

D 101.11:  
5-9047

# TM 5-9047

DEPARTMENT OF THE ARMY TECHNICAL MANUAL



## TRAILER, 4 WHEEL SPECIAL TANDEM 10 TON, MODEL 4 D-T FLAT BED FOR CRANE-SHOVEL ATTACHMENTS ALL MAKES AND MODELS

This copy is a reprint which includes current pages from Changes 1 and 3.





TM 5-9047  
C 1

**TECHNICAL MANUAL**

**TRAILER, 4 WHEEL, SPECIAL TANDEM  
10 TON, MODEL 4 D-T, FLAT BED,  
FOR CRANE-SHOVEL ATTACHMENTS,  
ALL MAKES AND MODELS FSN 2330-377-0389**

TM 5-9047

HEADQUARTERS,  
DEPARTMENT OF THE ARMY  
WASHINGTON 25, D.C., *29 January, 1962*

CHANGES No. 1

TM 5-9047, 4 December 1953, is changed as follows:

*Page 3.* Paragraph *1b*, line 7. After "equipment." Add: Appendix IV contains the Maintenance Allocation Chart. Appendix V contains the Basic Issue Items authorized for use by the instrument-man.

# APPENDIX IV (Added)

## MAINTENANCE ALLOCATION

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### Section I. INTRODUCTION

#### 1. General

This appendix contains explanations of all maintenance and repair functions authorized the various echelons. Section II contains the Maintenance Allocation Chart.

#### 2. Maintenance

Maintenance is any action taken to keep material in a serviceable condition or to restore it to serviceability when it is unserviceable. Maintenance of materiel includes the following:

- a. *Service.* To clean, preserve, and replenish fuel and lubricants.
- b. *Adjust.* To regulate periodically to prevent malfunction.
- c. *Inspect.* To verify serviceability and detect incipient electrical or mechanical failure by scrutiny.
- d. *Test.* To verify serviceability and detect incipient electrical or mechanical failure by use of special equipment such as gages, meters, and the like.
- e. *Replace.* To substitute serviceable assemblies, subassemblies, and parts for unserviceable components.
- f. *Repair.* To restore an item to serviceable condition through correction of a specific failure or unserviceable condition. This function includes, but is not limited to, inspecting, cleaning, preserving, adjusting, replacing, welding, riveting, and straightening.
- g. *Aline.* To adjust two or more components of an electrical system so that their functions are properly synchronized.
- h. *Calibrate.* To determine, check, or rectify the graduation of an instrument, weapon, or weapons system, or components of a weapons system.
- i. *Overhaul.* To restore an item to completely serviceable condition as prescribed by serviceability standards developed and published by heads of technical services. This is accomplished through employment of the technique of "Inspect and Repair Only as Necessary" (IROAN). Maximum utilization of diagnostic and test equipment is combined with minimum disassembly of the item during the overhaul process.



### 3. Explanation of Columns

*a. Functional Group.* The functional group is a numerical group set up on a functional basis. The applicable Functional Grouping Indexes (obtained from the Corps of Engineers Functional Grouping Indexes) are listed on the MAC in the appropriate numerical sequence. These indexes are normally set up in accordance with their function and proximity to each other.

*b. Components and Related Operation.* This column contains the Functional Grouping Index heading, subgroup headings, and a brief description of the part starting with the noun name. It also designates the operations to be performed such as service, adjust, inspect, test, replace, repair, and overhaul.

*c. Echelons of Maintenance.* This column contains the various echelons of maintenance by number designation. An X placed in the appropriate echelon column in line with an indicated maintenance function authorizes that echelon to perform the function. The X indicates the lowest echelon responsible for performing the function, but does not necessarily indicate repair parts stockage at that level. Higher echelons are authorized to perform the indicated functions of lower echelons.

*d. Remarks.* This column lists specific maintenance functions, special tools, cross-references, instructions, and the like pertinent to the operation being performed.

## Section II. Maintenance Allocation Chart

Functional group	Components and related operation	Echelons of maintenance					Remarks
		1	2	3	4	5	
06	ELECTRICAL SYSTEM (ENGINE AND VEHICULAR)						
0608	MISCELLANEOUS ITEMS Switch, Rotary						
	Replace.....		X				
0609.1	HEAD, TAIL, AND MARKER LIGHTS Lamp, Incandescent						
	Replace.....	X					
	Light, Marker, Clearance						
	Replace.....		X				
	Lens and Gasket						
	Replace.....	X					
0613	HULL OR CHASSIS WIRING HARNESS Wiring Harness: Trailer						
	Replace.....						
0617	TRAILER COUPLINGS Cable Assembly and Plug						
	Replace.....		X				
	Repair.....						
11	REAR AXLE						
1100	REAR AXLE ASSEMBLY Axle Assembly: Non Driving						
	Replace.....					X	
12	BRAKES						
1202	SERVICE BRAKES Brake Shoe and Lining Assembly						



Functional group	Components and related operation	Echelons of maintenance					Remarks
		1	2	3	4	5	
13	WHEELS AND TRACKS						
1311	WHEEL ASSEMBLY						
	Hub and Drum Assembly						
	Repair.....		X				
	Brake Drum						
	Repair.....				X		Machine
	Bearing, Roller						
	Service.....		X				
	Replace.....		X				
1313	TIRES, TUBES						
	Tires and Tubes, Pneumatic						
	Service.....						
	Replace.....	X					
	Repair.....		X				
15	FRAME						
1501	FRAME ASSEMBLY						
	Frame Assembly: Trailer						
	Replace.....						
1501.1	PLATFORMS, SUPERSTRUCTURES, RAMPS, CATWALKS						
	Plate: Floor, Deck						
	Replace.....		X				
1503	PINTLES AND TOWING ATTACHMENTS						
	Chain Assembly: Safety						
	Replace.....		X				
	Reach Assembly: Towing						
	Repair.....		X				



Functional group	Components and related operation	Echelons of maintenance					Remarks
		1	2	3	4	5	
43	HYDRAULIC, AIR AND VACUUM SYSTEMS (EXCLUDE BRAKE SYSTEMS)						
4300	HYDRAULIC SYSTEM Hydraulic Assembly	X					
	Service.....		X				
	Repair.....						
4301	HOSE, PIPE, FITTINGS, TUBING Hose: Hydraulic, Landing Gear						
	Replace.....						
4301.1	STRAINERS AND FILTERS Breather		X				Fabricate
	Service.....						
	Replace.....	X	X				
4302	PUMP AND MOUNTING PARTS Pump, Hydraulic: Landing Gear						
	Replace.....		X				
	Repair.....					X	
4305	MANIFOLD AND/OR CONTROL VALVES Valve: Multiple Unit						
	Replace.....		X				
	Repair.....					X	
4308	OIL TANK OR RESERVOIRS Tank: Hydraulic Fluid						
	Service.....	X					

# APPENDIX V (Added)

## BASIC ISSUE ITEMS

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### Section I. INTRODUCTION

#### 1. General

Section II lists the accessories, tools, and publications required in 1st echelon maintenance and operation, initially issued with, or authorized for the 10-ton, 4-wheel trailer, model 4 D-T.

#### 2. Explanation of Columns

*a. Source Codes.* The information provided in each column is as follows:

- (1) *Technical service.* This column lists the basic number (or symbol) of the technical service assigned supply responsibility for the part. Those spaces left blank denote Corps of Engineers supply responsibility. General Engineer supply parts are identified by the letters GE in parentheses, following the nomenclature in the description column. Other technical services basic numbers (or symbols) are:

10—Quartermaster Corps

12—Adjutant General's Corps

- (2) *Source.* The selection status and method of supply are indicated by the following code symbol:  
P—applied to high-mortality repair parts which are stocked in or supplied from the technical service depot system, and authorized for use at indicated maintenance echelons.
- (3) *Maintenance.* The lowest maintenance echelon authorized to use, stock, install, or manufacture the part is indicated by the following code symbol:

O—Organizational Maintenance (1st and 2d Echelons)

*b. Federal Stock Numbers.* This column lists the 11-digit Federal stock number used for requisitioning purposes.

*c. Description.*

- (1) The item name and a brief description of the part are shown.
- (2) A five-digit Federal supply code for manufacturers and/or other technical services is shown in parentheses followed by the manufacturer's part number. This number will be used for



requisitioning purposes when no Federal stock number is indicated.

*Example:* (08645) 86453.

- (3) The letters GE, shown in parentheses immediately following the description, indicate General Engineer supply responsibility for the part.

*d. Unit of Issue.* Where no abbreviation is shown in this column, the unit of issue is "each."

*e. Expendability.* Those items classified as nonexpendable are indicated by letters NX. Items not indicated by NX are expendable.

*f. Quantity Authorized.* This column lists the quantities of repair parts, accessories, tools, or publications authorized for issue to the equipment operator or crew as required.

*g. Quantity Issued with Equipment.* This column lists the quantities of repair parts, accessories, tools, or publications that are initially issued with each item of equipment. Those indicated by an asterisk are to be requisitioned through normal supply channels as required.

*h. Illustrations.*

- (1) *Figure number.* Provides the identifying number of the illustration.
- (2) *Item number.* Provides the reference number for the part shown in the illustration.

### **3. Comments and Suggestions**

Suggestions and recommendations for changes to the Basic Issue Items List will be submitted on DA Form 2028 to The Commanding General, Military Construction Supply Agency/U. S. Army Engineers Maintenance Center, Corps of Engineers, ATTN: MCSDM, P. O. Box 119, Columbus 16, Ohio. Direct communication is authorized.

## Section II. BASIC ISSUE ITEMS LIST

Tech- nical service	Source codes			Federal stock No.	Description	Unit of issue	Expend- ability	Quan- tity issued with equip- ment	Illustration	
	Source	Main- te- nance	Re- cover- ability						Fig.	Item
10	P	O		7520-559-9618	<p><b>GROUP 26—ACCESSORIES, PUBLICATIONS TEST EQUIPMENT AND TOOLS</b></p> <p><b>2602.1—ACCESSORIES</b></p> <p><b>CASE, MAINTENANCE AND OPERATIONAL MANUALS:</b> cotton-duck, water repellent, mildew resistant.</p>	-----	-----	1		
	P	O		5120-251-1102	<p><b>2602.2—COMMON TOOLS</b></p> <p><b>BAR, SOCKET WRENCH HANDLE:</b> ¼ in. dia; 20 in. lg.</p>	-----	-----	1		(*)
	P	O		5120-293-1289	<p><b>WRENCH, SOCKET:</b> 1½ in. hex opening; 1¼ in. square opening 14¼ in. lg.</p>	-----	-----	1		(*)
12					<p><b>2602.4—PUBLICATIONS</b></p> <p><b>DEPARTMENT OF THE ARMY LUBRICATION ORDER LO 5-9047.</b></p> <p><b>DEPARTMENT OF THE ARMY TECHNICAL MANUAL TM 5-9047.</b></p>	-----	-----	1		1
						-----	-----	2		2

Source codes			Federal stock No.	Description	Unit of issue	Expend-ability	Quas-ity auth-ORIZED	Quas-ity issued with equip-ment	Illustration	
Tech-nical service	Source	Main-tenance							Re-covery ability	Fig.
				DEPARTMENT OF THE ARMY OPERATOR, ORGANIZATIONAL, FIELD AND DEPOT MAINTENANCE REPAIR PARTS AND SPECIAL TOOL LISTS TM 5-2330-214-25P. DEPARTMENT OF THE ARMY TECHNICAL BULLETIN TB 5-9047-1.	---	---	2	2		
					---	---	2	2		

BY ORDER OF THE SECRETARY OF THE ARMY:

G. H. DECKER,  
*General, United States Army,*  
*Chief of Staff.*

Official:

J. C. LAMBERT,  
*Major General, United States Army*  
*The Adjutant General.*

Distribution:

*Active Army:*

USASA (2)  
DCSLOG (1)  
CNGB (1)  
Tech Stf, DA (1) except  
  CofEngrs (3)  
NSA Maint Bd (1)  
USCONARC (3)  
USAARTYBD (2)  
USAARMBD (2)  
USAIB (2)  
USARADB (2)  
USAABELCTBD (2)  
USAAVNBD (2)  
ARADCOM (2)  
ARADCOM Rgn (2)  
OS Maj Comd (5) except  
  USASETAF (2)  
  USARJ (10)  
MDW (1)  
Armies (2)  
Corps (2)  
Div (2)  
Engr Bde (1)  
Svc Colleges (2)  
Br Svc Sch (2) except  
  USAES (100)  
USMA (2)  
GENDEP (2) except  
  Schenectady GENDEP (4)  
  Atlanta GENDEP (4)  
  Utah GENDEP (4)  
  Memphis GENDEP (4)  
  Sharpe GENDEP (4)  
  Engr Sec, GENDEP (10)  
  Engr Dep (10) except  
    Granite City Engr Dept (14)  
  USA Trans Tml Comd (2)  
  Army Tml (1)

OSA (2)

Engr Dist (2) except  
  Buffalo Engr Dist (1)  
  Chicago Engr Dist (1)  
  Detroit Engr Dist (1)  
  Alaska Engr Dist (1)  
  Los Angeles Engr Dist (1)  
  New Orleans Engr Dist (1)  
  New York Engr Dist (1)  
  Louisville Engr Dist (1)  
  Pittsburgh Engr Dist (1)  
  San Francisco Engr Dist (1)  
  Omaha Engr Dist (1)  
  Seattle Engr Dist (1)  
  Kansas City Engr Dist (1)  
  Baltimore Engr Dist (1)  
  Ft Worth Engr Dist (1)  
  Eastern Ocean Engr Dist (1)  
  Philadelphia Engr Dist (1)  
  Rock Island Engr Dist (1)  
  St Louia Engr Dist (1)  
  St Paul Engr Dist (1)  
Div Engr (2) except  
  Lower Miss Valley Div Engr  
    (none)  
  North Central Div Engr  
    (none)  
  Engr Fld Maint Shops (2)  
  Engr Dep Maint Shops (2)  
  USAERDL (3)  
  Engr Cen (5)  
  AMS (3)  
  USA Engr Proc Ofc (10)  
  EMC (26)  
  ESCO (10)  
  Fld Comd, DASA (8)  
  AFSSC (1)  
  USACOMZEUR (2)  
  USAREUR Engr Sup Con  
    Agcy (10)

USAREUR Engr Proc Cen (2)		5-48	5-377
USA Corps (1)		5-54	5-420
MAAG (1)		5-114	5-425
JBUSMC (1)		5-115	5-427
Units org under fol TOE:		5-117	5-500 (EA, EB)
(2 copies ea except as indicated)		5-129	5-600
		5-237 (5)	5-625
		5-262 (5)	5-627
5-5	5-35	5-267 (1)	39-61
5-6	5-36	5-278 (5)	39-71
5-15	5-45	5-279	55-225
5-16	5-46	5-376	55-227

*NG*: State AG (3).

*USAR*: Same as Active Army except allowance is one copy to each unit.

For explanation of abbreviations used, see AR 320-50.

TECHNICAL MANUAL

TRAILER, 4 WHEEL, SPECIAL TANDEM 10 TON, MODEL 4D-T,  
FLAT BED, FOR CRANE-SHOVEL ATTACHMENTS, ALL MAKES  
AND MODELS, FSN 2330-377-0389

TM 5-9047

CHANGES No. 3

HEADQUARTERS  
DEPARTMENT OF THE ARMY  
WASHINGTON 25, D. C., 4 March 1963

TM 5-9047, 4 December 1953, is changed as follows:

*Cover page and page 1.* The title was changed by C 2, 18 October 1962, as shown above.

*Page 3, paragraph 1.*

c. (Added) Report all deficiencies in this manual on DA Form 2028. Submit recommendations for changes, additions, or deletions to the Commanding Officer, U. S. Army Mobility Support Center, ATTN: SMOMS-MS, P. O. Box 119, Columbus 16, Ohio. Direct communication is authorized.

## 2. Record and Report Forms

(Superseded)

DA Form 2258, Depreservation Guide of Engineer Equipment.

For other record and reports forms applicable to the maintenance of the trailer, refer to TM 38-750.

