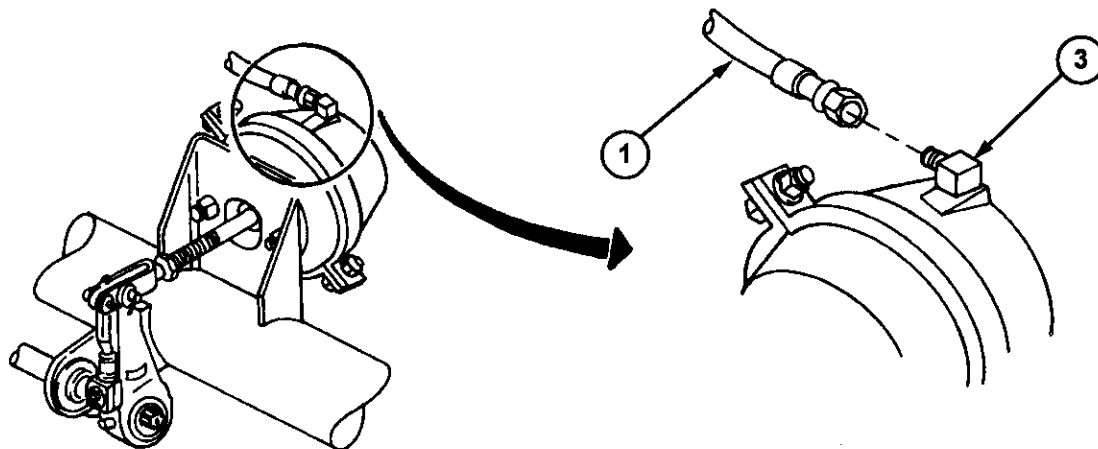


**4-52. AIR BRAKE CHAMBER REPLACEMENT (continued).**

12. Place a square (or equivalent object) so one edge is parallel with push rod (10) and other edge is against camshaft (11).
13. Measure the distance between the outside of camshaft (11) and the center of clevis pin (13). The distance should be between 1½ inches and 2¾ inches (3.81 cm and 6.98 cm).
14. If the distance is incorrect, repeat steps 10 through 13, threading clevis adapter (5) onto push rod an additional 1/16 inch (0.16 cm) each time.
15. Torque clevis adapter (5) to 10 ft-lb (14 N•m). Turn jamnut (4) until it is against clevis adapter (5). Hold clevis adapter (5) in place, and torque jamnut (4) between 34 and 50 ft-lb (45 and 67 N•m).



16. Install air hose (1) on elbow (3).

**FOLLOW-ON TASKS:**

- Close drain cock (para 3-8).
- Pressurize air system (para 3-8).
- Test air brake system for leaks (Table 2, item numbers 11 and 13).
- Adjust brakes (para 4-47).
- Stow planks (para 2-10).

## 4-53. SPRING BRAKE CHAMBER REPLACEMENT.

*This Task Covers:*

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

*Initial Setup:*

**Tools/Test Equipment:**

- Tool kit general mechanic's: automotive (Item 7, Appendix B)

- Lockwasher (2) (Item 15, Appendix I)

**Equipment Conditions:**

- Drain cocks open (para 3-8).

**Materials/Parts:**

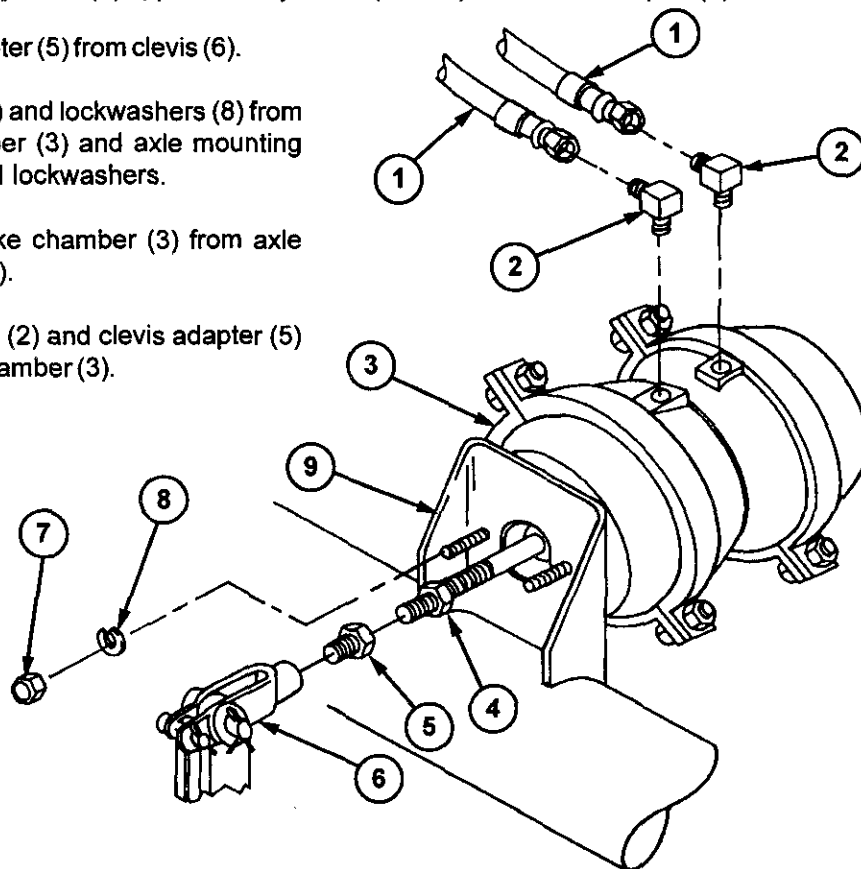
- Tape, antiseizing (Item 21, Appendix F)

### a. REMOVAL

**NOTE**

There are four spring brake chambers on the front and middle axles. This procedure is for the replacement of one spring brake chamber.

1. Tag and disconnect two air hoses (1) from two elbows (2) on spring brake chamber (3).
2. Loosen and position jamnut (4) approximately 1 inch (2.5 cm) from clevis adapter (5).
3. Unscrew clevis adapter (5) from clevis (6).
4. Remove two nuts (7) and lockwashers (8) from spring brake chamber (3) and axle mounting bracket (9). Discard lockwashers.
5. Remove spring brake chamber (3) from axle mounting bracket (9).
6. Remove two elbows (2) and clevis adapter (5) from spring brake chamber (3).



## 4-53. SPRING BRAKE CHAMBER REPLACEMENT (continued).

### b. INSTALLATION

#### NOTE

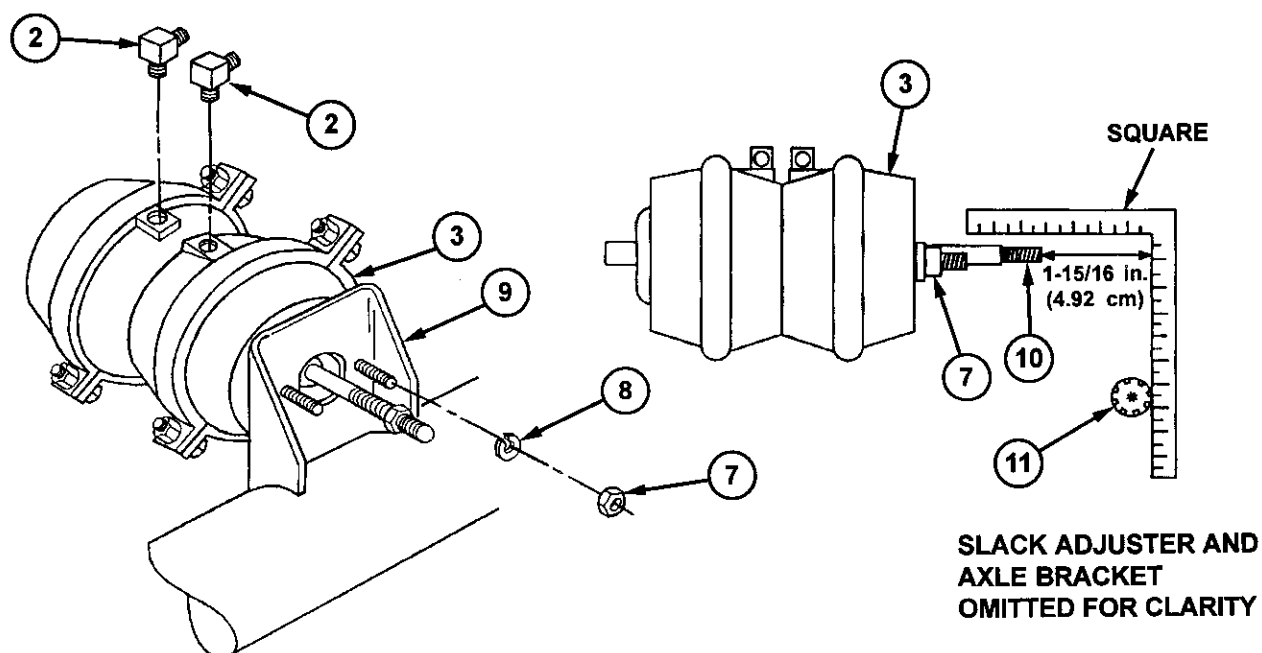
Wrap threaded ends of all brass fittings with two turns of antiseizing tape.

1. Install two elbows (2) on spring brake chamber (3).
2. Install spring brake chamber (3) on axle mounting bracket (9) using two new lockwashers (8) and nuts (7). Hand-tighten nuts.
3. Place a square (or equivalent object) so one edge is parallel with brake chamber push rod (10) and the other edge is against camshaft (11).
4. Measure the distance from end of push rod (10) to vertical edge of the square.
5. If measurement is less than  $2\frac{11}{16}$  inches (6.83 cm) for the M870 or less than  $1\frac{15}{16}$  inches (4.92 cm) for the M870A1, push rod (10) must be shortened (steps 6 and 7). If measurement is greater than  $3\frac{25}{32}$  inches (9.6 cm) for the M870 or more than  $3\frac{15}{16}$  inches (10 cm) for the M870A1, push rod (10) is too short; replace spring brake chamber (3) (steps 1 through 4).

#### NOTE

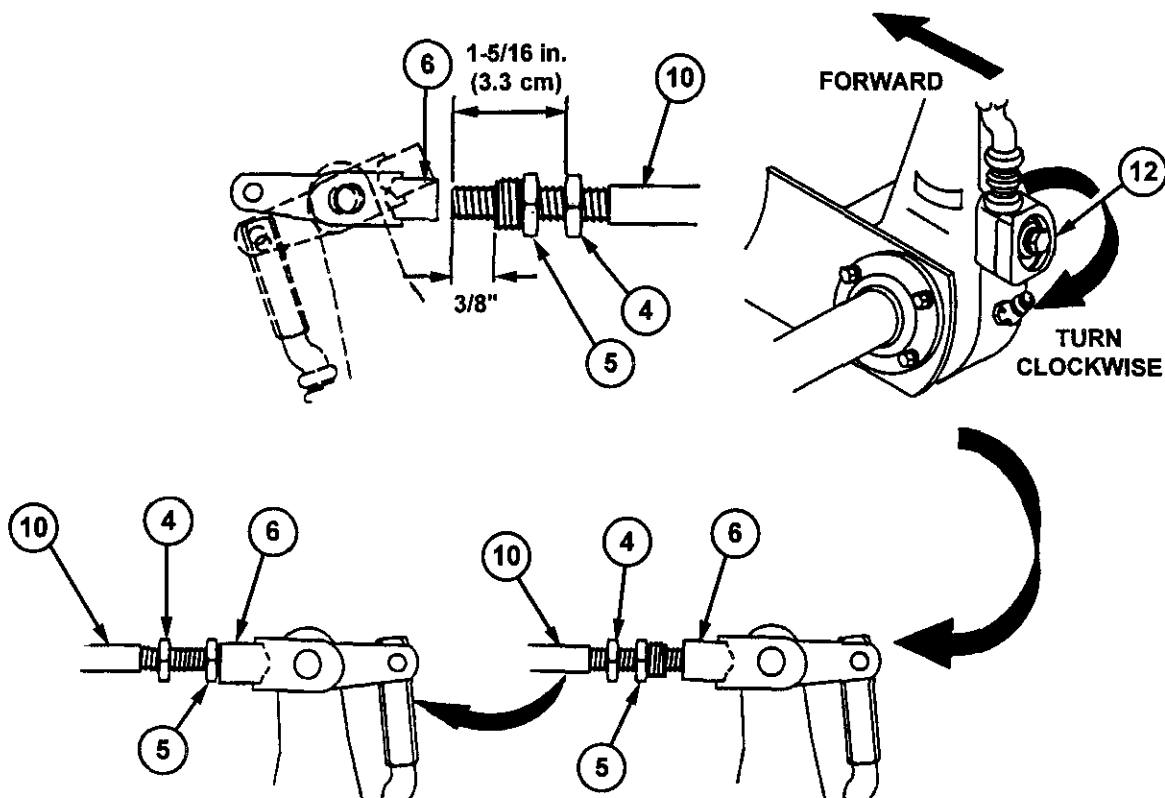
If push rod is the correct length, proceed to step 8.

6. Mark where push rod (10) is to be cut, and remove spring brake chamber (3) from axle mounting bracket (9).
7. Cut push rod (10) at mark, and reinstall spring brake chamber (3) on axle mounting bracket (9).
8. Tighten two mounting nuts (7) to required torque (see appendix H).



#### 4-53. SPRING BRAKE CHAMBER REPLACEMENT (continued).

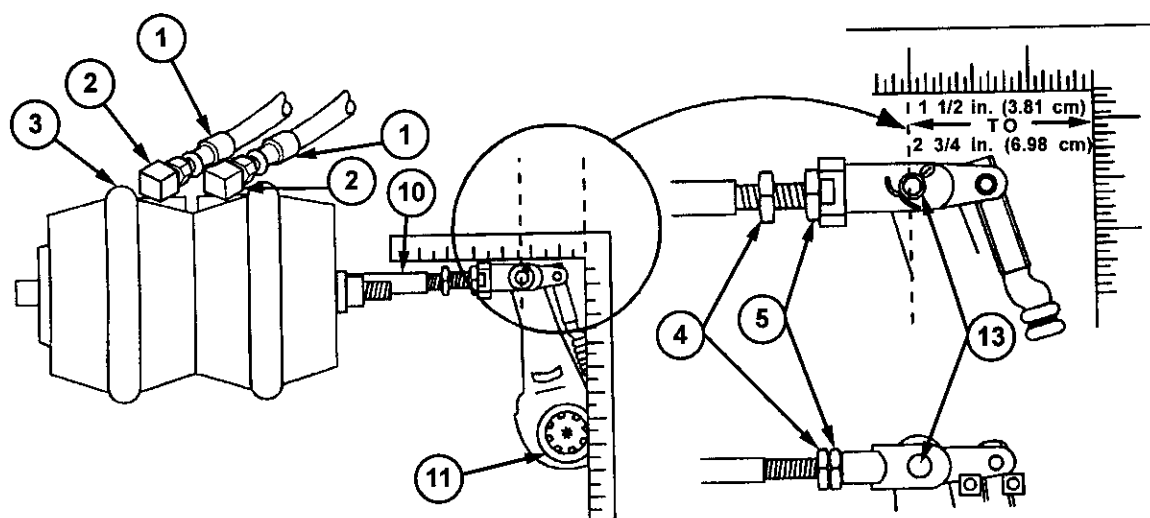
9. Install jamnut (4) approximately  $1\frac{5}{16}$  inches (3.3 cm) from threaded end of push rod (10).
10. Install clevis adapter (5) approximately  $\frac{3}{8}$  inch (9.5 cm) from threaded end of the push rod (10).
11. Turn adjusting hex (12) clockwise until clevis adapter (5) extends into clevis (6) approximately  $\frac{1}{8}$  inch (0.3 cm). Thread clevis adapter (5) into clevis (6) until snug.





**4-53. SPRING BRAKE CHAMBER REPLACEMENT (continued).**

12. Place a square (or equivalent object) so one edge is parallel with push rod (10) and the other edge is against camshaft (11).
13. Measure the distance between the outside of camshaft (11) and the center of clevis pin (13). The distance should be between 1½ inches and 2¾ inches (3.81 cm and 6.98 cm).
14. If the distance is incorrect, repeat steps 11 through 13, threading clevis adapter (5) onto the push rod an additional 1/16 of an inch (0.16 cm) each time.
15. Torque clevis adapter (5) to 10 ft-lb (14 N•m). Turn jamnut (4) until it is against clevis adapter (5). Hold clevis adapter (5) in place and torque jamnut between 34 and 50 ft-lb (45 and 67 N•m).
16. Install two air hoses (1) on two elbows (2) on brake chamber (3).



**AXLE BRACKET  
OMITTED FOR CLARITY**

**FOLLOW-ON TASKS:**

- Close drain cocks (para 3-8).
- Pressurize air system (para 3-8).
- Test airbrake system for leaks (Table 2-1, items 11 and 13).
- Adjust brakeshoes (para 4-47).

## 4-54. RELAY EMERGENCY VALVE REPLACEMENT, OPERATING TEST, AND LEAKAGE TEST.

*This Task Covers:*

- |                   |                 |
|-------------------|-----------------|
| a. Removal        | b. Installation |
| c. Operating Test | d. Leakage Test |

*Initial Setup:*

**Tools/Test Equipment:**

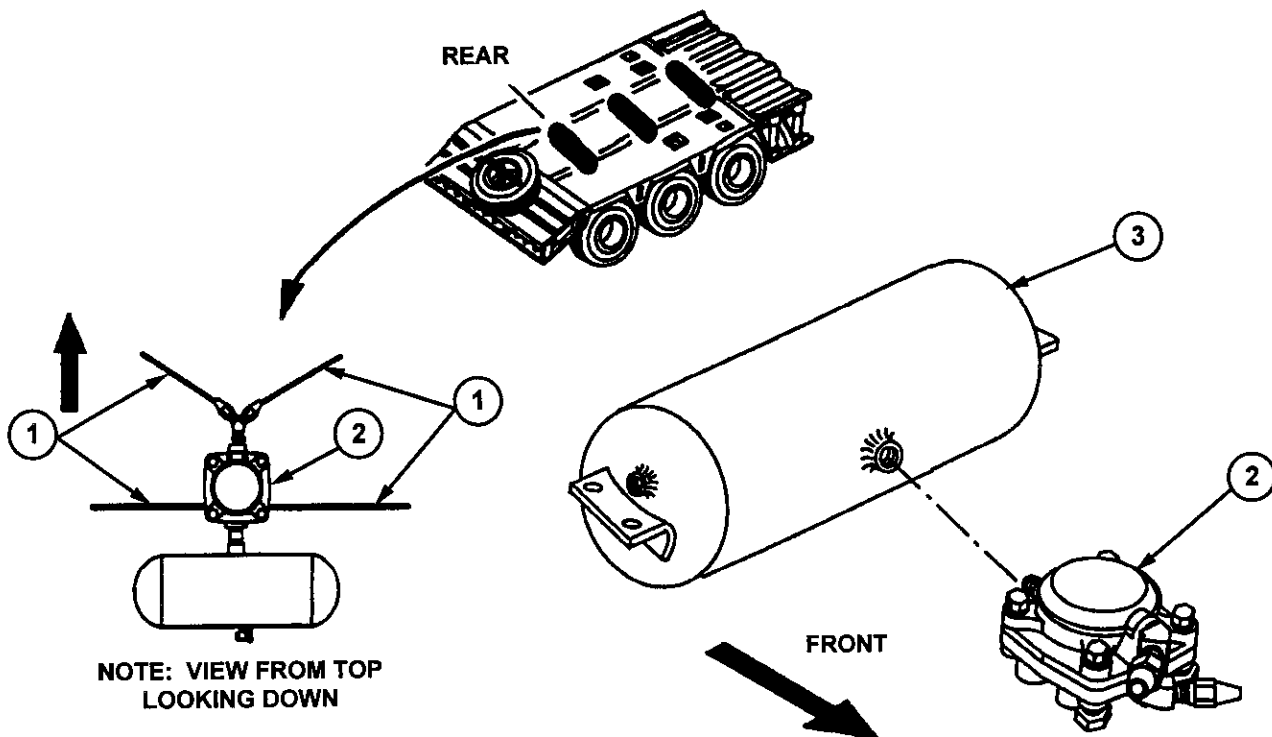
- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

**Materials/Parts:**

- Detergent (Item 4, Appendix F)
- Tape, antiseizing (Item 21, Appendix F)

**a. REMOVAL**

1. Open drain cocks (para 3-8).
2. Tag and disconnect four air hoses (1) from relay emergency valve (2).
3. Remove relay emergency valve (2) from rear air reservoir tank (3).



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**4-54. RELAY EMERGENCY VALVE REPLACEMENT, OPERATING TEST, AND LEAKAGE TEST (continued).**

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**b. INSTALLATION****NOTE**

Before installing fittings into valve or tank, wrap fitting threads with two turns of antiseizing tape.

1. Install relay emergency valve (2) on rear air reservoir tank (3).
2. Connect four air hoses (1) to relay emergency valve (2).
3. Close drain cocks (para 3-8).

**c. OPERATING TEST**

1. With gladhands connected to towing vehicle, apply brakes. Check to see that brakes of all semitrailer wheels apply properly.
2. Release brakes. Check to see that each brake releases properly.
3. With brake system fully pressurized, close shutoff cock on emergency line in towing vehicle. Disconnect gladhands tagged EMERGENCY from towing vehicle. Make sure semitrailer brakes apply automatically.
4. Connect gladhands tagged EMERGENCY to towing vehicle. Open shutoff valve cock in towing vehicle. Check to see that brakes release automatically.

**d. LEAKAGE TEST**

1. With air system connected, apply a solution of detergent (Item 4, Appendix F) and water to flanges holding diaphragm in service brake chamber and to gladhands tagged SERVICE. No leakage is permitted. Tighten nuts on flanges and coupling on gladhands as required.
2. With brake system fully pressurized, close shutoff cock on emergency hose in towing vehicle. Disconnect gladhands tagged EMERGENCY from towing vehicle. Make sure semitrailer brakes apply automatically. Coat relay emergency valve exhaust port with a solution of detergent (Item 4, Appendix F) and water.
3. Leakage must not exceed a one-inch bubble in three seconds. If excess leakage is found, replace relay emergency valve (subparas 4-54a and 4-54b).

**FOLLOW-ON TASKS:**

- None

## 4-55. MULTIFUNCTION VALVE REPLACEMENT AND OPERATING TEST (M870).

*This Task Covers:*

- |                   |                 |
|-------------------|-----------------|
| a. Removal        | b. Installation |
| c. Operating Test |                 |

*Initial Setup:*

### Tools/Test Equipment:

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

- Tape, antiseizing (Item 21, Appendix F)
- Lockwasher (Item 18, Appendix I)

### Materials/Parts:

- Detergent (Item 4, Appendix F)

### Equipment Conditions:

- Planks removed from stowed position (para 2-8).

### NOTE

The multifunction valve is sometimes called the "air pressure relay valve" or "spring brake valve."

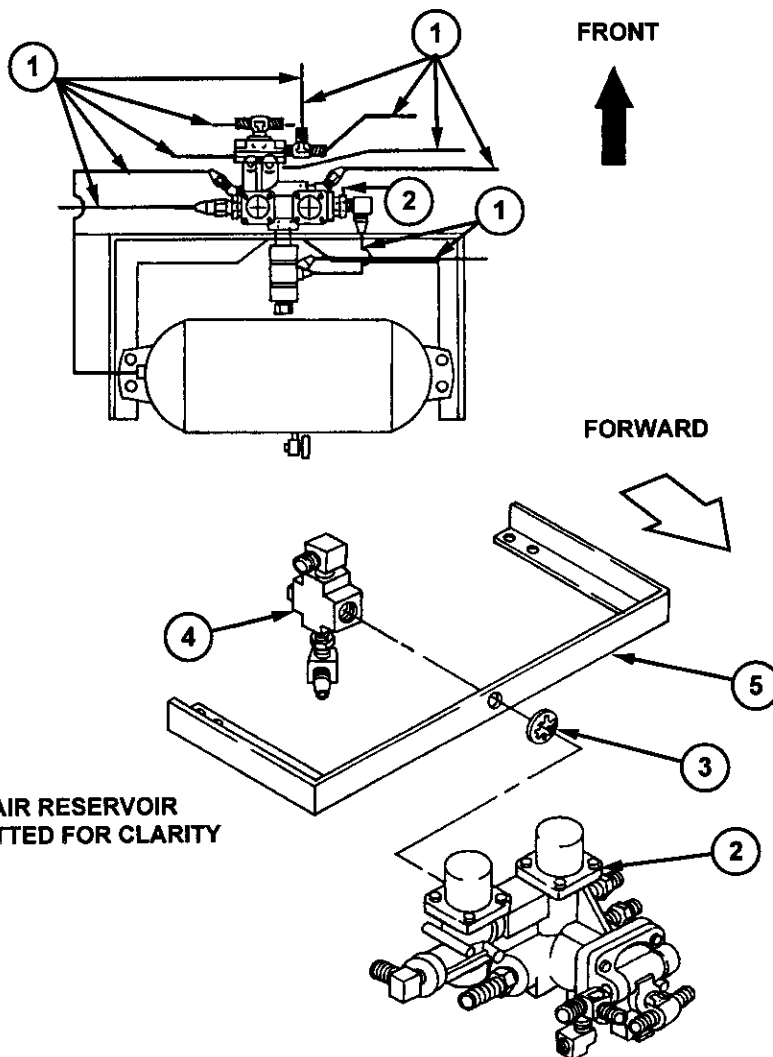
### a. REMOVAL

1. Open drain cocks (para 3-8).
2. Tag and disconnect 11 air hoses (1) from multifunction valve (2).
3. Remove multifunction valve (2), lockwasher (3), and cross tube fitting (4) from mounting bracket (5). Discard lockwasher.

### NOTE

- Repair is limited to the replacement of hardware.
- Wrap threaded ends of all brass fittings with two turns of antiseizing tape. Antiseizing tape is not required for brass-to-brass fittings.

AIR RESERVOIR  
OMITTED FOR CLARITY



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**4-55. MULTIFUNCTION VALVE REPLACEMENT AND OPERATING TEST (M870)**  
**(continued).**

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**b. INSTALLATION**

1. Install multifunction valve (2), new lockwasher (3), and cross tube fitting (4) on mounting bracket (5).
2. Connect 11 air lines (1) to multifunction valve (2). Check tagged air lines with schematic (Appendix J).
3. Close drain cocks (para 3-8).

**c. OPERATING TEST****WARNING**

**Wear protective goggles when opening air reservoir drain cocks. Avoid contact with the air stream.**

1. Pressurize semitrailer air system (para 3-8). Shut off towing vehicle engine. The tires on the front and middle axles of semitrailer should lock. Open drain cock on front air reservoir.
2. After air system is bled down, tires on front and middle axles should remain locked. Coat front reservoir drain cock with a solution of detergent (Item 4, Appendix F) and water.
3. Leakage at open front reservoir drain cock should not exceed a one-inch (2.5 cm) bubble in five seconds. If excess leakage is found, replace multifunction valve (subparas 4-55a and 4-55b).
4. Close front reservoir drain cock.
5. Repeat steps 1 through 4 for drain cock on middle air reservoir.

**FOLLOW-ON TASKS:**

- Check airbrake system for leaks (Table 2-1, item numbers 11 and 13).
- Check operation of brakes (subpara 4-54c).
- Stow planks (para 2-10).

## 4-56. MULTIFUNCTION VALVE REPLACEMENT AND OPERATING TEST (M870A1).

*This Task Covers:*

- |                   |                 |
|-------------------|-----------------|
| a. Removal        | b. Installation |
| c. Operating Test |                 |

*Initial Setup:*

### Tools/Test Equipment:

- Tool kit, general mechanic's: automotive (Item 7, Appendix B).

- Tape, antiseizing (Item 21, Appendix F)
- Lockwasher (Item 10, Appendix I)
- Self-locking nut (Item 29, Appendix I)

### Materials/Parts:

- Detergent (Item 4, Appendix F)

### Equipment Conditions:

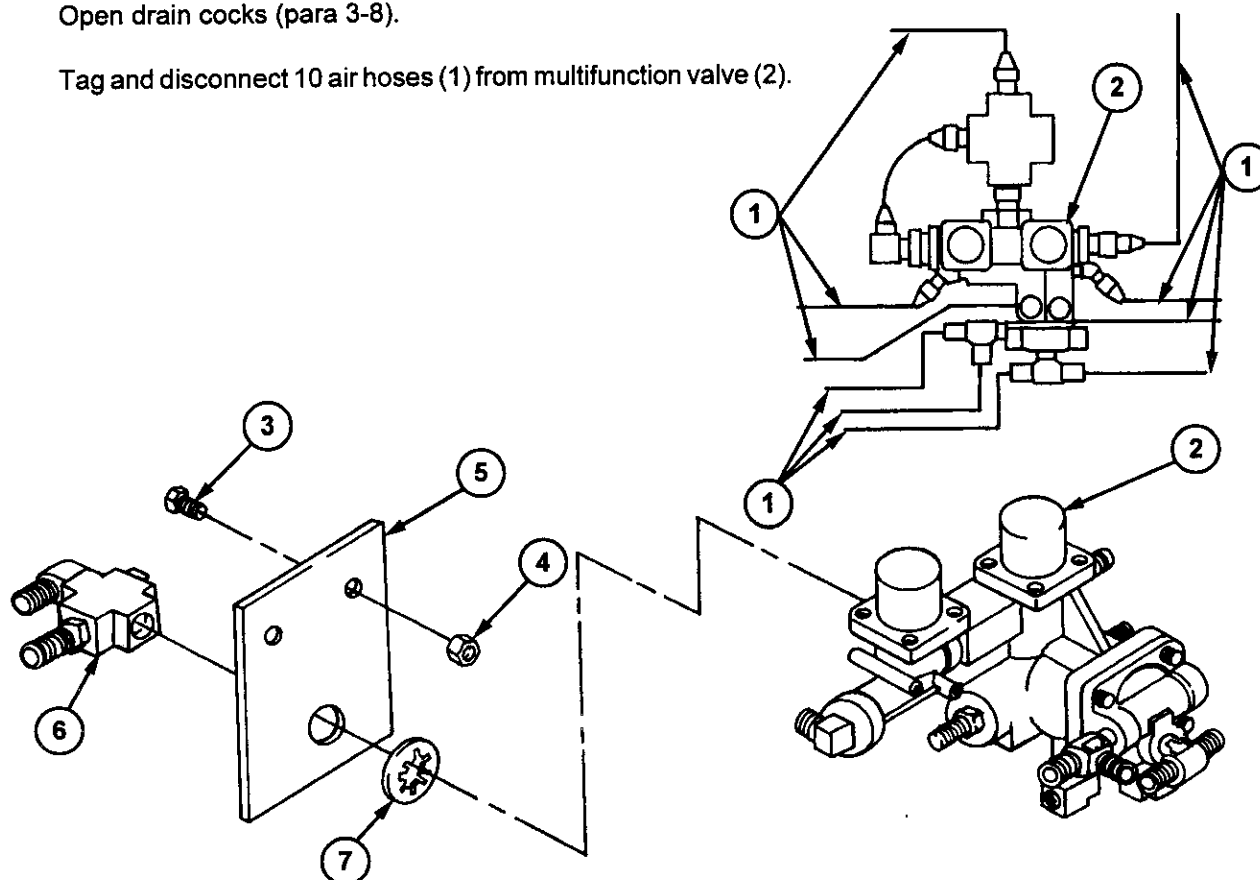
- Planks removed from stowed position (para 2-8).

### NOTE

The multifunction valve is sometimes called the "air pressure relay valve" or "spring brake valve."

### a. REMOVAL

1. Open drain cocks (para 3-8).
2. Tag and disconnect 10 air hoses (1) from multifunction valve (2).



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## 4-56. MULTIFUNCTION VALVE REPLACEMENT AND OPERATING TEST (M870A1) (continued).

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3. Hold multifunction valve (2) and remove two screws (3) and locknuts (4) from mounting plate (5).
4. Remove multifunction valve (2) from cross tube fitting (6) and mounting plate (5).
5. Remove lockwasher (7) from multifunction valve (2). Discard lockwasher.

### b. INSTALLATION

#### NOTE

Wrap threaded ends of all brass fittings with two turns of antiseizing tape.

1. Install new lockwasher (7) and mounting plate (5) on multifunction valve (2).
2. Install multifunction valve (2) and mounting plate (5) on cross tube fitting (6).
3. Secure multifunction valve (2) and mounting plate (5) to frame with two locknuts (4) and screws (3).
4. Connect 10 air hoses (1) to multifunction valve (2).
5. Close drain cocks (para 3-8).

### c. OPERATING TEST

#### WARNING

**Wear protective goggles when opening air reservoir drain cocks. Avoid contact with the air stream.**

1. Pressurize semitrailer air system (para 3-8). Shut off towing vehicle engine. The tires on the front and middle axles of semitrailer should lock. Open drain cock on front air reservoir.
2. After air system is bled down, tires on front and middle axles should remain locked. Coat front reservoir drain cock with a solution of detergent (Item 4, Appendix F) and water.
3. Leakage at open front reservoir drain cock should not exceed a one-inch (2.5 cm) bubble in five seconds. If excess leakage is found, replace multifunction valve (subparas 4-56a and 4-56b).
4. Close drain cock.
5. Repeat steps 1 through 4 for drain cock on middle air reservoir.

#### FOLLOW-ON TASKS:

- Stow planks (para 2-10).
- Check airbrake system for leaks (Table 2-1, item numbers 11 and 13).
- Check operation of brakes (para 4-54c).

## 4-57. MULTIFUNCTION VALVE MOUNTING BRACKET REPLACEMENT (M870).

*This Task Covers:*

a. Removal

b. Installation

*Initial Setup:*

### Tools/Test Equipment:

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

### Materials/Parts:

- Detergent (Item 4, Appendix F)
- Tape, antiseizing (Item 21, Appendix F)
- Lockwasher (4) (Item 16, Appendix I)

### Equipment Conditions:

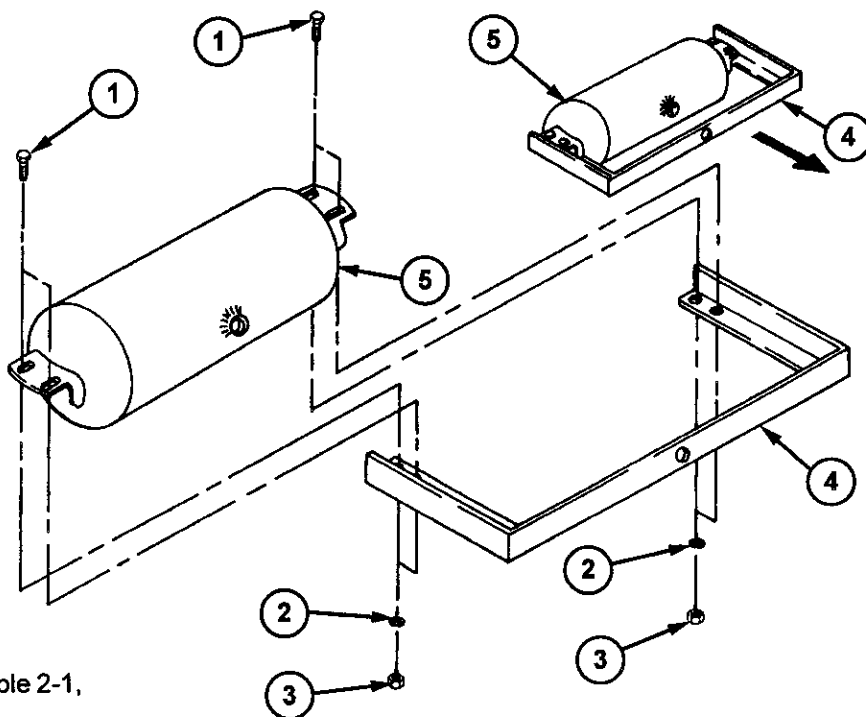
- Air reservoir drained and drain cocks open (para 3-8).
- Planks removed from stowed position (para 2-8).
- Multifunction valve removed (para 4-55).

### a. REMOVAL

1. Remove four screws (1), lockwashers (2), and nuts (3) from multifunction valve mounting bracket (4) and middle air reservoir (5). Discard lockwashers.
2. Remove mounting bracket (4) from middle air reservoir (5).

### b. INSTALLATION

1. Install mounting bracket (4) on middle air reservoir (5).
2. Install four nuts (3), new lockwashers (2), and screws (1) on mounting bracket (4) and middle air reservoir (5).



### FOLLOW-ON TASKS:

- Install multifunction valve (para 4-55).
- Close drain cocks (para 3-8).
- Pressurize air system (para 3-8).
- Check airbrake system for leaks (Table 2-1, item numbers 11 and 13).
- Check operation of brakes (subpara 4-54c).
- Stow planks (para 2-10).



## 4-58. EMERGENCY RELAY VALVE REPLACEMENT, OPERATING TEST, AND LEAKAGE TEST (M870).

*This Task Covers:*

- |                   |                 |
|-------------------|-----------------|
| a. Removal        | b. Installation |
| c. Operating Test | d. Leakage Test |

*Initial Setup:*

### Tools/Test Equipment:

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

### Equipment Conditions:

- Planks removed from stowed position (para 2-8).

### Materials/Parts:

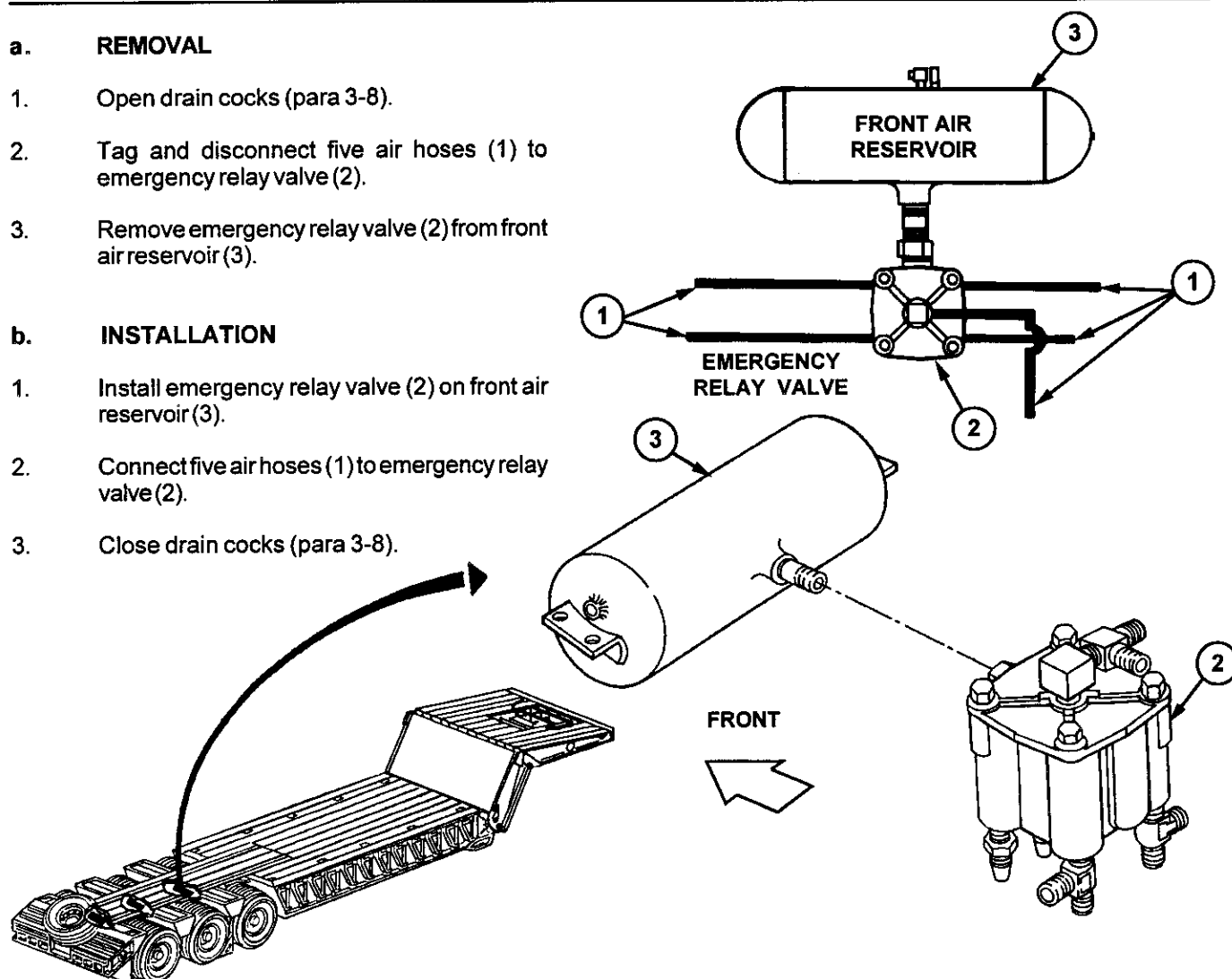
- Detergent (Item 4, Appendix F)
- Tape, antiseizing (Item 21, Appendix F).

### a. REMOVAL

1. Open drain cocks (para 3-8).
2. Tag and disconnect five air hoses (1) to emergency relay valve (2).
3. Remove emergency relay valve (2) from front air reservoir (3).

### b. INSTALLATION

1. Install emergency relay valve (2) on front air reservoir (3).
2. Connect five air hoses (1) to emergency relay valve (2).
3. Close drain cocks (para 3-8).



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**4-58. EMERGENCY RELAY VALVE REPLACEMENT, OPERATING TEST, AND LEAKAGE TEST (M870) (continued).**

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**c. OPERATING TEST**

1. With gladhands connected to towing vehicle, apply brakes. Check to see that brakes of all semitrailer wheels apply properly.
2. Release brakes. Check to see that each brake releases properly.
3. With brake system fully pressurized, close shutoff cock on emergency hose in towing vehicle. Disconnect gladhands tagged EMERGENCY from towing vehicle. Make sure semitrailer brakes apply automatically.
4. Connect gladhands tagged EMERGENCY. Open shutoff valve cock in towing vehicle. Check to see that brakes release automatically.

**d. LEAKAGE TEST**

1. With air system connected, apply a solution of detergent (Item 4, Appendix F) and water to flanges holding diaphragm in spring brake chamber, and to gladhands tagged SERVICE. No leakage is permitted. Tighten nuts on flanges and coupling on gladhands as required.
2. With brake system fully pressurized, close shutoff cock on emergency hose in towing vehicle. Disconnect glad hands tagged EMERGENCY from towing vehicle. Make sure semitrailer brakes apply automatically. Coat emergency relay valve exhaust port and multifunction valve exhaust port with a solution of detergent (Item 4, Appendix F) and water.
3. Leakage must not exceed a one-inch (2.5 cm) bubble in three seconds. If excess leakage is found, replace emergency relay valve (para 4-58) or multifunction valve (para 4-55).

**FOLLOW-ON TASKS:**

- Stow planks (para 2-10).

## 4-59. EMERGENCY RELAY VALVE REPLACEMENT, OPERATING TEST, AND LEAKAGE TEST (M870A1).

*This Task Covers:*

- |                   |                 |
|-------------------|-----------------|
| a. Removal        | b. Installation |
| c. Operating Test | d. Leakage Test |

*Initial Setup:*

### Tools/Test Equipment:

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

### Materials/Parts:

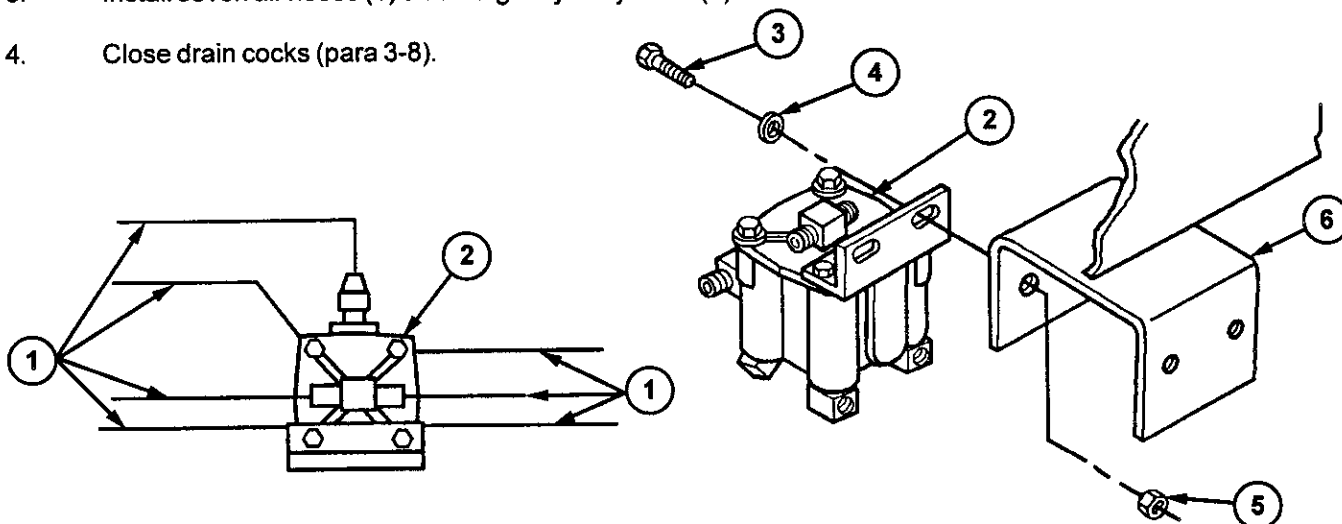
- Detergent (Item 4, Appendix F)
- Tape, antiseizing (Item 21, Appendix F).
- Self-locking nut (2) (Item 29, Appendix I)

### a. REMOVAL

1. Open drain cocks (para 3-8).
2. Tag and disconnect seven air hoses (1) from emergency relay valve (2).
3. Remove two screws (3), washers (4), and self-locking nuts (5) from mounting bracket (6) and emergency relay valve (2). Discard self-locking nuts.
4. Remove emergency relay valve (2) from mounting bracket (6).

### b. INSTALLATION

1. Install emergency relay valve (2) on mounting bracket (6).
2. Install two new self-locking nuts (5), washers (4), and screws (3) on emergency relay valve (2) and mounting bracket (6).
3. Install seven air hoses (1) on emergency relay valve (2).
4. Close drain cocks (para 3-8).



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**4-59. EMERGENCY RELAY VALVE REPLACEMENT, OPERATING TEST, AND LEAKAGE TEST (M870A1) (continued).**

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**c. OPERATING TEST**

1. With gladhands connected to towing vehicle, apply brakes. Check to see that brakes of all semitrailer wheels apply properly.
2. Release brakes. Check to see that each brake releases properly.
3. With brake system fully pressurized, close shutoff cock on emergency hose in towing vehicle. Disconnect gladhands tagged EMERGENCY from towing vehicle. Make sure semitrailer brakes apply automatically.
4. Connect gladhands tagged EMERGENCY to towing vehicle. Open shutoff valve cock in towing vehicle. Check to see that brakes release automatically.

**d. LEAKAGE TEST**

1. With air system connected, apply a solution of detergent (Item 4, Appendix F) and water to flanges holding diaphragm in spring brake chamber, and to gladhands tagged SERVICE. No leakage is permitted. Tighten nuts on flanges and coupling on gladhands as required.
2. With brake system fully pressurized, close shutoff cock on emergency line in towing vehicle. Disconnect gladhands tagged EMERGENCY from towing vehicle. Make sure semitrailer brakes apply automatically. Coat emergency relay valve exhaust port with a solution of detergent (Item 4, Appendix F) and water.
3. Leakage must not exceed a one-inch (2.5 cm) bubble in three seconds. If excess leakage is found, replace emergency relay valve (subparas 4-59a and 4-59b).

**FOLLOW-ON TASKS:**

- None

## 4-60. FRONT AIR RESERVOIR AND DRAIN COCK REPLACEMENT (M870).

*This Task Covers:*

a. Removal

b. Installation

*Initial Setup:*

### Tools/Test Equipment:

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

### Materials/Parts:

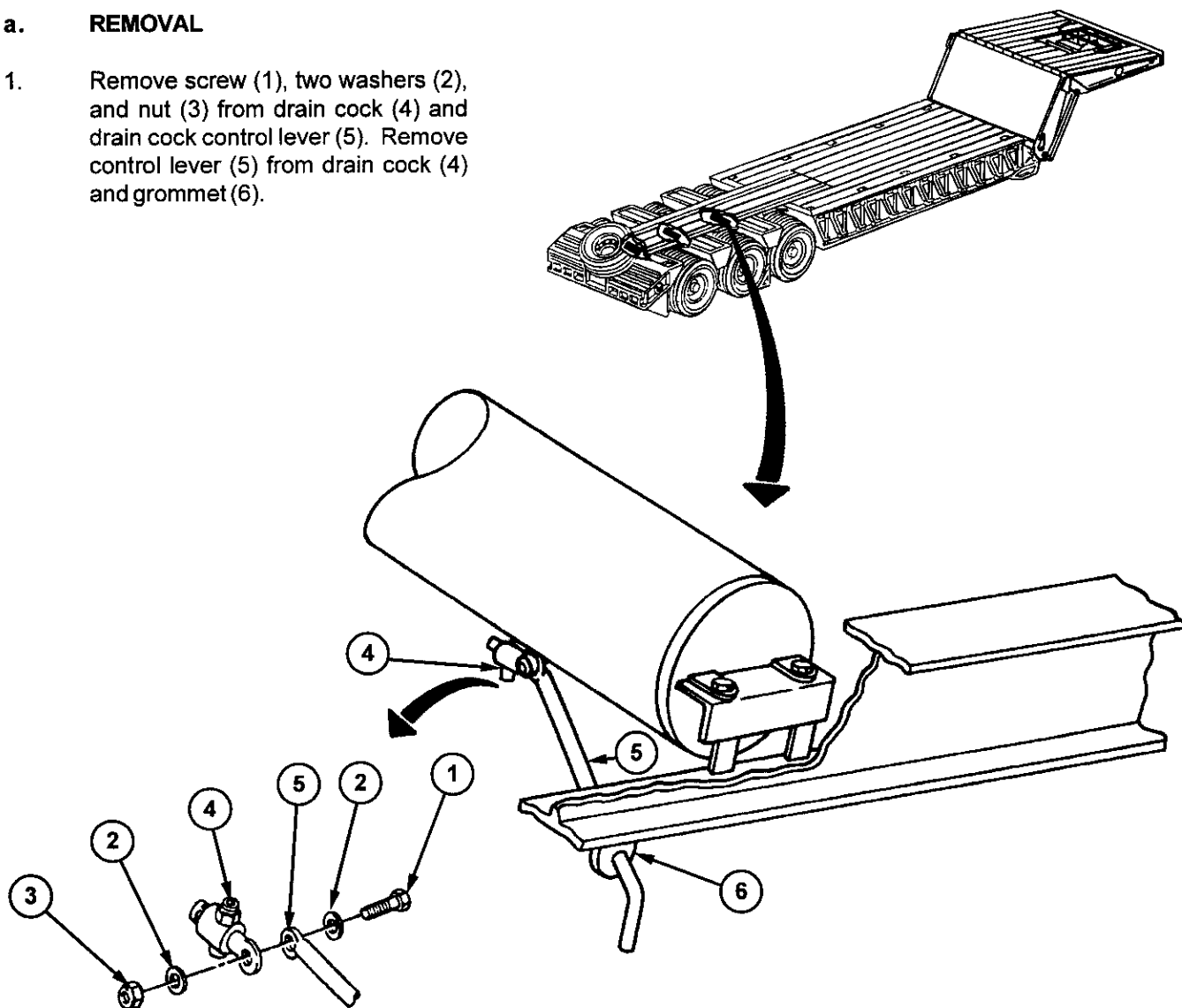
- Tape, antiseizing (Item 21, Appendix F)
- Lockwasher (4) (Item 14, Appendix I)

### Equipment Conditions:

- Wheels chocked (para 2-10).
- Air reservoirs drained and drain cocks open (para 3-8).
- Emergency relay valve removed (para 4-58).

### a. REMOVAL

1. Remove screw (1), two washers (2), and nut (3) from drain cock (4) and drain cock control lever (5). Remove control lever (5) from drain cock (4) and grommet (6).

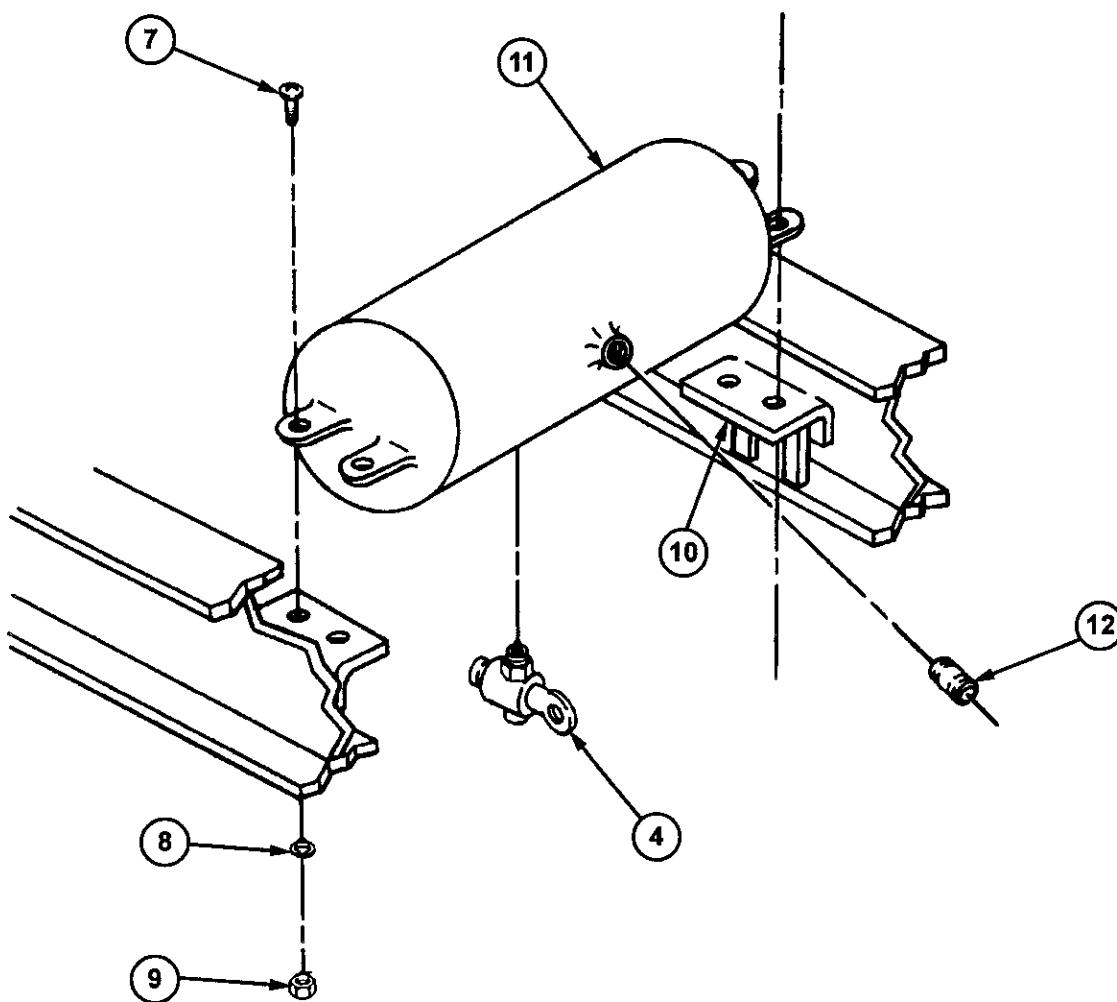


#### 4-60. FRONT AIR RESERVOIR AND DRAIN COCK REPLACEMENT (M870) (continued).

2. Remove four screws (7), lockwashers (8), and nuts (9) from two air reservoir mounting brackets (10). Discard lockwashers.
3. Remove front air reservoir (11) from two mounting brackets (10).
4. Remove drain cock (4) and pipe nipple (12) from front air reservoir (11).

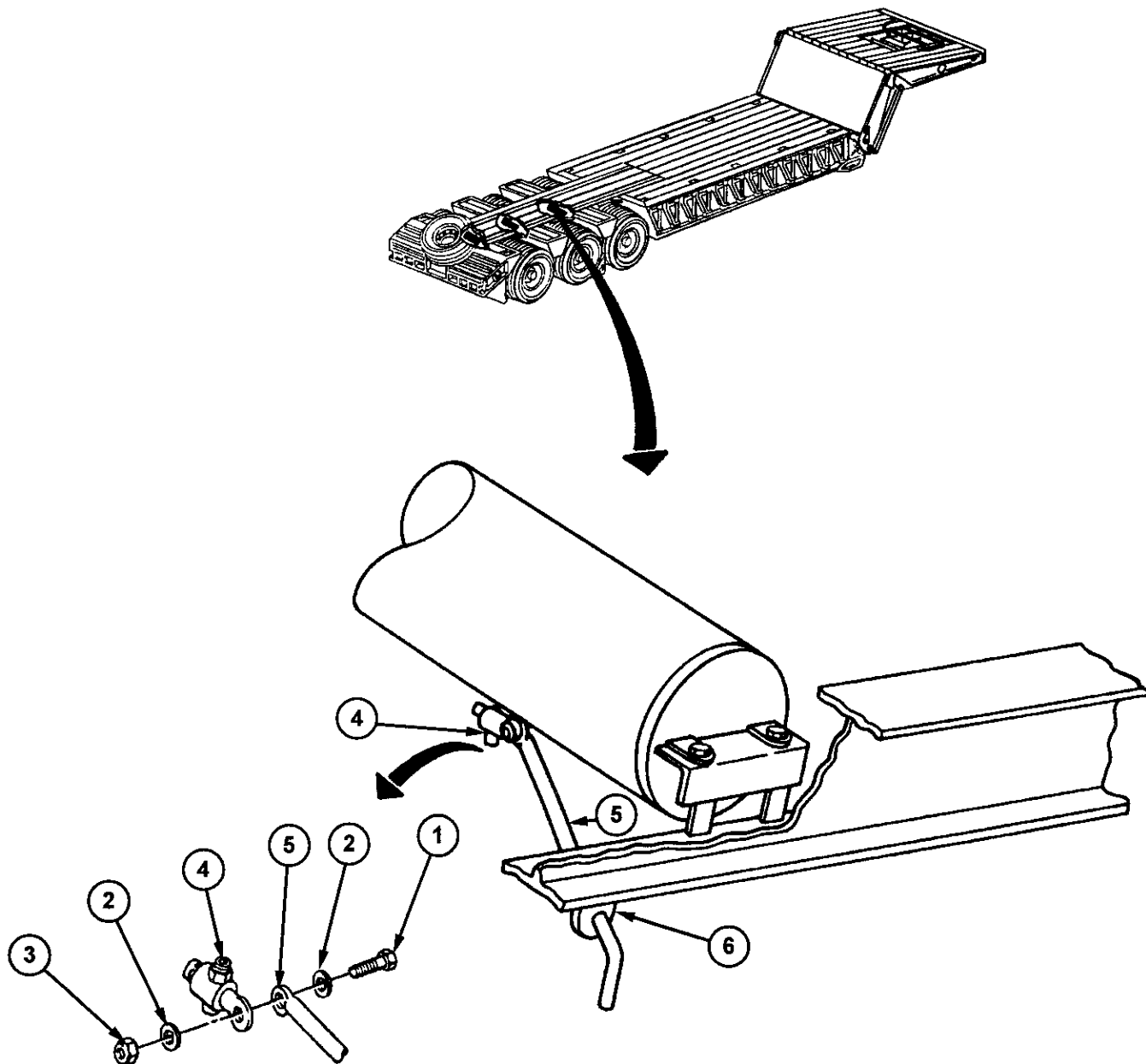
#### b. INSTALLATION

1. Install drain cock (4) and pipe nipple (12) on front air reservoir (11).
2. Install front air reservoir (11) on two mounting brackets (10) and secure with four nuts (9), new lockwashers (8), and screws (7).



**4-60. FRONT AIR RESERVOIR AND DRAIN COCK REPLACEMENT (M870) (continued).**

3. Install control lever (5) in grommet (6). Secure control lever (5) to drain cock (4) with nut (3), two washers (2), and screw (1).

**FOLLOW-ON TASKS:**

- Install emergency relay valve (para 4-58).
- Close drain cocks (para 3-8).
- Test air reservoir for serviceability (para 4-66).

**4-61. MIDDLE AIR RESERVOIR AND DRAIN COCK REPLACEMENT (M870).**

*This Task Covers:*

- a. Removal
- b. Installation

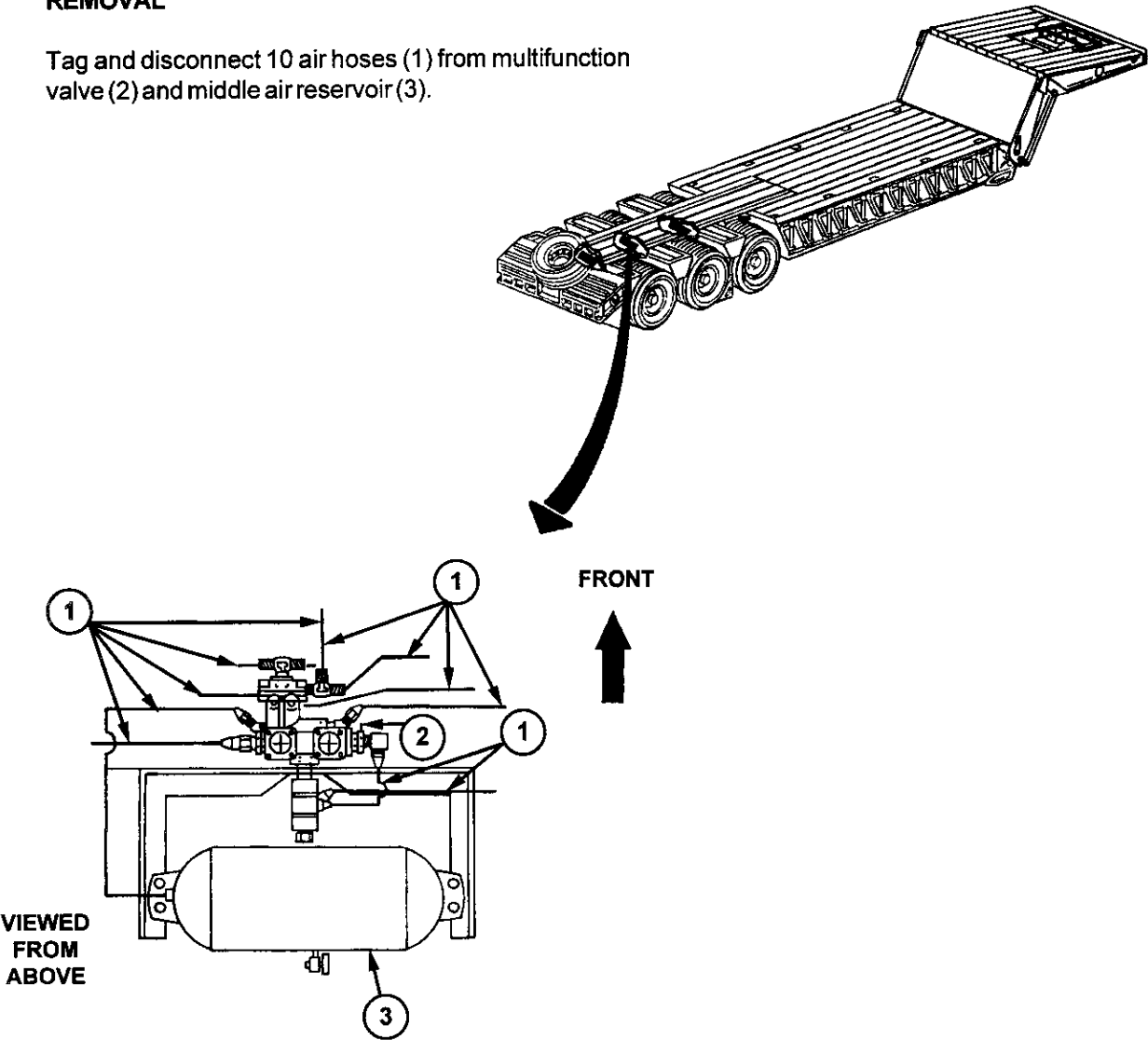
*Initial Setup:*

- Tools/Test Equipment:**
- Tool kit, general mechanic's: automotive (Item 7, Appendix B)
- Materials/Parts:**
- Tape, antiseizing (Item 21, Appendix F)
  - Lockwasher (4) (Item 14, Appendix I)

- Equipment Conditions:**
- Wheels chocked (para 2-10).
  - Air reservoirs drained and drain cocks open (para 3-8).

**a. REMOVAL**

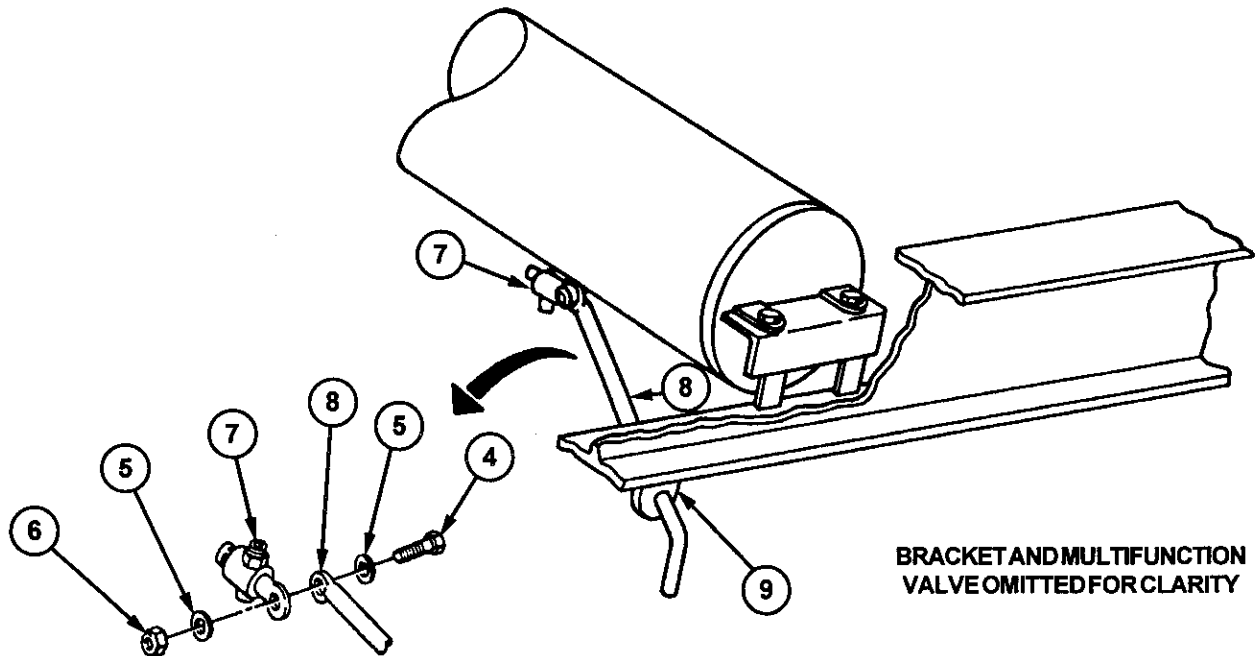
1. Tag and disconnect 10 air hoses (1) from multifunction valve (2) and middle air reservoir (3).





**4-61. MIDDLE AIR RESERVOIR AND DRAIN COCK REPLACEMENT (M870) (continued).**

2. Remove screw (4), two washers (5), and nut (6) from drain cock (7) and drain cock control lever (8). Remove control lever (8) from drain cock (7) and grommet (9).

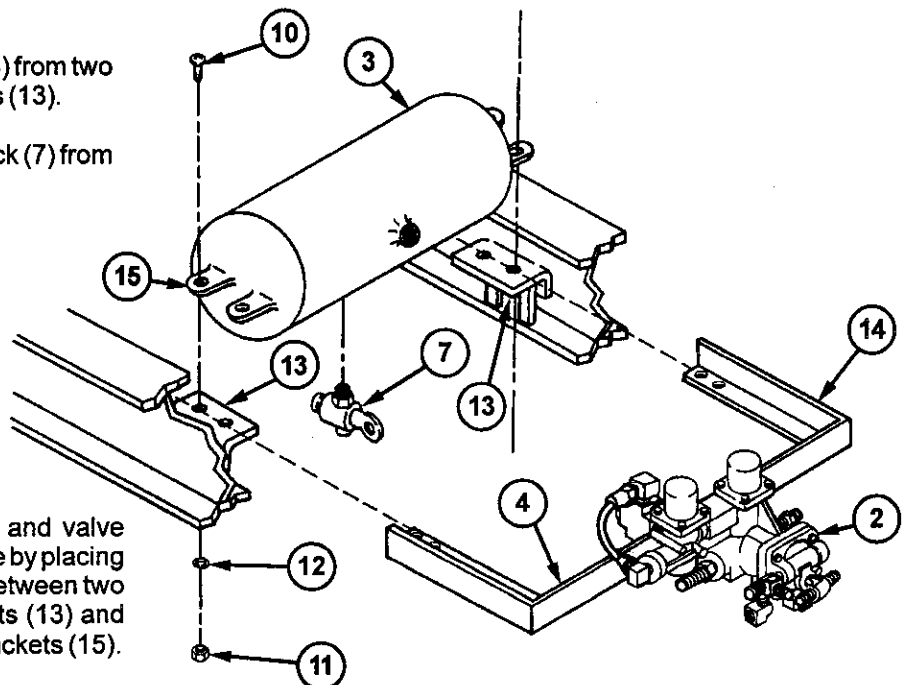


3. Remove four screws (10), lockwashers (11), and nuts (12) from two air reservoir mounting brackets (13). Discard lockwashers.
4. Remove multifunction valve (2) and valve mounting bracket (14), as a unit, from two air reservoir mounting brackets (13).

5. Remove middle air reservoir (3) from two air reservoir mounting brackets (13).
6. Unscrew and remove drain cock (7) from middle air reservoir (3).

**b. INSTALLATION**

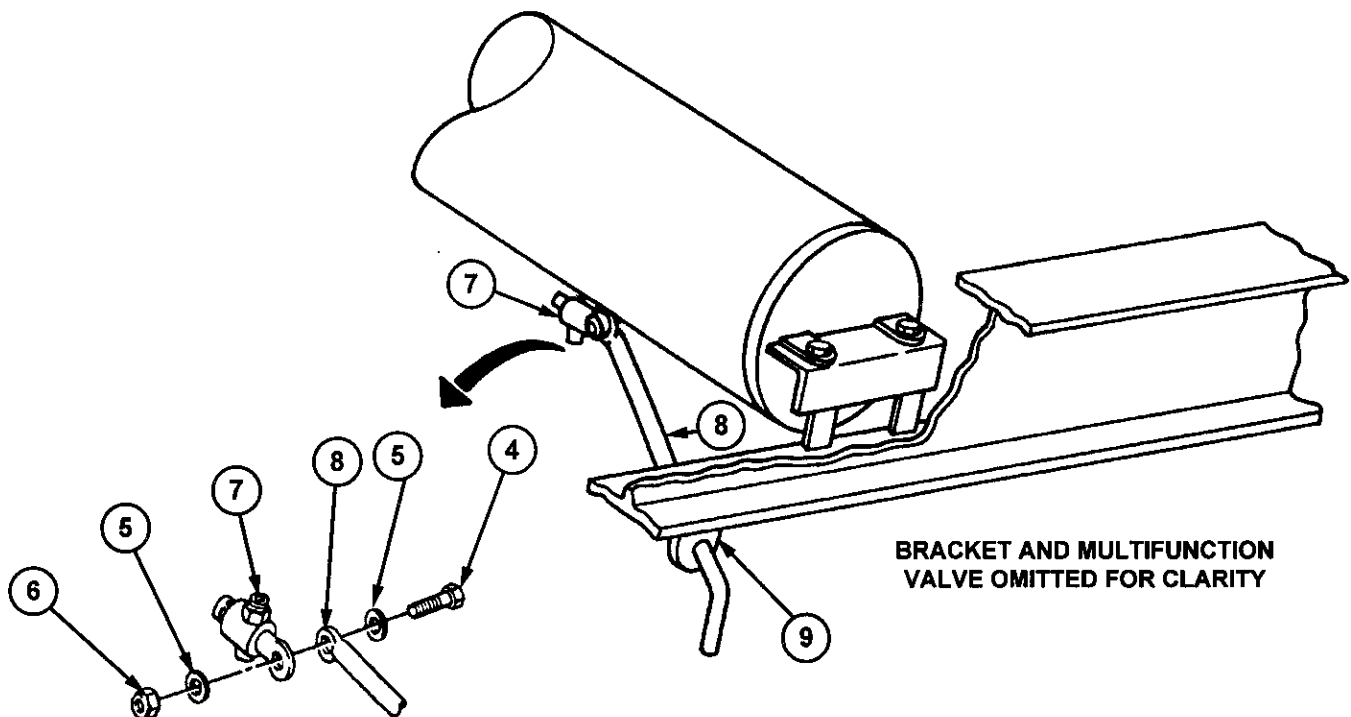
1. Install drain cock (7) on middle air reservoir (3).
2. Position middle air reservoir (3) on two air reservoir mounting brackets (13).
3. Install multifunction valve (2) and valve mounting bracket (14) on frame by placing valve mounting bracket (14) between two air reservoir mounting brackets (13) and middle air reservoir (3) end brackets (15).



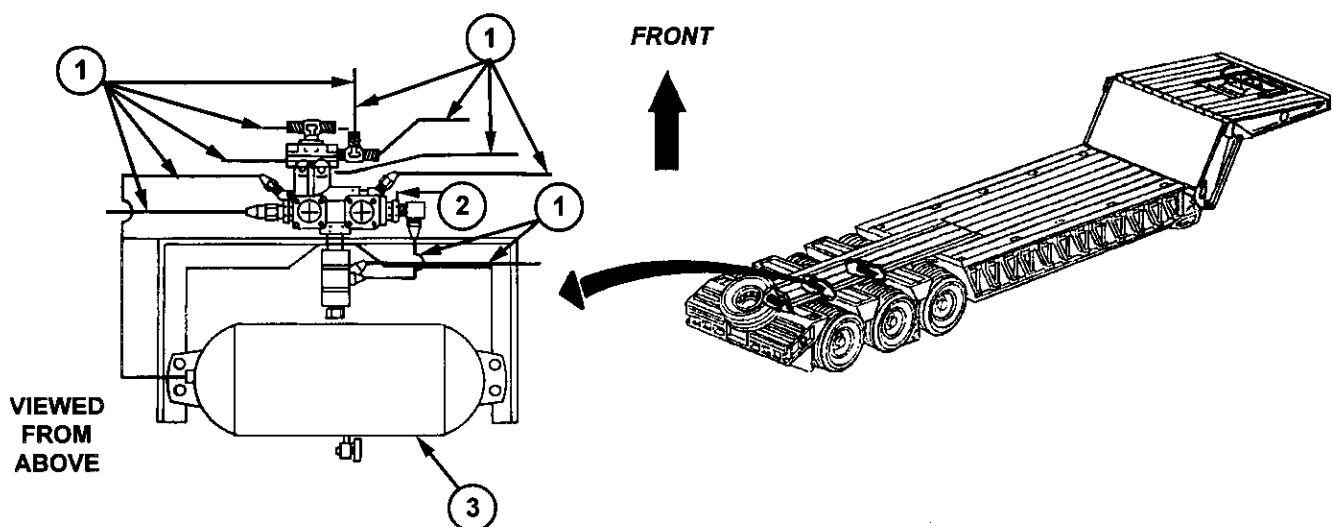
4. Secure middle air reservoir (3) and valve mounting bracket (14) to two air reservoir mounting brackets (13) with four nuts (12), new lockwashers (11), and screws (10).

#### 4-61. MIDDLE AIR RESERVOIR AND DRAIN COCK REPLACEMENT (M870) (continued).

5. Install control lever (8) in grommet (9). Secure control lever (8) to drain cock (7) with nut (6), two washers (5), and screw (4).



6. Install 10 air hoses (1) on multifunction valve (2) and middle air reservoir (3).



#### FOLLOW-ON TASKS:

- Close drain cocks (para 3-8).
- Test air reservoir for serviceability (para 4-66).

## 4-62. REAR AIR RESERVOIR AND DRAIN COCK REPLACEMENT (M870).

*This Task Covers:*

a. Removal

b. Installation

*Initial Setup:*

### Tools/Test Equipment:

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

### Materials/Parts:

- Tape, antiseizing (Item 21, Appendix F)
- Lockwasher (4) (Item 20, Appendix I)

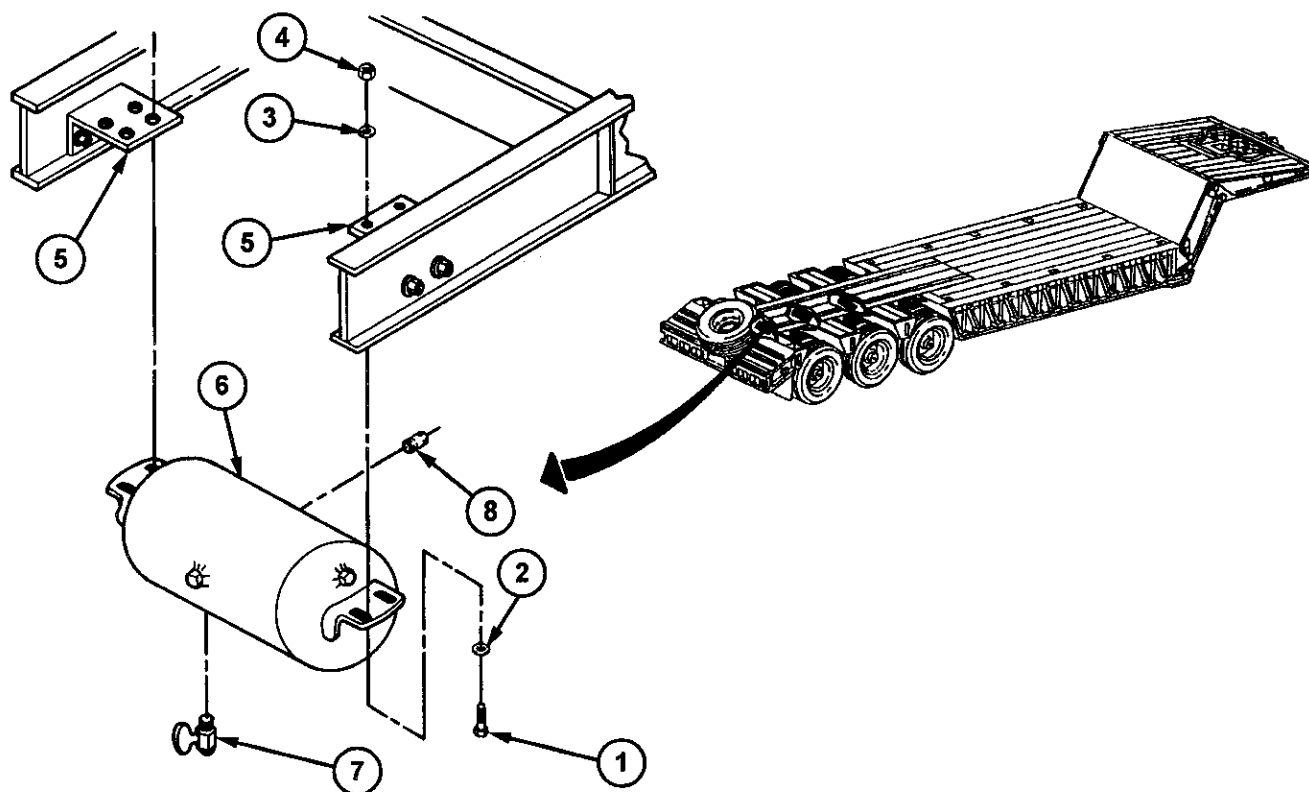
- Self-locking nut (4) (Item 30, Appendix I)

### Equipment Conditions:

- Wheels chocked (para 2-10).
- Air reservoirs drained and drain cocks open (para 3-8).
- Relay emergency valve removed (para 4-54).

### a. REMOVAL

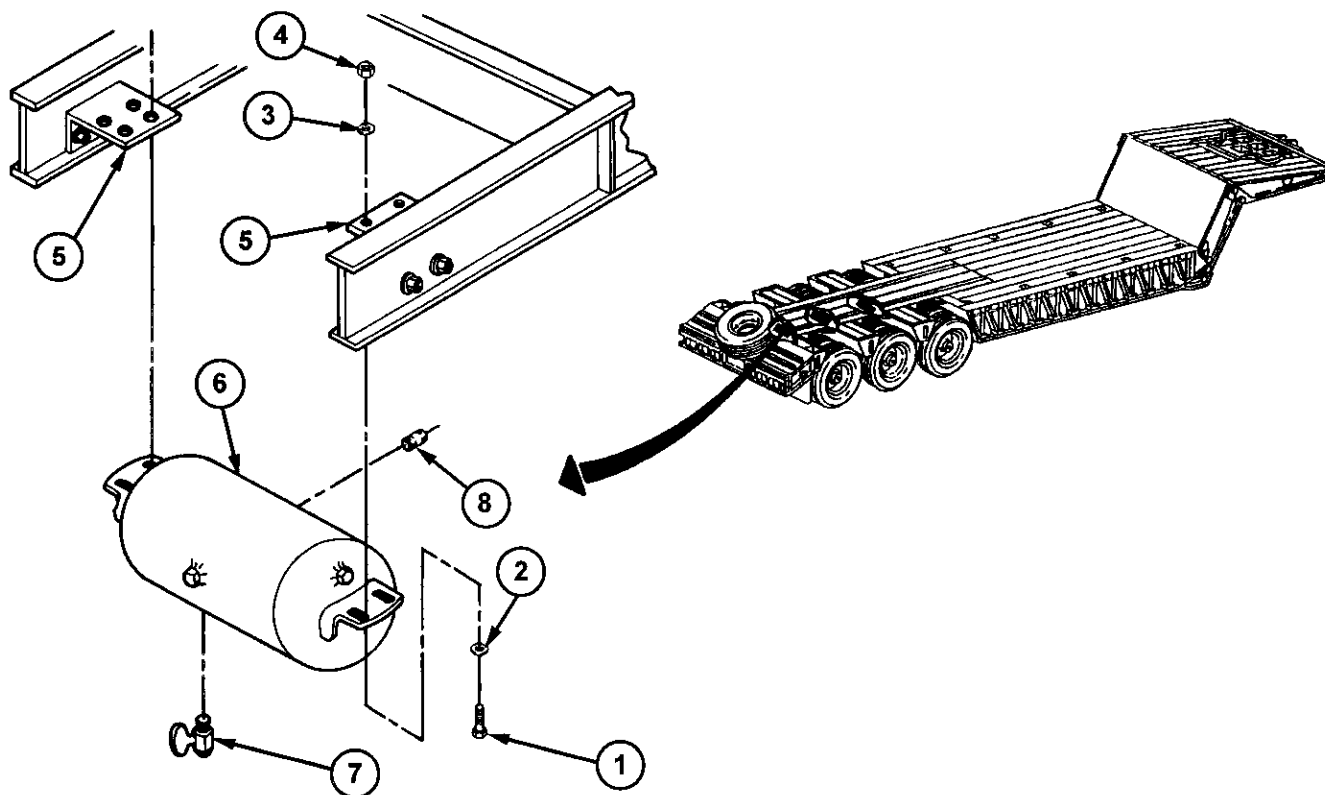
1. Remove four screws (1), washers (2), lockwashers (3), and self-locking nuts (4) from two air reservoir mounting brackets (5). Discard lockwashers and self-locking nuts.
2. Remove rear air reservoir (6) from two mounting brackets (5).
3. Unscrew and remove drain cock (7) and pipe nipple (8) from rear air reservoir (6).



## 4-62. REAR AIR RESERVOIR AND DRAIN COCK REPLACEMENT (M870) (continued).

### b. INSTALLATION

1. Install drain cock (7) and pipe nipple (8) on rear air reservoir (6).
2. Install rear air reservoir (6) on two mounting brackets (5).
3. Secure rear air reservoir (6) to two mounting brackets (5) with four new self-locking nuts (4), new lockwashers (3), washers (2), and screws (1).



### FOLLOW-ON TASKS:

- Install relay emergency valve (para 4-54)
- Close drain cocks (para 3-8).
- Test air reservoir for serviceability (para 4-66).

## 4-63. FRONT AIR RESERVOIR AND DRAIN COCK REPLACEMENT (M870A1).

*This Task Covers:*

a. Removal

b. Installation

*Initial Setup:*

### Tools/Test Equipment:

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

### Equipment Conditions:

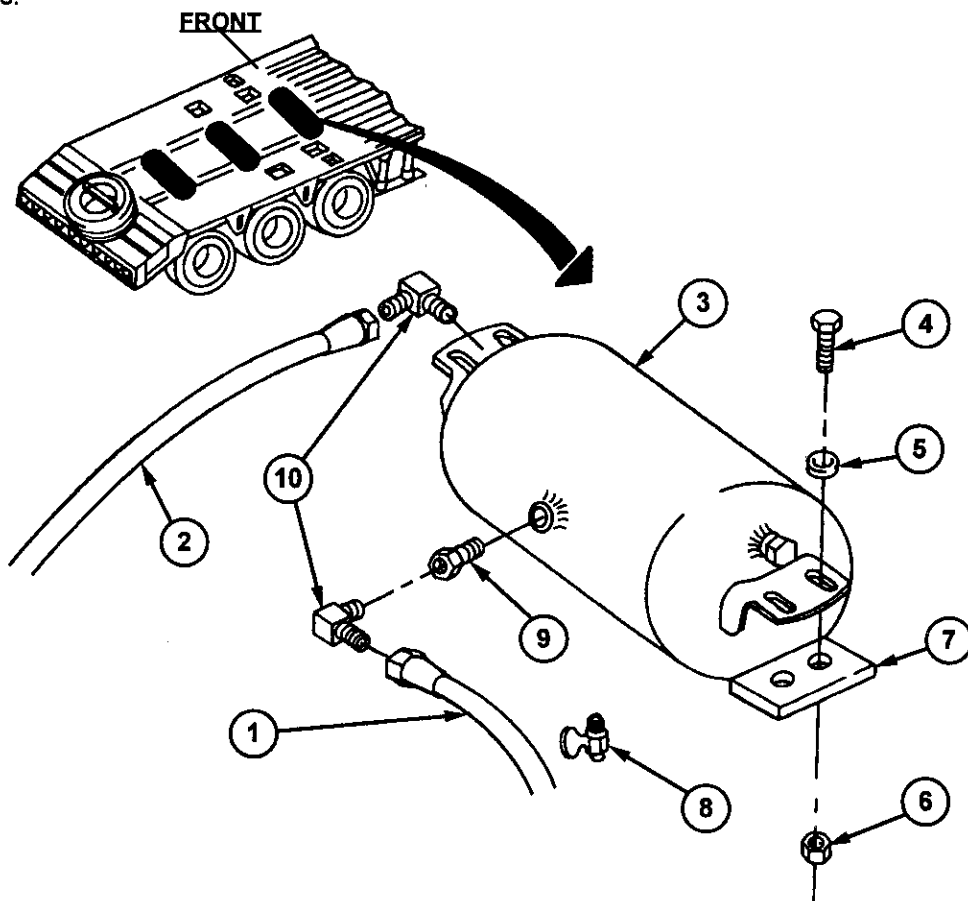
- Air reservoirs drained and drain cocks open (para 3-8).

### Materials/Parts:

- Tape, antiseizing (Item 21, Appendix F)
- Self-locking nut (4) (Item 28, Appendix I)

### a. REMOVAL

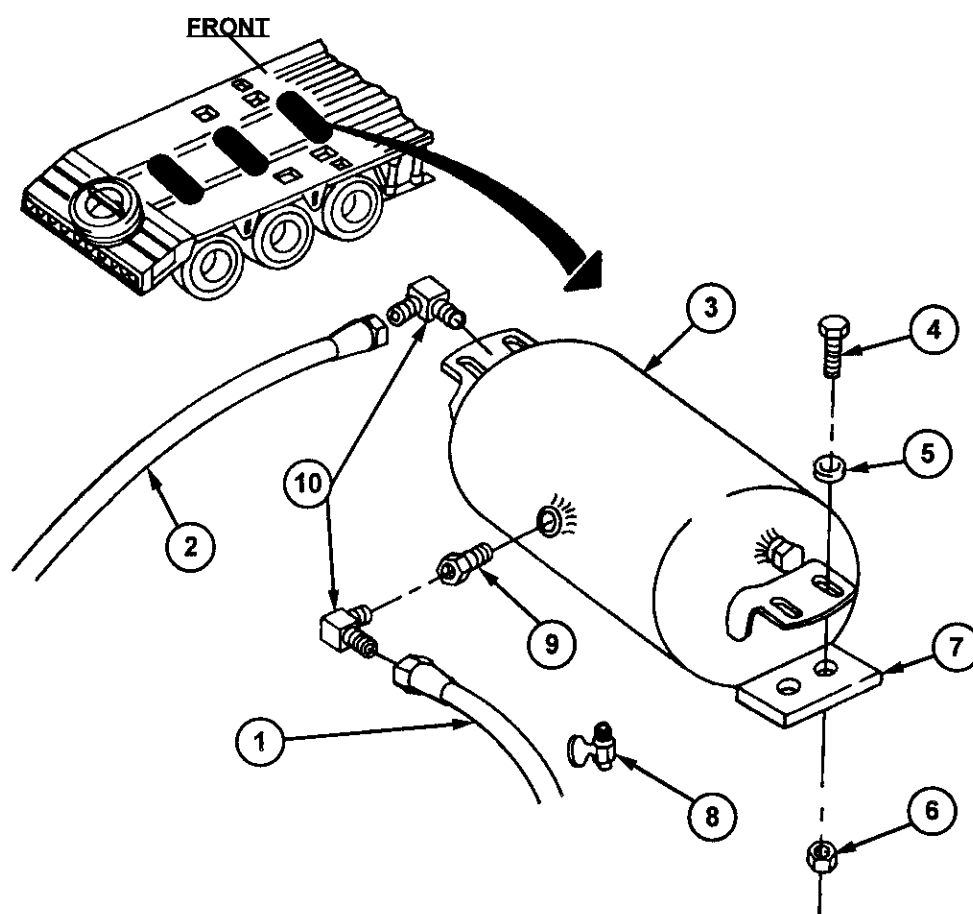
1. Tag and disconnect air hose (1) from relay emergency valve, and air hose (2) from multifunction valve to front air reservoir (3).
2. Remove four screws (4), washers (5), and self-locking nuts (6) from two air reservoir mounting brackets (7). Discard self-locking nuts.
3. Remove front air reservoir (3) from two mounting brackets (7).
4. Unscrew and remove drain cock (8), reducing bushing (9), and two elbows (10) from front air reservoir (3).



## 4-63. FRONT AIR RESERVOIR AND DRAIN COCK REPLACEMENT (M870A1) (continued).

### b. INSTALLATION

1. Install drain cock (8), reducing bushing (9), and two elbows (10) on front air reservoir (3).
2. Install front air reservoir (3) on two mounting brackets (7) and secure with four new self-locking nuts (6), washers (5), and screws (4).
3. Install air hose (1) from relay emergency valve and air hose (2) from multifunction valve on front air reservoir (3).



### FOLLOW-ON TASKS:

- Close drain cocks (para 3-8).
- Test air reservoir for serviceability (para 4-66).

## 4-64. MIDDLE AIR RESERVOIR AND DRAIN COCK REPLACEMENT (M870A1).

*This Task Covers:*

a. Removal

b. Installation

*Initial Setup:*

### Tools/Test Equipment:

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

### Equipment Conditions:

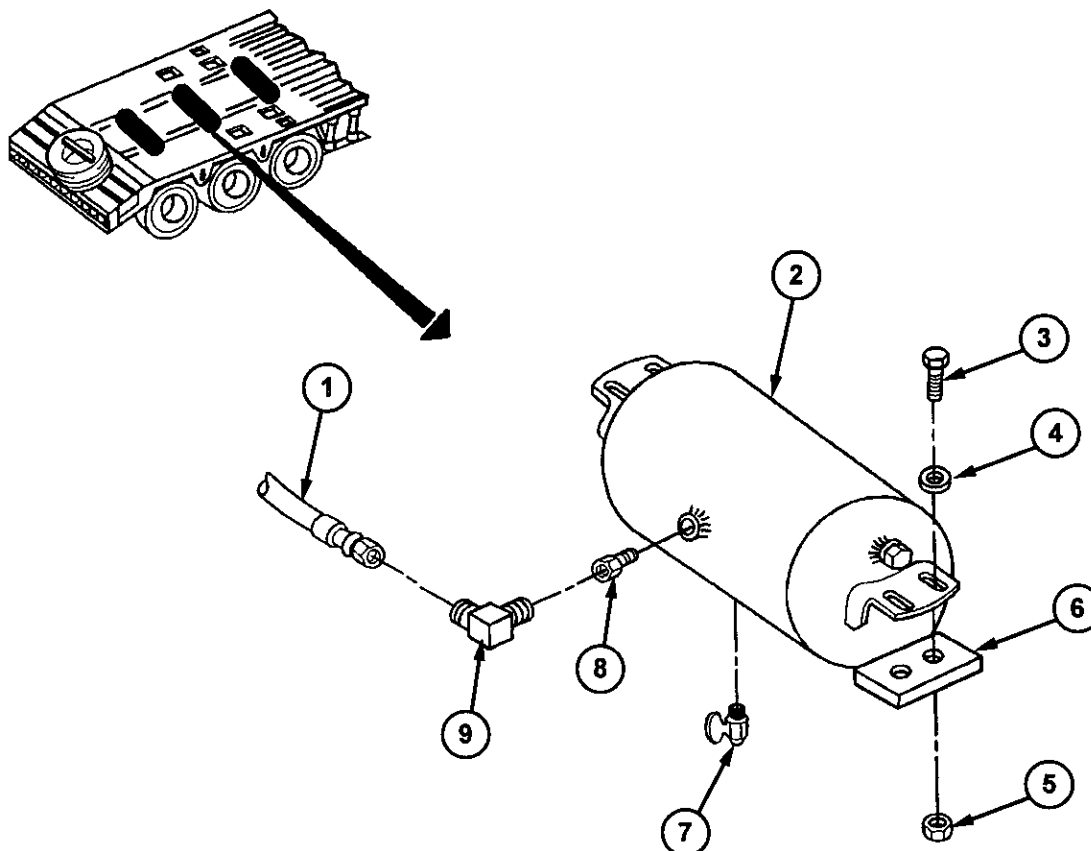
- Air reservoirs drained and drain cocks open (para 3-8).

### Materials/Parts:

- Tape, antiseizing (Item 21, Appendix F)
- Self-locking nut (4) (Item 28, Appendix I)

### a. REMOVAL

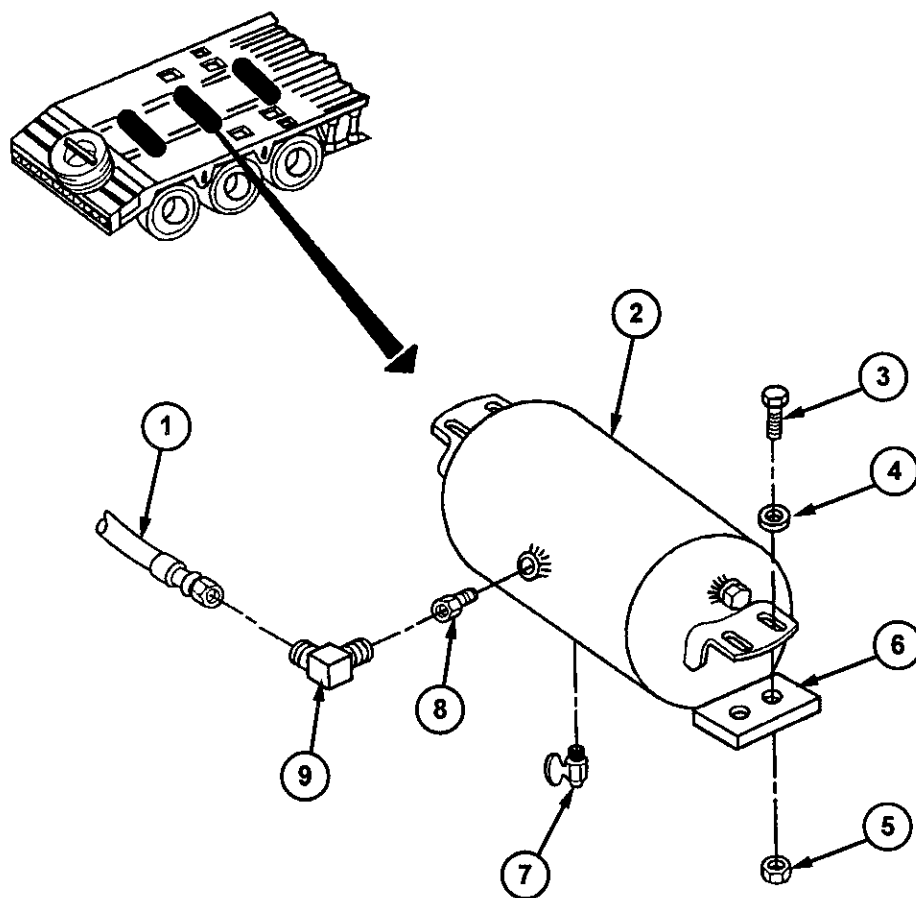
1. Tag and disconnect air hose (1) from middle air reservoir (2).
2. Remove four screws (3), washers (4), and self-locking nuts (5) from two air reservoir mounting brackets (6). Discard self-locking nuts.
3. Remove middle air reservoir (2) from two mounting brackets (6).
4. Unscrew and remove drain cock (7), reducing bushing (8), and elbow (9) from middle air reservoir (2).



#### 4-64. MIDDLE AIR RESERVOIR AND DRAIN COCK REPLACEMENT (M870A1) (continued).

##### b. INSTALLATION

1. Install drain cock (7), reducing bushing (8), and elbow (9) on middle air reservoir (2).
2. Install middle air reservoir (2) on two mounting brackets (6).
3. Secure middle air reservoir (2) to two mounting brackets (6) with four new self-locking nuts (5), washers (4), and screws (3).
4. Install air hose (1) on middle air reservoir (2).



##### FOLLOW-ON TASKS:

- Close drain cocks (para 3-8).
- Test for air reservoir serviceability (para 4-66).



## 4-65. REAR AIR RESERVOIR AND DRAIN COCK REPLACEMENT (M870A1).

*This Task Covers:*

a. Removal

b. Installation

*Initial Setup:*

### Tools/Test Equipment:

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

### Materials/Parts:

- Tape, antiseizing (Item 21, Appendix F)
- Lockwasher (4) (Item 20, Appendix I)

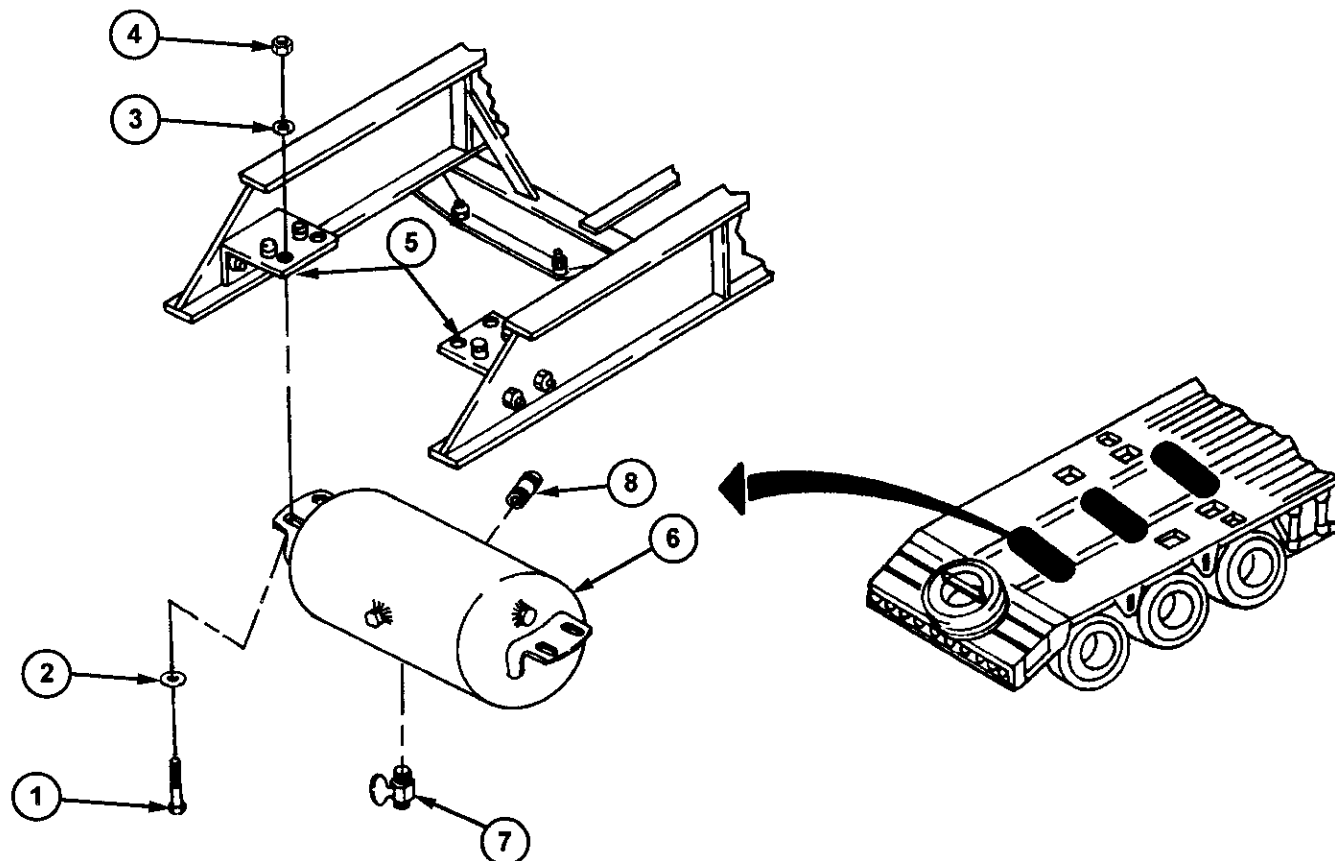
- Self-locking nut (4) (Item 30, Appendix I)

### Equipment Conditions:

- Air reservoirs drained and drain cocks open (para 3-8).
- Relay emergency valve removed (para 4-54).

