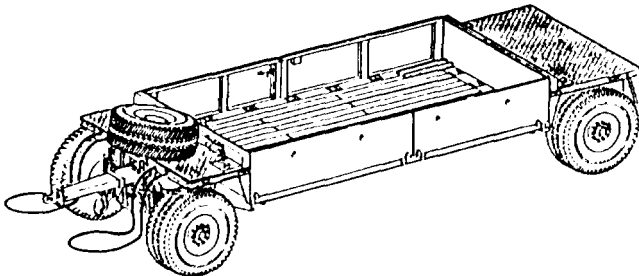


TECHNICAL MANUAL

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



OPERATING INSTRUCTIONS	2-1
------------------------	-----

OPERATOR MAINTENANCE INSTRUCTIONS	3-1
--------------------------------------	-----

UNIT MAINTENANCE INSTRUCTIONS	4-1
----------------------------------	-----

DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE INSTRUCTIONS	5-1
---	-----

MAINTENANCE ALLOCATION CHART	8-1
---------------------------------	-----

REPAIR PARTS AND SPECIAL TOOLS LIST	F-1
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**TRAILER, AMMUNITION,
HEAVY EXPANDED MOBILITY,
11 TON, M989A1
(2330-01-275-7474) (EIC: CAG)**

APPROVED FOR PUBLIC RELEASE. DISTRIBUTION IS UNLIMITED.

HEADQUARTERS, DEPARTMENT OF THE ARMY DECEMBER 1991

WARNING

Dry cleaning solvent (AA-711, type I) is extremely flammable, toxic, and is an irritant to the eyes, skin, and respiratory system. Do not use near open flame or excessive heat. Do not breathe the vapors. Use skin and eye protection and work in a well ventilated area. Flash point of the dry cleaning solvent is 140°F.

Wear protective goggles when opening drain cock and avoid the air stream. Failure to do so could result in personal injury.

A hot brake or drum can cause serious burns. Exercise extreme caution before attempting to touch brake drum after use. slowly move hand toward drum. If drum is overheated, radiated heat will be felt before the hand actually touches the drum.

Two persons are required to connect towing vehicle and trailer; one operates the towing vehicle, and one lifts the towbar with tiedown strap and acts as a spotter.

Be alert for other moving vehicles in the area. Do not stand between towing vehicle and trailer when towing vehicle is Lacking up. Serious injury can result if personnel are caught between vehicles. Set chocks front and rear of rear tires on trailer.

Make sure cotter pin is properly installed in pintle so trailer does not break loose and cause injury to personnel.

The side panels are heavy and awkward to handle. Use caution and two persons when removing or replacing side panels to avoid injury to personnel.

Do not allow any personnel to stand between the towing vehicle and trailer when backing. Make sure that you can see your ground guides at all times. Serious injury or death can occur if personnel are caught between moving vehicles.

Backing the trailer without locking towbar may cause vehicle to jackknife, injuring personnel and damaging equipment. Perform this procedure only when absolutely necessary.

When trailer has been backed with towbar locked, pull forward to relieve sideload pressure between pintle and towbar before attempting to unlock towbar lockpin or disconnect from pintle. Failure to relieve sideload may result in injury to personnel.

Two people and the davit crane from HEMTT will be required to raise or lower the spare tire. Clear all personnel from the immediate area to prevent possible injury when the tire is lifted from the deck. Use all possible care when handling to prevent injury. The tire weighs approximately 300 pounds.

The tire weighs approximately 300 pounds. Use two people and a suitable lifting device and exercise care in handling to prevent injury.

WARNING

Take care not to get grease on brake shoes or brake linings, as this will cause uneven or poor braking action, and may result in personal injury or equipment damage.

Changing wheels and tires on the trailer requires two people and considerable caution to avoid possible injury. The wheel opposite from the one being changed must be chocked front and rear.

Wheels and tires are heavy. To avoid personal injury, use two people when handling wheels and tires.

When caging brake air chamber, do not remove flange nuts or bolts. High spring pressure inside air chamber can cause injury if released.

Do not attempt to disassemble brake air chambers. The springs inside the chambers are under heavy tension and may cause severe injury if released during disassembly.

To avoid personal injury, never work under a vehicle supported only by a jack. Always use cap on jack when raising axles.

Use two persons when removing brake drum to avoid injury.

Be careful when removing air cleaner top nut because of high spring pressure behind nut.

Towbar is heavy and requires three persons to safely remove it: two persons to support towbar while one person removes pin.

Towbar pivot is heavy and will fall when pin is removed. Support pivot before removing pin.

Pivot bar is heavy. Remove carefully to avoid personal injury.

The resin and hardener contained in the two-part epoxy coating may cause irritation to the skin and eyes. Plastic gloves should be worn while handling these materials. Wipe these materials from the skin using dry cleaning solvent (item 6, appendix E), and wash with soap and warm water if contact is made. Wear goggles when applying coating to prevent contact with the eyes.

Coatings can cause internal injury during prolonged breathing of vapors. Wear respirator to prevent inhaling vapors. Use adequate ventilation.

To avoid injury to personnel and damage to equipment, connecting the trailer requires two persons.

Do not stand between towing vehicle and trailer or on front deck area when vehicle is backing up. Serious injury can occur

WARNING

When using foldable steps, take care to place foot on center of step. Otherwise foot may slip off side, resulting in serious injury.

Two persons are required to raise or lower side panels.

Two persons are required to remove or install davit crane on HEMTT or trailer, one person on vehicle and one person on ground. Hoist arm weighs 46 pounds and extension weighs 22 pounds. Handle both carefully to avoid injury to personnel.

Do not lean against davit crane while routing cable over end of pulley. Davit crane is designed to move in mount and could cause a fall resulting in serious injury.

When davit crane lifts tire clear of ground, weight will shift. Use all possible caution when guiding tire to avoid possible injury.

Do not stand beneath spare tire at any time. Use caution when repositioning and lowering spare tire.

Do not stand on front deck when raising spare tire.

To prevent tire from slipping and causing personal injury, lifting plate must be installed as shown, with lifting plate lugs in lower holes, and loop in center of tire.

Personnel on front deck must use extreme care to avoid tripping over spare tire, fire extinguisher, and lifting eyes. Otherwise serious injuries may occur.

Two persons are required to reposition davit crane and tire. Use extreme care to avoid tripping over spare tire mount, fire extinguisher, and lifting eyes. Otherwise serious injury could occur.

Ensure all personnel are clear of torsion bars.

TECHNICAL MANUAL

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington D. C., 13 December 1991

Operator's, Unit,
Direct Support, and General Support
Maintenance Manual Including
Repair Parts and Special Tools Lists

for

TRAILER, AMMUNITION,
HEAVY EXPANDED MOBILITY,
11 TON, M989A1
(2330-01-275-7474)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

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

Approved for public release; distribution is unlimited.

TABLE OF CONTENTS

		Page	Figure
CHAPTER 1	INTRODUCTION	1-1	
Section I	General Information	1-1	
Section II	Equipment Description	1-3	
CHAPTER 2	OPERATING INSTRUCTIONS	2-1	
Section I	Description and Use of Operator's Controls and Indicators	2-1	
Section II	Operator Preventive Maintenance Checks and Services (PMCS)	2-8	
Section III	Operation Under Usual Conditions	2-17	
Section IV	Operation Under Unusual Conditions	2-39	

TABLE OF CONTENTS - CONT

		Page	Figure
CHAPTER 3	OPERATOR MAINTENANCE INSTRUCTIONS	3-1	
Section I	Lubrication Instructions	3-1	
Section II	Operator Troubleshooting Procedures	3-9	
Section III	Operator Maintenance Procedures	3-13	
CHAPTER 4	UNIT MAINTENANCE INSTRUCTIONS	4-1	
Section I	Repair Parts, Special Tools, TMDE and Support Equipment	4-1	
Section II	Service Upon Receipt of Material	4-2	
Section III	Unit Preventive Maintenance Checks and Services (PMCS)	4-3	
Section IV	Unit Troubleshooting Procedures	4-8	
Section V	Maintenance of Electrical System	4-14	
Section VI	Maintenance of Front Axle	4-24	
Section VII	Maintenance of Air Brake System	4-28	
Section VIII	Maintenance of Wheels and Tracks	4-56	
Section IX	Maintenance of Steering	4-59	
Section X	Maintenance of Frame and Towing Components	4-68	
Section XI	Maintenance of Springs and Shock Absorbers	4-81	
Section XII	Maintenance of Body, Cab, Hood and Hull	4-91	
CHAPTER 5	DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE INSTRUCTIONS	5-1	
Section I	Repair Parts, Special Tools, TMDE and Support Equipment	5-1	
Section II	Maintenance of Miscellaneous Components	5-2	
Section III	Preparation for Storage or Shipment	5-17	
APPENDIX A	REFERENCES	A-1	
APPENDIX B	MAINTENANCE ALLOCATION CHART	B-1	
APPENDIX C	COMPONENT OF END ITEM AND BASIC ISSUE ITEMS LISTS	C-1	
APPENDIX D	ADDITIONAL AUTHORIZATION LIST	D-1	
APPENDIX E	EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST	E-1	

TABLE OF CONTENTS - CONT

		Page	Figure
APPENDIX F	REPAIR PARTS AND SPECIAL TOOLS LIST	F-1	
Section I.	INTRODUCTION	F-1	
Section II.	REPAIR PARTS LIST	1-1	
Group 06	Electrical System		
	0609 Lights		
	0609 Clearance Light	1-1	1
	0609 Composite Marker Light	2-1	2
	0613 Hull or Chassis Wiring Harness		
	0613 Electrical Installation	3-1	3
	0613 Special Purpose Electrical Cable Assembly	4-1	4
Group 10	Front Axle		
	1000 Front Axle Assembly		
	1000 Front Axle	5-1	5
	1004 Knuckle and Spindle Assembly	6-1	6
Group 11	Rear Axle		
	1100 Rear Axle Assembly		
	1100 Rear Axle	7-1	7
Group 12	Brakes		
	1202 Service Brakes		
	1202 Front and Rear Brake Assembly	8-1	8
	1206 Mechanical Brake System		
	1206 Slack Adjuster	9-1	9
	1208 Air Brake System		
	1208 Air Tank Installation	10-1	10
	1208 Air Valves	11-1	11
	1208 Brake Valve, Gladhand and Air Cleaner Intake	12-1	12
	1208 Air Chambers and Cable Clamps	13-1	13
Group 13	Wheels and Tracks		
	1311 Wheel Assembly		
	1311 Front and Rear Wheel Assembly	14-1	14
	1311 Wheel and Valve	15-1	15
	1313 Tires, Tubes, Tire Chains		
	1313 Tire	16-1	16
Group 14	Steering		
	1401 Mechanical Steering Gear Assembly		
	1401 Tie Rod and Pivot Assembly	17-1	17
Group 15	Frame, Towing Attachments, Drawbars and Articulation Systems		
	1501 Frame Assembly		
	1501 Trailer Assembly Components	18-1	18
	1503 Pintles and Towing Attachments		
	1503 Tow Bar Assembly	19-1	19

TABLE OF CONTENTS - CONT

		Page	Figure
Group 16	Springs and Shock Absorbers		
	1601 Springs		
	1601 Front Leveling Valve and Air Bags . . .	20-1	20
	1601 Rear Leveling Valve and Air Bags . . .	21-1	21
	1604 Shock Absorber Equipment		
	1604 Shock Absorber	22-1	22
	1605 Torque, Radius and Stabilizer Rods		
	1605 Front Suspension Assembly	23-1	23
	1605 Rear Suspension Assembly	24-1	24
Group 18	Body, Cab, Hood and Hull		
	1801 Body, Cab, Hood and Hull		
	Assemblies		
	1801 Side Panels	25-1	25
	1805 Floors, Subfloors and Related		
	Components		
	1805 Floor	26-1	26
	1808 Stowage Racks, Boxes, Straps,		
	Carrying Cases, Cable Reels,		
	Hose Reels, etc.		
	1808 Stowage Door Assembly	27-1	27
Group 22	Body Chassis or Hull, and Accessory Items		
	2202 Accessory Items		
	2202 Reflectors	28-1	28
	2210 Data Plates and Instruction Holders		
	2210 Identification Plates	29-1	29
Group 26	Tools and Test Equipment		
	2604 Special Tools (Repair Parts)		
	2604 Inserter, Bearing and Bushing	30-1	30
Group 95	General Use Standardized Parts		
	9501 Hardware Supplies and Bulk Materiel,		
	Common	Bulk-1	
Section III.	SPECIAL TOOLS.	31-1	
Group 26	Tools and Test Equipment		
	2604 Special Tools		
	2604 Special Tools	31-1	31
Section IV.	CROSS-REFERENCE INDEXES	I-1	
	NATIONAL STOCK NUMBER INDEX	I-1	
	PART NUMBER INDEX	I-4	
	FIGURE AND ITEM NUMBER INDEX	1-11	
APPENDIX G	ILLUSTRATED LIST OF MANUFACTURED ITEMS	G-1	
APPENDIX H	TORQUE LIMITS	H-1	
	ALPHABETIC INDEX	Index 1	

CHAPTER 1
INTRODUCTION

	Page
Overview	1-1
General Information	1-1
Equipment Description	1-3

OVERVIEW

This chapter provides general information about the type of data, equipment, forms, Army procedures, and reference material used to make up this manual. Also included in this chapter is a description of the capabilities, features, and components that make up the Heavy Expanded Mobility Ammunition Trailer (HEMAT).

Section I. GENERAL INFORMATION

1-1 I SCOPE

- a. Type of Manual. Operator, unit, direct, and general support maintenance manual including a Maintenance Allocation Chart (MAC) and a Repair Parts and Special Tools List (RPSTL).
- b. Model Number and Equipment Name. M989AI - Heavy Expanded Mobility Ammunition Trailer (HEMAT).
- c. Purpose of Equipment. To transport 22,000 pounds of payload.
 - (1) Eight 40 x 28 inch ammunition pallets.
 - (2) Four evenly distributed Multiple Launch Rocket System (MLRS) pods.
 - (3) Two fuel bladders and two fuel pods.

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.

1-4. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If the HEMAT needs improvement, send an EIR. The user can tell if something in the design or performance could be improved. Mail an SF 368 (Quality Deficiency Report) to U.S. Army Tank Automotive Command AMSTA-MP, Warren, MI 48397-5000. We will reply.

1-5. WARRANTY

Refer to TB-9-2330-383-14 for warranty terms.

1-6. PREPARATION FOR STORAGE OR SHIPMENT

Refer to chapter 5, section III.

1-70 SAFETY, CARE, AND HANDLING

Refer to TM 9-1300-206 for general ammunition care, handling, and safety.

1-8. METRIC UNITS

Metric units are not used in this publication. An English to metric conversion table is included on the inside back cover of this publication.

Section II. EQUIPMENT DESCRIPTION

1-9. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES

a. The HEMAT is a four-wheel trailer of lowboy design with a box-beam frame with large tires for off-road capability. The cargo area is constructed of steel with ship lap wood decking. The fore and aft decks are raised above the cargo deck and contain the suspension and steering systems.

b. The suspension is an air-bag type suspension for smooth riding and off-road stability. The steering system is that of a normal front-wheel truck steering linkage and is controlled by the towbar assembly.

c. The raised fore and aft decks are constructed with tread plate to minimize slipping or falling when working on the decks.

d. The side panels are removable for easier loading from either side.

e. There are four cargo tiedown rings at each end of the cargo deck and seven on each side. There are also four evenly distributed MLRS pod stops located at each corner of the deck. These pod stops are removable to allow other types of cargo.

f. Lift rings are located fore and aft on each side of the raised decks to allow the HEMAT to be sling loaded or helicopter transported. There are also four vehicle tiedowns located at each corner of the under deck for railroad transporting.

g. A storage box located in the box beam frame at the rear of the trailer is used to store tool boxes, parts, and accessories for extended use of the trailer.

h. The HEMAT will normally be towed by the M985 Heavy Expanded Mobility Tactical Truck (HEMTT). Load capability of the HEMAT is 22,000 pounds of munitions.

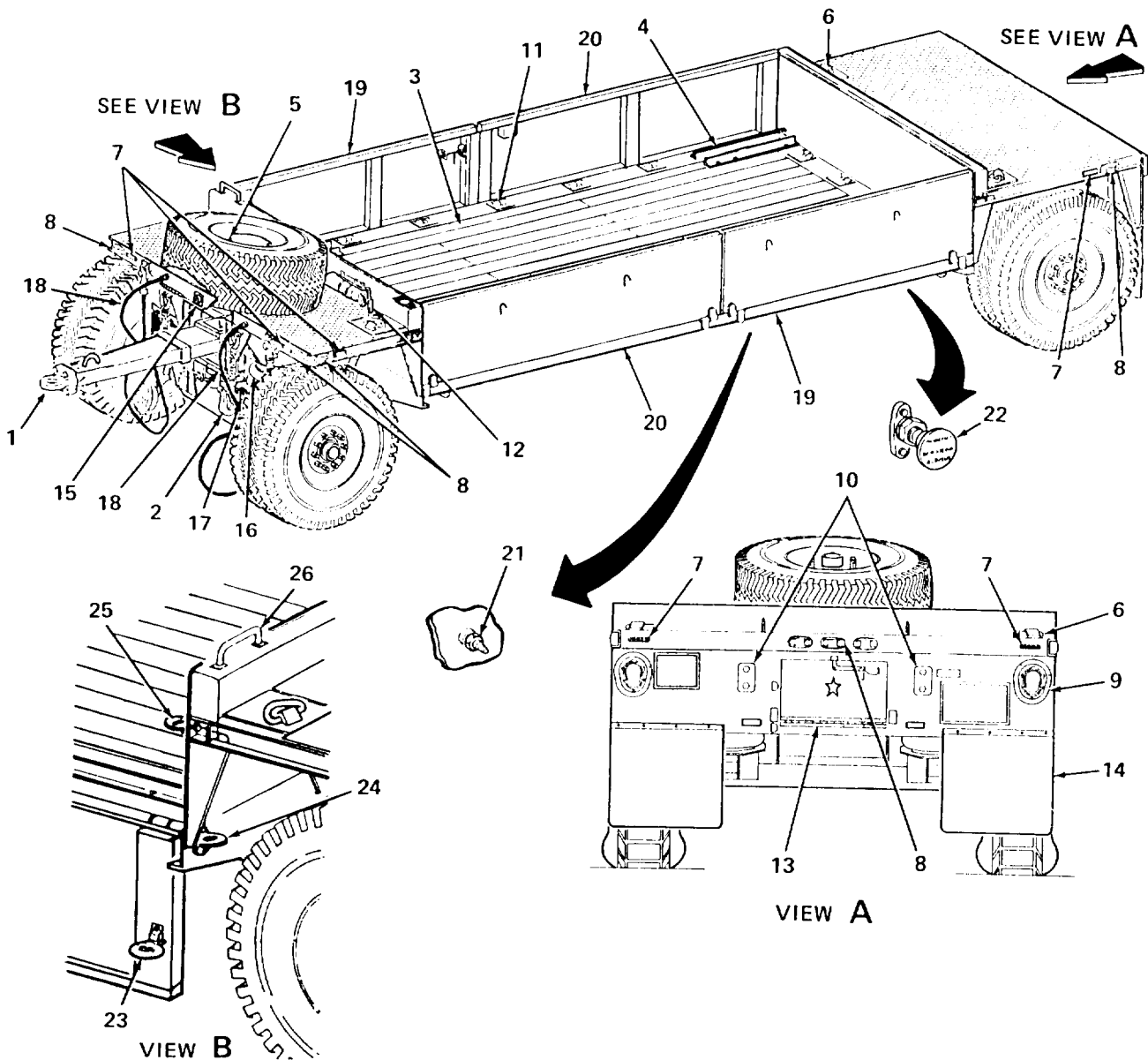
i. The towing vehicle provides electrical power through an intervehicular cable for the HEMAT clearance lights, brake lights, and turn signals.

j. Air is also supplied from the towing vehicle to the HEMAT air system, which includes three air tanks, air lines, four air suspension bags, and the four-wheel air brakes.

k. On-board trailer equipment includes a spare tire, jack, jack stand, lug wrench and handle, eight tiedown straps, and a fire extinguisher. Intervehicular electrical cable is stored in the storage box when not in use. Chocks are provided to stabilize the trailer when parked.

l. The trailer is equipped with an air hose fitting to allow use of the HEMTT air hose to inflate the tires. Air pressure in tires should be lowered to 65 psi for off-road travel.

1-10. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS



a. Towbar Assembly. The towbar assembly (1) is used for towing and steering the HEMAT.

b. Safety Chains. The safety chains (2) are attached from the HEMAT to the towing vehicle to prevent breakaway should the pintle and towbar separate during use.

c. Frame. The frame (3) is constructed of steel with a wood cargo deck. The frame also provides mounting for the axles and air suspension system.

d. Multiple Launch Rocket System Shoe Assembly. The cargo deck has one removable MLRS pod stop (4) in each of the four corners.

e. Spare Tire and Mounting Assembly. The spare tire (5) is secured on its mount with two studs and two lug nuts.

f. Lifting Eyes. Lifting eyes (6) are located on each side of the fore and aft decks. They are used to sling hoist or helicopter the HEMAT.

g. Reflectors. The rear (red) and forward (amber) reflectors (7) provide additional visibility of the HEMAT.

h. Lights. HEMAT lights include the rear (red) and forward (amber) clearance lights (8), and also the multipurpose composite taillights (9). The composite taillights (9) function as turn signals and brake lights. They also can be darkened during blackout.

i. Rubber Bumpers. The two rubber bumpers (10) located at the rear of the trailer prevent damage to the HEMAT and the deck when loading and unloading or parking.

j. Cargo Tiedown Rings. Twenty-two tiedown rings (11) are located around the cargo deck to secure cargo.

k. Fire Extinguisher. A fire extinguisher (12) is located on the front deck wall at all times in case of emergency.

l. Storage Box. A storage box (13) is located at the rear of the trailer for storing tools, -jack, cable, and other accessories.

m. Splash Guards. Splash guards (14) are provided to prevent debris hitting vehicles behind the HEMAT. There are also splash guards in front to protect the front air bags.

n. Electrical Cable Connector. The electrical cable connector (15) is the HEMAT receptacle for the intervehicular cable, which provides 24 volt dc power for the HEMAT lights.

o. Air Suspension System. The air suspension system (16) consists of four air bags (two front and two rear) supported by the axle suspension systems.

p. Air Brakes. The HEMAT air brakes (17) are controlled by the towing vehicle through intervehicular air hoses to the HEMAT air brake system.

q. Air Hoses. Two air hoses (18) provide air from the towing vehicle for operation of the HEMAT brakes.

r. Side Panels. The four side panels, one short (19) and one long (20) on each side, are removable.

s. Air Hose Fitting (Under Trailer). A fitting (21) is supplied for use in connecting the HEMTT air hose. The hose is then used to inflate the HEMAT tires.

t. Brake Control Valve (Under Trailer). A brake control valve (22) is used for moving the HEMAT when an air supply for the air brakes is not available.

1-10. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (CONT)

u. Access Steps (Curbside). One foldable access step (23) is mounted inside the curbside short side panel and two foldable access steps (24 and 25) are mounted on the front bulkhead, curbside, and a handle (26) is mounted on the front bulkhead curbside above the steps, to permit ready access to the front deck area when HEMAT is loaded.

1-11. EQUIPMENT DATA

Dimensions

Height	57 in. to top of side rail
	72 in. over spare tire
	34 in. to top of floor
Length	309 in.
Width	98.4 in.
Ground clearance	14.7 in., front axle
	21.7 in., box beam

Weight

Empty	10,850 lbs
Payload	22,000 lbs

Tires

Size	15 x 22.5
Inflation pressure	100 psi highway/65 psi
	off-road
Plies	10, sidewalls
	11, tread
Tread design	Traction road lug

Axles

Manufacturer: Front	Westport Axle
Rear	Southwest Mobile Systems
Capacity	16,900 lbs, front
	16,000 lbs, rear

Brake system

Type	Straight air
----------------	--------------

Brakes

Manufacturer	Eaton
Type	Drum 16-1/2 x 5 in.

Suspension

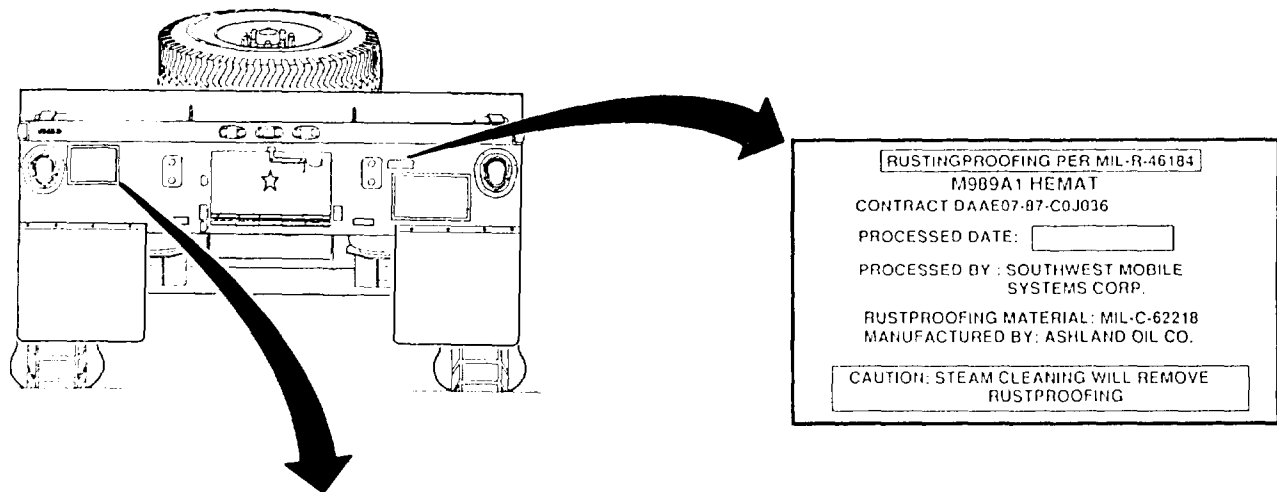
Manufacturer	Ridewell
Air bags	Firestone

Electrical system	24 Vdc
	Negative ground

Fire extinguisher	Amerex Corp.
	Dry chemical

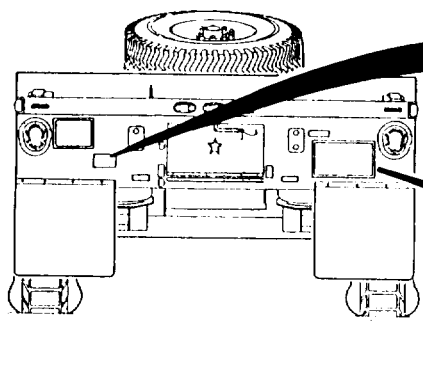
1-12. DATA PLATES

The following data plates are riveted to the trailer.



HEAVY EXPANDED MOBILITY AMMUNITION TRAILER, M989A1															
<p>▼ = CARGO TIEDOWN POINTS CAPACITY = 16,500</p> <p>▲ = LIFT POINTS</p>															
LIFTING DATA ALL CARGO MUST BE EVENLY DISTRIBUTED ON TRAILER WHEN LIFTING WITH LIFTING EYES. LIFTING CAPACITY OF EACH LIFT EYE IS 26,840 LBS.		WEIGHT DISTRIBUTION DATA <table border="1"> <thead> <tr> <th>LOCATION</th> <th>EMPTY</th> <th>LOADED</th> </tr> </thead> <tbody> <tr> <td>AXLE, FRONT</td> <td>5,621</td> <td>16,674</td> </tr> <tr> <td>AXLE, REAR</td> <td>5,029</td> <td>15,976</td> </tr> <tr> <td>DIM B</td> <td>150.5</td> <td>146.5</td> </tr> </tbody> </table>		LOCATION	EMPTY	LOADED	AXLE, FRONT	5,621	16,674	AXLE, REAR	5,029	15,976	DIM B	150.5	146.5
LOCATION	EMPTY	LOADED													
AXLE, FRONT	5,621	16,674													
AXLE, REAR	5,029	15,976													
DIM B	150.5	146.5													
TIEDOWN DATA EACH TIEDOWN MAY BE USED FOR BOTH LONGITUDINAL AND LATERAL RESTRAINT. RESTRAINING CAPACITY OF EACH TIEDOWN IS 16,500 LBS. VERTICALLY DOWN.		SHIPPING CUBE 309 x 72 x 96 MAXIMUM PAYLOAD 22,000 LBS. SHIPPING WEIGHT (EMPTY) 10,650 LBS.													
MODEL NO. M989A1 NSN 2330-01-275-7474 CONTRACT NO. DAAE07-87-C-J036 VEHICLE REG. NO. <input type="text"/>		MFD. BY: SOUTHWEST MOBILE SYSTEMS CORP. ST LOUIS, MO INSPECTION STAMP <input type="text"/> INSPECTION DATE <input type="text"/>													

1-12. DATA PLATES (CONT)



WARRANTY

NSN 2330-01-273-7474
 WARRANTY BULLETIN NO. _____
 MFR CAGE 98255
 SOUTHWEST MOBILE SYSTEMS
 WARRANTY BEGINS _____
 WARRANTY IS 18 MONTHS,
 24 MONTHS IF ACCEPTED
 FOR DEPOT STORAGE

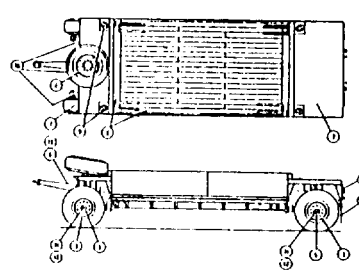
LUBRICATION CHART

HEAVY EXPANDED MOBILITY AMMUNITION TRAILER, M989A1

INTERVAL	REF NO.	IDENTIFICATION	SERVICE	LUBRICANT	NO. OF SERVICE POINTS
M	1	BACKUP PIN	APPLY TO CONTACT AREAS	GAA	1
M	2	STORAGE BOX HINGES	LUBRICATE WEAR POINTS	GS	1
SA	3	SHAKE ANCHOR PIN IN DRUM	LUBRICATE	GAA	1
M	4	PADLOCKS	CLEAN LUBRICATE	GAE	2
E	5	5/8" STEEL BEARINGS INNER & OUTER HUBCAP	REMOVE, CLEAN, DRY, REPACK	GAA	4
D	6	TOW BAR PIVOT	LUBRICATE	GAA	1
M	7	SHOCK ADJUSTER	LUBRICATE	GAA	1
SA	8	SHOCK RESISTOR	LUBRICATE	GS	2
SA	9	1 1/2" KING RETAINER	LUBRICATE	GS	4
M	10	STEERING LINKAGE	LUBRICATE	GAA	1
SA	11	SHAKE & LAMP SHAFT	LUBRICATE	GAA	1
SA	12	SHAKE NOISES	LUBRICATE	GAA	1
D	13	TOW BAR PIN	LUBRICATE	GAA	2

NOTES

1. WARNING: SOLVENT FED. P.D. MORTONIC. KEEP OFF SKIN, EYES AND CLOTHES. DO NOT BREATHE THE VAPORS. USE CHEMICAL GOGGLES AND HAVE GOOD VENTILATION.
2. INTERVALS ARE BASED ON NORMAL OPERATION.
3. RE-LUBRICATE AFTER WASHING.
4. LUBRICATE BOTH SIDES OF EQUIPMENT.
5. TOW BAR PIVOT (5) LUBRICATE WITH GAA. ATTACH GREASE GUN TO LUBRICATION FITTINGS AND LUBRICATE.
6. TOW BAR (13) LUBRICATE WITH GAA. ATTACH GREASE GUN TO LUBRICATION FITTINGS ON JOINT PIN AND LUBRICATE UNTIL CLEAN GREASE FLOWS FROM EACH SEGMENT OF JOINT. MOVE TOW BAR UP AND DOWN THROUGH ITS FULL RANGE OF MOTION TO SPREAD GREASE INSIDE JOINT. WIPE OFF EXCESS GREASE.
7. FOR BACKUP PIN, REMOVE HANDLE, REMOVE PIN AND APPLY GREASE.

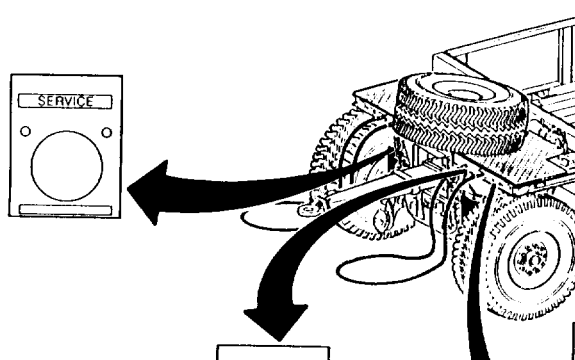


SPECIFICATIONS

OIL	MIL-1-2180
OIL	MIL-1-2180
GREASE	MIL-G-10554
SOLVENT	FED-P-D-144
ARCHIL	OPERATION TM 9-233

LUBRICANT DATA


LUBRICANT	TEMPERATURES		
	ABOVE +32°F	+32°F TO -18°F	0°F TO -65°F
OIL LUBRICATING ENGINE	DE 30	DE 10W	DE 5W
PL-ON LUBE PRESERVATIVE	PL MEDIUM	PL SPECIAL	PL SPECIAL
GAA GREASE AUTOMOTIVE AND AIRCRAFT	GAA	GAA	GAA




WARNING

STEERING LOCKPIN MUST BE DISENGAGED DURING ANY STEERING OPERATION OF THE VEHICLE OTHER THAN A STRAIGHT LINE

DISENGAGED POSITION

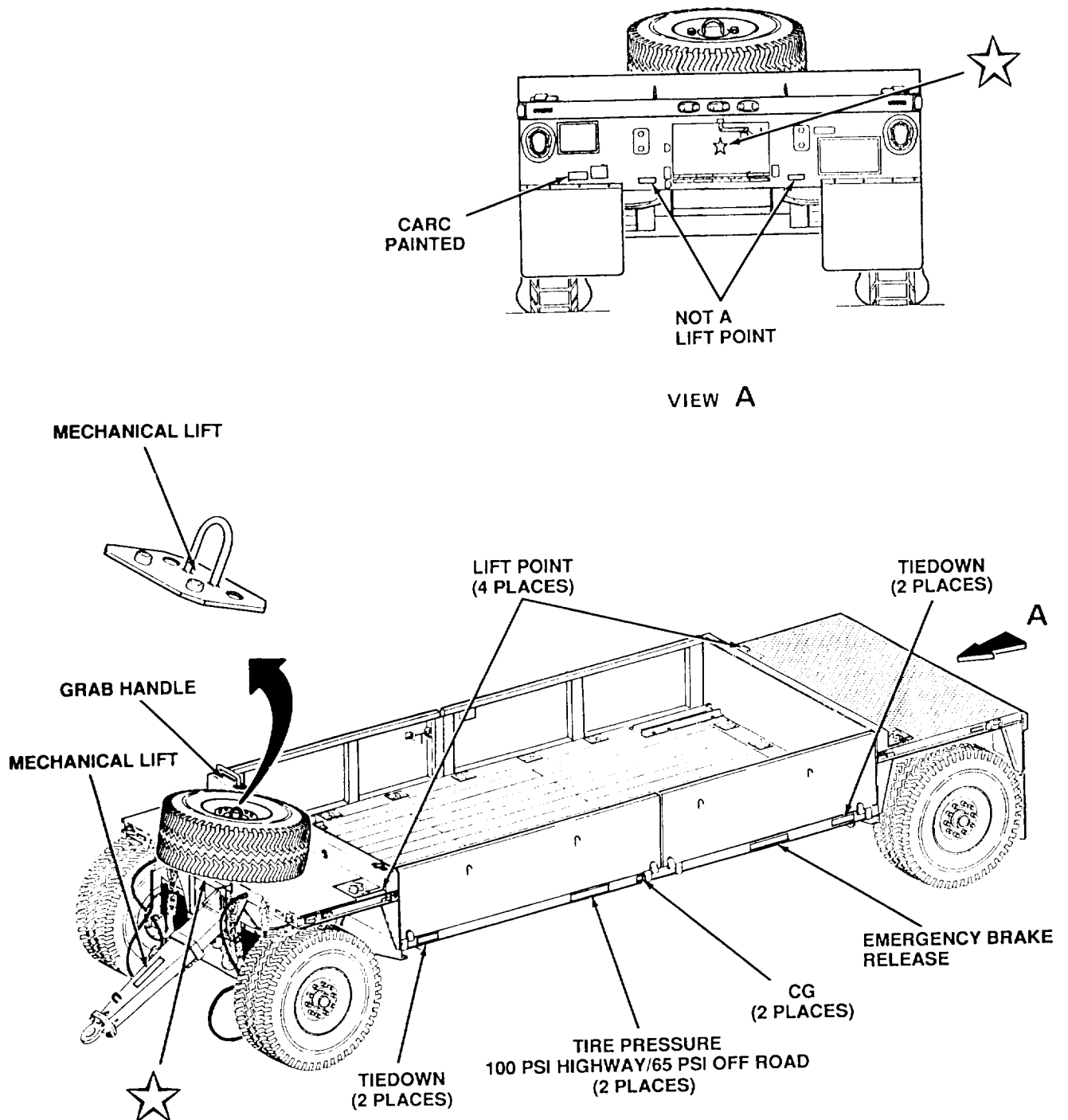


ENGAGED POSITION



1-13. STENCILS

The following stencils are painted on the trailer.



CHAPTER 2

OPERATING INSTRUCTIONS

	Page
Overview	2-1
Description and Use of Operator's Controls and Indicators	2-1
Operator Preventive Maintenance Checks and Services (PMCS)	2-8
Operation Under Usual Conditions	2-17
Operation Under Unusual Conditions	2-39

OVERVIEW

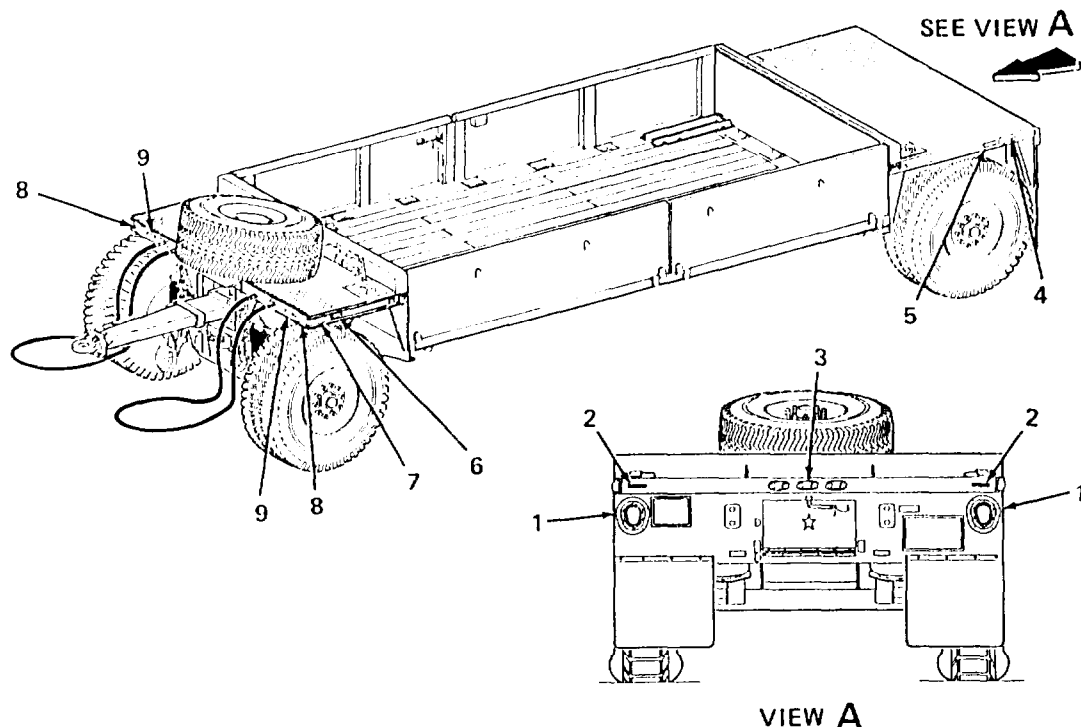
This chapter provides operator instructions for the operation and maintenance of the Heavy Expanded Mobility Ammunition Trailer (HEMAT) and its components. A Preventive Maintenance Checks and Services (PMCS) chart is provided as a guideline. Also, operating procedures for both usual and unusual conditions are included.

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

2-1. LIGHTING SYSTEM

a. Lights. The trailer lights are operated by the towing vehicle through the intervehicular electric cable. Lights include the following:

(1) Two rear composite lights (1), each containing a stoplight, turn signal light, a blackout stoplight, blackout marker light, and taillight.



2-1. LIGHTING SYSTEM (CONT)

(2) Two rear red marker reflectors (2).

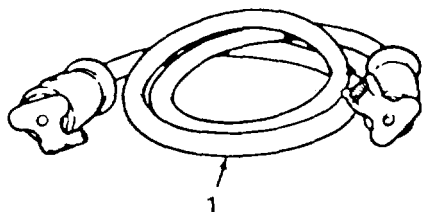
(3) Three rear red marker lights (3).

(4) Two red rear side lights (4) located left and right. Two red reflectors (5) located right and left.

(5) Two amber reflectors (6) and two amber clearance marker lights (7) located on left and right sides of trailer front.

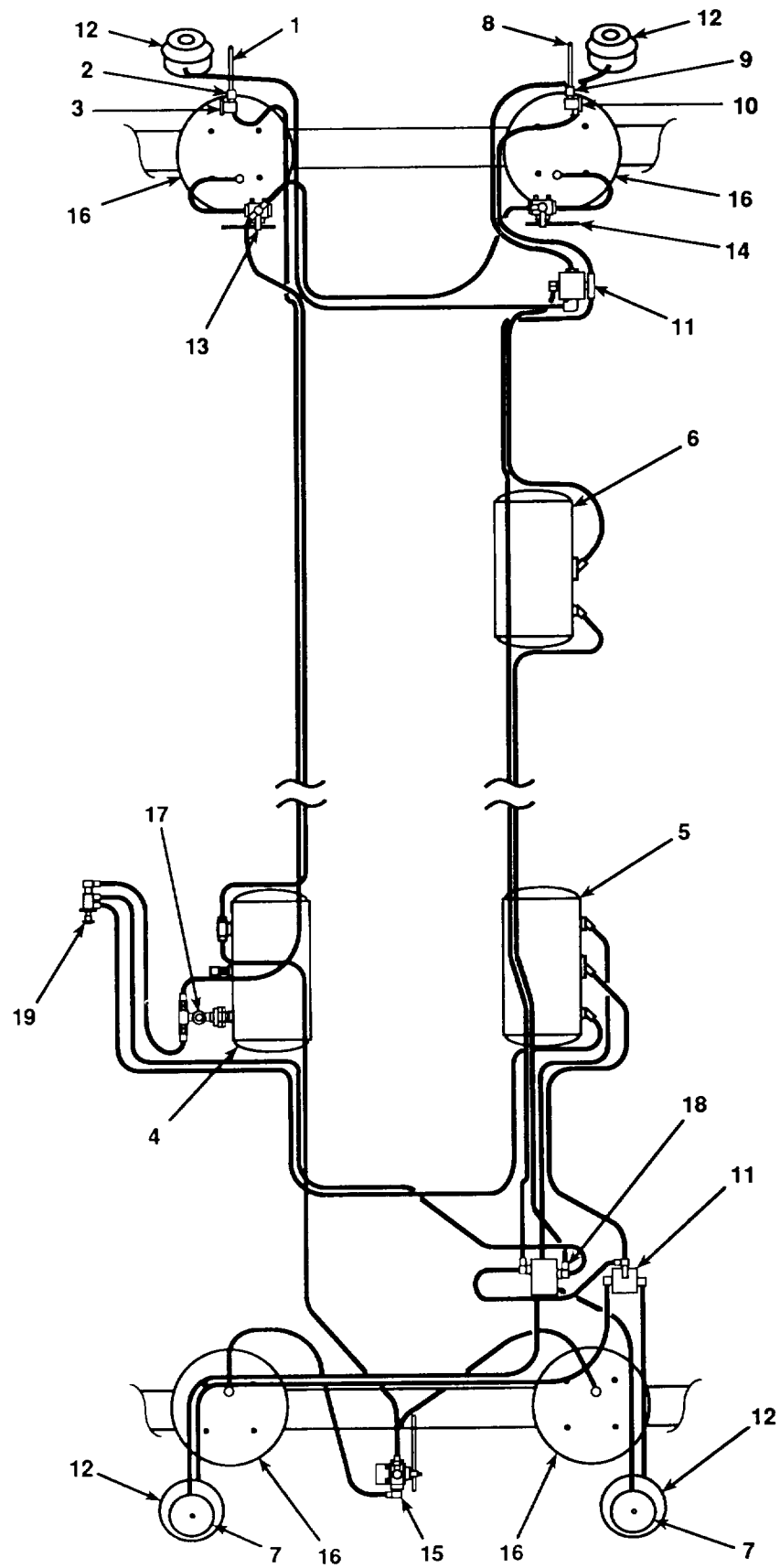
(6) Two amber lights (8) and two amber reflectors (9) located on front end of HEMAT.

b. Intervehicular Cable. The intervehicular cable (1) is used to connect the trailer lighting system to the towing vehicle electrical system during towing operations. The cable plugs are keyed so that they can only be connected to the trailer connector and the towing vehicle connectors in one way. The lights are operated from the towing vehicle. When not in use, the cable is stowed in the storage box.



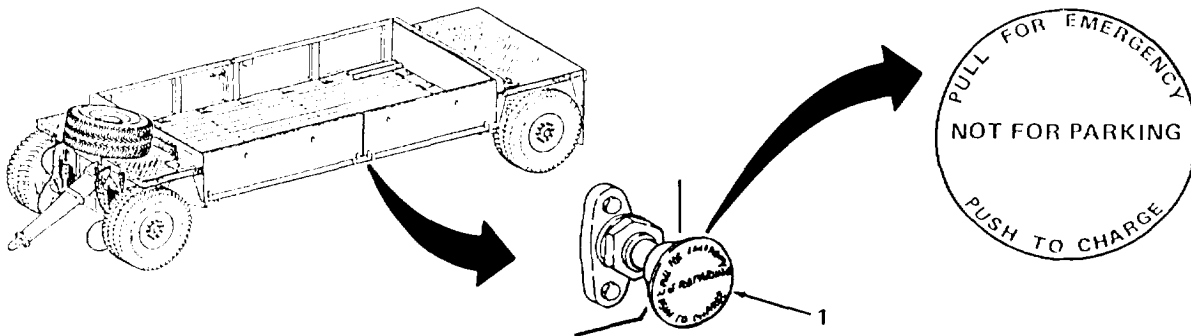
2-2. AIR SYSTEM

The pneumatic system is a standard two-line air brake system which includes emergency and parking brake features. The system is pressurized by the tractor through the emergency (supply) air line (1), gladhand (2), and air cleaner (3) to the left rear (4), right rear (5), and right front air reservoir (6), where air is stored. Air pressure is automatically applied to the rear spring brakes (7) to release them for normal operation. When any of the brake controls on the tractor are activated, pressure is provided from the tractor through the service (control) air line (8), gladhand (9), and air cleaner (10) to two relay valves (11), which release air pressure from reservoirs (4, 5, and 6) to operate four service brakes (12) for normal trailer braking and parking brake operations. From the three reservoirs, air is also supplied to the left front (13), right front (14), and rear leveling valve (15), which pressurize the four air suspension bags (16). If air pressure drops below approximately 60 psi, the pressure protection valve (17) cuts off air to leveling valves (13, 14, and 15), leaving air pressure to operate the service brakes only. If there is a major component failure or line rupture in the system, or the trailer is disconnected from the tractor, the multifunction valve (18) disables both relay valves (11) and releases air from the rear spring brake chambers, applying the rear spring brakes (7). The rear spring brakes (7) can be released by pushing the knob inward on the brake control valve (19), or by connecting the trailer to the tractor and recharging the air system. If the system has no air pressure, rear spring brakes can be manually released by caging.

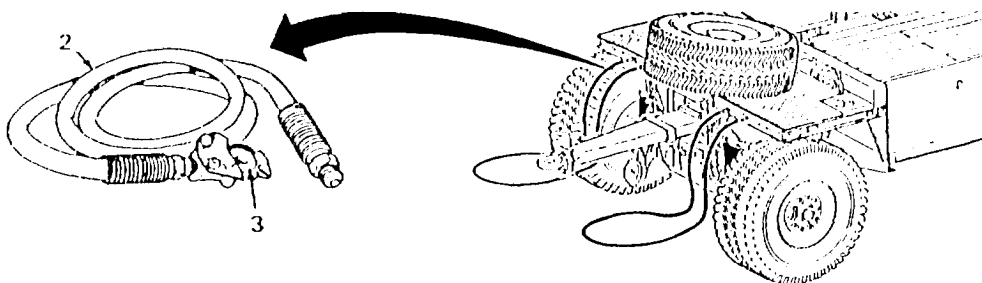


2-3. AIR BRAKE AND SUSPENSION SYSTEM

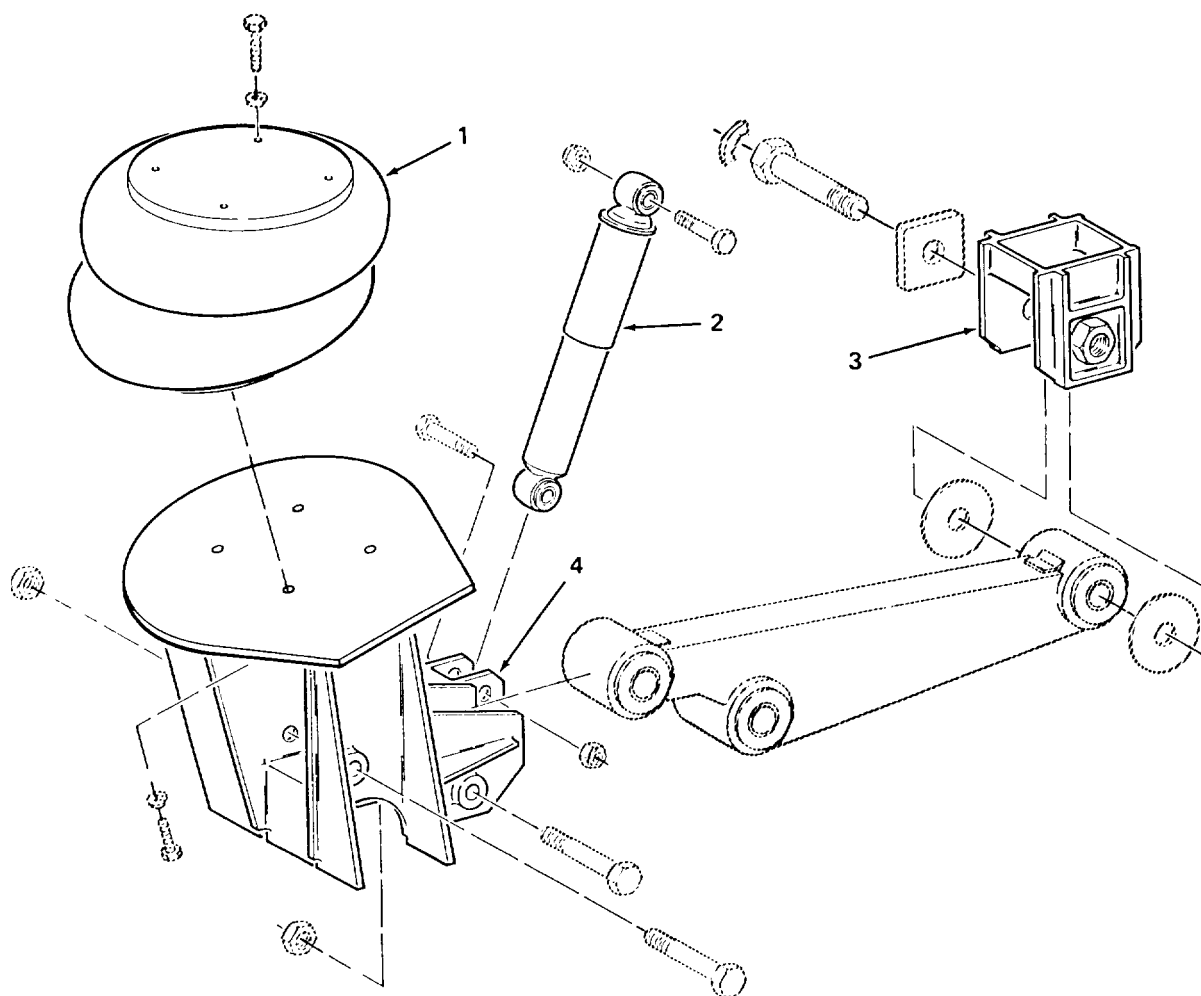
a. Service Brakes. The service brakes are expanding shoe-on-drum type brakes. The brake shoes are actuated by individual air chambers through camshafts. The air chambers are connected to the air system tanks and-valves through air hoses. The rear brakes are normally automatically locked as parking brakes when the trailer is disconnected from the towing vehicle. To unlock the rear brakes, push in on the control valve knob (1). If there is not enough air in the air tank, the control valve knob will pop back out and the rear brakes will remain locked. If the brakes cannot be released with the control valve, refer to para. 3-6 and mechanically release the brakes by caging the spring brake chamber.



b. Intervehicular Air Hoses. Air for operation of the trailer brakes is provided from the towing vehicle through two intervehicular air hoses (2) attached to the front of the trailer. The hoses are for service brake operation and for the emergency system. Both hoses have gladhand couplings (3) for quick secure connection to the tow vehicle.

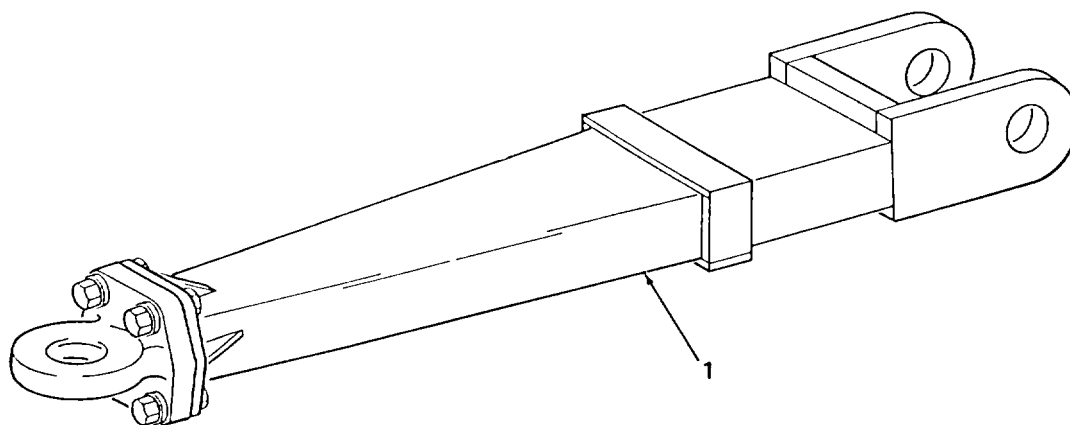


c. Suspension System. The trailer suspension system includes front and rear systems. The front suspension system has left and right side air-bag springs (1) and shocks (2) attached to hanger (3) and shock brackets (4). The illustration shown is for the left side. The rear suspension system consists of right and left air-bag springs (1) and shocks (2) attached to hanger (3) and shock brackets (4).



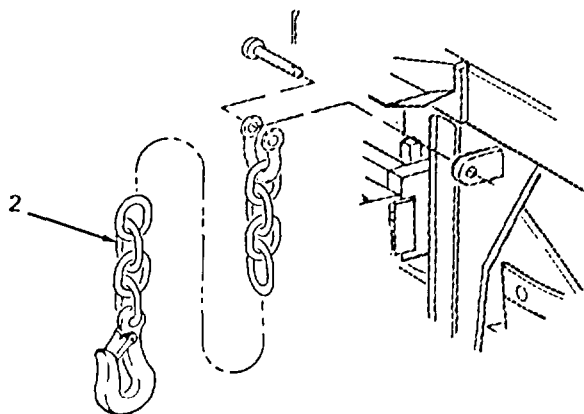
2-4. TOWBAR AND SAFETY CHAINS

a. Towbar. The towbar assembly (1) is used to connect the trailer to the tow vehicle for transporting. It is connected to the trailer tie rod for steering. The towbar can be held in place on the trailer by a lockpin when backing or parking the trailer.



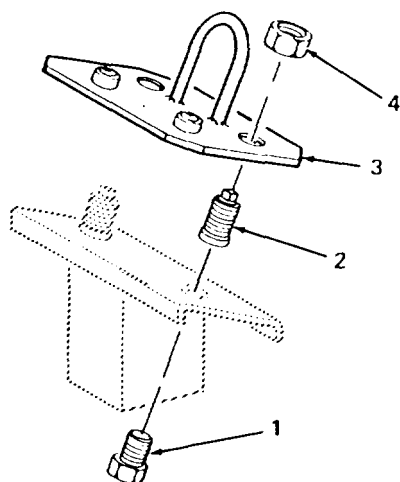
2-4. TOWBAR AND SAFETY CHAINS (CONT)

b. Safety Chains. The two safety chains (2) are attached just right and left of the towbar on the front end of the frame. Their purpose is to prevent breakaway in the event of towbar failure or pintle disconnect. The chains are hooked to the towing vehicle after the towbar has been connected.



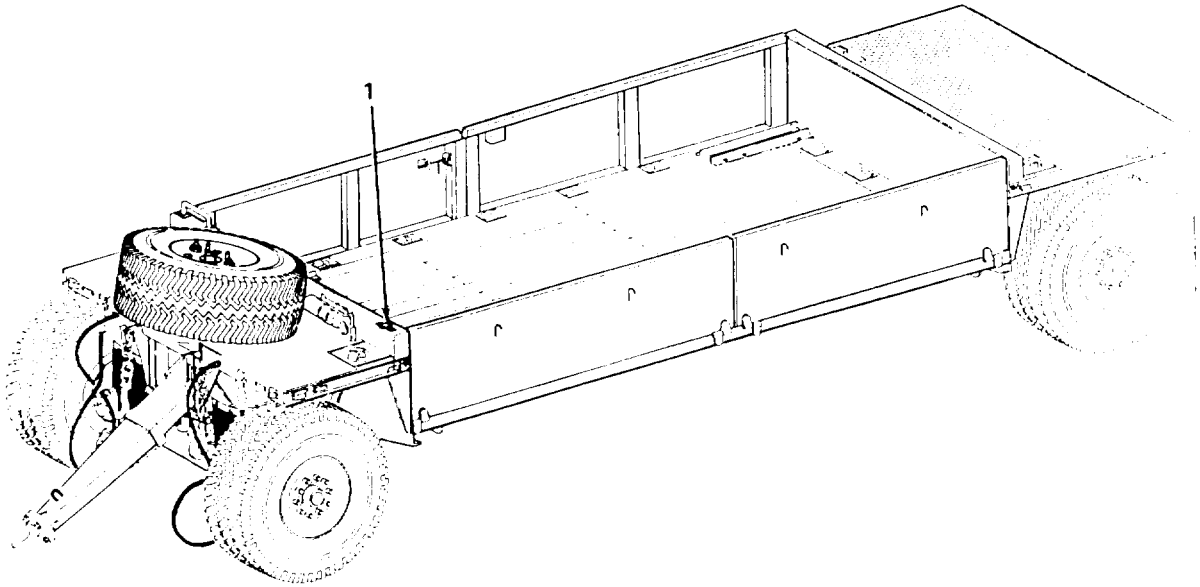
2-5. SPARE TIRE MOUNT

The trailer spare tire is located center on the forward deck and secured with two studs (1), cap nuts (2), lifting plate (3), and two lug nuts (4).



2-6. DAVIT CRANE MOUNT

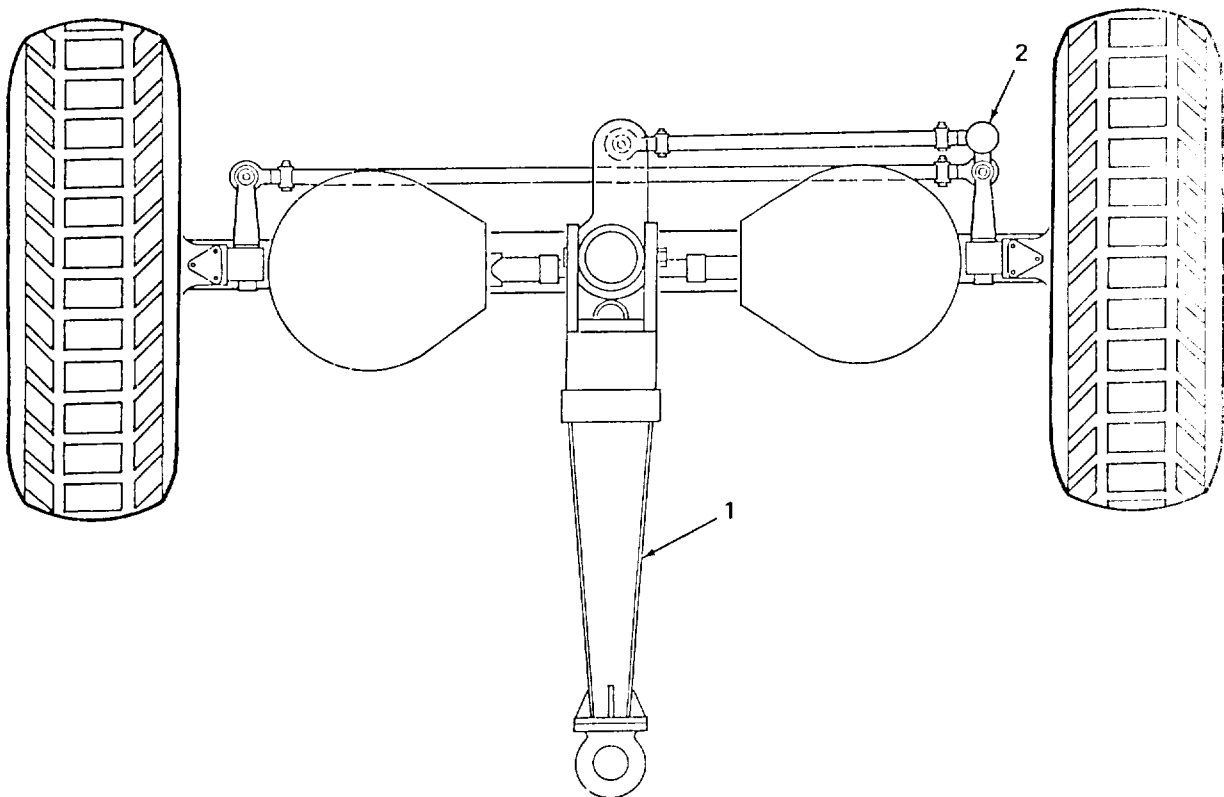
The davit crane mount (1) is located streetside on the forward bulkhead and is used to mount the davit hoist arm from the HEMTT. When the HEMTT davit is mounted in this location, it can be used to lift the spare tire and towbar.



2-7. STEERING

The trailer steering is controlled by the towbar assembly (1) which is connected to the trailer tie rod and steering assembly (2).

b. When the trailer is being backed up, the towbar assembly is normally pinned in place so that the front wheels are locked in a straight-ahead position.



2-8. STORAGE BOX

The trailer storage box is located at the rear of the trailer between the two dock bumpers. The storage box is used to stow intervehicular cable when it is not being used, as well as to stow the chocks, jack, lug wrench, and other tools as-required.

2-9. FIRE EXTINGUISHER

The fire extinguisher is a standard 10BC type. It is mounted on the left side of the forward deck wall next to the spare tire. It is held in place with a quick-release bracket.

2-10. LIFTING EYES

The four lifting eyes are located left and right on the forward and rear decks. The lifting eyes are used to lift the trailer.

2-11. SIDE PANELS

There are two side panels 23 inches high on each side of the trailer, one 79-3/4 inches long and the other 95-3/4 inches long. When installed, they are the same height as the forward and rear deck supports. The two short panels are drilled to mount the foldable access steps.

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

2-12. MAINTENANCE FORMS AND RECORDS

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

2-13. OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

a. Table 2-1 lists the necessary PMCS. Perform at the intervals shown below:

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

(2) Do your during (D) PREVENTIVE MAINTENANCE during operation. (During operation means to monitor the vehicles and their related components while they are actually being operated.)

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

(4) Do your weekly (W) PREVENTIVE MAINTENANCE weekly.

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

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

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

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

WARNING

Dry cleaning solvent (A-A-711, type I) is extremely flammable, toxic, and is an irritant to the eyes, skin, and respiratory system. Do not use near open flame or excessive heat. Do not breathe the vapors. Use skin and eye protection and work in a well ventilated area. Flash point of solvent is 140°F.

(1) Cleaning. Dirt, grease, oil, and debris only get in the way and may cover up a serious problem. Clean as you work and as needed. Use dry cleaning solvent (A-A-711, type I) (item 6, appendix E) on all metal surfaces. Use soap and water when you clean rubber or plastic material.

(2) Bolts, Nuts, and Screws. Check them all for obvious looseness, missing, bent, or broken condition. You can't try them all with a tool, of course; but look for chipped paint, bare metal or rust around bolt heads. If you find one you think is loose, tighten it, or report it to unit maintenance if you can't tighten it.

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

(4) Electrical Wires and Connectors. Look for cracked or broken insulation, bare wires and loose or broken connectors. Tighten loose connectors and make sure the wires are in good shape.

(5) Air Hose Lines. Look for wear, damage and leaks, and make sure clamps and fittings are tight. If a leak comes from a loose fitting or connector, tighten it. If something is broken or worn out, report it to unit maintenance.

2-13. OPERATOR PREVENTIVE MAINTENANCE CKECKS AND SERVICES (PMCS) (CONT)

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

NOTE

Within the designated interval, these checks are to be performed in the order listed.

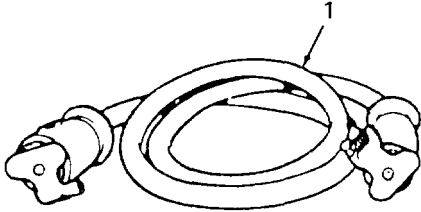
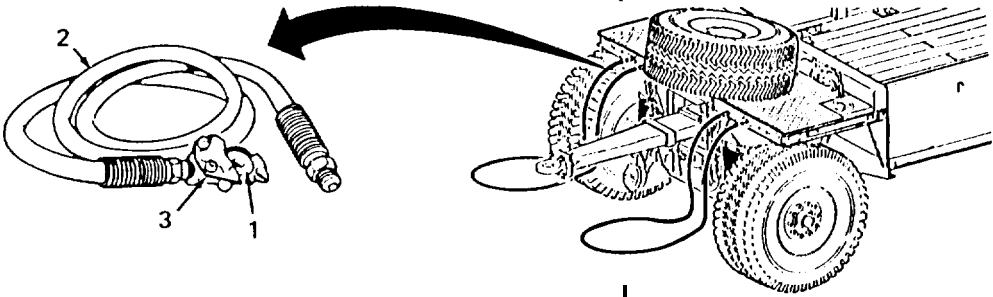
					B-Before	D - During	A - After	W - Weekly
Item No.	Interval				ITEM TO BE INSPECTED Procedure: Check for and have repaired, filled, or adjusted as needed.			Equipment Is Not Ready/Available If:
	B	D	A	W				
					<p>NOTE</p> <p>Perform weekly (W) PMCS as well as before if:</p> <p>You are the assigned operator but have not operated vehicle since the last inspection or you are operating the vehicle for the first time.</p> <p>Perform the following inspection/ checks before connecting the trailer to the towing vehicle.</p> <p>INTERVEHICULAR CABLE</p> <p>Check intervehicular cable (1) for cuts, breaks and frayed wires or damaged cable plugs and missing, broken, or bent pins.</p>  <p>INTERVEHICULAR AIR HOSES</p> <p>a. Check preformed packing (1). If defective, notify unit maintenance.</p> <p>b. Check intervehicular air hoses (2) for cuts, breaks and damaged glad-hand (3). If damaged, notify unit maintenance.</p>			Air hose is damaged or missing. Gladhand missing, damaged or missing the packing.

Table 2-1. Operator Preventive Maintenance Checks and Services (PMCS) - CONT

NOTE

Within the designated interval, these checks are to be performed in the order listed.

B - Before					D - During					A - After					W - Weekly				
Item No.	Interval				ITEM TO BE INSPECTED Procedure: Check for and have repaired, filled, or adjusted as needed.										Equipment Is Not Ready/Available If:				
	B	D	A	W															
3															Damaged tanks or air leaks from tanks.				
					<p>AIR TANKS</p> <p>a. Inspect all three air tanks for damage and leakage.</p> <p><u>WARNING</u></p> <p>Wear protective goggles when opening drain cock and avoid the air stream. Failure to do so could result in personal injury.</p> <p>b. Open drain cocks on air tanks to drain condensation.</p> <p>c. Close drain cock.</p>														
4					<p>AIR BRAKE SYSTEM</p> <p>a. While a helper activates service brakes, listen for air leaks at gladhands, air valves and tanks, and inspect lines for loose connections and damage. Report deficiencies to unit maintenance.</p>										Air is leaking. Service brakes do not operate.				

2-13. OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) (CONT)Table 2-1. Operator Preventive Maintenance
Checks and Services (PMCS) - CONT**NOTE**

Within the designated interval, these checks are to be performed in the order listed.

B - Before

D - During

A - After

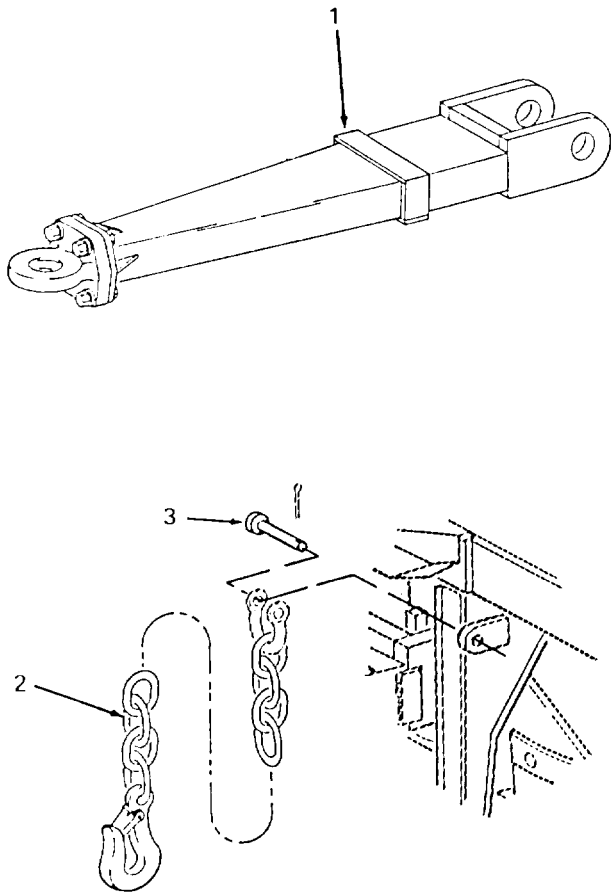
W - Weekly

Item No.	Interval				ITEM TO BE INSPECTED Procedure: Check for and have repaired, filled, or adjusted as needed.	Equipment Is Not Ready/Available If:
	B	D	A	W		
4 - CONT		.			<p>AIR BRAKE SYSTEM - CONT</p> <p>b. Test air brake system.</p> <p>(1) Connect trailer to towing vehicle (para. 2-14) and allow 1-2 minutes for air system to fully charge.</p> <p>(2) Release towing vehicle parking brake and check to see if rear pushrods retract.</p> <p>(3) Actuate service brakes. Observe air chamber pushrods to make sure brakes are evenly applied. Be alert for unusual difficulty in stopping that would indicate trailer service brakes are malfunctioning.</p> <p style="text-align: center;"><u>WARNING</u></p> <p>A hot brake or drum can cause serious burns. Exercise extreme caution before attempting to touch brake drum after use. Slowly move hand toward drum. If drum is overheated, radiated heat will be felt before the hand actually touches the drum.</p> <p>(4) Cautiously feel brake drums for abnormally hot or cold condition.</p>	<p>Rear pushrods do not retract.</p> <p>Uneven or no braking.</p> <p>Brake drums abnormally hot or cold.</p>

Table 2-1. Operator Preventive Maintenance Checks and Services (PMCS) - CONT

NOTE

Within the designated interval, these checks are to be performed in the order listed.

Item No.	Interval				ITEM TO BE INSPECTED Procedure: Check for and have repaired, filled, or adjusted as needed.	Equipment Is Not Ready/Available If:
	B	D	A	W		
5	.				<p>TOWBAR AND SAFETY CHAINS</p> <p>Check for loose or damaged towbar (1). Check towbar mounting pin. Check safety chain (2) and retainer pin (3). Notify unit maintenance of defects.</p> 	Towbar is loose or damaged.

2-13. OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) (CONT)Table 2-1. Operator Preventive Maintenance
Checks and Services (PMCS) - CONT**NOTE**

Within the designated interval, these checks are to be performed in the order listed.

B - Before

D - During

A - After

W - Weekly

Item No.	Interval				ITEM TO BE INSPECTED Procedure: Check for and have repaired, filled, or adjusted as needed.	Equipment Is Not Ready/Available If:
	B	D	A	W		
6	.				TIRES a. Check tire pressure when tires are cool. Pressures: 100 psi (highway) 65 psi (off-road) b. Check spare tire for pressure of 100 psi/65 psi for off-road mission. c. Check all tires for cuts, foreign objects or unusual tread wear. Remove any stones from between treads.	Two or more tires are flat, missing or unserviceable.
7	.				WHEELS NOTE Report any loose wheel nuts to organizational maintenance for torquing (450-500 lb ft). Check wheels for damage and wheel nuts for looseness and missing nuts. Check air valve for leaks.	
8				.	SIDE PANELS Inspect side panels for damaged latches, panels or hinges. If damaged, notify unit maintenance.	

Table 2-1. Operator Preventive Maintenance
Checks and Services (PMCS) - CONT

NOTE

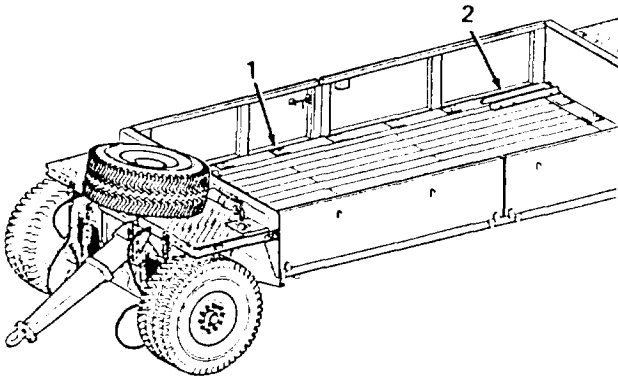
Within the designated interval, these checks are to be performed in the order listed.

B - Before

D - During

A - After

W - Weekly

Item No.	Interval				ITEM TO BE INSPECTED Procedure: Check for and have repaired, filled, or adjusted as needed.	Equipment Is Not Ready/Available If:
	B	D	A	W		
9					<p>CARGO TIEDOWN RINGS (QTY 22) AND POD STOPS (QTY 4)</p> <ul style="list-style-type: none"> • a. Inspect for damaged or missing cargo tiedown rings (1). • b. Inspect for loose, missing or damaged pod stops (2). 	<p>Cargo tiedown ring is missing or damaged.</p> <p>Pod stops are missing or loose when required for mission.</p>
10					 <p>The diagram shows a side view of a cargo trailer. A tiedown ring, labeled '1', is attached to the side rail. A pod stop, labeled '2', is located at the front of the trailer bed.</p>	
					<p>LIGHTS AND REFLECTORS</p> <p>NOTE</p> <p>An assistant is required to check the brake lights with trailer connected to towing vehicle.</p> <ul style="list-style-type: none"> • a. Check all lights for proper operation. • b. Check for damaged or missing reflectors. 	

2-13. OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) (CONT)Table 2-1. Operator Preventive Maintenance
Checks and Services (PMCS) - CONT**NOTE**

Within the designated interval, these checks are to be performed in the order listed.

B - Before

D - During

A - After

W Weekly

Item No.	Interval				ITEM TO BE INSPECTED Procedure: Check for and have repaired, filled, or adjusted as needed.	Equipment Is Not Ready/Available If:
	B	D	A	W		
11					AIR SUSPENSION	
	•				a. Check for ripped, cut, or torn air bags.	
	•				b. Check for proper inflation before moving trailer.	
12					FRAME	
	•				Inspect frame for obvious broken welds and distortion. Report damage to unit maintenance.	Welds are broken and/or frame is distorted.
13					BASIC ISSUE ITEMS	
	•				Ensure all basic issue items (appendix C) are present. Report damaged or missing items to unit maintenance.	
14					FIRE EXTINGUISHER	
	•				Inspect fire extinguisher to make sure pressure level is in the green area. If not in green area, notify unit maintenance.	

Section III. OPERATION UNDER USUAL CONDITIONS

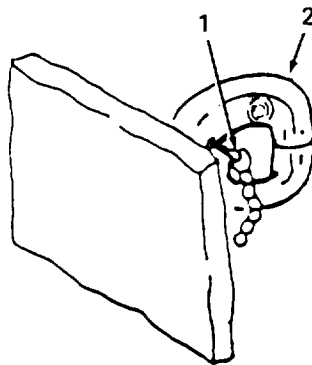
2-14. CONNECTING HEMAT TO TOWING VEHICLE USING DAVIT CRANE FROM HEMIT)

WARNING

Be alert for other moving vehicles in the area. Do not stand between towing vehicle and trailer when towing vehicle is backing up. Serious injury can result if personnel are caught between vehicles. Set chocks front and rear of rear tires on trailer.

To avoid injury to personnel and damage to equipment, connecting the trailer requires two persons.

- a. On towing vehicle, pull cotter pin (1) and open pintle (2). Back towing vehicle up until towing vehicle pintle (2) is aligned with and approximately 1 foot in front of trailer towbar lunette. Stop towing vehicle, set brakes and proceed as follows:



WARNING

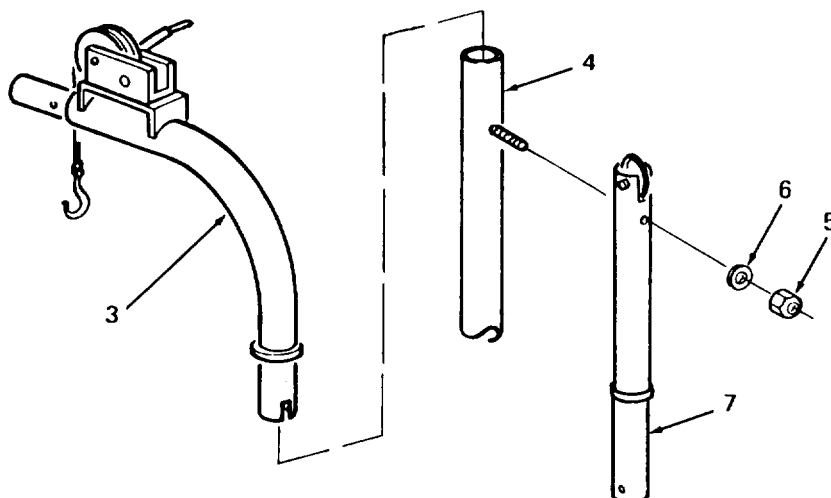
Two persons are required to remove or install davit crane on HEMTT or trailer, one person on vehicle and one person on ground. Hoist arm weighs 46 pounds and extension weighs 22 pounds. Handle both carefully to avoid injury to personnel.

- b. Remove davit crane from HEMTT.
 - (1) Remove hoist arm (3) from mounting bracket (4) and pass to person on ground, who relocates it on streetside, near davit crane mount.
 - (2) Remove nut (5), washer (6), and extension arm (7) from mount (4) and pass extension arm to person on ground, who relocates it on street-side, near davit crane mount. Reinstall washer (6) and nut (5).
- c. Install davit crane on trailer.

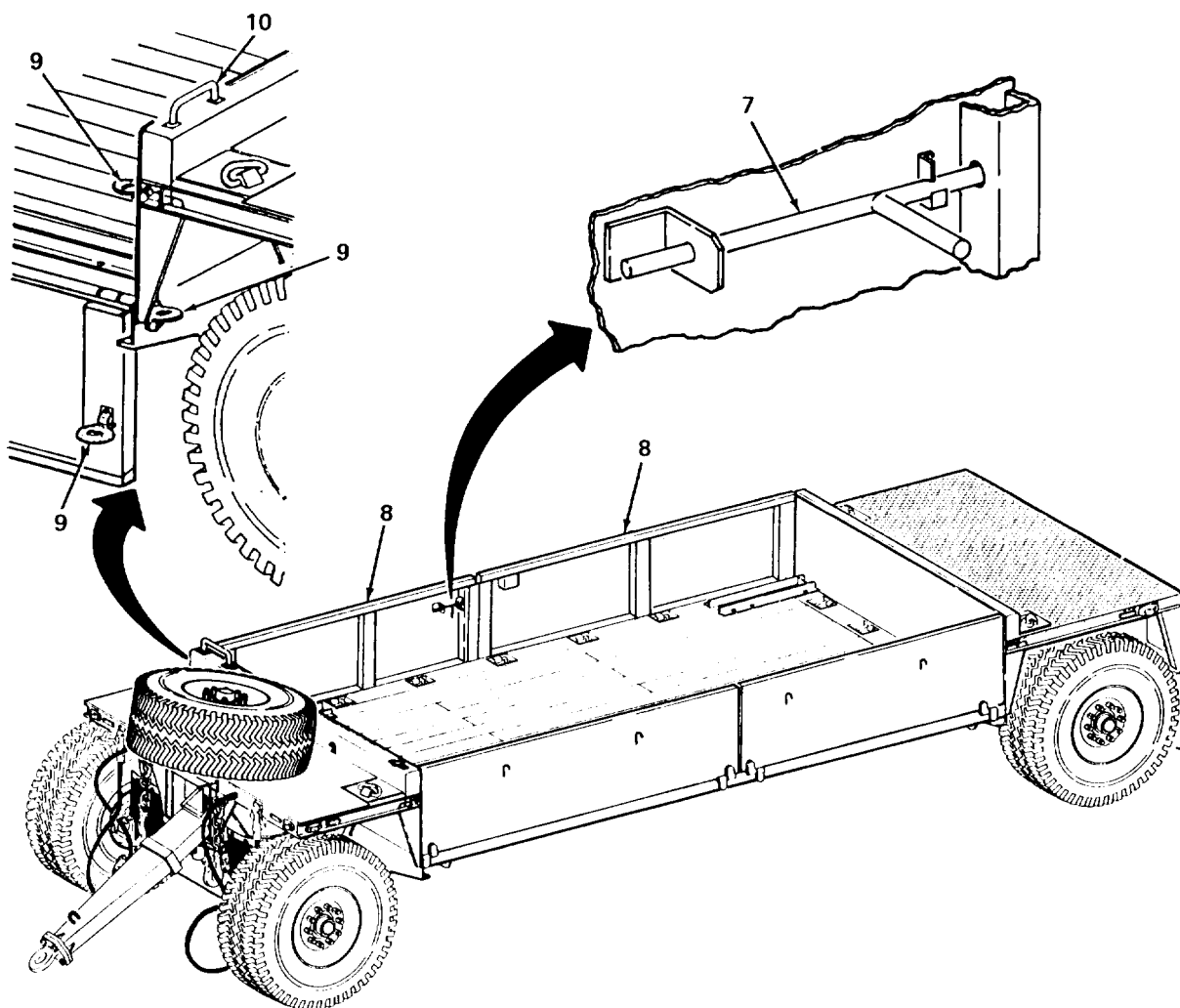
WARNING

When using foldable steps, take care to place foot on center of step. Otherwise foot may slip off side, resulting in serious injury.

Two persons are required to raise or lower side panels.



- (1) Without unlocking hitch pin (7), lower both curbside panels (8) together; lower all three foldable steps (9); and use handrail (10) to gain access to front deck area.