*Notes.* Applicable forms, excluding standard Form 46 which is carried by the operator, shall be kept in a canvas bag mounted on the equipment.

*Page 19, paragraph 12b.* (As changed by C 2, 18 Oct. 62). After paragraph 12b(5), insert the following caution:

**Caution:** Serious damage to landing jack can occur if jack is not in retract position and locked up prior to moving trailer.

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\* These changes supersede C 2, 18 October 1962, and TB 5-9047-1, 4 December 1953.

## **26. General**

**(Superseded)**

To insure that the trailer 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. The necessary Preventive Maintenance Services to be performed are listed and described in paragraphs 27 and 28-29. The item numbers indicate the sequence of minimum inspection requirements. Defects discovered during operation of the unit shall be noted for future correction, to be made as soon as operation has ceased. Stop operation immediately if a deficiency is noted during operation which would damage the equipment if operation were continued. All deficiencies and shortcomings will be recorded together with the corrective action taken on DA Form 2404 at the earliest possible opportunity.

## **27. Daily Preventive Maintenance Services**

**(Superseded)**

This paragraph contains an illustrated tabulated listing of preventive maintenance services which must be performed by the operator. Daily services retain the same item numbers used in Quarterly Preventive Maintenance Services. Therefore, Daily Preventive Maintenance Services may not be numbered consecutively but should be performed in the numerical sequence as shown to insure complete coverage. Refer to figure 18.1 for the Daily Preventive Maintenance Services.



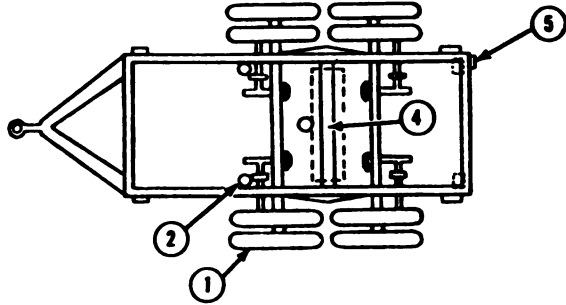
# PREVENTIVE MAINTENANCE SERVICES

## DAILY

TM 5-9047

TRAILER

ALL MAKES AND MODELS



LUBRICATE IN ACCORDANCE WITH CURRENT LUBRICATION ORDER

ITEM	PAR. REF	REF
1	<u>TIRES</u> . Check air pressure. Correct pressure is 70 psi.	
2	<u>AIR FILTER</u> . Drain condensate (after movement).	
4	<u>AIR RESERVOIR</u> . Drain condensate (after movement).	
5	<u>LIGHTS</u> . Check lights for proper operation (before movement).	

MSC 904/18.1

*Figure 18.1 (Added) Daily preventive maintenance services.*

*Page 37.*

**28. Quarterly Preventive Maintenance Services  
(Superseded)**

a. This paragraph contains an illustrated tabulated listing of preventive maintenance services which must be performed by Organizational Maintenance personnel at quarterly intervals. A quarterly interval is equal to 3 calendar months or 250 hours of operation, whichever occurs first.

b. The item numbers are listed consecutively and indicate the sequence of minimum requirements. Refer to figure 18.2 for the Quarterly Preventive Maintenance Services.

*Page 38. Paragraph 29—Rescinded.*

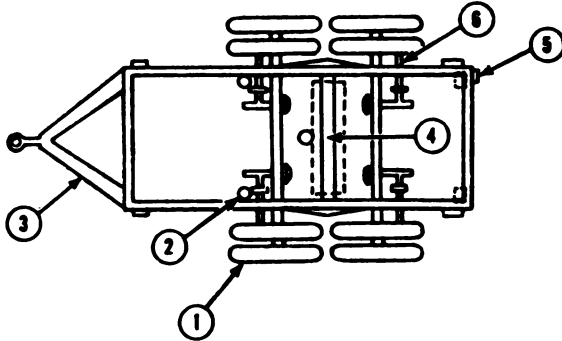
# PREVENTIVE MAINTENANCE SERVICES

## QUARTERLY

TM 5-9047

ALL MAKES AND MODELS

TRAILER



LUBRICATE IN ACCORDANCE WITH CURRENT LUBRICATION ORDER

ITEM	PAR. REF
1 <u>TIRES</u> . Inspect for wear, cuts, breaks, imbedded material, and deterioration. Correct air pressure is 70 psi.	
2 <u>AIR FILTER, LINE, CONNECTIONS, AND FITTINGS</u> . Inspect for leaks, damage, and insecure mounting. Drain condensate.	
3 <u>DRAWBAR AND LANDING JACKS</u> . Inspect for damage, insecure mounting, improper operation and loose or missing hardware.	
4 <u>AIR RESERVOIR AND VALVE</u> . Inspect for leaks, damage, improper operation, and insecure mounting. Drain condensate.	
5 <u>LIGHTS AND REFLECTORS</u> . Inspect for damage, insecure mounting, and loose connections.	
6 <u>BRAKES AND LINKAGE</u> . Inspect for damage, improper operation, and insecure mounting. Adjust.	.61

MSC 9047/18.2

*Figure 18.2 (Added) Quarterly preventive maintenance services.*

**Page 107, paragraph 99a.** After "deficiencies." add "Refer to paragraph 26 and 28."

**Page 111, paragraph 5.** Delete "TB 5-9047-1 Preventive Maintenance Services." and substitute "TM 38-750 The Army Equipment Records System and Procedures."

**Page 147, (page 10, C 1, 29 Jan 62).**

**APPENDIX V, Basic Issue Items, paragraph 3.**

**Line 2.** Delete "General" and "substitute "Officer". **Lines 3 and 4.** Delete "Military Construction Supply Agency/ U. S. Army Engineers Maintenance Center, Corps of Engineers, ATTN: MCSDM," and substitute "U. S. Army Mobility Support Center, ATTN: SMOMS-MS,".

BY ORDER OF THE SECRETARY OF THE ARMY:

**EARLE G. WHEELER,**  
*General, United States Army,*  
*Chief of Staff.*

Official:

**J. C. LAMBERT,**  
*Major General, United States Army,*  
*The Adjutant General.*

Distribution:

*Active Army:*

USASA (2)  
DCSLOG (1)  
CNGB (1)  
CofEngrs (3)  
TSG (1)  
CSigO (1)  
CofT (1)  
USA Maint Bd (1)  
USAARTYBD (2)  
USAARMBD (2)  
USAIB (2)  
USARADB (2)  
USA Abn Elet & SPWAR Bd (2)  
USAAVNBD (2)  
USCONARC (3)  
USAMC (5)  
OS Maj Comd (5) except  
    USASETAF (2)  
    USARJ (10)  
MDW (1)  
Armies (2)  
Corps (2)  
Div (2)  
Engr Bde (1)  
Svc Colleges (2)  
Br Svc Sch (2) except  
    USAES (100)  
USMA (2)  
GENDEP (OS) (2)  
Engr Sec, GENDEP (10)  
Engr Dep (OS) (10)  
Army Dep (2) except  
    Granite City (10)  
Trans Tml Comd (2)  
Army Tml (1)  
OSA (2)  
Engr Dist (2) except

Buffalo (1)  
 Chicago (1)  
 Detroit (1)  
 Alaska (1)  
 Los Angeles (1)  
 New Orleans (1)  
 New York (1)  
 Louisville (1)  
 Pittsburgh (1)  
 San Francisco (1)  
 Omaha (1)  
 Seattle (1)  
 Kansas City (1)  
 Baltimore (1)  
 Ft. Worth (1)  
 Eastern Ocean (1)  
 Philadelphia (1)  
 Rock Island (1)  
 St. Louis (1)  
 St Paul (1)  
 Div Engr (2) except  
   Lower Miss. Valley (None)  
   North Central (None)  
 Engr Fld Maint Shops (2)  
 USAERDL (3)  
 Engr Cen (5)  
 AMS (3)  
 Chicago Engr Proc Ofc (10)  
 USA Mob Spt Cen (36)  
 ESCO (10)  
 Fld Comd, DASA (8)  
 USACOMZEUR (2)  
 USAREUR Engr Sup Con Agcy  
   (10)  
 USAREUR Engr Proc Cen (2)  
 MAAG (1)  
 USA Corps (1)  
 JBUSMC (1)  
 Units org under fol TOE:  
   5-5 (2)  
   5-6 (2)  
   5-15 (2)  
   5-16 (2)  
   5-35 (2)  
   5-36 (2)  
   5-45 (2)  
   5-46 (2)  
   5-48 (2)  
   5-54 (2)  
   5-114 (2)  
   5-115 (2)  
   5-117 (2)  
   5-129 (2)  
   5-145 (2)

5-146 (2)  
5-155 (2)  
5-156 (2)  
5-237 (5)  
5-262 (5)  
5-267 (1)  
5-278 (5)  
5-279 (2)  
5-600 (2)  
5-625 (2)  
5-637 (2)  
39-61 (2)  
55-225 (2)  
55-327 (2)

**NG: State AG (3)**

**USAR: Units—same as Active Army except allowance is one copy to each unit.**

**For explanation of abbreviations used, see AR 320-50.**





**TRAILER, 4 WHEEL, SPECIAL TANDEM  
 10 TON, MODEL 4 D-T, FLAT BED,  
 FOR CRANE-SHOVEL ATTACHMENTS,  
 ALL MAKES AND MODELS**

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## **SAFETY PRECAUTIONS**

Before operating the trailer, check the air pressure on the dash gage, the operation of the brake, and the hand operated brake lever on the steering column of the towing vehicle.

See that both landing jacks are raised and properly locked before starting. Keep clear of landing jacks when unfolding.

See that all lights are operating properly.

Inspect the distribution of the load. See that the load is properly balanced and securely chained. Load the trailer carefully and do not drop loads suddenly on the trailer deck. Shock loads may cause serious damage to the axles and frame.

Do not start or stop suddenly.

When driving down steep hills, check the air pressure on the dash gage frequently and do not allow the trailer to push the towing vehicle.

Check the trailer frequently and watch out for swaying, improper tracking, or excessive vibration.

Drive slowly over bad or rocky roads and check the trailer, tires, and load more frequently.

Shift gears smoothly and avoid sudden jerking.

Look out for overhanging branches, wires, and low underpasses that may reach and damage the top of the load.

Approach turns slowly and round them carefully, observing the tracking of the trailer.

Turn the clearance and tail lights ON at the first sign of dusk or when driving through tunnels or dark, shaded areas.

Drive carefully and watch the road constantly.

Do not touch metal parts with bare hands when the temperature is extremely low.

# CHAPTER 1

## INTRODUCTION

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### Section I. GENERAL

#### 1. Scope

a. This manual is published for the information and use of the personnel to whom this trailer is issued. It contains information on the operation and organizational maintenance of the trailer as well as a description of the major units and their functions in relation to other components of the materiel. It applies only to the Trailer, 4 Wheel, Special Tandem 10 Ton, Model 4 D-T, Flat Bed, For Crane-Shovel Attachments, All Makes and Models.

b. Supply manuals, technical manuals, and other publications applicable to the equipment covered by this manual are listed in Appendix I, References. Appendix II, Identification of Replaceable Parts, tabulates the replaceable parts available for the equipment. Appendix III, On-Equipment Tools and Spare Parts, lists tools and spare parts issued with and carried on or with the equipment.

#### 2. Record and Report Forms

Maintenance record forms listed and briefly described in the following subdivisions will be used in the maintenance of this equipment.

a. *DD Form 110, Vehicle and Equipment Operational Record.* This form is used by equipment operators for reporting the accomplishment of daily preventive maintenance services, and for reporting any equipment deficiencies observed during operation.

b. *Standard Form No. 91, Operator's Report of Motor Vehicle Accident.* One copy of this form is kept with the equipment at all times. In case of an accident resulting in injury or property damage, Form No. 91 is filled out immediately (or as promptly thereafter as is practical) by the operator.

c. *DA Form 464, Work Sheet for Preventive Maintenance and Technical Inspection of Engineer Equipment.* This form is used by personnel of the using organization and higher echelons for

reporting the results of preventive maintenance services and technical inspections.

*d. DA Form 460, Preventive Maintenance Roster.* This form is used for maintaining and operating time records on the item of equipment, and for scheduling lubrication and preventive maintenance services at proper intervals.

*e. DA Form No. 478, Organizational Equipment File.* Major repairs or rebuilding, replacement of major unit assemblies, and accomplishment of equipment modifications are recorded on this form.

*f. DA Form No. 468, Unsatisfactory Equipment Report.* This form is used for reporting manufacturing, design, or operational defects in the materiel, with a view to correcting such defects; it is also used for recommending modifications of the materiel. Form No. 468 is not used for reporting failures, isolated materiel defects, or malfunctions of materiel resulting from fair wear and tear or accidental damage. Form No. 468 is not used to report issue of parts and equipment, or for reporting replacements and/or repairs.

*g. DD Form No. 5, Report of Damaged or Improper Shipment.* This form is used for reporting damages incurred in shipment.

*h. DA Form No. 9-81, Exchange Part or Unit Identification Tag.* This form is used to accomplish the direct exchange of un-serviceable for serviceable parts.

*i. DA Form No. 811, Work Request and Job Order.* This form is used to request work done by higher echelon organizations.

*j. DA Form No. 867, Status of Modification Work Order.* This form is used to maintain records of all modification work performed on equipment.

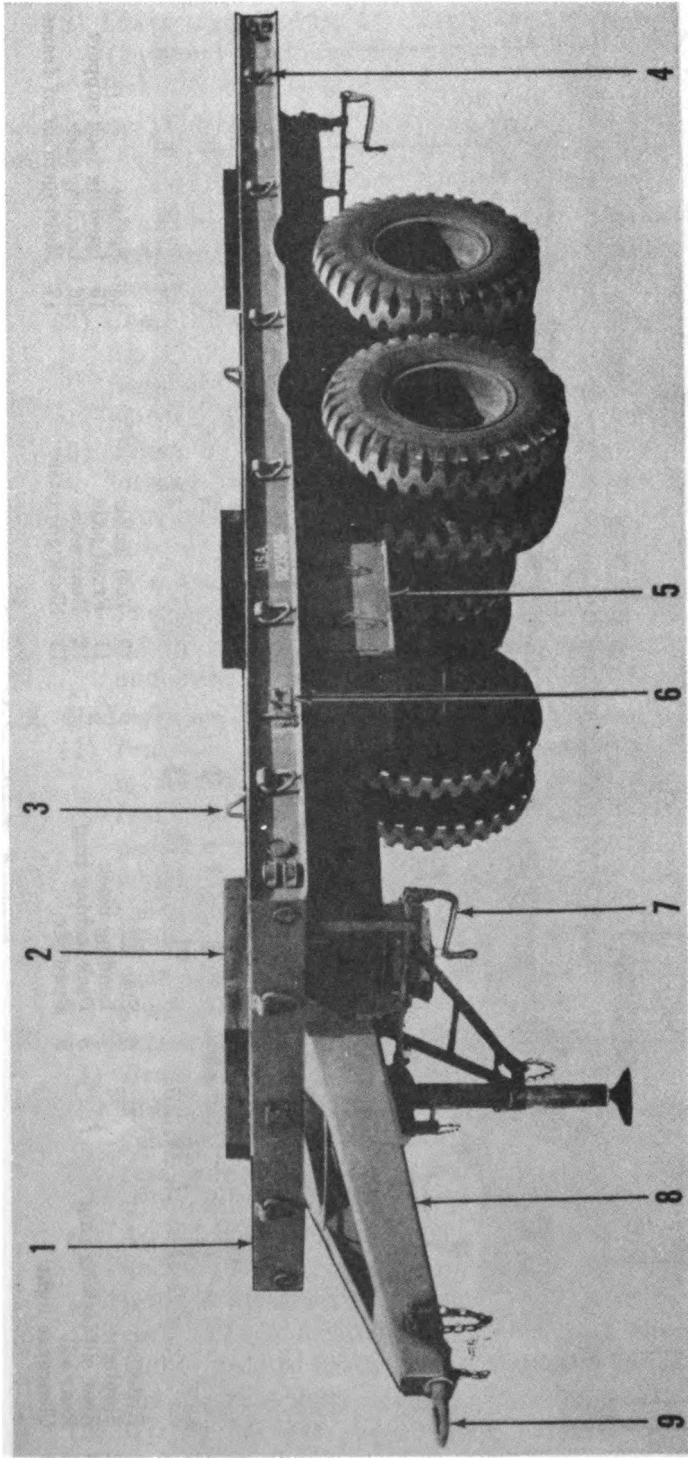
## Section II. DESCRIPTION AND DATA

### 3. Description

*a. General Information.* The Trailer, 4 Wheel, Special Tandem 10 Ton, Model 4 D-T, Flat Bed, For Crane-Shovel Attachments, All Makes and Models, is a specially designed vehicle for the transportation of heavy duty crane-shovel attachments (figs. 1 and 2). The capacity of the trailer is 10 tons. The trailer frame is constructed of structural and pressed steel and steel castings. Deck planking and filler pieces are made of processed hardwood.