### a. REMOVAL

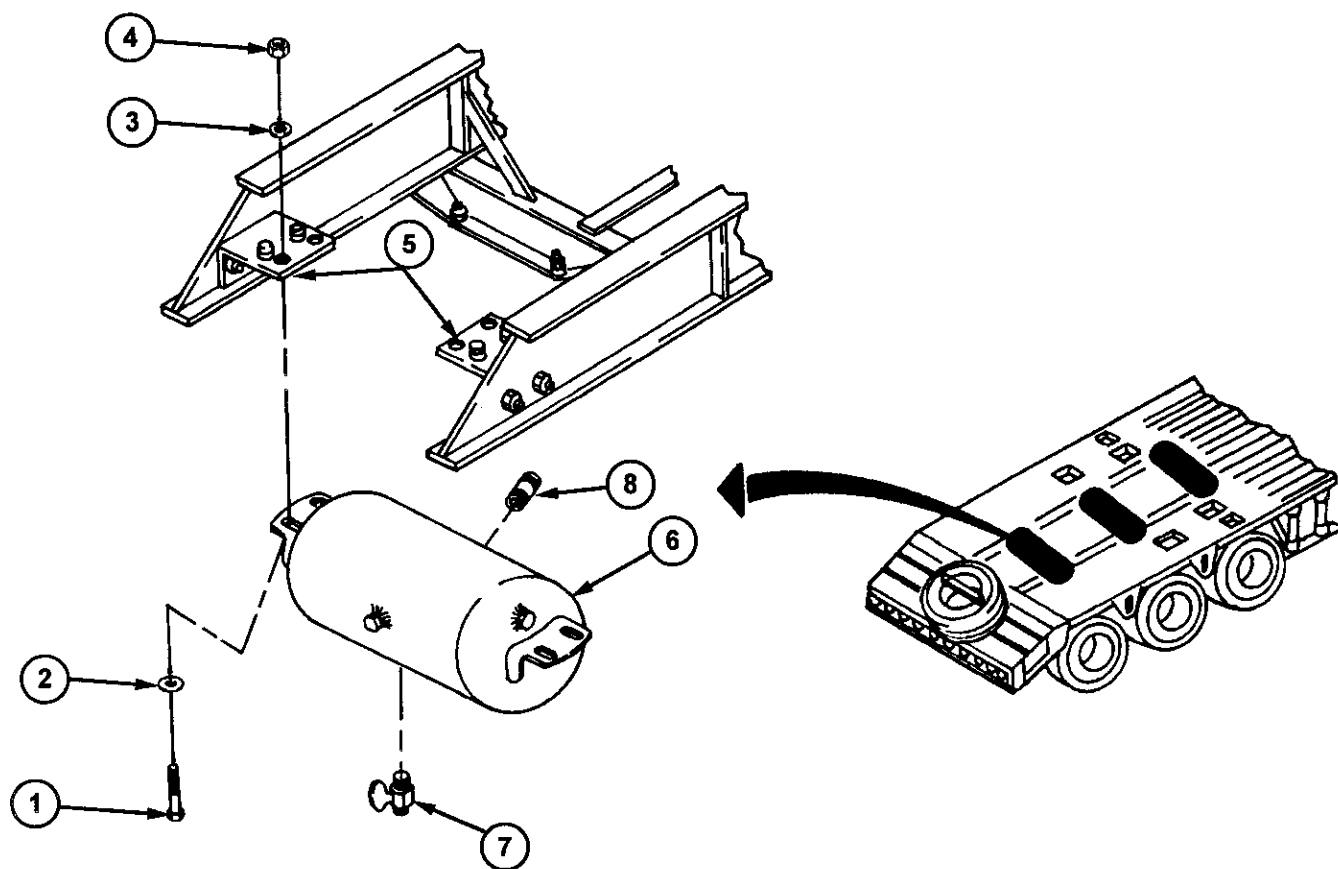
1. Remove four screws (1), washers (2), lockwashers (3), and self-locking nuts (4) from two air reservoir mounting brackets (5). Discard lockwashers and self-locking nuts.
2. Remove rear air reservoir (6) from two mounting brackets (5).
3. Unscrew and remove drain cock (7) and pipe nipple (8) from rear air reservoir (6).



## 4-65. REAR AIR RESERVOIR AND DRAIN COCK REPLACEMENT (M870A1) (continued).

### b. INSTALLATION

1. Install drain cock (7) and pipe nipple (8) on rear air reservoir (6).
2. Install rear air reservoir (6) on two mounting brackets (5).
3. Secure rear air reservoir (6) to two mounting brackets (5) with four new self-locking nuts (4), new lockwashers (3), washers (2), and screws (1).



### FOLLOW-ON TASKS:

- Install relay emergency valve (para 4-54).
- Close drain cocks (para 3-8).
- Test air reservoir for serviceability (para 4-66).

---

**4-66. AIR RESERVOIR SERVICEABILITY TEST.**

---

*This Task Covers:*

Serviceability Test

---

*Initial Setup:*

**Tools/Test Equipment:**

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

**Materials/Parts:**

- Detergent (Item 4, Appendix F)
- 

**SERVICEABILITY TEST**

- With airbrake system connected to towing vehicle, coat drain cocks, pipe plugs, and connections with a solution of detergent and water. No leakage is permissible.
- Tighten any leaking connections.
- Inspect air reservoir for damage or corrosion. Replace air reservoir if it leaks or if there is any damage or corrosion that could weaken the air reservoir.

**FOLLOW-ON TASKS:**

- Pressurize air system (para 3-8).
- Check operation of brakes (para 4-54).

## Section VIII. WHEELS, HUBS, AND BRAKEDRUMS MAINTENANCE

Paragraph Number	Paragraph Title	Page Number
4-67	General .....	4-144
4-68	Hub and Brakedrum Maintenance (M870) .....	4-144
4-69	Hub and Brakedrum Maintenance (M870A1) .....	4-150
4-70	Wheel and Tire Repair (M870 and M870A1) .....	4-154

**4-67. GENERAL.**

This section provides information for performing Unit level wheel, hub, and brakedrum repairs on the M870 and M870A1 semitrailers.

**4-68. HUB AND BRAKEDRUM MAINTENANCE (M870).***This Task Covers:*

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

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

- Common no. 1 tool set (Item 6, Appendix B)
- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

- Gasket (Item 5, Appendix I)
- Gasket (Item 6, Appendix I)
- Lockwasher (6) (Item 13, Appendix I)
- Washer (Item 38, Appendix I)

**Materials/Parts:**

- Rag (Item 15, Appendix F)
- Solvent, drycleaning (Item 19, Appendix F)

**Equipment Conditions:**

- Tire and wheel assembly removed (para 3-9).

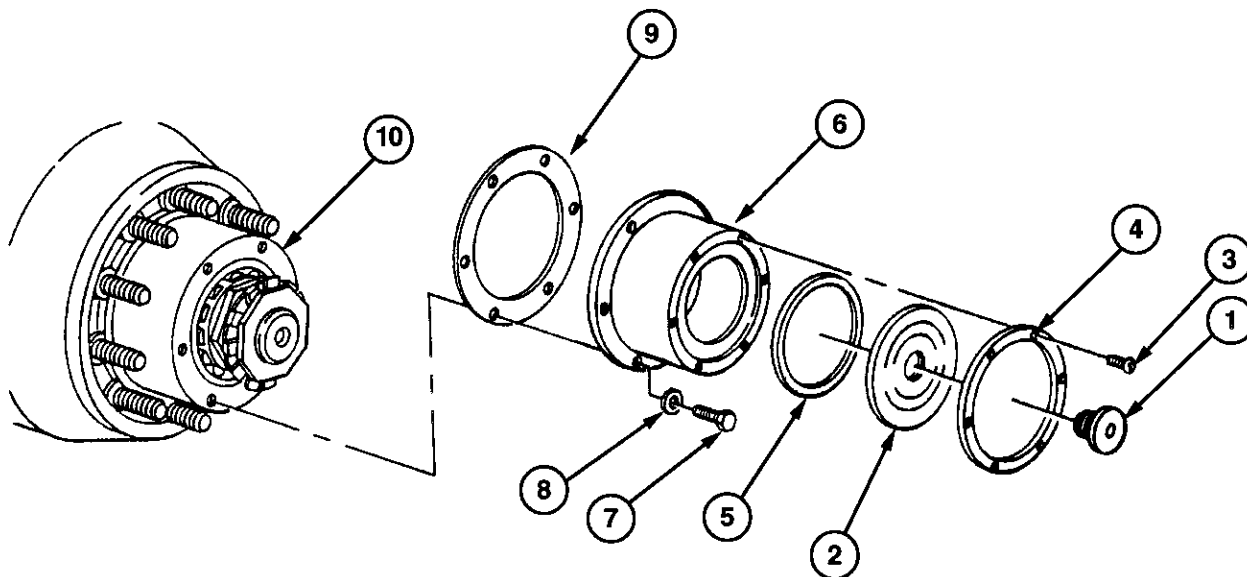
**a. REMOVAL**

1. Remove vent plug (1) from window (2).
2. Remove six screws (3) from retainer ring (4).
3. Remove retainer ring (4), window (2), and gasket (5) from access cover (6). Discard gasket.
4. Remove six screws (7) and lockwashers (8) from access cover (6). Discard lockwashers.
5. Remove access cover (6) and gasket (9) from hub (10). Discard gasket.

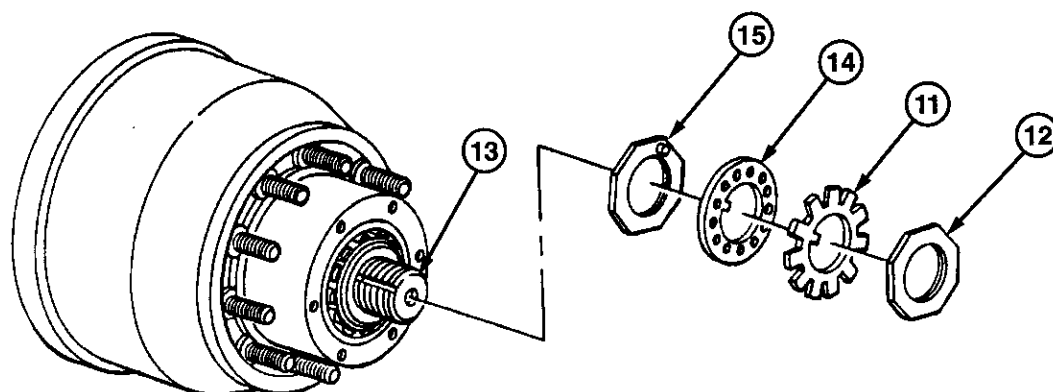
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**4-68. HUB AND BRAKEDRUM MAINTENANCE (M870) (continued).**


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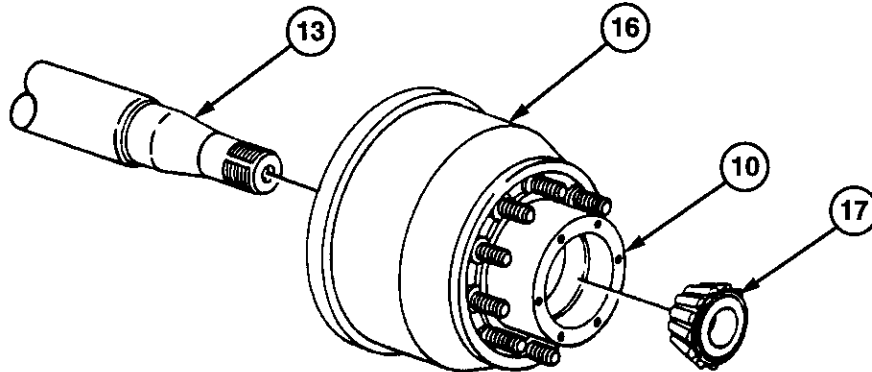


6. Using a hammer and chisel, bend back ears on washer (11).
7. Remove outer spindle nut (12) from spindle (13).
8. Remove washer (11) and lockring (14) from spindle (13). Discard washer.
9. Remove inner spindle nut (15) from spindle (13).

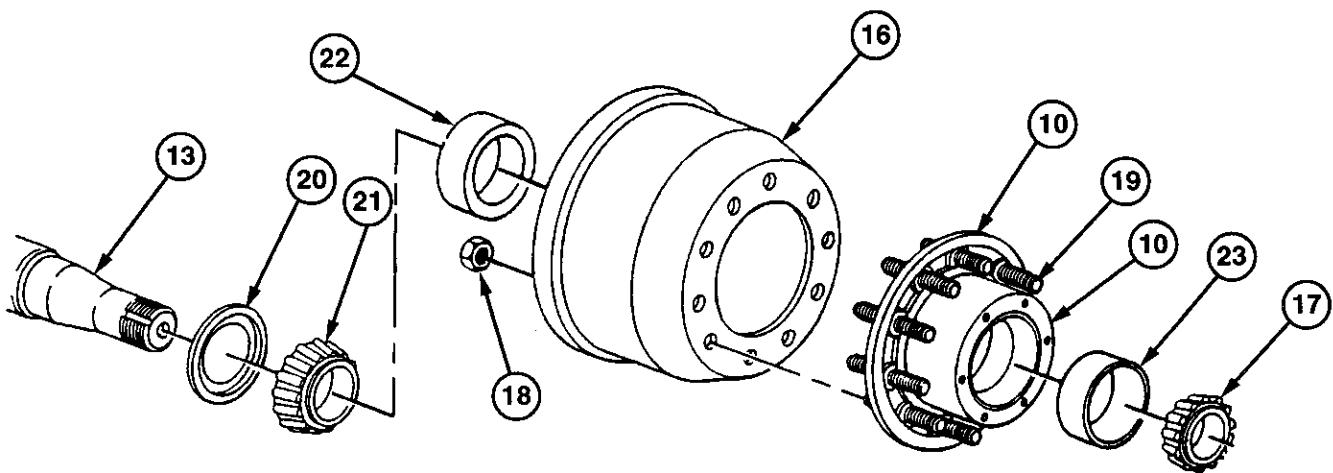


## 4-68. HUB AND BRAKEDRUM MAINTENANCE (M870) (continued).

10. Pull hub (10) and brakedrum (16) forward slightly, then push back to expose outer bearing cone (17). Remove outer bearing cone (17) from spindle (12).



11. Remove hub (10) and brakedrum (16) from spindle (13).
12. Remove 10 nuts (18) from 10 studs (19).
13. Separate hub (10) from brakedrum (16).
14. Using bearing/seal puller, remove inner seal (20) from hub (10).
15. Remove inner bearing cone (21) from hub (10).
16. Using bearing/seal puller and ball-peen hammer, remove two bearing cups (22 and 23) from hub (10).



## 4-68. HUB AND BRAKEDRUM MAINTENANCE (M870) (continued).

### b. CLEANING AND INSPECTION

#### **WARNING**

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

1. Thoroughly clean all metal parts using drycleaning solvent and a rag.

#### **WARNING**

**Particles blown by compressed air are hazardous. Failure to wear protective goggles when drying metal parts could cause serious eye injury.**

#### **CAUTION**

**Do not dry bearings with high-pressure compressed air. Spinning dry will cause damage to bearings.**

2. Dry all metal parts with low-pressure compressed air.
3. Check two bearing cones (17 and 21) for cracks and breaks in bearing cage, etching and pitting on rollers, and evidence of wear. If damaged or worn, replace bearing cones.
4. Inspect two bearing cups (22 and 23) for pits, grooves, and flaking. If pitted, grooved, or flaked, replace bearing cups.

#### **NOTE**

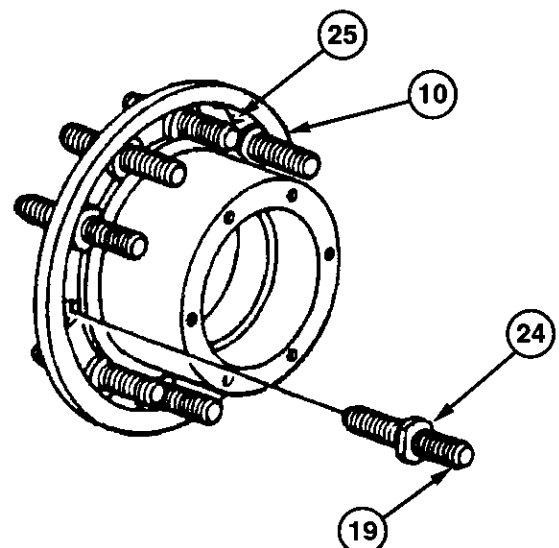
Replace broken or damaged studs in groups of three—the damaged or broken stud and the studs on either side.

5. Inspect 10 studs (19) and nuts (18) for damaged threads or breaks. Replace if threads are damaged or broken.

#### **NOTE**

Do steps 6 and 7 only if replacing studs.

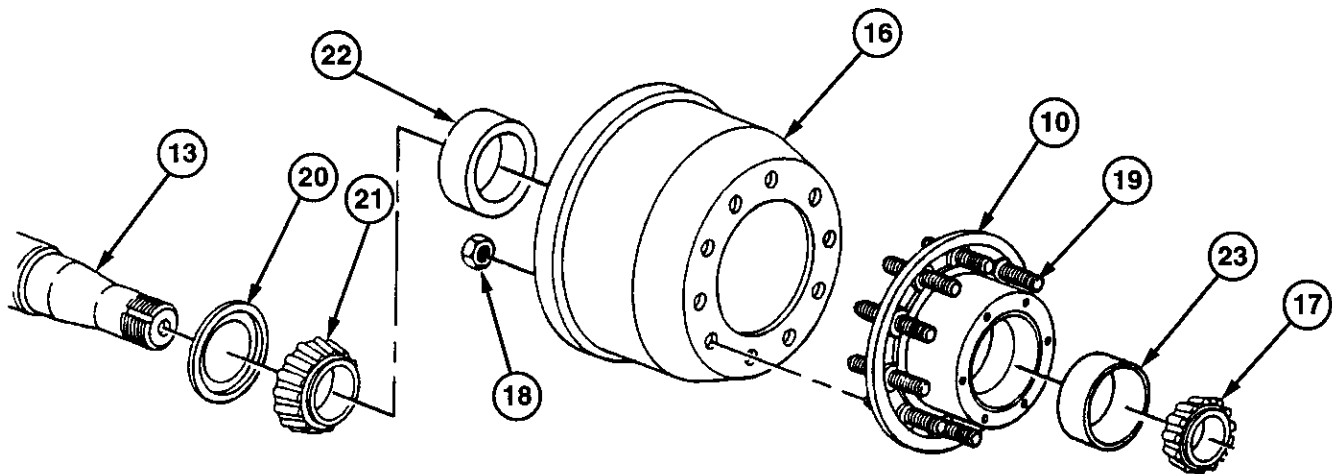
6. Drive studs (19) to be replaced out of hub (10).
7. Install new studs (19) in hub (10), being sure stud collars (24) are seated in recessed slot (25).
8. Inspect brakedrum (16) for pitting or scoring. If pitted or scored, notify Direct Support maintenance.
9. Inspect spindle (13) for pitting and grooves. If pitted or grooved, notify Direct Support maintenance.



## 4-68. HUB AND BRAKEDRUM MAINTENANCE (M870) (continued).

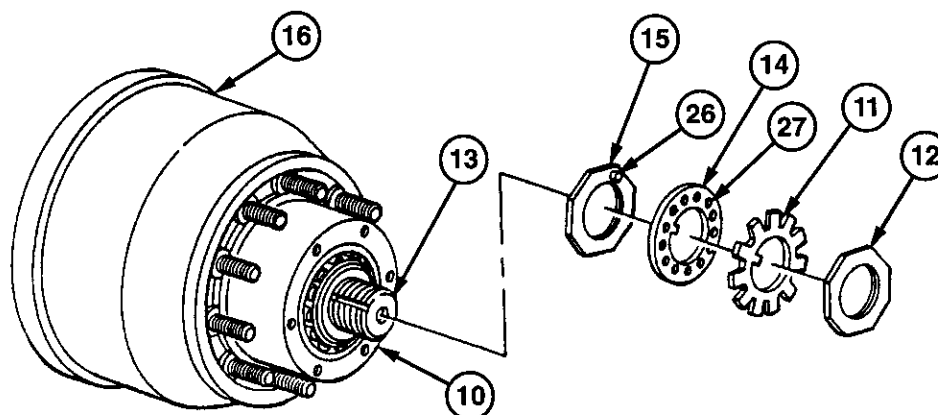
### c. INSTALLATION

1. Install two bearing cups (22 and 23) in hub (10) and seat using bearing replacer and hammer.
2. Install inner bearing cone (21) in bearing cup (22).
3. Press inner seal (20) in place. Place block of wood over seal and tap with hammer until inner seal (20) is seated.
4. Install hub (10) on brakedrum (16).
5. Install 10 nuts (18) on 10 studs (19).
6. Install hub (10) and brakedrum (16) on spindle (13).
7. Place outer bearing cone (17) on spindle (13) and slide into bearing cup (23).

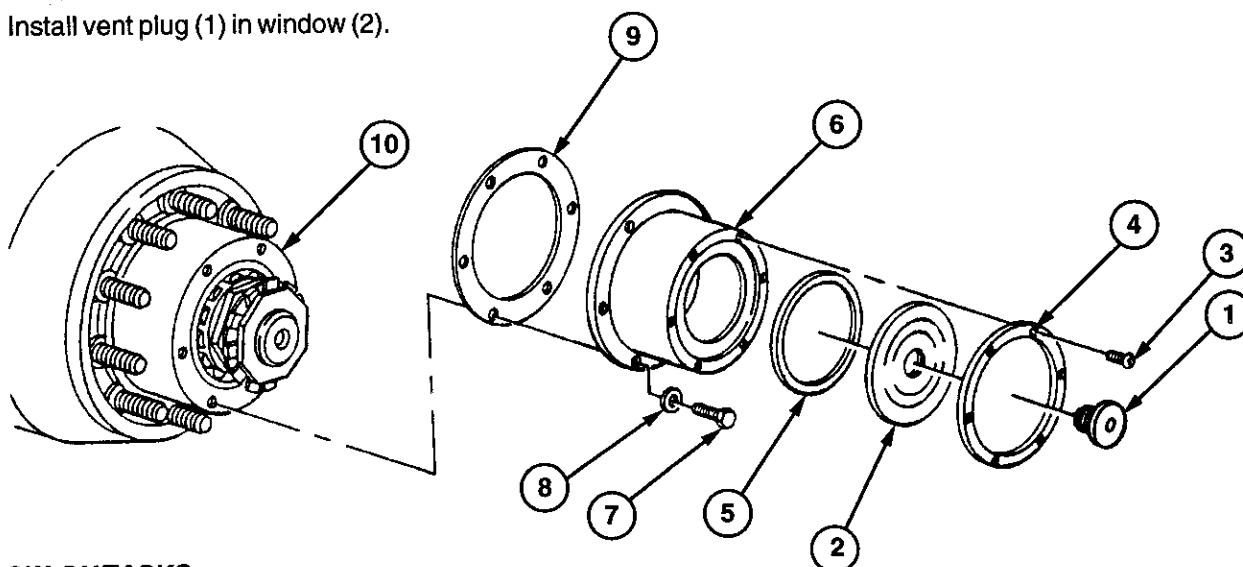


8. Install inner spindle nut (15) on spindle (13) and torque to 50 ft-lb (67.8 N•m). Be sure pin (26) in inner spindle nut (15) faces outward. Back off until hub (10) and brakedrum (16) turn freely.
9. Put lockring (14) on spindle (13), and turn inner spindle nut (15) until pin (26) goes in nearest hole (27) in lockring (14).
10. Install new washer (11) and outer spindle nut (12) on spindle (13).



**4-68. HUB AND BRAKEDRUM MAINTENANCE (M870) (continued).**

11. Bend two ears of washer (11) over flat surface of outer spindle nut (12) using ball-peen hammer and chisel.
12. Line up holes and install new gasket (9) on hub (10).
13. Line up holes and install access cover (6) on gasket (9).
14. Install six screws (7) and new lockwashers (8) on hub (10) and access cover (6).
15. Put light film of oil on new gasket (5) and put gasket (5) in place on access cover (6).
16. Press window (2) in place on access cover (6).
17. Put retainer ring (4) in place on access cover (6) and line up holes.
18. Install six screws (3) in retainer ring (4).
19. Install vent plug (1) in window (2).

**FOLLOW-ON TASKS:**

- Lubricate wheel bearings (Appendix J).
- Install tire and wheel assembly (para 3-9).
- Adjust brakes (para 4-47).

## 4-69. HUB AND BRAKEDRUM MAINTENANCE (M870A1).

### *This Task Covers:*

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

### *Initial Setup:*

#### **Tools/Test Equipment:**

- Common no. 1 tool set (Item 6, Appendix B)
- Tool kit, general mechanic's: automotive (Item 7, Appendix B)
- Body, seal inserter (Item 1, Appendix D)
- Guide, bearing insertion (Item 2, Appendix D)
- Head, axle tool (Item 3, Appendix D)
- Inserter, seal (Item 4, Appendix D)

#### **Materials/Parts:**

- Lubricating oil (Item 10, Appendix F)

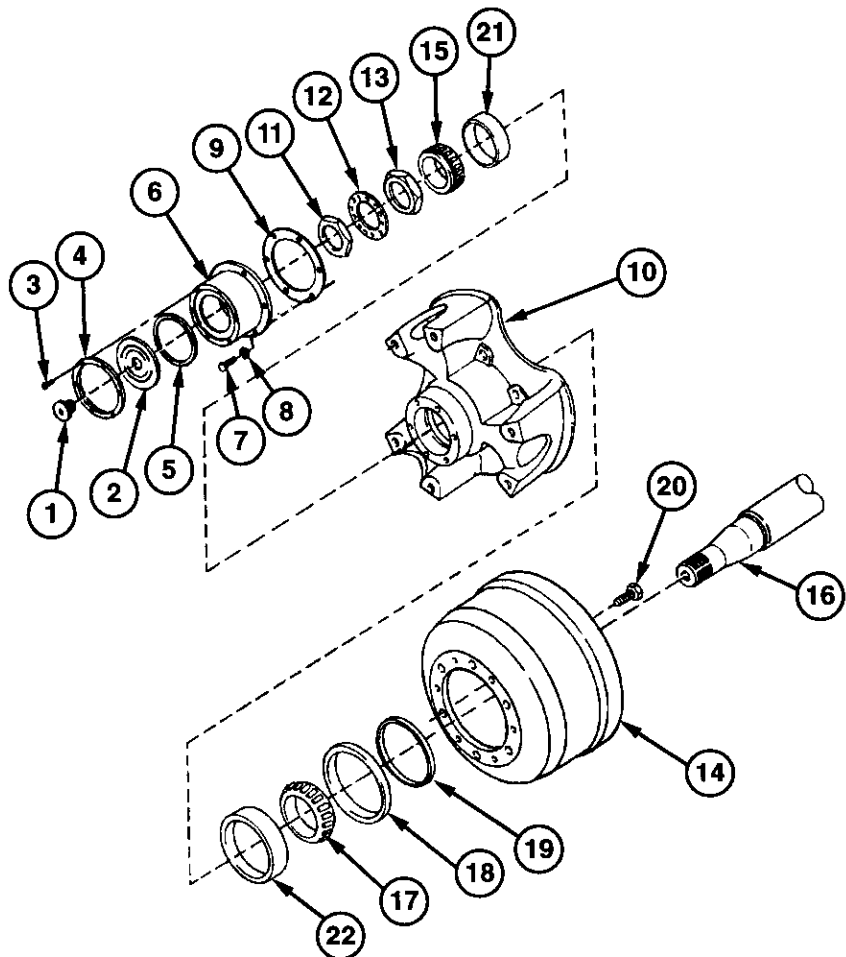
- Rag (Item 15, Appendix F)
- Sealing compound (Item 16, Appendix F)
- Solvent, drycleaning (Item 19, Appendix F)
- Gasket (Item 5, Appendix I)
- Gasket (Item 6, Appendix I)
- Lockwasher (7) (Item 13, Appendix I)

#### **Equipment Conditions:**

- Tire and wheel assembly removed (para 3-10).
- Air reservoirs charged (para 3-8).

### **a. REMOVAL**

1. Remove vent plug (1) from window (2).
2. Remove six screws (3) from retainer ring (4).
3. Remove retainer ring (4), window (2), and gasket (5) from access cover (6). Discard gasket.
4. Remove six screws (7) and lockwashers (8) from access cover (6). Discard lockwashers.
5. Remove access cover (6) and gasket (9) from hub (10). Discard gasket.
6. Remove outer spindle nut (11), locking (12), and inner spindle nut (13) from hub (10). Discard locking.
7. Pull hub (10) and brakedrum (14) forward slightly, then push back to expose outer bearing cone (15). Remove outer bearing cone (15) from spindle (16).



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**4-69. HUB AND BRAKEDRUM MAINTENANCE (M870A1) (continued).**

---

8. Remove hub (10) and brakedrum (14) from spindle (16).
9. Using hammer and drift, remove inner bearing cone (17) and seal (18) from hub (10). If damaged, remove seal ring (19) from spindle (16) and discard seal ring.
10. Remove six capscrews (20) from hub (10) and brakedrum (14). Separate hub (10) from brakedrum (14).
11. Remove inner and outer bearing cups (21 and 22) from hub (10).

**b. CLEANING**

1. Remove all buildup of dirt from hub and brakedrum components with a soft rag.

**WARNING**

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

2. Using a clean, soft rag, thoroughly clean all parts with drycleaning solvent.

**WARNING**

**Particles blown by compressed air are hazardous. Failure to wear protective goggles when drying metal parts could cause serious eye injury.**

**CAUTION**

**Do not dry bearings with high-pressure compressed air. Spinning will cause damage to bearings.**

3. Dry all metal parts with low-pressure compressed air.

**c. INSPECTION**

1. Inspect flange area and hub (10) for cracks. Replace hub if damaged.
2. Check outer and inner bearing cones (15 and 17) for cracks, wear, or pitting on rollers. Replace bearing cones if damaged.
3. Inspect inner and outer bearing cups (21 and 22) for pits, grooves, or flaking. Replace bearing cups if damaged.

## 4-69. HUB AND BRAKEDRUM MAINTENANCE (M870A1) (continued).

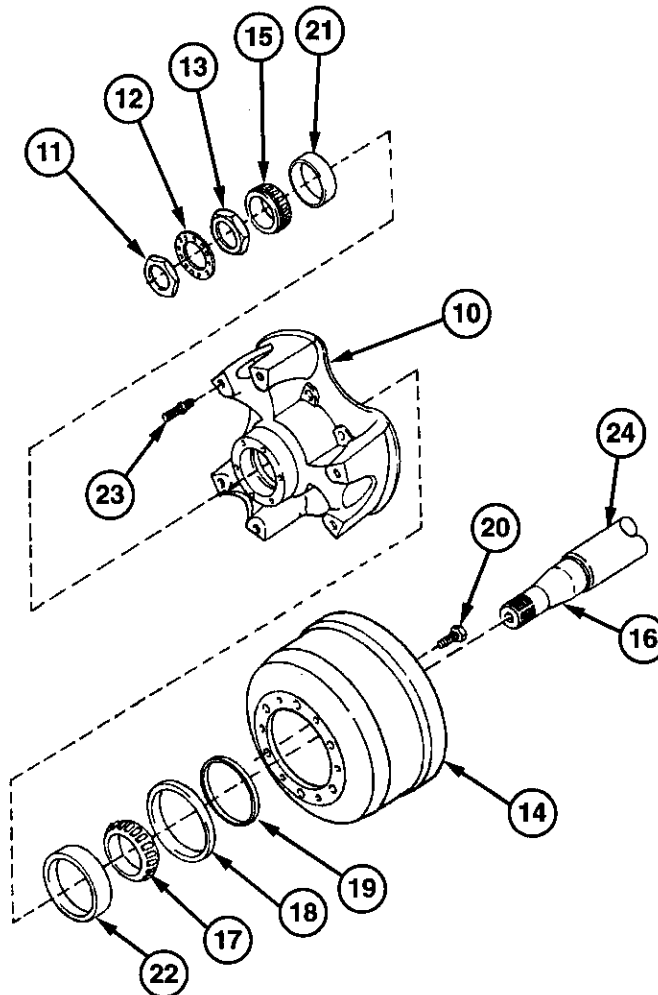
### NOTE

Replace damaged or broken studs in groups of three, the damaged or broken stud and the studs on both sides.

4. Inspect studs (23) for damaged threads or breaks. Remove and replace studs if damaged.
5. Inspect brakedrum (14) for pitting or scoring. If brakedrum (14) is pitted or scored, notify Direct Support maintenance.
6. Inspect spindle (16) for pitting and grooves. If spindle (16) is damaged, notify Direct Support maintenance.

### d. INSTALLATION

1. Install studs (23)  $2\frac{1}{32}$  inches (5.16 cm) deep, if removed.



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**4-69. HUB AND BRAKEDRUM MAINTENANCE (M870A1) (continued).**

---

2. Remove all burrs from hub (10) and thoroughly clean entire wheel cavity.
3. Using brass drift, install inner and outer bearing cups (21 and 22) in hub (10).
4. Install hub (10) on brakedrum (14).
5. Secure hub (10) to brakedrum (14) with six capscrews (20). Torque capscrews to 175 ft-lb (327 N•m). Be sure indentation in brakedrum (14) is between two spokes in hub (10).
6. Lay hub (10) and brakedrum (14) hub side down. Thoroughly oil inner bearing cone (17) and place it in inner bearing cup (21).
7. Apply a thin coat of sealing compound on outside diameter of seal (18), and position seal (18) in starting position in hub bore. Place seal inserter and bearing insertion guide on seal with handle in vertical position. Strike tool with a sharp blow to start seal (18) into bore. Drive seal (18) into bore until completely seated. Be sure there is at least  $\frac{1}{32}$ -inch (8 mm) clearance between inner bearing cone (17) and seal (18).

**NOTE**

Do steps 8 through 10 only if seal ring was removed.

8. Thoroughly clean spindle (16) and axle shoulder (24). Remove any burrs on axle shoulder (24) and any foreign matter in threaded area. Apply thin coat of sealing compound to outside diameter of axle shoulder (24).
9. Place seal ring (19), seal inserter, and axle tool head on axle. Tap end of axle tool head to start seal ring (19) into axle shoulder (24) and drive until axle tool head is against bottom of axle shoulder (24).
10. Check position of seal ring (19). Edge of ring should be flush with shoulder face. If necessary, place axle tool head back in position and repeat step 9. Remove any excess sealing compound.

**CAUTION**

**Damaged seal or seal ring will allow lubricant to leak, causing damage to equipment.  
If seal and/or seal ring is damaged while installing the hub and brakedrum, replace it.**

11. Install assembled hub (10) and brakedrum (14) over spindle (16), being careful to align wheel bore with axle. Do not damage seal ring (19) and seal (18).

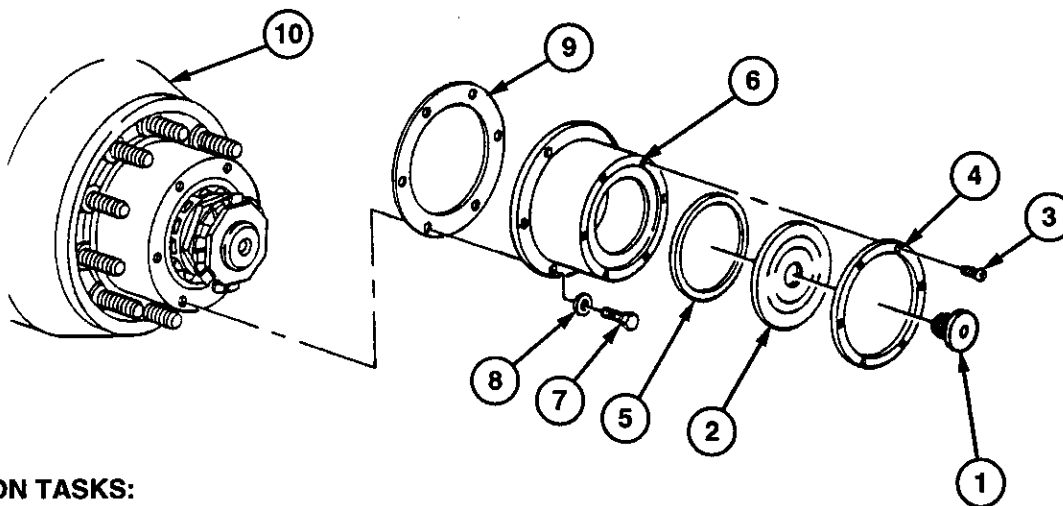
**NOTE**

Support hub and brakedrum assembly until outer bearing cone and spindle nut are installed.

12. Install outer bearing cone (15) on hub (10).
13. Install inner spindle nut (13) on hub (10) with guide pin facing outward. Torque inner spindle nut (13) to 75 ft-lb (101.7 N•m), then rotate brakedrum (14) and retorquer. Loosen inner spindle nut (13)  $\frac{1}{4}$  turn. Install new lockring (12) and outer spindle nut (11) on spindle (16). Torque outer spindle nut (11) to 200 ft-lb (271 N•m).

#### 4-69. HUB AND BRAKEDRUM MAINTENANCE (M870A1) (continued).

14. Line up holes and install new gasket (9) on hub (10).
15. Line up holes and install access cover (6) on gasket (9).
16. Install six new lockwashers (8) and screws (7) on hub (10) and access cover (6).
17. Apply light film of lubricating oil to new gasket (5) and install on access cover (6).
18. Press window (2) in place on access cover (6).
19. Install retainer ring (4) on access cover (6), and line up holes.
20. Install six screws (3) in retainer ring (4).
21. Install vent plug (1) in window (2).



#### FOLLOW-ON TASKS:

- Install tire and rim assembly (para 3-10).
- Adjust brakes (para 4-47).

#### 4-70. WHEEL AND TIRE REPAIR (M870 and M870A1).

For wheel and tire repairs, refer to TM 9-2610-200-14.

## Section IX. FRAME AND TOWING ATTACHMENTS MAINTENANCE

Paragraph Number	Paragraph Title	Page Number
4-71	General .....	4-155
4-72	Outrigger Replacement (M870) .....	4-155
4-73	Hook Fastener Replacement .....	4-156
4-74	Locking Pin Replacement .....	4-158
4-75	Kingpin Replacement .....	4-160
4-76	Shackle Replacement (M870A1) .....	4-161

**4-71. GENERAL.**

This section provides information for performing Unit level frame and towing attachment repairs on the M870 and M870A1 semitrailers.

**4-72. OUTRIGGER REPLACEMENT (M870).**

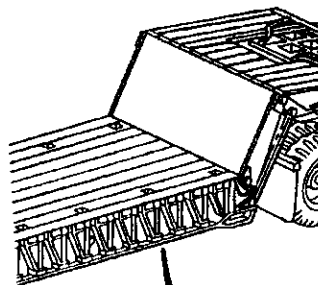
*This Task Covers:*

a. Removal

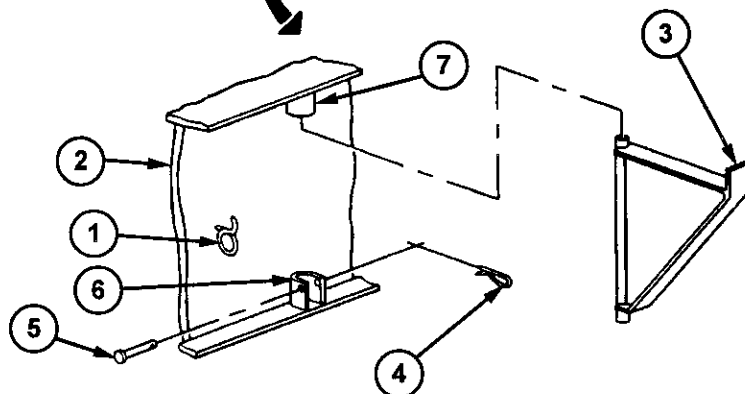
b. Installation

**a. REMOVAL**

1. Pull spring-loaded hook fastener (1) away from frame (2) to release outrigger (3).
2. Swing out outrigger (3).
3. Remove hairpin (4) from retaining pin (5).
4. Remove retaining pin (5) from lower yoke (6).
5. Remove bottom of outrigger (3) from lower yoke (6). Lower outrigger (3) to clear upper yoke (7).

**b. INSTALLATION**

1. Install outrigger (3) in upper yoke (7) and lift as high as possible.
2. Install outrigger (3) in lower yoke (6).
3. Install retaining pin (5) in lower yoke (6) and outrigger (3).
4. Install hairpin (4) in retaining pin (5).
5. Swing outrigger (3) in as far as possible.
6. Pull hook fastener (1) from frame (2), rotate over edge of outrigger (3), and release.

**FOLLOW-ON TASKS:**

- None

#### 4-73. HOOK FASTENER REPLACEMENT.

***This Task Covers:***

- a. Removal

b. Installation

**Initial Setup:**

**Tools/Test Equipment:**

**References:** TC 9-237

- Common no. 1 tool set (Item 6, Appendix B)

**Personnel Required: Two**

**a. REMOVAL**

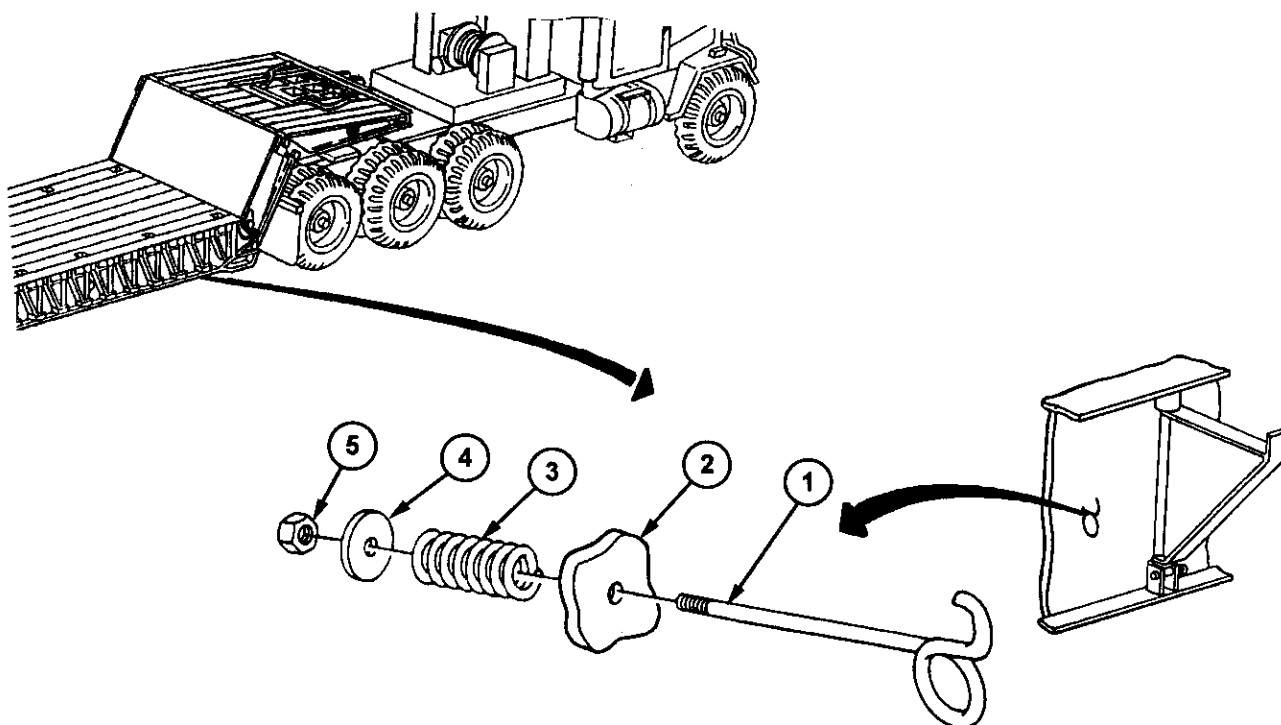
**WARNING**

**For the M870, be sure wheels are chocked before starting the procedure. Failure to do so could result in injury to personnel.**

## NOTE

There are 25 hook fasteners on the semitrailer. This procedure is for replacement of any one hook fastener.

1. Using bolt cutters, cut off hook fastener (1) from frame (2).





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**4-73. HOOK FASTENER REPLACEMENT (continued).**

---

**NOTE**

The M870 does not have a nut.

2. Remove fastener spring (3), washer (4), nut (5), and hook fastener (1) from frame (2).

**b. INSTALLATION**

1. Have assistant push hook fastener (1) through outside of frame (2) as far as possible and hold in position.

**NOTE**

The M870 does not have a nut. Weld washer to hook fastener.

2. Install fastener spring (3) and washer (4) on hook fastener (1) and push against inside of frame (2) as far as possible without squeezing fastener spring (3). For the M870, weld washer (4) on hook fastener (1). For the M870A1, install nut (5) on hook fastener (1).
3. Weld nut (5) and washer (4) to hook fastener (1) (refer to TC 9-237).

**FOLLOW-ON TASKS:**

- None

## 4-74. LOCKPIN REPLACEMENT.

*This Task Covers:*

a. Removal

b. Installation

*Initial Setup:*

**Tools/Test Equipment:**

- Common no.1 tool set (Item 6, Appendix B)

- Semitrailer coupled to towing vehicle (para 2-8).

**Equipment Conditions:**

- Semitrailer unloaded (para 2-10).

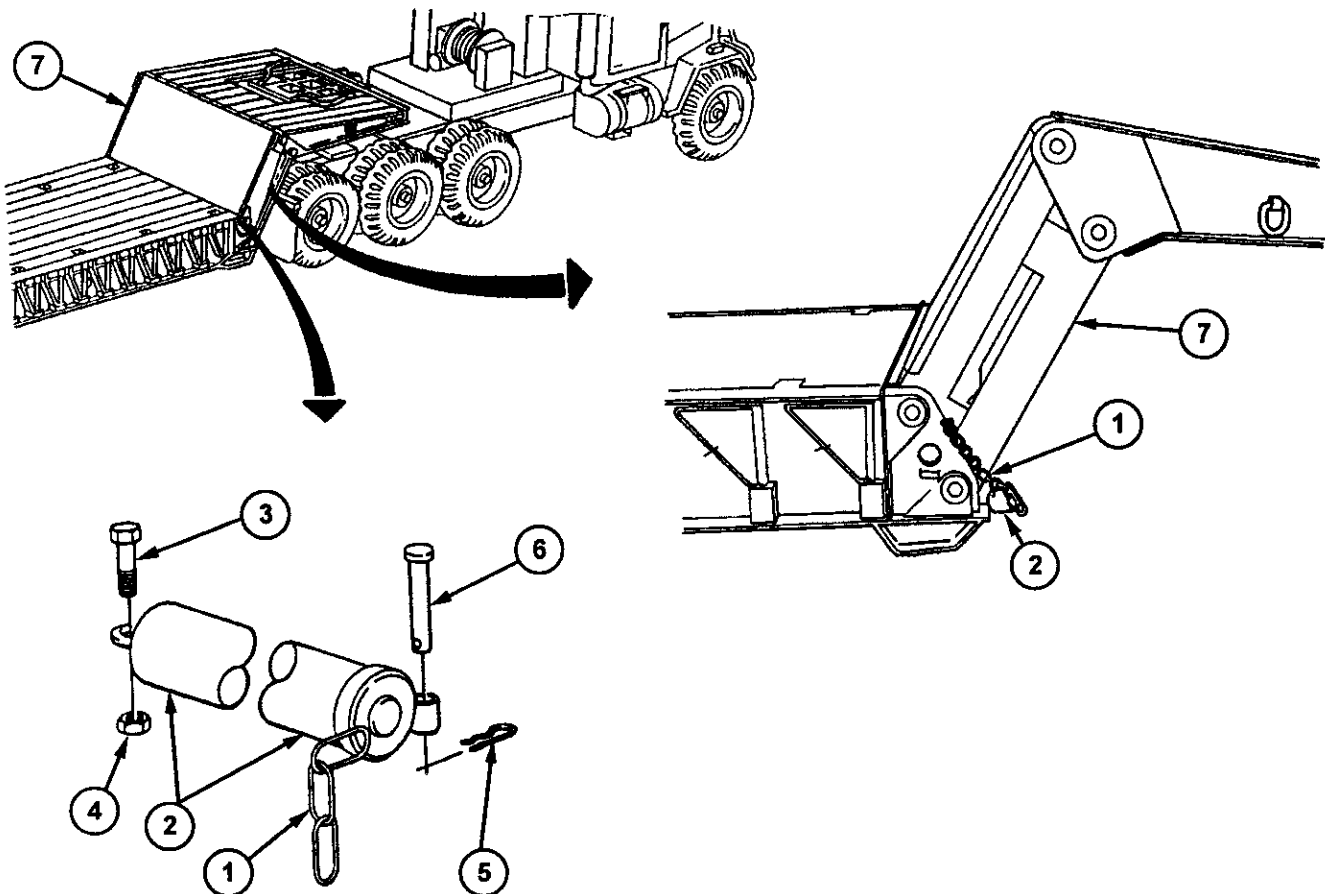
**Personnel Required: Two**

### NOTE

There are two locking pins. This procedure is the same for both the left-side and the right-side locking pin.

#### a. REMOVAL

1. Using bolt cutter, cut chain (1) at link closest to lockpin (2).



---

**4-74. LOCKPIN REPLACEMENT (continued).**

---

**NOTE**

Steps 2 through 4 apply only to the M870.

2. Remove safety bolt (3) and safety nut (4) from lockpin (2).
3. Remove safety clip (5) from safety pin (6).
4. Remove safety pin (6) from lockpin (2).
5. Remove lockpin (2) from gooseneck (7).

**b. INSTALLATION**

1. Install lockpin (2) in gooseneck (7).

**NOTE**

Steps 2 through 4 apply only to the M870.

2. Install safety pin (6) in lockpin (2).
3. Install safety clip (5) in safety pin (6).
4. Hand-tighten safety nut (4) and safety bolt (3) on lockpin (2).
5. While assistant holds chain (1) in place, weld last link to lockpin (2).

**FOLLOW-ON TASKS:**

- None

---

## 4-75. KINGPIN REPLACEMENT.

---

*This Task Covers:*

- a. Removal
  - b. Installation
- 

*Initial Setup:*

**Tools/Test Equipment:**

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

**Equipment Conditions:**

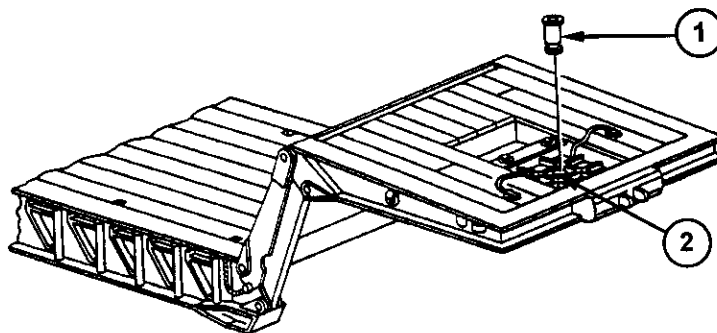
- Gooseneck in upright position (para 2-8).
- 

**a. REMOVAL**

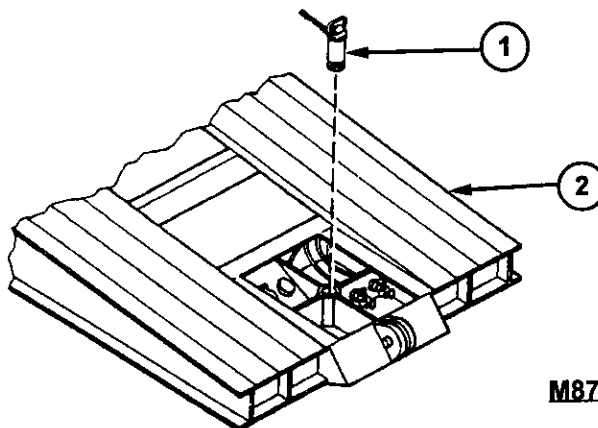
1. Using hammer, drive kingpin (1) until loose.
2. Remove kingpin (1) from gooseneck (2).

**b. INSTALLATION**

1. Install kingpin (1) in gooseneck (2).
2. Make sure kingpin (1) is seated. It may be necessary to seat kingpin (1) using hammer.



**M870**



**M870A1**

**FOLLOW-ON TASKS:**

- None

---

**4-76. SHACKLE REPLACEMENT (M870A1).**

---

*This Task Covers:*

a. Removal

b. Installation

---

*Initial Setup:*

**Tools/Test Equipment:**

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

---

**a. REMOVAL**

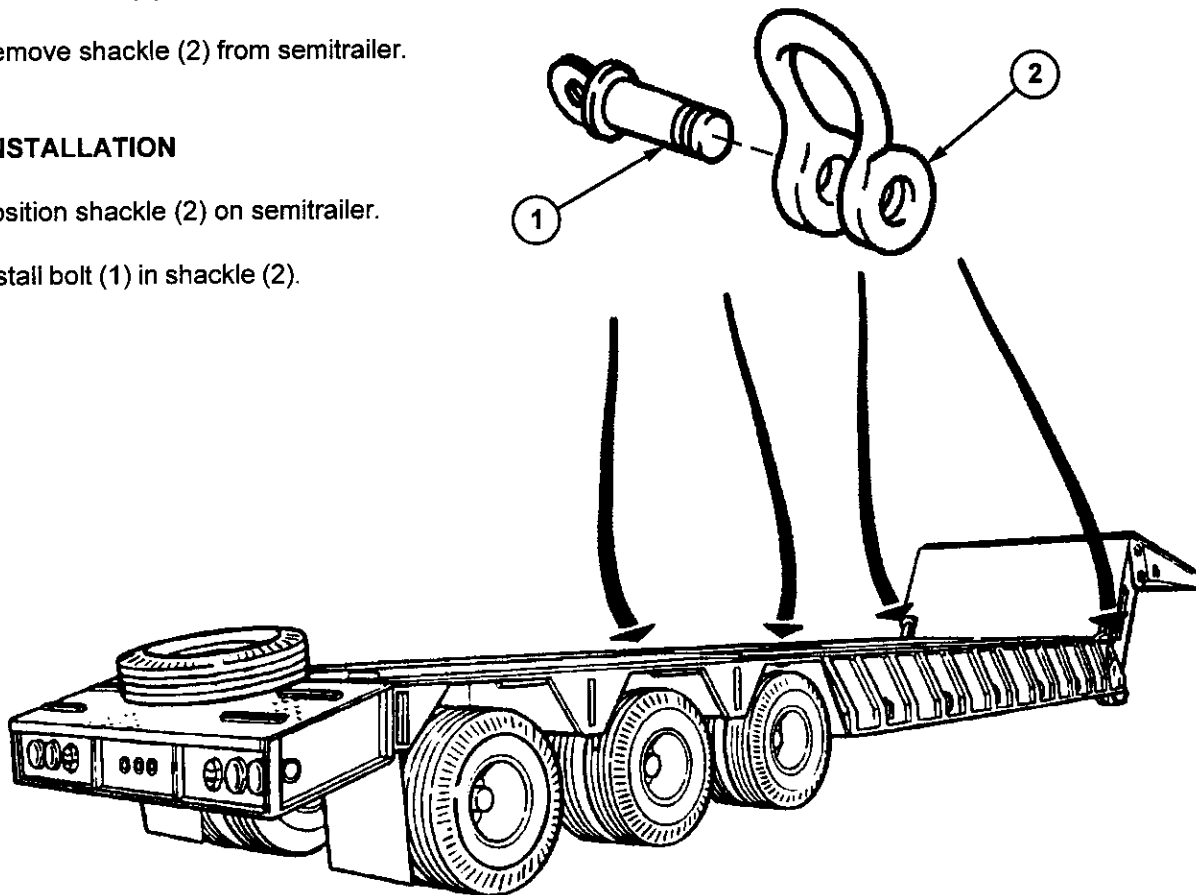
**NOTE**

There are four shackles on the semitrailer. This procedure is for the replacement of any one shackle.

1. Remove bolt (1) from shackle (2).
2. Remove shackle (2) from semitrailer.

**b. INSTALLATION**

1. Position shackle (2) on semitrailer.
2. Install bolt (1) in shackle (2).



**FOLLOW-ON TASKS:**

- None

## Section X. BODY MAINTENANCE

**4-77. PLANK REPLACEMENT.***This Task Covers:*

a. Removal

b. Installation

*Initial setup***Tool/Tests Equipment:**

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

- Gooseneck in upright position (para 2-8).

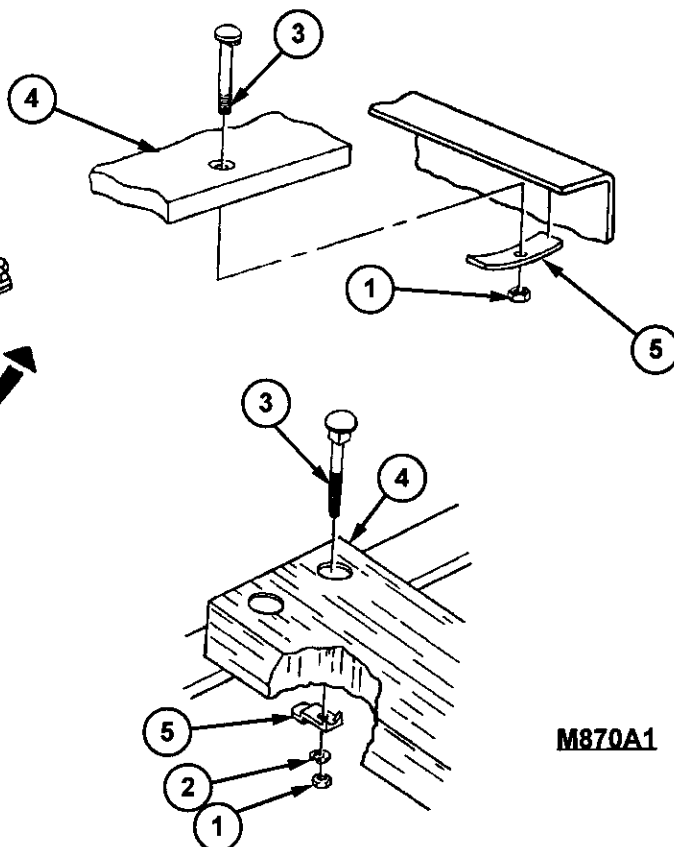
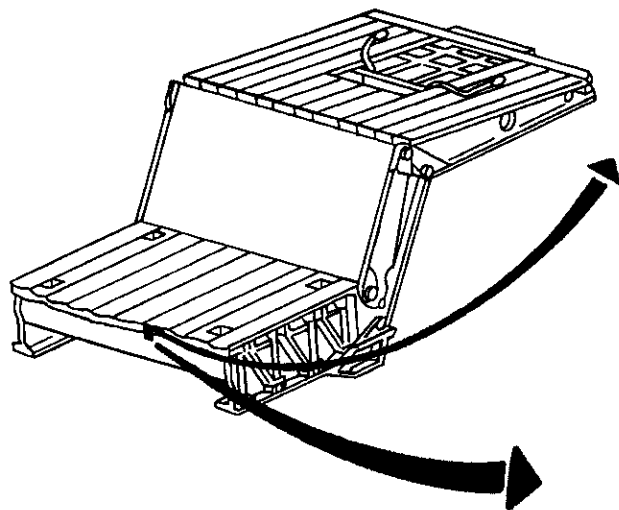
**Personnel Required:** Two**Equipment Conditions:**

- Wheels chocked (para 2-10).

**a. REMOVAL****NOTE**

- There are numerous planks in the deck. This procedure is for the replacement of any one plank.
- Before starting this procedure, measure planks to be replaced and cut new planks to the required dimensions.
- Washers are used on the M870A1 only.

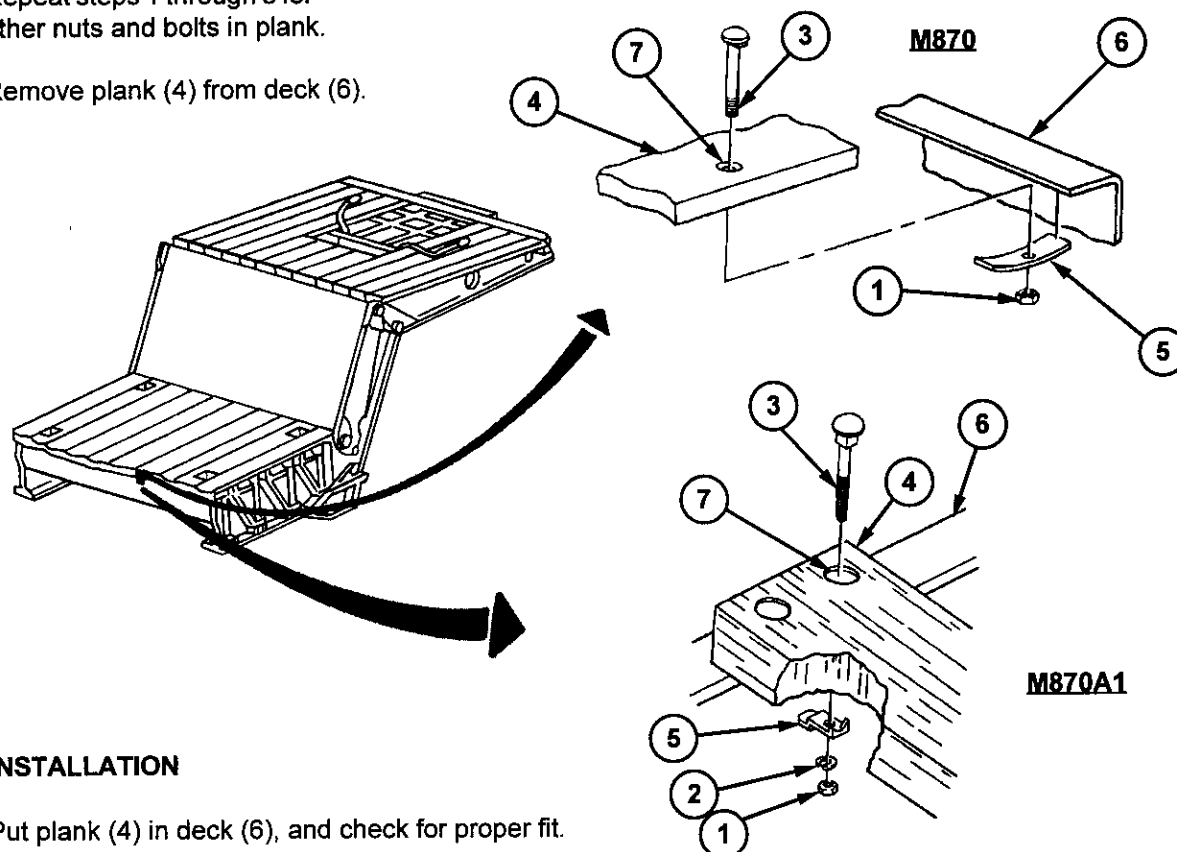
1. Remove nut (1) and washer (2) from bolt (3).
2. Using ball peen hammer and drift pin, drive bolt (3) out of plank (4) and clip (5).



**4-77. PLANK REPLACEMENT (continued).****NOTE**

Clips on the M870 are tack-welded to semitrailer frame. If one is damaged or loose, notify Direct Support maintenance.

3. Check bolt (3), washer (2), and nut (1). Replace if damaged or rusty.
4. Repeat steps 1 through 3 for other nuts and bolts in plank.
5. Remove plank (4) from deck (6).

**b. INSTALLATION**

1. Put plank (4) in deck (6), and check for proper fit.
2. Have assistant hold plank (4) in place from top side of deck. Drill 3/8-inch holes from underside of deck using clips (5) as a guide for proper alignment. Be sure holes are drilled vertically.
3. Using 7/8-inch drill bit, countersink holes (7) 1/2-inch deep over new bolt holes on top side of plank (4).
4. From the top side of deck, hammer bolt (3) into plank (4) and clip (5) as far as possible. Repeat for rest of holes.

**NOTE**

Washers are used on the M870A1 only.

5. Install washer (2) and nut (1) on bolt (3). Tighten until bolt is fully seated. Repeat for rest of washers (2) and nuts (1).

**FOLLOW-ON TASKS:**

- None

## Section XI. ACCESSORY ITEMS MAINTENANCE

Paragraph Number	Paragraph Title	Page Number
4-78	General .....	4-164
4-79	Data Plate Replacement (M870) .....	4-164
4-80	Data Plate Replacement (M870A1) .....	4-166
4-81	Splash Guard (Mud Flap) Replacement .....	4-167
4-82	Reflector Replacement (M870) .....	4-168
4-83	Reflector Replacement (M870A1) .....	4-169

**4-78. GENERAL.**

This section provides information for performing Unit level accessory item repairs on the M870 and M870A1 semitrailers.

**4-79. DATA PLATE REPLACEMENT (M870).**

*This Task Covers:*

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

*Initial Setup:*

**Tools/Test Equipment:**

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

- Solvent, drycleaning (Item 19, Appendix F)
- Drive screw (4) (Item 4, Appendix I)

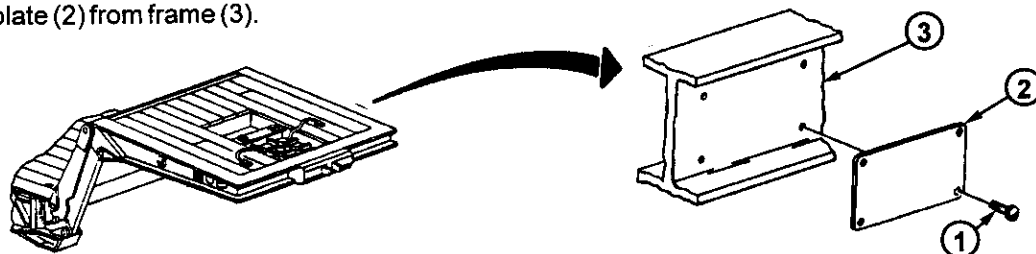
**Materials/Parts:**

- Rag (Item 15, Appendix F)

**a. REMOVAL****NOTE**

There are two methods for attaching vehicle data plate. If removing an adhesive attached plate, go to step 4. If removing a plate attached with drive screws, do steps 1 through 3 only.

1. Using ball-peen hammer and chisel, remove heads from four drive screws (1) in vehicle data plate (2).
2. Remove data plate (2) from frame (3).





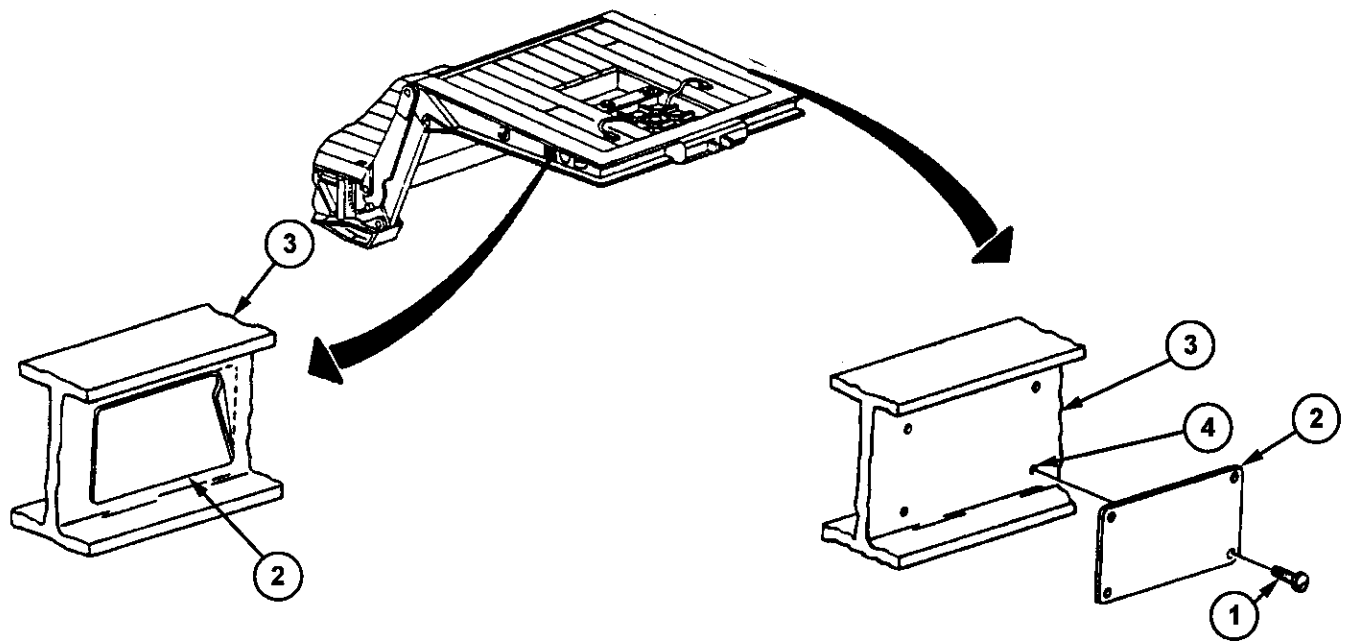
## 4-79. DATA PLATE REPLACEMENT (M870) (continued).

3. Drill out drive screw holes (4).

### **WARNING**

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

4. If data plate (2) is attached with adhesive, scrape it off frame (3) with putty knife. Thoroughly clean frame with drycleaning solvent and rag.



### b. INSTALLATION

#### **NOTE**

If replacing adhesive attached plate, do step 1 only. For plate attached with drive screws, do step 2 only.

1. Peel protective backing from data plate (2) and apply to frame (3) at location of old data plate.
2. Place data plate (2) in position on frame (3) and secure with four drive screws (1).

#### **FOLLOW-ON TASKS:**

- None

---

## 4-80. DATA PLATE REPLACEMENT (M870A1).

---

*This Task Covers:*

- a. Removal b. Installation
- 

*Initial Setup:*

**Tools/Test Equipment:**

- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

**Materials/Parts:**

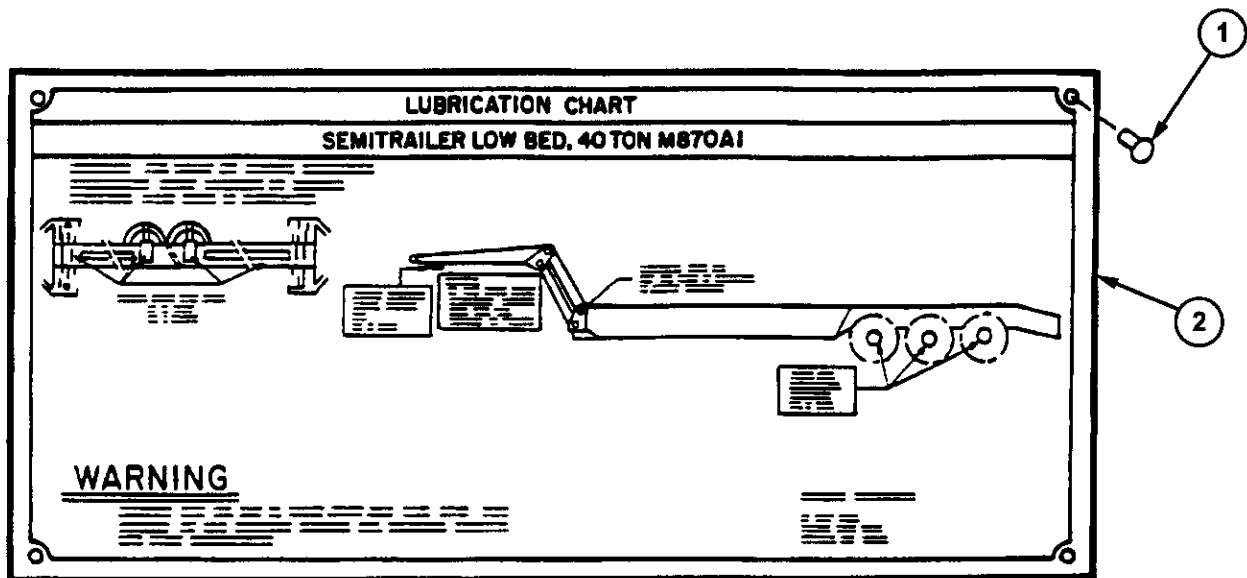
- Blind rivet (4) (Item 1, Appendix I)
- 

**a. REMOVAL**

1. Drill out four rivets (1) from data plate (2).
2. Remove data plate (2) from frame.

**b. INSTALLATION**

1. Place data plate (2) in position on frame.
2. Install four rivets (1) in data plate (2) and frame. Hammer rivets (1) until secure.



**FOLLOW-ON TASKS:**

- None

## 4-81. SPLASH GUARD (MUD FLAP) REPLACEMENT.

*This Task Covers:*

a. Removal

b. Installation

*Initial Setup:*

### Tools/Test Equipment:

- Tool kit, general mechanic's (Item 7, Appendix B)

### Materials/ Parts

- Lockwasher (4) (Item 12, Appendix I) (M870A1 only)

### a. REMOVAL

#### NOTE

Lockwashers are used on the M870A1 only.

1. Remove four nuts (1), lockwashers (2), and screws (3) from splash guard (4). Discard lockwashers.
2. Remove support bar (5) and splash guard (4) from mounting bracket (6).

### b. INSTALLATION

#### NOTE

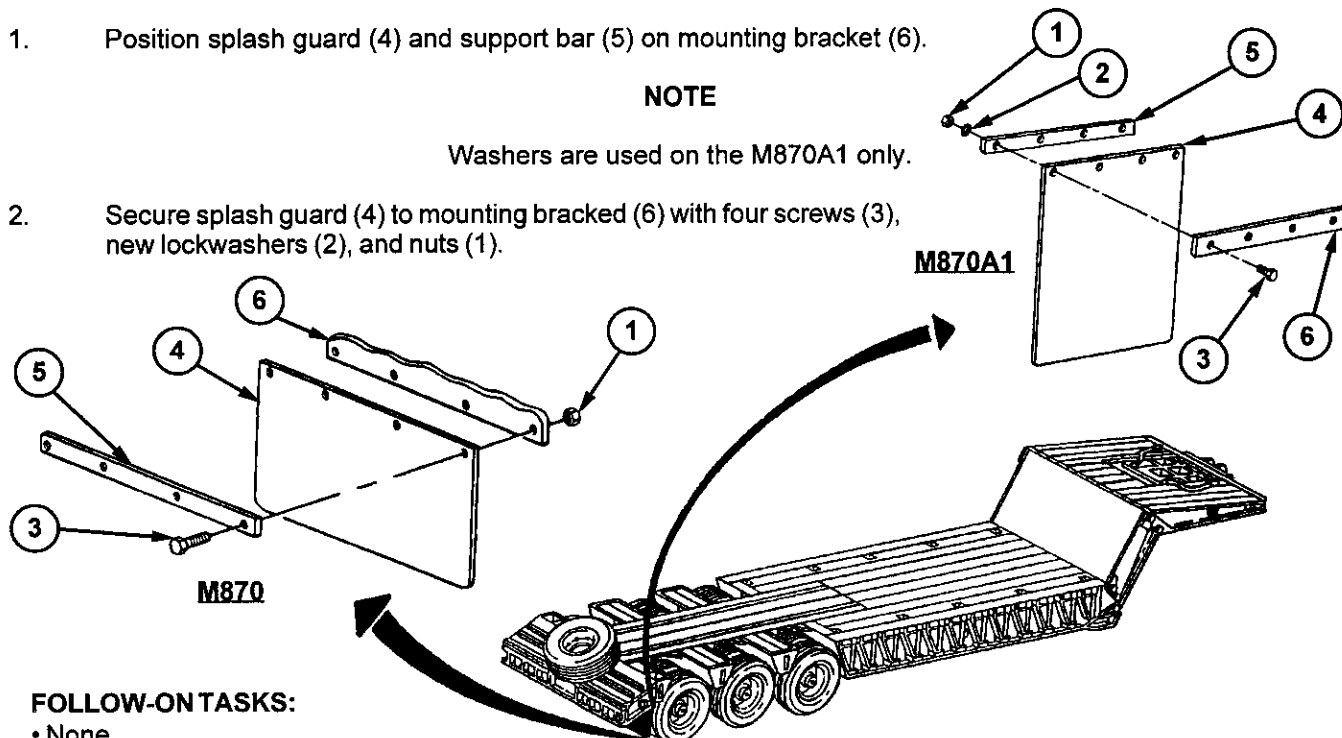
For information on making new splash guards, see Appendix G.

1. Position splash guard (4) and support bar (5) on mounting bracket (6).

#### NOTE

Washers are used on the M870A1 only.

2. Secure splash guard (4) to mounting bracket (6) with four screws (3), new lockwashers (2), and nuts (1).



### FOLLOW-ON TASKS:

- None

## 4-82. REFLECTOR REPLACEMENT (M870).

*This Task Covers:*

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

*Initial Setup:*

**Tools/Test Equipment:**

- Tool kit, general mechanic's (Item 7, Appendix B)

**Personnel Required:** Two

**Equipment Conditions:**

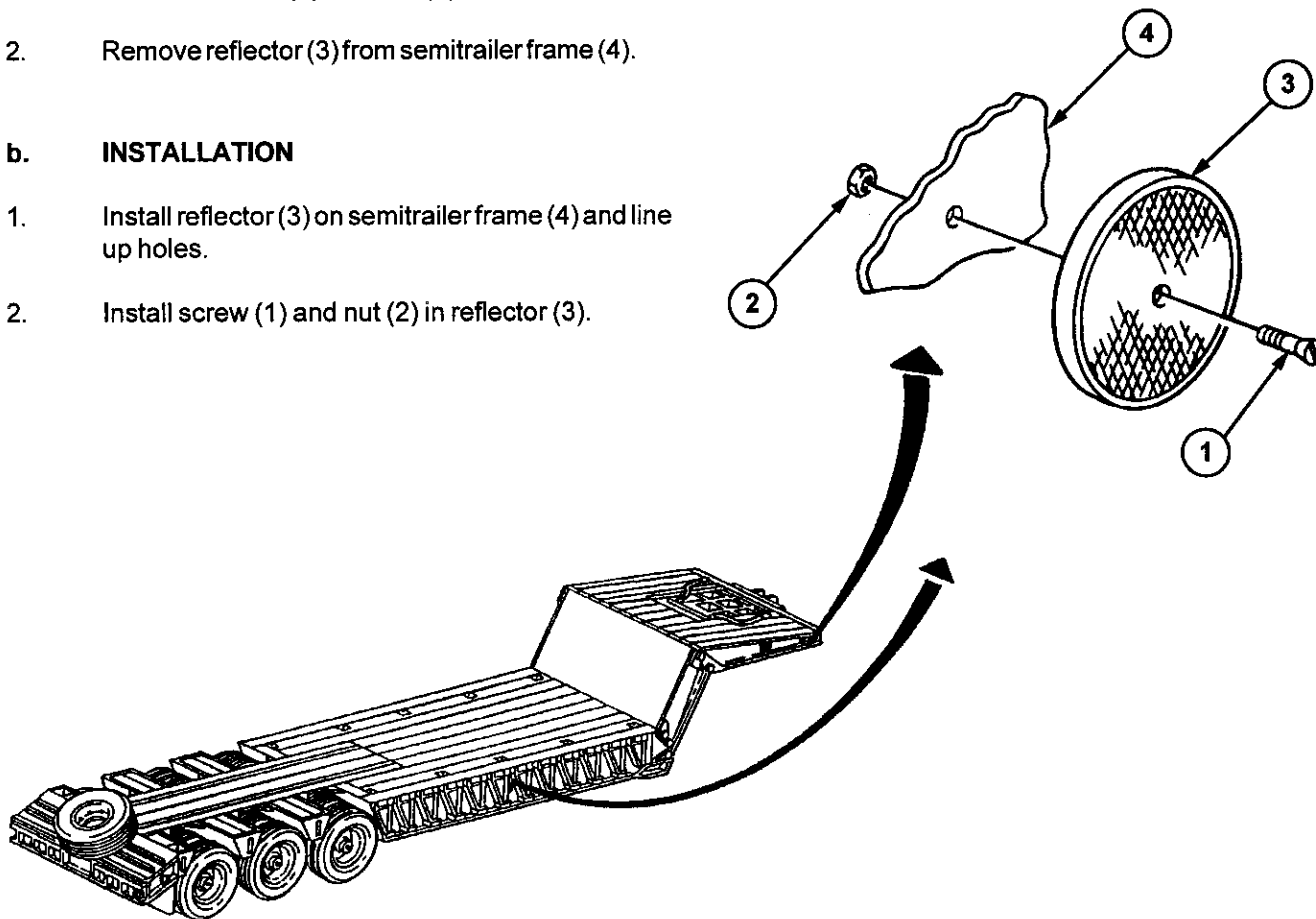
- Stoplight-taillight removed (replacement of rear corner reflectors only) (para 4-32).

**a. REMOVAL**

1. Remove screw (1) and nut (2) from reflector (3). It may be necessary for an assistant to hold nut.
2. Remove reflector (3) from semitrailer frame (4).

**b. INSTALLATION**

1. Install reflector (3) on semitrailer frame (4) and line up holes.
2. Install screw (1) and nut (2) in reflector (3).



**FOLLOW-ON TASKS:**

- None

#### 4-83. REFLECTOR REPLACEMENT (M870A1).

***This Task Covers:***

- a. Removal

b. Installation

**Initial Setup:**

**Tools/Test Equipment:**

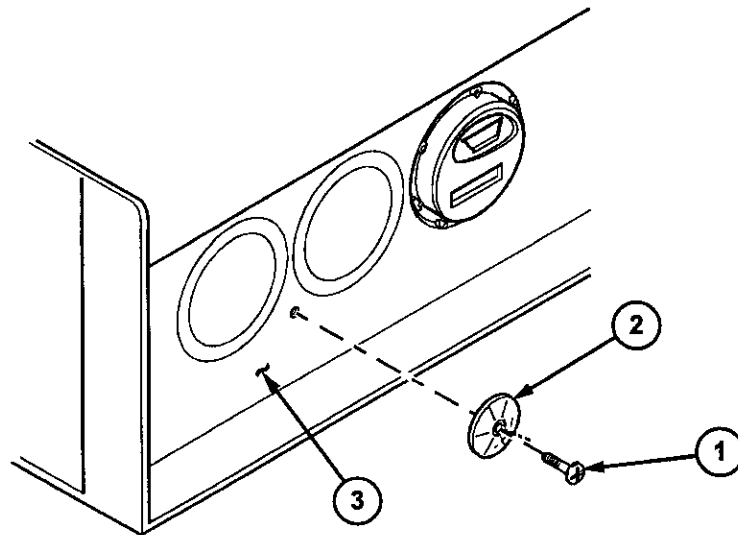
- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

**a. REMOVAL**

1. Remove screw (1) from reflector (2).
2. Remove reflector (2) from semitrailer frame (3).

## b. INSTALLATION

1. Install reflector (2) on frame (3).
2. Secure reflector (2) to frame (3) with screw (1).



### FOLLOW-ON TASKS:

- None

## Section XII. PREPARATION FOR STORAGE OR SHIPMENT

Paragraph Number	Paragraph Title	Page Number
4-84	General .....	4-170
4-85	Definition of Administrative Storage .....	4-170
4-86	Preparation of Equipment for Administrative Storage .....	4-170
4-87	Care of Equipment in Administrative Storage .....	4-172
4-88	Procedures for Common Components and Miscellaneous Items .....	4-173
4-89	Removal of Equipment from Administrative Storage .....	4-173
4-90	Preparation of Equipment for Shipment .....	4-173

### 4-84. GENERAL.

- a. This section contains requirements and procedures for the administrative storage of equipment that is issued to and in use by Army activities worldwide.
- b. The requirements specified herein are necessary to maintain the equipment in administrative storage in such a way as to achieve maximum readiness condition.
- c. Equipment that is placed in administrative storage should be capable of being readied to perform its mission within a 24-hour period, or as otherwise prescribed by the approving authority. Before equipment is placed in administrative storage, current preventive maintenance checks and services (PMCS) procedures should be completed and deficiencies corrected.
- d. Report equipment in administrative storage in Materiel Readiness and Unit Readiness reports as prescribed for all reportable equipment (refer to AR 200-1).
- e. Perform inspections, maintenance services, and lubrication as prescribed herein.
- f. Records and reports to be maintained for equipment in administrative storage are those prescribed by DA Pam 738-750 for equipment in use.
- g. A 10 percent variance is acceptable on time, running hours, or mileage used to determine maintenance actions.

### 4-85. DEFINITION OF ADMINISTRATIVE STORAGE.

The placement of equipment in administrative can be for short periods of time when a shortage of maintenance effort exists. Items should be ready for use within the time factors determined by the directing authority. During the storage period, appropriate maintenance records will be kept.

### 4-86. PREPARATION OF EQUIPMENT FOR ADMINISTRATIVE STORAGE.

#### Storage Site

- a. Select the best available site for administrative storage. Separate stored equipment from equipment in use. Conspicuously mark the area "Administrative Storage."

---

**4-86. PREPARATION OF EQUIPMENT FOR ADMINISTRATIVE STORAGE (continued).**

---

- b. Covered space is preferred.
- c. Open sites should be improved hardstand, if available. Unimproved sites should be firm, well drained, and free of excessive vegetation.

**Storage Plan**

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

**Maintenance Service and Inspection**

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

**Auxiliary Equipment and Basic Issue Items**

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

**Correction of Shortcomings and Deficiencies**

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

**Lubrication**

Lubricate equipment in accordance with instructions in Appendix J.

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

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

- a. Clean dirt, grease, and other contaminants from the equipment, but do not use vapor degreasing.

---

#### **4-86. PREPARATION OF EQUIPMENT FOR ADMINISTRATIVE STORAGE (continued).**

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- b. Remove rust and damaged paint by scraping, wire brushing, sanding, or buffing. Sand to a smooth finish and spot-paint as necessary (refer to TB 43-0209).
- c. After cleaning and drying, immediately coat unpainted metal surfaces with oil or grease, as appropriate (Appendix J).

#### **CAUTION**

**To prevent corrosion, place a piece of barrier material between desiccant bags and metal surfaces.**

#### **NOTE**

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

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

---

#### **4-87. CARE OF EQUIPMENT IN ADMINISTRATIVE STORAGE.**

---

##### **Maintenance Services**

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

##### **Inspection**

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

- a. Low or flat tires.
- b. Condition of preservatives, seals, and wraps.
- c. Torn, frayed, or split canvas covers and tops.
- d. Corrosion or other deterioration.
- e. Missing or damaged parts.
- f. Water in compartments.
- g. Any other readily recognizable shortcomings or deficiencies.

##### **Repair During Administrative Storage**

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



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**4-88. PROCEDURES FOR COMMON COMPONENTS AND MISCELLANEOUS ITEMS.**

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**Tires**

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

**Air Lines and Air Reservoirs**

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

**Seals**

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

---

**4-89. 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.

---

**4-90. PREPARATION OF EQUIPMENT FOR SHIPMENT.**

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- a. Refer to FM 55-21, TM 55-2200-001-12, and TM 743-200-1 for additional instructions on processing, storage, and shipment of materiel.
- b. Trailers that have been removed from storage for shipment do not have to be reprocessed if they will reach their destination within the administrative storage period. Reprocess only if inspection reveals any corrosion or if anticipated in-transit weather conditions make it necessary.
- c. When a trailer is received and has already been processed for domestic shipment, as indicated on DD Form 1397, the trailer does not have to be reprocessed for storage unless corrosion and deterioration are found during the inspection upon receipt. List, on SF Form 364, all discrepancies found because of poor preservation, packaging, marking, handling, loading, storage, or excessive preservation. Repairs that cannot be handled by the receiving unit must have tags attached listing the needed repairs. A report of these conditions will be submitted by the Unit commander for action by an ordnance maintenance Unit.



## CHAPTER 5

### DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE

## Section I. ELECTRICAL SYSTEM MAINTENANCE

### 5-1. 24-VOLT RECEPTACLE REPAIR (M870A1).

***This Task Covers:***

- a. Disassembly                      b. Assembly

**Initial Setup:**

**Tools/Test Equipment:**

- Common no. 1 tool set (Item 6, Appendix B)

- Petrolatum, technical (Item 14, Appendix F)
- Solder (Item 18, Appendix F)

### Materials/Parts:

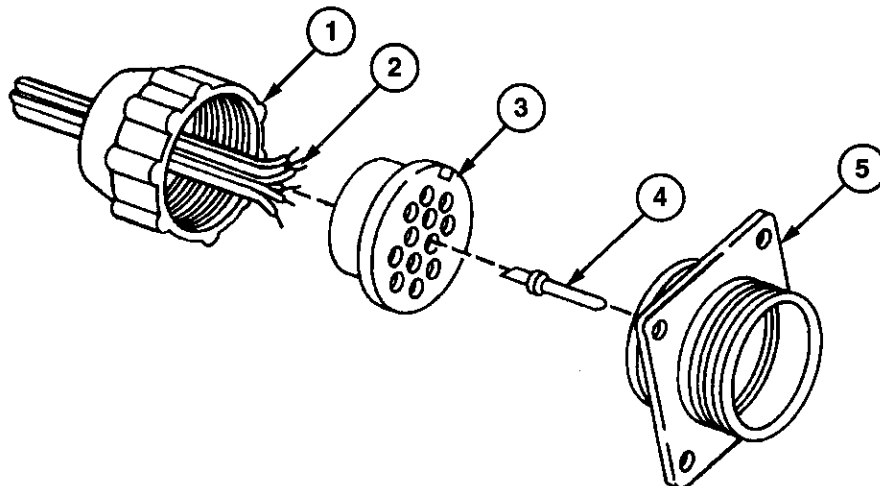
- Flux (Item 5, Appendix F)

**Equipment Conditions:**

- 24-volt receptacle removed (para 4-37).

**a. DISASSEMBLY**

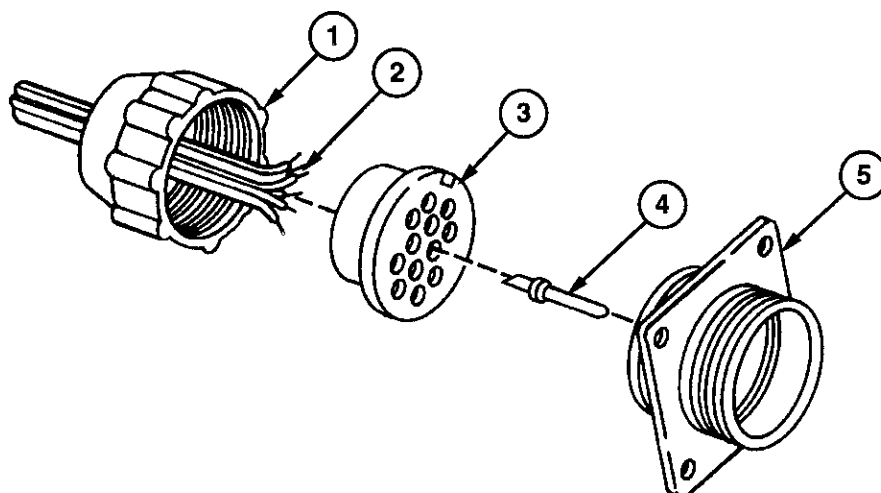
1. Unscrew grommet retaining nut (1), and slide nut (1) back on wires (2).
2. Slide grommet (3) onto wires (2).
3. Push pins (4) out of receptacle assembly grommet (5).
4. Tag wires (2) with the same letters that are printed on face of grommet (3).
5. Using soldering gun, heat solder well and remove pins (4) from ends of wires (2).
6. Pull wires (2) out of grommet (3) and nut (1).



## 5-1. 24-VOLT RECEPTACLE REPAIR (M870A1) (continued).

### b. ASSEMBLY

1. Slide nut (1) onto wires (2) with threads facing outward.
2. Put ends of wires (2) into back of grommet (3). Make sure wires (2) are matched with the corresponding pin letters printed on face of grommet (3).
3. Strip insulation on ends of wires (2) equal to depth of solder well in pins (4). Place solder well on ends of wires (2) and solder.
4. Coat receptacle assembly grommet (5) with light film of technical petroleum.
5. Install each pin (4) in rear of receptacle assembly grommet (5). Make sure the identifying letters are matched with the corresponding letters printed on face of grommet (3).
6. Push pins (4) into grommet (3) until seated. Push grommet (3) into receptacle assembly.
7. Install nut (1) on receptacle assembly grommet (5) and hand-tighten.



### FOLLOW-ON TASKS:

- Install 24-volt receptacle (para 4-37).

## Section II. AXLE MAINTENANCE

Paragraph Number	Paragraph Title	Page Number
5-2	General .....	5-3
5-3	Middle Axle Replacement (M870) .....	5-3
5-4	Middle Axle Replacement (M870A1) .....	5-9
5-5	Front and Rear Axle Replacement (M870) .....	5-15
5-6	Front and Rear Axle Replacement (M870A1) .....	5-18
5-7	Equalizing Beam Replacement (M870) .....	5-22
5-8	Equalizing Beam Replacement (M870A1) .....	5-26
5-9	Trunnion Tube and Bracket Replacement (M870) .....	5-30
5-10	Trunnion Tube Replacement (M870A1) .....	5-32

**5-2. GENERAL**

This section provides information for performing Direct Support level axle repairs on the M870 and M870A1 semitrailers.

**5-3. MIDDLE AXLE REPLACEMENT (M870).***This Task Covers:*

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

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

- Field maintenance tool set (Item 4, Appendix B)
- Tool kit, general mechanic's: automotive (Item 7, Appendix B)
- Trestle (6) (Item 1, Appendix B)

**Equipment Conditions:**

- Both radius rods removed (para 5-26).

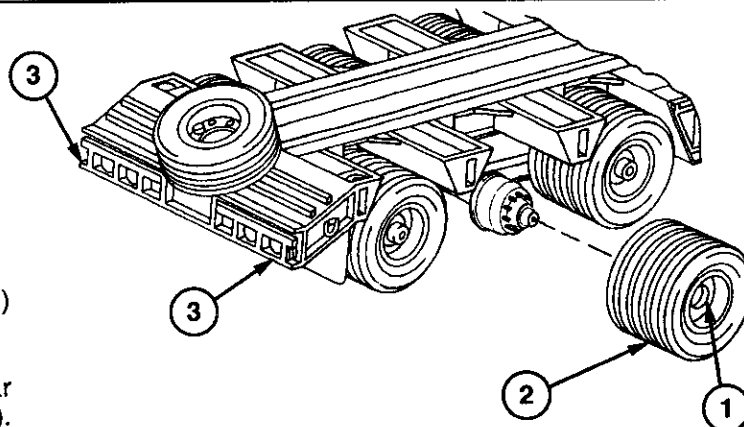
**Personnel Required:** Three**Materials/Parts:**

- Self-locking nut (Item 36, Appendix I)

**a. REMOVAL****NOTE**

For secure placement of jacks, it is recommended that this procedure be performed on hard floor surface.

1. Loosen, but do not remove, 10 lugnuts (1) on tire and wheel assembly (2).
2. Using hydraulic hand jack, raise two rear semitrailer corners (3) 32 inches (81 cm). Place trestles under corners.



## 5-3. MIDDLE AXLE REPLACEMENT (M870) (continued).

### WARNING

**Be certain equalizing beam is securely supported by trestle. Failure to do so could result in serious injury to personnel.**

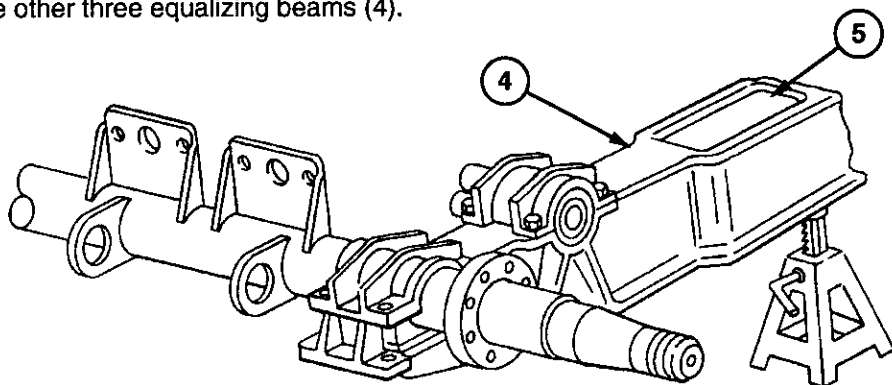
3. Using hydraulic hand jack, lift spring end of equalizing beam (4) about three inches. Put trestle under equalizing beam (4) just behind spring slot (5).

4. Remove hydraulic hand jack.

5. Repeat steps 3 and 4 for the other three equalizing beams (4).

6. Remove two tire and wheel assemblies (para 3-9).

7. Remove two hubs and brakedrums (para 4-68).



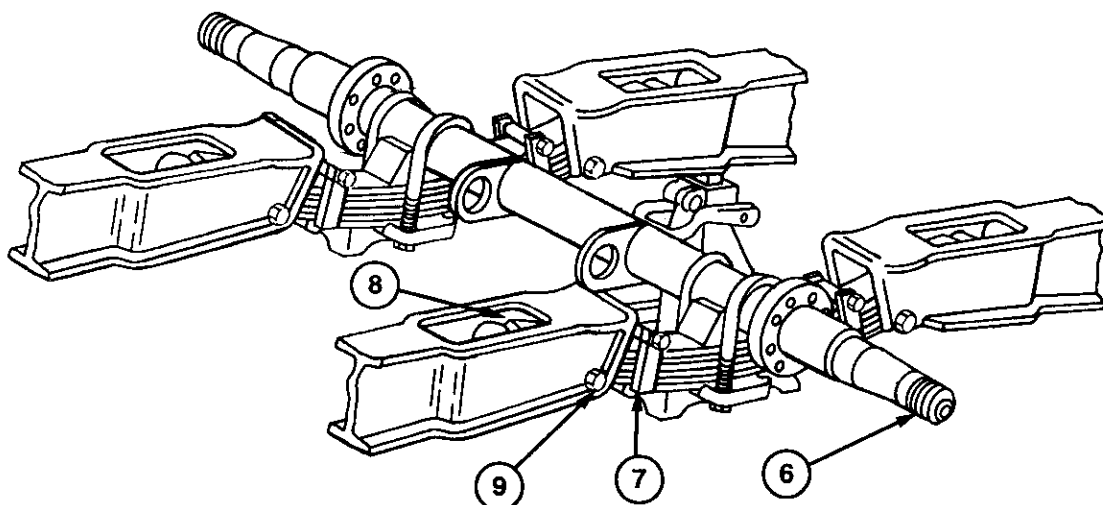
8. Remove two sets of brakeshoes (para 4-46).

9. Remove two spring brake chambers (para 4-53).

10. Remove two backing plates and camshafts (para 5-12).

11. Remove two slack adjusters (para 4-48).

12. Position dolly jack under balance point of middle axle (6). Lift axle (6) and two spring assemblies (7) until four spring ends (8) are clear of four support assemblies (9).