WARNING

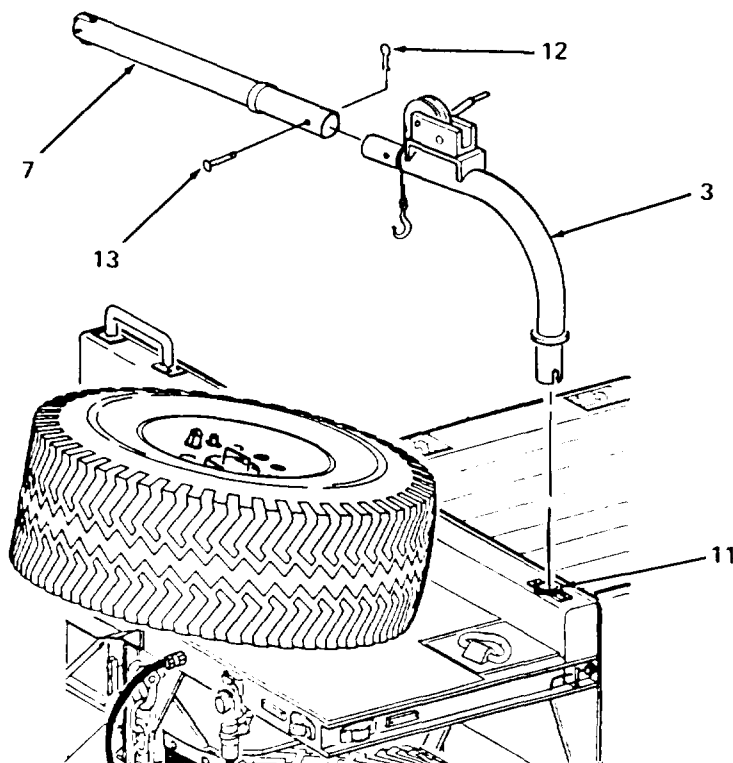
Personnel on front deck must use extreme care to avoid tripping over spare tire, fire extinguisher, and lifting eyes. Otherwise serious injuries may occur.

- (2) person on front deck is positioned on streetside, near davit crane mount.

WARNING

Two persons are required to remove or install davit crane on HEMTT or trailer, one person on vehicle and one person on ground. Hoist arm weighs 46 pounds and extension weighs 22 pounds. Handle both carefully to avoid injury to personnel.

- (3) person on ground passes hoist arm (3) to person on front deck. Insert hoist arm (3) into davit crane mount (11) pointing forward. Remove and keep safety pin (12) and pin (13) from hoist arm.
- (4) Person on ground passes extension (7) to person on front deck, who installs it onto hoist arm (3).
- (5) Line up holes in extension (7) and hoist arm (3), install pin (13) and safety pin (12).

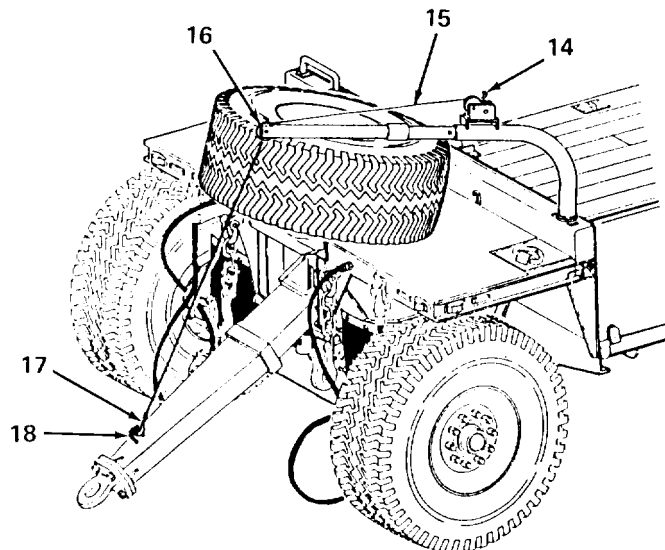


2-14. (CONT)

WARNING

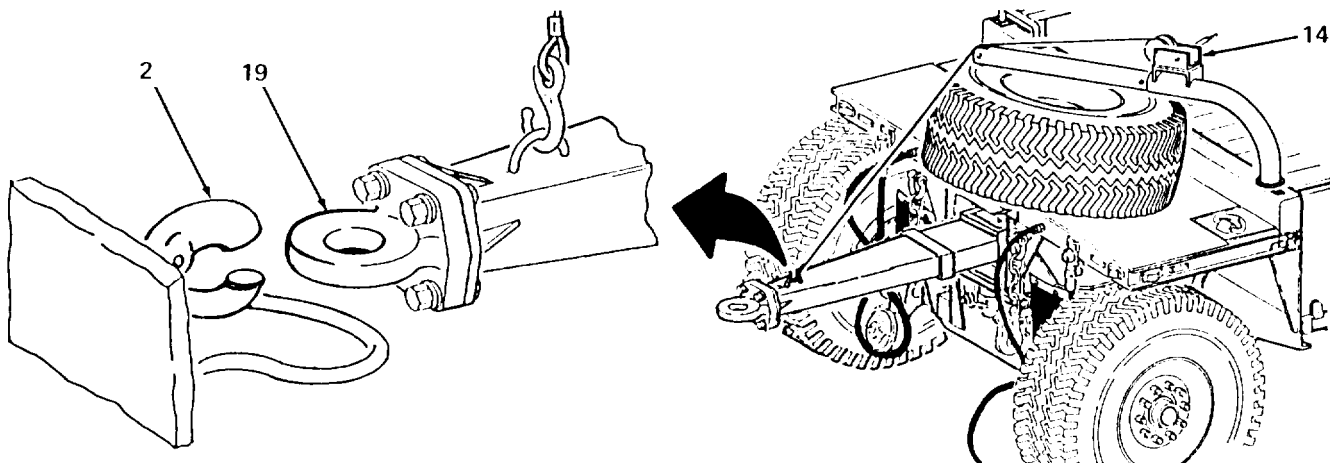
Do not lean against davit crane while routing cable over end of pulley. Davit crane is designed to move in mount and could cause a fall resulting in serious injury.

- (6) Turn handcrank (14) counterclockwise and route cable (15) over end of pulley (16).



- d. Lift towbar and connect to towing vehicle.

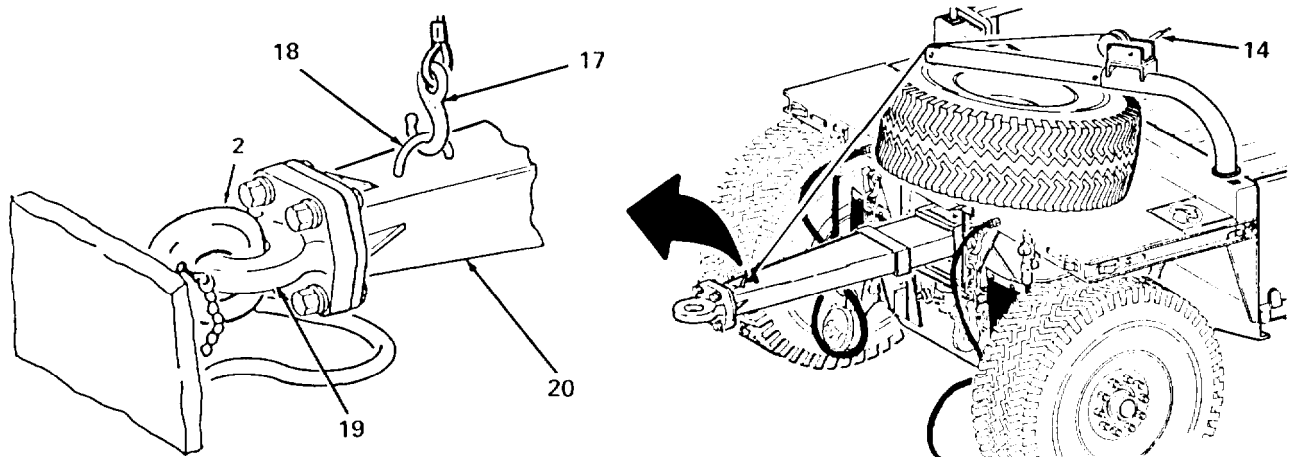
- (1) Turn handcrank (14) counterclockwise until person on ground is able to connect cable hook (17) into towbar ring (18).
- (2) Turn handcrank (14) clockwise until bottom of lunette (19) is level with lower hook portion of opened pintle (2) (approximately 39-1/2 inches).



WARNING

Do not stand between towing vehicle and trailer or on front deck area when vehicle is backing up. Serious injury can occur.

- (3) Exit front deck area and move into clear view of vehicle operator. Direct vehicle operator to back towing vehicle until front of lunette (19) just touches inner portion of opened pintle (2). Ensure that operator stops vehicle and sets brakes.
- (4) Approach towbar (20) and ensure that lunette (19) is aligned (side to side) with lower hook of opened pintle (2).

**WARNING**

Do not stand between towing vehicle and trailer or on front deck area when vehicle is backing up. Serious injury can occur.

- (5) Gain access to front deck area and turn handcrank (14) counterclockwise until lunette (19) drops onto lower hook of pintle (2).
- (6) Continue turning handcrank (14) until person on ground is able to disconnect cable hook (17) from towbar ring (18).

CAUTION

Davit crane must be removed and stowed prior to operation of trailer. Damage to equipment can occur.

e. Remove davit crane from trailer.

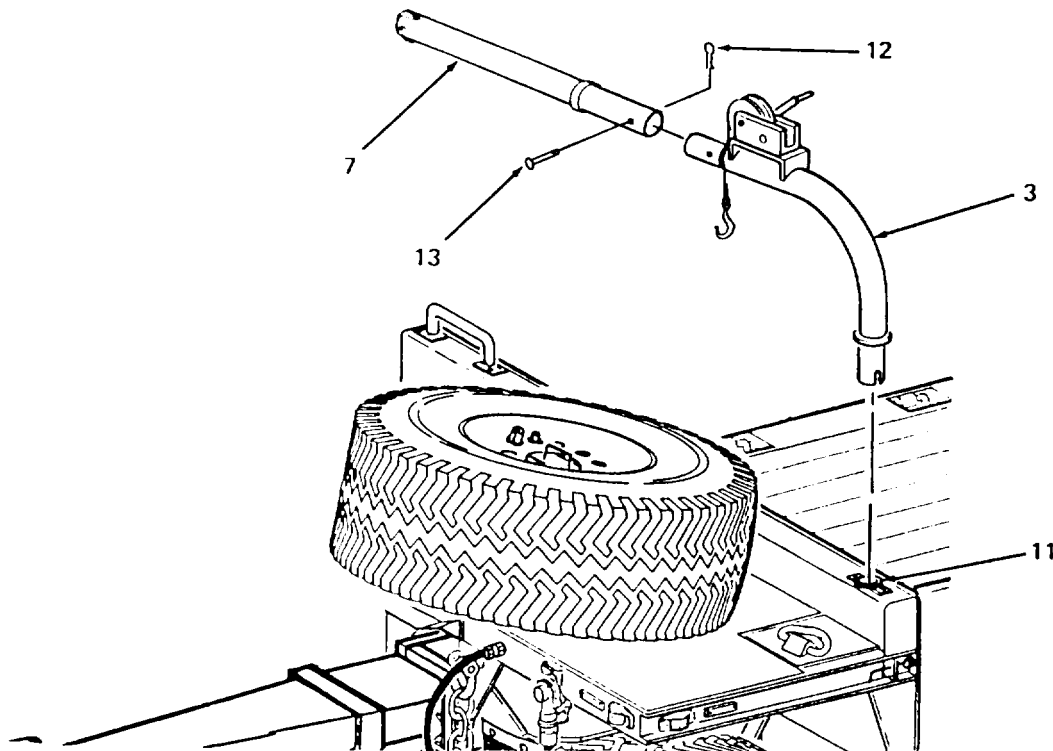
- (1) Turn handcrank clockwise until cable hook is retracted to cable winch.

2-14.(CONT)

WARNING

Two persons are required to remove or install davit crane on HEMTT or trailer, one person on vehicle and one person on ground. Hoist arm weighs 46 pounds and extension arm weighs 22 pounds. Handle both carefully to avoid injury to personnel.

- (2) Remove safety pin (12) and pin (13) from holes in extension arm (7) and hoist arm (3).
- (3) Remove extension arm (7) from hoist arm (3) and pass to person on ground.
- (4) Install pin (13) through hoist arm (3) and secure with safety pin (12).
- (5) Remove hoist arm (3) from mount (11) and pass to person on ground.



WARNING

Two persons are required to raise or lower side panels.

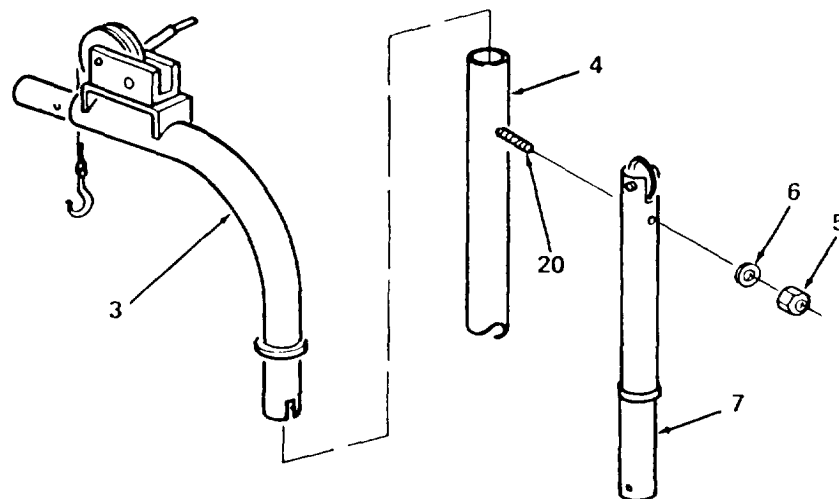
- (6) Exit front deck, fold steps, and raise side panels to vertical, ensuring that both front and rear bolt handles lock (see para. 2-16).

f. Stow davit crane on HEMTT.

WARNING

Two persons are required to remove or install davit crane on HEMTT or trailer, one person on vehicle and one person on ground. Hoist arm weighs 46 pounds and extension arm weighs 22 pounds. Handle both carefully to avoid injury to personnel.

- (1) person on ground passes extension arm (7) to person on truck.
- (2) Install extension arm (7) on mount (4).
- (3) Slide top of extension arm (7) over stud (20).
- (4) Secure extension arm (7) with washer (6) and nut (5).
- (5) Person on ground passes hoist arm (3) to person on truck.
- (6) Put hoist arm (3) into mounting bracket (4).



- g. To close towing vehicle pintle, attach safety chain, connect inter-vehicular air hoses and electrical cable, perform para. 2-14, steps b and c.

Section III. OPERATION UNDER USUAL CONDITIONS

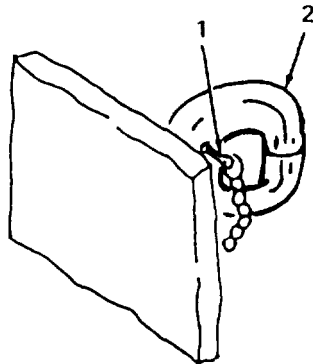
2-15. CONNECTING HEMAT TO TOWING VEHICLE(OPTIONAL METHOD)

WARNING

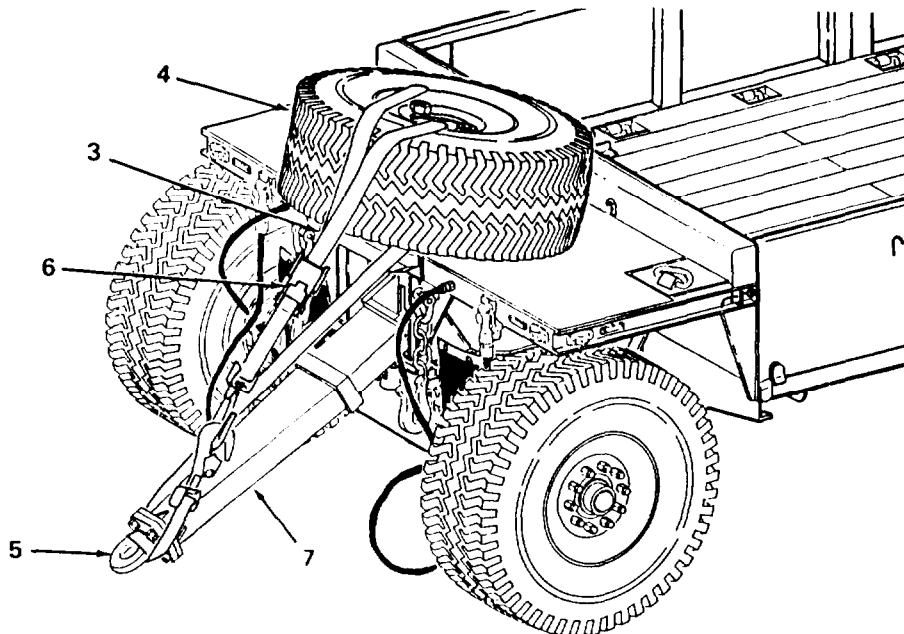
Two persons are required to connect towing vehicle and trailer: one operates the towing vehicle, and one lifts the towbar with tiedown strap and acts as a spotter.

Be alert for other moving vehicles in the area. Do not stand between towing vehicle and trailer when towing vehicle is backing up. Serious injury can result if personnel are caught between vehicles. Set chocks front and rear of rear tires on trailer.

- a. On towing vehicle, pull cotter pin (1) and open pintle (2). Back towing vehicle up until towing vehicle pintle (2) is alined with and approximately 1 foot in front of trailer towbar lunette. Stop towing vehicle, set brakes, and proceed as follows:



- (1) Using tiedown strap (3) from storage box, place hook on small end of strap (away from tightening device) over top of spare tire (4), thread hook through opening between rim and spare tire pedestal, and out over front deck.



2-15. CONNECTING HEMAT TO TOWING VEHICLE (CONT)

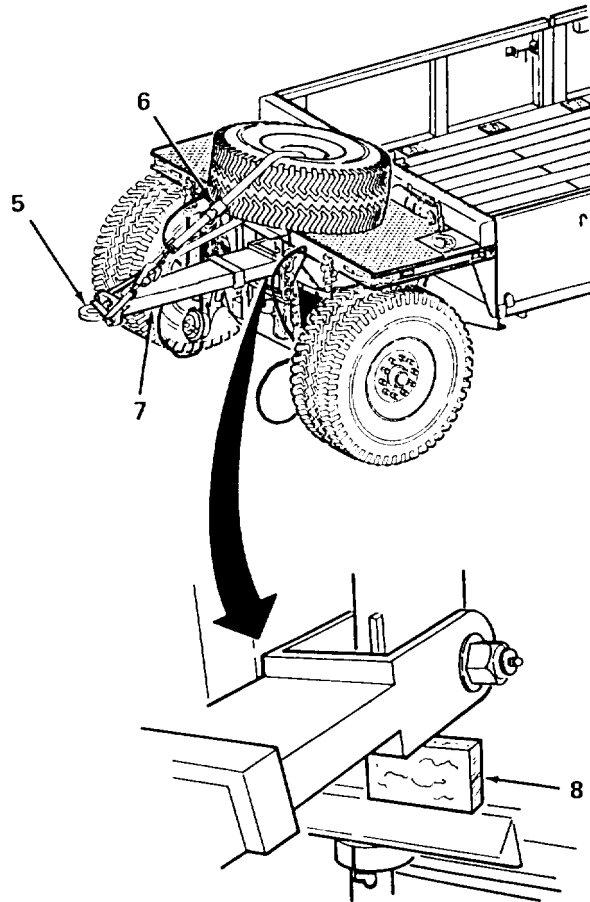
- (2) Pull strap (3) along towbar to lunette (5). Wrap 1-1/2 turns around lunette base, just forward of attaching bolts. On completion of wrapping, hook on small end must be positioned approximately 2 inches above nearest lunette attaching bolt.
- (3) Take hook on larger end of strap (3) (next to tightening device (6)) and hook into hook on small end. This forms the strap into a loop around spare tire (4) and around base of lunette (5).
- (4) Release tightening device (6) and pull free end of strap (3) (end with no hook) through until all slack is removed and strap is formed into a taut loop. Engage tightening device (6) to raise towbar (7).

NOTE

Raising towbar is a two-step operation. The tightening device will fill with strap and cease operating before the towbar reaches desired height.

- (5) Operate tightening device (6) and raise towbar (7) as far as possible. When device ceases operation, place 2-inch x 4-inch x 6-inch block (8) between towbar (7), and lower reinforcing bar. Again release tightening device (6) and pull free end through until all slack is removed.
- (6) Re-engage tightening device (6) and continue raising towbar (7) until bottom of lunette (5) is level with lower hook portion of opened pintle (approximately 39-1/2 inches).
- (7) Step away from towbar (7) and into clear view of vehicle operator. Direct vehicle operator to back towing vehicle until front of lunette (5) just touches inner portion of opened pintle. Ensure that operator stops vehicle and sets brakes.
- (8) Approach towbar (7) and ensure that lunette (5) is aligned (side to side) with lower hook of opened pintle. Release strap tightening device (6). Weight of towbar will cause lunette to drop onto lower hook of pintle. If towing vehicle needs to move slightly forward or aft for lunette alignment, step away from towbar into clear view of vehicle operator, and signal the appropriate vehicle movement until lunette drops into place.
- (9) Unhook strap hooks from each other and remove small end of strap from lunette base. Remove strap from spare tire and stow in storage box.

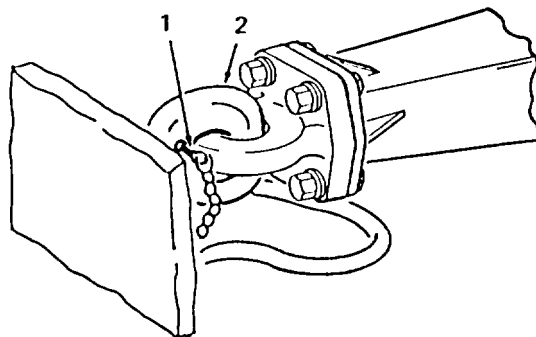
2-15. (CONT)



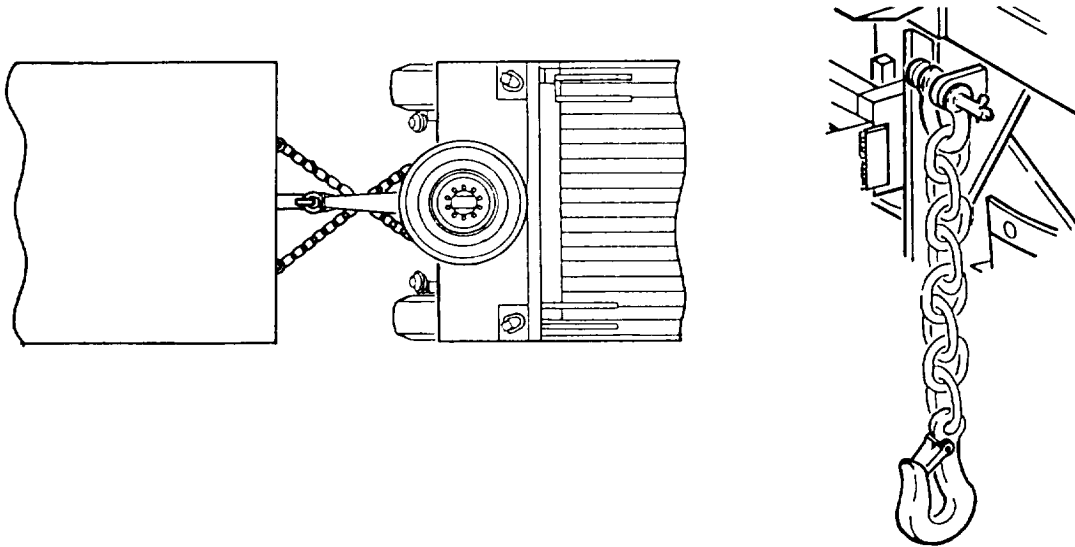
WARNING

Make sure cotter pin is properly installed in pintle so trailer does not break loose and cause injury to personnel.

- b. Close towing vehicle pintle (2). Ensure lock is down and in place. Install cotter pin (1) to lock pintle.



- c. Attach trailer safety chains to towing vehicle rear shackles. Attach chains crossed under towbar.

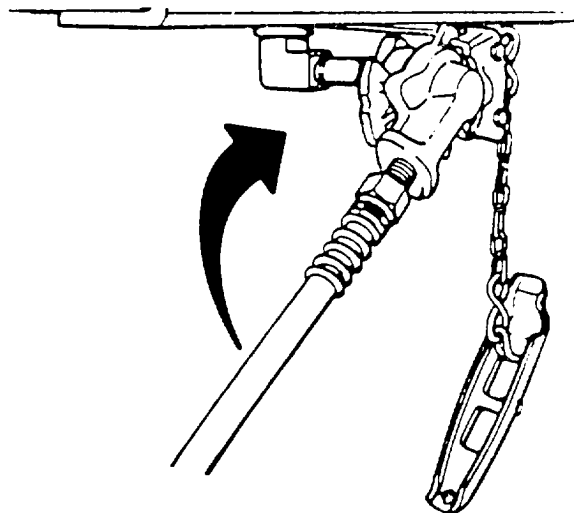


NOTE

Ensure the service and emergency intervehicular air hoses are connected service to service and emergency to emergency. Also ensure that hoses are above the chains.

Couplers are keyed for insertion.

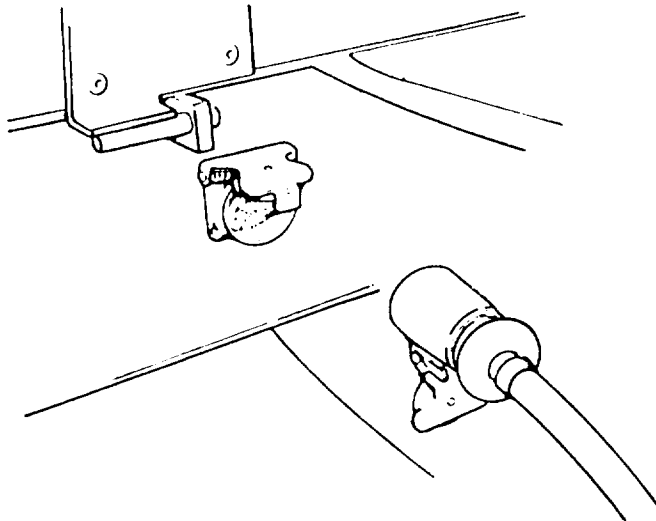
- d. Connect intervehicular air hoses from trailer to towing vehicle by holding hose gladhand coupling against the towing vehicle gladhand coupling at a 90-degree angle and rotate until locked in place.



2-15. (CONT)

e. Connect intervehicular electrical cable to trailer and towing vehicle as follows:

- (1) Remove cable from storage box at rear of trailer.
- (2) Open intervehicular cable protective covers and lock open by sliding latch lock in place.
- (3) Lift receptacle cover on trailer and front of cable and check for missing, bent, or broken pins.
- (4) Plug intervehicular electrical cable into trailer receptacle. Cable plugs are keyed so connection can be made only one way.
- (5) Connect opposite end of cable to towing vehicle receptacle.
- (6) Ensure cable is above the safety chains.

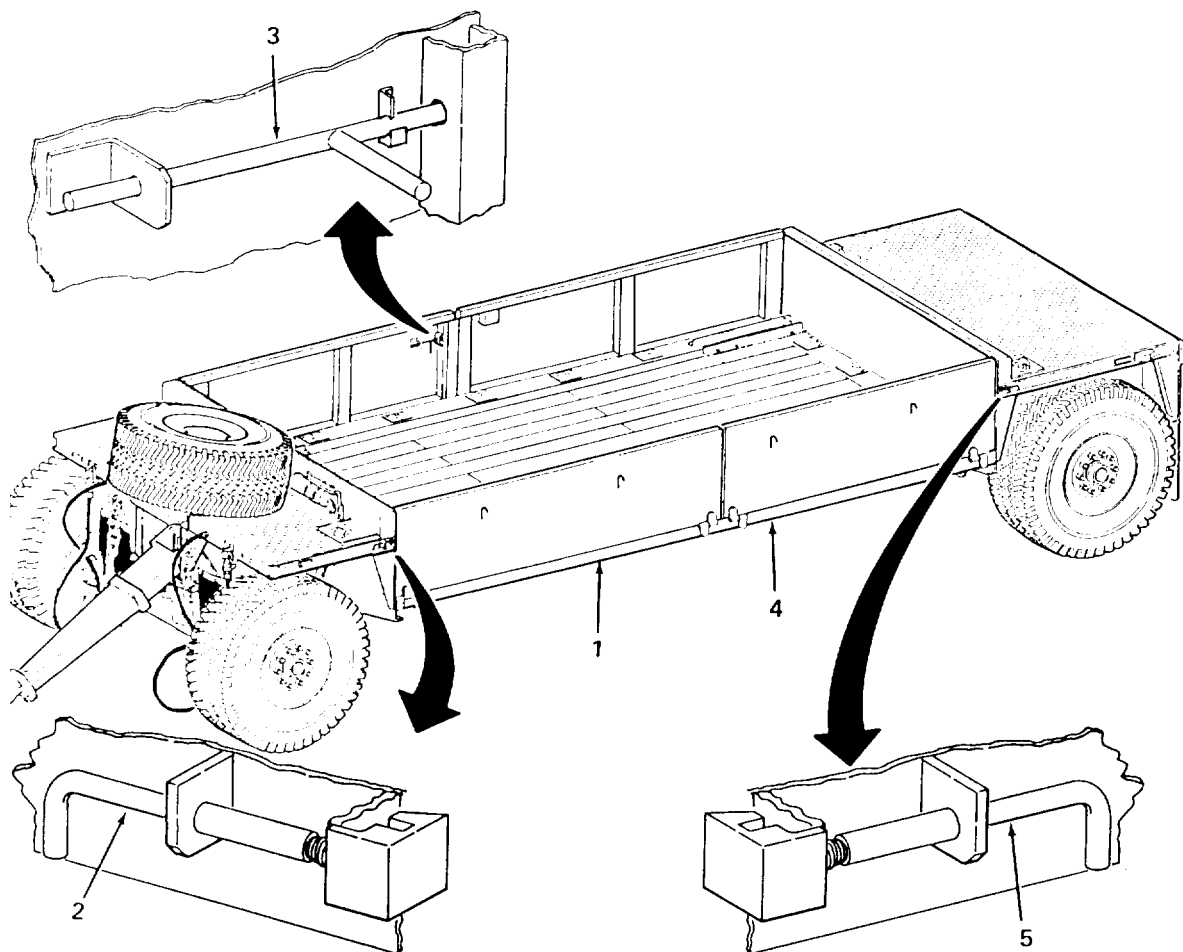


2-16. SIDE PANEL INSTALLATION AND REMOVAL**WARNING**

The side panels are heavy and awkward to handle. Use caution and two persons when removing or replacing side panels to avoid injury to personnel.

a. Removal.

- (1) To remove front panel (1), unlock bolt handle (2) by pulling forward and unlock hitch pin (3). Lower panel (1), slide to the rear and remove.



2-16. SIDE PANEL INSTALLATION AND REMOVAL (CONT)

(2) To remove rear panel (4), unlock bolt handle (5) by pulling rearward. Lower panel (4), slide forward, and remove.

(3) Repeat steps (1) and (2) for opposite side panels.

b. Installation.

(1) To install front panel (1), hold panel (1) horizontal and align hinge pins in panel (1) to holes in hinges on frame. Slide panel (1) forward, raise to vertical and lock bolt handle (2).

(2) To install rear panel (4), hold panel (4) horizontal and align hinge pins in panel (4) to holes in hinges on frame. Slide panel (4) rearward, raise to vertical, lock bolt handle (5) and hitch pin (3). Be sure tang on hitch pin (3) engages.

(3) Repeat steps (1) and (2) for opposite side panels.

2-17. OPERATION

a. Loading HEMAT.

- (1) Open side panels and load cargo onto trailer, distributing load weight as evenly as possible both lengthwise and sidewise. Secure load with tiedown straps passed through corner protectors and connected to tiedown rings on cargo deck.
- (2) Secure load with the straps from storage box and 22 tiedown rings (7 on each side and 4 at each end).
- (3) When Multiple Launch Rocket System (MLRS) pods are to be loaded on trailer, have unit maintenance attach pod stops to anchor plates located in each corner of deck (para. 4-31).
- (4) Close and secure side panel(s).

b. Towing HEMAT.

CAUTION

Allow 2 minutes for trailer air suspension to fully inflate before highway or cross-country driving or suspension system may be damaged.

The trailer obstacle clearance is 14.7 inches and "High Center" is 21.7 inches. These values differ from the towing vehicle and must be considered when operating off-road.

(1) Driving. When driving the towing vehicle with the trailer attached, the overall length of the combined unit must be kept in mind when passing other vehicles and when turning. Because the unit is hinged in the middle, turning and backing are also affected. The trailer payload will affect stopping and off-road maneuvering.

(2) Turning. When turning corners, allow for the fact that the trailer wheels turn inside the turning radius of the towing vehicle. To make a right turn at a road intersection, drive the towing vehicle about halfway into the intersection and then cut sharply to the right. This will allow for the shorter turning radius of the trailer and keep it off the curb.

(3) Stopping. In normal operation, the brakes of the towing vehicle and the trailer are applied at the same time the driver steps on the brake pedal. Brake pressure must be applied gradually and smoothly. The trailer brakes may be applied separately by using the brake control lever on the towing vehicle. On steep downgrades or slippery surfaces, the trailer brakes must be applied before the vehicle brakes. This will reduce the possibility of jackknifing. Refer to towing vehicle operator's manual for more detailed instructions about braking for your particular truck.

(4) Parking. When the towing vehicle and trailer are left parked and unattended, set the parking brake on the vehicle. When the towing vehicle parking brake is set, the trailer brake is automatically set.

WARNING

Do not allow any personnel to stand between the towing vehicle and trailer when backing. Make sure that you can see your ground guides at all times. Serious injury or death can occur if personnel are caught between moving vehicles.

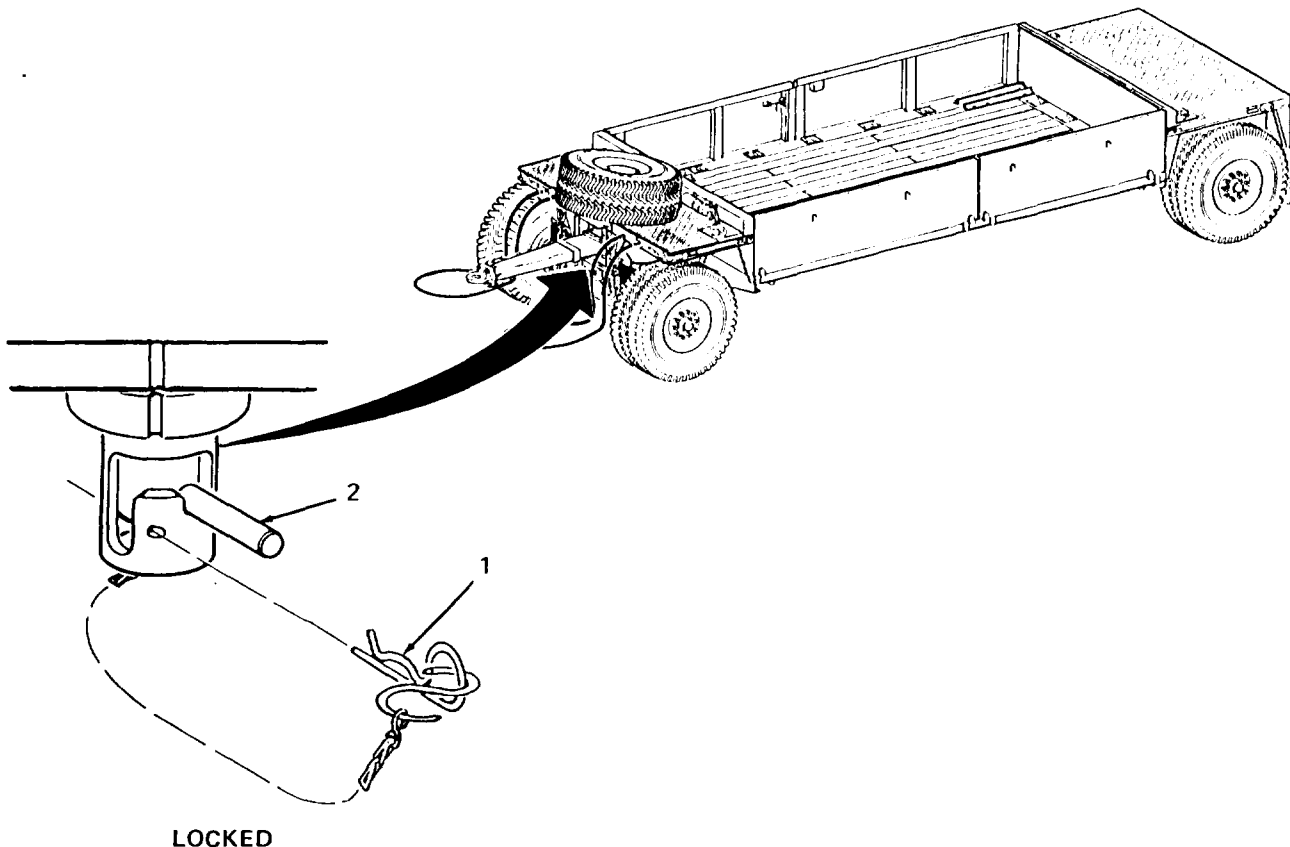
Backing the trailer without locking towbar may cause vehicle to jackknife, injuring personnel and damaging equipment. Perform this procedure only when absolutely necessary.

(5) Backing - Locked Towbar.

- (a) When backing trailer, use two ground guides. Refer to FM 21-60 for instructions for use of arm and hand signals.

2-17. OPERATION (CONT)

- (b) Aline towing vehicle and trailer. Adjust mirrors for a good view. Place transmission on towing vehicle in neutral and apply towing vehicle parking brakes. Make sure towbar is in centered position by lining up the alinement grooves. Remove hitch pin (1); raise lockpin handle (2), then rotate it counterclockwise to lock lockpin in place; replace hitch pin (1) through holes. Post ground guides to left front and rear where you can see them. Give instructions to ground guides. Pick a reference point. place front wheels of towing vehicle in center position.



CAUTION

Make only small steering corrections to avoid equipment damage.

- (c) Release all parking brakes, place transmission on towing vehicle in reverse and commence backing. Closely observe alinement of vehicles, the ground guides, and your reference point.

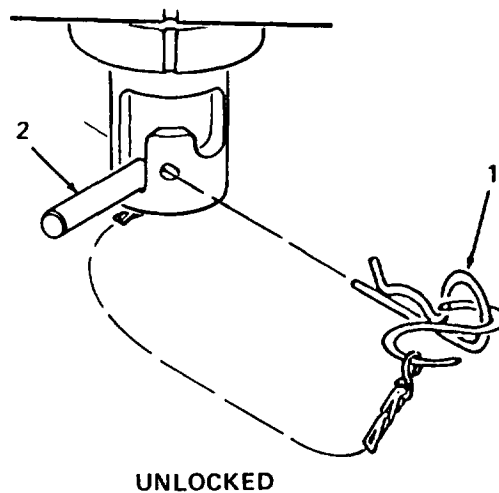
WARNING

When trailer has been backed with towbar locked, pull forward to relieve sideload pressure between pintle and towbar before attempting to unlock towbar lockpin or disconnect from pintle. Failure to relieve sideload may result in injury to personnel.

CAUTION

Be sure to unlock towbar lockpin before driving forward to avoid equipment damage.

- (d) Unlock towbar lockpin by removing hitch pin (1), rotating lockpin handle (2) clockwise, then lowering it and replacing hitch pin (1) through holes.

**WARNING**

Backing the trailer without locking towbar may cause vehicle to jackknife, injuring personnel and damaging equipment. Perform this procedure only when absolutely necessary.

(6) Backing - Unlocked Towbar. When backing without towbar locked in place, pull forward and aline towing and trailer vehicles as straight as possible. Adjust mirrors for a good view. Post ground guides to left front and rear and instruct ground guides. Pick a reference point. Commence backing and closely observe alinement of vehicles, the ground guides, and your reference point. If the rear of your trailer drifts to the left, slightly steer toward the left. If it drifts to the right, slightly steer toward the right. Do not oversteer and avoid any attempts at angle backing. Prepare to stop any time either one of the front clearance lights of the trailer comes into view in either of your rear view mirrors. Stop immediately when either of the inner corners of the front tires comes into view.

c. Unloading HEMAT.

- (1) Open one or both side panels.

2-17. OPERATION (CONT)

- (2) Remove tiedown straps and corner protectors from the load. Secure straps and corner protectors in storage box.
- (3) Unload cargo.
- (4) Close and secure side panel(s).

2-18. DISCONNECTING HEMAT FROM TOWING VEHICLE

- a. Disconnect intervehicular electrical cable from towing vehicle and trailer. Stow in storage box at rear of trailer.
- b. Disconnect intervehicular air hoses from towing vehicle and stow them on trailer dummy couplers. Trailer parking brakes will automatically lock when air hoses are disconnected.
- c. Disconnect safety chains from towing vehicle and hook onto trailer lift rings.

WARNING

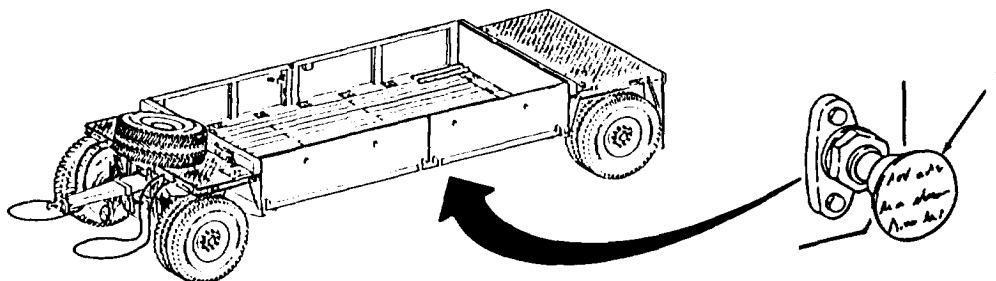
When trailer has been backed with towbar locked, pull forward to relieve sideload pressure between pintle and towbar before attempting to unlock towbar lockpin or disconnect from pintle. Failure to relieve sideload may result in injury to personnel.

- d. Remove cotter pin from towing vehicle pintle. Open pintle and raise trailer towbar free of pintle.

CAUTION

Lift towbar out of pintle with tiedown strap (see para. 2-14) or davit crane (see para. 2-15b thru f) before driving towing vehicle forward. Failure to restrain towbar could result in damage to equipment.

- e. Drive towing vehicle forward to clear trailer.
- f. If it is necessary to move trailer after disconnecting from towing vehicle, push in on brake control valve (1).



2-19. SPARE TIRE MOUNTWARNING

Two people and the davit crane from HEMTT will be required to raise or lower the spare tire. Clear all personnel from the immediate area to prevent possible injury when the tire is lifted from the deck. Use all possible care when handling to prevent injury. The tire weighs approximately 300 pounds.

CAUTION

When removing or installing spare tire, be careful not to damage the fire extinguisher or its bracket.

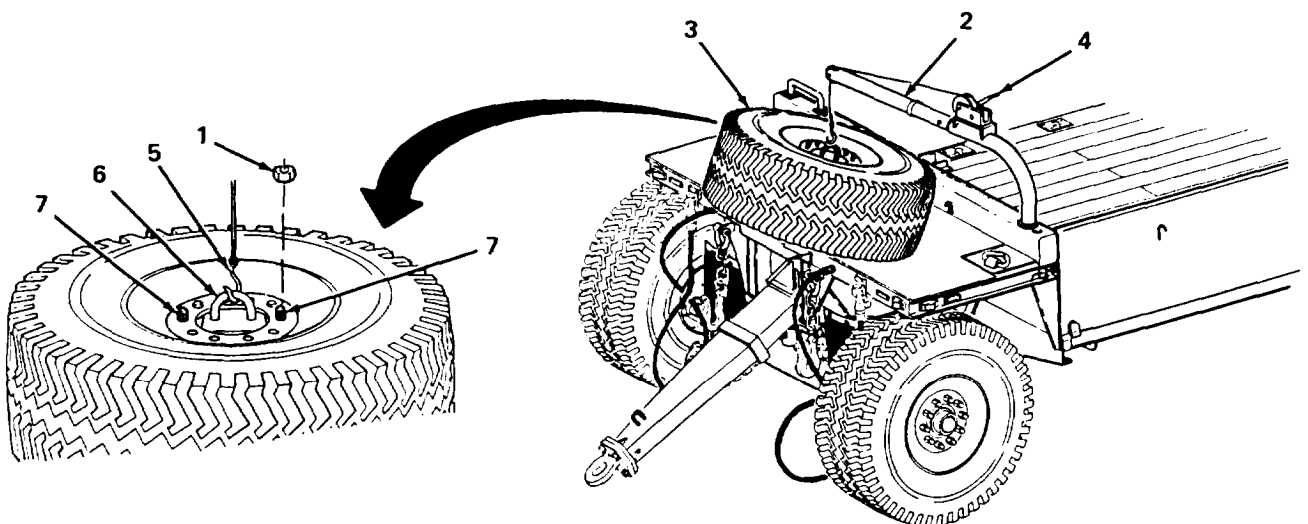
Be sure HEMTT and HEMAT are aligned before using davit crane to remove spare tire.

NOTE

A fully inflated tire will tend to jam against the front bulkhead when lug nuts are tightened. It may be necessary to pry the tire away from the bulkhead before it can be lifted. This can be done with the lug wrench cheater bar.

a. Removal of Spare Tire. The spare tire is mounted center on the front deck of the trailer, and is removed using the davit crane from HEMTT. To relocate davit crane from HEMTT to trailer, refer to para. 2-15, steps b and c.

- (1) Remove two lug nuts (1) and ensure that tire is free. Position davit crane extension arm (2) directly over center of spare tire (3).
- (2) Turn handcrank (4) counterclockwise until able to connect cable hook (5) into 100P of spare tire lifting plate (6).



2-19. SPARE TIRE MOUNT (CONT)

WARNING

Do not stand on front deck when raising spare tire.

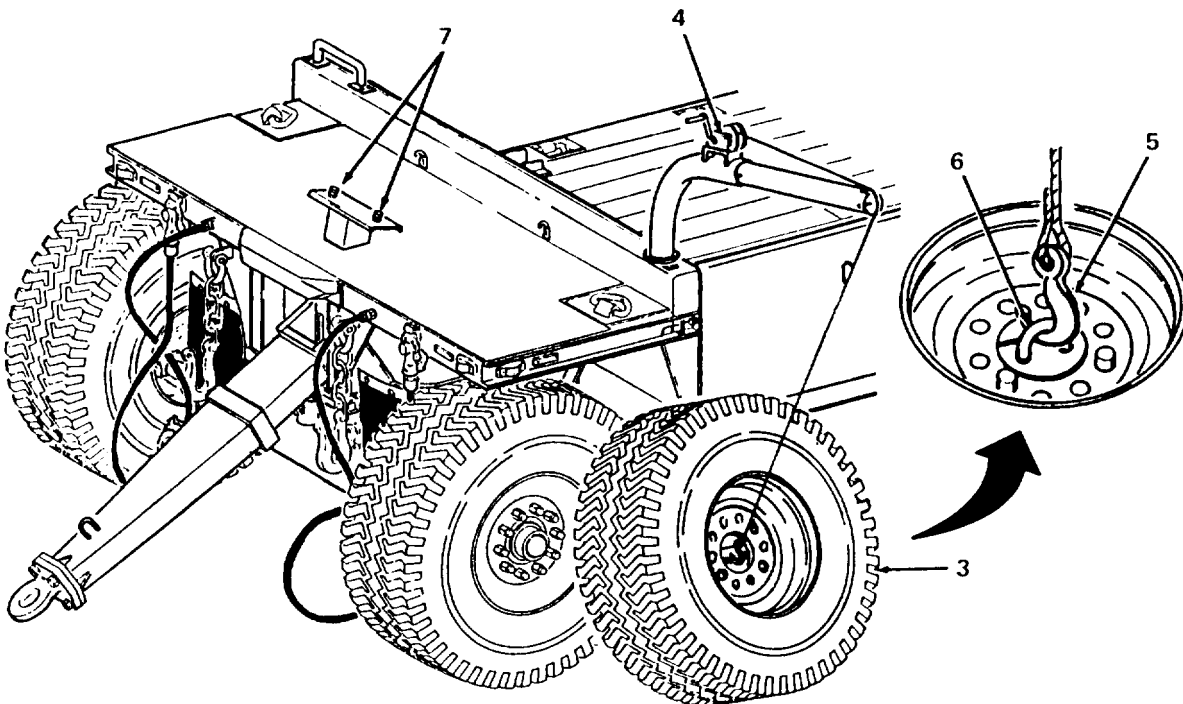
- (3) Person on front deck steps into cargo area and, using person on ground to stabilize spare tire, turns handcrank (4) clockwise until spare tire is lifted well clear of mount studs (7).

WARNING

Two persons are required to reposition davit crane and tire. Use extreme care to avoid tripping over spare tire mount, fire extinguisher and lifting eyes. Otherwise serious injury could occur.

Do not stand beneath spare tire at any time. Use caution when repositioning and lowering spare tire.

- (4) Reposition davit crane and tire until tire (3) will clear front deck on streetside of trailer.
- (5) Turn handcrank (4) counterclockwise until able to stand tire (3) in upright position on streetside of trailer.
- (6) With tire upright and steadied, continue turning handcrank counterclockwise until able to remove cable hook (5) from lifting plate (6). Remove lifting plate (6) from spare tire (3). Lean tire against side of trailer.



b. Installation of Spare Tire on Mount. The spare tire is installed using the davit crane from HEMTT.

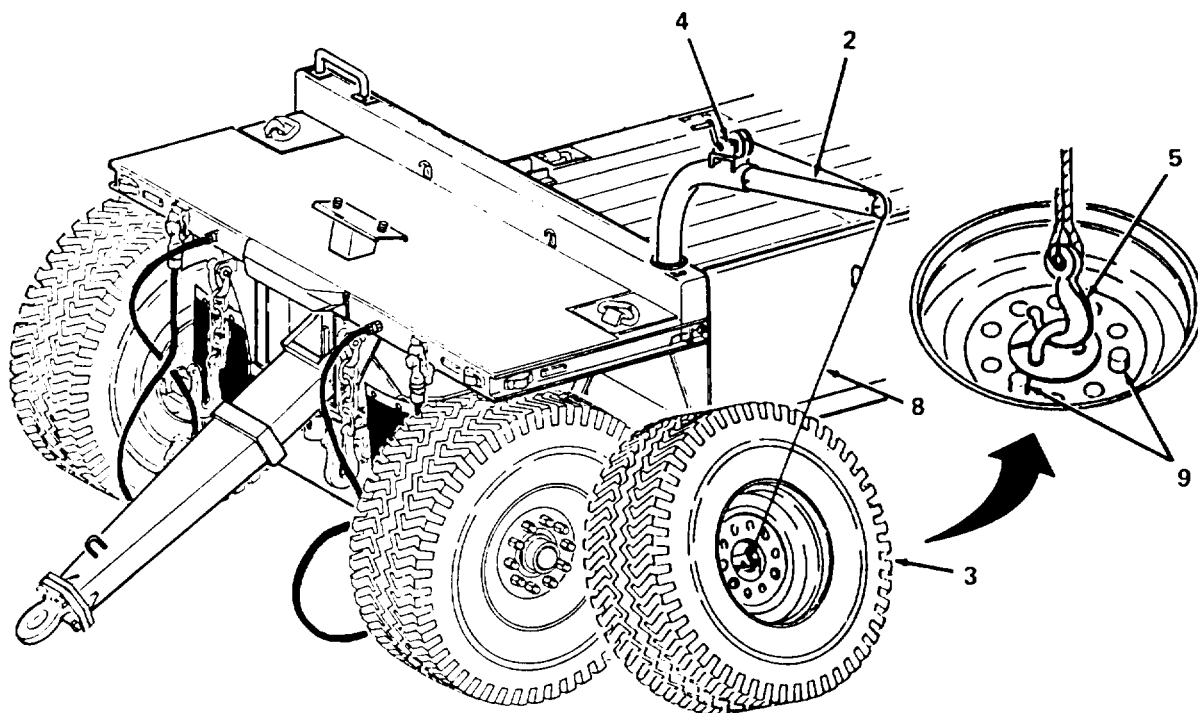
WARNING

Two people and the davit crane from HEMTT will be required to raise or lower the spare tire. Clear all personnel from the immediate area to prevent possible injury when the tire is lifted from ground. Use all possible care when handling to prevent injury. The tire weighs approximately 300 pounds.

CAUTION

When removing or installing spare tire, be careful not to damage the fire extinguisher or its bracket.

- (1) position davit crane extension arm (2) so cable hook (5) can be lowered below front deck on streetside of trailer.
- (2) Turn handcrank (4) counterclockwise until cable hook (5) is lowered to approximately 1 foot above ground.



2-19. SPARE TIRE MOUNT (CONT)

WARNING

To prevent tire from slipping and causing personal injury, lifting plate must be installed as shown, with lifting plate lugs in lower holes, and loop in center of tire.

- (3) Position tire directly under davit crane extension arm. With tire upright and steadied, install lifting plate (6) on outside of tire (3) with loop pointed inward. Connect cable hook (5) into lifting plate (6).
- (4) Turn handcrank clockwise until cable (8) is taut. Assure that two lifting plate pins (9) are securely seated in two lug bolt holes.

WARNING

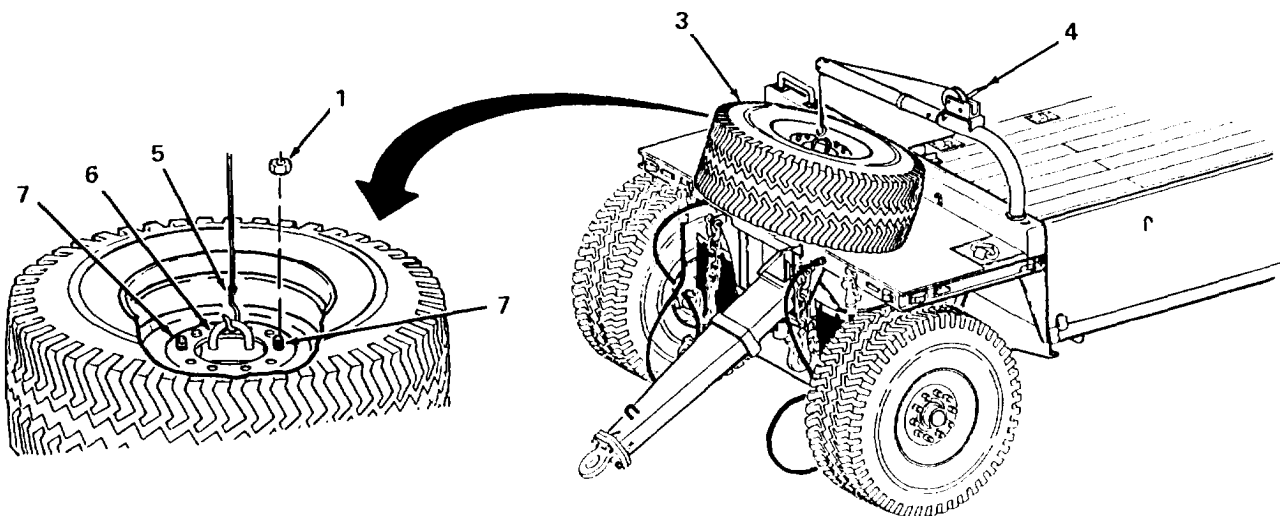
When davit crane lifts tire clear of ground, weight will shift. Use all possible caution when guiding tire to avoid possible injury.

- (5) With person on ground guiding tire, continue turning handcrank (4) clockwise until tire (3) is high enough to clear front deck.

WARNING

Two persons are required to reposition davit crane and tire. Use extreme care to avoid tripping over towbar, spare tire mount, fire extinguisher and lifting eyes. Otherwise serious injury could occur.

- (6) Reposition davit crane extension arm (2) and tire (3) until tire is directly over spare tire mount.
- (7) Turn handcrank (4) counterclockwise, lowering tire (3) onto spare tire mount, while aligning mount studs (7) with two holes in lifting plate (6) and tire (3).



- (8) Press down on tire as necessary to ensure that it is flat against mount. Secure with two lug nuts (1) installed flat side down.
- (9) Turn handcrank counterclockwise to get slack in cable; disconnect cable hook (5) from lifting plate (6); and turn handcrank clockwise until cable hook is retracted to cable drum.

CAUTION

Davit crane must be removed and stowed prior to operation of trailer. Damage to equipment can occur.

- (10) Relocate davit crane from trailer to HEMTT in accordance with para. 2-15, steps e and f.

2-20. LIFTING EYES

- a. There are four lifting eyes located left and right on the front and rear decks of trailer.
- b. The lifting eyes are used for lifting the entire trailer, loaded or unloaded.

Section IV. OPERATION UNDER UNUSUAL CONDITIONS

2-210 OPERATION IN EXTREME COLD

- a. General.
 - (1) Be careful when placing trailer in operation after a shutdown. Congealed lubricants can cause part failure.
 - (2) Tires may be frozen to the ground or have a flat spot if they are underinflated.
 - (3) If brake shoes are frozen to brake drums, notify unit maintenance.
 - (4) Refer to FM 9-207 and FM 21-305 for special instructions on driving hazards in snow and ice that may be encountered during extremely cold weather conditions.

2-21. OPERATION IN EXTREME COLD (CONT)

b. At-Halt Parking.

- (1) For short shutdown periods, park in a sheltered spot out of the wind.
- (2) For long shutdown periods, if high, dry ground is not available, prepare a footing of planks or brush.
- (3) Remove all built-up ice and snow as soon as possible after shutdown.
- (4) Cover and shield trailer with canvas covers (if available) but keep the ends of the covers off the ground to prevent them from freezing to the ground.

2-22. OPERATION IN EXTREME HEAT

- a. Do not park trailer in sunlight for long periods of time as heat and sunlight will shorten the life of tires.
- b. Cover trailer with canvas (if available) to protect it from heat, sun, and dust.

2-23. OPERATION IN RAINY OR HUMID CONDITIONS

- a. Frequently inspect, clean and lubricate inactive equipment to prevent rust and fungus accumulation.
- b. Check canvas covers (if available) periodically for deterioration and damage.

2-24. OPERATION IN SALT WATER AREAS

- a. Salt water will cause metal parts to rust and corrode. Clean, inspect and lubricate frequently.
- b. Do not drive trailer through more than 48 inches of water. Clean, inspect and lubricate immediately after salt water fording or when the tactical situation permits.

2-25. OPERATION IN SNOW

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

2-26. OPERATION IN MUDCAUTION

Do not push the trailer from the rear with another vehicle as damage to trailer may result.

- a. If one or more wheels sink into mud, it may be necessary to jack up mired wheel and insert planking or matting.
- b. Clean off mud as soon after operation as possible.

2-27. OPERATION IN DUSTY OR SANDY AREASCAUTION

Do not push the trailer from the rear with another vehicle as damage to trailer may result.

After extended use, the towbar pivot grease grooves may become clogged, indicated by the lubrication fittings not taking grease freely. Should this occur, schedule a maintenance action to remove and clean the towbar as soon as possible to prevent damage.

Clean, inspect, and lubricate trailer daily (para. 3-2). Clean grease fittings and grooves in towbar pivot as required.

2-28. FRESH WATER FORDING

Maximum fording depth of the trailer is 48 inches. Immediately after fording, exercise brakes while in motion at least three times to dry out brake shoes and drums.

CHAPTER 3
OPERATOR MAINTENANCE INSTRUCTIONS

Page

Overview 3-1
Lubrication Instructions 3-1
Operator Troubleshooting Procedures 3-9
Operator Maintenance Procedures 3-13

OVERVIEW

This chapter includes a lubrication chart and instructions as well as trouble-shooting procedures to be followed by the operator. Those maintenance tasks that can be performed by the operator are also included.

Section I. LUBRICATION INSTRUCTIONS

3-1. LUBRICATION INSTRUCTIONS

- a. Lubrication instructions are mandatory. The unit maintenance officer can authorize the operator to assist in certain maintenance functions.
- b. Service intervals are based on normal operation.
 - (1) Lube more often during constant use.
 - (2) Lube less often during inactive periods.
- c. Lubricate after washing or fording.
- d. Clean fittings before lubricating.
- e. Lubricate both sides of the equipment.
- f. DO NOT overlubricate.
- g. Wipe off excess lubricant.

3-2. LUBRICATION CHART

HEAVY EXPANDED MOBILITY AMMUNITION TRAILER
M989AL

Intervals (on-condition or hard time) are based on normal operation. Change the hard time interval if your lubricants are contaminated or if you are operating the equipment under adverse operating conditions including longer-than-usual operating hours. The hard time interval may be extended during periods of low activity. If extended, adequate preservation precautions must be taken.

WARNING

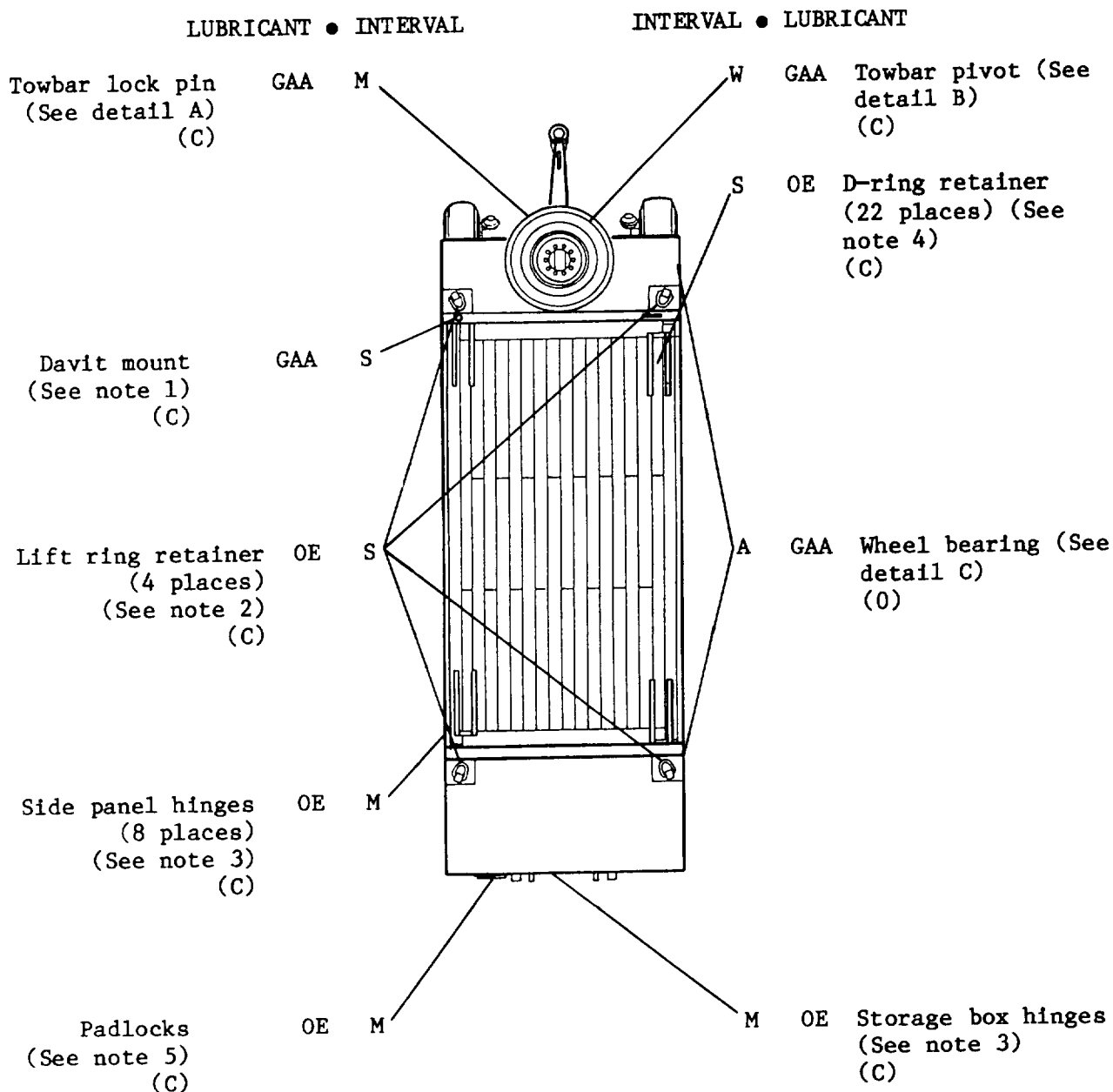
Dry cleaning solvent (A-A-711, type I) is extremely flammable, toxic, and is an irritant to the eyes, skin, and respiratory system. Do not use near open flame or excessive heat. Do not breathe the vapors. Use skin and eye protection and work in a well ventilated area. Flash point of dry cleaning solvent is 140°F.

Clean fittings before lubricating. Clean parts with dry cleaning solvent A-A-711, type I. Dry before lubricating. Dotted arrows indicate lubrication points on both sides of the equipment.

Level of Maintenance. The lowest level of maintenance authorized to lubricate a point is indicated by one of the following symbols as appropriate: Operator (C); and Unit Maintenance (0).

NOTE

Where "Daily" services are specified, daily shall be interpreted to mean only on days when equipment is operated.



KEY

LUBRICANTS		EXPECTED TEMPERATURES			INTERVALS
		ABOVE +32°F	+40°F to -10°F	0°F to -65°F	
OE (MIL-L-2104B)	OIL, ENGINE Lift Ring Retainer Storage Box Hinges D-Ring Retainers Padlocks	OE30	OE10W	OE5W	M - Monthly
GAA (MIL-L-10924)	GREASE, AUTOMOTIVE AND ARTILLERY Towbar Lockpin Towbar Pivot Wheel Bearings	ALL TEMPERATURES			S - Semiannually

NOTE 1

DAVIT MOUNT. Semiannually, clean inside of davit mount thoroughly with rag and apply grease (GAA) liberally to contact areas. Wipe off excess.

NOTE 2

LIFT RING RETAINER. Semiannually, wipe retainer with rag and apply oil (OE) in four places.

NOTE 3

STORAGE BOX AND SIDE PANEL HINGES. Monthly, wipe hinges with rag and apply oil (OE).

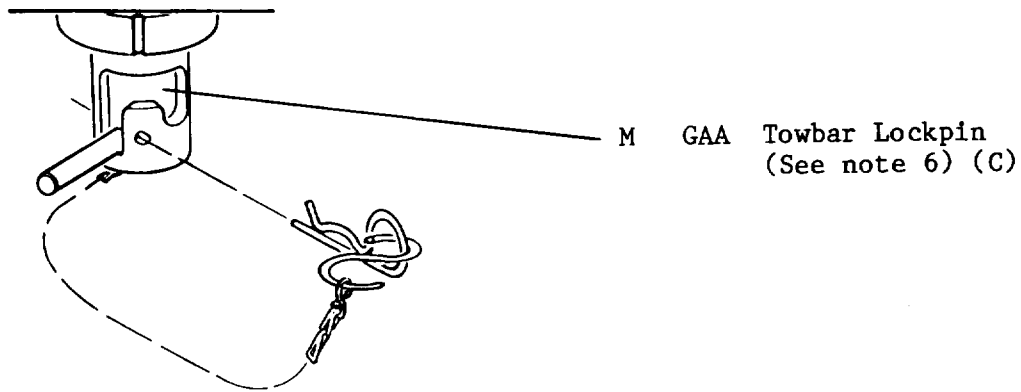
NOTE 4

D-RING RETAINER. Semiannually, wipe retainers (22 places) with rag and apply oil (OE).

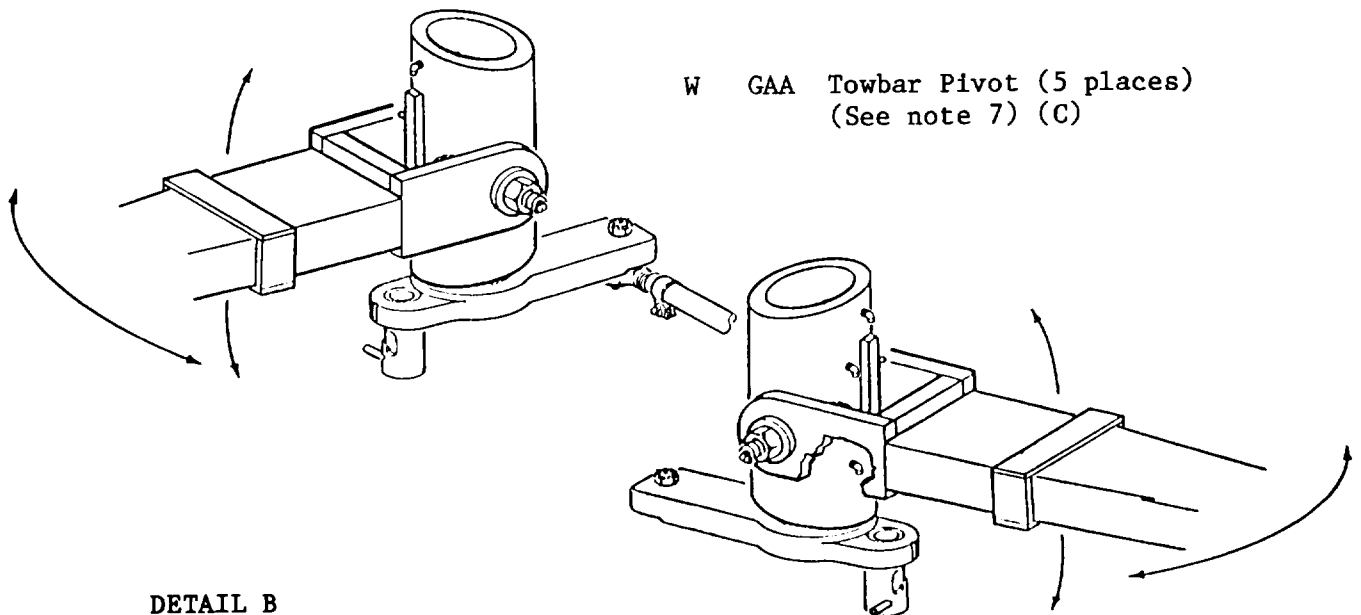
NOTE 5

PADLOCKS. Monthly, wipe padlocks with rag and apply oil (OE) sparingly to lock mechanism.

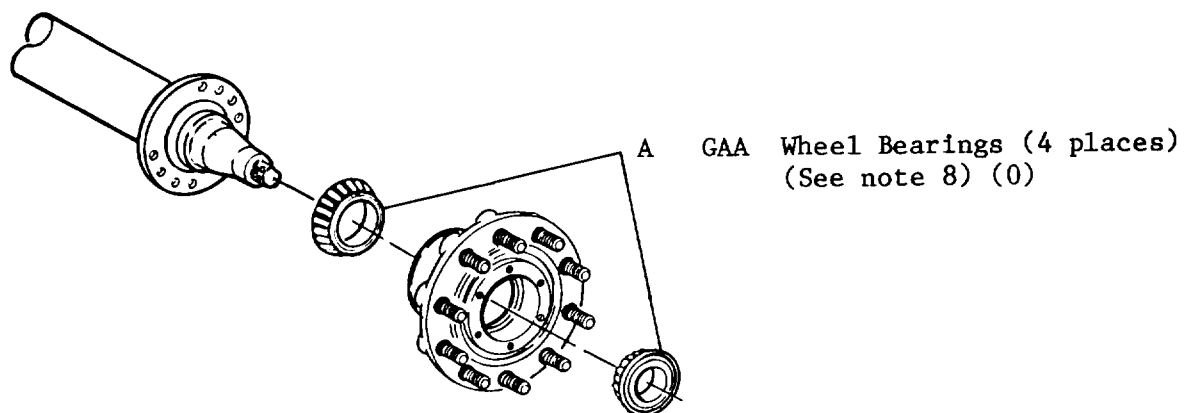
INTERVAL • LUBRICANT



DETAIL A



DETAIL B



DETAIL C

LUBRICANTS	EXPECTED TEMPERATURES			INTERVALS
	ABOVE +32°F	+40°F to -10°F	0°F to -65°F	
GAA (MIL-L-10924) GREASE, AUTOMOTIVE AND ARTILLERY Towbar Lockpin Towbar Pivot Wheel Bearings	ALL TEMPERATURES			D - Daily W - Weekly M - Monthly Q - Quarterly S - Semiannually A - Annually

NOTE 6

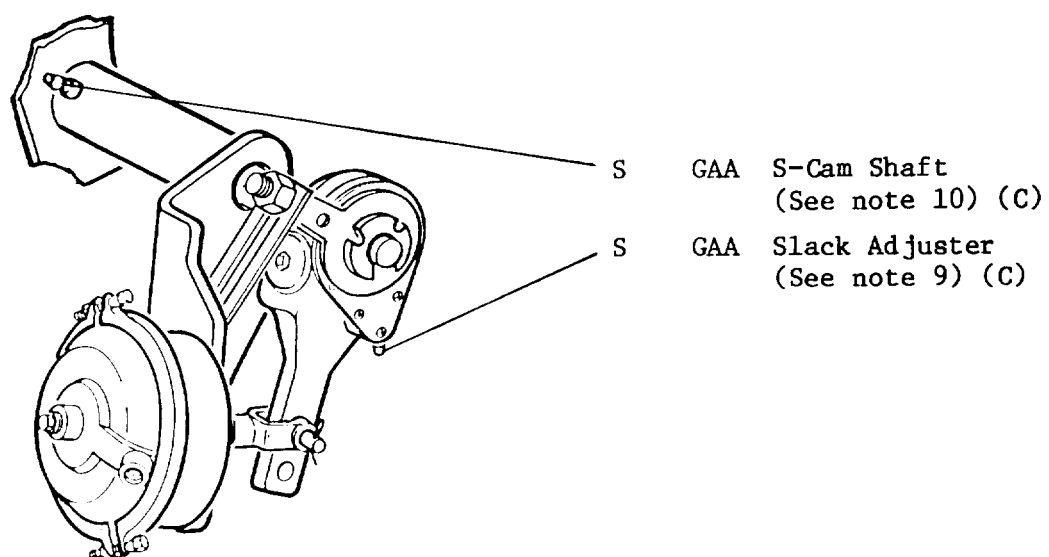
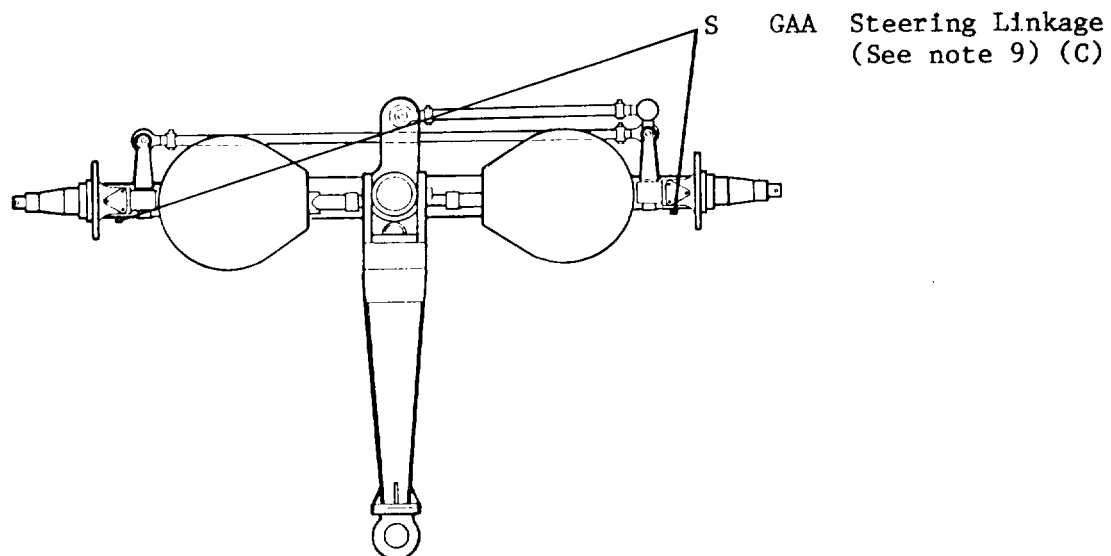
TOWBAR LOCKPIN. Monthly, apply grease (GAA) to towbar lockpin while moving pin fully left and right and up and down. Wipe off excess.

NOTE 7

TOWBAR PIVOT. Weekly (daily under dusty or sandy conditions), apply grease (GAA) to five grease fittings until clean grease seeps out of assembly. Wipe off excess. Annually, (as required under dusty or sandy conditions) remove towbar pivot, clean grease grooves and reinstall. If pivot pin will not accept grease, notify support maintenance. Towbar pivot requires disassembly and cleaning (para. 4-26).

NOTE 8

WHEEL BEARINGS. Annually, remove, clean, and hand or pressure pack inner and outer wheel bearings. Clean any existing grease from bearings and hub and drum assembly. Clean surfaces with rags. Pack bearings and hub with grease (GAA) and wipe off excess.



KEY

LUBRICANTS	EXPECTED TEMPERATURES			INTERVALS
	ABOVE +32°F	+40°F to -10°F	0°F to -65°F	
GAA (MIL-L-10924) GREASE, AUTOMOTIVE AND ARTILLERY Steering Linkage S-Cam Shaft Slack Adjuster	ALL TEMPERATURES			S - Semiannually

NOTE 9

STEERING LINKAGE. Semiannually, wipe off old grease from 6 grease fittings with rag and apply grease (GM) until clean grease comes out of each location. wipe off excess.

WARNING

Take care not to get grease on brake shoes or brake linings, as this will cause uneven or poor braking action, and may result in personal injury or equipment damage.

CAUTION

Do not overlubricate s-cam shaft.

NOTE 10

S-CAM SHAFT AND SLACK ADJUSTER. Semiannually, wipe off old grease and apply grease (GAA) to 8 grease fittings (2 places each wheel), s-cam shaft (1 place each wheel), and slack adjuster (1 place each wheel). Wipe off excess with rag.

Section II. OPERATOR TROUBLESHOOTING PROCEDURES

3-3. SYMPTOM INDEX

	Page
ELECTRICAL SYSTEM	
All lamps do not light	3-9
One or more (but not all) lights will not light	3-10
Dim or flickering lights	3-11
BRAKES	
Spring brakes will not release	3-11
Grabbing brakes	3-11
Hard pulling	3-12
TIRES	
Excessively worn or scuffed tires or flat spots on tires	3-12

3-4. OPERATOR TROUBLESHOOTING TABLE

- a. Table 3-1 lists the common malfunctions which you may find during the operation of the Heavy Expanded Mobility Ammunition Trailer (HEMAT) or its components. You should perform the test/inspections and corrective maintenance in the order listed.
- b. This manual cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed or it is not corrected by the listed corrective actions, notify your supervisor.

Table 3-1. Operator Troubleshooting Table

MALFUNCTION	
TEST OR INSPECTION	
CORRECTIVE ACTION	
ELECTRICAL SYSTEM	
1. ALL LAMPS DO NOT LIGHT.	
Step 1.	Check lights and fuses on towing vehicle including turn signals and stop lights.
a.	If towing vehicle lights do not light, notify unit maintenance.
b.	If towing vehicle lights come on, proceed to step 2.

3-4. OPERATOR TROUBLESHOOTING TABLE (CONT)

Table 3-1. Operator Troubleshooting Table - CONT

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

ELECTRICAL SYSTEM - CONT

1. ALL LAMPS DO NOT LIGHT - CONT.

Step 2. Check intervehicular cable.

- a. If cable is not properly connected, reconnect cable.
- b. If cable is properly connected, proceed to step 3.

Step 3. Check connectors for dirty or corroded pins. Check for damaged pins.

- a. If pins are dirty or corroded, clean the pins.
- b. If cables are damaged, replace.

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

Step 1. Check for broken lead wires or loose connections.

- a. If connections are loose, tighten connections.
- b. If lead wires are broken, notify unit maintenance.
- c. If connections are not loose or broken, proceed to step 2.

Step 2. Check light assembly for damage.

If light assembly is damaged, notify unit maintenance.

3. DIM OR FLICKERING LIGHTS.

Check electrical connections for loose, dirty, or corroded pins.

- a. If connections are loose, tighten connections.
- b. If connector pins are dirty or corroded, clean pins.
- c. If connections are tight and clean, notify unit maintenance.

Table 3-1. Operator Troubleshooting Table - CONT

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

BRAKES

1. SPRING BRAKES WILL NOT RELEASE.

NOTE

Check towing vehicle air pressure gage. Pressure should be 60 psi minimum. Allow 2 minutes for trailer air tanks to fill.

Step 1. Check that towing vehicle to trailer air supply is turned on.

- a. If air is shut off, turn on air supply and charge trailer air tanks.
- b. If air supply is on, proceed to step 2.

Step 2. Check connections of air hoses between towing vehicle and trailer.

- a. If air hoses are not properly connected (Emergency to Emergency, Service to Service), reconnect air hoses.
- b. If air lines are connected properly, notify unit maintenance.

2. GRABBING BRAKES.

WARNING

Wear protective goggles when opening drain cock, and avoid the air stream. Failure to do so could result in personal injury.

Check for moisture in air tanks by opening drain cocks.

- a. If moisture is in tanks, allow to drain; close drain cocks.
- b. If tanks are dry and malfunction is not corrected, notify unit maintenance.

3-40 OPERATOR TROUBLESHOOTING TABLE (CONT)

Table 3-1. Operator Troubleshooting Table - CONT

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
BRAKES - CONT		
3. HARD PULLING.		
	Check for cross connected air hoses.	
	a. If air hoses are cross connected, connect properly.	
	b. If air hoses are connected properly, notify unit maintenance.	
TIRES		
EXCESSIVELY WORN OR SCUFFED TIRES OR FLAT SPOTS ON TIRES.		
Step 1.	Check tire pressure. Tire pressure should be 100 psi for highway and 65 psi for off-road.	
	a. If tire pressure is low, inflate tires to correct tire pressure.	
	b. If tire pressure is correct, proceed to step 2.	
Step 2.	Check for loose wheel nuts.	
	If wheel nuts are loose, tighten nuts and have unit maintenance torque to 450-500 lb ft.	
Step 3.	Check suspension system for damaged air bags and loose or missing bolts and nuts.	
	a. If air suspension system is damaged or has loose or missing bolts and nuts, notify unit maintenance.	
	b. If suspension system is not damaged and all hardware is complete and secure, and problem still exists, notify unit maintenance.	

Section III. OPERATOR MAINTENANCE PROCEDURES**3-5. WHEELS AND TIRES**

This task covers: a. Removal b. Installation

INITIAL SETUP**Tools**

Chocks
 Jack (item 2, appendix C)
 Mud Plate (item 4, appendix C)
 Jack Cap Assembly (item 5 or 15, appendix C)
 Stand (item 3, appendix C)
 Lug Wrench (item 6, appendix C)
 Handle (item 7, appendix C)

Personnel Required: 2

Equipment Condition

Opposite wheel chocked front and rear

WARNING

Changing wheels and tires on the HEMAT requires two people and considerable caution to avoid possible injury. The wheel opposite from the one being changed must be chocked front and rear.

- a. **Removal.** Chock opposite wheel front and rear.

NOTE

Loosen left side wheel nuts clockwise and right side wheel nuts counterclockwise.

- (1) Loosen but do not remove lug nuts on defective wheel and tire.

NOTE

There are two cap assemblies; the small cap is used for the front axle, and the large cap is used for the rear axle.

- (2) Position cap on jack. Place jack on mud plate under the axle near the damaged tire, leaving room for vehicle stand and raise trailer until damaged tire is off the ground.

3-50 WHEELS AND TIRES (CONT)

(3) place vehicle stand under axle between jack and wheel being changed.
DO NOT remove jack.

(4) Lower vehicle onto jack stand.

(5) Remove wheel nuts.

WARNING

Wheels and tires are heavy. To avoid personal injury, use two people when handling wheels and tires.

(6) Using two people, remove defective tire and wheel.

b. Installation. Check spare tire for 100 psi air pressure (highway) or 65 psi (off-road).

WARNING

Wheels and tires are heavy. To avoid personal injury, use two people when handling wheels and tires.

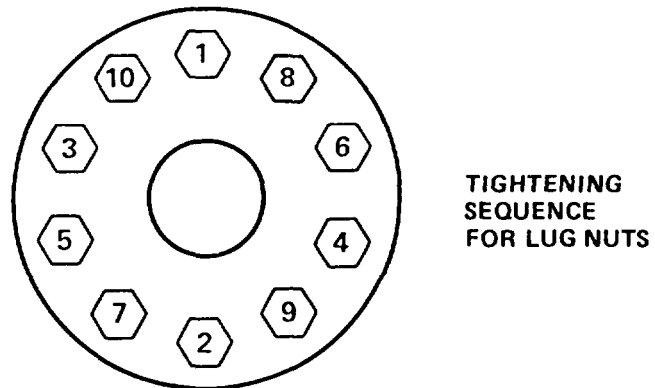
(1) Using two people, place a spare tire and wheel (para. 2-16) on the axle lugs by alining bolt holes with lugs and using the jack very carefully to raise or lower axle as needed to fit wheel onto lugs. Hand tighten lug nuts.