*b. Deck.* The trailer deck is constructed of processed hardwood boards. The boards are attached to the frame by carriage bolts.

(1) *Loading blocks* (fig. 1). The loading blocks (2) are bolted to the deck planking. They are used for support and even distribution of the load.



- 1 Front sill
- 2 Loading block
- 3 Deck lashing ring
- 4 Sill lashing ring
- 5 Chain and tool locker
- 6 Finch bar locker
- 7 Landing jack handle
- 8 Drawbar
- 9 Lunette

Figure 1. Trailer, left front view.





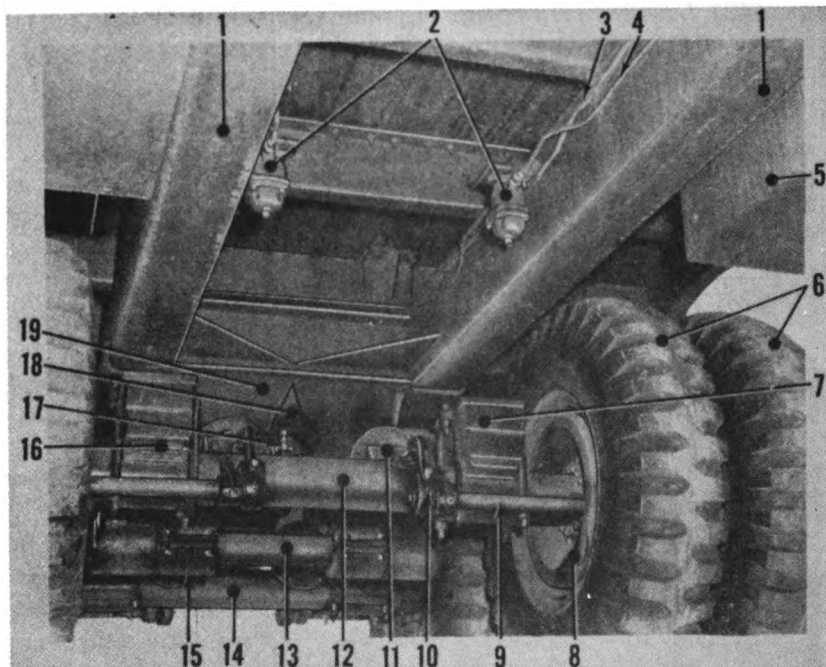
- (2) *Lashing rings* (fig. 1). There are six deck lashing rings (3) on the deck of the trailer. The rings are used for lashing and lifting purposes.

c. *Frame*. The frame of the trailer consists of two main members (17, fig. 2), side sills (6), and front (1, fig. 1) and rear (4, fig. 2) sills.

- (1) *Drawbar* (fig. 1). The drawbar (8) is welded to the two main members of the frame and reinforced by three gusset plates.
- (2) *Chain and tool lockers*. The chain and tool lockers (5, fig. 1) are located between the third and fourth cross-members of the frame on both sides of trailer. The lids of the lockers are provided with two latches.
- (3) *Pinch bar locker*. The pinch bar locker (6, fig. 1) is located on the left side sill of the trailer. The locker is provided with a hinged lid.
- (4) *Landing jacks*. The landing jacks (16, fig. 2) are operated by a crank handle (7, fig. 1) on the left side of the trailer. The crank handle folds under the cranking shaft when not in use. The landing jacks are retracted and secured under the frame when not in use.

d. *Underframe*.

- (1) *Trunnion axle*. The trunnion axle pedestal (19, fig. 3) is rigidly attached to the two main members of the frame at the sixth and seventh cross members. This pedestal accommodates the trunnion axle (13, fig. 3) by which the frame and all its members are attached to the running gear.
- (2) *Springs* (fig. 3). The two springs (7) are of steel, and each consists of 13 leaves—five main leaves and eight graduated auxiliary leaves. The end of each spring is encased in a shackle box (16).
- (3) *Brake lines* (fig. 3). The brake lines (4) are attached to the underframe. The compressed air from the towing vehicle flows through the lines to the air filter (2), air reservoir and relay emergency valve (18), and brake chambers (11).
- (4) *Air reservoir* (fig. 3). The air reservoir (18) is located under the trunnion axle pedestal and stores the compressed air for the operation of the brakes. The drain cock (17) is located on the bottom of the air reservoir and is used to drain the accumulated condensation from the air reservoir.
- (5) *Wiring harness*. The wiring harness (3, fig. 3) is attached to the underframe and carries the electricity



- |                   |   |
|-------------------|---|
| 1 Main member     | 11 Brake chamber                              |
| 2 Air filter      | 12 Front axle                                 |
| 3 Wiring harness  | 13 Trunnion axle                              |
| 4 Brake line      | 14 Rear axle                                  |
| 5 Tool locker     | 15 Trunnion axle bracket                      |
| 6 Tires           | 16 Shackle box                                |
| 7 Spring          | 17 Drain cock                                 |
| 8 Wheel           | 18 Air reservoir and relay<br>emergency valve |
| 9 Brake camshaft  | 19 Trunnion axle pedestal                     |
| 10 Slack adjuster |   |

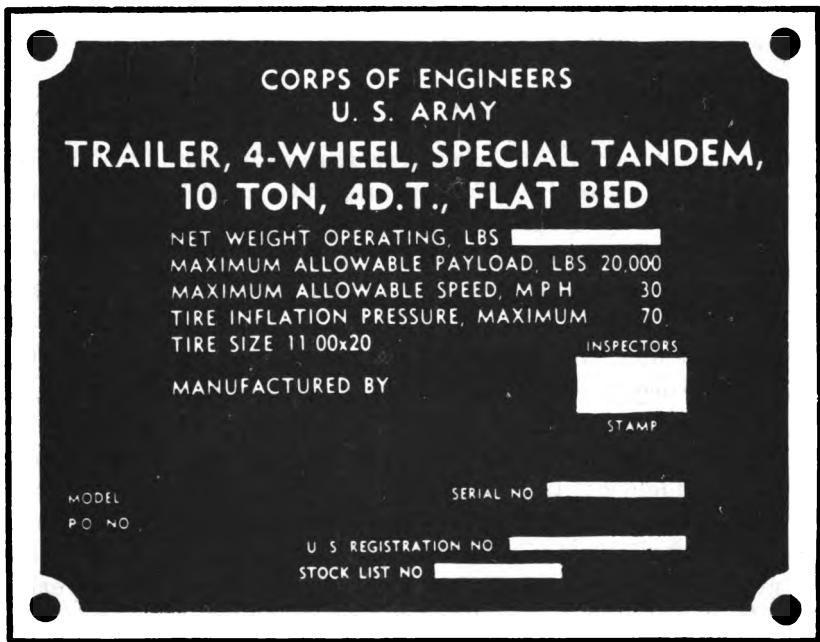
*Figure 3. Bottom view of trailer.*

from the towing vehicle to the stoplight (2, fig. 2) and clearance lights (5, fig. 2) of the trailer.

- (6) *Axles.* The front (11, fig. 2) and rear (12, fig. 3) axles are of tubular steel. Both axles are attached to the trunnion axle pedestal (19, fig. 3) by the trunnion axle (13, fig. 2) and trunnion axle bracket (15, fig. 2).

#### 4. Identification Information

*a. Description.* The trailer has two identification plates. The Corps of Engineers identification plate (A) specifies the official nomenclature, model and serial numbers, maximum allowable payload, maximum allowable speed, tire inflation pressure, and tire size. The transportation data plate (B) specifies length, width, shipping cubage, and shipping weight of the trailer.



**A**



**B**

*Figure 4. Identification plates.*

b. *Location.* Both plates are mounted on the front right side of the trailer on the longitudinal wideframe sill.

## 5. Differences in Models

a. *Description.* There are three trailer models; model TCST trailer, manufactured by Trailmobile, Inc.; model 10FBS trailer, manufactured by Eidal Manufacturing Co.; and model DCST trailer, manufactured by Dorsey Trailers, Inc. There are no essential differences in the construction of the trailers, except for axles and brakes.

b. *Differences.* Trailers manufactured by Dorsey and Eidal use Standard Forge and Axle Company's axles and brakes; trailers manufactured by the Trailmobile Company use Timken-Detroit Axle Company's axles and brakes. Axles and brakes of both companies are identical in construction and size. The only difference is in the brake lining attachment to the brake shoes. The Timken-Detroit brake lining is riveted to the brake shoe; the Standard Forge and Axle lining is bolted to the brake shoe. When working on axles and brakes, refer to appendix II for standard hardware and replaceable parts.

## 6. Tabulated Data

Overall length	27' 9"
Overall width	8' 2"
Length of frame	23' 0"
Overall height	5' 0"
End of frame to center of axle	10' 6"
Center to center of axle	4' 4"
Height lunette eye to ground, loaded	2' 5"
Weight	11,157 lb
Shipping cubage	1,065 cu ft
Capacity	20,000 lb
Fire size	11.00 x 20
Tire pressure, maximum	70 psi

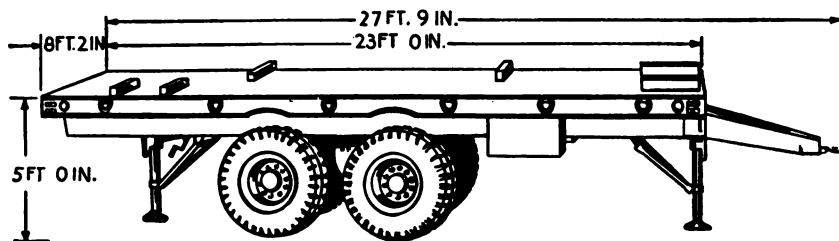


Figure 5. Trailer dimensions.

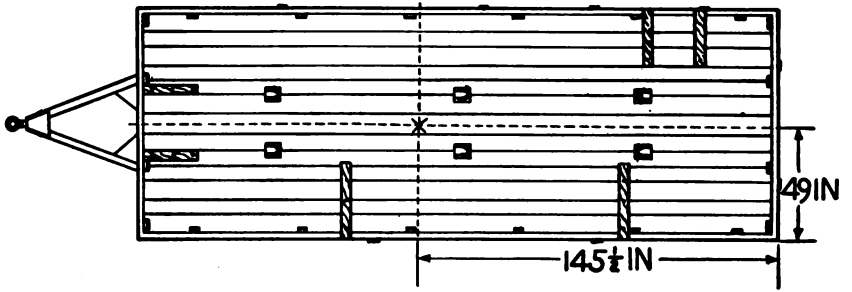


Figure 6. Center of gravity of trailer.

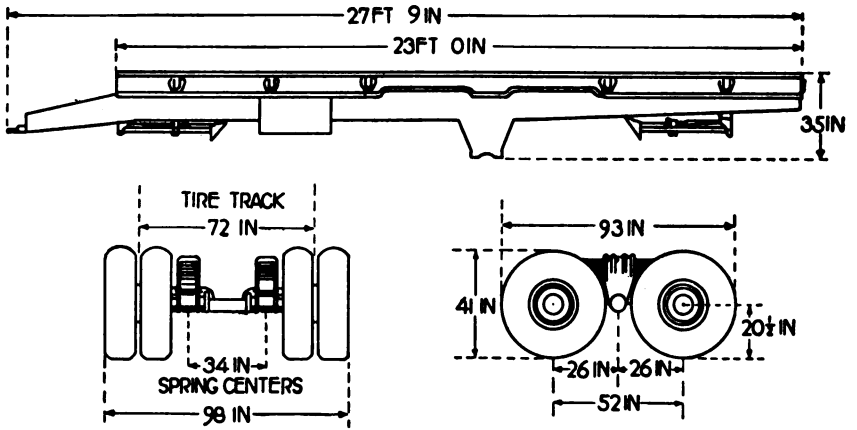


Figure 7. Dimensions of trailer disassembled for shipment.

## CHAPTER 2

# OPERATING INSTRUCTIONS

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### Section I. SERVICE UPON RECEIPT OF EQUIPMENT

#### 7. New Equipment

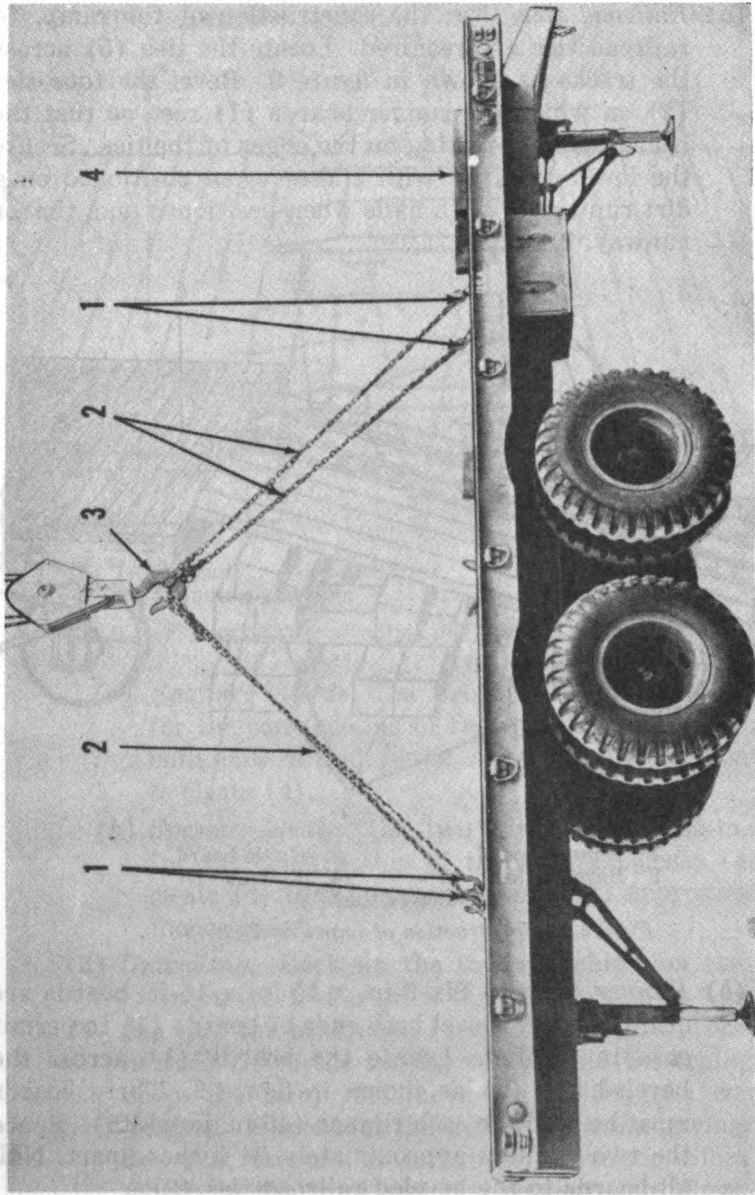
*a. General.* The trailer is usually delivered on a flat car (fig. 55). The landing jacks are folded under the frame. Blocks are placed under the front and rear ends of the frame to keep the trailer in proper horizontal position. The wheels are secured in the front, rear, and on the sides with blocks to prevent movement. Cables are fastened to the lashing rings on the four corners of the trailer and secured to the rings on the carrier deck. Cables must be tight and securely tied.

*b. Unloading the Trailer With a Crane* (fig. 8).