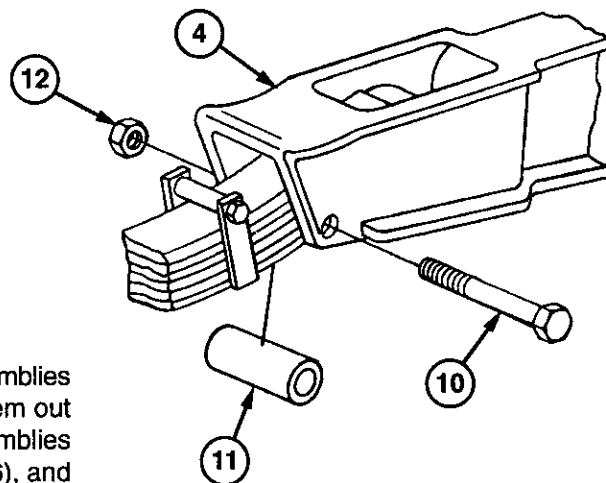


**5-3. MIDDLE AXLE REPLACEMENT (M870) (continued).**

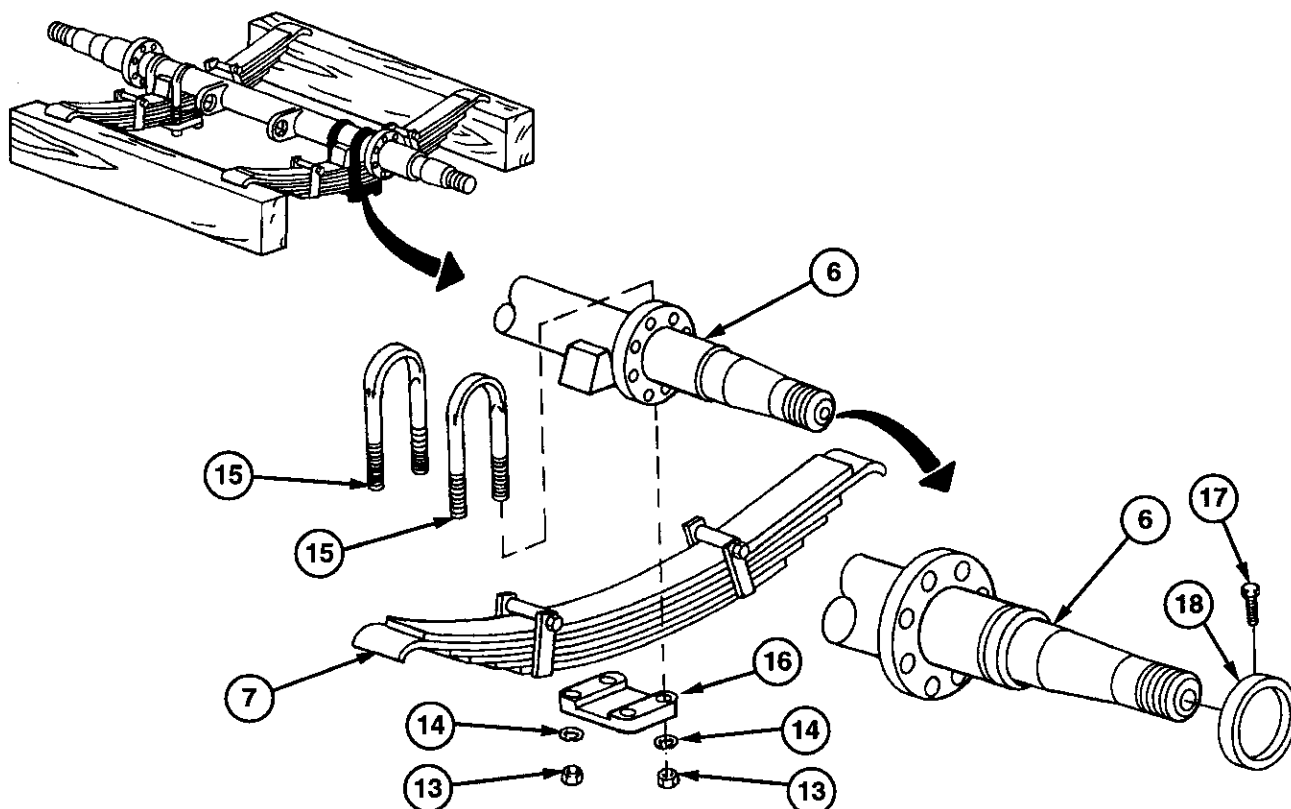
13. Remove screw (10), spacer (11), and nut (12) from equalizing beam (4). Repeat for other three equalizing beams (4).

**WARNING**

**Keep fingers from between equalizing beam and spring end while balancing axle as it is lowered. Failure to do so could result in injury to personnel.**



14. While two assistants balance axle (6) and two spring assemblies (7), lower axle (6) and spring assemblies and pull them out from under semitrailer. Put axle (6) and two spring assemblies (7) on blocking that allows access to bottom of axle (6), and remove dolly jack.
15. Remove four nuts (13) and washers (14) from two U-bolts (15) and spring clamp plate (16).
16. Remove two U-bolts (15) and spring clamp plate (16) from axle (6) and spring assembly (7).
17. Repeat steps 15 and 16 for other end of axle (6). Using hydraulic hand jack, lift axle (6) off of two spring assemblies (7).
18. Remove screw (17) from axle ring (18). Slide axle ring (18) off of axle (6). Repeat for other end of axle (6).



## 5-3. MIDDLE AXLE REPLACEMENT (M870) (continued).

### b. INSTALLATION

#### NOTE

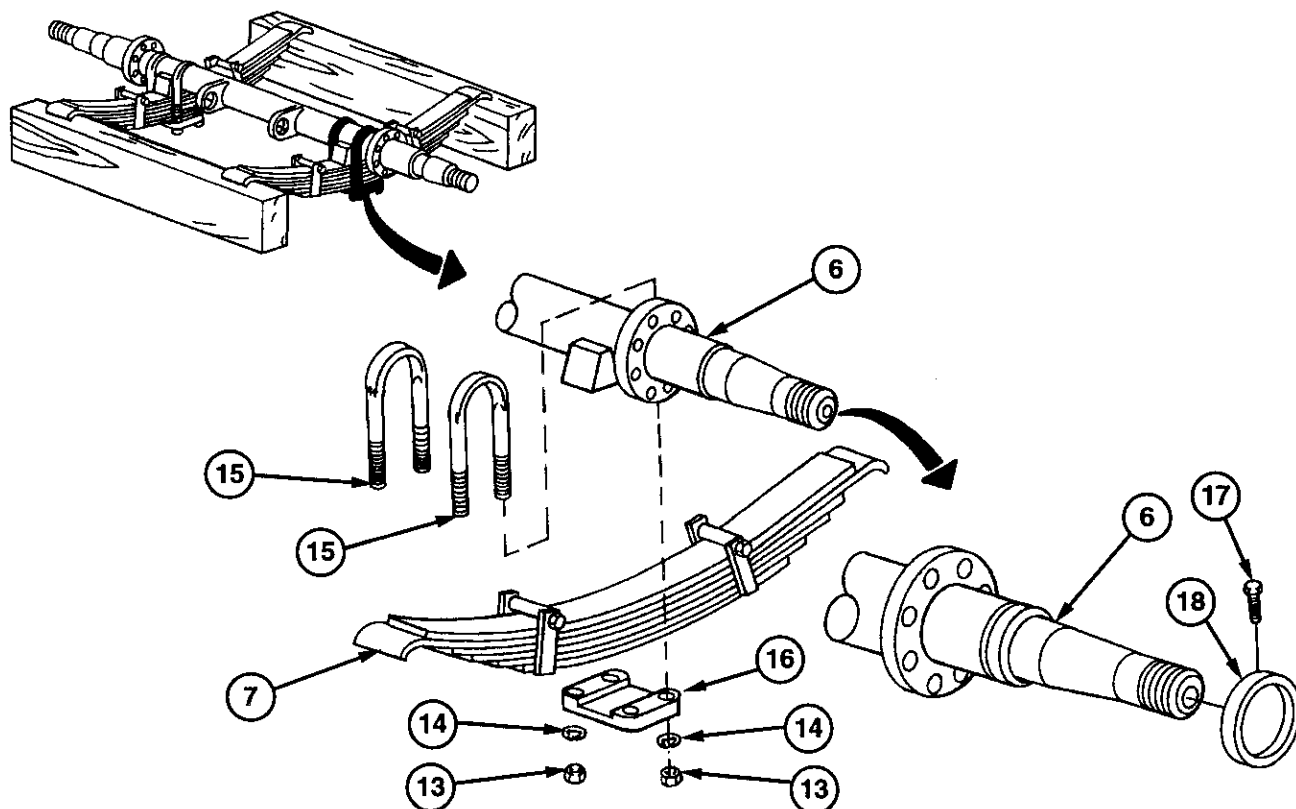
Before starting installation procedure, put spring ends on blocking high enough to allow dolly jack to roll under spring assembly and axle assembly.

1. Put axle ring (18) on axle (6) and line up screw hole.
2. Install screw (17) in axle ring (18) and axle (6).
3. Using hydraulic hand jack, put axle (6) on two spring assemblies (7). Be sure alignment pins on axle (6) go into alignment holes in spring assemblies (7).
4. Put two U-bolts (15) and spring clamp plate (16) on axle (6) and have assistant hold in place.
5. Install four nuts (13) and washers (14) on two U-bolts (15) and spring clamp plate (16).
6. Repeat steps 4 and 5 for other end of axle (6).

#### WARNING

**Keep fingers from between equalizing beam ends and spring ends while balancing axle as it is moved and lifted into place. Failure to do so could result in injury to personnel.**

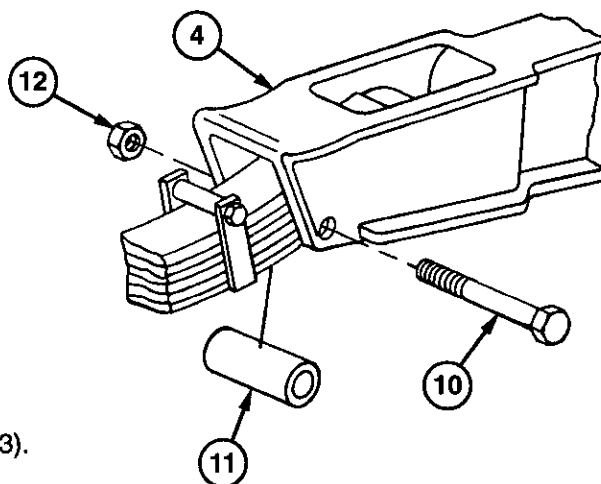
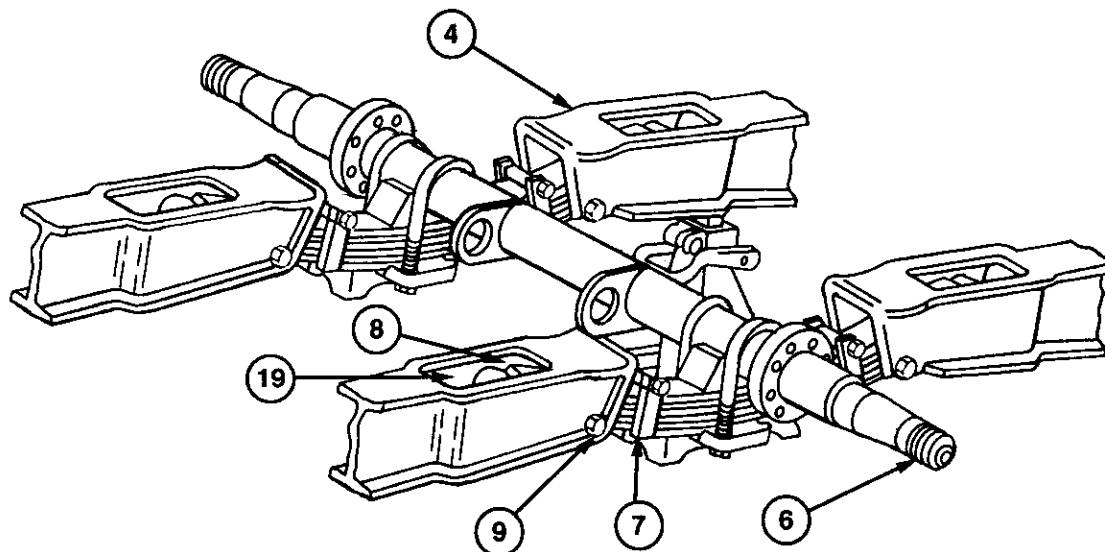
7. While two assistants balance axle (6) and two spring assemblies (7), lift them from blocking using dolly jack. Be sure dolly jack is parallel to axle (6) and lifting pad is at the balance point.





**5-3. MIDDLE AXLE REPLACEMENT (M870) (continued).**

8. Put axle (6) and spring assembly (7) in position and lift until spring ends are at top of equalizing beam (4) spring slots (19).
9. Install nut (12), spacer (11), and screw (10) in equalizing beam (4). Repeat for other three equalizing beams (4). Lower four spring ends (8) onto four support assemblies (9). Remove dolly jack.



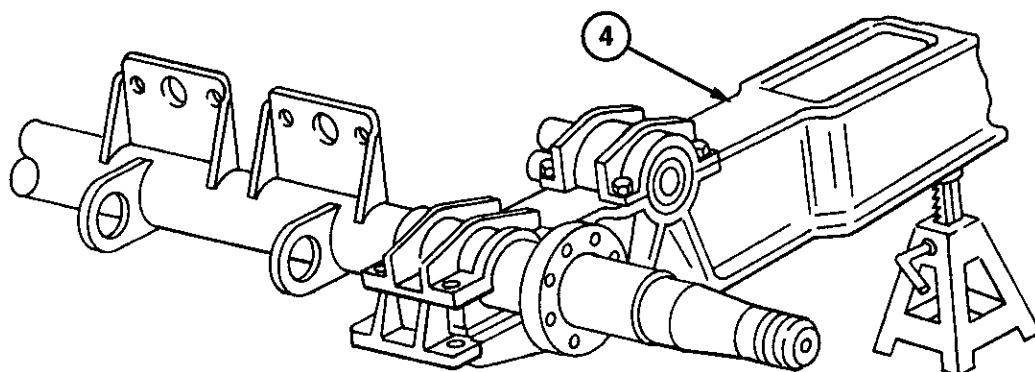
10. Install two spring brake chambers (para 4-53).
11. Install two backing plates and camshafts (para 5-12).
12. Install two slack adjusters (para 4-48).
13. Install two sets of brakeshoes (para 4-46).
14. Install two hubs and brakedrums (para 4-68).
15. Install two tire and wheel assemblies (para 3-9).

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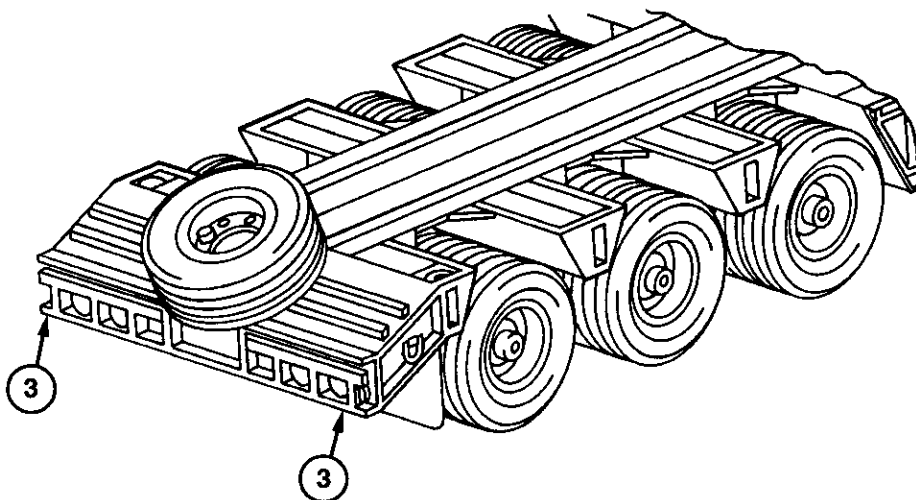
### 5-3. MIDDLE AXLE REPLACEMENT (M870) (continued).

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16. Using hydraulic hand jack, remove trestle from under equalizing beam (4). Repeat for other three equalizing beams (4).



17. Using hydraulic hand jack, remove trestle from under two rear semitrailers corners (3).



#### FOLLOW-ON TASKS:

- Install two radius rods (para 5-26).

## 5-4. MIDDLE AXLE REPLACEMENT (M870A1).

*This Task Covers:*

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

*Initial Setup:*

**Tools/Test Equipment:**

- Field maintenance tool set (Item 4, Appendix B)
- Tool kit, general mechanic's: automotive (Item 7, Appendix B)
- Trestle, 10-ton (6) (Item 1, Appendix B)

**Equipment Conditions:**

- Drain cocks opened (para 3-8).

**Personnel Required:** Three

**Materials/Parts:**

- Self-locking nut (4) (Item 31, Appendix I)

### a. REMOVAL

**NOTE**

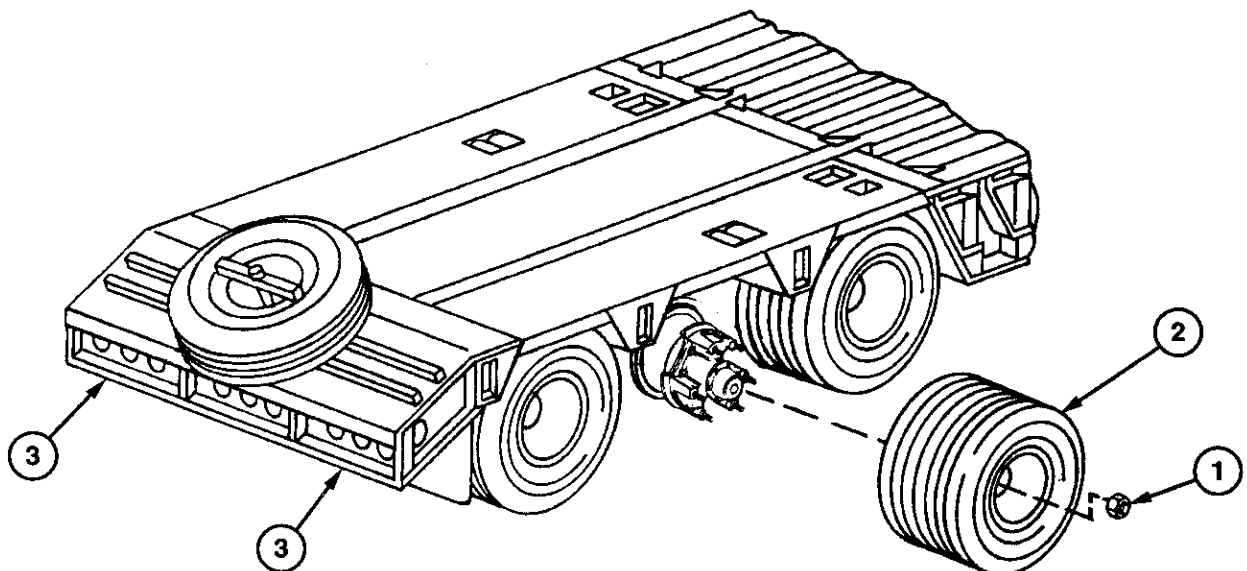
For secure placement of jacks, it is recommended that this procedure be performed on hard floor surface.

1. Loosen, but do not remove, six rim stud nuts (1) on middle tire and rim assembly (2). Repeat for middle tire and rim assembly (2) on other side.

**WARNING**

**To prevent shifting, semitrailer must be adequately supported at front and rear. Shifting of semitrailer may result in serious injury.**

2. Using hydraulic hand jack, raise two rear semitrailer corners (3) until wheels clear ground. Place trestle underneath each rear semitrailer corner (3). Remove hydraulic jack.

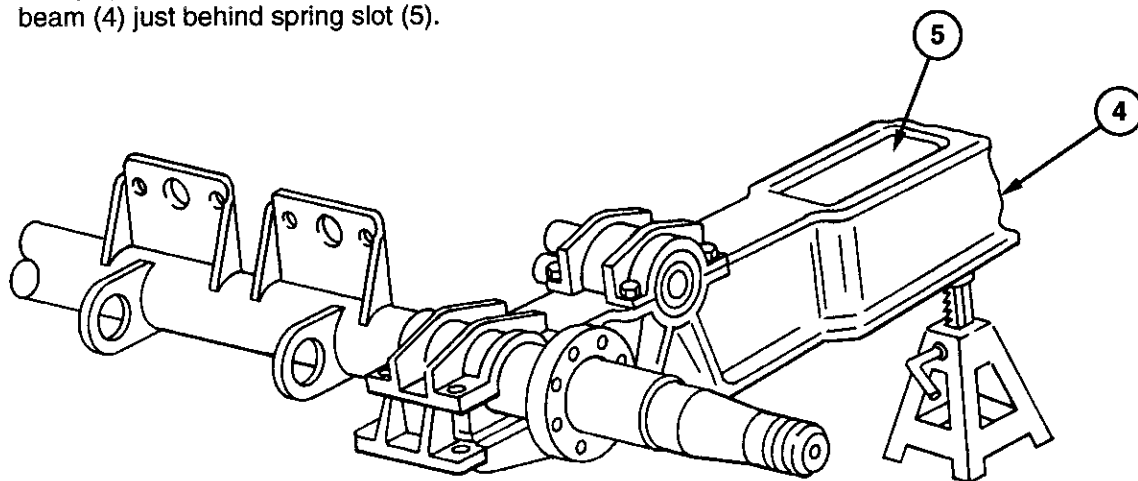


## 5-4. MIDDLE AXLE REPLACEMENT (M870A1) (continued).

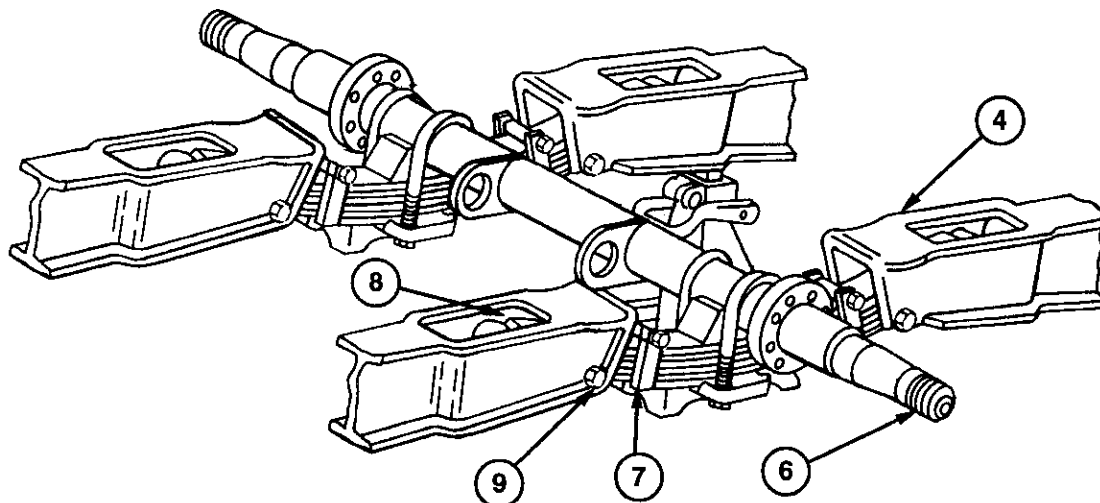
### WARNING

**Be certain equalizing beam is securely supported by trestle. Failure to do so could result in serious injury to personnel.**

3. Using hydraulic jack, lift spring end of equalizing beam (4) about three inches. Put trestle under equalizing beam (4) just behind spring slot (5).

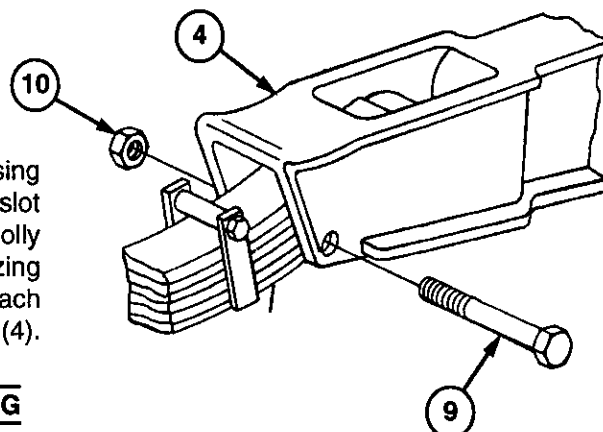


4. Remove hydraulic jack. Repeat steps 3 and 4 for other three equalizing beams (4).
5. Remove tire and rim assemblies from middle axle (para 3-10).
6. Remove slack adjusters from middle axle (para 4-48).
7. Remove spring brake chambers from middle axle (para 4-53).
8. Remove two torque arm ends from middle axle (para 5-27).
9. Position dolly jack under balance point of middle axle (6). Lift axle (6) and two spring assemblies (7) until four spring ends (8) are clear of four keeper bolts (9).



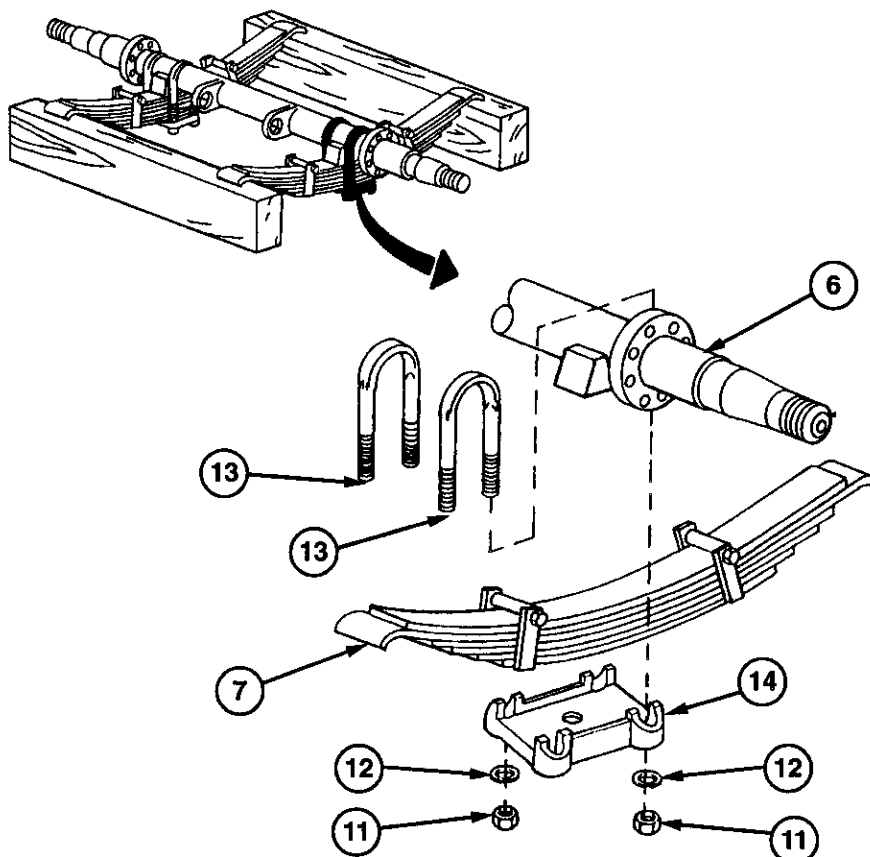
**5-4. MIDDLE AXLE REPLACEMENT (M870A1) (continued).**

10. Remove keeper bolt (9) and self-locking nut (10) from each of four equalizing beams (4). Discard self-locking nuts.
11. Move axle (6) and two spring assemblies (7) forward using dolly jack until rear of each spring assembly (7) clears slot in rear of two equalizing beams (4). Carefully lower dolly jack until spring assemblies (7) clear two rear equalizing beams (4). Move dolly jack carefully until front of each spring assembly (7) clears two front equalizing beams (4).

**WARNING**

**Keep fingers from between equalizing beam end and spring end while balancing axle.  
Failure to do so may result in serious injury.**

12. Lower dolly jack while two assistants balance axle (6) and two spring assemblies (7).
13. Pull axle (6) and two spring assemblies (7) out from under semitrailer and place on blocking.
14. Remove four nuts (11) and washers (12) from two U-bolts (13) and bottom plate (14).
15. Remove two U-bolts (13) and bottom plate (14) from spring assembly (7).
16. Repeat steps 14 and 15 for other spring assembly (7).



## 5-4. MIDDLE AXLE REPLACEMENT (M870A1) (continued).

17. Using hydraulic jack, lift axle (6) off of two spring assemblies (7).
18. Remove hubs and brakedrums (para 4-69).
19. Remove brakeshoes (para 4-46).
20. Remove camshafts (para 5-13).

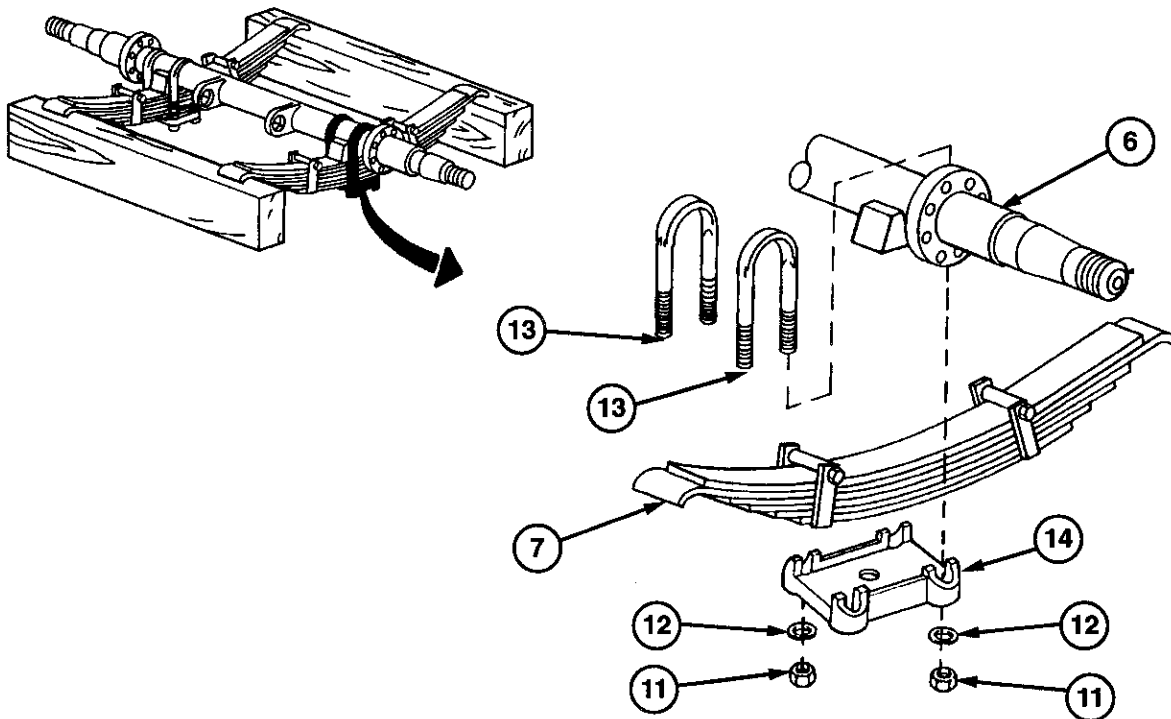
### b. INSTALLATION

1. Install camshafts (para 5-13).
2. Install brakeshoes (para 4-46).
3. Install hubs and brakedrums (para 4-69).

#### NOTE

Before installing axle on spring assemblies, put spring ends on blocking high enough to allow dolly jack to roll under spring assemblies and axle.

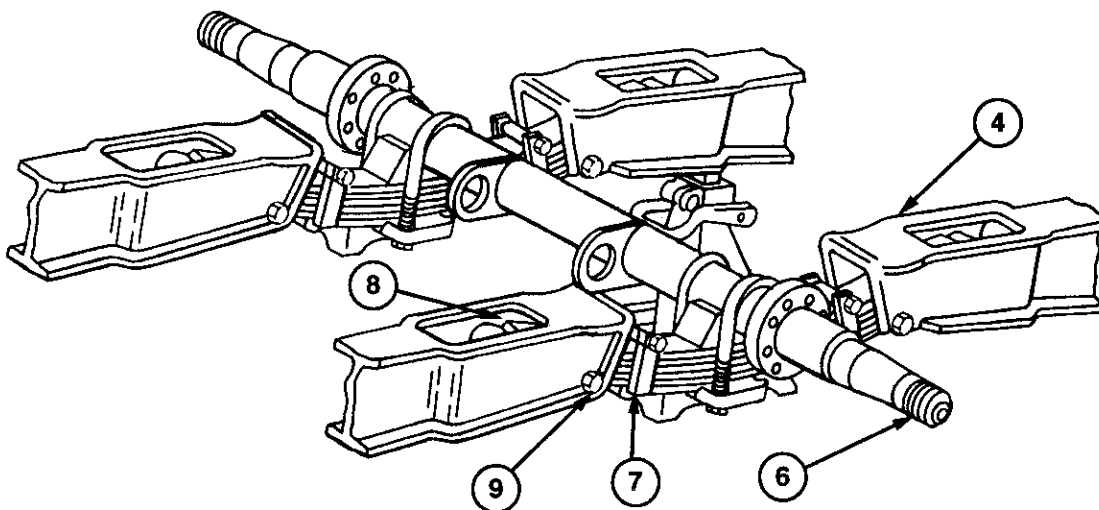
4. Using dolly jack, place axle (6) on two spring assemblies (7).
5. Install bottom plate (14) on axle (6) and two spring assemblies (7). Lubricate threads on two U-bolts (13), and secure bottom plate (14) with two U-bolts (13) and four washers (12) and nuts (11). Repeat for other spring assembly (7). Torque nuts between 275 and 300 ft-lb (373 and 407 N•m).



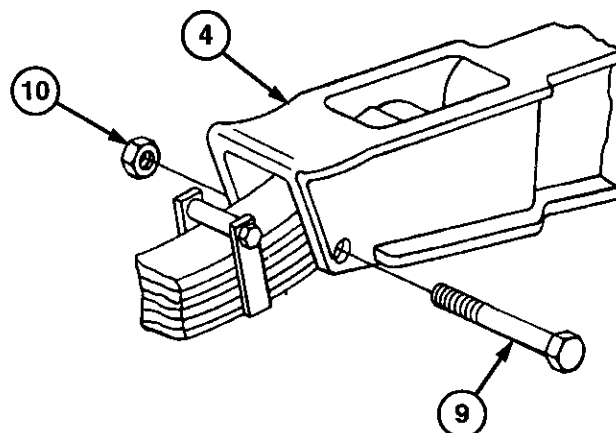
**5-4. MIDDLE AXLE REPLACEMENT (M870A1) (continued).****WARNING**

**Keep fingers from between equalizing beam ends and spring ends while balancing axle as it is moved and lifted into place. Failure to do so could result in serious injury.**

6. Position dolly jack at balance point of middle axle (6). While two assistants balance two spring assemblies (7) and axle (6), use dolly jack to lift axle (6) and spring assemblies (7) from blocking.
7. Place axle (6) and two spring assemblies (7) under semitrailer.
8. Using dolly jack, raise axle (6) and both spring assemblies (7) carefully until front of each spring assembly (7) clears slot in each of two front equalizing beams (4).
9. Install new self-locking nut (10) and keeper bolt (9) on each of two front equalizing beams (4).
10. Move dolly jack backward carefully until rears of two spring assemblies (7) clear slots in two rear equalizing beams (4). Lubricate threads on locknut (10) and install locknut (10) and keeper bolt (9) on each of two rear equalizing beams (4). Torque four keeper bolts (9) between 73 and 97 ft-lb (99 and 132 N•m). Carefully lower two spring assemblies (7) into position in four equalizing beams (4), with four spring ends (8) resting on four keeper bolts (9).



11. Install two adjustable torque arm ends on middle axle (para 5-27).
12. Install spring brake chambers on middle axle (para 4-53).
13. Install slack adjusters on middle axle (para 4-48).
14. Install tire and rim assemblies on middle axle (para 3-10).

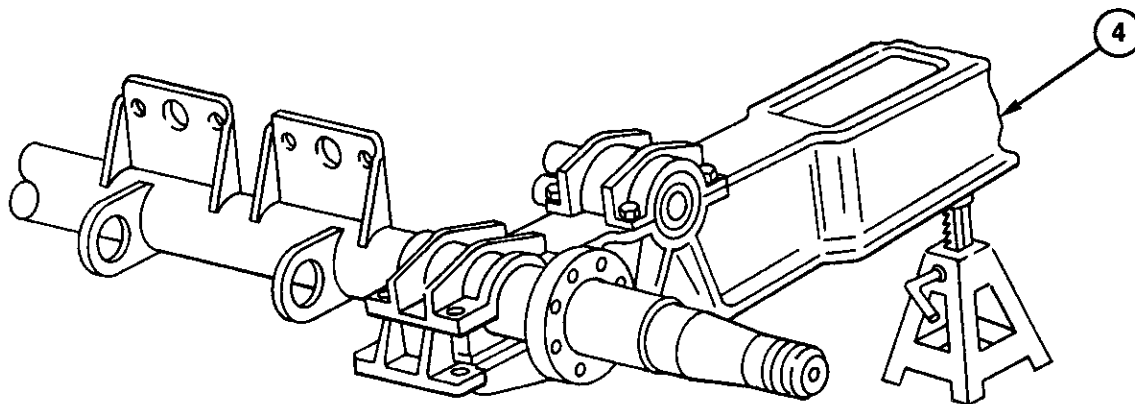


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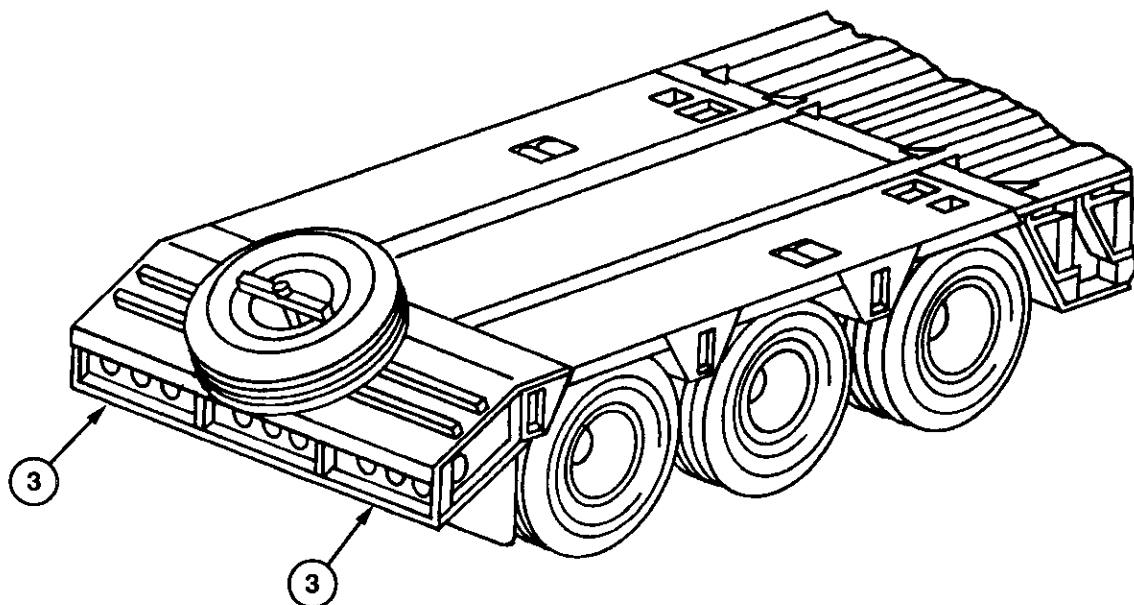
**5-4. MIDDLE AXLE REPLACEMENT (M870A1) (continued).**

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15. Using hydraulic jack, remove trestle from under equalizing beam (4). Repeat for other three beams (4).



16. Using hydraulic hand jack, remove trestles from under two rear semitrailer corners (3).



**FOLLOW-ON TASKS:**

- Close drain cocks (para 3-8).
- Adjust brakes (para 4-47).



## 5-5. FRONT AND REAR AXLE REPLACEMENT (M870).

*This Task Covers:*

a. Removal

b. Installation

*Initial Setup:*

### Tools/Test Equipment:

- Field maintenance tool set (Item 4, Appendix B)
- Tool kit, general mechanic's: automotive (Item 7, Appendix B)
- Trestle (2) (Item 1, Appendix B)

- Self-locking nut (4) (Item 36, Appendix I)

### Equipment Conditions:

- Tire and wheel assemblies removed from axle to be removed (para 3-9).

### Materials/Parts:

- Self-locking nut (4) (Item 35, Appendix I)

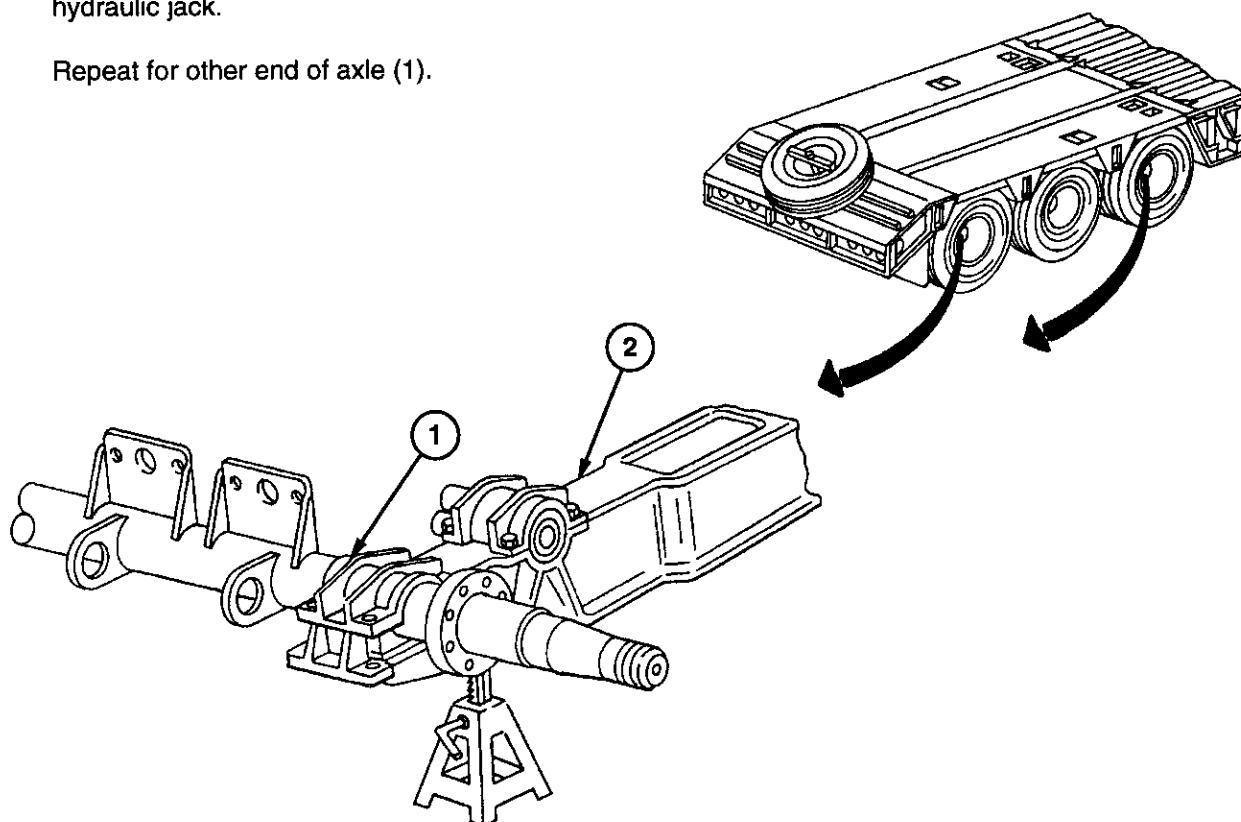
**Personnel Required:** Two

## a. REMOVAL

### NOTE

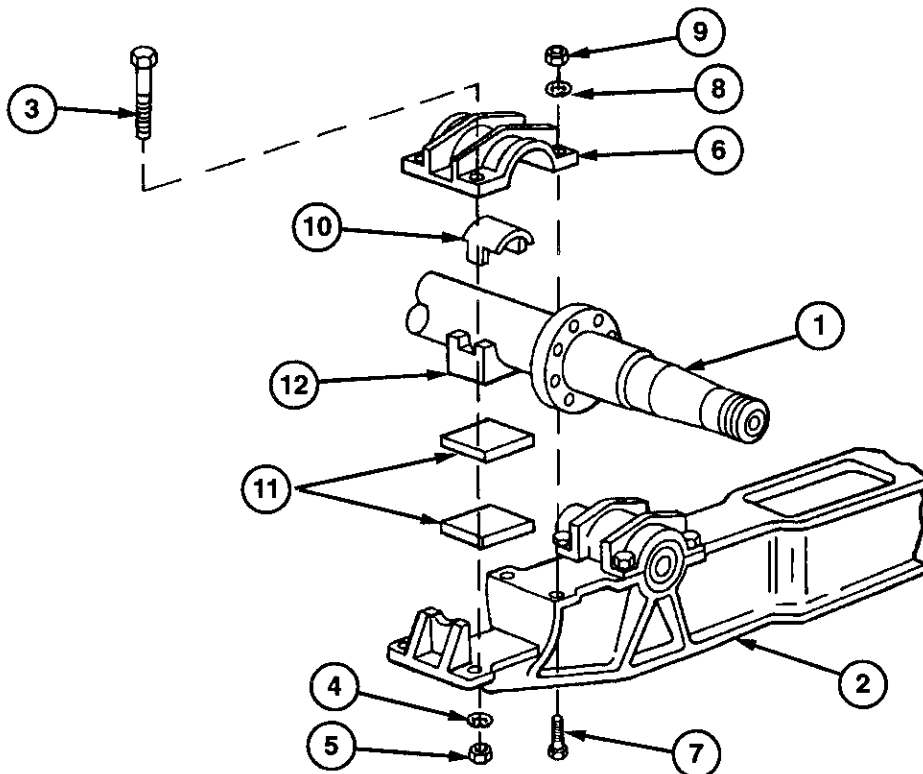
Front and rear axles are removed the same way. This procedure covers one axle. Repeat procedure for other axle.

1. Using hydraulic jack, lift one end of axle (1). Place trestle under axle (1) and equalizing beam (2) and remove hydraulic jack.
2. Repeat for other end of axle (1).



## 5-5. FRONT AND REAR AXLE REPLACEMENT (M870) (continued).

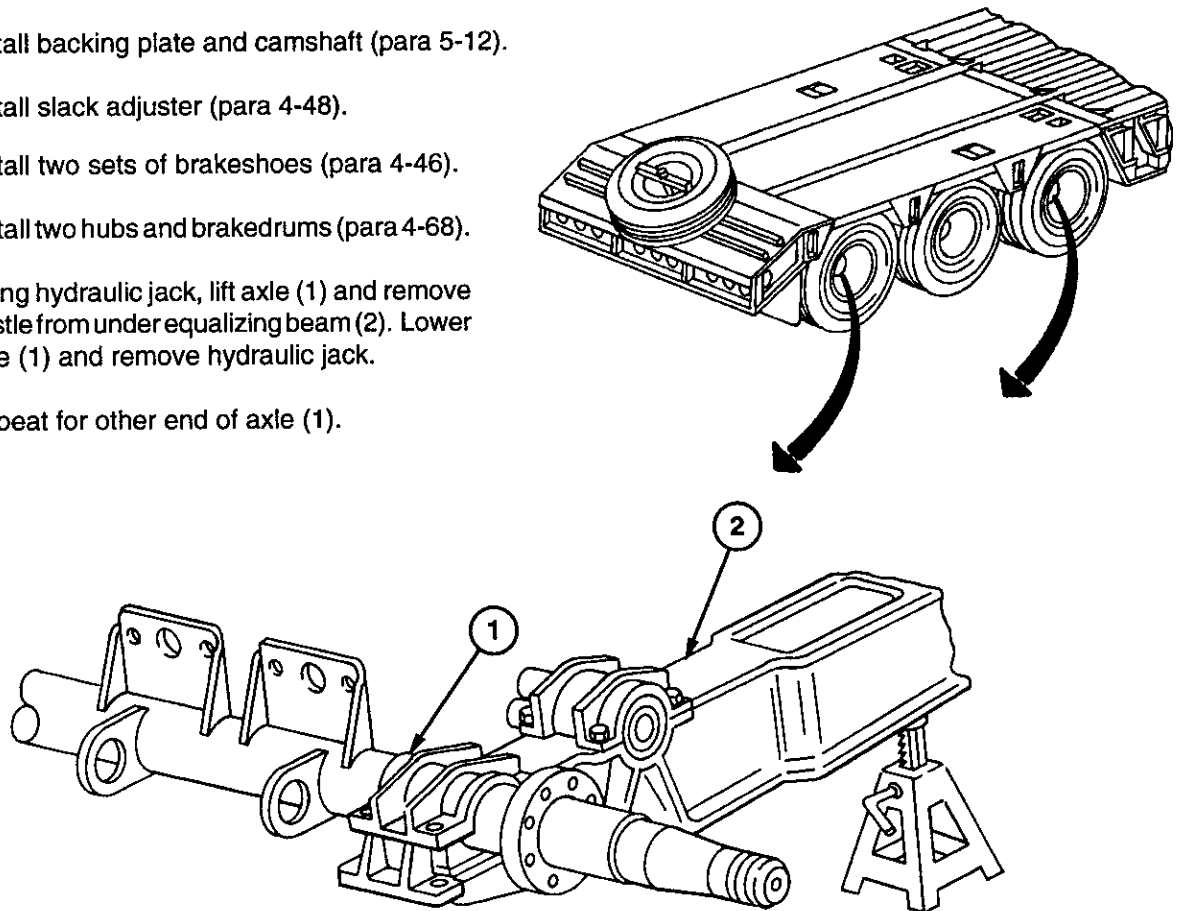
3. Remove two hubs and brakedrums (para 4-68).
4. Remove two sets of brakeshoes (para 4-46).
5. If replacing rear axle, remove two airbrake chambers (para 4-52). If replacing front axle, remove two spring brake chambers (para 4-53).
6. Remove backing plate and camshaft (para 5-12).
7. Remove slack adjuster (para 4-48)
8. Remove two capscrews (3), washers (4), and self-locking nuts (5) from axle cap (6). Discard self-locking nuts.
9. Remove two capscrews (7), washers (8), and self-locking nuts (9) from axle cap (6). Discard self-locking nuts.
10. Remove axle cap (6) and rubber wrapper (10) from equalizing beam (2).
11. Repeat steps 6 through 10 for other end of axle.
12. Using dolly jack, lift axle (1) until it clears ends of both equalizing beams (2).
13. While assistant balances axle (1), remove jack stands from rear semitrailer corners and remove axle (1) from under semitrailer.
14. Remove two rubber pads (11) from equalizing beam (2). Repeat for other side.



## 5-5. FRONT AND REAR AXLE REPLACEMENT (M870) (continued).

### b. INSTALLATION

1. Install two rubber pads (11) in equalizing beam (2). Repeat for other side.
2. Using dolly jack, lift axle (1) into position over equalizing beam (2) and put trestles back under rear semitrailer corners.
3. Lower axle (1) into place. Be sure two axle adapters (12) are in correct position on two equalizing beams (2).
4. Install axle cap (6) and rubber wrapper (10) on equalizing beam (2).
5. Install two self-locking nuts (9), washers (8), and capscrews (7) on axle cap (6).
6. Install two self-locking nuts (5), washers (4), and capscrews (3) on axle cap (6).
7. Repeat steps 4 through 6 for other end of axle (1).
8. If replacing rear axle, install two airbrake chambers (para 4-52). If replacing front axle, install two spring brake chambers (para 4-53).
9. Install backing plate and camshaft (para 5-12).
10. Install slack adjuster (para 4-48).
11. Install two sets of brakeshoes (para 4-46).
12. Install two hubs and brakedrums (para 4-68).
13. Using hydraulic jack, lift axle (1) and remove trestle from under equalizing beam (2). Lower axle (1) and remove hydraulic jack.
14. Repeat for other end of axle (1).



### FOLLOW-ON TASKS:

- Install tire and wheel assemblies (para 3-9).

## 5-6. FRONT AND REAR AXLE REPLACEMENT (M870A1).

*This Task Covers:*

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

*Initial Setup:*

**Tools/Test Equipment:**

- Field maintenance tool set (Item 4, Appendix B)
- Tool kit, general mechanic's: automotive (Item 7, Appendix B)
- Trestle (6) (Item 1, Appendix B)

- Tire and wheel assemblies removed from axle to be removed (para 3-10).

**Personnel Required:** Two

**Equipment Conditions:**

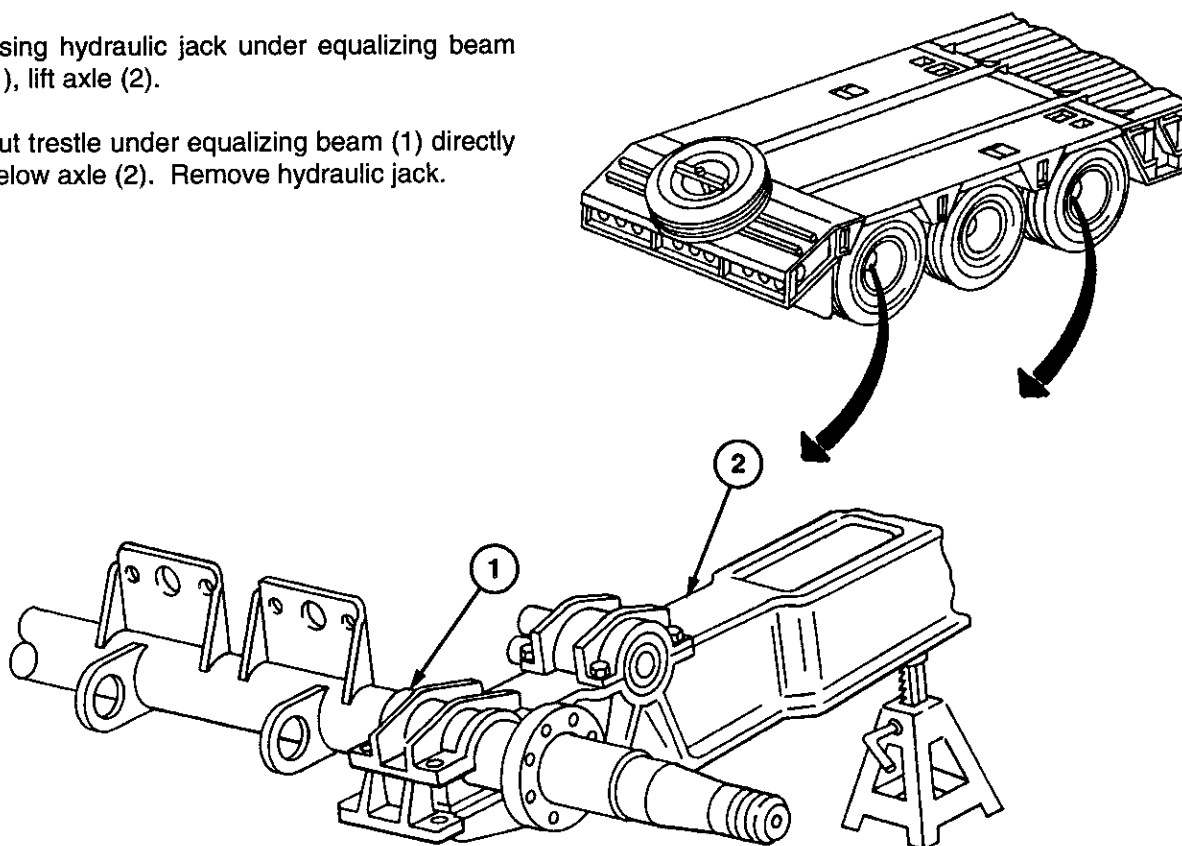
- Drain cocks open (para 3-8).

### a. REMOVAL

**NOTE**

Front and rear axles are removed the same way. This procedure covers one axle. Repeat the procedure for the other axle.

1. Using hydraulic jack under equalizing beam (1), lift axle (2).
2. Put trestle under equalizing beam (1) directly below axle (2). Remove hydraulic jack.



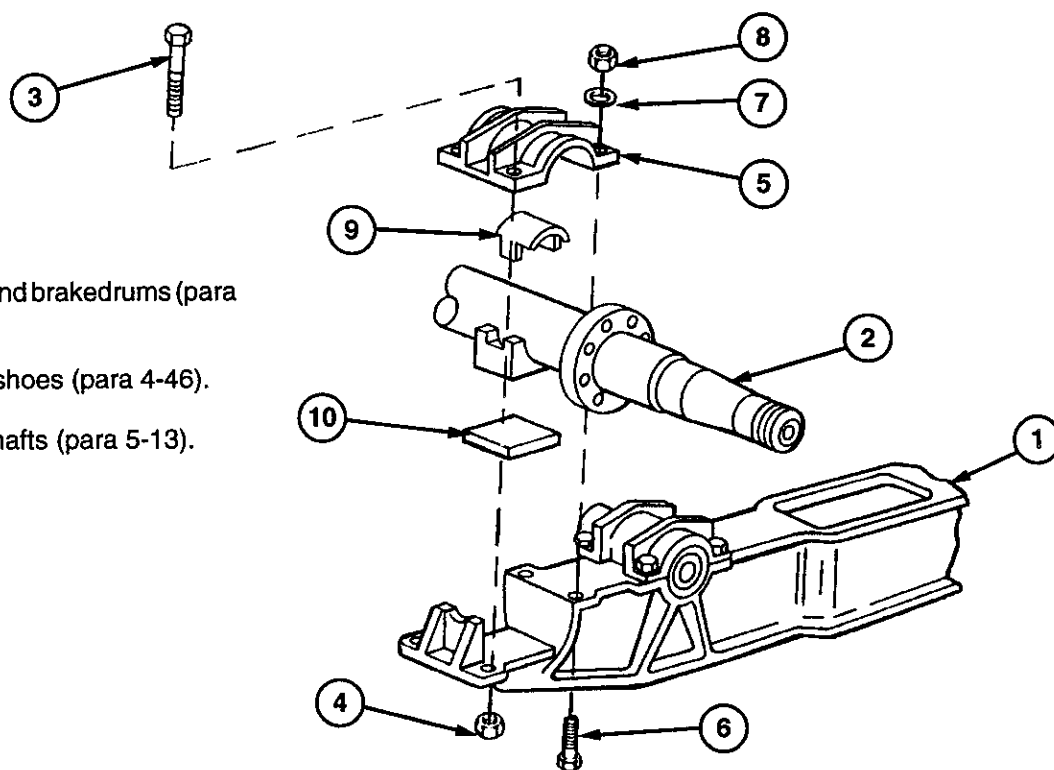
**5-6. FRONT AND REAR AXLE REPLACEMENT (M870A1) (continued).**

3. Repeat steps 1 and 2 for other end of axle (2).
4. Remove slack adjusters from axle (para 4-48).
5. If replacing rear axle, remove airbrake chambers (para 4-52). If replacing front axle, remove spring brake chambers (para 4-53).
6. Remove torque arm ends from front axle (para 5-27).
7. Remove two bolts (3) and flanged nuts (4) from axle clamp (5).
8. Remove two bolts (6), washers (7), and flanged nuts (8) from axle clamp (5).
9. Remove axle clamp (5) and upper rubber pad (9) from equalizing beam (1).
10. Repeat steps 4 through 9 for other side of axle (2).
11. Using dolly jack, lift axle (2) until it clears ends of both equalizing beams (1).

**WARNING**

**Be certain equalizing beam is securely supported by trestle. Failure to do so could result in serious injury to personnel.**

12. While assistant balances axle (2), remove axle (2) from under semitrailer.
13. Remove lower rubber pad (10) from each equalizing beam (1).

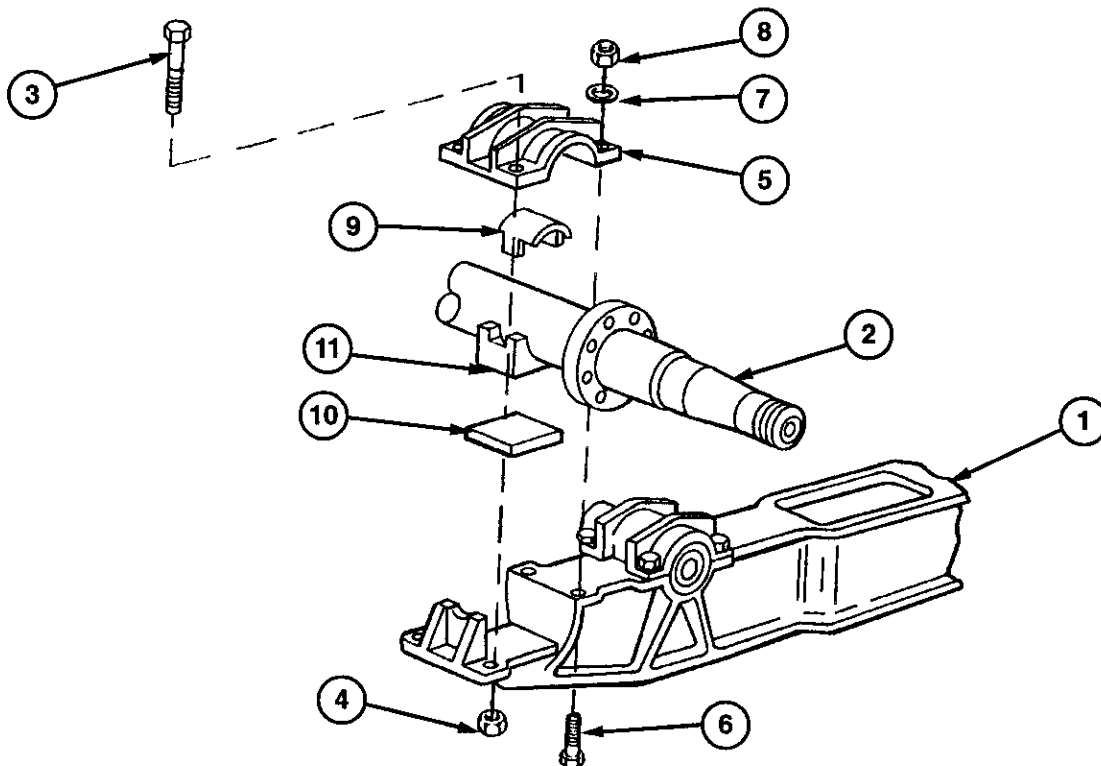


14. Remove hubs and brakedrums (para 4-69).
15. Remove brakeshoes (para 4-46).
16. Remove camshafts (para 5-13).

## 5-6. FRONT AND REAR AXLE REPLACEMENT (M870A1) (continued).

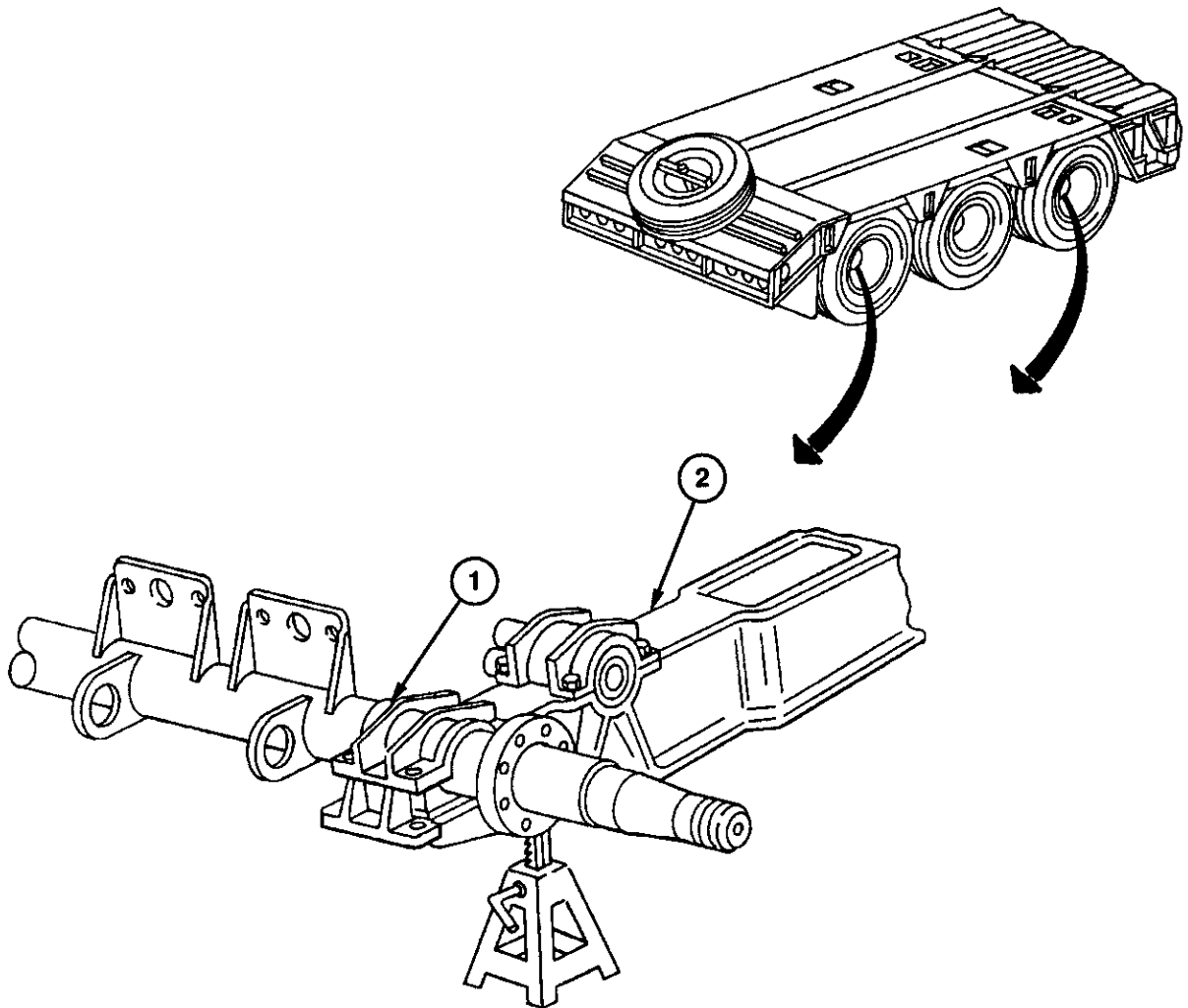
### b. INSTALLATION

1. Install lower rubber pad (10) on equalizing beam (1). Repeat for other side of semitrailer.
2. Using dolly jack, lift axle (2).
3. Lower axle (2) in place. Make sure two axle adapters (11) are in correct position on two equalizing beams (1).
4. Install upper rubber pad (9) and axle clamp (5) on equalizing beam (1).
5. Install two flanged nuts (8), washers (7), and bolts (6) on axle clamp (5).
6. Lubricate threads of two bolts (3), and install two flanged nuts (4) and bolts (3) on axle clamp (5). Torque two flanged nuts (4) to 350 ft-lb (475 N•m). Torque two flanged nuts (8) between 275 and 300 ft-lb (373 and 407 N•m). Torque nuts gradually, alternating between nuts, until torque requirement is met.
7. Repeat steps 4 through 6 for other end of axle (2).
8. Install camshafts on axle (para 5-13).
9. Install brakeshoes (para 4-46).
10. Install hubs and brakedrums (para 4-69).
11. Install torque arm ends on front axle (para 5-27).



**5-6. FRONT AND REAR AXLE REPLACEMENT (M870A1) (continued).**

12. If replacing rear axle, install airbrake chambers (para 4-52). If replacing front axle, install spring brake chambers (para 4-53).
13. Install slack adjuster on axle (para 4-48).
14. Using hydraulic jack, lift axle (2) and equalizing beam (1). Remove trestle.
15. Lower axle (2) and remove hydraulic jack.
16. Repeat steps 12 through 15 for other end of axle (2).

**FOLLOW-ON TASKS:**

- Install tire and wheel assemblies (para 3-10).
- Close drain cocks (para 3-8).
- Adjust brakes (para 4-47).

## 5-7. EQUALIZING BEAM REPLACEMENT (M870).

This Task Covers:

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

*Initial Setup:*

**Tools/Test Equipment:**

- Field maintenance tool set (Item 4, Appendix B)
- Tool kit, general mechanic's: automotive (Item 7, Appendix B)
- Trestle (3) (Item 1, Appendix B)

**Materials/Parts:**

- Self-locking nut (4) (Item 34, Appendix I)

- Self-locking nut (2) (Item 35, Appendix I)

- Self-locking nut (2) (Item 36, Appendix I)

**Equipment Conditions:**

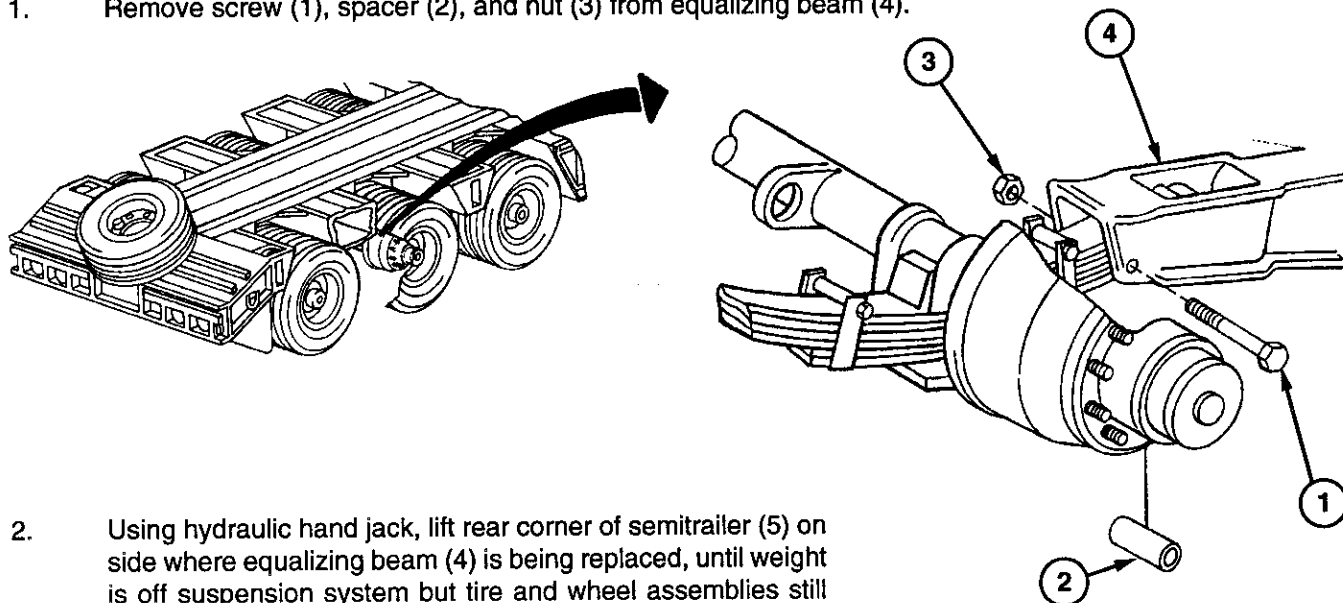
- Semitrailer unloaded (para 2-10).
- Wheels chocked (para 2-10)

**Personnel Required:** Two

### NOTE

There are four equalizing beams on the semitrailer. This procedure is for replacing one equalizing beam. Repeat this procedure for the remaining three.

1. Remove screw (1), spacer (2), and nut (3) from equalizing beam (4).

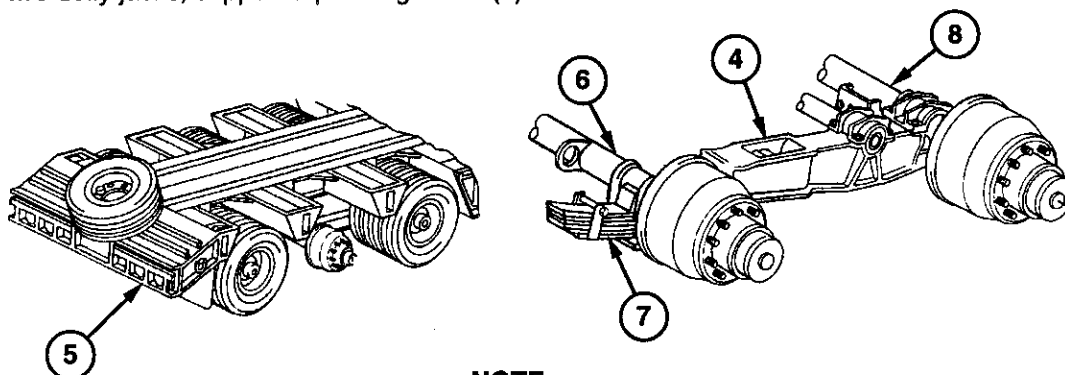


2. Using hydraulic hand jack, lift rear corner of semitrailer (5) on side where equalizing beam (4) is being replaced, until weight is off suspension system but tire and wheel assemblies still touch the ground.
3. Put trestle under rear corner of semitrailer (5).
4. Remove tire and wheel assembly from middle axle (para 3-9). Support middle axle (6) on trestle under spring clamp plate (7).



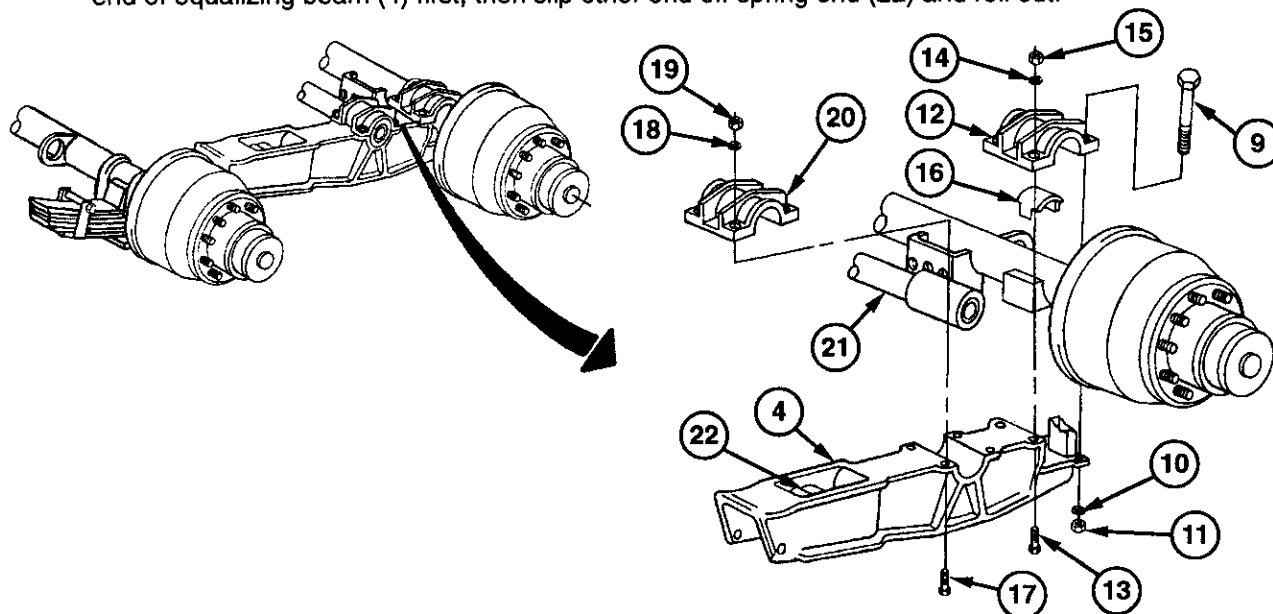
**5-7. EQUALIZING BEAM REPLACEMENT (M870) (continued).**

5. Remove tire and wheel assembly of axle on equalizing beam being removed (para 3-9). Support axle (8) with trestle behind equalizing beam (4).
6. Using two dolly jacks, support equalizing beam (4) under each end.

**NOTE**

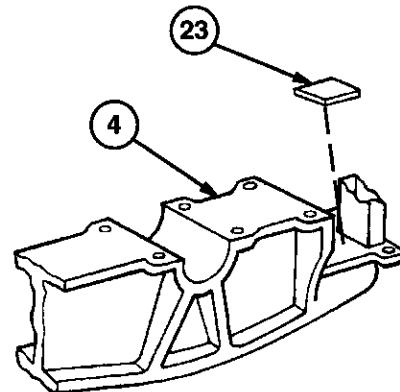
Place dolly jacks so they do not interfere with removal of capscrews and self-locking nuts.

7. Remove two capscrews (9), washers (10), and self-locking nuts (11) from axle cap (12). Discard self-locking nuts.
8. Remove two capscrews (13), washers (14), and self-locking nuts (15) from axle cap (12). Discard self-locking nuts.
9. Remove axle cap (12) and rubber wrapper (16) from equalizing beam (4).
10. Remove four capscrews (17), washers (18), and self-locking nuts (19) from trunnion cap (20). Discard self-locking nuts.
11. Remove trunnion cap (20) from trunnion tube (21).
12. Using two dolly jacks, remove equalizing beam (4) from semitrailer. With the aid of an assistant, lower axle end of equalizing beam (4) first, then slip other end off spring end (22) and roll out.



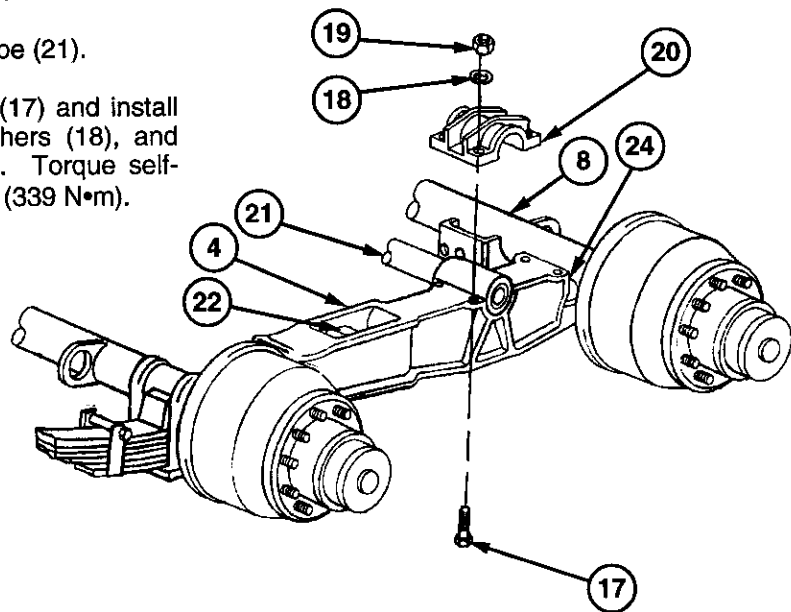
## 5-7. EQUALIZING BEAM REPLACEMENT (M870) (continued).

13. Remove rubber pad (23) from equalizing beam (4).



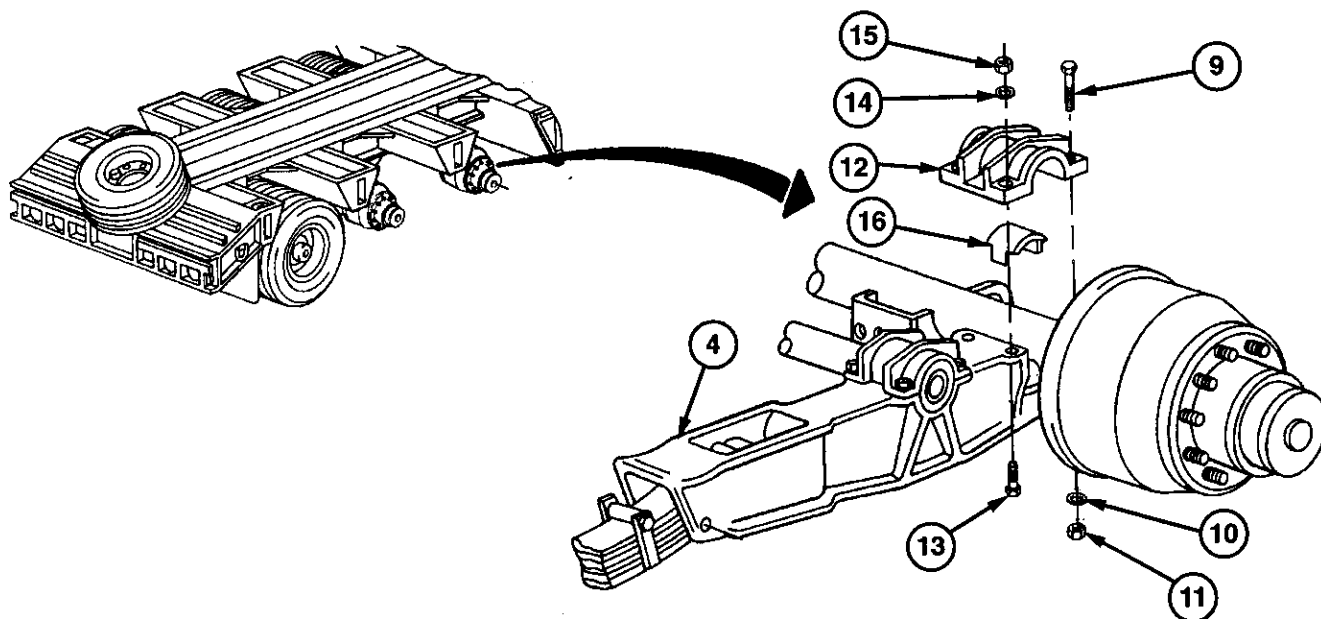
### b. INSTALLATION

1. Install rubber pad (23) on equalizing beam (4).
2. Using two dolly jacks, install equalizing beam (4) on axle (8) and spring end (22). Be sure axle adapter (24) and rubber pad (23) do not shift out of place.
3. Install trunnion cap (20) on trunnion tube (21).
4. Lubricate threads on four capscrews (17) and install four new self-locking nuts (19), washers (18), and capscrews (17) on trunnion cap (20). Torque self-locking nuts to approximately 250 ft-lb (339 N•m).

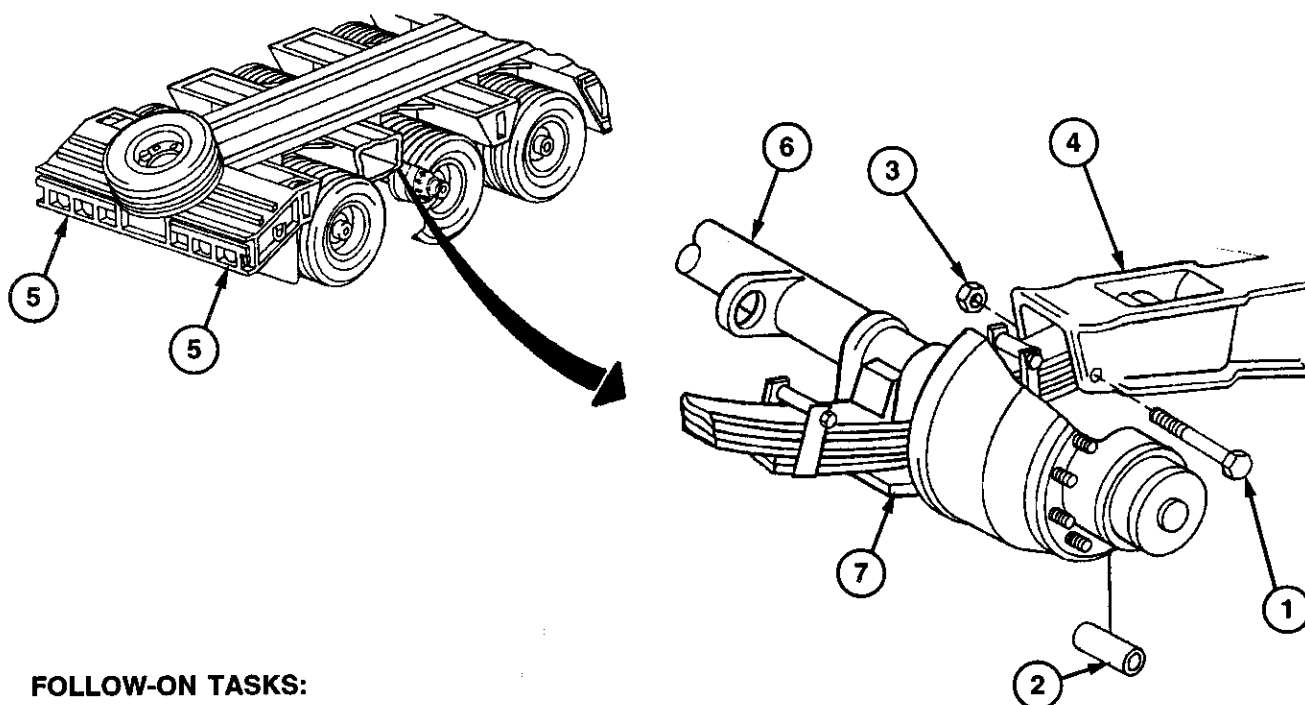


5. Put axle cap (12) and rubber wrapper (16) in place on equalizing beam (4).
6. Install two new self-locking nuts (15), washers (14), and capscrews (13) on axle cap (12) and equalizing beam (4). Torque self-locking nuts to approximately 550 ft-lb (746 N•m).
7. Install two new self-locking nuts (11), washers (10), and capscrews (9) on axle cap (12).
8. Remove dolly jacks.
9. Install tire and wheel assemblies on both axles (para 3-9).
10. Using hydraulic jack, remove trestle from under front or rear axle (8).

## 5-7. EQUALIZING BEAM REPLACEMENT (M870) (continued).



11. Using hydraulic jack, remove trestle from under spring clamp plate (7) at middle axle (6).
12. Using hydraulic jack, remove trestle from under rear corner of semitrailer (5).
13. Lubricate threads of screw (1) and install nut (3), spacer (2), and screw (1) on equalizing beam (4). Torque nut to approximately 75 ft-lb (102 N•m).



### FOLLOW-ON TASKS:

- Unchock wheels (para 2-8)

## 5-8. EQUALIZING BEAM REPLACEMENT (M870A1).

*This Task Covers:*

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

*Initial Setup:*

### Tools/Test Equipment:

- Field maintenance tool set (Item 4, Appendix B)
- Tool kit, general mechanic's: automotive (Item 7, Appendix B)
- Trestle (3) (Item 1, Appendix B)

### Equipment Conditions:

- Semitrailer unloaded (para 2-10).

**Personnel Required:** Two

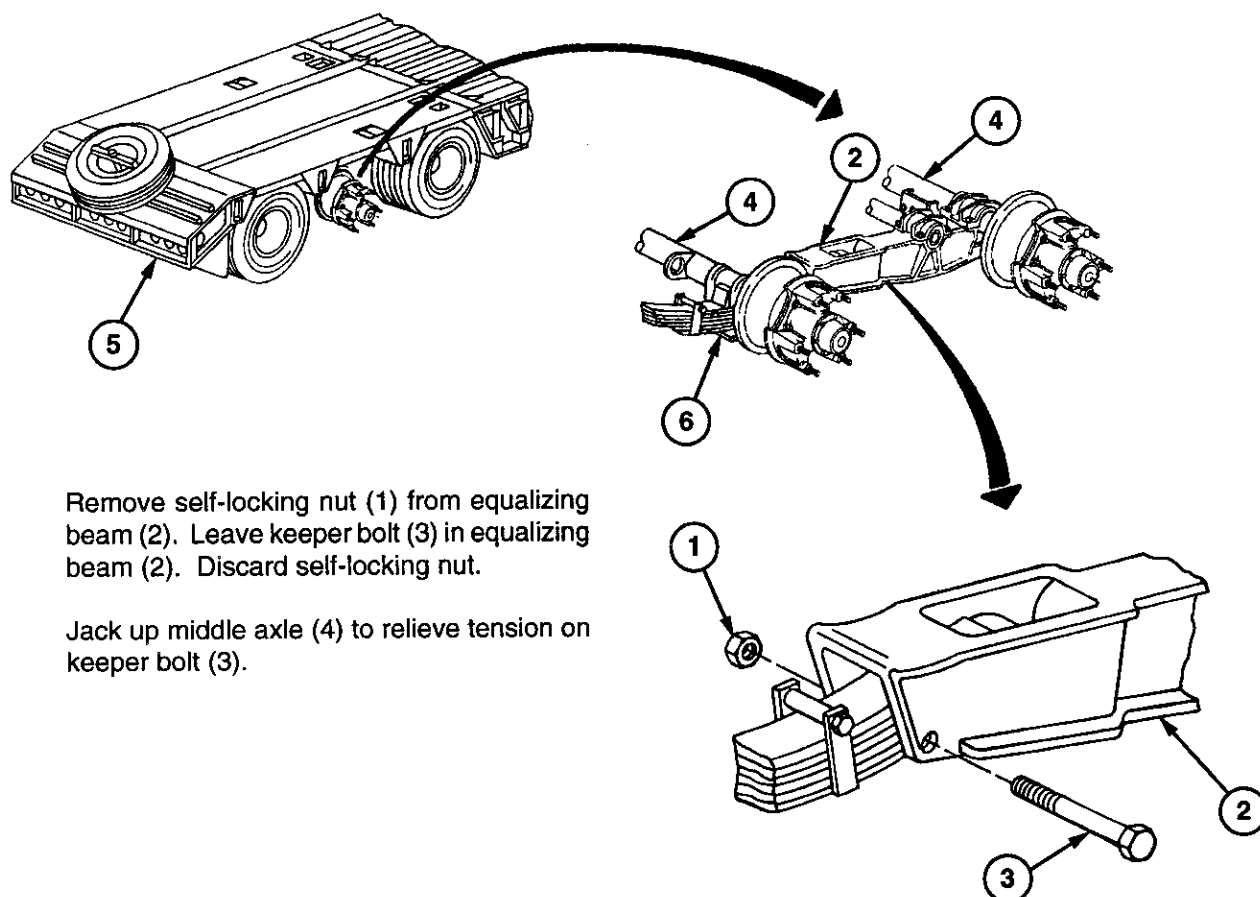
### Materials/Parts:

- Self-locking nut (Item 31, Appendix I)

### a. REMOVAL

#### NOTE

There are four equalizing beams on the semitrailer. This procedure is for replacing one equalizing beam. Repeat the procedure for the remaining three.



1. Remove self-locking nut (1) from equalizing beam (2). Leave keeper bolt (3) in equalizing beam (2). Discard self-locking nut.
2. Jack up middle axle (4) to relieve tension on keeper bolt (3).

**5-8. EQUALIZING BEAM REPLACEMENT (M870A1) (continued).**

3. Using hydraulic jack, lift rear corner (5) of semitrailer until weight is off suspension system but tire and rim assemblies still touch the ground. Put trestle under rear corner (5).
4. Support middle axle (4) on trestle under spring bottom plate (6).
5. Place trestle under axle (7) on equalizing beam (2) being removed.
6. Remove tire and wheel assembly from axle of equalizing beam being removed (para 3-10).
7. Using two dolly jacks, support equalizing beam (2) under each end.

**NOTE**

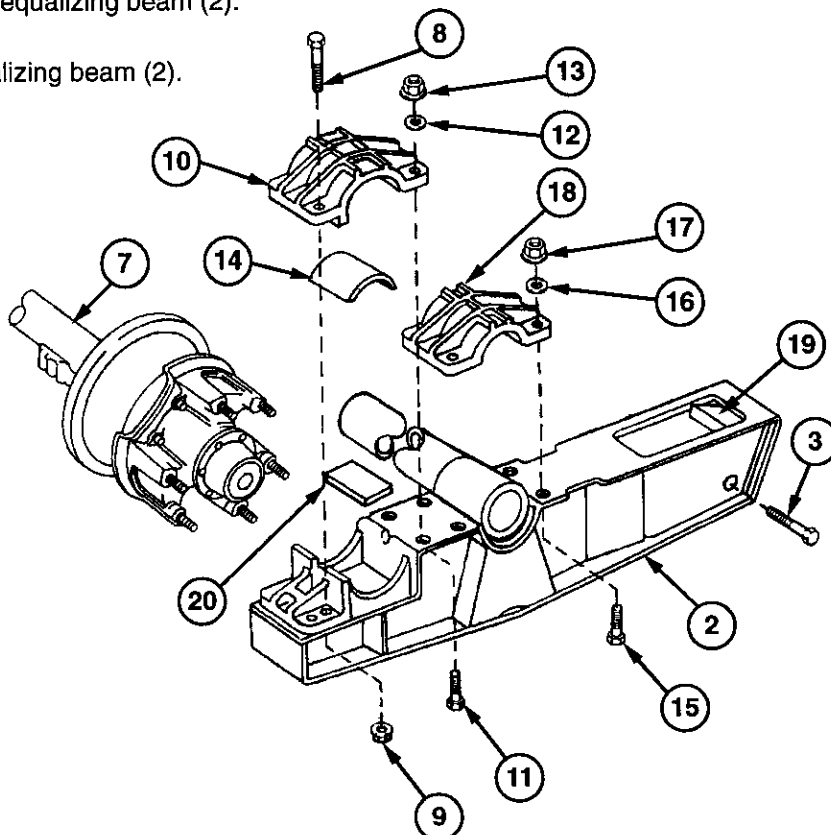
Place dolly jacks so they do not interfere with removal of bolts and nuts from axle clamp.

8. Remove two bolts (8) and nuts (9) from axle clamp (10).
9. Remove two bolts (11), washers (12), and nuts (13) from axle clamp (10).
10. Remove axle clamp (10) and upper rubber pad (14) from equalizing beam (2).
11. Remove four bolts (15), washers (16), and nuts (17) from trunnion clamp (18).
12. Remove trunnion clamp (18) from equalizing beam (2).

13. Remove keeper bolt (3) from equalizing beam (2).

14. Using two dolly jacks, remove equalizing beam (2) from semitrailer. With the aid of an assistant, lower axle (7) end of equalizing beam (2) first, then slip other end off spring end (19) and roll out.

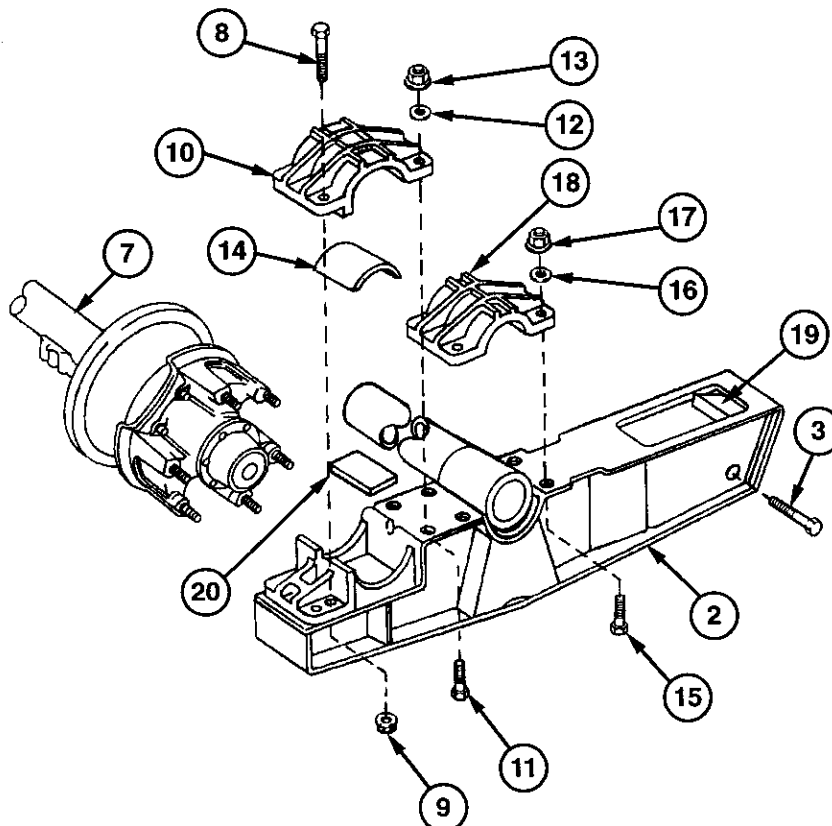
15. Remove lower rubber pad (20) from equalizing beam (2).



## 5-8. EQUALIZING BEAM REPLACEMENT (M870A1) (continued).

### b. INSTALLATION

1. Install lower rubber pad (20) on equalizing beam (2).
2. Using two dolly jacks, install equalizing beam (2) on axle (7) and spring end (19).
3. Lubricate threads of keeper bolt (3). Install new self-locking nut (1) and keeper bolt (3) on equalizing beam (2).
4. Install trunnion clamp (18) on equalizing beam (2).
5. Lubricate threads of four bolts (15). Secure trunnion clamp (18) with four nuts (17), washers (16), and bolts (15). Torque nuts between 275 and 300 ft-lb (373 and 407 N•m).
6. Install upper rubber pad (14) and axle clamp (10) on equalizing beam (2).
7. Lubricate threads of two bolts (11). Install two nuts (13), washers (12), and bolts (11) on axle clamp (10). Torque nuts between 275 and 300 ft-lb (373 and 407 N•m).
8. Lubricate threads of two bolts (8) and install two nuts (9) and bolts (8) on axle clamp (10). Torque nuts to 350 ft-lb (475 N•m).
9. Remove dolly jacks.
10. Install tire and wheel assemblies on axle (para 3-10).

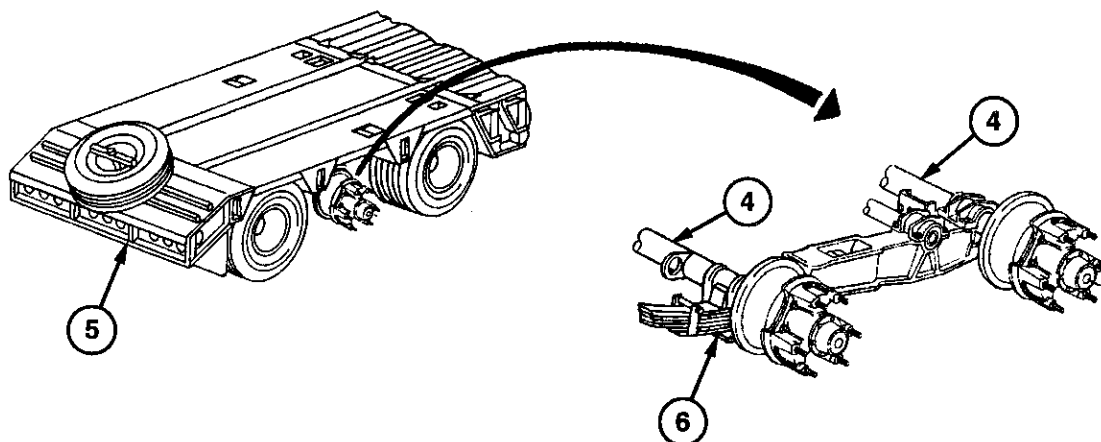


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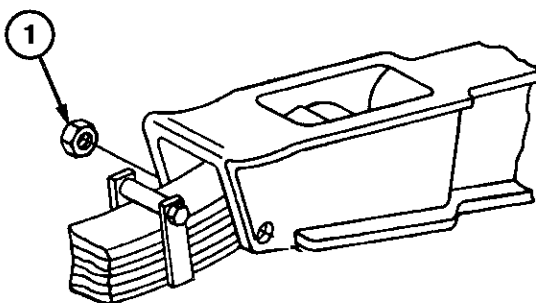
**5-8. EQUALIZING BEAM REPLACEMENT (M870A1) (continued).**

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11. Using hydraulic jack, remove trestle from under front or rear axle (7) .
12. Using hydraulic jack, remove trestle from under spring bottom plate (6) at middle axle (4).



13. Using hydraulic jack, remove trestle from under rear corner (5) of semitrailer.
14. Torque self-locking nut (1) between 73 and 97 ft-lb (99 and 132 N•m).

**FOLLOW-ON TASKS:**

- None

## 5-9. TRUNNION TUBE AND BRACKET REPLACEMENT (M870).

*This Task Covers:*

a. Removal

b. Installation

*Initial Setup:*

### Tools/Test Equipment:

- Field maintenance tool set (Item 4 Appendix B)
- Tool kit, general mechanic's: automotive (Item 7, Appendix B)
- Trestle (2) (Item 1, Appendix B)

### Equipment Conditions:

- Tire and wheel assembly removed (para 3-9).

**Personnel Required:** Two

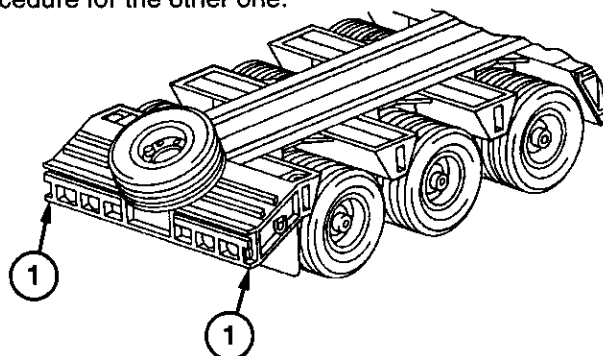
### Materials/Parts:

- Self-locking nut (12) (Item 34, Appendix I)

### a. REMOVAL

#### NOTE

There are two trunnion tubes on the semitrailer. They are located behind the front axle and in front of the rear axle, and run parallel to the axles. This procedure is for replacing one trunnion tube. Repeat the procedure for the other one.