(2) Using the jack, raise trailer. Remove vehicle stand and lower trailer until tire touches the ground.

NOTE

Tighten left side wheel nuts counterclockwise and right side wheel nuts clockwise.

(3) Tighten lug nuts in the order shown.



(4) Lower trailer and remove jack.

(5) Remove chocks from opposite wheels.

(6) Stow chocks and other tools in storage box.

(7) As soon as possible, have unit maintenance torque nuts to 450-500 lb ft.

END OF TASK

3-6. BRAKE AIR CHAMBER

This task covers: a. Caging b. Uncaging

INITIAL SETUP

Tools

Adjustable wrench

Personnel Required: 1

Equipment Condition

Front wheel chocked front
and back

a. Caging.

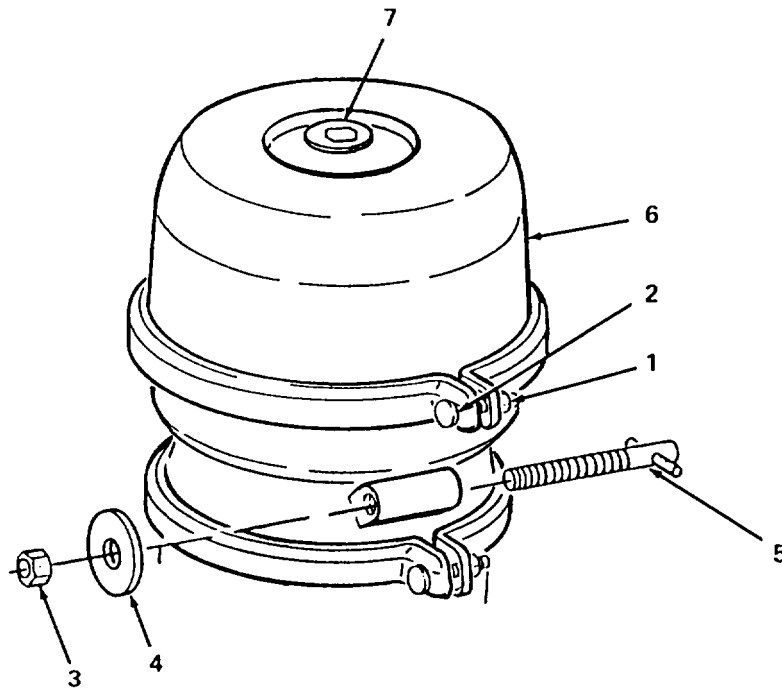
WARNING

When caging brake air chamber, do not remove flange nuts (1) or bolts (2). High spring pressure inside air chamber can cause injury if released.

NOTE

Caging the brake air chamber (steps (1) thru (5)) applies only to rear brakes.

- (1) Cage brake air chamber by removing nut (3) and washer (4) and release stud (5) from mounting bracket on brake air chamber (6).
- (2) Remove plug (7).
- (3) Insert T-end of release stud (5) into chamber hole and turn one-quarter turn clockwise to engage stud in pressure plate.
- (4) Install washer (4) and nut (3) on release stud (5) and tighten nut until wheel spins freely.
- (5) Repeat steps (1) thru (4) to cage remaining brake air chamber, if necessary.



b. Uncaging.

CAUTION

Caging nut must be next to the tire bolt head facing rear (curbside) to prevent rubbing air bag.

NOTE

Uncaging the brake air chamber applies only to rear brakes.

- (1) Loosen nut (3) on release stud (5) to uncage springs until wheel no longer spins.
- (2) Turn release stud (5) one-quarter turn counterclockwise and remove release stud (5).
- (3) Install stud (5) on bracket with washer (4) and nut (3).
- (4) Install plug (7) on brake air chamber (6).

END OF TASK

CHAPTER 4

UNIT MAINTENANCE INSTRUCTIONS

	Page
Overview	4-1
Repair Parts, Special Tools, TMDE, and Support Equipment	4-1
Service Upon Receipt of Material	4-2
Unit Preventive Maintenance Checks and Services (PMCS)	4-3
Unit Troubleshooting Procedures	4-8
Maintenance of Electrical System	4-14
Maintenance of Front Axle	4-24
Maintenance of Air Brake System	4-28
Maintenance of Wheels and Tracks	4-56
Maintenance of Steering	4-59
Maintenance of Frame and Towing Components	4-68
Maintenance of Springs and Shock Absorbers	4-81
Maintenance of Body, Cab, Hood, and Hull	4-91

OVERVIEW

Maintenance instructions to be performed at the unit level are provided in this chapter. Included are references for spare parts, special tools, TMDE and support equipment. Services to be performed on receipt of material are included as a Preventive Maintenance Checks and Service (PMCS) chart and a troubleshooting table. Maintenance of the Heavy Expanded Mobility Ammunition Trailer (HEMAT) electrical system, brakes, hubs, body and towing components is included.

Section I. REPAIR PARTS, SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT4-1. COMMON TOOLS AND EQUIPMENT

For authorized common tools and equipment, refer to the Table of Organization and Equipment (TOE) or the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

4-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

Refer to section III, appendix F, for special tools to support the M989A1 trailer.

4-3. REPAIR PARTS

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

Section II. SERVICE UPON RECEIPT OF MATERIAL

4-4. UNPACKING AND CHECKING THE EQUIPMENT

- a. Remove any metal strapping, plywood, tapes, seals, wrapping paper or any other shipping and protective items.

WARNING

Dry cleaning solvent (A-A-711, type I) is extremely flammable, toxic, and is an irritant to the eyes, skin and respiratory system. Do not use near open flame or excessive heat. Do not breathe the vapors. Use skin and eye protection and work in a well ventilated area. Flash point of dry cleaning solvent is 140°F.

- b. If any exterior parts are coated with rust preventive compound, remove it with dry cleaning solvent (A-A-711, type I) (item 6, appendix E).
- c. Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on DD Form 6, Packaging Improvement Report.
- d. Check the equipment against the packing slip to see if the shipment is complete. Report all discrepancies in accordance with the instructions of DA PAM 738-750.

4-5. SERVICING TEE EQUIPMENT

- a. Perform the PMCS contained in table 2-1.
- b. Lubricate all points as shown in the Lubrication Instructions (chapter 3, section I), regardless of interval.
- c. Schedule the next PMCS on DD Form 314, Preventive Maintenance Schedule and Record.
- d. Report all deficiencies on DA Form 2407 if the deficiencies appear to involve unsatisfactory design.
- e. Perform a break-in road test of 25 miles at a maximum speed of 55 miles per hour.

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

4-6 GENERAL

To ensure that the HEMAT is ready for operation at all times, it must be inspected systematically so that defects may be discovered and corrected before they result in serious damage or failure. Table 4-1 contains a tabulated listing of PMCS to be performed by unit maintenance personnel. All deficiencies and shortcomings will be recorded as well as the corrective action taken on DA Form 2404 at the earliest possible opportunity.

4-7. UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

a. The item numbers in table 4-1 indicate the sequence of the PMCS. Perform at the intervals shown below:

(1) Do your semiannual (S) PREVENTIVE MAINTENANCE once each 6 months.

(2) Do your annual (A) PREVENTIVE MAINTENANCE once each year.

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

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

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

WARNING

Dry cleaning solvent (A-A-711, type I) is extremely flammable, toxic, and is an irritant to the eyes, skin, and respiratory system. Do not use near open flame or excessive heat. Do not breathe the vapors. Use skin and eye protection and work in a well ventilated area. Flash point of dry cleaning solvent is 140°F.

(1) Cleaning. Dirt, grease, oil, and debris only get in the way and may cover up a serious problem. Clean as you work and as needed. Use dry cleaning solvent (A-A-711, type I) (item 6, appendix E) to clean metal surfaces. Use soap when you clean rubber or plastic material.

(2) Bolts, Nuts, and Screws. Check them all for obvious looseness, missing, bent, or broken condition. You can't try them all with a tool, of course, but look for chipped paint, bare metal, or rust around bolt heads. Tighten any that you find loose.

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

(4) Electrical Wires and Connectors. Look for cracked or broken insulation, bare wires and loose or broken connectors. Tighten loose connectors and make sure the tires are in good condition.

4-7. UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) (CONT)

(5) Air Hoses. Look for wear, damage and leaks and make sure clamps and fittings are tight. If a leak comes from a loose fitting or connector, tighten it. If something is broken or worn out, either correct it or report it to support maintenance. Refer to appendix B.

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

S - semiannually

A - Annually

Item No.	Interval		ITEM TO BE INSPECTED Procedure:
	S	A	
			<p style="text-align: center;">NOTE</p> <p>Perform operator PMCS prior to or in conjunction with unit PMCS if:</p> <p style="padding-left: 40px;">There is a delay between the daily operation of the equipment and the unit PMCS.</p> <p style="padding-left: 40px;">Regular operator is not assisting/participating.</p>
1			<p>WHEELS AND TIRES</p> <ul style="list-style-type: none"> • a. Rotate and match tires according to design and degree of wear. See TM 9-2610-200-24 for acceptable limits in matching tires. Tighten wheel nuts to 450-500 lb ft. (See sequence in para. 3-5.) • b. Check steering alinement in accordance with para. 4-29 of this manual.
2			<p>SERVICE BRAKES</p> <ul style="list-style-type: none"> • a. Inspect hub and drum for visible wear and scoring (para. 4-26). • b. Inspect wheel bearings for visible wear and seal for deterioration and damage (para. 4-26). • c. Inspect brake shoes for wear (para. 4-16). • d. Inspect camshafts for visible wear and damage (para. 4-17). • e. Inspect camshaft bearings for visible wear (para. 4-17).

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

S - semiannually

A - Annually

Item No.	Interval		ITEM TO BE INSPECTED Procedure:
	S	A	
3			BRAKE AIR CHAMBER <p style="text-align: center;"><u>WARNING</u></p> <p>Do not attempt to disassemble brake air chambers. The springs inside the chambers are under heavy tension and may cause severe injury if released during disassembly.</p> <ul style="list-style-type: none"> • Inspect brake air chambers for visible damage.
4			SLACK ADJUSTERS <ul style="list-style-type: none"> • a. Inspect slack adjusters for damage (para. 4-18). • b. Adjust slack adjusters (para. 4-18).
5			AIR SUSPENSION SYSTEM <ul style="list-style-type: none"> • a. Inspect front and rear air bags for proper inflation, cuts or cracks. Report defective bags to support maintenance. • b. Inspect connecting air hoses for cracks and proper connection. Report any defects to support maintenance.
6			AIR CLEANER <ul style="list-style-type: none"> • Inspect air filter for dirt (para. 4-19). Replace as necessary.

4-7. UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) (CONT)

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

S - Semiannually A - Annually

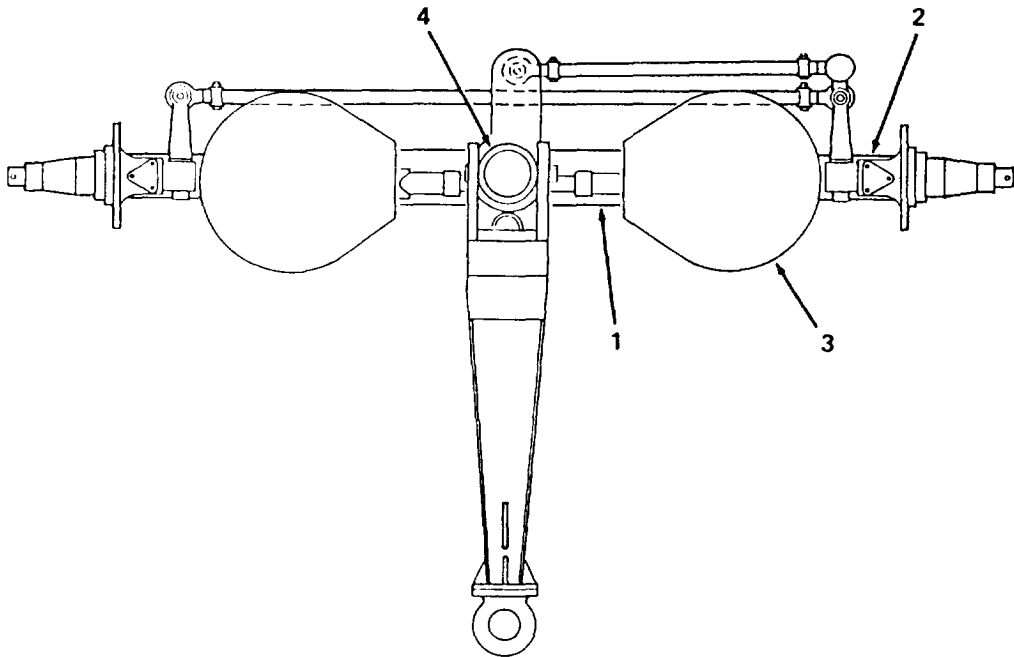
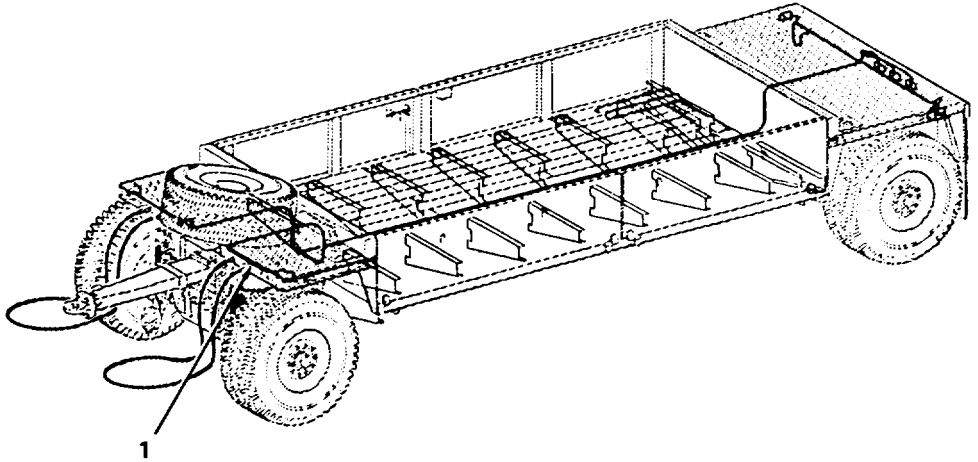
Item No.	Interval S A	ITEM TO BE INSPECTED Procedure:
7	<ul style="list-style-type: none">	<p>AXLES</p> <p>Inspect axles (1) for cracks, damaged brackets (2) and pads (3). Report deficiencies to support maintenance.</p> 
8	<ul style="list-style-type: none">	<p>TOWBAR PIVOT</p> <p>Remove towbar pivot (4) (para. 4-27). Thoroughly clean grease grooves and reinstall.</p>

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

S - semiannually

A - Annually

Item No.	Interval		ITEM TO BE INSPECTED Procedure:
	S	A	
9			<p>WIRING HARNESS</p> <ul style="list-style-type: none"> Inspect wiring harness (1) for loose mounting, broken wires, damaged insulation and connections. Repair or replace defective wiring harness (para. 4-13). 
10			<p>FLOORBOARDS AND FRAME</p> <ul style="list-style-type: none"> a. Inspect storage box cover for loose hinge or damaged cover. Replace defective parts (para. 4-35). b. Inspect bumpers and splash guards for deterioration and damage. Replace defective bumpers (para. 4-31) and splash guards (para. 4-33). c. Inspect frame for peeling paint, distortion and other damage. Report deficiencies to support maintenance. d. Inspect vehicle for cracked welds, excessive deformation, and loose fittings. Report deficiencies to support maintenance.

Section IV. UNIT TROUBLESHOOTING PROCEDURES

4-8. SYMPTOM INDEX

	Page
ELECTRICAL SYSTEM	
All lamps do not light	4-8
One or more lamps (but not all) will not light	4-9
Dim or flickering lights	4-9
BRAKES	
All brakes will not release (trailer connected to towing vehicle)	4-9
Rear brakes will not release (trailer disconnected from toting vehicle)	4-10
No brakes or weak brakes	4-12
Slow brake application or slow release	4-13
Grabbing brakes	4-14
Hard pulling (one or more brake drums running hot)	4-14
AIR SUSPENSION SYSTEM	
Improper air bag inflation	4-15
TIRES	
Excessively worn or scuffed tires or flat spots on tires	4-15
Trailer not tracking	4-16

4-9. UNIT TROUBLESHOOTING TABLE

- a. Table 4-2 lists the common malfunctions which you may find during the operation or maintenance of the HEMAT or components. You should perform the test/inspections and corrective actions in the order listed.
- b. This manual cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed or it is not corrected by the listed corrective actions, notify your supervisor.

Table 4-2. Unit Troubleshooting Table

MALFUNCTION		
TEST OR INSPECTION		
CORRECTIVE ACTION		
<hr/>		
ELECTRICAL SYSTEM		
(See schematic diagram, para. 4-10)		
1. ALL LAMPS DO NOT LIGHT.		
Step 1. Test intervehicular cable for shorts or open cable.		
a. If cable is defective, replace cable.		
b. If cable is not defective, proceed to step 2.		

Table 4-2. Unit Troubleshooting Table - CONT

MALFUNCTION TEST OR INSPECTION	CORRECTIVE ACTION
Step 2. Check for short or open circuit in wiring (para. 4-10).	If wiring has a short or open circuit, repair or replace wiring (para. 4-13).
2. ONE OR MORE LAMPS (BUT NOT ALL) WILL NOT LIGHT.	
Step 1. Replace Inoperative lamps (para. 4-10). If still inoperative, check for defective light.	<ul style="list-style-type: none"> a. Replace or repair defective light assemblies (para. 4-11 and 4-12). b. If light assembly is not damaged, proceed to step 2.
Step 2. Check for short or open circuit in wiring (para. 4-10).	If wiring has a short or open circuit, repair or replace wiring (para. 4-13).
3. DIM OR FLICKERING LIGHTS.	
Step 1. Check for proper ground or defective light assemblies (para. 4-10).	<ul style="list-style-type: none"> a. Replace or repair defective light assemblies (para. 4-11 and 4-12). b. If light assemblies are not damaged, proceed to step 2.
Step 2. Check for intermittent short or open circuit (para. 4-10).	If wiring is defective, repair or replace wiring (para. 4-13).

BRAKES

1. ALL BRAKES WILL NOT RELEASE (TRAILER CONNECTED TO TOWING VEHICLE).

- Step 1. Check for leaks in service air lines or tanks (table 2-1).
- a. If leaks are found, repair or replace as required (para. 4-21 or para. 4-22).
 - b. If no leaks are found, replace relay valve (para. 4-23) or multifunction valve (para. 4-25).
 - c. If no malfunctions are found, proceed to step 2.

4-9. UNIT TROUBLESHOOTING TABLE (CONT)

Table 4-2. Unit Troubleshooting Table - CONT

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
BRAKES - CONT		
	Step 2. Check operation of brake control valve (table 2-1).	<ul style="list-style-type: none"> a. If brake control valve does not operate properly, replace valve (para. 4-24). b. If brake control valve operates properly, proceed to step 3.
	Step 3. Check operation of brake chambers (table 2-1).	Replace any chamber not functioning properly (para. 4-20).
2. NO BRAKES OR WEAK BRAKES.		
	Step 1. Check for low air pressure (leakage at connection, air lines, or valves) (table 2-1).	<ul style="list-style-type: none"> a. If air lines/connections are leaking, repair or replace as needed (para. 4-21). b. If brake control valve, relay valve, or multifunction valve is leaking, replace defective valve (para. 4-23, 4-24, or 4-25). c. If air lines/connections or valves are not leaking, proceed to step 2.
	Step 2. Check for relay valve operation by observing action of brake air chambers.	<ul style="list-style-type: none"> a. If brake air chambers do not operate, replace relay valve (para. 4-23). b. If action of brake air chambers is not positive, replace relay valve (para. 4-23). c. If a single brake air chamber does not operate properly, replace brake chamber (para. 4-20).
	Step 3. Inspect for grease on brake lining.	<ul style="list-style-type: none"> a. If grease is present on brake lining, replace defective seals and brake shoes (para. 4-16). b. If grease is not present on brake lining, proceed to step 4.

Table 4-2. Unit Troubleshooting Table - CONT

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
	Step 4. Check for proper brake adjustment by checking slack adjuster, and adjust as required (para. 4-18).	
	Step 5. Check for worn brake lining (table 4-1).	
		If brake lining is worn, replace brake shoe (para. 4-16).
3. SLOW BRAKE APPLICATION OR SLOW RELEASE.		
	Step 1. Disconnect air lines and hoses (para. 4-21) and check for restrictions.	
	a. If air lines or hoses are restricted, replace as required.	
	b. If air lines or hoses are not restricted, proceed to step 2.	
	Step 2. Check for damaged or broken brake shoe springs (para. 4-16).	
	a. If a spring is defective, replace spring.	
	b. If any spring is not defective, proceed to step 3.	
	Step 3. Check for brake air chamber operation (table 2-1).	
	a. If one brake air chamber operates slowly, replace defective brake chamber (para. 4-20).	
	b. If front pair or rear pair of brake air chambers operates slowly, replace front or rear relay valve (para. 4-23).	
	c. If all brake air chambers still operate slowly, replace multifunction valve (para. 4-25).	
	Step 4. Check for proper brake adjustment by checking slack adjuster, and adjust as required (para. 4-18).	
	Step 5. Check for leaking rear brake chamber.	
		If rear brake chamber leaks at center clamp, tighten bolts (para. 4-20).
4. GRABBING BRAKES.		
	Step 1. Check for grease on brake lining.	
	a. If grease is present, replace brake shoes and seals (para. 4-16).	
	b. If grease is not present on brake lining, proceed to step 2.	

4-9. UNIT TROUBLESHOOTING TABLE (CONT)

Table 4-2. Unit Troubleshooting Table - CONT

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
BRAKES - CONT		
	Step 2.	Check for cracked, scored, or deformed brake drum (table 4-1). <ul style="list-style-type: none"> a. If brake drum is cracked, scored or deformed, replace brake drum (para. 4-26). b. If brake drum is not cracked, scored or deformed, proceed to step 3.
	Step 3.	Check for worn or loose brake linings (table 4-1). <p>If linings are worn or damaged, replace brake shoes (para. 4-16).</p>
	Step 4.	Check slack adjusters and adjust as required (para. 4-18).
5.	HARD PULLING (ONE OR MORE BRAKE DRUMS RUNNING HOT).	
	Step 1.	Check for cross connected air hoses. <ul style="list-style-type: none"> a. If hoses are cross connected, connect hoses properly (emergency to emergency, service to service). b. If hoses are not cross connected, proceed to step 2.
	Step 2.	Check for weak or broken brake shoe springs (para. 4-16). <p>If a spring is defective, replace spring (para. 4-16).</p>
	Step 3.	Check for proper brake adjustment by checking slack adjuster and adjust as required (para. 4-18).
IMPROPER AIR BAG INFLATION.		
	Step 1.	Check air bag for cuts or cracks. <ul style="list-style-type: none"> a. If air bag is damaged, notify support maintenance. b. If air bag is not damaged, proceed to step 2.
	Step 2.	Check air hoses for proper wrapping, cracks, cuts and proper connection. <p>If hoses are loose or damaged, tighten or replace (para. 4-21).</p>

Table 4-2. Unit Troubleshooting Table - CONT

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

AIR SUSPENSION SYSTEM

Step 3. Check air tanks for leaks or damage.

If air tanks leak or are damaged, replace air tanks (para. 4-22).

Step 4. Check leveling valves for proper height setting (para. 4-40).

Adjust as required (para. 4-40).

TIRES

1. EXCESSIVELY WORN OR SCUFFED TIRES OR FLAT SPOTS ON TIRES.

Step 1. Check steering alignment (para. 4-29).

Step 2. Check for loose wheel bearings.

a. If wheel bearings are loose, adjust wheel bearings.

b. If wheel bearings are not loose, proceed to step 3.

Step 3. Check suspension system for damaged bushings, air bags and loose or missing bolts and nuts.

a. If air bags are damaged or have loose or missing bolts and nuts, notify support maintenance.

b. If suspension system is not damaged and all hardware is complete and secure, notify support maintenance.

2. TRAILER NOT TRACKING.

Step 1. Check for loose wheel bearings.

a. If wheel bearings are loose, adjust wheel bearings.

b. If wheel bearings are not loose, proceed to step 2.

Step 2. Check suspension system for damaged bushings, air bags and loose or missing hardware.

a. If suspension system is damaged or has missing hardware, repair or replace as required.

b. If suspension system is not defective, proceed to step 3.

4-9. UNIT TROUBLESHOOTING TABLE (CONT)

Table 4-2. Unit Troubleshooting Table - CONT

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
TIRES - CONT		
	Step 3.	Check toe-in and steering adjustment and adjust as required (para. 4-29).
	Step 4.	Check for excessive tire wear.

Section V. MAINTENANCE OF ELECTRICAL SYSTEM

4-10. ELECTRICAL SYSTEM

This task covers inspection.

INITIAL SETUP

Tools

Multimeter

CHECK FOR SHORTS

Check for shorts between the prime source and the trailer, within the wiring harness, and between the wiring harness and the lights.

CHECK FOR GROUNDS

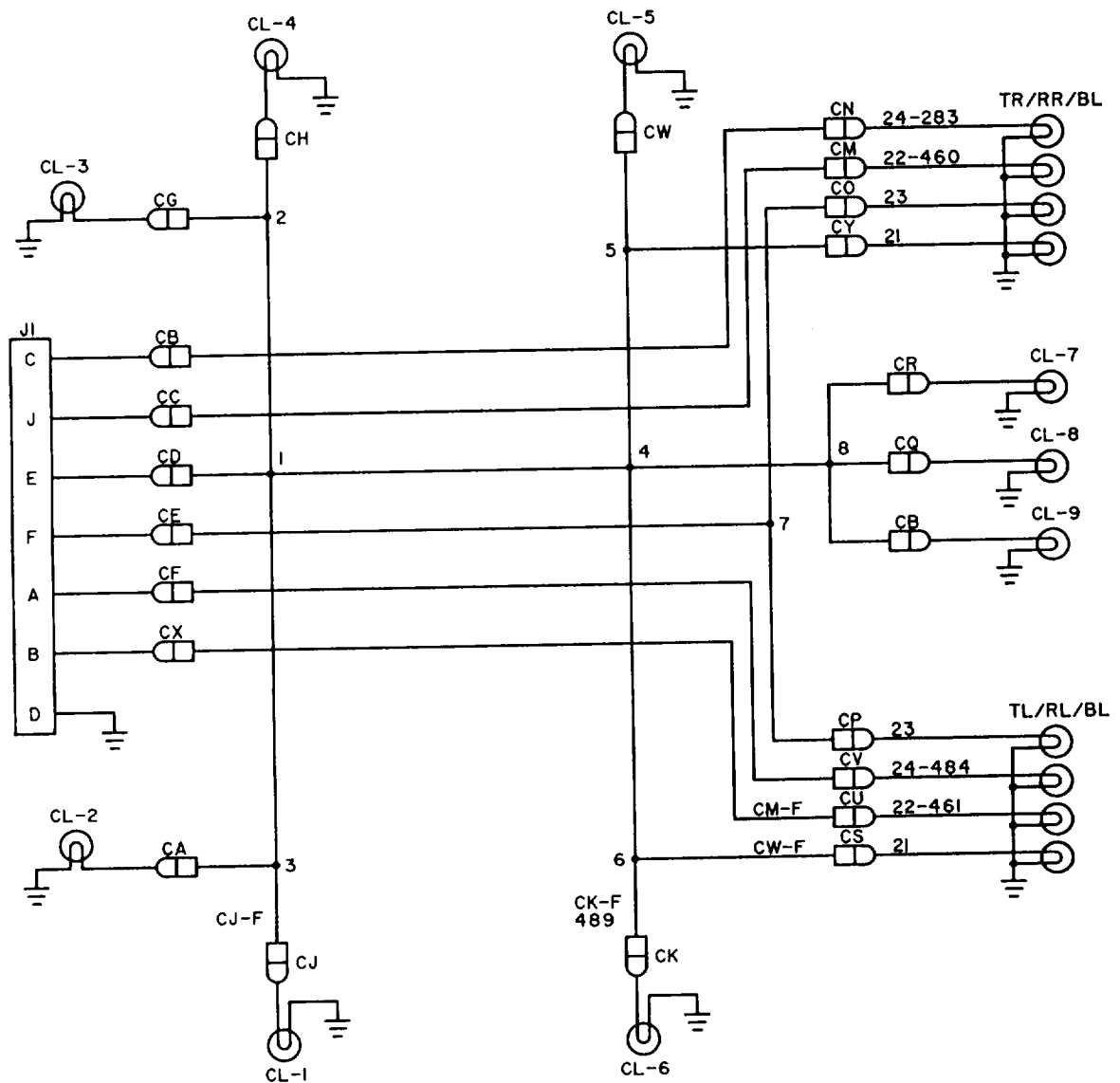
- a. Disconnect all wiring connectors at the lights. Be sure identification markers are present on individual wires before disconnecting. If not, tag wires.

NOTE

Check for continuity on grounds using the multimeter on a low ohms scale.

- b. Check for continuity between wiring harness connector pin D and the chassis. If the circuit is open, repair ground lead on wiring harness.

- c. Check for shorts to ground between wiring harness connector pins J1-C, J, E, F, A, B and pin D (ground). There should be an open circuit between the connector pins. If there is continuity between any connector pin as specified, that circuit is grounded and the wiring harness must be repaired or replaced.
- d. Remove all lamps from lights (para. 4-11 and 4-12).
- e. Check for grounds from each light lead wire and the chassis (ground). There should be an open circuit between each lead wire and the chassis. If there is continuity on any lead wire, the wire is grounded and must be repaired or the light replaced.



4-10. ELECTRICAL SYSTEM (CONT)

CHECK WIRING HARNESS CONTINUITY

- a. Install all lamps in lights (para. 4-11 and 4-12).
- b. Check for continuity between each light lead wire and the chassis. If there is an open circuit, first check lamp. If lamp is defective, replace it. If there is still an open circuit, repair lead wire or replace light.
- c. Connect all wire connectors at lights.
- d. Check for continuity between wiring harness connector pins J1-C, J, E, F, A, B and pin D (ground). Each circuit should indicate continuity. If not, there is a broken wire and wiring must be repaired or replaced.

CHECK INTERVEHICULAR CABLE CONTINUITY

Check for continuity between individual connector pins and socket on opposite ends of cable at terminals J1-C, J, E, F, A, and B. Each circuit should indicate continuity. If any circuit is open, replace cable. At each end of cable, check for open circuit between any two pins. If short circuit is found, replace cable.

END OF TASK

4-11. COMPOSITE LIGHTS

This task covers: a. Removal b. Repair c. Installation

INITIAL SETUP

Tools

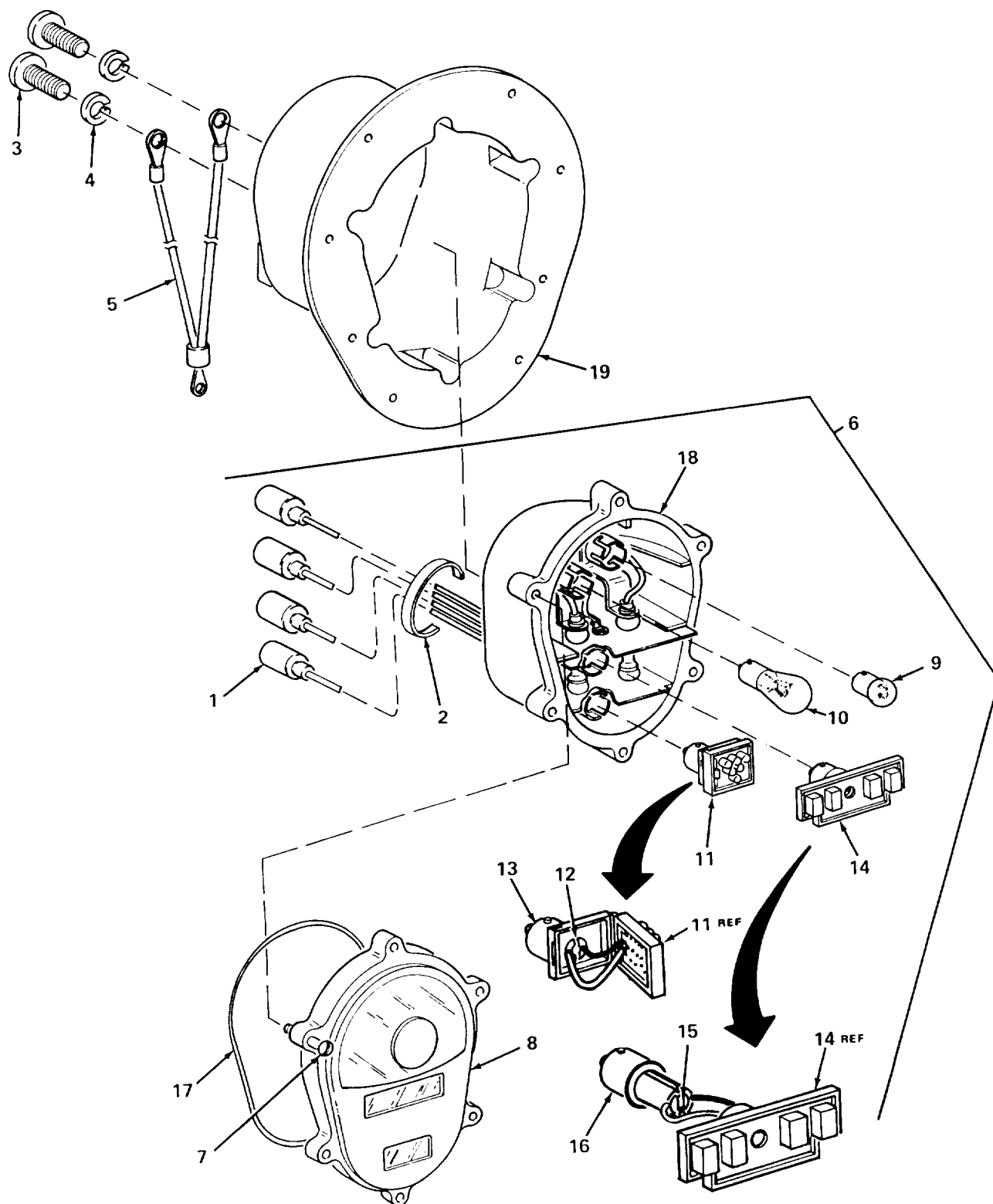
General mechanics tool kit

Materials/Parts

Lockwasher (2)
Packing
Tiewrap (item 14, appendix E)
Tag (item 15, appendix E)

REMOVAL

- a. Tag and disconnect connectors (1) from wiring harness. Remove plastic tiewrap (2).
- b. Remove two machine screws (3), lockwashers (4) and wire harness (5) to detach composite light (6). Remove light (6).



4-110 COMPOSITE LIGHTS (CONT)

REPAIR

- a. Loosen six captive screws (7) and remove lens (8).
- b. If defective, replace lamp (9 or 10).
- c. If defective, replace stop lamp assembly (11) by using a small screwdriver and inserting it on left side (facing taillight) between printed wiring board and printed wiring board housing. Pop open printed wiring board and insert screwdriver in screw (12) slot in the middle of printed wiring board housing. Press down and turn screw (12) counterclockwise to remove bayonet (13) and stop lamp assembly (11) from socket.
- d. Replace stop lamp assembly (11), with printed wiring board popped open, by positioning bayonet (13) in socket and using small screwdriver in screw (12) slot. Press down and turn screw (12) clockwise until bayonet (13) is seated in socket.
- e. Snap shut printed wiring board into printed wiring board housing.
- f. If defective, replace marker assembly (14) by using a small screwdriver and inserting it in screw (15) slot in center of assembly. Press down and turn screw (15) counterclockwise to remove bayonet (16) and assembly (14) from socket.

CAUTION

Ensure wires are cleared from center screw (15) slot.

- g. Replace marker assembly (14) by positioning bayonet (16) and assembly (14) into socket. Using small screwdriver in screw (15) center slot, press down and turn screw (15) clockwise until bayonet (16) is seated in socket.

NOTE

Do not remove packing (17) unless damaged.

- h. If necessary, replace packing (17). Install lens (8) into body (18) and tighten and fasten six captive screws (7).
- i. If necessary, replace housing (19) by drilling out eight rivets and removing housing from trailer frame. Install housing (19) and eight rivets.

INSTALLATION

- a. Install composite light (6) on trailer and install wire harness (5) with two machine screws (3) and lockwashers (4).
- b. Connect connectors (1) to wiring harness. Make sure that tag or marker numbers on wires correspond. Install tirwrap (2).

END OF TASK

4-12. CLEARANCE MARKER LIGHTS

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools

General mechanics tool kit

Materials/Parts

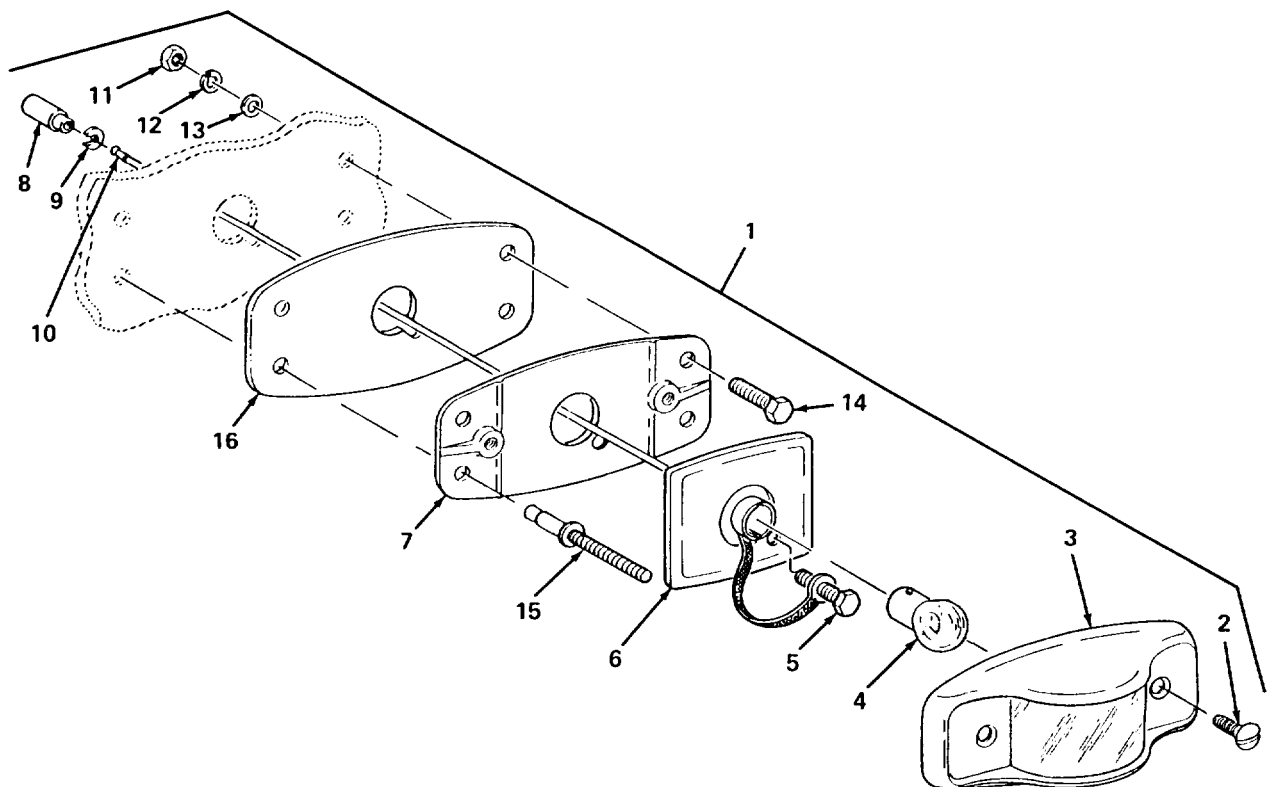
Lockwasher (4)

NOTE

All clearance marker lights (1) are identical except for the lenses (red in back, amber in front).

REMOVAL

- a. Remove two screws (2) and lens (3).
- b. Remove lamp (4).



4-120 CLEARANCE MARKER LIGHTS (CONT)

- c. Remove grounding screw (5) and socket base (6) from mount plate (7) to gain access to wiring.
- d. Disconnect light connector from harness connector.
- e. Push shell (8) back on wire and remove C-washer (9) and shell (8). Remove terminal (10) if damaged.

NOTE

If removing any one of the three center rear lights, it will be necessary to drill or chisel the fasteners, whether screws or rivets.

- f. If necessary, remove existing fasteners, either four nuts (11), lockwashers (12), washers (13) and screws (14) or four rivets (15), mount plate (7) and gasket (16).

INSTALLATION

- a. If removed, install gasket (16) and mount plate (7) using four 3/16-inch blind fasteners.
- b. Install terminal (10) if removed. Insert terminal (10) through shell (8). Install C-washer (9) on terminal (10) and pull shell (8) over terminal.
- c. Connect connector to wiring harness.
- d. Mount socket base (6) to mount plate (7) with grounding screw (5).
- e. Install lamp (4).
- f. Install lens (3) with two screws (2).

END OF TASK

4-13. WIRING HARNESS

This task covers:

a. Removal	c. Repair
b. Cleaning and Inspection	d. Installation

INITIAL SETUP

Tools

General mechanics tool kit
Electrical tool and connector repair kit
Soldering Iron

Personnel Required: 2

Equipment	Condition
1. Excavator	Good
2. Bulldozer	Fair
3. Grader	Good
4. Compactor	Good
5. Paver	Fair
6. Roller	Good
7. Truck	Good
8. Crane	Fair
9. Drilling Rig	Good
10. Concrete Pump	Fair
11. Scaffolding	Good
12. Formwork	Good
13. Safety Harness	Good
14. Hard Hat	Good
15. Work Boots	Good
16. First Aid Kit	Good
17. Fire Extinguisher	Good
18. Shovel	Good
19. Pickaxe	Good
20. Hammer	Good
21. Saw	Good
22. Drill	Good
23. Wrench	Good
24. Screwdriver	Good
25. Pliers	Good
26. Tape Measure	Good
27. Level	Good
28. Plumb Line	Good
29. String Line	Good
30. Chalk Line	Good
31. Spirit Level	Good
32. Transit	Good
33. Total Station	Good
34. GPS Receiver	Good
35. Surveying Instrument	Good
36. Construction Software	Good
37. Communication System	Good
38. Safety Vest	Good
39. Safety Glasses	Good
40. Safety Helmet	Good
41. Safety Boots	Good
42. Safety Harness	Good
43. Safety Net	Good
44. Safety Barrier	Good
45. Safety Signage	Good
46. Safety Training	Good
47. Safety Protocol	Good
48. Safety Manual	Good
49. Safety Checklist	Good
50. Safety Inspection	Good

Right rear wheel removed

Materials/Parts

Wiping rag (item 12, appendix E)
Lockwasher (12)
Tiewrap (as required) (item 14, appendix E)
Lock nut (4)

REMOVAL

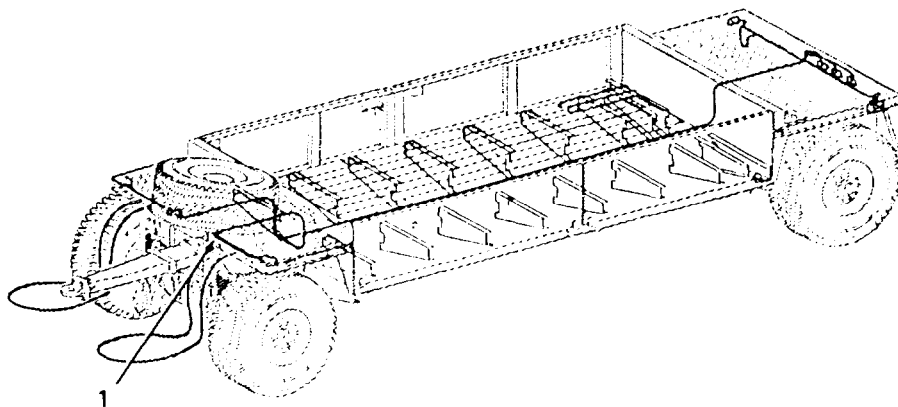
CAUTION

Be careful not to cut air hose when cutting tape from tiewraps.

NOTE

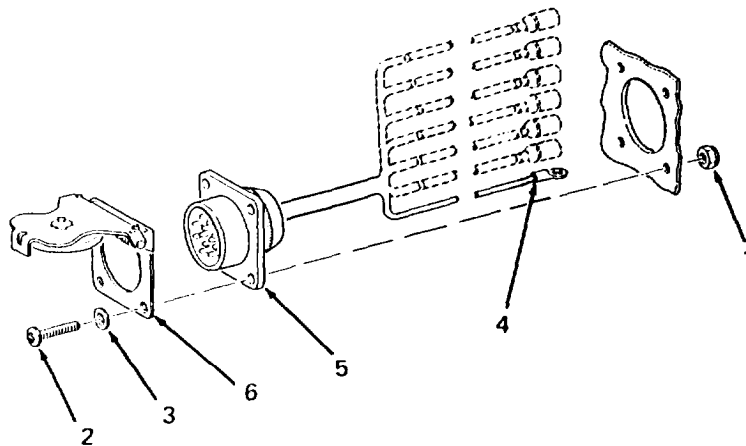
Remove complete harness only if required to effect repair or replacement.

- a. Cut tape and remove tiewraps around harness at composite light mounting brackets.
- b. Tag and disconnect harness connectors (1) at all lights by pulling connector halves apart.



4-13. WIRING HARNESS (CONT)

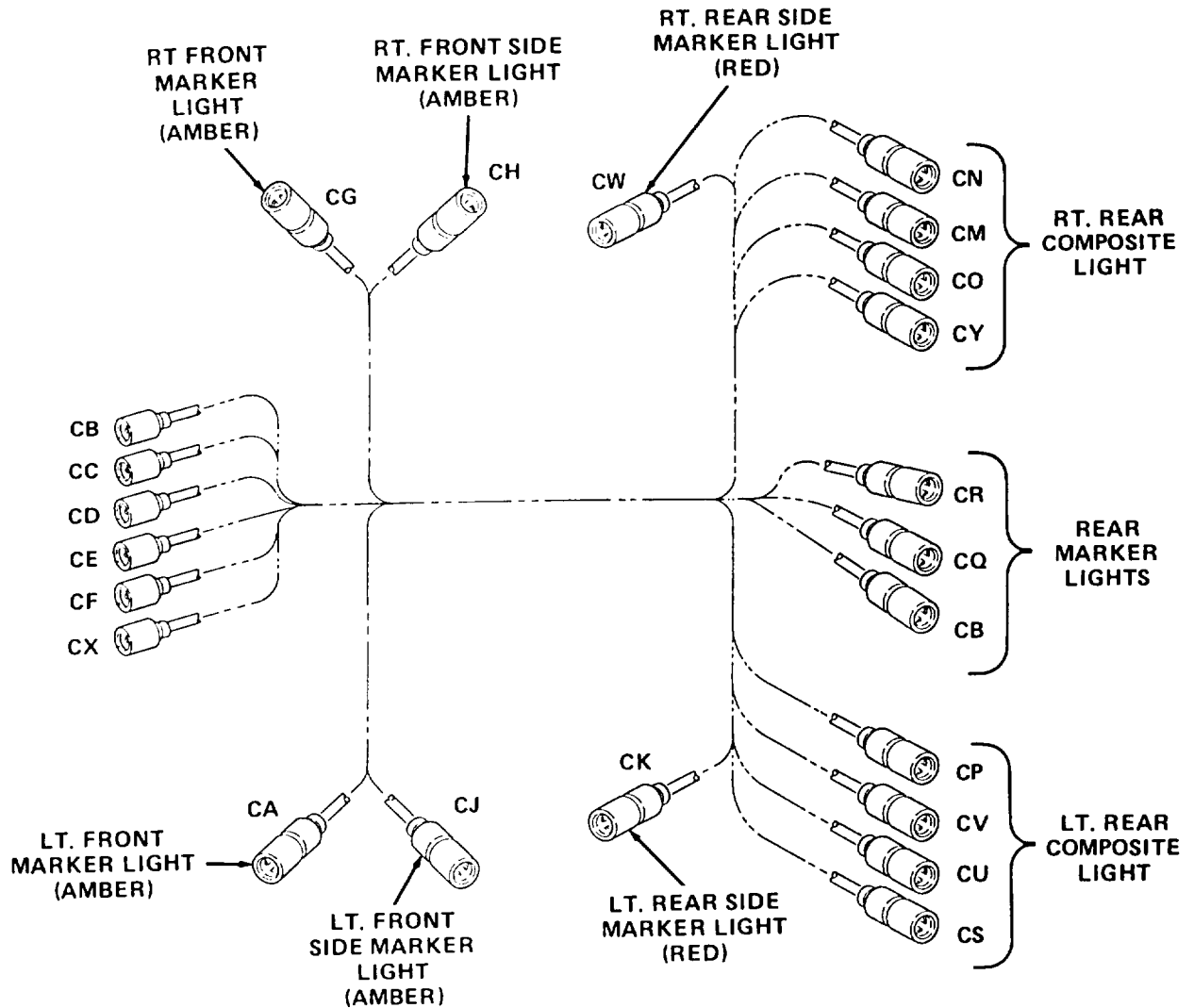
- c. Tag and disconnect harness connectors at front receptacle.
- d. Remove 12 nuts and lockwashers from 10 screws and 2 studs securing the harness clamps at positions along the right side under frame. Remove clamps from wiring harness.
- e. Remove four lock nuts (1), capscrews (2), and washers (3) to free ground lead (4), receptacle (5) and cover (6) from frame.



NOTE

To make installation easier, tape receptacle bundles to main harness if desired.

- f. To remove, feed wire harness through grommets and along frame.



CLEANING AND INSPECTION

- Clean wiring harness with a clean rag.
- Inspect wiring for cuts, breaks and loose connections and connectors and cover (6) for damage.

REPAIR

- If any connector assembly is damaged, replace it. Push back shell on wire to expose terminal, remove defective terminals and crimp a new terminal on end of wire. Pull shell over terminal.
- If individual harness wires extending from the harness loom are broken, splice at break. Install new terminal and shell if required.

4-13. WIRING HARNESS (CONT)

- c. If wire leads have damaged insulation, tape over damaged insulation where required. If wires within the harness loom are defective, replace wiring harness.
- d. Replace deteriorated grommets in frame holes.

INSTALLATION

CAUTION

Do not damage wiring or insulation during installation of wiring harness.

- a. Run wiring harness along frame and through grommets. Run harness over cross beams. Install clamps over harness and secure.
- b. Install tiewraps around composite light wires and to air lines along frame.
- c. Position receptacle and cover on frame. Receptacle must have A contact upward. Install capscrews and lock nuts. Be sure ground lead and lockwasher are under one of the lock nuts.
- d. Connect connectors to all lights.
- e. Connect trailer to towing vehicle and check operation of all lights.

END OF TASK

Section VI. MAINTENANCE OF FRONT AXLE

4-14. KNUCKLE REASSEMBLY

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools

Welding machine
Welder tool kit
Bearing and bushing inserter tool

Materials/Parts

Cleaning compound (item 3, appendix E)
Grease (item 7, appendix E)
Wiping rag (item 12, appendix E)
Cotter pin
Cotter pin
Bushings (2)

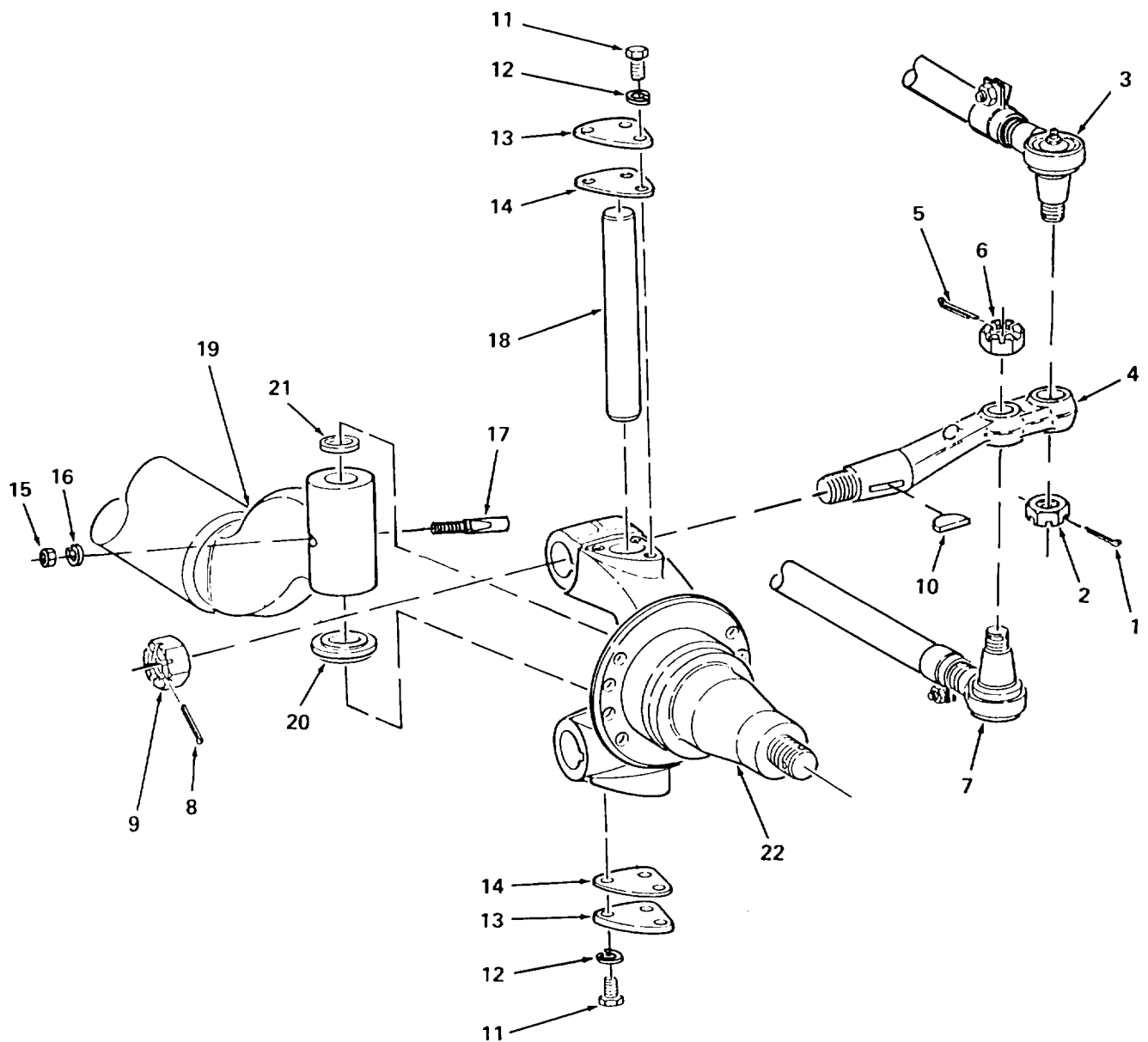
Personnel Required: 2

Equipment Condition

Wheels removed (para. 3-5)
Brake assemblies removed (para. 4-15)
Hub and drum removed (para. 4-26)
Brake air chamber removed (para. 4-20)
Camshaft assembly removed (para. 4-17)

REMOVAL

- a. On streetside only, remove cotter pin (1), nut (2) and short tie rod (3) from assembly arm (4).
- b. Remove cotter pin (5), nut (6), and long tie rod (7) from assembly arm (4).
- c. Remove cotter pin (8), nut (9), assembly arm (4) and woodruff key (10).
- d. Remove six bolts (11), lockwashers (12), top and bottom plates (13) and two gaskets (14).
- e. Remove nut (15), washer (16) and taper Pin (17).

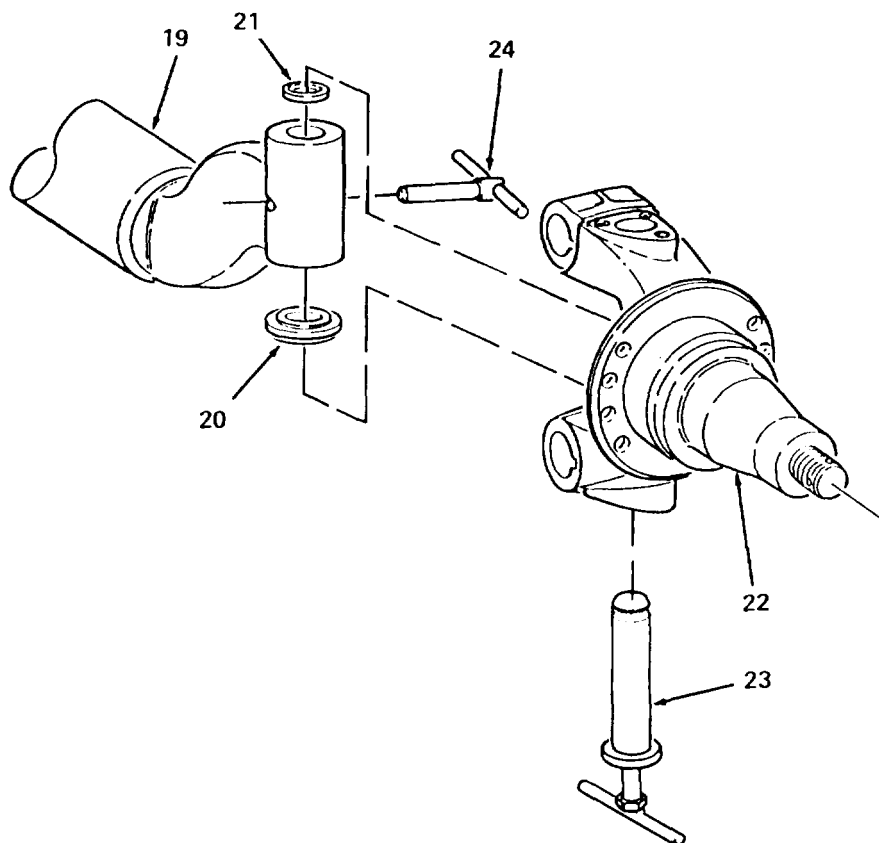


4-14. KNUCKLE ASSEMBLY (CONT)

- f. Drive king pin (18) out with bearing preload tool or other suitable object to avoid damage to king pin ends.
- g. Remove axle (19), bearing (20) and shim (21) from knuckle assembly (22).

INSTALLATION

- a. Apply grease to new bearing (20) and install bearing and knuckle assembly (22) onto axle (19).
- b. Insert body of bearing inserter tool (23) through lower portion of knuckle assembly (22) and bearing (20) into axle; secure by inserting bearing inserter tool T-handle (24) through tapered pin hole.
- c. Start threaded handle into body of bearing inserter tool (23) until stop on handle contacts lower surface of knuckle assembly (22).
- d. Preload bearing by hand turning the threaded handle as much as possible.

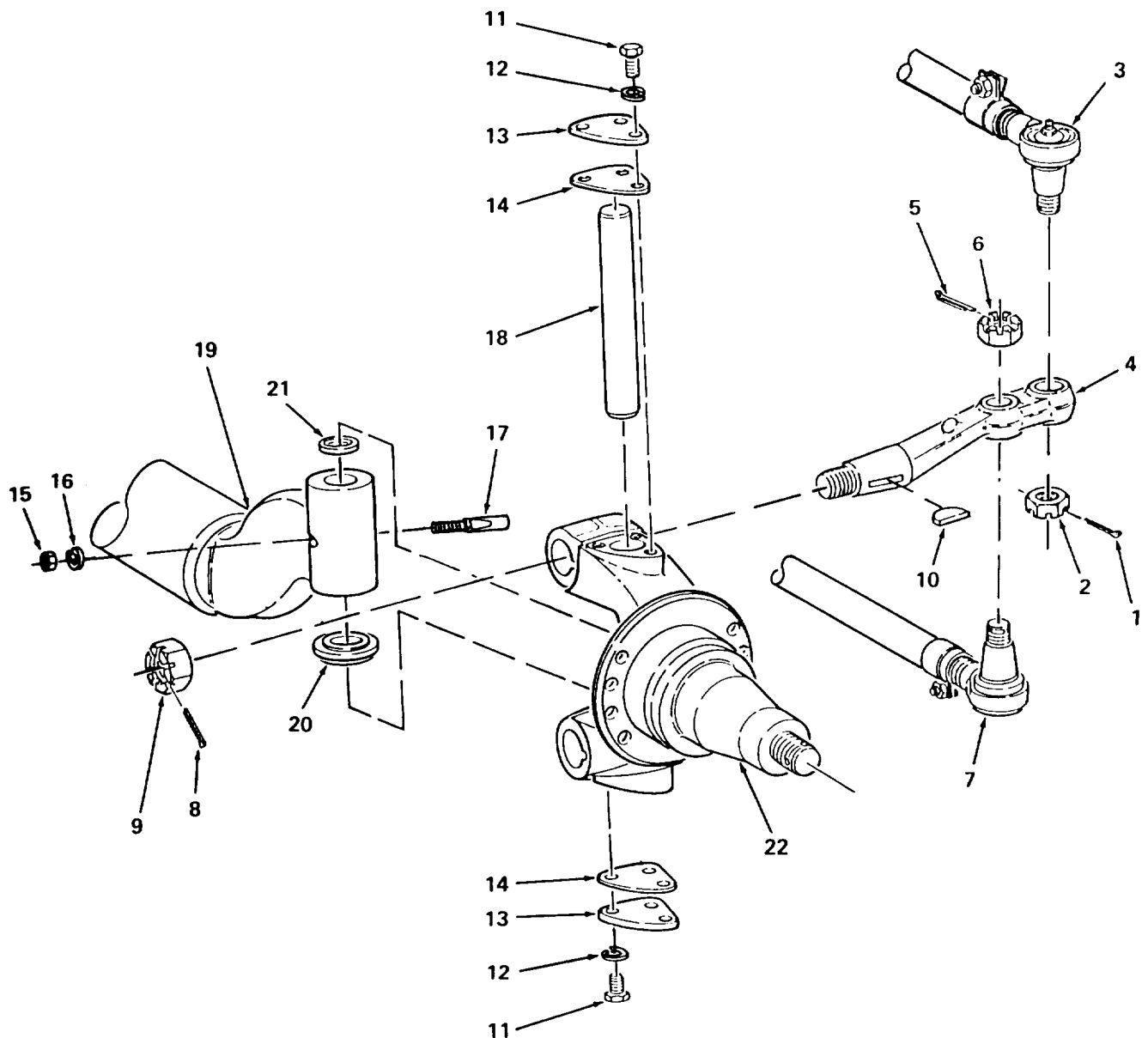


- e. Insert shim (21) of appropriate thickness between top of axle (19) and knuckle assembly (22) to achieve 0.002-inch clearance between top of axle and knuckle. Release tension on bearing inserter tools (23).

CAUTION

Do not insert king pin upside down. The king pin measures 5-1/10 inches from the groove to the bottom, and 5-4/10 inches from the groove to the top. INSERT BOTTOM FIRST.

- f. Apply grease to king pin (18); align roove with tapered pin hole, insert into top of knuckle assembly (22) and drive downward until it reaches top of bearing preload tool. Remove tool T-handle (24) from tapered pin hole and continue driving king pin. This will drive out body of bearing preload tool.



4-14. KNUCKLE ASSEMBLY (CONT)

- g. Insert tapered pin (17) and secure with washer (16) and nut (15).
Torque to 55-60 lb ft.
- h. Replace top and bottom gaskets (14) and plates (13) and secure with six lockwashers (12) and bolts (11). Torque to 6-8 lb ft.
- i. Replace key (10) and assembly arm (4). Secure with nut (9) and cotter pin (8).
- j. Replace tie rod (7) and secure with nut (6). Torque to 125 lb ft and tighten to aline hole; then install cotter pin (5).
- k. On streetside only, install short tie rod (3) on assembly arm (4) and secure with nut (2). Torque to 125 lb ft and tighten to aline hole; then install cotter pin (1).
- l. Lube two fittings top and bottom on axle.

END OF TASK

Section VII. MAINTENANCE OF AIR BRAKE SYSTEM

4-15. SERVICE BRAKE ASSEMBLY

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools

General mechanics tool kit

Materials/Parts

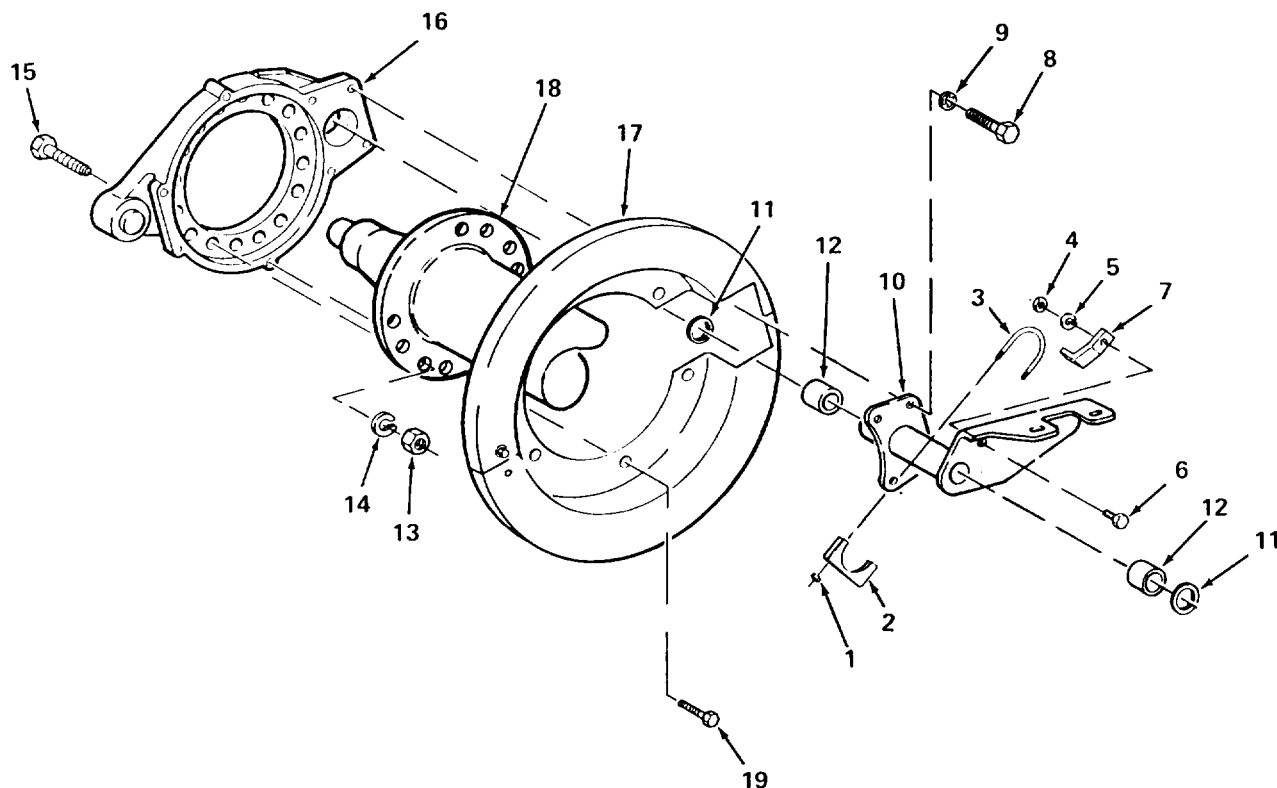
Lockwasher (2)
Lockwasher (4)
Lockwasher (8)
Lockwasher

Equipment Condition

Hub and drum removed (para. 4-26)
Brake shoes removed (para. 4-16)
Slack adjuster removed (para. 4-18)
Camshaft removed (para. 4-17)
Brake air chamber removed (para. 4-20)

REMOVAL

- a. At rear brake only, remove two nuts (1), clamp (2), U-bolt (3), nut (4), lockwasher (5), bolt (6), and bracket (7).
- b. Remove four screws (8) and lockwashers (9); then remove cam bracket assembly (10).
- c. Remove two washers (11) and two bushings (12) from cam bracket assembly (10).
- d. Remove eight nuts (13), lockwashers (14), and screws (15) and remove spider (16) and deflector (17) from spindle (18).
- e. Remove five screws (19) and separate spider (16) and deflector (17).



4-15. SERVICE BRAKE ASSEMBLY (CONT)

INSTALLATION

- a. Aline spider (16) and deflector (17) and install five screws (19).
- b. Attach spider (16) and deflector (17) to spindle (18) with eight screws (15), lockwashers (14) and nuts (13). Torque nuts (13) to 150-170 lb ft.
- c. Install two bushings (12) and washers (11) into cam bracket assembly (10), and install with four screws (9) and lockwashers (8).
- d. At rear brake only, install bracket (7), bolt (6), lockwasher (5), nut (4), U-bolt (3), clamp (2) and two nuts (1). Torque nut (4) to 45-55 lb ft. Torque two nuts (1) to 50-70 lb ft.

END OF TASK

4-16. BRAKE SHOES

This task covers: a. Removal c. Inspection
 b. Cleaning d. Installation

INITIAL SETUP

Tools

General mechanics tool kit
Lock ring pliers
Pry bar

Materials/Parts

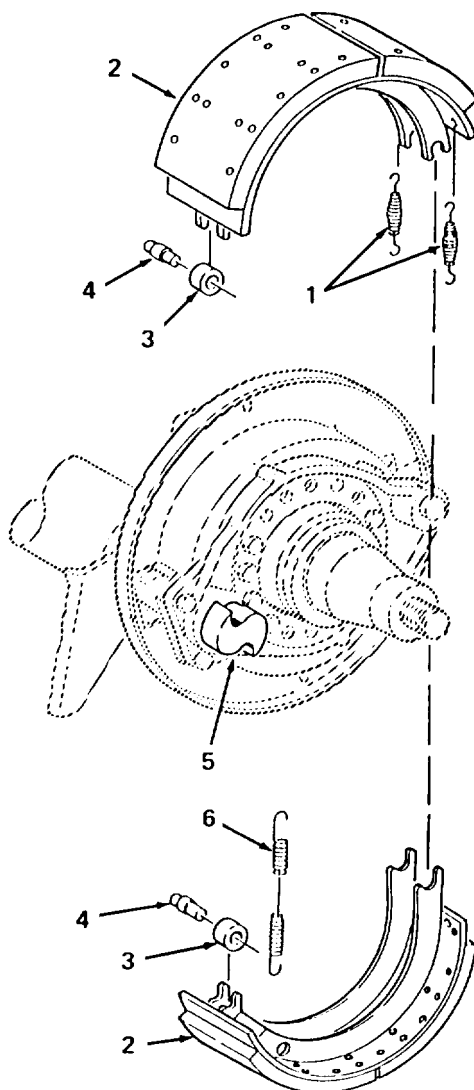
Grease (item 7, appendix E)
Abrasive cloth (item 4, appendix E)
Dry cleaning solvent (item 6, appendix E)
Wiping rag (item 12, appendix E)

Equipment Condition

Wheel and tire removed (para. 3-5)
Drum and hub removed (para. 4-26)

REMOVAL

- a. Using a large screwdriver or lever, remove two springs (1) from brake shoes (2).
- b. Remove two cam rollers (3) and pins (4).
- c. Push cam end of both brake shoes (2) toward cam (5) and unhook return spring (6) and remove brake shoes (2).



4-16. BRAKE SHOES (CONT)

CLEANING

WARNING

Dry cleaning solvent (A-A-711, type I) is extremely flammable, toxic, and is an irritant to the eyes, skin, and respiratory system. Do not use near open flame or excessive heat. Do not breathe the vapors. Use skin and eye protection and work in a well ventilated area. Flash point of dry cleaning solvent is 140°F.

CAUTION

Do not allow lubricants or solvents to get on brake shoes. These materials will do damage to brake linings and result in poor braking action.

- a. Clean all parts except brake shoes with a brush and dry cleaning solvent. Air dry.
- b. Clean brake shoes with soft bristle brush.

INSPECTION

- a. Inspect brake shoes for wear and scoring. Replace brake shoes if linings are worn to less than 5/16-inch thick at any place on the linings.
- b. Inspect springs for kinks, corrosion, and distortion.
- c. Inspect rollers and pins for wear, corrosion and other damage.

INSTALLATION

- a. Install two rollers (3) and pins (4) on cam (5).
- b. Position two brake shoes (2) on rollers (3).
- c. Install return spring (6).
- d. Install two springs (1).
- e. Back off slack adjuster (para. 4-18) to allow for drum installation.

END OF TASK

4-17. CAMSHAFT

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools

General mechanics tool kit
Snap ring pliers

Materials/Parts

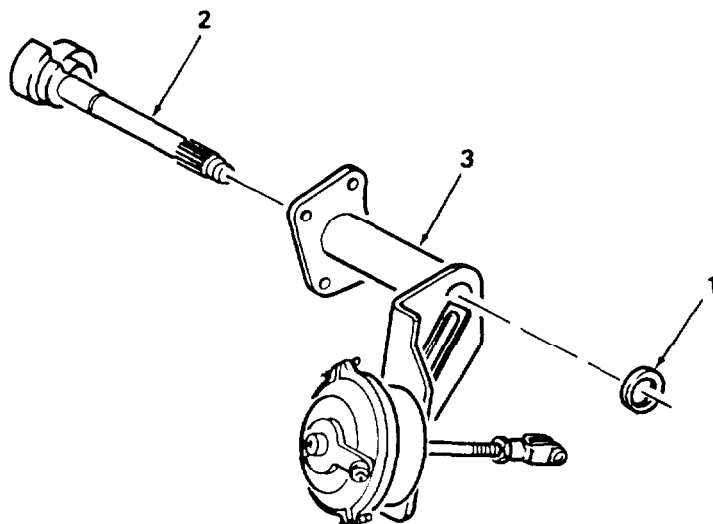
Cotter pin

Equipment Condition

Brake shoes removed (para. 4-16)
Slack adjuster removed (para. 4-18)

REMOVAL

- a. Remove inner camshaft (thin) washer (1) from camshaft (2).
- b. Remove camshaft (2) from bracket (3).



4-17. CAMSHAFT (CONT)

INSTALLATION

NOTE

Two different thicknesses of washers are used on the camshaft, 0.30 inch and 0.60 inch thick. In addition, there is a thin washer that is used to seal dirt out of the slack adjuster.

- a. Install camshaft (2) through bracket (3).
- b. Install inner camshaft (thin) washer (1) onto camshaft (2).
- c. Install slack adjuster (para. 4-18).
- d. Check camshaft end play. Add or delete washers to obtain end play of 0.020 and 0.045 inch.

END OF TASK

4-18. SLACK ADJUSTER

This task covers: a. Removal b. Installation c. Brake Adjustment

INITIAL SETUP

Tools

General mechanics tool kit
Snap ring pliers

Equipment Condition

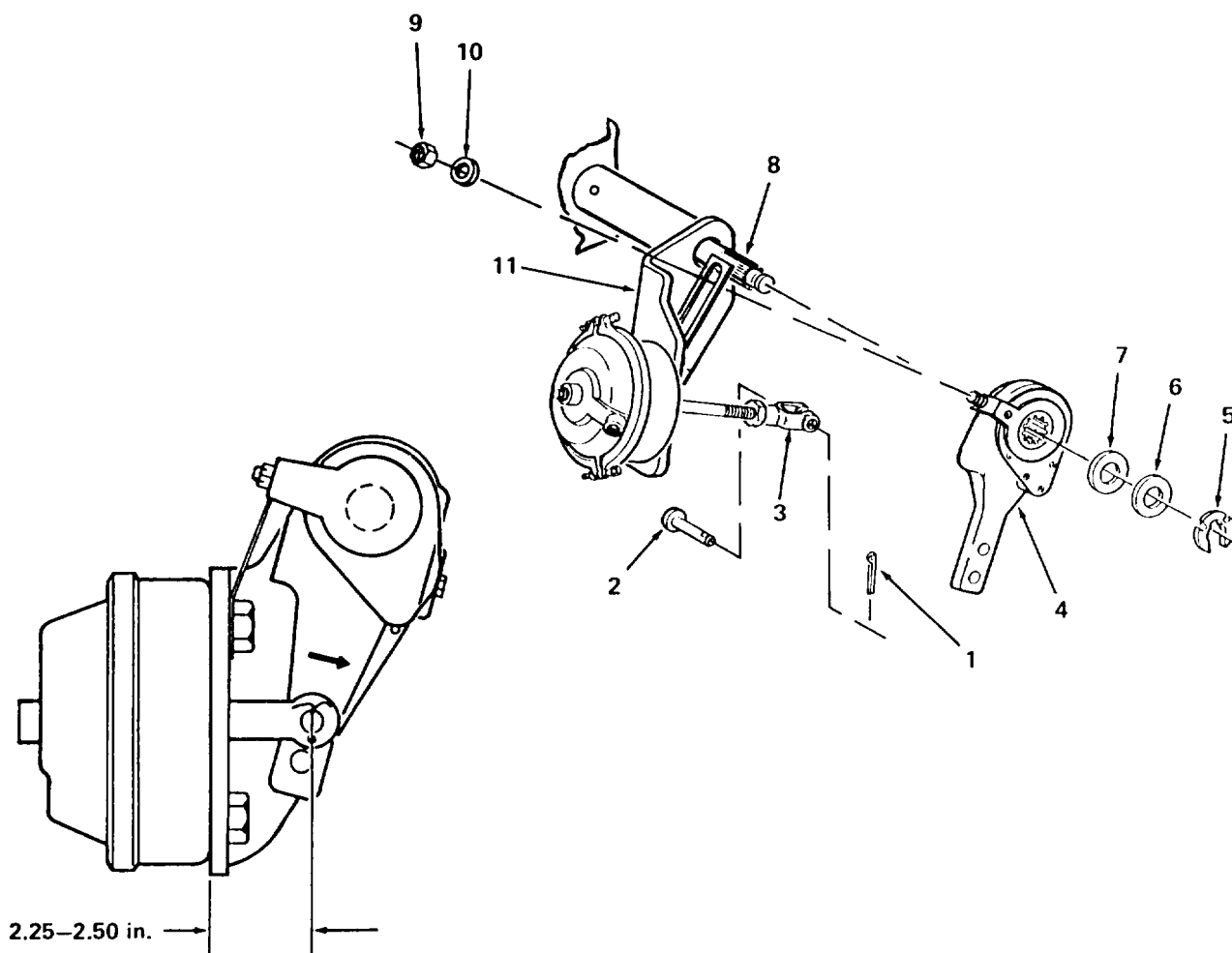
Brake shoes removed (para. 4-16)

Materials/Parts

Cotter pin
Grease GAA (item 7, appendix E)

REMOVAL

- a. Remove cotter pin (1) and clevis pin (2) from air chamber push rod clevis (3).
- b. Using a 7/16-inch socket wrench, rotate slack adjuster hex (on underside of slack adjuster (4)) counterclockwise (a ratcheting sound will be heard) until slack adjuster arm is clear of push rod clevis (3).



- c. Remove snap ring (5) and outer washers (6 and 7) from camshaft (8).
- d. Remove nut (9) and washer (10).

CAUTION

Do not hammer on slack adjuster to remove. Damage to the slack adjuster may occur.

- e. Using a suitable puller, remove slack adjuster (4) from bracket (11).

4-18. SLACK ADJUSTER (CONT)

INSTALLATION

WARNING

The slack adjuster must be installed with the arrow stamped on the side pointing AWAY from the air chamber. If the slack adjuster is installed wrong, brake failure may occur, possibly causing serious injury to personnel.

The slack adjusters for the front and rear axles are not identical. When reinstalling or replacing, ensure that the correct slack adjuster is used. Installation of incorrect slack adjuster may cause brake failure and possible serious injury to personnel.

- a. Lightly grease slack adjuster splines and slide slack adjuster (4) onto camshaft (8).
- b. Visually check alinement of slack adjuster and brake chamber push rod. If required, install an additional washer between slack adjuster and drum to center the slack arm in the clevis.
- c. Install two washers (7 and 6) and install snap ring (5).
- d. Install washer (10) and nut (9).
- e. Check camshaft end play. Add or delete washers to obtain end play of between 0.020 and 0.045 inch.

CAUTION

Ensure that the push rod is threaded as far as possible into the clevis. The face of the threaded push rod should be flush or protruding slightly from the inside of the clevis.

- f. Verify that the dimension between the air chamber mounting face and the center of clevis pin is between 2.25 and 2.50 inches. If adjustment is necessary, loosen jam nut above clevis, adjust clevis to 2.50 inches, and tighten jam nut to 15-20 lb ft.

NOTE

Some slack adjusters are equipped with two clevis pin holes.

On the rear brakes, install the clevis in the slack adjuster hole furthest from the camshaft.

On the rear brakes, install the clevis in the slack adjuster hole closest to the camshaft.

- g. Rotate adjustment hex on underside of slack adjuster (4) clockwise until holes in slack adjuster arm aline with push rod clevis (3).

- h. Install clevis pin (2) and cotter pin (1).
- i. Lubricate slack adjuster (4) with grease.
- j. Uncage air chambers (para. 3-6).
- k. Adjust brakes (see below).

BRAKE ADJUSTMENT

CAUTION

After any maintenance on hubs, slack adjusters, or drums, perform the brake adjustment procedure. Otherwise, brake rubbing or ineffective braking may occur.

NOTE

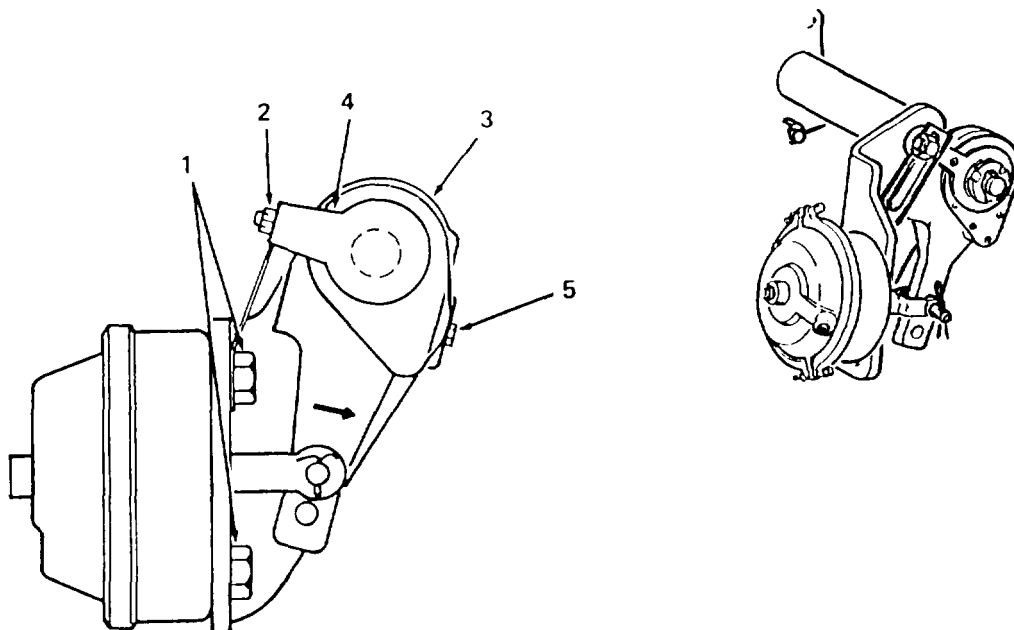
The HEMAT is equipped with automatic slack adjusters. They adjust constantly whenever braking is done, and compensate for lining and drum wear. The slack adjusters must be initially installed as above and adjusted as below in order for the automatic adjustment to function.

- a. Cage the brake chambers (rear only) (para. 3-6).

NOTE

Brakes must be off (wheels rotate freely).

- b. Ensure that brake chamber bolts (1) are tight. If not torque to 90-110 lb ft.



4-18. SLACK ADJUSTER (CONT)

- c. Loosen nut (2) on slack adjuster (3).

CAUTION

If the control arm is not rotated to the internal stop, tight brakes will occur.

- d. Lightly tap control arm (4) to rotate it toward brake chamber (there is an arrow stamped on the control arm to show which direction to move it). The control arm should be rotated until stopped by the internal stop of slack adjuster.
- e. Without moving control arm from stopped position, tighten nut (2) and torque to 38-42 lb ft.
- f. Using a 7/16-inch ratchet wrench, rotate adjustment hex (5) on underside of slack adjuster clockwise until shoes are tight against drum and the hex will no longer turn.
- g. Back off adjuster hex (5) three-quarters of a turn by turning counterclockwise. The wrench will require approximately 15 lb ft to turn, and a ratcheting sound will occur.
- h. Uncage brake chambers (rear only) (para. 3-6).