- (1) Remove all cables, chains, or ropes holding the trailer on the flat car.
- (2) Fasten cables or chains (2) to the lashing rings (1) on the deck of the trailer and take up the slack.
- (3) Remove blocks at the front, rear, and sides of wheels.
- (4) Remove blocks under the front and rear of the trailer.
- (5) Slowly and carefully lift the trailer clear of the carrier and move it to a convenient location.
- (6) Slowly lower the trailer to the ground and block wheels in the front and rear to prevent rolling.
- (7) Remove lifting cables or chains.
- (8) See that the trailer is properly leveled. Refer to *d* below.

*c. Unloading the Trailer With a Ramp.*

- (1) *General.* If crane equipment is not available, a ramp may be used to unload the trailer from the flatcar. The trailer may be moved along the length of the train to the rearmost flatcar by the use of spanning platforms placed between cars. Do not forget to lower the brake wheel to the floor of the flatcar to allow the trailer to pass.
- (2) *Runway.* Level the road bed at the loading end of the rearmost flatcar to the top of the rails, using 6- by 8-inch timbers. When such timbers are not available, use dirt and cinders to make a level approach or runway.

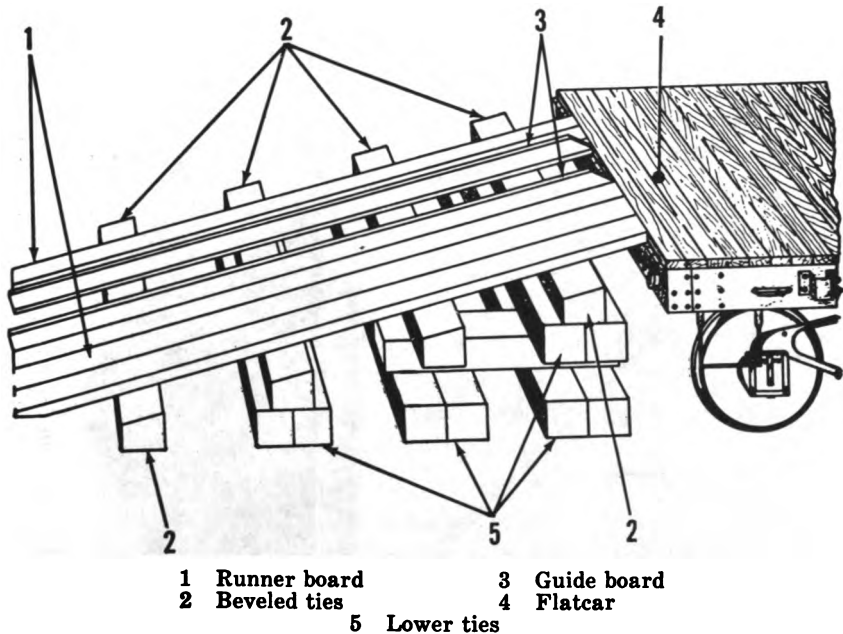


1 Lashing ring      2 Lifting chain      3 Lifting hook      4 Loading block

*Figure 8. Trailer lashing for unloading.*

(3) *Ramp* (fig. 9). Use permanent ramps for unloading when available. When such ramps are not available, use improvised ramps (17,500 lb maximum capacity), constructed of railroad ties and other available lumber.

(a) *Railroad ties*. For the construction of the ramp, 14 railroad ties are required. Locate the ties (5) across the tracks as shown in figure 9. Bevel the four ties (2) on which the runner boards (1) rest, so that the boards are not resting on the edges of the ties. Secure the lower ties (5) with stakes when positioned on a dirt runway or with nails when positioned on a timber runway.



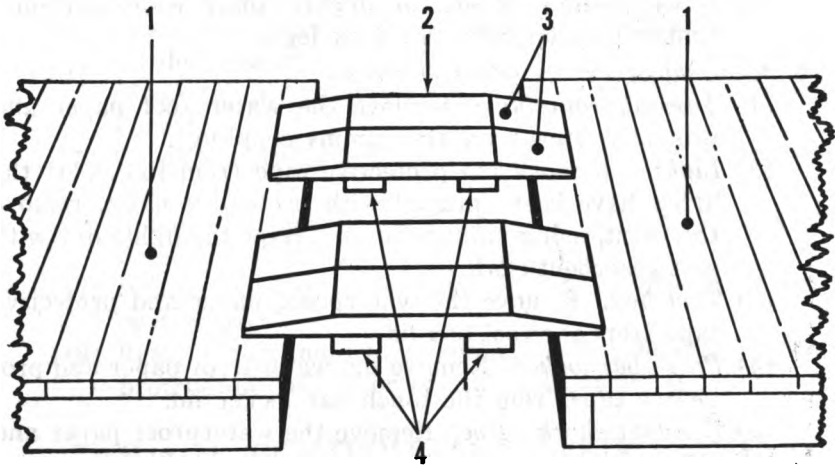
*Figure 9. Construction of improvised ramp.*

(b) *Runner boards*. Six 3-in. x 15-in. x 16-ft. boards are also required. Bevel both ends of boards (1) to permit ease in loading. Locate the boards (1) across the beveled ties (2) as shown in figure 9. Three boards must be used for each runner (45-in. in width). Space the two runners approximately 34 inches apart. Nail all boards to the beveled railroad ties (2).

(c) *Guide boards*. Two 1-in. x 6-in. x 16-ft. boards complete the ramp. Nail the guide boards (3) on the inner side of each runner to guide the trailer during unloading.



- (4) *Spanning platforms* (fig. 10). Use two spanning platforms (2) between flatcars to move the trailer along the length of the train. Space the platforms approximately 34 inches apart. Construct spanning platforms of 17,500 lbs maximum capacity.



- |                     |                  |
|---------------------|------------------|
| 1 Flatcar           | 3 Spanner board  |
| 2 Spanning platform | 4 Spanner cleats |

*Figure 10. Construction of spanning platforms.*

- (a) *Spanner boards.* Use two 3-in. x 15-in. x 48 in. boards for the construction of the spanner boards (3). Bevel both ends of each board. Nail the spanner boards (3) to cleats (4).
- (b) *Spanner cleats.* Use two 2-in. x 6-in. x 30-in. boards for the construction of the spanner cleats (4). Nail cleats (4) to the spanner boards (3) approximately 15 inches apart.
- (5) *Unloading.* Back up the towing vehicle on the flatcar. Connect the trailer with the towing vehicle (par. 12a). See that the brake and electrical lines are properly connected. Drive the towing vehicle and the trailer slowly down the ramp and move the trailer to a convenient location. Disconnect the trailer from the towing vehicle. See that the trailer is properly leveled. Block trailer wheels in the front and rear to prevent rolling.

*d. Leveling.*

- (1) Always see that the trailer is properly balanced. If the ground is uneven, level the trailer by lowering or raising the landing jacks.

- (2) Landing jacks can be raised or lowered by turning the cranking handle clockwise or counter-clockwise.
- (3) Turning the cranking handle counter-clockwise will raise the jack leg and lower the deck of the trailer.
- (4) Turning the cranking handle clockwise will lower the jack leg and raise the deck of the trailer.
- (5) If the ground is soft or muddy, place wide and solid timber boards under the jack legs.

*e. Removal of Preservative Devices.*

- (1) *Dummy couplings.* Remove the waterproof paper and protective tape from the dummy couplings.
- (2) *Lights.* Remove the protective tape from lights. If the lights have been sprayed with protective paint, remove the paint, using paint remover. Wipe the lights dry with soft absorbent cloth.
- (3) *Tool box.* Remove the waterproof paper and protective tape from the tool box lid.
- (4) *Pinch bar locker.* Remove the waterproof paper and protective tape from the pinch bar locker lid.
- (5) *Exhaust check valve.* Remove the waterproof paper and protective tape from the exhaust check valve.
- (6) *Air reservoir drain cock.* Remove the protective tape from the air reservoir drain cock.
- (7) *Electric receptacle.* Remove the waterproof paper and protective tape from the electric receptacle.

*f. Inspection.* Carefully inspect the entire trailer for any damage or deficiencies. Inspect the brake lines, air filters, air reservoir, electrical connections, wires, and light bulbs for possible damage. Inspect the wheels for loose or missing bolts. Check the tires for low pressure, excessive wear, or cuts and bruises. Inspect the brake chambers and slack adjusters for possible dents, cracks, or other damage. Inspect the deck planking for loose bolts, splintered boards, or protruding nails. Check the lashing rings and brackets for proper installation and mounting. Make a visual inspection of the entire trailer and check carefully for missing parts, bolts, nuts, and washers.

*g. Service.*

- (1) Lubricate the trailer according to LO 5-9047.
- (2) Inflate tires to proper pressure. Maximum pressure is 70 psi.

## **8. Used Equipment**

*a. General.* Used trailers which have been stored and shipped in conformance with Army specifications are ready for use on arrival, after a brief check. Special care must be paid to inspection.

*b. Unloading.* Refer to paragraph 7b and c.

*c. Inspection.* Refer to paragraph 7f.

*d. Service.*

- (1) Lubricate the trailer according to LO 5-9047.
- (2) Drain and clean air line filters. Replace strainers if necessary (par. 62).
- (3) Check the entire brake system for air leaks and correct all deficiencies.
- (4) Check the air reservoir for dents or cracks. Drain condensate.
- (5) Check the brakes and slack adjusters. Adjust if necessary (par. 66).
- (6) Repair or replace faulty electrical wiring, connections, defective light bulbs, and reflectors.
- (7) Inflate tires to proper pressure. Replace tires if worn or damaged.
- (8) Remove dirt and debris from the deck planking. Remove protruding nails. Correct any deficiencies noted.

## **Section II. CONTROLS AND INSTRUMENTS**

### **9. General**

This section describes, locates, illustrates, and furnishes the operator sufficient information about the various controls and instruments for the proper operation of the trailer.

### **10. Controls and Instruments**

*a. Landing Jacks.* The landing jacks (16, fig. 2) are located at the front and rear under the deck of the trailer. Landing jacks are used for support and proper balancing of the trailer.

*b. Air Reservoir Drain Cock.* The drain cock (17, fig. 3) is located on the bottom part of the air reservoir. The drain cock is open when the key handle is straight up and down and closed when the key handle is at right angles to the drain cock body. The drain cock is used for draining the condensate from the air reservoir.

*c. Dummy Couplings.* The dummy couplings (7, fig. 29) are located on the left and right sides of the front sill of the trailer. The dummy couplings are used to blank off the brake lines and prevent the entrance of dirt, mud, and water.

*d. Electric Wiring Receptacle* (fig. 11). The receptacle is mounted on the front of the trailer, in the middle of the front sill. The receptacle is used to connect the electrical system of the trailer with the electrical system of the towing vehicle.

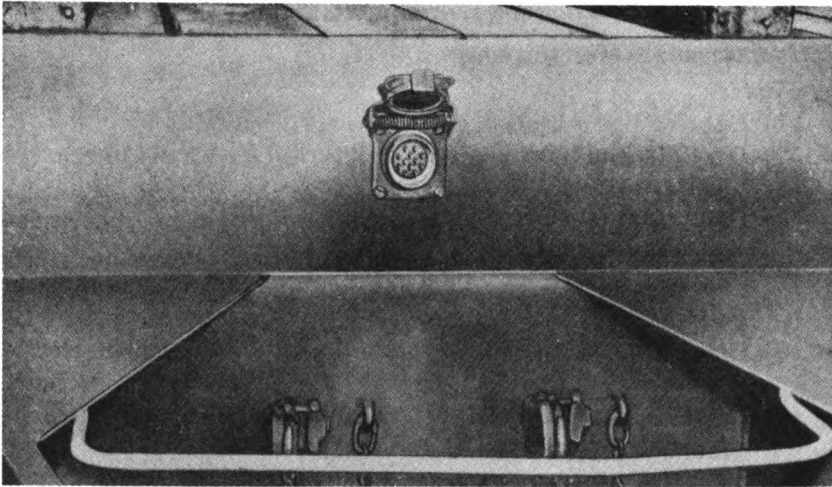


Figure 11. Electric wiring receptacle.

### Section III. OPERATION UNDER USUAL CONDITIONS

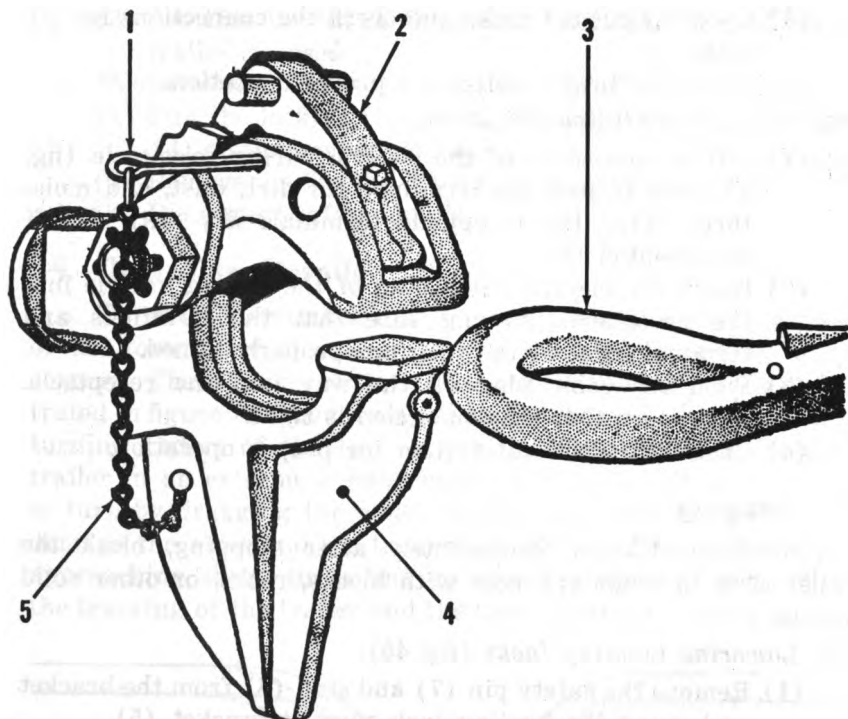
#### 11. General

a. The instructions in this section are published for the information and guidance of the personnel responsible for the operation of this trailer.

b. It is essential that the operator know how to perform every operation of which this trailer is capable. This section gives instructions on starting and stopping the trailer, instructions on the basic motions of the trailer, and instructions on coordinating those basic motions to perform the specific tasks for which the trailer is designed. Since nearly every job presents a different problem, the operator may have to vary the given procedure to fit the individual job.

#### 12. Starting

a. *Towing Connection* (fig. 12). Open the pintle hook (fig. 12) on the towing vehicle. Place the lunette (3) in the pintle hook. Pull the locking tongue (2) down and see that the spring lock slips back in place. Connect the safety chains to the towing vehicle. Do not try to lift the drawbar alone. This job requires two or three men. If there is a shortage of personnel, the drawbar can be lifted using the landing jack. Raise the trailer with the landing jack until the lunette is slightly higher than the pintle hook (4) on the towing vehicle. Back up the towing vehicle carefully until the lunette (3) is directly over the pintle hook (4). Lower the trailer until the lunette snaps into the pintle hook.



- |   |                   |   |             |
|---|-------------------|---|-------------|
| 1 | Safety clip       | 3 | Lunette     |
| 2 | Locking tongue    | 4 | Pintle hook |
| 5 | Safety clip chain |   |             |

Figure 12. Pintle hook and lunette.

**b. Raising Landing Jacks (fig. 45).**

- (1) Unfold the cranking handle (1) and raise the landing jack by turning the handle counter-clockwise.
- (2) Remove the bracket stud (8) from the bracket on the bottom part of the jack and disconnect the landing jack support (5).
- (3) Fold the landing jack under the frame and fasten it with the bracket stud. Secure the stud with the safety clip (7).
- (4) Raise the landing jack support bracket (5) and fasten it under the frame. Secure the bracket stud with the safety clip.
- (5) Fold the crank handle under its shaft and secure it with the hook.

**c. Connecting Brake Lines.**

- (1) Close cut-out cocks on both the emergency and service lines on the towing vehicle.
- (2) Remove the dummy couplings (7, fig. 29) and connect the brake lines with the trailer. See that no dirt or water enters the brake lines.