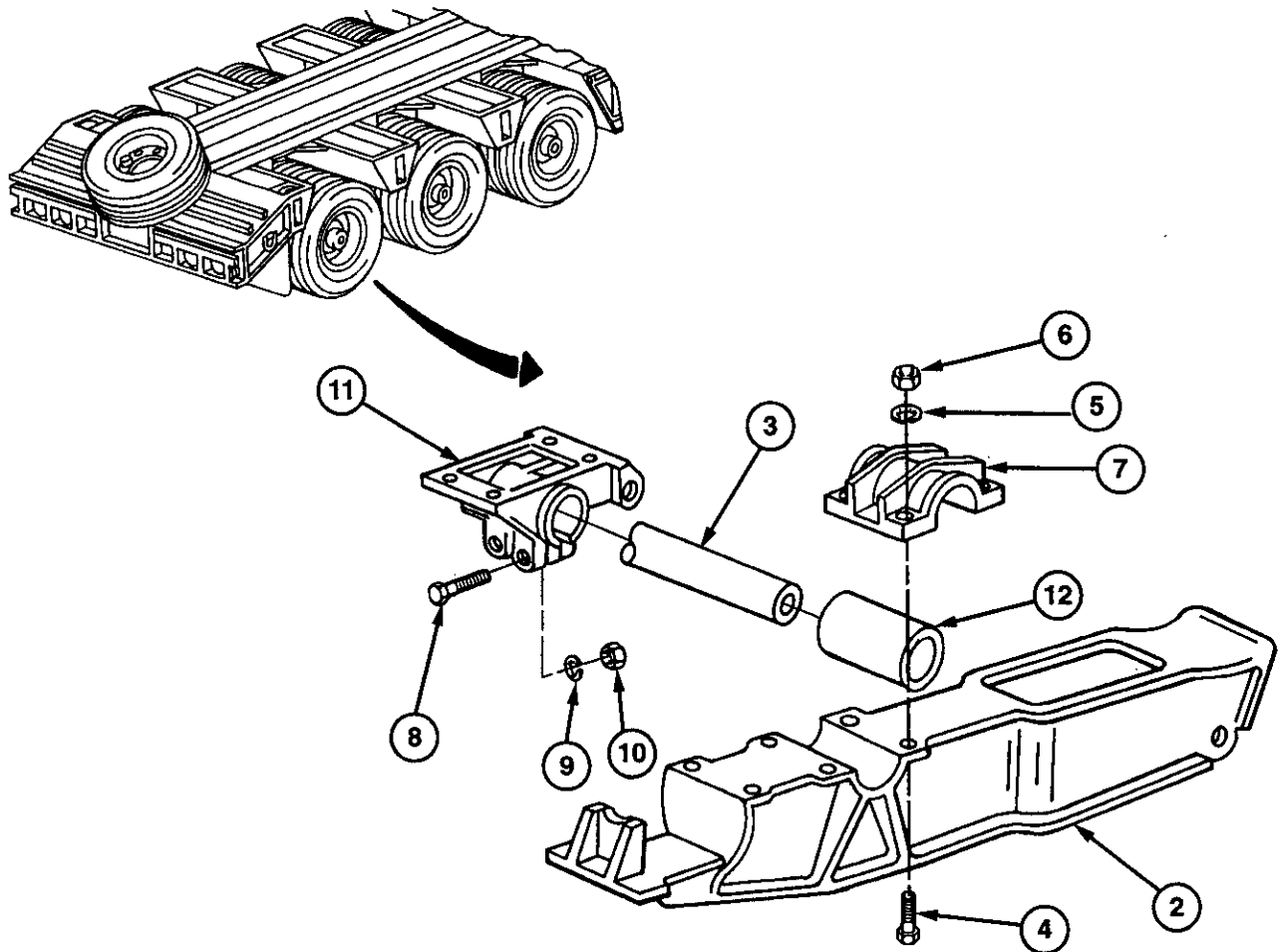
1. Using hydraulic jack, lift two rear corners (1) of semitrailer until weight is off suspension system but tire and wheel assemblies still touch the ground. Put trestles under corners (1).
2. Using dolly jack, support equalizing beam (2) under trunnion tube (3). Do not lift equalizing beam (2). Repeat for equalizing beam (2) at other end of trunnion tube (3).
3. Remove four capscrews (4), washers (5), and self-locking nuts (6) from trunnion cap (7). Remove trunnion cap (7) from equalizing beam (2). Repeat for equalizing beam (2) at other end of trunnion tube (3). Discard self-locking nuts.
4. Using dolly jack, lower equalizing beam (2) until clear of trunnion tube (3). Repeat for equalizing beam (2) at other end of trunnion tube (3).
5. Remove two capscrews (8), washers (9), and self-locking nuts (10) from trunnion bracket (11). Repeat for other trunnion bracket (11). Discard self-locking nuts.
6. Remove rubber bushing (12) from trunnion tube (3). Repeat for other end of trunnion tube (3).
7. With the aid of an assistant, drive trunnion tube (3) out of two trunnion brackets (11).

### b. INSTALLATION

1. With the aid of an assistant, drive trunnion tube (3) into two trunnion brackets (11). Be sure trunnion tube (3) is centered evenly in trunnion brackets (11).



## 5-9. TRUNNION TUBE AND BRACKET REPLACEMENT (M870) (continued).



2. Install rubber bushing (12) on trunnion tube (3). Repeat for other end of trunnion tube (3).

### **CAUTION**

**Be sure trunnion brackets hold trunnion tube securely. Failure to do so could result in damage to the equipment.**

3. Lubricate threads of two capscrews (8) and install two new self-locking nuts (10), washers (9), and capscrews (8) in trunnion bracket (11). Torque self-locking nuts (10) to 250 ft-lb (339 N•m). Repeat for other trunnion bracket (11).
4. Using dolly jack, lift equalizing beam (2) into place until rubber bushing (12) and trunnion tube (3) are placed. Repeat for equalizing beam (2) at other end of trunnion tube (3).
5. Install trunnion cap (7) on equalizing beam (2). Lubricate threads of four capscrews (4) and secure with four new self-locking nuts (6), washers (5), and capscrews (4). Torque self-locking nuts to 250 ft-lb (339 N•m). Remove dolly jacks. Repeat for other end of trunnion tube.
6. Using hydraulic jack, remove trestles from two rear corners (1) of semitrailer.

### **FOLLOW-ON TASKS:**

- Install tire and wheel assembly (para 3-9).

---

## 5-10. TRUNNION TUBE REPLACEMENT (M870A1).

---

*This Task Covers:*

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

*Initial Setup:*

- |                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Tools/Test Equipment:</b></p> <ul style="list-style-type: none"> <li>• Field maintenance tool set (Item 4, Appendix B)</li> <li>• Tool kit, general mechanic's: automotive (Item 7, Appendix B)</li> <li>• Trestle (2) (Item 1, Appendix B)</li> </ul> <p><b>Materials/Parts:</b></p> <ul style="list-style-type: none"> <li>• Grease (Item 6, Appendix F)</li> <li>• Self-locking nut (4) (Item 34, Appendix I)</li> </ul> | <p><b>Equipment Conditions:</b></p> <ul style="list-style-type: none"> <li>• Tire and wheel assemblies removed (para 3-10).</li> </ul> <p><b>Personnel Required:</b> Two</p> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
- 

**a. REMOVAL**

**NOTE**

There are two trunnion tubes on the semitrailer. They are located behind the front axle and in front of the rear axle, and run parallel to the axles. This procedure is for replacement of one trunnion tube. Repeat the procedure for the other one.

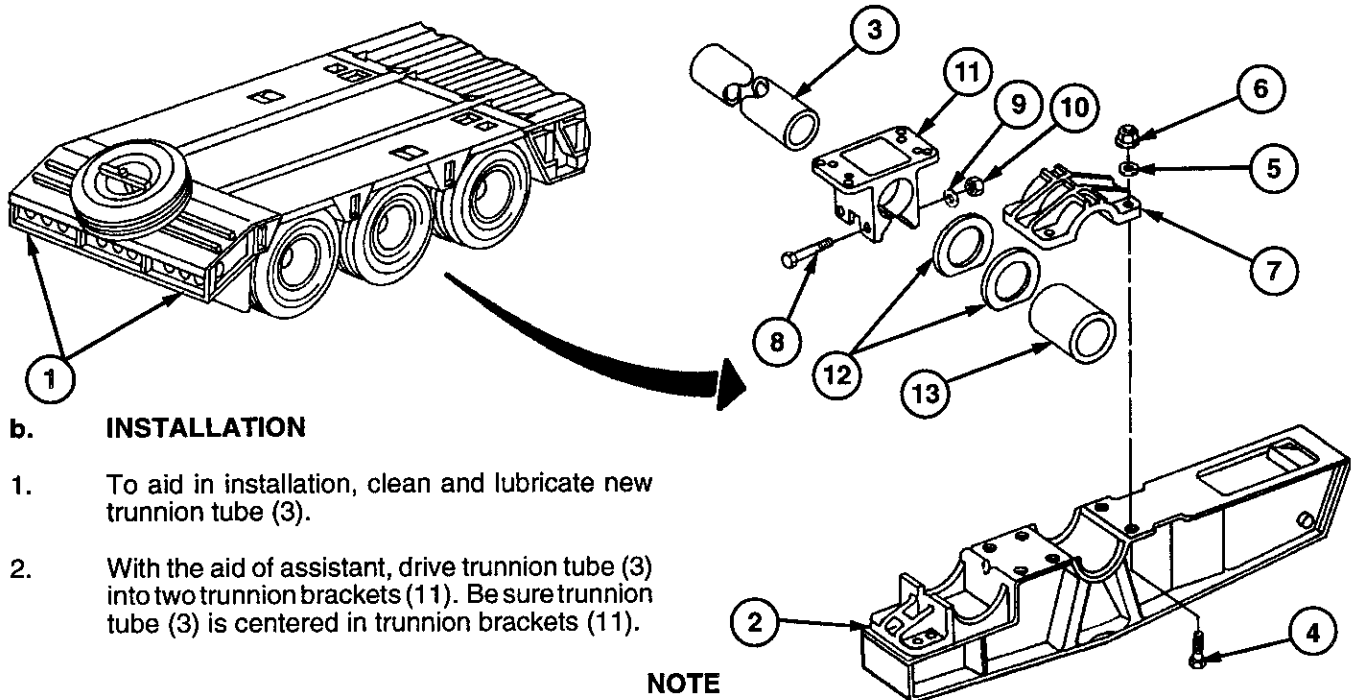
1. Using hydraulic jack, lift two rear corners (1) of semitrailer until weight is off suspension system but tire and rim assemblies still touch the ground. Put trestles under rear corners (1).
2. Using dolly jack, support equalizing beam (2) under trunnion tube (3), but do not lift. Repeat for equalizing beam (2) at other end of trunnion tube (3).
3. Remove four bolts (4), washers (5), and self-locking nuts (6) from trunnion clamp (7). Repeat for other trunnion clamp (7). Discard self-locking nuts.
4. Remove two trunnion clamps (7) from two equalizing beams (2).
5. Using dolly jack, lower equalizing beam (2) until clear of trunnion tube (3). Repeat for equalizing beam (2) at other end of trunnion tube (3).
6. Remove two bolts (8), washers (9), and nuts (10) from trunnion bracket (11). Repeat for other trunnion bracket (11).
7. Remove two washers (12) and rubber bushing (13) from each side of trunnion tube (3). Mark washers to aid in returning them to their proper location.

## 5-10. TRUNNION TUBE REPLACEMENT (M870A1) (continued).

### NOTE

Trunnion tube may be rusty and difficult to remove. Lubricate, clean, and sand as necessary to remove it.

8. To aid in removal, clean trunnion tube thoroughly. Thoroughly lubricate trunnion tube with grease after cleaning.
9. With the aid of an assistant, drive trunnion tube (3) out of two trunnion brackets (11).



### b. INSTALLATION

1. To aid in installation, clean and lubricate new trunnion tube (3).
2. With the aid of assistant, drive trunnion tube (3) into two trunnion brackets (11). Be sure trunnion tube (3) is centered in trunnion brackets (11).

### NOTE

A thin washer and a thick washer must be installed on each end of trunnion tube, between bracket and trunnion clamp.

3. Install two washers (12) and rubber bushing (13) on each side of trunnion tube (3). Be sure washers (12) are in correct location.
4. Lubricate threads of two bolts (8), and install two nuts (10), washers (9), and bolts (8) on trunnion bracket (11). Torque nuts between 120 and 165 ft-lb (373 and 407 N•m). Repeat for other trunnion bracket (11).
5. Using dolly jack, lift equalizing beam (2) into place until rubber bushing (13) and trunnion tube (3) are seated. Repeat for other equalizing beam (2).
6. Install trunnion clamp (7) on each side of trunnion tube (3).
7. Lubricate threads of four bolts (4), and secure trunnion clamp (7) with four self-locking nuts (6), washers (5), and bolts (4). Torque nuts between 275 and 300 ft-lb (373 and 407 N•m). Repeat for other trunnion clamp.
8. Using hydraulic jack, remove trestles from two rear corners (1) of semitrailer.

### FOLLOW-ON TASKS:

- Install tire and wheel assemblies (para 3-10).

### Section III. BRAKE MAINTENANCE

Paragraph Number	Paragraph Title	Page Number
5-11	General .....	5-34
5-12	Backing Plate and Camshaft Repair and Replacement (M870) .....	5-34
5-13	Camshaft Replacement (M870A1) .....	5-38

#### 5-11. GENERAL

This section provides information for performing brake repairs on the M870 and M870A1 semitrailers.

#### 5-12. BACKING PLATE AND CAMSHAFT REPAIR AND REPLACEMENT (M870).

*This Task covers:*

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

*Initial Setup:*

**Tools/Test Equipment:**

- Common no.1 tool set (Item 6, Appendix B)

**Materials/Parts:**

- Rag (Item 15, Appendix F)
- Lockwasher (4) (Item 8, Appendix I)

- Lockwasher (8) (Item 20, Appendix I)

**Equipment Conditions:**

- Drain cocks open (para 3-8)
- Brakeshoes removed (para 4-46).
- Slack adjuster removed (para 4-48).

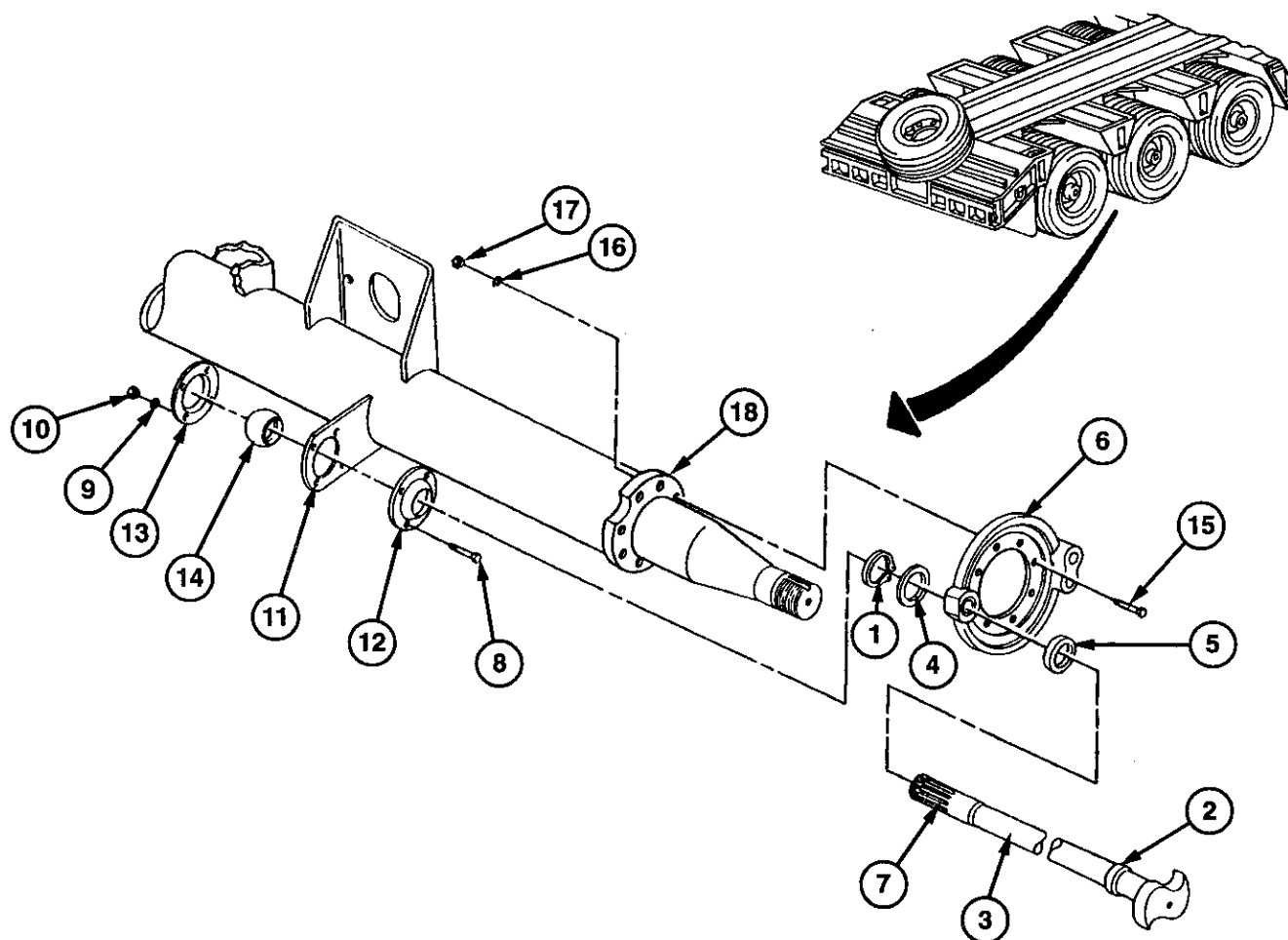
#### REMOVAL

#### NOTE

There are six camshafts and backing plates on the semitrailer. This procedure is for replacing one camshaft and backing plate. Repeat this procedure for the remaining five.

## 5-12. BACKING PLATE AND CAMSHAFT REPAIR AND REPLACEMENT (M870).

1. Remove retaining ring (1) from seat (2) on camshaft (3).
2. Slide camshaft (3) and two washers (4 and 5) out of backing plate (6). Retaining ring (1) and washers (4 and 5) will slide on camshaft (3). Retaining ring (1) will drop into seat (7) and have to be taken off with snapping pliers.
3. Remove four screws (8), lockwashers (9), and nuts (10) from camshaft bearing bracket (11). Discard lockwashers.
4. Remove key washer (12) and camshaft retainer (13) from camshaft bearing bracket (11).
5. Remove bearing (14) from camshaft bearing bracket (11).
6. Remove eight bolts (15), lockwashers (16), and nuts (17) from backing plate (6). Discard lockwashers.
7. Slide backing plate (6) off of axle (18).



## 5-12. BACKING PLATE AND CAMSHAFT REPAIR AND REPLACEMENT (M870) (continued).

### b. INSPECTION

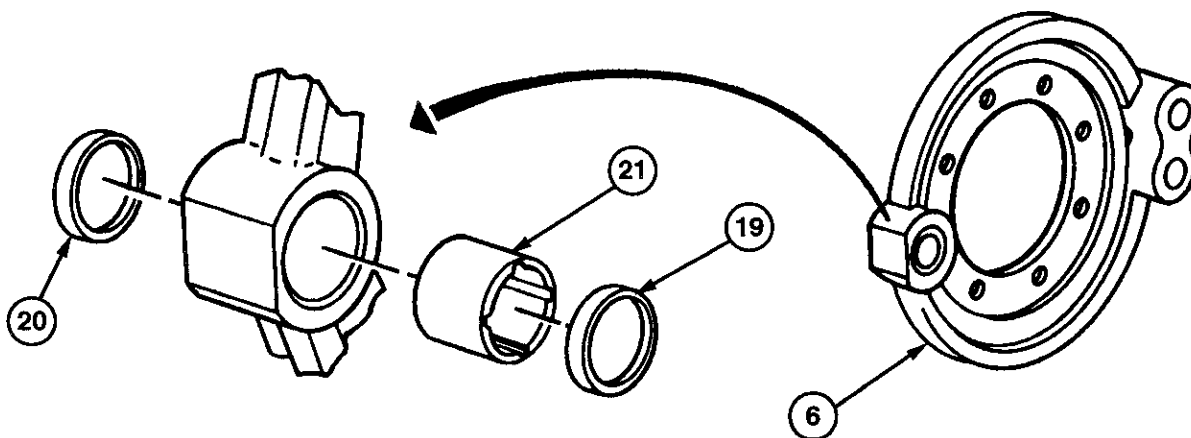
Check two seals (19 and 20) and bushing (21) for damage or wear.

#### NOTE

If seals are damaged or worn, replace them by doing steps 1 through 5 in subparagraph 5-12c. If seals and bushing are not damaged, go to subparagraph 5-12d.

### c. REPAIR

1. Pry two seals (19 and 20) out of bushing (21).
2. Push bushing (21) out of backing plate (6).
3. Install new seal (19) in new bushing (21).
4. Install bushing (21) in backing plate (6).
5. Install new seal (20) in bushing (21).

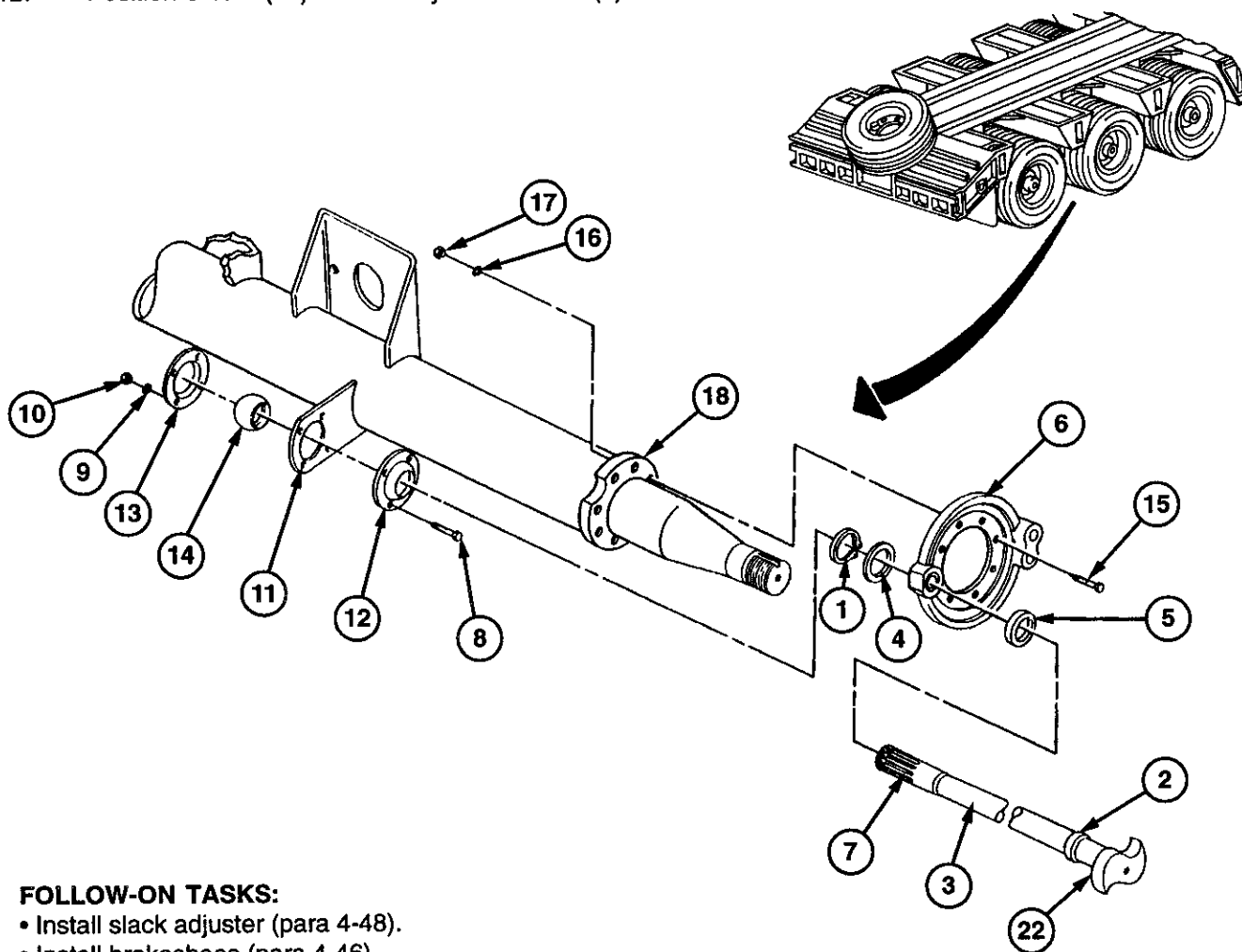


### d. INSTALLATION

1. Slide backing plate (6) on axle (18), and line up holes in backing plate (6) with holes in axle (18).
2. Install eight nuts (17), new lockwashers (16), and bolts (15) in backing plate (6).
3. Install bearing (14), key washer (12), and camshaft retainer (13) on camshaft bearing bracket (11).
4. Install four nuts (10), new lockwashers (9), and screws (8) on key washer (12) and camshaft retainer (13), but do not tighten. This will allow the bearing to turn when the camshaft is installed.

## 5-12. BACKING PLATE AND CAMSHAFT REPAIR AND REPLACEMENT (M870) (continued).

5. Install washer (5) on camshaft (3).
6. Slide camshaft (3) through backing plate (6), but not through bearing (14).
7. Install washer (4) on camshaft (3).
8. Place retaining ring (1) on camshaft (3) and move past seat (7) until retaining ring (1) touches backing plate (6).
9. Push camshaft (3) through camshaft bearing bracket (11) until S-cam (22) touches backing plate (6).
10. Install retaining ring (1) in seat (2).
11. Tighten four nuts (10), lockwashers (9), and screws (8) in camshaft bearing bracket (11).
12. Position S-cam (22) horizontally on camshaft (3).



### FOLLOW-ON TASKS:

- Install slack adjuster (para 4-48).
- Install brakeshoes (para 4-46).
- Close drain cocks (para 3-8).

---

## 5-13. CAMSHAFT REPLACEMENT (M870A1).

---

*This Task covers:*

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

*Initial Setup:*

**Tools/Test Equipment:**

- Common no. 1 tool set (Item 6, Appendix B)

**Materials/Parts:**

- Bushing (Item 2, Appendix I)
- Lockwasher (4) (Item 16, Appendix I)
- Preformed packing (2) (Item 22, Appendix I)
- Preformed Packing (2) (Item 23, Appendix I)

**Equipment Conditions:**

- Drain cocks open (para 3-8)
- Slack adjusters removed (para 4-48).
- Brakeshoes removed (para 4-46).

**Personnel Required:** Two

---

### a. REMOVAL

**NOTE**

There are six camshafts on the semitrailer. This procedure is for replacing one camshaft. Repeat this procedure for the remaining five.

1. Remove four bolts (1), lockwashers (2), and nuts (3) from two retaining plates (4). Discard lockwashers.
2. Remove two retaining plates (4) and preformed packings (5) and bearing (6) from camshaft bearing bracket (7). Discard preformed packings.

**NOTE**

It may be necessary to tap camshaft out of backing plate using mallet.

3. Hold retaining ring (8) open and slide camshaft (9) forward, out of camshaft bearing bracket (7). Remove retaining ring (8) and washer (10) from camshaft (9). Slide camshaft (9) out of backing plate (11).
4. Slide plate spacer (12) off camshaft (9).
5. Remove lubrication fitting (13) from backing plate (11).
6. Remove two preformed packings (14) and bushing (15) from backing plate (11). Discard bushing and preformed packings.

### b. INSTALLATION

1. Install new bushing (15) and two new preformed packings (14) in backing plate (11).
2. Install lubrication fitting (13) in backing plate (11).
3. Slide plate spacer (12) onto camshaft (9).
4. Install two new preformed packings (5) and retaining plates (4) and bearing (6) on camshaft bearing bracket (7).
5. Install four nuts (3), lockwashers (2), and bolts (1) on two retaining plates (4) and camshaft bearing bracket (7).

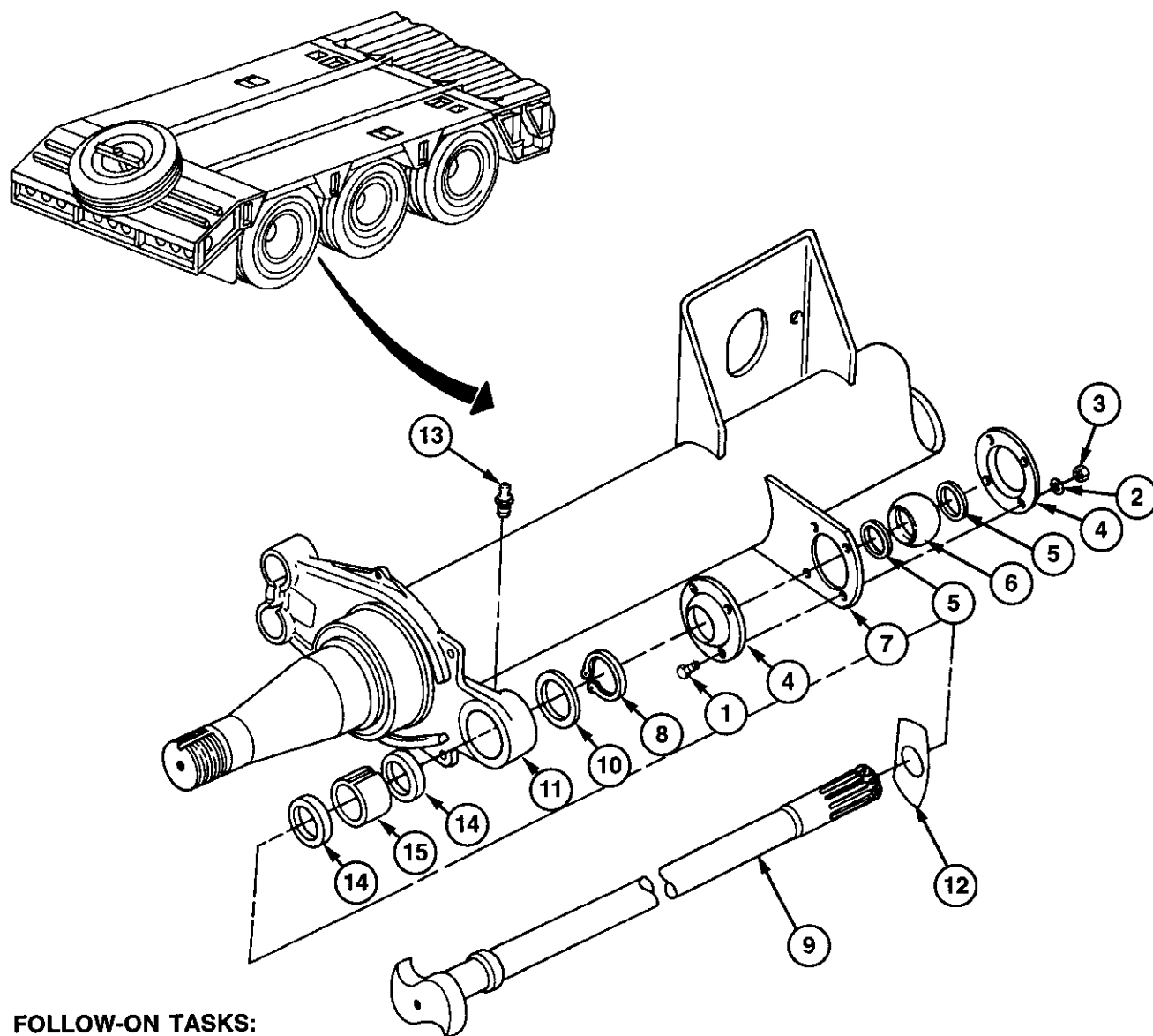


## 5-13. CAMSHAFT REPLACEMENT (M870A1) (continued).

### NOTE

It may be necessary to tap camshaft in position with a mallet.

6. Slide approximately two inches (5 cm) of camshaft (9) through opening in backing plate (11). Install washer (10) and retaining ring (8) on camshaft (9). Slide camshaft (9) through opening in retaining plates (4).
7. Move retaining ring (8) to proper position.
8. Lubricate lubrication fitting (13) (see Appendix J).



### FOLLOW-ON TASKS:

- Install brakeshoes (para. 4-46).
- Install slack adjuster (para. 4-48).
- Close drain cocks on air reservoirs (para 3-8).
- Adjust brakes (para 4-47).

## Section IV. WHEELS AND TRACKS MAINTENANCE

### 5-14. BRAKEDRUM REPAIR.

*This Task Covers:*

Repair

*Initial Setup:*

**Tools/Test Equipment:**

- Field maintenance tool set (Item 4, Appendix B)
- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

**Materials/Parts:**

- Cloth, abrasive (crocus) (Item 3, Appendix F)

- Rag (Item 15, Appendix F)

- Solvent, drycleaning (Item 19, Appendix F)

**Equipment Conditions:**

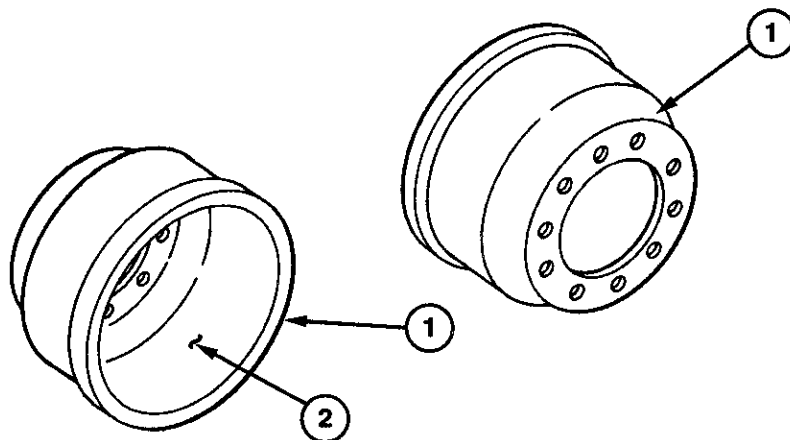
- Hub and brakedrum removed and hub separated from brakedrum (para 4-68 or 4-69).

## REPAIR

### WARNING

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

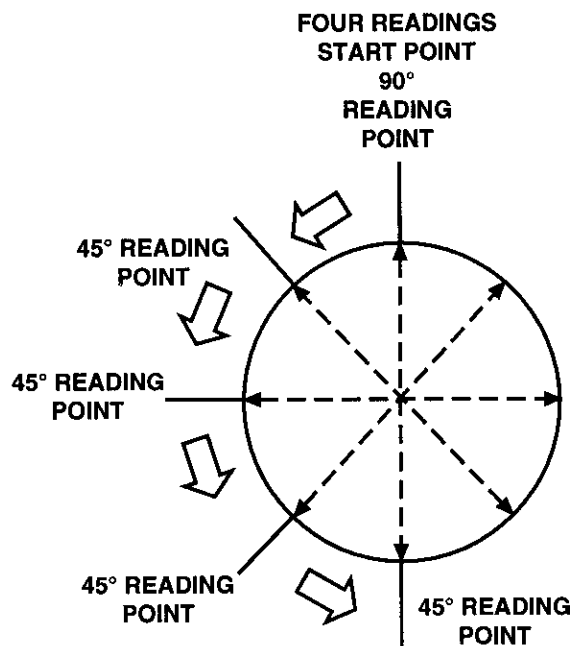
1. Wash brakedrum (1) thoroughly with drycleaning solvent and rag.
2. Inspect brakedrum (1) for wear, cracks, or damage. Replace if worn, cracked, or damaged.
3. Inspect inner braking surface (2) for heat checking, scoring, or warpage.



## 5-14. BRAKEDRUM REPAIR (M870 AND M870A1) (continued).

### NOTE

- Slight scoring on brakedrum can be corrected by polishing with abrasive (crocus) cloth. If brakedrum is heavily scored or out-of-round, it must be refaced.
  - Whenever brakedrum on one side of axle is refaced, the other brakedrum on that axle should be refaced to the same specifications.
4. Using micrometer, check inside of brakedrum (1) if four places for out-of-round or tapered wear. Record each reading. The maximum difference between the four readings cannot exceed 0.062 inch (1.5888 mm). Brakedrums with out-of-round exceeding limits must be refaced.



### NOTE

If refacing causes brakedrums to exceed original diameter by more than 0.80 inch (2.032 mm) for the M870 or 0.060 inch (1.524 mm) for the M870A1, replace brakedrum. The other brakedrum on that axle should be replaced also.

5. Reface inner braking surface (2). Make several thin cuts until grooving or scoring defects have been removed. Check brakedrum diameter after each cut to make sure you have not cut out too much metal.
6. Reface other brakedrum on the same axle to the same specifications.

### FOLLOW-ON TASKS:

- Install hub and brakedrum on axle (para 4-68 or 4-69).

## Section V. FRAME AND TOWING ATTACHMENTS MAINTENANCE

Paragraph Number	Paragraph Number	Page Number
5-15	General .....	5-42
5-16	Tiedown Ring Replacement .....	5-42
5-17	Lower Link Assembly Replacement (M870) .....	5-44
5-18	Lower Link Assembly Replacement (M870A1) .....	5-46
5-19	Gooseneck Hinge Pin Replacement (M870) .....	5-48
5-20	Gooseneck Hinge Pin Replacement (M870A1) .....	5-50
5-21	Spare Tire Carrier Replacement (M870) .....	5-52
5-22	Spare tire Carrier Connector Replacement (M870A1) .....	5-53

### 5-15. GENERAL

This section provides information for performing Direct Support level frame and towing attachments repairs on the M870 and M870A1 semitrailers.

### 5-16. TIEDOWN RING REPLACEMENT.

*This Task Covers:*

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

*Initial Setup:*

**Tools/Test Equipment:**

- Field maintenance tool set  
(Item 4, Appendix B)
- Tool kit, general mechanic's: automotive  
(Item 7, Appendix B)

**Personnel Required:** Two

**References:** TC 9-237

#### a. REMOVAL

#### NOTE

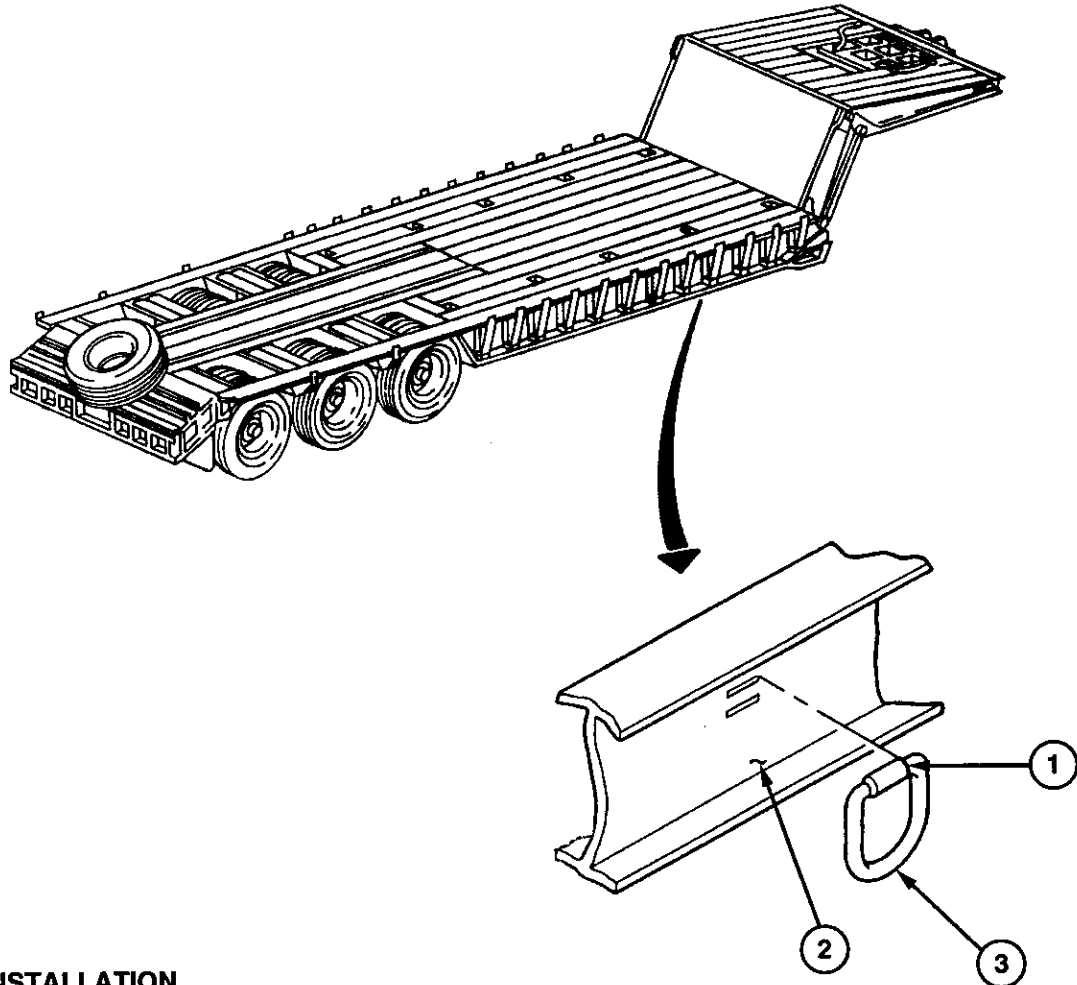
There are 18 tiedown rings on the M870 semitrailer and 14 tiedown rings on the M870A1 semitrailer. This procedure is for the replacement of one tiedown ring. Repeat the procedure as necessary.

---

**5- 16. TIEDOWN RING REPLACEMENT (continued).**

---

1. To aid in placement of new tiedown bracket (1) during installation, mark the location above and beside bracket (1).
2. Cut off bracket (1) from semitrailer frame (2). Remove tiedown ring (3) from bracket (1).
3. Grind weldment from frame (2).

**b. INSTALLATION**

1. Place tiedown ring (3) in bracket (1).
2. Put bracket (1) and tiedown ring (3) in place on frame (2) according to the marks made during removal. Have assistant hold in place with wooden dowel.
3. Weld bracket (1) to frame (2) (refer to TC 9-237).

**FOLLOW-ON TASKS:**

- None

---

## 5-17. LOWER LINK ASSEMBLY REPLACEMENT (M870).

---

*This Task Covers:*

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

*Initial Setup:*

**Tools/Test Equipment:**

- Common no.1 tool set (Item 6, Appendix B)
- Crane, wheel mounted (Item 2, Appendix B)
- Field maintenance tool set (Item 4, Appendix B)
- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

**Materials/Parts:**

- Retaining ring (Item 24, Appendix I)

**Equipment Conditions:**

- Wheels chocked (para 2-10).
- Gooseneck in upright position (para 2-8).

**Personnel Required:** Two

**References:** TC 9-237

---

**a. REMOVAL**

1. Using crane, lift front of semitrailer.
2. Place two one-foot-high wood blocks (1) under two landing pads (2). Lower front of semitrailer onto blocks (1).
3. Behind semitrailer frame (3), cut tack welds from two retaining rings (4) on two lower link hinge pins (5). Remove two retaining rings (4) from two hinge pins (5). Grind weld to surface of each hinge pin (5).
4. Using crane, lift gooseneck (6) until two lockpins (7) are loose.

**WARNING**

**Do not work under gooseneck unless lockpins are in place. Failure to heed this warning could result in injury or death.**

5. Remove two lockpins (para 2-10).
6. Lower front of semitrailer until gooseneck (6) is fully extended.

**WARNING**

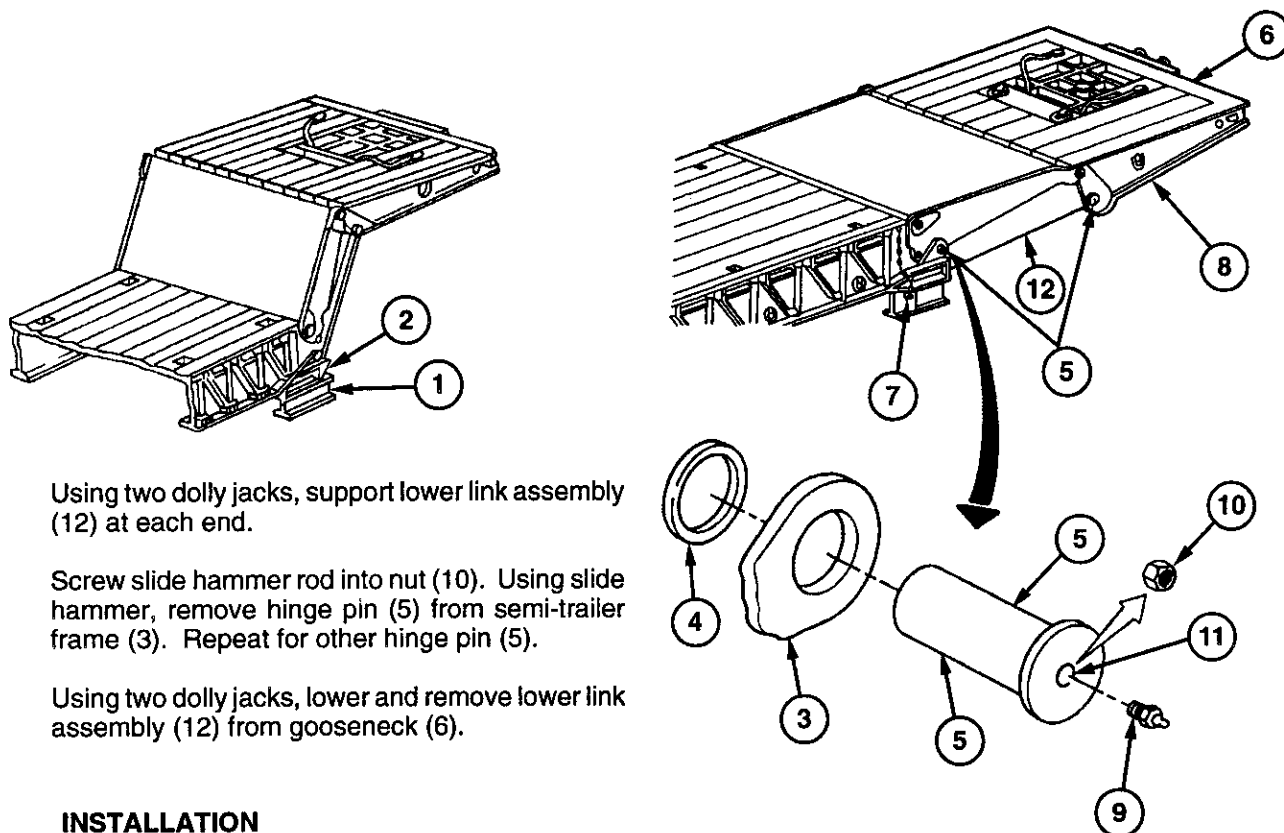
**Placement of jacks is extremely important in this procedure. Failure to place jacks properly could result in injury or death.**

7. Place hydraulic jack under front and rear ends of upper deck side rail (8).
8. Raise hydraulic jack at front of upper deck side rail (8) until gooseneck (6) starts to lift.
9. Raise hydraulic jack at rear of upper deck side rail (8) until two hinge pins (5) can be turned with pipe wrench.
10. Remove lubrication fitting (9) from one of two hinge pins (5).

**NOTE**

A slide hammer is required for removal of hinge pin. Use nut that will fit threads on end of slide hammer rod.

11. Put nut (10) in place over lubrication fitting hole (11) and have assistant hold nut (10) in place with wooden dowel. Weld nut (10) to one hinge pin (5).
12. Repeat steps 10 and 11 for other hinge pin (5).

**5-17. LOWER LINK ASSEMBLY REPLACEMENT (M870) (continued).**

13. Using two dolly jacks, support lower link assembly (12) at each end.
14. Screw slide hammer rod into nut (10). Using slide hammer, remove hinge pin (5) from semi-trailer frame (3). Repeat for other hinge pin (5).
15. Using two dolly jacks, lower and remove lower link assembly (12) from gooseneck (6).

**b. INSTALLATION**

1. Place dolly jacks under front and rear ends of new lower link assembly (12). Slide lower link assembly (12) into gooseneck (6) and raise into position.
2. Drive two hinge pins (5) into lower link assembly (12). If using old hinge pins, cut off nuts (10) and grind weldment smooth.
3. Install two lubrication fittings (9) in two hinge pins (5).
4. Remove two dolly jacks from lower link assembly (12).
5. Using crane, raise gooseneck (6) to upright position.
6. Install two lockpins (para 2-8).
7. Remove hydraulic jacks from under upper deck side rail (8).
8. Behind semitrailer frame (3), install retaining ring (4) on hinge pin (5) and weld (refer to TC 9-237). Repeat for other hinge pin (5).
9. Using crane, lift gooseneck (6). Remove two wood blocks (1) from under two landing pads (2).

**FOLLOW ON TASKS:**

- Lower gooseneck (2-10).
- Unchock wheels (2-8).

---

## 5-18. LOWER LINK ASSEMBLY REPLACEMENT (M870A1).

---

*This Task Covers:*

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

*Initial Setup:*

**Tools/Test Equipment:**

- Common no. 1 tool set (Item 6, Appendix B)
- Crane, wheel mounted (Item 2, Appendix B)
- Field maintenance tool set (Item 4, Appendix B)
- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

**Equipment Conditions:**

- Gooseneck in upright position (para 2-8).

**Personnel Required:** Two

**Materials/Parts:**

- Cotter pin (3) (Item 3, Appendix I)
- 

**a. REMOVAL**

1. Using crane, lift front of semitrailer.
2. Place two one-foot-high wood blocks (1) under two landing pads (2). Lower front of semitrailer onto blocks (1).
3. Remove two cotter pins (3) from two hinge pins (4). Discard cotter pins.
4. Remove two retaining rings (5) from two hinge pins (4).

**WARNING**

**Do not work under gooseneck unless lockpins are in place. Working under gooseneck when lockpins are not in place could result in injury or death.**

5. Remove two lockpins (para 2-10).
6. Lower front of semitrailer until gooseneck (6) is fully extended.

**WARNING**

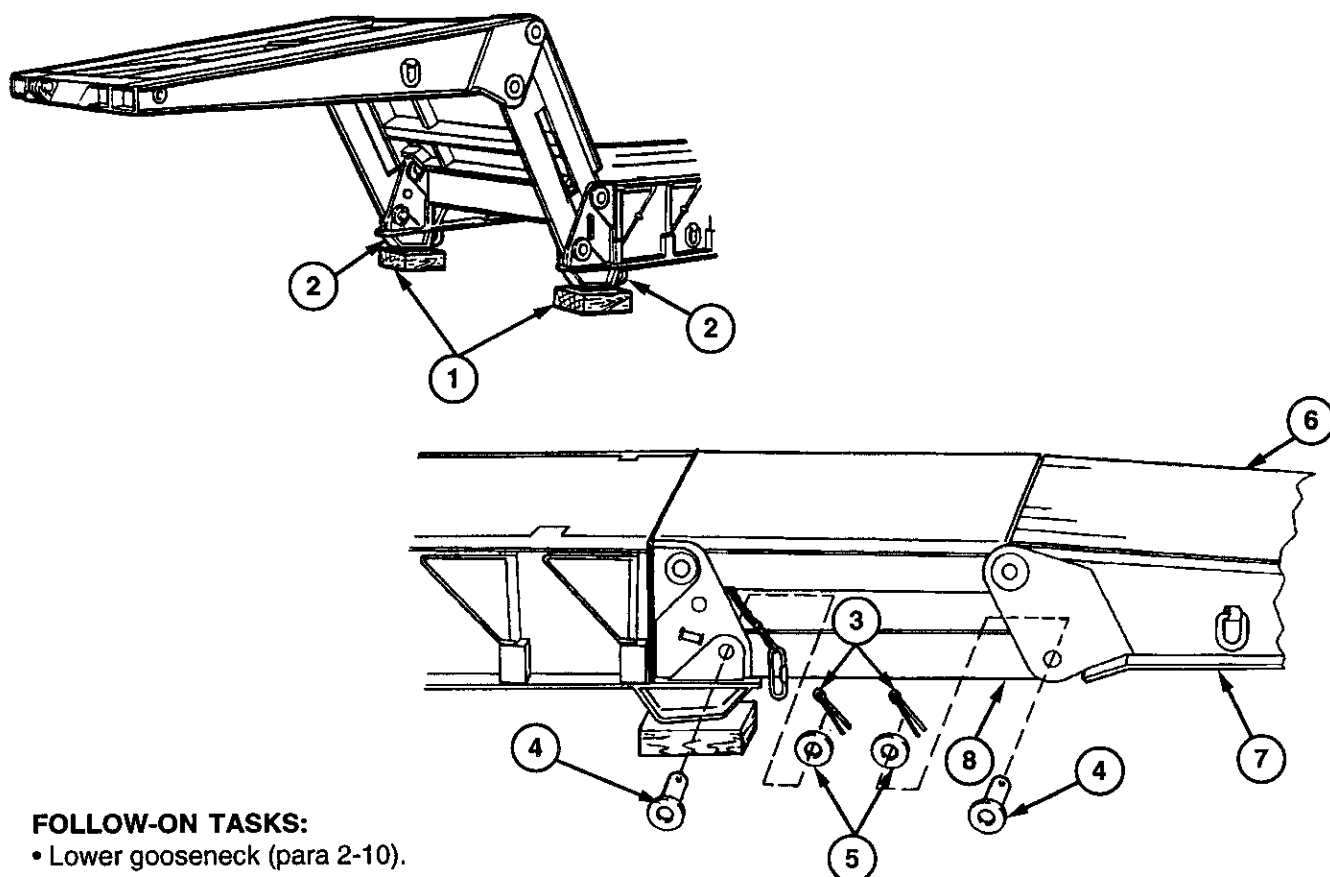
**Placement of jacks is extremely important in this procedure. Failure to place jacks properly could result in injury or death.**

7. Place hydraulic jacks under front and rear ends of upper deck side rail (7).
8. Raise hydraulic jack at front end of upper deck side rail (7) until gooseneck (6) starts to lift.
9. Raise hydraulic jack at rear end of upper deck side rail (7) until two hinge pins (4) can be turned with pipe wrench.
10. Using dolly jacks, support lower link assembly (8) at each end.
11. Remove two hinge pins (4) from lower link assembly (8).
12. Using dolly jacks, lower and remove lower link assembly (8) from gooseneck (6).



**5-18. LOWER LINK ASSEMBLY REPLACEMENT (M870A1) (continued).****b. INSTALLATION**

1. Place dolly jack under front and rear ends of new lower link assembly (8). Slide lower link assembly (8) into gooseneck (6) and raise into position. Make sure holes for two hinge pins (4) in lower link assembly (8) are aligned with holes for hinge pins (4) in gooseneck (6).
2. Drive two hinge pins (4) into lower link assembly (8).
3. Remove dolly jacks from under lower link assembly (8).
4. Using crane, raise gooseneck (6) to upright position.
5. Install two lockpins (para 2-8).
6. Remove hydraulic jacks from under upper deck side rail (7).
7. Install two retaining rings (5) on two hinge pins (4).
8. Install two new cotter pins (3) on two hinge pins (4).
9. Using crane, raise front of semitrailer. Remove two wood blocks (1) from under two landing pads (2).

**FOLLOW-ON TASKS:**

- Lower gooseneck (para 2-10).

---

## 5-19. GOOSENECK HINGE PIN REPLACEMENT (M870).

---

*This Task Covers:*

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

*Initial Setup:*

**Tools/Test Equipment:**

- Common no. 1 tool set (Item 6, Appendix B)
- Crane, wheel mounted (Item 2, Appendix B)
- Field maintenance tool set (Item 4, Appendix B)
- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

**Equipment Conditions:**

- Gooseneck in upright position (para 2-8).

**Personnel Required:** Two

**References:** TC 9-237

**Materials/Parts:**

- Retaining ring (Item 24, Appendix I)
- 

**a. REMOVAL**

1. Using crane, lift front of semitrailer.
2. Place two one-foot-high wood blocks (1) under two landing pads (2). Lower front of semitrailer onto blocks (1).
3. Cut tack weld from retaining ring (3) behind semitrailer frame (4) on gooseneck hinge pin (5). Remove retaining ring (3) from hinge pin (5). Grind weld to surface of hinge pin (5). Discard retaining ring.
4. Using crane, lift gooseneck (6) until two locking pins (7) are loose.

**WARNING**

**Do not work under gooseneck unless lockpins are in place. Working under gooseneck when lockpins are not in place could result in injury or death.**

5. Remove two lockpins (para 2-10).
6. Lower gooseneck (6) until fully extended.

**WARNING**

**Placement of jacks is extremely important in this procedure. Failure to place jacks properly could result in injury or death.**

7. Place hydraulic jack under front and rear ends of upper deck side rail (8).
8. Raise hydraulic jack at front of side rail (8) until gooseneck (6) starts to lift.
9. Raise hydraulic jack at rear of side rail (8) until hinge pin (5) can be turned with pipe wrench.
10. Remove lubrication fitting (9) from hinge pin (5).

**NOTE**

Removal of hinge pin requires the use of a slide hammer. Use a nut that will fit threads on slide hammer rod.

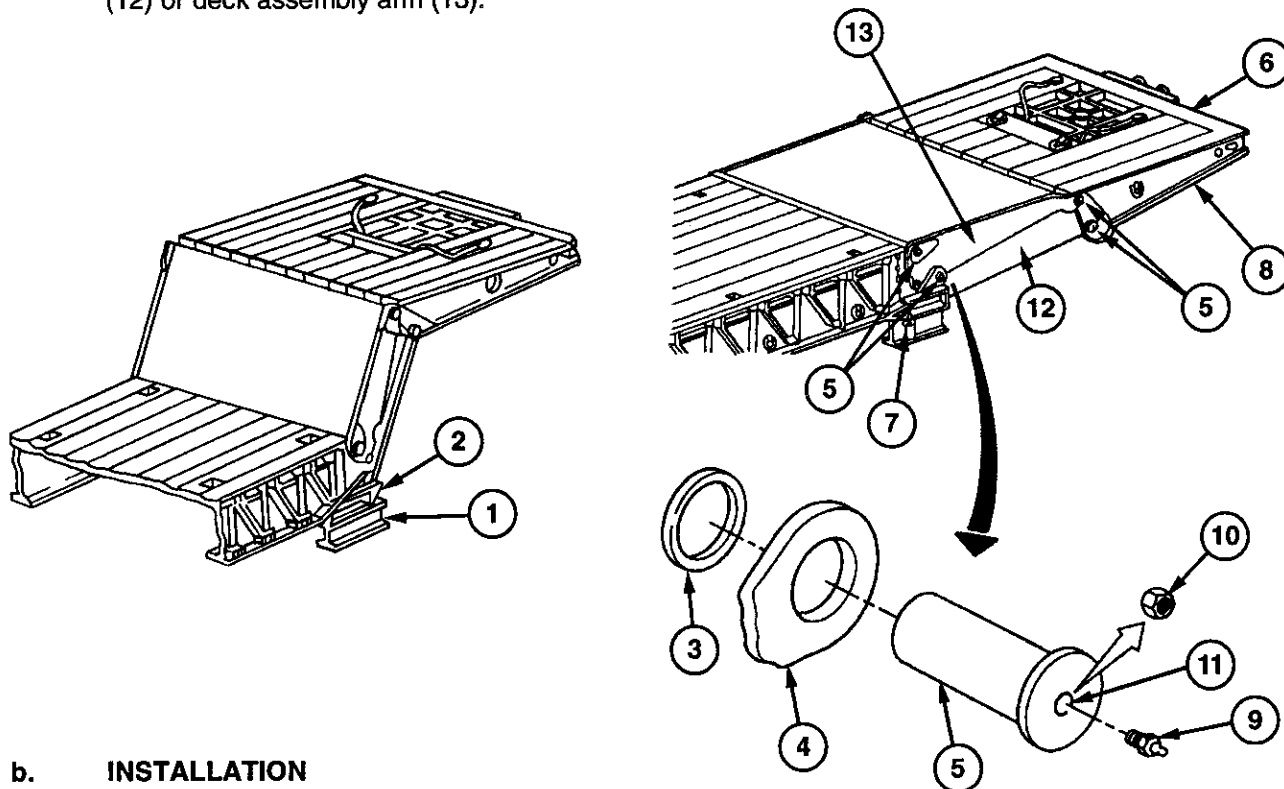
11. Put nut (10) in place over lubrication fitting hole (11) and have assistant hold it in place with wooden dowel. Weld nut (10) to hinge pin (5).

## 5-19. GOOSENECK HINGE PIN REPLACEMENT (M870) (continued).

### WARNING

Before removing hinge pin, the part being freed must be supported. If hinge pin is being removed from lower link assembly, support end of lower link assembly with dolly jack. If hinge pin is being removed from deck assembly arm, deck assembly must be supported by overhead hoist. Failure to do so may result in injury or death.

12. Screw rod of slide hammer into nut (10). Using slide hammer, remove hinge pin (5) from lower link assembly (12) or deck assembly arm (13).



### b. INSTALLATION

1. Drive new hinge pin (5) into lower link assembly (12) or deck assembly arm (13).
2. Install lubrication fitting (9) in hole (11) in hinge pin (5).
3. Using crane, raise gooseneck (6) to upright position.
4. Install two lockpins (para 2-8).
5. Remove hydraulic jacks from under side rail (8).
6. Install retaining ring (3) on hinge pin (5) behind semitrailer frame (4) and weld (refer to TC 9-237).
7. Using crane, lift front end of semitrailer. Remove wood blocks (1) from under landing pads (2).

### FOLLOW-ON TASKS:

- Lower gooseneck (para 2-10).

## 5-20. GOOSENECK HINGE PIN REPLACEMENT (M870A1).

***This Task Covers:***

- a. Removal**

**b. Installation**

**Initial Setup:**

**Tools/Test Equipment:**

- Common no. 1 tool set (Item 6, Appendix B)
- Crane, wheel mounted (Item 2, Appendix B)
- Field maintenance tool set (Item 4, Appendix B)
- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

**Equipment Conditions:**

- Gooseneck in upright position (para 2-8).

**Personnel Required: Two**

### Materials/Parts:

- Cotter pin (Item 3, Appendix I)

**a. REMOVAL**

1. Using crane, lift front of semitrailer.
2. Place two one-foot-high wood blocks (1) under two landing pads (2). Lower front of semitrailer onto blocks (1).
3. Remove cotter pin (3) from gooseneck hinge pin (4). Discard cotter pin.

## WARNING

**Do not work under gooseneck unless lockpins are in place. Working under goose-neck when lockpins are not in place could result in injury or death.**

4. Remove lockpin (para 2-10).
5. Lower front of semitrailer until gooseneck (5) is fully extended.

## WARNING

**Placement of jacks is extremely important in this procedure. Failure to place jacks properly could result in injury or death.**

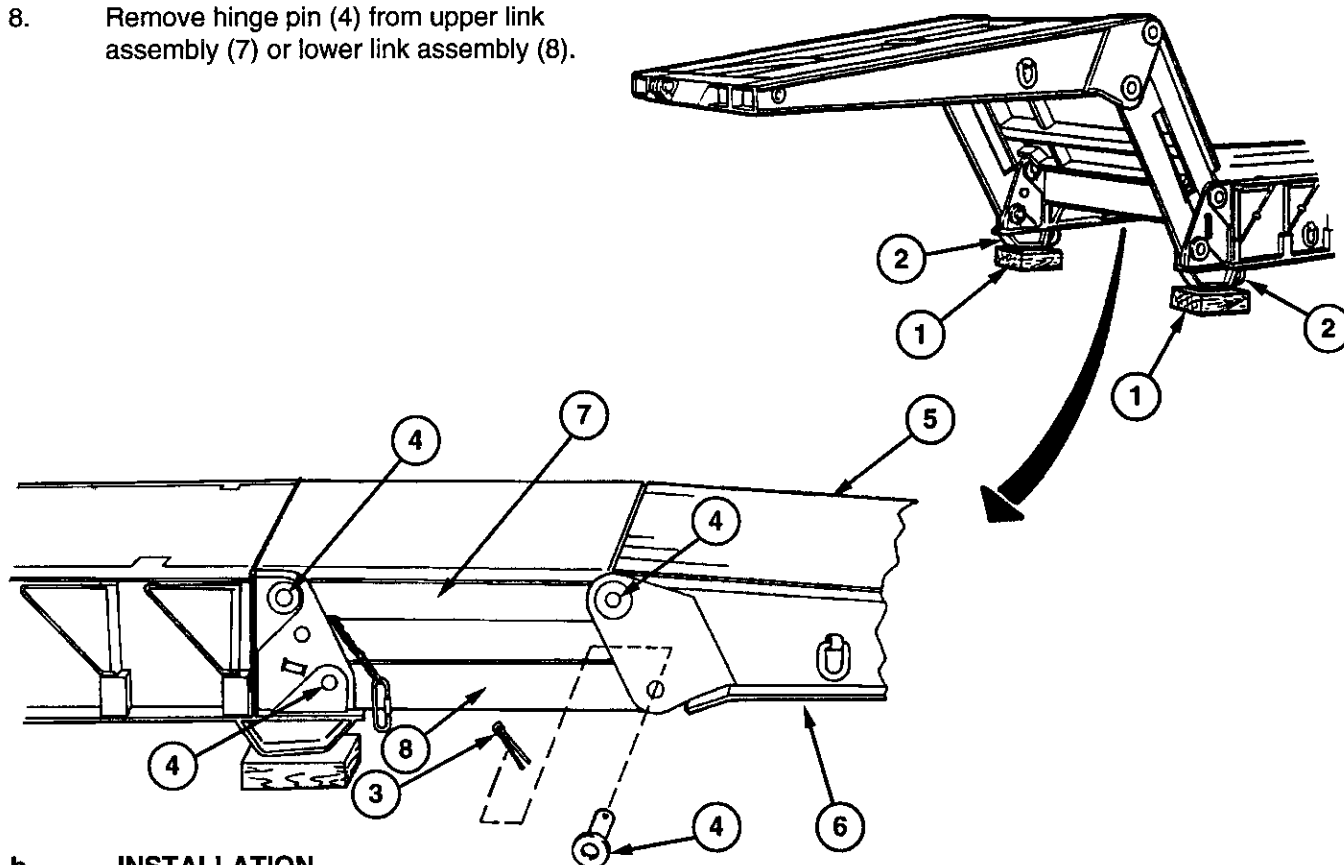
6. Place hydraulic jack under each end of upper-deck side rail (6).
7. Raise hydraulic jack at front of side rail (6) until hinge pin (4) can be turned with pipe wrench.

## 5-20. GOOSENECK HINGE PIN REPLACEMENT (M870A1) (continued).

### WARNING

Before removing hinge pin, the part being freed must be supported. If hinge pin is being removed from lower link assembly, support end of lower link assembly with dolly jack. If hinge pin is being removed from upper link assembly, upper link must be supported by overhead hoist. Failure to do so may result in injury or death.

8. Remove hinge pin (4) from upper link assembly (7) or lower link assembly (8).



### b. INSTALLATION

1. Drive hinge pin (4) into upper link assembly (7) or lower link assembly (8).
2. Using crane, raise gooseneck (5) to upright position.
3. Install lockpin (para 2-8).
4. Install new cotter pin (3) on hinge pin (4).
5. Remove hydraulic jacks from under upper-deck side rail (6).
6. Using crane, raise front of semitrailer. Remove two wood blocks (1) from under two landing pads (2).

### FOLLOW-ON TASKS:

- Lower gooseneck (para 2-10).

---

## 5-21. SPARE TIRE CARRIER REPLACEMENT (M870).

---

*This Task Covers:*

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

*Initial Setup:*

**Tools/Test Equipment:**

- Field maintenance tool set (Item 4, Appendix B)
- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

**Personnel Required:** Two

**References:** TC 9-237

**Equipment Conditions:**

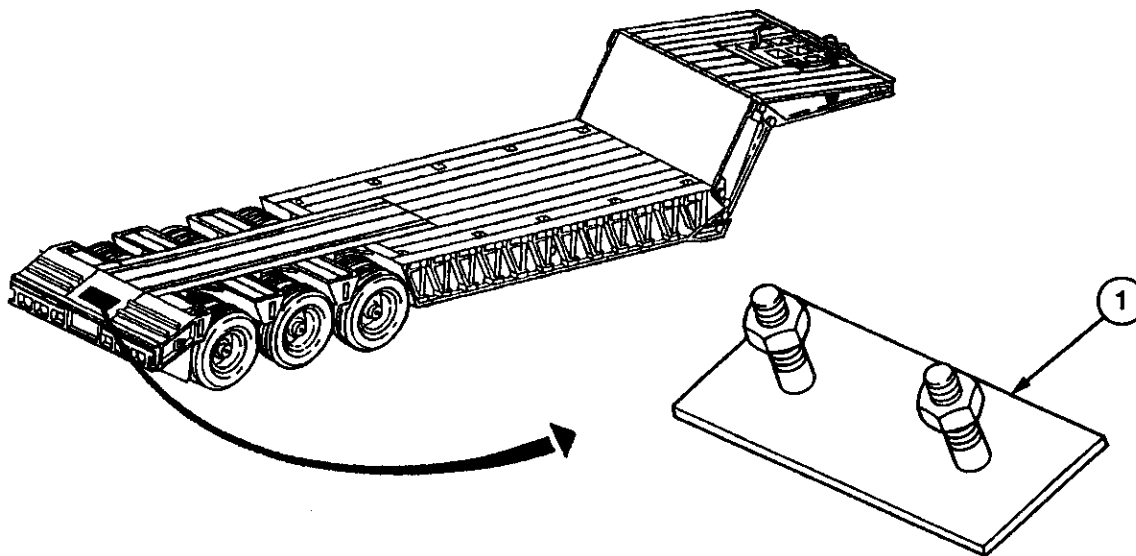
- Spare tire removed (para 3-11).
- 

**a. REMOVAL**

1. Mark location above and beside spare tire carrier (1) to aid in placement of new spare tire carrier (1) during installation.
2. Cut spare tire carrier (1) from back of semitrailer.
3. Grind weldment smooth.

**b. INSTALLATION**

1. Using marks made in step 1, put new spare tire carrier (1) in place on rear of semitrailer. Have assistant hold in place with wood dowel.
2. Weld spare tire carrier (1) to semitrailer (refer to TC 9-237).



**FOLLOW-ON TASKS:**

- Install spare tire (para 3-11).

---

**5-22. SPARE TIRE CARRIER CONNECTOR REPLACEMENT (M870A1).**

---

*This Task Covers:*

a. Removal

b. Installation

---

*Initial Setup:*

**Tools/Test Equipment:**

- Field maintenance tool set (Item 4, Appendix B)
- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

**Personnel Required:** Two

**References:** TC 9-237

**Equipment Conditions:**

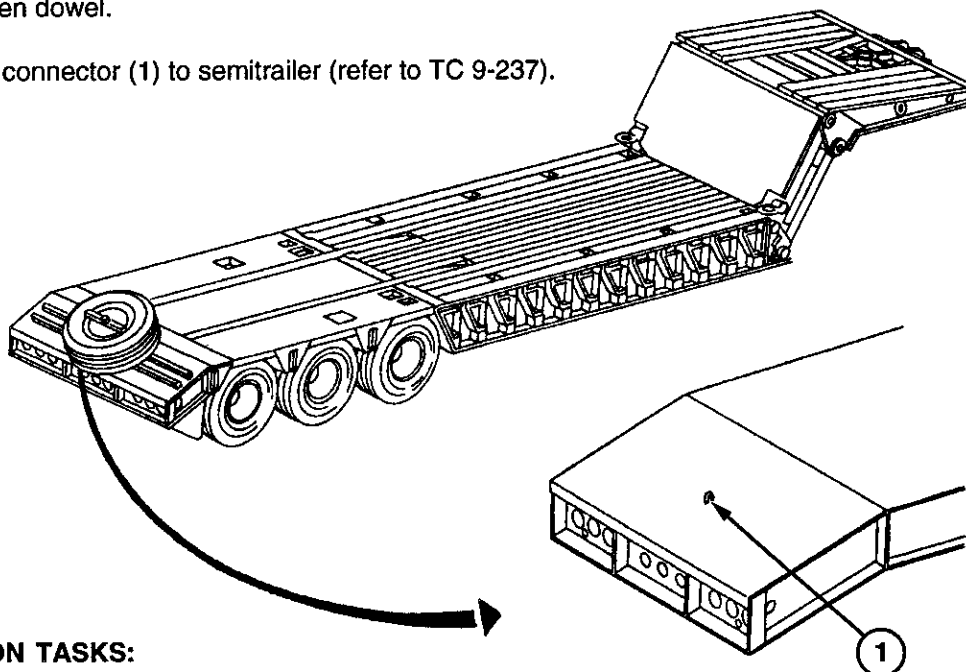
- Spare tire removed (para 3-12).
- 

**a. REMOVAL**

1. Mark location above and beside spare tire carrier connector (1), to aid in placement of new connector during installation.
2. Cut connector (1) from rear of semitrailer.
3. Grind weldment smooth.

**b. INSTALLATION**

1. Using marks made in step 1, put new connector (1) in place. Have assistant hold connector (1) in place with wooden dowel.
2. Weld connector (1) to semitrailer (refer to TC 9-237).



**FOLLOW-ON TASKS:**

- Install spare tire (para 3-12).

## Section VI. SPRINGS AND SHOCKS MAINTENANCE

Paragraph Number	Paragraph Title	Page Number
5-23	General .....	5-54
5-24	Spring Assembly and Clamp Plate Replacement (M870) .....	5-54
5-25	Spring Assembly and Bottom Plate Replacement (M870A1) .....	5-56
5-26	Radius Rod Screw and Ends Replacement and Adjustment, and Axle Bracket Replacement (M870) .....	5-58
5-27	Torque Arm Screw and Ends Replacement and Adjustment (M870A1) .....	5-61
5-28	Clip Replacement (M870) .....	5-64

**5-23. GENERAL**

This section provides information for performing Direct Support level springs and shocks repairs on the M870 and M870A1 semitrailers.

**5-24. SPRING ASSEMBLY AND CLAMP PLATE REPLACEMENT (M870).***This Task Covers:*

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

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

- Field maintenance tool set (Item 4, Appendix B)
- Tool kit, general mechanic's: automotive (Item 7, Appendix B)
- Trestle (3) (Item 1, Appendix B)

**Equipment Conditions:**

- Wheel and tire assembly removed (para 3-9).

**a. REMOVAL****NOTE**

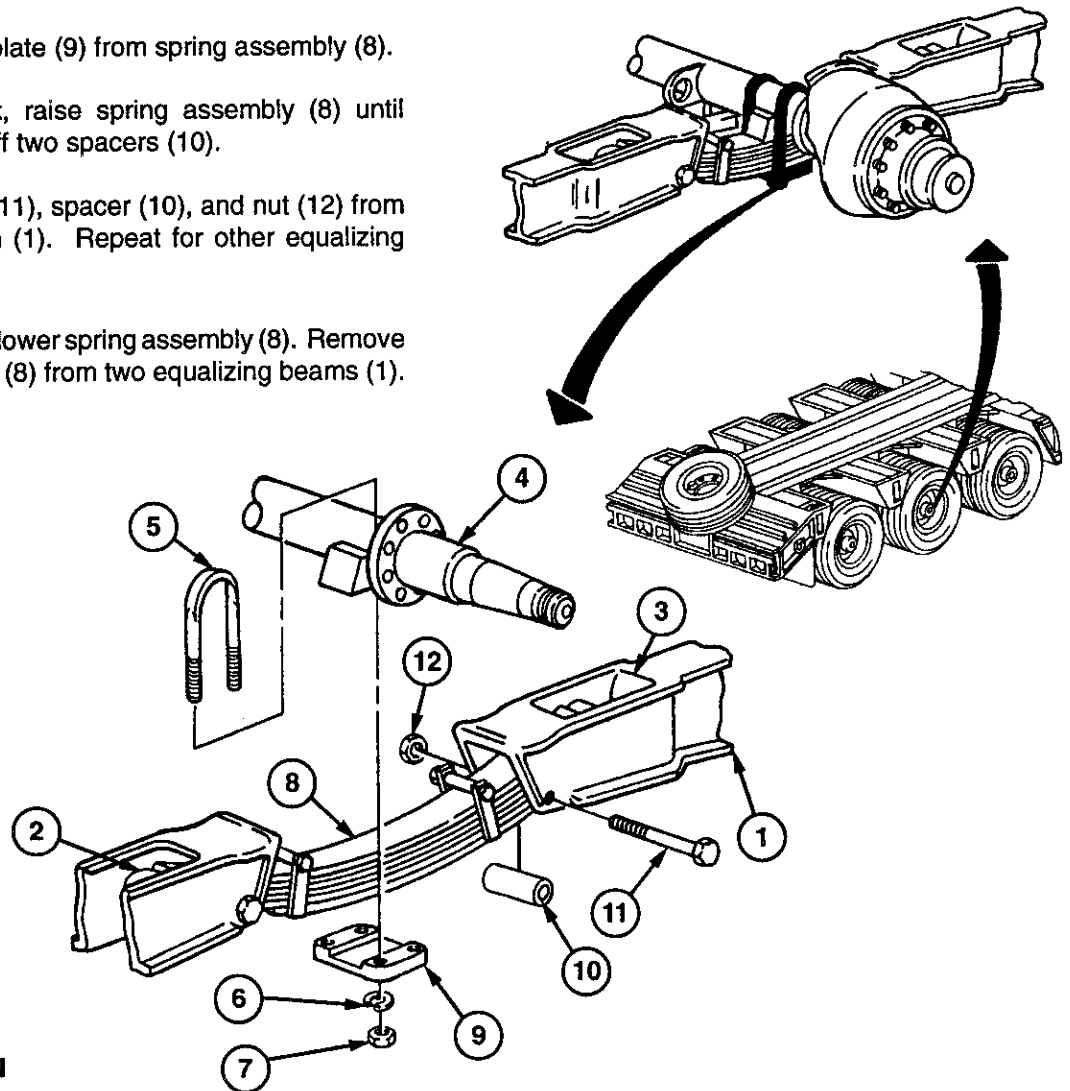
There are two spring assemblies and two clamp plates on the semitrailer. This procedure is for replacing one spring assembly and one clamp plate. Repeat the procedure for the other one.

1. Place hydraulic hand jack under end of equalizing beam (1) closest to spring end (2). Lift equalizing beam (1) approximately three inches from normal position.
2. Place trestle under equalizing beam (1) just behind spring slot (3). Remove hydraulic hand jack.
3. Repeat steps 1 and 2 for equalizing beam (1) at other spring end (2).
4. Using hydraulic hand jack, lift middle axle (4) and place on trestle. Remove hydraulic hand jack.
5. Remove two U-bolts (5) and four washers (6) and nuts (7) from spring assembly (8) and axle (4).



**5-24. SPRING ASSEMBLY AND CLAMP PLATE REPLACEMENT (M870) (continued).**

6. Remove clamp plate (9) from spring assembly (8).
7. Using dolly jack, raise spring assembly (8) until weight is lifted off two spacers (10).
8. Remove screw (11), spacer (10), and nut (12) from equalizing beam (1). Repeat for other equalizing beam (1).
9. Using dolly jack, lower spring assembly (8). Remove spring assembly (8) from two equalizing beams (1).

**b. INSTALLATION**

1. Using dolly jack, lift spring assembly (8) into position in two equalizing beams (1). Place spring ends (2) in spring slots (3).
2. Lubricate threads of screw (11) and install nut (12), spacer (10), and screw (11) in equalizing beam (1). Torque nut to approximately 75 ft-lb (102 N•m). Repeat for equalizing beam (1) at other end of spring assembly (8).
3. Using hydraulic jack, raise axle (4) and remove trestle from under axle (4). Lower axle (4) onto spring assembly (8).
4. Install clamp plate (9) on axle (4) and spring assembly (8) and secure with four nuts (7) and washers (6) and two U-bolts (5).
5. Using hydraulic jack, remove jack stands from under equalizing beams (1).

**FOLLOW-ON TASKS:**

- Install wheel and tire assembly (para 3-9).

---

## 5-25. SPRING ASSEMBLY AND BOTTOM PLATE REPLACEMENT (M870A1).

---

*This Task Covers:*

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

*Initial Setup:*

**Tools/Test Equipment:**

- Field maintenance tool set (Item 4, Appendix B)
- Tool kit, general mechanic's: automotive (Item 7, Appendix B)
- Trestle (3) (Item 1, Appendix B)

**Equipment Conditions:**

- Middle axle tire and wheel assembly removed (para 3-10).

**Materials/Parts:**

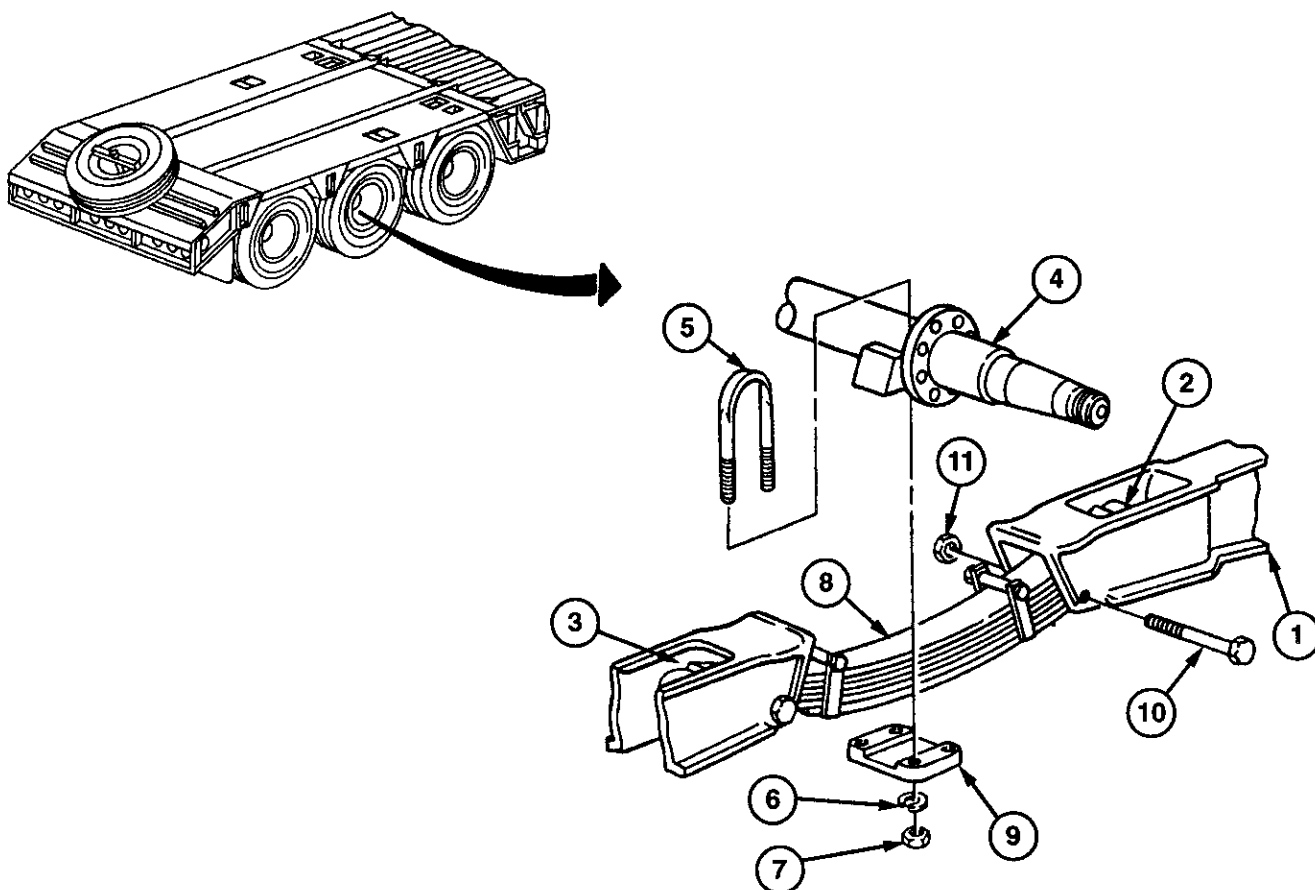
- Self-locking nut (Item 33, Appendix I)
- 

**a. REMOVAL**

1. Place hydraulic jack under end of one equalizing beam (1), close to spring end (2). Lift equalizing beam (1) approximately three inches from normal position.
2. Place trestle under equalizing beam (1), just behind spring slot (3). Remove hydraulic jack from under equalizing beam (1).
3. Repeat steps 1 and 2 for equalizing beam (1) at other spring end (2).
4. Using hydraulic jack, lift middle axle (4). Place trestle under axle (4) and remove hydraulic jack.
5. Remove two U-bolts (5) and four washers (6) and nuts (7) from spring assembly (8) and axle (4).
6. Remove bottom plate (9) from spring assembly (8).
7. Using dolly jack, raise spring assembly (8).
8. Remove keeper bolt (10) and self-locking nut (11) from equalizing beam (1). Repeat for other equalizing beam (1) at other end of spring assembly (8). Discard self-locking nut.
9. Using dolly jack, lower spring assembly (8) and remove spring assembly (8) from semitrailer.

**b. INSTALLATION**

1. Using dolly jack, lift spring assembly (8) into position in both equalizing beams (1). Place spring ends (2) in spring slots (3).
2. Lubricate threads of keeper bolt (10) and install new self-locking nut (11) and keeper bolt (10) in equalizing beam (1). Torque self-locking nut between 73 and 95 ft-lb (99 and 132 N•m). Repeat for equalizing beam (1) at other end of spring assembly (8).

**5-25. SPRING ASSEMBLY AND BOTTOM PLATE REPLACEMENT (M870A1) (continued).**

3. Using hydraulic jack, raise axle (4) and remove trestle. Lower axle onto spring assembly (8).
4. Install bottom plate (9) on axle (4) and spring assembly (8) and secure with four nuts (7) and washers (6) and two U-bolts (5).
5. Using hydraulic jack, remove trestles.

**FOLLOW-ON TASKS:**

- Install middle axle tire and wheel assembly (para 3-10).

## 5-26. RADIUS ROD SCREW AND ENDS REPLACEMENT AND ADJUSTMENT, AND AXLE BRACKET REPLACEMENT (M870).

*This Task Covers:*

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

*Initial Setup:*

**Tools/Test Equipment:**

- Field maintenance tool set (Item 4, Appendix B)
- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

- Spring brake chambers removed from middle axle (para 4-53).

**Personnel Required:** Two

**Equipment Conditions:**

- Middle air reservoir removed (para 4-61).

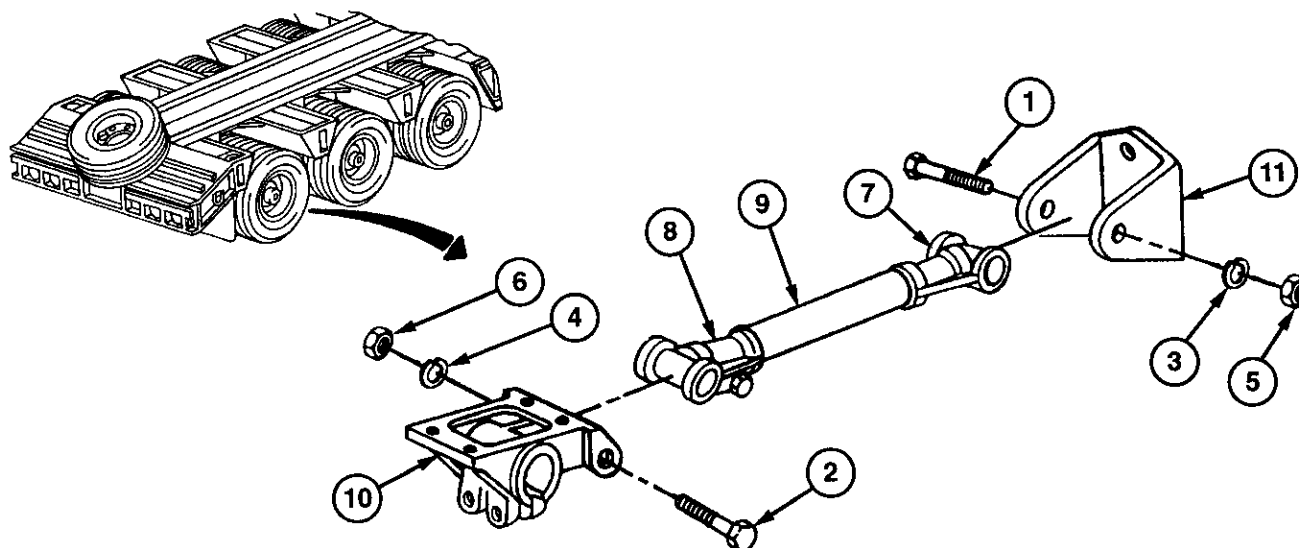
**References:** TC 9-237

### a. REMOVAL

#### NOTE

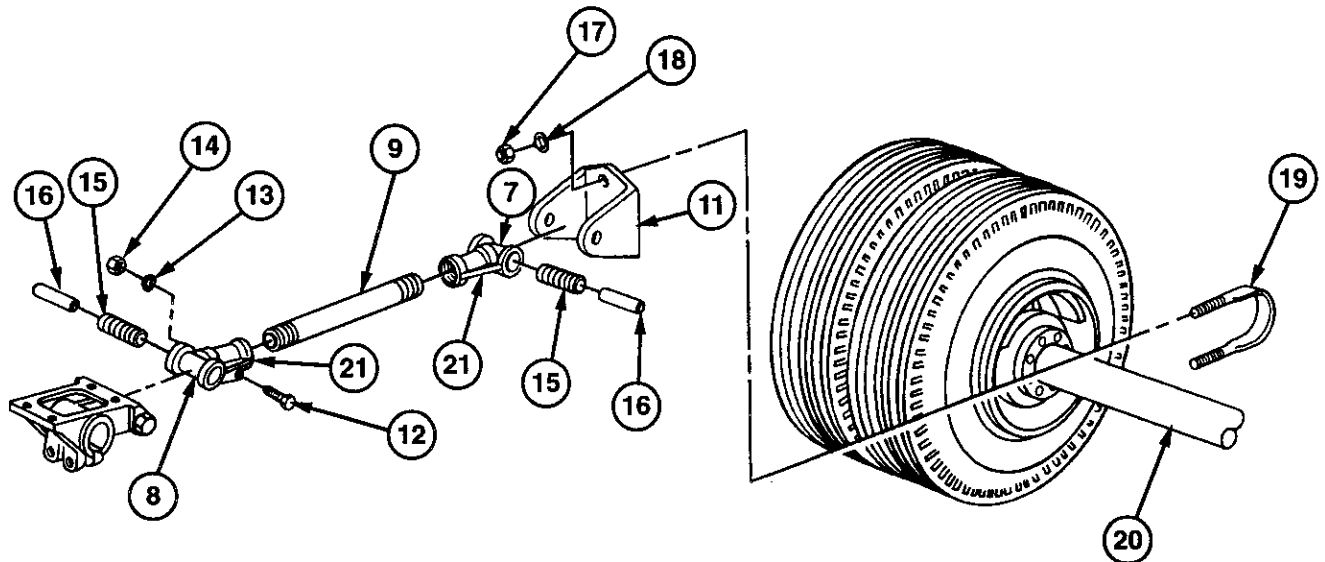
- There are two radius rod screws and four radius rod ends on semitrailer. This procedure is for replacing and adjusting one radius rod screw and two ends. Repeat the procedure for the other radius rod screw and ends.
- Before starting procedure, measure and record the distance between (1) radius rod end flanges on both radius rod screws and (2) front and middle axles at both axle ends.

1. Remove two rod bolts (1 and 2), washers (3 and 4), and nuts (5 and 6) from two radius rod ends (7 and 8).
2. Remove radius rod screw (9) and two radius rod ends (7 and 8) from front radius rod bracket (10) and axle bracket (11).



## 5-26. RADIUS ROD SCREW AND ENDS REPLACEMENT AND ADJUSTMENT, AND AXLE BRACKET REPLACEMENT (M870) (continued).

3. Loosen two bolts (12), washers (13), and nuts (14) in two radius rod ends (7 and 8).
4. Remove two radius rod ends (7 and 8) from radius rod screw (9).
5. Remove two mounts (15) and liners (16) from two radius rod ends (7 and 8).
6. Remove two nuts (17) and washers (18) from U-bolt (19). Remove U-bolt (19) from middle axle (20) and axle bracket (11).
7. To aid in placement of axle bracket (11) during installation, mark location of axle bracket (11) on middle axle (20). Cut weldment holding axle bracket (11) on middle axle (20). Remove axle bracket (11) from middle axle (20).
8. Grind weld off middle axle (20) surface. Be careful not to remove location marks.



### b. INSTALLATION

1. Put axle bracket (11) in position on middle axle (20) according to marks made during removal. Install U-bolt (19) on axle bracket (11) and middle axle (20) and secure with two washers (18) and nuts (17).
2. Weld axle bracket (11) to middle axle (20) (refer to TC 9-237).
3. Screw two radius rod ends (7 and 8) onto radius rod screw (9), three turns each. While assistant holds radius rod ends (7 and 8), turn radius rod screw (9) with pipe wrench until distance between two radius rod end flanges (21) is the same as measurement taken before start of procedure.
4. Install two mounts (15) and liners (16) in two radius rod ends (7 and 8)

## 5-26. RADIUS ROD SCREW AND ENDS REPLACEMENT AND ADJUSTMENT AND AXLE BRACKET REPLACEMENT (M870) (continued).

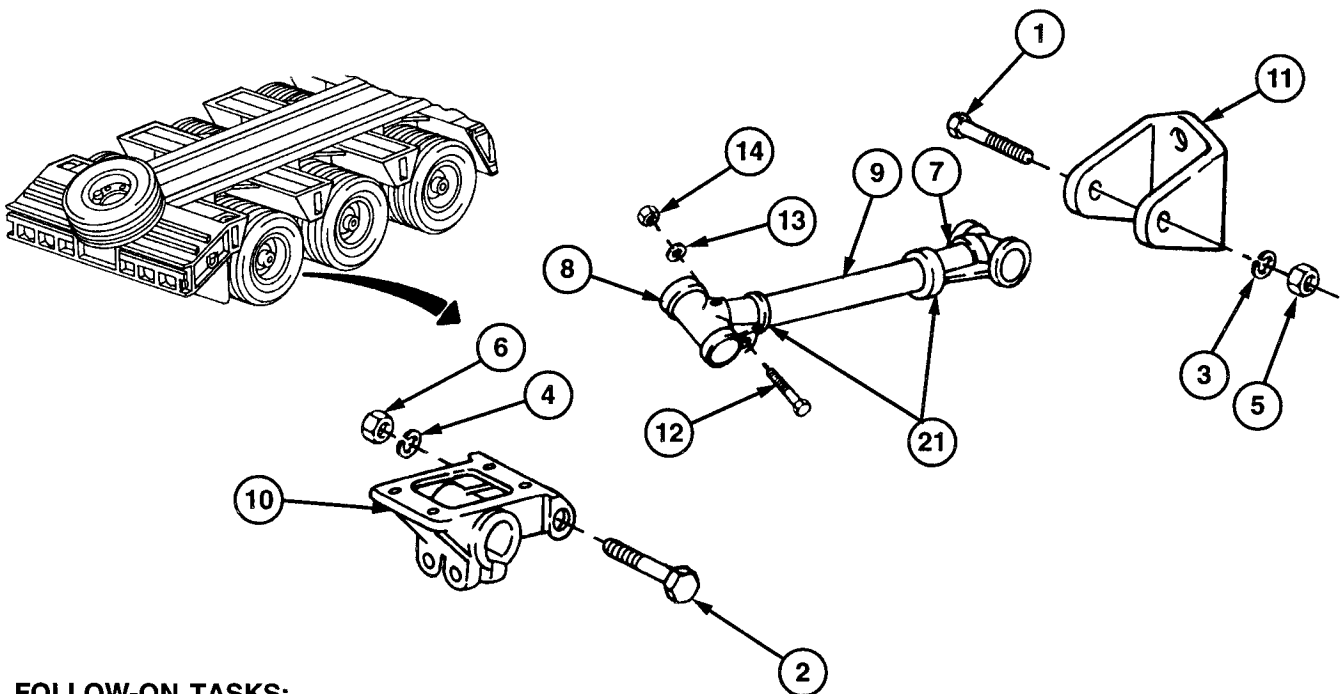
5. Place radius rod end (8) in front radius rod bracket (10) and line up opening in radius rod end (8) with holes in bracket (10) for rod bolt (2).
6. Install nut (6), washer (4), and rod bolt (2) in front radius rod bracket (10) and radius rod end (8).
7. Lift radius rod end (7) into position in axle bracket (11). Line up opening in radius rod end (7) with holes in axle bracket (11) for rod bolt (1). It may be necessary to adjust radius rod screw (9).
8. Lubricate threads of rod bolt (1) and install nut (5), washer (3), and rod bolt (1) in axle bracket (11) and radius rod end (7). Torque nut to approximately 600 ft-lb (184 N•m).

### c. ADJUSTMENT

#### NOTE

Make sure nuts and bolts on radius rod ends are loose. Radius rod screw must turn for adjustment.

1. Measure distance between two radius rod end flanges (21) on one radius rod screw (9). Take the same measurement on the other radius rod screw (9) and compare the two measurements.
2. Turn radius rod screw (9) until both measurements are equal.
3. Tighten two nuts (14), washers (13), and bolts (12).



#### FOLLOW-ON TASKS:

- Install middle axle spring brake chambers (para 4-53).
- Install middle air reservoir (para 4-61).

**5-27. TORQUE ARM SCREW AND ENDS REPLACEMENT AND ADJUSTMENT (M870A1).***This Task Covers:*

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

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

- Field maintenance tool set (Item 4, Appendix B)
- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

- Trestle (3) (Item 1, Appendix B)

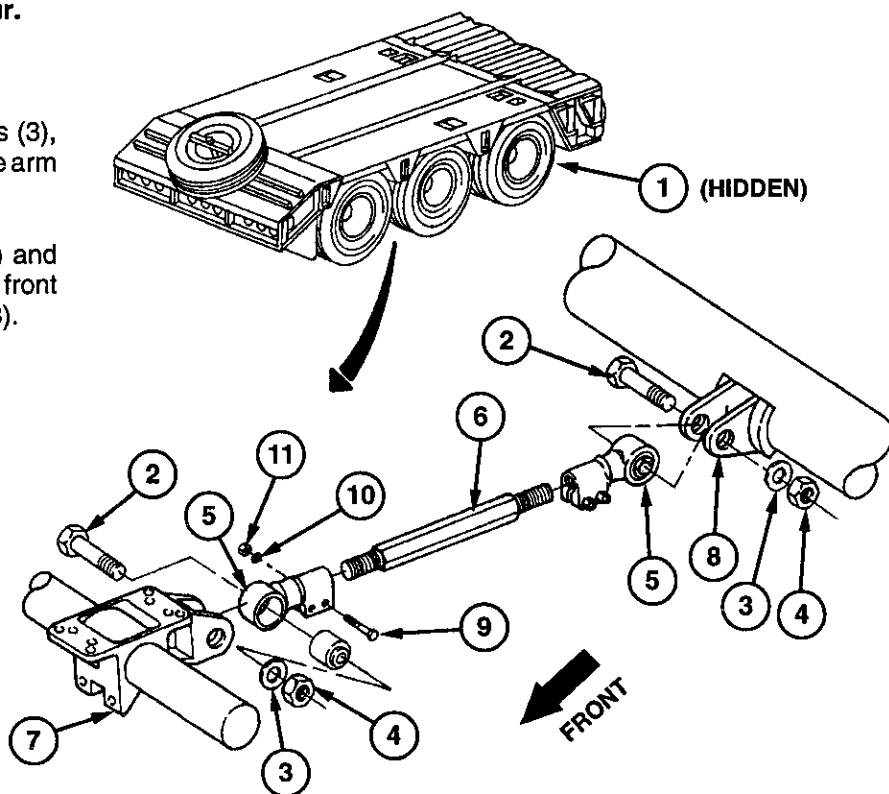
**Personnel Required:** Two**a. REMOVAL****NOTE**

- There are two torque arm screws and four torque arm ends on the semitrailer. This procedure is for replacing and adjusting one torque arm screw and two ends. Repeat the procedure for the other torque arm screw and ends.
- Before starting procedure, measure and record the distance between (1) torque arm end flanges on both torque arms screws and (2) front and middle axles at both axle ends.

**WARNING**

**Failure to support middle axle may result in middle axle dropping suddenly. Serious injury or death may occur.**

1. Jack up front axle (1).
2. Remove two bolts (2), washers (3), and locknuts (4) from two torque arm ends (5).
3. Remove torque arm screw (6) and two torque arm ends (5) from front bracket (7) and rear bracket (8).
4. Loosen four bolts (9), washers (10), and nuts (11) on two torque arm ends (5).
5. Remove both torque arm ends (5) from torque arm screw (6).