END OF TASK

4-19. AIR CLEANER

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools

General mechanics tool kit

Equipment Condition

Air tanks drained

Materials/Parts

Anti-seize tape (item 16, appendix E)

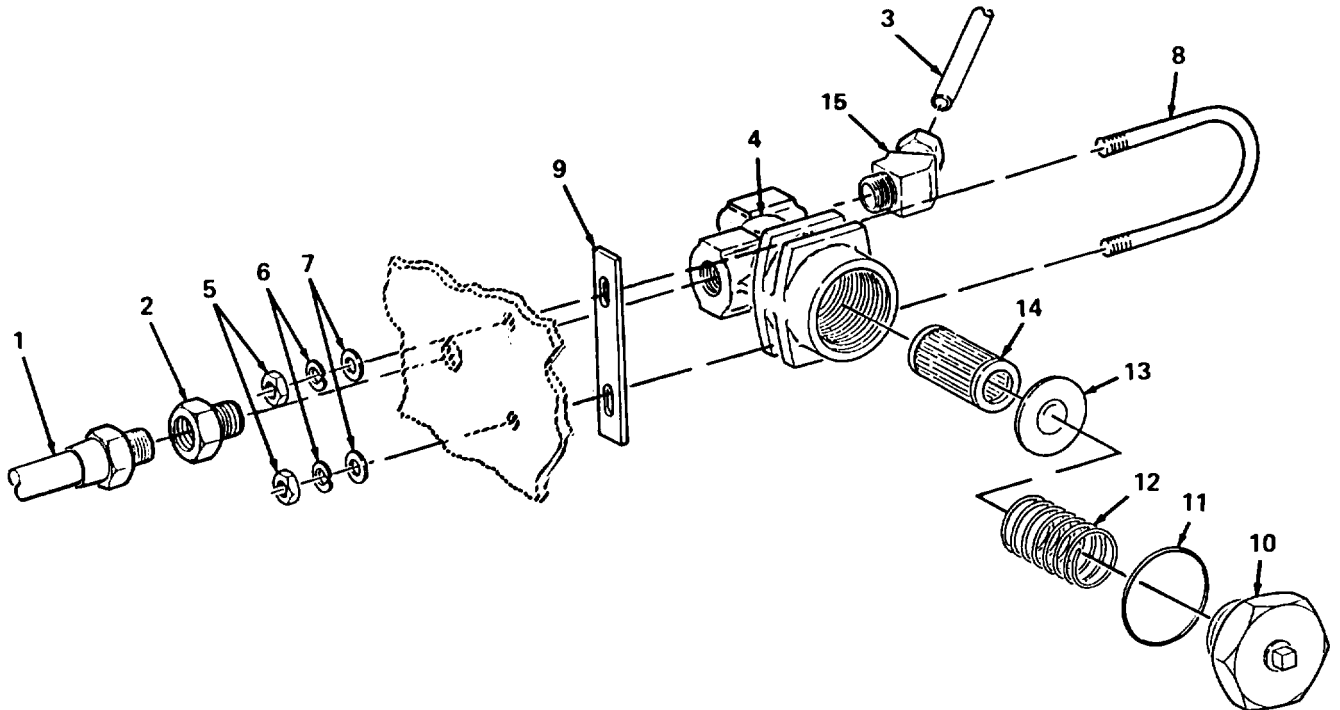
Lockwasher

REMOVAL

NOTE

There are two air cleaners, the service air cleaner and the emergency air cleaner. They are installed facing in opposite directions. (See air system schematic, para. 2-2.)

- a. Disconnect air hose (1) and adapter (2) from trailer.
- b. Disconnect air hose (3) from air cleaner (4).



- c. Remove two nuts (5), lockwashers (6) and washers (7) from U-bolt (8).
- d. Remove U-bolt (8), spacer (9) and air cleaner (4).

WARNING

Be careful when removing air cleaner top nut because of high spring pressure behind nut.

- e. Remove top nut (10), preformed packing (11), spring (12), filter holder (13) and filter (14).
- f. Remove elbow (15).

INSTALLATION

NOTE

Apply anti-seize tape to male pipe threads before connecting.

- a. Install elbow (15).
- b. Install filter (14), filter holder (13), spring (12), preformed packing (11) and top nut (10) into air cleaner (4).

4-19. AIR CLEANER (CONT)

- c. Position U-bolt (8), spacer (9) and air cleaner (4) onto frame and secure with two washers (7), lockwashers (6) and nuts (5).
- d. Connect air hose (3).
- e. Connect adapter (2) and air hose (1) to trailer.

END OF TASK

4-20. BRAKE AIR CHAMBER

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools

General mechanics tool kit

Materials/Parts

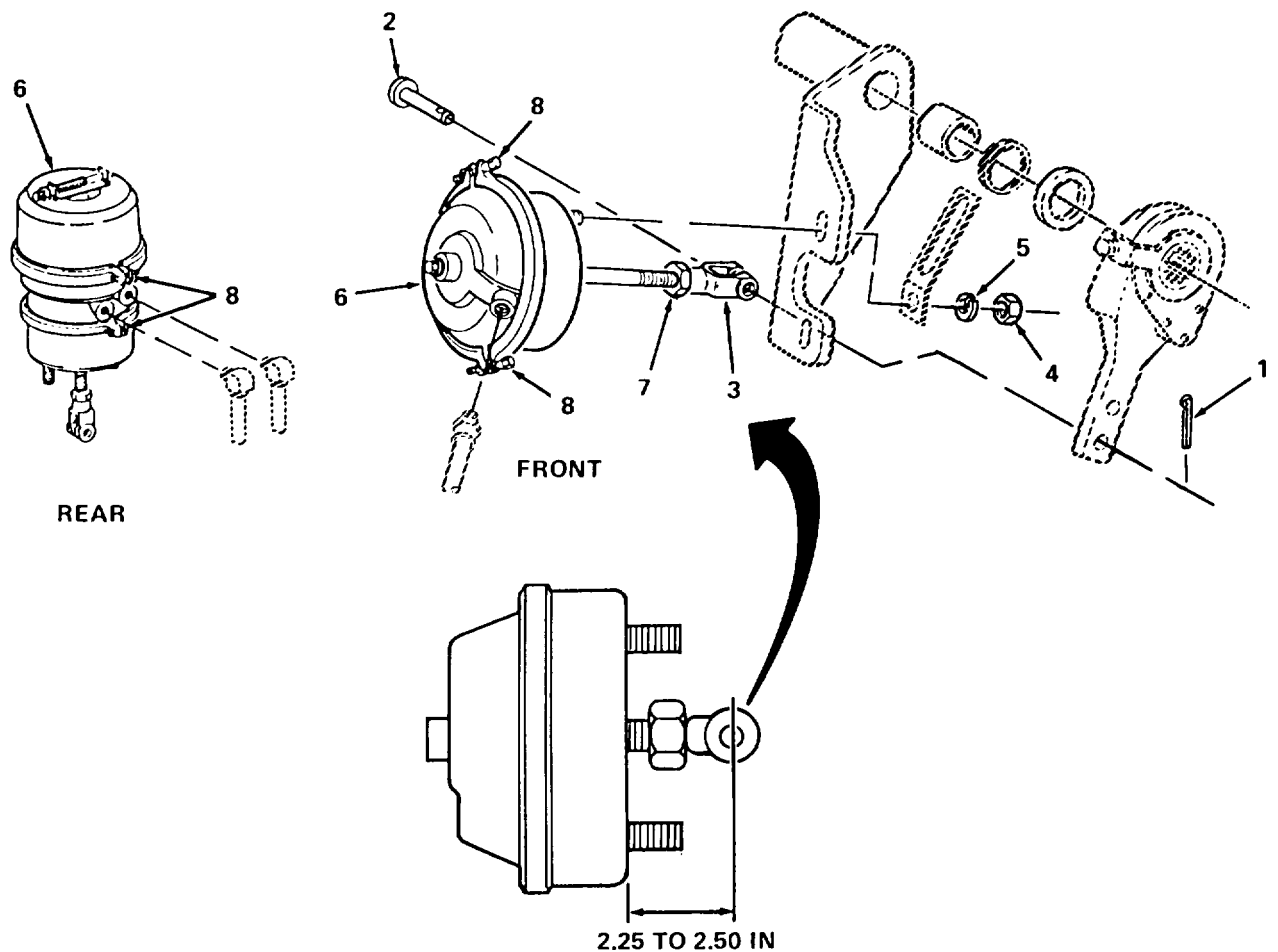
Anti-seize tape (item 16, appendix E)
Cotter pin
Lockwasher (2)

WARNING

Do not attempt to disassemble brake air chambers. The springs inside the chambers are under heavy tension and may cause severe injury if released during disassembly.

REMOVAL

- a. Cage air chamber (rear brakes only) (para. 3-6).
- b. Drain air tanks.
- c. Tag and disconnect air hose from brake chamber (one hose on each front chamber, two on each back chamber).
- d. Remove cotter pin (1) and clevis pin (2) from clevis (3).



- e. Remove two hex nuts (4) and lockwashers (5). Remove brake air chamber (6).
- f. Uncage air chamber (rear brakes only) (para. 3-6).

INSTALLATION

- a. Cage new brake chamber (rear brakes only) (para. 3-6).
- b. With brake air chamber spring caged, measure length of push rod from mounting surface of chamber. Length should be 2.25 to 2.50 inches.
- c. If necessary, loosen jam nut (7) and turn clevis (3) on or off push rod to adjust length. Tighten jam nut (7) against push rod end to 15-25 lb ft.
- d. Install air chamber (6) with two lockwashers (5) and hex nuts (4).
- e. Aline clevis (3) with center hole in slack adjuster. Install clevis pin (2) and cotter pin (1).

4-20. BRAKE AIR CHAMBER (CONT)

- f. Uncage brake air chamber spring (rear brakes only) (para. 3-6).
- g. Apply anti-seize tape to male fittings and connect air hoses.
- h. Adjust brakes (para. 4-18).
- i. If brake air chamber leaks at clamp, disconnect air supply, torque bolts (8) to 40-50 lb ft and check for leaks.

END OF TASK

4-21. AIR LINES

This task covers: a. Removal b. Repair c. Installation

INITIAL SETUP

Tools

General mechanics tool kit

Materials/Parts

Anti-seize tape (item 16, appendix E)
Lockwasher (2)
Loom, as required (appendix F)
Tiewrap, as required (item 14, appendix E)
Tag, as required (item 20, appendix E)

Equipment Condition

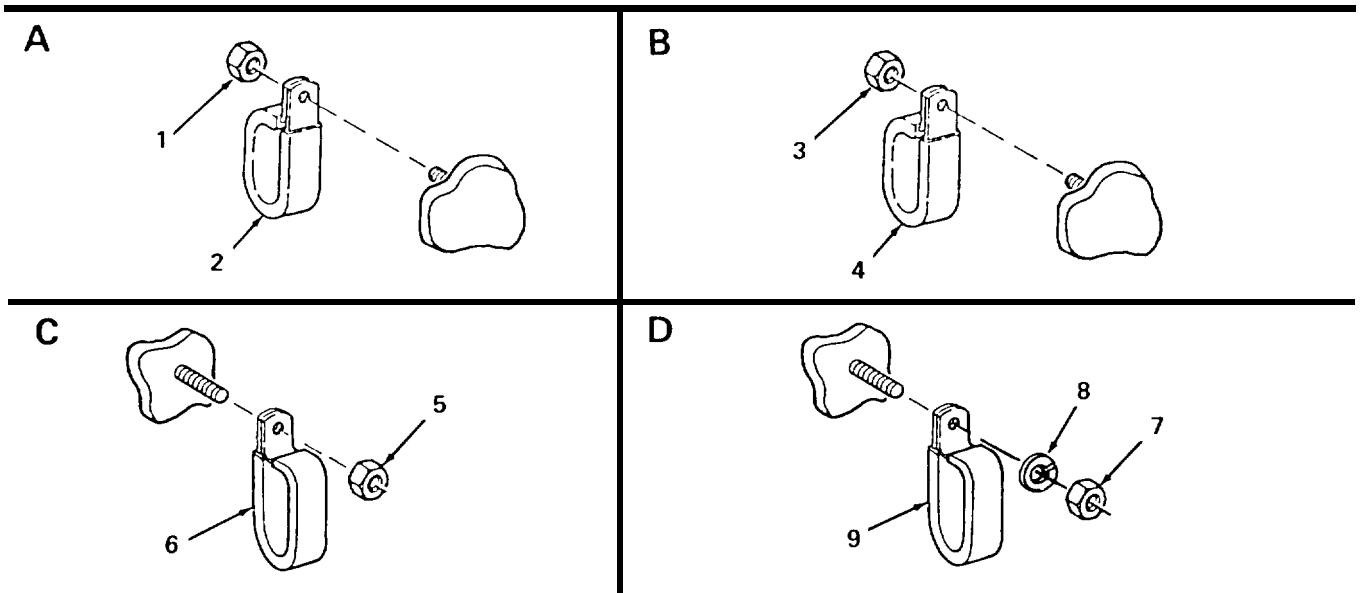
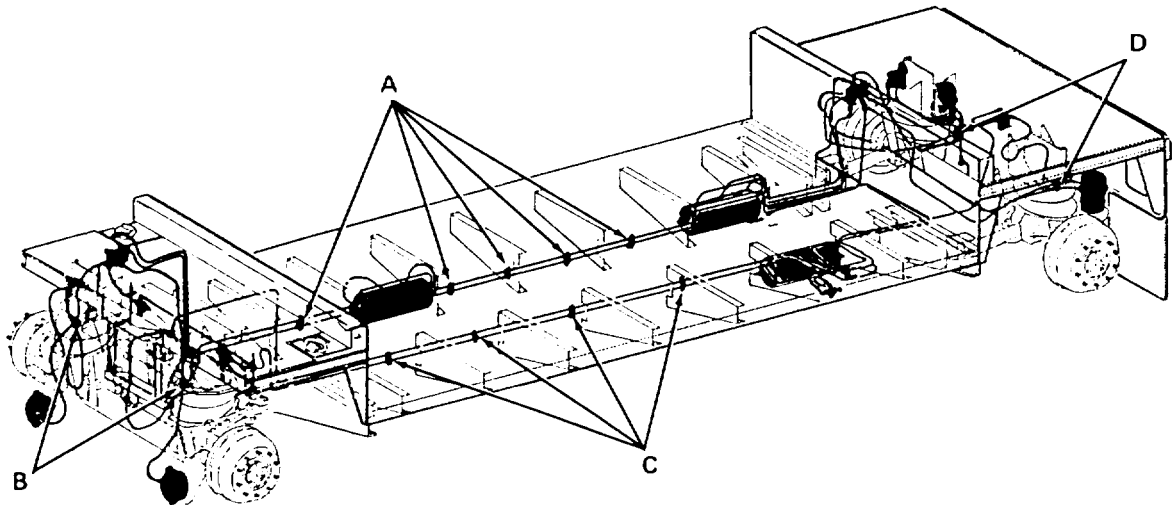
Hoses and tubes disconnected at air tanks (para. 4-22)
Hoses and tubes disconnected at air cleaners (para. 4-19)
Hoses and tubes disconnected at relay valves (para. 4-23)
Hoses and tubes disconnected at leveling valves (para. 4-40)
Hoses and tubes disconnected at brake control valve (para. 4-24)
Hoses and tubes disconnected at multifunction valve (para. 4-25)

REMOVAL

NOTE

Tag all hoses and tubes before disconnecting.

- a. Disconnect trailer from towing vehicle.
- b. Disconnect remaining hoses and tubes.
- c. Remove five nuts (1) and clamps (2).



- d. Remove two nuts (3) and clamps (4).
- e. Remove four nuts (5) and clamps (6).
- f. Remove two nuts (7), lockwashers (8) and clamps (9).
- g. Remove tiewraps and looms.
- h. Remove hoses and tubes.

4-21. AIR LINES (CONT)

REPAIR

- a. If defective, replace preformed packing in gladhands.
- b. Replace other defective parts as required.
- c. Refer to appendix G (figure G-1) for nonmetallic tube sizes and materials.
- d. Refer to TM 9-4940-468-14 (para. 2-10 and 2-11) for fabricating hoses and tubes.

INSTALLATION

NOTE

Apply anti-seize tape to all pipe threads.

- a. Install hoses and tubes. Refer to appropriate installation procedures.
- b. Install looms and tiewraps as required.
- c. Install two clamps (9), lockwashers (8) and nuts (7).
- d. Install four clamps (6) and nuts (5).
- e. Install two clamps (4) and nuts (3).
- f. Install five clamps (2) and nuts (1).
- g. Connect trailer to towing vehicle, allow 2 minutes for air system to fully charge, and check for leaks.

END OF TASK

4-22. AIR TANKS

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools

General mechanics tool kit

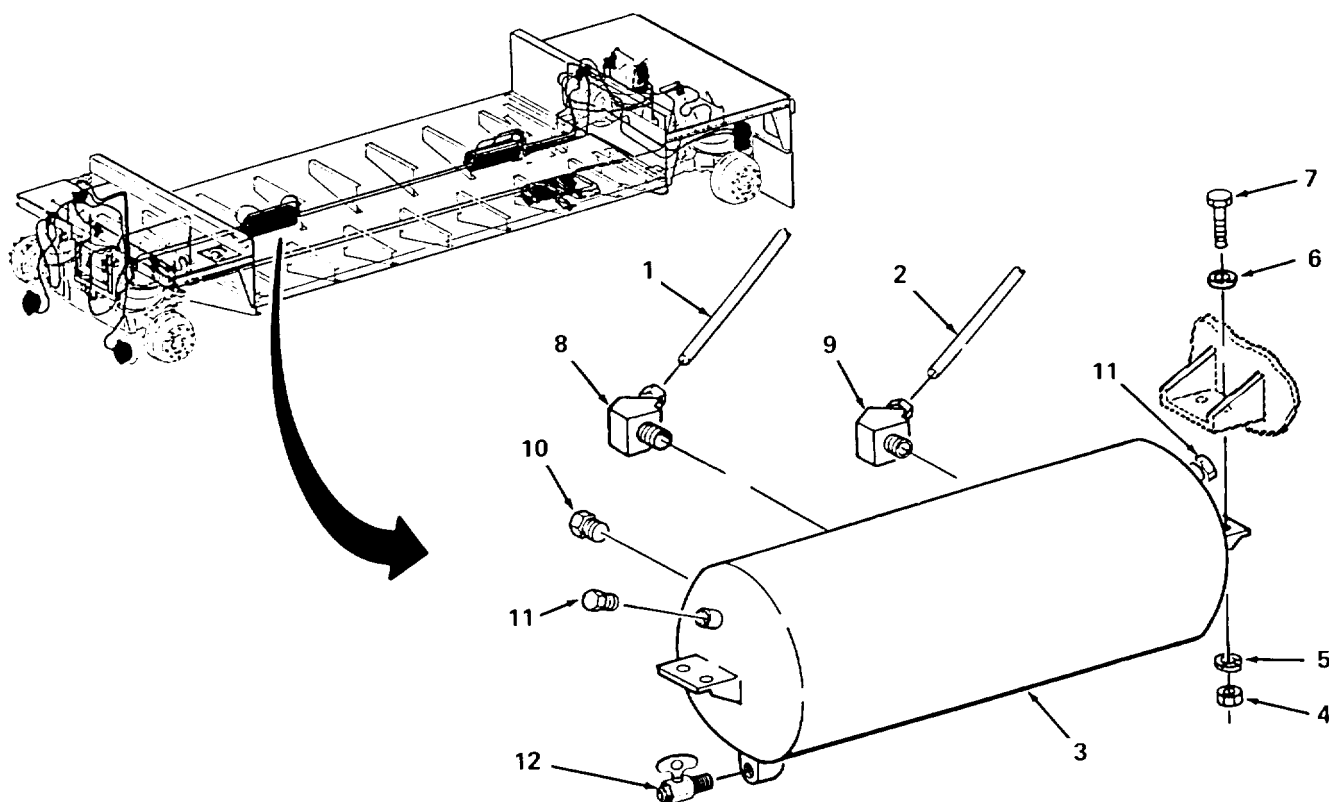
Materials/Parts

Anti-seize tape (item 16, appendix E)
Lockwasher (12)
Tags

REMOVAL**Front Tank.****NOTE**

Tag all tubes for identification prior to disconnecting.

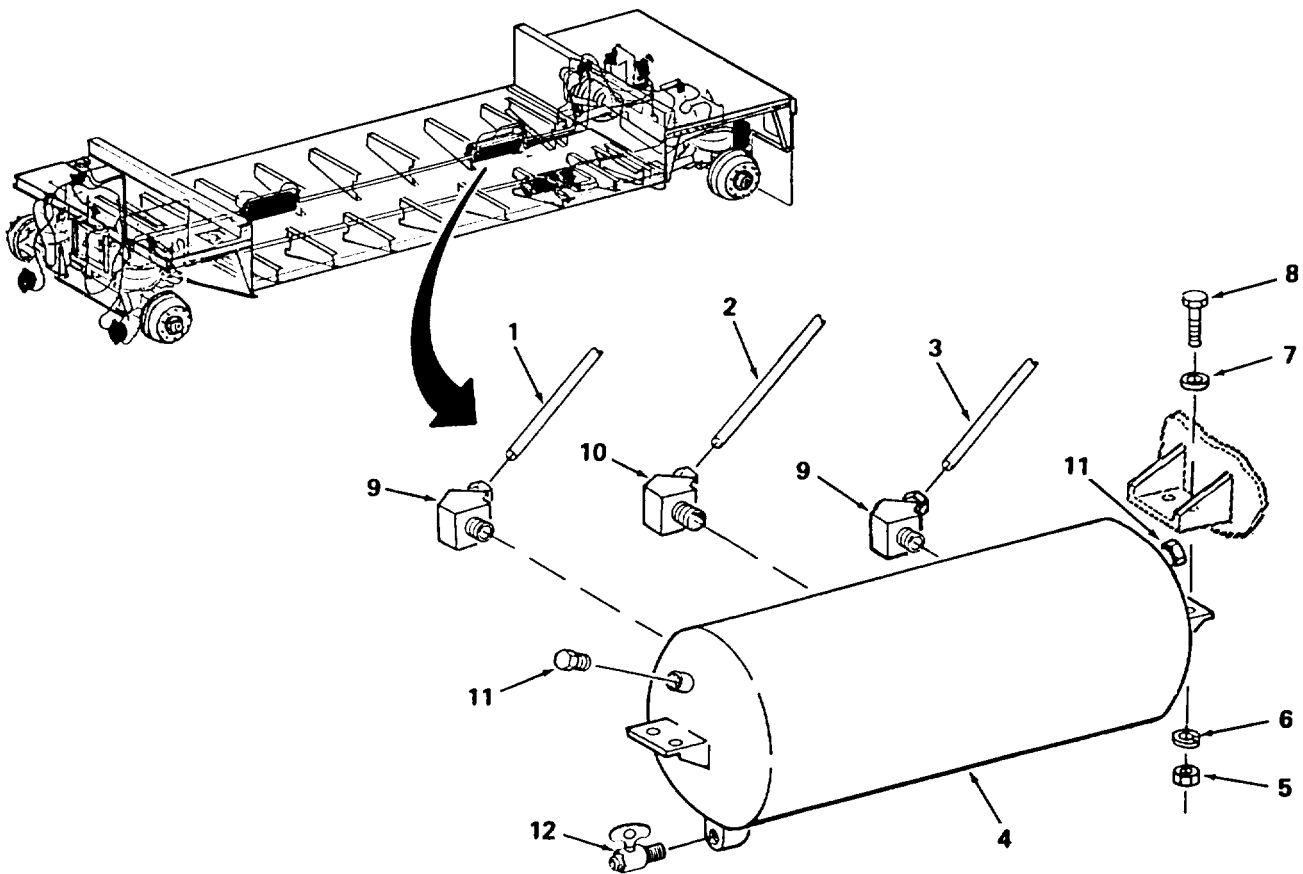
- a. Disconnect tube (1) and tube (2).
- b. Support air tank (3); remove four nuts (4), lockwashers (5), washers (6) and screws (7); remove air tank (3).
- c. Remove elbow (8), elbow (9) and plug (10).
- d. Remove two plugs (11) and petcock (12).



4-22. AIR TANKS (CONT)

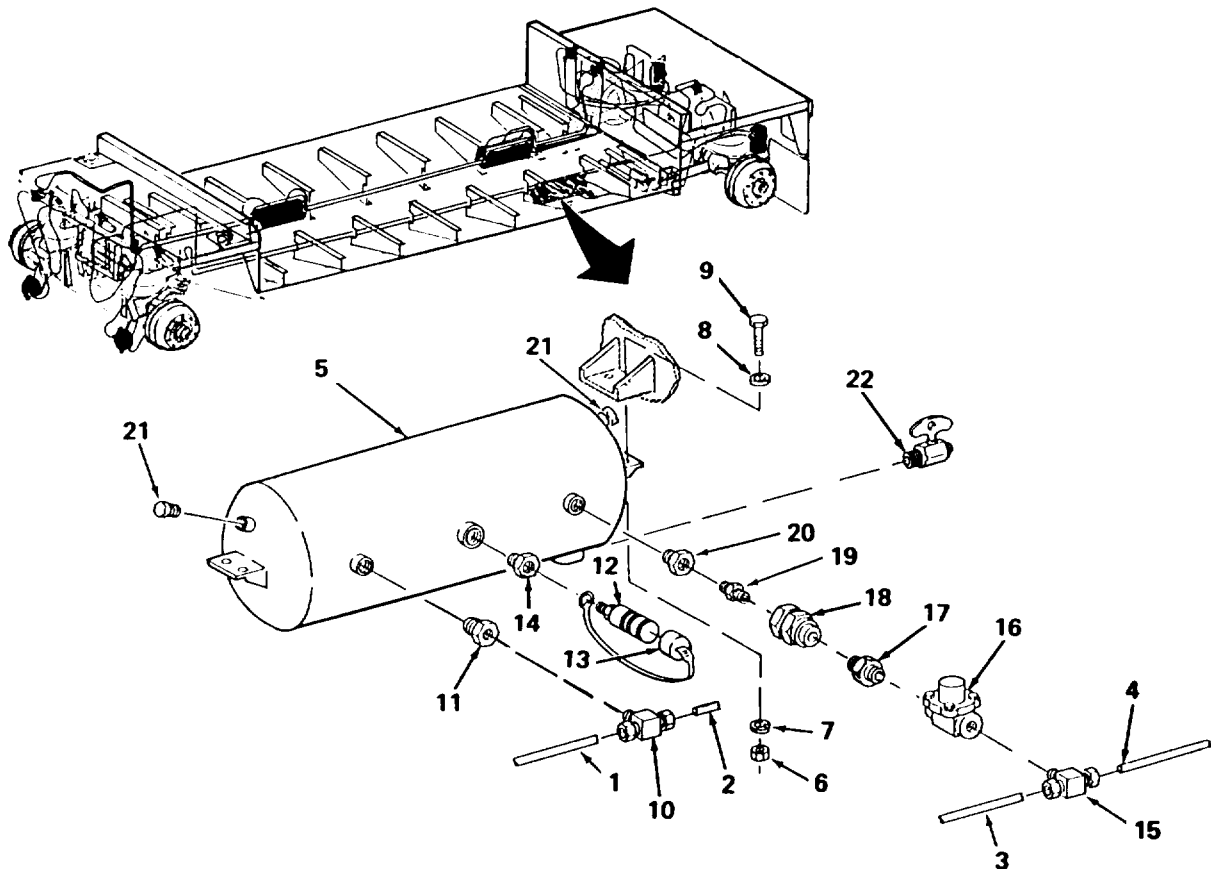
Right Rear Tank.

- a. Disconnect three tubes (1, 2, and 3).
- b. Support air tank (4); remove four nuts (5), lockwashers (6), washers (7) and screws (8); remove air tank (4).
- c. Remove two elbows (9) and elbow (10).
- d. Remove two plugs (11) and petcock (12).



Left Rear Tank.

- a. Disconnect four tubes (1, 2, 3, and 4).
- b. Support air tank (5); remove four nuts (6), lockwashers (7), washers (8) and screws (9); remove air tank (5).
- c. Remove tee (10) and reducer bushing (11).
- d. Remove quick-disconnect fitting (12), dust cap (13) and reducer bushing (14).



- e. Remove tee (15), pressure protection valve (16), nipple (17), check valve (18), nipple (19) and reducer bushing (20).
- f. Remove two plugs (21) and petcock (22).

INSTALLATION

NOTE

Apply anti-seize tape to all male threads before connecting.

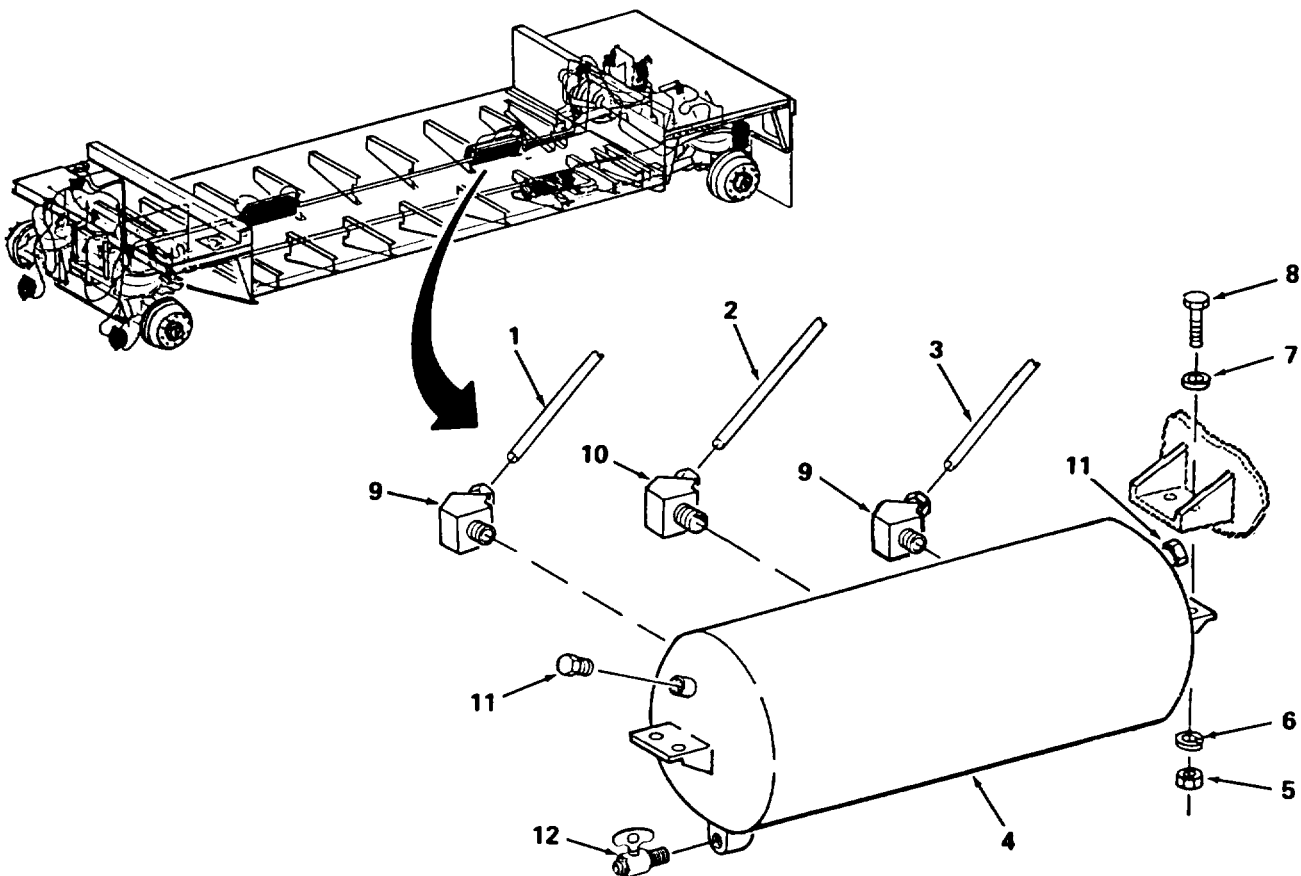
Left Rear Tank.

- a. Install petcock (22) and two plugs (21) into air tank (5).
- b. Install reducer bushing (20), nipple (19), check valve (18), nipple (17), pressure protection valve (16) and tee (15).
- c. Install reducer bushing (14), dust cap (13) and quick-disconnect fitting (12).
- d. Install reducer bushing (11) and tee (10).
- e. Install air tank (5) and secure with four screws (9), washers (8), lockwashers (7) and nuts (6).
- f. Connect four tubes (4, 3, 2 and 1).

4-22. AIR TANKS (CONT)

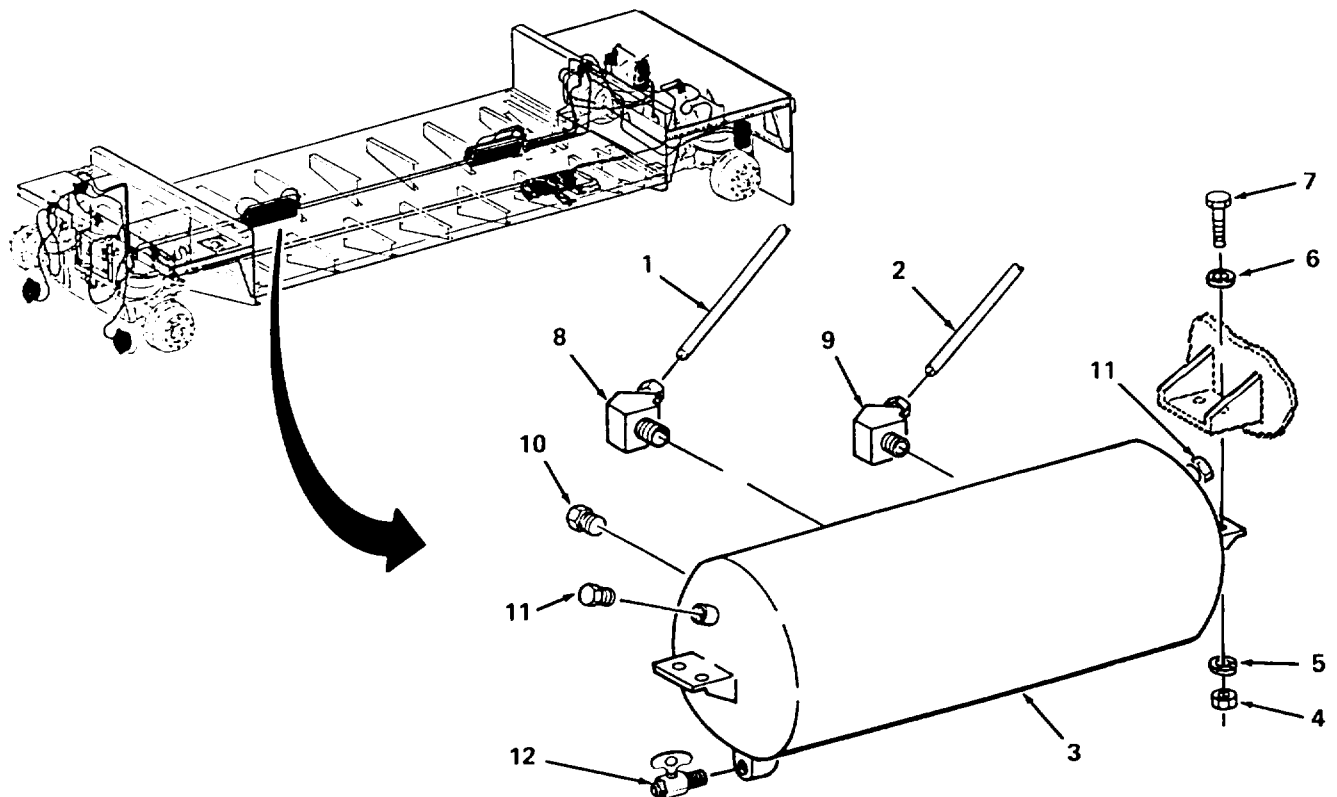
Right Rear Tank.

- a. Install petcock (12) and two plugs (11).
- b. Install elbow (10) and two elbows (9).
- c. Install air tank (4) and secure with four screws (8), washers (7), lockwashers (6) and nuts (5).
- d. Connect three tubes (3, 2 and 1).



Front Tank.

- a. Install petcock (12) and two plugs (11).
- b. Install plug (10), elbow (9) and elbow (8).
- c. Install air tank (3) and secure with four screws (7), washers (6), lockwashers (5) and nuts (4).
- d. Connect tube (2) and tube (1).



END OF TASK

4-23. RELAY VALVES

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools

General mechanics tool kit

Equipment Condition

Air tanks drained

Materials/Parts

Anti-seize tape (item 16, appendix E)

Lockwasher (4)

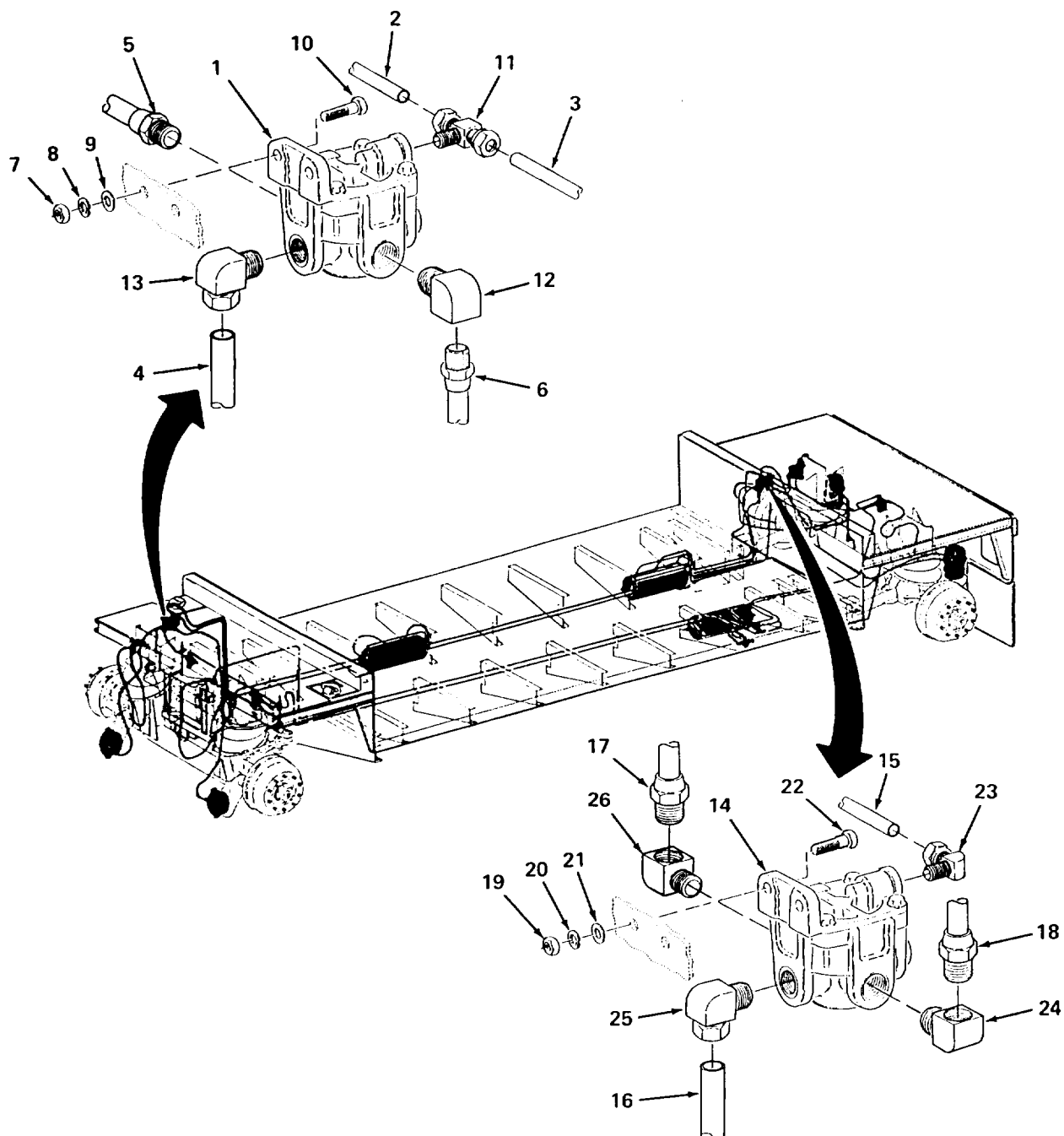
REMOVAL

NOTE

There are two relay valves, one at the right front of the HEMAT, and one at the right rear.

Tag hoses and tubes for identification before disconnecting.

- a. At right front relay valve (1), tag and disconnect three tubes (2, 3 and 4) and two hoses (5 and 6) from relay valve (1).
- b. Remove two nuts (7), lockwashers (8), washers (9), screws (10) and relay valve (1).
- c. Remove tee (11) and two elbows (12 and 13).
- d. At right rear relay valve (14), tag and disconnect two tubes (15 and 16) and two hoses (17 and 18).
- e. Remove two nuts (19), lockwashers (20), washers (21), screws (22) and relay valve (14).
- f. Remove four elbows (23, 24, 25 and 26).



4-23. RELAY VALVES (CONT)

INSTALLATION

NOTE

Use anti-seize tape on all pipe fittings.

- a. Install four elbows (26, 25, 24 and 23) on right rear relay valve (14).
- b. Install relay valve (14) with two screws (22), washers (21), lockwashers (20) and nuts (19).
- c. Connect two hoses (18 and 17) and two tubes (16 and 15).
- d. Install two elbows (13 and 12) and tee (11) on right front relay valve (1).
- e. Install relay valve (1) with two screws (10), washers (9), lockwashers (8) and nuts (7).
- f. Connect two hoses (6 and 5) and three tubes (4, 3 and 2).

END OF TASK

4-24. BRAKE CONTROL VALVE

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools

General mechanics tool kit

Equipment Condition

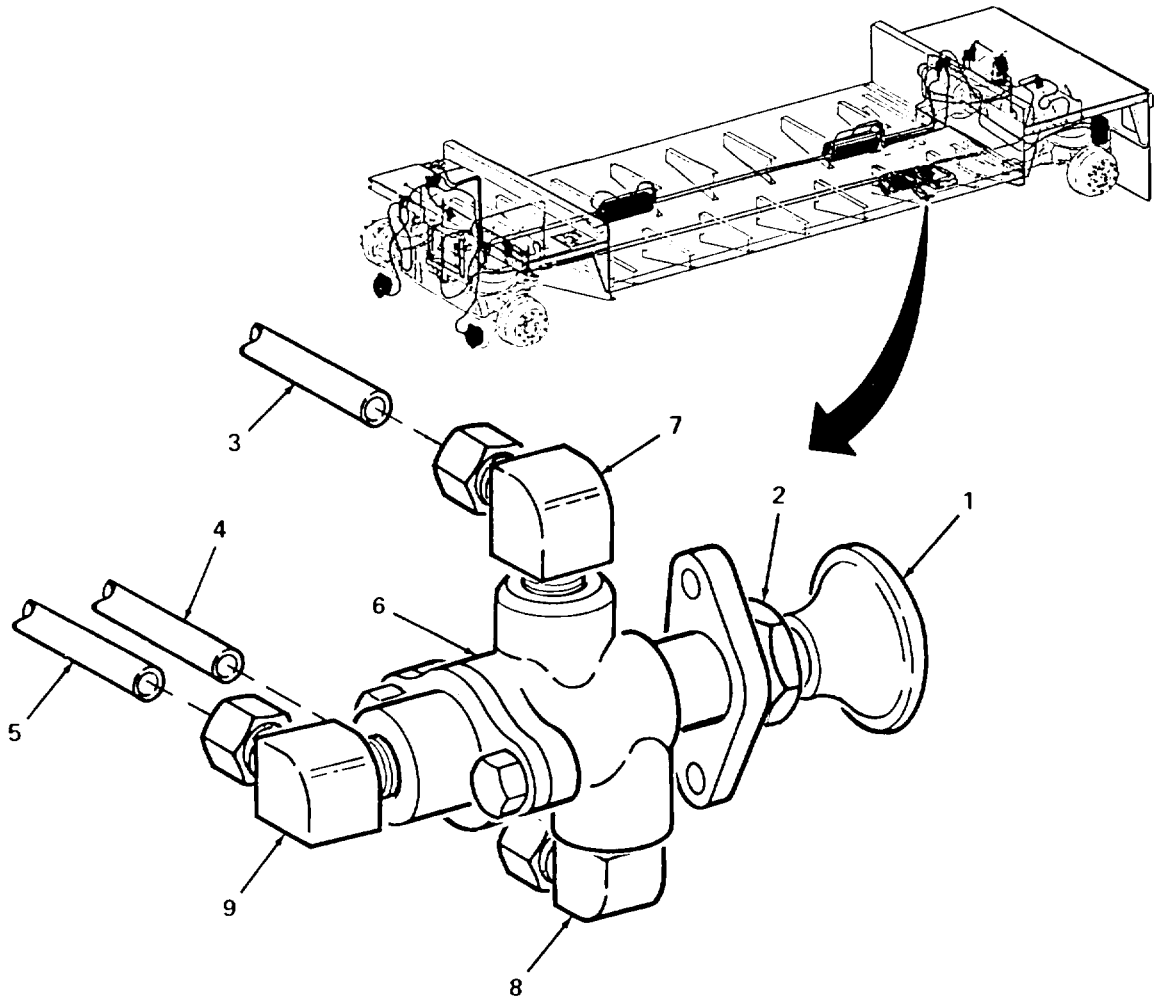
Air tanks drained

Materials/Parts

Anti-seize tape (item 16, appendix E)

REMOVAL

- a. Remove knob (1) and nut (2).
- b. Tag and disconnect three tubes (3, 4 and 5).
- c. Remove brake control valve (6).
- d. Remove three elbows (7, 8 and 9).

**INSTALLATION****NOTE**

Apply anti-seize tape to all pipe threads before connecting.

- a. Install three elbows (9, 8 and 7).
- b. Place brake control valve (6) into hole in frame, and install nut (2) and knob (1).
- c. Connect three tubes (5, 4 and 3).

END OF TASK

4-25. MULTIFUNCTION VALVE

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools

General mechanics tool kit

Equipment Condition

Air tanks drained

Materials/Parts

Anti-seize tape (item 16, appendix E)
Lockwasher (2).

REMOVAL

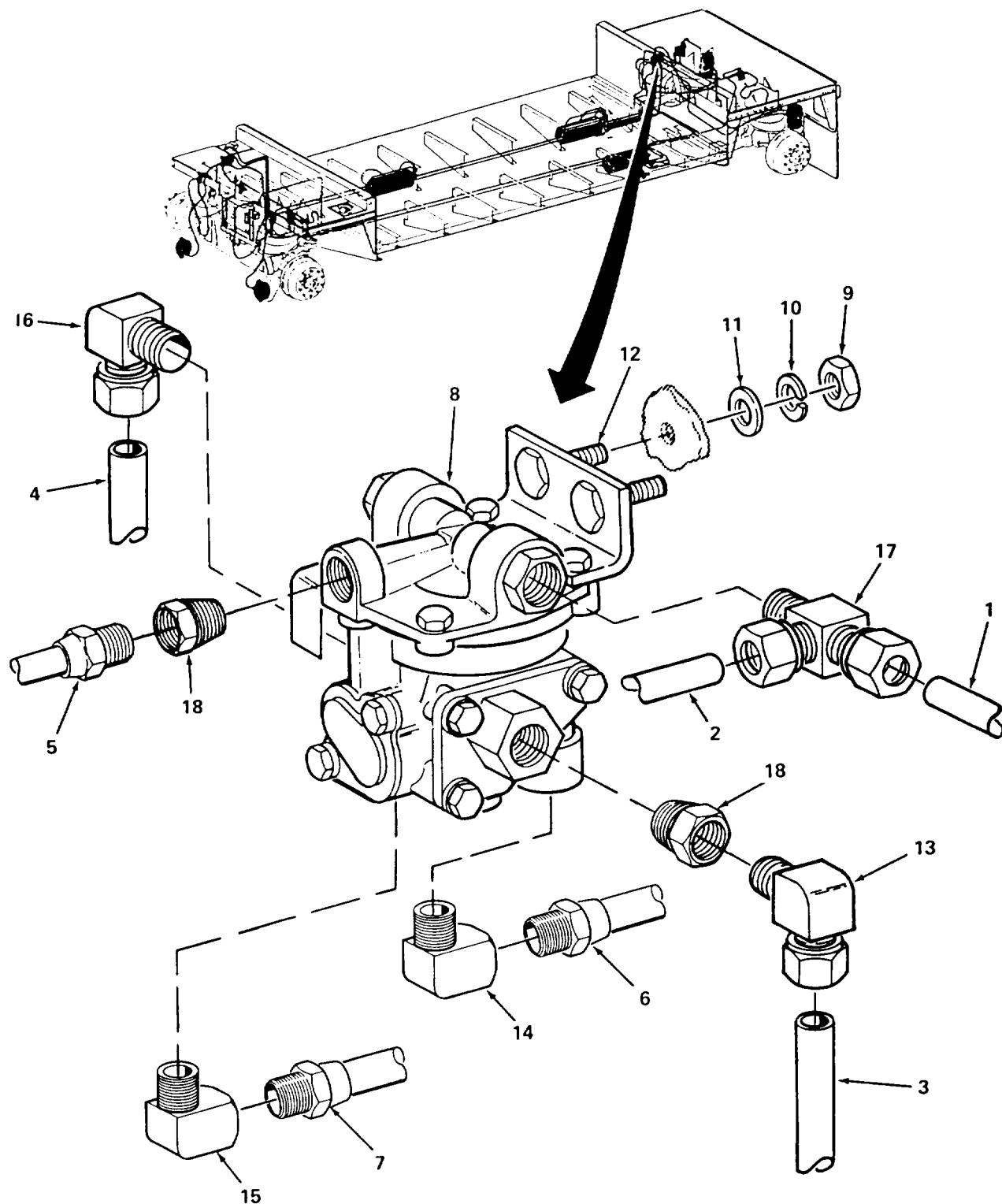
- a. Tag and disconnect four tubes (1 thru 4) and three hoses (5, 6 and 7) from multifunction valve (8).
- b. Remove two nuts (9), lockwashers (10), washers (11) and screws (12).
- c. Remove multifunction valve (8).
- d. Remove four elbows (13 thru 16), tee (17) and two bushings (18).

INSTALLATION

NOTE

Use anti-seize tape on all pipe fittings.

- a. Install two bushings (18), tee (17) and four elbows (16 thru 13) on multifunction valve (8).
- b. Install multifunction valve (8) and secure With two screws (12), washers (11), lockwashers (10) and nuts (9).
- c. Connect three hoses (7, 6 and 5) and four tubes (4 thru 1).



END OF TASK

Section VIII. MAINTENANCE OF WHEELS AND TRACKS

4-26. HUBS AND DRUMS

This task covers: a. Removal c. Inspection e. Installation
b. Cleaning d. Repair f. Wheel Bearing Adjustment

INITIAL SETUP

Tools

General mechanics tool kit
Jack (item C-2, appendix C)
Jack stand (item C-3, appendix C)
Socket set
Torque wrench, 3/4-inch drive, 0-600 lb ft
Wheel and hub puller
Socket wrench

Personnel Required: 2

Equipment Condition

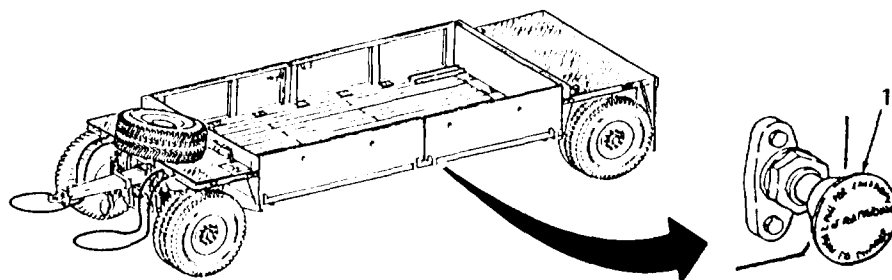
Trailer connected to towing vehicle
and air system charged
Spring brake chamber caged
(rear drum only)

Materials/Parts

Dry cleaning solvent (item 6, appendix E)
Wiping rag (item 12, appendix E)
Grease GAA (item 7, appendix E)
Hubcap gasket (appendix F)
Hub oil seal (appendix F)
Lubricating oil, 80/90W (item 8, appendix E)
Sealing compound (item 13, appendix E)

REMOVAL

- a. Verify parking brakes are set on towing vehicle.
- b. Chock opposite wheel front and rear of the wheel being removed.
- c. Loosen but do not remove lug nuts.
- d. Release brakes by pushing in on brake control valve (1).



WARNING

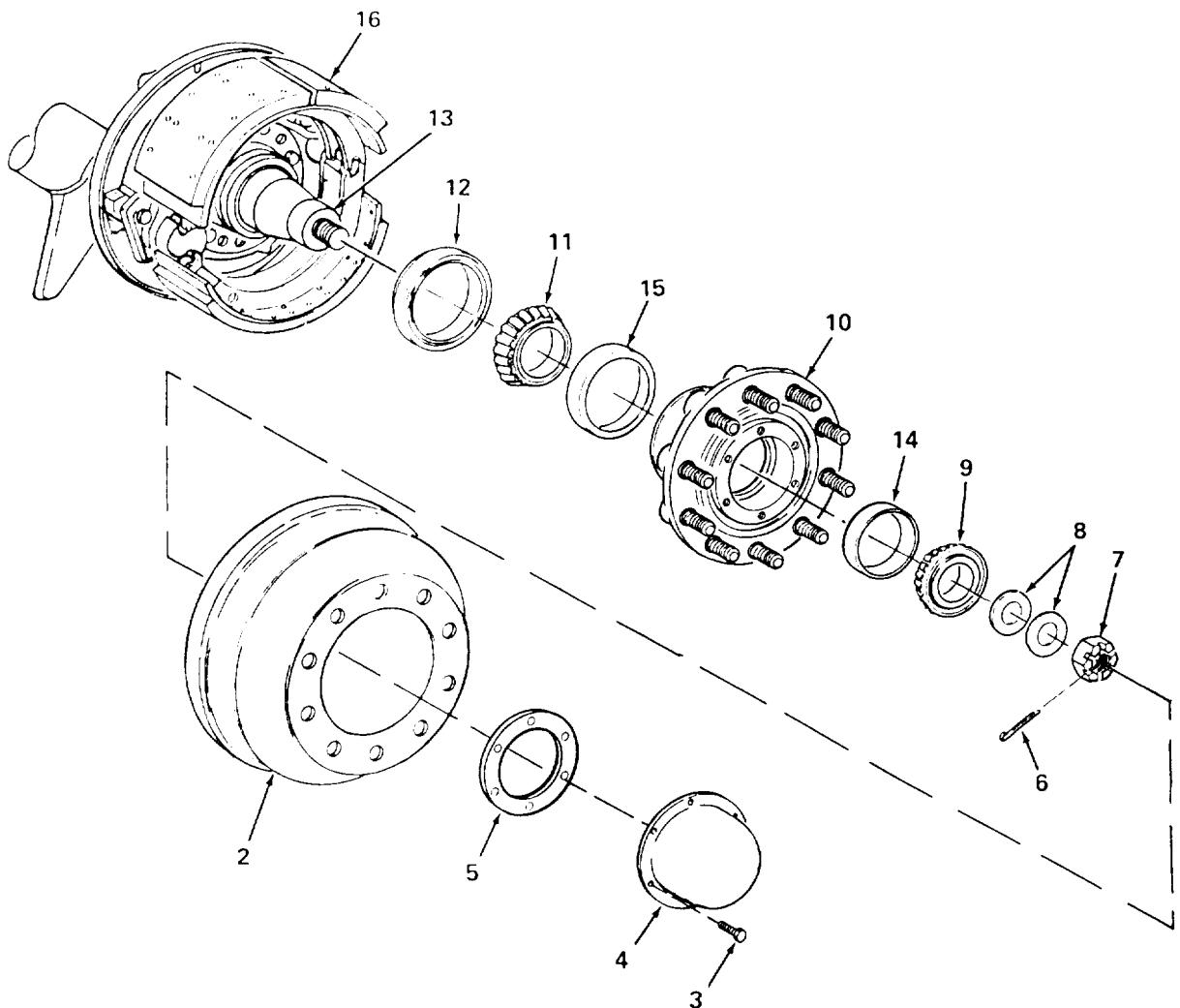
To avoid personal injury, never work under a vehicle supported only by a jack. Always use cap on jack when raising axles.

- e. Raise axle and support on suitable stand.
- f. Remove wheel and tire (para. 3-5b).

WARNING

Use two persons when removing brake drum to avoid injury.

- g. Using a hammer, tap lightly around drum (2) until it loosens enough to be pulled by hand. While pulling outboard, rock drum (2) from side to side until free from brake shoes and can be lifted off hub.
- h. Remove drum (2).
- i. Remove six screws (3), hubcap (4) and hubcap gasket (5).



4-26. HUBS AND DRUMS (CONT)

- j. Remove cotter pin (6), hex nut (7) and two washers (8).
- k. Remove outer wheel bearing (9).
- l. Remove hub (10), inner bearing (11) and seal (12) from spindle (13).

CAUTION

Do not remove bearing cups unless necessary for replacement.

- m. Remove bearing cups (14 and 15) from hub (10).

CLEANING

WARNING

Dry cleaning solvent (A-A-711, type I) is extremely flammable, toxic, and is an irritant to the eyes, skin, and respiratory system. Do not use near open flame or excessive heat. Do not breathe the vapors. Use skin and eye protection and work in a well ventilated area. Flash point of dry cleaning solvent is 140°F.

- a. Clean all parts thoroughly using a brush and dry cleaning solvent. Allow to air dry.
- b. Clean spindle (13) and brake shoes (16) on axle with wiping cloth.
- c. Clean hub cavity.

INSPECTION

- a. Inspect bearings (9 and 11) for wear, scoring, flat spots and overheating (discoloration).
- b. Inspect brake drum (2) for deep scoring, excessive wear (ridge) and other irregularities. Report defects to support maintenance.
- c. Inspect hubcap (4) and hub (10) for cracks and other damage.
- d. Inspect spindle (13) for damaged threads, evidence of seizure rough surfaces. Report defects to support maintenance.

REPAIR

Replace gasket (5), seal (12), and all defective parts. Have support maintenance turn drum (2) if required.

INSTALLATION

- a. Clean hub cavity, spindle (13) and brake shoes (16).
- b. Hand pack inner and outer bearings (11 and 9) with grease.

- c. Install inner and outer bearing cups (14 and 15) into hub (10), if removed.
- d. Install inner bearing cone (11) and seal (12) into hub (10). Seal should have word "airside" facing out of hub (10).
- e. Install hub (10) onto spindle (13).
- f. Install outer bearing (9), two washers (8) and nut (7).

WHEEL BEARING ADJUSTMENT

- a. Tighten nut (7) to 50 lb ft while turning hub (10) in both directions. Back off nut (7) 1/8 to 1/4 turn and check to see that there is no binding. Install cotter pin (6).
- b. Apply sealing compound to both sides of gasket (5), and install gasket (5), hubcap (4) and six screws (3).
- c. Install drum (2).
- d. Install wheels and tires (para. 3-5).
- e. Lower trailer and remove chocks.

END OF TASK

Section IX. MAINTENANCE OF STEERING

4-27. TOWBAR PIVOT

This task covers: a. Removal c. Cleaning e. Assembly
 b. Disassembly d. Inspection f. Installation

INITIAL SETUP

Tools

General mechanics tool kit
 Hydraulic jack (dolly type)

Materials/Parts

Dry cleaning solvent (item 6, appendix E)
 Wiping rag (item 12, appendix E)
 Grease, GAA (item 7, appendix E)
 MS15003 lubricating fitting (2)
 Cotter pin

Personnel Required: 2

Equipment Condition

Towbar removed (para. 4-38)
 Sway bars removed (para. 4-42)
 Tie rod removed (para. 4-28)

4-27. TOWBAR PIVOT (CONT)

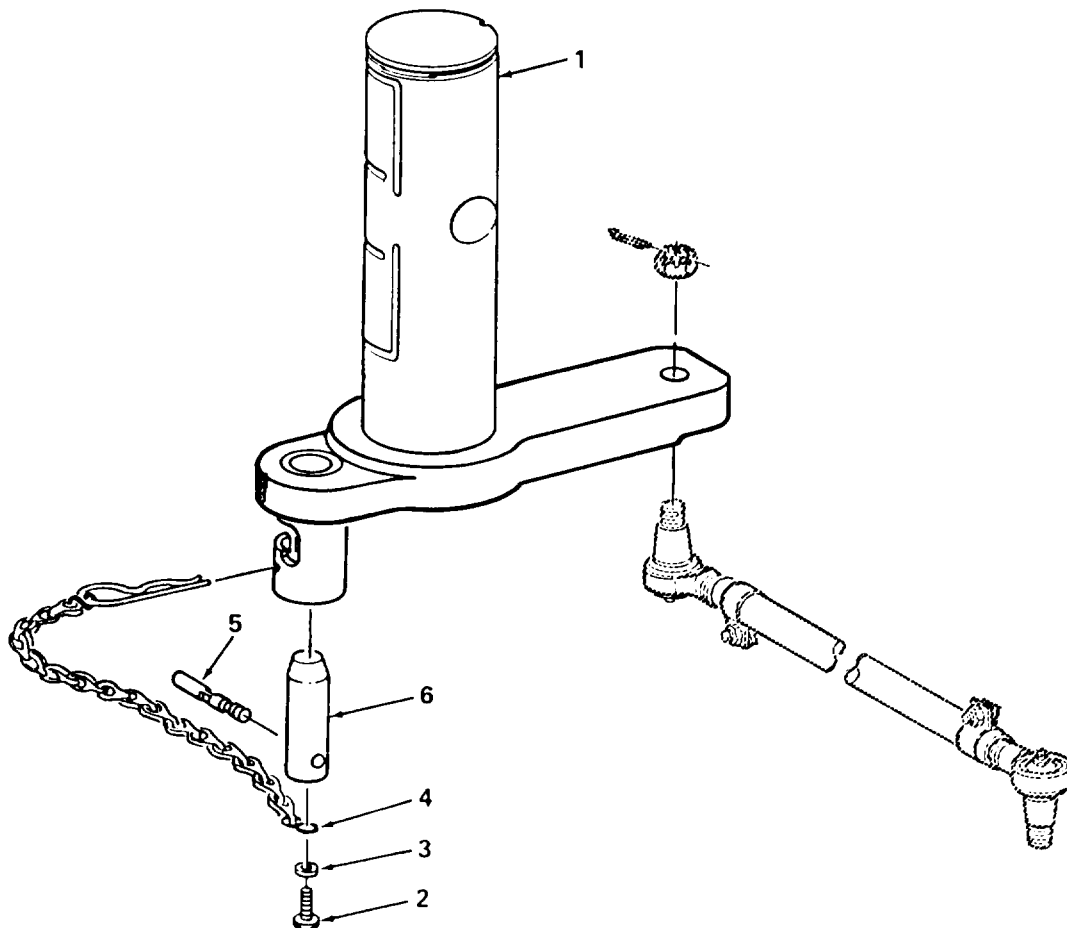
REMOVAL

- a. Insert pin, without bushings, to support towbar pivot (1).
- b. Remove four top nuts and disconnect air line from each front air bag (para. 4-39).
- c. Disconnect leveling valve rods from both front leveling valves (remove bottom nut and lockwasher only) (para. 4-40).
- d. Disconnect lower ends of both front shock absorbers (para. 4-41).
- e. Hoist up front of trailer deck to remove towbar pivot, but leave tires touching ground.

WARNING

Pivot assembly is heavy. Remove carefully to avoid personal injury.

- f. Remove towbar pivot (1) and jack stands.



DISASSEMBLY

- a. Remove pin from towbar pivot (1) and remove pivot from towbar housing.
- b. Remove screw (2), washer (3) and chain assembly (4).
- c. Remove lock pin handle (5) and lock pin (6).

CLEANING**WARNING**

Dry cleaning solvent (A-A-711, type I) is extremely flammable, toxic, and is an irritant to the eyes, skin, and respiratory system. Do not use near open flame or excessive heat. Do not breathe the vapors. Use skin and eye protection and work in a well ventilated area. Flash point of the dry cleaning solvent is 140°F.

- a. Remove all buildup of dirt, grease, and foreign matter from pivot bar surfaces and holes and lock pin using wiping rags and A-A-711, type I dry cleaning solvent.
- b. Apply light coat of grease to unpainted top part of pivot bar and lock pin.

INSPECTION

- a. Visually inspect pivot bar holes and lock pin for cracks, corrosion, burrs and pitting.
- b. Repair or replace any defective parts.

ASSEMBLY

- a. Install lock pin (6) and lock pin handle (5).
- b. Install chain assembly (4), washer (3) and screw (2).

INSTALLATION**WARNING**

Pivot assembly is heavy. Install carefully to avoid personal injury.

- a. Raise trailer and remove jack stands.
- b. Lower trailer to align holes for sway bar. Install sway bar (para. 4-42).

4-27. TOWBAR PIVOT (CONT)

- c. Install towbar pivot (1) and insert pin without bushing through housing and towbar pivot.

CAUTION

Do not damage brass couplings.

- d. Aline and install four bolts in air bags and reconnect air lines.
- e. Lower trailer and reconnect lower ends of both front shock absorbers (para. 4-41).
- f. Reconnect leveling valve rods at both front leveling valves (para. 4-40).
- g. Install towbar (para. 4-38).
- h. Install tie rods (para. 4-28).
- i. Lubricate in accordance with paragraphs 3-1 and 3-2.

END OF TASK

4-28. TIE RODS

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools

General mechanics tool kit

Materials/Parts

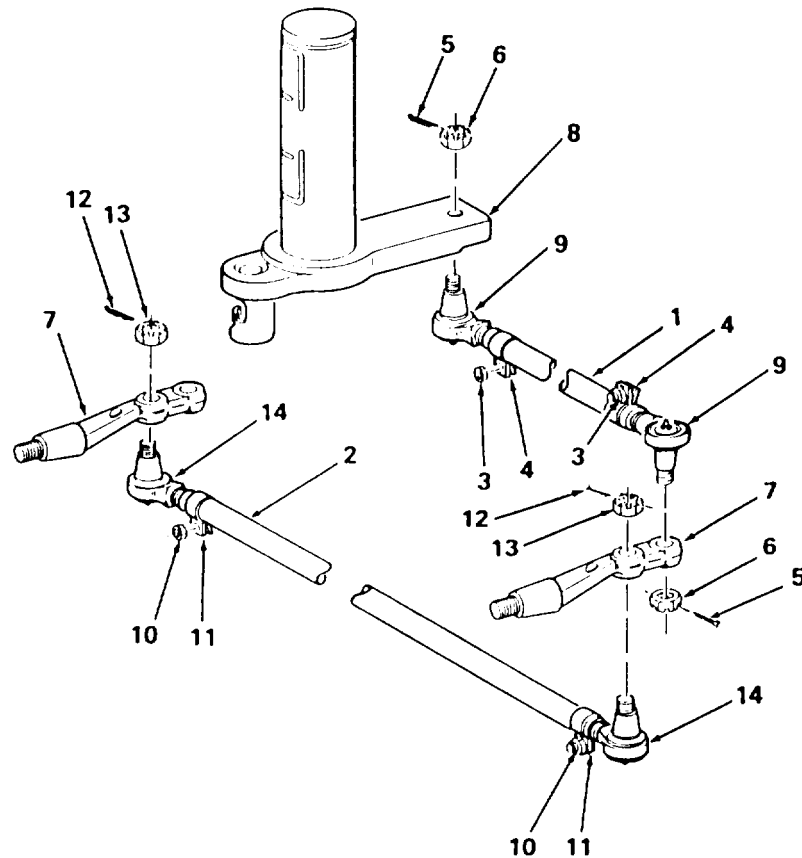
Clamp (4)
Nut (4)
Cotter pin (4)
Nut (4)

NOTE

There are two tie rods, which will be referred to in this procedure as the short tie rod (1) and the long tie rod (2).

REMOVAL

- a. Loosen, but do not remove, nuts (3) and holding clamps (4) on short tie rod (1).



- b. Remove cotter pins (5), nuts (6) and short tie rod (1) from assembly arm (7) and towbar pivot (8).
- c. Unscrew and remove short tie rod ends (9).
- d. Remove clamps (4).
- e. Loosen, but do not remove, nuts (10) holding clamps (11) on long tie rod (2).
- f. Remove cotter pins (12), nuts (13) and long tie rod (2) from assembly arms (7).
- g. Unscrew and remove long tie rod ends (14).
- h. Remove clamps (11).

INSTALLATION

- a. Install clamps (11) on each end of long tie rod (2) (do not tighten).
- b. Install tie rod ends (14) onto long tie rod (2).
- c. Position clamps (11) and tighten nuts (10).

4-28. TIE RODS (CONT)

- d. Install long tie rod (2) into curbside and streetside assembly arms (7).
- e. Secure ends with nuts (13). Torque to 125 lb ft, tighten as required to aline holes, and insert cotter pins (12).
- f. Install clamps (4) on each end of short tie rod (1) (do not tighten).
- g. Install tie rod ends (7) onto short tie rod (1).
- h. Position clamps (4) and tighten nuts (3).
- i. Install short tie rod (1) into streetside assembly arm (7) and towbar pivot (8).
- j. Secure ends with nuts (6). Torque to 125 lb ft, tighten as required to aline holes, and insert cotter pins (5).

END OF TASK

4-29. STEERING ADJUSTMENT

This task covers: a. Long Tie Rod Adjustment c. Four Wheel Alinement
b. Short Tie Rod Adjustment d. Steering Stop Adjustment

INITIAL SETUP

Tools

General mechanics tool kit
Pipe wrench
Tape measure, 50-foot
Torque wrench

Personnel Required: 2

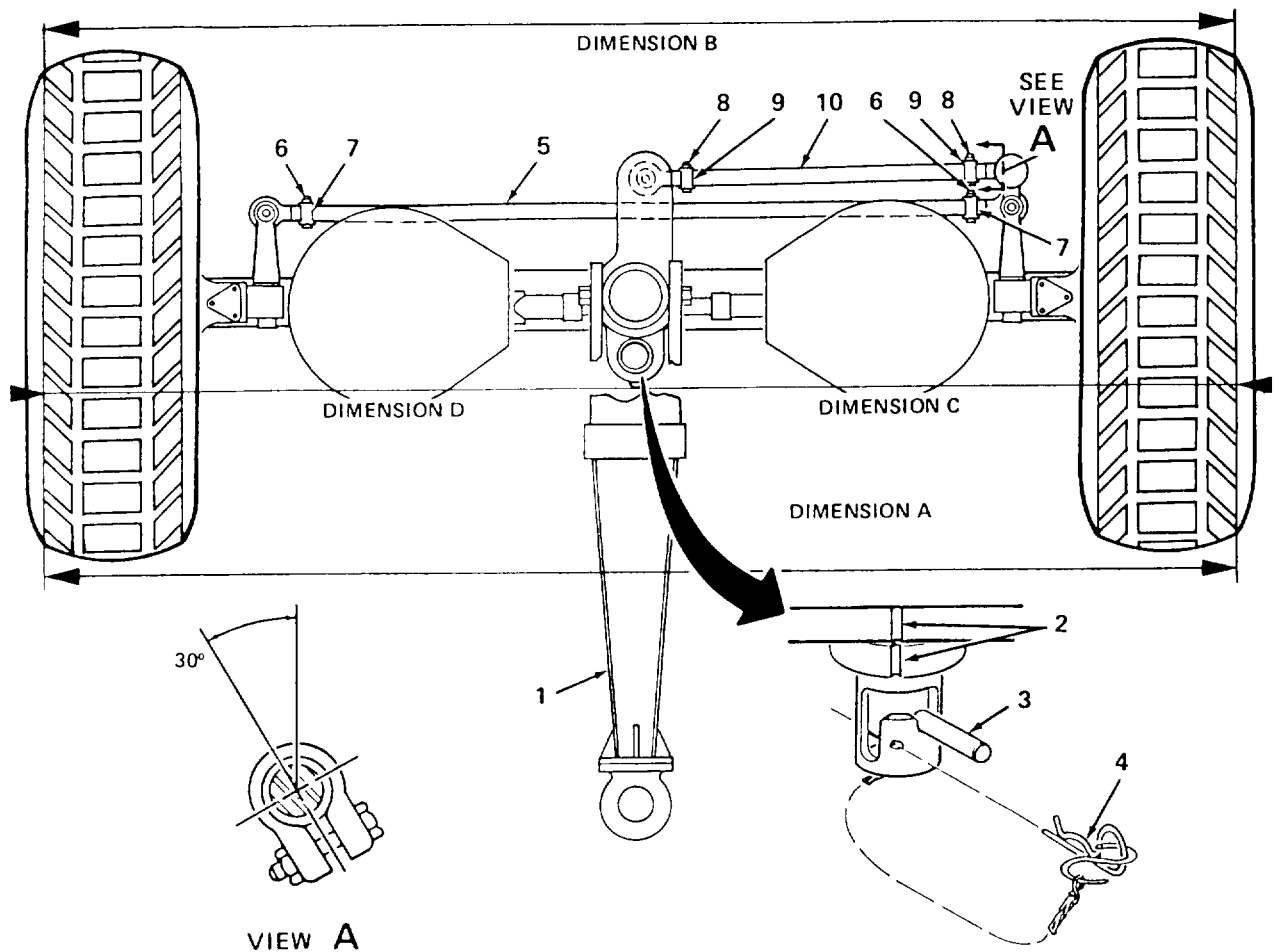
NOTE

Inflate air bags to normal suspension height to avoid tracking error.

After front end suspension or tie rod installation, aline front axle to ensure proper tracking of trailer and to avoid excessive tire wear.

LONG TIE ROD ADJUSTMENT

- a. Center tow bar assembly (1) by alining the alinement grooves (2). Secure by rotating lock pin handle (3) counterclockwise and inserting hitch pin (4).



- b. Using a tape measure, measure from the outside to the outside of each front tire-across front of trailer (Dimension A). Record distance.
- c. Measure the back side of front tires from the outside to the outside (Dimension B). Record distance.

NOTE

Front measurement (Dimension A) should be 1/4 to 1/8 inch less than rear measurement (Dimension B).

- d. Compare front and rear measurements.
- e. If adjustment is necessary, at each end of long tie rod (5), loosen but do not remove nut (6) holding clamp (7).
- f. Adjust tie rod as necessary using pipe wrench to arrive at correct measurement.
- g. Tighten long tie rod clamp nuts (6).

4-29. STEERING ADJUSTMENT (CONT)

SHORT TIE ROD ADJUSTMENT

NOTE

The long tie rod adjustment must be performed before adjusting the short tie rod (10).

- a. Using a tape measure, measure from the outside of left tire to the lower alinement groove (Dimension C). Record distance.
- b. Measure from the outside of right tire to the same alinement groove (Dimension D). Record distance.

NOTE

Alinement tolerance center-to-center from each wheel is $\pm 3/16$ inch.

- c. If measurements are not the same, loosen nut (8) on clamp (9) on each end of short tie rod (10). Do not remove nuts.

NOTE

To move left front tire toward center, lengthen short tie rod (10).

To move left front tire away from center, shorten short tie rod (10).

- d. Turn short tie rod (10) until equal distance from each tire is achieved.

CAUTION

Be sure streetside tie rod clamp (7) is rotated 30 degrees as shown, to allow clearance between the two tie rods (5 and 10).

- e. Torque nuts (8) to 40-50 lb ft.

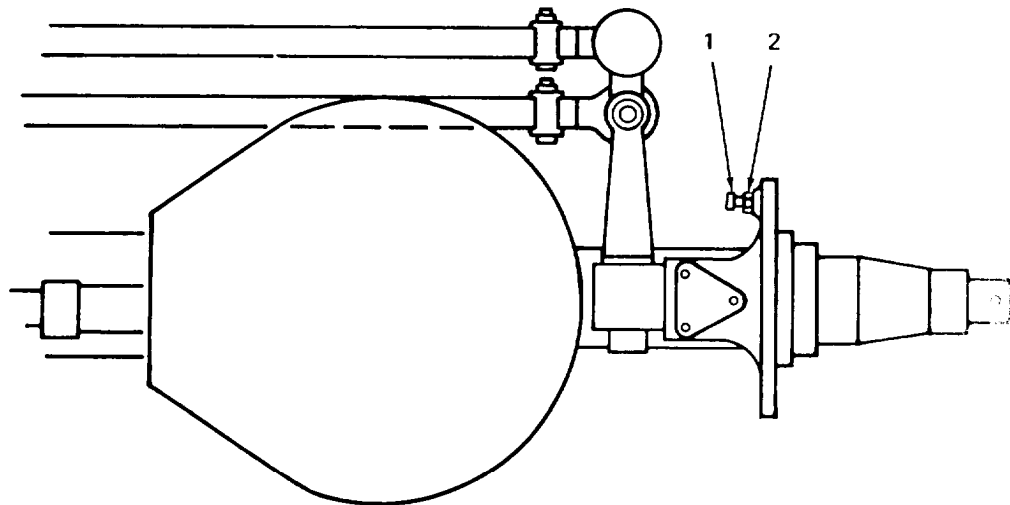
FOUR WHEEL ALINEMENT

- a. Measure on streetside from rear bottom of outside torsion bar bracket to front rear of outside shock bracket. Record distance.
- b. Measure on curbside from rear bottom of outside torsion bar bracket to front rear of outside shock bracket. Record distance.
- c. The measurement of each side should be within $1/4$ inch of each other. If not, loosen torsion bar streetside eccentric nut and adjust to $1/4$ -inch tolerance.

STEERING STOP ADJUSTMENT**NOTE**

The steering stop adjustment must be performed after adjustment of short tie rod and long tie rod.

- a. Turn towbar fully to streetside. If towbar contacts the frame or the tie rod contacts suspension torsion bar, adjust steering stop as follows:
- b. Measure gap between end of stop bolt (1) and contact point on axle.
- c. With towbar centered, loosen hex jam nut (2) on steering stop bolt (1). Rotate steering stop bolt (1) counterclockwise one turn for every 1/16-inch gap, plus one turn.
- d. Move towbar again to streetside. Verify a gap of 1/16 inch between tie rod and torsion bar and a gap of at least 1/4 inch between towbar and frame. Readjust as required.
- e. Tighten jam nut (2), ensuring that stop bolt (1) does not rotate. Reverify gap measurements.
- f. Repeat this procedure for the curbside.



END OF TASK

Section X. MAINTENANCE OF FRAME AND TOWING COMPONENTS

4-30. FRAME

This task covers: a. Cleaning b. Inspection c. Repair

INITIAL SETUP

Materials/Parts

Cleaning compound (item 3, appendix E)

CLEANING

Clean frame thoroughly using a stiff bristle brush and water to remove mud, and cleaning compound to remove grease and oil.

INSPECTION

Inspect frame for marred paint, corrosion, cracks, breaks, broken welds, and other damage.

REPAIR

- a. If damage to frame is not too extensive, straighten member where possible. Notify support maintenance to weld up cracks or broken welds.
 - b. Clean frame.
-

END OF TASK

4-31. BUMPERS

This task covers: a. Removal b. Installation

INITIAL SETUP**Tools**

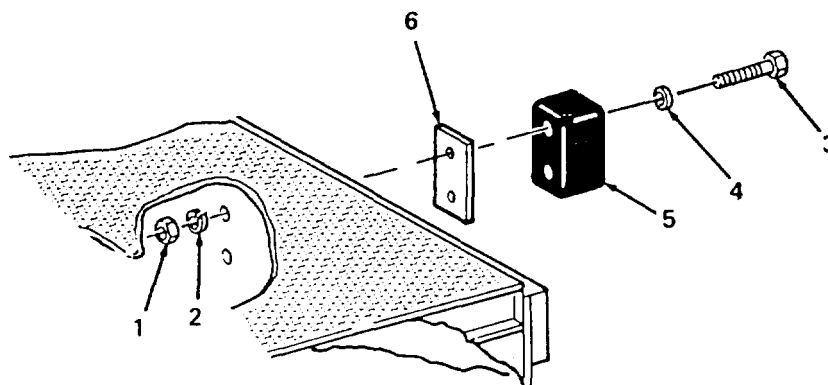
General mechanics tool kit
Torque wrench, 3/8-inch drive, 0-150 lb ft

Materials/Parts

Lockwasher (4)

REMOVAL

Remove two hex nuts (1), lockwashers (2), capscrews (3) and flat washers (4) to remove each of two bumpers (5) and spacing pads (6).

**INSTALLATION**

Install each bumper (5) and spacing pad (6) with two capscrews (3), flat washers (4), lockwashers (2) and hex nut (1). Tighten hex nut to 72-78 lb ft.

END OF TASK

4-32. POD STOPS

This task covers: a. Removal b. Installation

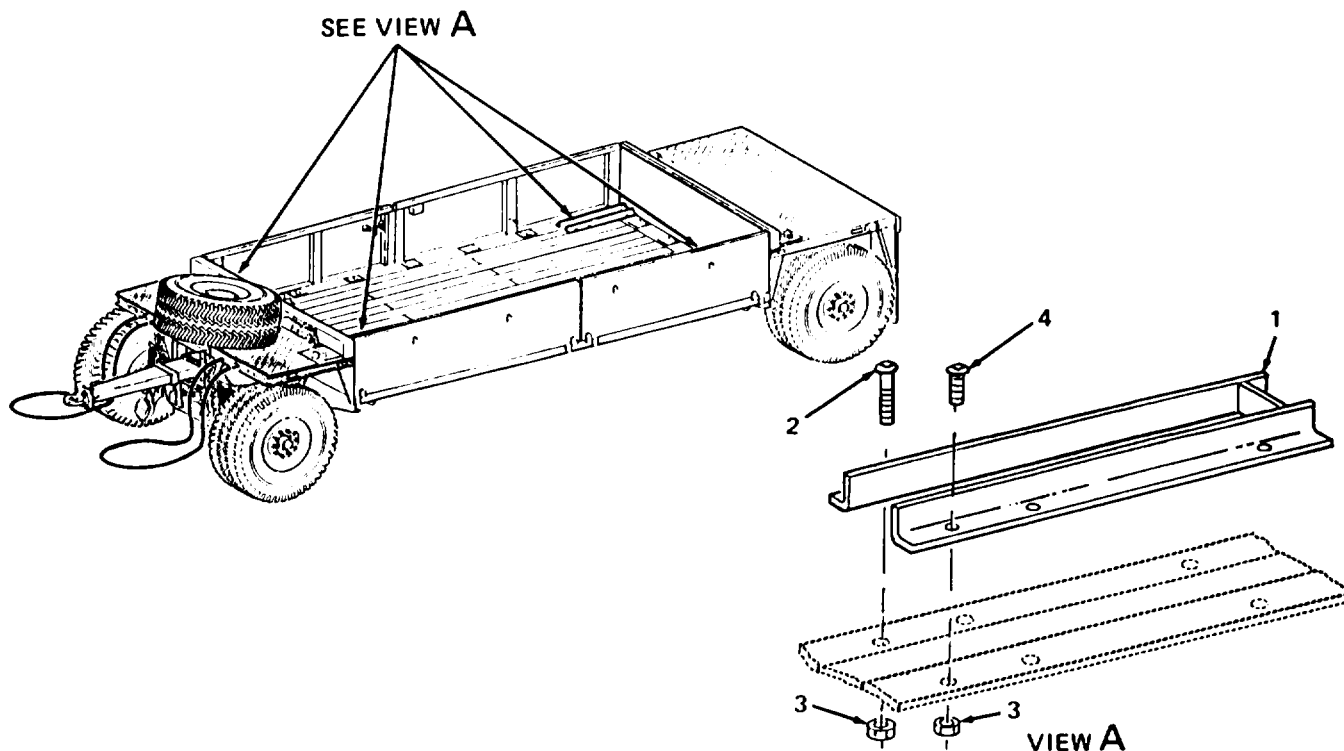
INITIAL SETUP**Tools**

General mechanics tool kit

4-32. POD STOPS (CONT)

REMOVAL

For each of four pod stops (1), remove three screws (2), nuts (3), screws (4), nuts (3) and pod stop (1).



INSTALLATION

NOTE

Tiedown ring must be in the up position for pod stop installation.