(3) Open the cut-out cocks and check the connections for air leaks.

(4) Check the brake system for proper operation.

*d. Connecting Electrical System.*

(1) Lift up the cover of the electric wiring receptacle (fig. 11) and inspect the terminals for dirt, dust, and moisture. Wipe the receptacle terminals dry with a soft absorbent cloth.

(2) Insert the electric cable plug of the towing vehicle into the receptacle, making sure that the terminals and terminal holes in the plug are properly aligned.

(3) Push the cable plug all the way into the receptacle. Make sure that the connection is tight.

(4) Check the electrical system for proper operation.

### 13. Stopping

*a. Blocking Wheels.* Immediately after stopping, block the trailer tires in front and rear with blocks, rocks, or other solid objects.

*b. Lowering Landing Jacks (fig. 45).*

(1) Remove the safety pin (7) and stud (8) from the bracket and lower the landing jack support bracket (5).

(2) Remove the safety pin (7) and stud (8) from the bracket on the bottom part of the landing jack and lower the jack assembly.

**Caution:** Keep clear of jack when unfolding.

(3) Connect the landing jack support bracket (5) with the landing jack and secure it with stud (8) and safety pin (7).

(4) Unfold the crank handle (1) and lower the landing jack to its desired position by turning the crank handle clockwise.

(5) Fold the crank handle (1) under its shaft (2) and secure it with the hook.

*c. Disconnecting Brake Lines.*

(1) Close all cut-out cocks on the towing vehicle.

(2) Disconnect the emergency and service brake lines and install dummy couplings (7, fig. 29) immediately. See that no dirt or water enters the brake lines.

(3) Secure brake lines on the towing vehicle.

*d. Disconnecting Electrical System.*

(1) Pull out the electrical connection from the electric wiring receptacle on the trailer.

(2) Secure the electric line on the towing vehicle.

(3) See that the lid of the electric wiring receptacle on the trailer is closed.

e. *Disconnecting Towing Connection* (fig. 12).

(1) Pull the locking tongue (2) up and open the pintle hook (4) on the towing vehicle.

(2) Remove the lunette (3) from the pintle hook (4).

(3) Disconnect safety chains.

## 14. Operating Details

a. *Turning.* Remember that the trailer turns inside the radius of the towing vehicle. Keep this in mind when driving around corners. The tracking of the trailer and the towing vehicle is illustrated in figure 13. The turning radius of the trailer depends on the turning radius of the towing vehicle. Do not try to turn the trailer in an extremely small radius and do not force the trailer to turn by dragging the wheels sidewise, as this might seriously damage the axles and the tandem alignment. Reduce speed when approaching sharp turns and go around corners slowly. Watch the tracking of the trailer and the towing vehicle frequently.

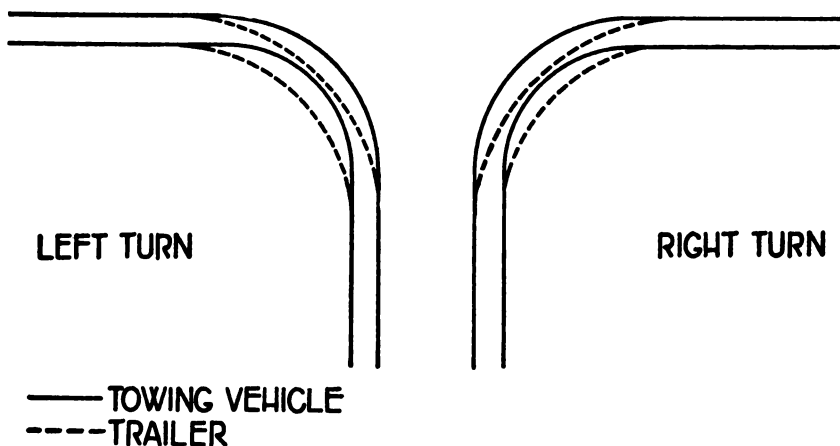


Figure 13. Tracking of trailer and towing vehicle on left and right turn.

b. *Backing* (fig. 14).

(1) Before backing the trailer, make sure that the road or space in back of the trailer is free and provides enough room for backing. Stop frequently and check to see that the backing procedure has been executed in the proper manner and if enough free space is left for further backing. Drive the towing vehicle in the opposite direction from which you want the trailer to run. If the trailer starts to wander in the wrong direction, stop, shift to

the forward gear, and drive forward until the trailer is again properly tracking with the towing vehicle. Then start the backing procedure again. Engage the clutch smoothly and do not start suddenly. Proper backing of the trailer requires skill and is achieved through frequent practice. Avoid sudden full turns of the steering wheel. Use short steering wheel movements.

- (2) When backing the trailer to the left (fig. 14), turn the steering wheel clockwise. The trailer will start turning to the left. When the desired degree of turn is achieved, straighten out the front wheels, and the towing vehicle will again track properly with the trailer.

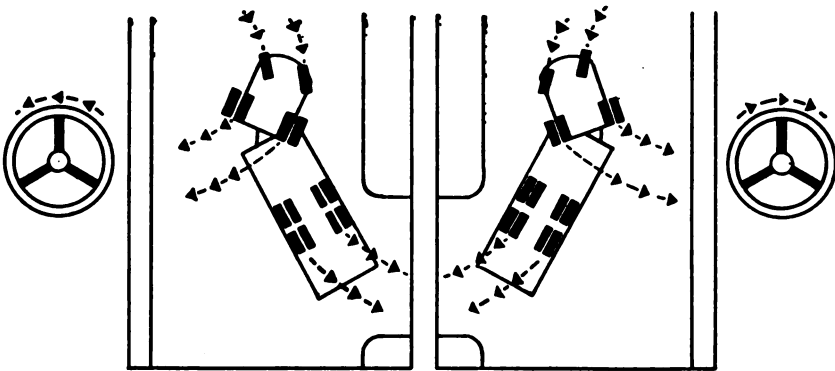


Figure 14. Backing the trailer.

- (3) When backing the trailer to the right (fig. 14), turn the steering wheel counter-clockwise. The trailer will start turning to the right. When the desired degree turn is achieved, straighten out the front wheels and the towing vehicle will again track properly with the trailer.

*c. Adjusting.*

- (1) Check the operation of the brakes and adjust if necessary. Refer to paragraph 61c.
- (2) Check the springs for broken or shifted leaves. Inspect the spring clips and spring wedges (par. 52b).
- (3) Check the operation of the landing jacks. Inspect the landing jacks for signs of insufficient lubrication (par. 24).

*d. Deck Blocking Arrangement (fig. 15).*

- (1) *General.* The deck of the trailer has two front loading blocks, two left side loading blocks, and two right side loading blocks. Each loading block has three holes match-



ing the holes drilled in the deck boards. Bolts are inserted through the holes in the loading blocks and deck boards, and the loading blocks are securely bolted to the deck. The trailer has two additional loose loading blocks; they are used when loading and lashing the crane-shovel attachments. After the trench hoe boom has been loaded, the blocks are placed on it at the rear end of the trailer. The trench hoe shovel is then placed on the blocks.

- (2) *Front loading blocks.* The front loading blocks are  $3\frac{5}{8}$ " wide,  $3\frac{5}{8}$ " high, and 24" long; they are mounted between the second and third stake pockets on the front of the trailer.

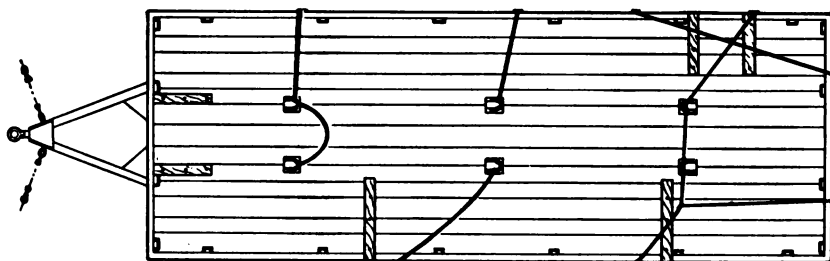
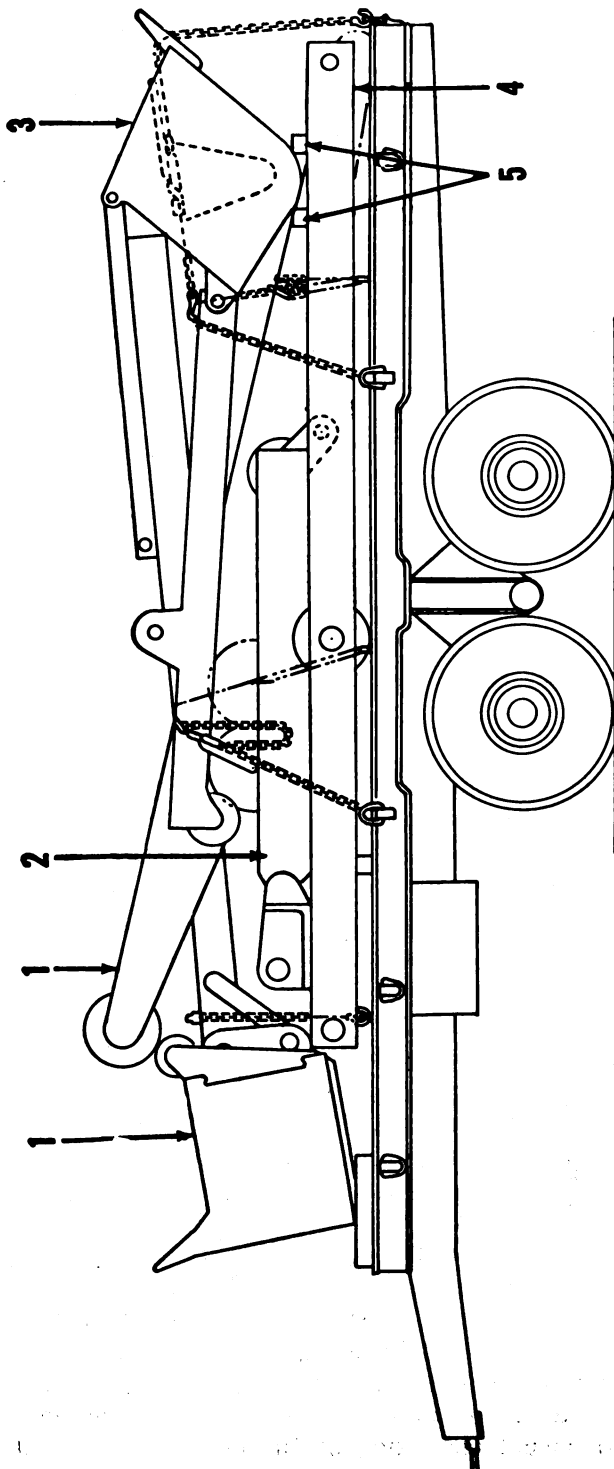


Figure 15. Deck blocking arrangement.

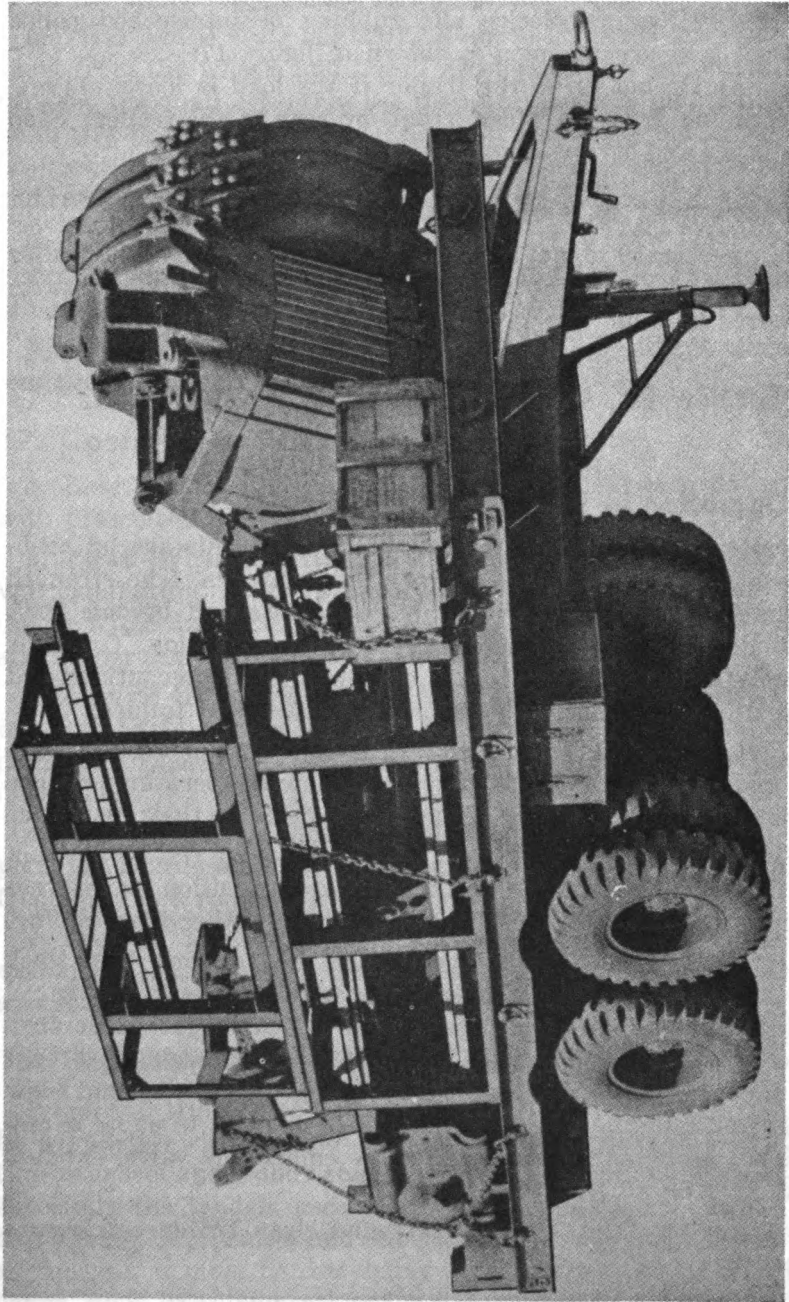
- (3) *Right side loading blocks.* The right side loading blocks are of the same size as the front loading blocks; they are mounted between the fifth and sixth stake pockets on the right side of the trailer.
- (4) *Left side loading blocks.* The left side loading blocks are  $3\frac{3}{8}$ " wide,  $3\frac{5}{8}$ " high, and 32" long. The first block is mounted 92" from the trailer's front sill; the second block is mounted 64" from the rear sill of the trailer.

*e. Load Arrangement and Lashing* (figs. 16 and 17). Load the trailer carefully and see that the load is evenly distributed over the entire trailer. Make sure that the load is not extending over the side sills. Secure the load with chains and loadbinders. Avoid crowding and interlocking of the load. Be especially careful when loading the piledriver leads, follower block, and boom section. After loading the trailer, check every piece of the load and see that it is properly seated on blocks or on the trailer deck. Watch out for interlocking parts and twisted or cramped loading chains. Remove the slack from the chains and inspect to see if the chains are properly connected with the lashing rings on the sills and on the deck of the trailer. After the trailer is loaded and securely chained, make a visual inspection of the entire trailer and see



- 1 Shovel front
- 2 Back hoe gantry
- 3 Back hoe shovel
- 4 Back hoe boom
- 5 Loose blocks

Figure 16. Load arrangement and lashing.



*Figure 17. Front end attachments loaded on trailer.*

that the load is not protruding from the sides, front, or rear of the trailer. Check and inspect the trailer frequently for broken or twisted chains, disconnected load binders, a shifted or rattling load, broken loading blocks, and rubbing or interlocked parts. A typical load arrangement is shown in figure 17.

**Caution:** Do not drive the trailer if the load is loose, sliding, or protruding from the sides, front, or rear of the trailer. Stop immediately and correct all deficiencies.

## 15. Movement to a New Location

If it is necessary to move the trailer to a new location, the trailer must be connected to the towing vehicle (par. 12) and driven to the desired location.