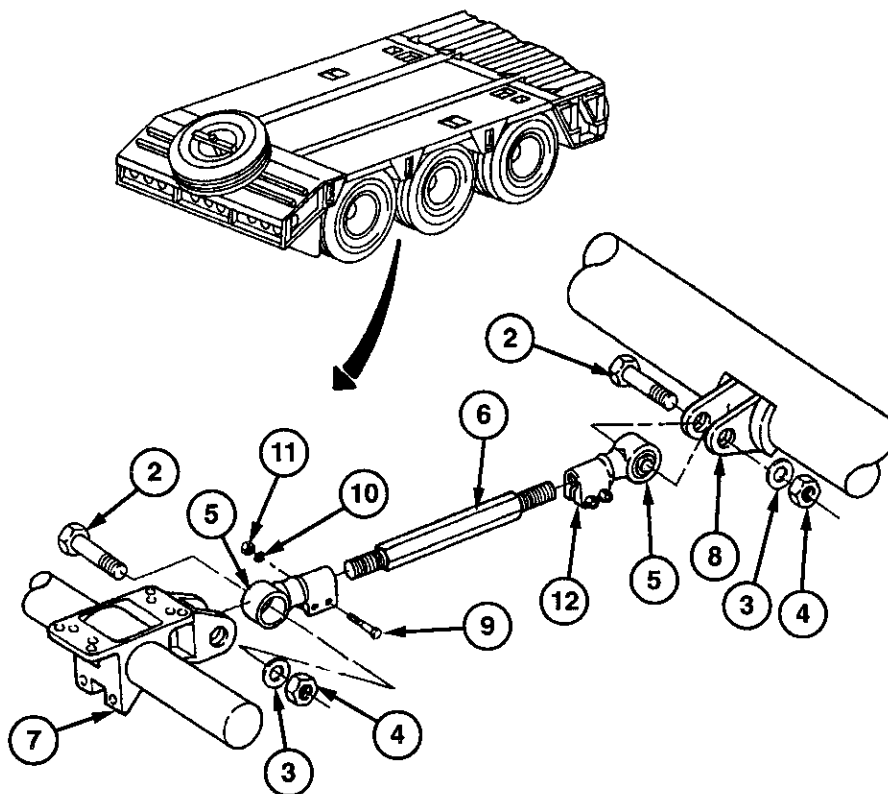
## 5-27. TORQUE ARM SCREW AND ENDS REPLACEMENT AND ADJUSTMENT (M870A1) (continued).

### b. INSTALLATION

1. Screw two torque arm ends (5) on torque arm screw (6) three turns each.
2. While assistant holds torque arm ends (5), turn torque arm screw (6) with pipe wrench until distance between two torque arm end flanges (13) is the same as measurement taken before start of procedure.
3. Tighten two nuts (11), washers (10), and bolts (9) on each torque arm end (5).
4. Install one torque arm end (5) in front bracket (7). Secure with locknut (4), washer (3), and bolt (2).
5. Install other torque arm end (5) in rear bracket (8). Lubricate threads of bolt (2) and install locknut (4), washer (3), and bolt (2) on rear bracket (8). Torque locknut (4) to 600 ft-lb (814 N•m). If locknut (4) cannot be reached, torque bolt (2) to 840 ft-lb (1140 N•m).

### NOTE

It may be necessary to adjust torque arm screw with pipe wrench.





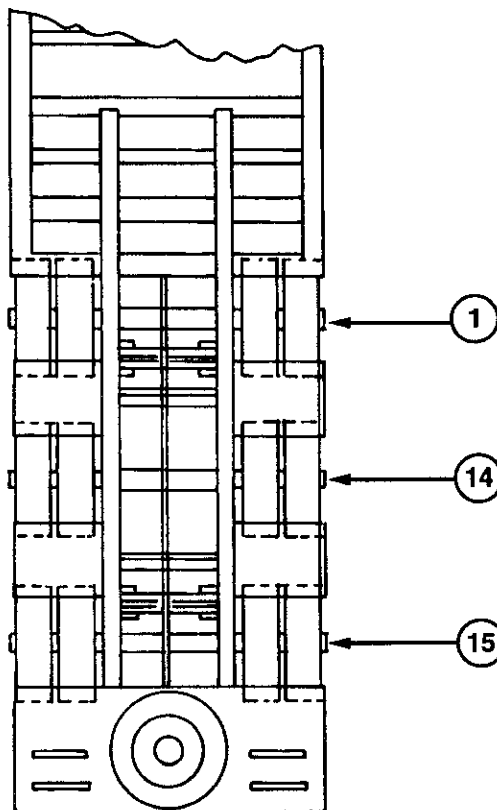
## 5-27. TORQUE ARM SCREW AND ENDS REPLACEMENT AND ADJUSTMENT (M870A1) (continued).

### c. ADJUSTMENT

#### NOTE

Be certain nuts and bolts on torque arm ends are loose. Torque arm screw must turn for adjustment.

1. Measure the distance between two torque arm end flanges (13) on one torque arm screw (6).
2. Take the same measurement on other torque arm screw (6).
3. Measure the distance between center of front axle (1) and center of middle axle (14). The measurement should be 50 inches (127 cm), and must be the same on each side. The measurement must also be half the distance between center of front axle (1) and center of rear axle (15); this measurement should be 100 inches (254 cm).



4. Using pipe wrench, turn torque arm screw (6) until both measurements are the same.
5. Tighten two nuts (11), washers (10), and bolts (9) on each torque arm end (5).
6. Lower front axle (1).

#### FOLLOW-ON TASKS:

- None

## 5-28. CLIP REPLACEMENT (M870).

*This Task Covers:*

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

*Initial Setup:*

### Tools/Test Equipment:

- Field maintenance tool set (Item 4, Appendix B)
- Tool kit, general mechanic's: automotive (Item 7, Appendix B)

References: TC 9-237

### a. REMOVAL

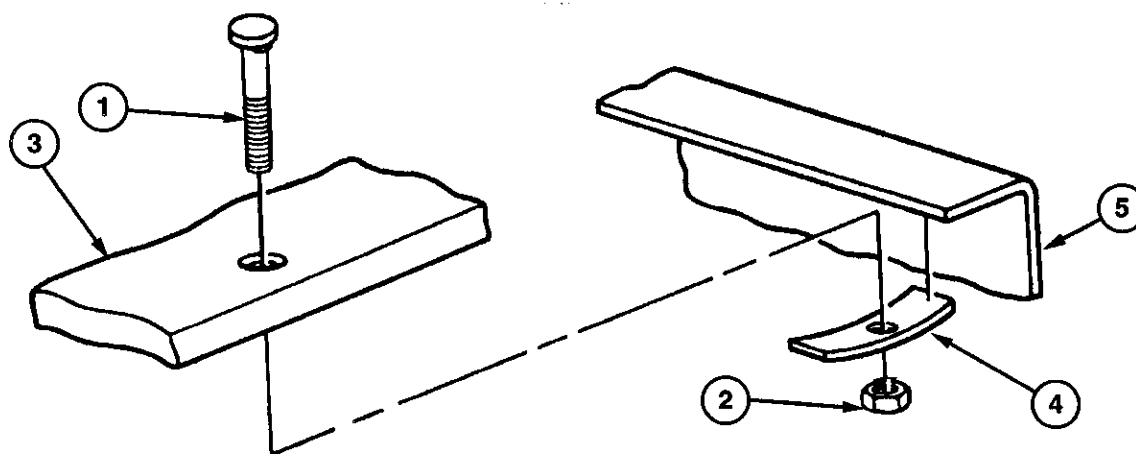
#### NOTE

The number of clips on the semitrailer varies. This procedure is for the replacement of one clip. Repeat as necessary for other clips. Clips are located along the frame of the semitrailer deck, under the planks.

1. Remove screw (1) and nut (2) from plank (3) and clip (4).
2. Using torch, cut clip (4) from frame (5). Grind off weldment.

### b. INSTALLATION

1. Secure clip (4) to frame (5) and plank (3) using nut (2) and screw (1).
2. Weld clip (4) to frame (5) (refer to TC 9-237).



### FOLLOW-ON TASKS:

- None

## APPENDIX A

### REFERENCES

Paragraph Number	Paragraph Title	Page Number
A-1	General .....	A-1
A-2	Forms .....	A-1
A-3	Manuals .....	A-1
A-4	Pamphlets, Bulletins, and Handbooks .....	A-2
A-5	Regulations .....	A-2

#### A-1. GENERAL.

This appendix lists all forms, manuals, bulletins, and other publications that are referenced in this manual and/or apply to the operation of and to the Unit, Direct Support, or General Support maintenance of the M870 and M870A1 semitrailers. DA Pam 25-30 should be consulted frequently for the latest changes or revisions to publications and for new publications relevant to material covered in this technical manual.

#### A-2 FORMS.

Refer to DA Pam 738-750 for instructions on the use of maintenance forms.

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

#### A-3. MANUALS.

Operation and Maintenance of Ordnance Materiel in Cold Weather (0 Degrees F to Minus 65 Degrees F) .....	FM 9-207
First Aid for Soldiers .....	FM 21-11
Manual for the Wheeled Vehicle Driver .....	FM 21-305
Railway Operating and Safety Rules .....	FM 55-21
Inspection, Care and Maintenance of Antifriction Bearings .....	TM 9-214
Materials Used for Cleaning, Preserving, Abrading and Cementing Ordnance Materiel and Related Materials Including Chemicals .....	TM 9-247
Direct Support and General Support Maintenance Repair Parts and Special Tools List for Truck, Tractor; Commercial Heavy Equipment Transporter (C-HET); 85,000 GVWR, 8x6, Army Model M911 (NSN 2320-01-025-3733) .....	TM 9-2320-270-34P

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### A-3. MANUALS (continued).

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Operator's, Unit, Direct Support and General Support Maintenance Manual for Care, Maintenance Repair and Inspection of Pneumatic Tires and Inner Tubes .....	TM 9-2610-200-14
Painting Instructions for Army Materiel .....	TM 43-0139
Transportability Guidance for Application of Blocking, Bracing and Tiedown Materials for Rail Transport .....	TM 55-2200-001-12
Storage and Materials Handling .....	TM 743-200-1
Procedures for Destruction of Tank-Automotive Equipment to Prevent Enemy Use .....	TM 750-244-6

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### A-4. PAMPHLETS, BULLETINS, AND HANDBOOKS.

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Consolidated Index of Army Publications and Blank Forms .....	DA Pam 25-30
Functional Users Manual for The Army Maintenance Management System (TAMMS) .....	DA Pam 738-750
Tiedown Handbook for Truck Movements .....	MTMCTEA Ref. No. 92-55-20
Warranty Program for Semitrailer, Lowbed: 40-Ton Construction Equipment Transporter M870A1 (NSN 2330-01-224-9245) .....	TB 5-2330-378-14
Color, Marking and Camouflage Painting of Military Vehicles, Construction Equipment, and Materials Handling Equipment .....	TB 43-0209
Operator's Circular Welding Theory and Application .....	TC 9-237

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### A-5. REGULATIONS.

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Environmental Protection and Enhancement .....	AR 200-1
Army Logistics Readiness and Sustainability .....	AR 700-138
Product Quality Deficiency Report Program .....	AR 702-7
Army Medical Department Expendable/Durable Items .....	CTA 8-100
Expendable/Durable Items (Except: Medical, Class V, Repair Parts and Heraldic Items) .....	CTA 50-970
Abbreviations for Use on Drawings, Specifications, Standards, and in Technical Documents .....	MIL-STD-12

## APPENDIX B

### MAINTENANCE ALLOCATION CHART

#### Section I. INTRODUCTION

Paragraph Number	Paragraph Title	Page Number
B-1	General .....	B-1
B-2	Maintenance Functions .....	B-1
B-3	Explanation of Columns in Section II, Maintenance Allocation Chart for Semitrailer, Lowbed: M870 and M870A1 .....	B-2
B-4	Explanation of Columns in Section III, Tool and Test Equipment Requirements .....	B-3
B-5	Explanation of Columns in Section IV, Remarks .....	B-3

#### **B-1. GENERAL.**

Appendix B consists of three sections:

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

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

Maintenance functions are limited to and defined as follows:

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

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**B-2. MAINTENANCE FUNCTIONS (continued).**


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

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**B-3. EXPLANATION OF COLUMNS IN SECTION II, MAINTENANCE ALLOCATION CHART FOR SEMITRAILER, LOWBED: M870 AND M870A1.**


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

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**B-3. EXPLANATION OF COLUMNS IN SECTION II, MAINTENANCE ALLOCATION CHART FOR SEMITRAILER, LOWBED: M870 AND M870A1 (continued).**


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

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

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


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

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


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- a. **(1) Reference Code.** This is the code recorded in Section II, Column 6.
- b. **(2) Remarks.** This column provides information pertinent to the maintenance function being performed as indicated in the MAC, Section II.

**Section II. MAINTENANCE ALLOCATION CHART  
FOR SEMITRAILER, LOWBED: M870 AND M870A1**

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tool or Test Equipment Reference Code	(6) Remarks
			C	O	F	H	D		
<b>06</b>	<b>ELECTRICAL SYSTEM</b>								
0609	Lamps	Inspect (M870A1) Replace	0.2	0.3				7	
	Light Assemblies	Repair Replace		0.3 0.5				7 7	
	Chassis Wire Harness	Repair (M870) Replace		2.0				7 7	
0613	Voltage Reduction Box (M870)	Replace	1.0	1.0				7	
	Voltage Reduction Box (M870A1)	Replace		1.0				7	
	Receptacle, 12-volt (M870A1)	Replace		1.5				7	
	Receptacle, 24-volt (M870A1)	Replace Repair		1.5	1.5			7 3	
	Resistors (M870A1)	Replace		0.3				1	
<b>11</b>	<b>AXLE</b>								
1100	Axle	Replace Repair (M870A1)		2.0	6.0			4,5 6,5	A
	Axle Cap (M870)	Replace			1.0			6,5	
	Equalizing Beam	Replace			3.5			4,3	
	Trunnion Tube and Clamp (M870)	Replace			3.0			4,5	
	Trunnion Tube (M870A1)	Replace			3.0			4,5	



**Section II. MAINTENANCE ALLOCATION CHART  
FOR SEMITRAILER, LOWBED: M870 AND M870A1 (continued)**

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tool or Test Equipment Reference Code	(6) Remarks
			C	O	F	H	D		
<b>12</b>	<b>BRAKES</b>								
1202	Service Brakes	Inspect	0.2					7	
		Service		1.0				7	
		Adjust		1.0				7,6	
		Repair		4.0				6	
		Replace		4.0				6	
	Brakeshoe	Replace		4.0				7,6	
1208	Brake, Camshaft	Repair		3.0				7,6	
	Coupling, Air	Repair		0.1					
		Replace		0.5					
	Lines and Fittings	Inspect	0.2						
		Repair		1.0				7	
		Replace		2.0				7	
	Chamber, Airbrake	Replace		1.0				7	
	Chamber, Spring Brake	Replace		1.0				7	
	Valve, Emergency Relay	Test		0.5				7	B
		Replace		2.0				7	
	Valve, Relay Emergency	Test		0.5				7	B
		Replace		2.0				7	
	Valve, Multifunction	Test		0.5				7	B
		Replace		2.0				7	
	Reservoir, Air	Test	0.3	0.5				7	
		Service						6	
		Replace		2.5				7	
	Draincock	Replace		0.3				7	
<b>13</b>	<b>WHEELS, HUBS, AND DRUMS</b>								
1311	Hub, Bearing, and Seal	Inspect		0.5					
		Service		0.5				7	
		Repair		1.5				6	
		Replace		1.5				6	

**Section II. MAINTENANCE ALLOCATION CHART  
FOR SEMITRAILER, LOWBED: M870 AND M870A1 (continued)**

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tool or Test Equipment Reference Code	(6) Remarks
			C	O	F	H	D		
1313	Brakedrum	Inspect Service Repair Replace		0.5 0.5	1.5 1.5			4,3 4	
	Wheel	Inspect Replace	0.3 1.0					1	
	Tire Assembly	Service Inspect Repair Replace	0.2 0.3	1.0 0.7				7,1 6,1	
	Tubes	Inspect Repair Replace		0.3 0.5 0.7				7,1 7,1	
<b>15</b>	<b>FRAME AND TOWING ATTACHMENTS</b>								
1501	Chassis	Inspect	0.2						
	Tiedown Rings	Replace			1.3			6	
	Hook Fastener	Replace			1.0			6	
	Lower Link Assembly	Replace			3.0			4,3	
	Locking Pins			0.3				6	
	Hinge Pins				2.0			4,3	
	Shackle (M870A1)			0.2				7	
1503	Kingpin	Inspect Replace	0.7	0.3				6	
1504	Spare Tire Carrier	Replace			1.0			4	
<b>16</b>	<b>SPRINGS AND SHOCK ABSORBERS</b>								
1601	Springs	Inspect Replace	0.2		6.0				

**Section II. MAINTENANCE ALLOCATION CHART  
FOR SEMITRAILER, LOWBED: M870 AND M870A1 (continued)**

(1)  Group Number	(2)  Component/Assembly	(3)  Maintenance Function	(4) Maintenance Level					(5) Tool or Test Equipment Reference Code	(6) Remarks
			C	O	F	H	D		
1605	Radius Rods and Brackets (M870)	Replace			2.0				
	Torque Arm	Replace			2.0			4	
		Adjust			1.0			4	
<b>18</b>	<b>BODY</b>								
1810	Deck	Replace		8.0				7	
<b>22</b>	<b>ACCESSORIES</b>								
2202	Reflectors	Replace		0.1				7	
2210	Plates, Data	Replace		0.3				7	
	Mudflaps (M870)	Replace		1.0					
	Splash Guard (M870A1)	Replace		1.0				7	

## Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS

(1) Tool or Test Equipment Reference Code	(2)  Maintenance Level	(3)  Nomenclature	(4)  National Stock Number	(5)  Tool Number
1	O, F, H	Trestle, Motor Vehicle	4190-00-724-2172	MILT14521
2	F	Crane, Wheel Mounted	3810-01-165-0647	R050010-0K00
3	F	Shop Equipment, Automotive Maintenance and Repair: Field Maintenance, Wheeled Vehicles, Post, Camp, and Station, Set A	4190-00-348-7696	SC 4910-95-CL-A02
4	F, H	Shop Equipment, Automotive Maintenance and Repair: Field Maintenance, Less Power	4910-00-754-0705	SC 4910-95-CL-A31
5	O, F, H	Shop Equipment, Automotive Maintenance and Repair: Unit Maintenance, Supplemental No. 1, Less Power	4910-00-754-0653	SC 4910-95-CL-A73
6	O, F, H	Shop Equipment, Automotive Maintenance and Repair: Unit Maintenance, Common No. 1, Less Power	4910-00-754-0654	SC 4910-95-CL-A74
7	O, F, H	Tool Kit, General Mechanic's: Automotive	5180-00-177-7033	SC 5180-90-N26
8	O, F, H	Multimeter, Digital	6625-01-139-2512	T00377(55026)

**Section IV. REMARKS**

<b>(1) Reference Code</b>	<b>(2) Remarks</b>
A	Repair at Unit level with axle installed on trailer.
B	Test consists of inspection for leakage.



## APPENDIX C

### COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS

#### Section I. INTRODUCTION

Paragraph Number	Paragraph Title	Page Number
C-1	Scope .....	C-1
C-2	General .....	C-1
C-3	Explanation of Columns in Sections II and III .....	C-1

#### C-1. SCOPE.

This appendix lists components of the end item and basic issue items for the 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). This listing is for informational purposes only, and is not authority to requisition replacements. These items are part of the semitrailer. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Items of COEI are removed and packaged separately for transportation or shipment only when necessary. Illustrations are furnished to help you find and identify the items.
- b. Section III. Basic Issue Items (BII). This is a list of the essential items required to place the semitrailer in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged, BII must be with the semitrailer during operation and whenever it is transferred between property accounts. This list is your authority to request/requisition replacement BII, based on authorization of the end item by the TOE/MTOE (Tables of Organization and Equipment/Modified TOE). Illustrations are furnished to help you find and identify the item.

#### C-3. EXPLANATION OF COLUMNS IN SECTIONS II AND III.

The following provides an explanation of the columns in Section II and Section III.

(1) **Illus. [Illustration] Number:** gives you the illustration number of the item.

(2) **National Stock Number:** identifies the national stock number (NSN) assigned to the item; this number is used for requisitioning purposes.

(3) **Description, CAGEC and Part Number:** identifies the Federal item name (in capital letters) and, if required, gives a minimum description to identify and locate the item. The line below the description is the Commercial and Government Entity Code (CAGEC) (in parentheses), followed by the part number.

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**C-3. EXPLANATION OF COLUMNS IN SECTIONS II AND III (continued).**

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**(4) Usable-on Code:** indicates the model the item is used on.

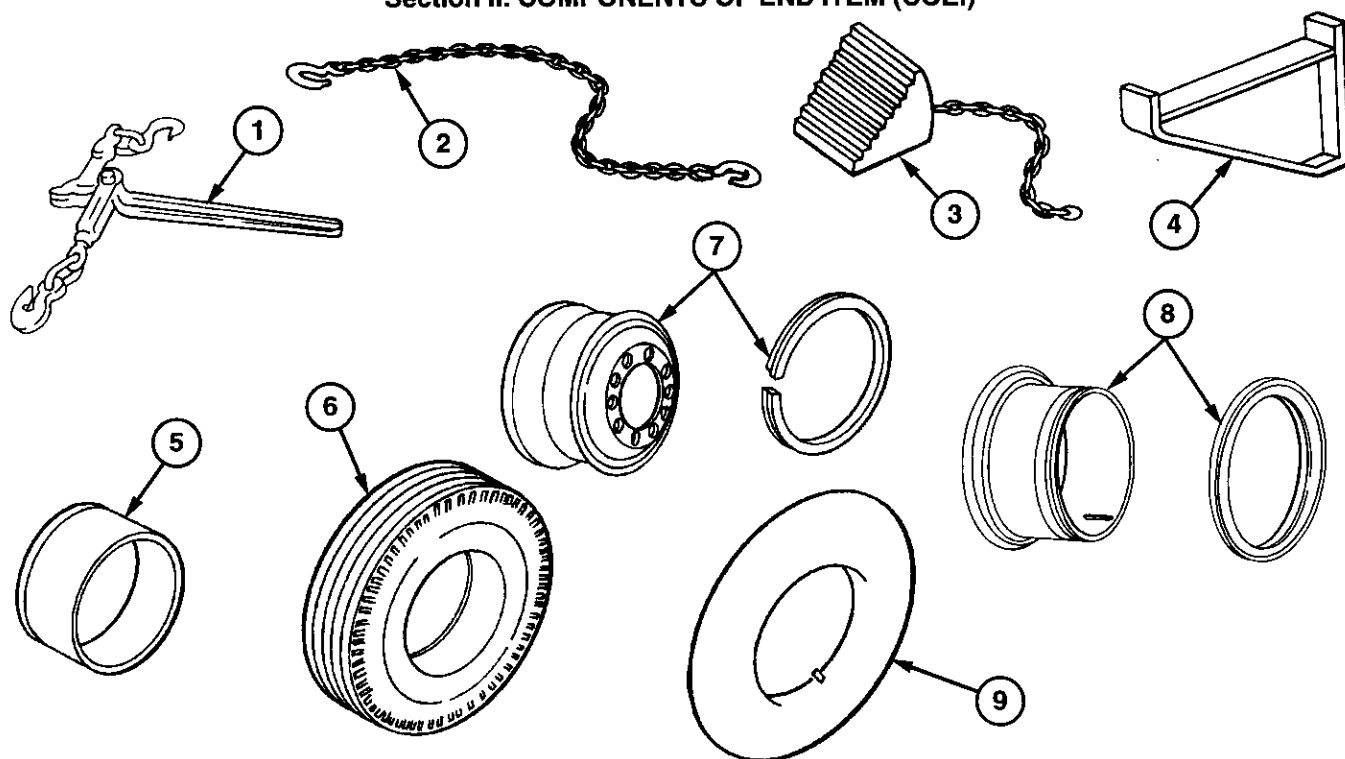
<u>Code</u>	<u>Used on</u>
TO1	M870
U17	M870 Marine Variation
TLB	M870A1

**(5) U/I [Unit of Issue]:** indicates how the item is issued for the NSN shown in Column 2. This unit is expressed by a two-character alphabetical abbreviation (EA for "each").

**(6) Qty. Rqr. [Quantity Required]:** indicates the quantity of the item authorized to be used with or on the equipment.

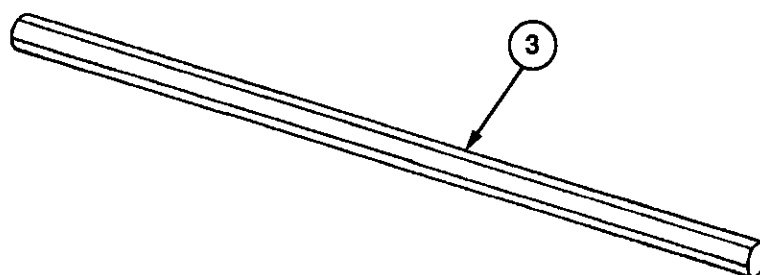
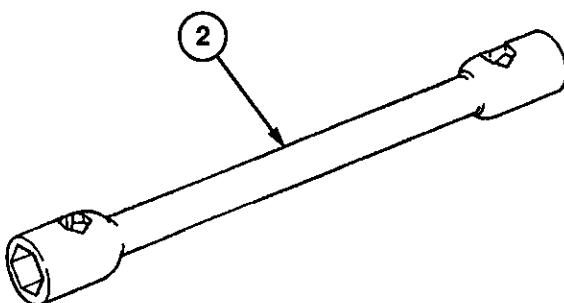
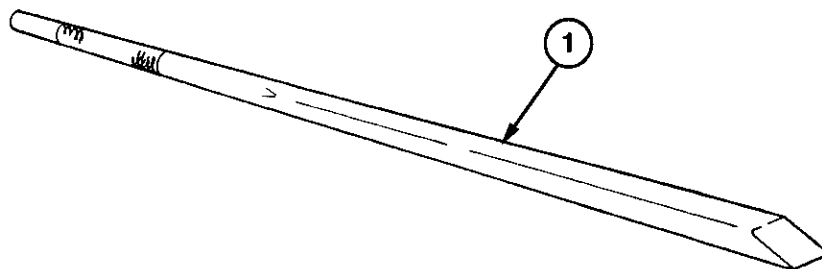


## Section II. COMPONENTS OF END ITEM (COEI)



(1) Illus. Number	(2) National Stock Number	(3) Description CAGEC and Part Number	(4) Usable-on Code	(5) U/I	(6) Qty. Rqr.
1	3990-01-213-1746	LOAD BINDER (2740) R-45	TO1, U17, TLB	EA	10
2	4010-00-443-4845	CHAIN ASSEMBLY (19207) 10944642-2	TO1, U17, TLB	EA	10
3	2540-00-678-3469	CHOCK BLOCK (19207) 7979235	TO1, U17	EA	2
4	5340-01-182-1075	OUTRIGGER, REAR (26697) BC1-0039	TO1, U17	EA	6
	2510-01-267-1366	OUTRIGGER, REAR (666788) SAM-F870-0009	TLB	EA	1
5	2640-01-254-5392	FLAP, PNEUMATIC TIRE (80540) 15-7.5	TO1, U17, TLB	EA	1
6	2610-01-325-1934	TIRE, PNEUMATIC RADIAL GPZSTYLXTYRBCLR/T/10. 00R15/J/LTR	TO1, U17, TLB	EA	1
7	2530-01-048-7842	WHEEL, PNEUMATIC TIRE (017X3) R85770-3	TO1, U17	EA	1
8	2530-01-255-8743	WHEEL, PNEUMATIC TIRE (92065) 1115-215	TLB	EA	1
9	2610-00-052-7969	TUBE, INNER, PNEUMATIC, RADIAL (70622) 69299	TO1, U17, TLB	EA	1

## Section III. BASIC ISSUE ITEMS (BII)



(1) Illus. Number	(2) National Stock Number	(3) Description CAGEC and Part Number	(4) Usable-on Code	(5) U/I	(6) Qty. Rqr.
1	5120-00-224-1390	CROWBAR (56161) 10501985	TO1, U17	EA	1
2	5120-01-292-9849	WRENCH, TRUCK (75204) TR9	TLB	EA	1
3	5120-01-134-9422	HANDLE, TRUCK WRENCH (75204) TR5	TLB	EA	1

## APPENDIX D

### ADDITIONAL AUTHORIZATION LIST

Paragraph Number	Paragraph Title	Page Number
D-1	Scope .....	D-1
D-2	Explanation .....	D-1

---

#### **D-1. SCOPE.**

---

This appendix lists additional items you are authorized for the support of the M870A1 semitrailer. No additional items are authorized for the M870 semitrailer.

---

#### **D-2. EXPLANATION OF LISTING.**

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

**Section II. ADDITIONAL AUTHORIZED ITEMS LIST (M870A1)**

**NOTE**

No additional authorized items list has been assigned to the M870 semitrailer

(1) National Stock Number	(2) Description CAGEC and Part Number	(3) U/M	(4) Qty. Recm.
5120-01-327-6126	Body, Seal Insertion (26151) 555-0001	EA	1
5120-01-327-6127	Guide, Bearing Inserter (26151) 570-0026	EA	1
5120-01-333-9652	Head, Axle Tool (26151) 555-5039	EA	1
5120-01-324-2665	Inserter, Seal (26151) 551-5322	EA	1

## APPENDIX E

### REPAIR PARTS AND SPECIAL TOOLS LIST

#### Section I. INTRODUCTION

Paragraph Number	Paragraph Title	Page Number
E-1	Scope .....	E-1
E-2	General .....	E-1
E-3	Explanation of Columns (Sections II and III) .....	E-2
E-4	Explanation of Columns (Section IV) .....	E-6
E-5	Special Information .....	E-6
E-6	How To Locate Repair Parts .....	E-7
E-7	Abbreviations .....	E-7

#### E-1. SCOPE.

This repair parts and special tools list (RPSTL) lists and authorizes spares and repair parts; special tools; special test, measurement, and diagnostic equipment (TMDE); and other special support equipment required for the performance of Unit, Direct Support, and General Support maintenance of the M870 and M870A1 semitrailers. This RPSTL authorizes the requisitioning, issue, and disposition of spares, repair parts, and special tools as indicated by the source, maintenance, and recoverability (SMR) code.

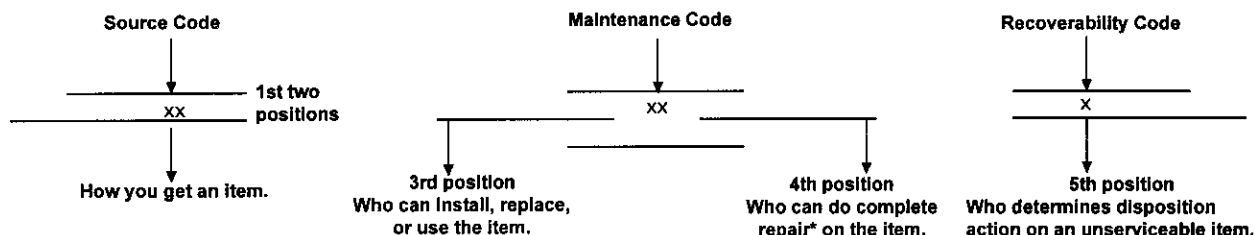
#### E-2. GENERAL.

In addition to Section I, this RPSTL is divided into the following sections:

- a. **Section II. Repair Parts List.** A list of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. The list also includes parts that must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in ascending alphanumeric sequence, with the parts in each group listed in ascending figure and item number sequence. Bulk materials are listed in item name sequence. Repair parts kits are listed separately in their own functional group within Section II.
- b. **Section III. Special Tools List.** A list of special tools, special TMDE, and other special support equipment authorized by this RPSTL for the performance of maintenance.
- c. **Section IV. Cross-reference Indexes.** There are two indexes. The first is a list, in national item identification number (NIIN) sequence, of all national stock numbered items appearing in the listings; the second is a list, in alphanumeric sequence, of all part numbers appearing in the listings. National stock numbers (NSNs) and part numbers are cross-referenced to each illustration/figure and item number appearance.

### E-3. EXPLANATION OF COLUMNS (SECTIONS II AND III).

- a. **ITEM NO. [Column (1)].** Indicates the number used to identify items called out in the illustration.
- b. **SMR CODE [Column (2)].** The SMR code is a five-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.

- (1) **Source Code.** The source code tells you how to get an item needed for maintenance, repair, or overhaul of an end item/equipment. Explanations of source codes follow:

<u>Code</u>	<u>Application/Explanation</u>
<div style="border: 1px solid black; padding: 5px; display: inline-block;">           PA PB PC** PD PE PF PG         </div>	<p>Stocked items; use the applicable NSN to request/requisition items with these source codes. They are authorized to the category indicated by the code entered in the third position of the SMR code.</p> <p><i>**Items coded PC are subject to deterioration.</i></p>
<div style="border: 1px solid black; padding: 5px; display: inline-block;">           KD KF KB         </div>	<p>Items with these codes are not to be requested/requisitioned individually. They are part of a kit that is authorized to the maintenance category indicated in the third position of the SMR code. The complete kit must be requisitioned and applied.</p>
<div style="border: 1px solid black; padding: 5px; display: inline-block;">           MO - Made at UNIT/AVUM Level MF - Made at DS/AVUM Level MH - Made at GS Level MD - Made at Depot         </div>	<p>Items with these codes are not to be requested/requisitioned individually. They must be made from bulk material that is identified by the part number in the DESCRIPTION AND USABLE ON CODE (UOC) column and listed in the bulk material group of the repair parts list in this RPSTL. If the item is authorized to you by the third-position code of the SMR code, but the source code indicates it is made at a higher level, order the item from the higher level of maintenance.</p>
<div style="border: 1px solid black; padding: 5px; display: inline-block;">           AO - Assembled by UNIT/AVUM Level AF - Assembled by DS/AVUM Level AH - Assembled by GS Level AD - Assembled at Depot         </div>	<p>Items with these codes are not to be requested/requisitioned individually. The parts that make up the assembled item must be requisitioned or fabricated and assembled at the level of maintenance indicated by the source code. If the third-position code of the SMR code authorizes you to replace the item, but the source code indicates that the item is assembled at a higher level, order the item from the higher level of maintenance.</p>

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**E-3. EXPLANATION OF COLUMNS (SECTIONS II AND III) (continued).**


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**NOTE**

Cannibalization or controlled exchange, when authorized, may be used as a source of supply for items with the preceding source codes, except for those source-coded "XA."

XA - DO NOT requisition an "XA"-coded item. Order its next higher assembly.

XB - If an "XB" item is not available from salvage, order it using the CAGEC and part number given.

XC - Installation drawing, diagram, instruction sheet, or field service drawing that is identified by manufacturer's part number.

XD - Item is not stocked. Order an "XD"-coded item through normal supply channels using the CAGEC and part number given if no NSN is available.

- (2) **Maintenance Code.** Maintenance codes tell you the level(s) of maintenance authorized to use and repair support items. The maintenance codes are entered in the third and fourth positions of the SMR code as follows:

- (a) The maintenance code entered in the third position tells you the lowest maintenance level authorized to remove, replace, and use an item. The maintenance code entered in the third position will indicate authorization to one of the following levels of maintenance:

<u>Code</u>	<u>Application/Explanation</u>
<i>C</i>	Crew or Operator maintenance done within Unit maintenance or Aviation Unit maintenance.
<i>O</i>	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 (SRA) can remove, replace, and use the item.
<i>D</i>	Depot level can remove, replace, and use the item.

**NOTE**

If authorized by the maintenance allocation chart (MAC) and SMR codes, some limited repair may be done on an item at a lower level of maintenance.

- (b) The maintenance code entered in the fourth position tells whether the item is to be repaired and identifies the lowest maintenance level with the capability to do complete repair (i.e., perform all authorized "Repair" functions). This position will contain one of the following maintenance codes:

**E-3. EXPLANATION OF COLUMNS (SECTIONS II AND III) (continued).**

<u>Code</u>	<u>Application/Explanation</u>
O	Unit maintenance or Aviation Unit is the lowest level that can do complete repair of the item.
F	Direct Support or Aviation Intermediate is the lowest level than can do complete repair of the item.
H	General Support is the lowest level that can do complete repair of the item.
L	SRA is the lowest level that can do complete repair of the item.
D	Depot is the lowest level that can do complete repair of the item.
Z	Nonrepairable. No repair is authorized.
B	No repair is authorized. (No parts or special tools are authorized for the maintenance of a "B"-coded item.) However, the item may be reconditioned by adjusting, lubricating, and so on, at the user level.

- (3) **Recoverability Code.** Recoverability codes are assigned to items to indicate the disposition action on unserviceable items. The recoverability code is entered in the fifth position of the SMR code as follows:

<u>Code</u>	<u>Application/Explanation</u>
Z	Nonrepairable item. When unserviceable, condemn and dispose of the item at the level of maintenance shown in the third position of the SMR code.
O	Repairable item. When uneconomically repairable, condemn and dispose of the item at Unit maintenance or Aviation Unit level.
F	Repairable item. When uneconomically repairable, condemn and dispose of the item at the Direct Support or Aviation Intermediate level.
H	Repairable item. When uneconomically repairable, condemn and dispose of the item at the General Support level.
D	Repairable item. When beyond lower-level repair capability, return to Depot. Condemnation and disposal of the item is not authorized below Depot level.
L	Repairable item. Condemnation and disposal of the item is not authorized below SRA.
A	Item requires special handling or condemnation procedures for specific reasons (e.g., precious metal content, high dollar value, critical material, or hazardous material). Refer to appropriate manuals/directives for specific instructions.

- c. **NSN [Column (3)].** The NSNs for the items are listed in this column.



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**E-3. EXPLANATION OF COLUMNS (SECTIONS II AND III) (continued).**


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- d. **CAGEC [Column (4)].** The commercial and government entity code (CAGEC) is a five-digit alphanumeric code 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 part number different from the part ordered.

- e. **PART NUMBER [COLUMN (5)].** Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirements, to identify an item or range of items.
- f. **DESCRIPTION AND USABLE-ON CODE (UOC) [Column (6)].** This column includes the following information:
- (1) The Federal item name and, when required, a minimum description to identify the item.
  - (2) Physical security classification. Not applicable.
  - (3) Items that are included in kits and sets are listed below the name of the kit or set on Figure KIT.
  - (4) Spare/repair parts that make up an assembled item are listed immediately following the assembled item line entry.
  - (5) Part numbers for bulk materials are referenced in this column in the line item entry for the item to be manufactured/fabricated.
  - (6) When the item is not used with all serial numbers of the same model, the effective serial numbers are shown on the last line(s) of the description (before the UOC).
  - (7) The UOC, when applicable (see para E-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 BOI, the total authorization is increased proportionately.
  - (9) The statement "END OF FIGURE" appears just below the last item description in Column 5 for a given figure in both Section II and Section III.
- g. **QTY [Column (7)].** The QTY (quantity per figure) column indicates the quantity of the item used in the breakout shown on the illustration/figure, which is prepared for a functional group, subfunctional group, or an assembly. A "V" appearing in this column in lieu of a quantity indicates that the quantity is variable and may vary from application to application.

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**E-4. EXPLANATION OF COLUMNS (SECTION IV).**


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**a. National Stock Number (NSN) Index.**

- (1) **STOCK NUMBER Column.** This column lists the NSN by NIIN sequence. The NIIN consists of the last nine digits of the NSN (i.e.,  

NSN
5305-01-674-1467
NIIN

). When using this column to locate an item, ignore the first four digits of the NSN. However, the complete NSN should be used when ordering items by stock number.
- (2) **FIG. Column.** This column lists the number of the figure where the item is identified/located. The figures are in numerical order in Section II and Section III.
- (3) **ITEM Column.** The item number identifies the item associated with the figure listed in the adjacent FIG. column. This item is also identified by the NSN listed on the same line.

**b. Part Number Index.** Part numbers in this index are listed by part number in ascending alphanumeric sequence (i.e., vertical arrangement of letter and number combination that places the first letter or digit of each group in order A through Z, followed by the numbers 0 through 9 and each following letter or digit in like order).

- (1) **CAGEC Column.** The CAGEC is a five-digit alphanumeric code used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.
- (2) **PART NUMBER Column.** Indicates the primary number used by the manufacturer (individual, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirements, to identify an item or range of items.
- (3) **STOCK NUMBER Column.** This column lists the NSN for the associated part number and manufacturer identified in the PART NUMBER and CAGEC columns to the left.
- (4) **FIG. Column.** This column lists the number of the figure where the item is identified/located in Section II and Section III.
- (5) **ITEM Column.** The item number is that number assigned to the item as it appears in the figure referenced in the adjacent figure number column.

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**E-5. SPECIAL INFORMATION.**


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**a. Usable-on Code.** Indicates the model on which the item is used.

<u>Code</u>	<u>Used On</u>
T01	M870
U17	M870 Marine Variation
TLB	M870A1

**b. Fabrication Instructions.** Bulk materials required to manufacture items are listed in the Bulk Material Functional Group of this RPSTL. Part numbers for bulk material are also referenced in the DESCRIPTION column of the line item entry for the item to be manufactured/fabricated. Detailed fabrication instructions for items source coded to be manufactured or fabricated are found in Appendix G of this manual.

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**E-5. SPECIAL INFORMATION (continued).**

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- c. **Assembly Instructions.** Detailed assembly instructions for items source coded to be assembled from component spare/repair parts are found in Appendix G.
- d. **Kits.** Line item entries for repair parts kits appear in group 9401 in Section II.
- e. **Index Numbers.** Items that have the work BULK in the FIG. column will have an index number shown in the ITEM column. This index number is furnished for use as a cross-reference between the NSN/part number index and the bulk material list in Section II.
- f. **Associated Publications.** Not applicable.

---

**E-6. HOW TO LOCATE REPAIR PARTS.**

---

- a. When the NSN or part number is not known, you can locate a repair part by following these steps:
  - (1) **First.** Using the Table of Contents, determine the assembly group or subassembly group to which the item belongs. This is necessary because figures are prepared for assembly groups and subassembly groups, and listings are divided into the same groups.
  - (2) **Second.** Find the figure covering the assembly group or subassembly group to which the item belongs.
  - (3) **Third.** Identify the item on the figure and note the item number of the item.
  - (4) **Fourth.** Refer to the Repair Parts List for the figure to find the line item entry for the item number noted on the figure.
- b. When the NSN or part number is known, you can locate a repair part by following these steps:
  - (1) **First.** Using the National Stock Number Index or the Part Number Index, find the pertinent NSN or part number. The National Stock Number Index is in NIIN sequence. The part numbers in the Part Number Index are listed in ascending alphanumeric sequence. Both indexes cross-reference you to the figure number and the item number of the item you are looking for.
  - (2) **Second.** After finding the figure and item numbers, verify that the item is the one you're looking for; then locate the item number in the Repair Parts List for the figure.

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**E-7. ABBREVIATIONS.**

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For standard abbreviations see MIL-STD-12, Abbreviations for Use on Drawings, Specifications, Standards, and in Technical Documents.

SECTION II

TM 5-2330-378-14&P

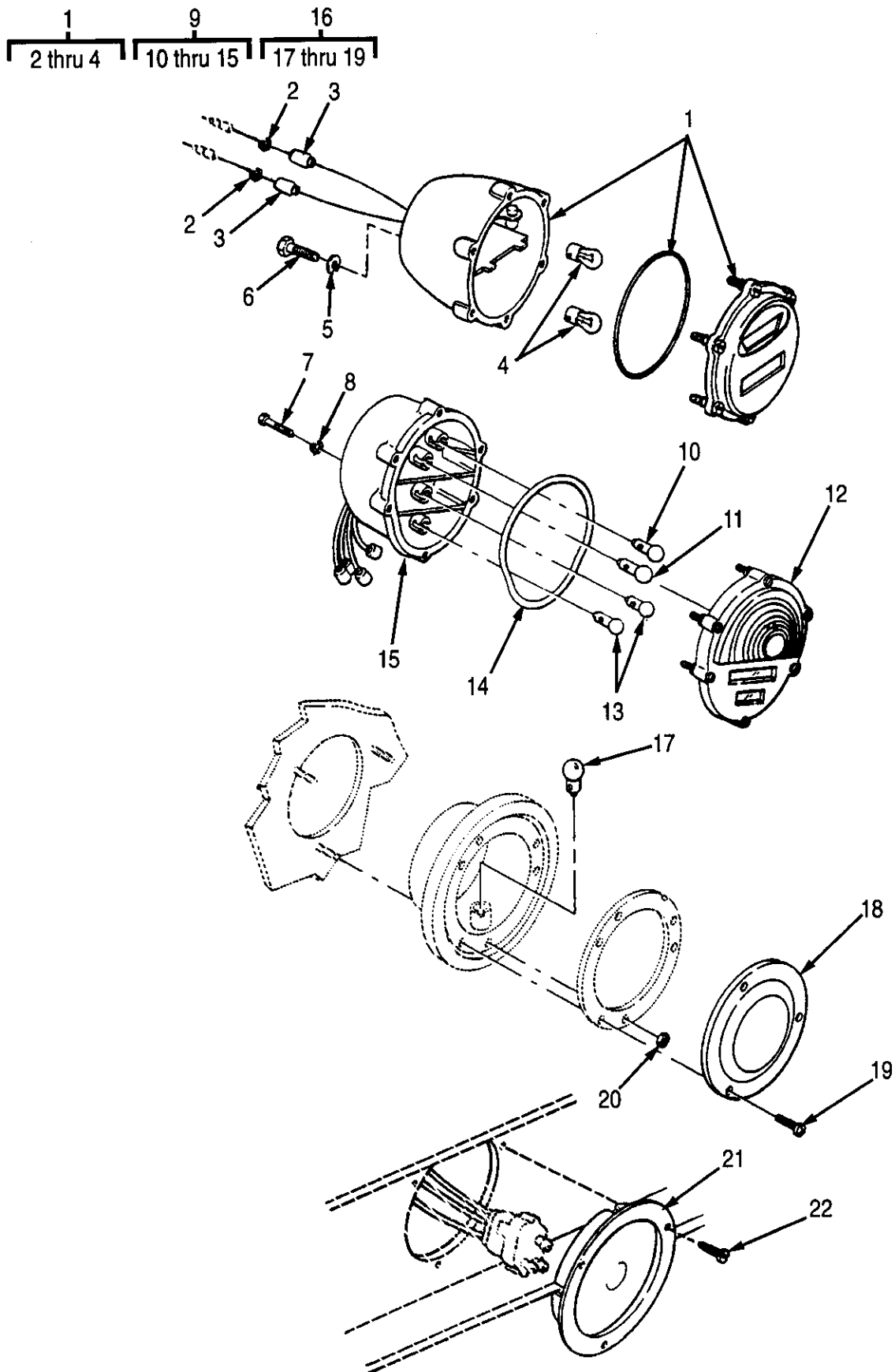


Figure 1. Stop Lights

## SECTION II

TM5-2330-378-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP 06 ELECTRICAL SYSTEM GROUP 0609 LIGHTS FIG.1 STOP LIGHTS					
1	PAOOO	96906	MS51330-1	STOP LIGHT-TAILLIGHT..... UOC:TLB,	2
2	XAOZZ	19207	8338567	.WASHER, SLOTTED..... UOC:TLB,	2
3	XAOZZ	19207	8338566	.SHELL, ELECTRICAL CO..... UOC:TLB,	2
4	PAOZZ	58536	A52463-1-08	.LAMP, INCANDESCENT..... UOC:TLB,	2
5	PAOZZ	94231	3-07620-311	WASHER, LOCK..... UOC:TLB,	4
6	PAOZZ	80204	B1821BH038C075D	SCREW, CAP, HEXAGON H..... UOC:TLB,	4
7	PAOZZ	80204	B1821BH038C063N	SCREW, CAP, HEXAGON H..... UOC:U17,	2
8	PAOZZ	96906	MS35338-46	WASHER, LOCK..... UOC:U17,	2
9	PAOOO	19207	12375837	TAILLIGHT, VEHICULAR..... UOC:U17,	2
10	PAOZZ	58536	A52463-1-09	.LAMP, INCANDESCENT..... UOC:U17,	1
11	PAOZZ	58536	A52463-2-10	.LAMP, INCANDESCENT..... UOC:U17,	1
12	PAOZZ	19207	12375841	.LENS, LIGHT COMPOSITE LIGHT..... UOC:U17,	1
13	PAOZZ	58536	A52463-1-08	.LAMP, INCANDESCENT..... UOC:U17,	2
14	PAOZZ	19207	11639519-2	.O-RING..... UOC:U17,	1
15	XAOZZ	19207	12375838	.BODY ASSEMBLY..... UOC:U17,	1
16	PAOZZ	75175	772-2605	STOP LIGHT, VEHICULA..... UOC:T01,	4
17	PAOZZ	08806	1156	.LAMP, INCANDESCENT..... UOC:T01,	1
18	PAOZZ	26697	06000042415R	.LENS, LIGHT RED..... UOC:T01,	1
19	PAOZZ	96906	MS51861-53	.SCREW, TAPPING..... UOC:T01,	3
20	PAOZZ	96906	MS35649-23	NUT, PLAIN, HEXAGON..... UOC:T01,	3
21	PAOZZ	13548	40022R	LAMP UNIT, VEHICULAR..... UOC:TLB,	4
22	PAOZZ	96906	MS24629-48	SCREW, TAPPING..... UOC:TLB,	12

END OF FIGURE

# SECTION II

TM 5-2330-378-14&P

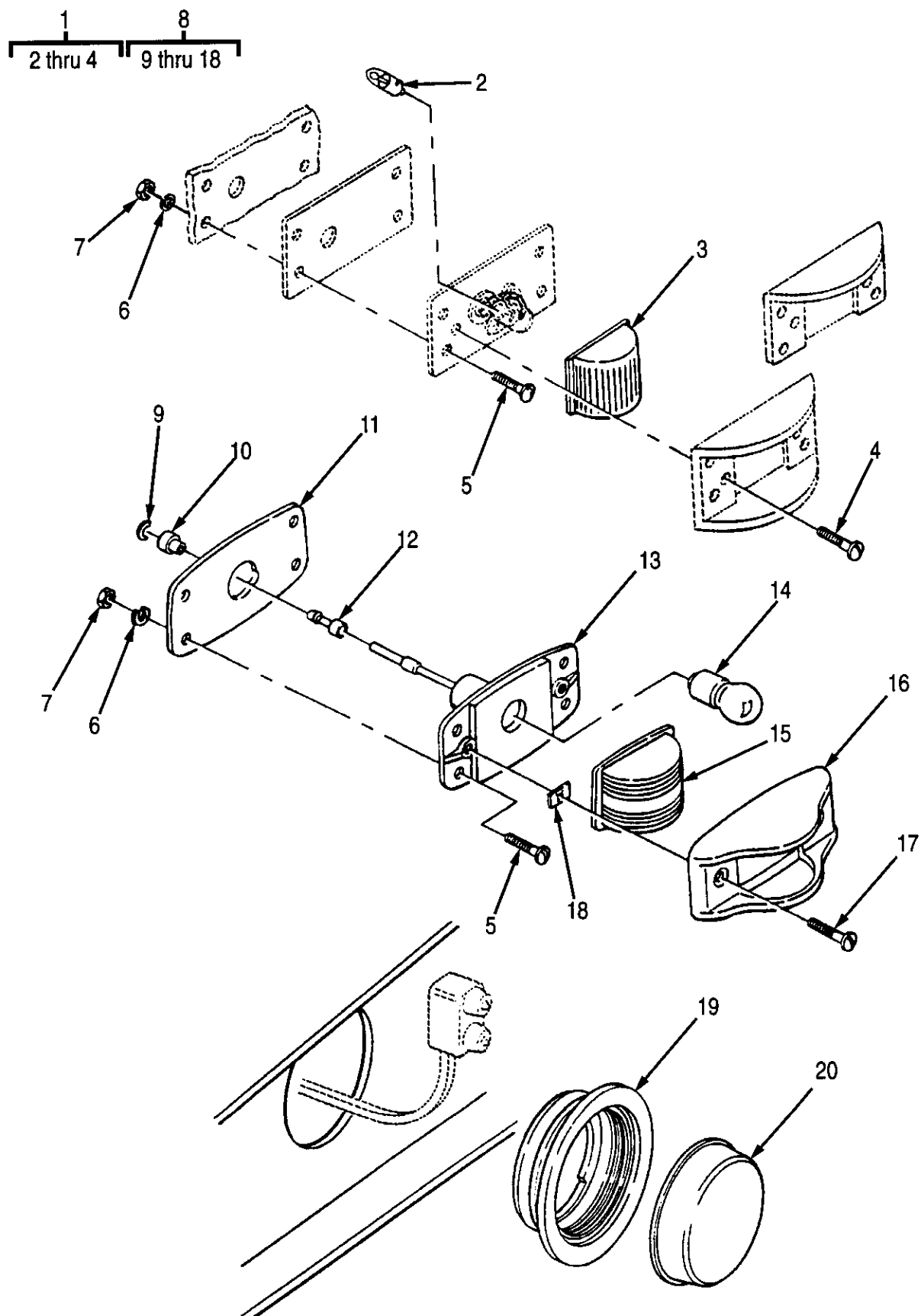


Figure 2. Clearance Lights and Taillight

## SECTION II

TM5-2330-378-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP 0609 LIGHTS					
FIG.2 CLEARANCE LIGHTS AND TAILLIGHT					
1	PAOZZ	26697	JPO-0094	LIGHT, MARKER, CLEARA AMBER..... UOC:T01,	1
1	PAOZZ	26697	06000000124-R	LIGHT, MARKER, CLEARA RED..... UOC:T01,	1
2	PAOZZ	62607	194	.LAMP, INCANDESCENT..... UOC:T01,	2
3	PAOZZ	96906	MS35421-2	.LENS, LIGHT RED..... UOC:T01,	1
3	PAOZZ	96906	MS35421-1	.LENS, LIGHT AMBER..... UOC:T01,	4
4	PAOZZ	96906	MS51959-61	.SCREW, MACHINE..... UOC:T01,	2
5	PAOZZ	96906	MS35206-264	SCREW, MACHINE..... UOC:T01, U17,	4
6	PAOZZ	96906	MS35338-43	WASHER, LOCK..... UOC:T01, U17,	4
7	PAOZZ	96906	MS35649-202	NUT, PLAIN, HEXAGON..... UOC:T01, U17,	4
8	PAOZZ	96906	MS35423-1	LIGHT, MARKER, CLEARA AMBER..... UOC:U17,	4
8	PAOZZ	96906	MS35423-2	LIGHT, MARKER, CLEARA RED..... UOC:U17,	5
9	PAOZZ	19207	8338567	.WASHER, SLOTTED..... UOC:U17,	1
10	PAOZZ	19207	8338566	.SHELL, ELECTRICAL CO..... UOC:U17,	1
11	PAOZZ	73331	5939841	.FELT MECHANICAL..... UOC:U17,	1
12	PAOZZ	96906	MS27148-2	.CONTACT, ELECTRICAL..... UOC:U17,	1
13	PAOZZ	73331	5939831	.PLATE, MOUNTING, LAMP..... UOC:U17,	1
14	PAOZZ	58536	A52463-1-08	.LAMP, INCANDESCENT..... UOC:U17,	1
15	PAOZZ	96906	MS35421-2	.LENS, LIGHT RED..... UOC:U17,	1
15	PAOZZ	96906	MS35421-1	.LENS, LIGHT AMBER..... UOC:U17,	1
16	PAOZZ	19207	7526516	.RETAINER, LENS..... UOC:U17,	1
17	PAOZZ	96906	MS51959-61	.SCREW, MACHINE..... UOC:U17,	2
18	PAOZZ	19207	7526796	.PUSH ON NUT..... UOC:U17,	2
19	PAOZZ	13548	10700	GROMMET, NONMETALLIC..... UOC:TLB,	11
20	PAOZZ	13548	10205Y	LAMP UNIT, VEHICULAR YELLOW..... UOC:TLB,	6
20	PAOZZ	13548	10205R	LAMP UNIT, VEHICULAR RED..... UOC:TLB,	5

END OF FIGURE

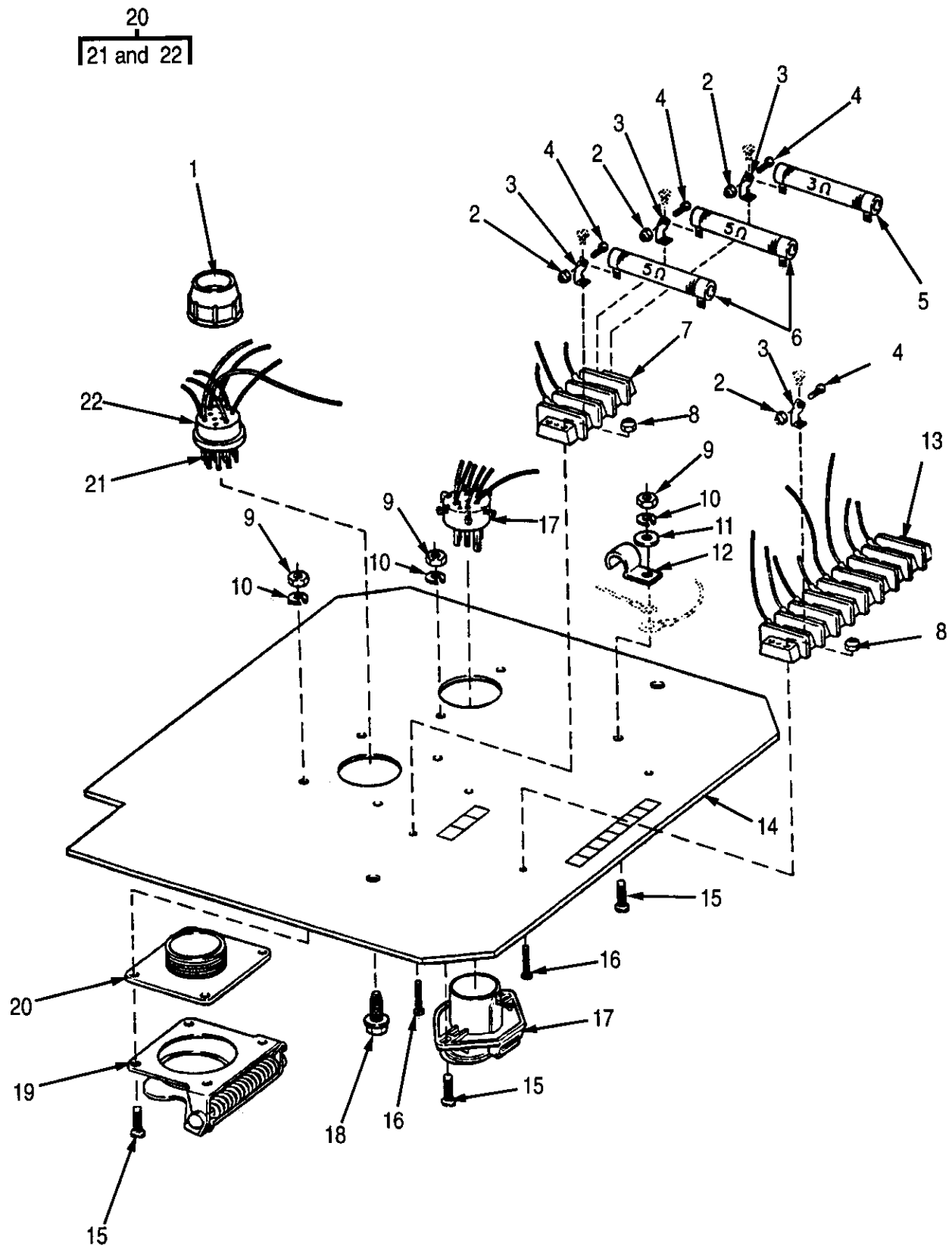


Figure 3. Electrical System



## SECTION II

TM5-2330-378-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP 0613 CHASSIS WIRING HARNESS FIG.3 ELECTRICAL SYSTEM					
1	PAOZZ	19207	7723309	NUT, PLAIN, KNURLED..... UOC:TLB,	1
2	PAOZZ	96906	MS35649-242	NUT, PLAIN, HEXAGON..... UOC:TLB,	6
3	PAOZZ	91833	4326	BRACKET, ANGLE..... UOC:TLB,	6
4	PAOZZ	96906	MS35206-215	SCREW, MACHINE..... UOC:TLB,	6
5	PAOZZ	12697	VP50K30HM	RESISTOR, FIXED, WIRE..... UOC:TLB,	1
6	PAOZZ	51831	VP50K/5	RESISTOR, FIXED, WIRE..... UOC:TLB,	2
7	PAOZZ	71785	TRW3-150	TERMINAL JUNCTION B..... UOC:TLB,	1
8	PAOZZ	96906	MS17830-06C	NUT, SELF-LOCKING, HE..... UOC:TLB,	4
9	PAOZZ	96906	MS51967-2	NUT, PLAIN, HEXAGON..... UOC:TLB,	7
10	PAOZZ	96906	MS35338-44	WASHER, LOCK..... UOC:TLB,	7
11	PAOZZ	96906	MS27183-9	WASHER, FLAT..... UOC:TLB,	1
12	PAOZZ	75272	COV-1709	CLAMP, LOOP..... UOC:TLB,	1
13	PAOZZ	71785	TRW8-150	TERMINAL JUNCTION B..... UOC:TLB,	1
14	PAOZZ	66788	SAT-E16870	PLATE, ELECTRICAL SH..... UOC:TLB,	1
15	PAOZZ	96906	MS35206-281	SCREW, MACHINE..... UOC:TLB,	7
16	PAOZZ	96906	MS35206-265	SCREW, MACHINE..... UOC:TLB,	4
17	PFOZZ	26697	JP0-0031	CONNECTOR, RECEPTACL..... UOC:TLB,	1
18	PAOZZ	05573	31884	SCREW, TAPPING..... UOC:TLB,	2
19	PAOZZ	19207	7731428	COVER, ELECTRICAL CO..... UOC:TLB,	2
20	PAOZZ	96906	MS75021-2	CONNECTOR, RECEPTACL..... UOC:TLB,	1
21	PAOZZ	96906	MS75021-1	.CONNECTOR, RECEPTACL..... UOC:TLB,	7
22	PAOZZ	19207	7722333	.BUSHING, NONMETALLIC..... UOC:TLB,	1

END OF FIGURE

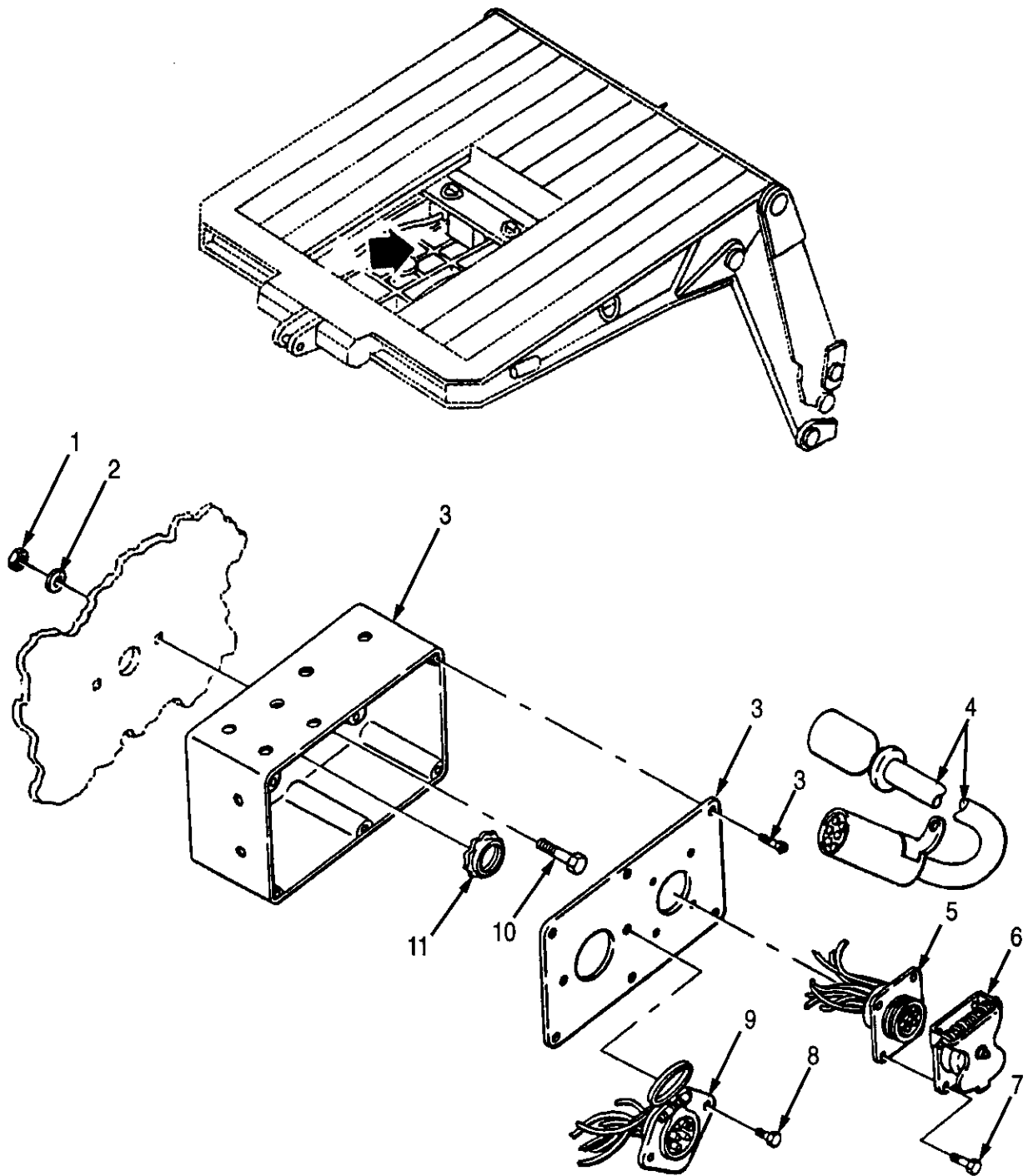


Figure 4. Electric Reduction Box and Connector

## SECTION II

TM5-2330-378-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP 0613 CHASSIS WIRING HARNESS FIG.4 ELECTRIC REDUCTION BOX AND CONNECTOR					
1	XBOZZ	26697	MP5-0091-407	NUT BOX MOUNTING..... UOC:T01,U17,	2
2	XBOZZ	26697	MP5-0105-6	WASHER BOX MOUNTING..... UOC:T01,U17,	2
3	PAOZZ	16236	CS-2590-SV-0703	BOX,REDUCER..... UOC:T01,	1
3	XBOZZ	26697	MP0-0900	REDUCTION BOX..... UOC:U17,	1
4	PAOZZ	26697	JP0-0031	CONNECTOR,RECEPTACL..... UOC:T01,U17,	1
5	PAOZZ	96906	MS75021-1	CONNECTOR,RECEPTACL 24V..... UOC:T01,U17,	1
6	PAOZZ	19207	7731428	COVER,ELECTRICAL CO..... UOC:T01,U17,	1
7	PAOZZ	96906	MS35206-280	SCREW,MACHINE..... UOC:T01,U17,	4
8	PAOZZ	96906	MS35206-295	SCREW,MACHINE..... UOC:T01,U17,	4
9	PAOZZ	40670	3296986	CONNECTOR,RECEPTACL 12V..... UOC:T01,U17,	1
10	XBOZZ	26697	MP5-0094-6	SCREW..... UOC:T01,U17,	2
11	XBOZZ	26697	PD0-0285	NUT..... UOC:T01,U17,	1

END OF FIGURE

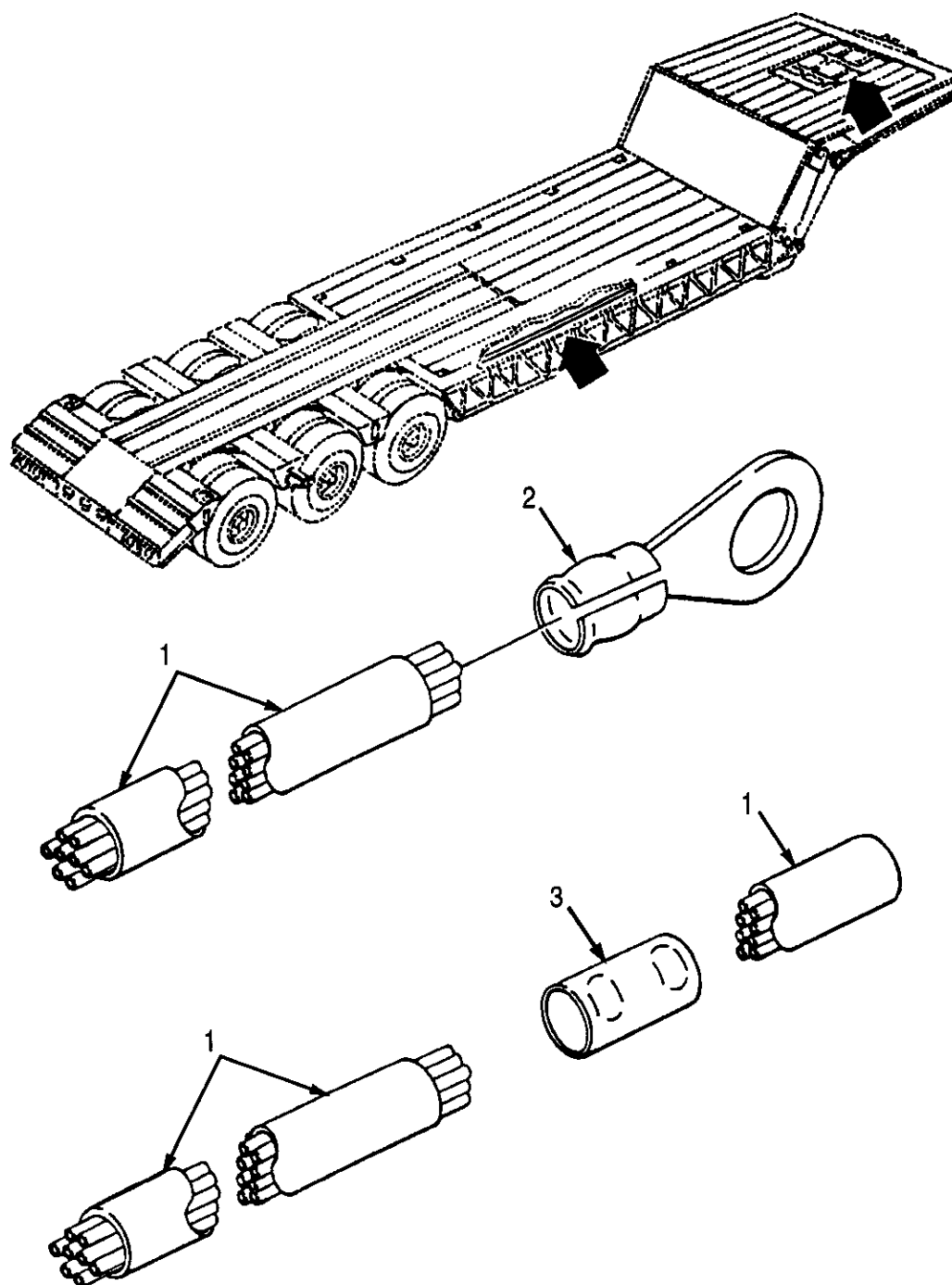


Figure 5. Wiring Harness

## SECTION II

TM5-2330-378-14&amp;P

(1)	(2)	(3)	(4)	(5)	(6)
ITEM	SMR		PART		
NO	CODE	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY

GROUP 0613 CHASSIS WIRING HARNESS  
FIG. 5 WIRING HARNESS

1	MOOZZ	19207	6152019-1	WIRE,BLACK MAKE FROM P/N 59A4X14X500.....	8
2	XBOZZ	26697	PD0-0286	UOC:T01,U17, CONNECTOR.....	V
3	XBOZZ	26697	PD0-0287	UOC:T01,U17, CONNECTOR.....	V

END OF FIGURE



# SECTION II

TM 5-2330-378-14&P

1	5	9	14	17
2 thru 4	6 thru 8	10 thru 13	15 and 16	18 thru 20

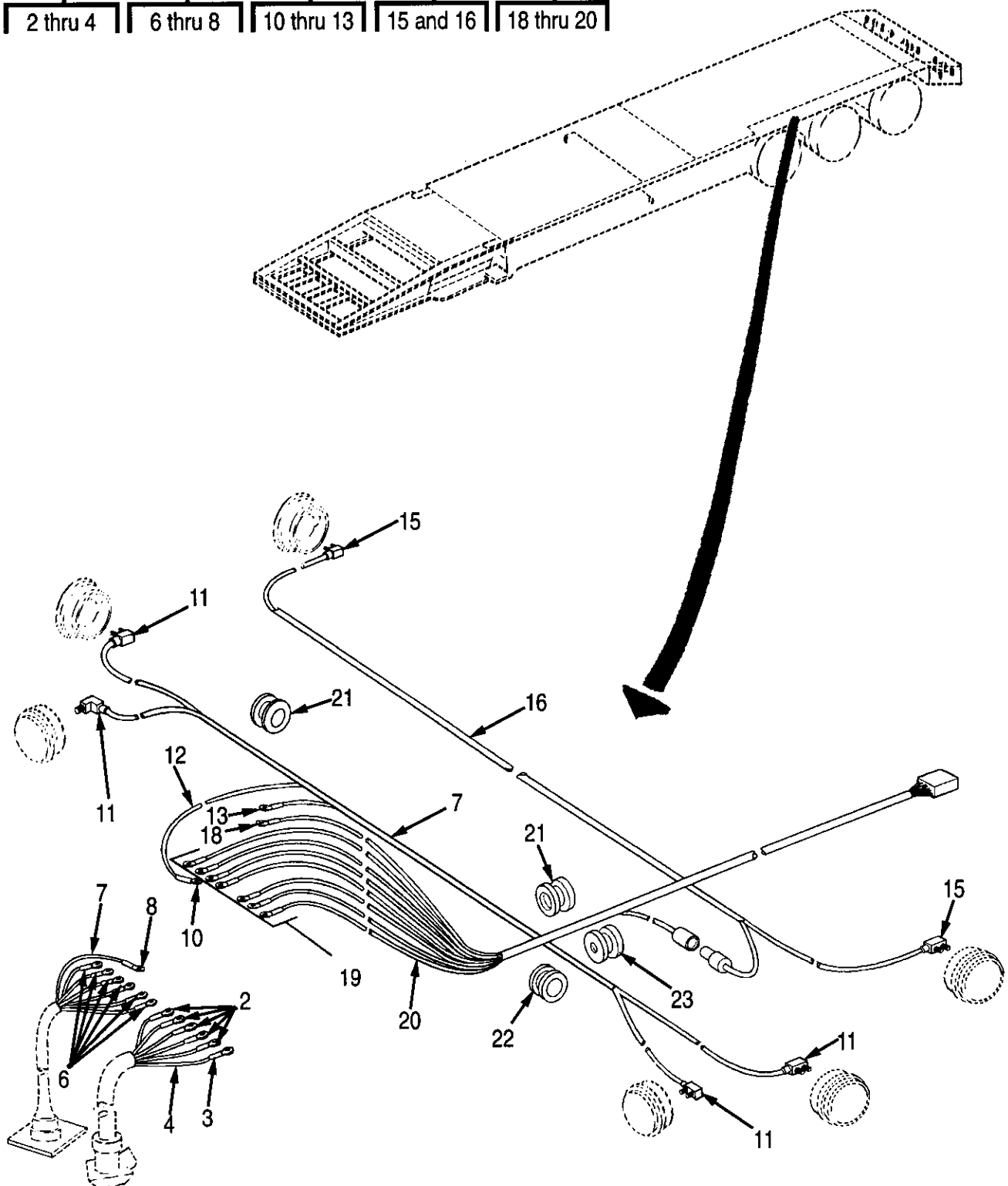


Figure 6. Wiring Harnesses (sheet 1 of 2)

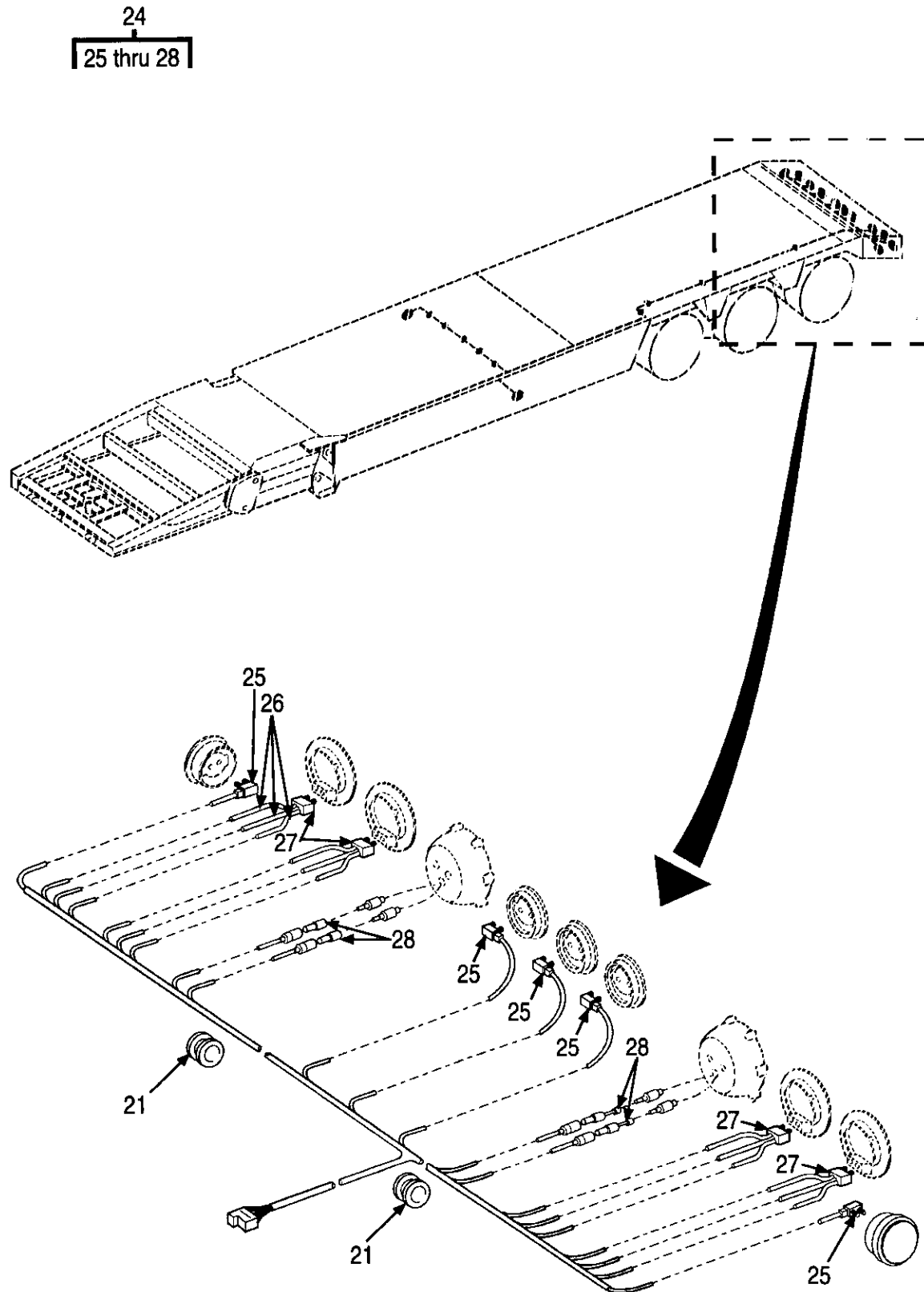


Figure 6. Wiring Harnesses (sheet 2 of 2)



## SECTION II

TM5-2330-378-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP 0613 CHASSIS WIRING HARNESS FIG.6 WIRING HARNESES					
1	A0000	66788	SAT-1090	HARNESS 12 VOLT.....	1
2	PAOZZ	96906	MS25036-108	UOC:TLB, .TERMINAL, LUG.....	5
3	PAOZZ	96906	MS25036-157	UOC:TLB, .TERMINAL, LUG.....	1
4	MOOZZ	19207	7720853-AR	UOC:TLB, .WIRE, ELECTRICAL MAKE FROM WIRE, ELECTRICAL, P/N 7720853, LENGTH AS REQUIRED.....	6
5	A0000	66788	SAT-1010	UOC:TLB, CABLE ASSEMBLY, SPEC.....	1
6	PAOZZ	96906	MS25036-108	UOC:TLB, .TERMINAL, LUG.....	6
7	MOOZZ	19207	7720853-AR	UOC:TLB, .WIRE, ELECTRICAL MAKE FROM WIRE, ELECTRICAL P/N, 7720853, LENGTH AS REQUIRED.....	7
8	PAOZZ	96906	MS25036-157	UOC:TLB, .TERMINAL, LUG.....	1
9	A0000	66788	SAT-1020	UOC:TLB, WIRING HARNESS, BRAN .....	1
10	PAOZZ	96906	MS25036-157	UOC:TLB, .TERMINAL, LUG.....	1
11	PAOZZ	13548	94902	UOC:TLB, .PLUG ASSEMBLY.....	4
12	MOOZZ	19207	7720853-AR	UOC:TLB, .WIRE, ELECTRICAL MAKE FROM WIRE, ELECTRICAL P/N 7720853, LENGTH AS REQUIRED.....	3
13	PAOZZ	96906	MS25036-108	UOC:TLB, .TERMINAL, LUG.....	1
14	A0000	66788	SAT-1040	UOC:TLB, WIRING HARNESS .....	1
15	PAOZZ	13548	94902	UOC:TLB, .PLUG ASSEMBLY.....	2
16	MOOZZ	19207	7720853-AR	UOC:TLB, .WIRE, ELECTRICAL MAKE FROM WIRE, ELECTRICAL, P/N 7720853, LENGTH AS REQUIRED.....	1
17	A0000	66788	SAT-1030	UOC:TLB, WIRING HARNESS.....	1
18	PAOZZ	96906	MS25036-108	UOC:TLB, .TERMINAL, LUG.....	7
19	PAOZZ	96906	MS25036-157	UOC:TLB, .TERMINAL, LUG.....	1
20	MOOZZ	19207	7720853-AR	UOC:TLB, .WIRE, ELECTRICAL MAKE FROM WIRE, ELECTRICAL P/N 7720853, LENGTH AS REQUIRED.....	8
21	XBOZZ	51831	2873	UOC:TLB, GROMMET.....	8

## SECTION II

TM5-2330-378-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
22	PAOZZ	51831	Z-425	GROMMET, NONMETALLIC..... UOC:TLB,	1
23	XBOZZ	51831	2575	GROMMET..... UOC:TLB,	4
24	AOOOO	66788	SAT-1050	WIRING HARNESS, BRAN .....	1
25	PAOZZ	13548	94902	.PLUG ASSEMBLY..... UOC:TLB,	5
26	MOOZZ	19207	7720853-AR	.WIRE, ELECTRICAL MAKE FROM WIRE, ELECTRICAL P/N 7720853, LENGTH AS REQUIRED..... UOC:TLB,	21
27	PAOZZ	13548	94926	.PLUG ASSEMBLY..... UOC:TLB,	4
28	PAOZZ	96906	MS27144-2	.CONNECTOR, PLUG, ELEC..... UOC:TLB,	4

END OF FIGURE



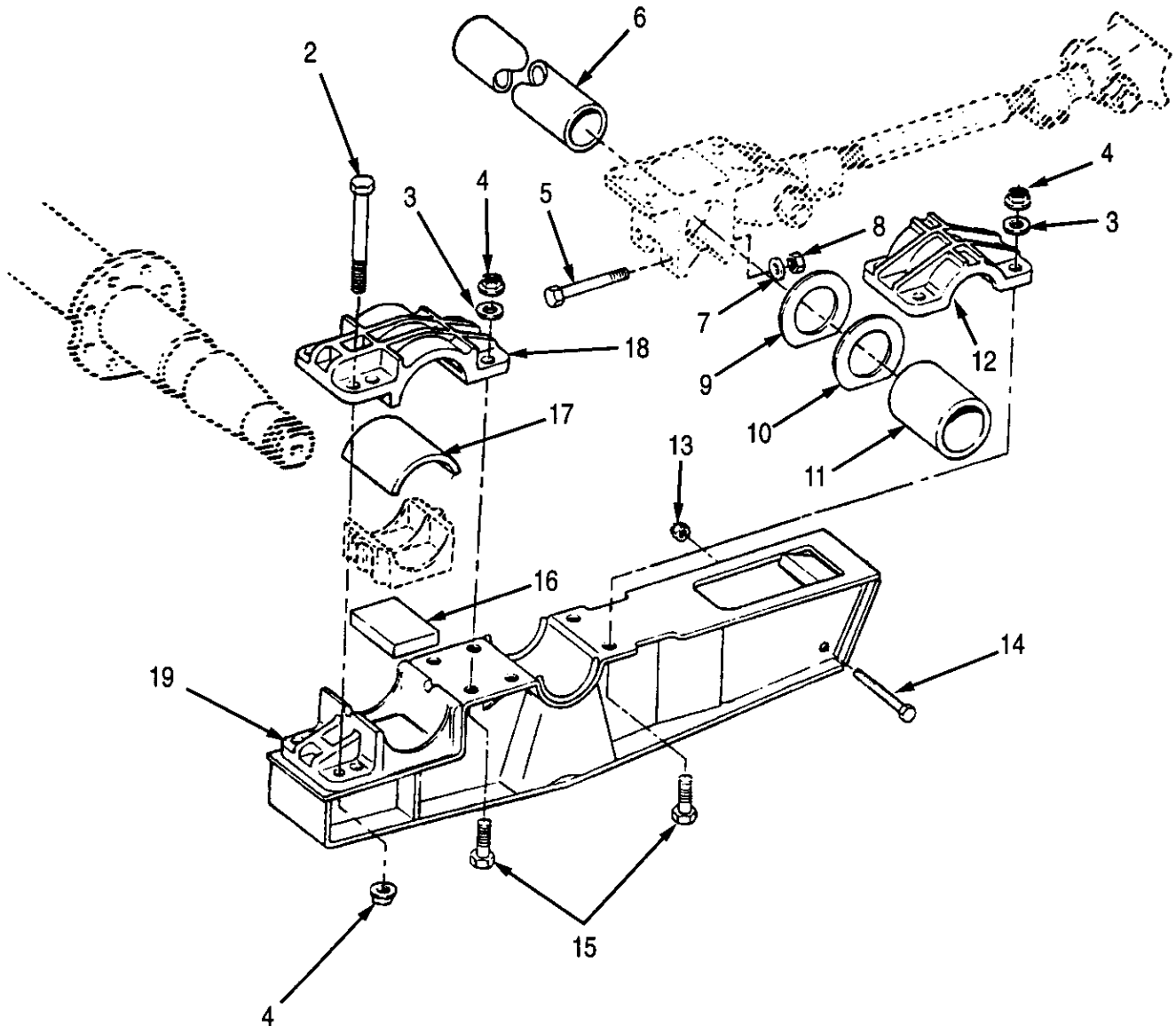
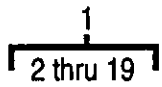


Figure 7. Axle Suspension

## SECTION II

TM5-2330-378-14&amp;P

(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.7 AXLE SUSPENSION					
1	XBFFF	92967	11455-00	TRI- AXLE ASSY. SEE FIG. 23 FOR SPRING BREAKDOWN..... UOC:TLB,	1
2	PAFZZ	92967	11443-00	.SCREW,CAP,HEXAGON H..... UOC:TLB,	8
3	PAFZZ	92967	35-00	.WASHER,FLAT..... UOC:TLB,	24
4	PAFZZ	92967	11514-00	.NUT,PLAIN,EXTENDED..... UOC:TLB,	32
5	PAFZZ	92967	11456-00	.SCREW,CAP,HEXAGON H..... UOC:TLB,	4
6	PAFZZ	92967	11446-00	.TUBE,METALLIC..... UOC:TLB,	2
7	PAFZZ	92967	817-00	.WASHER,FLAT..... UOC:TLB,	4
8	PAFZZ	92967	841-00	.NUT,SELF-LOCKING,HE..... UOC:TLB,	4
9	PAFZZ	92967	11452-00	.WASHER,FLAT..... UOC:TLB,	4
10	PAFZZ	66788	SAI-16820	.WASHER,FLAT..... UOC:TLB,	4
11	PAFZZ	92967	11442-00	.BUSHING,NONMETALLIC..... UOC:TLB,	4
12	PAFZZ	92967	11434-00	.STRAP,RETAINING..... UOC:TLB,	4
13	PAFZZ	92967	37-03	.NUT,SELF-LOCKING,HE..... UOC:TLB,	4
14	PAFZZ	92967	11439-00	.SCREW,CAP,HEXAGON H..... UOC:TLB,	6
15	PAFZZ	92967	11435-00	.SCREW,CAP,HEXAGON H..... UOC:TLB,	24
16	PAFZZ	92967	11433-00	.BUMPER,NONMETALLIC..... UOC:TLB,	4
17	PAFZZ	92967	11445-00	.RUBBER STRIP..... UOC:TLB,	4
18	PAFZZ	92967	11444-00	.STRAP,RETAINING..... UOC:TLB,	4
19	PAFZZ	92967	11441-00	.STRAP,RETAINING..... UOC:TLB,	4

END OF FIGURE

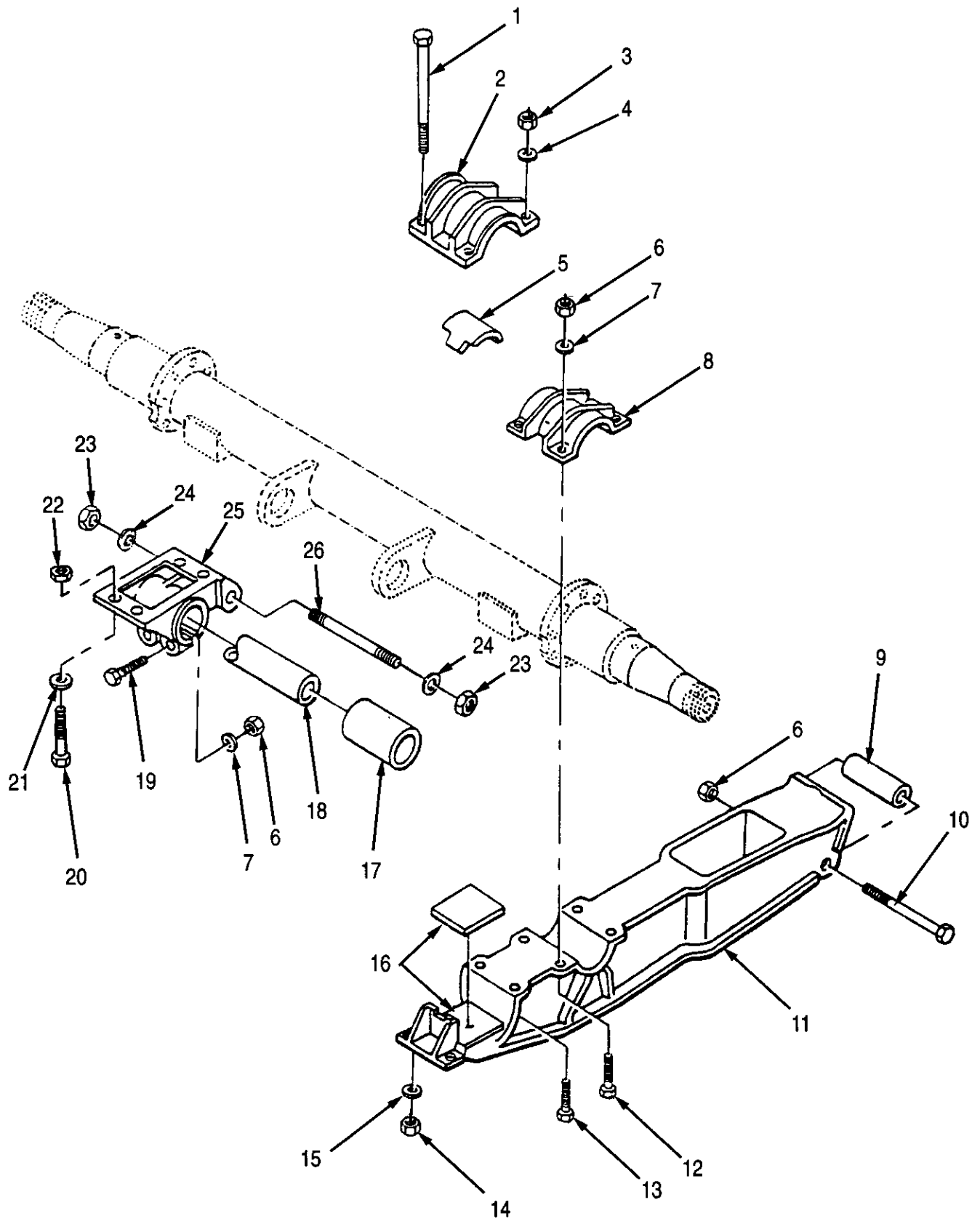


Figure 8. Axle Suspension

## SECTION II

TM5-2330-378-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP 1100 REAR AXLE ASSEMBLY FIG.8 AXLE SUSPENSION					
1	PAFZZ	98171	930-03-935	SCREW,CAP,HEXAGON H..... UOC:T01,	8
2	XBFZZ	98171	91010060	AXLE CAP..... UOC:T01,U17,	8
3	PAFZZ	98171	934 00 500	NUT,SELF-LOCKING,HE..... UOC:T01,U17,	1
4	PAFZZ	98171	936 00 168	WASHER,FLAT..... UOC:T01,U17,	1
5	PAFZZ	98171	91028051	WRAPPER,AXLE..... UOC:T01,U17,	2
6	PAFZZ	98171	934 00 492	NUT,SELF-LOCKING,HE..... UOC:T01,U17,	1
7	PAFZZ	96906	MS20002-12	WASHER,FLAT..... UOC:T01,U17,	8
8	PAFZZ	98171	900-08-011	BUSHING,NONMETALLIC..... UOC:T01,U17,	4
9	PFFZZ	98171	910-36-078	SPACER,SLEEVE..... UOC:T01,U17,	4
10	PAFZZ	80204	B1821BH075C600N	SCREW,CAP,HEXAGON H..... UOC:T01,U17,	4
11	PFFZZ	98171	910-15-015	EQUALIZING BEAM..... UOC:T01,	4
12	PAFZZ	80204	B1821BH075C300N	SCREW,CAP,HEXAGON H..... UOC:T01,U17,	16
13	PAFZZ	98171	930-04-239	SCREW,CAP,HEXAGON H..... UOC:T01,U17,	8
14	PFFZZ	98171	934 00 498	NUT,SELF-LOCKING,HE..... UOC:T01,U17,	8
15	PAFZZ	98171	936-00-162	WASHER..... UOC:T01,U17,	1
16	PBFZZ	98171	91028089	RUBBER STRIP..... UOC:T01,U17,	4
17	PAFZZ	98171	900-08-011	BUSHING,NONMETALLIC..... UOC:T01,U17,	4
18	XBFZZ	98171	91038290	TRUNNION TUBE..... UOC:T01,U17,	2
19	PAOZZ	96906	MS90727-199	SCREW,CAP,HEXAGON H..... UOC:T01,	8
20	PAFZZ	98171	930-03-345	SCREW,CAP,HEXAGON H..... UOC:T01,U17,	4
21	PAFZZ	96906	MS27183-21	WASHER,FLAT..... UOC:T01,U17,	2
22	PAFZZ	98171	934 00 488	NUT,SELF-LOCKING,HE..... UOC:T01,U17,	4
23	PAFZZ	98171	934 00 506	NUT,SELF-LOCKING,RO..... UOC:T01,U17,	4
24	PAFZZ	98171	936 00 174	WASHER,FLAT..... UOC:T01,U17,	4

## SECTION II

TM5-2330-378-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
25	PBFZZ	98171	91518041	BRACKET, MOUNTING..... UOC:T01,	1
26	PAFZZ	98171	93201045	SCREW, CAP, HEXAGON H..... UOC:T01,U17,	2

END OF FIGURE





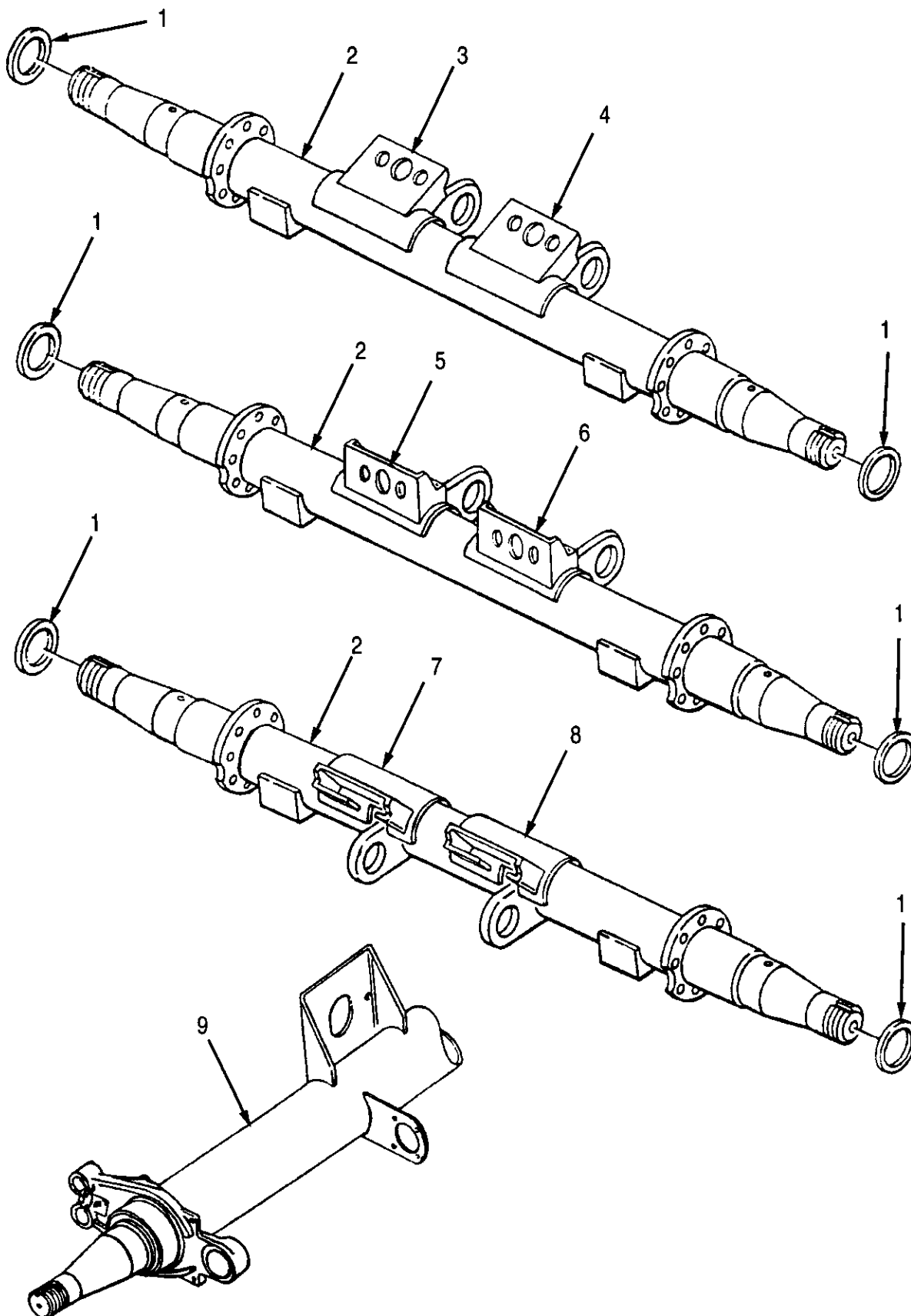


Figure 9. Axles

## SECTION II

TM5-2330-378-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP 1100 REAR AXLE ASSEMBLY FIG.9 AXLES					
1	PAFZZ	26151	1013	RING, AXLE.....	6
2	XBFZZ	26697	A19T75LHDA-71	UOC:T01,U17, AXLE BAR W/FLANGE.....	3
3	XBFZZ	19207	12357780-1	UOC:T01,U17, MOUNT,ASSY RIGHT SIDE REAR AXLE....	1
4	XBFZZ	19207	12357780-2	UOC:T01, MOUNT,ASSY LEFT SIDE REAR AXLE.....	1
5	XBFZZ	19207	12357779-1	UOC:T01, MOUNT,ASSY LEFT SIDE MIDDLE AXLE...	1
6	XBFZZ	19207	12357779-2	UOC:T01, MOUNT,ASSY RIGHT SIDE MIDDLE AXLE..	1
7	XBFZZ	19207	12357778-1	UOC:T01, MOUNT,ASSY LEFT SIDE FRONT AXLE....	1
8	XBFZZ	19207	12357778-2	UOC:T01, MOUNT,ASSY RIGHT SIDE FRONT AXLE...	1
9	PBOFF	66788	D22AX503-209	UOC:T01, AXLE ASSEMBLY,VEHIC REAR, SEE FIG. 10 FOR AXLE ASSEMBLY BREAKDOWN.....	1
9	PFFFF	66788	SA-870-382	UOC:TLB, AXLE,VEHICULAR,NOND FRONT, SEE FIG. 10 FOR AXLE ASSEMBLY BREAKDOWN.....	1
9	PFFFF	66788	SA870-208	UOC:TLB, AXLE ASSEMBLY,VEHIC MIDDLE, SEE FIG. 10 FOR AXLE ASSEMBLY BREAKDOWN..... UOC:TLB,	1