Longer screws must be installed on the inboard side of pod stops.

Install each pod stop (1) and secure with three screws (2), nuts (3), screws (4) and nuts (3).

END OF TASK

4-33. SPLASH GUARDS

This task covers: a. Removal b. Installation

INITIAL SETUP**Tools**

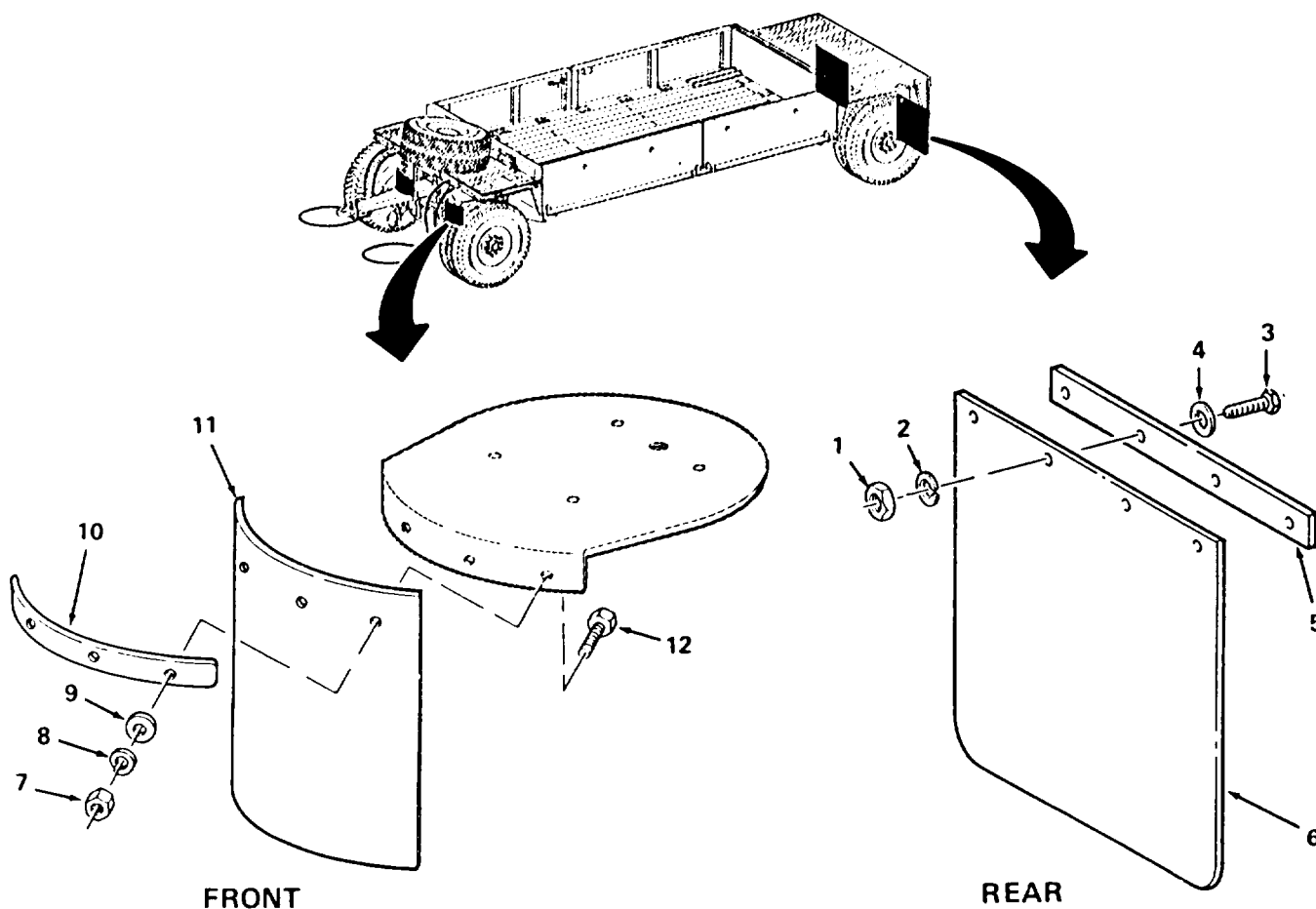
General mechanics tool kit

Materials/Parts

Lockwasher (4 per guard)

REMOVAL

- a. For rear splash guard, remove four nuts (1), lockwashers (2), screws (3), washers (4), mounting bar (5) and splash guard (6).
- b. For front splash guard, remove four nuts (7), lockwashers (8), washers (9), mounting bar (10), splash guard (11) and four screws (12).



4-33. SPLASH GUARDS (CONT)

INSTALLATION

- a. For front splash guard, install splash guard (11), four screws (12), mounting bar (10), four washers (9), lockwashers (8) and nuts (7).
- b. For rear splash guard, install splash guard (6), mounting bar (5), and four screws (3), lockwashers (2), washers (4) and nuts (1).

END OF TASK

4-34. SAFETY CHAINS

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools

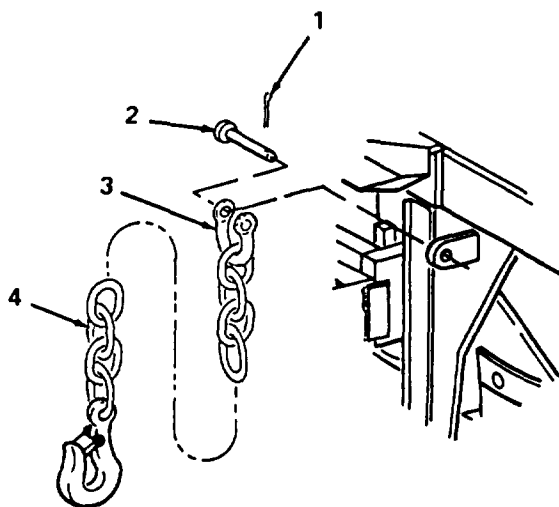
General mechanics tool kit
Socket, 1-5/16-inch, 3/4-inch drive

Materials/Parts

Cotter pin (2)

REMOVAL

For each chain, remove cotter pin (1), pin (2) and shackle (3) with safety chain (4). Slide shackle (3) from chain link.



INSTALLATION

Insert shackle (3) through end link on safety chain (4). Mount shackle (3) with chain (4) to frame with pin (2). Insert cotter pin (1).

END OF TASK

4-35. STORAGE BOX COVER

This task covers: a. Removal b. Repair c. Installation

INITIAL SETUP

Tools

General mechanics tool kit

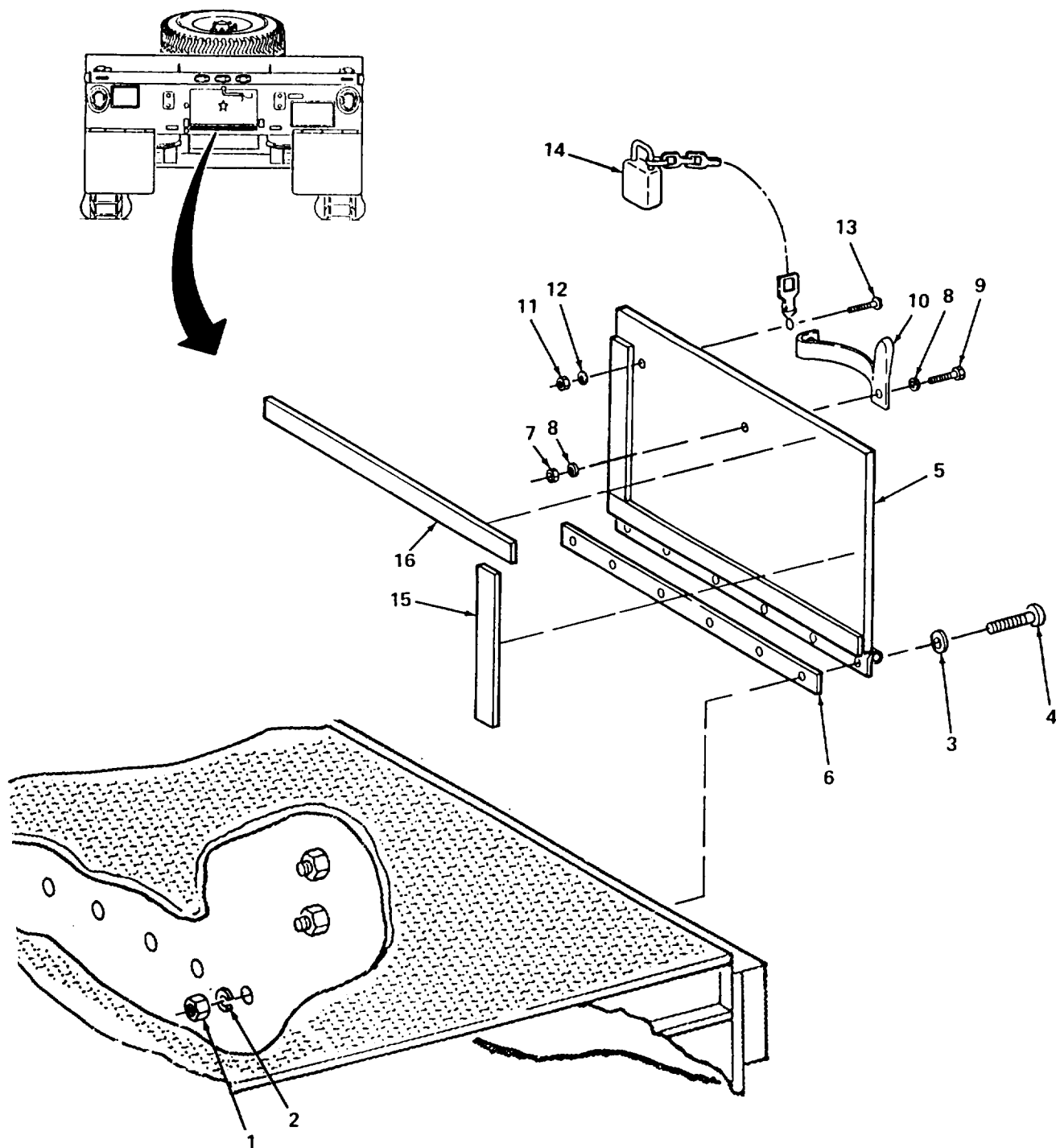
Materials/Parts

Adhesive (item 1, appendix E)
 Lack nut
 Lock nut
 Lockwashers (6)
 Gasket (figure G-2)

4-35. STORAGE BOX COVER (CONT)

REMOVAL

- a. Remove six nuts (1), lockwashers (2), washers (3), screws (4), door assembly (5) and mounting plate (6).



- b. Remove lock nut (7), two washers (8), screw (9) and handle (10).
- c. Remove lock nut (11), washer (12), screw (13) and padlock assembly (14).
- d. If necessary, scrape off two gaskets (15) and two gaskets (16).

REPAIR

- a. Replace defective parts as required.
- b. Refer to appendix G for fabrication instructions for gaskets (15 and 16).

INSTALLATION

- a. Apply adhesive to two gaskets (16) and two gaskets (15) and install on door assembly (5).
- b. Install padlock assembly (14) and secure with screw (13), washer (12) and lock nut (11).
- c. Install handle (10) and secure with screw (9), two washers (8) and lock nut (7).
- d. Install mounting plate (6) and door assembly (5) and secure with six screws (4), washers (3), lockwashers (2) and nuts (1).

END OF TASK

4-36. FIRE EXTINGUISHER BRACKET

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools

Portable electric drill
1/4-inch drill bit
Rivet gun kit

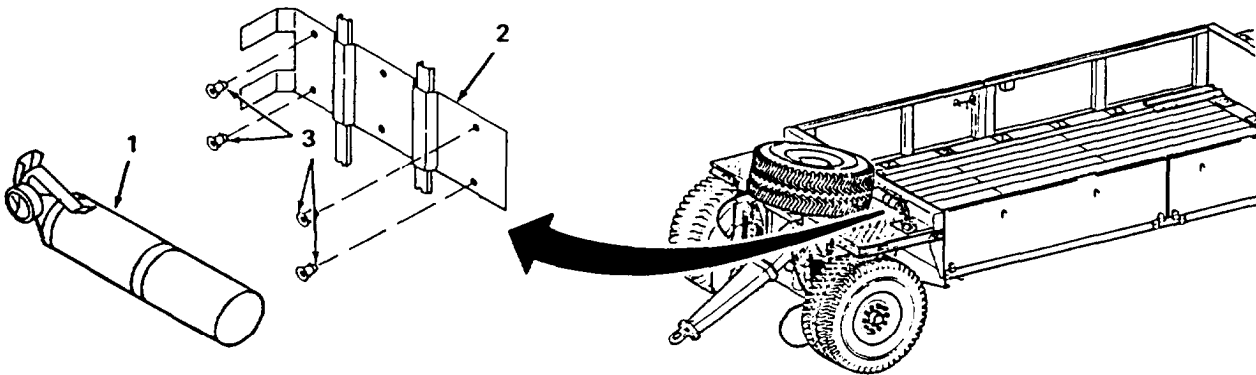
Materials/Parts

Blind rivet (4)

4-36. FIRE EXTINGUISHER BRACKET (CONT)

REMOVAL

- a. Remove fire extinguisher (1) from bracket (2).
- b. Using portable drill, remove four rivets (3).
- c. Remove bracket (2) from trailer frame.



INSTALLATION

- a. Align bracket (2) with holes in trailer frame.
- b. Using rivet gun, secure bracket (2) to frame with four rivets (3).
- c. Attach fire extinguisher (1) to bracket (2).

END OF TASK

4-37. FOLDABLE STEPS

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools

General mechanics tool kit

Materials/Parts

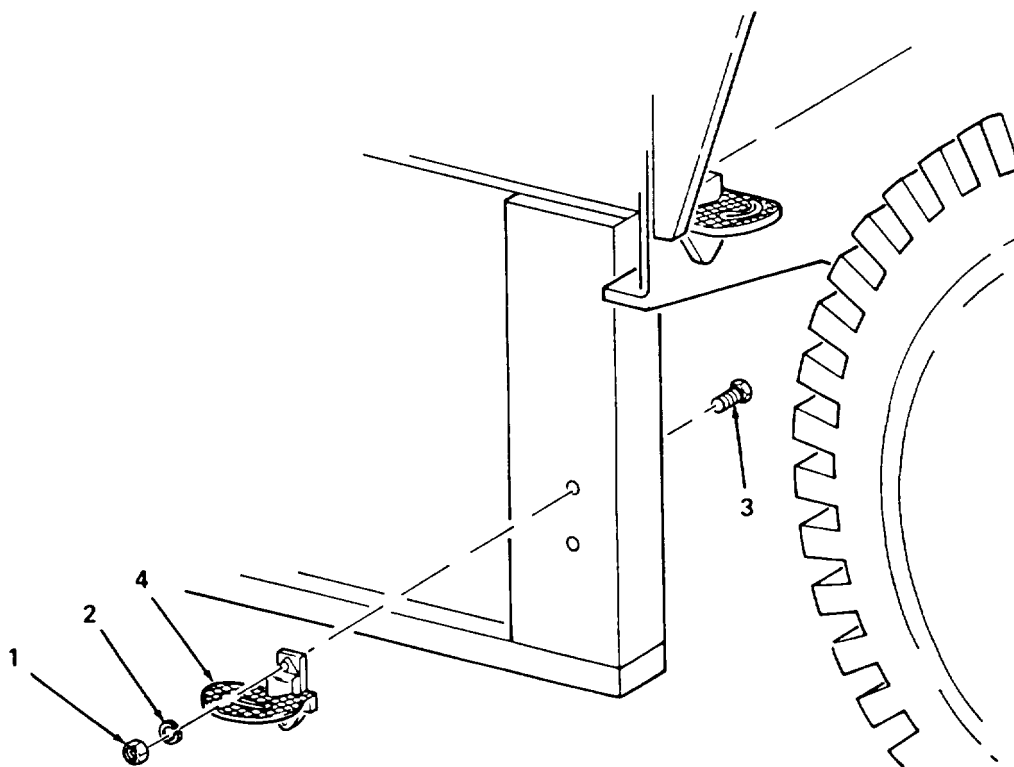
Lockwashers (2)

NOTE

The trailer has three foldable steps curbside front. One is mounted on the front side panel and two are mounted on the front bulkhead. Each is removed and installed in the same manner.

REMOVAL

Remove two nuts (1), lockwashers (2)) bolts (3) and step (4).

**INSTALLATION**

position step (4) and secure with two bolts (3)) lockwashrs (2) and nuts (1).

END OF TASK

4-38. TOWBAR

This task covers: a. Removal c. Assembly
b. Disassembly d. Installation

INITIAL SETUP

Tools

General mechanics tool kit
Suitable lifting device
(8-ton minimum capacity)
2-3/16-inch open end wrench
1-1/4-inch open end wrench
Brass hammer

Materials/Parts

Grease, GAA (item 7, appendix E)

Personnel Required: 3

REMOVAL

- a. Remove two grease fittings (1) and two lock nuts (2).

CAUTION

Use a soft brass hammer or wood block to avoid damaging threads.

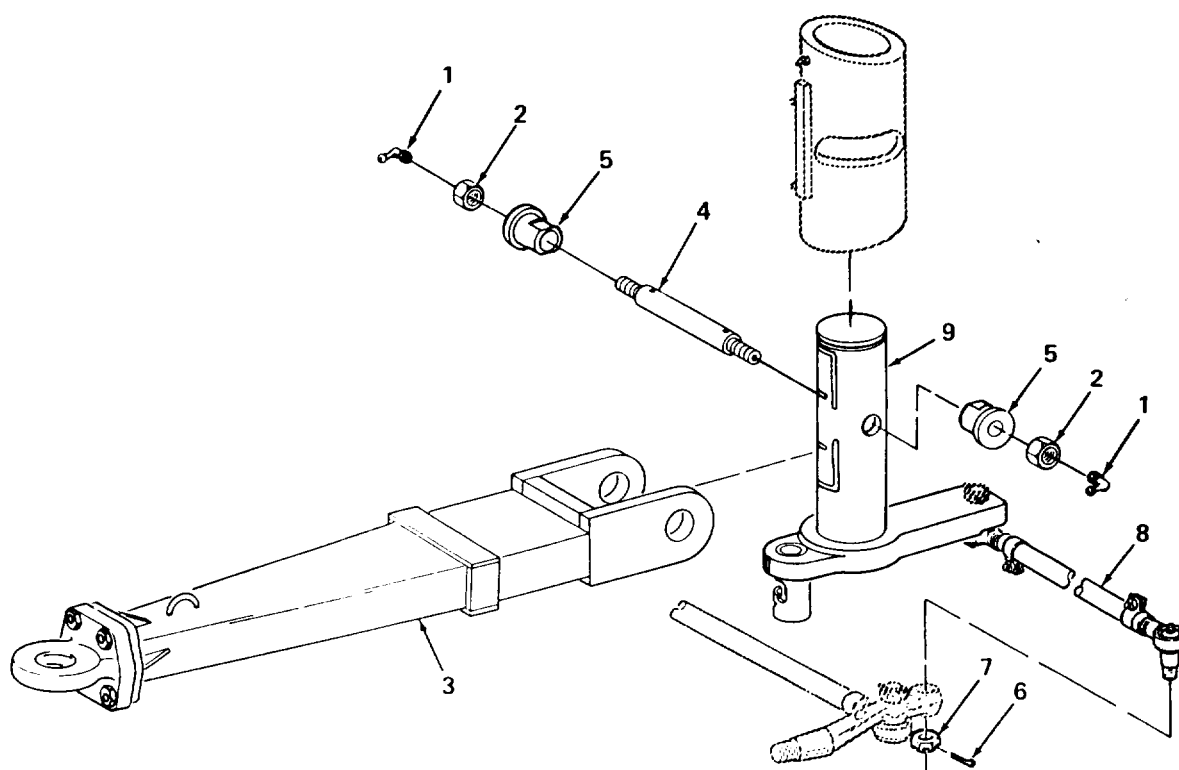
- b. Turn towbar (3) full right (curbside). Using a soft hammer or wood block, tap pin (4) until bushing (5) is driven out from opposite end of pin.
- c. Turn towbar (3) fully in the opposite direction and repeat to remove other bushing (5).
- d. Remove cotter pin (6) and nut (7) from short tie rod (8) and disconnect end of tie rod by tapping with brass hammer to allow towbar (3) to be moved streetside to its fullest extent.

WARNING

Towbar (3) is heavy and requires three persons to safely remove it: two persons to support towbar while one person removes pin (4).

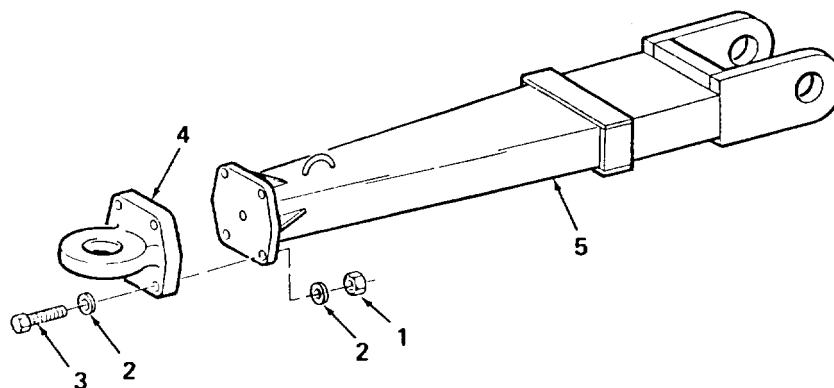
Towbar pivot (9) is heavy and will fall when pin (4) is removed. Support pivot before removing pin (4).

- e. Remove pin (4) and towbar (3) from towbar pivot (8).



DISASSEMBLY

Remove four nuts (1), eight washers (2), four screws (3) and lunette (4) from towbar (5).



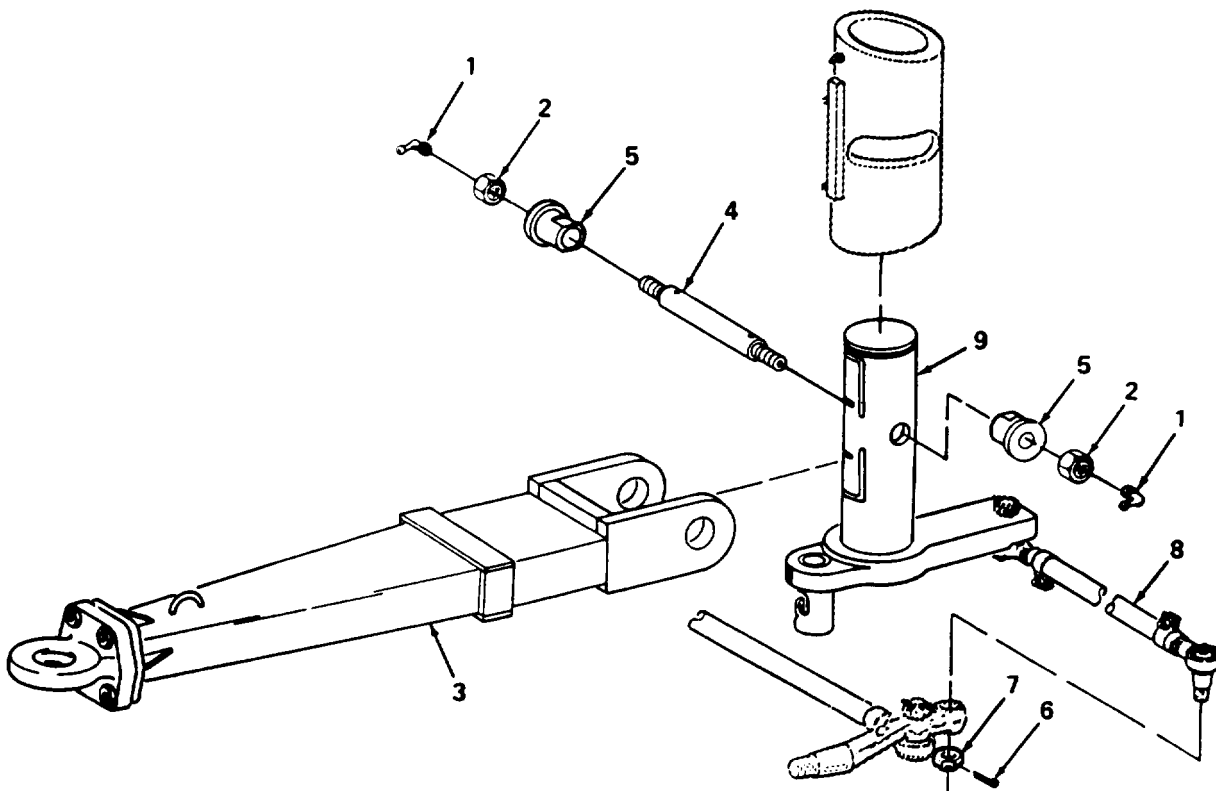
ASSEMBLY

Install lunette (4) and secure with four screws (3), eight washers (2) and four nuts (1).

4-38. TOWBAR (CONT)

INSTALLATION

- a. Install towbar (3) and insert pin (4) through towbar (3), slot in pivot housing and towbar pivot (9).
- b. Install two bushings (5), making sure the flats align with and go into slots in pivot housing.
- c. Install two nuts (2), tighten nuts (2) until shoulders on bushings (5) seat firmly against towbar flange, then back off one-quarter turn.
- d. Install two grease fittings (1). Grease until grease runs out of the fittings.
- e. Reconnect short tie rod (8) and install nut (7) and cotter pin (6).



END OF TASK

Section XI. MAINTENANCE OF SPRINGS AND SHOCK ABSORBERS**4-39. AIR BAG SUSPENSION**

This task covers: a. Removal b. Installation

INITIAL SETUP**Tools**

General mechanics tool kit
Suitable lifting device

Materials/Parts

Lockwasher (8)

Equipment Condition

Air tanks drained
Lower end of leveling valve vertical control rod disconnected (para. 4-40)
Wheels chocked

NOTE

All four air bags are removed in a similar manner.

For front air bags, remove front splash guards first (para. 4-33).

4-39. AIR BAG SUSPENSION (CONT)

REMOVAL

- a. Lift upper trailer deck high enough to remove tension from air bag (1).

WARNING

To avoid slippage of lifting device and personal injury, block up upper trailer.

- b. Block up upper trailer to prevent slippage of trailer lifting device.
- c. Disconnect air hose (2) from suspension bracket (3).
- d. Remove four bolts (4), lockwashers (5) and upper plate (6).
- e. Remove four nuts (7) and lockwashers (8).

CAUTION

Remove air bag carefully to avoid tearing, ripping, or cutting of rubber material.

- f. Carefully remove air bag (1) from lower plate (9).

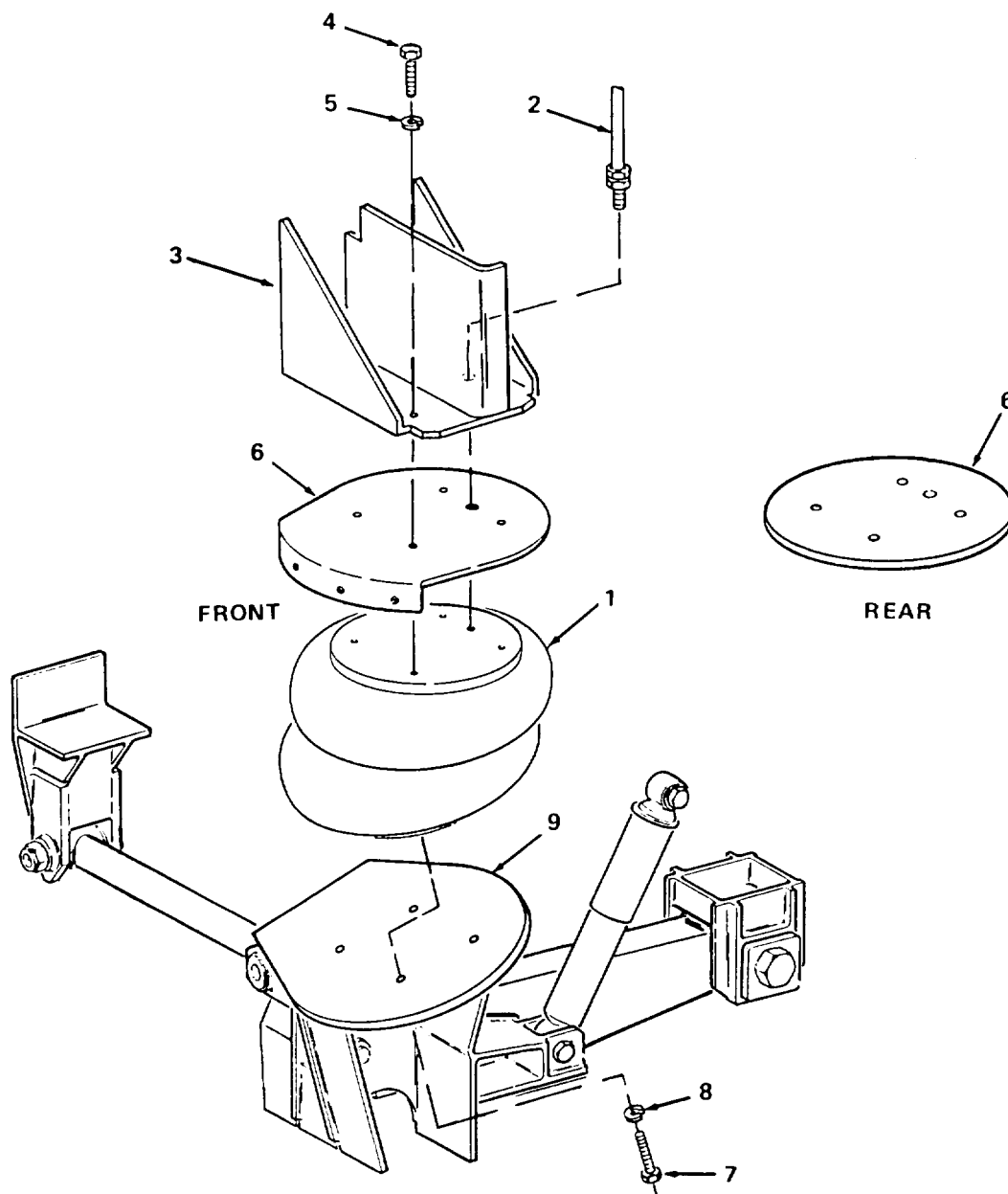
INSTALLATION

- a. Ensure trailer deck is raised and properly blocked to keep tension off suspension.
- b. Install air bag (1), four lockwashers (8) and nuts (7) onto lower plate (9).
- c. Install upper plate (6) onto air bag (1) and install four lockwashers (5) and bolts (4) through suspension bracket (3) into air bag (1).

NOTE

For installation of front air bags, install front splash guards (para. 4-33).

- d. Connect air hose (2).
- e. Remove blocks and lower trailer deck.
- f. Reconnect lower end of adjacent vertical leveling valve control rod (para. 4-40).



END OF TASK

4-40. LEVELING VALVES

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools

General mechanics tool kit

Equipment Condition

Air tanks drained

Materials/Parts

Lockwasher (6)
Lockwashers (6)

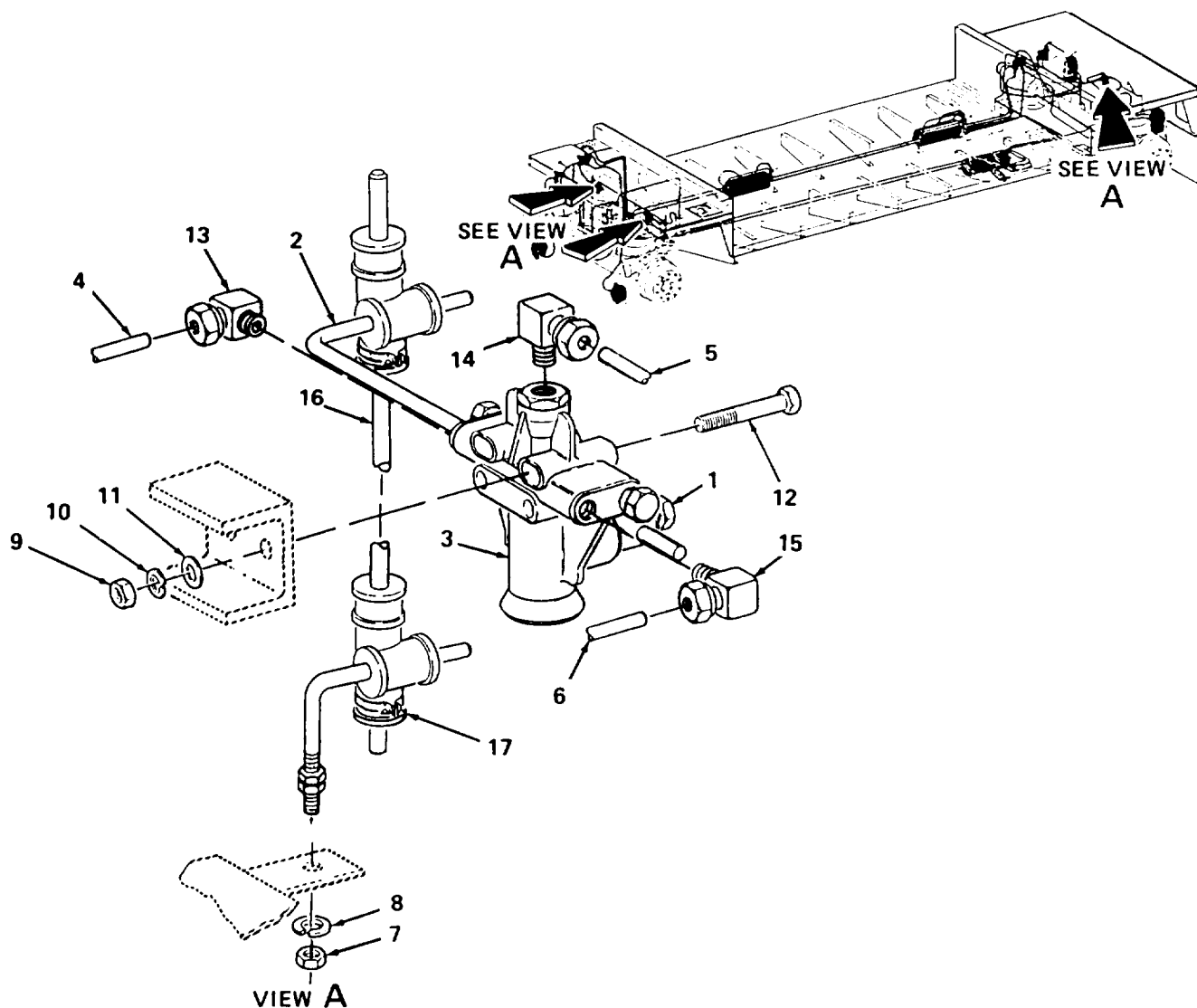
4-40. LEVELING VALVES (CONT)

NOTE

There are three leveling valves, two in front and one at the rear of the trailer. They are mounted in a similar manner.

REMOVAL

- Loosen screw (1) and remove leveling rod (2) from valve (3).
- Tag and disconnect three tubes (4, 5 and 6) from leveling valve (3).
- Remove nut (7) and lockwashers (8).
- Remove two nuts (9), lockwashers (10), washers (11) and screws (12) from leveling valve (3).



- e. Remove leveling valve (3).
- f. Remove three elbows (13, 14 and 15).

INSTALLATION

NOTE

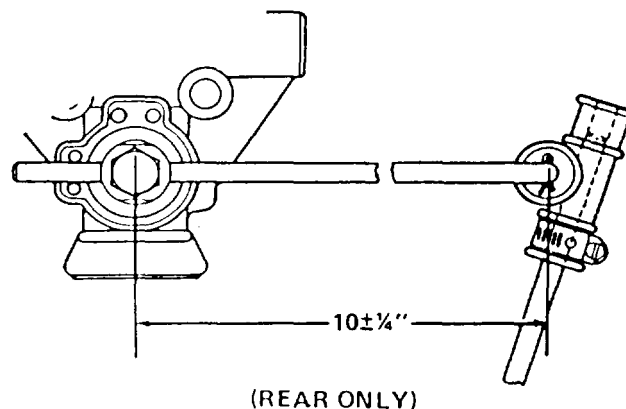
Apply anti-seize tape to all pipe threads before connecting.

- a. Install three elbows (15, 14 and 13).
- b. position leveling valve (3) and secure with two screws (12), washers (11), lockwashers (10), and nuts (9).
- c* Secure bottom connection with lockwashers (8) and nut (7).
- d. Connect three tubes (6, 5 and 4).
- e. With towing vehicle air supply connected to trailer, wait 2 minutes for system to charge, and verify proper adjustment by measuring 57 inches from the ground to the top of the trailer bulkhead (front or back). If bulkhead is too high, proceed to step h. If bulkhead is too low, proceed to step 1.

NOTE

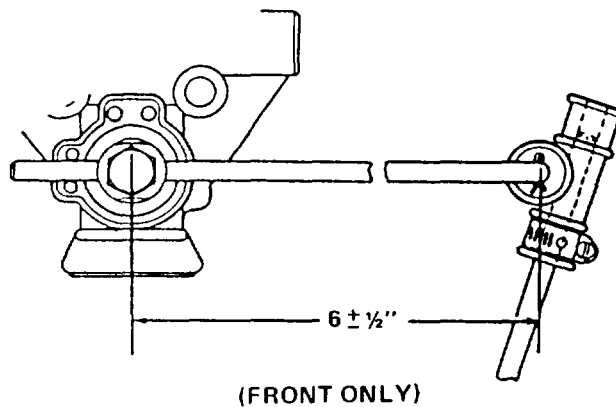
When installing a new rear vertical control rod, cut it to the same length as the one being replaced.

- f. For the rear leveling valve only, slant the vertical control rod (16) forward so the distance between center of retaining bolt on valve and the cotter pin on upper clamp is $10 \pm \frac{1}{4}$ inches.

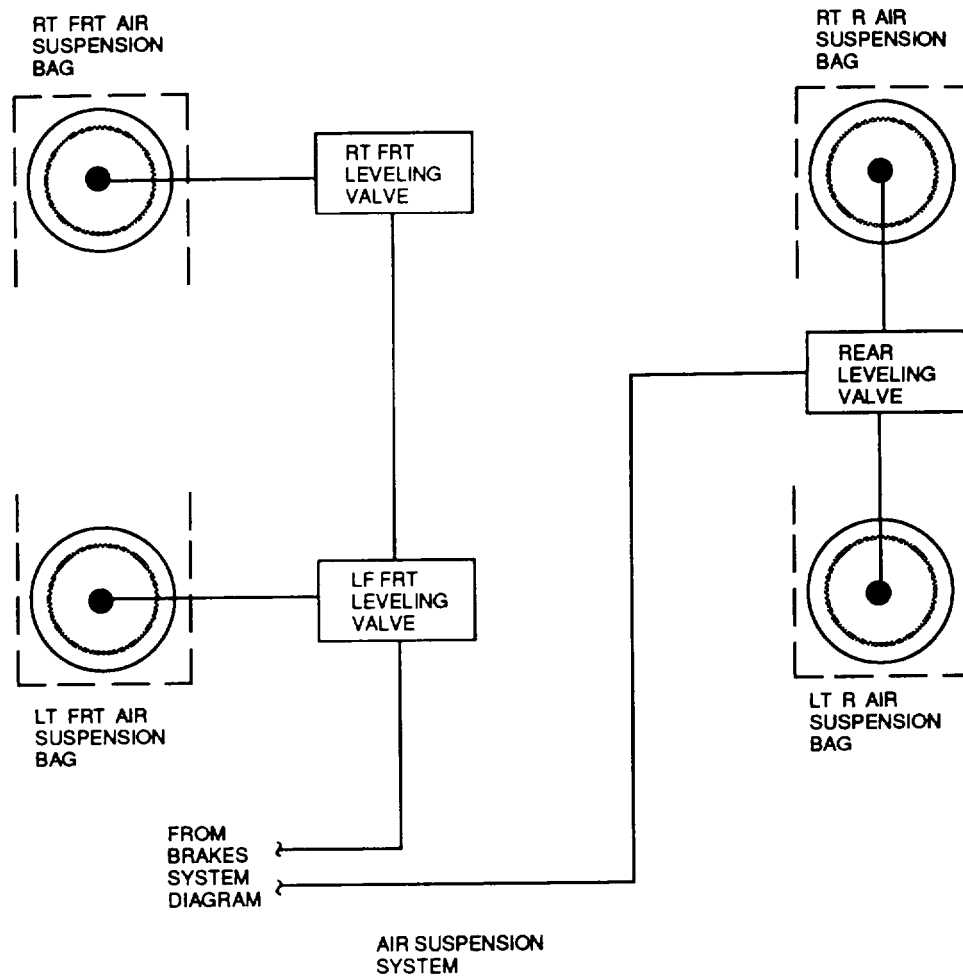


4-40. LEVELING VALVES (CONT)

- g. For the two front leveling valves, install the "L"-shaped pivot on the air bag mount so it points toward rear of trailer. Adjust linkage with air bags inflated so the distance between retaining bolt on valve and the cotter pin on upper clamp is $6 \pm 1/4$ inches.



- h. Loosen lower clamp (17) and push leveling control rod (2) down until trailer lowers; release leveling control rod (2) and allow it to center, then tighten clamp (17).
- i. Loosen lower clamp (17) and push leveling control rod (2) up until trailer raises; release leveling control rod (2) and allow it to center, then tighten clamp (17).
- j. Repeat step h or i for all three leveling valves until proper height is achieved.



END OF TASK

4-41. SHOCK ABSORBERS

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools

General mechanics tool kit
Torque multiplier

Materials/Parts

Lock nut (8)
Bolt (8)
Brake chamber, air bag, and air hose caps

Equipment Condition

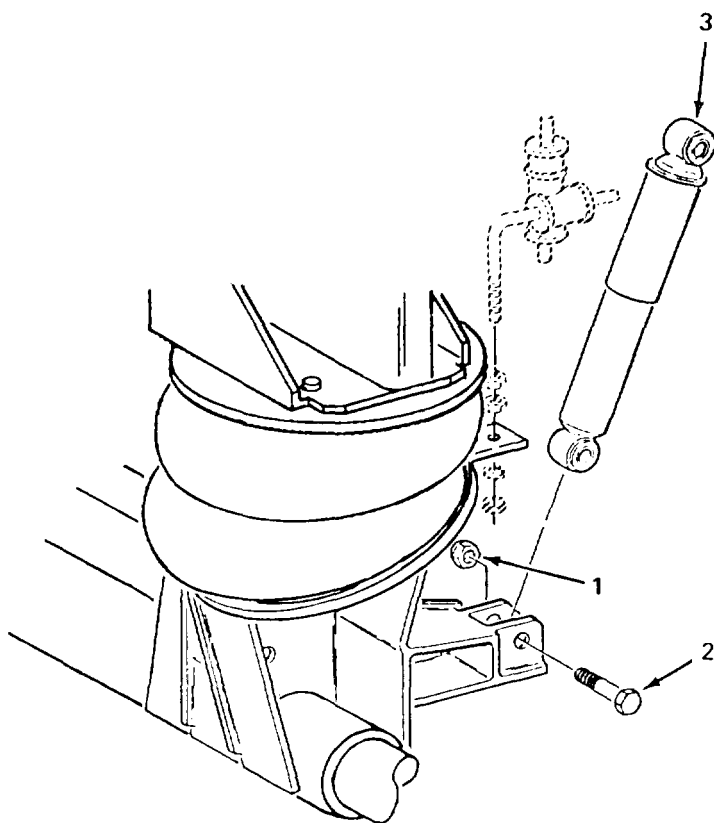
Wheels removed (para. 3-5)
Leveling valve linkage disconnected (para. 4-40)
Air drained
Sway bar removed (para. 4-42)

REMOVAL

- a. Tag, disconnect, and remove air hoses from brake chambers and air bags. Cap hoses, air bags, and brake chambers.
- b. Jack up and block frame. Chock wheels.
- c. Remove two lock nuts (1), two bolts (2) and shock (3) from each side of vehicle.
- d. Repeat for front or rear.

INSTALLATION

- a. Aline shock (3).
- b. Insert two bolts (2) and secure with two lock nuts (1). Torque to 140-150 lb ft.



4-42. SWAY BARS

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools

General mechanics tool kit
Torque multiplier

Materials/Parts

Lock nut (4)
Bolt (4)
Brake chamber, air bag, and air hose caps

Equipment Condition

Leveling valve linkage disconnected
(para. 4-40)
Air drained
Wheels chocked

NOTE

Front and rear sway bars are similar and are mounted in the same manner.

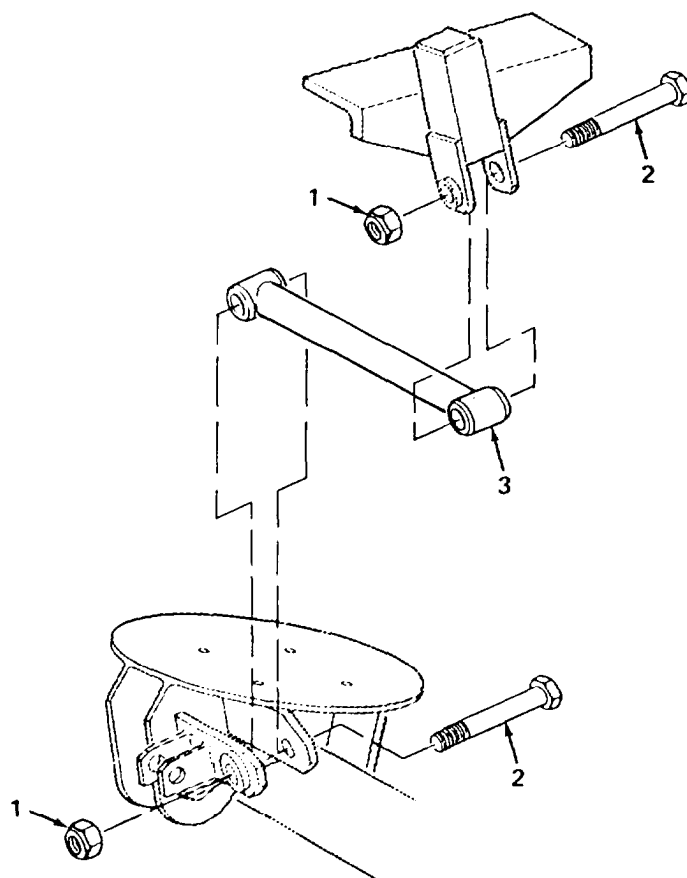
4-42. SWAY BARS (CONT)

REMOVAL

NOTE

Prior to removing sway bars, mark which is curbside and which is streetside of sway bar. This will expedite reinstallation.

- a. Tag, disconnect, and remove air hoses from brake chambers and air bags. Cap hoses, air bags and brake chambers.
- b. Jack up and block frame.
- c. Remove two lock nuts (1) and bolts (2) from ends of sway bar (3). Remove sway bar (3).



INSTALLATION

- a. Aline sway bar (3) so previously marked curbside and streetside are correct.
- b. Insert two bolts (2) and secure with two lock nuts (1). Torque to 650-680 lb ft.

END OF TASK

Section XII. MAINTENANCE OF BODY, CAB, HOOD, AND HULL**4-43. SIDE PANELS**

This task covers repair.

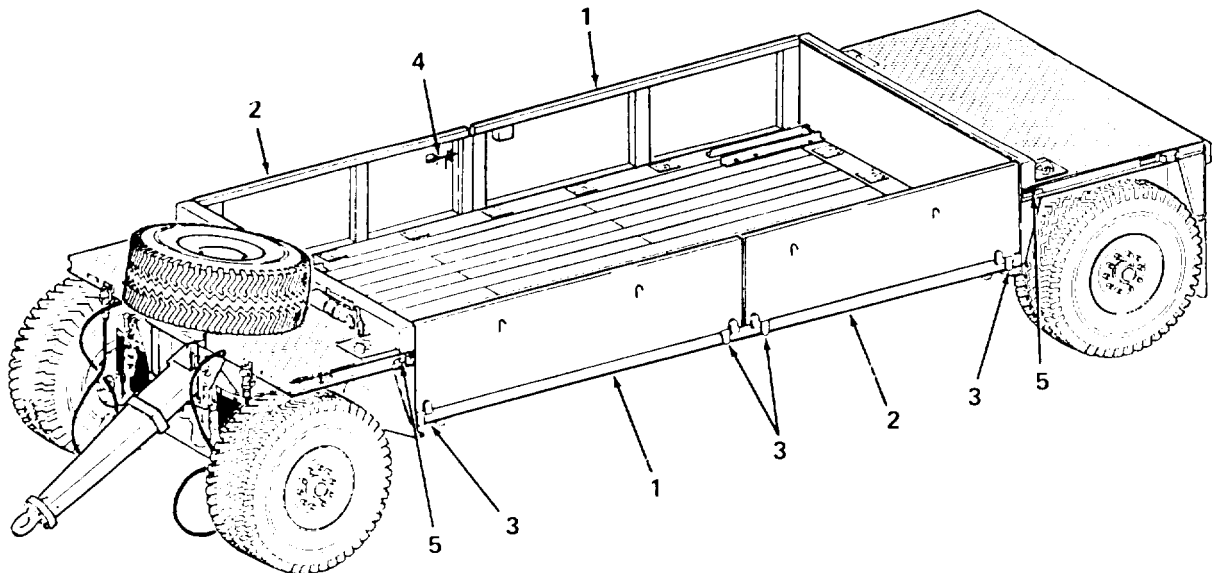
INITIAL SETUP**Materials/Parts**

Cleaning compound (item 3, appendix E)

Wiping rag (item 12, appendix E)

REPAIR

- a. If damage to side panel (1 or 2) is not too extensive, straighten member where possible. Notify support maintenance to weld up cracks in broken welds.
- b. Straighten bent hinge pins (3).
- c. Straighten bent hitch pins (4).
- d. Straighten bent bolt handles (5).



END OF TASK

4-44. FLOORBOARDS

This task covers: a. Inspection c. Repair
b. Removal d. Installation

INITIAL SETUP

Tools

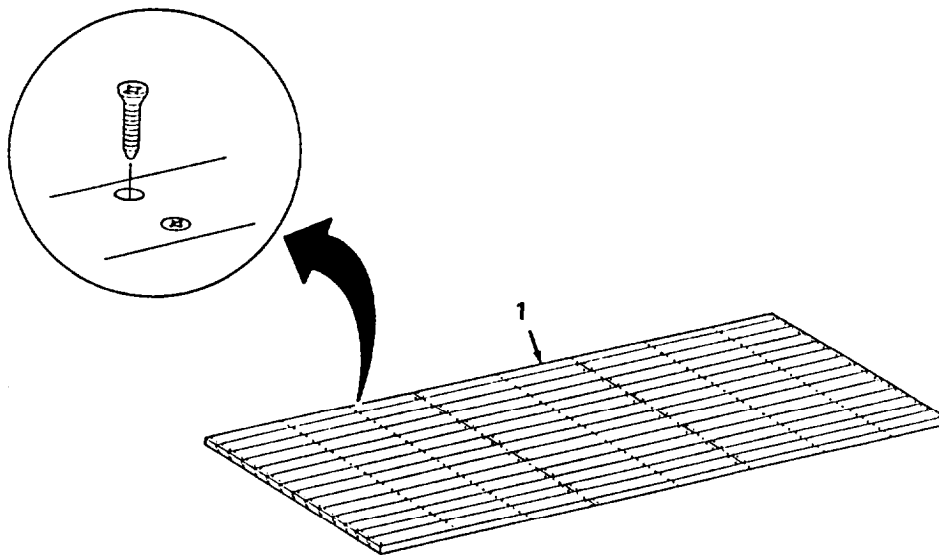
Portable electric drill
Twist drill, No. J
Countersink
Screwdriver bit (item 6, appendix B)
Floor kit

Materials/Parts

Caulking compound (item 2, appendix E)

INSPECTION

Inspect all floorboards (1) for breakage and warpage. Replace defective floorboards.



REMOVAL

Remove torx screws as required to remove boards, starting with streetside or curbside boards and working toward the board to be replaced.

REPAIR

NOTE

Determine width of board available. It must be cut to match the length of the board which has been removed.

INSTALLATION

- a. Place replacement floorboard in position on frame. Cut board to proper length.
- b. Remove board. Then, using a No. J drill bit (0.277-inch) and drill, bore holes in floorboard to avoid previous mounting holes in frame. Countersink holes.

CAUTION

Torx screws have sharp points which must be cut off and filed down if they protrude, in order to avoid damage to air hoses or electrical wiring.

- c. Install torx screws as required to secure floorboard to frame. Heads of screws should be below surface of boards. If points protrude below under-surface of deck, cut off and file down points, so that they are flush with deck.
- d. paint replacement floorboard.
- e. Seal between floorboard and side rail, if necessary, with caulking compound.

END OF TASK

4-45. REFLECTORS

This task covers: a. Removal b. Installation

INITIAL SETUPTools

General mechanics tool kit

Materials/Parts

Lockwashers (2)

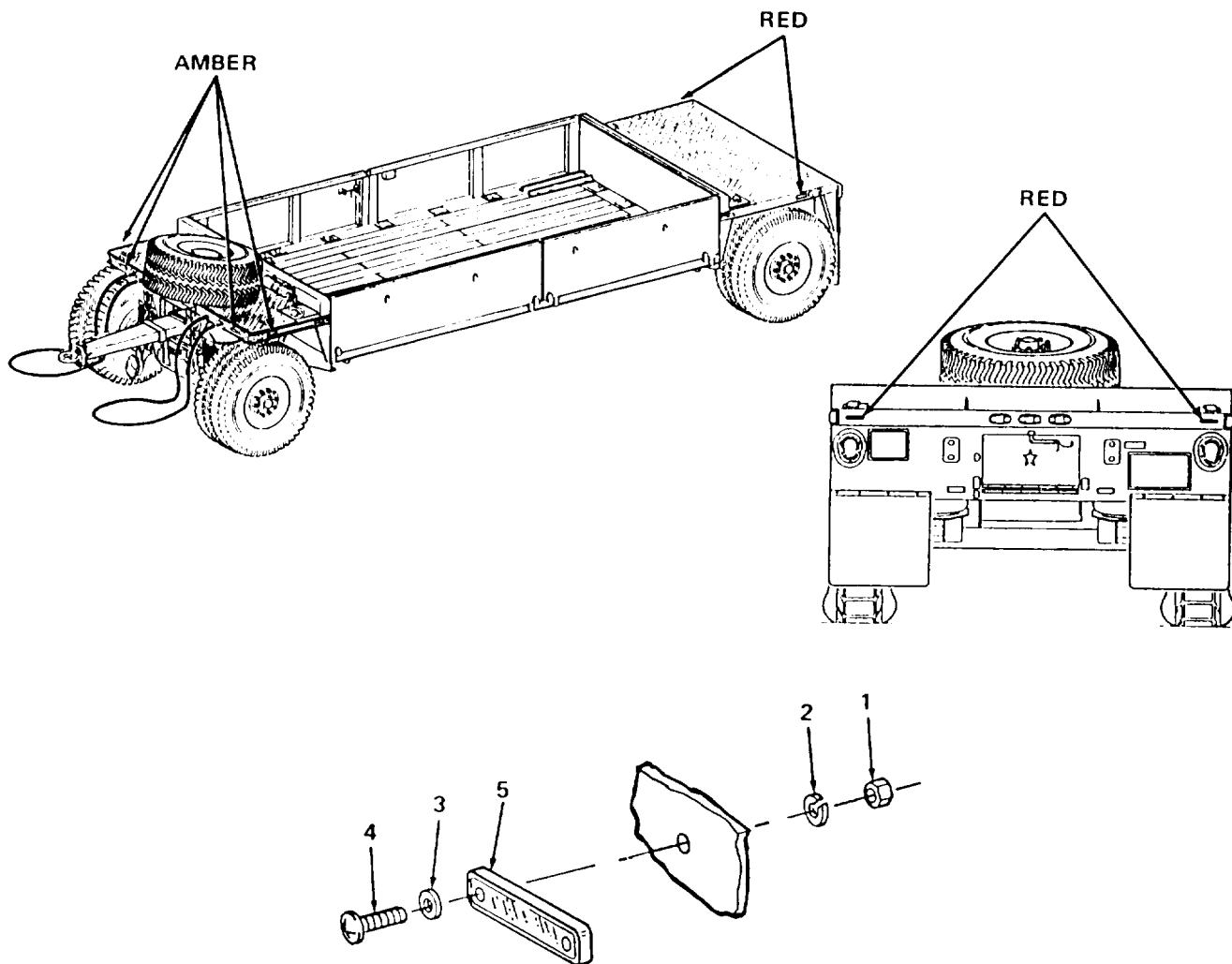
4-45. REFLECTORS (CONT)

NOTE

The trailer has four amber reflectors at the front, and four red reflectors at the rear. Each is removed and installed in the same manner.

REMOVAL

Remove two nuts (1), lockwashers (2), washers (3) and screws (4). Remove reflector (5).



INSTALLATION

CAUTION

Do not over-tighten or reflector will crack.

Position reflector (5) and secure with two screws (4), washers (3), lockwashers (2) and nuts (1).

END OF TASK

4-46. DATA PLATES

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools

General mechanics tool kit
Blind head riveter

Materials/Parts

Rivets

REMOVAL

Remove pop rivets to detach any defective identification plate, service/emergency tag, instruction plate, lubrication plate, or certification plate.

INSTALLATION

Install Identification plate, instruction plate, lubrication plate, service/emergency tag, and certification plate with pop rivets.

END OF TASK

CHAPTER 5

DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE INSTRUCTIONS

	Page
Overview	5-1
Repair Parts, Special Tools, TMDE, and Support Equipment	5-1
Maintenance of Miscellaneous Components	5-2
Preparation for Storage or Shipment	5-17

OVERVIEW

This chapter provides those tasks to be performed by the direct and general support maintenance personnel. Included are references for repair parts, special tools, TMDE, and support equipment. Also included are maintenance of the HEMAT miscellaneous components and instructions for storage or shipment.

Section I. REPAIR PARTS, SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

5-1. COMMON TOOLS AND EQUIPMENT

For authorized common tools and equipment, refer to the Table of Organization and Equipment (TOE) or the modified Table of Organization and Equipment (MTOE) applicable to your unit.

5-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

Refer to section III, appendix F, for special tools to support the M989A1 trailer.

5-3. REPAIR PARTS

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

Section II. MAINTENANCE OF MISCELLANEOUS COMPONENTS

5-4. FRONT AXLE

This task covers: a. Removal c. Cleaning e. Assembly
b. Disassembly d. Inspection f. Installation

INITIAL SETUP

Tools

General mechanics tool kit
Cutting torch
Hydraulic jack (2)
1-7/8-inch socket wrench
Socket wrench set
Torque multiplier
Open end wrench
Open end wrench
Open end wrench
Arc welder
Pinch bar
Sledge hammer

Equipment Condition

Leveling valve linkage disconnected
(para. 4-40)
Air drained
Front wheels removed (loosen nuts, raise
trailer, remove nuts and wheels)
Frame jacked up to remove weight from
axle, frame on blocks
Hydraulic jacks under axle, weight
supported

Materials/Parts

- Anti-seize tape (item 16, appendix E)
- Cleaning compound (item 3, appendix E)
- Grease GAA (item 7, appendix E)
- Lock nut (2)
- Lock nut (2)
- Lockwasher (8)
- Lock ring
- Lock ring
- Industrial goggles
- Brake chamber, air bag, and air hose caps
- Teflon tape

REMOVAL

WARNING

Chock rear wheels.

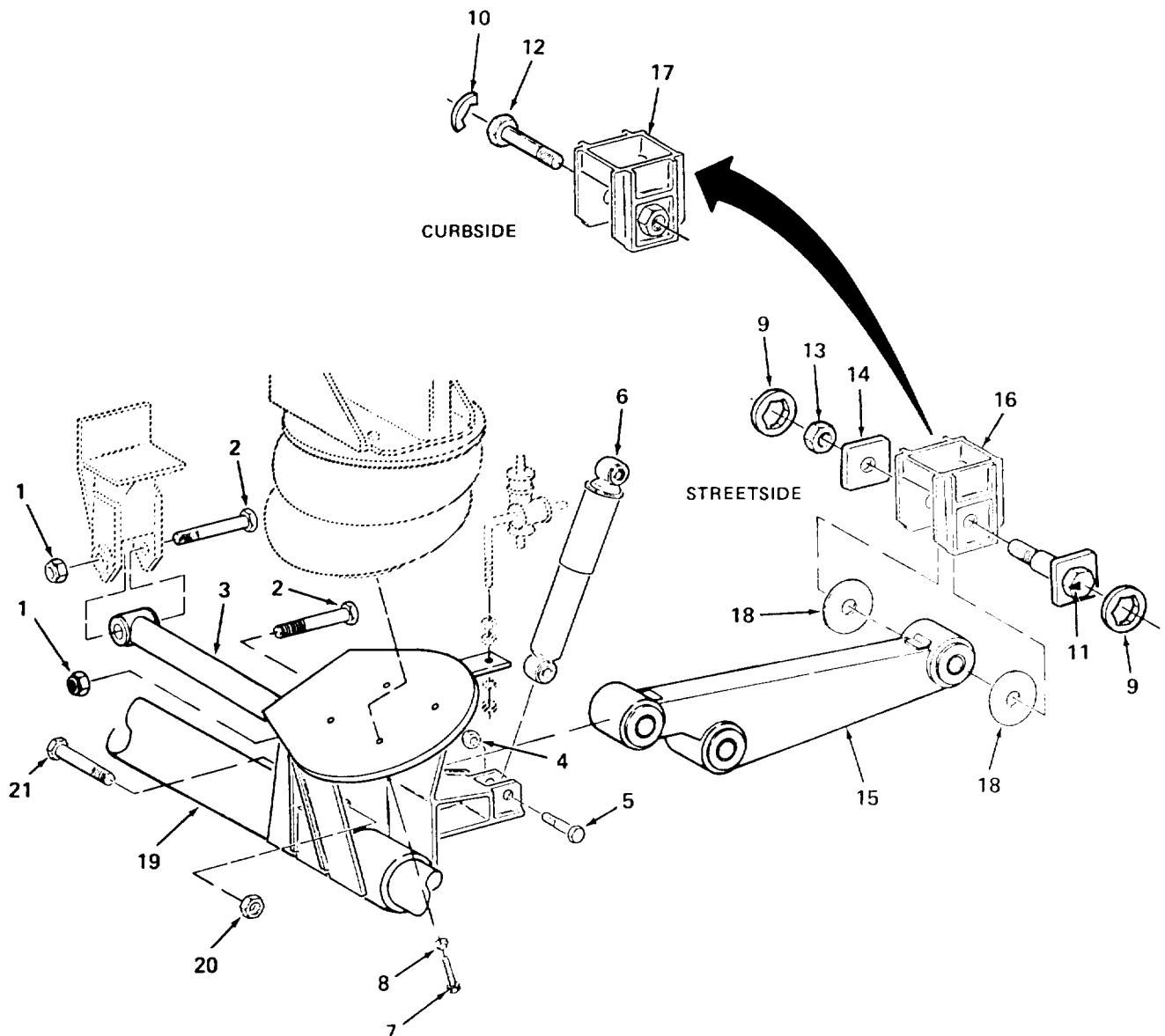
CAUTION

Ensure wheels are facing straight ahead when raising and securing towbar.

NOTE

If an axle is to be removed for replacement or repair, remove axle and suspension together and disassemble after removal.

- a. Tag, disconnect, and remove hoses from brake chambers. Cap brake chamber, hoses and air bags.
- b. Remove two lock nuts (1) and bolts (2) from sway bar (3). (Mark streetside and curbside for ease of replacement.) Remove sway bar (3).



5-4. FRONT AXLE (CONT)

- c. Remove two lock nuts (4) and shock bolts (5) from each side of vehicle, and remove shock absorbers (6).
- d. Remove four bolts (7) and lockwashers (8) from air bags on both sides of vehicle. Remove air bag plates.
- e. Disconnect short tie rod (para. 4-28). Tie off leveling valve rods.

CAUTION

Be careful when cutting off lock rings to prevent damage to frame and/or air lines.

- f. Using an Oxy-Acetylene cutting torch, remove welds on suspension hanger bolt lock rings (9 and 10).
- g. Lower axle to the ground and remove jacks.
- h. Mark location of arrow on head of bolt (11) on streetside of vehicle.
- i. Remove curbside hanger bolt (12) using an impact wrench.

NOTE

Do not try to rotate the streetside hanger bolt with the impact wrench. The nut must be rotated.

- j. Remove nut (13) and clamping plate (14) from streetside hanger bolt (11) using an impact wrench.
- k. Rotate streetside hanger bolt (11) as required to bring arrow stamped on the head straight up. Drive out bolt (11) using a drift punch.

WARNING

Ensure all personnel are clear of torsion bars.

- l. Drive both torsion bars (15) down, out of hangers (16 and 17) and remove two spacers (18).
- m. Roll axle (19) out from under vehicle.

DISASSEMBLYWARNING

Ensure all personnel are clear of torsion bars.

NOTE

It may be necessary to drive bolts out of axle assembly due to their tight fit. Use a drift pin and mallet or hydraulic jack blocked against brake drum flange.

- a. Jack up axle and block up.
- b. Remove nuts (20) and bolts (21) from axle assembly (19).
- c. Remove torsion bars (15).
- d. Remove hubs and drums (para. 4-26).
- e. Remove tie rods (para. 4-28).
- f. Remove brakes, camshafts and slack adjusters (para. 4-16, 4-17 and 4-18).
- g. Remove brake air chambers (para. 4-20).

CLEANING

Clean axle thoroughly, using a brush and water to remove mud and cleaning compound to remove grease and oil. Wipe off.

INSPECTION

Inspect axle for cracks, broken or distorted brackets and pads, corrosion or other damage.

ASSEMBLY

- a. Install brake air chambers (para. 4-20).
- b. Install slack adjusters, camshafts, and brakes (para. 4-18, 4-17 and 4-16).
- c. Install hubs and drums (para. 4-26).

5-40 FRONT AXLE (CONT)

- d. Install tie rods (para. 4-28).
- e. Install torsion bars (15) into axle (19) with two bolts (21) and nuts (20).
- f. Apply a light coat of grease to bolts (21) and install into axle (19).
- g. Install nuts (20) onto bolts (21). Torque bolts to 800-1000 lb ft.

INSTALLATION

- a. Slide axle assembly (19) under frame of trailer.
- b. Apply a coat of grease to hanger bolts (11 and 12) and spacer washers (18).
- c. Install spacer washers (18) onto torsion bars (15).
- d. Using three people and two hydraulic jacks, push both torsion bars into hangers (17 and 16) from the underside. Aline holes using a drift pin or alinement pin.

CAUTION

Stamped arrow bolt must be used on streetside.

- e. Install eccentric bolt (11) into streetside hanger (16) with stamped arrow pointing straight up. Attach clamping plate (14) and nut (13) to streetside bolt, but do not torque at this time. Ensure clamping plate is clean of all debris.
- f. Install curbside bolt (12) into hanger (17) by screwing bolt (12) in with an impact wrench.
- g. Raise axle to frame.
- h. Check curbside and streetside markings and install sway bar with two bolts (2) and nuts (1). Torque bolts to 650-680 lb ft.
- i. On each side, install four lockwashers (8) and bolts (7) onto air bags and torque to 15-20 lb ft.
- j. Install each shock with two bolts (5) and nuts (4) and torque to 140-150 lb ft.
- k. Connect leveling valve linkage (para. 4-40).
- l. Rotate streetside hanger bolt (11) to aline arrow with mark on frame.

NOTE

Do not allow streetside bolt to rotate while torquing.

- m. Torque streetside hanger nut (13) to 740-750 lb ft.
- n. Torque curbside hanger bolt (12) to 740-750 lb ft.
- o. Install short tie rod (para. 4-28). Install leveling valve rod (para. 4-40) .
- p. Weld new lock rings (9 and 10) onto hanger bolts (11 and 12).
- q. Install wheels (para. 3-5).
- r. Apply anti-seize tape to threads and reconnect air hoses to brake chambers and air bags.

END OF TASK

5-5. TORSION BARS

This task covers: a. Removal c. Inspection
 b. Cleaning d. Installation

INITIAL SETUP

Tools

General mechanics tool kit
Torque wrench
Cutting torch
Impact wrench
Hydraulic jack (2)
Drift punch
Assembly tool (figure G-3)
 (for rear streetside)

Equipment Condition

Sway bar removed (para. 4-42)
Shocks removed (para. 4-41)
Air bag removed (para. 4-39)
Tie rods removed (front only)
 (para. 4-28)
Axle removed (front or rear)
 (para. 5-4, 5-6)

Materials/Parts

Hanger bolt lock ring (4)

NOTE

Front and rear torsion bars are identical. Front installation is shown .

5-5. TORSION BARS (CONT)

REMOVAL

CAUTION

Use caution when cutting off lock ring (1 and 2) welds to prevent damage to frame and/or air lines.

- a. Using an Oxy-Acetylene torch, remove welds on suspension hanger bolt lock rings (1 and 2).
- b. Jack up frame to remove weight from axle (3) and block up frame.
- c. Place jack stand under torsion bar (4) and lower axle (3) to the ground.
- d. Mark location of arrow on head of bolt (5) on streetside of vehicle.
- e. Remove curbside hanger bolt (6) using impact wrench.

CAUTION

Do not try to rotate the streetside hanger bolt (5) with the impact wrench. The nut (7) must be rotated.

- f. Remove nut (7) and clamping plate (8) from streetside hanger bolt (5), using an impact wrench.
- g. Rotate streetside hanger bolt (5), as required, to bring arrow stamped on the head straight up. Drive out bolt (5) using a drift punch.

WARNING

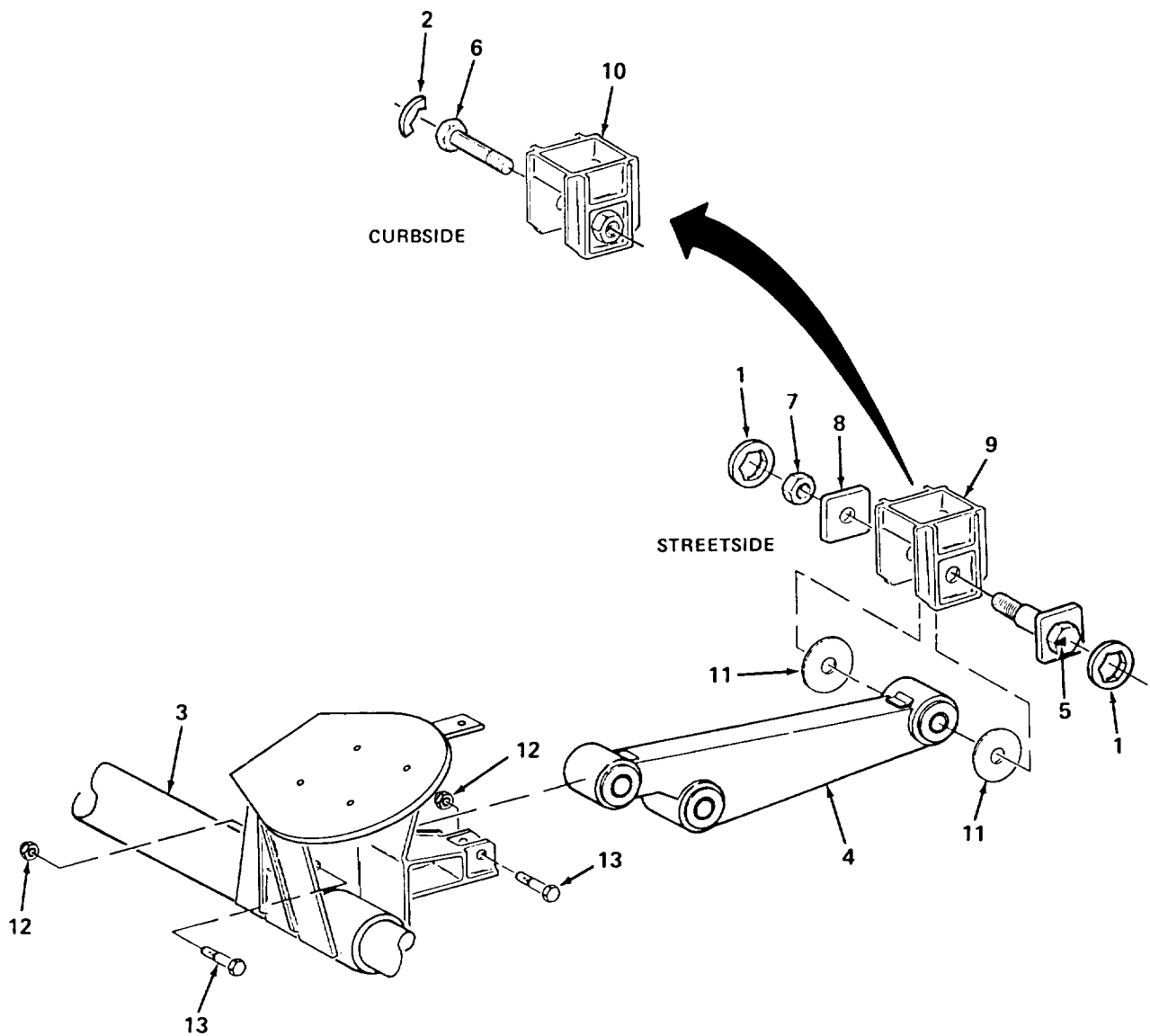
Ensure personnel are clear of torsion bars.

- h. Drive both torsion bars (4) down, out of hangers (9 and 10). Remove spacers (11).
- i. Replace jack stand with wooden blocks to support frame.
- j. Roll axle (3) and torsion bars (4) out from under vehicle.

NOTE

It may be necessary to drive bolts (13) out of axle assembly (3) due to tight fit. Use a drift pin and mallet or hydraulic jack blocked against brake drum flange.

- k. Remove four nuts (12) and four bolts (13) from axle assembly (3).
- l. Remove torsion bars (4).



CLEANING

Clean torsion bars using a brush and water to remove mud and cleaning compound to remove grease and oil. Wipe off.

INSPECTION

Inspect torsion bars for cracks, corrosion or other damage.

3-5. TORSION BARS (CONT)

INSTALLATION

- a. Install torsion bars (4) into axle (3).
- b. Apply a light coat of grease to two bolts (13) and install bolts (13) into axle (3).
- c. Install two nuts (12) onto bolts (13). Using an impact wrench and torque wrench, torque bolts (13) to 800-1000 lb ft.
- d. Roll axle assembly (3) under frame of trailer.
- e. Apply a coat of grease to hanger bolts (6 and 5) and spacers (11).
- f. Install spacers (11) onto torsion bars (4).
- g. Using three people and a hydraulic jack, push both torsion bars (4) into hangers (10 and 9) from the underside. Aline holes using a drift pin or alinement pin.

CAUTION

Stamped arrow bolt (5) must be used on streetside hanger (9).

- h. Install eccentric bolt (5) into streetside hanger (9) with stamped arrow pointing straight up. Attach clamping plate (8) and nut (7) to streetside bolt (5) but do not torque at this time.
- i. Install curbside bolt (6) into hanger (10) by screwing in bolt (6) with an impact wrench.
- j. Raise axle to frame.
- k. Rotate streetside hanger bolt (5) to aline arrow with mark on frame.

NOTE

Do not allow streetside bolt (5) to rotate while torquing.

- l. Torque streetside hanger nut (7) to 740-750 lb ft.
- m. Torque curbside hanger bolt (6) to 740-750 lb ft.
- n. Weld new lock rings (1 and 2) onto hanger bolts (5 and 6).

END OF TASK

5-60 REAR AXLE

This task covers: a. Removal c. Cleaning e. Assembly
b. Disassembly d. Inspection f. Installation

INITIAL SETUP

Tools

General mechanics tool kit
Cutting torch
Hydraulic jack (2)
1-7/8-inch socket wrench
Socket wrench set
Torque multiplier
Open end wrench
Open end wrench
Open end wrench
Arc welder
Pinch bar
Sledge hammer
Assembly tool (figure G-3)
(rear streetside torsion bar)

Equipment Condition

Rear wheels removed (loosen nuts, raise trailer, remove nuts and wheels)
Leveling valve linkage disconnected (para. 4-40)
Air drained
Frame jacked up to remove weight from axle, frame on blocks
Hydraulic jacks under axle, weight supported

Materials/Parts

- Anti-seize tape (item 16, appendix E)
- Cleaning compound (item 3, appendix E)
- Grease GAA (item 7, appendix E)
- Lock nut (2)
- Lock nut (2)
- Lockwasher (8)
- Lock ring
- Lock ring
- Industrial goggles
- Brake chamber, air bag, and air hose caps
- Teflon tape

REMOVAL

WARNING

Chock front wheels.

NOTE

If an axle is to be removed for replacement or repair, remove axle and suspension together and disassemble after removal.

- a. Tag, disconnect, and remove hoses from brake chambers and air bags. Cap brake chamber, hoses and air bags.

5-6. REAR AXLE (CONT)

- b. Remove lock nut (1) and bolt (2) from sway bar (3). (Mark streetside and curbside for ease of replacement.) Remove sway bar (3) from axle mount. On frame end, remove nut (1) and move bolt (2) back. Tie up axle end of sway bar (3).
- c. Remove two lock nuts (4) and shock bolts (5) from each side of vehicle, and remove shock absorbers (6).
- d. Remove four bolts (7) and lockwashers (8) from air bags on both sides of vehicle. Remove air bag plates.

CAUTION

Be careful when cutting off lock rings to prevent damage to frame and/or air lines.

- e. Using an Oxy-Acetylene cutting torch, remove welds on suspension hanger bolt lock rings (9 and 10).
- f. Lower axle to the ground and remove jacks.
- g. Mark location of arrow on head of bolt (11) on streetside of vehicle.
- h. Remove curbside hanger bolt (12) using an impact wrench.

NOTE

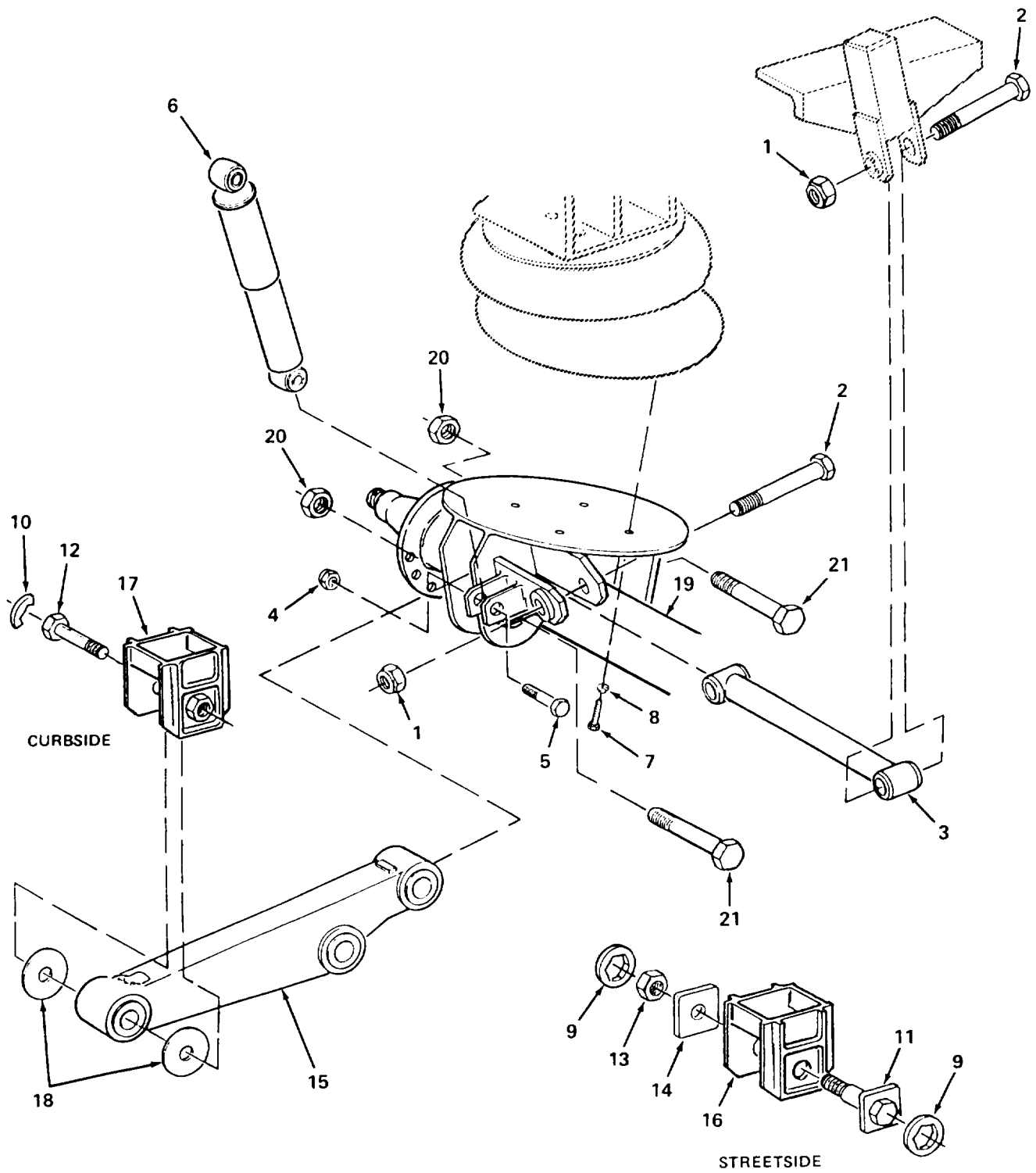
Do not try to rotate the streetside hanger bolt with the impact wrench. The nut must be rotated.

- i. Remove nut (13) and clamping plate (14) from streetside hanger bolt (11) using an impact wrench.
- j. Rotate streetside hanger bolt (11) as required to bring arrow stamped on the head straight up. Drive out bolt (11) using a drift punch.

WARNING

Ensure all personnel are clear of torsion bars.

- k. Drive both torsion bars (15) down, out of hangers (16 and 17), and remove two spacers (18).
- l. Roll axle (19) out from under vehicle.



5-6. REAR AXLE (CONT)

DISASSEMBLY

WARNING

Ensure all personnel are clear of torsion bars.

NOTE

It may be necessary to drive bolts out of axle assembly due to their tight fit. Use a drift pin and mallet or hydraulic jack blocked against brake drum flange.

- a. Jack up axle and block up.
- b. Remove nuts (20) and bolts (21) from axle assembly (19).
- c. Remove torsion bars (15).
- d. Remove hubs and drums (para. 4-26).
- e. Remove tie rods (para. 4-28).
- f. Remove brakes, camshafts and slack adjusters (para. 4-16, 4-17, and 4-18).
- g. Remove brake air chambers (para. 4-20).

CLEANING

Clean axle thoroughly, using a brush and water to remove mud and cleaning compound to remove grease and oil. Wipe off.

INSPECTION

Inspect axle for cracks, broken or distorted brackets and pads, corrosion or other damage.

ASSEMBLY

- a. Install brake air chambers (para. 4-20).
- b. Install slack adjusters, camshafts, and brakes (para. 4-18, 4-17 and 4-16).
- c. Install hubs and drums (para. 4-26).
- d. Install torsion bars (15) into axle (19) with two bolts (21) and nuts (20).
- e. Apply a light coat of grease to bolts (21) and install into axle (19).
- f. Install nuts (20) onto bolts (21). Torque bolts to 800-1000 lb ft.

INSTALLATION

- a. Slide axle assembly (19) under frame of trailer.
- b. Apply a coat of grease to hanger bolts (12 and 11) and spacer washers (18).
- c. Install spacer washers (18) onto torsion bars (15).
- d. Using three people and two hydraulic jacks, push both torsion bars into hangers (17 and 16) from the underside. Aline holes using a drift pin or alinement pin.

CAUTION

Stamped arrow bolt must be used on streetside.

- e. Install eccentric bolt (11) into streetside hanger (16) with stamped arrow pointing straight up. Attach clamping plate (14) and nut (13) to streetside bolt, but do not torque at this time. Ensure clamping plate is clean of all debris.
- f. Install curbside bolt (12) into hanger (17) by screwing bolt (12) in with an impact wrench.
- g. Raise axle up to frame.
- h. Check curbside and streetside markings and install sway bar with two bolts (2) and nuts (1). Torque bolts to 650-680 lb ft using torque wrench and extender.
- i. On each side, install four lockwashers (8) and bolts (7) onto air bags and torque to 15-20 lb ft.
- j. Install each shock (6) with two bolts (5) and nuts (4) and torque to 140-150 lb ft.
- k. Connect rear center leveling valve linkage (para. 4-40).
- l. Rotate streetside hanger bolt (11) to aline arrow with mark on frame.