# Section IV. OPERATION UNDER UNUSUAL CONDITIONS

## 16. Operation in Extreme Cold (Below 0° F.)

Operation of the trailer in extreme cold presents special problems which do not exist in warmer temperatures. The strength of metals decreases, and lubricants coagulate and become stiff. Air condensation freezes and hinders brake operation. Operator and maintenance personnel must observe special precautions and service the trailer carefully to prevent functional failure.

*a. Bolts and Nuts.* Inspect the trailer for loose or broken bolts, nuts, and other metal parts. Extremely low temperatures reduce the shock-resistant property of metals and decrease their resistance to strain and stress.

*b. Brakes.* Keep brakes in the released position to prevent freezing. Block trailer wheels to prevent the trailer from rolling.

*c. Brake System.* Remove all caked ice, mud, or snow from slack adjusters, air filters, relay emergency valve, exhaust check valve, and brake lines. Drive the trailer into a heated garage or shop and let the ice and snow melt. Wipe all parts with clean absorbent rags until they are dry. Use a blow torch to melt the ice and snow if a heated building is not available. Be careful to avoid excessive heat, as it may damage the relay emergency valve, exhaust check valve, or rubber parts.

*d. Air Filters (fig. 29).* Inspect and clean frozen condensate frequently (par. 62).

*e. Air Reservoir.* Remove all caked ice, mud, and snow from the air reservoir. Inspect and clean frozen condensate frequently (par. 67).

*f. Light Connections* (fig. 54). Check light connections and electric receptacle for tightness and moisture around the sockets. Wipe the sockets dry with a soft absorbent cloth.

*g. Tires and Wheels* (fig. 20). Remove all caked ice, mud, and snow from the wheels and tires. Remove the ice and snow from between the duals. See that the tires are properly inflated (maximum tire pressure is 70 lbs). See that the wheel mounting nuts are tight and secure. Check tires for cracked or damaged rubber and treads.

*h. Blow Torch.* Keep a blow torch handy to thaw frozen parts.

*i. Lubrication.* Refer to LO 5-9047 and lubricate the trailer as prescribed.

**Warning:** Do not touch metal parts with bare hands when the temperature is extremely low.

## **17. Operation in Extreme Heat**

*a. Lubrication.* Refer to LO 5-9047 and lubricate the trailer with prescribed lubricants.

*b. Tires.* When operating in extreme heat, the air in the tires will expand and build up pressure. Do not release the air from the tires to reduce pressure, because more tire flexibility will cause still higher temperatures and additional tire wear.

*c. Electric Wiring* (fig. 54). The insulation of the electric wiring softens in extremely high temperatures and can be easily damaged. Check electric wiring for frayed, swollen, or peeling insulation.

*d. Deck Planking.* At extremely high temperatures, the deck planking boards might warp and crack. Check the deck planking frequently and replace if necessary.

*e. Brakes.* The brake shoes and brake lining may expand in extreme heat and cause the brakes to bind. Inspect the brakes and readjust if necessary. Refer to paragraph 61c.

## **18. Operation in Salt Water Areas**

When the trailer has been driven through salt water, it must be completely cleaned and lubricated. After driving for a long time over wet and muddy roads or in salt water areas, the trailer—especially the tandem assembly, wheel bearings, and brake system—must be cleaned and lubricated. If the trailer has been submerged, it must be completely dismantled, cleaned, and lubricated. If a delay is necessary because of emergency conditions, notify the proper authorities as soon as possible, so that the trailer may be completely dismantled and cleaned.

## 19. Operation in Dusty or Sandy Areas

*a. General.* Dust and sand penetrate bushings, bearings, air filters, brakes, and other normally protected parts. When the trailer is operating in dusty or sandy areas, more attention must be given to lubrication, air filters, brakes, and moving parts which contain bushings and bearings.

*b. Air Filters* (fig. 29). Drain and clean filters frequently (par. 62). Replace their strainer elements if necessary.

*c. Lubrication.* Blow off the sand with compressed air and lubricate according to LO 5-9047.

*d. Bearings.* Inspect and lubricate bearings frequently (par. 24).

*e. Brake Lines.* Inspect connections and see that they are tight. See that the dummy couplings are properly installed.

*f. Sand Storms.* During a sand storm, cover the dummy couplings, relay emergency valve, air filters, and wheels with cloth. Tighten the tire valve stem caps to prevent clogging of valves.

## 20. Operation in Excessively Rocky Areas

Drive slowly and be extremely careful when operating in rocky areas. Look out for protruding rocks that might reach slack adjusters or brake chambers and tear them off or cause severe damage. Inspect tires frequently for cuts and bruises and avoid sharp rocks and rock splinters that might puncture tires. Inspect the air reservoir, brake lines, electric wiring, and air filters for any damage caused by flying rocks. Keep tires properly inflated. Check the load frequently.

# CHAPTER 3

## ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

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### Section I. SPECIAL ORGANIZATIONAL TOOLS AND EQUIPMENT

#### 21. General

The tools and equipment listed in this section are those that are required to perform organizational maintenance on the Trailer, 4 Wheel, Special Tandem 10 Ton, Model 4 D-T, Flat Bed, For Crane-Shovel Attachments, All Makes and Models. Standard mechanic's hand tools and on-equipment tools are not enumerated in this section.

#### 22. On-Equipment Tools

The on-equipment tools normally supplied with this equipment for the use of the operator are listed in appendix III.

### Section II. LUBRICATION AND PAINTING

#### 23. General Lubrication Information

a. Lubrication Order LO 5-9047 prescribes first and second echelon maintenance for the Trailer, 4 Wheel, Special Tandem 10 Ton, Model 4 D-T, Flat Bed, For Crane-Shovel Attachments, All Makes and Models.

b. A lubrication order is published for each item of equipment. The lubrication order shown in figure 18 is a reproduction of an approved lubrication order for this trailer.

c. Lubrication orders prescribe approved first and second echelon lubrication procedures. The instructions contained therein are mandatory.

#### 24. Detailed Lubrication Information

a. *Care of Lubricant.* Clean lubrication is one of the most important items in the maintenance of this trailer. All lubricant chambers, bearings, and grease-gun nozzles must be kept clean and free of dirt, sand, or grit. Cleaning rags must be free of dirt

and other abrasive materials. While hand-packing bearings, hands must be free of dirt, sand, and used grease. When lubricant chamber covers are removed, they must be protected with clean cloth. Clean all fittings and keep the nozzle of the grease-gun clean at all times.

*b. Points of Application (LO 5-9047).*

- (1) *Brake camshaft outer bearing (1) (Four points).* Clean fittings and lubricate with grease-gun.
- (2) *Brake camshaft inner bearing (2) (Four points).* Clean fittings and lubricate with grease-gun. Use little grease, as excess grease may enter brake.
- (3) *Trunnion axle bearings (3) (Two points).* Clean fittings and lubricate with grease-gun.
- (4) *Brake slack adjusters (4) (Four points).* Remove pipe plug, screw in grease fitting, and fill with lubricant until housing around adjusting worm is full. Remove grease fitting and replace it with the original pipe plug.
- (5) *Jack landing gear handle (5) (Two points).* Clean fittings and lubricate with grease-gun.
- (6) *Jack landing gear (6) (Four points).* Clean fittings and lubricate with grease-gun.
- (7) *Jack landing gear screw (7) (Two points).* Remove plug, check level, and fill with lubricant if necessary.
- (8) *Front and rear wheel bearings.* Remove wheel, hub and bearing cones, clean and inspect oil seal and oil seal wiping surfaces, and check the bearings and cups for wear or damage. Pack bearings with pressure packer or by hand, forcing the lubricant into the cavities between the rollers and cage from the large end of the cone. Coat the hub between the two bearing cups with grease. Use approximately one-eighth inch of grease (see the Lubrication Order for type). Assemble hub and bearings on the axle.

*c. Cleaning.* Use dry-cleaning solvent or Diesel fuel oil to clean or wash all parts. Use of gasoline for this purpose is prohibited. Clean wheel bearings with a stiff fiber brush; do not use heated solvents to clean the bearings. Allow the cleaned parts to dry and wipe them with clean absorbent cloth. Clean and dry hands and tools used in the operation. Reassemble cleaned and dried parts as soon as possible; do not keep the parts dry for long periods of time.

*d. Operation Immediately After Lubrication.* Operate the trailer immediately after lubrication and inspect slack adjusters, brake



# LUBRICATION ORDER

# L05-9047

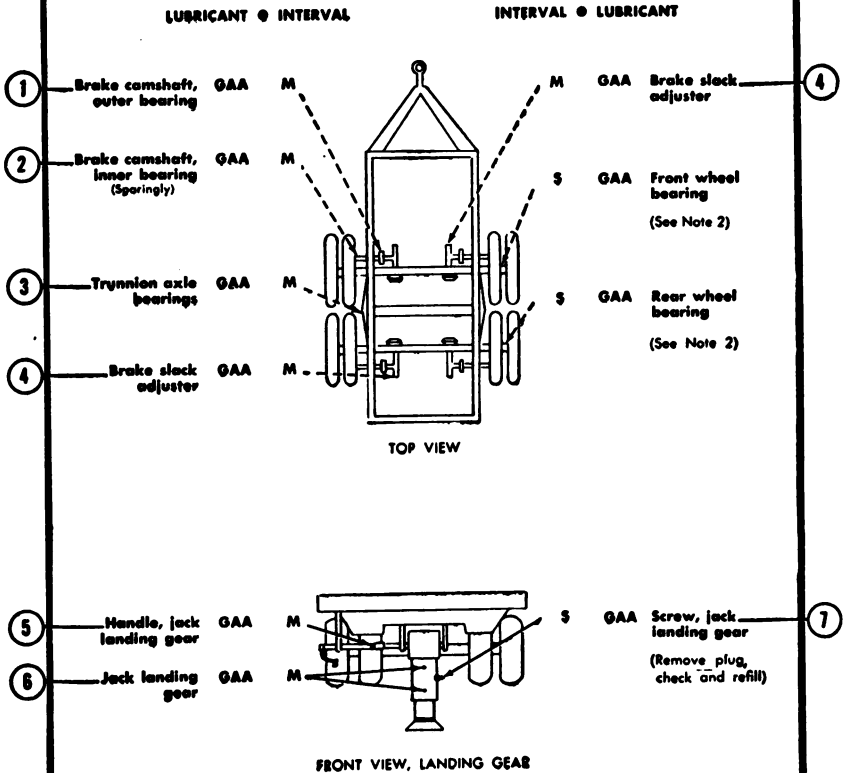
## TRAILER, 4 WHEEL, SPECIAL TANDEM, 10 TON, MODEL 4D-T, FLAT BED, (FOR CRANE-SHOVEL ATTACHMENTS) ALL MAKES AND MODELS

Reference: TM 5-9047, TB 5-9047-1.

Intervals given are maximums for 8-hour day operation. For abnormal conditions or activities, intervals should be shortened to compensate. Clean fittings before lubricating. Relubricate after washing or fording.

Clean parts with SOLVENT, dry-cleaning, or with OIL, fuel, Diesel. Dry before lubricating.

Lubricate points indicated by dotted arrow shafts on both sides of equipment.



CONTINUED ON FOLLOWING PAGE

Figure 18. Lubrication order.

CONTINUED FROM  
PRECEDING PAGE

- KEY -

LUBRICANT	EXPECTED TEMPERATURE			INTERVALS
	Above +32 F	-32 F to 10 F	Below 10 F	
OE - OIL, Engine	OE 30 or 9250	OE 10 or 9110	OE 10 or 9110	M - Monthly Q - Quarterly S - Semi- annually

GAA - GREASE, Automotive and Artillery.

NOTES:

1. OIL CAN POINTS. Weekly clean and lightly coat the chain, pintle, all exposed nuts, bolts and threaded surfaces with OE.

2. WHEEL BEARINGS—Remove wheel, clean and inspect all parts, replace damaged or worn parts, repack bearings and reassemble. If operating with faulty seals or under conditions of extreme moisture, lubricate with WB.

Copy of this Lubrication Order will remain with the equipment at all times; instructions contained

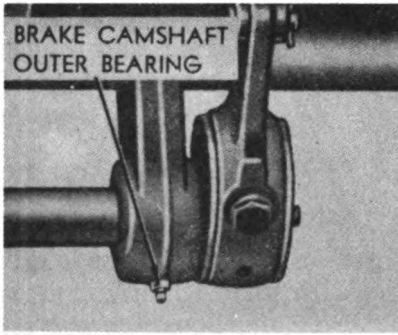
herein are mandatory and supersede all conflicting lubrication instructions dated prior to the date of this Lubrication Order.

BY ORDER OF THE SECRETARY OF THE ARMY:

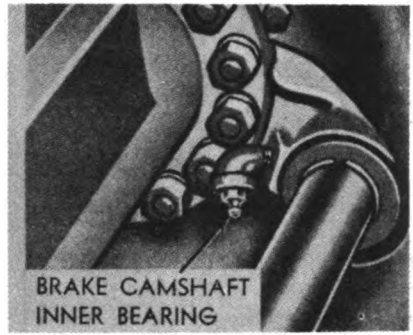
M. B. BISHWAY,  
General, United States Army,  
Chief of Staff.

OFFICIAL:  
Wm. E. BERSON,  
Major General, United States Army,  
The Adjutant General.

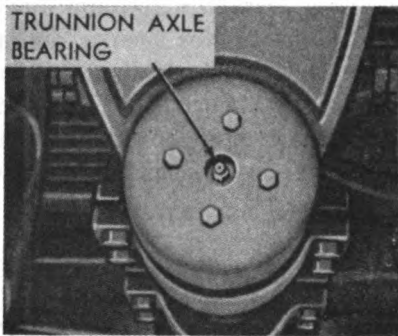
Figure 18—Continued.



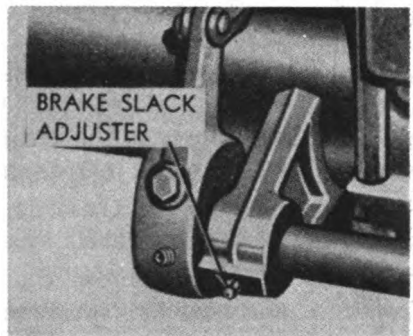
**Reference 1:** Clean fittings and lubricate with grease-gun.



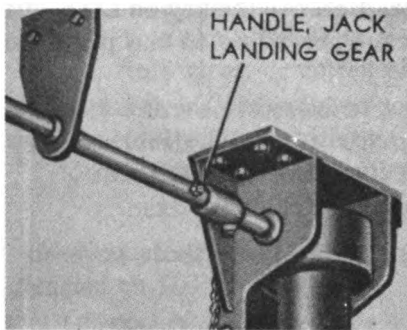
**Reference 2:** Clean fittings and lubricate with grease-gun. Use little grease, as excess grease may enter brake.



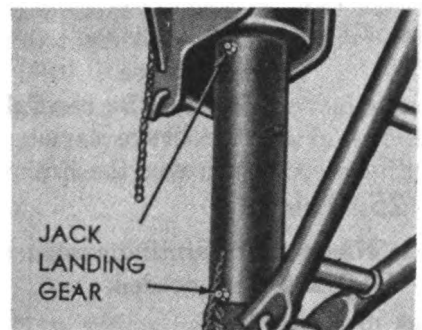
**Reference 3:** Clean fittings and lubricate with grease-gun.



**Reference 4:** Remove pipe plug, screw in grease fitting, and fill with lubricant until housing around adjusting worm is full. Remove grease fitting and replace it with the original pipe plug.



**Reference 5:** Clean fittings and lubricate with grease-gun.



**Reference 6:** Clean fittings and lubricate with grease-gun.

*Figure 18. Lubrication order—Continued.*



Reference 7: Remove plug, check level, and fill with lubricant if necessary.

Figure 18. Lubrication order—Continued.

camshafts, trunnion axle, and wheel bearings for proper operation. Check the landing jacks and landing jack handles for proper operation and see that they are operating smoothly, without binding. Inspect the entire trailer for signs of insufficient lubrication. Wipe off excess grease from the grease fittings and plugs.