END OF FIGURE

SECTION II

TM 5-2330-378-14&P

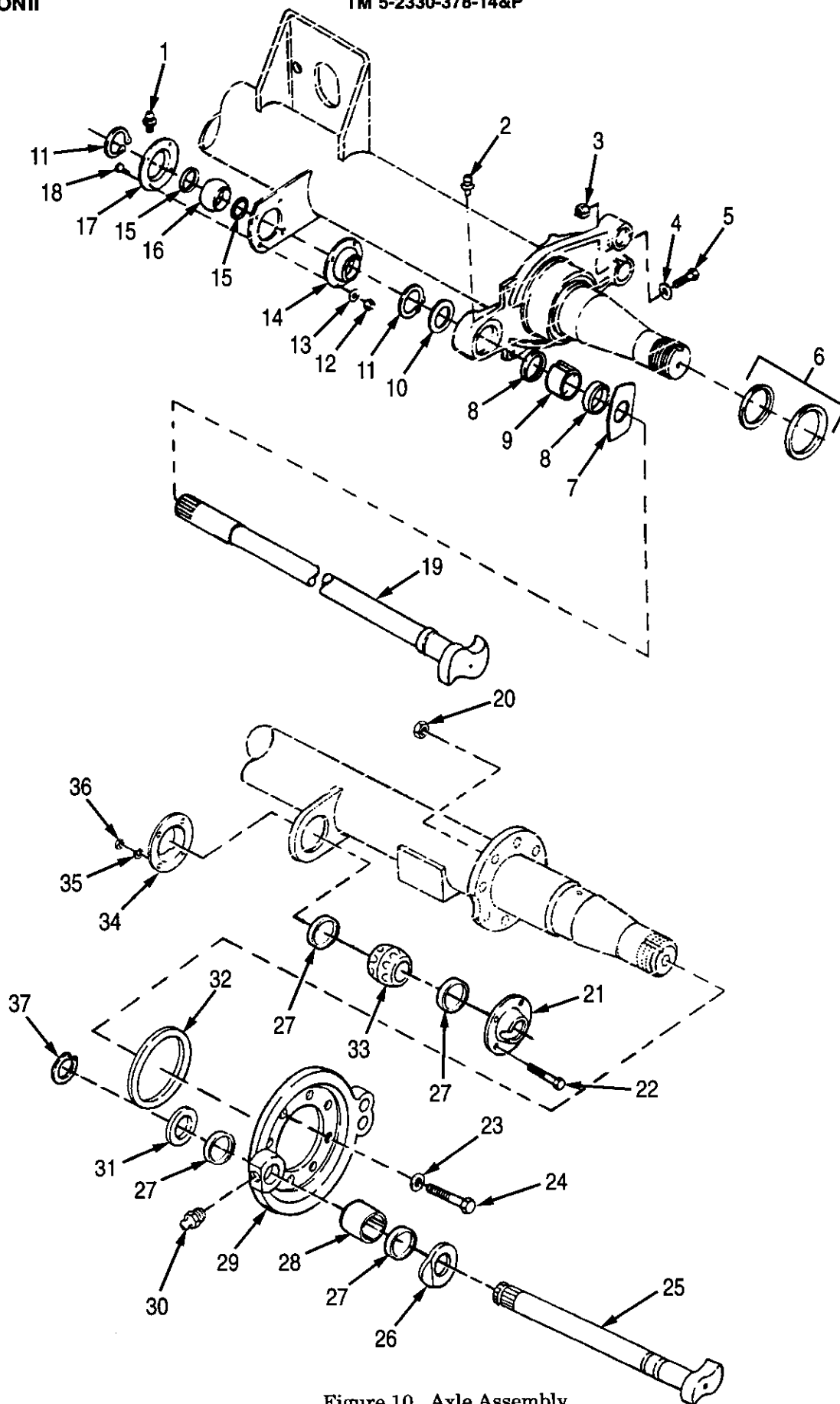


Figure 10. Axle Assembly

## SECTION II

TM5-2330-378-14&amp;P

(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.10 AXLE ASSEMBLY					
1	PAOZZ	62707	500174-2	.FITTING,LUBRICATION..... UOC:TLB,	2
2	PAOZZ	97271	500168-2	.FITTING,LUBRICATION..... UOC:TLB,	2
3	PAOZZ	96906	MS51968-14	.NUT,PLAIN,HEXAGON..... UOC:TLB,	2
4	PAOZZ	96906	MS35333-44	.WASHER,LOCK..... UOC:TLB,	2
5	PAOZZ	96906	MS35308-417	.SCREW,CAP,HEXAGON H..... UOC:TLB,	2
6	PAOZZ	26151	372-7098	.SEAL KIT..... UOC:TLB,	2
7	PAFZZ	62707	M10HS115	.SPACER,PLATE..... UOC:TLB,	2
8	PAFZZ	62707	M16HH100	.PACKING,PREFORMED..... UOC:TLB,	4
9	PAFZZ	62707	M10WS109	.BUSHING,SLEEVE..... UOC:TLB,	2
10	PAOZZ	62707	M10HS117	.WASHER,FLAT..... UOC:TLB,	6
11	PAOZZ	62707	38038	.RING,RETAINING..... UOC:TLB,	4
12	PAOZZ	62707	500370-2	.NUT,PLAIN,HEXAGON..... UOC:TLB,	8
13	PAOZZ	96906	MS35338-8	.WASHER,LOCK..... UOC:TLB,	8
14	PAOZZ	62707	M10WH100-1	.PLATE,RETAINING,SHA..... UOC:TLB,	2
15	PAOZZ	62707	M10HH100	.PACKING,PREFORMED..... UOC:TLB,	4
16	PAOZZ	62707	M10WJ100	.BEARING,PLAIN,SPHER..... UOC:TLB,	2
17	PAOZZ	62707	M10WH100-2	.PLATE,RETAINING,SHA..... UOC:TLB,	2
18	PAOZZ	62707	500397-9	.BOLT,MACHINE..... UOC:TLB,	8
19	PAFZZ	62707	M12WKL10-233	.CAMSHAFT,ACTUATING, L.H..... UOC:TLB,	1
19	PAFZZ	62707	M12WKR10-234	.CAM,CONTROL R.H..... UOC:TLB,	1
20	PAFZZ	97271	500371-5	NUT,BRAKE MOUNT..... UOC:T01,U17,	48
21	PFFZZ	62707	M10HN138	WASHER,KEY..... UOC:T01,U17,	6
22	XBFZZ	26697	MP0-0033	SCREW..... UOC:T01,U17,	24
23	PFFZZ	56697	403117	WASHER,LOCK..... UOC:T01,U17,	48
24	PAFZZ	62707	500412-15	BOLT,MACHINE..... UOC:T01,U17,	48

## SECTION II

TM5-2330-378-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
25	PAFZZ	62707	M12WKR10-234	CAM, CONTROL RIGHT..... UOC:T01,	3
25	PAFZZ	62707	M12WKL10-233	CAMSHAFT, ACTUATING LEFT..... UOC:T01,	3
26	PAFZZ	26697	MP0-0330	WASHER, FLAT..... UOC:T01, U17,	6
27	PAFZZ	01212	443527SS1	SEAL, PLAIN ENCASED..... UOC:T01, U17,	8
28	PAFZZ	26697	MP0-0045	BUSHING, SPIDER..... UOC:T01, U17,	1
29	PFFZZ	62703	M12WS122	PLATE, BACKING, BRAKE..... UOC:T01, U17,	6
30	PAOZZ	18740	SK974-32	FITTING, LUBRICATION..... UOC:T01, U17,	6
31	PAFZZ	26697	MD0-0088	WASHER, FLAT..... UOC:T01, U17,	6
32	PAFZZ	62707	M10HH129	SEAL, PLAIN ENCASED..... UOC:T01,	6
33	PAFZZ	62707	M10WJ107	BEARING, PLAIN, SPHER..... UOC:T01, U17,	6
34	PFFZZ	22271	16029	WASHER, FLAT..... UOC:T01, U17,	6
35	XBFZZ	26697	MP0-0035	WASHER, LOCK..... UOC:T01, U17,	24
36	XBFZZ	26697	MP0-0034	NUT..... UOC:T01, U17,	24
37	PAFZZ	62707	38038	RING, RETAINING..... UOC:T01, U17,	12

END OF FIGURE



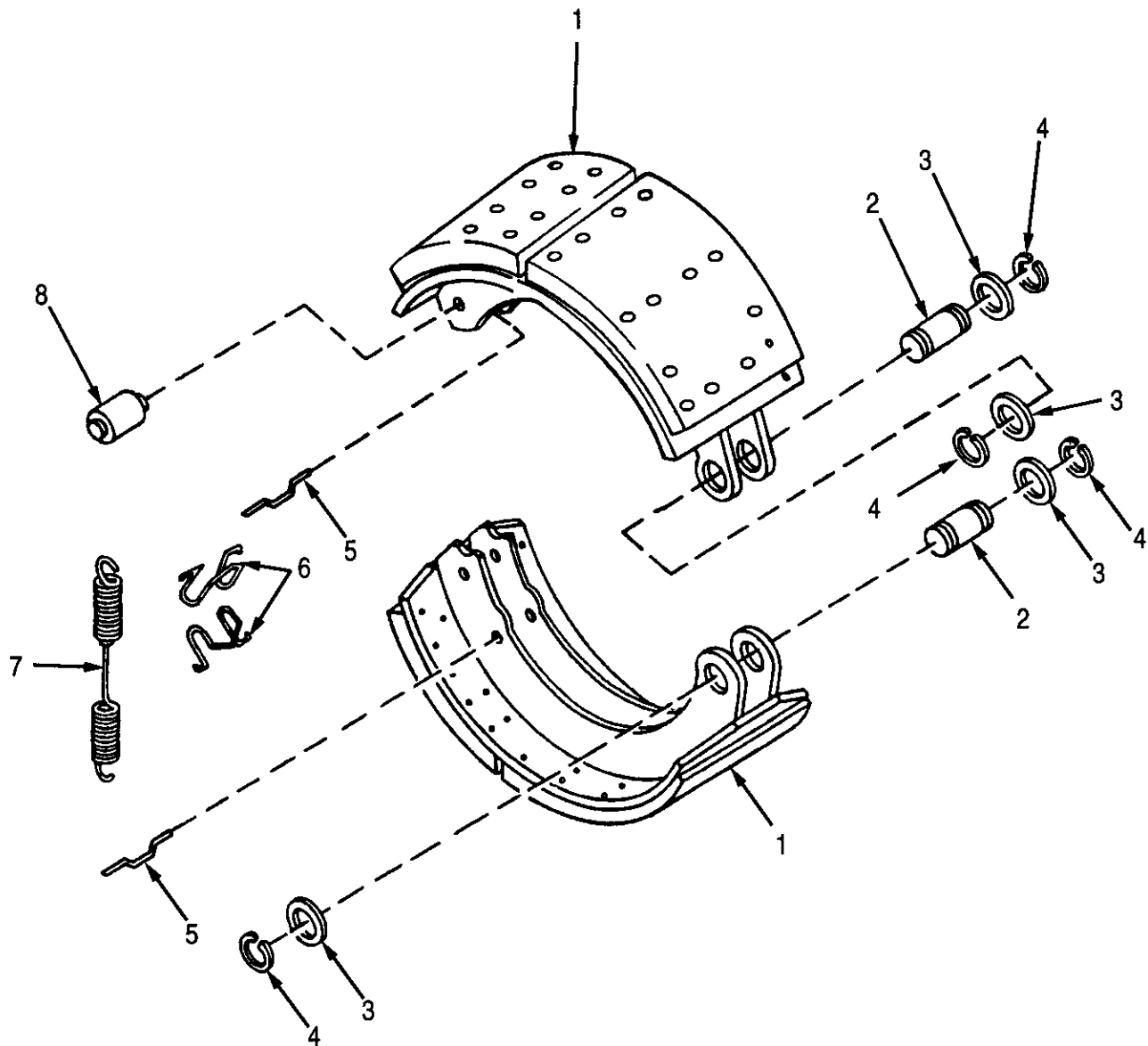


Figure 11. Brake Shoe Assembly



## SECTION II

TM5-2330-378-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP 1202 SERVICE BRAKES					
FIG.11 BRAKE SHOE ASSEMBLY					
1	PAOZZ	19207	57K1744	BRAKE SHOE SET.....	2
2	PAOZZ	62707	M10WJ108	PIN,GROOVED,HEADLES.....	2
3	PAOZZ	62707	M10HN136	WASHER,FLAT.....	4
4	PAOZZ	79136	5100-100MD	RING,RETAINING.....	4
5	PAOZZ	62707	M16WJ102	CLIP,RETAINING.....	2
6	PAOZZ	62707	M16WJ103	SPRING,HELICAL,TORS PART OF KIT P/N 57K1744.....	2
7	PAOZZ	62707	M10WJ118	SPRING.....	1
8	PAOZZ	62707	M16WJ104	PIN,SHOULDER,HEADLE PART OF KIT P/N 57K1744.....	2

END OF FIGURE

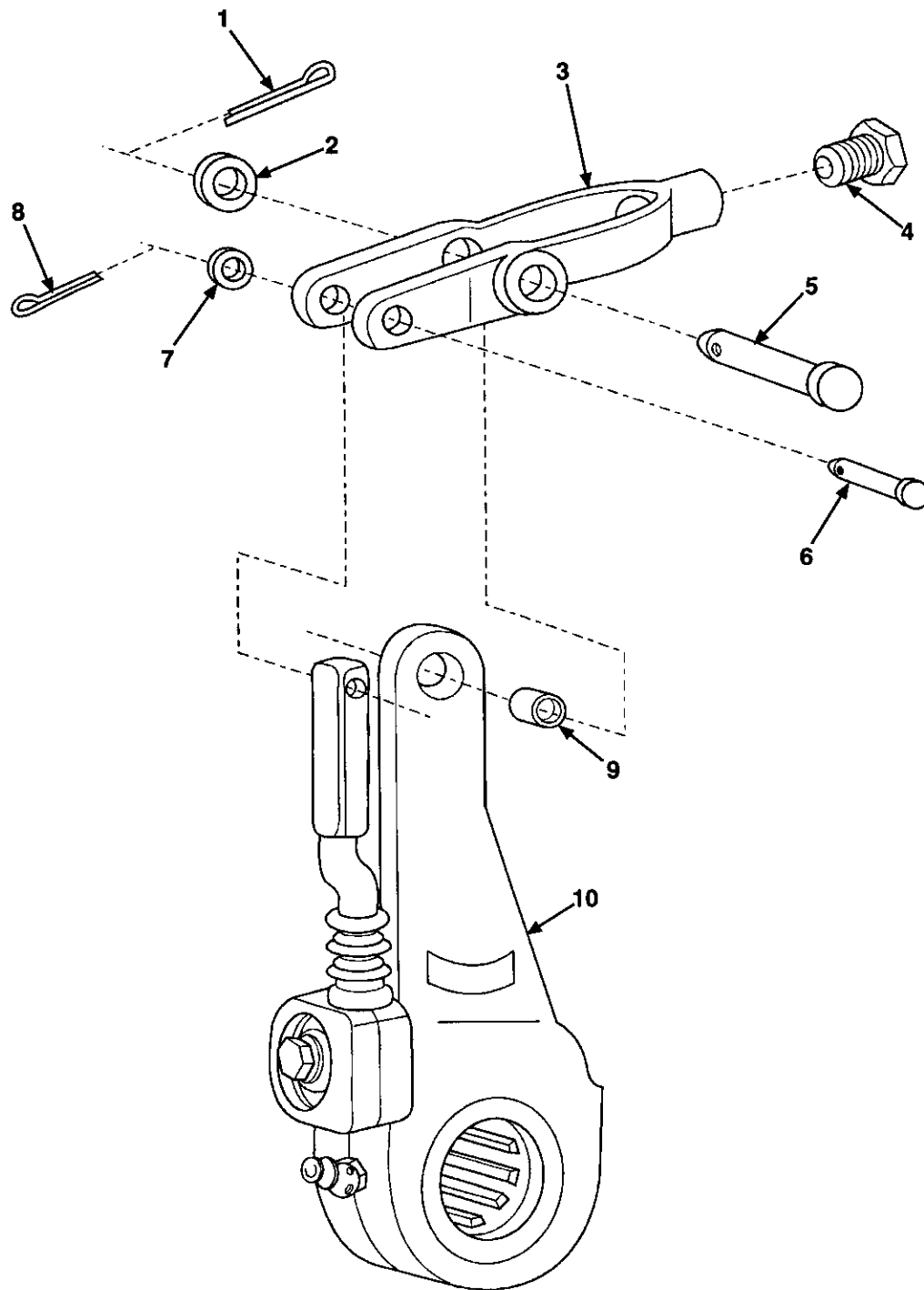


Figure 12. Automatic Slack Adjuster

## SECTION II

TM5-2330-378-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP 1206 MECHANICAL BRAKE SYSTEM FIG.12 AUTOMATIC SLACK ADJUSTER					
1	PAOZZ	96906	MS24665-353	PIN,COTTER.....	4
				UOC:TLB,T01,	
2	PAOZZ	19207	5165104	WASHER,FLAT.....	4
				UOC:TLB,	
2	PAOZZ	19207	5165104	WASHER,FLAT.....	6
				UOC:T01,	
3	PAOZZ	06853	298534	YOKE.....	4
				UOC:TLB,	
3	KFOZZ	06853	298534	YOKE PART OF KIT P/N 107158 .....	6
				UOC:T01,	
4	PAOZZ	06853	291452	ADAPTER,STRAIGHT,PI.....	4
				UOC:TLB,	
4	PAOZZ	06853	291452	ADAPTER,STRAIGHT,PI.....	5
				UOC:T01,	
5	PAOZZ	06853	200235	PIN,YOKE.....	4
				UOC:TLB,	
5	PAOZZ	06853	200235	PIN,YOKE PART OF KIT P/N 107158 ...	6
				UOC:T01,	
6	PAOZZ	06853	298469	PIN,LINK.....	4
				UOC:TLB,	
6	PAOZZ	06853	298469	PIN,LINK PART OF KIT P/N 107158 ...	6
				UOC:T01,	
7	PAOZZ	06853	111009	WASHER,SPECIAL.....	4
				UOC:TLB,	
7	PAOZZ	06853	111009	WASHER,SPECIAL PART OF KIT P/N 107158 .....	6
				UOC:T01,	
8	PAOZZ	96906	MS24665-283	PIN,COTTER.....	4
				UOC:TLB,T01,	
9	KFOZZ	06853	298070	BUSHING PART OF KIT P/N 107158 .....	1
				UOC:T01,	
10	PAOZZ	06853	65344	ADJUSTER,SLACK,BRAK.....	1
				UOC:TLB,	
10	PAOZZ	06853	65508	ADJUSTER,SLACK,BRAK.....	6
				UOC:T01,	

END OF FIGURE



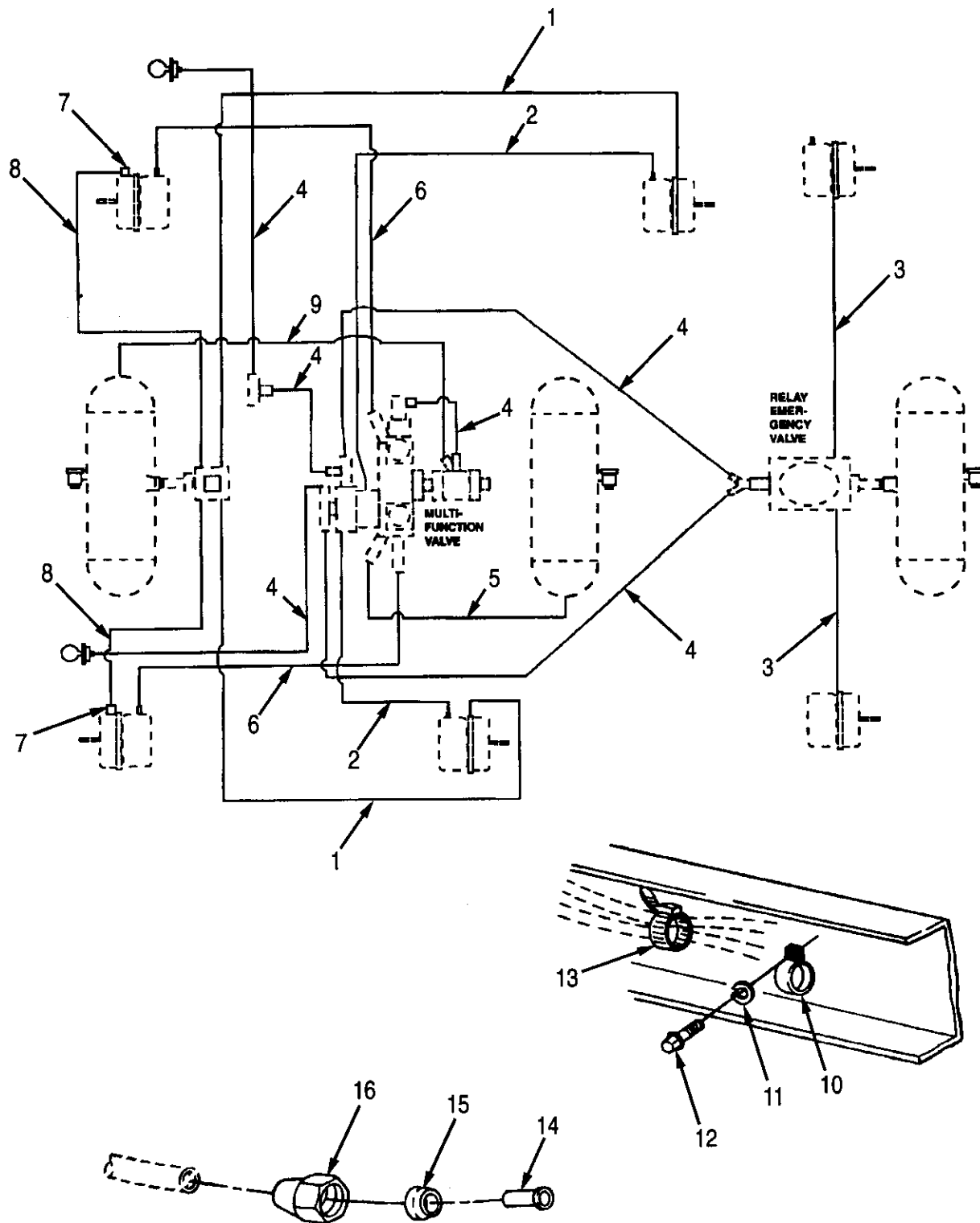


Figure 13. Air Brake Lines and Fittings (sheet 1 of 2)

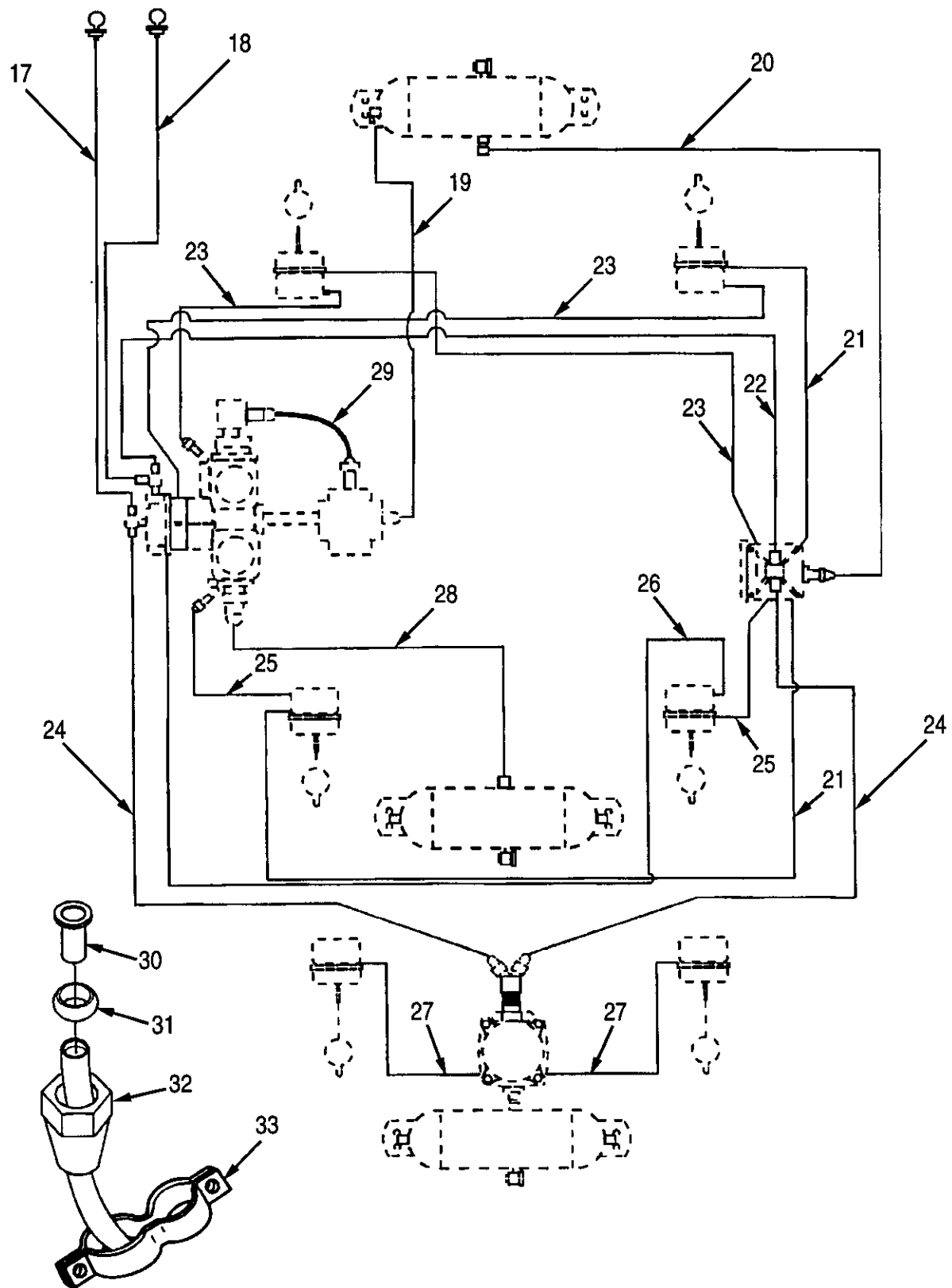


Figure 13. Air Brake Lines and Fittings (sheet 2 of 2)

## SECTION II

TM5-2330-378-14&amp;P

(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.13 AIR BRAKE LINES AND FITTINGS					
1	PAFZZ	96906	MS500077A60300	HOSE ASSEMBLY, NONME..... UOC:T01,	2
2	PAFZZ	96906	MS500077A60370	HOSE ASSEMBLY, NONME..... UOC:T01,	2
3	PAOZZ	06853	109165	HOSE ASSEMBLY, NONME..... UOC:T01,	2
4	PAOZZ	26697	32011954	HOSE ASSEMBLY, NONME..... UOC:T01, U17,	2
5	MOOZZ	06853	112518	TUBE 1/2"X23"..... UOC:T01,	2
6	PAFZZ	96906	MS500077A60760	HOSE ASSEMBLY, NONME..... UOC:T01,	2
7	PAOZZ	96906	MS51504-B6-6	ELBOW, PIPE TO TUBE..... UOC:T01,	10
8	PAFZZ	96906	MS500077A60500	HOSE ASSEMBLY, NONME..... UOC:T01,	2
9	PAFZZ	96906	MS500077A60544	HOSE ASSEMBLY, NONME..... UOC:T01,	2
10	PAFZZ	96906	MS21333-12	CLAMP, LOOP..... UOC:T01,	10
11	PAOZZ	88044	AN935-416	WASHER, LOCK..... UOC:T01,	10
12	PFOZZ	96906	MS35207-281	SCREW, MACHINE..... UOC:T01,	10
13	PAOZZ	96906	MS3367-3-0	STRAP, TIEDOWN, ELECT..... UOC:T01,	3
14	XBOZZ	26697	MP5-0162-2	FERRULE..... UOC:T01, U17,	1
15	XDOZZ	26697	MP5-0164-2	INSERT..... UOC:T01, U17,	1
16	PAOZZ	16662	AC2569	ADAPTER, STRAIGHT, PI..... UOC:T01, U17,	2
17	MOOZZ	66788	SAT-A15014-480	TUBING MAKE FROM TUBING P/N 3250-06-124..... UOC:TLB,	1
18	MOOZZ	66788	SAT-A15013-480	HOSE, NONMETALLIC MAKE FROM TUBING P/N 3250-06-164..... UOC:TLB,	1
19	MOOZZ	66788	SAT-A15039-96	TUBING MAKE FROM TUBING P/N 3250-08-164..... UOC:TLB,	1
20	MOOZZ	06853	112473	TUBE 5/8"X110"..... UOC:TLB,	1
21	PAOZZ	79470	511-00107-02400	HOSE ASSEMBLY, NONME..... UOC:TLB,	1
22	MOOZZ	66788	SAT-A15014-18	TUBING MAKE FROM TUBING P/N 3250-06-124..... UOC:TLB,	1
23	PAOZZ	79470	511-00107-05400	HOSE ASSEMBLY, NONME..... UOC:TLB,	1

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(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
24	MOOZZ	06853	246623	TUBE, 3/8"X16'..... UOC:TLB,	1
25	PAOZZ	79470	511-00107-03000	HOSE ASSEMBLY, NONME..... UOC:TLB,	1
26	PAOZZ	79470	511-00107-04800	HOSE ASSEMBLY, NONME..... UOC:TLB,	1
27	PAOZZ	79470	511-00107-08000	HOSE ASSEMBLY, NONME..... UOC:TLB,	2
28	MOOZZ	66788	SAT-A15039-36	TUBING MAKE FROM TUBING P/N 3250-08-164..... UOC:TLB,	1
29	MOOZZ	66788	SAT-A15013-18	TUBING MAKE FROM TUBING P/N 3250-06-124..... UOC:TLB,	2
30	PAOZZ	06853	246089	TUBING, NONMETALLIC 3/8..... UOC:TLB,	1
30	PAOZZ	06853	247608	INSERT, TUBE FITTING 5/8..... UOC:TLB,	1
30	PAOZZ	06853	246090	INSERT TUBING 1/2..... UOC:TLB,	1
31	PAOZZ	81343	6 100115B	SLEEVE, COMPRESSION, 3/8..... UOC:TLB,	1
31	PAOZZ	81343	8 100115B	SLEEVE, COMPRESSION, 1/2..... UOC:TLB,	1
31	PAOZZ	81343	10 120115B	SLEEVE, COMPRESSION, 5/8..... UOC:TLB,	1
32	PAOZZ	81343	4 120111B	NUT TUBE COUPLING 3/8..... UOC:TLB,	1
32	PAOZZ	81343	10 120111B	NUT TUBE COUPLING 5/8..... UOC:TLB,	1
32	PAOZZ	81343	8 120111B	NUT TUBE COUPLING 1/2..... UOC:TLB,	1
33	PAOZZ	06721	1521	CLAMP, LOOP..... UOC:TLB,	12

END OF FIGURE





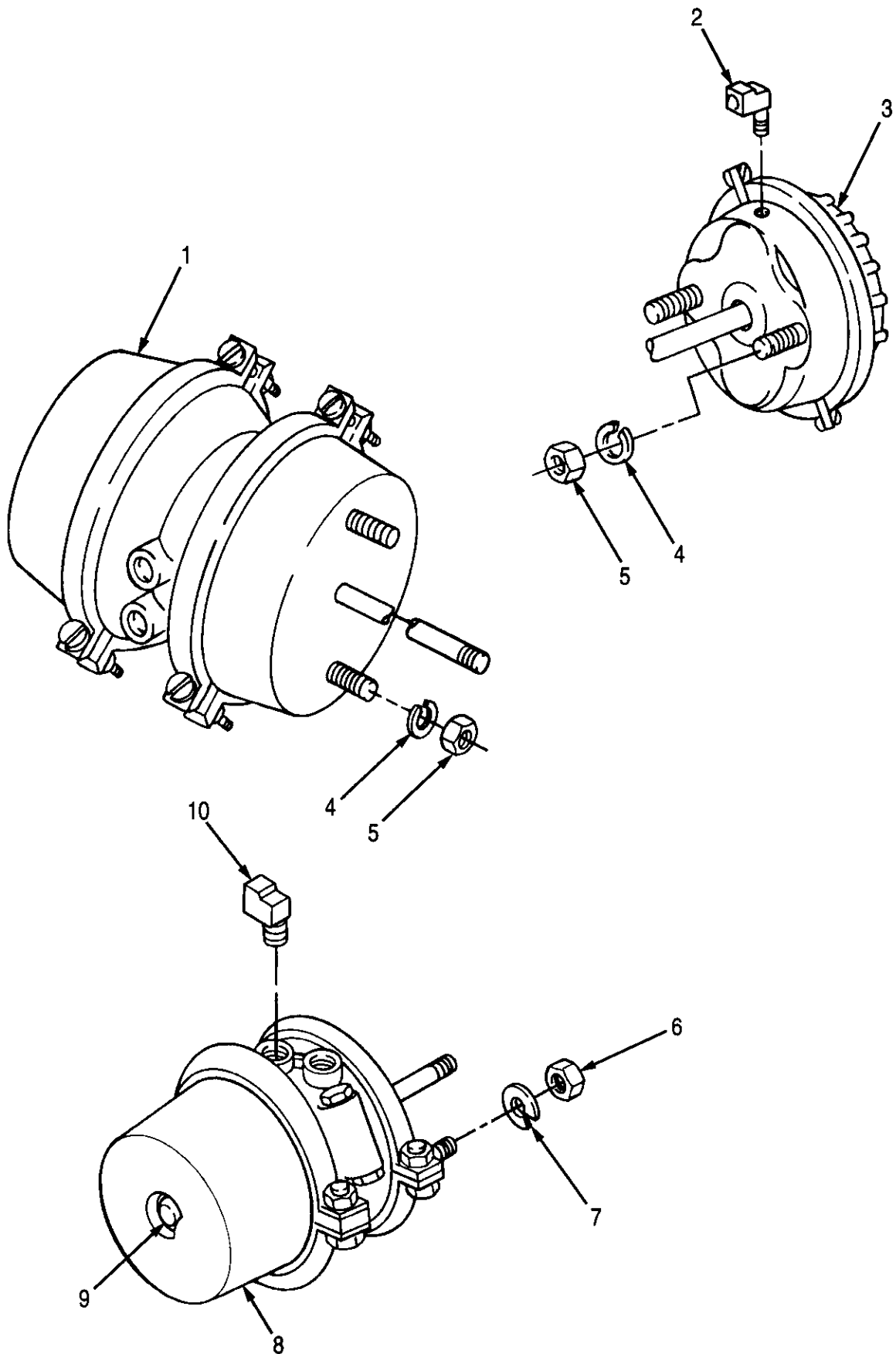


Figure 14. Air Brake and Spring Brake Chambers

## SECTION II

TM5-2330-378-14&amp;P

(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.14 AIR BRAKE AND SPRING BRAKE CHAMBERS					
1	PAOZZ	19207	12357788-2	CHAMBER,AIR BRAKE FRONT AXLE..... UOC:T01,	2
1	PAOZZ	19207	12357788-1	CHAMBER,AIR BRAKE CENTER AXLE..... UOC:T01,	2
2	PAOZZ	79470	3400X6	ELBOW,PIPE..... UOC:TLB,	8
2	PAOZZ	96906	MS51504-B6-6	ELBOW,PIPE TO TUBE..... UOC:T01,	3
2	PAOZZ	19207	7364214	ELBOW,PIPE..... UOC:TLB,	1
3	PAOFF	06721	N-36330-AL	CHAMBER,AIR BRAKE..... UOC:TLB,	2
3	PAOZZ	19207	12357812	CHAMBER,AIR BRAKE REAR AXLE..... UOC:T01,	2
4	PAOZZ	26697	MP0-0455	WASHER,LOCK 4 FRONT AXLE, 4 CENTER AXLE, 4 REAR AXLE..... UOC:T01,U17,	12
4	PAOZZ	96906	MS35338-50	WASHER,LOCK..... UOC:TLB,	2
5	PAOZZ	96906	MS35691-53	NUT,PLAIN,HEXAGON..... UOC:TLB,	3
5	PAOZZ	96906	MS35691-53	NUT,PLAIN,HEXAGON 2 FRONT AXLE, 2 CENTER AXLE, 2 REAR AXLE..... UOC:T01,U17,	6
6	PAOZZ	96906	MS35691-49	NUT,PLAIN,HEXAGON..... UOC:TLB,	2
7	PAOZZ	96906	MS35338-50	WASHER,LOCK..... UOC:TLB,	2
8	PAOZZ	06721	N-4730-BF	PARTS KIT,BRAKE CHA..... UOC:TLB,	4
9	PAOZZ	23540	438	PLUG,PROTECTIVE,DUS..... UOC:TLB,	4
10	PAOZZ	79470	3400X6	ELBOW,PIPE..... UOC:TLB,	2

END OF FIGURE



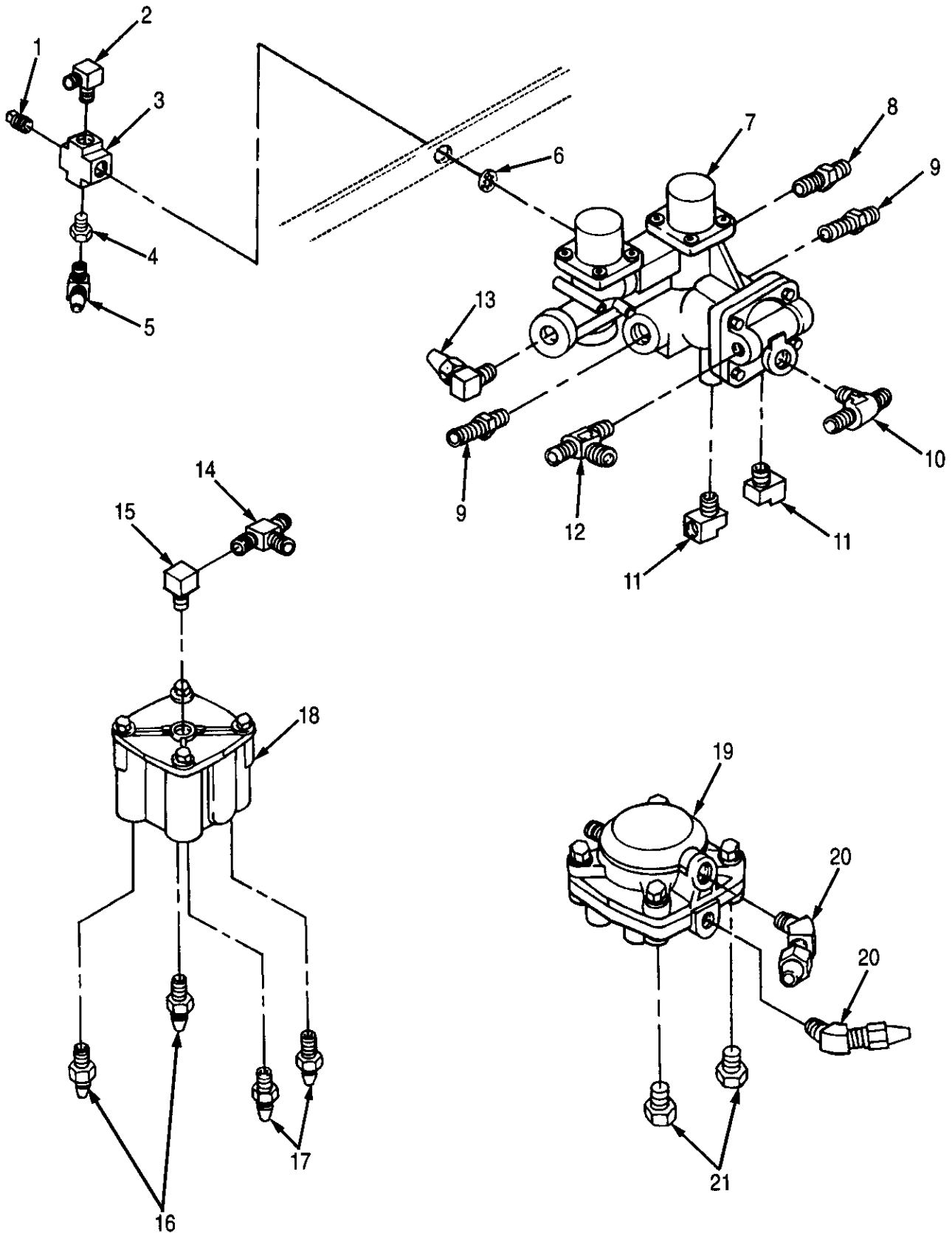


Figure 15. Emergency Relay and Multi-Function Valves (sheet 1 of 2)

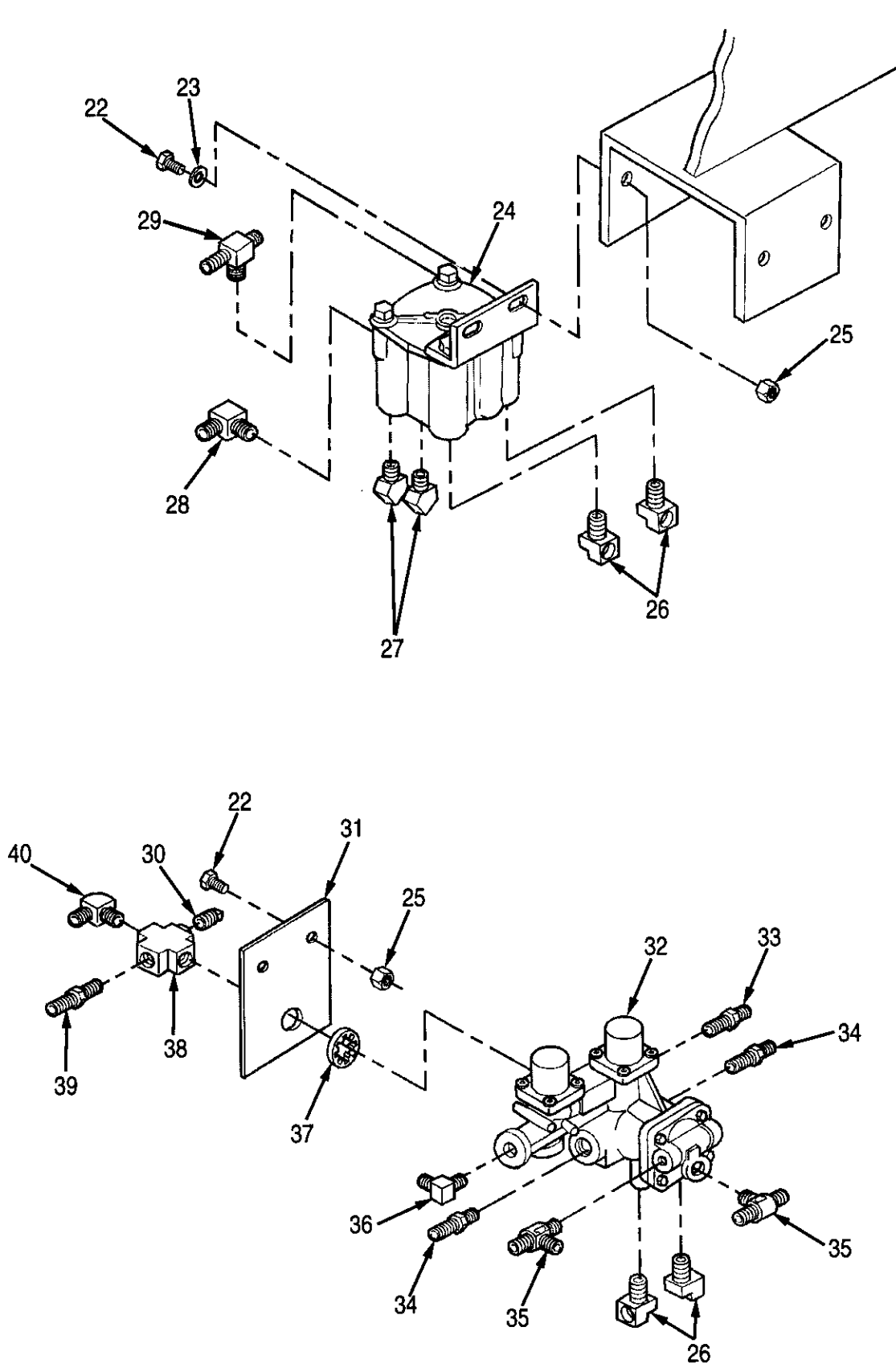


Figure 15. Emergency Relay and Multi-Function Valves (sheet 2 of 2)

## 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 EMERGENCY RELAY AND MULTI-FUNCTION VALVES					
1	PAOZZ	30780	1-2SHPB	PLUG, PIPE..... UOC:T01,	1
2	PAOZZ	06853	222062	ELBOW, PIPE TO TUBE..... UOC:T01,	1
3	PAOZZ	06853	112520	CROSS, PIPE..... UOC:T01,	1
4	PAOZZ	08645	230130	BUSHING, SLEEVE..... UOC:T01, U17,	1
5	PAOZZ	06853	112521	ELBOW, PIPE TO TUBE..... UOC:T01,	1
6	PAOZZ	96906	MS35333-32	WASHER, LOCK..... UOC:T01, U17,	1
7	PAOZZ	06853	065439	VALVE, RELAY, AIR PRE..... UOC:T01,	1
8	PAOZZ	96906	MS51500-A6-6	ADAPTER, STRAIGHT, PI..... UOC:T01,	1
9	PAOZZ	06853	217690	ADAPTER, STRAIGHT, PI..... UOC:T01,	2
10	PAOZZ	06853	205103	TEE, PIPE TO TUBE..... UOC:T01,	1
11	PAOZZ	96906	MS51504-B6-6	ELBOW, PIPE TO TUBE..... UOC:T01,	2
12	PAOZZ	06853	205104	TEE, PIPE TO TUBE..... UOC:T01, U17,	1
13	PAOZZ	06853	205102	ELBOW, PIPE TO TUBE..... UOC:T01,	1
14	PAOZZ	81343	6-4-6 120424BA	TEE, PIPE TO TUBE..... UOC:T01,	1
15	PAOZZ	79146	H0169-6X4	ELBOW, PIPE TO TUBE..... UOC:T01, U17,	4
16	PAOZZ	96906	MS51500-A6-6	ADAPTER, STRAIGHT, PI..... UOC:T01,	2
17	PAOZZ	99832	112553	ADAPTER, STRAIGHT, PI..... UOC:T01, U17,	2
18	PAOZZ	19207	12357833	VALVE, RELAY, AIR PRE..... UOC:T01,	1
19	PAOZZ	06853	106345	VALVE, RELAY, AIR PRE..... UOC:TLB, T01,	1
20	PAOZZ	06853	220722	ELBOW, PIPE TO TUBE..... UOC:TLB, T01,	2
21	PAOZZ	96906	MS51500A6	ADAPTER, STRAIGHT, PI..... UOC:TLB, T01,	1
22	PAOZZ	96906	MS90725-36	BOLT, MACHINE..... UOC:TLB,	4
23	PAOZZ	96906	MS27183-11	WASHER, FLAT..... UOC:TLB,	2
24	PAOZZ	06853	104561	VALVE, RELAY, AIR, PRE..... UOC:TLB,	1
25	PAOZZ	96906	MS51922-9	NUT, SELF-LOCKING, HE..... UOC:TLB,	4

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(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
26	PAOZZ	79470	3400X6	ELBOW, PIPE..... UOC:TLB,	4
27	PAOZZ	79470	3350X6	ELBOW, PIPE..... UOC:TLB,	3
28	PAOZZ	06853	221825	ELBOW, PIPE TO TUBE..... UOC:TLB,	1
29	PAOZZ	06853	205103	TEE, PIPE TO TUBE..... UOC:TLB,	1
30	PAOZZ	81343	8 130109AB	PLUG, PIPE..... UOC:TLB,	1
31	PAOZZ	66788	SAT-A16810	SPACER, PLATE..... UOC:TLB,	1
32	PAOZZ	06848	101622	VALVE, RELAY, AIR PRE..... UOC:TLB,	1
33	PAOZZ	06853	217690	ADAPTER, STRAIGHT, PI..... UOC:TLB,	1
34	PAOZZ	06853	222063	ADAPTER, STRAIGHT, PI..... UOC:TLB,	2
35	PAOZZ	96906	MS20826-6	TEE, PIPE TO TUBE..... UOC:TLB,	1
36	PAOZZ	79470	1469X8X4	ELBOW, PIPE TO TUBE..... UOC:TLB,	1
37	PAOZZ	96906	MS35333-49	WASHER, LOCK..... UOC:TLB,	1
38	PAOZZ	79470	3950X8	CROSS, PIPE..... UOC:TLB,	1
39	PAOZZ	79470	1468X8X8	ADAPTER, STRAIGHT, PI..... UOC:TLB,	2
40	PAOZZ	79470	1469X6X8	ELBOW, PIPE TO TUBE..... UOC:TLB,	1

END OF FIGURE



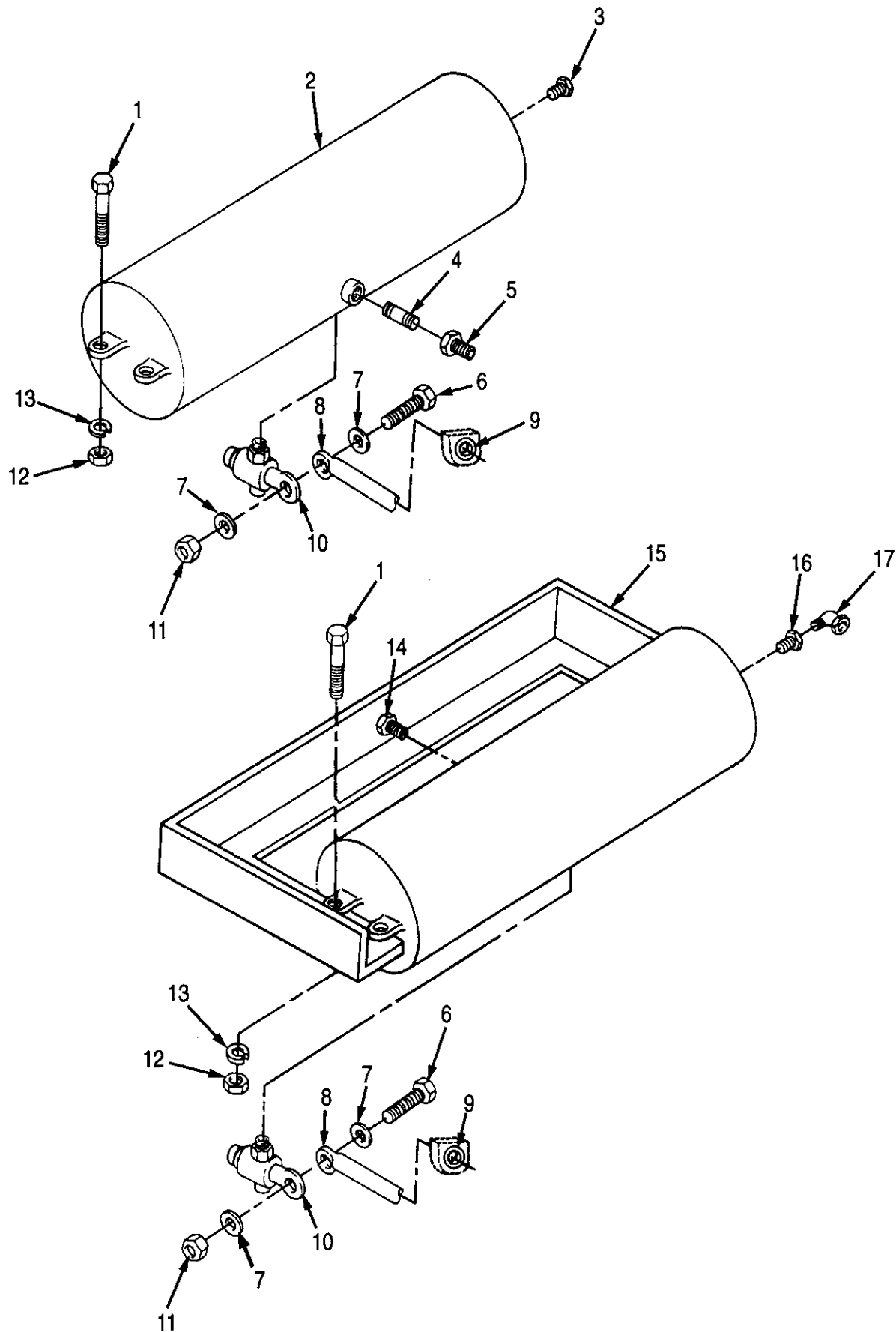


Figure 16. Air Reservoirs (sheet 1 of 2)

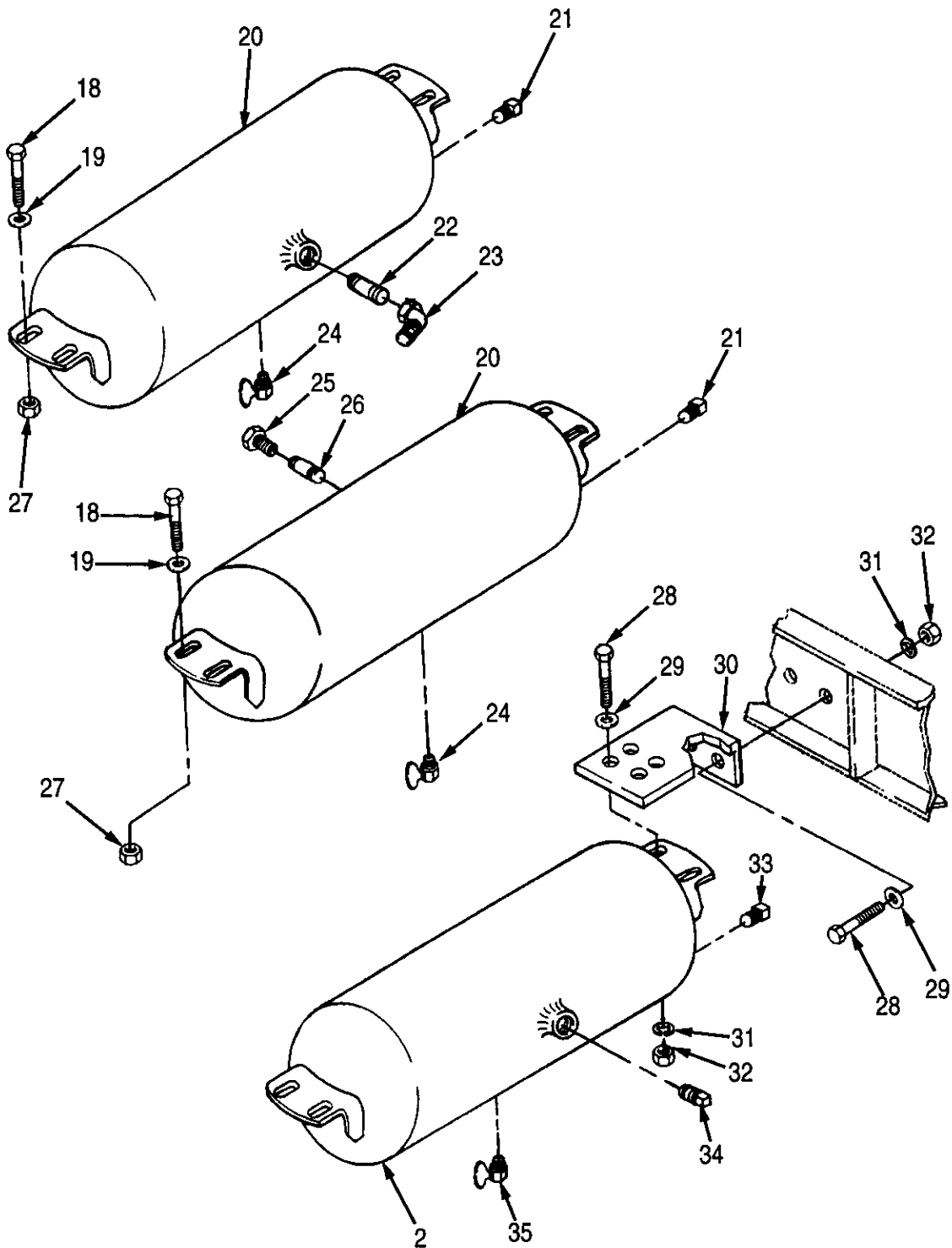


Figure 16. Air Reservoirs (sheet 2 of 2)

## SECTION II

TM5-2330-378-14&amp;P

(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.16 AIR RESERVOIRS					
1	PAOZZ	96906	MS90725-60	SCREW, CAP, HEXAGON H..... UOC:T01,	8
2	PAOZZ	19207	12357803	TANK, PRESSURE..... UOC:TLB, T01,	2
3	PAOZZ	96906	MS51500-A6-6	ADAPTER, STRAIGHT, PI..... UOC:T01,	5
4	PAOZZ	24617	192075	NIPPLE, PIPE..... UOC:T01,	1
5	PAOZZ	96906	MS51887-13Z	BUSHING, PIPE..... UOC:T01,	1
6	PAOZZ	80204	B1821BH025C125N	SCREW, CAP, HEXAGON H..... UOC:T01,	1
7	PAOZZ	24446	N402P13C6	WASHER, FLAT..... UOC:T01,	1
8	PAOZZ	19207	12357829	LEVER, MANUAL CONTRO..... UOC:T01,	1
9	PAOZZ	96906	MS35489-43	GROMMET, NONMETALLIC..... UOC:T01,	1
10	PAOZZ	19207	12357831	COCK, DRAIN..... UOC:T01,	1
11	PAOZZ	88044	AN365-420A	NUT, SELF-LOCKING, HE..... UOC:T01,	2
12	PAOZZ	96906	MS51967-8	NUT, PLAIN, HEXAGON..... UOC:T01,	8
13	PAOZZ	96906	MS35338-46	WASHER, LOCK..... UOC:U17,	4
14	PAOZZ	06853	249226	PLUG, PIPE..... UOC:T01,	1
15	PFOZZ	06853	112479	BRACKET, MOUNTING..... UOC:T01,	1
16	PAOZZ	06853	212862	BUSHING, PIPE..... UOC:T01,	1
17	PAOZZ	06853	220475	ELBOW, PIPE TO TUBE..... UOC:T01,	1
18	PAOZZ	80204	B1821BH038C150N	SCREW, CAP, HEXAGON H..... UOC:TLB,	8
19	PAOZZ	42280	61-0542-1	WASHER, FLAT..... UOC:TLB,	8
20	PAOZZ	62173	9500	TANK, PRESSURE..... UOC:TLB,	2
21	PAOZZ	81348	WW-P-471AASBCC	PLUG, PIPE..... UOC:TLB,	3
22	PAOZZ	06853	234680	BUSHING, PIPE..... UOC:TLB,	1
23	PAOZZ	06853	221825	ELBOW, PIPE TO TUBE..... UOC:TLB,	1
24	PAOZZ	96906	MS35782-5	COCK, DRAIN..... UOC:TLB,	2
25	PAOZZ	79470	3220X12X6	BUSHING, PIPE..... UOC:TLB,	1

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(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
26	PAOZZ	79470	1468X8	ADAPTER, STRAIGHT, PI..... UOC:TLB,	1
27	PAOZZ	96906	MS51922-17	NUT, SELF-LOCKING, HE..... UOC:TLB,	8
28	PAOZZ	06853	290964	SCREW, CAP, HEXAGON H..... UOC:TLB, T01,	4
29	PAOZZ	06853	204235	WASHER, FLAT..... UOC:TLB,	4
29	PAOZZ	06853	204235	WASHER, FLAT..... UOC:T01,	8
30	PFOZZ	06853	112472	BRACKET, VEHICULAR C..... UOC:T01,	2
31	PAOZZ	23382	4303	WASHER, LOCK..... UOC:TLB,	4
31	PAOZZ	23382	4303	WASHER, LOCK..... UOC:T01,	8
32	PAOZZ	06853	298476	NUT, SELF-LOCKING, HE..... UOC:TLB,	4
32	PAOZZ	06853	298476	NUT, SELF-LOCKING, HE..... UOC:T01,	8
33	PFOZZ	30327	109B-50	PLUG, PIPE..... UOC:T01,	1
33	PAOZZ	30327	109B-50	PLUG, PIPE..... UOC:TLB,	1
34	PAOZZ	06853	249226	PLUG, PIPE..... UOC:TLB, T01,	1
35	PAOZZ	06853	103385	COCK, DRAIN..... UOC:TLB, T01,	1

END OF FIGURE



## SECTION II

TM 5-2330-378-14&P

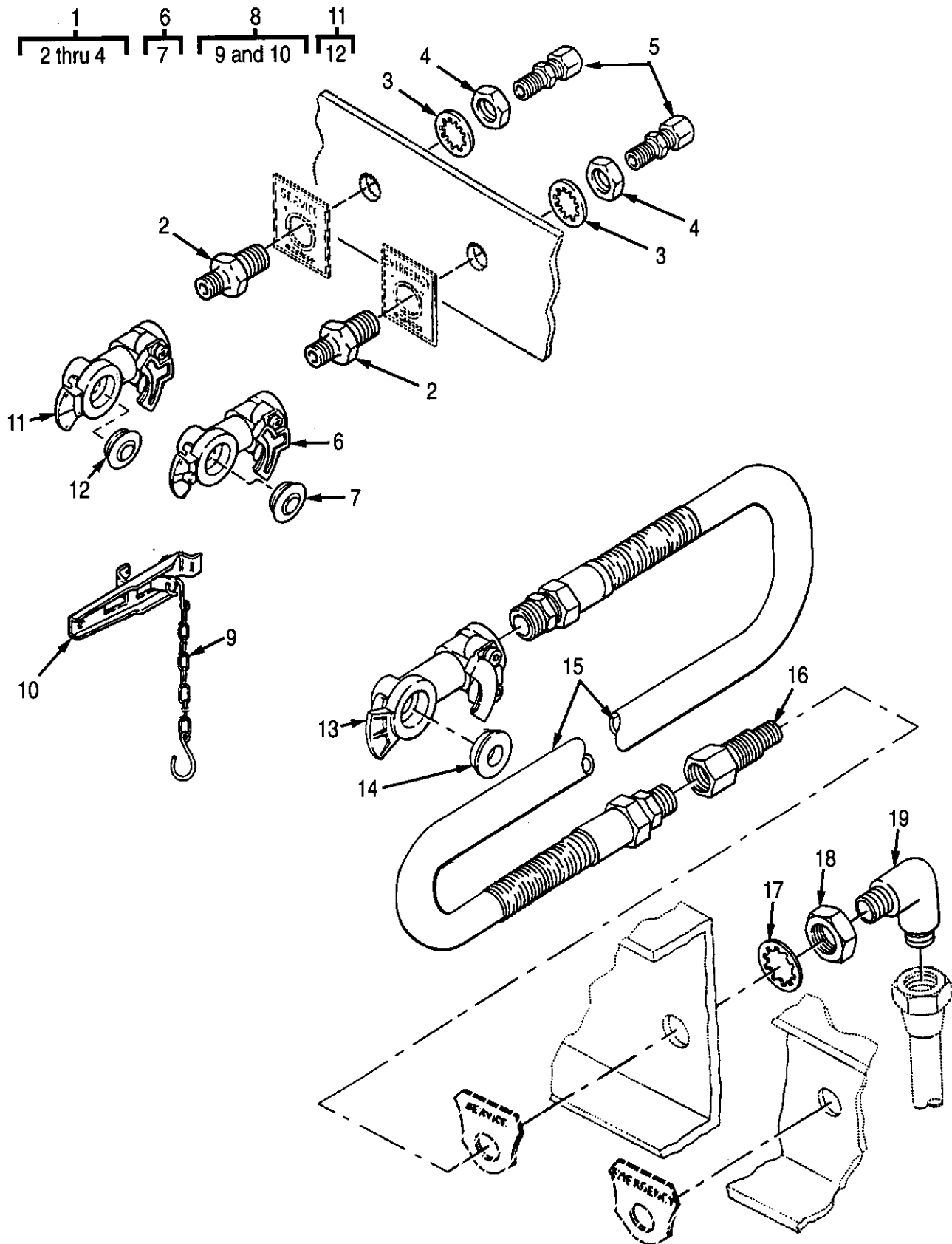


Figure 17. Gladhands

## SECTION II

TM5-2330-378-14&amp;P

(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.17 GLADHANDS					
1	PAOZZ	79146	035079	BUSHING, PIPE.....	2
				UOC:TLB,	
2	XAOZZ	79146	035080	.CLAMPING, STUD.....	1
				UOC:TLB,	
3	PAOZZ	79146	035024	.WASHER, LOCK.....	1
				UOC:TLB,	
4	PAOZZ	79146	035023	.NUT, PLAIN, HEXAGON.....	1
				UOC:TLB,	
5	PAOZZ	79470	1468X6X6	ADAPTER, STRAIGHT, PI.....	2
				UOC:TLB,	
6	PAOZZ	98343	10451E	COUPLING HALF, QUICK EMERGENCY.....	1
				UOC:TLB,	
7	PAOZZ	96906	MS35748-1	.PACKING, PREFORMED.....	1
				UOC:TLB,	
8	PFOZZ	06721	N13048	DUMMY COUPLING, AUTO.....	2
				UOC:TLB,	
9	PAOZZ	06721	N-13047	.CHAIN, WELDLESS.....	1
				UOC:TLB,	
10	PFOZZ	06721	N-20071	.DUMMY COUPLING, AUTO.....	1
				UOC:TLB,	
11	PAOZZ	98343	10452S	COUPLING HALF, QUICK SERVICE.....	1
				UOC:TLB,	
12	PAOZZ	96906	MS35748-1	.PACKING, PREFORMED.....	1
				UOC:TLB,	
13	PAOZZ	79146	MS35746-1	COUPLING HALF, QUICK.....	1
				UOC:T01,U17,	
14	PAOZZ	96906	MS35748-1	PACKING, PREFORMED.....	1
				UOC:T01,U17,	
15	PAOZZ	26697	MPO-0635	HOSE ASSEMBLY, NONME.....	1
				UOC:T01,U17,	
16	PFOZZ	26697	KP0-0164	ADAPTER, STRAIGHT, PI.....	1
				UOC:T01,U17,	
17	PFOZZ	26697	KP0-0162	WASHER, LOCK.....	1
				UOC:T01,U17,	
18	PFOZZ	26697	KP0-0163	NUT, PLAIN, HEXAGON.....	1
				UOC:T01,U17,	
19	PAOZZ	26697	MP5-0169-8	ELBOW.....	2
				UOC:T01,U17,	

END OF FIGURE

5  
6 thru 14

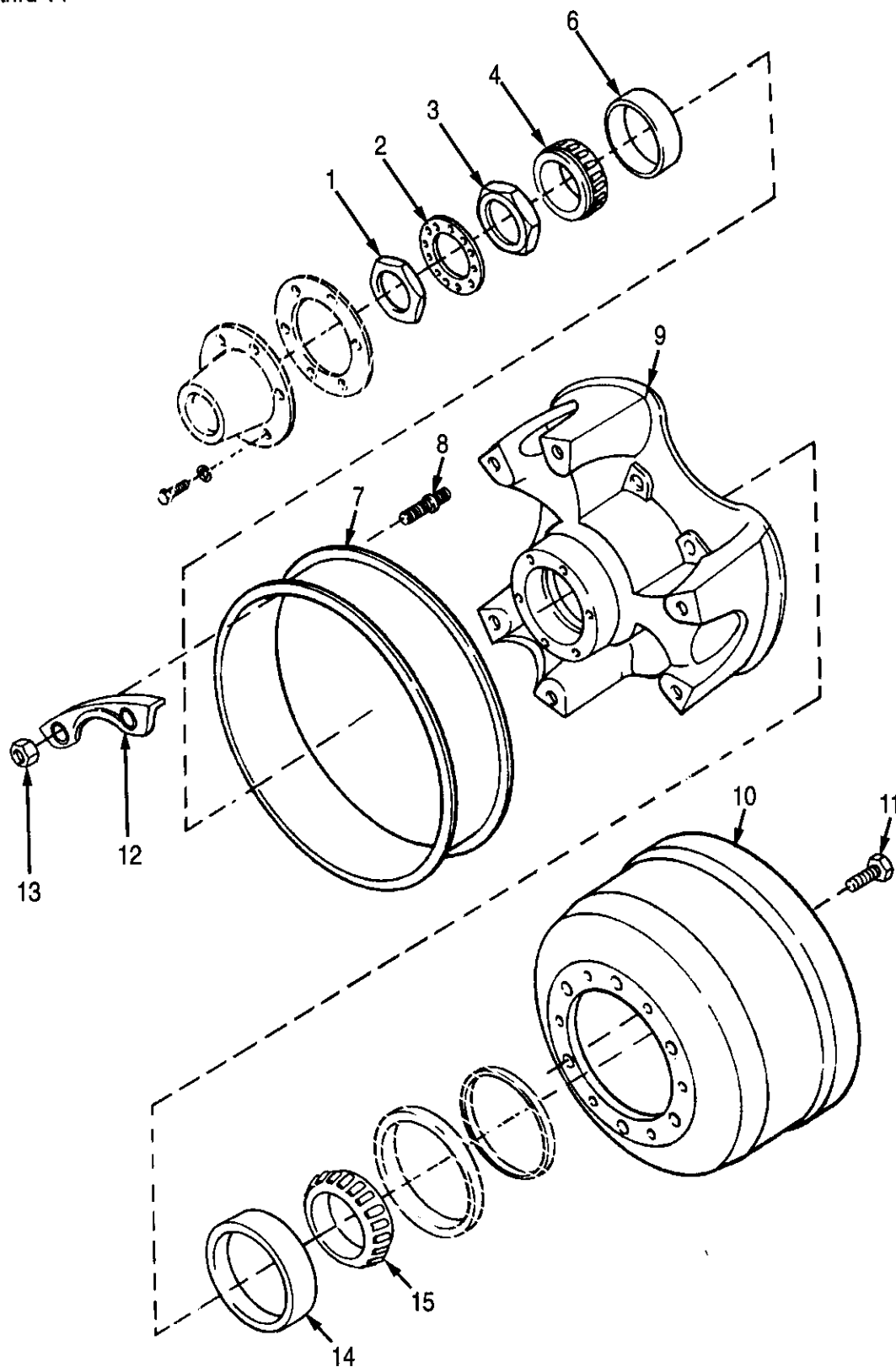


Figure 18. Hub and Drum



## SECTION II

TM5-2330-378-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP 13 WHEELS					
GROUP 1311 WHEEL ASSEMBLY					
FIG.18 HUB AND DRUM ASSEMBLY					
1	PAOZZ	62707	M10HN102	NUT, PLAIN, SLOTTED, O.....	2
				UOC:TLB,	
2	PAOZZ	56697	A150034	WASHER, KEY.....	2
				UOC:TLB,	
3	PAOZZ	62707	M10HN101	NUT, PLAIN, OCTAGON.....	2
				UOC:TLB,	
4	PAOZZ	60038	HM212049	CONE AND ROLLERS, TA.....	1
				UOC:TLB,	
5	PAOOO	18889	70009CKA	WHEEL, PNEUMATIC TIR.....	6
				UOC:TLB,	
6	PAOZZ	60038	HM212011	.CUP, TAPERED ROLLER.....	1
				UOC:TLB,	
7	PAOZZ	89611	SB4015K	.RING, ALIGNING, DUAL.....	1
				UOC:TLB,	
8	PAOZZ	18889	171027	.STUD, PLAIN.....	6
				UOC:TLB,	
9	XAOZZ	18889	7000	.WHEEL, PNEUMATIC TIR.....	6
				UOC:TLB,	
10	PAOZZ	18889	63637	.BRAKE DRUM.....	1
				UOC:TLB,	
11	PAOZZ	18889	96218	.BOLT, SELF-LOCKING.....	6
				UOC:TLB,	
12	PFOZZ	18889	3314	.CLAMP, HUB.....	3
				UOC:TLB,	
13	PAOZZ	18889	74710	.NUT, CAP, DUAL WHEEL.....	6
				UOC:TLB,	
14	PAOZZ	60038	HM218210	.CUP, TAPERED ROLLER.....	1
				UOC:TLB,	
15	PAOZZ	60038	HM218248	CONE AND ROLLERS, TA.....	1
				UOC:TLB,	

END OF FIGURE

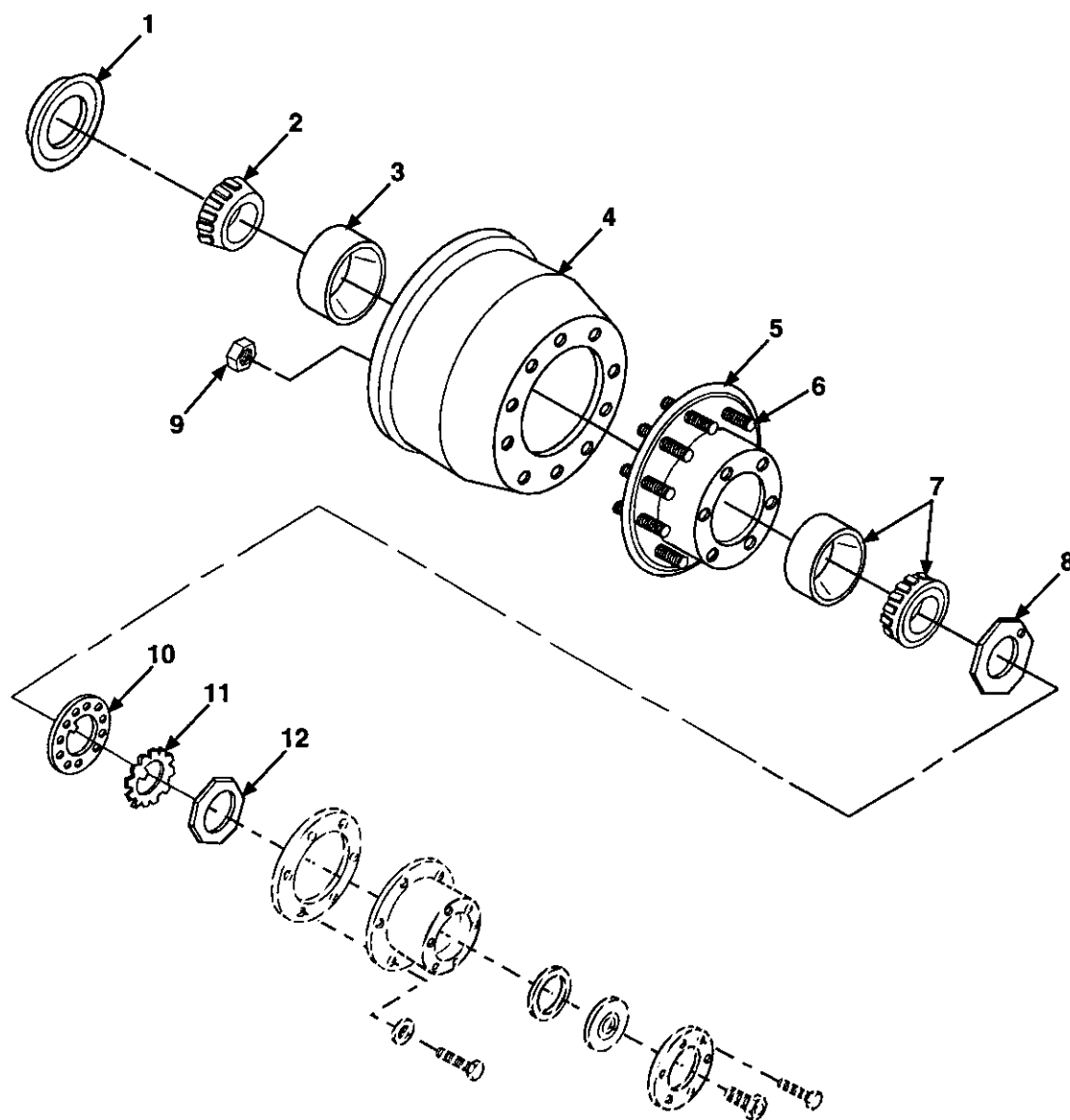


Figure 19. Hub and Drum Assembly

## SECTION II

TM5-2330-378-14&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.19 HUB AND DRUM ASSEMBLY					
1	PAOZZ	26151	372-7098	SEAL KIT.....	6
				UOC:T01,U17,	
2	PAOZZ	09605	P6130A	CONE AND ROLLERS,TA.....	6
				UOC:T01,U17,	
3	PAOZZ	60038	653	CUP,TAPERED ROLLER OUTER.....	6
				UOC:T01,U17,	
4	PAOFF	18889	63631	BRAKE DRUM.....	6
				UOC:T01,U17,	
5	PFOZZ	26697	MPO-0262	HUB,WHEEL,VEHICULAR.....	6
				UOC:T01,U17,	
6	PAOZZ	09386	13989	STUD,SHOULDERED LEFT.....	10
				UOC:T01,U17,	
7	PAOZZ	96906	MS19081-113	BEARING,ROLLER,TAPE INNER.....	6
				UOC:T01,U17,	
8	PAOZZ	62707	M10HN101	NUT,PLAIN,OCTAGON.....	6
				UOC:T01,U17,	
9	PAOZZ	26697	MP0-0123	NUT HUB DRUM TO HUB ATTACHING.....	10
				UOC:T01,U17,	
10	PAOZZ	41885	813508	LOCK RING.....	6
				UOC:T01,U17,	
11	PAOZZ	62707	M10HN151	WASHER.....	6
				UOC:T01,U17,	
12	PAOZZ	62707	M10HN102	NUT,PLAIN,SLOTTED,O OUTER.....	6
				UOC:T01,U17,	

END OF FIGURE

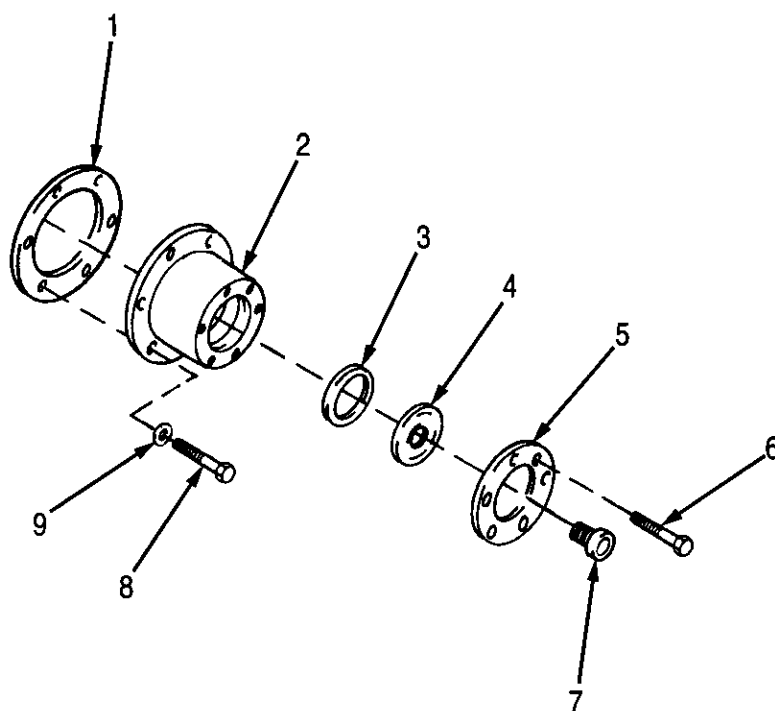


Figure 20. Wheel Assembly/Hub and Drum

## SECTION II

TM5-2330-378-14&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.20 WHEEL ASSEMBLY/HUB AND DRUM					
1	PAOZZ	26151	3009	GASKET HUB CAP.....	6
2	PAOZZ	26151	343-4009	COVER,ACCESS.....	6
3	XBOZZ	26697	MP0-0541	GASKET.....	6
4	XAOZZ	26151	359-5994	WINDOW.....	6
5	PAOZZ	26697	MP0-0543	O-RING.....	6
6	PAOZZ	26697	MP0-0545	SCREW,MACHINE.....	6
7	PAOZZ	26151	5990	PLUG,VENT.....	6
8	PAOZZ	96906	MS90726-32	BOLT,MACHINE.....	6
9	PAOZZ	96906	MS35338-45	WASHER,LOCK.....	6

END OF FIGURE



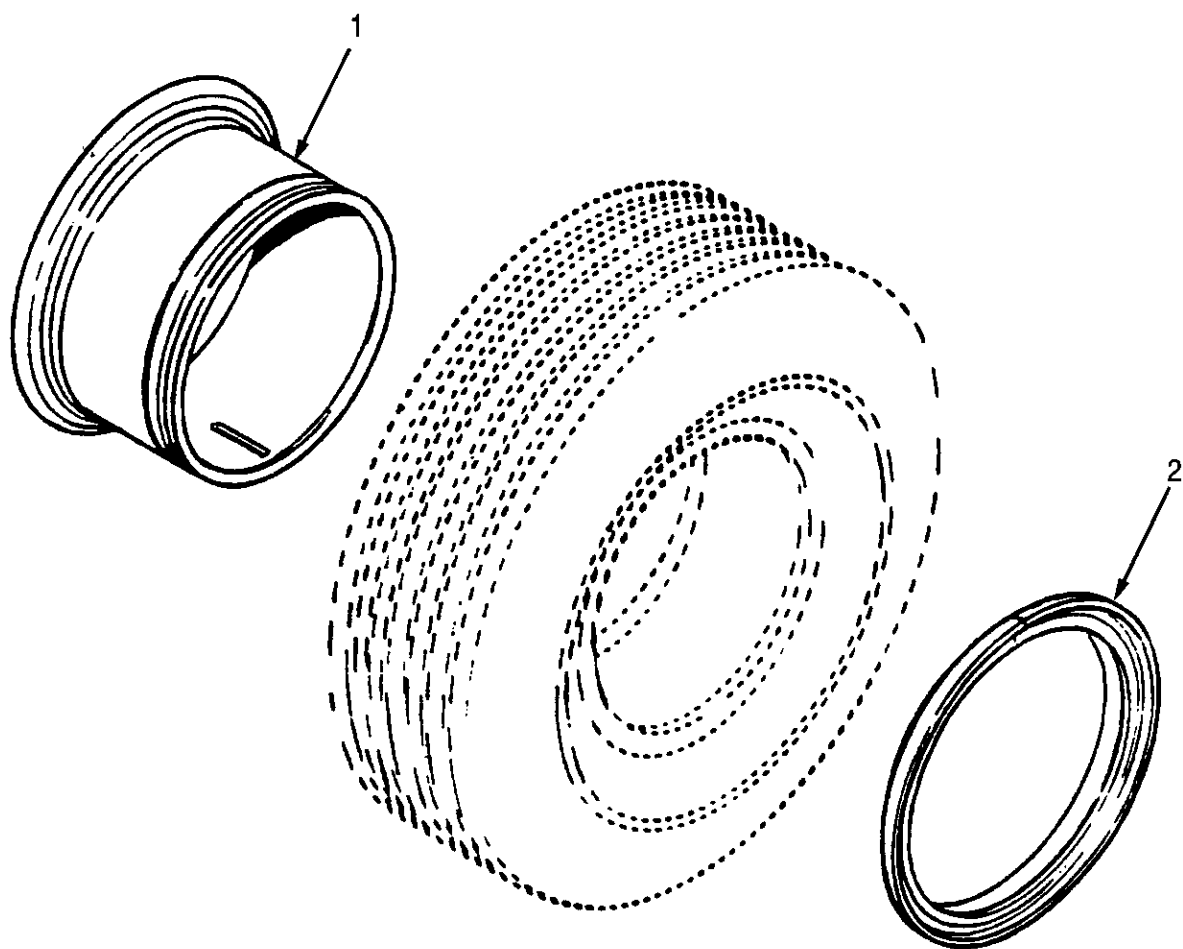


Figure 21. Wheel Assembly (sheet 1 of 2)

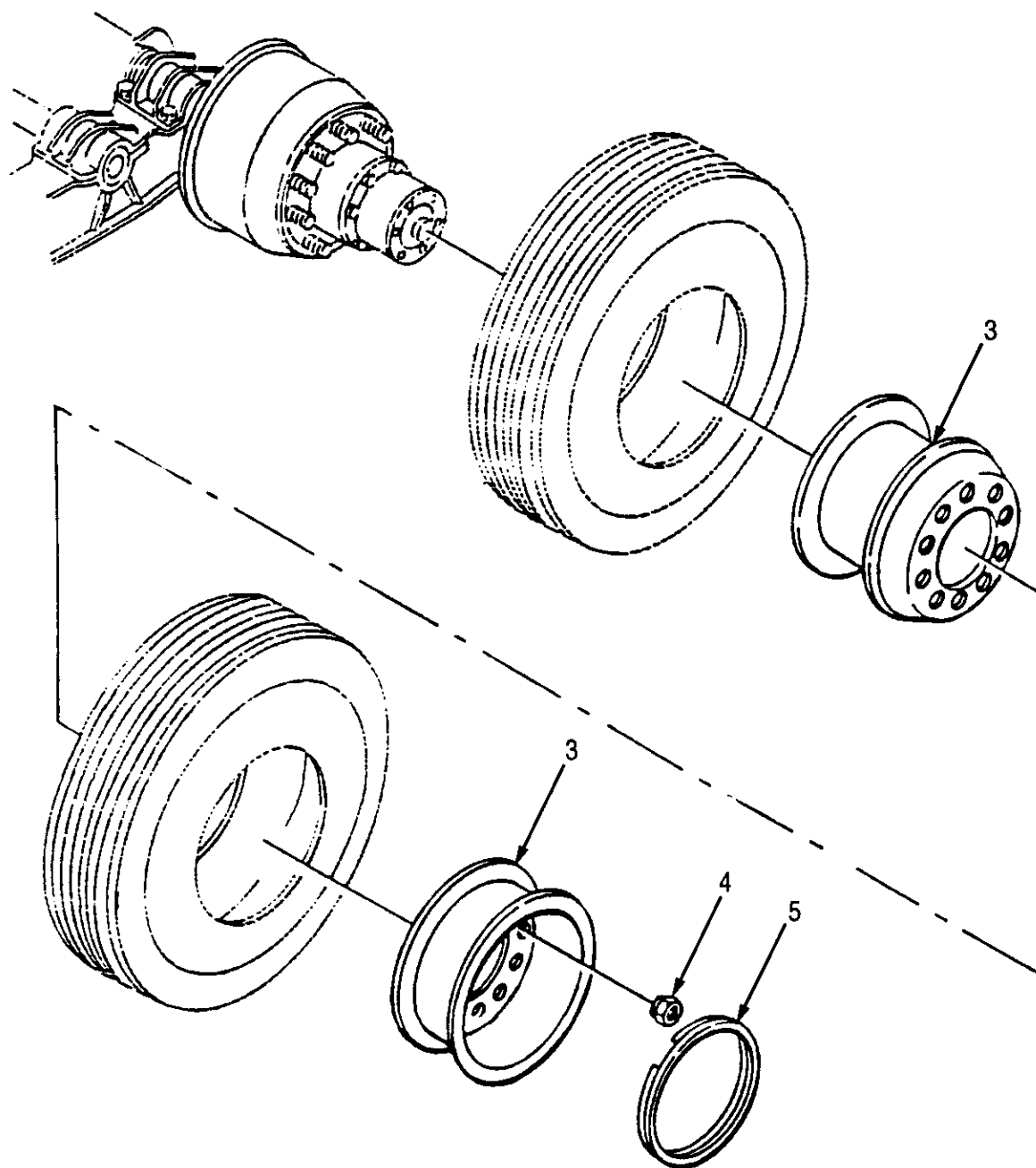


Figure 21. Wheel Assembly (sheet 2 of 2)



## SECTION II

TM5-2330-378-14&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.21 WHEEL ASSEMBLY					
1	PAOZZ	92065	1115-215	RIM,WHEEL,PNEUMATIC.....	1
				UOC:TLB,	
2	PAOZZ	92065	1115-315	RING,SIDE,AUTOMOTIV.....	1
				UOC:TLB,	
3	PAOZZ	09386	R85770-3	WHEEL,PNEUMATIC TIR.....	12
				UOC:T01,U17,	
4	PAOZZ	96906	MS51983-3	NUT,PLAIN,SINGLE BA OUTER RIGHT....	30
				UOC:T01,U17,	
4	PAOZZ	96906	MS51983-4	NUT,PLAIN,SINGLE BA OUTER LEFT.....	30
				UOC:T01,U17,	
5	PAOZZ	26697	PD0-0107	HUB CAP,WHEEL.....	6
				UOC:T01,U17,	
END OF FIGURE					

2  
3 and 4

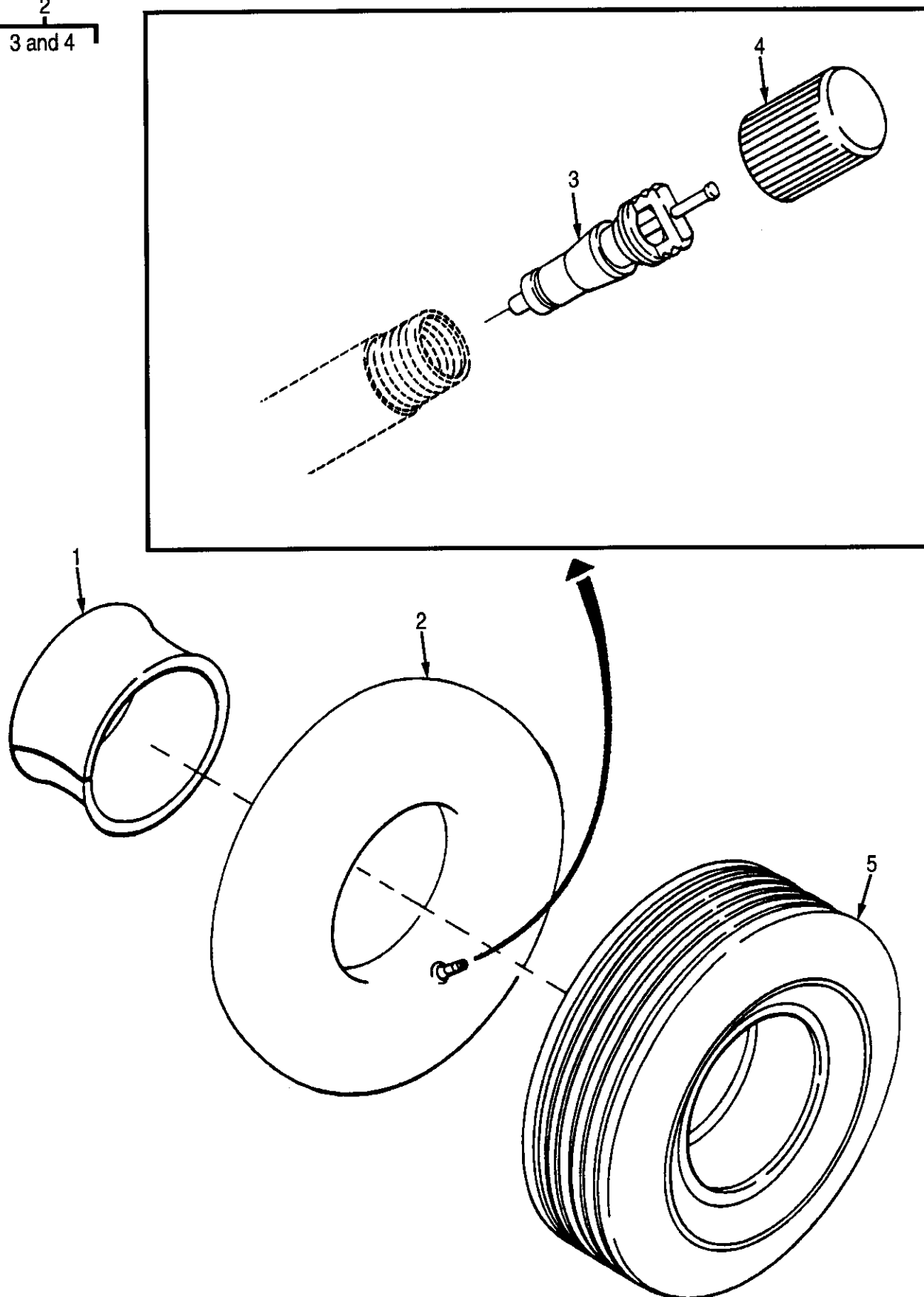


Figure 22. Tires

## SECTION II

TM5-2330-378-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
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GROUP 1313 TIRES AND TUBES  
FIG.22 TIRES

1	PAOZZ	80540	15-7.5	FLAP, INNER TUBE, PNE..... UOC:T01,U17,	13
2	PAOOO	81348	GP2/10.00R15/TR7 8A/ON CENTER	INNER TUBE, PNEUMATI..... UOC:TLB,	13
3	PAOZZ	17875	100AA	.VALVE CORE..... UOC:T01,U17,	12
4	PAOZZ	81348	ZZ-V-25/TYPE IV/ CLASS1/TR-VC-2	.CAP, PNEUMATIC VALVE..... UOC:T01,U17,	1
5	PCOHH	81348	GP2STYLXTYRBCLR/ T/10.00R15/J/LTR	TIRE, PNEUMATIC..... UOC:T01,U17,	13

END OF FIGURE



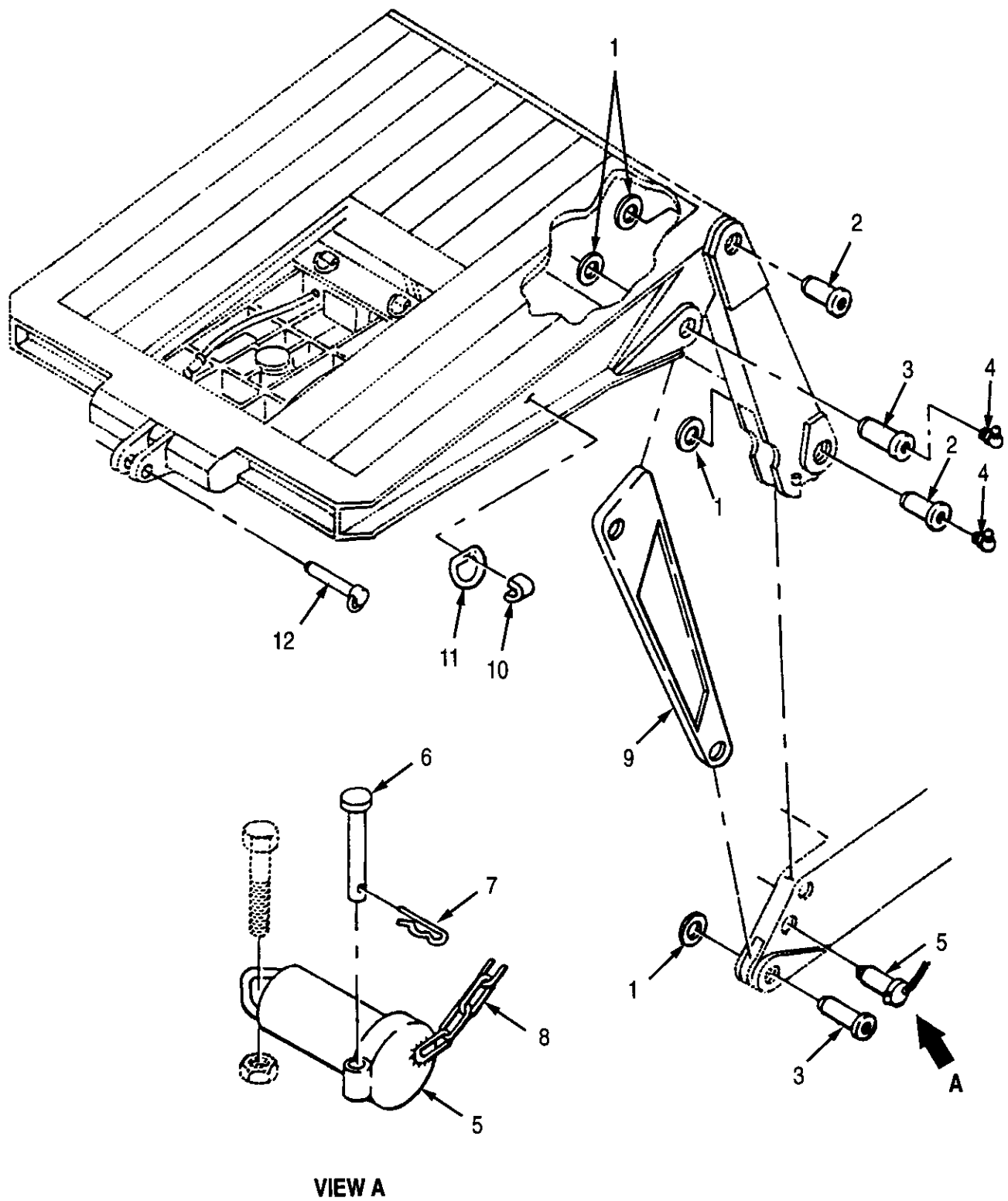


Figure 23. Gooseneck and Lashing Ring (sheet 1 of 2)

13  
14 thru 21

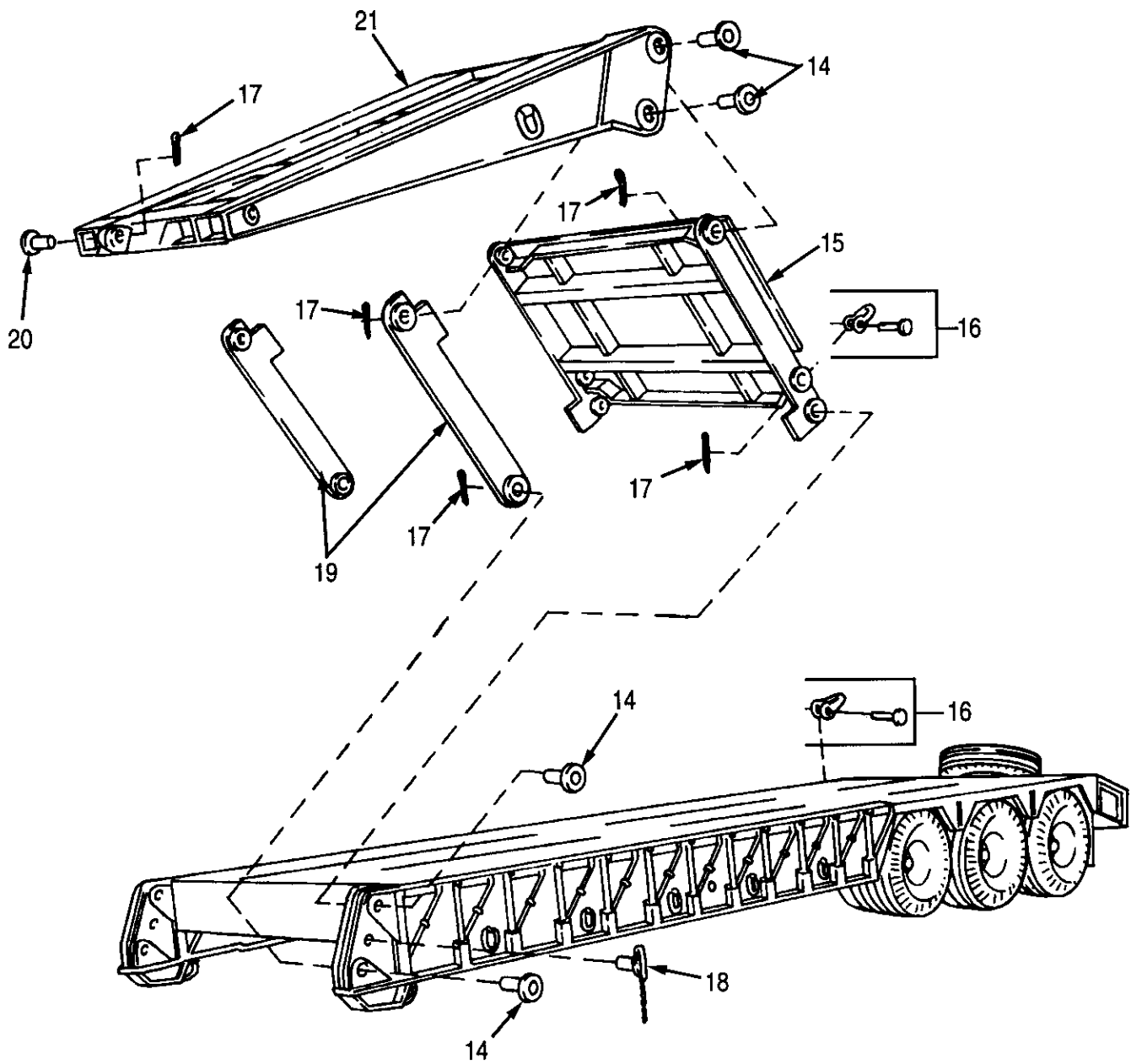


Figure 23. Gooseneck and Lashing Ring (sheet 2 of 2)