NOTE

Do not allow streetside bolt to rotate while torquing.

- m. Torque streetside hanger nut (13) to 740-750 lb ft.
- n. Torque curbside hanger bolt (12) to 740-750 lb ft.
- o. Weld new lock rings (9 and 10) onto hanger bolts (11 and 12).
- p. Install wheels (para. 3-5).

5-6. REAR AXLE (CONT)

- q. Remove caps and reconnect air hoses to brake chambers.
- r. Apply anti-seize tape to threads, and reconnect air hoses to air bags.

END OF TASK

5-7. BRAKE DRUMS

This task covers: a. Inspection b. Repair

INITIAL SETUP

Tools

Brake drum lathe

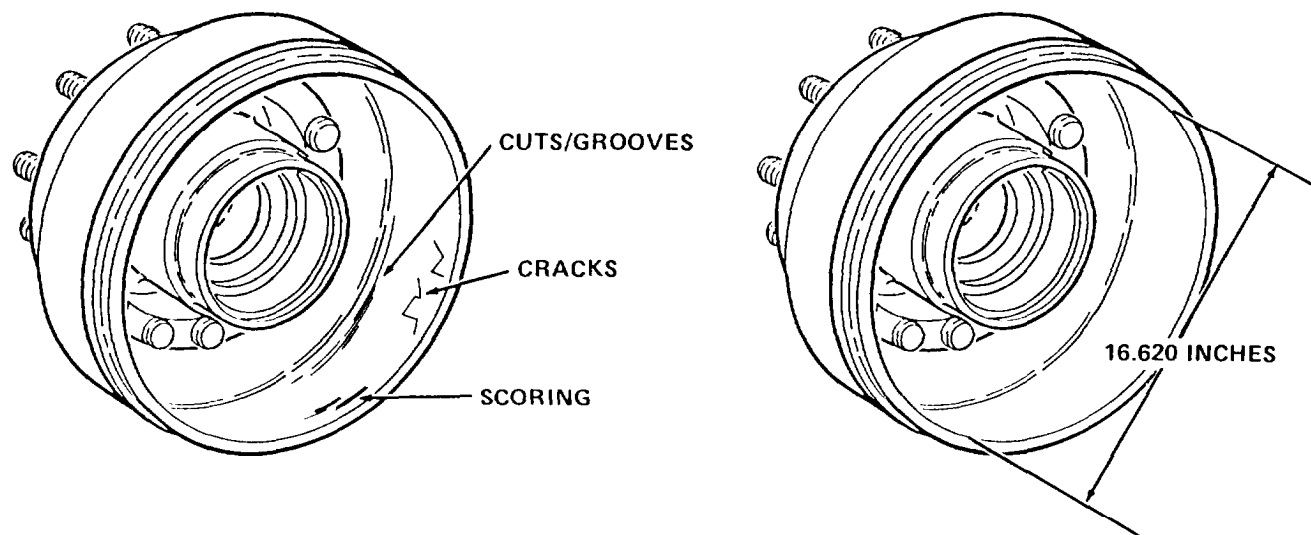
Materials/Parts

Cleaning compound (item 3, appendix E)

Wiping rag (item 12, appendix E)

INSPECTION

- a. Inspect machined surface texture of drum for grooves, cuts, scoring, surface cracks and out-of-roundness.
- b. Measure inner diameter of drum. If inside diameter of drum is greater than 16.620 inches, replace it. If inside diameter is less than 16.620 inches, and any defects are found, drum must be turned (machined).



REPAIR

- a. Install drum on lathe and turn drum, as required, until a smooth finish can be obtained. If, after a series of attempts, a smooth finish cannot be obtained, discard drum.
 - b. If a smooth finish is obtained, remeasure inside diameter. If inside diameter exceeds 16.620 inches, discard drum and replace.
 - c. If a smooth finish is obtained and maximum inside diameter is less than 16.620 inches, drum is repaired.
-

END OF TASK

Section III. PREPARATION FOR STORAGE OR SHIPMENT**5-8. PREPARATION FOR STORAGE**

- a. Open drain cocks on all three air tanks on the trailer (para. 4-22).
 - b. Cage rear brake air chambers (para. 3-6).
 - c. Perform complete lubrication (para. 3-2).
 - d. Reduce tire pressure to 20 psi (cold).
-

END OF TASK

5-9. PREPARATION FOR SHIPMENT

- a. Open drain cocks on all three air tanks on the trailer (para. 4-22).
 - b. Cage rear brake air chambers (para. 3-6).
 - c. Perform complete lubrication (para. 3-2).
 - d. Reduce tire pressure to 20 psi (cold).
-

END OF TASK

5-10. PREPARATION FOR USE AFTER STORAGE

- a. Inflate tires to 100 psi (cold) (65 psi for off-road use).
 - b. Close all three air tank drain cocks.
 - c. Uncage brake air chambers (para. 3-6).
 - d. Perform operator/crew and unit preventive maintenance services.
-

END OF TASK

APPENDIX A

REFERENCES

A-1. PUBLICATION INDEXES AND GENERAL REFERENCES

Indexes should be consulted frequently for latest changes or revisions of references given in this appendix and for new publications relating to material covered in this publication.

a. Military Publication Indexes.

Consolidated Index of Army Publications and Forms DA PAM 25-30

b. General References.

How to Prepare and Conduct Military Training FM 21-6

Military Symbols FM 21-30

A-2. FORMS

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

A-3. OTHER PUBLICATIONS

The following publications contain information pertinent to the major item material and associated equipment.

a. Camouflage.

Camouflage FM 5-20

b. Decontamination.

Chemical, Biological, and Radiological (CBR) Decontamination TM 3-220

Nuclear, Biological, and Chemical Defense FM 21-40

c. General.

Basic Cold Weather Manual FM 31-70

Manual for Wheeled Vehicle Driver FM 21-305

Driver Selection and Training (Wheeled Vehicles) FM 21-300

Northern Operations FM 31-71

Operation and Maintenance of Ordnance Material in Cold

Weather (0°F to -65°F) FM 9-207

Procedures for Destruction of Tank Automotive Equipment to

prevent Enemy Use TM 750-244-6

Visual Signals FM 21-60

A-3. OTHER PUBLICATIONS (CONT)

d. Maintenance and Repair.

Organizational Care, Maintenance and Repair of Pneumatic
Tires and Inner Tubes TM 9-2610-200-24

Description, Use, Bonding Techniques, and Properties of
Adhesives TB ORD 1032

Inspection, Care, and Maintenance of Antifriction Bearings TM 9-214

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

Welding Theory and Application TM 9-237

Tool Outfit, Hydraulic Systems Test and Repair (HSTRU) TM 9-4940-468-14

Ammunition and Explosives Standards TM 9-1300-206

Warranty Terms for Trailer, Ammunition, Heavy Expanded
Mobility, n-Ton, M989A1 TB 9-2330-383-14

APPENDIX B

MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION

B-1. GENERAL

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

b. The Maintenance Allocation Chart (MAC) in section II designates overall responsibility for the performance of maintenance functions on the identified end item or component. The implementation of the maintenance functions upon the end item or component will be consistent with the assigned maintenance functions.

c. Section III lists the special tools and test equipment required for each maintenance function as referenced from section II.

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

B-2. MAINTENANCE FUNCTIONS

Maintenance functions will be limited to and defined as follows:

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical and/or electrical characteristics with established standards through examination.

b. Test. To verify serviceability by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition, i.e., to clean (includes decontaminate, when required), to preserve, to drain, to paint or to replenish fuel, lubricants, chemical fluids or gases.

d. Adjust. To maintain, within prescribed limits, by bringing into proper or exact position or by setting the operating characteristics to specified parameters.

e. Aline. To adjust specified variable elements of an item to bring about optimum or desired performance.

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test, measuring and diagnostic equipments used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

B-2. MAINTENANCE FUNCTIONS (CONT)

g. Install. The act of emplacing, seating or fixing into position an item, part or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

h. Replace. The act of substituting a serviceable like type part, sub-assembly, or module (component or assembly) for an unserviceable counterpart.

i. Repair. The application of maintenance services¹ or other maintenance actions² to restore serviceability to an item by correcting specific damage, fault, malfunction or failure in a part, subassembly, module (component or assembly), end item or system.

j. Overhaul. That maintenance effort (service/action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards in appropriate technical publications (i.e., DMWR). Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

k. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours/miles, etc) considered in classifying Army equipments/components.

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

a. Column 1, Group Number. Column 1 lists group numbers, the purpose of which is to identify components, assemblies, subassemblies and modules with the next higher assembly.

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

c. Column 3, Maintenance Function. Column 3 lists the functions to be performed on an item listed in Column 2. (For detailed explanation of these functions, see paragraph B-2.)

d. Column 4, Maintenance Category. Column 4 specifies, by the listing of a work time figure in the appropriate subcolumn(s), the category of maintenance authorized to perform the function listed in Column 3. This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance categories, appropriate work time figures will be shown for each category.

¹ Services--inspect, test, service, adjust, aline, calibrate or replace.

² Actions--welding, grinding, riveting, straightening, facing, remachining or resurfacing.

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, troubleshooting time and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. The symbol designations for the various maintenance categories are as follows:

C	.....	Operator or crew
O	.....	Unit maintenance
F	.....	Direct support maintenance
H	.....	General support maintenance
D	.....	Depot maintenance

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

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

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

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

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

c. Column 3, Nomenclature. Name or identification of the tool or test equipment.

d. Column 4, National Stock Number. The National Stock Number of the tool or test equipment.

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

B-5. EXPLANATION OF COLUMNS IN REMARKS

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

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

Section II. MAINTENANCE ALLOCATION CHART

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category				(5) Tools and Equipment	(6) Remarks
			Unit		F	H	D	
06	ELECTRICAL SYSTEM							
0609	LIGHTS							
	LIGHTS	REPAIR INSPECT REPLACE	.1	.2 .1 .3			7	
0613	HULL OR CHASSIS WIRING HARNESS							
	HARNESS, WIRING	INSPECT REPLACE REPAIR	.2	.3 .3 .1			7,26 7,26	
10	FRONT AXLE							
1000	FRONT AXLE ASSEMBLY							
	AXLE ASSEMBLY	INSPECT REPLACE SERVICE	.2	1.0	9.0		7,19 5,8,12,23 1,3,7,8,11,12, 15,16,17,18,20, 23,27,28,29,30, 31,32,33,34,35, 36,37,38,39	
1004	STEERING AND LEANING WHEEL MECHANISM							
	KING PIN	REPLACE		1.0			1,3,7,8,11,12, 15,16,17,18,20, 23,42	
11	REAR AXLE							
1100	REAR AXLE ASSEMBLY							
	AXLE ASSEMBLY	INSPECT REPLACE		1.0	6.0		1,5,7,11,15,17, 18,20,27,28,29, 30,31,32,33,34, 15,36,37,38,39	
12	BRAKES							
1202	SERVICE BRAKES							
	SERVICE BRAKE ASSY	INSPECT ADJUST REPLACE REPAIR	.1	.5 2.2 1.9			3,7,25 3,7,11,15,17, 18,20 3,7,11,15,17, 18,20	

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category					(5) Tools and Equipment	(6) Remarks
			Unit		F	H	D		
			c	o					
1206	BRAKE SHOE ASSEMBLY	INSPECT REPLACE		.5 1.4				3,7 3,7,17,18,20	
	CAMSHAFT ASSEMBLY	REPLACE SERVICE		1.0 .2				3,7,17,18,20	
	MECHANICAL BRAKE SYSTEM								
	SLACK ADJUSTER	ADJUST REPLACE SERVICE		.1 .5 .2				7,11	
1208	AIR BRAKE SYSTEM								
	AIR CLEANER	INSPECT REPLACE REPAIR		.1 .5 .5				7 7,12	
	BRAKE AIR CHAMBER	REPLACE		.5				7	
	AIR HOSE & FITTINGS	REPLACE REPAIR		.5 1.0				7	
	AIR RESERVOIRS	SERVICE REPLACE	.2	.9				7	
	VALVE, RELAY	REPLACE		.5				2,7	
	VALVE , BRAKE CNTRL	REPLACE		.7				7	
	MULTIFUNCTION VALVE	REPLACE		.8				7	
13	WHEEL AND TRACKS								
1311	WHEEL ASSEMBLY								
	WHEEL ASSEMBLY	REPLACE	.7					7	
	HUB AND DRUM	INSPECT REPLACE REPAIR		1.7 2.4 1.0	1.6			3,7,17,18,20 3,4,7,17,18,20 3,4,7,17,18,20	
	BEARINGS	ADJUST SERVICE INSPECT REPLACE		.8 2.4 .3 1.4				3,18 3,7,17,18,20 3,4,7,11,17,18, 20	
1313	TIRES , TUBES , TIRE CHAINS								
	TIRES	SERVICE REPLACE REPAIR	.2	2.5 .8				7 7 7	

(1)	(2)	(3)	(4)				(5)	(6)	
Group Number	Component/Assembly	Maintenance Function	Unit		Maintenance Category			Tools and Equipment	Remarks
			C	O	F	H	D		
14	STERRING								
1401	MECHANICAL STEERING GEAR ASSEMBLY								
	PIVOT ASSEMBLY	SERVICE REPLACE REPAIR	.2	3.0 3.0 .6				1,3,7,13,14 3,7,39	
	TIE RODS	SERVICE ADJUST REPLACE		.2 1.5 1.5				7 1,3,7,13,18	
15	FRAME TOWING ATTACHMENT AND DRAWBARS								
1501	FRAME ASSEMBLY								
	FRAME	INSPECT REPAIR	.2	2.0 .3				3,7,17,18,20 7,9,10,21,22	A
	BUMPERS	REPLACE		.1				7,15	
	POD STOPS	REPLACE		.2				6,7	
	SPLASH GUARD	REPLACE		.1				7	
	SAFETY CHAIN	REPLACE		.2				18	
	STORAGE BOX COVER	REPAIR		15				7	
	FIRE EXTINGUISHER BRACKET	REPLACE		.2				21,22	
	FOLDABLE STEPS	REPLACE		.1				7	
1503	PINTLES AND TOWING ATTACHMENTS								
	TOWBAR ASSEMBLY	INSPECT REPLACE SERVICE	11 12	.4				7,13,14,40,41	
16	SPRINGS AND SHOCK ABSORBERS								
1601	SPRINGS								
	AIR BAG SUSPENSION	INSPECT REPLACE	.1	.2 1.3				3,7	
	LEVELING VALVES	REPLACE		.5				7	

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category				(5) Tools and Equipment	(6) Remarks	
			Unit		F	H			D
			C	O					
1604	SHOCK ABSORBER EQUIPMENT								
	SHOCK ABSORBERS	INSPECT REPLACE	.1	.3			7,23,32		
1605	TORQUE, RADIUS, AND STABILIZER RODS								
	SWAY BARS	REPLACE		.5			7,32		
	TORSION BARS	REPLACE			3.7		7,20,33		
18	BODY CAB HOOD AND HULL								
1801	BODY CAB HOOD AND HULL ASSEMBLIES								
	SIDE PANELS	SERVICE INSPECT REPLACE REPAIR	.2 .1	.2 .2				A	
1805	FLOORS SUBFLOORS AND RELATED COMPONENTS								
	FLOORBOARDS	INSPECT REPLACE	.2	10.0			6,7,22		
2202	REFLECTORS	REPLACE		.1			7		
2210	DATA PLATES	REPLACE		.3			7,21		

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS

(1) Reference Code	(2) Maintenance Category	(3) Nomenclature	(4) National Stock Number	(5) Tool
1	O,F	TIE ROD SEPARATOR		A203
2	O	WRENCH, STRAP		BT-BS-601
3	O,F	STANDS, JACK		SW25482
4	O,F	ARBOR PRESS TOOL		YA621
5	F	JACK, TRANSMISSION		YA876
6	O,F	TORX DRIVER SET		212FTXY
7	O,F	TOOL KIT MECH	4910-00-754-0650	-
8	F	KING PIN PRESS	4940-00-125-7906	-
9	O	DRIFT, PUNCH	5110-00-234-1949	-
10	O	SCRAPER	5110-01-017-9440	-
11	O,F	PULLER	5120-00-030-7942	-
12	O,F	RATCHET	5120-00-221-7968	-
13	O	PLIER	5120-00-223-7396	-
14	O	WRENCH 2"	5120-00-224-3109	-
15	O,F	SOCKET 15/16	5120-00-243-7343	-
16	F	SOCKET 11/16	5120-00-243-7346	-
17	O,F	WRENCH 2-3/4	5120-00-293-0674	-
18	C,O,F	PLIERS, DIA CUT	5120-00-537-3375	-
19	O	MIRROR, INSPECTION	5120-00-618-6901	-
20	O,F	DRIFT, PUNCH	5120-01-007-8364	-
21	O	RIVET PNEUMATIC	5130-00-595-8339	-
22	O	DRILL, ELEC 3/8	5130-00-935-7354	-
23	F	SOCKET 2-1/16	5130-01-166-6465	-
24	O	TK-101/G TOOL KIT	5180-00-064-5178	-
25	O	GAGE, FEELER	5210-00-131-9005	-

(1) Reference Code	(2) Maintenance Category	(3) Nomenclature	(4) National Stock Number	(5) Tool
26	0	TOOL KIT, ELECTRICAL CONNECTOR REPAIR	51800-00-876-9336	-
27	F	WRENCH, OPEN END	5120-00-184-8739	-
28	F	WRENCH, OPEN END	5120-00-449-8171	-
29	F	WRENCH, OPEN END	5120-00-081-9100	-
30	F	WRENCH, SOCKET 1-7/8	5130-00-227-5053	-
31	F	WRENCH, SOCKET SET	5120-00-081-2309	-
32	O,F	MULTIPLIER, TORQUE	5120-01-122-9393	-
33	F	TORCH, CUTTING		-
34	F	WELDER, ARC		-
35	F	JACK STANDS (4 EA)	7910-00-251-8013	-
36	F	BAR, PINCH	5120-00-224-1384	-
37	F	HAMMER HAND, SLEDGE	5120-00-900-6097	-
38	F	GOGGLES, INDUSTRIAL	4240-00-269-7912	-
39	O,F	JACK, DOLLY TYPE	4910-00-289-7233	-
40	0	WRENCH, OPEN END 2-3/16	5120-00-293-1531	-
41	0	WRENCH, OPEN END 1-1/4	5120-00-277-2322	-
42	0	INSERTER, BEARING AND BUSHING	5120-01-296-3099	-

Section IV. REMARKS

(1) Reference Code		(2) Remarks
A		MAINTENANCE LEVEL DEPENDS ON EXTENT OF REPAIR

APPENDIX C

COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS

Section I. INTRODUCTION

C-1. SCOPE

This appendix lists components of end item and basic issue items for the trailer 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. This listing is for informational purposes only, and is not authority to requisition replacements. These items are part of the end item, but are removed and separately packaged for transportation or shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Illustrations are furnished to assist you in identifying the items.

b. Section III. Basic Issue Items. These are the minimum essential items required to place the trailer in operation, to operate it, and to perform emergency repairs. Although shipped separately, packaged BII must be with the trailer during operation and whenever it is transferred between property accounts. The illustrations will assist you with hard-to-identify items. This manual is your authority to request/requisition replacement BII, based on TOE/MTOE authorization of the end item.

C-3. EXPLANATION OF COLUMNS

The following provides an explanation of columns found in the tabular listings:

a. Column (1) - Illustration Number (Illus Number). This column indicates the number of the illustration in which the item is shown.

b. Column (2) - National Stock Number. This column indicates the national stock number assigned to the item and will be used for requisitioning purposes.

c. Column (3) - Description. This column indicates the national item name and, if required, a minimum description to identify and locate the item. The last line for each item indicates the FSCM (in parentheses) followed by the part number.

d. Column (4) - Unit of Measure (U/M). This column indicates the measure used in performing the actual operational/maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in., pr).

e. Column (5) - Quantity Required (Qty Rqr). This column indicates the quantity of the item authorized to be used with/on the equipment.

Section II. COMPONENTS OF END ITEM

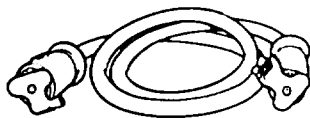
(1) Illus Number	(2) National Stock Number	(3) Description FSCM and Part Number	Usable On Code	(4) U/M	(5) Qty Rqr
		NONE			

Section III. BASIC ISSUE ITEMS

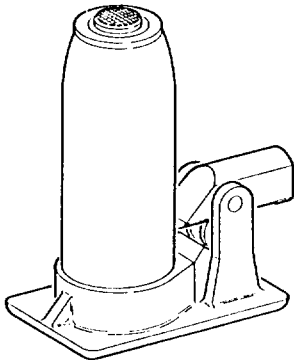
(1) Illus Number	(2) National Stock Number	(3) Description FSCM and Part Number	Usable On Code	(4) U/M	(5) Qty Rqr
C-1	5995-00-038-3914	Intervehicular Cable (96521) 490630		ea	1
C-2	TBD	8-Ton Hydraulic Jack and Handle (36251) 93228		ea	1
C-3	TBD	5-Ton Vehicle Stand (36251) 93516		ea	1
C-4	TBD	Mud Plate (98255) SW25475		ea	1
C-5	TBD	Cap Assembly (98255) SW25471		ea	1
C-6	5120-00-203-6480	Lug Wrench (75204) TR98		ea	1
C-7	5120-01-134-9422	Wrench Handle (75204) TR5		ea	1
C-8	TBD	Fire Extinguisher (54905) 403T		ea	1
C-9	2540-01-052-6234	Trailer Wheel Chock (96906) MS52127-2		ea	2
C-10	5340-00-682-1508	Padlock (96906) MS35647-3		ea	1
C-11	TBD	Corner Protectors		ea	16
C-12	5340-01-204-3009	Tiedown Straps (31272) 45464-10		ea	8

Section III. BASIC ISSUE ITEMS - CONT

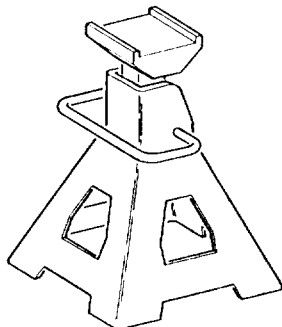
(1) Illus Number	(2) National Stock Number	(3) Description FSCM and Part Number	Usable On Code	(4) U/M	(5) Qty Rqr
C-13	TBD	Lug Wrench Extension Bar (98255) SW26621		ea	1
C-14	TBD	Cap Assembly (98255) SW29454		ea	1



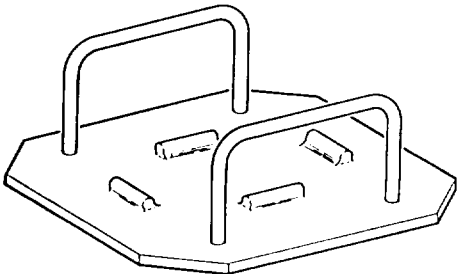
C-1



C-2



C-3



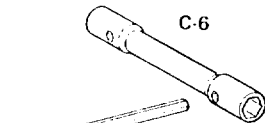
C-4



C-5



C-14

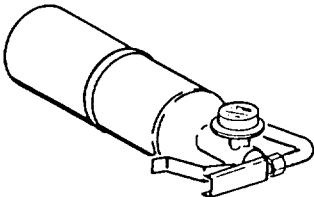


C-6

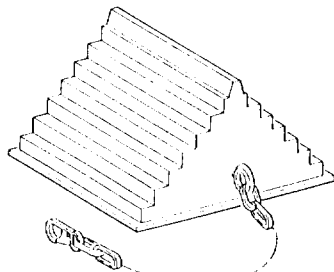
C-7



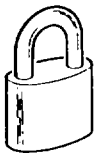
C-13



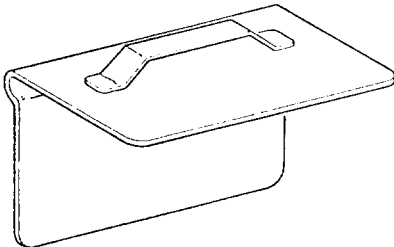
C-8



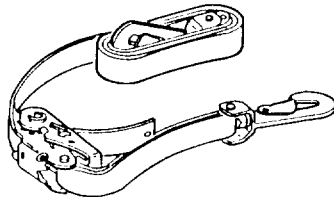
C-9



C-10



C-11



C-12

APPENDIX D

ADDITIONAL AUTHORIZATION LIST

Section I. INTRODUCTION

D-1. SCOPE

This appendix lists additional items you are authorized for the support of the trailer.

D-2. GENERAL

This list identifies items that do not have to accompany the trailer and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

D-4. EXPLANATION OF LISTING

National stock numbers, descriptions, and quantities are provided to help you identify and request the additional items you require to support this equipment. The items are listed in alphabetical sequence by item name under the type document (i.e., CTA, MTOE, TDA, or JTA) which authorizes the items(s) to you*

Section II. ADDITIONAL AUTHORIZATION LIST

(1) National Stock Number	(2) Description FSCM & Part Number Usable On Code	(3) U/M	(4) Qty Auth
4930-01-028-1442	(10001) 3133414 GUN, GREASE	EA	1

APPENDIX E

EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

E-1. SCOPE

This appendix lists expendable supplies and materials you will need to operate and maintain the trailer. These items are authorized to you by CTA 50-950, Expendable Items (Except Medical, Class V, Repair Parts and Heraldic Items).

E-2. EXPLANATION OF COLUMNS

a. Column (1) - Item Number. The item number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., "Cleaning compound, item 3, appendix E")

b. Column (2) - Level. Column (2) identifies the lowest level of maintenance that requires the listed item:

- C - operator/crew maintenance
- O - unit maintenance
- F - direct support maintenance
- H - general support maintenance

c. Column (3) - National Stock Number. Column (3) is the National Stock Number assigned to the item; use it to request or requisition the item.

d. Column (4) - Description. Column (4) indicates the federal item name and, if required, a description to identify the item. The last line for each item indicates the Federal Supply Code for Manufacturer (FSCM) in parentheses followed by the part number.

e. Column (5) - Unit of Measure (U/M). Column (5) indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in., pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
1	0	8040-00-221-3811	ADHESIVE, RUBBER BASE: (80244) MMM-A-1617 2 oz bottle	oz
2	F		CAULKING COMPOUND, BUTYL: (98255) TT-S-001657	tu
3	C	6850-00-597-9765	CLEANING COMPOUND SOLVENT: (81349) MIL-C-18718 1 gal can	gl
4	F	5350-00-221-0872	CLOTH, ABRASIVE (CROCUS): (81348) P-C-458 50-sheet package	sh
5	F		COATING, ALIPHATIC POLY- URETHANE, CHEMICAL AGENT RESISTANT: Forest green (81349) MIL-C-46168A(MR)	gl
6	0	6850-00-281-1985	DRY CLEANING SOLVENT: (81348) A-A-711, type I 1 gal can	gl
7	C	9150-00-065-0029 9150-00-935-1017 9150-00-190-0904 9150-00-190-0907	GREASE, AUTOMOTIVE AND ARTILLERY: GAA (81349) MIL-G-10924 2-1/4 oz tube 14 oz cartridge 1.75 lb can 35 lb can	oz oz lb lb
8	0	9150-01-035-5390	OIL, LUBRICATING (81349) MIL-L-2105	qt
9	C	9150-00-189-6727 9150-00-186-6681	OIL, LUBRICATING, INTERNAL COMBUSTION ENGINE: OE (81349) MIL-L-2104 HDO10, 1 qt can HD030, 1 qt can	qt qt
10	0	9150-00-402-4478 9150-00-402-2372	OIL, LUBRICATING INTERNAL COMBUSTION ENGINE: subzero (81349) MIL-L-46167 1 qt can 5 gal can	qt gl

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
11	F	8010-00-264-8866	PRIMER COATING, EPOXY: (81349) MIL-P-52192	k t
12	C	7920-00-205-1711	RAG, WIPING: Cotton, white, bleached, 50 lb bale (81349) DDD-R-30	be
13	0	8030-00-058-5398	SEALING, LOCKING, AND RETAINING COMPOUND, GRADE B: (05972) NIL-S-22473 2 cc tube	t u
14	0	5975-00-570-9598	STRAP, TIEDOWN, ELECTRICAL COMPONENTS: (96906) MS 3367-7-9	hd
15	0	8135-00-292-2342	TAG: TYPE A, GRADE 3, 2-3/4 X 1-3/8 in. (81348) UU-T-81	bx
16	0	8030-00-889-3534	TAPE, ANTI-SEIZE: (81349) MIL-T-27730	ea
17	F	8010-00-018-8079	THINNER, ALIPHATIC POLYURETHANE COATING: 5 gal can (81349) MIL-T-81772	cn

APPENDIX F
ORGANIZATIONAL, DIRECT SUPPORT, AND
GENERAL SUPPORT MAINTENANCE
REPAIR PARTS AND SPECIAL TOOLS LIST
SECTION I. INTRODUCTION

1. Scope

This RPSTL lists and authorizes spares and repair parts; special tools; special test, measurement, and diagnostic equipment (TMDE); and other special support equipment required for performance of organizational, direct support, and general support maintenance of the Heavy Expanded Mobility Ammunition Trailer (HEMAT). It authorizes the requisitioning, issue, and disposition of spares, repair parts and special tools as indicated by the source, maintenance and recoverability (SMR) codes.

2. General

In addition to Section I, Introduction, this Repair Parts and Special Tools List is divided into the following sections:

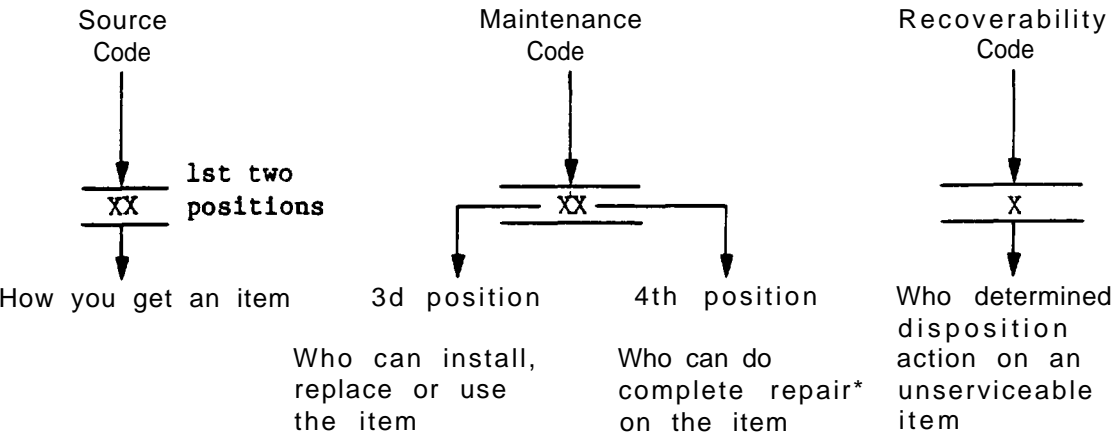
a. Section II - Repair Parts List. A list of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. The lists also includes parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in ascending alphanumeric sequence, with the parts in each group listed in ascending figure and item number sequence. Bulk materials are listed by item name in FIG BULK at the end of the section. Repair parts kits or sets are listed separately in their own functional group within Section II. Repair parts for repairable special tools are also listed in the section.

b. Section III - Special Tools List. A list of special tools, special TMDE, and other special support equipment authorized by this RPSTL (as indicated by Basis of Issue (BOI) information in DESCRIPTION AND USABLE ON CODE (UOC) column) for the performance of maintenance.

c. Section IV - National Stock Number and Part Number Index. A list, in National item identification number (NIIN) sequence, of all National stock numbered items appearing in the listings, followed by a list in alphanumeric sequence of all part numbers appearing in the listing National stock numbers and part numbers are cross-referenced to each illustration figure and item number appearance.

3. Explanation of Columns (Sections II and III).

- a. ITEM NO. (Column (1)). Indicates the number used to identify items called out in the illustration.
- b. SMR CODE (Column (2)). The Source, Maintenance, and Recoverability (SMR) code is a 5-position code containing supply/requisitioning information, maintenance category authorization criteria, and disposition instruction, as shown in the following breakout:



*Complete Repair: Maintenance capacity, capability, and authority to perform all corrective maintenance tasks of the "Repair" function in a use/user environment in order to restore serviceability to a failed item.

(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 follows:

Code	Explanation
<div>PA PB PC** PD PE PF PG</div>	<div>Stocked items; use the applicable NSN to request/requisition items with these source codes. They are authorized to the category indicated by the code entered in the 3d position of the SMR code.</div> <div>**NOTE: Items coded PC are subject to deterioration.</div>
<div>KD KF KB</div>	<div>Items with these codes are not to be requested/requisitioned individually. They are part of a kit which is authorized to the maintenance category indicated in the 3d position of the SMR code. The complete kit must be requisitioned and applied.</div>

Code	Explanation
<div> <div>MO- (Made at erg/ AVUM Level)</div> <div>MF- (Made at DS/ AVUM Level)</div> <div>MH- (Made at GS Level)</div> <div>ML- (Made at specialized Repair Act (SRA))</div> <div>MD- (Made at Depot)</div> </div>	Items with these codes are not to be requested/requisitioned individually. They must be made from bulk material which 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 3d position code of the SMR code, but the source code indicates it is made at a higher level, order the item from the higher level of maintenance.
<div> <div>AO- (Assembled by org/AVUN Level)</div> <div>AF- (Assembled by DS/AVIM Level)</div> <div>AH- (Assembled by GS Category)</div> <div>AL- (Assembled by SRA)</div> <div>O (Assembled by Depot)</div> </div>	Items with these codes are not to be requested/requisitioned individually. The parts that make up the assembled item must be requisitioned or fabricated and assembled at the level of maintenance indicated by the source code. If the 3d position code of the SMR code authorizes you to replace the item, but the source code indicates the item is assembled at a higher level, order the item from the higher level of maintenance.

XA - Do not requisition an "XA"-coded item. Order its next higher assembly.
(Also, refer to the NOTE below.)

XB - If an "XB" item is not available from salvage, order it using the FSCM and part number given.

XC - Installation drawing, diagram, instruction sheet, field service drawing, that is identified by manufacturer's part number.

XD - Item is not stocked. Order an "XD"-coded item through normal supply channels using the FSCM and part number given, if no NSN is available.

NOTE: Cannibalization or controlled exchange, when authorized, may be used as a source of supply for items with the above source codes, except for those source coded "XA" or those aircraft support items restricted by requirements of AR 700-42.

(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.

Code	Application/Explanation
C	-Crew or operator maintenance done within organizational or aviation unit maintenance.
O	-Organizational or aviation unit category can remove, replace, and use the item.
F	-Direct support or aviation intermediate level can remove, replace, and use the item.
H	-General support level can remove, replace, and use the item.
L	-Specialized repair activity can remove, replace, and use the item.
D	-Depot level can remove, replace, and use the item.

(b) The maintenance code entered in the fourth position tells whether or not the item is to be repaired and identifies the lowest maintenance level with the capability to do complete repair (i.e., perform all authorized repair functions.) (NOTE: Some limited repair may be done on the item at a lower level of maintenance, if authorized by the Maintenance Allocation Chart (MAC) and SMR codes.) This position will contain one of the following maintenance codes.

Code	Application/Explanation
O	-Organizational or (aviation unit) is the lowest level that can do complete repair of the item.
F	-Direct support or aviation intermediate is the lowest level that can do complete repair of the item.
H	-General support is the lowest level that can do complete repair of the item.
L	-Specialized repair activity (designate the specialized repair activity) is the lowest level that can do complete repair of the item.

Code	Application/Explanation
D	-Depot is the lowest level that can do complete repair of the item.
Z	-Nonreparable. No repair is authorized.
B	-No repair is authorized. (no parts or special tools are authorized for the maintenance of a "B" coded item). However, the item may be reconditioned by adjusting, lubricating, etc., at the user level.

(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:

Recoverability Codes	Application/Explanation
z	-Nonreparable item. When unserviceable, condemn and dispose of the item at the level of maintenance shown in 3d position of SMR Code.
o	-Reparable item. When uneconomically reparable, condemn and dispose of the item at organizational or aviation unit level.
F	-Reparable item. When uneconomically reparable, condemn and dispose of the item at the direct support or aviation intermediate level.
H	-Reparable item. When uneconomically reparable, condemn and dispose of the item at the general support level.
D	-Reparable item. When beyond lower level repair capability, return to depot. Condemnation and disposal of item not authorized below depot level.
L	-Reparable item. Condemnation and disposal not authorized below specialized repair activity (SRA).
A	-Item requires special handling or condemnation procedures because of specific reasons (e.g., precious metal content, high dollar value, critical material, or hazardous material). Refer to appropriate manuals/directives for specific instructions.

c. FSCM (Column (3)). The Federal Supply Code for Manufacturer (FSCM) is a 5-digit numeric code which is used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

d. PART NUMBER (Column (4)). Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirements to identify an item or range of items.

NOTE: When you use a NSN to requisition an item, the item you receive may have a different part number from the part ordered.

e. DESCRIPTION AND USABLE ON CODE (UOC) (Column (5)). This column includes the following information:

(1) The Federal item name and, when required, a minimum description to identify the item.

(2) The physical security classification of the item is indicated by the parenthetical entry (insert applicable physical security classification abbreviation, e.g., Phy Sec C1 (C) -Confidential, Phy Sec C1 (S) -Secret, Phy Sec C1 (T) Top Secret).

(3) Items that are included in kits and sets are listed below the name of the kit or set.

(4) Spare/repair parts that make up an assembled item are listed immediately following the assembled item line entry.

(5) Part numbers for bulk materials are referenced in this column in the line item entry for the item to be manufactured/fabricated.

(6) When the item is not used with all serial numbers of the same model, the effective serial numbers are shown on the last line(s) of the description (before UOC).

(7) The usable on code, when applicable (see paragraph 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, exceeds density spread indicated in the basis of issue, the total authorization is increased proportionately.

(9) The statement "END OF FIGURE" appears just below the last item description in Column 5 for a given figure in both Section II and Section III.

f. QTY (Column (6)). The QTY (quantity per figure column) indicates the quantity of the item used in the breakout shown on the illustration figure, which is prepared for a functional group, subfunctional group, or an assembly. A "V" appearing in this column in lieu of a quantity indicates that the quantity is variable and the quantity may vary from application to application.

4. Explanation of Columns (Sect. IV).

a. NATIONAL STOCK NUMBER (NSN) INDEX.

(1) STOCK NUMBER column. This column lists the NSN by National item identification number (NIIN) sequence. The NIIN consists of the last nine digits of the NSN (i.e., 5305-01-674-1467). When using this column to locate an item, ignore the first 4 digits of the NSN. However, the complete NSN should be used when ordering items by stock number.

(2) FIG. column. This column lists the number of the figure where the item is identified/located. The figures are in numerical order in Section II and Section III.

(3) ITEM column. The item number identifies the item associated with the figure listed in the adjacent FIG. column. This item is also identified by the NSN listed on the same line.

b. PART NUMBER INDEX. Part numbers in this index are listed by part number in ascending alphanumeric sequence (i.e., vertical arrangement of letter and number combination which places the first letter or digit of each group in order A through Z, followed by the numbers 0 through 9 and each following letter or digit in like order).

(1) FSCM column. The Federal Supply Code for Manufacturer (FSCM) is a 5-digit numeric 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 FSCM 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 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.

5. Special Information. Use the following subparagraphs as applicable:

a. USABLE ON CODE. The usable on code appears in the lower left corner of the Description column heading. Usable on codes are shown as "UOC:" in the Description Column (justified left) on the first line applicable item description/nomenclature. Uncoded items are applicable to all models. Identification of the usable on codes used in the RPSTL are:

<u>Code</u>	<u>Used On</u>
990	Model M989A1

b. FABRICATION INSTRUCTIONS. Bulk materials required to manufacture items are listed in the Bulk Material Functional Group of this RPSTL. Part numbers for bulk materials are also referenced in the description column of the line item entry for the item to be manufactured/fabricated. Detailed fabrication instructions for items source codes to be manufactured or fabricated are found in the maintenance portion of this manual.

c. ASSEMBLY INSTRUCTION. Detailed assembly instructions for items source coded to be assembled from component spare/repair parts are found in the maintenance portion of this manual. Items that make up the assembly are listed immediately following the assembly item entry or reference is made to an applicable figure.

d. KITS. Line item entries for repair parts kits appear in a group in Section II (see table of contents).

e. INDEX NUMBERS. Items which have the word BULK in the figure column will have an index number shown in the item number column. This index number is a cross-reference between the National Stock Number/Part Number Index and the bulk material list in Section II.

6. How to Locate Repair Parts

a. When National Stock Number or Part Number is Not Known.

(1) First. Using the table of contents, determine the assembly group or subassembly group to which the item belongs. This is necessary since figures are prepared for assembly groups and subassembly groups, and listings are divided into the same groups.

(2) Second. Find the figure covering the assembly group or subassembly group to which the item belongs.

(3) Third. Identify the item on the figure and note the item number.

(4) Fourth. Refer to the Repair Parts List for the figure to find the part number for the item number noted on the figure.

(5) Fifth. Refer to the Part Number Index to find the NSN, if assigned.

b. When National Stock Number or Part Number is Known:

(1) First. Using the Index of National Stock Numbers and Part Numbers, find the pertinent National Stock Number or Part Number. The NSN index is in National Item Identification Number (NIIN) sequence (see 4.1(1)). The part numbers in the Part Number index are listed in ascending alphanumeric sequence (see 4.b). Both indexes cross-reference you to the illustration figure and item number of the item you are looking for.

(2) Second. After finding the figure and item number, verify that the item is the one you're looking for, then locate the item number in the repair parts list for the figure.

7. Abbreviations. (Abbreviations must be applicable to specific RPSTL and not listed in MIL-STD-12).

Abbreviations

NIIN

Explanation

National Item Identification Number (consists of the last 9 digits of the NSN)

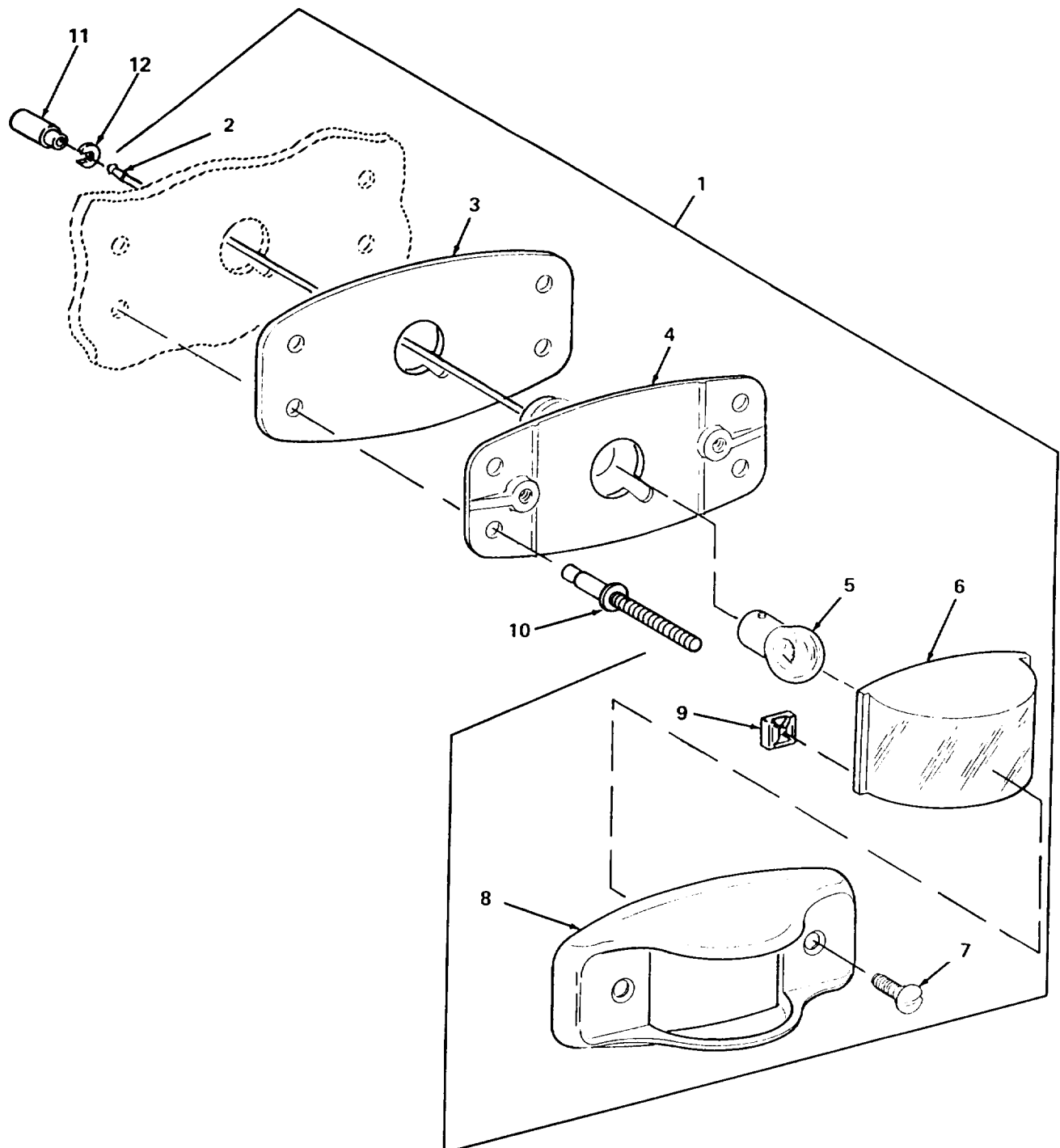


Figure 1. Clearance Light

(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					
FIGURE 1. CLEARANCE LIGHT					
1	PAOOO	96906	MS35423-2	LIGHT,MARKER,CLEARA RED	
1	PAOOO	96906	MS35423-1	LIGHT,MARKER,CLEARA AMBER	4
2	PAOZA	96906	MS 27148-2	.CONTCT,ELECTRICAL	9
3	PAOZO	73331	5939841	.FELT, MECHANICAL,PRE	1
4	PAOZZ	73331	5939831	.PLATE,MOUNTING,LAMP	1
5	PAOZZ	96906	MS15570-1251	.LAMP,INCANDESCENT	1
6	PAOZZ	96906	MS35421-2	.LENS,LIGHT RED	1
6	PAOZZ	96906	MS35421-1	.LENS,LIGHT AMBER	1
7	PAOZZ	96906	MS35206-261	.SCREW,MACHINE	2
8	PAOZZ	733331	5939830	.RETAINER,LENS	1
9	PAOZZ	78553	C1059-014-1	.PUSH ON NUT	1
10	PAOZZ	98255	MGLP-R6-7	RIVET,BLIND STEEL	36
11	PAOZZ	19207	8338566	SHELL,ELECTRICAL CO	9
12	PAOZZ	19207	8338567	WASHER,SLOTTED	9

END OF FIGURE

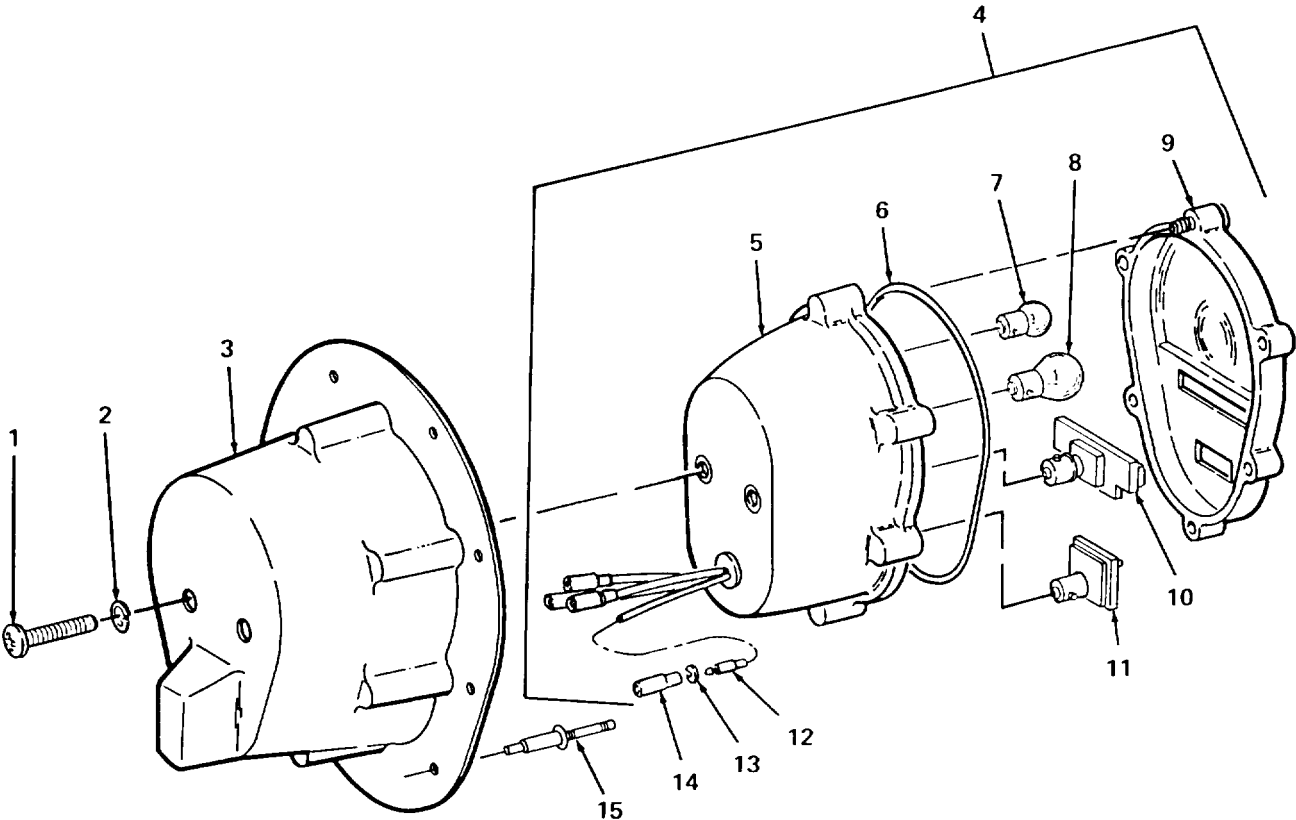


Figure 2. Composite Marker Light

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP:0609 LIGHTS					
FIGURE 2. CLEARANCE MARKER LIGHT.					
1	PAOZZ	96906	MS35206-308	SCREW,MACHINE	4
2	PAOZZ	96906	MS35338-46	WASHER,LOCK	4
3	PAOZZ	19207	12338711	BRACKET	2
4	PAOOO	19207	MS52125-2	STOP LIGHT-TAILLIGH	2
5	PAOZZ	19207	11639520	.BODY ASSEMBLY	1
6	PAOZZ	19207	11639515-2	.GASKET	1
7	PAOZZ	96906	MS15570-623	.LAMP,INCANDESCENT	1
8	PAOZZ	96906	MS35478-1683	.LAMP,INCANDESCENT	1
9	PAOZZ	19207	11639535	.LENS,LIGHT	1
10	PAOZZ	19207	12360850-1	.LIGHT,MARKER,CLEARA RED	1
11	PAOZZ	19207	12360870-2	.STOP LIGHT,VEHICULA	1
12	PAOZA	96906	MS27148-2	.CONTACT,ELECTRICAL	4
13	PAOZZ	19207	8338566	.SHELL,ELECTRICAL CO	4
14	PAOZZ	19207	8338567	.WASHER,SLOTTED	4
15	PAOZZ	11815	BAPKTR-66	RIVET,SOLID	16

END OF FIGURE

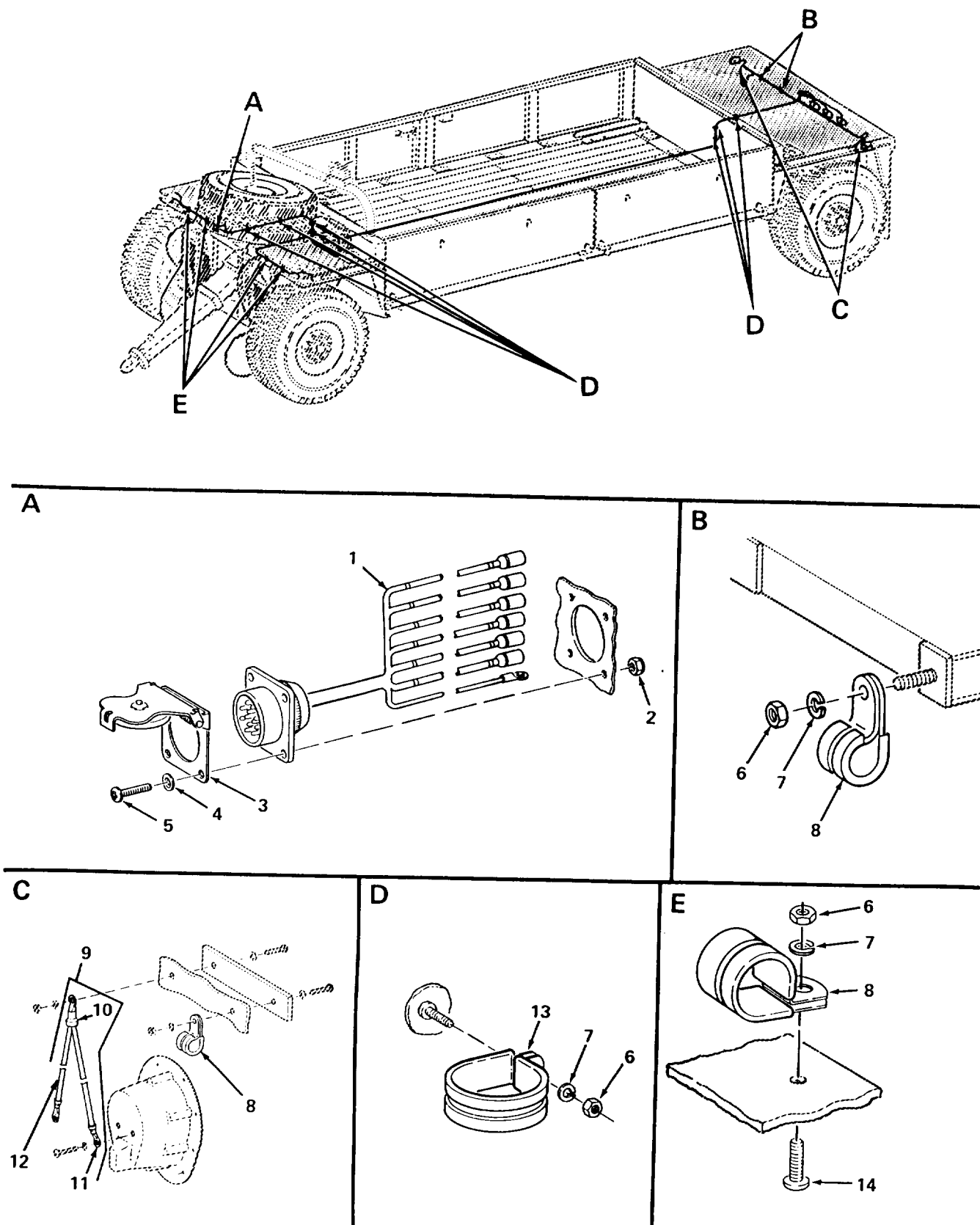


Figure 3. Electrical Installation

(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:0613 HULL OR CHASSIS WIRING
HARNESS

FIGURE 3. ELECTRICAL INSTALLATION.

1	PAOZZ	98255	SW25292	LEAD ASSEMBLY,ELECT	1
2	PAOZZ	96906	MS51922-1	NUT,SELF-LOCKING,HE	4
3	PAOZZ	19207	7731428	COVER,ELECTRICAL CO	1
4	PAOZZ	96906	MS27183-10	WASHER,FLAT	4
5	PAOZZ	96906	MS35206-282	SCREW,MACHINE	4
6	PAOZZ	96906	MS35649-202	NUT,PLAIN,HEXAGON	20
7	PAOZZ	96906	MS35338-43	WASHER,LOCK	20
8	PAOZZ	96906	MS21333-73	CLAMP,LOOP	8
9	PAOOO	98255	SW31802	WIRE ASSEMBLY,GROUN	1
10	PAOZZ	96906	MS25036-112	.TERMINAL,LUG	1
11	PAOZZ	96906	MS25036-110	.TERMINAL,LUG	2
12	PAOZZ	98255	SW25138-1	.WIRE ASSEMBLY,GROUN 12 IN	1
13	PAOZZ	96906	MS21919WCG28	CLAMP,LOOP	14
14	PAOZZ	96906	MS35206-266	SCREW,MACHINE	4

END OF FIGURE

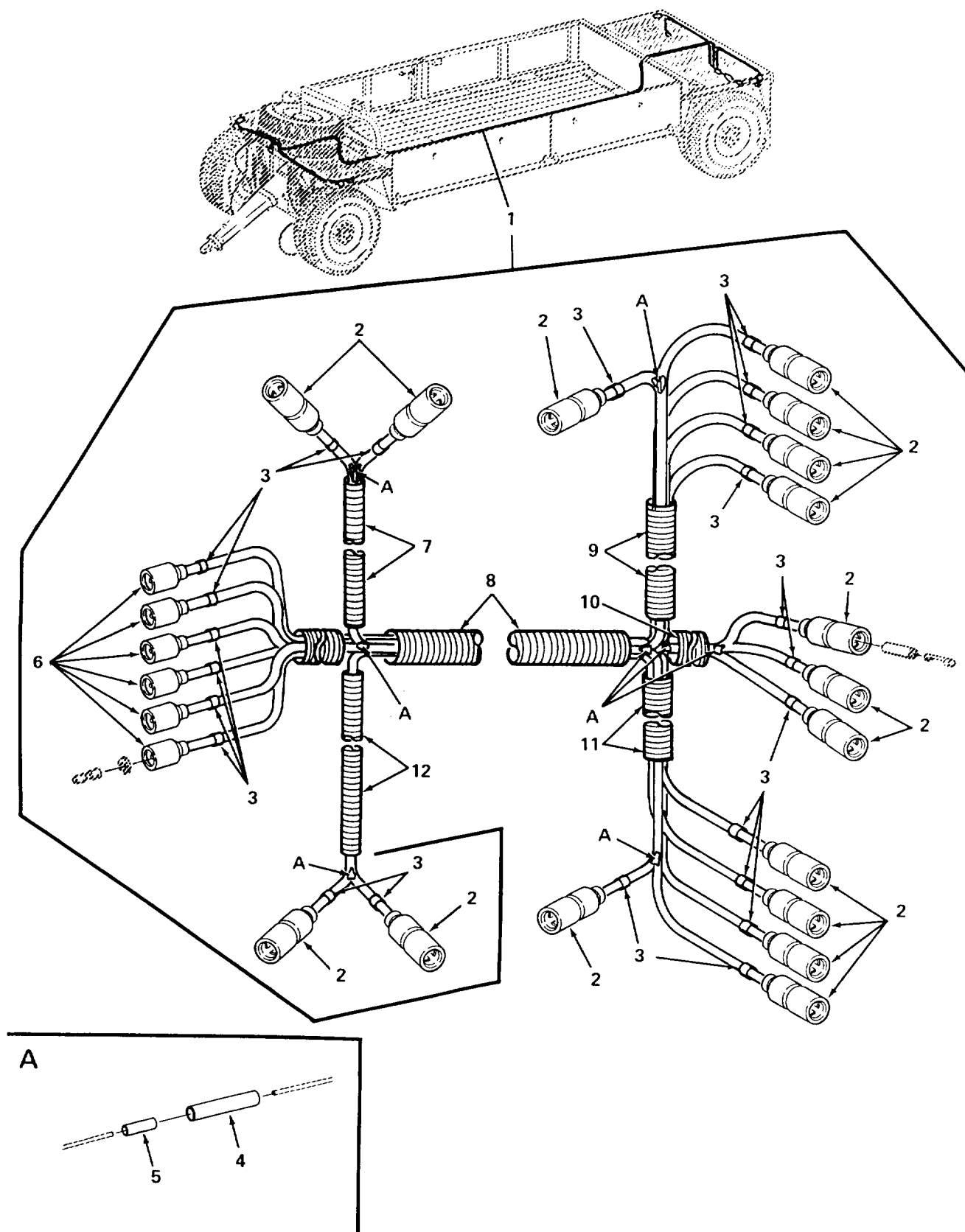


Figure 4. Special Purpose Electrical Cable Assembly

SECTION II

TM9-2330-383-14&P

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP:0613 HULL OR CHASSES WIRING HARNESS					
FIGURE 4. SPECIAL PURPOSE CABLE ASSEMBLY.					
1	PAOOO	98255	SW25142	CABLE ASSEMBLY,POWE	1
2	PAOZZ	96906	MS27144-1	.CONNECTOR,PLUG,ELEC	17
3	PAOZZ	81349	M43436/3-1	.BAND,MARKER	23
4	PAOZZ	81349	M23053/4-303-0	.INSULATION SLEEVING	8
5	PAOZZ	98255	SW16183P	.SPLICE,CONDUCTOR	8
6	PAOZZ	96906	MS27142-2	.CONNECTOR,PLUG,ELEC	6
7	MOOZZ	98255	SW31258-2	.TUBE,NONMETALLIC 30 IN. MAKE FROM TUBE P/N OR 8376128	1
8	MOOZZ	98255	OR8376130-288	.TUBE,NONMETALLIC 288 IN. MAKE FROM TUBE P/N OR8376128	1
9	MOOZZ	98255	SW31259-2	.TUBE,NONMETALLIC 30 IN. MAKE FROM TUBE P/N OR87276127	1
10	MOOZZ	98255	SW31259-3	.TUBE,NONMETALLIC 22 IN. MAKE FROM TUBE P/N OR8376128	1
11	MOOZZ	98255	SW31259-1	.TUBE,NONMETALLIC 55 IN. MAKE FROM TUBE P/N OR8376128	1
12	MOOZZ	98255	SW31258-1	.TUBE,NONMETALLIC 82 IN. MAKE FROM TUBE P/N OR8376127	1
END OF FIGURE					

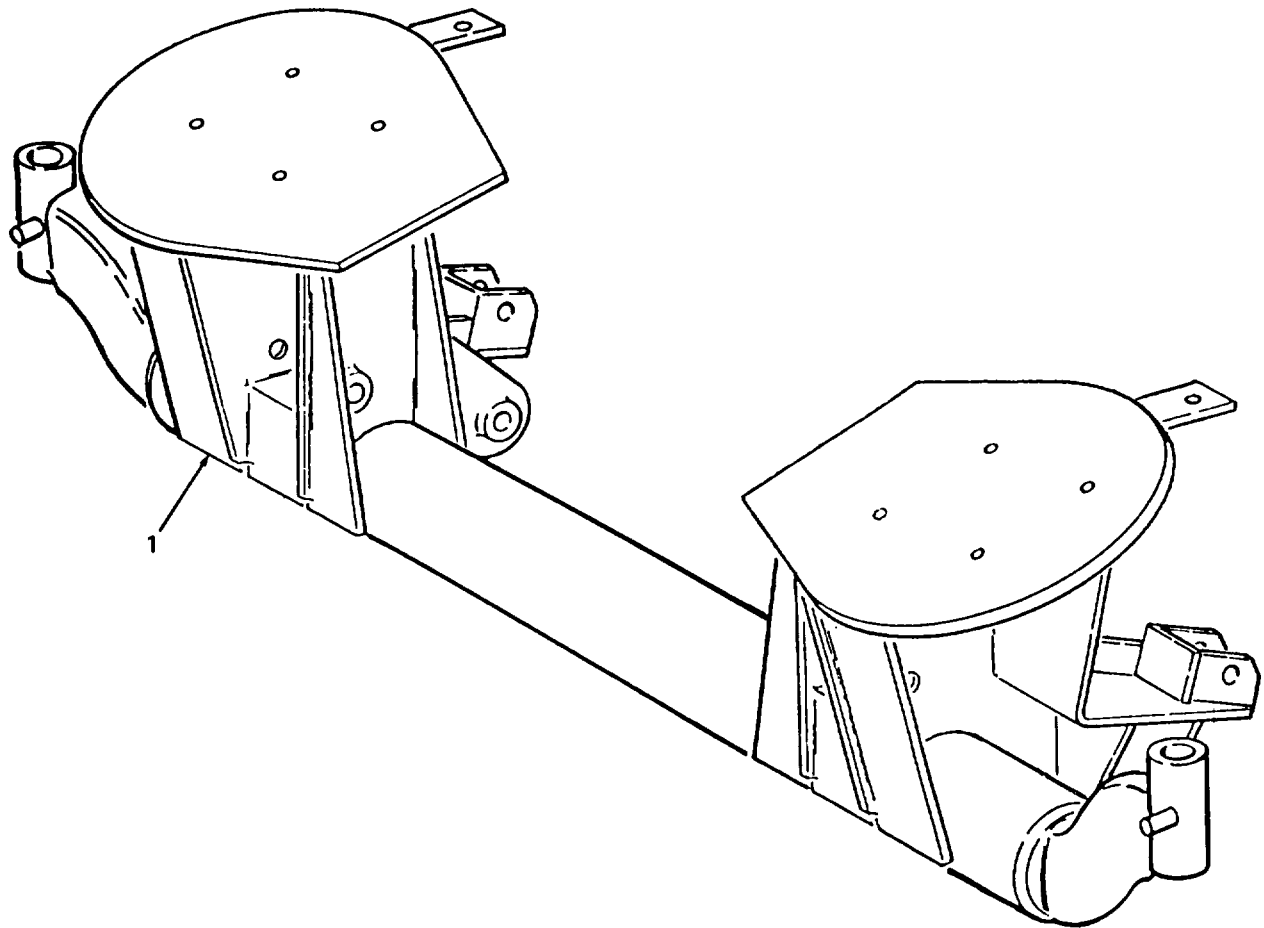


Figure 5. Front Axle

SECTION II

TM9-2330-383-14&P

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP:10 FRONT AXLE GROUP:1000 FRONT AXLE. FIGURE 5. FRONT AXLE.	
1	PBFZZ	98255	SW25395	AXLE ASSEMBLY	1
				END OF FIGURE	

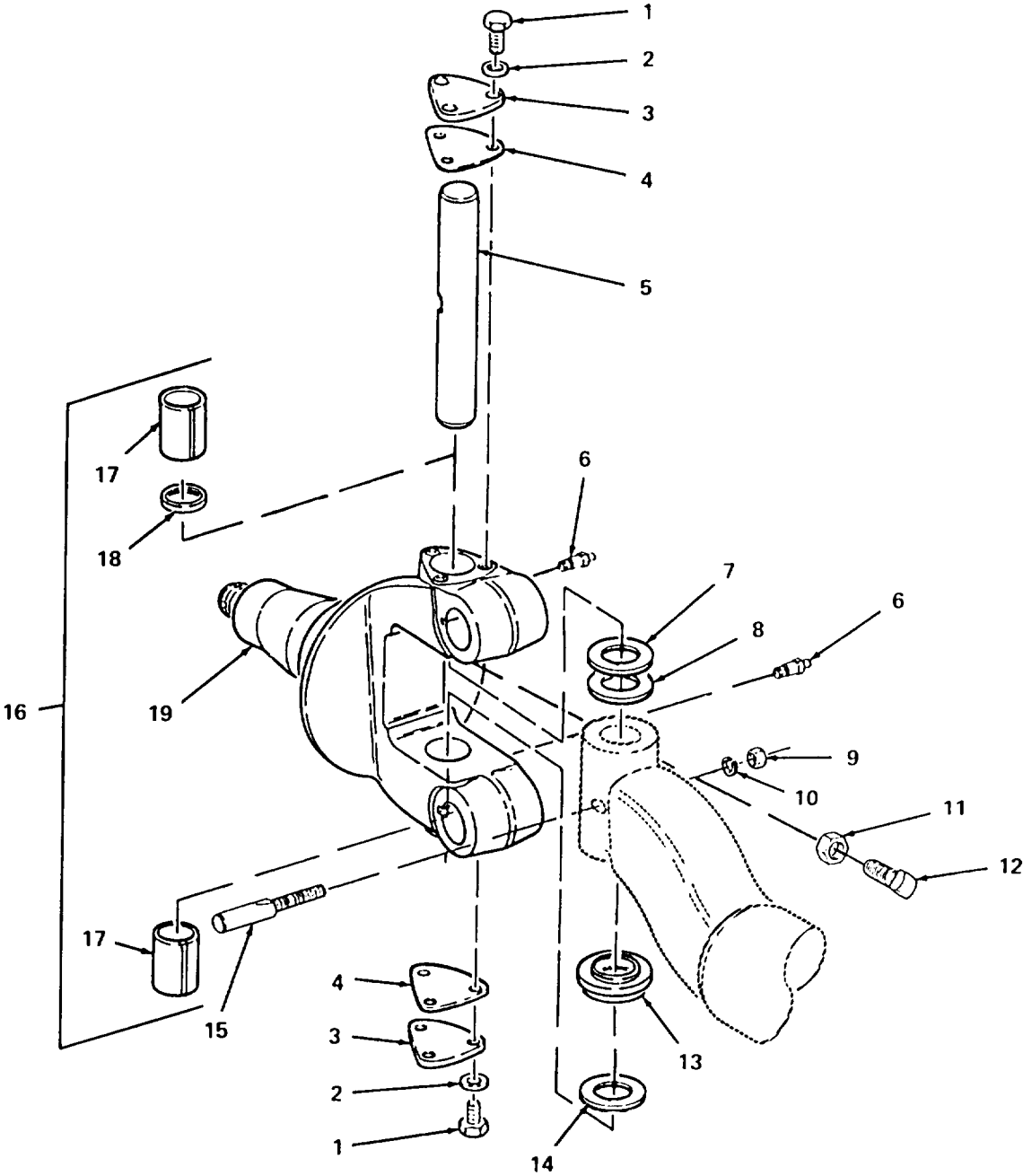


Figure 6. Knuckle and Spindle Assembly

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP:1004 STEERING AND LEANING WHEEL MECHANISM					
FIGURE 6. KNUCKLE AND SPINDLE ASSEMBLY.					
1	PAOZZ	96906	MS90725-3	SCREW,CAP,HEXAGON H	6
2	PAOZZ	96906	MS35338-63	WASHER,LOCK	6
3	PAOZZ	98255	SW25207	COVER,ACCESS	2
4	PAOZZ	98255	SW25206	GASKET	2
5	PBOZZ	98255	SW25204	KINGPIN,FIFTH WHEEL	1
6	PAOZZ	98255	SW25213	FITING,LUBRICA	1
7	PAOZZ	98255	SW25210	SHIM .006 THICK	2
8	PAOZZ	98255	SW25211	SHIM .011 THICK	2
9	PAOZZ	96906	MS51968-11	NUT,PLAIN,HEXAGON	1
10	PAOZZ	96906	MS35338-47	WASHER,LOCK	1
11	PAOZZ	96906	MS51968-20	NUT,PLAIN,HEXAGON	1
12	PAOZZ	98255	SW25202	SCREW,LAG	1
13	PAOZZ	98255	SW25208	BEARING,ROLLER,THRU	1
14	PAOZZ	98255	SW25209	SHIM	2
15	PAOZZ	98255	SW25203	PIN,TAPERED,THREADE	1
16	PBOOO	98255	SW25216	SPINDLE,WHEEL,DRIVI LEFT HAND	1
16	PBOOO	98255	SW25219	SPINDLE,WHEEL,DRIVI RIGHT HAND	1
17	PAOZZ	OHJ37	143622-0001	.BUSHING	4
18	PAOZZ	OHJ37	143623-0001	.SEAL	2
19	XAOZZ	98255	SW25197-2	.KNUCKLE LEFT HAND	1
19	XAOZZ	98255	SW25197-1	.KNUCKLE RIGHT HAND	1

END OF FIGURE

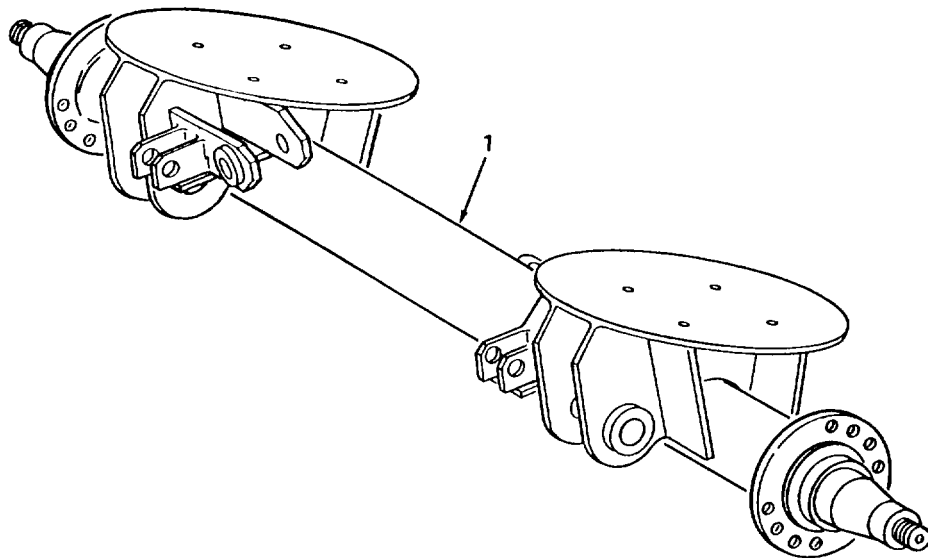


Figure 7. Rear Axle

SECTION II

TM9-2330-383-14&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:11 REAR AXLE
GROUP:1100 REAR AXLE ASSEMBLY

FIGURE 7. REAR AXLE.

1	PBFZZ	98255	SW25182	AXLE,VEHICULAR,NOND	1
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END OF FIGURE

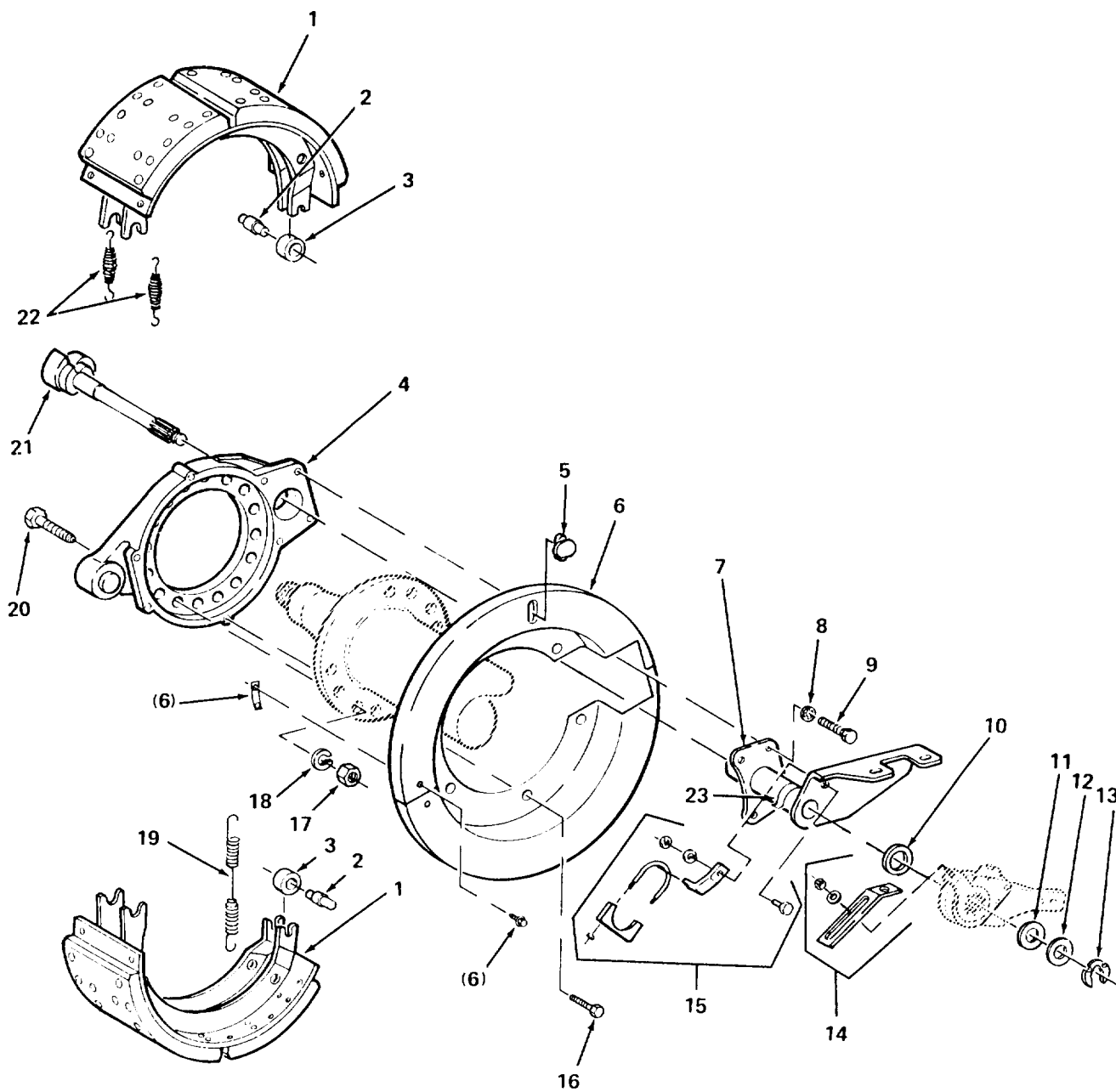


Figure 8. Front and Rear Brake Assembly

(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					
FIGURE 8. FRONT AND REAR BRAKE ASSEMBLY.					
1	PAOZZ	52304	805714	BRAKE SHOE	8
2	PAOZZ	52304	39075	PIN,SHOULDER,HEADLE	8
3	PAOZZ	52304	39074	ROLLER,BRAKE SHOE	8
4	PFOZZ	9R200	807497	SPIDER,BRAKE USED ON P/N 808752 AND 808681	2
4	PFOZZ	9R200	807496	SPIDER,BRAKE USED ON P/N 808753 AND 808680	2
5	PAOZZ	9R200	089899	BOOT,DUST AND MOIST USED ON P/N 808680 AND 808681	4
6	PAOZZ	52304	1000693	DEFLECTOR,DIRT AND	4
7	PFOZZ	9R200	808751	BRACKET,BRAKE CAMSH LEFT REAR	1
7	PFOZZ	9R200	808750	BEARING UNIT,PLAIN RIGHT REAR	1
7	PFOZZ	9R200	807488	BRACKET ASSEMBLY,CA LEFT FRONT	1
7	PFOZZ	9R200	807489	BRACKET ASSEMBLY,CA RIGHT FRONT	1
8	PAOZZ	52304	90414	WASHER	16
9	PAOZZ	52304	38540	SCREW,CAP,HEXAGON H	16
10	PAOZZ	9R200	043943	WASHER .0598 THICK	4
11	PAOZZ	76301	4M36-11008	WASHER,FLAT .063 THICK	4
12	PAOZZ	52304	23570	WASHER,FLAT .031 THICK	8
13	PAOZZ	79136	5304-125	RING,RETAINING	4
14	PAOZZ	78302	427-10401	BRACKET ASSMEBLY	4
15	PAOZZ	7P109	1001353	PARTS KIT,BRAKE MOU REAR BRAKES ONLY	2
16	PAOZZ	52304	804023	SCREW,MACHINE	20
17	PAOZZ	96906	MS51968-20	NUT,PLAIN,HEXAGON	32
18	PAOZZ	96906	MS35335-39	WASHER,LOCK	32
19	PAOZZ	81142	1000406	SPRING,HELICAL,EXTE	4
20	PAOZZ	96906	MS90727-163	SCREW,CAP,HEXAGON H	32
21	PFOZZ	9R200	807615	CAMSHAFT,ACTUATING, LEFT REAR	1
21	PFOZZ	9R200	807614	CAMSHAFT,ACUTATING RIGHT REAR	1
21	PFOZZ	9R200	070308	CAMSHAFT,ACTUATING LEFT FRONT	1
21	PFOZZ	9R200	070309	CAMSHAFT,ACTUATING RIGHT FRONT	1
22	PAOZZ	9R200	070326	SPRING,HELICAL,EXTE	8
23	PAOZZ	9R200	1001811	MARKER,IDENTIFICATI	4

END OF FIGURE

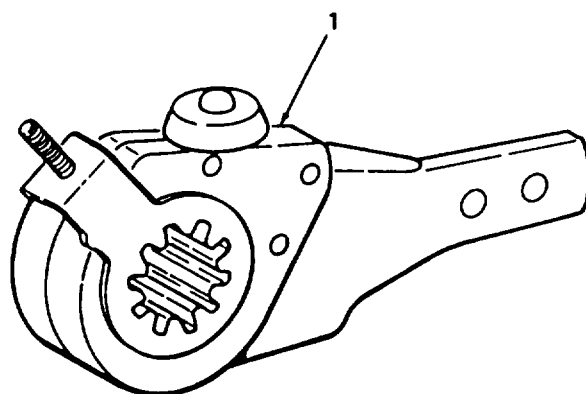


Figure 9. Slack Adjuster

SECTION II

TM9-2330-383-14&P

(1)	(2)	(3)	(4)	(5)	(6)
ITEM	SMR		PART		
NO	CODE	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY

GROUP:1206 MECHANICAL BRAKE STSTEM

FIGURE 9. SLACK ADJUSTER.