*e. Unusual Atmospheric Conditions.*

- (1) *Dusty conditions.* Sand and dust penetrate into bushings and bearings. Inspect, clean, and lubricate the assembly at more frequent intervals. Refer to LO 5-9047.
- (2) *Wet and muddy conditions.* Water and mud penetrate into fittings, bushings, and bearings. Inspect, clean, and lubricate the assembly at more frequent intervals. Refer to LO 5-9047.
- (3) *Extremely cold conditions.* Refer to the key on LO 5-9047 and use the right lubricant according to the prevailing temperatures.

**Caution:** Be careful not to lubricate the inner bearing on the brake camshaft excessively. The lubricant may spread over the brake linings and damage them.

## 25. Painting

No special painting instructions, other than those covered in TM 9-2851, are needed.

## Section III. PREVENTIVE MAINTENANCE SERVICES

### 26. General

The operator or crew of the Trailer, 4 Wheel, Special Tandem 10 Ton, Model 4 D-T, Flat Bed, For Crane-Shovel Attachments,

All Makes and Models, and the organizational maintenance personnel must perform their preventive maintenance services regularly, to make sure the trailer operates well and to lessen the chances of mechanical failure.

## **27. Operator or Crew Maintenance**

*a. Inspections.* Inspections must be made before operation, during operation, at halt, and after operation, as described in this section. All inspections of assemblies, subassemblies, or parts must include any supporting members or connections and must determine whether the unit is in good condition, correctly assembled, secure, or excessively worn. Any mechanical condition which may result in further damage to the unit must be corrected before the equipment is operated.

- (1) The inspection for "good condition" is usually an external visual inspection to determine whether the unit is damaged beyond safe or serviceable limits, or to determine if it is in such condition that damage will result from the operation. The term "good condition" is further defined as: not bent or twisted; not chafed or burned; not broken or cracked; not bare or frayed; not dented or collapsed; not torn or cut; adequately lubricated.
- (2) Inspection of a unit to see that it is "correctly assembled" is usually an external visual inspection to determine whether it is in its normal assembled position in the equipment.
- (3) Check of a unit to determine if it is "secure" is usually an external inspection, a hand-feel, or a pry-bar or wrench check for looseness in the unit. Such an inspection should include brackets, lock washers, locknuts, locking wires, or cotter pins used in the assembly.
- (4) "Excessively worn" means worn close to or beyond serviceable limits, a condition likely to result in a failure if replacement of the affected parts is not made before the next scheduled inspection.

*b. Reporting Deficiencies.* The operator will report all deficiencies on DD Form 110.

*c. Before-Operation Services.* The following services will be performed to determine if the condition of the equipment has changed since it was last operated, and to make sure the equipment is ready for operation. Any deficiencies must be corrected or reported to the proper authority before the unit is put into operation.

- (1) *Brakes.* Check the brake system for proper operation. Inspect all lines for leaks. Check the drain cock on reservoir for condensate.
- (2) *Tires.* See that tires are not underinflated. The correct pressure is 70 psi. Examine tires for excessive wear, cuts and bruises. Check and remove imbedded foreign matter in treads and between duals.
- (3) *Lights.* Inspect the lighting system and check for broken wires and damaged reflectors.
- (4) *Connections.* Check all hose and cable connections and inspect the lunette and pintle hook connection. See that safety chains are properly connected. Check the pintle hook assembly on prime mover.
- (5) *Wheels.* Check all cap nuts on wheels for tightness.
- (6) *Visual inspection.* Make a visual inspection of the entire trailer for loose or missing bolts, nuts, cotter pins, damaged control valves, and loose, splintered, or broken boards on the trailer bed.

*d. During-Operation Services.* The operator is responsible for correcting or reporting unusual sounds or odors, deficiencies in performance, or other signs of abnormal operation. He will perform the following specific services:

- (1) *Trailer load.* Inspect the load frequently during transit for shifting. See that the load is properly and securely fastened to the trailer.
- (2) *Unusual operation.* Check for unusual operation, such as swaying, excessive vibration, or dragging. Report any irregularity to the proper authority.
- (3) *Brakes.* See that the hand brake on the towing vehicle is in the released position. Check the air pressure frequently.

*e. At-Halt Services.* During halts, even if only for short periods, the operator should make a general check of the equipment and correct or report any deficiencies noted, in addition to performing the following specific duties.

- (1) *Wheels and hubs.* Inspect for loose or missing wheel and flange nuts. Check brake drums for excessive heat which may indicate dragging brakes or dry or defective wheel bearings.
- (2) *Tires.* Check the tire pressure. Inspect tires for cuts, bruises, and imbedded foreign matter.
- (3) *Towing connections.* Inspect towing connections and see that they are properly and securely locked.

- (4) *Load.* Inspect the load for shifting. See that loadbinders and chains are in their proper positions.

*f. After-Operation Services.* To insure that the equipment is ready to operate at any time, the following services must be performed by the operator or crew immediately after any operating period of eight hours or less. All deficiencies must be corrected or reported to the proper authority.

- (1) *Shutdown precautions.* Before disconnecting the trailer from the towing vehicle, place blocks tightly against the front and rear wheels to prevent rolling in either direction. Lower the landing jacks in front and rear and see that the trailer is properly balanced on both ends. Close the cut-off cocks and disconnect the air hose and electric cable. Install dummy couplings to protect the hose sockets from dirt and water.
- (2) *Air reservoir.* Open the drain cock on the air reservoir and drain off any water that may have condensed in the reservoir. Close the drain cock.
- (3) *Tires.* Check tires for excessive wear, cuts, bruises, imbedded foreign matter, and underinflation. Check to see if the valve caps are in place. Tighten them if loose.
- (4) *Lights and reflectors.* Check lights and reflectors for damage and see that they are properly mounted, in good working condition, and clean.
- (5) *Visual inspection.* Make a visual inspection of the entire trailer, checking for breakage in air lines and hose, loose or missing bolts, nuts and pins, broken springs, or bent, cracked, or damaged parts.
- (6) *Clean equipment.* Check the trailer bed and remove all accumulated dirt, snow, ice, and debris.

## **28. Maintenance and Safety Precautions**

*a.* Always correct and report any mechanical deficiencies that may result in further damage to the trailer if operation is continued.

*b.* Always see that the landing jacks are in a folded, locked position before moving the trailer.

*c.* Place blocks tightly against front and rear wheels before disconnecting air lines.

*d.* Always see that air cut-off cocks on the towing vehicle are closed before disconnecting the air lines.

## 29. Organizational Maintenance

a. Organizational preventive maintenance is performed by organizational maintenance personnel, with the aid of the operator, at weekly and monthly intervals. The weekly interval will be equivalent to 60 hours of use. The monthly interval will be equivalent to 4 weeks, or 240 hours, of use, whichever occurs first.

b. The column headed technical inspection is provided for the information and guidance of personnel performing technical inspection, and constitutes the minimum inspection requirements for the equipment.

c. The preventive maintenance services to be performed at these regular intervals are listed and described below. The numbers appearing in the columns opposite each service refer to a corresponding number appearing on DA Form 464, and indicate that a report of the service should be made at that particular number on Form 464. These numbers appear in either second, third, or both columns, as an indication of the interval at which the service is to be performed.

Technical inspection	Services		
	Monthly	Weekly	
1	1	1	<b>GENERAL</b> <i>Before-operation service.</i> Check and perform services listed in paragraph 27c.
2	2	2	<i>Lubrication.</i> Inspect entire trailer for missing or damaged lubrication fittings and pipe plugs and for indications of insufficient lubrication.
---	2	2	Replace missing or damaged lubrication fittings and pipe plugs. Lubricate as specified in LO 5-9047.
3	3	3	<i>Tools and equipment.</i> Inspect condition of tools and equipment assigned to the trailer. Check condition and mounting of tool and bar lockers.
---	3	3	See that all tools and equipment assigned to the trailer are clean, serviceable, and properly stowed or mounted. See that tool and bar lockers are clean and in good condition, and that they will close and fasten properly.
5	5	5	<i>Publications.</i> See that a copy of this technical manual, LO 5-9047, and TB 5-9047-1 on preventive maintenance services are with equipment and in serviceable condition.
6	6	6	<i>Appearance.</i> Inspect the general appearance of the trailer, paying particular attention to cleanness, legibility of identification markings, and condition of paint.



Technical inspection	Services		
	Monthly	Weekly	
---	6	6	Correct or report any deficiencies noted.
7	7	7	<i>Modifications.</i> See if all available modification work orders applying to this trailer have been completed and are recorded on DA Form 478 (MWO and Major Unit Replacement Record and Organizational Equipment File).
52	52	52	<b>ELECTRIC SYSTEM</b> <i>Lights and reflectors.</i> Inspect lights and reflectors for loose or missing mounting bolts, cracked or broken lenses, and defective bulbs. Check entire wiring system for broken wires, worn, frayed, or cracked insulation, and loose, corroded, or damaged connections. Check receptacle for secure and proper mounting.
---	52	52	Tighten or replace loose or missing mounting bolts. Replace defective lenses, bulbs, or wiring. Clean and tighten loose or corroded connections.
76	76	76	<b>FRAMES AND MOUNTINGS</b> <i>Tires.</i> Inspect all tires for low air pressure, excessive wear, cuts, bruises, peelings, imbedded foreign matter, and missing or loose valve caps. The correct air pressure is 70 pounds.
---	76	76	Remove imbedded foreign matter from tires and from between the duals. Inflate to correct pressure. Replace excessively worn or damaged tires.
78	78	78	<i>Rear wheels.</i> Inspect wheel bearings for proper adjustment. Check for leaky oil seals and for loose hub-cap and wheel-mounting bolts.
---	78	78	Adjust wheel bearings if necessary (par. 58c). Replace leaky oil seals (par. 57). Tighten or replace missing bolts.
79	79	79	<i>Front wheels.</i> Inspect wheel bearings for proper adjustment. Check for leaky oil seals and loose hub-cap and wheel-mounting bolts.
---	79	79	Adjust wheel bearings if necessary (par. 58c). Replace leaky oil seals (par. 57). Tighten or replace missing bolts.
80	80	80	<i>Frame.</i> Inspect frame for cracked or broken welds, loose or missing bolts and nuts, and bent or displaced members. Check all lashing rings and brackets for proper mounting and security.
---	80	80	Repair or report all bends, cracks, and breaks. Tighten or replace all loose or missing bolts and nuts.

Technical inspection	Services		
	Monthly	Weekly	
83	83	83	<i>Springs.</i> Inspect springs for broken or shifted leaves and spring clips. Check saddle bolts, wedges, and trunnion axle caps for tightness.
---	83	83	Correct or report any deficiencies noted.
84	84	84	<i>Axles.</i> Inspect condition of alinement of axles.
---	84	84	Correct or report any deficiencies noted.
85	85	85	<i>Landing jacks.</i> Check condition and operation of landing jacks. See if the jacks lock properly while in retracted position.
---	85	85	Correct or report any deficiencies noted.
<b>DRIVE SYSTEM</b>			
99	99	99	<i>Service brakes.</i> Inspect brakes for proper operation and adjustment. Check entire brake system for air leaks and damaged, bent, or clogged lines and connections. Inspect mounting and condition of brake chambers, brake lining, slack adjusters, valves, and air filter.
---	99	99	Adjust brakes if necessary (par. 61c). Replace damaged lines and connections. Correct any leaks noted. Drain or clean air filter and replace strainer if necessary (par. 62d). See that the brakes are relined before lining is worn flush with rivets (par. 90d). Correct or report any other deficiencies noted.
<b>MISCELLANEOUS ITEMS</b>			
133	133	133	<i>Air reservoir.</i> Inspect condition and mounting of air reservoir. Check for dents or cracks in the wall of the reservoir.
---	133	133	Tighten loose bolts and connections. Drain condensation from the reservoir.
134	134	134	<i>Trailer bed.</i> Inspect for damaged or broken flooring and loose, cracked, or splintered boards.
---	134	134	Correct or report any deficiencies noted.
135	135	135	<i>Towing connection.</i> Check condition of the towing connection. Check safety chains for possible twists and damage.
---	135	135	Correct any deficiency noted.

## Section IV. TROUBLESHOOTING

### 30. Use of Troubleshooting Section

This section provides information useful in diagnosing and correcting unsatisfactory operation or failure of the trailer or any of its components. Each trouble symptom is followed by a list

of probable causes of the trouble. The possible remedy recommended is described opposite the probable cause.

*Note.* All references in this section to paragraphs 77 through 98 pertain to operations that are the responsibility of field and depot maintenance personnel. Organizational maintenance personnel should not proceed without proper authority.

### 31. Insufficient Brake

*Probable cause*

Brakes need adjusting, lubricating or relining.

Low pressure in the air brake system (below 80 lbs).

Brake valve delivery pressure from towing vehicle below normal.

Relay emergency valve defective.

*Possible remedy*

Adjust or lubricate brakes (par. 61c).

Check air brake systems on towing vehicle and trailer for excessive leakage.

Check brake valve delivery pressure on towing vehicle. Adjust brake valve linkage or replace valve.

Replace (par. 63).

### 32. Brakes Apply Too Slowly

*Probable cause*

Brakes need adjusting or lubricating.

Low pressure in the air brake system (below 80 lbs).

Brake valve delivery pressure from towing vehicle below normal.

Restriction in tubing line.

Air line filter clogged.

*Possible remedy*

Adjust or lubricate brakes (par. 61c).

Check brake system on towing vehicle and trailer for excessive leakage.

Check valve delivery pressure. Adjust brake valve linkage or replace valve.

Service or replace tubing line (par. 67).

Clean filter (par. 62).

### 33. Brakes Do Not Apply

*Probable cause*

Cut-out cocks on towing vehicle closed.

Brake system not properly connected to brake system of towing vehicle.

No air pressure in brake system.

Restriction in tubing line.

Clogged air line filter.

*Possible remedy*

Open cut-out cocks.

Connect brake lines correctly.

Charge brake system.

Repair or replace tubing line (par. 67).

Clean filter (par. 62).

### 34. Brakes Do Not Release

*Probable cause*

Brake system improperly connected to brake system of towing vehicle.

Brake valve on towing vehicle in applied position.

Brakes improperly adjusted.

*Possible remedy*

Connect lines correctly.

Move brake valve to released position.

Adjust brakes (par. 61c).

*Probable cause*  
Relay emergency valve in emergency position.

Cut-out cocks on towing vehicle closed.

Restriction in tubing lines.

Restriction in hose line.

## 35. Brakes Grab

*Probable cause*  
Grease on brake lining.

Brake rigging binding.

Brake valve on towing vehicle defective.

Brake chamber diaphragm defective.

## 36. Brakes Are Uneven

*Probable cause*  
Brakes need adjusting or lubricating.

Brake shoe or brake chamber release spring broken.

Brake drum out of round.

Brake chamber diaphragm leaking.

## 37. Excessive Leakage Occurs With Brakes Released

*Probable cause*  
Relay emergency valve leaking.

Tubing line leaking.

Hose line leaking.

## 38. Excessive Leakage Occurs With Brakes Applied and Relay Emergency Valve in Emergency Position

*Probable cause*  
Relay emergency valve defective.

Tubing line leaking.

Hose line leaking.

## 39. Excessive Oil and Water Present in Air Brake System

*Probable cause*  
Air reservoir not drained.  
Compressor on towing vehicle passing oil.

*Possible remedy*  
Build up pressure in brake system if connected to towing vehicle. Drain trailer brake system if not connected to towing vehicle.  
Open cut-out cocks.

Service or replace tubing lines (par. 67).

Service or replace hose line (par. 67).

*Possible remedy*  
Reline brakes (par. 90). See *note* in paragraph 30.

Lubricate brake rigging.

Repair or replace.

Replace brake chamber or brake chamber diaphragm (par. 65).

*Possible remedy*  
Adjust and lubricate brakes (par. 61).

Replace broken spring (par. 90). See *note* in paragraph 30.

Replace brake drum (par. 90). See *note* in paragraph 30.

Replace brake chamber or brake chamber diaphragm (par. 65).

*Possible remedy*  
Replace relay emergency valve (par. 63).

Repair or replace (par. 67).

Repair or replace (par. 67).

*Possible remedy*  
Replace relay emergency valve (par. 63).

Repair or replace (par. 67).

Repair or replace (par. 67).