## SECTION II

TM5-2330-378-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP 15 FRAME GROUP 1501 FRAME ASSEMBLY FIG.23 GOOSENECK AND LASHING RING					
1	PAFZZ	26697	MP0-0996	RING, RETAINING.....	10
				UOC:T01,U17,	
2	PAFZZ	26697	061FOLD00PF4	PIN, STRAIGHT, HEADED UPPER.....	4
				UOC:T01,U17,	
3	PAFZZ	26697	BF 1-0063	PIN, STRAIGHT, HEADED LOWER.....	4
				UOC:T01,U17,	
4	XBOZZ	26697	MP5-0303	FITTINGS, LUBE.....	8
				UOC:T01,U17,	
5	PAOZZ	55683	01-2371	PIN, LOCK.....	2
				UOC:T01,U17,	
6	PAOZZ	26697	MP0-0492	PIN, STRAIGHT, HEADLE.....	1
				UOC:T01,U17,	
7	PAOZZ	26697	MP0-0296	PIN.....	1
				UOC:T01,U17,	
8	PAOZZ	10001	42C14856-305	CHAIN, WELDED.....	1
				UOC:T01,U17,	
9	XBFZZ	26697	061FOLD0PF10	LINK, ASSEMBLY, LOWER.....	2
				UOC:T01,U17,	
10	PFFZZ	26697	MP1-0014	STRAP, RETAINING LASHING RINGS.....	16
				UOC:T01,U17,	
11	PFFZZ	26697	MP1-0015	RING, DEE.....	16
				UOC:T01,U17,	
12	PAOZZ	26697	MP0-0902	PIN, QUICK RELEASE.....	1
				UOC:T01,	
13	XAFFF	66788	T870-0001	MAIN FRAME.....	1
				UOC:TLB,	
14	PAOZZ	66788	SAM-F870-0005	.PIN, STRAIGHT, HEADED.....	8
				UOC:TLB,	
15	PFFZZ	66788	SAM-F870-0003	.FRAME, STRUCTURAL, VE.....	1
				UOC:TLB,	
16	XDOZZ	80535	541-2405	.SHACKLE.....	4
				UOC:TLB,	
17	PAOZZ	96906	MS24665-630	.PIN, COTTER.....	9
				UOC:TLB,	
18	PAOZZ	OWGN0	SAM-F870-0006	.PIN, STRAIGHT, HEADLE.....	2
				UOC:TLB,	
19	PFFZZ	66788	SAM-F870-0004	.CONNECTING LINK, RIG.....	2
				UOC:TLB,	
20	PAOZZ	66788	SAM-F870-0012	.PIN, STRAIGHT, HEADED.....	1
				UOC:TLB,	
21	XBFZZ	66788	SAM-F870-0002	.GOOSENECK PLATFORM.....	1
				UOC:TLB,	

END OF FIGURE

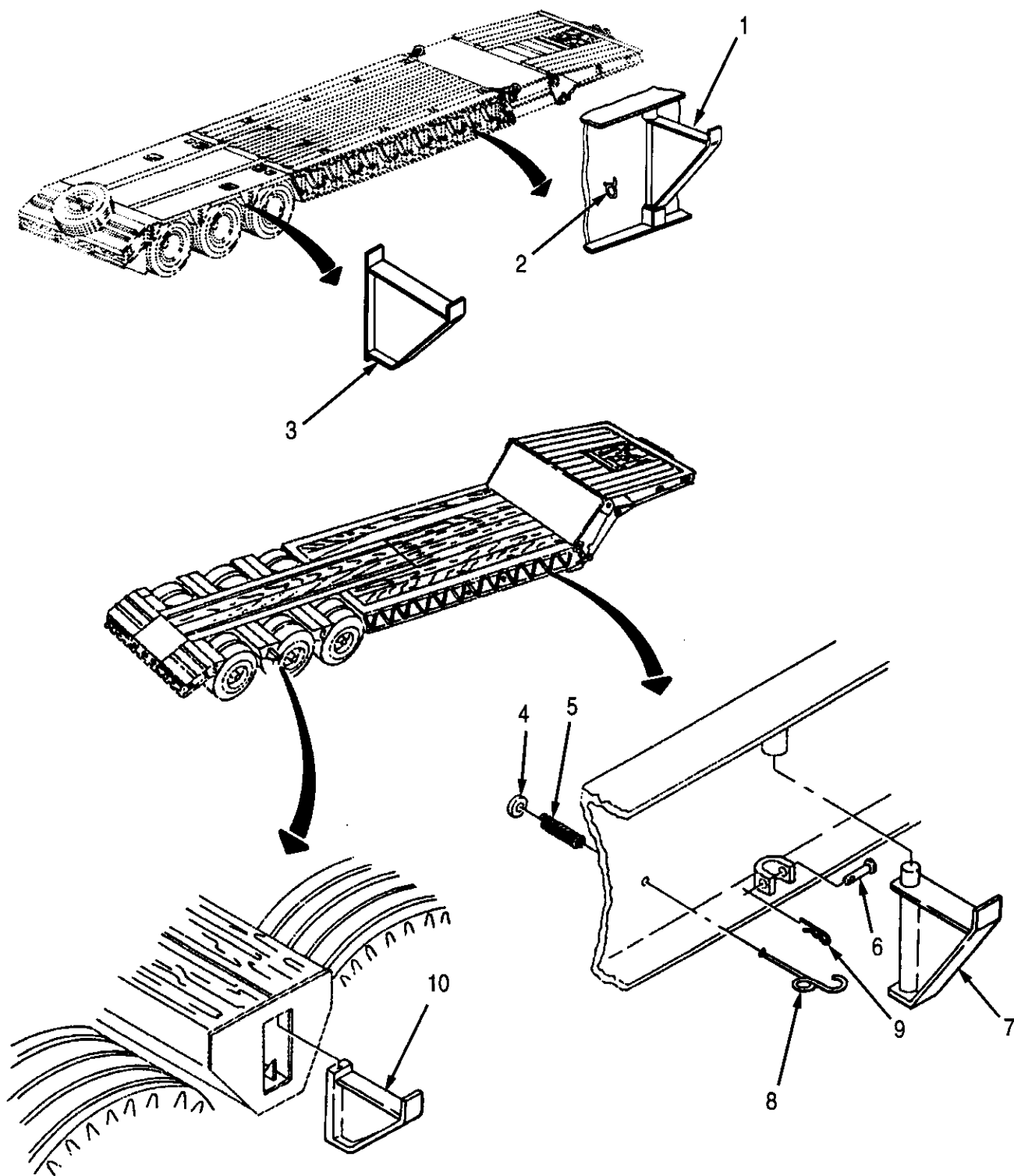


Figure 24. Outriggers



## SECTION II

TM5-2330-378-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP 1501 FRAME ASSEMBLY FIG.24 OUTRIGGERS					
1	PFFZZ	66788	SAM-F870-0010	FRAME, STRUCTURAL, VE.....	24
2	PAOZZ	66788	SAM-F870-0011	UOC:TLB, LOCK ASSEMBLY, OUTRI.....	24
3	PFOZZ	66788	SAM-F870-0009	UOC:TLB, OUTRIGGER, MAIN FRAM.....	6
4	PAOZZ	26697	0610000000B9	UOC:TLB, WASHER, FLAT.....	24
5	PAOZZ	26697	MP5-1416	UOC:T01,U17, SPRING, HELICAL, COMP.....	24
6	PAOZZ	26697	MPOO492	UOC:T01,U17, PIN, STRAIGHT, HEADED.....	24
7	PAOZZ	26697	0610000000B4	UOC:T01,U17, OUTRIGGER ASSEMBLY.....	24
8	PAOZZ	26697	0610000000B7	UOC:T01,U17, FASTENER, HOOK.....	24
9	PAOZZ	26697	MPU-0296	UOC:T01,U17, PIN, LOCK.....	24
10	PAOZZ	26697	BC1-0039	UOC:T01,U17, BRACKET, MOUNTING.....	6

END OF FIGURE

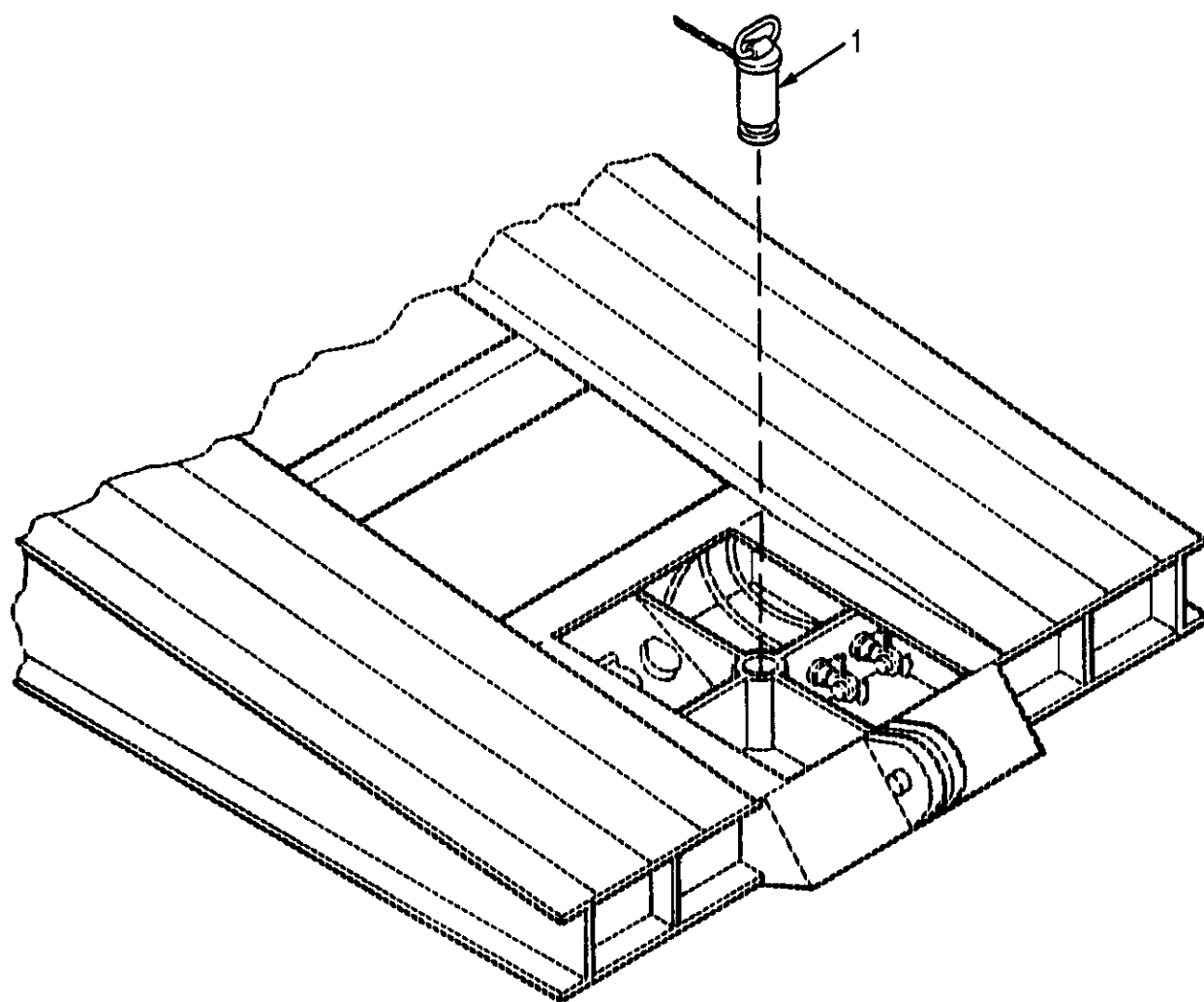


Figure 25. Kingpin

## SECTION II

TM5-2330-378-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 1503 PINTLES AND TOWING ATTACHMENTS FIG.25 KINGPIN	
1	PAOZZ	19207	12461842	PIN,GROOVED,HEADED.....	1
				UOC:TLB,	
1	PAOZZ	26697	MP0-0897	PIN,SPECIAL FIFTH WHEEL.....	1
				UOC:T01,	

END OF FIGURE

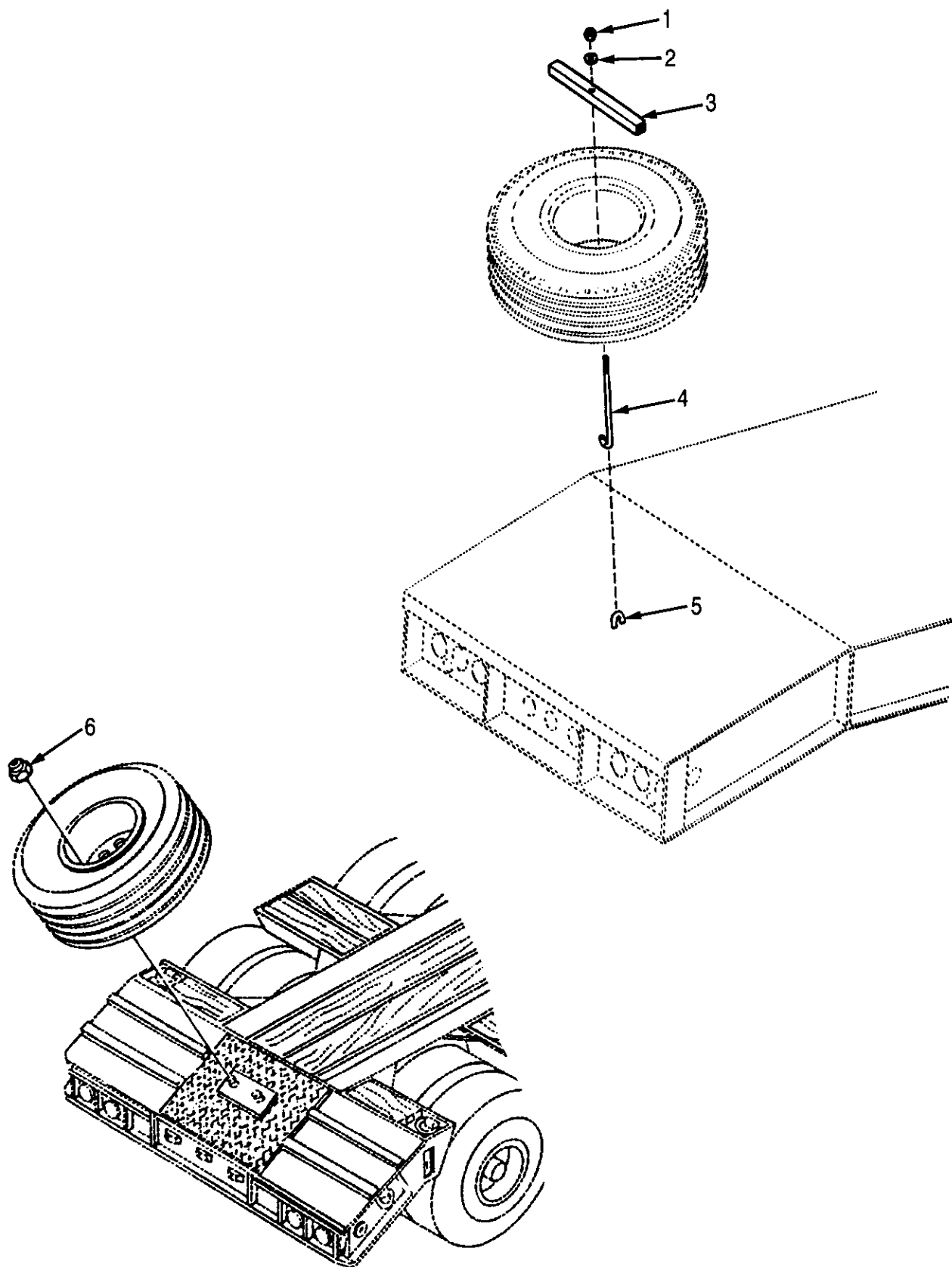


Figure 26. Spare Tire Carrier Mounting Hardware

## SECTION II

TM5-2330-378-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 1504 SPARE WHEEL CARRIER AND TIRE LOCK FIG.26 SPARE TIRE CARRIER MOUNTING HARDWARE	
1	PAOZZ	96906	MS51922-33	NUT, SELF-LOCKING, HE..... UOC:TLB,	1
2	PAOZZ	96906	MS27183-19	WASHER, FLAT..... UOC:TLB,	1
3	PAOZZ	66788	SAM-F870-0013	STRAP, RETAINING..... UOC:TLB,	1
4	PAOZZ	66788	SAM-F870-0014	BOLT, HOOK..... UOC:TLB,	1
5	MFFZZ	66788	SAT-1695	HOOK..... UOC:TLB,	1
6	PAOZZ	96906	MS51983-3	NUT, PLAIN, SINGLE BA..... UOC:T01,U17,	2
				END OF FIGURE	

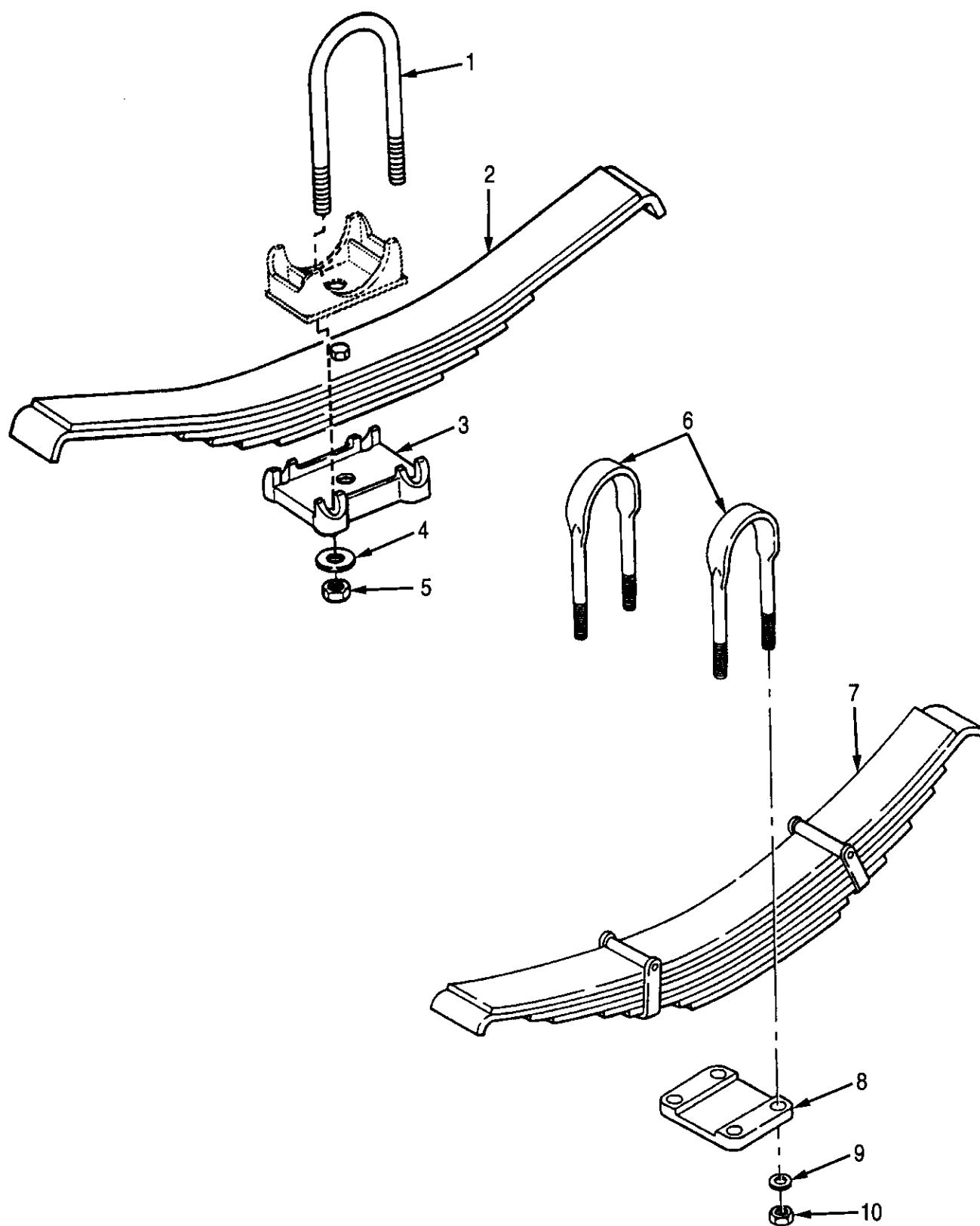


Figure 27. Springs

## SECTION II

TM5-2330-378-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 16 SPRINGS GROUP 1601 SPRINGS FIG.27 SPRINGS	
1	PAFZZ	92967	7A16-08	BOLT,U.....	4
				UOC:TLB,	
2	PAFZZ	92967	11436-00	SPRING ASSEMBLY,LEA.....	2
				UOC:TLB,	
3	PAFZZ	92967	11438-00	PLATE,WEAR,LEAF SPR.....	2
				UOC:TLB,	
4	PAFZZ	92967	35-00	WASHER,FLAT.....	8
				UOC:TLB,	
5	PAFZZ	92967	34-04	NUT,PLAIN,HEXAGON.....	8
				UOC:TLB,	
6	PAFZZ	98171	90041823	BOLT,U.....	2
				UOC:T01,U17,	
7	PAFZZ	98171	915-57-172	SPRING ASSEMBLY,LEA.....	2
				UOC:T01,U17,	
8	PAFZZ	98171	910-10-108	SPRING CLAMP,CASTIN.....	4
				UOC:T01,U17,	
9	PAFZZ	98171	936-00-168	WASHER,FLAT.....	2
				UOC:T01,U17,	
10	PAFZZ	98171	934 00 500	NUT,SELF-LOCKING,HE.....	2
				UOC:T01,U17,	
				END OF FIGURE	

# SECTION II

TM 5-2330-378-14&P

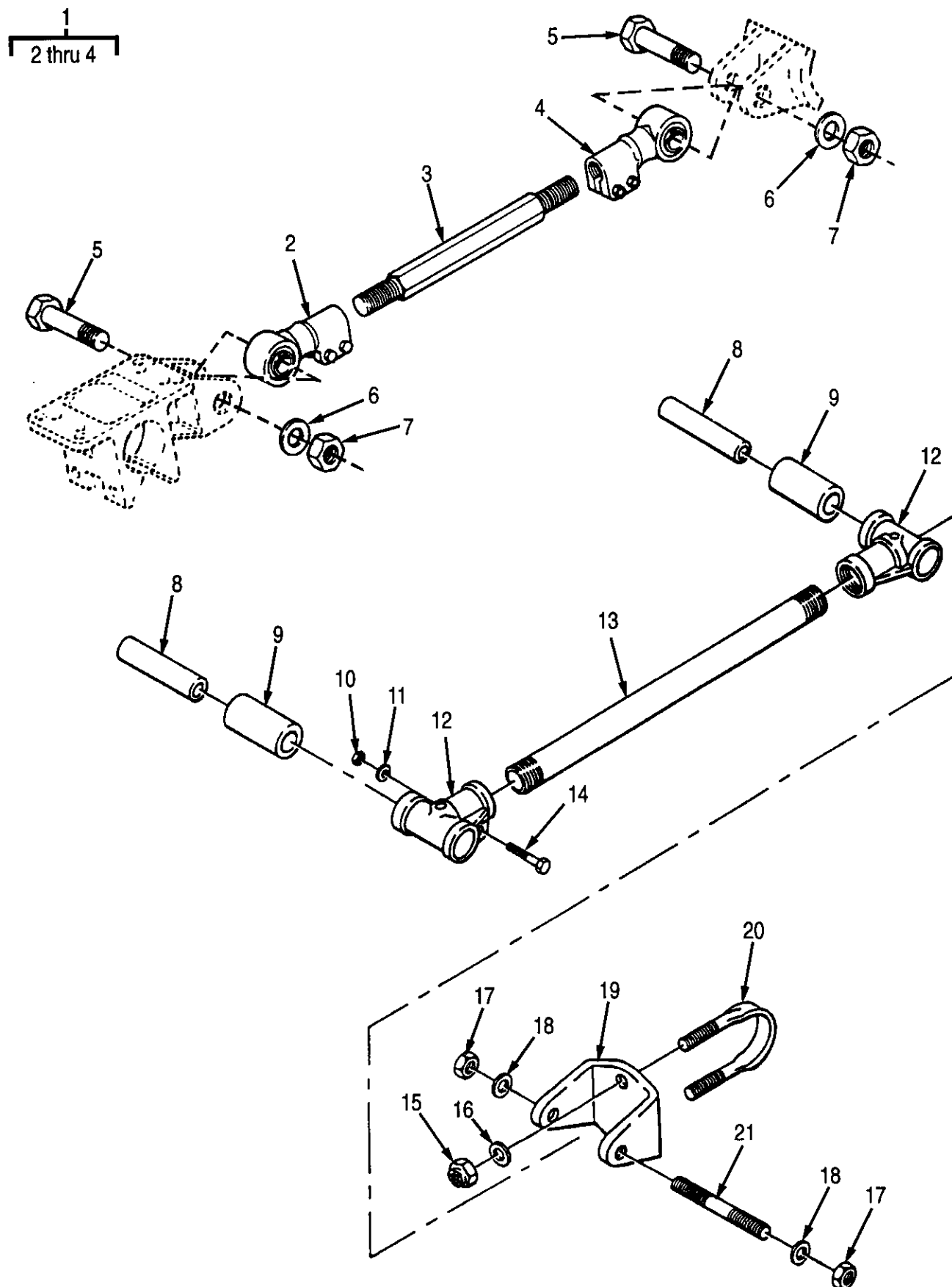


Figure 28. Torque Arm



## SECTION II

TM5-2330-378-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP 1605 TORQUE AND RADIUS RODS FIG.28 TORQUE ARM					
1	PAFZZ	92967	11451-00	ROD,ALIGNING,VEHICU..... UOC:TLB,	2
2	PAFZZ	92967	11450-01	.TORQUE ROD,END..... UOC:TLB,	1
3	XAFZZ	62707	2214-05	.SCREW,TORQUE ARM..... UOC:TLB,	1
4	PAFZZ	92967	11450-02	.TORQUE ROD,END..... UOC:TLB,	1
5	PAFZZ	92967	11448-00	BOLT,MACHINE..... UOC:TLB,	4
6	PAFZZ	92967	837-00	WASHER,FLAT..... UOC:TLB,	4
7	PAFZZ	92967	11449-00	NUT,PLAIN,HEXAGON..... UOC:TLB,	4
8	PAFZZ	98171	90038083	LINER,PLASTIC AXLE..... UOC:T01,U17,	2
9	PFFZZ	98171	90008002	MOUNT,RESILIENT..... UOC:T01,U17,	2
10	PAFZZ	98171	934 00 488	NUT,SELF-LOCKING,HE..... UOC:T01,U17,	1
11	PAFZZ	98171	93900025	WASHER,FLAT..... UOC:T01,U17,	8
12	XBFZZ	98171	91544137	ROD END,RADIUS LEFT..... UOC:T01,U17,	2
13	PAFZZ	98171	91038475	ROD,ALIGNING,VEHICU..... UOC:T01,U17,	4
14	PAFZZ	98171	93003383	CAPSCREW..... UOC:T01,U17,	8
15	PAFZZ	98171	934 00 500	NUT,SELF-LOCKING,HE..... UOC:T01,U17,	1
16	PAFZZ	98171	936 00 168	WASHER,FLAT..... UOC:T01,U17,	1
17	PAFZZ	98171	934 00 506	NUT,SELF-LOCKING,RO..... UOC:T01,U17,	1
18	PAFZZ	98171	936 00 174	WASHER,FLAT..... UOC:T01,U17,	1
19	PAFZZ	98171	91018039	BRACKET,MOUNTING..... UOC:T01,U17,	2
20	PAFZZ	98171	900 41 808	BOLT,U..... UOC:T01,U17,	1
21	PAFZZ	98171	93201045	SCREW,CAP,HEXAGON H..... UOC:T01,U17,	4

END OF FIGURE

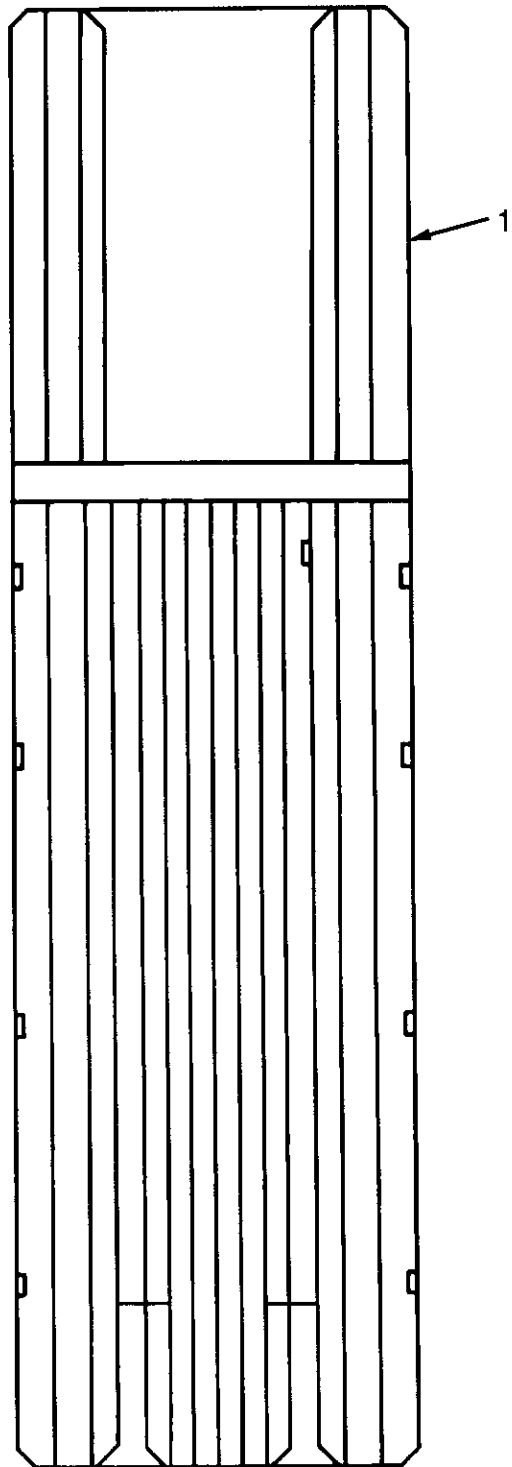


Figure 29. Floor Boards

## SECTION II

TM5-2330-378-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 18 BODY, CAB, HOOD, AND HULL GROUP 1805 FLOORS, SUBFLOORS, AND RELATED COMPONENTS FIG.29 FLOOR BOARDS	
1	XBFZZ	81348	MML 736	LUMBER,HARDWOOD.....	1
				END OF FIGURE	

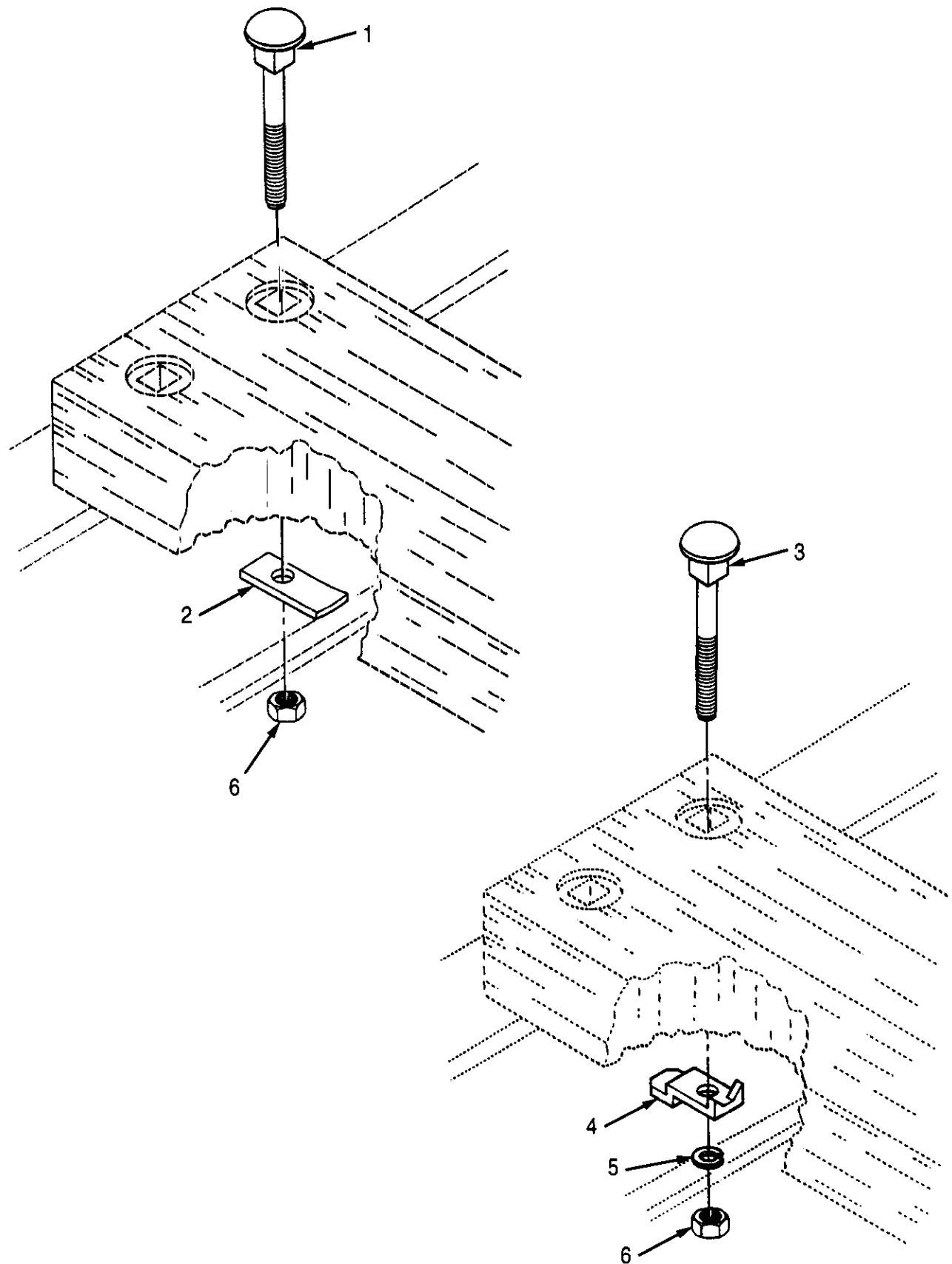


Figure 30. Floor Clip

## SECTION II

TM5-2330-378-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP 1805 FLOORS AND RELATED COMPONENTS					
FIG.30 FLOOR CLIP					
1	PAOZZ	26697	MP0-0919-A	BOLT,SQUARE NECK ASSEMBLY.....	1
				UOC:T01,U17,	
2	PAFZZ	26697	MP0-0919-C	RETAINER,NUT AND BO.....	1
				UOC:T01,U17,	
3	PAOZZ	96906	MS35751-77	BOLT,SQUARE NECK.....	124
				UOC:TLB,	
4	PAOZZ	82465	60509	CLAMP,RIM CLENCHING.....	124
				UOC:TLB,	
5	PAOZZ	96906	MS35338-8	WASHER,LOCK.....	124
				UOC:TLB,	
6	PAOZZ	96906	MS51967-9	NUT,PLAIN,HEXAGON.....	124
				UOC:TLB,	
END OF FIGURE					

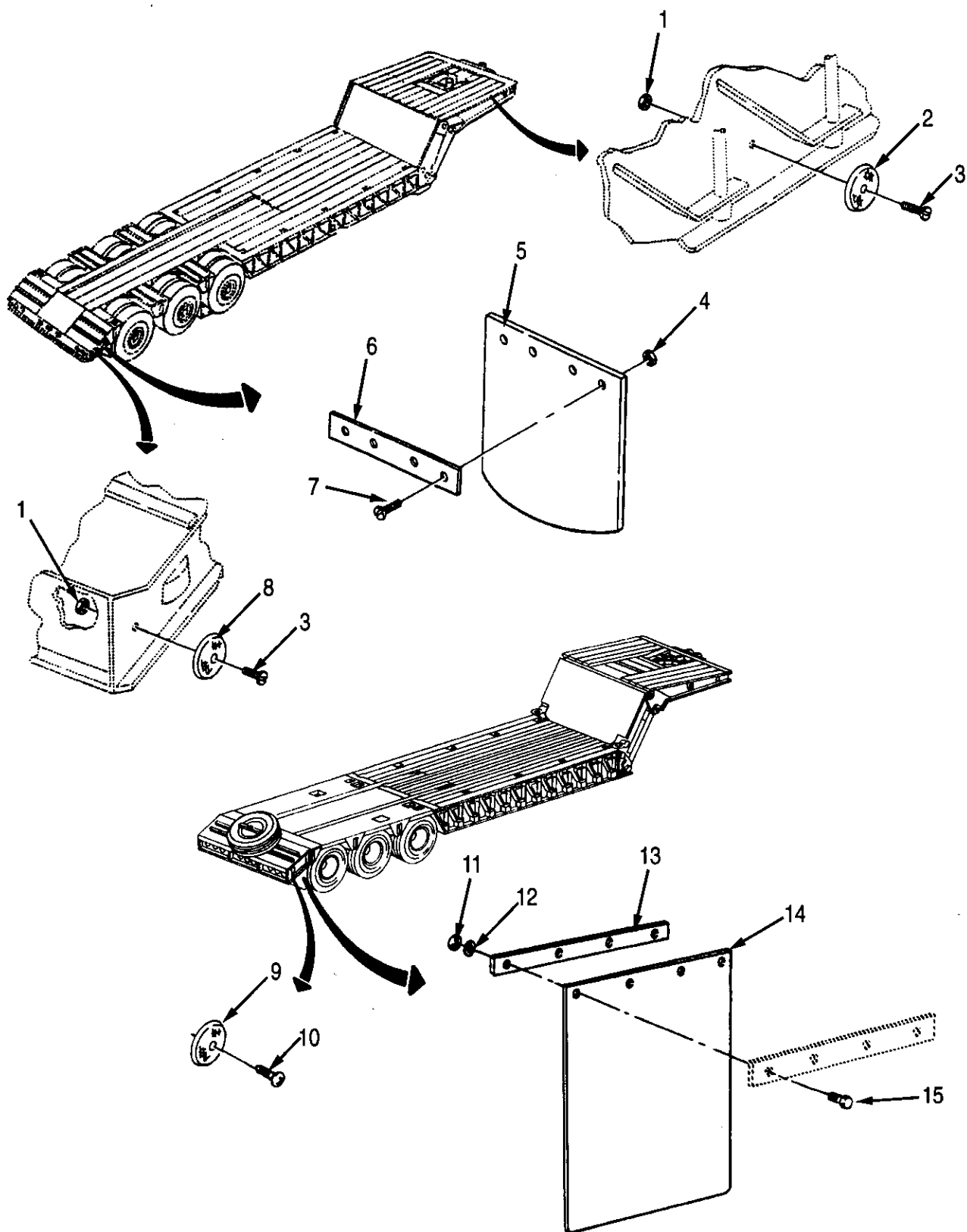


Figure 31. Reflectors and Mud Flaps

## SECTION II

TM5-2330-378-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP 22 BODY, CHASSIS, AND HULL ACCESSORY ITEMS GROUP 2202 ACCESSORY ITEMS FIG.31 REFLECTORS AND MUD FLAPS					
1	PAOZZ	96906	MS35650-302	NUT, PLAIN, HEXAGON..... UOC:T01,U17,	6
2	PAOZZ	96906	MS35387-2	REFLECTOR, INDICATIN AMBER..... UOC:T01,U17,	4
3	PAOZZ	96906	MS35206-267	SCREW, MACHINE..... UOC:T01,U17,	6
4	PAOZZ	26697	MP0-0482	NUT, MUD FLAP MOUNTI..... UOC:T01,U17,	8
5	PAOZZ	26697	060000012X24	GUARD, SPLASH, VEHICU..... UOC:T01,	2
5	MOOZZ	19207	0410708-1	GUARD, SPLASH MAKE FROM P/N 10959859 (19207)..... UOC:U17,	2
6	PAOZZ	26697	BC0-0002	BAR, MUD FLAP..... UOC:T01,U17,	2
7	PAOZZ	26697	MP0-0489	BOLT, MACHINE..... UOC:T01,U17,	8
8	PAOZZ	96906	MS35387-1	REFLECTOR, INDICATIN RED..... UOC:T01,U17,	2
9	PAOZZ	13548	98007R	REFLECTOR, INDICATIN..... UOC:TLB,	2
10	PAOZZ	96906	MS35206-267	SCREW, MACHINE..... UOC:TLB,	2
11	PAOZZ	96906	MS35691-5	NUT, PLAIN, HEXAGON..... UOC:TLB,	8
12	PAOZZ	96906	MS35338-44	WASHER, LOCK..... UOC:TLB,	8
13	PAOZZ	66788	SAT-16805	PLATE, MENDING..... UOC:TLB,	2
14	MOOZZ	66788	302424	GUARD, SPLASH, VEHICU MAKE FROM SPLASH GUARD P/N 10959859..... UOC:TLB,	2
15	PAOZZ	80204	B1821BH025F100N	SCREW, CAP, HEXAGON H..... UOC:TLB,	8

END OF FIGURE





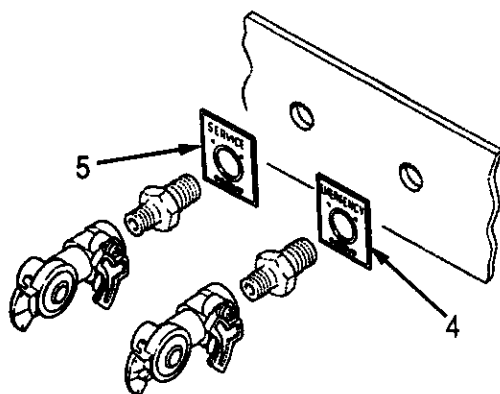
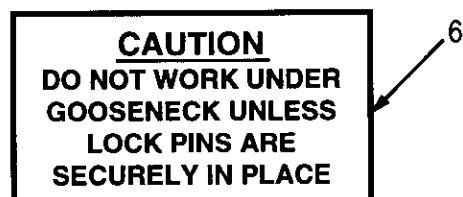
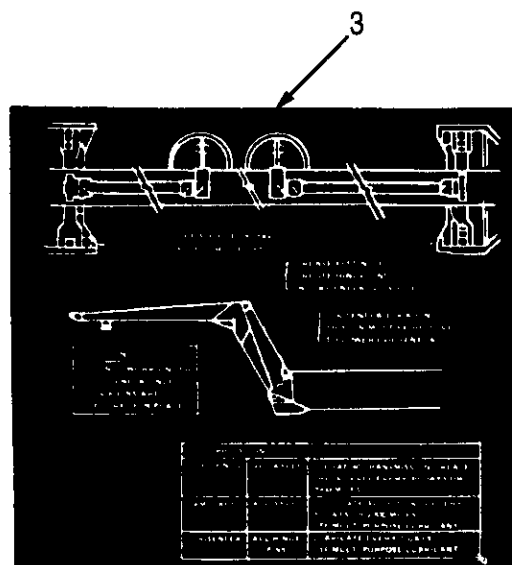
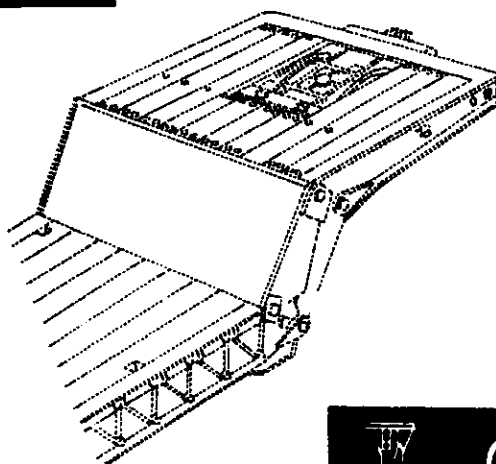
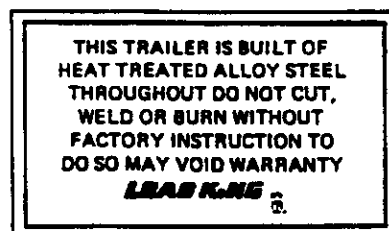
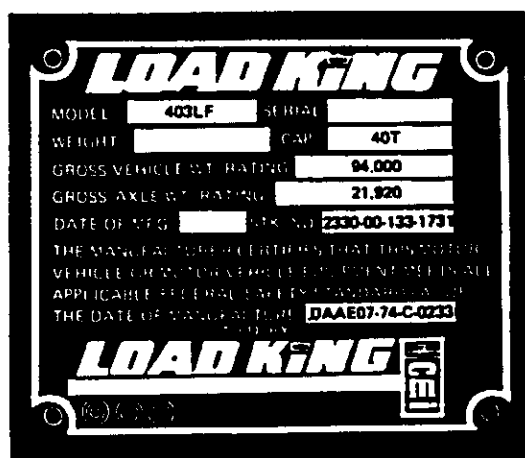


Figure 32. Data Plates and Decals (sheet 1 of 2)

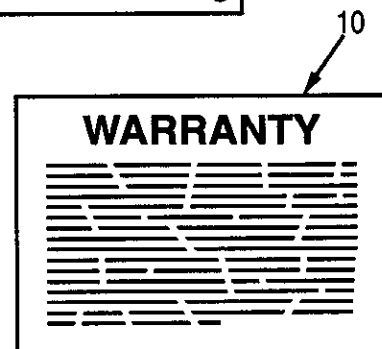
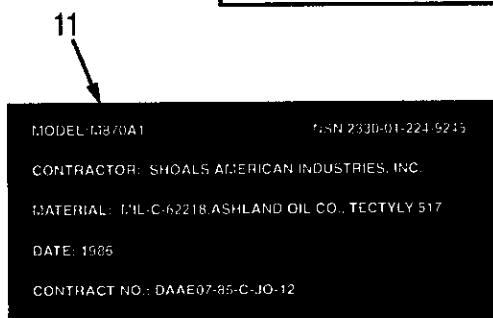
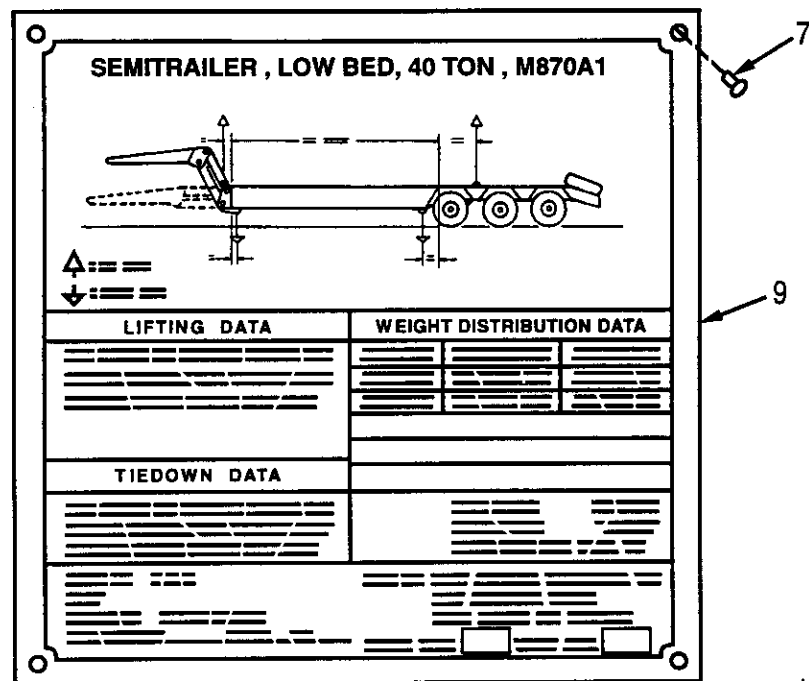
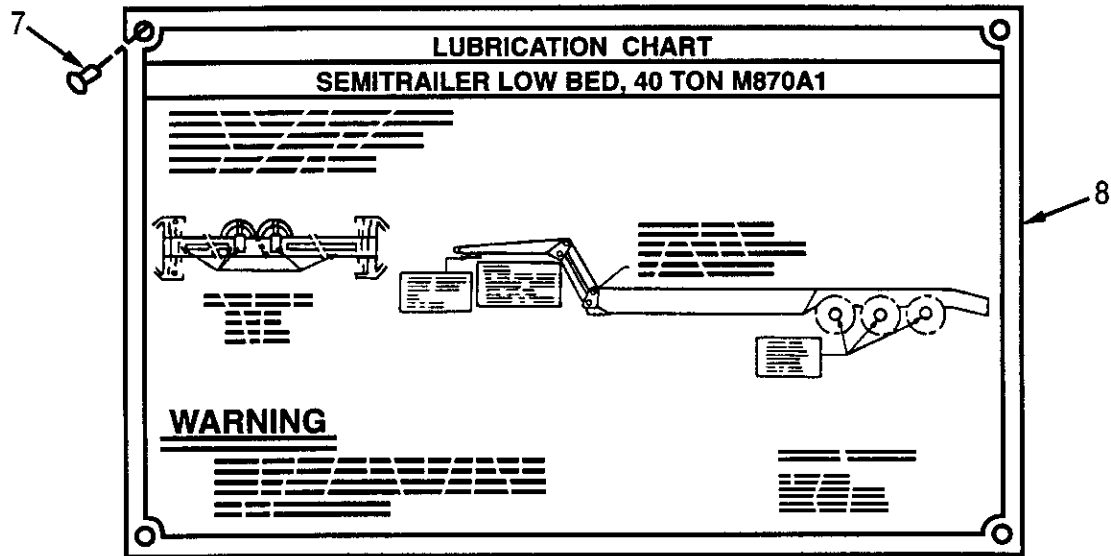


Figure 32. Data Plates and Decals (sheet 2 of 2)

## SECTION II

TM5-2330-378-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP 2210 DATA PLATES AND INSTRUCTION HOLDERS FIG.32 DATA PLATES AND DECALS					
1	XBOZZ	26697	061NAMEPLATE	DATA PLATE IDENTIFICATION..... UOC:T01,U17,	1
2	XBOZZ	26697	061000T1WELD	DATA PLATE WELDING INST..... UOC:T01,U17,	1
3	XBOZZ	26697	PD0-0289	DATA PLATE LUBRICATION INST..... UOC:T01,U17,	1
4	PAOZZ	06721	N-10790-L	PLATE,IDENTIFICATIO..... UOC:TLB,	1
4	XBOZZ	26697	KP0-0165	TAG,EMERGENCY..... UOC:T01,U17,	1
5	PAOZZ	06721	N-10790-K	PLATE,IDENTIFICATIO..... UOC:TLB,	1
5	XBOZZ	26697	KP0-0166	TAG,SERVICE..... UOC:T01,U17,	1
6	XBOZZ	26697	061CAUTIONOF	DATA PLATE GOOSENECK CAUTION..... UOC:T01,U17,	2
7	PAOZZ	96906	MS24661-225	RIVET,BLIND..... UOC:TLB,	8
8	PAOZZ	66788	SAI#870-15540	PLATE,INSTRUCTION..... UOC:TLB,	1
9	PAOZZ	66788	SAI-15539	PLATE,IDENTIFICATIO..... UOC:TLB,	1
10	PAOZZ	66788	SAI#870-15541	PLATE,INSTRUCTION..... UOC:TLB,	1
11	PAOZZ	66788	SAT-15542	MARKER,IDENTIFICATI..... UOC:TLB,	1

END OF FIGURE

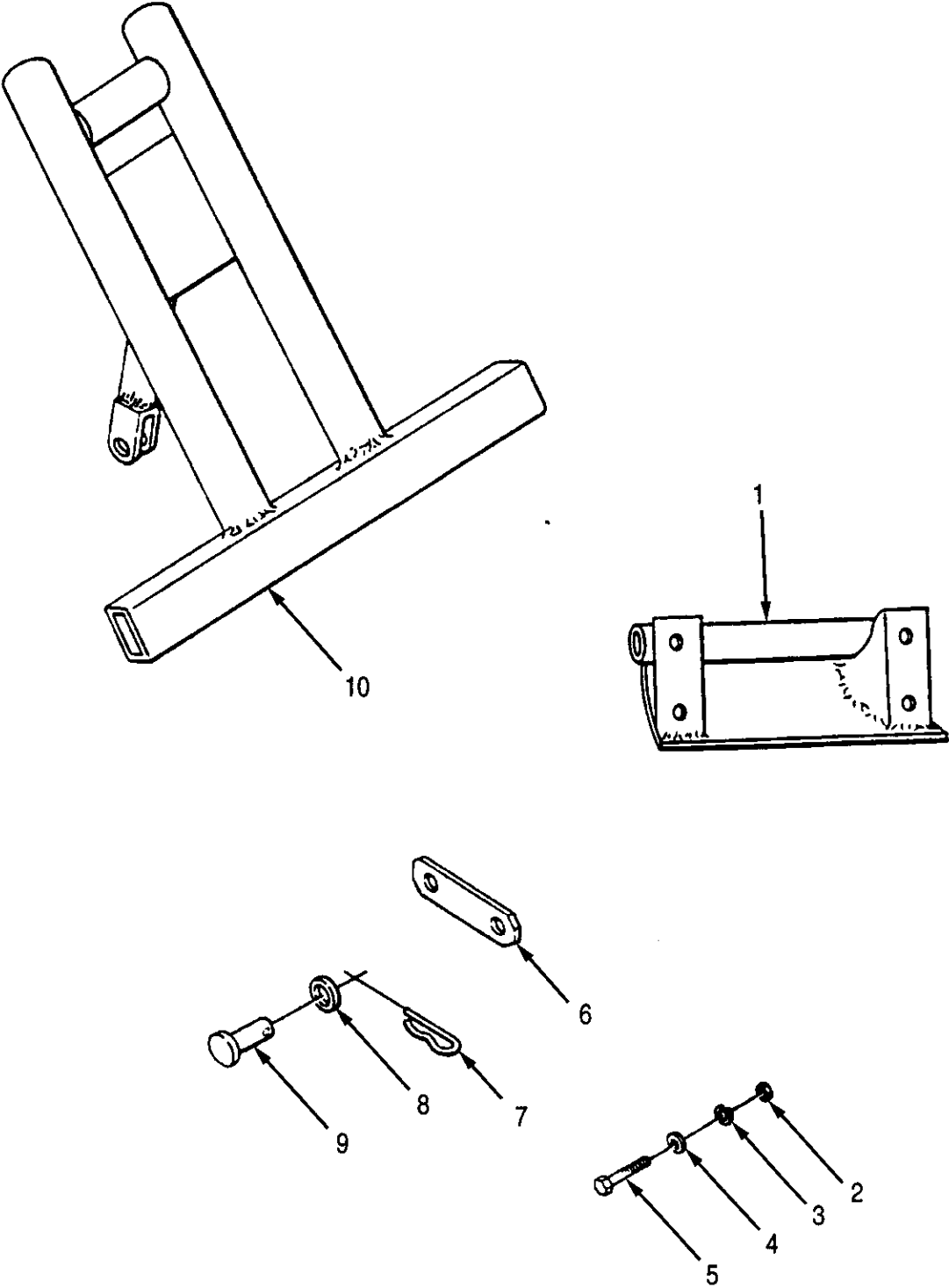


Figure 33. Adaptation Kit

## SECTION II

TM5-2330-378-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP 33 SPECIAL PURPOSE KITS GROUP 3307 SPECIAL PURPOSE KITS FIG. 33 ADAPTATION KIT					
1	KFOZZ	26697	9004	APPROACH PLATE CENTER EXTENSION PART OF KIT P/N 8000..... UOC:T01,	1
1	KFOZZ	26697	21280	APPROACH PLATE CENTER EXTENSION PART OF KIT P/N 21707..... UOC:U17,	1
2	PAOZZ	96906	MS51968-20	NUT, PLAIN, HEXAGON..... UOC:T01,U17,	4
3	PAOZZ	96906	MS35338-50	WASHER, LOCK..... UOC:T01,U17,	4
4	PAFZZ	96906	MS27183-21	WASHER, FLAT..... UOC:T01,U17,	4
5	KFOZZ	96906	90726-164	SCREW, CAP, HEXAGON PART OF KIT P/N 8000..... UOC:T01,U17,	4
6	KFOZZ	26697	9003	HANG UP PLATE PART OF KIT P/N 8000. UOC:T01,U17,	1
7	PAOZZ	96906	MS24665-493	PIN, COTTER..... UOC:T01,U17,	1
8	PAOZZ	96906	MS15795-825	WASHER, FLAT..... UOC:T01,U17,	1
9	KFOZZ	26697	9002	PIN PART OF KIT P/N 8000..... UOC:T01,U17,	1
10	KFOZZ	26697	30112	SUPPORT FRAME, CABLE PART OF KIT P/N 21707 ..... UOC:U17,	1
10	KFOZZ	26697	9001	SUPPORT FRAME, CABLE PART OF KIT P/N 8000 UOC:T01,	1
	PAOZZ	26697	21707	KIT, ADAPTER..... UOC:U17, APPROACH PLATE.....( 1)33-1 SUPPORT FRAME, CABLE.....( 1)33-10	1
	PAOZZ	26697	8000	ADAPTER KIT..... UOC:T01, APPROACH PLATE.....( 1)33-1 HANG UP PLATE.....( 1)33-6 PIN.....( 1)33-9 SCREW, CAP, HEXAGON.....( 4)33-5 SUPPORT FRAME, CABLE.....( 1)33-10	1

END OF FIGURE



## SECTION II

TM5-2330-378-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 94 REPAIR KITS	
				GROUP 9401 REPAIR KITS	
				FIG.KITS	
PAOZZ	96906	MS53004-2		PARTS KIT,RELAY VAL.....	1
				UOC:T01,U17,	
PAOZZ	06853	107158		PARTS KIT,BRAKE ADJ.....	1
				UOC:T01,	
				BUSHING ( 1) 12-9	
				PIN, LINK..... ( 6) 12-6	
				PIN, YOKE..... ( 6) 12-5	
				WASHER, SPECIAL..... ( 6) 12-7	
				YOKE ( 6) 12-3	

END OF FIGURE





## SECTION II

TM5-2330-378-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP 95 GENERAL USE STANDARDIZED PARTS					
GROUP 9501 BULK MATERIAL, COMMON FIG. BULK					
10	PAOZZ	19207	10959859	GUARD, SPLASH, VEHICU.....	V
20	PAOZZ	30327	C608	HOSE, NONMETALLIC.....	V
				UOC:T01,	
30	PAOZZ	06853	246115	HOSE, NONMETALLIC.....	V
				UOC:T01, U17,	
40	PAOZZ	85757	3250-0612	HOSE, NONMETALLIC.....	V
				UOC:TLB,	
50	PAOZZ	85757	3250-0816	HOSE, NONMETALLIC.....	V
				UOC:TLB,	
60	PAOZZ	81348	MML736TY3 OAK/GR	LUMBER, HARDWOOD.....	V
			22X8	UOC:TLB,	
70	PAOZZ	79146	59A4X14X500	WIRE, ELECTRICAL.....	V
				UOC:T01, U17,	
80	PAOZZ	19207	7720853	WIRE, ELECTRICAL.....	V
				UOC:TLB,	
END OF FIGURE					



## CROSS REFERENCE INDEXES

## NATIONAL STOCK NUMBER INDEX

NATIONAL STOCK NUMBER	FIGURE NO.	ITEM NO.	NATIONAL STOCK NUMBER	FIGURE NO.	ITEM NO.
5310-00-004-5033	1	5	5310-00-176-6384	3	8
2530-00-004-8287	18	13	9330-00-177-8445	13	30
4730-00-011-3176	15	1	4730-00-187-4202	16	21
4730-00-011-3176	15	30	4730-00-194-0219	16	25
4730-00-011-3176	16	33	5310-00-194-1483	10	4
4730-00-011-3176	16	33	4730-00-196-1504	16	4
5310-00-013-8572	15	6	4730-00-200-0436	13	31
5315-00-018-7988	33	7	9905-00-202-3639	31	2
6240-00-019-0877	1	4	4730-00-202-6491	16	16
6240-00-019-0877	1	13	9905-00-205-2795	31	8
6240-00-019-0877	2	14	5310-00-208-1919	16	11
2530-00-021-2366	KITS		5310-00-209-1962	16	19
6240-00-044-6914	1	11			
5310-00-045-3296	2	6	5310-00-225-6993	26	1
2640-00-050-1229	22	3	5306-00-225-9087	20	8
2610-00-052-7969	22	2	5315-00-234-1670	23	17
4730-00-054-2572	13	32	5310-00-261-7340	10	13
4820-00-057-0694	16	10	5310-00-261-7340	30	5
5999-00-057-2929	2	12	5305-00-269-3211	16	1
5305-00-068-0509	16	6	2530-00-270-3878	17	8
5305-00-068-0515	31	15	5510-00-274-4994	BULK	60
4730-00-069-1186	13	16	5510-00-274-4994	29	1
4730-00-069-1187	15	15	4730-00-277-8257	15	27
5310-00-087-4652	16	27	4730-00-277-9114	16	5
5330-00-090-2128	17	7	4730-00-278-4822	14	2
5330-00-090-2128	17	12	4730-00-278-4822	14	2
5330-00-090-2128	17	14	4730-00-278-4822	14	10
5365-00-090-5426	3	22	4730-00-278-4822	15	26
3110-00-100-0335	19	3	4730-00-278-5491	13	32
3110-00-100-0670	19	2	4730-00-278-8824	13	32
5935-00-115-2307	6	28	4730-00-288-9490	15	10
5305-00-115-9526	1	6	4730-00-288-9490	15	29
6220-00-128-8151	1	18	3110-00-293-8997	18	6
4820-00-142-3036	16	35	3110-00-293-8998	18	4
5940-00-143-4777	6	3	6220-00-299-7425	2	3
5940-00-143-4777	6	8	6220-00-299-7425	2	15
5940-00-143-4777	6	10	6220-00-299-7426	2	3
5940-00-143-4777	6	19	6220-00-299-7426	2	15
5940-00-143-4780	6	2	4730-00-322-8457	15	8
5940-00-143-4780	6	6	4730-00-322-8457	15	16
5940-00-143-4780	6	13	4730-00-322-8457	16	3
5940-00-143-4780	6	18	3120-00-331-7635	15	4
4730-00-143-9282	15	2	6220-00-337-6471	1	1
2530-00-151-6681	9	1	5330-00-353-0959	2	11
6145-00-152-6499	BULK	80	4730-00-393-3809	15	12
4010-00-165-6063	23	8	5310-00-393-6685	3	1
5310-00-167-0835	12	2	5310-00-407-9566	20	9

## CROSS REFERENCE INDEXES

## NATIONAL STOCK NUMBER INDEX

NATIONAL STOCK NUMBER	FIGURE NO.	ITEM NO.	NATIONAL STOCK NUMBER	FIGURE NO.	ITEM NO.
4730-00-409-7854	16	17	5310-00-761-0654	30	6
4730-00-434-6396	13	30	5310-00-761-6882	3	9
4010-00-443-4845	*		5310-00-763-8905	33	2
5330-00-462-0907	1	14	5935-00-773-1428	3	19
5305-00-476-7387	1	19	5935-00-773-1428	4	6
5365-00-486-2885	8	8	5325-00-795-0719	16	9
5365-00-486-2885	8	17	5310-00-809-3078	15	23
5310-00-488-3911	10	23	5310-00-809-3079	26	2
5340-00-518-5678	14	9	4730-00-812-7999	13	7
4730-00-526-0284	15	9	4730-00-812-7999	14	2
4730-00-526-0284	15	33	4730-00-812-7999	15	11
5365-00-530-7968	11	4	4730-00-813-7811	15	14
5935-00-572-9180	1	3	5310-00-818-6460	1	20
5935-00-572-9180	2	10	5310-00-820-6653	14	4
6220-00-577-3434	2	8	5310-00-820-6653	14	7
5310-00-582-5965	3	10	5310-00-820-6653	33	3
5310-00-582-5965	13	11	5310-00-823-8803	8	21
5310-00-582-5965	31	12	5310-00-823-8803	28	11
5310-00-582-6714	15	37	5310-00-823-8803	33	4
4730-00-595-0083	17	13	5310-00-823-8804	3	11
5310-00-595-6612	8	7	3110-00-829-0575	19	7
5310-00-596-8169	2	18	5310-00-833-3340	16	7
2530-00-606-2101	19	4	5310-00-833-8567	1	2
2640-00-606-3550	22	4	5310-00-833-8567	2	9
5330-00-615-1843	20	1	5310-00-835-2037	14	5
5340-00-615-1856	20	7	5310-00-835-2037	14	5
6145-00-615-2019	BULK	70	4730-00-837-1177	15	34
3110-00-618-0248	18	15	5315-00-839-5822	12	1
3110-00-618-0249	18	14	5315-00-839-5822	12	1
9320-00-620-0063	8	16	5315-00-842-3044	12	8
5310-00-620-2486	18	2	5315-00-842-3044	12	8
5315-00-630-4819	25	1	5935-00-846-3883	3	21
5307-00-637-1084	19	6	5935-00-846-3883	4	5
5310-00-637-9541	1	8	5935-00-846-3884	3	20
5310-00-637-9541	16	13	4820-00-849-1220	16	24
2540-00-678-3469	*		5310-00-851-2677	14	6
5310-00-680-7297	16	31	5305-00-855-0964	1	22
5310-00-680-7297	16	31	5310-00-880-2004	21	4
5305-00-701-5071	2	4	5310-00-880-2004	26	6
5305-00-701-5071	2	17	5310-00-880-2005	21	4
5320-00-721-4240	32	7	5305-00-889-2997	3	4
5305-00-721-5492	1	7	4730-00-891-0798	17	11
5305-00-725-2317	16	18	5307-00-899-7061	18	8
6220-00-726-1916	2	8	5310-00-902-6659	33	8
5310-00-732-0558	16	12	5340-00-905-2691	13	10
5310-00-732-0560	10	3	4730-00-906-0982	10	2
6220-00-752-6516	2	16	6240-00-924-7526	1	17

## CROSS REFERENCE INDEXES

## NATIONAL STOCK NUMBER INDEX

NATIONAL STOCK NUMBER	FIGURE NO.	ITEM NO.	NATIONAL STOCK NUMBER	FIGURE NO.	ITEM NO.
5305-00-928-9636	8	19	4730-01-049-1559	13	31
5330-00-931-8736	10	6	5310-01-049-9051	19	11
5330-00-931-8736	19	1	2530-01-052-4018	8	5
5310-00-934-9739	3	2	5310-01-055-8817	16	29
5310-00-934-9751	31	1	5310-01-055-8817	16	29
5310-00-934-9758	2	7	2510-01-061-0429	27	8
5305-00-939-0847	10	5	5310-01-061-0690	8	15
6240-00-944-1264	2	2	5365-01-061-0710	10	11
5305-00-947-4354	8	12	5365-01-061-0710	10	37
5305-00-947-4364	8	10	5365-01-061-0714	8	9
4730-00-970-4292	15	5	5305-01-061-0734	8	13
5310-00-971-7989	31	11	5310-01-061-1307	8	3
5310-00-984-3806	15	25	5310-01-061-1307	27	10
5305-00-984-5675	4	8	5310-01-061-1307	28	15
5305-00-984-6211	2	5	5310-01-061-1310	8	6
5305-00-984-6212	3	16	5310-01-061-1311	8	22
5305-00-984-6214	31	3	5310-01-061-1311	28	10
5305-00-984-6214	31	10	5310-01-061-1312	8	14
5975-00-985-6630	13	13	5305-01-061-1416	8	20
4730-00-988-1714	15	35	5305-01-061-2973	8	1
5305-00-988-1724	4	7	5310-01-062-1532	10	10
5305-00-988-1725	3	15	2510-01-062-1920	27	7
5305-00-993-2461	13	12	4730-01-066-3363	13	30
5306-00-993-6257	30	3	5330-01-067-3440	10	32
4730-00-995-1559	15	21	6220-01-067-5264	6	11
2540-01-003-4413	33		6220-01-067-5264	6	15
4720-01-003-6706	BULK	20	6220-01-067-5264	6	25
2590-01-003-9416	4	3	2540-01-068-4746	6	27
4720-01-014-4915	BULK	30	9905-01-069-7282	31	9
5360-01-019-3541	11	7	5306-01-075-8519	15	22
5935-01-038-9629	4	9	4730-01-078-4317	15	28
2540-01-041-0708	BULK	10	4730-01-078-4317	16	23
2540-01-041-0708	BULK	10	4730-01-091-8032	16	26
5310-01-041-5168	24	4	4730-01-096-3204	17	6
5325-01-041-7321	24	8	5340-01-096-7556	28	9
5340-01-042-0573	20	2	4730-01-096-9128	17	5
3120-01-042-2579	10	28	5310-01-098-7245	7	7
5360-01-042-2666	24	5	5310-01-098-7246	28	6
5310-01-043-0596	18	3	5310-01-098-7827	7	8
5310-01-043-0596	19	8	5310-01-099-6539	7	13
5315-01-043-4187	23	2	4720-01-108-1090	13	4
5315-01-043-4188	23	3	4730-01-115-7362	15	36
5315-01-043-5478	24	6	3120-01-128-6497	15	17
2530-01-046-4695	28	8	4730-01-134-3563	15	40
4730-01-048-0819	10	30	4730-01-134-7759	15	39
4730-01-048-5260	13	31	5305-01-145-7070	3	18
2530-01-048-7842	21	3	5315-01-155-0009	23	5

## CROSS REFERENCE INDEXES

## NATIONAL STOCK NUMBER INDEX

NATIONAL STOCK NUMBER	FIGURE NO.	ITEM NO.	NATIONAL STOCK NUMBER	FIGURE NO.	ITEM NO.
2530-01-155-5731	15	18	5306-01-202-2667	31	7
5340-01-159-1183	3	12	5310-01-202-6776	10	26
4730-01-159-6427	15	3	5310-01-202-8985	10	31
4730-01-159-6427	15	38	5315-01-203-6308	23	7
5310-01-160-4550	10	34	5310-01-204-3352	17	17
2590-01-164-8174	24	7	5310-01-204-4210	17	18
6220-01-173-2939	2	1	5310-01-205-2838	14	4
2530-01-174-0464	28	1	5310-01-205-3225	19	9
2530-01-177-3048	8	11	2530-01-209-3473	28	13
2530-01-178-7227	28	2	5935-01-211-4434	4	4
2530-01-178-7228	28	4			
6220-01-178-8249	2	1	5315-01-220-6245	11	8
4720-01-179-2937	BULK	50	5360-01-220-9373	11	6
4720-01-180-5152	BULK	40	9905-01-235-0397	32	9
			9905-01-235-0399	32	10
5340-01-182-1075	24	10	6150-01-235-0417	6	14
5340-01-182-1081	23	10	5315-01-235-0429	25	1
5365-01-182-1271	23	11	5995-01-235-0473	6	9
6220-01-182-3380	2	20	5905-01-238-8177	3	6
5306-01-183-2697	10	24	5310-01-239-0881	10	12
6220-01-183-4557	2	20	5340-01-239-0883	11	5
2530-01-183-6813	10	29	5330-01-239-0885	10	8
3120-01-183-6814	10	33	3120-01-239-0888	10	16
5330-01-183-6815	10	27	5310-01-239-0893	18	1
5310-01-183-6831	10	21	5310-01-239-0893	19	12
5306-01-185-0159	30	1	6150-01-239-3636	6	5
2540-01-187-6526	31	5	9905-01-239-4897	32	8
2540-01-189-0460	31	6	4010-01-239-5719	17	9
5365-01-189-0554	23	1	5995-01-239-9320	6	17
5330-01-190-4634	10	15	6150-01-239-9387	6	24
5330-01-191-3457	7	17	2530-01-240-8608	16	20
2530-01-191-6232	19	5	3040-01-241-4818	10	14
2510-01-191-6644	27	3	3040-01-241-7404	10	17
5305-01-192-5742	7	5	2540-01-241-9076	31	14
5310-01-192-9307	7	4	2530-01-243-1461	10	19
5306-01-194-4972	27	1	2530-01-243-1461	10	25
5310-01-194-5006	28	7	4710-01-243-3391	7	6
5310-01-194-9211	27	5	2530-01-243-4931	18	10
5305-01-195-5042	7	14	2510-01-243-4940	27	2
5310-01-195-7956	7	3	2530-01-243-4946	18	5
5310-01-195-7956	27	4	2530-01-243-4946	18	9
5306-01-197-1491	28	5	5999-01-243-6371	3	14
6220-01-198-3814	1	16	2530-01-243-6372	18	7
5305-01-198-4649	7	15	2510-01-243-6397	23	15
5365-01-198-6608	7	11	3040-01-243-6475	23	19
5315-01-201-1999	23	6	3120-01-244-4603	10	9
5306-01-202-0642	31	4	5306-01-244-6869	18	11

## CROSS REFERENCE INDEXES

## NATIONAL STOCK NUMBER INDEX

NATIONAL STOCK NUMBER	FIGURE NO.	ITEM NO.	NATIONAL STOCK NUMBER	FIGURE NO.	ITEM NO.
5310-01-244-6894	11	3	5940-01-269-3913	3	7
5306-01-244-7541	26	4	5325-01-270-3721	6	22
5310-01-244-7572	7	9	5310-01-270-8921	7	10
5315-01-244-7901	23	20	4730-01-271-2852	17	19
5305-01-244-7970	7	2	5340-01-273-0034	3	3
5315-01-245-3890	23	18	5365-01-274-0074	10	7
5340-01-245-3947	7	19	5340-01-277-5066	13	33
5340-01-245-3948	7	12	5315-01-280-6184	11	2
5340-01-245-3949	7	18	5305-01-280-7680	20	6
5315-01-245-4177	23	14	3040-01-285-2898	18	12
5340-01-245-4253	26	3	5310-01-288-5668	10	20
4730-01-246-2846	17	16	5330-01-288-8988	20	5
5340-01-246-7570	30	4	5340-01-289-4466	17	2
5340-01-246-7859	31	13	4720-01-300-0774	13	9
5365-01-247-0672	15	31	4720-01-300-5878	13	1
2530-01-248-2532	17	10	4720-01-301-7997	13	6
6150-01-248-2549	6	1	2530-01-301-8094	16	2
5306-01-249-4146	10	18	4720-01-302-2533	13	8
5340-01-250-0785	7	16	2530-01-302-2583	14	1
2530-01-252-6121	15	7	2530-01-303-0085	14	1
2530-01-252-6121	15	32	5340-01-303-1656	16	8
2640-01-254-5392	22	1	4720-01-303-7840	13	18
2530-01-255-8723	21	2	5306-01-304-5201	27	6
2530-01-255-8743	21	1	5340-01-304-7898	28	19
4730-01-256-9056	10	1	4720-01-307-4745	13	2
5315-01-257-4817	23	12	5310-01-308-5957	8	4
7690-01-258-7366	32	11	5310-01-308-5957	27	9
2530-01-258-7383	9	9	5310-01-308-5957	28	16
2530-01-259-4428	9	9	5306-01-309-2613	28	20
6220-01-259-9017	1	21	5310-01-309-6495	8	23
9905-01-260-0220	32	5	5310-01-309-6495	28	17
9905-01-260-0221	32	4	5310-01-309-9406	8	24
2530-01-260-0223	14	3	5310-01-309-9406	28	18
2530-01-260-0224	9	9	2530-01-312-0340	14	3
2530-01-260-0227	14	8	5340-01-312-4926	8	25
4720-01-261-7950	17	15	4720-01-320-8870	13	21
2530-01-263-5382	21	5	4720-01-320-8871	13	25
4730-01-265-2669	17	1	4720-01-321-2229	13	27
5325-01-265-3678	2	19	4720-01-321-4422	13	23
3040-01-265-3679	10	19	4720-01-321-6433	13	26
3040-01-265-3679	10	25	5305-01-322-2481	8	26
2510-01-266-8219	24	1	5305-01-322-2481	28	21
2510-01-267-1365	24	2	2610-01-325-1934	22	5
2510-01-267-1366	24	3	5340-01-325-2249	30	2
5310-01-268-8983	17	4	2530-01-327-7781	19	10
5310-01-268-9052	17	3	2530-01-330-1962	11	1
5940-01-269-3912	3	13	6220-01-359-2870	1	12

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NATIONAL STOCK NUMBER	FIGURE NO.	ITEM NO.	NATIONAL STOCK NUMBER	FIGURE NO.	ITEM NO.
6220-01-372-3883	1	9	2590-01-406-0347	16	30
2530-01-396-5031	15	19	5310-01-406-5462	16	32
4720-01-396-5032	13	3	5310-01-406-5462	16	32
2530-01-396-5514	12	10	4730-01-407-9281	16	14
2530-01-396-5518	15	24	4730-01-407-9281	16	34
2530-01-397-7031	KITS		4730-01-407-9282	16	22
5340-01-400-1032	16	15	5305-01-409-0183	16	28
4730-01-400-3146	12	4	2530-01-411-5542	12	10
4730-01-400-3146	12	4	4730-01-415-1004	15	13
4730-01-406-0345	15	20			



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CAGEC	PART NUMBER	NATIONAL STOCK NUMBER	FIGURE NO.	ITEM NO.
16662	AC2569	4730-00-069-1186	13	16
88044	AN365-420A	5310-00-208-1919	16	11
88044	AN935-416	5310-00-582-5965	13	11
56697	A150034	5310-00-620-2486	18	2
26697	A19T75LHDA-71		9	2
58536	A52463-1-08	6240-00-019-0877	1	4
		6240-00-019-0877	1	13
		6240-00-019-0877	2	14
58536	A52463-1-09		1	10
58536	A52463-2-10	6240-00-044-6914	1	11
26697	BC0-0002	2540-01-189-0460	31	6
		5340-01-182-1075	24	10
26697	BF 1-0063	5315-01-043-4188	23	3
80204	B1821BH025C125N	5305-00-068-0509	16	6
80204	B1821BH025F100N	5305-00-068-0515	31	15
80204	B1821BH038C063N	5305-00-721-5492	1	7
80204	B1821BH038C075D	5305-00-115-9526	1	6
80204	B1821BH038C150N	5305-00-725-2317	16	18
80204	B1821BH075C300N	5305-00-947-4354	8	12
80204	B1821BH075C600N	5305-00-947-4364	8	10
75272	COV-1709	5340-01-159-1183	3	12
16236	CS-2590-SV-0703	2590-01-003-9416	4	3
30327	C608	4720-01-003-6706	BULK	20
66788	D22AX503-209	2530-01-260-0224	9	9
81348	GP2/10.00R15/TR7	2610-00-052-7969	22	2
	8A/ON CENTER			
81348	GP2STYLXTYRBCLR/ T/10.00R15/J/LTR	2610-01-325-1934	22	5
60038	HM212011	3110-00-293-8997	18	6
60038	HM212049	3110-00-293-8998	18	4
60038	HM218210	3110-00-618-0249	18	14
60038	HM218248	3110-00-618-0248	18	15
79146	H0169-6X4	4730-00-069-1187	15	15
26697	JPO-0094	6220-01-173-2939	2	1
26697	JPO-0031		3	17
		5935-01-211-4434	4	4
26697	KP0-0162	5310-01-204-3352	17	17
26697	KP0-0163	5310-01-204-4210	17	18
26697	KP0-0164	4730-01-246-2846	17	16
26697	KP0-0165		32	4
26697	KP0-0166		32	5
26697	MD0-0088	5310-01-202-8985	10	31
81348	MML 736	5510-00-274-4994	29	1
81348	MML736TY3 OAK/GR 22X8	5510-00-274-4994	BULK	60
26697	MPO-0262	2530-01-191-6232	19	5
26697	MPO-0635	4720-01-261-7950	17	15
26697	MPO0492	5315-01-043-5478	24	6
26697	MPU-0296		24	9
26697	MP0-0033		10	22
26697	MP0-0034		10	36
26697	MP0-0035		10	35
26697	MP0-0045	3120-01-042-2579	10	28
26697	MP0-0123	5310-01-205-3225	19	9

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CAGEC	PART NUMBER	NATIONAL STOCK NUMBER	FIGURE NO.	ITEM NO.
26697	MP0-0296	5315-01-203-6308	23	7
26697	MP0-0330	5310-01-202-6776	10	26
26697	MP0-0455	5310-01-205-2838	14	4
26697	MP0-0482	5306-01-202-0642	31	4
26697	MP0-0489	5306-01-202-2667	31	7
26697	MP0-0492	5315-01-201-1999	23	6
26697	MP0-0541		20	3
26697	MP0-0543	5330-01-288-8988	20	5
26697	MP0-0545	5305-01-280-7680	20	6
26697	MP0-0897	5315-00-630-4819	25	1
26697	MP0-0900		4	3
26697	MP0-0902	5315-01-257-4817	23	12
26697	MP0-0919-A	5306-01-185-0159	30	1
26697	MP0-0919-C	5340-01-325-2249	30	2
26697	MP0-0996	5365-01-189-0554	23	1
26697	MP1-0014	5340-01-182-1081	23	10
26697	MP1-0015	5365-01-182-1271	23	11
26697	MP5-0091-407		4	1
26697	MP5-0094-6		4	10
26697	MP5-0105-6		4	2
26697	MP5-0162-2		13	14
26697	MP5-0164-2		13	15
26697	MP5-0169-8	4730-01-271-2852	17	19
26697	MP5-0303		23	4
26697	MP5-1416	5360-01-042-2666	24	5
96906	MS15795-825	5310-00-902-6659	33	8
96906	MS17830-06C	5310-00-176-6384	3	8
96906	MS19081-113	3110-00-829-0575	19	7
96906	MS20002-12	5310-00-595-6612	8	7
96906	MS20826-6	4730-00-988-1714	15	35
96906	MS21333-12	5340-00-905-2691	13	10
96906	MS24629-48	5305-00-855-0964	1	22
96906	MS24661-225	5320-00-721-4240	32	7
96906	MS24665-283	5315-00-842-3044	12	8
		5315-00-842-3044	12	8
96906	MS24665-353	5315-00-839-5822	12	1
		5315-00-839-5822	12	1
96906	MS24665-493	5315-00-018-7988	33	7
96906	MS24665-630	5315-00-234-1670	23	17
96906	MS25036-108	5940-00-143-4780	6	2
		5940-00-143-4780	6	6
		5940-00-143-4780	6	13
		5940-00-143-4780	6	18
96906	MS25036-157	5940-00-143-4777	6	3
		5940-00-143-4777	6	8
		5940-00-143-4777	6	10
		5940-00-143-4777	6	19
96906	MS27144-2	5935-00-115-2307	6	28
96906	MS27148-2	5999-00-057-2929	2	12
96906	MS27183-11	5310-00-809-3078	15	23
96906	MS27183-19	5310-00-809-3079	26	2
96906	MS27183-21	5310-00-823-8803	8	21
		5310-00-823-8803	33	4
96906	MS27183-9	5310-00-823-8804	3	11
96906	MS3367-3-0	5975-00-985-6630	13	13

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CAGEC	PART NUMBER	NATIONAL STOCK NUMBER	FIGURE NO.	ITEM NO.
96906	MS35206-215	5305-00-889-2997	3	4
96906	MS35206-264	5305-00-984-6211	2	5
96906	MS35206-265	5305-00-984-6212	3	16
96906	MS35206-267	5305-00-984-6214	31	3
		5305-00-984-6214	31	10
96906	MS35206-280	5305-00-988-1724	4	7
96906	MS35206-281	5305-00-988-1725	3	15
96906	MS35206-295	5305-00-984-5675	4	8
96906	MS35207-281	5305-00-993-2461	13	12
96906	MS35308-417	5305-00-939-0847	10	5
96906	MS35333-32	5310-00-013-8572	15	6
96906	MS35333-44	5310-00-194-1483	10	4
96906	MS35333-49	5310-00-582-6714	15	37
96906	MS35338-43	5310-00-045-3296	2	6
96906	MS35338-44	5310-00-582-5965	3	10
		5310-00-582-5965	31	12
96906	MS35338-45	5310-00-407-9566	20	9
96906	MS35338-46	5310-00-637-9541	1	8
		5310-00-637-9541	16	13
96906	MS35338-50	5310-00-820-6653	14	4
		5310-00-820-6653	14	7
		5310-00-820-6653	33	3
96906	MS35338-8	5310-00-261-7340	10	13
		5310-00-261-7340	30	5
96906	MS35387-1	9905-00-205-2795	31	8
96906	MS35387-2	9905-00-202-3639	31	2
96906	MS35421-1	6220-00-299-7425	2	3
		6220-00-299-7425	2	15
96906	MS35421-2	6220-00-299-7426	2	3
		6220-00-299-7426	2	15
96906	MS35423-1	6220-00-577-3434	2	8
96906	MS35423-2	6220-00-726-1916	2	8
96906	MS35489-43	5325-00-795-0719	16	9
96906	MS35649-202	5310-00-934-9758	2	7
96906	MS35649-23	5310-00-818-6460	1	20
96906	MS35649-242	5310-00-934-9739	3	2
96906	MS35650-302	5310-00-934-9751	31	1
96906	MS35691-49	5310-00-851-2677	14	6
96906	MS35691-5	5310-00-971-7989	31	11
96906	MS35691-53	5310-00-835-2037	14	5
		5310-00-835-2037	14	5
79146	MS35746-1	4730-00-595-0083	17	13
96906	MS35748-1	5330-00-090-2128	17	7
		5330-00-090-2128	17	12
		5330-00-090-2128	17	14
96906	MS35751-77	5306-00-993-6257	30	3
96906	MS35782-5	4820-00-849-1220	16	24
96906	MS500077A60300	4720-01-300-5878	13	1
96906	MS500077A60370	4720-01-307-4745	13	2
96906	MS500077A60500	4720-01-302-2533	13	8
96906	MS500077A60544	4720-01-300-0774	13	9
96906	MS500077A60760	4720-01-301-7997	13	6
96906	MS51330-1	6220-00-337-6471	1	1
96906	MS51500-A6-6	4730-00-322-8457	15	8
		4730-00-322-8457	15	16

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CAGEC	PART NUMBER	NATIONAL STOCK NUMBER	FIGURE NO.	ITEM NO.
		4730-00-322-8457	16	3
96906	MS51500A6	4730-00-995-1559	15	21
96906	MS51504-B6-6	4730-00-812-7999	13	7
		4730-00-812-7999	14	2
		4730-00-812-7999	15	11
96906	MS51861-53	5305-00-476-7387	1	19
96906	MS51887-13Z	4730-00-277-9114	16	5
96906	MS51922-17	5310-00-087-4652	16	27
96906	MS51922-33	5310-00-225-6993	26	1
96906	MS51922-9	5310-00-984-3806	15	25
96906	MS51959-61	5305-00-701-5071	2	4
		5305-00-701-5071	2	17
96906	MS51967-2	5310-00-761-6882	3	9
96906	MS51967-8	5310-00-732-0558	16	12
96906	MS51967-9	5310-00-761-0654	30	6
96906	MS51968-14	5310-00-732-0560	10	3
96906	MS51968-20	5310-00-763-8905	33	2
96906	MS51983-3	5310-00-880-2004	21	4
		5310-00-880-2004	26	6
96906	MS51983-4	5310-00-880-2005	21	4
96906	MS53004-2	2530-00-021-2366	KITS	
96906	MS75021-1	5935-00-846-3883	3	21
		5935-00-846-3883	4	5
96906	MS75021-2	5935-00-846-3884	3	20
96906	MS90725-36	5306-01-075-8519	15	22
96906	MS90725-60	5305-00-269-3211	16	1
96906	MS90726-32	5306-00-225-9087	20	8
96906	MS90727-199	5305-00-928-9636	8	19
62707	M10HH100	5330-01-190-4634	10	15
62707	M10HH129	5330-01-067-3440	10	32
62707	M10HN101	5310-01-043-0596	18	3
		5310-01-043-0596	19	8
62707	M10HN102	5310-01-239-0893	18	1
		5310-01-239-0893	19	12
62707	M10HN136	5310-01-244-6894	11	3
62707	M10HN138	5310-01-183-6831	10	21
62707	M10HN151	5310-01-049-9051	19	11
62707	M10HS115	5365-01-274-0074	10	7
62707	M10HS117	5310-01-062-1532	10	10
62707	M10WH100-1	3040-01-241-4818	10	14
62707	M10WH100-2	3040-01-241-7404	10	17
62707	M10WJ107	3120-01-183-6814	10	33
62707	M10WJ100	3120-01-239-0888	10	16
62707	M10WJ108	5315-01-280-6184	11	2
62707	M10WJ118	5360-01-019-3541	11	7
62707	M10WS109	3120-01-244-4603	10	9
62707	M12WKL10-233	2530-01-243-1461	10	19
		2530-01-243-1461	10	25
62707	M12WKR10-234	3040-01-265-3679	10	19
		3040-01-265-3679	10	25
62703	M12WS122	2530-01-183-6813	10	29
62707	M16HH100	5330-01-239-0885	10	8
62707	M16WJ102	5340-01-239-0883	11	5
62707	M16WJ103	5360-01-220-9373	11	6
62707	M16WJ104	5315-01-220-6245	11	8

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CAGEC	PART NUMBER	NATIONAL STOCK NUMBER	FIGURE NO.	ITEM NO.
06721	N-10790-K	9905-01-260-0220	32	5
06721	N-10790-L	9905-01-260-0221	32	4
06721	N-13047	4010-01-239-5719	17	9
06721	N-20071	2530-01-248-2532	17	10
06721	N-36330-AL	2530-01-260-0223	14	3
06721	N-4730-BF	2530-01-260-0227	14	8
06721	N13048	2530-00-270-3878	17	8
24446	N402P13C6	5310-00-833-3340	16	7
26697	PD0-0107	2530-01-263-5382	21	5
26697	PD0-0285		4	11
26697	PD0-0286		5	2
26697	PD0-0287		5	3
26697	PD0-0289		32	3
09605	P6130A	3110-00-100-0670	19	2
09386	R85770-3	2530-01-048-7842	21	3
66788	SA-870-382	2530-01-259-4428	9	9
66788	SAI-15539	9905-01-235-0397	32	9
66788	SAI-16820	5310-01-270-8921	7	10
66788	SAI#870-15540	9905-01-239-4897	32	8
66788	SAI#870-15541	9905-01-235-0399	32	10
66788	SAM-F870-0002		23	21
66788	SAM-F870-0003	2510-01-243-6397	23	15
66788	SAM-F870-0004	3040-01-243-6475	23	19
66788	SAM-F870-0005	5315-01-245-4177	23	14
OWGN0	SAM-F870-0006	5315-01-245-3890	23	18
66788	SAM-F870-0009	2510-01-267-1366	24	3
66788	SAM-F870-0010	2510-01-266-8219	24	1
66788	SAM-F870-0011	2510-01-267-1365	24	2
66788	SAM-F870-0012	5315-01-244-7901	23	20
66788	SAM-F870-0013	5340-01-245-4253	26	3
66788	SAM-F870-0014	5306-01-244-7541	26	4
66788	SAT-A15013-18		13	29
66788	SAT-A15013-480	4720-01-303-7840	13	18
66788	SAT-A15014-18		13	22
66788	SAT-A15014-480		13	17
66788	SAT-A15039-36		13	28
66788	SAT-A15039-96		13	19
66788	SAT-A16810	5365-01-247-0672	15	31
66788	SAT-E16870	5999-01-243-6371	3	14
66788	SAT-1010	6150-01-239-3636	6	5
66788	SAT-1020	5995-01-235-0473	6	9
66788	SAT-1030	5995-01-239-9320	6	17
66788	SAT-1040	6150-01-235-0417	6	14
66788	SAT-1050	6150-01-239-9387	6	24
66788	SAT-1090	6150-01-248-2549	6	1
66788	SAT-15542	7690-01-258-7366	32	11
66788	SAT-16805	5340-01-246-7859	31	13
66788	SAT-1695		26	5
66788	SA870-208	2530-01-258-7383	9	9
89611	SB4015K	2530-01-243-6372	18	7
18740	SK974-32	4730-01-048-0819	10	30
71785	TRW3-150	5940-01-269-3913	3	7
71785	TRW8-150	5940-01-269-3912	3	13
66788	T870-0001		23	13
51831	VP50K/5	5905-01-238-8177	3	6

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CAGEC	PART NUMBER	NATIONAL STOCK NUMBER	FIGURE NO.	ITEM NO.
12697	VP50K30HM		3	5
81348	WW-P-471AASBCC	4730-00-187-4202	16	21
51831	Z-425	5325-01-270-3721	6	22
81348	ZZ-V-25/TYPE IV/ CLASS1/TR-VC-2	2640-00-606-3550	22	4
55683	01-2371	5315-01-155-0009	23	5
79146	035023	5310-01-268-8983	17	4
79146	035024	5310-01-268-9052	17	3
79146	035079	4730-01-265-2669	17	1
79146	035080	5340-01-289-4466	17	2
19207	0410708-1		31	5
26697	06000000124-R	6220-01-178-8249	2	1
26697	060000012X24	2540-01-187-6526	31	5
26697	06000042415R	6220-00-128-8151	1	18
26697	061CAUTIONOF		32	6
26697	061FOLDOPF10		23	9
26697	061FOLD00PF4	5315-01-043-4187	23	2
26697	061NAMEPLATE		32	1
26697	061000TIWELD		32	2
26697	0610000000B4	2590-01-164-8174	24	7
26697	0610000000B7	5325-01-041-7321	24	8
26697	0610000000B9	5310-01-041-5168	24	4
06853	065439	2530-01-252-6121	15	7
30780	1-2SHPB	4730-00-011-3176	15	1
81343	10 120111B	4730-00-278-5491	13	32
81343	10 120115B	4730-00-200-0436	13	31
17875	100AA	2640-00-050-1229	22	3
26151	1013	2530-00-151-6681	9	1
06848	101622	2530-01-252-6121	15	32
13548	10205R	6220-01-183-4557	2	20
13548	10205Y	6220-01-182-3380	2	20
06853	103385	4820-00-142-3036	16	35
98343	10451E	4730-01-096-3204	17	6
98343	10452S	4730-00-891-0798	17	11
06853	104561	2530-01-396-5518	15	24
06853	106345	2530-01-396-5031	15	19
13548	10700	5325-01-265-3678	2	19
06853	107158	2530-01-397-7031	KITS	
30327	109B-50	4730-00-011-3176	16	33
		4730-00-011-3176	16	33
06853	109165	4720-01-396-5032	13	3
19207	10944642-2	4010-00-443-4845	*	
19207	10959859	2540-01-041-0708	BULK	10
		2540-01-041-0708	BULK	10
06853	111009		12	7
			12	7
92065	1115-215	2530-01-255-8743	21	1
92065	1115-315	2530-01-255-8723	21	2
06853	112472	2590-01-406-0347	16	30
06853	112473		13	20
06853	112479	5340-01-400-1032	16	15
06853	112518		13	5
06853	112520	4730-01-159-6427	15	3
06853	112521	4730-00-970-4292	15	5
99832	112553	3120-01-128-6497	15	17

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CAGEC	PART NUMBER	NATIONAL STOCK NUMBER	FIGURE NO.	ITEM NO.
92967	11433-00	5340-01-250-0785	7	16
92967	11434-00	5340-01-245-3948	7	12
92967	11435-00	5305-01-198-4649	7	15
92967	11436-00	2510-01-243-4940	27	2
92967	11438-00	2510-01-191-6644	27	3
92967	11439-00	5305-01-195-5042	7	14
92967	11441-00	5340-01-245-3947	7	19
92967	11442-00	5365-01-198-6608	7	11
92967	11443-00	5305-01-244-7970	7	2
92967	11444-00	5340-01-245-3949	7	18
92967	11445-00	5330-01-191-3457	7	17
92967	11446-00	4710-01-243-3391	7	6
92967	11448-00	5306-01-197-1491	28	5
92967	11449-00	5310-01-194-5006	28	7
92967	11450-01	2530-01-178-7227	28	2
92967	11450-02	2530-01-178-7228	28	4
92967	11451-00	2530-01-174-0464	28	1
92967	11452-00	5310-01-244-7572	7	9
92967	11455-00		7	1
92967	11456-00	5305-01-192-5742	7	5
92967	11514-00	5310-01-192-9307	7	4
08806	1156	6240-00-924-7526	1	17
19207	11639519-2	5330-00-462-0907	1	14
19207	12357778-1		9	7
19207	12357778-2		9	8
19207	12357779-1		9	5
19207	12357779-2		9	6
19207	12357780-1		9	3
19207	12357780-2		9	4
19207	12357788-1	2530-01-302-2583	14	1
19207	12357788-2	2530-01-303-0085	14	1
19207	12357803	2530-01-301-8094	16	2
19207	12357812	2530-01-312-0340	14	3
19207	12357829	5340-01-303-1656	16	8
19207	12357831	4820-00-057-0694	16	10
19207	12357833	2530-01-155-5731	15	18
19207	12375837	6220-01-372-3883	1	9
19207	12375838		1	15
19207	12375841	6220-01-359-2870	1	12
19207	12461842	5315-01-235-0429	25	1
09386	13989	5307-00-637-1084	19	6
79470	1468X6X6	4730-01-096-9128	17	5
79470	1468X8	4730-01-091-8032	16	26
79470	1468X8X8	4730-01-134-7759	15	39
79470	1469X6X8	4730-01-134-3563	15	40
79470	1469X8X4	4730-01-115-7362	15	36
80540	15-7.5	2640-01-254-5392	22	1
06721	1521	5340-01-277-5066	13	33
22271	16029	5310-01-160-4550	10	34
18889	171027	5307-00-899-7061	18	8
24617	192075	4730-00-196-1504	16	4
62607	194	6240-00-944-1264	2	2
06853	200235		12	5
			12	5
06853	204235	5310-01-055-8817	16	29

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CAGEC	PART NUMBER	NATIONAL STOCK NUMBER	FIGURE NO.	ITEM NO.
		5310-01-055-8817	16	29
06853	205102	4730-01-415-1004	15	13
06853	205103	4730-00-288-9490	15	10
		4730-00-288-9490	15	29
06853	205104	4730-00-393-3809	15	12
26697	21280		33	1
06853	212862	4730-00-202-6491	16	16
26697	21707		33	
06853	217690	4730-00-526-0284	15	9
		4730-00-526-0284	15	33
06853	220475	4730-00-409-7854	16	17
06853	220722	4730-01-406-0345	15	20
62707	2214-05		28	3
06853	221825	4730-01-078-4317	15	28
		4730-01-078-4317	16	23
06853	222062	4730-00-143-9282	15	2
06853	222063	4730-00-837-1177	15	34
08645	230130	3120-00-331-7635	15	4
06853	234680	4730-01-407-9282	16	22
06853	246089	9330-00-177-8445	13	30
06853	246090	4730-01-066-3363	13	30
06853	246115	4720-01-014-4915	BULK	30
06853	246623		13	24
06853	247608	4730-00-434-6396	13	30
06853	249226	4730-01-407-9281	16	14
		4730-01-407-9281	16	34
51831	2575		6	23
51831	2873		6	21
06853	290964	5305-01-409-0183	16	28
06853	291452	4730-01-400-3146	12	4
		4730-01-400-3146	12	4
06853	298070		12	9
06853	298469		12	6
			12	6
06853	298476	5310-01-406-5462	16	32
		5310-01-406-5462	16	32
06853	298534		12	3
			12	3
			12	3
94231	3-07620-311	5310-00-004-5033	1	5
26151	3009	5330-00-615-1843	20	1
26697	30112		33	10
66788	302424	2540-01-241-9076	31	14
05573	31884	5305-01-145-7070	3	18
26697	32011954	4720-01-108-1090	13	4
79470	3220X12X6	4730-00-194-0219	16	25
85757	3250-0612	4720-01-180-5152	BULK	40
85757	3250-0816	4720-01-179-2937	BULK	50
40670	3296986	5935-01-038-9629	4	9
18889	3314	3040-01-285-2898	18	12
79470	3350X6	4730-00-277-8257	15	27
92967	34-04	5310-01-194-9211	27	5
79470	3400X6	4730-00-278-4822	14	2
		4730-00-278-4822	14	10
		4730-00-278-4822	15	26