1	PAOZZ	78502	409-10133	ADJUSTER,SLACK,BRAK REAR	1
1	PAOZZ	78502	409-10370	ADJUSTER,SLACK,BRAK FRONT	1

END OF FIGURE

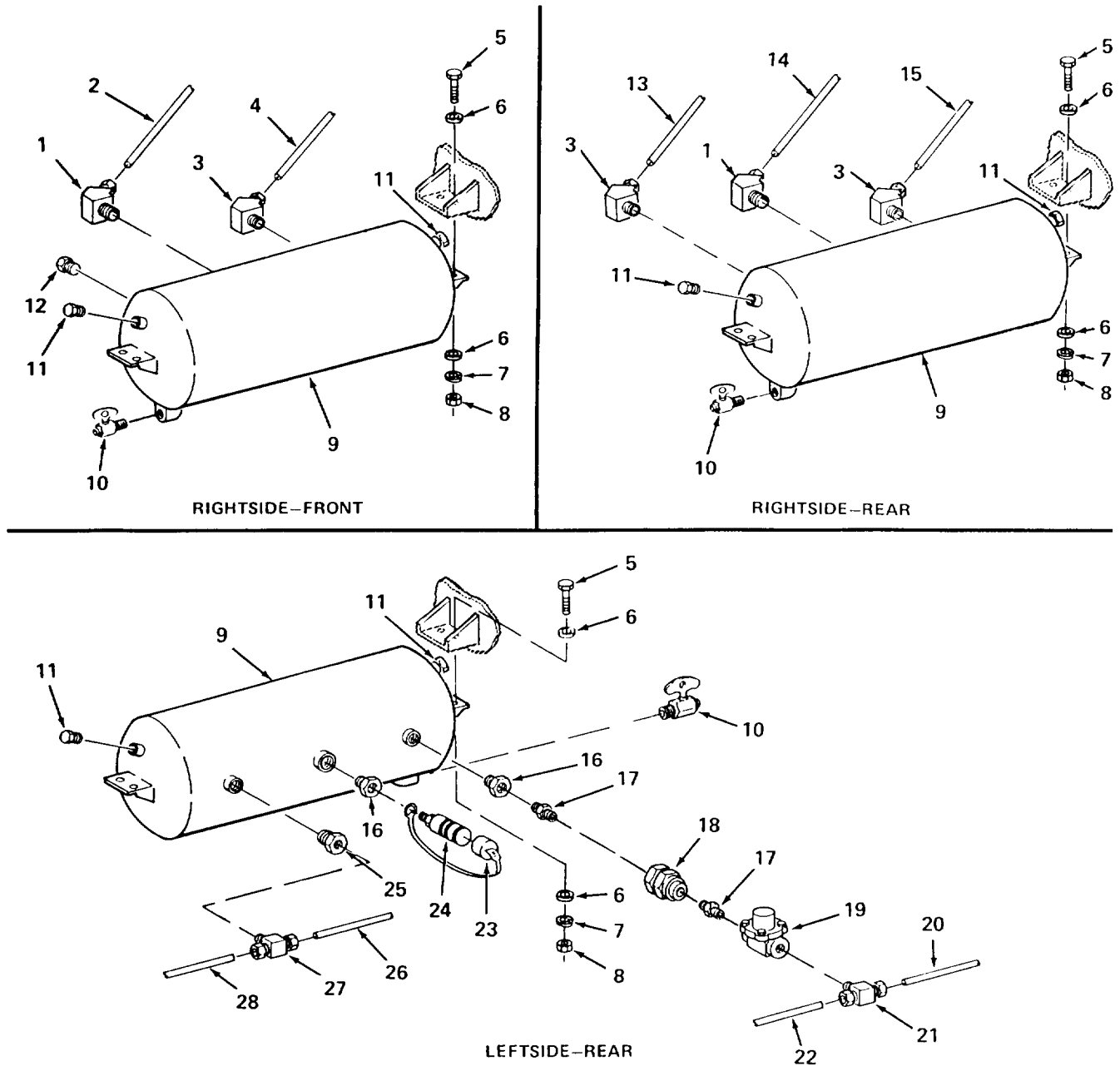


Figure 10. Air Tank Installation

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP:1208 AIR BRAKE SYSTEM					
FIGURE 10. AIR TANK INSTALLATION.					
1	PAOZZ	93061	279NTA-10-8	ELBOW,PIPE TO TUBE	2
2	MOOZZ	98255	SW13321P-0960	HOSE,NONMETALLIC MAKE FROM HOSE P/ N 3250-10103	1
3	PAOZZ	93061	279NTA-6-8	ELBOW,PIPE TO TUBE	3
4	MOOZZ	98255	SW13319P-1900	TUBE,NONMETALLIC MAKE FROM HOSE P/ N PFT-6B	1
5	PAOZZ	96906	MS90725-36	BOLT,MACHINE	12
6	PAOZZ	96906	MS27183-12	WASHER,FLAT	24
7	PAOZZ	96906	MS35338-45	WASHER,LOCK	12
8	PAOZZ	96906	MS35649-2314	NUT,PLAIN,HEXAGON	12
9	PAOZZ	98255	SW25355	TANK,PRESSURE	3
10	PAOZZ	06721	10719	VALVE,PLUG	3
11	PAOZZ	79470	3152X6	PLUG,PIPE	6
12	PAOZZ	79470	3152X8	PLUG,PIPE	1
13	MOOZZ	98255	SW13319P-0840	TUBE,NONMETTALLIC MAKE FROM HOSE P/ N PFT-6B	1
14	MOOZZ	98255	SW13321P-0800	TUBE,NONMETALLIC MAKE FROM HOSE P/ N 3250-10103	1
15	MOOZZ	98255	SW13319P-1400	TUBE,NONMETALLIC MAKE FROM HOSE P/ N FPT-6B	1
16	PAOZZ	79470	3220X8X4	BUSHING,SLEEVE	2
17	PAOZZ	79470	3325X4	NIPPLE,PIPE	2
18	PAOZZ	30379	2148946	VALVE,CHECK	1
19	PAOZZ	06721	N15759A	VALE,REGULATING,FL	1
20	MOOZZ	98255	SW13319P-0440	TUBE,NONMETALLIC MAKE FROM HOSE P/ N PFT-6B	1
21	PAOZZ	93061	272NTA-6-4	TEE,PIPE TO TUBE	1
22	MOOZZ	98255	SW13319P-2440	HOSE,NONMETALLIC MAKE FROM HOSE P/ N PFT-6B	1
23	PAOZZ	01276	FD45-1040-06	CAP,PROTECTIVE,DUST	1
24	PAOZZ	97111	B22	COUPLING HALF,QUICK	1
25	PAOZZ	79470	3220X8X6	BUSHING,PIPE	1
26	MOOZZ	98255	SW13319P-1200	TUBE,NONMETALLIC MAKE FROM HOSE P/ N PFT-6B	1
27	PAOZZ	81343	6-6-6-120425BA	TEE,PIPE TO TUBE	1
28	MOOZZ	98255	SW13319P-2000	TUBE,NONMETALLIC MAKE FROM HOSE P/ N PFT-6B	1

END OF FIGURE

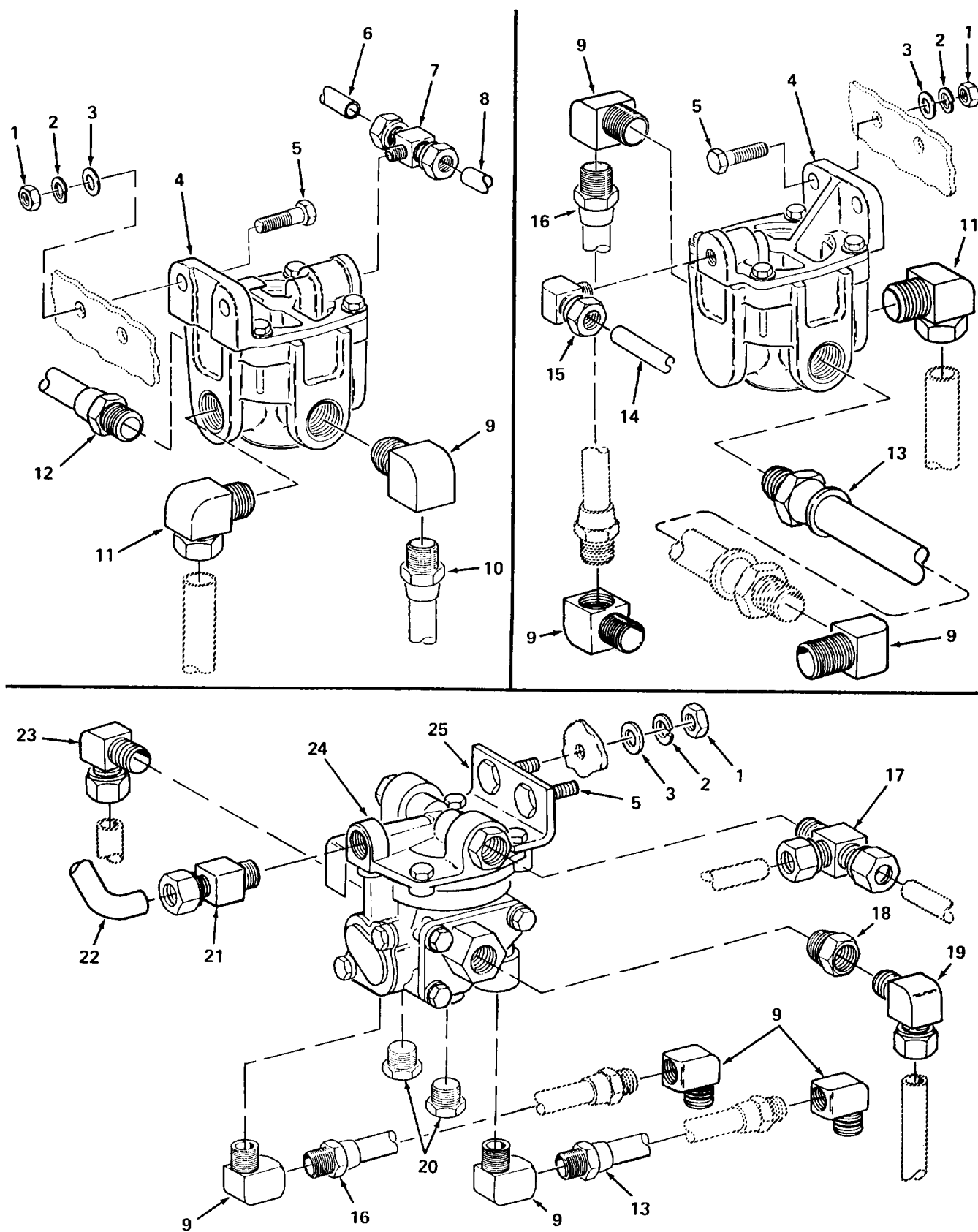


Figure 11. Air Valves

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP:1208 AIR BRAKE SYSTEM					
FIGURE 11. AIR VALVES.					
1	PAOZZ	96906	MS35649-2312	NUT,PLAIN,HEXAGON	6
2	PAOZZ	96906	MS35338-45	WASHER,LOCK	6
3	PAOZZ	96906	MS27183-12	WASHER,FLAT	6
4	PAOZZ	06721	N30108BD	VALVE,RELAY,AIR PRE	2
5	PAOZZ	96906	MS90728-38	BOLT,MACHINE	6
6	MOOZZ	98255	SW13319P-0320	HOSE,NONMETALLIC MAKE FROM HOSE P/ N PFT-6B	1
7	PAOZZ	93061	272NTA-6-4	TEE,PIPE TO TUBE	1
8	MOOZZ	98255	SW13319P-2660	HOSE,NONMETALLIC MAKE FROM HOSE P/ N PFT-6B	1
9	PAOZZ	93061	1202P-6-6	ELBOW,PIPE	8
10	PAOZZ	58429	62W3506B0	HOSE ASSEMBLY,NONME	1
11	PAOZZ	93061	269NTA-10-8	ELBOW,PIPE TO TUBE	2
12	PAOZZ	58429	62W3572B0	HOSE ASSEMBLY,NONME	1
13	PAOZZ	58429	62W3584B0	HOSE ASSEMBLY,NONME	2
14	MOOZZ	98255	SW13319P-0080	TUBE,NONMETALLIC MAKE FROM HOSE P/ N PFT-6B	1
15	PAOZZ	81343	6-4 100202BA	ELBOW,PIPE TO TUBE	1
16	PAOZZ	58429	62W3554B0	HOSE ASSEMBLY,NONME	2
17	PAOZZ	93061	271NTA-6-6	TEE,PIPE TO TUBE	1
18	PAOZZ	79470	3220X8X6	BUSHING,PIPE	1
19	PAOZZ	81343	6-4 120202BA(LON G NUT)	ELBOW,PIPE TO TUBE	1
20	PAOZZ	79470	3152X6	PLUG,PIPE	3
21	PAOZZ	93061	68NTA-6-6	ADAPTER,STRAIGHT,PI	1
22	MOOZZ	98255	SW13319P-0900	TUBE,NONMETALLIC MAKE FORM HOSE P/ N PFT-6B	1
23	PAOZZ	81343	6-6 120202BA	ELBOW,PIPE TO TUBE	1
24	PAOZZ	06721	N4302A	VALVE,RELAY,AIR PRE	1
25	PAOZZ	98255	SW26521	BRACKET,ANGLE	1

END OF FIGURE

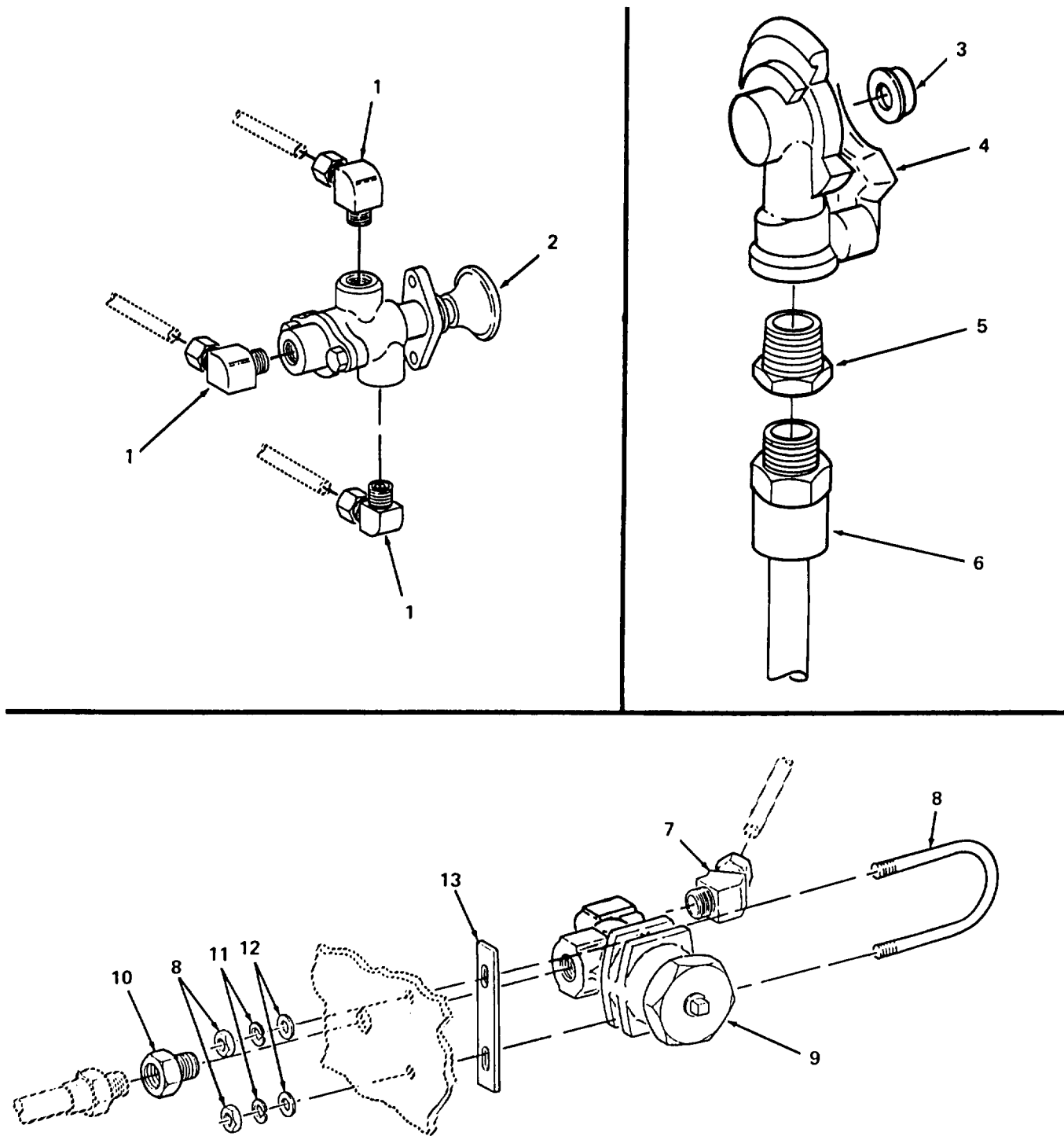


Figure 12. Brake Valve, Gladhand and Air Cleaner Intake

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP:1208 AIR BRAKE SYSTEM					
FIG 12. BRAKE VALVE, GLADHAND AND AIR CLEANER INTAKE.					
1	PAOZZ	81343	6-4 100202BA	ELBOW,PIPE TO TUBE	3
2	PAOZZ	06721	N14488AC	VALVE,BRAKE PNEUMAT	1
3	PAOZZ	98343	1509	PACKING,PREFORMED	1
4	PAOOO	73265	278852	COUPLING HALF,QUICK RIGHT SIDE (SERVICE)	1
4	PAOOO	98343	10451-E	COUPLING HALF,QUICK LEFT SIDE (EMERGENCY)	1
5	PAOZZ	79470	3220X8X6	BUSHING,PIPE	2
6	PAOZZ	58429	62W3500B0	HOSE ASSEMBLY,NONME	2
7	PAOZZ	79470	1480X6	ELBOW,PIPE TO TUBE	2
8	PAOZA	39428	3043T19	BOLT,U	2
9	PAOZZ	06721	N-12969	AIR CLEANER,INTAKE	2
10	PAOZZ	79470	3200X6X4	REDUCER,PIPE	2
11	PAOZZ	96906	MS35338-44	WASHER,LOCK	4
12	PAOZZ	96906	MS27183-10	WASHER,FLAT	4
13	PAOZZ	98255	SW25336	SPACER,PLATE	2

END OF FIGURE

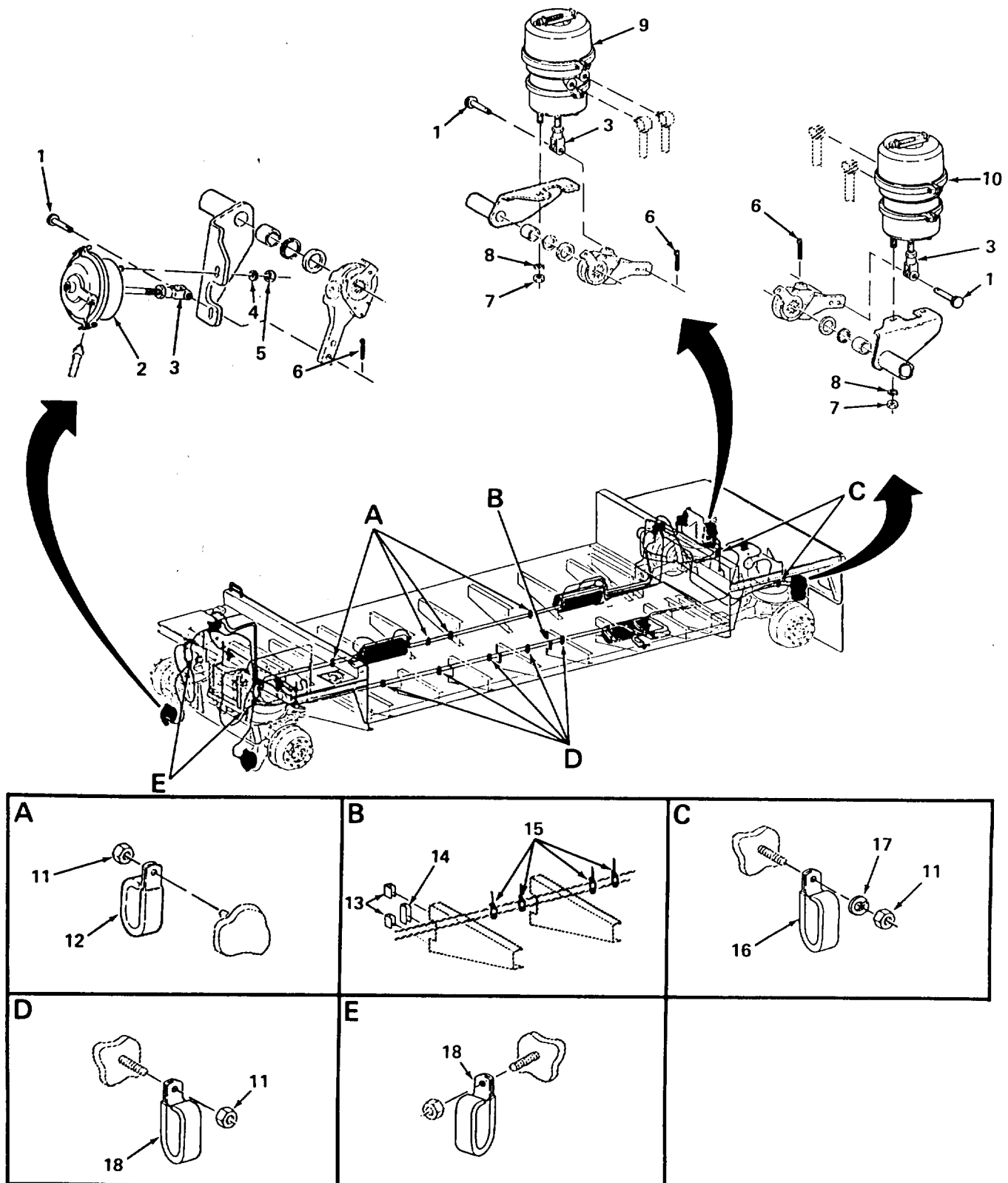


Figure 13. Air Chambers and Cable Clamps

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP:1208 AIR BRAKE STSTEM					
FIGURE 13. AIR CHAMBERS AND CABLE CLAMPS.					
1	PAOZZ	06721	19100	PIN,STRAIGHT,HEADLE	4
2	PAOZZ	98255	SW25189	CHAMBER,AIR BRAKE	2
3	PAOZZ	40342	N-11257AA	CLEVIS,ROD END	4
4	PAOZZ	98343	35W52040	WASHER,LOCK	4
5	PAOZZ	98343	2-X-256	NUT,PLAIN,HEXAGON	4
6	PAOZZ	06721	6-X-102	PIN,COTTER	4
7	PAOZZ	98343	6178617	NUT,PLAIN,HEXAGON	4
8	PAOZZ	40342	193008	WASHER,LOCK	4
9	PAOZZ	98255	SW25183-2	CHAMBER,AIR BRAKE RIGHT HAND	1
10	PAOZZ	98255	SW25183	CHAMBER,AIR BRAKE LEFT HAND	1
11	PAOZZ	96906	MS35649-202	NUT,PLAIN,HEXAGON	11
12	PAOZZ	96906	MS21919WCG18	CLAMP,LOOP	4
13	MOOZZ	98255	SW15460P-5	NONMETALLIC CHANNEL 1.50 IN. MAKE FROM CHANNEL P/N X-982	2
14	MOOZZ	98255	15460P-6	RUBBER EXTRUSION 3 IN. MAKE FROM CHANNEL P/M X-982	1
15	PAOZZ	96906	MS3367-7-9	STRAP,TIEDOWN,ELECT	36
16	PAOZZ	96906	MS21919WCG28	CLAMP,LOOP	2
17	PAOZZ	96906	MS35338-43	WASHER,LOCK	2
18	PAOZZ	96906	MS21333-105	CLAMP,LOOP	7

END OF FIGURE

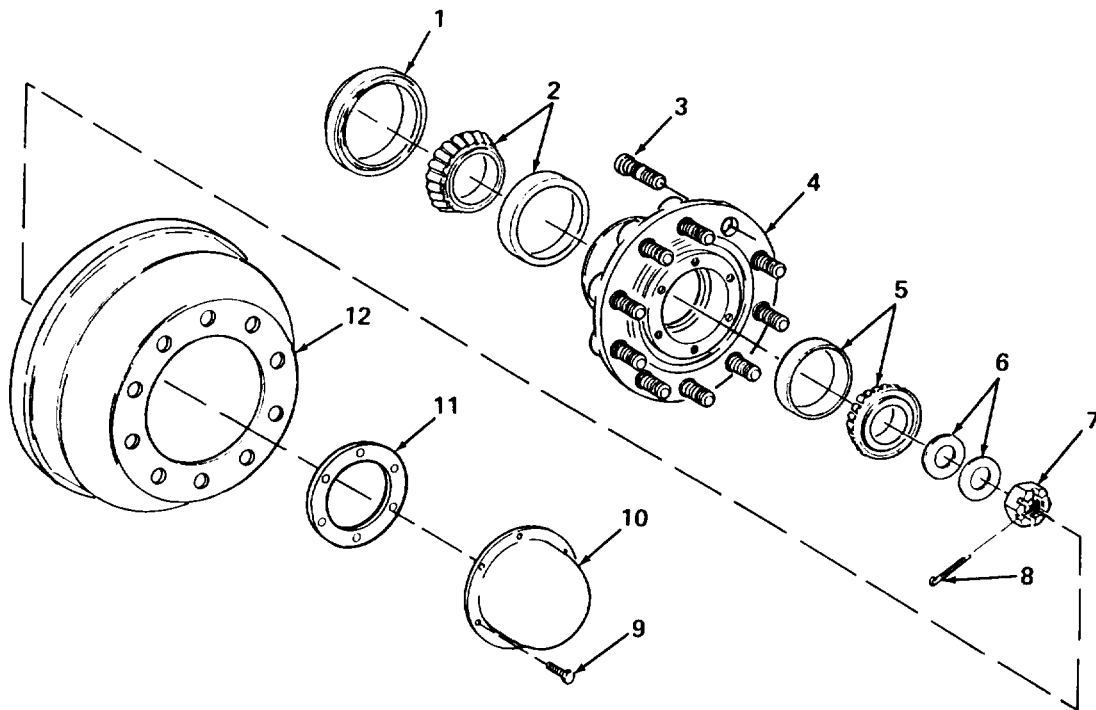


Figure 14. Front and Rear Wheel Assembly

SECTION II

TM9-2330-383-14&P

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP:13 WHEELS AND TRACKS					
GROUP:1311 WHEEL ASSEMBLY					
FIGURE 14. FRONT AND REAR WHEEL ASSEMBLY.					
1	PAOZZ	80201	46304	SEAL,PLAIN ENCASED	4
2	PAOZZ	96906	MS19081-283	BEARING,ROLLER,TAPE	4
3	PAOZZ	18889	100170	BOLT,RIBBED SHOULDE RIGHT HAND	10
3	PAOZZ	18889	100181	BOLT,INTERNAL WRENC LEFT HAND	10
4	PBOZZ	18889	1540	HUB,WHEEL,VEHICULAR	4
5	PAOZZ	96906	MS19081-113	BEARING,ROLLER,TAPE	4
6	PAOZZ	98255	143625-0002	WASHER,KEYWAY	
7	PAOZZ	98255	143699-0019	NUT,PLAIN,SLOTTED,H	2
8	PAOZZ	46717	L6451-101	PIN,COTTER	4
9	PAOZZ	96906	MS90728-32	BOLT,MACHINE	24
10	PAOZZ	78500	3262S45	HUB CAP,WHEEL	4
11	PAOZZ	78500	2208N430	GASKET	4
12	PBOFF	18889	656518	BRAKE CRUM	4

END OF FIGURE

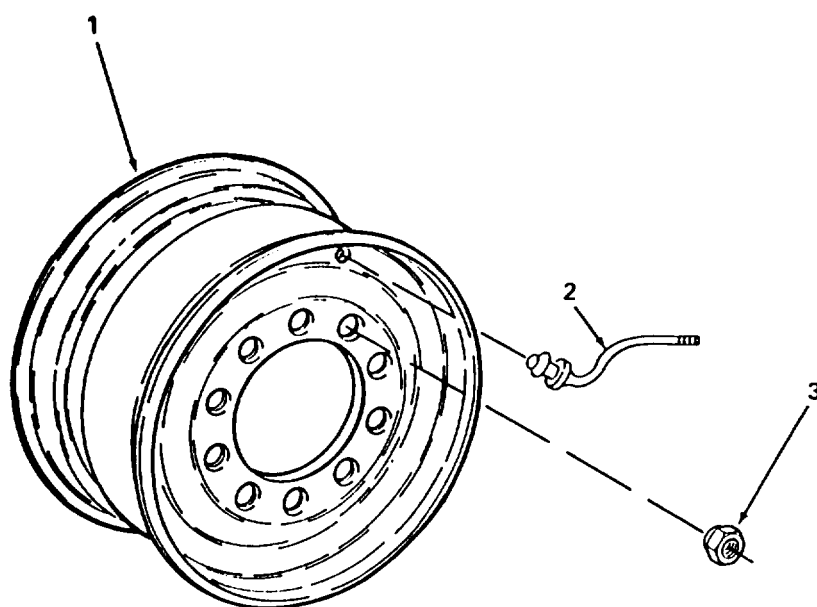


Figure 15. Wheel and Valve

SECTION II

TM9-2330-383-14&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					
FIGURE 15. WHEEL AND VALVE.					
1	PAOZZ	73195	RA28165-8	WHEEL,PNEUMATIC TIR	1
2	PAOZZ	98255	SW25442-2	VALVE,PNEUMATIC TIR	1
3	PAOZZ	96906	MS51983-8	NUT,PLAIN,SINGLE BA RIGHT HAND	10
3	PAOZZ	96906	MS51983-7	NUT,PLAIN,SINGLE BA LEFT HAND	10

END OF FIGURE

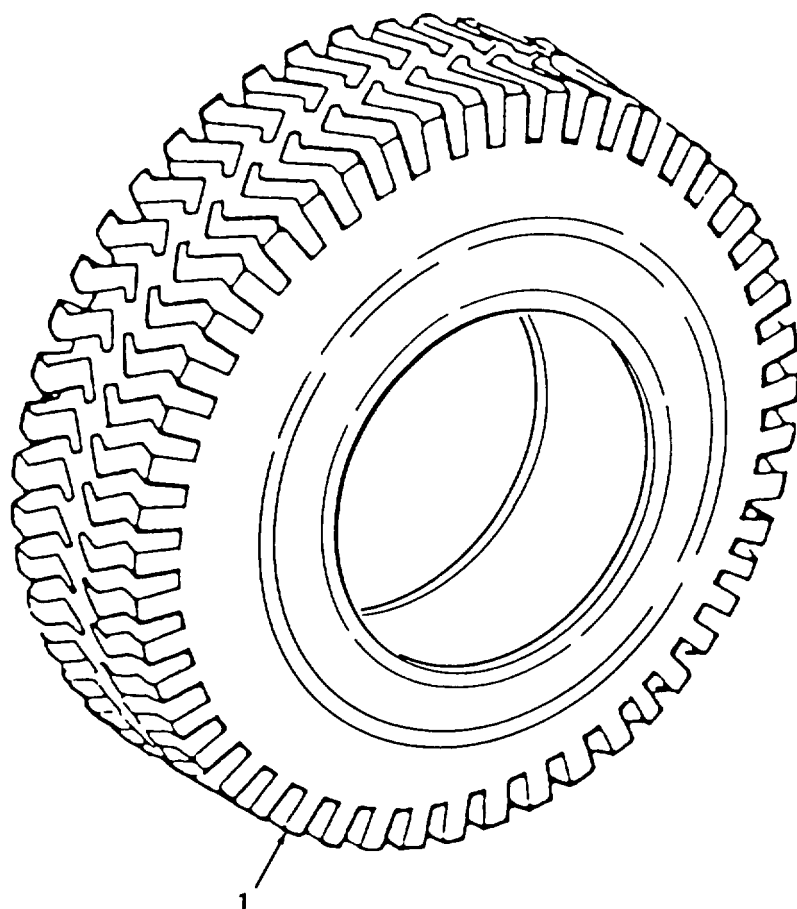


Figure 16. Tire

SECTION II

TM9-2330-383-14&P

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP:1313 TIRES, TUBES, TIRE CHAINS	
				FIGURE 16. TIRE.	
1	PAOFF	81348	GP3A/15.00-22.50 /H/TBTR	TIRE,PNEUMATIC	5
				END OF FIGURE	

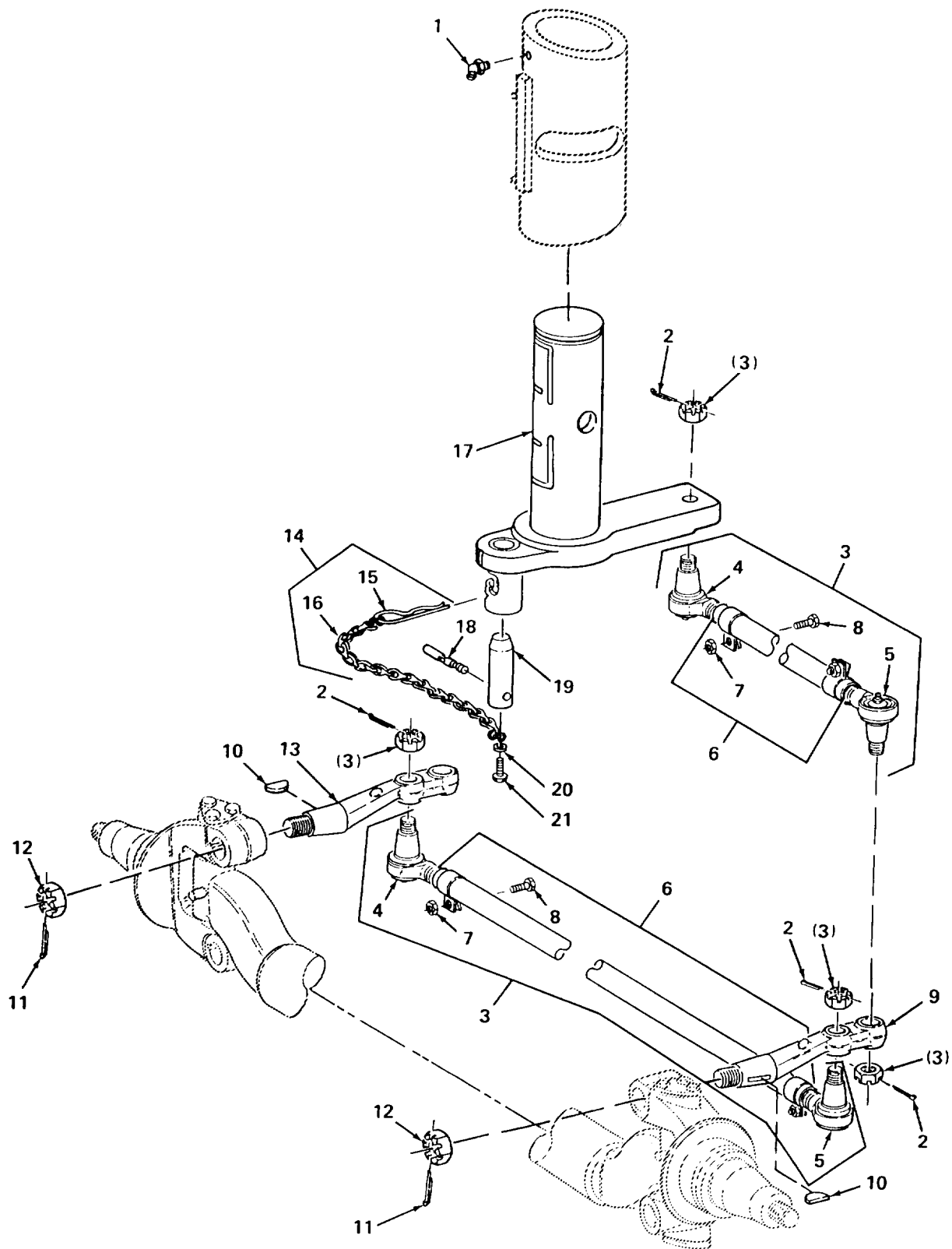


Figure 17. Tie Rod and Pivot Assembly

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP:14 STEERING					
GROUP:1401 MECHANICAL STEERING GEAR ASSEMBLY					
FIGURE 17. TIE ROD AND PIVOT ASSEMBLY.					
1	PAOZZ	96906	MS15003-4	FITTING,LUBRICATION	3
2	PAOZZ	96906	MS24665-357	PIN,COTTER	4
3	PAOOO	93019	1211X	TIE ROD,STEERING 29.81 IN	1
3	PAOOO	93019	12210X	TIE ROD,STEERING 60.970 IN	1
4	PAOZZ	93019	12003BN	.TIE ROD RIGHT HAND	2
5	PAOZZ	93019	12004BN	.TIE ROD LEFT HAND	2
6	PAOZZ	93019	12211-7	.BAR AND CLAMP ASSY	1
6	PAOZZ	93019	12210-7	.BAR AND CLAMP ASSY	1
7	PAOZZ	96906	MS51922-53	..NUT,SELF-LOCKING,HE	2
8	PAOZZ	9D6906	MS90727-168	..SCREW,CAP,HEXAGON H	2
9	PAOZZ	98255	SW25198-1	TIE ROD END,STEERIN LEFT HAND	1
10	PAFZZ	98255	SW25214	KEY,WOODRUFF	2
11	PAFZZ	96906	MS24665-499	PIN,COTTER	2
12	PAFZZ	96906	MS35692-101	NUT,PLAIN,SLOTTED,H	2
13	PAOZZ	98255	SW25198-2	TIE ROD END,STEERIN RIGHT HAND	1
14	PAOZZ	98255	SW26638	CHAIN ASSEMBLY	1
15	PAOZZ	88044	AN415-7	.PIN,LOCK	1
16	PAOZZ	98255	SW10010-0101	.CHAIN	1
17	PAOZZ	98255	SW25078	PIVOT,TOW BAR	1
18	PAOZZ	98255	SW26676	PIN,GROOVED,HEADLES	1
19	PAOZZ	98255	SW25175	PIN ASSEMBLY	1
20	PAOZZ	96906	MS27183-4	WASHER,FLAT	1
21	PAOZZ	96906	MS35206-213	SCREW,MACHINE	1

END OF FIGURE

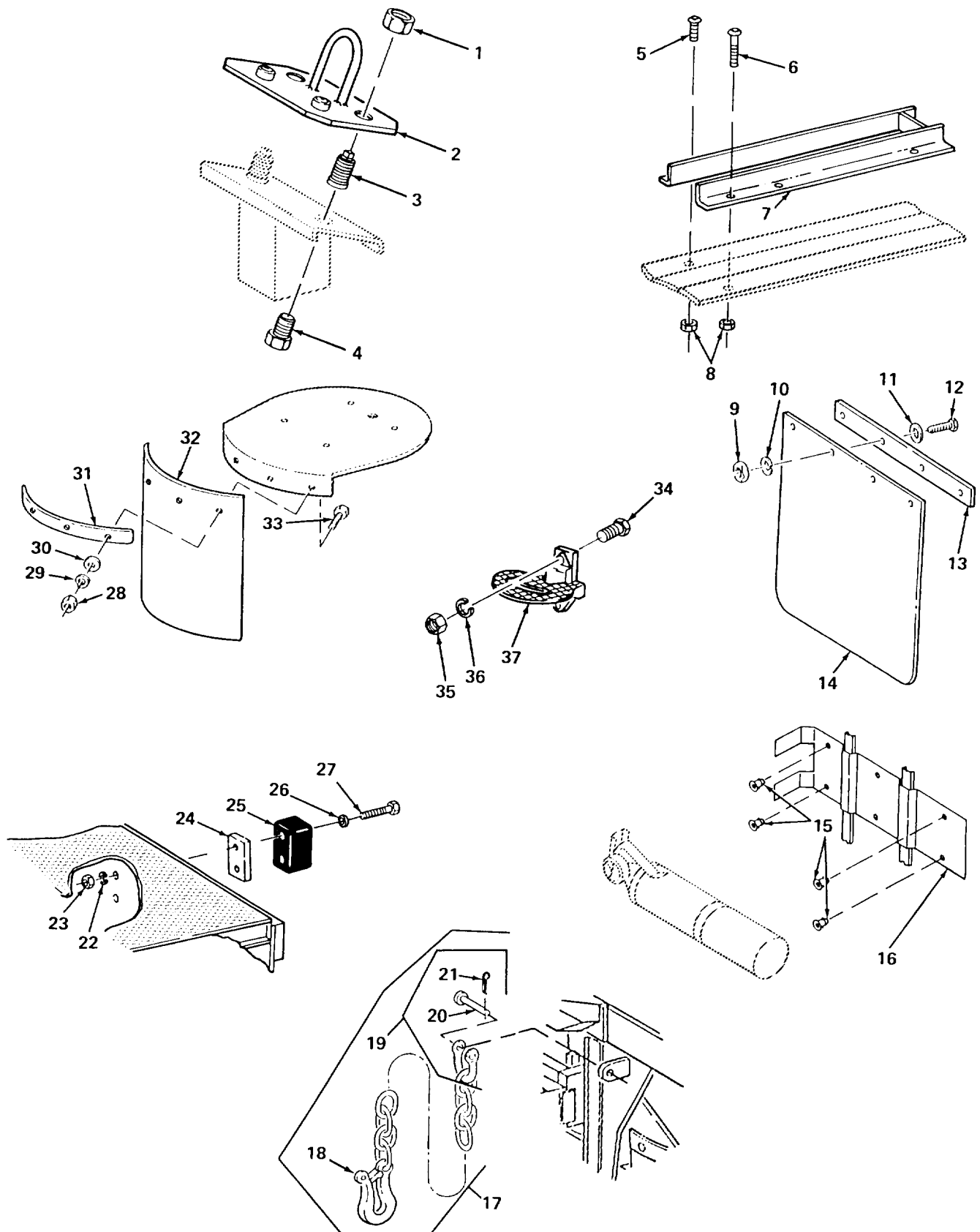


Figure 18. Trailer Assembly Components

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP:15 FRAME, TOWING ATTACHMENTS, DRAWBARS AND ARTICULATION SYSTEMS GROUP:1501 FRAME ASSEMBLY					
FIGURE 18. TRAILER ASSEMBLY COMPONENTS.					
1	PAOZZ	96906	MS53068-2	NUT,CAP,DUAL WHEEL	2
2	PAOZZ	98255	SW32969	LIFT ASSEMBLY,TIRE	1
3	PAOZZ	96906	MS51983-8	NUT,PLAIN,SINGLE BA	2
4	PAOZZ	96906	MS90727-185	SCREW,CAP,HEXAGON H	2
5	PAOZZ	39428	91255A120	SCREW,CAP,SOCKET HE	12
6	PAOZZ	39428	91255A999	SCREW,CAP,SOCKET HE	12
7	PAOZZ	98255	SW25081	SHOE,MILLERS	4
8	PAOZZ	9U920	SW26534	NUT,PLAIN,EXTENDED	24
9	PAOZZ	96906	MS51967-8	NUT,PLAIN,HEXAGON	8
10	PAOZZ	96906	MS35338-46	WASHER,LOCK	8
11	PAOZZ	96906	MS27183-14	WASHER,FLAT	8
12	PAOZZ	96906	MS90728-64	SCREW,CAP,HEXAGON H	8
13	PAOZZ	98255	SW25087	PLATE,MENDING	2
14	PFOZZ	98255	SW21641	GUARD,SPLASH,VEHICU	2
15	PAOZZ	81349	M24243/6-A804H	RIVET,BLIND	4
16	PAOZZ	54905	403T	EXTINGUISHER,FIRE,D BRACKET	1
17	PAOZZ	98255	SW26535	CHAIN ASSEMBLY,SING	2
18	XDOZZ	98255	SW25371	.CHAIN ASSEMBLY,SING	1
19	XAOZZ	75535	G-213-5/8 IN	.SHACKLE	1
20	PAOZZ	60938	2X351G	. . PIN,STRAIGHT,HEADED	1
21	PAOZZ	96906	MS24665-421	. . PIN,COTTER	1
22	PAOZZ	96906	MS35338-48	WASHER,LOCK	4
23	PAOZZ	96906	MS51967-15	NUT,PLAIN,HEXAGON	4
24	PAOZZ	98255	SW29658	SPACER,PLATE	2
25	PAOZZ	83473	TB-20	BUMPER,NONMETALLIC	2
26	PAOZZ	96906	MS27183-18	WASHER,FLAT	4
27	PAOZZ	96906	MS90728-121	SCREW,CAP,HEXAGON H	4
28	PAOZZ	96906	MS51967-2	NUT,PLAIN,HEXAGON	8
29	PAOZZ	96906	MS35338-44	WASHER,LOCK	8
30	PAOZZ	96906	MS27183-10	WASHER,FLAT	8
31	PAOZZ	98255	SW29638	BAR,MOUNTING	2
32	PAOZZ	98255	SW29637	FLAP,PROTECTOR,AIR	2
33	PAOZZ	96906	MS90728-7	SCREW,CAP,HEXAGON H	8
34	PAOZZ	96906	MS90725-36	BOLT,MACHINE	6
35	PAOZZ	96906	MS35649-2314	NUT,PLAIN,HEXAGON	6
36	PAOZZ	96906	MS35338-45	WASHER,LOCK	6
37	PAOZZ	98255	SW32973	STEP	3

END OF FIGURE

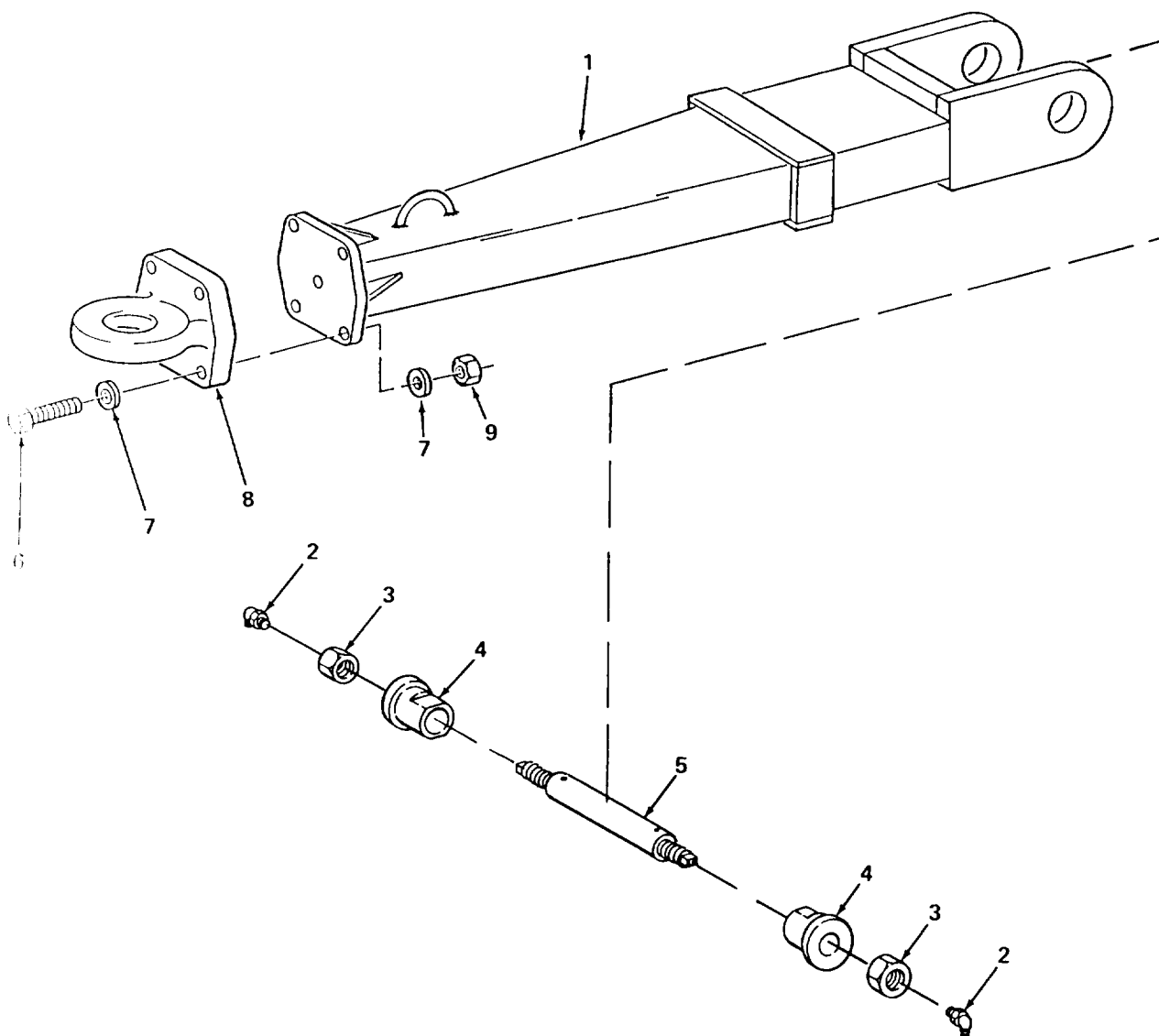


Figure 19. Tow Bar Assembly

SECTION II

TM9-2330-383-14&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					
FIGURE 19. TOW BAR ASSEMBLY.					
1	PAFZZ	98255	SW27025	TOWBAR,MOTOR VEHICL	1
2	PAOZZ	96906	MS15003-6	FITTING,LUBRICATION	2
3	PAOZZ	OHUY6	115 7427B 102	NUT,SELF-LOCKING,HE	2
4	PAOZZ	98255	SW29648	BUSHING,FLANGED	2
5	PAOZZ	98255	SW26981	PIN,SHOULDER,HEADLE	1
6	PAFZZ	96906	MS90728-191	SCREW,CAP,HEXAGON H	4
7	PAFZZ	96906	MS27183-23	WASHER,FLAT	8
8	PAFZZ	74410	DB-1385	COUPLER,DRAWBAR,RIN	1
9	PAFZZ	96906	MS51922-57	NUT,SELF-LOCKING,HE	4

END OF FIGURE

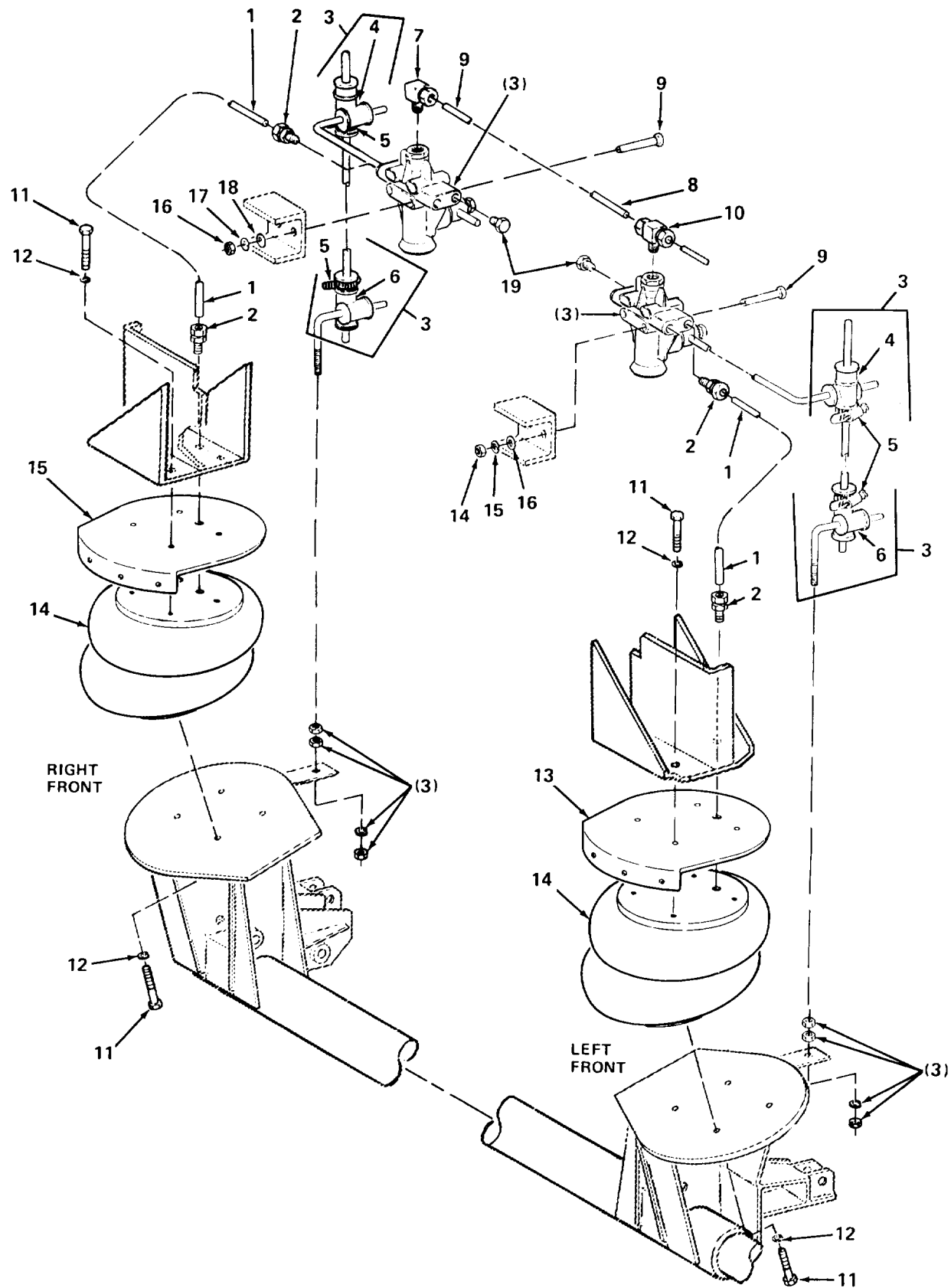


Figure 20. Front Leveling Value and Air Bags

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP:16 SPRINGS AND SHOCK ABSORBERS					
FIGURE 20. FRONT LEVELING VALVE AND AIR BAGS.					
1	MOOZZ	98255	SW13319P-0240	TUBE, NONMETALLIC MAKE FROM HOSE P/ N PFT-6B	2
2	PAOZZ	93061	68NTA-6-4	ADAPTER, STRAIGHT, PI	4
3	PAOZZ	06721	N20404E	VALVE, LEVELING	2
4	XAOZZ	06721	100558	.LINKAGE ASSY, UPPER	1
5	XAOZZ	06721	22-X-183	.CLAMP	2
6	XAOZZ	06721	100558-A	.LOWER LINKAGE ASSEM	1
7	PAOZZ	81343	6-4 100202BA	ELBOW, PIPE TO TUBE	1
8	MOOZZ	98255	SW13319P-0840	TUBE, NONMETALLIC MAKE FROM HOSE P/ N PFT-6B	1
9	PAOZZ	96906	MS90728-42	BOLT, MACHINE	4
10	PAOZZ	93061	272NTA-6-4	TEE, PIPE TO TUBE	1
11	PAOZZ	96906	MS90725-60	SCREW, CAP, HEXAGON H	16
12	PAOZZ	96906	MS35338-46	WASHER, LOCK	16
13	PAOZZ	98255	SW29636-1	ASSY, AIR SPRING PLA	1
14	PAOZZ	98255	SW25236	AIR SPRING, VEHICULA	2
15	PAOZZ	98255	SW29636-2	ASSY, PLATE, AIR SPRI	1
16	PAOZZ	96906	MS35649-2312	NUT, PLAIN, HEXAGON	4
17	PAOZZ	96906	MS35338-45	WASHER, LOCK	4
18	PAOZZ	96906	MS27183-12	WASHER, FLAT	4
19	PAOZZ	79470	3152X4	PLUG, PIPE	2

END OF FIGURE

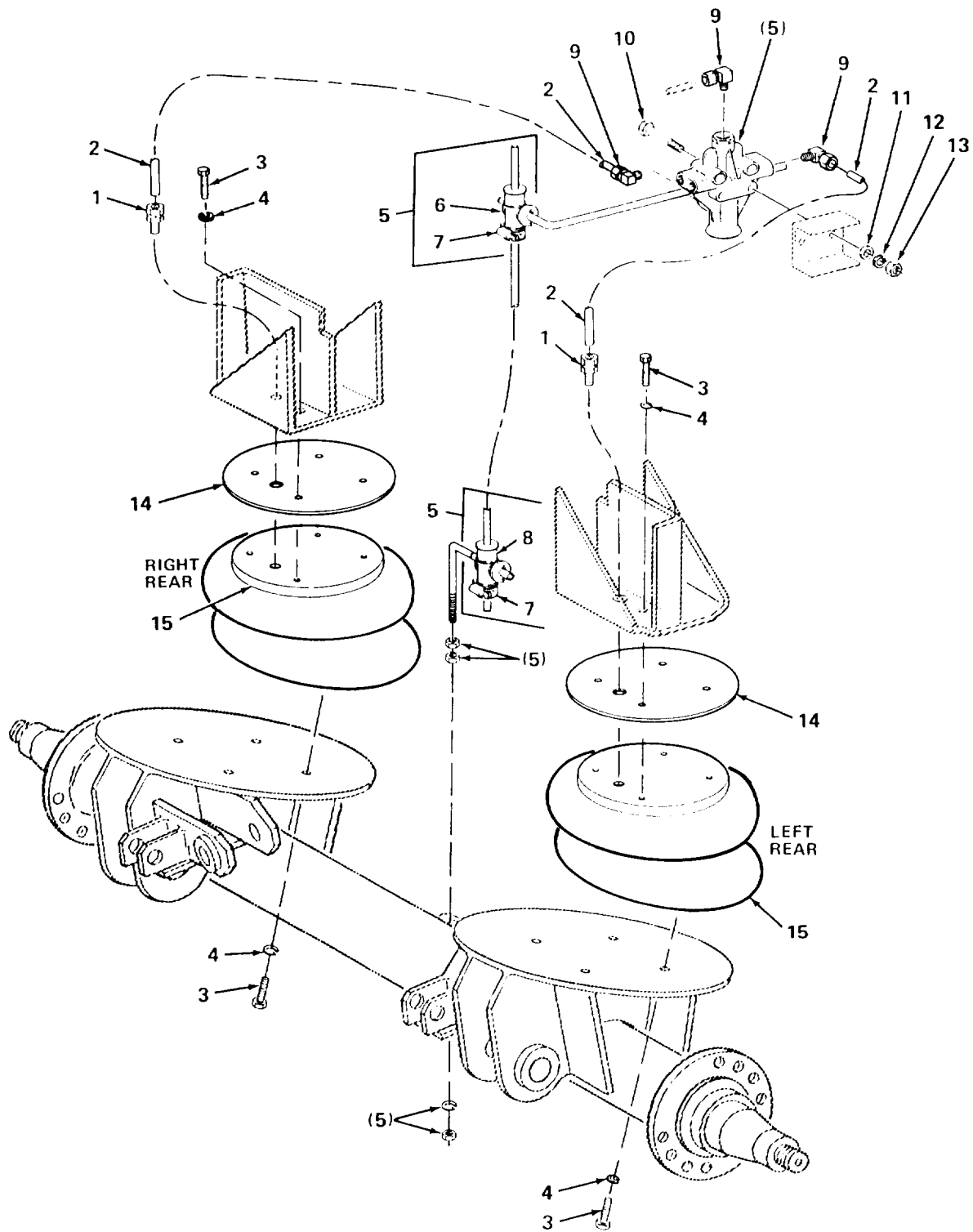


Figure 21. Rear Leveling Valve and Air Bags

SECTION II

TM9-2330-383-14&P

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP:1601 SPRINGS					
FIGURE 21. REAR LEVELING VALVE AND AIR BAGS.					
1	PAOZZ	93061	68NTA-6-4	ADAPTER,STRAIGHT,PI	2
2	MOOZZ	98255	SW13319P-0600	TUBE,NONMETALLIC MAKE FROM HOSE P/ N PFT-6B	2
3	PAOZZ	96906	MS90725-60	SCREW,CAP,HEXAGON H	16
4	PAOZZ	96906	MS35338-46	WASHER,LOCK	16
5	PAOZZ	06721	N20404E	VALVE,BRAKE PNEUMAT	1
6	XAOZZ	06721	100558	.LINKAGE ASSEMBLY,UP	1
7	XAOZZ	06721	22-X-183	.CLAMP	2
8	XAOZZ	06721	100558-A	.LOWER LINKAGE ASSEM	1
9	PAOZZ	81343	6-4 100202BA	ELBOW,PIPE TO TUBE	3
10	PAOZZ	96906	MS90728-42	BOLT,MACHINE	2
11	PAOZZ	96906	MS27183-12	WASHER,FLAT	2
12	PAOZZ	96906	MS35338-45	WASHER,LOCK	2
13	PAOZZ	96906	MS35649-2312	NUT,PLAIN,HEXAGON	2
14	PBOZZ	98255	SW26639	SPACER,PLATE	2
15	PAFZZ	98255	SW25236	AIR SPRING,VEHICULA	2

END OF FIGURE

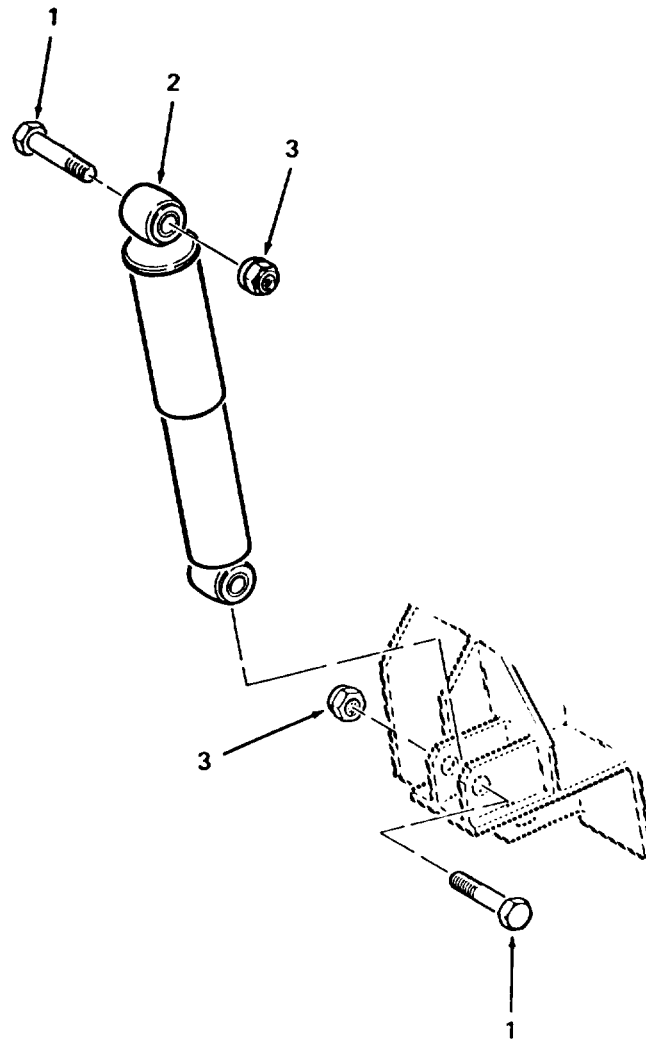


Figure 22. Shock Absorber

SECTION II

TM9-2330-383-14&P

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP:1604 SHOCK ABSORBER EQUIPMENT					
FIGURE 22. SHOCK ABSORBER.					
1	PAOZZ	96906	MS90726-217	SCREW,CAP,HEXAGON H	8
2	PAOZZ	37492	695272-40T	SHOCK ABSORBER,DIRE	4
3	PAOZZ	96906	MS21044N14	NUT,SELF-LOCKING,HE	8
END OF FIGURE					

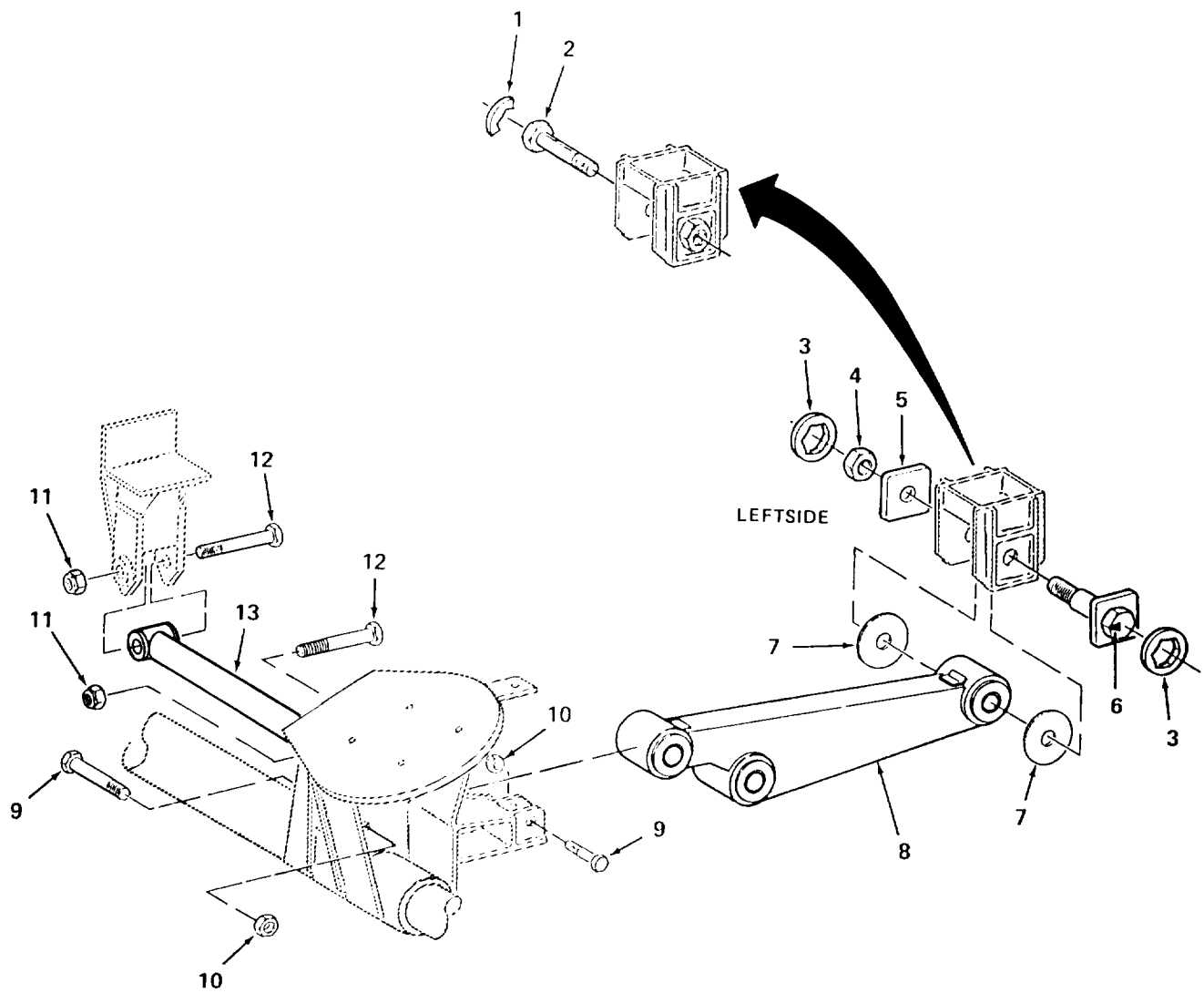


Figure 23. Front Suspension Assembly

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP:1605 TORQUE, RADIUS, STABILIZER RODS					
FIGURE 23. FRONT SUSPENSION ASSEMBLY					
1	PBOZZ	98255	SW25247	PLATE,MENDING	1
2	PAOZZ	98255	SW25238	SCREW,CAP,HEXAGON H	1
3	PAOZZ	98255	SW25246	WASHER,FLAT	2
4	PAOZZ	98255	SW25239	NUT,PLAIN,HEXAGON	1
5	PAOZZ	98255	SW25245	PLATE,MENDING	1
6	PAOZZ	98255	SW25243	BOLT,ASSEMBLED WASH	1
7	PAOZZ	98255	SW25230	WASHER,FLAT	4
8	PAFZZ	0HUY6	507 7427B 000	CONNECTING LINK,RIG	2
9	PAFZZ	0HUY6	1135873B1 05	SCREW,CAP,HEXAGON H	4
10	PAFZZ	0HUY6	115 7427B 102	NUT,SELF-LOCKING,HE	4
11	PAFZZ	96906	MS51922-72	NUT,SELF-LOCKING,HE	2
12	PAOZZ	98255	SW25456	SCREW,CAP,HEXAGON H	2
13	PAFZZ	0HUY6	503 7264B 342	BAR,STABILIZER	1

END OF FIGURE

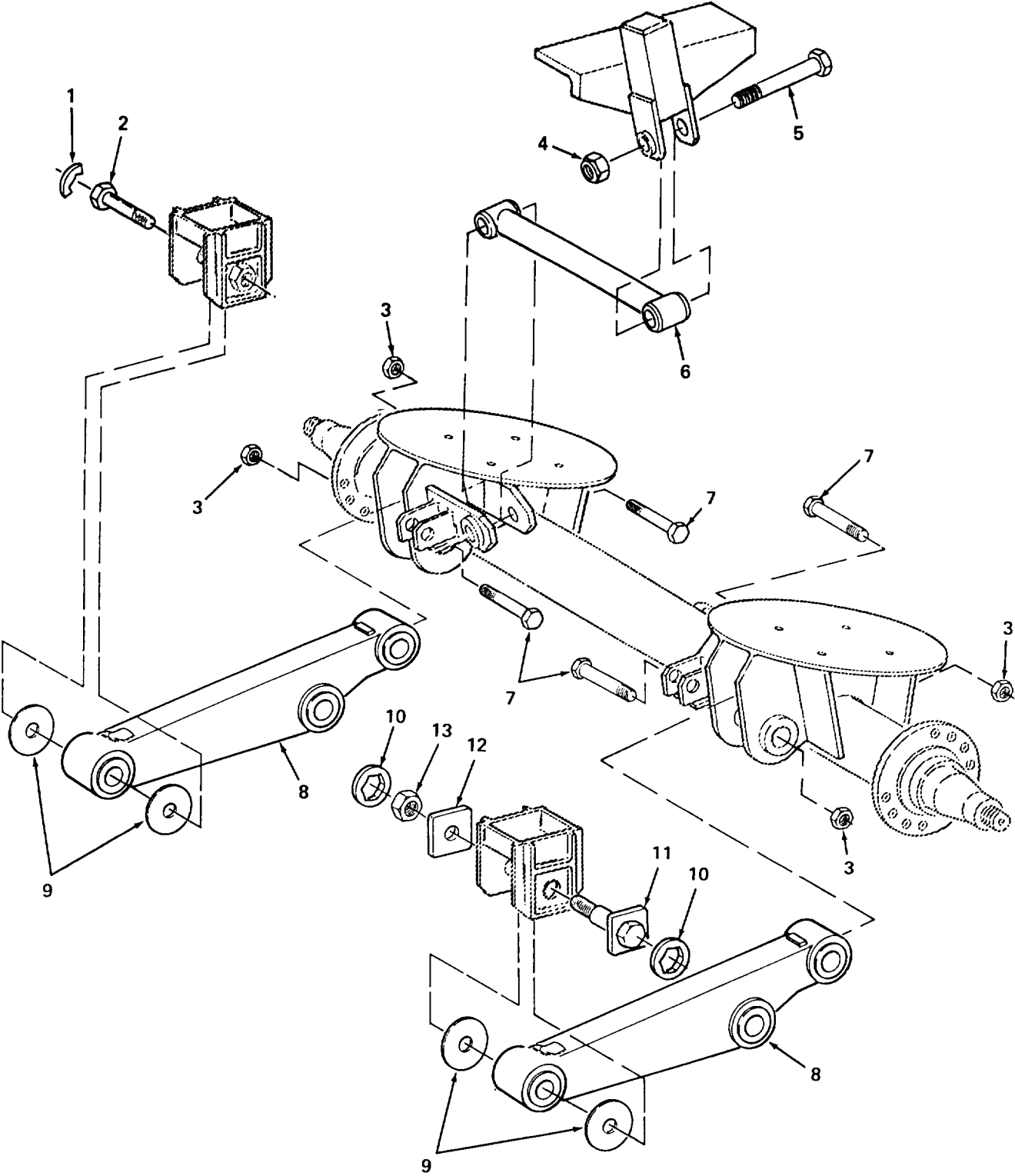


Figure 24. Rear Suspension Assembly

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP:1605 TORQUE, RADIUS, STABILIZER RODS					
FIGURE 24. REAR SUSPENSION ASSEMBLY.					
1	PAFZZ	98255	SW25247	PLATE,MENDING	1
2	PAFZZ	98255	SW25238	SCREW,CAP,HEXAGON H	1
3	PAFZZ	0HUY6	115 7427B 102	NUT,SELF-LOCKING,HE	4
4	PAFZZ	96906	MS51922-72	NUT,SELF-LOCKING,HE	2
5	PAFZZ	98255	SW25456	SCREW,CAP,HEXAGON H	2
6	PAFZZ	0HUY6	503 7264B 343	BAR,STABILIZER	1
7	PAFZZ	0HUY6	1135873B105	SCREW,CAP,HEXAGON H	4
8	PBFZZ	0HUY6	507 7427B 000	CONNECTING LINK,RIG	2
9	PAFZZ	98255	SW25230	WASHER,FLAT	4
10	PAFZZ	98255	SW25246	WASHER,FLAT	2
11	PAFZZ	98255	SW25243	BOLT,ASSEMBLED WASH	1
12	PBFZZ	98255	SW25245	PLATE,MENDING	1
13	PAFZZ	98255	SW25239	NUT,PLAIN,HEXAGON	1

END OF FIGURE

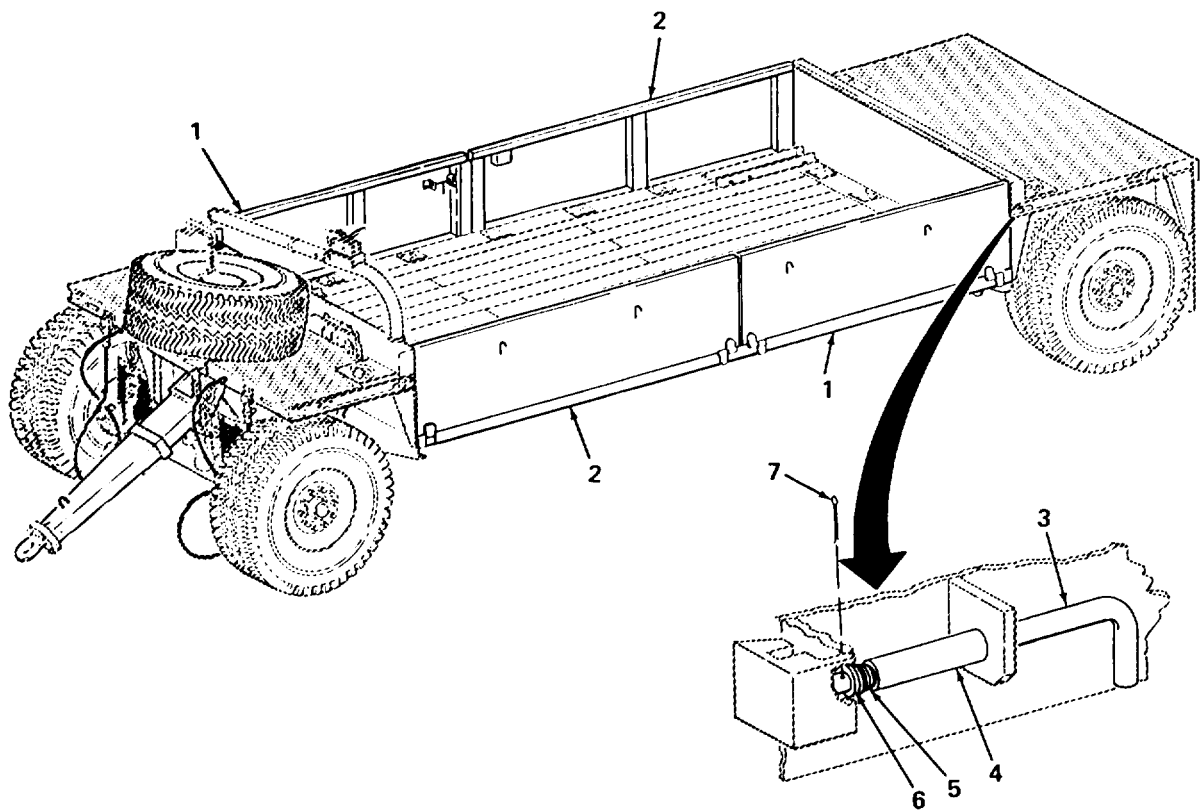


Figure 25. Side Panels

SECTION II

TM9-2330-383-14&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:1801 BODY, CAB, HOOD AND HULL ASSEMBLIES	
				FIGURE 25. SIDE PANELS.	
1	PBOZZ	98255	SW26910	PANEL,BODY,VEHICULA	2
2	PBOZZ	98255	SW26911	DOOR,ACCESS	2
3	PAOZZ	98255	SW27049	HANDLE,BOLT	4
4	PFOZZ	98255	SW29772	TUBE	4
5	PAOZZ	98255	SW29773	SPRING,HELICAL	4
6	PAOZZ	96906	MS27183-18	WASHER,FLAT	4
7	PAOZZ	96906	MS24665-302	PIN,COTTER	4

END OF FIGURE

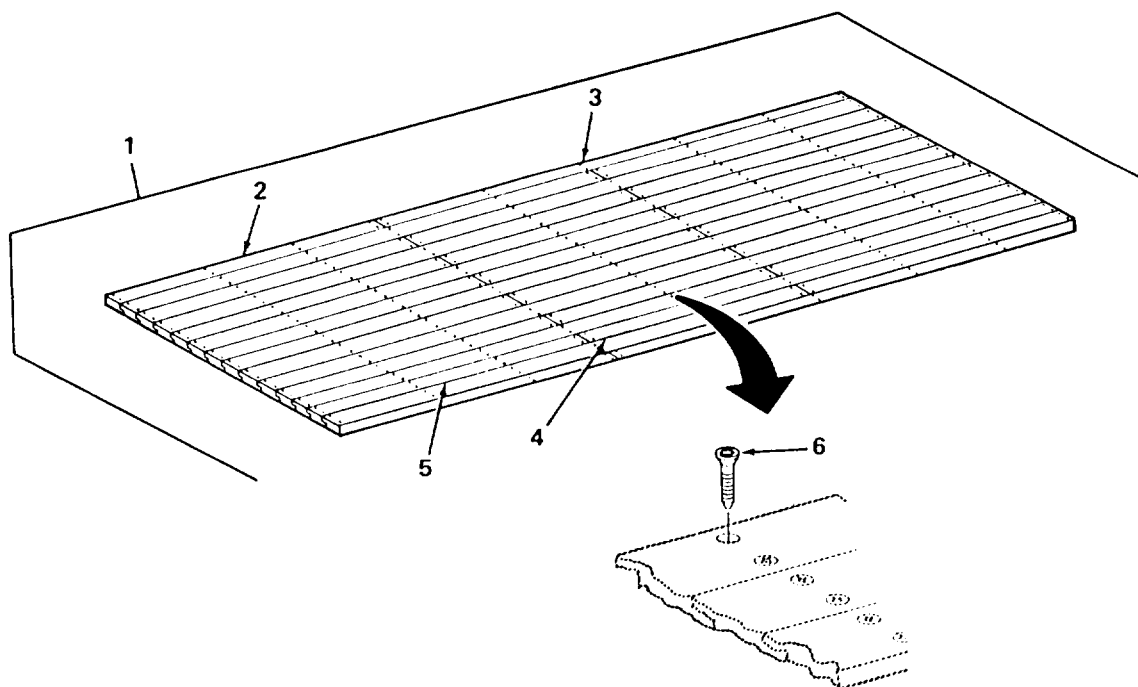


Figure 26. Floor

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP:1805 SUBFLOORS AND RELATED COMPONENTS					
FIGURE 26. FLOOR.					
1	PFOOO	3B938	SW31969	FLOOR KIT	1
2	PFOZZ	3B938	SW31969-2	.BOARD,DECK 56.94 IN	2
3	PFOZZ	3B938	SW31969-1	.BOARD,DECK 104.81 IN	2
4	PFOZZ	3B938	SW31969-3	.BOARD,DECK 104.81 IN	14
5	PFOZZ	3B938	SW31969-4	.BOARD,DECK 56.94 IN	14
6	PAOZZ	98255	SW25289	SCREW,TAPPING,THREA	320

END OF FIGURE

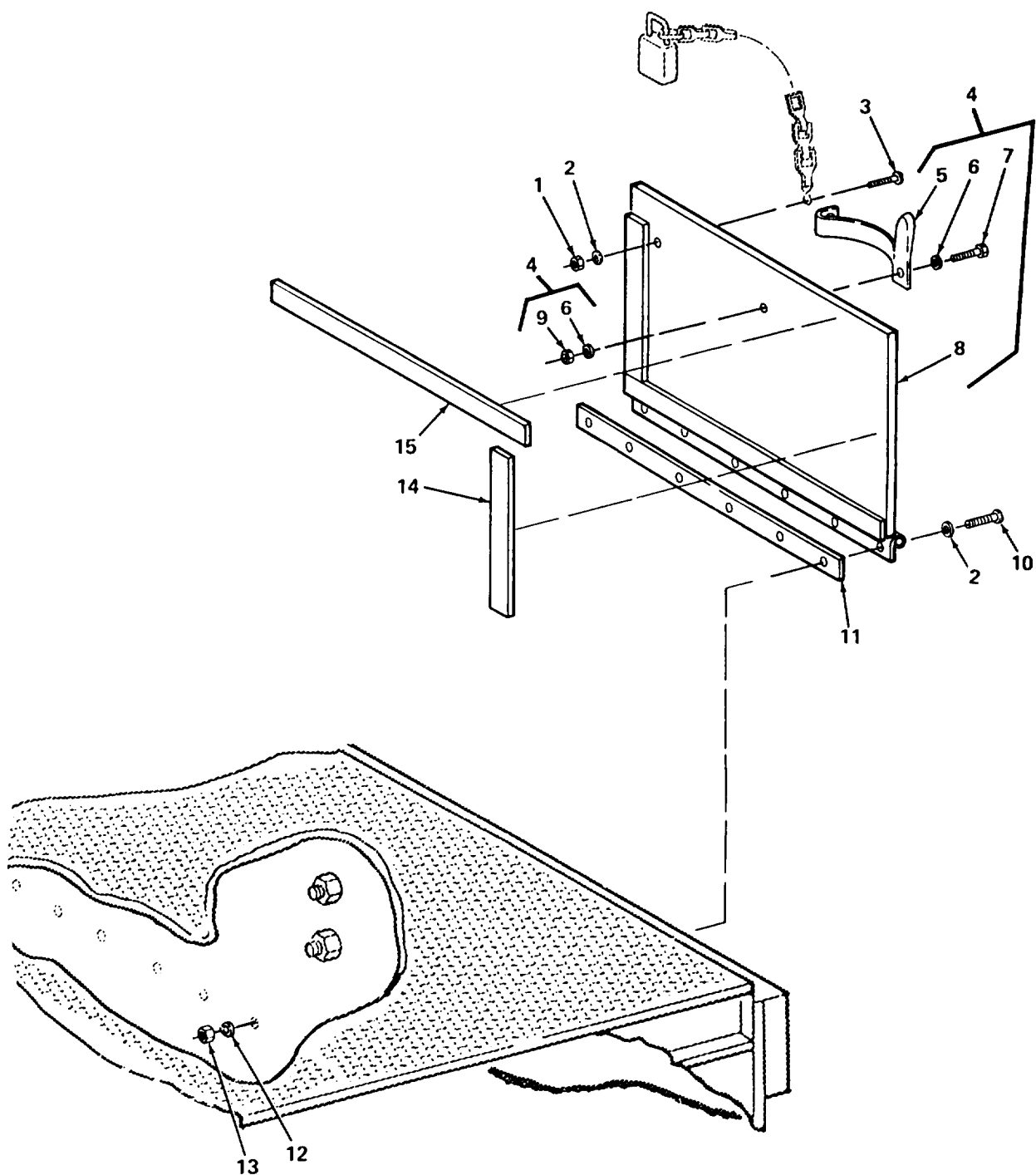


Figure 27. Stowage Door Assembly

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP:1808 STOWAGE RACKS, BOXES, STRAPS, CARRYING CASES, CABLE REELS, HOSE REELS, ETC.					
FIGURE 27. STOWAGE DOOR ASSEMBLY.					
1	PAOZZ	96906	MS17830-3C	NUT,SELF-LOCKING,HE	1
2	PAOZZ	96906	MS27183-42	WASHER,FLAT	7
3	PAOZZ	96906	MS35206-264	SCREW,MACHINE	1
4	PBOOO	98255	SW25157	DOOR,ACCESS	1
5	PAOZZ	98255	SW13217E1155-1	.HANDLE,DOOR	1
6	PAOZZ	96906	MS27183-10	.WASHER,FLAT	2
7	PAOZZ	96906	MS90725-6	.SCREW,CAP,HEXAGON H	1
8	XAOZZ	98255	SW21653	.DOOR,STORAGE	1
9	PAOZZ	96906	MS51922-1	.NUT,SELF-LOCKING,HE	1
10	PAOZZ	96906	MS35206-266	SCREW,MACHINE	6
11	PAOZZ	98255	SW25055	PLATE,MENDING	1
12	PAOZZ	96906	MS35338-43	WASHER,LOCK	6
13	PAOZZ	96906	MS35649-202	NUT,PLAIN,HEXAGON	6
14	MOOZZ	98255	SW26522-2	GASKET 22.5 IN. MAKE FROM RUBBER SHEET P/N ASTM-D-1056	2
15	MOOZZ	98255	SW26522-1	GASKET 10.3 IN. MAKE FROM RUBBER SHEET P/N ASTM-D-1056	2

END OF FIGURE

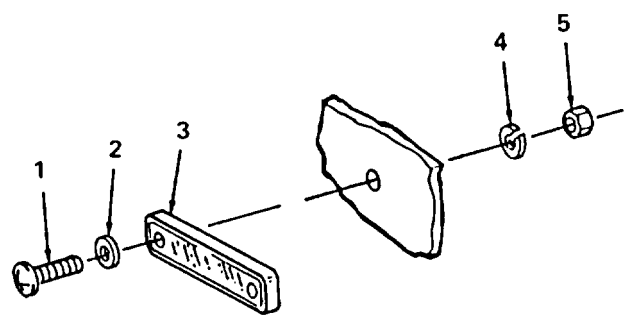


Figure 28. Reflectors

SECTION II

TM9-2330-383-14&P

(1)	(2)	(3)	(4)	(5)	(6)
ITEM	SMR		PART		
NO	CODE	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY

GROUP:22 BODY, CHASSIS OR HULL

ACCESSORY ITEMS

GROUP:2202 ACCESSORY ITEMS

FIGURE 28. REFLECTORS.