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CAGEC	PART NUMBER	NATIONAL STOCK NUMBER	FIGURE NO.	ITEM NO.
26151	343-4009	5340-01-042-0573	20	2
92967	35-00	5310-01-195-7956	7	3
		5310-01-195-7956	27	4
26151	359-5994		20	4
92967	37-03	5310-01-099-6539	7	13
26151	372-7098	5330-00-931-8736	10	6
		5330-00-931-8736	19	1
62707	38038	5365-01-061-0710	10	11
		5365-01-061-0710	10	37
79470	3950X8	4730-01-159-6427	15	38
81343	4 120111B	4730-00-278-8824	13	32
13548	40022R	6220-01-259-9017	1	21
56697	403117	5310-00-488-3911	10	23
10001	42C14856-305	4010-00-165-6063	23	8
23382	4303	5310-00-680-7297	16	31
		5310-00-680-7297	16	31
91833	4326	5340-01-273-0034	3	3
23540	438	5340-00-518-5678	14	9
01212	443527SS1	5330-01-183-6815	10	27
97271	500168-2	4730-00-906-0982	10	2
62707	500174-2	4730-01-256-9056	10	1
62707	500370-2	5310-01-239-0881	10	12
97271	500371-5	5310-01-288-5668	10	20
62707	500397-9	5306-01-249-4146	10	18
62707	500412-15	5306-01-183-2697	10	24
79136	5100-100MD	5365-00-530-7968	11	4
79470	511-00107-02400	4720-01-320-8870	13	21
79470	511-00107-03000	4720-01-320-8871	13	25
79470	511-00107-04800	4720-01-321-6433	13	26
79470	511-00107-05400	4720-01-321-4422	13	23
79470	511-00107-08000	4720-01-321-2229	13	27
19207	5165104	5310-00-167-0835	12	2
80535	541-2405		23	16
19207	57K1744	2530-01-330-1962	11	1
79146	59A4X14X500	6145-00-615-2019	BULK	70
73331	5939831		2	13
73331	5939841	5330-00-353-0959	2	11
26151	5990	5340-00-615-1856	20	7
81343	6 100115B	4730-01-048-5260	13	31
81343	6-4-6 120424BA	4730-00-813-7811	15	14
82465	60509	5340-01-246-7570	30	4
42280	61-0542-1	5310-00-209-1962	16	19
19207	6152019-1		5	1
18889	63631	2530-00-606-2101	19	4
18889	63637	2530-01-243-4931	18	10
60038	653	3110-00-100-0335	19	3
06853	65344	2530-01-411-5542	12	10
06853	65508	2530-01-396-5514	12	10
92967	7A16-08	5306-01-194-4972	27	1
18889	7000	2530-01-243-4946	18	9
18889	70009CKA	2530-01-243-4946	18	5
19207	7364214	4730-00-278-4822	14	2
18889	74710	2530-00-004-8287	18	13
19207	7526516	6220-00-752-6516	2	16
19207	7526796	5310-00-596-8169	2	18

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CAGEC	PART NUMBER	NATIONAL STOCK NUMBER	FIGURE NO.	ITEM NO.
75175	772-2605	6220-01-198-3814	1	16
19207	7720853	6145-00-152-6499	BULK	80
19207	7720853-AR		6	4
			6	7
			6	12
			6	16
			6	20
			6	26
19207	7722333	5365-00-090-5426	3	22
19207	7723309	5310-00-393-6685	3	1
19207	7731428	5935-00-773-1428	3	19
		5935-00-773-1428	4	6
81343	8 100115B	4730-01-049-1559	13	31
81343	8 120111B	4730-00-054-2572	13	32
81343	8 130109AB	4730-00-011-3176	15	30
26697	8000	2540-01-003-4413	33	
41885	813508	2530-01-327-7781	19	10
92967	817-00	5310-01-098-7245	7	7
19207	8338566	5935-00-572-9180	1	3
		5935-00-572-9180	2	10
19207	8338567	5310-00-833-8567	1	2
		5310-00-833-8567	2	9
92967	837-00	5310-01-098-7246	28	6
92967	841-00	5310-01-098-7827	7	8
98171	900 41 808	5306-01-309-2613	28	20
98171	900-08-011	5365-00-486-2885	8	8
		5365-00-486-2885	8	17
98171	90008002	5340-01-096-7556	28	9
26697	9001		33	10
26697	9002		33	9
26697	9003		33	6
98171	90038083	2530-01-046-4695	28	8
26697	9004		33	1
98171	90041823	5306-01-304-5201	27	6
96906	90726-164		33	5
98171	910-10-108	2510-01-061-0429	27	8
98171	910-15-015	2530-01-177-3048	8	11
98171	910-36-078	5365-01-061-0714	8	9
98171	91010060		8	2
98171	91018039	5340-01-304-7898	28	19
98171	91028051	2530-01-052-4018	8	5
98171	91028089	9320-00-620-0063	8	16
98171	91038290		8	18
98171	91038475	2530-01-209-3473	28	13
98171	915-57-172	2510-01-062-1920	27	7
98171	91518041	5340-01-312-4926	8	25
98171	91544137		28	12
98171	930-03-345	5305-01-061-1416	8	20
98171	930-03-935	5305-01-061-2973	8	1
98171	930-04-239	5305-01-061-0734	8	13
98171	93003383		28	14
98171	93201045	5305-01-322-2481	8	26
		5305-01-322-2481	28	21
98171	934 00 488	5310-01-061-1311	8	22
		5310-01-061-1311	28	10

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CAGEC	PART NUMBER	NATIONAL STOCK NUMBER	FIGURE NO.	ITEM NO.
98171	934 00 492	5310-01-061-1310	8	6
98171	934 00 498	5310-01-061-1312	8	14
98171	934 00 500	5310-01-061-1307	8	3
		5310-01-061-1307	27	10
		5310-01-061-1307	28	15
98171	934 00 506	5310-01-309-6495	8	23
		5310-01-309-6495	28	17
98171	936 00 168	5310-01-308-5957	8	4
		5310-01-308-5957	28	16
98171	936 00 174	5310-01-309-9406	8	24
		5310-01-309-9406	28	18
98171	936-00-162	5310-01-061-0690	8	15
98171	936-00-168	5310-01-308-5957	27	9
98171	93900025	5310-00-823-8803	28	11
13548	94902	6220-01-067-5264	6	11
		6220-01-067-5264	6	15
		6220-01-067-5264	6	25
13548	94926	2540-01-068-4746	6	27
62173	9500	2530-01-240-8608	16	20
18889	96218	5306-01-244-6869	18	11
13548	98007R	9905-01-069-7282	31	9

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FIGURE	ITEM	NATIONAL STOCK NUMBER	CAGEC	PART NUMBER
BULK	10	2540-01-041-0708	19207	10959859
BULK	10	2540-01-041-0708	19207	10959859
BULK	20	4720-01-003-6706	30327	C608
BULK	30	4720-01-014-4915	06853	246115
BULK	40	4720-01-180-5152	85757	3250-0612
BULK	50	4720-01-179-2937	85757	3250-0816
BULK	60	5510-00-274-4994	81348	MML736TY3 OAK/GR 22X8
BULK	70	6145-00-615-2019	79146	59A4X14X500
BULK	80	6145-00-152-6499	19207	7720853
KIT		2530-00-021-2366	96906	MS53004-2
KIT		2530-01-397-7031	06853	107158
1	1	6220-00-337-6471	96906	MS51330-1
1	2	5310-00-833-8567	19207	8338567
1	3	5935-00-572-9180	19207	8338566
1	4	6240-00-019-0877	58536	A52463-1-08
1	5	5310-00-004-5033	94231	3-07620-311
1	6	5305-00-115-9526	80204	B1821BH038C075D
1	7	5305-00-721-5492	80204	B1821BH038C063N
1	8	5310-00-637-9541	96906	MS35338-46
1	9	6220-01-372-3883	19207	12375837
1	10		58536	A52463-1-09
1	11	6240-00-044-6914	58536	A52463-2-10
1	12	6220-01-359-2870	19207	12375841
1	13	6240-00-019-0877	58536	A52463-1-08
1	14	5330-00-462-0907	19207	11639519-2
1	15		19207	12375838
1	16	6220-01-198-3814	75175	772-2605
1	17	6240-00-924-7526	08806	1156
1	18	6220-00-128-8151	26697	06000042415R
1	19	5305-00-476-7387	96906	MS51861-53
1	20	5310-00-818-6460	96906	MS35649-23
1	21	6220-01-259-9017	13548	40022R
1	22	5305-00-855-0964	96906	MS24629-48
2	1	6220-01-173-2939	26697	JPO-0094
2	1	6220-01-178-8249	26697	06000000124-R
2	2	6240-00-944-1264	62607	194
2	3	6220-00-299-7425	96906	MS35421-1
2	3	6220-00-299-7426	96906	MS35421-2
2	4	5305-00-701-5071	96906	MS51959-61
2	5	5305-00-984-6211	96906	MS35206-264
2	6	5310-00-045-3296	96906	MS35338-43
2	7	5310-00-934-9758	96906	MS35649-202
2	8	6220-00-577-3434	96906	MS35423-1
2	8	6220-00-726-1916	96906	MS35423-2
2	9	5310-00-833-8567	19207	8338567
2	10	5935-00-572-9180	19207	8338566
2	11	5330-00-353-0959	73331	5939841
2	12	5999-00-057-2929	96906	MS27148-2
2	13		73331	5939831
2	14	6240-00-019-0877	58536	A52463-1-08
2	15	6220-00-299-7425	96906	MS35421-1
2	15	6220-00-299-7426	96906	MS35421-2
2	16	6220-00-752-6516	19207	7526516
2	17	5305-00-701-5071	96906	MS51959-61

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FIGURE	ITEM	NATIONAL STOCK NUMBER	CAGEC	PART NUMBER
2	18	5310-00-596-8169	19207	7526796
2	19	5325-01-265-3678	13548	10700
2	20	6220-01-183-4557	13548	10205R
2	20	6220-01-182-3380	13548	10205Y
3	1	5310-00-393-6685	19207	7723309
3	2	5310-00-934-9739	96906	MS35649-242
3	3	5340-01-273-0034	91833	4326
3	4	5305-00-889-2997	96906	MS35206-215
3	6	5905-01-238-8177	51831	VP50K/5
3	7	5940-01-269-3913	71785	TRW3-150
3	8	5310-00-176-6384	96906	MS17830-06C
3	9	5310-00-761-6882	96906	MS51967-2
3	10	5310-00-582-5965	96906	MS35338-44
3	11	5310-00-823-8804	96906	MS27183-9
3	12	5340-01-159-1183	75272	COV-1709
3	13	5940-01-269-3912	71785	TRW8-150
3	14	5999-01-243-6371	66788	SAT-E16870
3	15	5305-00-988-1725	96906	MS35206-281
3	16	5305-00-984-6212	96906	MS35206-265
3	17		26697	JP0-0031
3	18	5305-01-145-7070	05573	31884
3	19	5935-00-773-1428	19207	7731428
3	20	5935-00-846-3884	96906	MS75021-2
3	21	5935-00-846-3883	96906	MS75021-1
3	22	5365-00-090-5426	19207	7722333
4	1		26697	MP5-0091-407
4	2		26697	MP5-0105-6
4	3	2590-01-003-9416	16236	CS-2590-SV-0703
4	3		26697	MP0-0900
4	4	5935-01-211-4434	26697	JP0-0031
4	5	5935-00-846-3883	96906	MS75021-1
4	6	5935-00-773-1428	19207	7731428
4	7	5305-00-988-1724	96906	MS35206-280
4	8	5305-00-984-5675	96906	MS35206-295
4	9	5935-01-038-9629	40670	3296986
4	10		26697	MP5-0094-6
4	11		26697	PD0-0285
5	1		19207	6152019-1
5	2		26697	PD0-0286
5	3		26697	PD0-0287
6	1	6150-01-248-2549	66788	SAT-1090
6	2	5940-00-143-4780	96906	MS25036-108
6	3	5940-00-143-4777	96906	MS25036-157
6	4		19207	7720853-AR
6	5	6150-01-239-3636	66788	SAT-1010
6	6	5940-00-143-4780	96906	MS25036-108
6	7		19207	7720853-AR
6	8	5940-00-143-4777	96906	MS25036-157
6	9	5995-01-235-0473	66788	SAT-1020
6	10	5940-00-143-4777	96906	MS25036-157
6	11	6220-01-067-5264	13548	94902
6	12		19207	7720853-AR
6	13	5940-00-143-4780	96906	MS25036-108
6	14	6150-01-235-0417	66788	SAT-1040
6	15	6220-01-067-5264	13548	94902

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6	16		19207	7720853-AR
6	17	5995-01-239-9320	66788	SAT-1030
6	18	5940-00-143-4780	96906	MS25036-108
6	19	5940-00-143-4777	96906	MS25036-157
6	20		19207	7720853-AR
6	21		51831	2873
6	22	5325-01-270-3721	51831	Z-425
6	23		51831	2575
6	24	6150-01-239-9387	66788	SAT-1050
6	25	6220-01-067-5264	13548	94902
6	26		19207	7720853-AR
6	27	2540-01-068-4746	13548	94926
6	28	5935-00-115-2307	96906	MS27144-2
7	1		92967	11455-00
7	2	5305-01-244-7970	92967	11443-00
7	3	5310-01-195-7956	92967	35-00
7	4	5310-01-192-9307	92967	11514-00
7	5	5305-01-192-5742	92967	11456-00
7	6	4710-01-243-3391	92967	11446-00
7	7	5310-01-098-7245	92967	817-00
7	8	5310-01-098-7827	92967	841-00
7	9	5310-01-244-7572	92967	11452-00
7	10	5310-01-270-8921	66788	SAI-16820
7	11	5365-01-198-6608	92967	11442-00
7	12	5340-01-245-3948	92967	11434-00
7	13	5310-01-099-6539	92967	37-03
7	14	5305-01-195-5042	92967	11439-00
7	15	5305-01-198-4649	92967	11435-00
7	16	5340-01-250-0785	92967	11433-00
7	17	5330-01-191-3457	92967	11445-00
7	18	5340-01-245-3949	92967	11444-00
7	19	5340-01-245-3947	92967	11441-00
8	1	5305-01-061-2973	98171	930-03-935
8	2		98171	91010060
8	3	5310-01-061-1307	98171	934 00 500
8	4	5310-01-308-5957	98171	936 00 168
8	5	2530-01-052-4018	98171	91028051
8	6	5310-01-061-1310	98171	934 00 492
8	7	5310-00-595-6612	96906	MS20002-12
8	8	5365-00-486-2885	98171	900-08-011
8	9	5365-01-061-0714	98171	910-36-078
8	10	5305-00-947-4364	80204	B1821BH075C600N
8	11	2530-01-177-3048	98171	910-15-015
8	12	5305-00-947-4354	80204	B1821BH075C300N
8	13	5305-01-061-0734	98171	930-04-239
8	14	5310-01-061-1312	98171	934 00 498
8	15	5310-01-061-0690	98171	936-00-162
8	16	9320-00-620-0063	98171	91028089
8	17	5365-00-486-2885	98171	900-08-011
8	19	5305-00-928-9636	96906	MS90727-199
8	20	5305-01-061-1416	98171	930-03-345
8	21	5310-00-823-8803	96906	MS27183-21
8	22	5310-01-061-1311	98171	934 00 488
8	23	5310-01-309-6495	98171	934 00 506
8	24	5310-01-309-9406	98171	936 00 174

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8	25	5340-01-312-4926	98171	91518041
8	26	5305-01-322-2481	98171	93201045
9	1	2530-00-151-6681	26151	1013
9	2		26697	A19T75LHDA-71
9	3		19207	12357780-1
9	4		19207	12357780-2
9	5		19207	12357779-1
9	6		19207	12357779-2
9	7		19207	12357778-1
9	8		19207	12357778-2
9	9	2530-01-260-0224	66788	D22AX503-209
9	9	2530-01-259-4428	66788	SA-870-382
9	9	2530-01-258-7383	66788	SA870-208
10	1	4730-01-256-9056	62707	500174-2
10	2	4730-00-906-0982	97271	500168-2
10	3	5310-00-732-0560	96906	MS51968-14
10	4	5310-00-194-1483	96906	MS35333-44
10	5	5305-00-939-0847	96906	MS35308-417
10	6	5330-00-931-8736	26151	372-7098
10	7	5365-01-274-0074	62707	M10HS115
10	8	5330-01-239-0885	62707	M16HH100
10	9	3120-01-244-4603	62707	M10WS109
10	10	5310-01-062-1532	62707	M10HS117
10	11	5365-01-061-0710	62707	38038
10	12	5310-01-239-0881	62707	500370-2
10	13	5310-00-261-7340	96906	MS35338-8
10	14	3040-01-241-4818	62707	M10WH100-1
10	15	5330-01-190-4634	62707	M10HH100
10	16	3120-01-239-0888	62707	M10WJ100
10	17	3040-01-241-7404	62707	M10WH100-2
10	18	5306-01-249-4146	62707	500397-9
10	19	2530-01-243-1461	62707	M12WKL10-233
10	19	3040-01-265-3679	62707	M12WKR10-234
10	20	5310-01-288-5668	97271	500371-5
10	21	5310-01-183-6831	62707	M10HN138
10	22		26697	MP0-0033
10	23	5310-00-488-3911	56697	403117
10	24	5306-01-183-2697	62707	500412-15
10	25	2530-01-243-1461	62707	M12WKL10-233
10	25	3040-01-265-3679	62707	M12WKR10-234
10	26	5310-01-202-6776	26697	MP0-0330
10	27	5330-01-183-6815	01212	443527SS1
10	28	3120-01-042-2579	26697	MP0-0045
10	29	2530-01-183-6813	62703	M12WS122
10	30	4730-01-048-0819	18740	SK974-32
10	31	5310-01-202-8985	26697	MD0-0088
10	32	5330-01-067-3440	62707	M10HH129
10	33	3120-01-183-6814	62707	M10WJ107
10	34	5310-01-160-4550	22271	16029
10	35		26697	MP0-0035
10	36		26697	MP0-0034
10	37	5365-01-061-0710	62707	38038
11	1	2530-01-330-1962	19207	57K1744
11	2	5315-01-280-6184	62707	M10WJ108
11	3	5310-01-244-6894	62707	M10HN136

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FIGURE	ITEM	NATIONAL STOCK NUMBER	CAGEC	PART NUMBER
11	4	5365-00-530-7968	79136	5100-100MD
11	5	5340-01-239-0883	62707	M16WJ102
11	6	5360-01-220-9373	62707	M16WJ103
11	7	5360-01-019-3541	62707	M10WJ118
11	8	5315-01-220-6245	62707	M16WJ104
12	1	2530-01-397-7031	06853	107158
12	1	5315-00-839-5822	96906	MS24665-353
12	1	2530-01-397-7031	06853	107158
12	2	5310-00-167-0835	19207	5165104
12	3		06853	298534
12	3		06853	202678
12	3		06853	298534
12	4	4730-01-400-3146	06853	291452
12	5		06853	200235
12	6		06853	298469
12	7		06853	111009
12	8	5315-00-842-3044	96906	MS24665-283
12	9	5315-00-842-3044	96906	MS24665-283
12	9		06853	298070
12	10	2530-01-411-5542	06853	65344
12	10	2530-01-396-5514	06853	65508
13	1	4720-01-300-5878	96906	MS500077A60300
13	2	4720-01-307-4745	96906	MS500077Z60370
13	3	4720-01-396-5032	06853	109165
13	4	4720-01-108-1090	26697	32011954
13	5		06853	112518
13	6	4720-01-301-7997	96906	MS500077A60760
13	7	4730-00-812-7999	96906	MS51504-B6-6
13	8	4720-01-302-2533	96906	MS500077A60500
13	9	4720-01-300-0774	96906	MS500077A60544
13	10	5340-00-905-2691	96906	MS21333-12
13	11	5310-00-582-5965	88044	AN935-416
13	12	5305-00-993-2461	96906	MS35207-281
13	13	5975-00-985-6630	96906	MS3367-3-0
13	14		26697	MP5-0162-2
13	15		26697	MP5-0164-2
13	16	4730-00-069-1186	16662	AC2569
13	17		66788	SAT-A15014-480
13	18	4720-01-303-7840	66788	SAT-A15013-480
13	19		66788	SAT-A15039-96
13	20		06853	112473
13	21	4720-01-320-8870	79470	511-00107-02400
13	22		66788	SAT-A15014-18
13	23	4720-01-321-4422	79470	511-00107-05400
13	24		06853	246623
13	25	4720-01-320-8871	79470	511-00107-03000
13	26	4720-01-321-6433	79470	511-00107-04800
13	27	4720-01-321-2229	79470	511-00107-08000
13	28		66788	SAT-A15039-36
13	29		66788	SAT-A15013-18
13	30	9330-00-177-8445	06853	246089
13	30	4730-01-066-3363	06853	246090
13	30	4730-00-434-6396	06853	247608
13	31	4730-00-200-0436	81343	10 120115B
13	31	4730-01-048-5260	81343	6 100115B



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13	31	4730-01-049-1559	81343	8 100115B
13	32	4730-00-278-5491	81343	10 120111B
13	32	4730-00-278-8824	81343	4 120111B
13	32	4730-00-054-2572	81343	8 120111B
13	33	5340-01-277-5066	06721	1521
14	1	2530-01-302-2583	19207	12357788-1
14	1	2530-01-303-0085	19207	12357788-2
14	2	4730-00-278-4822	79470	3400X6
14	2	4730-00-278-4822	19207	7364214
14	2	4730-00-812-7999	96906	MS51504-B6-6
14	3	2530-01-260-0223	06721	N-36330-AL
14	3	2530-01-312-0340	19207	12357812
14	4	5310-00-820-6653	96906	MS35338-50
14	4	5310-01-205-2838	26697	MP0-0455
14	5	5310-00-835-2037	96906	MS35691-53
14	5	5310-00-835-2037	96906	MS35691-53
14	6	5310-00-851-2677	96906	MS35691-49
14	7	5310-00-820-6653	96906	MS35338-50
14	8	2530-01-260-0227	06721	N-4730-BF
14	9	5340-00-518-5678	23540	438
14	10	4730-00-278-4822	79470	3400X6
15	1	4730-00-011-3176	30780	1-2SHPB
15	2	4730-00-143-9282	06853	222062
15	3	4730-01-159-6427	06853	112520
15	4	3120-00-331-7635	08645	230130
15	5	4730-00-970-4292	06853	112521
15	6	5310-00-013-8572	96906	MS35333-32
15	7	2530-01-252-6121	06853	065439
15	8	4730-00-322-8457	96906	MS51500-A6-6
15	9	4730-00-526-0284	06853	217690
15	10	4730-00-288-9490	06853	205103
15	11	4730-00-812-7999	96906	MS51504-B6-6
15	12	4730-00-393-3809	06853	205104
15	13	4730-01-415-1004	06853	205102
15	14	4730-00-813-7811	81343	6-4-6 120424BA
15	15	4730-00-069-1187	79146	H0169-6X4
15	16	4730-00-322-8457	96906	MS51500-A6-6
15	17	3120-01-128-6497	99832	112553
15	18	2530-01-155-5731	19207	12357833
15	19	2530-01-396-5031	06853	106345
15	20	4730-01-406-0345	06853	220722
15	21	4730-00-995-1559	96906	MS51500A6
15	22	5306-01-075-8519	96906	MS90725-36
15	23	5310-00-809-3078	96906	MS27183-11
15	24	2530-01-396-5518	06853	104561
15	25	5310-00-984-3806	96906	MS51922-9
15	26	4730-00-278-4822	79470	3400X6
15	27	4730-00-277-8257	79470	3350X6
15	28	4730-01-078-4317	06853	221825
15	29	4730-00-288-9490	06853	205103
15	30	4730-00-011-3176	81343	8 130109AB
15	31	5365-01-247-0672	66788	SAT-A16810
15	32	2530-01-252-6121	06848	101622
15	33	4730-00-526-0284	06853	217690
15	34	4730-00-837-1177	06853	222063

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15	35	4730-00-988-1714	96906	MS20826-6
15	36	4730-01-115-7362	79470	1469X8X4
15	37	5310-00-582-6714	96906	MS35333-49
15	38	4730-01-159-6427	79470	3950X8
15	39	4730-01-134-7759	79470	1468X8X8
15	40	4730-01-134-3563	79470	1469X6X8
16	1	5305-00-269-3211	96906	MS90725-60
16	2	2530-01-301-8094	19207	12357803
16	3	4730-00-322-8457	96906	MS51500-A6-6
16	4	4730-00-196-1504	24617	192075
16	5	4730-00-277-9114	96906	MS51887-13Z
16	6	5305-00-068-0509	80204	B1821BH025C125N
16	7	5310-00-833-3340	24446	N402P13C6
16	8	5340-01-303-1656	19207	12357829
16	9	5325-00-795-0719	96906	MS35489-43
16	10	4820-00-057-0694	19207	12357831
16	11	5310-00-208-1919	88044	AN365-420A
16	12	5310-00-732-0558	96906	MS51967-8
16	13	5310-00-637-9541	96906	MS35338-46
16	14	4730-01-407-9281	06853	249226
16	15	5340-01-400-1032	06853	112479
16	16	4730-00-202-6491	06853	212862
16	17	4730-00-409-7854	06853	220475
16	18	5305-00-725-2317	80204	B1821BH038C150N
16	19	5310-00-209-1962	42280	61-0542-1
16	20	2530-01-240-8608	62173	9500
16	21	4730-00-187-4202	81348	WW-P-471AASBCC
16	22	4730-01-407-9282	06853	234680
16	23	4730-01-078-4317	06853	221825
16	24	4820-00-849-1220	96906	MS35782-5
16	25	4730-00-194-0219	79470	3220X12X6
16	26	4730-01-091-8032	79470	1468X8
16	27	5310-00-087-4652	96906	MS51922-17
16	28	5305-01-409-0183	06853	290964
16	29	5310-01-055-8817	06853	204235
16	29	5310-01-055-8817	06853	204235
16	30	2590-01-406-0347	06853	112472
16	31	5310-00-680-7297	23382	4303
16	31	5310-00-680-7297	23382	4303
16	32	5310-01-406-5462	06853	298476
16	32	5310-01-406-5462	06853	298476
16	33	4730-00-011-3176	30327	109B-50
16	33	4730-00-011-3176	30327	109B-50
16	34	4730-01-407-9281	06853	249226
16	35	4820-00-142-3036	06853	103385
17	1	4730-01-265-2669	79146	035079
17	2	5340-01-289-4466	79146	035080
17	3	5310-01-268-9052	79146	035024
17	4	5310-01-268-8983	79146	035023
17	5	4730-01-096-9128	79470	1468X6X6
17	6	4730-01-096-3204	98343	10451E
17	7	5330-00-090-2128	96906	MS35748-1
17	8	2530-00-270-3878	06721	N13048
17	9	4010-01-239-5719	06721	N-13047
17	10	2530-01-248-2532	06721	N-20071

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17	11	4730-00-891-0798	98343	10452S
17	12	5330-00-090-2128	96906	MS35748-1
17	13	4730-00-595-0083	79146	MS35746-1
17	14	5330-00-090-2128	96906	MS35748-1
17	15	4720-01-261-7950	26697	MPO-0635
17	16	4730-01-246-2846	26697	KP0-0164
17	17	5310-01-204-3352	26697	KP0-0162
17	18	5310-01-204-4210	26697	KP0-0163
17	19	4730-01-271-2852	26697	MP5-0169-8
18	1	5310-01-239-0893	62707	M10HN102
18	2	5310-00-620-2486	56697	A150034
18	3	5310-01-043-0596	62707	M10HN101
18	4	3110-00-293-8998	60038	HM212049
18	5	2530-01-243-4946	18889	70009CKA
18	6	3110-00-293-8997	60038	HM212011
18	7	2530-01-243-6372	89611	SB4015K
18	8	5307-00-899-7061	18889	171027
18	9	2530-01-243-4946	18889	7000
18	10	2530-01-243-4931	18889	63637
18	11	5306-01-244-6869	18889	96218
18	12	3040-01-285-2898	18889	3314
18	13	2530-00-004-8287	18889	74710
18	14	3110-00-618-0249	60038	HM218210
18	15	3110-00-618-0248	60038	HM218248
19	1	5330-00-931-8736	26151	372-7098
19	2	3110-00-100-0670	09605	P6130A
19	3	3110-00-100-0335	60038	653
19	4	2530-00-606-2101	18889	63631
19	5	2530-01-191-6232	26697	MPO-0262
19	6	5307-00-637-1084	09386	13989
19	7	3110-00-829-0575	96906	MS19081-113
19	8	5310-01-043-0596	62707	M10HN101
19	9	5310-01-205-3225	26697	MP0-0123
19	10	2530-01-327-7781	41885	813508
19	11	5310-01-049-9051	62707	M10HN151
19	12	5310-01-239-0893	62707	M10HN102
20	1	5330-00-615-1843	26151	3009
20	2	5340-01-042-0573	26151	343-4009
20	3		26697	MP0-0541
20	4		26151	359-5994
20	5	5330-01-288-8988	26697	MP0-0543
20	6	5305-01-280-7680	26697	MP0-0545
20	7	5340-00-615-1856	26151	5990
20	8	5306-00-225-9087	96906	MS90726-32
20	9	5310-00-407-9566	96906	MS35338-45
21	1	2530-01-255-8743	92065	1115-215
21	2	2530-01-255-8723	92065	1115-315
21	3	2530-01-048-7842	09386	R85770-3
21	4	5310-00-880-2004	96906	MS51983-3
21	4	5310-00-880-2005	96906	MS51983-4
21	5	2530-01-263-5382	26697	PD0-0107
22	1	2640-01-254-5392	80540	15-7.5
22	2	2610-00-052-7969	81348	GP2/10.00R15/TR7
22	3	2640-00-050-1229	17875	8A/ON CENTER
22				100AA

## CROSS REFERENCE INDEXES

## FIGURE AND ITEM NUMBER INDEX

FIGURE	ITEM	NATIONAL STOCK NUMBER	CAGEC	PART NUMBER
22	4	2640-00-060-3550	81348	ZZ-V-25/TYPE IV/ CLASS1/TR-VC-2
22	5	2610-01-325-1934	81348	GP2STYLXTYRBCLR/ T/10.00R15/J/LTR
23	1	5365-01-189-0554	26697	MP0-0996
23	2	5315-01-043-4187	26697	061FOLD00PF4
23	3	5315-01-043-4188	26697	BF 1-0063
23	4		26697	MP5-0303
23	5	5315-01-155-0009	55683	01-2371
23	6	5315-01-201-1999	26697	MP0-0492
23	7	5315-01-203-6308	26697	MP0-0296
23	8	4010-00-165-6063	10001	42C14856-305
23	9		26697	061FOLD00PF10
23	10	5340-01-182-1081	26697	MP1-0014
23	11	5365-01-182-1271	26697	MP1-0015
23	12	5315-01-257-4817	26697	MP0-0902
23	13		66788	T870-0001
23	14	5315-01-245-4177	66788	SAM-F870-0005
23	15	2510-01-243-6397	66788	SAM-F870-0003
23	16		80535	541-2405
23	17	5315-00-234-1670	96906	MS24665-630
23	18	5315-01-245-3890	OWGN0	SAM-F870-0006
23	19	3040-01-243-6475	66788	SAM-F870-0004
23	20	5315-01-244-7901	66788	SAM-F870-0012
23	21		66788	SAM-F870-0002
24	1	2510-01-266-8219	66788	SAM-F870-0010
24	2	2510-01-267-1365	66788	SAM-F870-0011
24	3	2510-01-267-1366	66788	SAM-F870-0009
24	4	5310-01-041-5168	26697	0610000000B9
24	5	5360-01-042-2666	26697	MP5-1416
24	6	5315-01-043-5478	26697	MPO0492
24	7	2590-01-164-8174	26697	0610000000B4
24	8	5325-01-041-7321	26697	0610000000B7
24	9		26697	MPU-0296
24	10	5340-01-182-1075	26697	BC1-0039
25	1	5315-01-235-0429	19207	12461842
25	1	5315-00-630-4819	26697	MP0-0897
26	1	5310-00-225-6993	96906	MS51922-33
26	2	5310-00-809-3079	96906	MS27183-19
26	3	5340-01-245-4253	66788	SAM-F870-0013
26	4	5306-01-244-7541	66788	SAM-F870-0014
26	5		66788	SAT-1695
26	6	5310-00-880-2004	96906	MS51983-3
27	1	5306-01-194-4972	92967	7A16-08
27	2	2510-01-243-4940	92967	11436-00
27	3	2510-01-191-6644	92967	11438-00
27	4	5310-01-195-7956	92967	35-00
27	5	5310-01-194-9211	92967	34-04
27	6	5306-01-304-5201	98171	90041823
27	7	2510-01-062-1920	98171	915-57-172
27	8	2510-01-061-0429	98171	910-10-108
27	9	5310-01-308-5957	98171	936-00-168
27	10	5310-01-061-1307	98171	934 00 500
28	1	2530-01-174-0464	92967	11451-00
28	2	2530-01-178-7227	92967	11450-01

## SECTION IV

TM5-2330-378-14&amp;P

## CROSS REFERENCE INDEXES

## FIGURE AND ITEM NUMBER INDEX

FIGURE	ITEM	NATIONAL STOCK NUMBER	CAGEC	PART NUMBER
28	3		62707	2214-05
28	4	2530-01-178-7228	92967	11450-02
28	5	5306-01-197-1491	92967	11448-00
28	6	5310-01-098-7246	92967	837-00
28	7	5310-01-194-5006	92967	11449-00
28	8	2530-01-046-4695	98171	90038083
28	9	5340-01-096-7556	98171	90008002
28	10	5310-01-061-1311	98171	934 00 488
28	11	5310-00-823-8803	98171	93900025
28	12		98171	91544137
28	13	2530-01-209-3473	98171	91038475
28	14		98171	93003383
28	15	5310-01-061-1307	98171	934 00 500
28	16	5310-01-308-5957	98171	936 00 168
28	17	5310-01-309-6495	98171	934 00 506
28	18	5310-01-309-9406	98171	936 00 174
28	19	5340-01-304-7898	98171	91018039
28	20	5306-01-309-2613	98171	900 41 808
28	21	5305-01-322-2481	98171	93201045
29	1	5510-00-274-4994	81348	MML 736
30	1	5306-01-185-0159	26697	MP0-0919-A
30	2	5340-01-325-2249	26697	MP0-0919-C
30	3	5306-00-993-6257	96906	MS35751-77
30	4	5340-01-246-7570	82465	60509
30	5	5310-00-261-7340	96906	MS35338-8
30	6	5310-00-761-0654	96906	MS51967-9
31	1	5310-00-934-9751	96906	MS35650-302
31	2	9905-00-202-3639	96906	MS35387-2
31	3	5305-00-984-6214	96906	MS35206-267
31	4	5306-01-202-0642	26697	MP0-0482
31	5	2540-01-187-6526	26697	060000012X24
31	5		19207	0410708-1
31	6	2540-01-189-0460	26697	BC0-0002
31	7	5306-01-202-2667	26697	MP0-0489
31	8	9905-00-205-2795	96906	MS35387-1
31	9	9905-01-069-7282	13548	98007R
31	10	5305-00-984-6214	96906	MS35206-267
31	11	5310-00-971-7989	96906	MS35691-5
31	12	5310-00-582-5965	96906	MS35338-44
31	13	5340-01-246-7859	66788	SAT-16805
31	14	2540-01-241-9076	66788	302424
31	15	5305-00-068-0515	80204	B1821BH025F100N
32	1		26697	061NAMEPLATE
32	2		26697	061000T1WELD
32	3		26697	PD0-0289
32	4	9905-01-260-0221	06721	N-10790-L
32	4		26697	KP0-0165
32	5	9905-01-260-0220	06721	N-10790-K
32	5		26697	KP0-0166
32	6		26697	061CAUTIONOF
32	7	5320-00-721-4240	96906	MS24661-225
32	8	9905-01-239-4897	66788	SAI#870-15540
32	9	9905-01-235-0397	66788	SAI-15539
32	10	9905-01-235-0399	66788	SAI#870-15541
32	11	7690-01-258-7366	66788	SAT-15542

SECTION IV

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CROSS REFERENCE INDEXES

FIGURE AND ITEM NUMBER INDEX

FIGURE	ITEM	NATIONAL STOCK NUMBER	CAGEC	PART NUMBER
33		2540-01-003-4413	26697	8000
33			26697	21707
33	1		26697	21280
33	1		26697	9004
33	2	5310-00-763-8905	96906	MS51968-20
33	3	5310-00-820-6653	96906	MS35338-50
33	4	5310-00-823-8803	96906	MS27183-21
33	5		96906	90726-164
33	6		26697	9003
33	7	5315-00-018-7988	96906	MS24665-493
33	8	5310-00-902-6659	96906	MS15795-825
33	9		26697	9002
33	10		26697	30112
33	10		26697	9001

## APPENDIX F EXPENDABLE AND DURABLE ITEMS LIST

### Section I. INTRODUCTION

Paragraph Number	Paragraph Title	Page Number
F-1	Scope .....	F-1
F-2	Explanation of Columns .....	F-1

#### **F-1. SCOPE.**

This appendix lists expendable/durable supplies and materials you will need to operate and maintain the M870/M870A1 semitrailer. This listing is for informational purposes only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, Expendable/Durable Items (Except Medical, Class V, Repair Parts and Heraldic Items), or CTA 8-100, Army Medical Department Expendable/Durable Items.

#### **F-2. EXPLANATION OF COLUMNS.**

There are five columns in the Expendable and Durable Items List (Section II):

**Column (1) - Item Number.** This number is assigned to the entry in the listing and is referenced in the "Initial Setup" of maintenance paragraphs or narrative instructions to identify the material needed (e.g., Sealing Compound, Item 16, Appendix F).

**Column (2) - Level.** This column identifies the lowest level of maintenance that requires the listed item.

C - Operator/Crew  
O - Unit  
F - Direct Support  
H - General Support

**Column (3) - National Stock Number.** This is the national stock number assigned to the item; use it to request or requisition the item.

**Column (4) - Item Name, Description, (CAGEC) Part Number.** This column contains the Federal item name and, if required, a description to identify the item. The last line for each item indicates the Commercial and Government Entity Code (CAGEC) in parentheses followed by the part number, if applicable.

**Column (5) - UM [Unit of Measure]/UI [Unit of Issue].** Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation: DR (drum), EA (each), FT (foot), GL (gallon), LB (pound), OZ (ounce), QT (quart), and SH (sheet). If the unit of measure differs from the unit of issue as shown in the Army Master Data File, requisition the lowest unit of issue that will satisfy your requirements.

## Section II. EXPENDABLE AND DURABLE ITEMS LIST

(1) Item Number	(2) Level	(3) National Stock Number	(4) Item Name, Description (CAGEC) Part Number	(5) UM/UI
1	O	3810-00-205-6790	Alcohol, Denatured, 16-Ounce Bottle (81348) O-E-760	OZ
2	C	7920-00-514-2417	Brush, Acid Swabbing, Box of 144 (81328) HB643	EA
3	O	5350-00-221-0872	Cloth, Abrasive (Crocus), 50-Sheet Package (81348) P-C-548	SH
4	O	7930-00-282-9699	Detergent, General Purpose, 1-Gallon Can (83421)	GL
5	F	3439-01-184-1253	Flux, Solder, 1-Quart Jar (09185) Formula-197	QT
6	C	9150-01-197-7690	Grease, Automotive and Artillery, 1-Pound Can (81349) MIL-G-10924	LB
7	C	9150-01-035-5393	Lubricating Oil, Gear, 5-Gallon Can (81349) MIL-L-2105	GL
8	C		Oil, GOS	
9	C	9150-00-189-6727	Lubricating Oil, OE/HDO 10, 1-Quart Can (81349) MIL-L-2104C	QT
10	C	9150-00-186-6681	Lubricating Oil, OE/HDO 30, 1-Quart Can (81349) MIL-L-2104C	QT
11	C	9150-00-402-4478	Lubricating Oil, OEA, 1-Quart Can (81349) MIL-L-46167	QT
12	C	9150-00-231-2361	Lubricating Oil, Preservative PL-M, 1-Quart Can (81349) MIL-L-3150	QT
13	C	9150-00-231-6686	Lubricating Oil, Preservative PL-S, 1-Quart Can (81348) VV-L-800	QT
14	O	9150-00-205-0928	Petrolatum, Technical, 35-Pound Can (81348) VV-P-236	LB
15	C	7920-00-205-1711	Rag, Wiping, 50-Pound Bale (58336) A-A-331	LB
16	O	8030-00-252-3391	Sealing Compound, 11-Ounce Tube (80064) 1756371	OZ



## Section II. EXPENDABLE AND DURABLE ITEMS LIST (continued)

(1) Item Number	(2) Level	(3) National Stock Number	(4) Item Name, Description (CAGEC) Part Number	(5) UM/UI
17	C	6850-01-092-3550	Silicone Compound, 13.2 Fluid Ounce Aerosol Can (75037) 1609	OZ
18	F	3439-00-824-9856	Solder, Lead, 1-Pound Bar (09185) 44RE	LB
19	C		Solvent, Drycleaning (OK209) Breakthrough	
		6850-01-378-0679	1-Gallon Can	GL
		6850-01-378-0666	55-Gallon Drum	DR
20	O	9905-00-537-8954	Tag, Marker Box of 50 (81349) MIL-T-12755	EA
21	O	8030-00-398-4130	Tape, Antiseizing (Teflon) 1/4 Inch Wide x 260 Inches Long (81349) MIL-T-27730	FT
22	O	5970-00-644-3167	Tape, Insulation, Electrical, 85-Foot Roll (81348) HH-1-510	FT



## **APPENDIX G**

### **ILLUSTRATED LIST OF MANUFACTURED ITEMS**

#### **Section I. INTRODUCTION**

---

#### **INTRODUCTION.**

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- a. This appendix contains complete instructions for making items authorized to be manufactured or fabricated at the Unit level of maintenance.
- b. All bulk materials needed for the manufacture of an item are listed by part number or specification number in the table for each figure in Section II, Manufacturing Instructions.
- c. When manufacturing items, make sure the appropriate tools are used to cut, shape, and thread materials. Make sure hoses are clean and free of dust and moisture before installing after fabrication.
- d. All dimensions given in Section II are in standard units.

Section II. MANUFACTURING INSTRUCTIONS

Figure/Table Number	Figure/Table Title	Page Number
Figure G-1	Electric Circuit—Brake Lights .....	G-2
Table G-1	Wire Length—Brake Lights .....	G-2
Figure G-2	Electric Circuit—Service Lights .....	G-3
Table G-2	Wire Length—Service Lights .....	G-3
Figure G-3	Electric Circuit—Right Turn Signal .....	G-3
Table G-3	Wire Length—Right Turn Signal .....	G-3
Figure G-4	Electric Circuit—Left Turn Signal .....	G-4
Table G-4	Wire Length—Left Turn Signal .....	G-4
Figure G-5	Brake Air Hoses .....	G-4
Table G-5	Air Hose Common Hardware .....	G-4
Figure G-6	Splash Guards .....	G-5
Table G-6	Splash Guard Dimensions .....	G-5

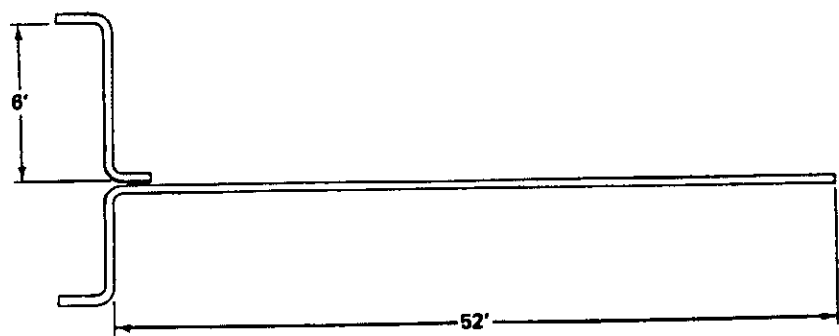


Figure G-1. Electric Circuit—Brake Lights

Table G-1. Wire Length—Brake Lights

Length	Make from:	National Stock Number
58 feet (17.7 m)	Wire	6145-00-615-2019 59A4X14X500 (79146)

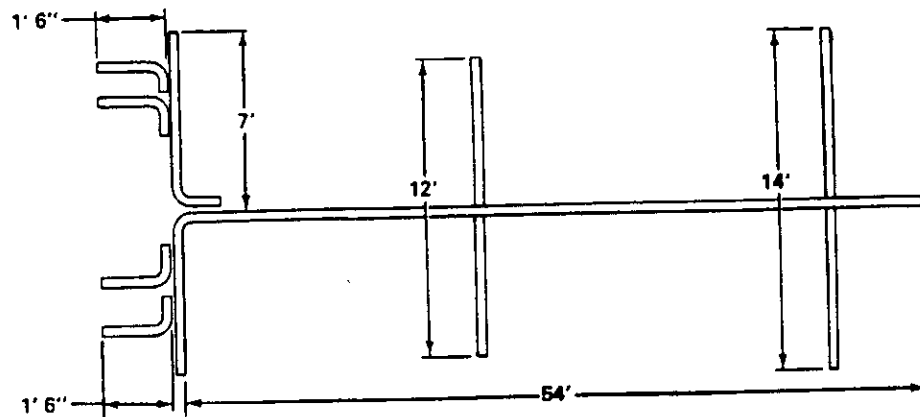


Figure G-2. Electric Circuit—Service Lights

Table G-2. Wire Length—Service Lights

Length	Make from:	National Stock Number
93.4 feet (28.5 m)	Wire	6145-00-615-2019

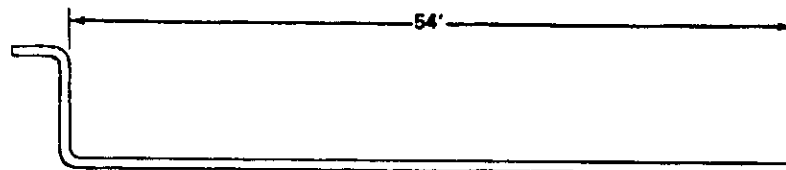
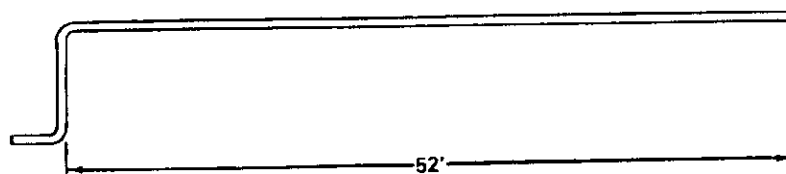


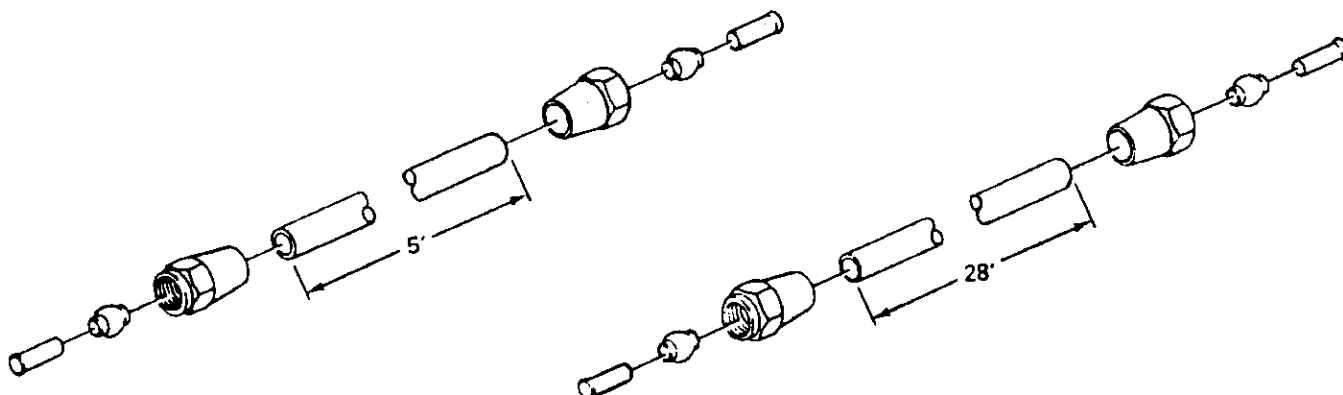
Figure G-3. Electric Circuit—Right Turn Signal

Table G-3. Wire Length—Right Turn Signal

Length	Make from:	National Stock Number
54 feet (16.5 m)	Wire	6145-00-615-2019

**Figure G-4. Electric Circuit—Left Turn Signal****Table G-4. Wire Length—Left Turn Signal**

Length	Make from:	National Stock Number
52 feet (15.9 m)	Wire	6145-00-615-2019

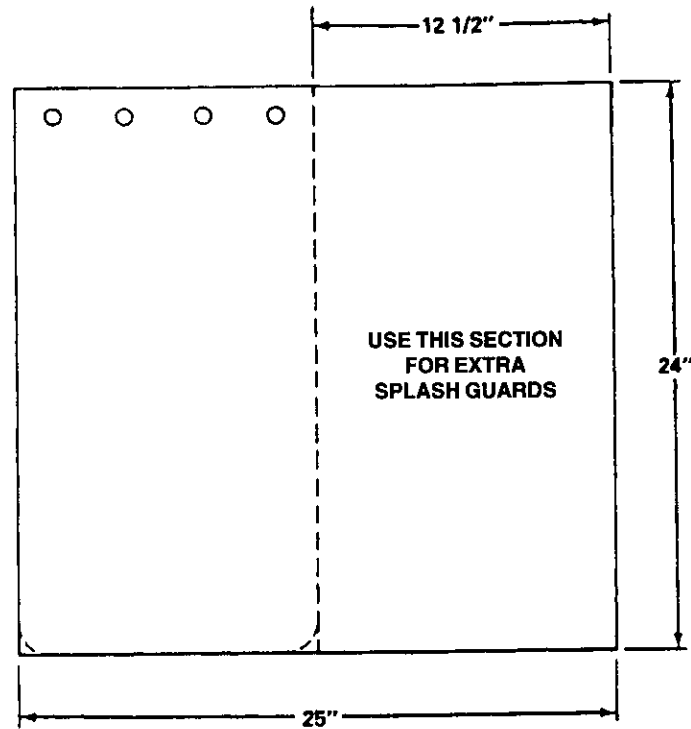
**Figure G-5. Brake Air Hoses****NOTE**

Replace air hoses and fittings as needed. Air hoses may be reused only if sufficient length remains to prevent kinking after assembly. If air hoses are not long enough, replace them.

**Table G-5. Air Hose Common Hardware**

Part Number (CAGEC)*	Nomenclature	National Stock Number
246089 (06853)	3/8-inch tubing, nonmetallic	9330-00-177-8445
247608 (06853)	5/8-inch tube insert	4730-00-434-6396
246090 (06853)	1/2-inch tube insert	4730-01-066-3363
6 100115B (81343)	3/8-inch compression sleeve	4730-01-048-5260
8 100115B (81343)	1/2-inch compression sleeve	4730-01-049-1559
10 120115B (81343)	5/8-inch compression sleeve	4730-00-200-0436
4 120111B (81343)	3/8-inch tube coupling nut	4730-00-278-8824
10 120111B (81343)	5/8-inch tube coupling nut	4730-00-278-5491
8 120111B (81343)	1/2-inch tube coupling nut	4730-00-054-2572

\*commercial and government entity code



**Figure G-6. Splash Guards**

1. Cut piece of splash guard material in half with utility knife and round off bottom edges.
2. Using support bar as template, drill four holes using a 9/16-inch drill bit.

**Table G-6. Splash Guard Dimensions**

Dimensions	Make From:	National Stock Number
12.5 inches x 24 inches (31.75 cm x 61 cm)	Splash Guard	2540-01-041-0708





## APPENDIX H

### TORQUE VALUES FOR THREADED FASTENERS

Paragraph Number	Paragraph Title	Page Number
H-1	General .....	H-1
H-2	Torque Limits .....	H-1
H-3	How To Use Torque Table .....	H-1
H-4	Tightening Metal Fasteners .....	H-3
H-5	Fastener Size and Thread Pattern .....	H-4
H-6	Fastener Grade .....	H-5

#### H-1. GENERAL.

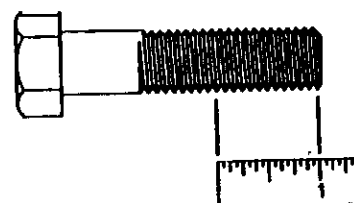
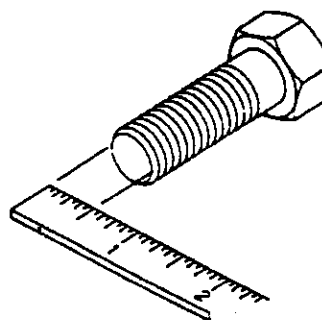
This appendix provides general torque limits for screws used on the M870 and M870A1 semitrailers. Special torque limits are indicated in the maintenance procedures for applicable components. The general torque limits given in this appendix shall be used when specific torque limits are not indicated in the maintenance procedure. These general torque limits cannot be applied to screws that retain rubber components. The rubber components will be damaged before the correct torque limit is reached. If a special torque limit is not given in the maintenance instructions, tighten the screw or nut until it touches the metal bracket, then tighten it one more turn.

#### H-2. TORQUE LIMITS.

Table H-1 (p. H-2) lists dry torque limits, which are used on screws that do not have lubricants applied to threads. Table H-2 (p. H-3) lists wet torque limits, which are used on screws that have high-pressure lubricants applied to threads.

#### H-3. HOW TO USE TORQUE TABLE.

1. Measure the diameter of the screw to be installed.
2. Count the number of threads per inch or use a pitch gage.
3. Under the heading SIZE in Table H-1, look down the left-hand column until the diameter of screw to be installed is found (there will usually be two lines beginning with the same size).
4. In the second column under SIZE, find the number of threads per inch that matches the number of threads counted in step 2.



**H-3. HOW TO USE TORQUE TABLE (continued).**

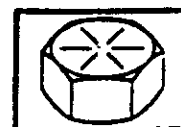
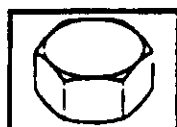
5. To find the grade of the screw that is to be installed, match the markings on the head to the correct picture of CAPSCREW HEAD MARKINGS on the table.

**CAPSCREW HEAD MARKINGS**

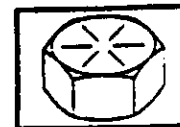
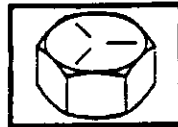
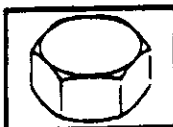
Manufacturer's marks may vary.  
These are all SAE Grade No. 5 (3 lines).



6. Look down the column under the picture found in step 5 until the torque limit in foot-pounds for the diameter and threads per inch of the screw being installed is found.

**Table H-1. Torque Limits for Dry Fasteners****SAE CAPSCREW HEAD MARKINGS**

SIZE			TORQUE							
			SAE GRADE No. 1 or 2		SAE GRADE No. 5		SAE GRADE No. 6 or 7		SAE GRADE No. 8	
DIA. (IN.)	THREADS PER INCH	MM	FOOT- POUNDS	N•m	FOOT- POUNDS	N•m	FOOT- POUNDS	N•m	FOOT- POUNDS	N•m
1/4	20	6.35	5	6.78	8.0	10.85	10	13.56	12	16.27
1/4	28	6.35	6	8.14	10.0	13.56	—	—	14	18.98
5/16	18	7.94	11	14.92	17.0	23.05	19	25.76	24	32.52
5/16	24	7.94	13	17.63	19.0	25.76	—	—	27	36.61
3/8	16	9.53	18	24.41	31.0	42.04	34	46.10	44	59.66
3/8	24	9.53	20	27.12	35.0	47.46	—	—	49	66.44
7/16	14	11.11	28	37.97	49.0	66.44	55	74.58	70	94.92
7/16	20	—	30	40.68	55.0	74.58	—	—	78	105.77
1/2	13	12.70	39	52.88	75.0	101.70	85	115.26	105	142.38
1/2	20	—	41	55.60	85.0	115.26	—	—	120	162.78
9/16	12	14.28	51	69.16	110.0	149.16	120	162.72	155	210.18
9/16	18	—	55	74.58	120.0	162.72	—	—	170	230.52
5/8	11	15.88	63	85.43	150.0	203.40	167	226.45	210	284.76
5/8	18	—	95	128.82	170.0	230.52	—	—	240	325.44
3/4	10	19.05	105	142.38	270.0	356.12	280	379.68	375	506.50
3/4	16	—	115	155.94	295.0	400.02	—	—	420	596.52
7/8	9	22.23	160	216.96	375.0	536.62	440	596.64	605	820.38
7/8	14	—	175	237.30	435.0	599.85	—	—	675	915.30
1	8	25.40	235	318.66	590.0	800.04	660	694.96	910	1233.96
1	14	—	250	338.00	660.0	894.96	—	—	990	1342.44
1 1/8	—	25.58	—	—	800.0	1064.80	—	—	1280	1735.70
					880.0	1193.30			1444	1952.80
1 1/4	—	31.75	—	—	—	—	—	—	1820	2467.90
									2000	2712.00
1 3/8	—	34.93	—	—	1460.0	1979.80	—	—	2300	3227.30
					1680.0	2278.10			2720	3688.30
1 1/2	—	38.10	—	—	1940.0	2630.60	—	—	3160	4285.00
					2200.0	2963.20			3560	4827.40

**H-3. HOW TO USE TORQUE TABLE (continued).****Table H-2. Torque Limits for Wet Fasteners****SAE CAPSCREW HEAD MARKINGS**

SIZE			TORQUE							
			SAE GRADE No. 1 or 2		SAE GRADE No. 5		SAE GRADE No. 6 or 7		SAE GRADE No. 8	
DIA. (IN.)	THREADS PER INCH	MM	FOOT- POUNDS	N•m	FOOT- POUNDS	N•m	FOOT- POUNDS	N•m	FOOT- POUNDS	N•m
1/4	20	6.35	4.9	6.10	7.2	9.76	9.0	12.00	10.8	14.64
1/4	28	6.35	5.4	7.33	9.0	12.20	—	—	12.6	17.08
5/16	18	7.94	9.9	13.34	15.3	22.54	17.1	23.18	21.6	29.27
5/16	24	7.94	11.7	15.87	17.1	23.18	—	—	24.3	32.95
3/8	16	9.53	16.2	21.97	27.9	37.84	30.6	41.49	39.6	53.69
3/8	24	9.53	18.0	24.41	31.5	42.71	—	—	44.1	59.80
7/16	14	11.11	25.2	34.17	44.1	59.80	49.5	67.12	63.0	85.42
7/16	20	—	27.0	36.61	49.5	67.12	—	—	70.2	95.19
1/2	13	12.70	35.1	47.58	67.5	91.53	76.5	103.73	94.5	128.14
1/2	20	—	36.9	50.04	76.5	103.73	—	—	106.0	146.50
9/16	12	14.29	45.9	62.24	99.0	134.24	108.0	146.45	139.5	189.16
9/16	18	—	45.5	67.12	106.0	146.45	—	—	153.0	207.47
5/8	11	15.88	56.7	76.89	135.0	183.06	150.3	203.80	189.0	256.28
5/8	18	—	85.5	115.94	153.0	207.47	—	—	216.0	296.90
3/4	10	19.05	94.5	128.14	243.0	329.51	252.0	341.71	337.5	457.65
3/4	16	—	103.5	140.35	265.5	360.20	—	—	378.0	536.87
7/8	9	22.23	144.0	195.26	355.5	482.06	396.0	536.98	544.5	738.34
7/8	14	—	157.5	213.57	391.5	530.87	—	—	607.5	823.77
1	8	25.40	211.5	286.79	531.0	720.04	594.0	805.46	819.0	1110.56
1	14	—	225.0	305.10	594.0	805.46	—	—	891.0	1208.20
1-1/8	—	25.58	—	—	720.0	976.32	—	—	1152.0	1562.13
					792.0	1073.97			1296.0	1757.52
1-1/4	—	31.75	—	—	—	—	—	—	1638.0	2221.11
									1800.0	2440.80
1-3/8	—	34.93	—	—	1314.0	1781.82	—	—	2142.0	2904.57
					1512.0	2050.29			2448.0	3319.47
1-1/2	—	38.10	—	—	1746.0	2367.54	—	—	2844.0	3856.50
					1980.0	2684.88			3204.0	4344.66

**H-4. TIGHTENING METAL FASTENERS.**

When torquing a fastener, select a torque wrench whose range (Table H-3, p. H-4) fits the required torque value. A torque wrench is most accurate from 25 percent to 75 percent of its stated range. A torque wrench with a stated range of 0 to 100 will be most accurate from 25 to 75 foot-pounds. The accuracy of readings will decrease as you approach 0 foot-pounds or 100 foot-pounds. The ranges in Table H-3 are based on this principle.

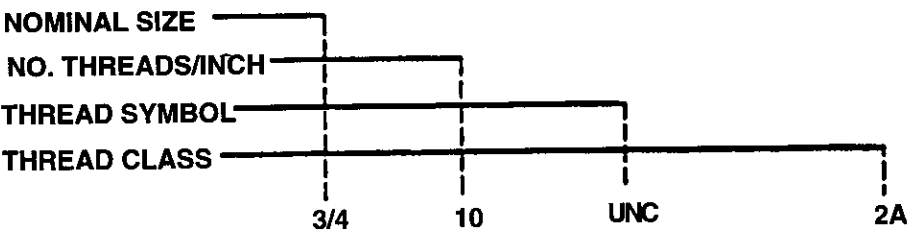
H-4. TIGHTENING METAL FASTENERS (continued).

Table H-3. Torque Ranges	
STATED RANGE	MOST EFFECTIVE RANGE
0-600 ft-lb	150-450 ft-lb
0-170 ft-lb	44-131 ft-lb
15-75 ft-lb	30-60 ft-lb

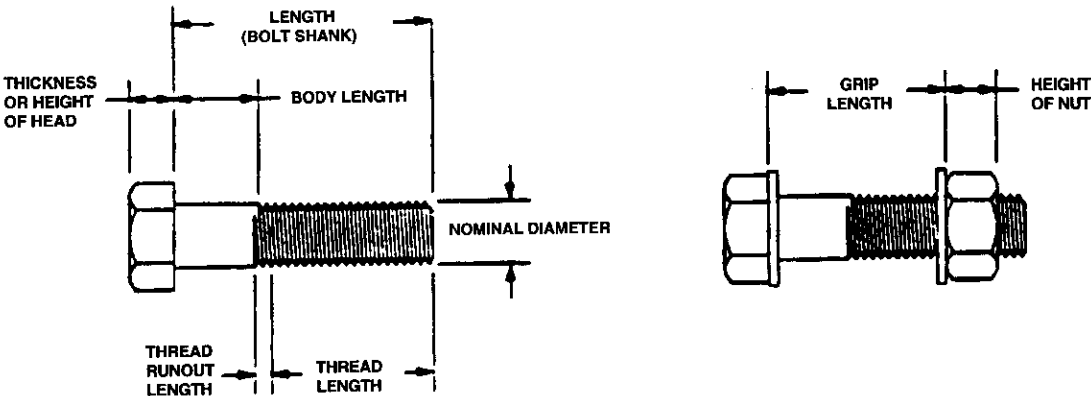
H-5. FASTENER SIZE AND THREAD PATTERN.

Threaded fasteners are categorized according to diameter of the fastener shank. Thread styles are divided into broad groups, the two most common being coarse (Unified Coarse-UNC) and fine (Unified Fine-UNF). These groups are defined by the number of threads per inch on the bolt shanks. In addition, threads are categorized by thread class (Table H-4), which is a measure of the degree between threads of bolt or screw (external threads) and threads of the attaching nut or tapped hole (internal threads of the attaching nut or tapped hole) (internal threads). The most common thread class for bolts and screws is Class 2.

Table H-4. Thread Classes and Description		
EXTERNAL	INTERNAL	INTERNAL
1A	1B	LOOSE FIT
2A	2B	MEDIUM FIT
3A	3B	CLOSE FIT



NOTE: Unless followed with -LH (e.g., 314-10 UNC-2A-LH), threads are right-hand.



## H-6. FASTENER GRADE.

In addition to being classified by thread type, thread fasteners are also classified by material. The most familiar fastener classification system is the SAE grading system (Table H-5).

Table H-5. SAE Screw and Bolt Markings	
SCREWS	BOLTS
SAE GRADE 2 NO MARKING	SAE GRADE 6 4 RADIAL DASHES 90° APART
SAE GRADE 3 2 RADIAL DASHES 180° APART	SAE GRADE 7 5 RADIAL DASHES 72° APART
SAE GRADE 5 3 RADIAL DASHES 120° APART	SAE GRADE 8 6 RADIAL DASHES 60° APART

### Markings on Hex Locknuts

GRADE A - No Marks  
GRADE B - 3 Marks  
GRADE C - 6 Marks

GRADE A - No Marks  
GRADE B - Letter B  
GRADE C - Letter C

GRADE A - No Notches  
GRADE B - One Notch  
GRADE C - Two Notches



## APPENDIX I

### MANDATORY REPLACEMENT PARTS

Paragraph Number	Paragraph Title	Page Number
I-1	General .....	I-1
I-2	Explanation of Columns .....	I-1
Table I-1	Mandatory Replacement Parts .....	I-2

#### I-1. GENERAL.

This appendix is a cross-reference of item numbers to part numbers and is included for that purpose only.

#### I-2. EXPLANATION OF COLUMNS IN TABLE I-1.

There are five columns in Table I-1, Mandatory Replacement Parts (p. I-2):

- a. **Column (1)—Item Number.** This number is assigned to the entry in Table I-1 (p. I-2) for cross-referencing to the part number. The item number appears in the Materials/Parts listing of a maintenance procedure.
- b. **Column (2)—Part Number.** This is the primary number used by the manufacturer, which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or a range of items.
- c. **Column (3)—National Stock Number.** When available, the national stock number is listed for each part.
- d. **Column (4)—Item Name.** This is the name given each item in the Materials\Parts listing of a maintenance procedure.
- e. **Column (5)—Quantity Required.** This indicates the quantity of the item used on the M870/M870A1 semitrailer.

Table I-1. Mandatory Replacement Parts

(1) Item Number	(2) Part Number	(3) National Stock Number	(4) Item Name	(5) Quantity Required
1	40002500		Blind rivet	4
2	M10WS109	3120-01-244-4603	Bushing	6
3	MS24665-630		Cotter pin	9
4	MS2131820		Drive screw	4
5	MP0-0541	5330-01-361-7877	Gasket	6
6	3009	5330-00-615-1843	Gasket	6
7	KPO-0162	5310-01-204-3352	Lockwasher	2
8	MPO-0035		Lockwasher	24
9	MPO-0455	5310-01-205-2838	Lockwasher	12
10	MS35333-49	5310-00-582-6714	Lockwasher	2
11	MS35338-43	5310-00-045-3296	Lockwasher	28
12	MS35338-44	5310-00-582-5962	Lockwasher	20
13	MS35338-45	5310-00-407-9566	Lockwasher	36
14	MS35338-46	5310-00-637-9541	Lockwasher	16
15	MS35338-50	5310-00-820-6653	Lockwasher	18
16	MS35338-8	5310-00-261-7340	Lockwasher	132
17	035024	5310-01-268-9052	Lockwasher	2
18	201946		Lockwasher	
19	403117	5310-00-488-3911	Lockwasher	48
20	4303		Lockwasher	8
21	M10HH100	5330-01-190-4634	Preformed packing	12
22	M16HH100		Preformed packing	12
23	M16WJ102		Retaining clip	
24	MP0-0966		Retaining ring	10
25	MS16624-11		Retaining ring	
26	38038		Retaining ring	
27	MS17830-06C	5310-00-176-6341	Self-locking nut	4
28	MS51922-17	5310-00-087-4652	Self-locking nut	12
29	MS51922-9	5310-00-984-3806	Self-locking nut	4
30	298476	5310-01-406-5462	Self-locking nut	16
31	37-03	5310-01-099-6539	Self-locking nut	4
32	634 00 498	5310-01-061-1312	Self-locking nut	8
33	841-00	5310-01-098-7827	Self-locking nut	4
34	934 00 492	5310-01-061-1310	Self-locking nut	28
35	934 00 498	5310-01-061-1312	Self-locking nut	
36	934 00 500	5310-01-061-1307	Self-locking nut	20
37	934 00 506	5310-01-309-6495	Self-locking nut	8
38	M10HN151	5310-01-149-9051	Washer	6



## APPENDIX J

### LUBRICATION INSTRUCTIONS

Paragraph Number	Paragraph Title	Page Number
J-1	General .....	J-1
J-2	Specific Lubrication Instructions .....	J-1

#### J-1. GENERAL.

##### NOTE

These instructions are MANDATORY.

- a. The M870/M870A1 semitrailers must receive lubrication with approved lubricants at recommended intervals in order to be mission-ready at all times.
- b. The KEY (p. J-4) lists lubricants to be used in all temperature ranges and shows the intervals.
- c. The Lubrication Chart (pp. J-3 through J-5) shows lubrication points, items to be lubricated, required lubricants, and recommended intervals for lubrication.
- d. The lowest level of maintenance authorized to lubricate a point is indicated in parentheses on the Lubrication Chart by use of (C) for Operator/Crew or (O) for Unit maintenance. Any special lubricating instructions required are contained in the NOTES section of the chart.
- e. Recommended intervals are based on normal conditions of operation, temperature, and humidity. When operating under extreme conditions, lubricants should always be changed more frequently. When in doubt, notify your supervisor.

#### J-2. SPECIFIC LUBRICATION INSTRUCTIONS.

- a. Keep all lubricants in a closed container and store in a clean, dry place away from extreme heat. Keep container covers clean and do not allow dust, dirt, or other foreign material to mix with lubricants. Keep all lubrication equipment clean and ready for use.
- b. Maintain a record of lubrication performed and report any problems noted during lubrication. Refer to DA Pam 738-750 for maintenance forms and procedures for recording and reporting any findings.

##### WARNING

**Wipe excess lubricant from the area of brakeshoe linings to prevent grease from soaking the linings. If brakeshoe linings become soaked, have Unit maintenance replace them. Failure to follow this warning may cause brakes to malfunction, resulting in serious injury or death to personnel.**

- c. Keep brakeshoe linings and all external parts not requiring lubrication free of lubricants. After lubrication, wipe off excess oil or grease to prevent accumulation of foreign matter.

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## J-2. SPECIFIC LUBRICATION INSTRUCTIONS (continued).

---

- d. Refer to FM 9-207 for lubrication instructions in cold weather.
- e. After operation in mud or in sandy or dusty conditions, clean and inspect all points of lubrication for fouled lubricants. Change lubricants as required.
- f. 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.

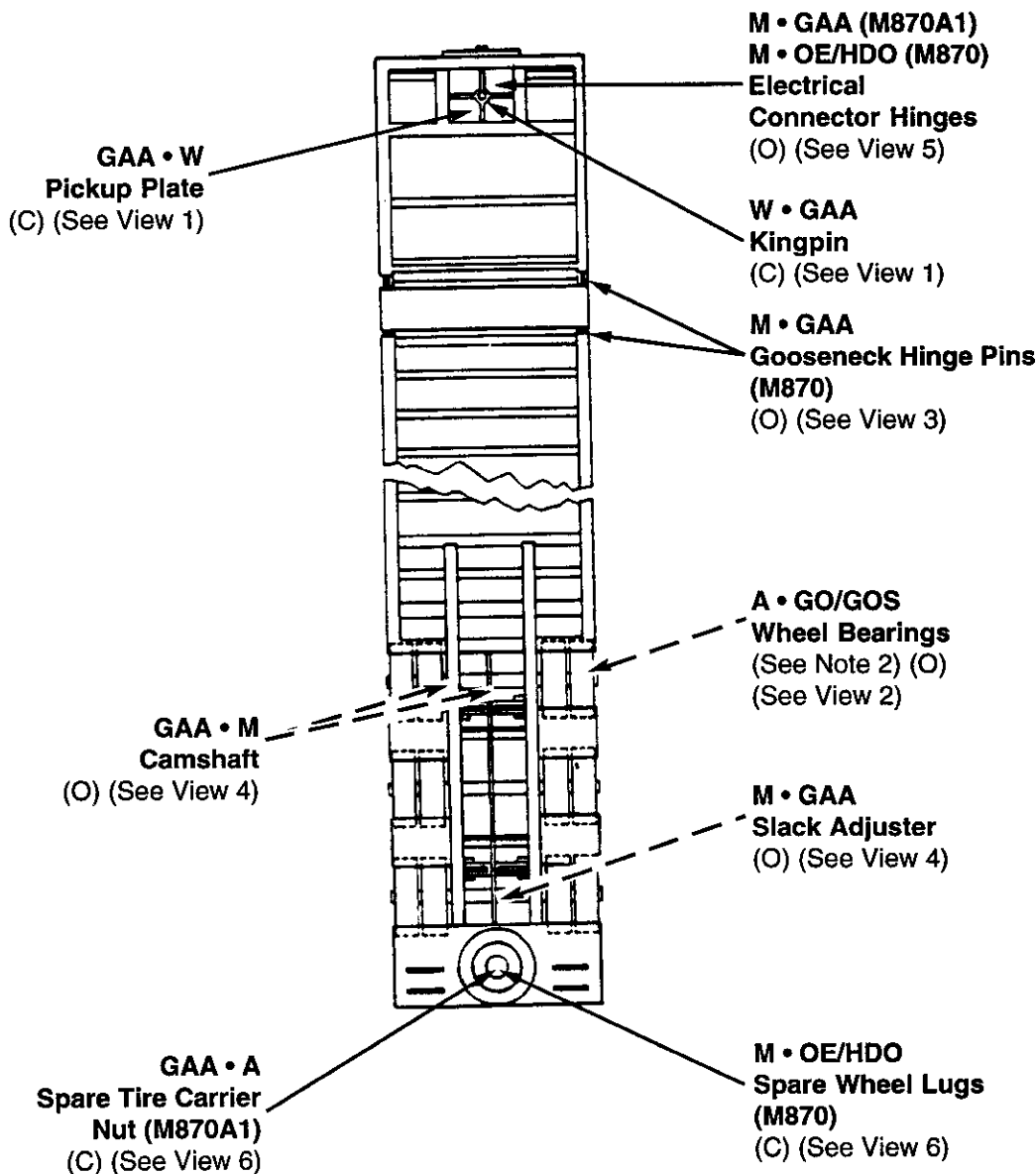
### **WARNING**

**Drycleaning solvent 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.**

- g. Clean all fittings and areas around lubrication points with drycleaning solvent (Item 19, Appendix F), or equivalent, before lubricating equipment. After lubrication, wipe off excess oil or grease to prevent accumulation of foreign matter.

LUBRICANT • INTERVAL

INTERVAL • LUBRICANT



NOTE

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

INTERVAL	MAN-HOURS *
W	0.5
M	0.6
A	7.3

\* The man-hour time specified is the time you need to do all the services prescribed.

## - KEY -

LUBRICANTS	EXPECTED TEMPERATURE *			INTERVALS
	Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-18°C to -54°C)	
GAA (MIL-G-10924) Grease, Automotive and Artillery	GAA	GAA	GAA	W – Weekly M – Monthly A – Annual
GO/GOS Lubricating Oil, Multi- purpose or subzero	GO	GO	GOS	
PL-M/PL-S Lubricating Oil, Preservative	PL-M	PL-S	PL-S	
OE/HDO Lubricating Oil	OE/HDO 30	OE/HDO 10	OEA/AP6-PD-1	

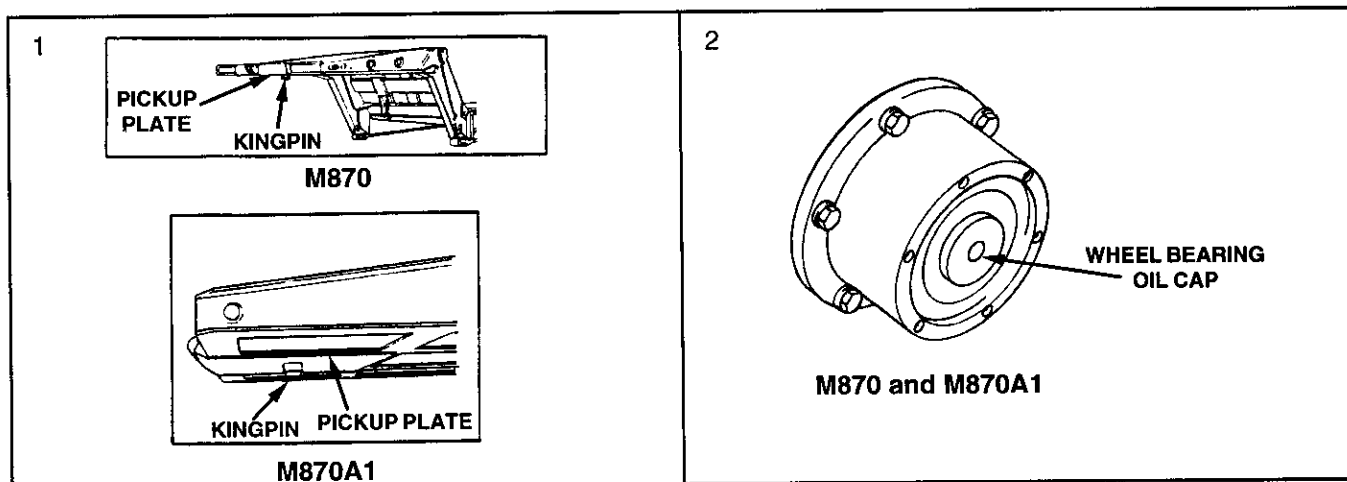
\* For Arctic operations, refer to FM 9-207.

## NOTES:

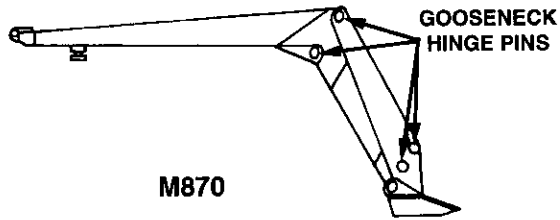
**WARNING**

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

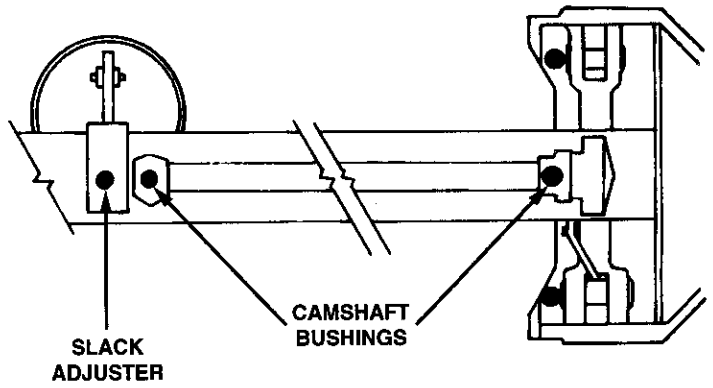
1. For operation of semitrailer in protracted cold temperatures below -10°F (-23°C), remove lubricants prescribed in the KEY for temperatures above -10°F (-23°C). Clean parts with drycleaning solvent. Relubricate with lubricants specified in the key for temperatures below -10°F (-23°C).
2. Fill hub to fill line in sight glass. Allow oil to drain into hub. Refill hub until oil level stabilizes.
3. In sandy areas, halve the lubrication intervals.



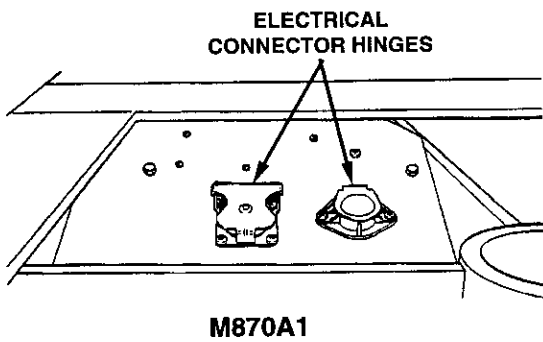
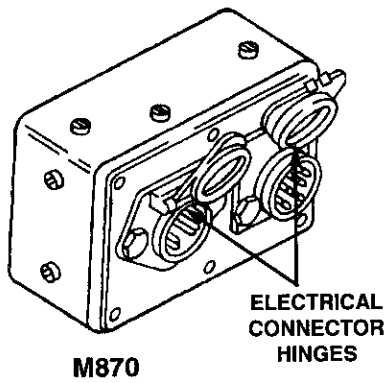
3



4

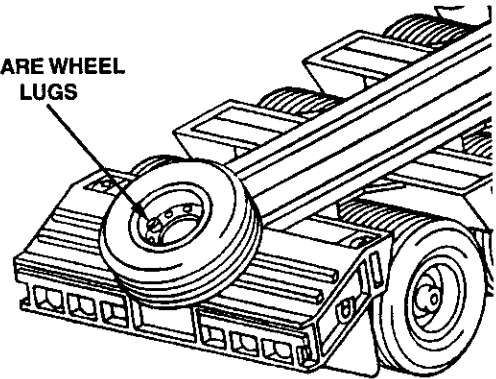


5



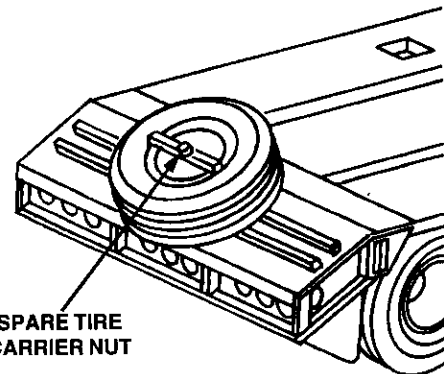
6

SPARE WHEEL  
LUGS



M870

SPARE TIRE  
CARRIER NUT



M870A1



## APPENDIX K

### ELECTRICAL AND BRAKE SYSTEM SCHEMATICS

Paragraph Number	Paragraph Title	Page Number
K-1	General .....	K-1
K-2	Electrical System Schematics .....	K-1
K-3	Brake System Schematics .....	K-3

#### K-1. GENERAL

This appendix contains schematic drawings of the electrical system and the brake system of the M870 and M870A1 semitrailers. Figure K-1 is the electrical system schematic for the M870, and Figure K-2 is the electrical system schematic for the M870A1. Figure K-3 is the brake system schematic for the M870, and Figure K-4 is the brake system schematic for the M870A1.

#### K-2. ELECTRICAL SYSTEM SCHEMATICS.

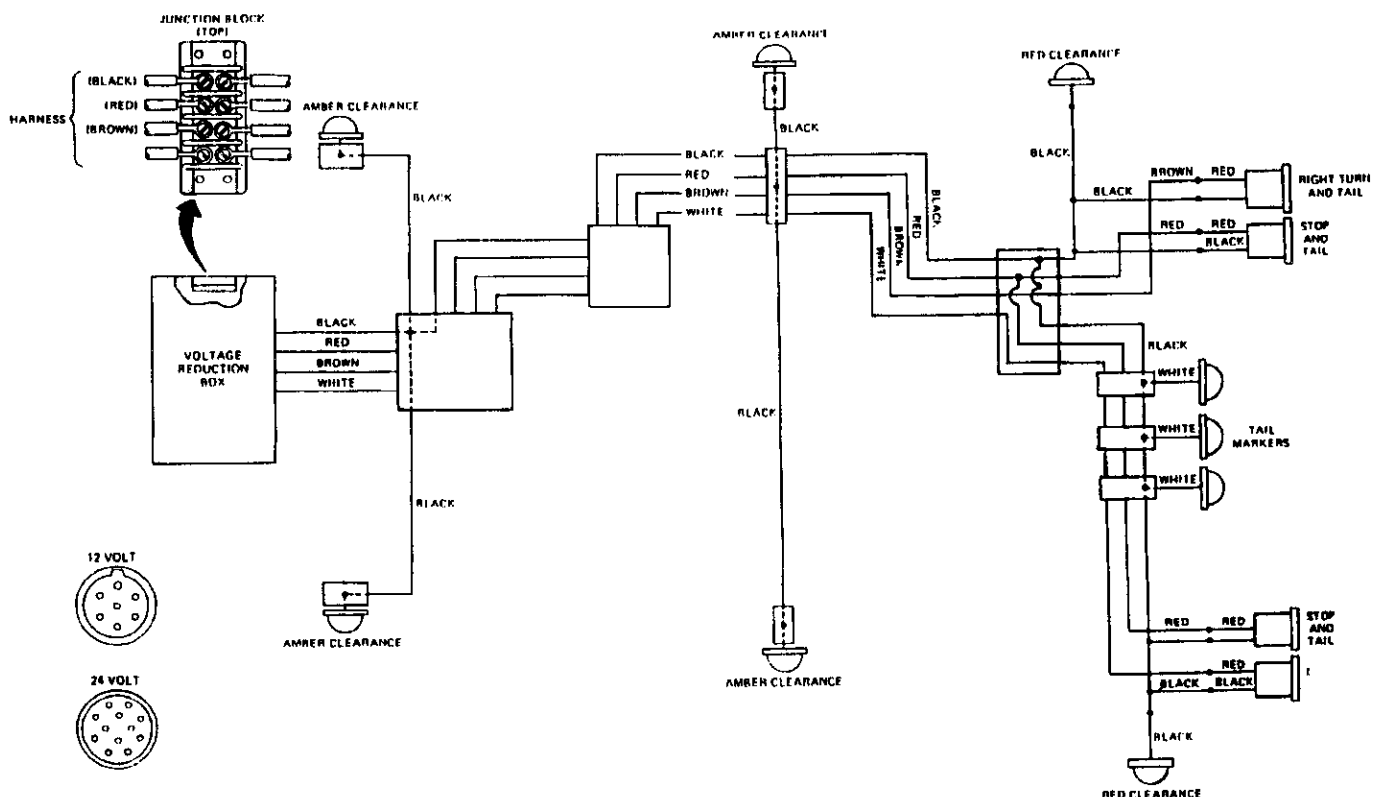
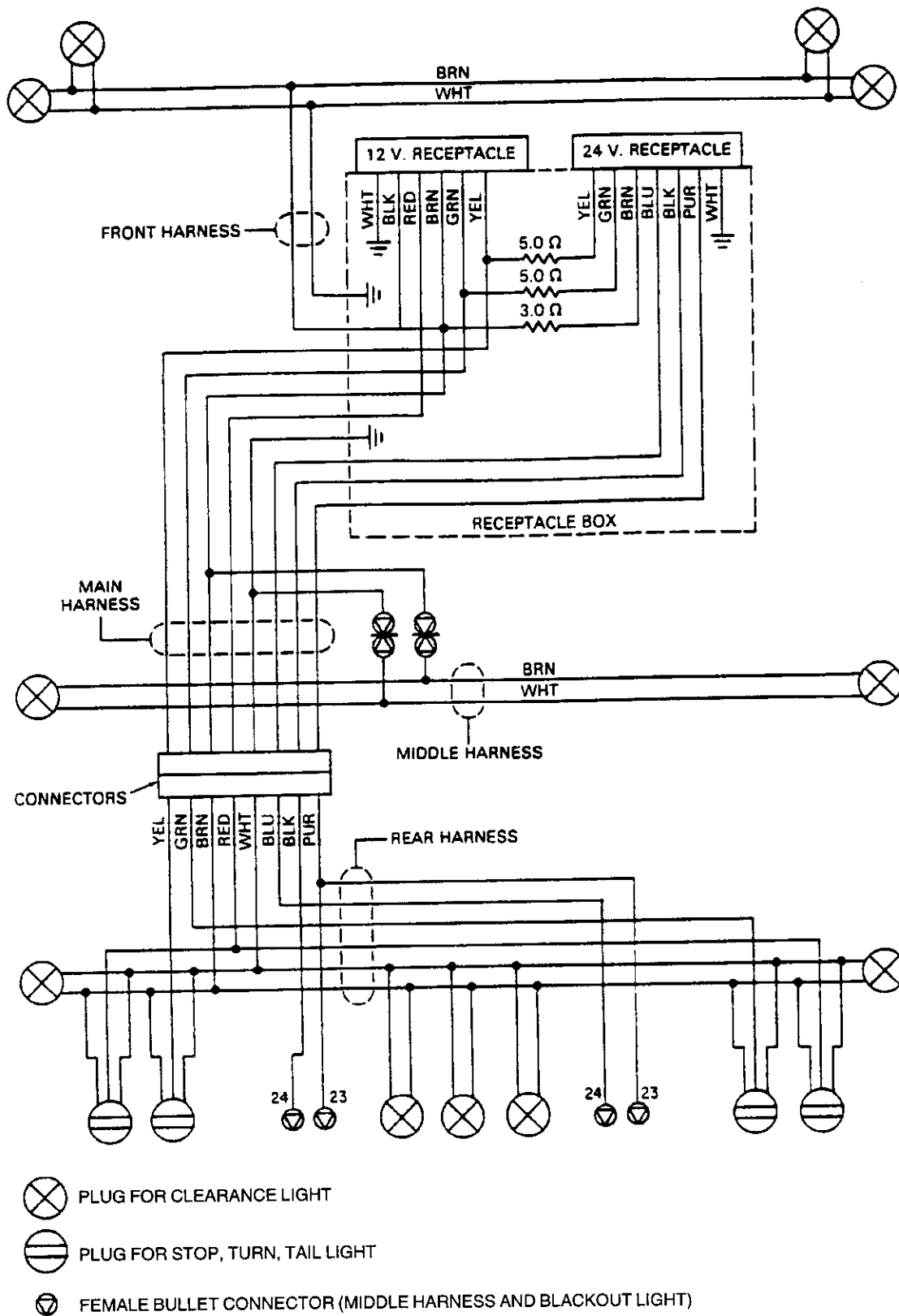


Figure K-1. M870 ELECTRICAL SYSTEM SCHEMATIC

**K-2. ELECTRICAL SYSTEM SCHEMATICS (continued).**



**Figure K-2. M870A1 ELECTRICAL SYSTEM SCHEMATIC**



### K-3. BRAKE SYSTEM SCHEMATICS.

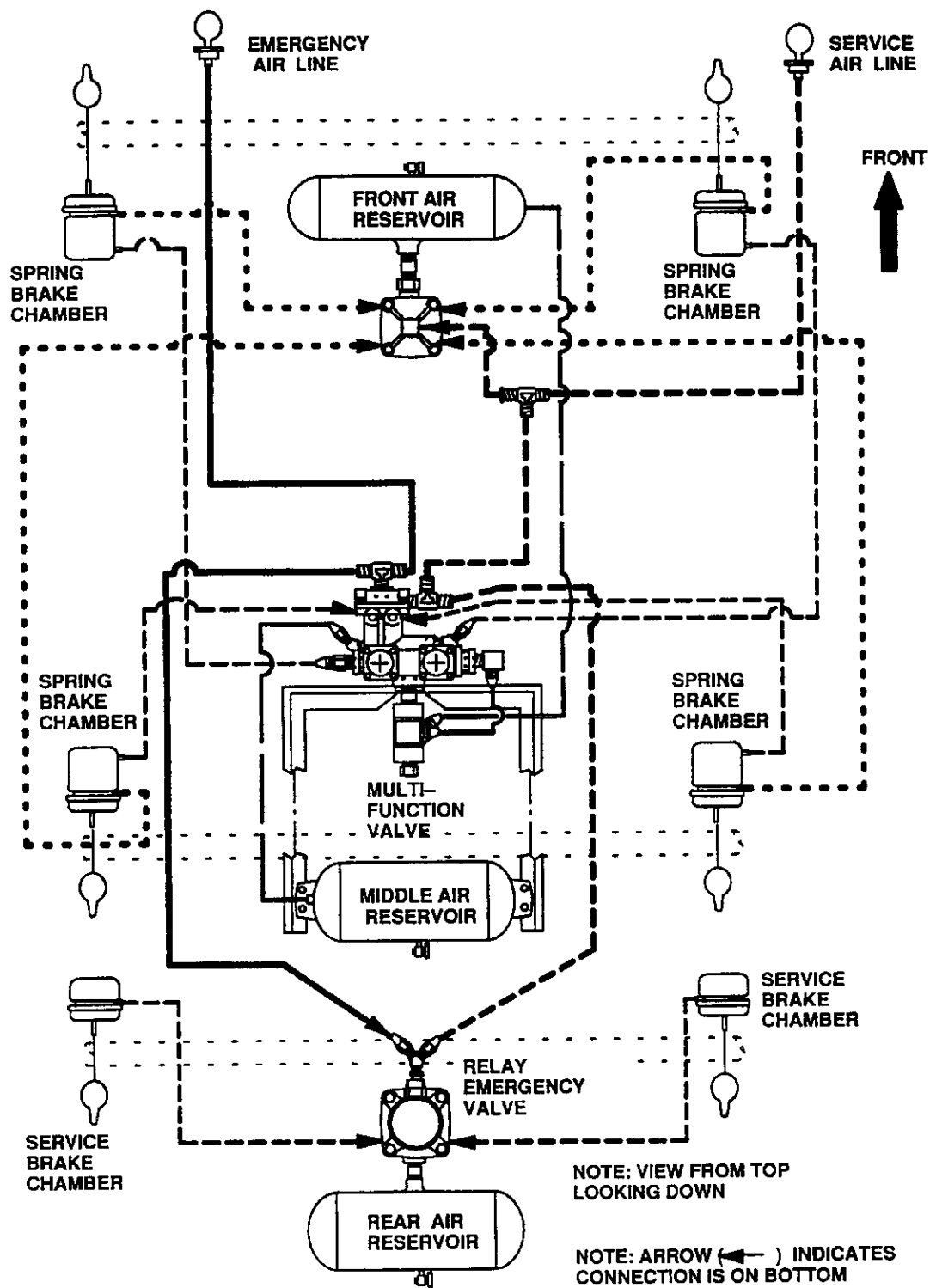
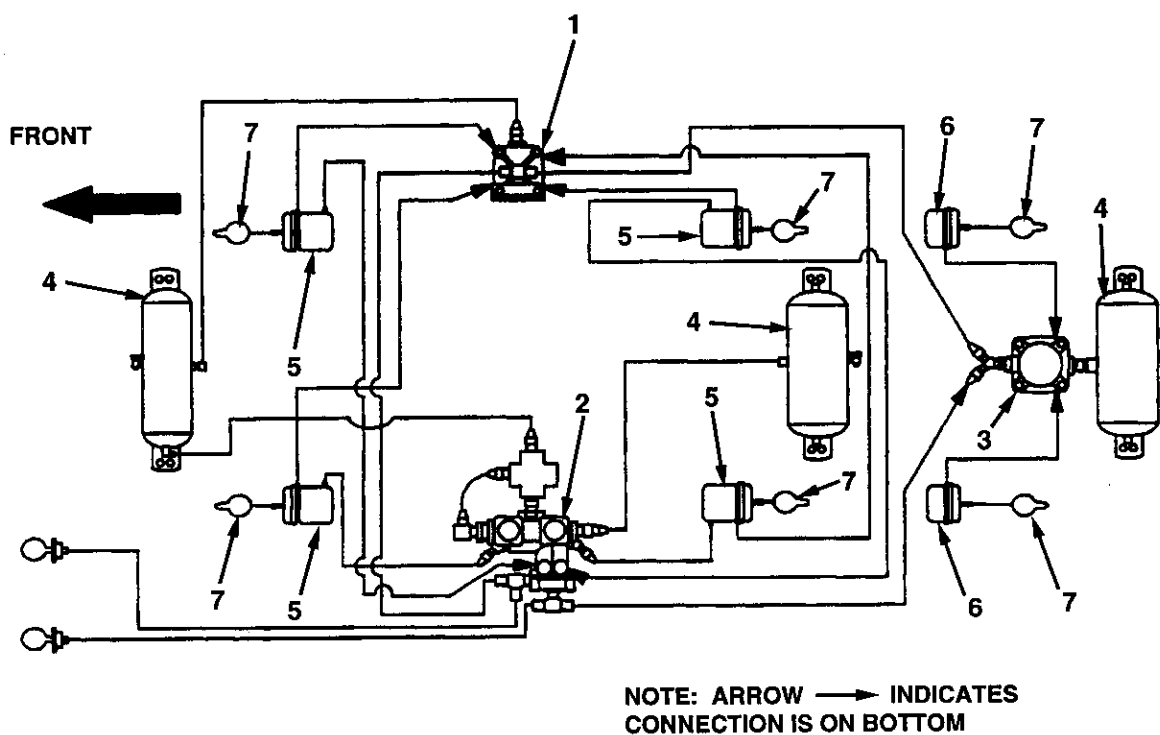


Figure K-3. M870 BRAKE SYSTEM SCHEMATIC

### K-3. BRAKE SYSTEM SCHEMATICS (continued).



#### LEGEND FOR FIGURE K-4

- |                          |                             |
|--------------------------|-----------------------------|
| 1. Relay Valve           | 5. Spring Brake Chamber     |
| 2. Multifunction Valve   | 6. Air Brake Chamber        |
| 3. Emergency Relay Valve | 7. Automatic Slack Adjuster |
| 4. Air Reservoir Tank    |                             |

Figure K-4. M870A1 BRAKE SYSTEM SCHEMATIC

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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.

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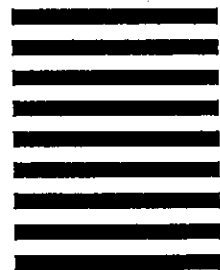
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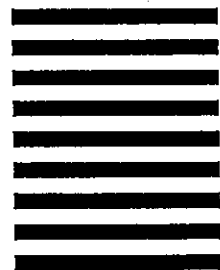
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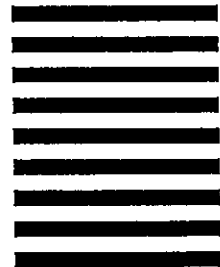
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## THE METRIC SYSTEM AND EQUIVALENTS

### LINEAR MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches  
 1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches  
 1 Kilometer = 1000 Meters = 0.621 Miles

### WEIGHTS

1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces  
 1 Kilogram = 1000 Grams = 2.2 Lb.  
 1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

### LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces  
 1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

### SQUARE MEASURE

1 Sq. Centimeter = 100 Sq. Millimeters = 0.155 Sq. Inches  
 1 Sq. Meter = 10,000 Sq. Centimeters = 10.76 Sq. Feet  
 1 Sq. Kilometer = 1,000,000 Sq. Meters = 0.386 Sq. Miles

### CUBIC MEASURE

1 Cu. Centimeter = 1000 Cu. Millimeters = 0.06 Cu. Inches  
 1 Cu. Meter = 1,000,000 Cu. Centimeters = 35.31 Cu. Feet

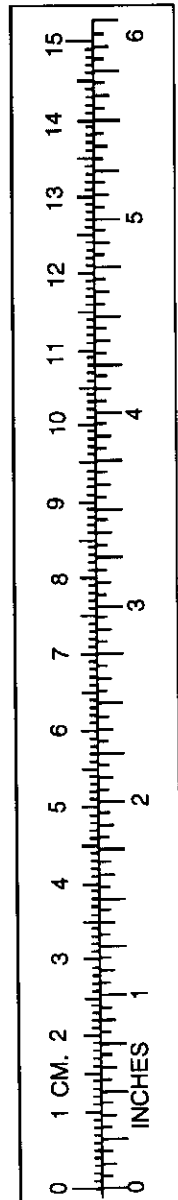
### TEMPERATURE

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

### APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches .....	Centimeters .....	2.540
Feet .....	Meters .....	0.305
Yards .....	Meters .....	0.914
Miles .....	Kilometers .....	1.609
Square Inches .....	Square Centimeters .....	6.451
Square Feet .....	Square Meters .....	0.093
Square Yards .....	Square Meters .....	0.836
Square Miles .....	Square Kilometers .....	2.590
Acres .....	Square Hectometers .....	0.405
Cubic Feet .....	Cubic Meters .....	0.028
Cubic Yards .....	Cubic Meters .....	0.765
Fluid Ounces .....	Milliliters .....	29.573
Pints .....	Liters .....	0.473
Quarts .....	Liters .....	0.946
Gallons .....	Liters .....	3.785
Ounces .....	Grams .....	28.349
Pounds .....	Kilograms .....	0.454
Short Tons .....	Metric Tons .....	0.907
Pound-Feet .....	Newton-Meters .....	1.356
Pounds per Square Inch .....	Kilopascals .....	6.895
Miles per Gallon .....	Kilometers per Liter .....	0.425
Miles per Hour .....	Kilometers per Hour .....	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters .....	Inches .....	0.394
Meters .....	Feet .....	3.280
Meters .....	Yards .....	1.094
Kilometers .....	Miles .....	0.621
Square Centimeters .....	Square Inches .....	0.155
Square Meters .....	Square Feet .....	10.764
Square Meters .....	Square Yards .....	1.195
Square Kilometers .....	Square Miles .....	0.386
Square Hectometers .....	Acres .....	2.471
Cubic Meters .....	Cubic Feet .....	35.315
Cubic Meters .....	Cubic Yards .....	1.308
Milliliters .....	Fluid Ounces .....	0.034
Liters .....	Pints .....	2.113
Liters .....	Quarts .....	1.057
Liters .....	Gallons .....	0.264
Grams .....	Ounces .....	0.035
Kilograms .....	Pounds .....	2.205
Metric Tons .....	Short Tons .....	1.102
Newton-Meters .....	Pound-Feet .....	0.738
Kilopascals .....	Pounds per Square Inch .....	0.145
Kilometers per Liter .....	Miles per Gallon .....	2.354
Kilometers per Hour .....	Miles per Hour .....	0.621



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