1	PAOZZ	96906	MS35206-265	SCREW,MACHINE	16
2	PAOZZ	96906	MS27183-42	WASHER,FLAT	16
3	PAOZZ	98255	SW25444-1	REFLECTOR,INDICATIN AMBER	4
3	PAOZZ	98255	SW25444-2	REFLECTOR,INDICATIN RED	4
4	PAOZZ	96906	MS35338-43	WASHER,LOCK	16
5	PAOZZ	96906	MS35649-202	NUT,PLAIN,HEXAGON	16

END OF FIGURE

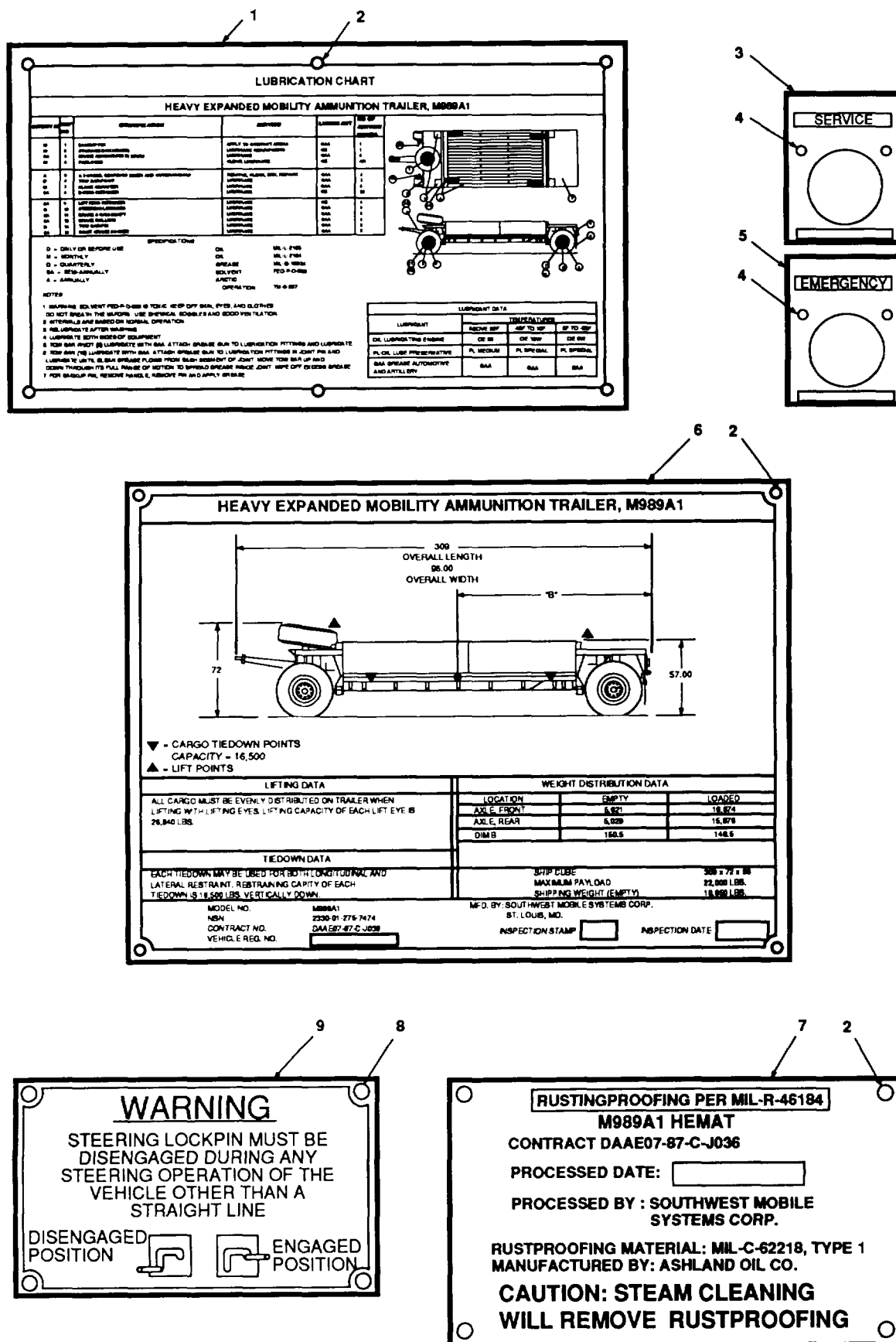


Figure 29. Identification Plates (Sheet 1 of 2)

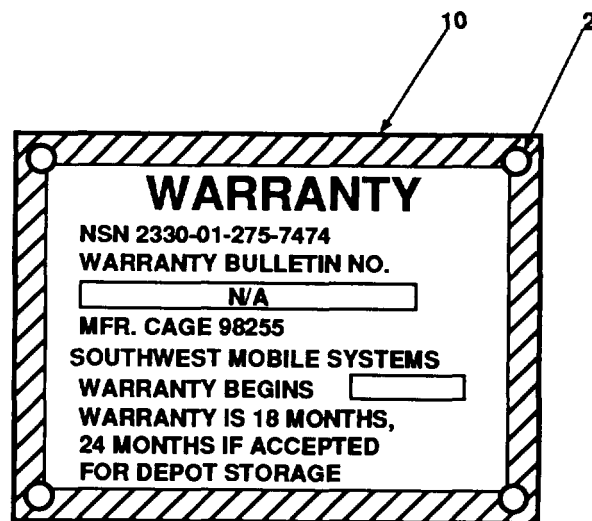


Figure 29. Identification Plates (Sheet 2 of 2)

(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	
				FIGURE 29. IDENTIFICATION PLATES.	
1	PFOZZ	98255	SW25458	PLATE, INSTRUCTION	1
2	PAOZZ	07707	AD64H	RIVET, BLIND	19
3	PAOZZ	96906	MS53007-1	PLATE, IDENTIFICATIO	1
4	PAOZZ	81349	M24243/6-A404H	RIVET, BLIND	4
5	PAOZZ	96906	MS53007-2	PLATE, IDENTIFICATIO	1
6	PFOZZ	98255	SW25457	PLATE, IDENTIFICATIO	1
7	PAOZZ	98255	SW32560	PLATE, IDENTIFICATIO	1
8	PAOZZ	81349	M24243/6-A606H	RIVET, BLIND	4
9	PAOZZ	98255	SW31723	PLATE, INSTRUCTION	1
10	PAOZZ	98255	SW32558	PLATE, IDENTIFICATIO	1

END OF FIGURE

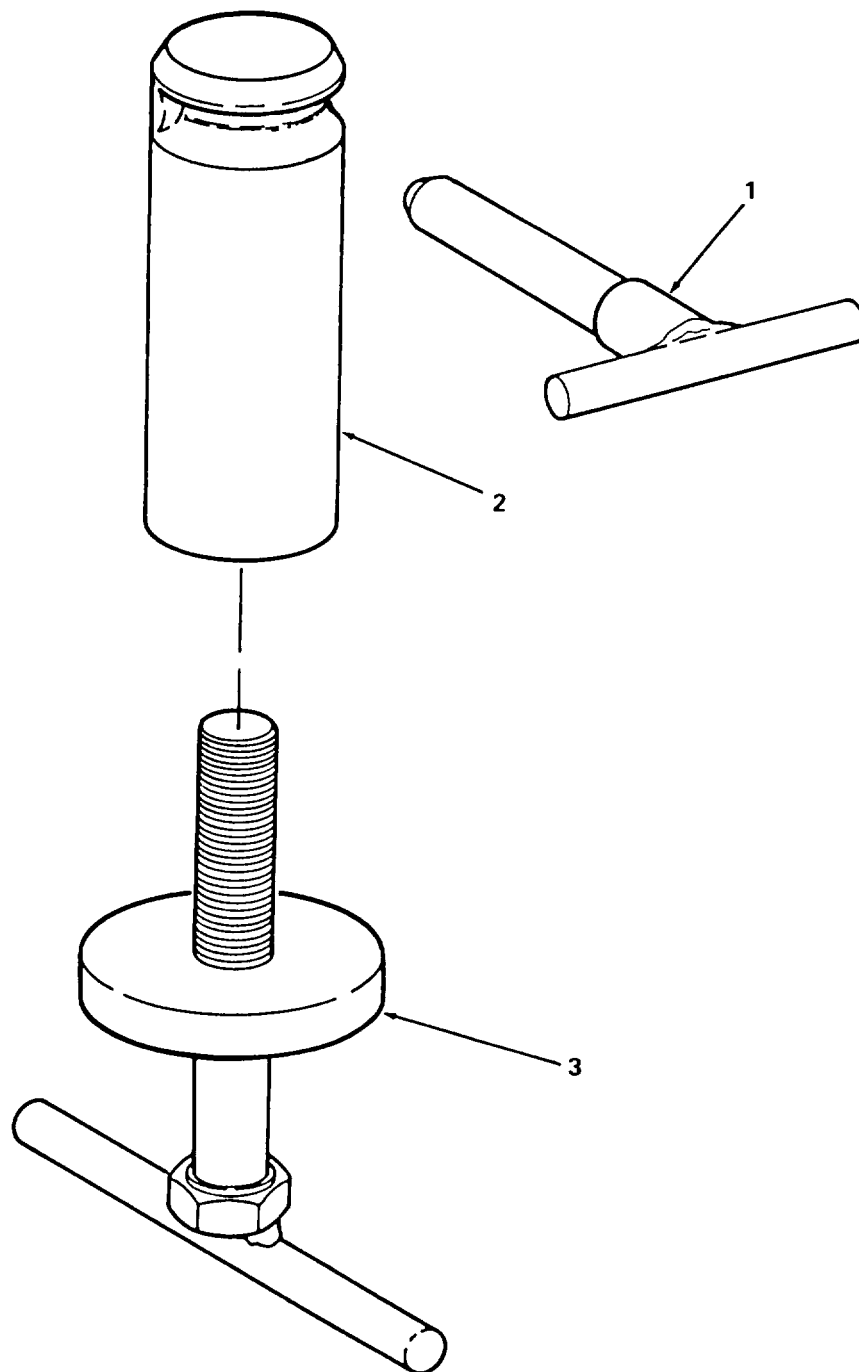


Figure 30. Inserter, Bearing and Bushing

SECTION II

TM9-2330-383-14&P

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP:26 TOOLS AND TEST EQUIPMENT GROUP:2604 SPECIAL TOOLS (REPAIR PARTS)	
				FIGURE. 30. INSERTER, BEARING AND BUSHING.	
1	XAOZZ	98255	SW26788	TOOL,BEARING-HANDLE	1
2	XAOZZ	98255	SW26790	TOOL,BEARING	1
3	XAOZZ	98255	SW26789	TOOL,BEARING-BASE	1

END OF FIGURE

SECTION II

TM9-2330-383-14&P

(1)	(2)	(3)	(4)	(5)	(6)
ITEM	SMR		PART		
NO	CODE	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY

GROUP:95 GENERAL USE STANDARDIZED
PARTSGROUP:9501 BULK HARDWARE SUPPLIES
AND BULK MATERIEL, COMMON

FIGURE BULK.

1	PAOZZ	61424	PFT-6B	HOSE, NONMETALLIC	V
2	PAOZZ	52540	3250-10103	HOSE, NONMETALLIC	V
3	PAOZZ	70485	X-982	NONMETALLIC CHANNEL	V
4	PAOZZ	81346	ASTM-D-1056	RUBBER SHEET, CELLUL	V
5	PAOZZ	98255	OR8376128	TUBE, NONMETALLIC	V
6	PAOZZ	98255	OR8376130	TUBE, NONMETALLIC	V
7	PAOZZ	98255	OR8376127	TUBE, NONMETALLIC	V
8	PAOZZ	01276	FC425-32	TUBING, NONMETALLIC	V
9	PAOZZ	01276	FC425-24	TUBING, NONMETALLIC	V

END OF FIGURE

BULK-1

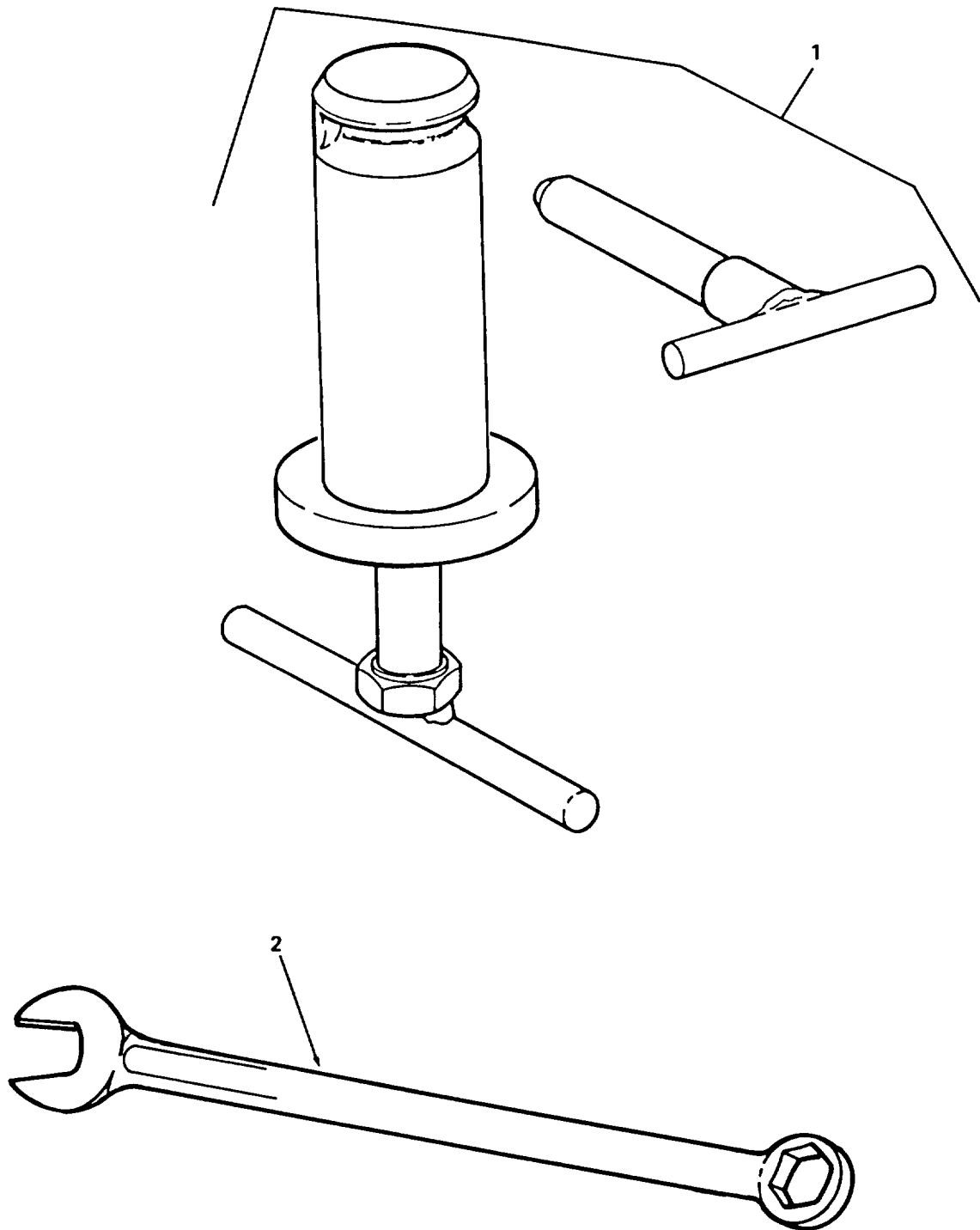


Figure 31. Special Tools

SECTION III

TM9-2330-383-14&P

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP:26 TOOLS AND TEST EQUIPMENT					
GROUP:2604 SPECIAL TOOLS					
FIGURE 31. SPECIAL TOOLS.					
1	PEOZZ	98255	SW26878	INSERTER, BEARING QTY:001	4
2	PEOZZ	65814	47	WRENCH,OPEN END QTY:001	4
END OF FIGURE					

CROSS-REFERENCE INDEXES

NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG	ITEM	STOCK NUMBER	FIG	ITEM
4730-00-012-7951	20	19	4730-00-277-8289	10	17
4730-00-014-4027	10	12	4730-00-278-4822	11	9
5310-00-014-5850	27	2	5306-00-286-0481	12	8
	28	2	4730-00-289-0155	11	23
6240-00-019-0877	1	5	5120-00-293-1531	31	2
6240-00-019-3093	2	7	5315-00-298-1481	17	2
6240-00-044-6914	2	8	6220-00-299-7425	1	6
5310-00-045-3296	3	7	6220-00-299-7426	1	6
	13	17	5330-00-353-0959	1	3
	27	12	2530-00-359-1162	18	1
	28	4	6250-00-371-4018	1	4
5340-00-057-2906	3	8	4820-00-377-8780	10	18
5999-00-057-2929	1	2	5310-00-407-9566	10	7
	2	12		11	2
5310-00-067-6356	19	9		18	36
5305-00-068-0500	6	1		20	17
5305-00-068-0502	27	7		21	12
4730-00-069-1187	11	15	2530-00-426-8971	14	10
	12	1	4730-00-427-5121	10	11
	20	7		11	20
	21	9	5310-00-436-3290	27	1
5305-00-071-2077	18	27	9390-00-442-6321	BULK	3
5305-00-071-2505	18	33	5935-00-462-6603	4	6
5310-00-080-6004	18	11	5310-00-497-3895	22	3
5310-00-081-4219	10	6	5975-00-570-9598	13	15
	11	3	5935-00-572-9180	1	11
	20	18		2	13
	21	11	5330-00-576-3028	14	11
5310-00-088-1251	3	2	6220-00-577-3434	1	1
	27	9	5310-00-582-5965	12	11
5310-00-122-7102	17	12		18	29
5940-00-143-4793	3	11	5310-00-584-5272	18	22
5940-00-143-4794	3	10	5310-00-596-8169	1	9
5935-00-167-7775	4	2	5310-00-637-9541	2	2
4730-00-172-0028	17	1		18	10
4730-00-172-0034	19	2		20	12
5330-00-172-1919	12	3		21	4
6220-00-179-4324	2	9	5305-00-725-2317	18	12
5315-00-187-9591	14	8	6220-00-726-1916	1	1
4730-00-200-0257	12	10	5305-00-726-2550	8	20
5310-00-209-0965	6	10	5305-00-726-2555	17	8
5310-00-225-6408	17	7	2640-00-729-6081	15	2
5306-00-226-4825	14	9	5310-00-732-0558	18	9
5306-00-226-4831	11	5	6220-00-752-6516	1	8
5306-00-226-4835	20	9	5310-00-761-3706	18	23
	21	10	5310-00-761-6882	18	28
5315-00-234-1864	25	7	5310-00-763-8905	6	11
5310-00-245-3615	10	8		8	17
	18	35	5935-00-773-1428	3	3
5310-00-274-8715	6	2	5310-00-800-0695	8	18

CROSS-REFERENCE INDEXES

NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG	ITEM	STOCK NUMBER	FIG	ITEM
5340-00-809-1494	13	18	5360-01-058-8253	8	19
5310-00-809-4058	3	4	4730-01-062-2570	20	2
	12	12		21	1
	18	30	2510-01-067-4717	2	5
	27	6	5306-01-075-8519	10	5
5310-00-809-5998	18	26		18	34
	25	6	4730-01-086-4068	11	17
5310-00-809-8533	19	7	6220-01-093-4439	2	4
5310-00-811-1377	23	11	4730-01-095-5833	10	27
	24	4	4730-01-096-0574	10	1
4730-00-817-6578	10	25	4730-01-096-3169	10	3
	11	18	4730-01-096-3204	12	4
	12	5	4730-01-096-9128	11	21
3110-00-829-0575	14	5	4730-01-097-0386	10	21
5310-00-829-9981	11	1		11	7
	20	16		20	10
	21	13	4730-01-098-4494	10	24
5310-00-833-8567	1	12	5315-01-098-6455	17	15
	2	14	4730-01-102-4123	11	11
5315-00-842-3045	17	11	5310-01-110-7815	8	10
5315-00-849-9857	18	21	5310-01-110-7816	8	8
5310-00-880-7745	6	9	5340-01-112-6396	18	25
5320-00-882-8385	29	8	5970-01-142-2282	4	4
5320-00-882-8386	29	4	5365-01-152-4536	8	13
5305-00-889-3116	17	21	2530-01-153-1464	8	6
4730-00-891-0798	12	4	5305-01-156-5418	8	16
5305-00-914-7648	18	4	3120-01-161-2139	10	16
5310-00-934-9758	3	6	5310-01-164-1136	13	7
	13	11	2540-01-164-7252	19	8
	27	13	5340-01-169-8331	13	12
	28	5	4720-01-169-9891	BULK	1
5305-00-947-4354	19	6	5340-01-172-3737	10	23
5310-00-950-1310	17	20	4730-01-174-9405	12	7
5320-00-956-7355	29	2	5310-01-176-6495	13	8
5305-00-958-8463	22	1	5340-01-194-3128	2	3
5305-00-984-5688	2	1	5310-01-204-3342	8	11
5305-00-984-6208	1	7	5310-01-229-8029	15	3
5305-00-984-6211	27	3		18	3
5305-00-984-6212	28	1	5340-01-231-5359	3	13
5305-00-984-6213	3	14		13	16
	27	10	4720-01-234-1733	BULK	8
5305-00-988-1726	3	5	5315-01-239-0882	13	6
9905-00-999-7369	29	5	5315-01-239-0884	13	1
9905-00-999-7370	29	3	5305-01-248-9959	8	9
5940-01-006-4487	4	5	5310-01-257-7715	13	5
4720-01-009-9058	BULK	2	5310-01-266-3011	13	4
9905-01-013-8723	4	3	5310-01-270-5463	15	3
2530-01-023-7015	8	3	5340-01-281-8354	27	4
5315-01-025-2847	8	2	9905-01-282-7981	29	6
5310-01-058-4589	8	12	2940-01-284-1822	12	9

CROSS-REFERENCE INDEXES

NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG	ITEM	STOCK NUMBER	FIG	ITEM
6220-01-284-2709	2	10	5315-01-289-5046	6	15
4720-01-285-4608	BULK	9	5340-01-289-7577	18	7
2530-01-287-2167	8	1	2530-01-289-8284	20	3
5340-01-288-1311	23	1		21	5
	24	1	2530-01-289-8285	10	19
5305-01-288-1413	18	5	4720-01-289-8291	11	13
5305-01-288-1414	18	6	2530-01-289-8389	8	21
5305-01-288-1416	23	2	2530-01-289-9731	17	9
	24	2	2540-01-290-0757	18	14
5365-01-288-1488	6	7	9905-01-290-1980	28	3
5365-01-288-1489	6	8	9905-01-290-1981	28	3
5365-01-288-1502	12	13	5315-01-290-2742	17	10
4720-01-288-1948	11	12	9905-01-290-4751	29	1
4730-01-288-3583	6	6	2530-01-290-9288	14	12
2530-01-288-4049	8	21	5330-01-291-5071	14	1
2530-01-288-4050	8	21	5360-01-291-5628	8	22
2530-01-288-4051	9	1	2530-01-291-5798	8	5
5305-01-288-4516	6	12	2530-01-291-5872	8	4
5330-01-288-4539	6	4	5310-01-292-7088	23	4
5310-01-288-5098	6	14		24	13
5365-01-288-5119	23	5	5310-01-292-7255	23	7
	24	12		24	9
5340-01-288-5122	27	11	5310-01-292-7256	23	3
5340-01-288-5124	18	13		24	10
5340-01-288-5131	6	3	5310-01-292-9430	14	7
5340-01-288-5135	25	2	5310-01-292-9481	14	6
3110-01-288-5757	6	13	5306-01-292-9484	23	6
2530-01-288-5793	12	2		24	11
2530-01-288-5878	17	3	6150-01-293-5749	3	1
5306-01-288-9351	14	3	3130-01-294-3164	8	7
2530-01-288-9640	11	4	6150-01-296-3046	4	1
4720-01-288-9664	11	16	5120-01-296-3099	31	1
2510-01-288-9758	20	14	6220-01-297-3217	2	11
	21	15	5305-01-299-6588	26	6
2530-01-288-9797	10	9	2510-01-299-9433	25	1
3040-01-288-9840	23	8	7690-01-300-0777	8	23
	24	8	5310-01-309-7072	18	8
2530-01-288-9854	17	13	5305-01-309-7720	23	9
2530-01-289-1013	11	24		24	7
2530-01-289-1037	8	7	5306-01-310-6729	14	3
2540-01-289-1105	17	17	3110-01-319-3970	14	2
2530-01-289-1475	14	4	4720-01-339-8531	11	10
4210-01-289-1723	18	16	2590-01-340-0270	8	14
2530-01-289-3782	6	16	5315-01-340-0349	17	18
2530-01-289-3783	6	16	2540-01-340-0460	19	1
2540-01-289-3799	27	5	2530-01-340-0466	5	1
2530-01-289-3954	7	1	5310-01-340-4628	19	3
2530-01-289-3959	17	3		23	10
2530-01-289-3960	6	5		24	3
2530-01-289-3963	15	1	5330-01-340-4660	18	24

CROSS-REFERENCE INDEXES

NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG	ITEM	STOCK NUMBER	FIG	ITEM
4010-01-341-3308	18	17			
2530-01-341-5031	19	5			
5340-01-341-9521	11	25			
5365-01-342-8607	21	14			

SECTION IV

TM9-2330-383-14&P
CROSS-REFERENCE INDEXES

CAGEC	PART NUMBER	PART NUMBER INDEX		FIG	ITEM
		STOCK	NUMBER		
07707	AD64H	5320-00-956-7355		29	2
88044	AN415-7	5315-01-098-6455		17	15
81346	ASTM-D-1056			BULK	4
11815	BAPKTR-66			2	15
97111	B22	4730-01-098-4494		10	24
78553	C1059-014-1	5310-00-596-8169		1	9
74410	DB-1385	2540-01-164-7252		19	8
01276	FC425-24	4720-01-285-4608		BULK	9
01276	FC425-32	4720-01-234-1733		BULK	8
01276	FD45-1040-06	5340-01-172-3737		10	23
75535	G-213-5/8 IN			18	19
81348	GP3A/15.00-22.50 /H/TBTR			16	1
46717	L6451-101	5315-00-187-9591		14	8
98255	MGLP-R6-7			1	10
96906	MS15003-4	4730-00-172-0028		17	1
96906	MS15003-6	4730-00-172-0034		19	2
96906	MS15570-1251	6240-00-019-0877		1	5
96906	MS15570-623	6240-00-019-3093		2	7
96906	MS17830-3C	5310-00-436-3290		27	1
96906	MS19081-113	3110-00-829-0575		14	5
96906	MS19081-283	3110-01-319-3970		14	2
96906	MS21044N14	5310-00-497-3895		22	3
96906	MS21333-105	5340-00-809-1494		13	18
96906	MS21333-73	5340-00-057-2906		3	8
96906	MS21919WCG18	5340-01-169-8331		13	12
96906	MS21919WCG28	5340-01-231-5359		3	13
				13	16
96906	MS24665-302	5315-00-234-1864		25	7
96906	MS24665-357	5315-00-298-1481		17	2
96906	MS24665-421	5315-00-849-9857		18	21
96906	MS24665-499	5315-00-842-3045		17	11
96906	MS25036-110	5940-00-143-4793		3	11
96906	MS25036-112	5940-00-143-4794		3	10
96906	MS27142-2	5935-00-462-6603		4	6
96906	MS27144-1	5935-00-167-7775		4	2
96906	MS27148-2	5999-00-057-2929		1	2
				2	12
96906	MS27183-10	5310-00-809-4058		3	4
				12	12
				18	30
				27	6
96906	MS27183-12	5310-00-081-4219		10	6
				11	3
				20	18
				21	11
96906	MS27183-14	5310-00-080-6004		18	11
96906	MS27183-18	5310-00-809-5998		18	26
				25	6
96906	MS27183-23	5310-00-809-8533		19	7
96906	MS27183-4	5310-00-950-1310		17	20

SECTION IV

TM9-2330-383-14&P
CROSS-REFERENCE INDEXES

CAGEC	PART NUMBER	PART NUMBER INDEX STOCK NUMBER	FIG	ITEM
96906	MS27183-42	5310-00-014-5850	27	2
			28	2
96906	MS3367-7-9	5975-00-570-9598	13	15
96906	MS35206-213	5305-00-889-3116	17	21
96906	MS35206-261	5305-00-984-6208	1	7
96906	MS35206-264	5305-00-984-6211	27	3
96906	MS35206-265	5305-00-984-6212	28	1
96906	MS35206-266	5305-00-984-6213	3	14
			27	10
96906	MS35206-282	5305-00-988-1726	3	5
96906	MS35206-308	5305-00-984-5688	2	1
96906	MS35335-39	5310-00-800-0695	8	18
96906	MS35338-43	5310-00-045-3296	3	7
			13	17
			27	12
			28	4
96906	MS35338-44	5310-00-582-5965	12	11
			18	29
96906	MS35338-45	5310-00-407-9566	10	7
			11	2
			18	36
			20	17
			21	12
96906	MS35338-46	5310-00-637-9541	2	2
			18	10
			20	12
			21	4
96906	MS35338-47	5310-00-209-0965	6	10
96906	MS35338-48	5310-00-584-5272	18	22
96906	MS35338-63	5310-00-274-8715	6	2
96906	MS35421-1	6220-00-299-7425	1	6
96906	MS35421-2	6220-00-299-7426	1	6
96906	MS35423-1	6220-00-577-3434	1	1
96906	MS35423-2	6220-00-726-1916	1	1
96906	MS35478-1683	6240-00-044-6914	2	8
96906	MS35649-202	5310-00-934-9758	3	6
			13	11
			27	13
			28	5
96906	MS35649-2312	5310-00-829-9981	11	1
			20	16
			21	13
96906	MS35649-2314	5310-00-245-3615	10	8
			18	35
96906	MS35692-101	5310-00-122-7102	17	12
96906	MS51922-1	5310-00-088-1251	3	2
			27	9
96906	MS51922-53	5310-00-225-6408	17	7
96906	MS51922-57	5310-00-067-6356	19	9
96906	MS51922-72	5310-00-811-1377	23	11
			24	4

SECTION IV

TM9-2330-383-14&P
CROSS-REFERENCE INDEXES

CAGEC	PART NUMBER	PART NUMBER INDEX STOCK NUMBER	FIG	ITEM
96906	MS51967-15	5310-00-761-3706	18	23
96906	MS51967-2	5310-00-761-6882	18	28
96906	MS51967-8	5310-00-732-0558	18	9
96906	MS51968-11	5310-00-880-7745	6	9
96906	MS51968-20	5310-00-763-8905	6	11
			8	17
96906	MS51983-7	5310-01-270-5463	15	3
96906	MS51983-8	5310-01-229-8029	15	3
			18	3
96906	MS52125-2	6220-01-093-4439	2	4
96906	MS53007-1	9905-00-999-7370	29	3
96906	MS53007-2	9905-00-999-7369	29	5
96906	MS53068-2	2530-00-359-1162	18	1
96906	MS90725-3	5305-00-068-0500	6	1
96906	MS90725-36	5306-01-075-8519	10	5
			18	34
96906	MS90725-6	5305-00-068-0502	27	7
96906	MS90725-60		20	11
			21	3
96906	MS90726-217	5305-00-958-8463	22	1
96906	MS90727-163	5305-00-726-2550	8	20
96906	MS90727-168	5305-00-726-2555	17	8
96906	MS90727-185	5305-00-914-7648	18	4
96906	MS90728-121	5305-00-071-2077	18	27
96906	MS90728-191	5305-00-947-4354	19	6
96906	MS90728-32	5306-00-226-4825	14	9
96906	MS90728-38	5306-00-226-4831	11	5
96906	MS90728-42	5306-00-226-4835	20	9
			21	10
96906	MS90728-64	5305-00-725-2317	18	12
96906	MS90728-7	5305-00-071-2505	18	33
81349	M23053/4-303-0	5970-01-142-2282	4	4
81349	M24243/6-A404H	5320-00-882-8386	29	4
81349	M24243/6-A606H	5320-00-882-8385	29	8
81349	M24243/6-A804H		18	15
81349	M43436/3-1	9905-01-013-8723	4	3
40342	N-11257AA		13	3
06721	N-12969	2940-01-284-1822	12	9
06721	N14488AC	2530-01-288-5793	12	2
06721	N15759A	2530-01-289-8285	10	19
06721	N20404E	2530-01-289-8284	20	3
			21	5
06721	N30108BD	2530-01-288-9640	11	4
06721	N4302A	2530-01-289-1013	11	24
98255	OR8376127		BULK	7
98255	OR8376128		BULK	5
98255	OR8376130		BULK	6
98255	OR8376130-288		4	8
61424	PFT-6B	4720-01-169-9891	BULK	1
73195	RA28165-8	2530-01-289-3963	15	1
98255	SW10010-0101		17	16

SECTION IV

TM9-2330-383-14&P
CROSS-REFERENCE INDEXES

CAGEC	PART NUMBER	PART NUMBER INDEX STOCK NUMBER	FIG	ITEM
98255	SW13217E1155-1	2540-01-289-3799	27	5
98255	SW13319P-0080		11	14
98255	SW13319P-0240		20	1
98255	SW13319P-0320		11	6
98255	SW13319P-0440		10	20
98255	SW13319P-0600		21	2
98255	SW13319P-0840		10	13
			20	8
98255	SW13319P-0900		11	22
98255	SW13319P-1200		10	26
98255	SW13319P-1400		10	15
98255	SW13319P-1900		10	4
98255	SW13319P-2000		10	28
98255	SW13319P-2440		10	22
98255	SW13319P-2660		11	8
98255	SW13321P-0800		10	14
98255	SW13321P-0960		10	2
98255	SW15460P-5		13	13
98255	SW16183P	5940-01-006-4487	4	5
98255	SW21641	2540-01-290-0757	18	14
98255	SW21653		27	8
98255	SW25055	5340-01-288-5122	27	11
98255	SW25078	2540-01-289-1105	17	17
98255	SW25081	5340-01-289-7577	18	7
98255	SW25087	5340-01-288-5124	18	13
98255	SW25138-1		3	12
98255	SW25142	6150-01-296-3046	4	1
98255	SW25157	5340-01-281-8354	27	4
98255	SW25175		17	19
98255	SW25182	2530-01-289-3954	7	1
98255	SW25183		13	10
98255	SW25183-2		13	9
98255	SW25189		13	2
98255	SW25197-1		6	19
98255	SW25197-2		6	19
98255	SW25198-1	2530-01-289-9731	17	9
98255	SW25198-2	2530-01-288-9854	17	13
98255	SW25202	5305-01-288-4516	6	12
98255	SW25203	5315-01-289-5046	6	15
98255	SW25204	2530-01-289-3960	6	5
98255	SW25206	5330-01-288-4539	6	4
98255	SW25207	5340-01-288-5131	6	3
98255	SW25208	3110-01-288-5757	6	13
98255	SW25209	5310-01-288-5098	6	14
98255	SW25210	5365-01-288-1488	6	7
98255	SW25211	5365-01-288-1489	6	8
98255	SW25213	4730-01-288-3583	6	6
98255	SW25214	5315-01-290-2742	17	10
98255	SW25216	2530-01-289-3783	6	16
98255	SW25219	2530-01-289-3782	6	16
98255	SW25230	5310-01-292-7255	23	7

SECTION IV

TM9-2330-383-14&P
CROSS-REFERENCE INDEXES

CAGEC	PART NUMBER	PART NUMBER INDEX STOCK NUMBER	FIG	ITEM
98255	SW25230	5310-01-292-7255	24	9
98255	SW25236	2510-01-288-9758	20	14
			21	15
98255	SW25238	5305-01-288-1416	23	2
			24	2
98255	SW25239	5310-01-292-7088	23	4
			24	13
98255	SW25243	5306-01-292-9484	23	6
			24	11
98255	SW25245	5365-01-288-5119	23	5
			24	12
98255	SW25246	5310-01-292-7256	23	3
			24	10
98255	SW25247	5340-01-288-1311	23	1
			24	1
98255	SW25289	5305-01-299-6588	26	6
98255	SW25292	6150-01-293-5749	3	1
98255	SW25336	5365-01-288-1502	12	13
98255	SW25355	2530-01-288-9797	10	9
98255	SW25371		18	18
98255	SW25395	2530-01-340-0466	5	1
98255	SW25442-2	2640-00-729-6081	15	2
98255	SW25444-1	9905-01-290-1980	28	3
98255	SW25444-2	9905-01-290-1981	28	3
98255	SW25456		23	12
			24	5
98255	SW25457	9905-01-282-7981	29	6
98255	SW25458	9905-01-290-4751	29	1
98255	SW26521	5340-01-341-9521	11	25
98255	SW26522-1		27	15
98255	SW26522-2		27	14
9U920	SW26534	5310-01-309-7072	18	8
98255	SW26535	4010-01-341-3308	18	17
98255	SW26638		17	14
98255	SW26639	5365-01-342-8607	21	14
98255	SW26676	5315-01-340-0349	17	18
98255	SW26788		30	1
98255	SW26789		30	3
98255	SW26790		30	2
98255	SW26878	5120-01-296-3099	31	1
98255	SW26910	2510-01-299-9433	25	1
98255	SW26911	5340-01-288-5135	25	2
98255	SW26981	2530-01-341-5031	19	5
98255	SW27025	2540-01-340-0460	19	1
98255	SW27049		25	3
98255	SW29636-1		20	13
98255	SW29636-2		20	15
98255	SW29637		18	32
98255	SW29638		18	31
98255	SW29648		19	4
98255	SW29658	5330-01-340-4660	18	24

SECTION IV

TM9-2330-383-14&P
CROSS-REFERENCE INDEXES

CAGEC	PART NUMBER	PART NUMBER INDEX STOCK NUMBER	FIG	ITEM
98255	SW29772		25	4
98255	SW29773		25	5
98255	SW31258-1		4	12
98255	SW31258-2		4	7
98255	SW31259-1		4	11
98255	SW31259-2		4	9
98255	SW31259-3		4	10
98255	SW31723		29	9
98255	SW31802		3	9
3B938	SW31969		26	1
3B938	SW31969-1		26	3
3B938	SW31969-2		26	2
3B938	SW31969-3		26	4
3B938	SW31969-4		26	5
98255	SW32558		29	10
98255	SW32560		29	7
98255	SW32969		18	2
98255	SW32973		18	37
83473	TB-20	5340-01-112-6396	18	25
70485	X-982	9390-00-442-6321	BULK	3
9R200	043943	5310-01-110-7815	8	10
9R200	070308	2530-01-288-4050	8	21
9R200	070309		8	21
9R200	070326	5360-01-291-5628	8	22
9R200	089899	2530-01-291-5798	8	5
81142	1000406	5360-01-058-8253	8	19
52304	1000693	2530-01-153-1464	8	6
7P109	1001353		8	15
18889	100170	5306-01-288-9351	14	3
18889	100181	5306-01-310-6729	14	3
9R200	1001811	7690-01-300-0777	8	23
06721	100558		20	4
			21	6
06721	100558-A		20	6
			21	8
98343	10451-E	4730-01-096-3204	12	4
06721	10719		10	10
0HUY6	1135873B105	5305-01-309-7720	23	9
			24	7
0HUY6	115 7427B 102	5310-01-340-4628	19	3
			23	10
			24	3
19207	11639515-2		2	6
19207	11639520	2510-01-067-4717	2	5
19207	11639535	6220-00-179-4324	2	9
93019	12003BN		17	4
93019	12004BN		17	5
93061	1202P-6-6	4730-00-278-4822	11	9
93019	12210-7		17	6
93019	12210X	2530-01-289-3959	17	3
93019	12211-7		17	6

SECTION IV

TM9-2330-383-14&P
CROSS-REFERENCE INDEXES

CAGEC	PART NUMBER	PART NUMBER INDEX STOCK NUMBER	FIG	ITEM
93019	12211X	2530-01-288-5878	17	3
19207	12338711	5340-01-194-3128	2	3
19207	12360850-1	6220-01-284-2709	2	10
19207	12360870-2	6220-01-297-3217	2	11
OHJ37	143622-0001		6	17
OHJ37	143623-0001		6	18
98255	143625-0002	5310-01-292-9481	14	6
98255	143699-0019	5310-01-292-9430	14	7
79470	1480X6	4730-01-174-9405	12	7
98343	1509	5330-00-172-1919	12	3
18889	1540	2530-01-289-1475	14	4
98255	15460P-6		13	14
06721	19100	5315-01-239-0884	13	1
40342	193008	5310-01-176-6495	13	8
98343	2-X-256	5310-01-257-7715	13	5
60938	2X351G		18	20
30379	2148946	4820-00-377-8780	10	18
06721	22-X-183		20	5
			21	7
78500	2208N430	5330-00-576-3028	14	11
52304	23570	5310-01-058-4589	8	12
93061	269NTA-10-8	4730-01-102-4123	11	11
93061	271NTA-6-6	4730-01-086-4068	11	17
93061	272NTA-6-4	4730-01-097-0386	10	21
			11	7
			20	10
73265	278852	4730-00-891-0798	12	4
93061	279NTA-10-8	4730-01-096-0574	10	1
93061	279NTA-6-8	4730-01-096-3169	10	3
39428	3043T19	5306-00-286-0481	12	8
79470	3152X4	4730-00-012-7951	20	19
79470	3152X6	4730-00-427-5121	10	11
			11	20
79470	3152X8	4730-00-014-4027	10	12
79470	3200X6X4	4730-00-200-0257	12	10
79470	3220X8X4	3120-01-161-2139	10	16
79470	3220X8X6	4730-00-817-6578	10	25
			11	18
			12	5
52540	3250-10103	4720-01-009-9058	BULK	2
78500	3262S45	2530-00-426-8971	14	10
79470	3325X4	4730-00-277-8289	10	17
98343	35W52040	5310-01-266-3011	13	4
52304	38540	5305-01-248-9959	8	9
52304	39074	2530-01-023-7015	8	3
52304	39075	5315-01-025-2847	8	2
76301	4M36-11008	5310-01-204-3342	8	11
54905	403T	4210-01-289-1723	18	16
78502	409-10133	2530-01-288-4051	9	1
78502	409-10370		9	1
78502	427-10401	2590-01-340-0270	8	14

SECTION IV

TM9-2330-383-14&P
CROSS-REFERENCE INDEXES

CAGEC	PART NUMBER	PART NUMBER INDEX STOCK NUMBER	FIG	ITEM
80201	46304	5330-01-291-5071	14	1
65814	47	5120-00-293-1531	31	2
OHUY6	503 7264B 342		23	13
OHUY6	503 7264B 343		24	6
OHUY6	507 7427B 000	3040-01-288-9840	23	8
			24	8
79136	5304-125	5365-01-152-4536	8	13
73331	5939830	6220-00-752-6516	1	8
73331	5939831	6250-00-371-4018	1	4
73331	5939841	5330-00-353-0959	1	3
06721	6-X-102	5315-01-239-0882	13	6
81343	6-4 100202BA	4730-00-069-1187	11	15
			12	1
			20	7
			21	9
81343	6-4 120202BA(LON G NUT)		11	19
81343	6-6 120202BA	4730-00-289-0155	11	23
81343	6-6-6-120425BA	4730-01-095-5833	10	27
98343	6178617	5310-01-164-1136	13	7
58429	62W3500B0		12	6
58429	62W3506B0	4720-01-339-8531	11	10
58429	62W3554B0	4720-01-288-9664	11	16
58429	62W3572B0	4720-01-288-1948	11	12
58429	62W3584B0	4720-01-289-8291	11	13
18889	656518	2530-01-290-9288	14	12
93061	68NTA-6-4	4730-01-062-2570	20	2
			21	1
93061	68NTA-6-6	4730-01-096-9128	11	21
37492	695272-40T		22	2
19207	7731428	5935-00-773-1428	3	3
52304	804023	5305-01-156-5418	8	16
52304	805714	2530-01-287-2167	8	1
9R200	807488	2530-01-289-1037	8	7
9R200	807489		8	7
9R200	807496	2530-01-291-5872	8	4
9R200	807497		8	4
9R200	807614	2530-01-289-8389	8	21
9R200	807615	2530-01-288-4049	8	21
9R200	808750	3130-01-294-3164	8	7
9R200	808751		8	7
19207	8338566	5935-00-572-9180	1	11
			2	13
19207	8338567	5310-00-833-8567	1	12
			2	14
52304	90414	5310-01-110-7816	8	8
39428	91255A120	5305-01-288-1413	18	5
39428	91255A999	5305-01-288-1414	18	6

SECTION IV TM9-2330-383-14&P
CROSS-REFERENCE INDEXES

FIG	ITEM	FIGURE AND ITEM NUMBER STOCK NUMBER	INDEX CAGEC	PART NUMBER
BULK	1	4720-01-169-9891	61424	PFT-6B
BULK	2	4720-01-009-9058	52540	3250-10103
BULK	3	9390-00-442-6321	70485	X-982
BULK	4		81346	ASTM-D-1056
BULK	5		98255	CR8376128
BULK	6		98255	OR8376130
BULK	7		98255	OR8376127
BULK	8	4720-01-234-1733	01276	FC425-32
BULK	9	4720-01-285-4608	01276	FC425-24
1	1	6220-00-577-3434	96906	MS35423-1
1	1	6220-00-726-1916	96906	MS35423-2
1	2	5999-00-057-2929	96906	MS27148-2
1	3	5330-00-353-0959	73331	5939841
1	4	6250-00-371-4018	73331	5939831
1	5	6240-00-019-0877	96906	MS15570-1251
1	6	6220-00-299-7425	96906	MS35421-1
1	6	6220-00-299-7426	96906	MS35421-2
1	7	5305-00-984-6208	96906	MS35206-261
1	8	6220-00-752-6516	73331	5939830
1	9	5310-00-596-8169	78553	C1059-014-1
1	10		98255	MGLP-R6-7
1	11	5935-00-572-9180	19207	8338566
1	12	5310-00-833-8567	19207	8338567
2	1	5305-00-984-5688	96906	MS35206-308
2	2	5310-00-637-9541	96906	MS35338-46
2	3	5340-01-194-3128	19207	12338711
2	4	6220-01-093-4439	96906	MS52125-2
2	5	2510-01-067-4717	19207	11639520
2	6		19207	11639515-2
2	7	6240-00-019-3093	96906	MS15570-623
2	8	6240-00-044-6914	96906	MS35478-1683
2	9	6220-00-179-4324	19207	11639535
2	10	6220-01-284-2709	19207	12360850-1
2	11	6220-01-297-3217	19207	12360870-2
2	12	5999-00-057-2929	96906	MS27148-2
2	13	5935-00-572-9180	19207	8338566
2	14	5310-00-833-8567	19207	8338567
2	15		11815	BAPKTR-66
3	1	6150-01-293-5749	98255	SW25292
3	2	5310-00-088-1251	96906	MS51922-1
3	3	5935-00-773-1428	19207	7731428
3	4	5310-00-809-4058	96906	MS27183-10
3	5	5305-00-988-1726	96906	MS35206-282
3	6	5310-00-934-9758	96906	MS35649-202
3	7	5310-00-045-3296	96906	MS35338-43
3	8	5340-00-057-2906	96906	MS21333-73
3	9		98255	SW31802
3	10	5940-00-143-4794	96906	MS25036-112
3	11	5940-00-143-4793	96906	MS25036-110
3	12		98255	SW25138-1
3	13	5340-01-231-5359	96906	MS21919WCG28

SECTION IV TM9-2330-383-14&P
CROSS-REFERENCE INDEXES

FIG	ITEM	FIGURE AND ITEM NUMBER INDEX		PART NUMBER
		STOCK NUMBER	CAGEC	
3	14	5305-00-984-6213	96906	MS35206-266
4	1	6150-01-296-3046	98255	SW25142
4	2	5935-00-167-7775	96906	MS27144-1
4	3	9905-01-013-8723	81349	M43436/3-1
4	4	5970-01-142-2282	81349	M23053/4-303-0
4	5	5940-01-006-4487	98255	SW16183P
4	6	5935-00-462-6603	96906	MS27142-2
4	7		98255	SW31258-2
4	8		98255	CR8376130-288
4	9		98255	SW31259-2
4	10		98255	SW31259-3
4	11		98255	SW31259-1
4	12		98255	SW31258-1
5	1	2530-01-340-0466	98255	SW25395
6	1	5305-00-068-0500	96906	MS90725-3
6	2	5310-00-274-8715	96906	MS35338-63
6	3	5340-01-288-5131	98255	SW25207
6	4	5330-01-288-4539	98255	SW25206
6	5	2530-01-289-3960	98255	SW25204
6	6	4730-01-288-3583	98255	SW25213
6	7	5365-01-288-1488	98255	SW25210
6	8	5365-01-288-1489	98255	SW25211
6	9	5310-00-880-7745	96906	MS51968-11
6	10	5310-00-209-0965	96906	MS35338-47
6	11	5310-00-763-8905	96906	MS51968-20
6	12	5305-01-288-4516	98255	SW25202
6	13	3110-01-288-5757	98255	SW25208
6	14	5310-01-288-5098	98255	SW25209
6	15	5315-01-289-5046	98255	SW25203
6	16	2530-01-289-3782	98255	SW25219
6	16	2530-01-289-3783	98255	SW25216
6	17		OHJ37	143622-0001
6	18		OHJ37	143623-0001
6	19		98255	SW25197-1
6	19		98255	SW25197-2
7	1	2530-01-289-3954	98255	SW25182
8	1	2530-01-287-2167	52304	805714
8	2	5315-01-025-2847	52304	39075
8	3	2530-01-023-7015	52304	39074
8	4		9R200	807497
8	4	2530-01-291-5872	9R200	807496
8	5	2530-01-291-5798	9R200	089899
8	6	2530-01-153-1464	52304	1000693
8	7		9R200	807489
8	7		9R200	808751
8	7	2530-01-289-1037	9R200	807488
8	7	3130-01-294-3164	9R200	808750
8	8	5310-01-110-7816	52304	90414
8	9	5305-01-248-9959	52304	38540
8	10	5310-01-110-7815	9R200	043943
8	11	5310-01-204-3342	76301	4M36-11008

SECTION IV TM9-2330-383-14&P
CROSS-REFERENCE INDEXES

FIG	ITEM	FIGURE AND ITEM NUMBER STOCK NUMBER	INDEX CAGEC	PART NUMBER
8	12	5310-01-058-4589	52304	23570
8	13	5365-01-152-4536	79136	5304-125
8	14	2590-01-340-0270	78502	427-10401
8	15		7P109	1001353
8	16	5305-01-156-5418	52304	804023
8	17	5310-00-763-8905	96906	MS51968-20
8	18	5310-00-800-0695	96906	MS35335-39
8	19	5360-01-058-8253	81142	1000406
8	20	5305-00-726-2550	96906	MS90727-163
8	21		9R200	070309
8	21	2530-01-288-4049	9R200	807615
8	21	2530-01-288-4050	9R200	070308
8	21	2530-01-289-8389	9R200	807614
8	22	5360-01-291-5628	9R200	070326
8	23	7690-01-300-0777	9R200	1001811
9	1		78502	409-10370
9	1	2530-01-288-4051	78502	409-10133
10	1	4730-01-096-0574	93061	279NTA-10-8
10	2		98255	SW13321P-0960
10	3	4730-01-096-3169	93061	279NTA-6-8
10	4		98255	SW13319P-1900
10	5	5306-01-075-8519	96906	MS90725-36
10	6	5310-00-081-4219	96906	MS27183-12
10	7	5310-00-407-9566	96906	MS35338-45
10	8	5310-00-245-3615	96906	MS35649-2314
10	9	2530-01-288-9797	98255	SW25355
10	10		06721	10719
10	11	4730-00-427-5121	79470	3152X6
10	12	4730-00-014-4027	79470	3152X8
10	13		98255	SW13319P-0840
10	14		98255	SW13321P-0800
10	15		98255	SW13319P-1400
10	16	3120-01-161-2139	79470	3220X8X4
10	17	4730-00-277-8289	79470	3325X4
10	18	4820-00-377-8780	30379	2148946
10	19	2530-01-289-8285	06721	N15759A
10	20		98255	SW13319P-0440
10	21	4730-01-097-0386	93061	272NTA-6-4
10	22		98255	SW13319P-2440
10	23	5340-01-172-3737	01276	FD45-1040-06
10	24	4730-01-098-4494	97111	B22
10	25	4730-00-817-6578	79470	3220X8X6
10	26		98255	SW13319P-1200
10	27	4730-01-095-5833	81343	6-6-6-120425BA
10	28		98255	SW13319P-2000
11	1	5310-00-829-9981	96906	MS35649-2312
11	2	5310-00-407-9566	96906	MS35338-45
11	3	5310-00-081-4219	96906	MS27183-12
11	4	2530-01-288-9640	06721	N30108BD
11	5	5306-00-226-4831	96906	MS90728-38
11	6		98255	SW13319P-0320

SECTION IV TM9-2330-383-14&P
CROSS-REFERENCE INDEXES

FIG	ITEM	FIGURE AND ITEM NUMBER STOCK NUMBER	INDEX CAGEC	PART NUMBER
11	7	4730-01-097-0386	93061	272NTA-6-4
11	8		98255	SW13319P-2660
11	9	4730-00-278-4822	93061	1202P-6-6
11	10	4720-01-339-8531	58429	62W3506B0
11	11	4730-01-102-4123	93061	269NTA-10-8
11	12	4720-01-288-1948	58429	62W3572B0
11	13	4720-01-289-8291	58429	62W3584B0
11	14		98255	SW13319P-0080
11	15	4730-00-069-1187	81343	6-4 100202BA
11	16	4720-01-288-9664	58429	62W3554B0
11	17	4730-01-086-4068	93061	271NTA-6-6
11	18	4730-00-817-6578	79470	3220X8X6
11	19		81343	6-4 120202BA(LON G NUT)
11	20	4730-00-427-5121	79470	3152X6
11	21	4730-01-096-9128	93061	68NTA-6-6
11	22		98255	SW13319P-0900
11	23	4730-00-289-0155	81343	6-6 120202BA
11	24	2530-01-289-1013	06721	N4302A
11	25	5340-01-341-9521	98255	SW26521
12	1	4730-00-069-1187	81343	6-4 100202BA
12	2	2530-01-288-5793	06721	N14488AC
12	3	5330-00-172-1919	98343	1509
12	4	4730-00-891-0798	73265	278852
12	4	4730-01-096-3204	98343	10451-E
12	5	4730-00-817-6578	79470	3220X8X6
12	6		58429	62W3500B0
12	7	4730-01-174-9405	79470	1480X6
12	8	5306-00-286-0481	39428	3043T19
12	9	2940-01-284-1822	06721	N-12969
12	10	4730-00-200-0257	79470	3200X6X4
12	11	5310-00-582-5965	96906	MS35338-44
12	12	5310-00-809-4058	96906	MS27183-10
12	13	5365-01-288-1502	98255	SW25336
13	1	5315-01-239-0884	06721	19100
13	2		98255	SW25189
13	3		40342	N-11257AA
13	4	5310-01-266-3011	98343	35W52040
13	5	5310-01-257-7715	98343	2-X-256
13	6	5315-01-239-0882	06721	6-X-102
13	7	5310-01-164-1136	98343	6178617
13	8	5310-01-176-6495	40342	193008
13	9		98255	SW25183-2
13	10		98255	SW25183
13	11	5310-00-934-9758	96906	MS35649-202
13	12	5340-01-169-8331	96906	MS21919WCG18
13	13		98255	SW15460P-5
13	14		98255	15460P-6
13	15	5975-00-570-9598	96906	MS3367-7-9
13	16	5340-01-231-5359	96906	MS21919WCG28
13	17	5310-00-045-3296	96906	MS35338-43

SECTION IV TM9-2330-383-14&P
CROSS-REFERENCE INDEXES

FIG	ITEM	FIGURE AND ITEM NUMBER STOCK NUMBER	INDEX CAGEC	PART NUMBER
13	18	5340-00-809-1494	96906	MS21333-105
14	1	5330-01-291-5071	80201	46304
14	2	3110-01-319-3970	96906	MS19081-283
14	3	5306-01-288-9351	18889	100170
14	3	5306-01-310-6729	18889	100181
14	4	2530-01-289-1475	18889	1540
14	5	3110-00-829-0575	96906	MS19081-113
14	6	5310-01-292-9481	98255	143625-0002
14	7	5310-01-292-9430	98255	143699-0019
14	8	5315-00-187-9591	46717	L6451-101
14	9	5306-00-226-4825	96906	MS90728-32
14	10	2530-00-426-8971	78500	3262S45
14	11	5330-00-576-3028	78500	2208N430
14	12	2530-01-290-9288	18889	656518
15	1	2530-01-289-3963	73195	RA28165-8
15	2	2640-00-729-6081	98255	SW25442-2
15	3	5310-01-229-8029	96906	MS51983-8
15	3	5310-01-270-5463	96906	MS51983-7
16	1		81348	GP3A/15.00-22.50 /H/TBTR
17	1	4730-00-172-0028	96906	MS15003-4
17	2	5315-00-298-1481	96906	MS24665-357
17	3	2530-01-288-5878	93019	12211X
17	3	2530-01-289-3959	93019	12210X
17	4		93019	12003BN
17	5		93019	12004BN
17	6		93019	12210-7
17	6		93019	12211-7
17	7	5310-00-225-6408	96906	MS51922-53
17	8	5305-00-726-2555	96906	MS90727-168
17	9	2530-01-289-9731	98255	SW25198-1
17	10	5315-01-290-2742	98255	SW25214
17	11	5315-00-842-3045	96906	MS24665-499
17	12	5310-00-122-7102	96906	MS35692-101
17	13	2530-01-288-9854	98255	SW25198-2
17	14		98255	SW26638
17	15	5315-01-098-6455	88044	AN415-7
17	16		98255	SW10010-0101
17	17	2540-01-289-1105	98255	SW25078
17	18	5315-01-340-0349	98255	SW26676
17	19		98255	SW25175
17	20	5310-00-950-1310	96906	MS27183-4
17	21	5305-00-889-3116	96906	MS35206-213
18	1	2530-00-359-1162	96906	MS53068-2
18	2		98255	SW32969
18	3	5310-01-229-8029	96906	MS51983-8
18	4	5305-00-914-7648	96906	MS90727-185
18	5	5305-01-288-1413	39428	91255A120
18	6	5305-01-288-1414	39428	91255A999
18	7	5340-01-289-7577	98255	SW25081
18	8	5310-01-309-7072	9U920	SW26534

SECTION IV TM9-2330-383-14&P
CROSS-REFERENCE INDEXES

FIG	ITEM	FIGURE AND ITEM NUMBER STOCK NUMBER	INDEX CAGEC	PART NUMBER
18	9	5310-00-732-0558	96906	MS51967-8
18	10	5310-00-637-9541	96906	MS35338-46
18	11	5310-00-080-6004	96906	MS27183-14
18	12	5305-00-725-2317	96906	MS90728-64
18	13	5340-01-288-5124	98255	SW25087
18	14	2540-01-290-0757	98255	SW21641
18	15		81349	M24243/6-A804H
18	16	4210-01-289-1723	54905	403T
18	17	4010-01-341-3308	98255	SW26535
18	18		98255	SW25371
18	19		75535	G-213-5/8 IN
18	20		60938	2X351G
18	21	5315-00-849-9857	96906	MS24665-421
18	22	5310-00-584-5272	96906	MS35338-48
18	23	5310-00-761-3706	96906	MS51967-15
18	24	5330-01-340-4660	98255	SW29658
18	25	5340-01-112-6396	83473	TB-20
18	26	5310-00-809-5998	96906	MS27183-18
18	27	5305-00-071-2077	96906	MS90728-121
18	28	5310-00-761-6882	96906	MS51967-2
18	29	5310-00-582-5965	96906	MS35338-44
18	30	5310-00-809-4058	96906	MS27183-10
18	31		98255	SW29638
18	32		98255	SW29637
18	33	5305-00-071-2505	96906	MS90728-7
18	34	5306-01-075-8519	96906	MS90725-36
18	35	5310-00-245-3615	96906	MS35649-2314
18	36	5310-00-407-9566	96906	MS35338-45
18	37		98255	SW32973
19	1	2540-01-340-0460	98255	SW27025
19	2	4730-00-172-0034	96906	MS15003-6
19	3	5310-01-340-4628	OHUY6	115 7427B 102
19	4		98255	SW29648
19	5	2530-01-341-5031	98255	SW26981
19	6	5305-00-947-4354	96906	MS90728-191
19	7	5310-00-809-8533	96906	MS27183-23
19	8	2540-01-164-7252	74410	DB-1385
19	9	5310-00-067-6356	96906	MS51922-57
20	1		98255	SW13319P-0240
20	2	4730-01-062-2570	93061	68NTA-6-4
20	3	2530-01-289-8284	06721	N20404E
20	4		06721	100558
20	5		06721	22-X-183
20	6		06721	100558-A
20	7	4730-00-069-1187	81343	6-4 100202BA
20	8		98255	SW13319P-0840
20	9	5306-00-226-4835	96906	MS90728-42
20	10	4730-01-097-0386	93061	272NTA-6-4
20	11		96906	MS90725-60
20	12	5310-00-637-9541	96906	MS35338-46
20	13		98255	SW29636-1

SECTION IV TM9-2330-383-14&P
CROSS-REFERENCE INDEXES

FIG	ITEM	FIGURE AND ITEM NUMBER STOCK NUMBER	INDEX CAGEC	PART NUMBER
20	14	2510-01-288-9758	98255	SW25236
20	15		98255	SW29636-2
20	16	5310-00-829-9981	96906	MS35649-2312
20	17	5310-00-407-9566	96906	MS35338-45
20	18	5310-00-081-4219	96906	MS27183-12
20	19	4730-00-012-7951	79470	3152X4
21	1	4730-01-062-2570	93061	68NTA-6-4
21	2		98255	SW13319P-0600
21	3		96906	MS90725-60
21	4	5310-00-637-9541	96906	MS35338-46
21	5	2530-01-289-8284	06721	N20404E
21	6		06721	100558
21	7		06721	22-X-183
21	8		06721	100558-A
21	9	4730-00-069-1187	81343	6-4 100202BA
21	10	5306-00-226-4835	96906	MS90728-42
21	11	5310-00-081-4219	96906	MS27183-12
21	12	5310-00-407-9566	96906	MS35338-45
21	13	5310-00-829-9981	96906	MS35649-2312
21	14	5365-01-342-8607	98255	SW26639
21	15	2510-01-288-9758	98255	SW25236
22	1	5305-00-958-8463	96906	MS90726-217
22	2		37492	695272-40T
22	3	5310-00-497-3895	96906	MS21044N14
23	1	5340-01-288-1311	98255	SW25247
23	2	5305-01-288-1416	98255	SW25238
23	3	5310-01-292-7256	98255	SW25246
23	4	5310-01-292-7088	98255	SW25239
23	5	5365-01-288-5119	98255	SW25245
23	6	5306-01-292-9484	98255	SW25243
23	7	5310-01-292-7255	98255	SW25230
23	8	3040-01-288-9840	OHUY6	507 7427B 000
23	9	5305-01-309-7720	OHUY6	1135873B105
23	10	5310-01-340-4628	OHUY6	115 7427B 102
23	11	5310-00-811-1377	96906	MS51922-72
23	12		98255	SW25456
23	13		OHUY6	503 7264B 342
24	1	5340-01-288-1311	98255	SW25247
24	2	5305-01-288-1416	98255	SW25238
24	3	5310-01-340-4628	OHUY6	115 7427B 102
24	4	5310-00-811-1377	96906	MS51922-72
24	5		98255	SW25456
24	6		OHUY6	503 7264B 343
24	7	5305-01-309-7720	OHUY6	1135873B105
24	8	3040-01-288-9840	OHUY6	507 7427B 000
24	9	5310-01-292-7255	98255	SW25230
24	10	5310-01-292-7256	98255	SW25246
24	11	5306-01-292-9484	98255	SW25243
24	12	5365-01-288-5119	98255	SW25245
24	13	5310-01-292-7088	98255	SW25239
25	1	2510-01-299-9433	98255	SW26910

SECTION IV TM9-2330-383-14&P
CROSS-REFERENCE INDEXES

FIG	ITEM	FIGURE AND ITEM NUMBER STOCK NUMBER	INDEX CAGEC	PART NUMBER
25	2	5340-01-288-5135	98255	SW26911
25	3		98255	SW27049
25	4		98255	SW29772
25	5		98255	SW29773
25	6	5310-00-809-5998	96906	MS27183-18
25	7	5315-00-234-1864	96906	MS24665-302
26	1		3B938	SW31969
26	2		3B938	SW31969-2
26	3		3B938	SW31969-1
26	4		3B938	SW31969-3
26	5		3B938	SW31969-4
26	6	5305-01-299-6588	98255	SW25289
27	1	5310-00-436-3290	96906	MS17830-3C
27	2	5310-00-014-5850	96906	MS27183-42
27	3	5305-00-984-6211	96906	MS35206-264
27	4	5340-01-281-8354	98255	SW25157
27	5	2540-01-289-3799	98255	SW13217E1155-1
27	6	5310-00-809-4058	96906	MS27183-10
27	7	5305-00-068-0502	96906	MS90725-6
27	8		98255	SW21653
27	9	5310-00-088-1251	96906	MS51922-1
27	10	5305-00-984-6213	96906	MS35206-266
27	11	5340-01-288-5122	98255	SW25055
27	12	5310-00-045-3296	96906	MS35338-43
27	13	5310-00-934-9758	96906	MS35649-202
27	14		98255	SW26522-2
27	15		98255	SW26522-1
28	1	5305-00-984-6212	96906	MS35206-265
28	2	5310-00-014-5850	96906	MS27183-42
28	3	9905-01-290-1980	98255	SW25444-1
28	3	9905-01-290-1981	98255	SW25444-2
28	4	5310-00-045-3296	96906	MS35338-43
28	5	5310-00-934-9758	96906	MS35649-202
29	1	9905-01-290-4751	98255	SW25458
29	2	5320-00-956-7355	07707	AD64H
29	3	9905-00-999-7370	96906	MS53007-1
29	4	5320-00-882-8386	81349	M24243/6-A404H
29	5	9905-00-999-7369	96906	MS53007-2
29	6	9905-01-282-7981	98255	SW25457
29	7		98255	SW32560
29	8	5320-00-882-8385	81349	M24243/6-A606H
29	9		98255	SW31723
29	10		98255	SW32558
30	1		98255	SW26788
30	2		98255	SW26790
30	3		98255	SW26789
31	1	5120-01-296-3099	98255	SW26878
31	2	5120-00-293-1531	65814	47

APPENDIX G

ILLUSTRATED LIST OF MANUFACTURED ITEMS

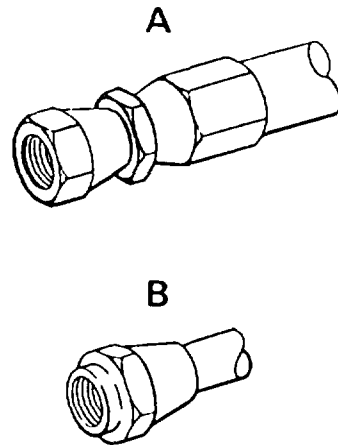
G-1. INTRODUCTION

This appendix includes complete instructions for making items authorized to be manufactured or fabricated. A part number index in alphanumeric order is provided for cross-referencing the part number of the item to be manufactured to the figure which covers the fabrication criteria. All bulk materials needed for manufacture of an item are listed in a tabular list on the illustrations.

G-2. MANUFACTURED ITEMS PART NUMBER INDEX

<u>Part Number</u>	<u>Figure Number</u>
SW13319P-0080	G-1
SW13319P-0240	G-1
SW13319P-0320	G-1
SW13319P-0440	G-1
SW13319P-0560	G-1
SW13319P-0600	G-1
SW13319P-0840	G-1
SW13319P-0900	G-1
SW13319P-1200	G-1
SW13319P-1400	G-1
SW13319P-1900	G-1
sW13319P-2000	G-1
SW13319P-2440	G-1
SW13319P-2660	G-1
SW13321P-0800	G-1
sW13321P-0960	G-1
SW25338-3	G-1
SW25338-4	G-1
SW25338-6	G-1
SW25338-8	G-1
SW26522-1	G-2
SW26522-2	G-2
SW26666	G-3

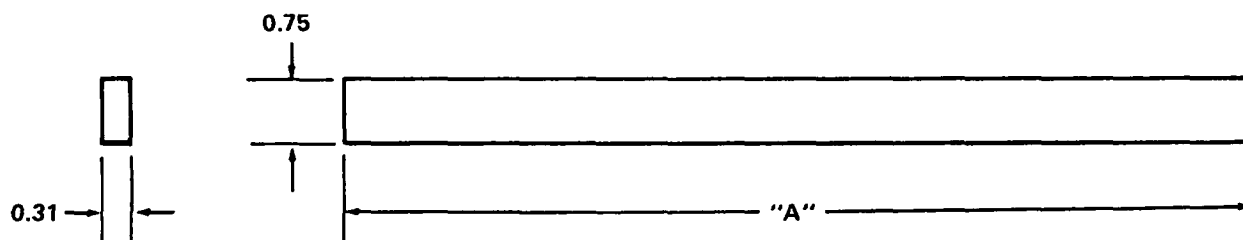
1. Nonmetallic Tube



PART NUMBER	LENGTH		CONNECTOR TYPE		NOMINAL INNER DIA	MATERIAL
	in .	(cm)				
SW13319P-0080	8	(20.3)	A	A	3/8	3250-06104
SW13319P-0240	24	(60.9)	A	A	3/8	3250-16104
SW13319P-0320	32	(81.3)	A	A	3/8	3250-16104
sw13319P-0440	44	(111.8)	A	A	3/8	3250-16104
SW13319P-0560	56	(142.2)	A	A	3/8	3250-16104
SW13319P-0600	60	(152.4)	A	A	3/8	3250-16104
SW13319P-0840	84	(213.4)	A	A	3/8	3250-16104
SW13319P-0900	90	(228.6)	A	A	3/8	3250-16104
SW13319P-1200	120	(304.8)	A	A	3/8	3250-16104
SW13319P-1400	140	(355.6)	A	A	3/8	3250-16104
SW13319P-1900	190	(482.6)	A	A	3/8	3250-16104
SW13319P-2000	200	(508.0)	A	A	3/8	3250-16104
SW13319P-2440	244	(619.8)	A	A	3/8	3250-16104
SKL3319P-2660	266	(675.7)	A	A	3/8	3250-16104
SW13321P-0800	80	(203.2)	B	B	5/8	3250-10103
SW13321P-0960	96	(243.8)	B	B	5/8	3250-10103
SW25338-3	54	(137.2)	A	B	3/8	62W3554B0
SW25338-4	72	(182.9)	A	B	3/8	62W3572B0
SW25338-6	84	(213.4)	A	B	3/8	62W3584B0
SW25338-8	106	(269.3)	A	B	3/8	62W3606B0

Figure G-1

2. Gasket

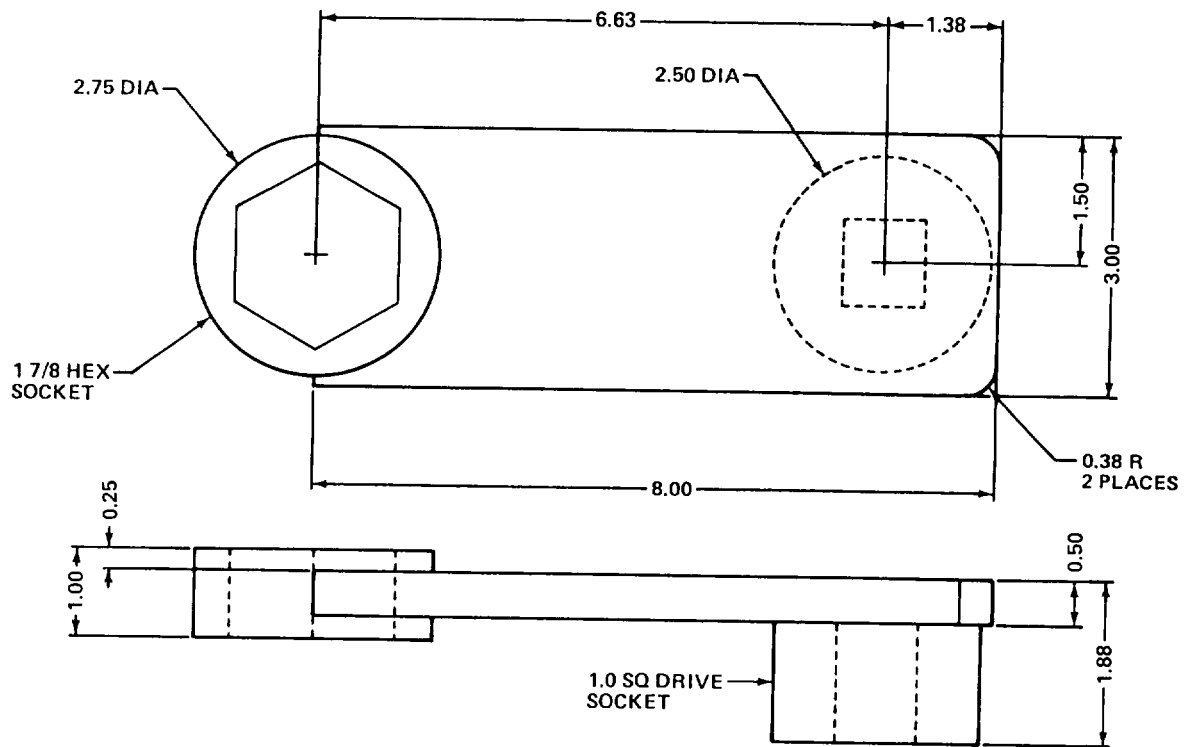


PART NO.	"A"
SW26522-1	22.5
SW26522-2	10.3

Fabricate from: Rubber Strip, MIL-C-3133SCE7K2.

Figure G-2

3. Assembly Tool (T1707 Offset Extension Socket)



Fabricate from:

- HR/CR steel stock, 1/2 x 3.0 x 8.0 inches.
- 1-7/8-inch 6-point impact socket.
- 1-inch drive socket.

Notes:

- All work surfaces must be level to within +0.005 inch.
- Break all sharp edges/corners to 0.03R.
- Weld components in place.

Figure G-3

APPENDIX H

TORQUE LIMITS

H-1. GENERAL

Use a torque wrench to check torque or tighten nuts and capscrews to specified torque. Special torque values are indicated in the maintenance procedures. Standard torque values should be used for other threaded fasteners. Refer to tables H-1 and H-2.

Table H-1. Standard Torque Values

Suggested Torque Values +5 Percent to Produce Corresponding Bolt Loads						
SAE Grade 5				SAE Grade 8		
Size	Clamp Load (lbs)	Assembly Torque		Clamp Load (lbs)	Assembly Torque	
		Dry (lb ft)	Lube (lb ft)		Dry (lb ft)	Lube (lb ft)
1/4-20	2020	8	75	2860	12	9
1/4-28	2320	10	86	3280	14	10
5/16-18	3340	17	13	4270	25	18
5/16-24	3700	19	14	5220	25	20
3/8-16	4940	30	23	7000	45	35
3/8-24	5600	35	25	7900	50	35
7/16-14	6800	50	35	9550	70	55
7/16-20	7550	55	40	10700	80	60
1/2-13	9050	75	55	12750	110	80
1/2-20	10700	90	65	14400	120	90
9/16-12	11600	110	80	16400	150	110
9/16-18	12950	120	90	18250	170	130
5/8-11	14400	150	110	20350	220	170
5/8-18	16950	180	130	23000	240	180
3/4-10	21300	260	200	30100	380	280
3/4-16	23800	300	220	33600	420	320
7/8-9	27000	400	300	41600	600	460
7/8-14	29800	440	320	45800	660	500
1-8	35500	580	440	54500	900	680
1-12	38800	640	480	59700	1000	740

H-1. GENERAL (CONT)

Table H-2. Self-Locking Nut Breakaway Torque Values

NOTE

To determine breakaway torque, thread nut onto screw or bolt until at least two threads stick out. Nut shall not make contact with a mating part. Stop the nut. Torque necessary to begin turning nut again is the breakaway torque. Do not reuse self-locking nuts that do not wet minimum breakaway torque.

Thread Size	Minimum Breakaway Torque (lb ft)	Thread Size	Minimum Breakaway Torque (lb ft)
10-32	2.0	5/8-18	32.0
1/4-28	3.5	3/4-16	50.0
5/16-24	6.5	7/8-14	70.0
3/8-24	9.5	1-12	90.0
7/16-20	14.0	1-1/8-12	117.0
1/2-20	18.0	1-1/4-12	143.0
9/16-18	24.0		

ALPHABETIC INDEX

Subject	Paragraph, Table
A	
Air Bag Suspension	
Installation	4-39
Removal	4-39
Air Brake and Suspension System	
Description	2-3
Air Brake System	
Testing (see PMCS, Operator)	
Air Chambers (see Brake Air Chambers)	
Air Cleaner	
Installation	4-19
Removal	4-19
Air Lines	
Installation	4-21
Removal	4-21
Repair	4-21
Air System	
Description	2-2
Air Tanks	
Installation	4-22
Removal	4-22
Axles	
Data	1-11
B	
Brake Air Chamber	
Caging	3-6
Installation	4-20
Removal	4-20
Uncaging	3-6
Brake Control Valve	
Installation	4-24
Removal	4-24
Brakes	
Adjustment	4-17
Description	2-3
Location	1-10
Brake Drums	
Inspection	5-7
Repair	5-7

ALPHABETIC INDEX - CONT**Subject****Paragraph,
Table****B - CONT**

Brake Shoes	
Cleaning	4-16
Inspection	4-16
Installation	4-16
Removal	4-16
Bumpers	
Installation	4-31
Location	1-10
Removal	4-31

C

Camshaft	
Installation	4-17
Removal	4-17
Clearance Marker Lights	
Description	2-1
Installation	4-12
Removal	4-12
Common Tools and Equipment	4-1, 5-1
Composite Lights	
Description	2-1
Installation	4-11
Removal	4-11
Repair	4-11
Connecting HEMAT	2-14, 2-15

D

Data Plates	
Installation	4-46
Location	1-12
Removal	4-46
Davit Crane Mount	
Description	2-6
Destruction of Materiel	1-3
Disconnecting HEMAT	2-18

E

Electrical System	
Inspection	4-10
Operator Maintenance	3-4
Equipment Characteristics, Capabilities, and Features	1-9
Equipment Data	1-11

ALPHABETIC INDEX - CONT

Subject	Paragraph, Table
F	
Fire Extinguisher	2-9
Fire Extinguisher Bracket	
Installation	4-36
Removal	4-36
Floorboards	
Inspection	4-44
Installation	4-44
Removal	4-44
Repair	4-44
Foldable Steps	
Installation	4-37
Removal	4-37
Fording	2-28
Frame	
Cleaning	4-30
Inspection	4-30
Location	1-10
Repair	4-30
Fresh Water Fording	2-28
Front Axle	
Assembly	5-4
Cleaning	5-4
Disassembly	5-4
Inspection	5-4
Installation	5-4
Removal	5-4
H	
Hubs and Drums	
Cleaning	4-26
Inspection	4-26
Installation	4-26
Removal	4-26
Repair	4-26
Wheel Bearing Adjustment	4-26
I	
Intervehicular Air Hoses	
Description	2-3
Intervehicular Cable	
Description	2-1

ALPHABETIC INDEX - CONT

Subject	Paragraph, Table
K	
Knuckle Assembly	
Installation	4-14
Removal	4-14
L	
Leveling Valves	
Installation	4-40
Removal	4-40
Lifting Eyes	
Description	2-1o
Location	2-1o
Use of	2-20
Lighting System	
Description	2-1
Location	2-1
Loading HEMAT	2-17
Location and Description of Major Components	1-1o
Lubrication Chart	3-2
Lubrication Instructions	3-1
M	
Maintenance Forms and Records	1-2, 2-12
Major Components	1-10
Marker Lights (see Clearance Marker Lights)	
Metric Units	1-8
Multifunction Valve	
Installation	4-25
Removal	4-25
O	
Operation	2-17
Operation in Dusty or Sandy Areas	2-27
Operation in Extreme Cold	2-21
Operation in Extreme Heat	2-22
Operation in Mud	2-26
Operation in Rainy or Humid Conditions	2-23
Operation in Salt Water Areas	2-24
Operation in Snow	2-25

ALPHABETIC INDEX - CONT

Subject	Paragraph, Table
P	
PMCS	
Operator	2-13, T2-1
Unit	4-7, T4-1
Pod Stops	
Installation	4-32
Location	1-10
Removal	4-32
Preparation for Shipment	5-9
Preparation for Storage	5-8
Preparation for Use After Storage	5-10
R	
Rear Axle	
Assembly	5-6
Cleaning	5-6
Disassembly	5-6
Inspection	5-6
Installation	5-6
Removal	5-6
Reflectors	
Installation	4-45
Location	1-10
Removal	4-45
Relay Valves	
Installation	4-23
Removal	4-23
Repair Parts	4-3, 5-3
Reporting Equipment Improvement Recommendations	1-4
S	
Safety, Care, and Handling	1-7
Safety Chains	
Installation	4-34
Location	2-4
Removal	4-34
Service Brake Assembly	
Installation	4-15
Removal	4-15
Servicing the Equipment	4-5
Shock Absorbers	
Installation	4-41
Removal	4-41

ALPHABETIC INDEX - CONT

Subject	Paragraph, Table
S - CONT	
Side Panels	
Installation	2-16
Location	2-11
Removal	2-16
Repair	4-43
Slack Adjuster	
Brake Adjustment	4-18
Installation	4-18
Removal	4-18
Spare Tire	
Installation	2-19
Location	2-5
Removal	2-19
Spare Tire Mount	
Description	2-5
Spare Tire Mounting	2-19
Special Tools, TMDE, and Support Equipment	4-2, 5-2
Splash Guards	
Installation	4-33
Removal	4-33
Steering	
Description	2-7
Steering Adjustment	
Four Wheel Alinement	4-29
Long Tie Rod Adjustment	4-29
Short Tie Rod Adjustment	4-29
Steering Stop Adjustment	4-29
Stencils	1-13
Stop and Tail Light (see Composite Light)	
Storage Box	
Description	2-8
Location	2-8
Storage Box Cover	
Installation	4-35
Removal	4-35
Repair	4-35
Suspension (Air)	
Description	2-2
Installation	4-39
Removal	4-39
Sway Bars	
Installation	4-42
Removal	4-42

ALPHABETIC INDEX - CONT

Subject	Paragraph, Table
S - CONT	
Symptom Index	
Operator	3-3
Unit	4-8
T	
Tiedown Rings	1-10
Tierods	
Installation	4-28
Removal	4-28
Torsion Bars	
Cleaning	5-5
Inspection	5-5
Installation	5-5
Removal	5-5
Towbar	
Assembly	4-38
Description	2-3
Disassembly	4-38
Installation	4-38
Removal	4-38
Towbar and Safety Chains	
Description	2-4
Towbar Pivot	
Assembly	4-27
Cleaning	4-27
Disassembly	4-27
Inspection	4-27
Installation	4-27
Removal	4-27
Towing HEMAT	2-17
Troubleshooting	
Operator	3-4, T3-1
Unit	4-9, T4-2
Turning of Drums	5-7
U	
Unpacking	4-4
Unloading HEMAT	2-17

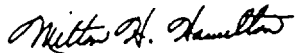
ALPHABETIC INDEX - CONT

Subject	Paragraph, Table
W	
Warranty	1-5
Wheels and Tires	
Installation	3-5
Removal	3-5
Wiring Harness	
Cleaning	4-13
Inspection	4-13
Installation	4-13
Removal	4-13
Repair	4-13

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TEAR ALONG PERFORATED LINE

THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
 1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
 1 Kilometer = 1000 Meters = 0.621 Miles

WEIGHTS

1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
 1 Kilogram = 1000 Grams = 2.2 Lb
 1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
 1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

SQUARE MEASURE

1 Sq. Centimeter = 100 Sq. Millimeters = 0.155 Sq. Inches
 1 Sq. Meter = 10,000 Sq. Centimeters = 10.76 Sq. Feet
 1 Sq. Kilometer = 1,000,000 Sq. Meters = 0.386 Sq. Miles

CUBIC MEASURE

1 Cu. Centimeter = 1000 Cu. Millimeters = 0.06 Cu. Inches
 1 Cu. Meter = 1,000,000 Cu. Centimeters = 35.31 Cu. Feet

TEMPERATURE

$$5/9 (^{\circ}\text{F} - 32) = ^{\circ}\text{C}$$

212^o Fahrenheit is equivalent to 100^o Celsius

90^o Fahrenheit is equivalent to 32.2^o Celsius

32^o Fahrenheit is equivalent to 0^o Celsius

$$9/5 \text{ C}^{\circ} + 32 = \text{F}^{\circ}$$

APPROXIMATE CONVERSION FACTORS

<u>TO CHANGE</u>	<u>TO</u>	<u>MULTIPLY BY</u>
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

<u>TO CHANGE</u>	<u>TO</u>	<u>MULTIPLY BY</u>
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
Kilometers per Liter	Miles per Gallon	2.354
Kilometers per Hour	Miles per Hour	0.621