*Possible remedy*  
Drain reservoir.  
Replace compressor on towing vehicle.

## 40. Wheels Wobble

### *Probable cause*

Bearings loose or worn.  
Wheels eccentric.  
Wheels loose.

### *Possible remedy*

Replace or adjust bearings (par. 58).  
Replace wheels (par. 57).  
Tighten wheels.

## 41. Brakes Get Hot

### *Probable cause*

Brakes need adjusting.  
Brakes used excessively.  
Dry bearings.

### *Possible remedy*

Adjust brakes (par. 61).  
Use brakes properly.  
Lubricate bearings (par. 24).

## 42. Wheel Hubs Get Hot

### *Probable cause*

Brakes need adjusting.  
Dry bearings.  
Brakes used excessively.  
Wheel bearings adjusted too lightly.  
Wheel bearings lack lubrication.

### *Possible remedy*

Adjust brakes (par. 61).  
Lubricate bearings (par. 24).  
Use brakes properly.  
Adjust properly (par. 58).  
Lubricate bearings (par. 24).

## 43. Abnormal Tire Wear

### *Probable cause*

Tires underinflated.  
Wheel bearings worn or damaged.  
Axle bent.  
Tandem assembly out of alinement.

### *Possible remedy*

Inflate tires properly.  
Replace wheel bearings (par. 58).  
Replace axle (par. 56).  
Aline tandem assembly (par. 85). See  
*note* in paragraph 30.

## 44. Landing Jacks Operate Hard

### *Probable cause*

Insufficient lubrication.  
Foreign matter in the landing jack  
screw.

### *Possible remedy*

Lubricate.  
Remove foreign matter, clean, and  
lubricate screw (par. 93). See  
*note* in paragraph 30.

## 45. Landing Jack Pin Will Not Fit in the Bracket

### *Probable cause*

Pin bent or damaged.  
Bracket holes out of alinement.  
Bracket bent or twisted.

### *Possible remedy*

Replace pin.  
Straighten out the bracket and aline  
holes.  
Straighten bracket.

## 46. Landing Jack Sinks in the Ground

### *Probable cause*

Ground soft and muddy.  
Ground sandy.

### *Possible remedy*

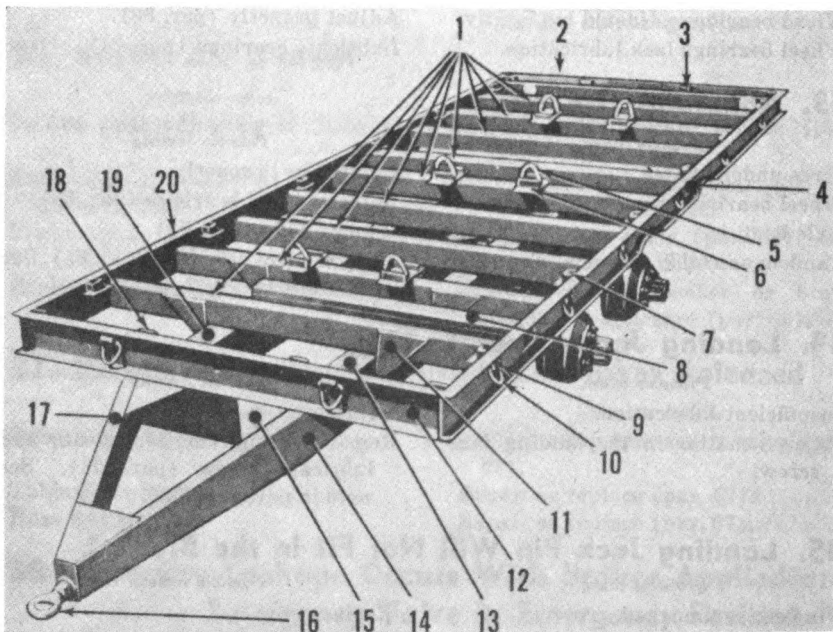
Place wide, solid timber boards under  
the jack leg.  
Wet down the ground and place solid,  
wide timber boards under the jack  
leg.

## Section V. FRAME AND DECK ASSEMBLY

### 47. Description

(fig. 19)

The frame of the trailer is constructed of structural steel and steel castings. The frame has two main longitudinal members (13) (19) running through the center of the trailer. The longitudinal members are crossed by a series of channel cross-members (1) and welded at both sides of the trailer to the left and right side sills (4) (20), and in the front and rear to the front (12) and rear (20) sills. The frame cannot be disassembled. The brake system, the electric wiring system, and lights can be removed, as can the decking bolted to the frame.



- |    |                           |    |                     |
|----|---------------------------|----|---------------------|
| 1  | Cross-member              | 11 | Cross-member gusset |
| 2  | Rear sill                 | 12 | Front sill          |
| 3  | Rear stake pocket         | 13 | Left main member    |
| 4  | Left side sill            | 14 | Left drawbar arm    |
| 5  | Deck lashing ring         | 15 | Drawbar gusset      |
| 6  | Deck lashing ring well    | 16 | Lunette             |
| 7  | Side stake pocket         | 17 | Right drawbar arm   |
| 8  | Pinch bar locker          | 18 | Front stake pocket  |
| 9  | Side lashing ring bracket | 19 | Right main member   |
| 10 | Side lashing ring         | 20 | Right side sill.    |

Figure 19. Frame assembly without deck.

## 48. Underframe Assembly

*a. Description.* The underframe assembly consists of the two longitudinal members of the frame, the trunnion axle pedestal, and the drawbar. All these sections are rigidly welded to form a single unit.

(1) *Trunnion axle pedestal.* The pedestal is attached to the two main longitudinal members at the sixth and seventh cross-members of the frame. The pedestal is machined and welded to exact dimensions to accommodate the trunnion axle by which the frame and all its members are attached to the running gear.

(2) *The drawbar.* The drawbar is welded to the two main longitudinal members and is reinforced by three gusset plates welded at the lunette and at the front end sill.

*b. Inspection and Repair.* Inspect both longitudinal members, the trunnion axle pedestal, and the drawbar for broken welds and cracked or bent members. Re-weld cracks and breaks, using reinforcing plates.

*c. Cleaning.* Clean all caked mud and dirt from the underframe assembly. Remove road tar from all underframe assembly members. Wash the underframe assembly, using a water hose and strong water pressure. Wipe the underframe assembly dry and check for corrosion. Clean corroded places by sand blasting or scrubbing with a wire brush until clean metal is visible.

## 49. Wideframe Assembly

*a. Description.* The wideframe assembly consists of left and right sills, front and rear sills, and nine cross-members. Six stake pockets are welded along the inside of the left and right sill. Four stake pockets are welded along the inside of the front and rear sill. On the second, fifth, and eighth cross-members are welded the D-ring brackets which hold the deck D-rings used for lashing and lifting purposes. Along the outside of the four sills are welded the D-ring brackets and rings—two in front, two in the rear, and six on each side. These rings are used for lashing purposes. The rear cross-member is drilled for the lamps, which are mounted on lamp mounting brackets welded inside the member.

*b. Inspection and Repair.* Inspect the wideframe assembly for broken welds and cracked, bent, or displaced members. Remove the bent or cracked members, using a cutting torch. Install new members and weld them securely in their proper places.

## 50. Deck Assembly

*a. Description.* The deck assembly consists of the hardwood flooring, six lashing rings, and six loading blocks. The flooring

is attached to the frame with bolts and nuts. Loading blocks are provided with three drilled holes and can be bolted to the flooring. The rings are used for lashing and lifting.

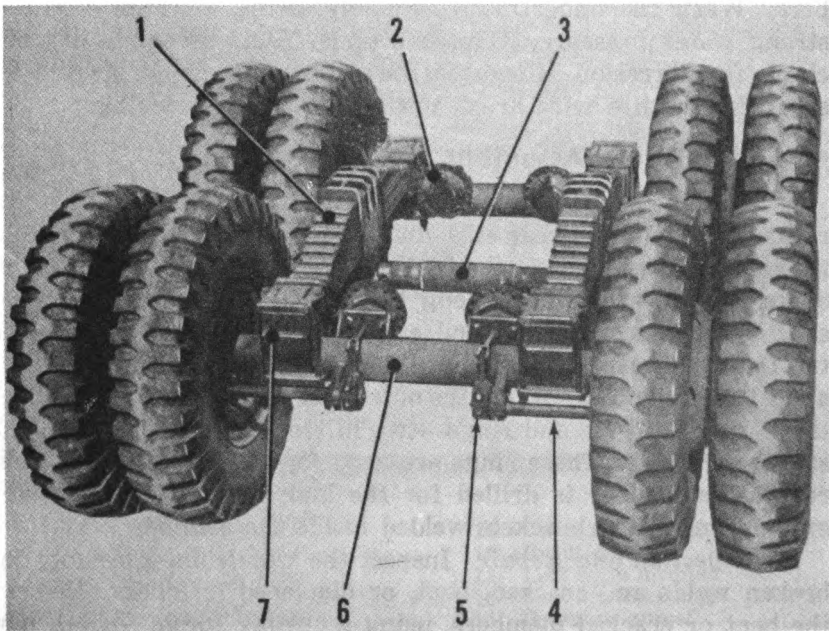
*b. Inspection and Repair.* Inspect the flooring for broken, splintered, or warped boards and loose or lost bolts. Tighten or replace bolts and nuts. Check the lashing brackets for broken welds. Inspect the loading blocks and see that they are properly and securely mounted.

## Section VI. SPRINGS AND TRUNNIONS

### 51. Description

(fig. 20)

The front and rear axles (6), spring assembly (1), and trunnion axle (3) form a tandem unit. Each spring (1), is secured to the trunnion axle (3) by a spring saddle. Spring ends are encased in shackle box castings (7) welded to the axles. The frame is attached to the tandem unit by the trunnion pedestal, secured on the trunnion axle with brackets and bolts.



- |                 |                  |
|-----------------|------------------|
| 1 Spring        | 4 Brake camshaft |
| 2 Brake chamber | 5 Slack adjuster |
| 3 Trunnion axle | 6 Axle           |
| 7 Shackle box   |                  |

Figure 20. Tandem suspension and axle assemblies.

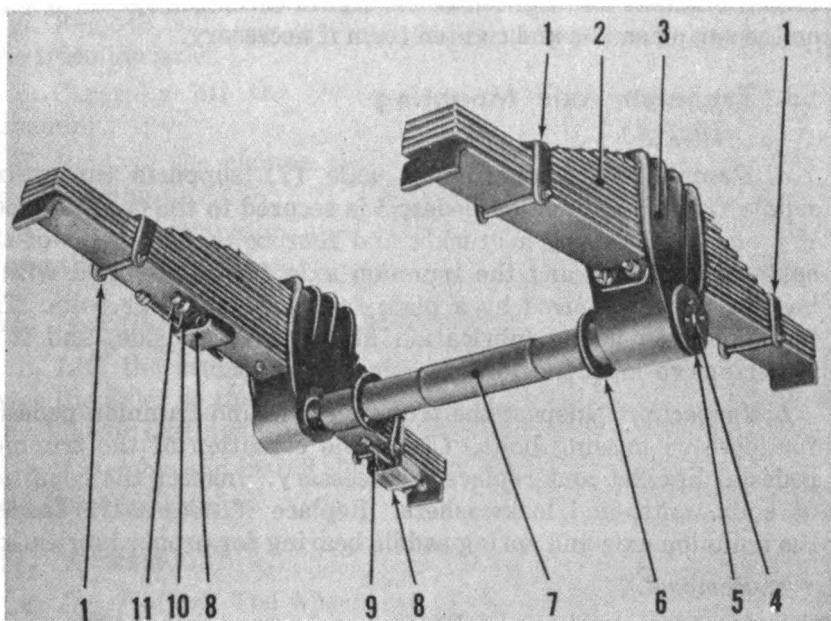


## 52. Spring Mounting

(fig. 21)

*a. Description.* Each spring assembly has thirteen steel leaves. Five long leaves are the main leaves. The eight graduated leaves are auxiliary leaves. The spring assembly (2) is tied together in the center with a  $\frac{1}{2}$ -inch round hex bolt. At the sixth leaf the spring assembly is tied on both ends by a spring clip (1). The ends of the bottom leaf are bent down to fit into a slot in the shackle box casting welded to the axle. The ends of the springs are secured by shackle box brackets and clamps. The spring assembly is held firmly in the spring saddle (3) by two wedges (8) at the bottom of the spring assembly. The wedges must be tightened occasionally, compressing the wedge bolts (9). This is important to keep both axles in perfect alinement. The spring saddle is secured to the trunnion axle, and the joint is provided with a bearing and a lubrication fitting.

*b. Inspection.* Inspect the spring assembly for broken leaves, loose spring bolts, and spring clips. Check tightness of the wedges



- |                       |                   |
|-----------------------|-------------------|
| 1 Spring clip         | 6 Washer          |
| 2 Spring assembly     | 7 Trunnion axle   |
| 3 Spring saddle       | 8 Wedge           |
| 4 Grease fitting      | 9 Wedge bolt      |
| 5 Cap                 | 10 Wedge bolt nut |
| 11 Wedge bolt locknut |                   |

Figure 21. Spring assembly.

in the spring saddle. Inspect the shackle box brackets for loose bolts and tighten if necessary. Check to see if the trunnion axle and spring saddle joint is sufficiently lubricated. Inspect the cap on the trunnion axle and tighten the four bolts if necessary.

*c. Removal.* Disconnect air lines and secure them to the under-frame. Remove bolts and brackets holding the trunnion pedestal on the trunnion axle. Carefully lift the frame up and away from the tandem assembly. Remove the clamps and shackle box bracket assembly at each end of spring. Now the trunnion axle and springs can be lifted away from the axle assembly. Loosen the wedge bolts and remove wedges. Remove the spring saddle and springs from the trunnion axle.

*d. Installation.* Install the spring assembly (2) on the trunnion axle (7) and tighten the wedge bolts (9). Lift the trunnion axle and spring assembly and position it over the axles so that the bent ends of the bottom springs will fit into the shackle box castings on the axle. Assemble and install the shackle box bracket and tighten clamps. Carefully lower the frame assembly until the trunnion pedestal rests on the trunnion axle in its proper place. Install brackets and tighten bolts. Again check the spring wedges on the spring saddle and tighten them if necessary.

### **53. Trunnion Axle Mounting**

(fig. 21)

*a. Description.* The trunnion axle (7) supports the spring saddle (3). The trunnion pedestal is secured to the trunnion axle (7) on both sides by a bracket and four bolts. The joint of the spring saddle (3) and the trunnion axle (7) is provided with a bearing and is secured by a plate fastened with four bolts. The trunnion axle has a lubrication fitting on each side, and it is important to keep the joint bearing lubricated.

*b. Inspection.* Inspect the trunnion axle and trunnion pedestal for loose or missing bolts. Check the condition of the trunnion pedestal bracket and replace if necessary. Inspect the condition of bolts, nuts, and lockwashers. Replace if necessary. Inspect the trunnion axle and spring saddle bearing for proper lubrication.

*c. Removal.*

- (1) Disconnect the brake lines and secure them to the under-frame.
- (2) Remove bolts and brackets holding the trunnion pedestal on the trunnion axle.
- (3) Carefully lift the frame up and away from the tandem assembly.

*d. Installation.*

- (1) Lift the frame over the tandem assembly and lower it so that the trunnion pedestal rests on the trunnion axle in its proper place.
- (2) Install brackets and bolts and tighten bolts securely.

## **Section VII. AXLES AND WHEELS**

### **54. Description**

Axles are of the tubular type with forged steel ends, electrically welded to form an integral unit. The ends of each spring fit into slots in the castings welded to the axle. The springs are secured to the axle by a shackle box bracket and clamps. The axles are secured in their proper relation to each other and form the tandem suspension for the trailer frame.

### **55. Removal of Axle Assembly**

- a.* Disconnect brake lines and secure them to the underframe.
- b.* Remove bolts and brackets holding the trunnion pedestal on the trunnion axle.
- c.* Carefully lift the frame up and away from the tandem assembly.
- d.* Remove the clamps and shackle box brackets at each end of the spring.
- e.* Lift the trunnion axle and spring assembly up and away from the axles.

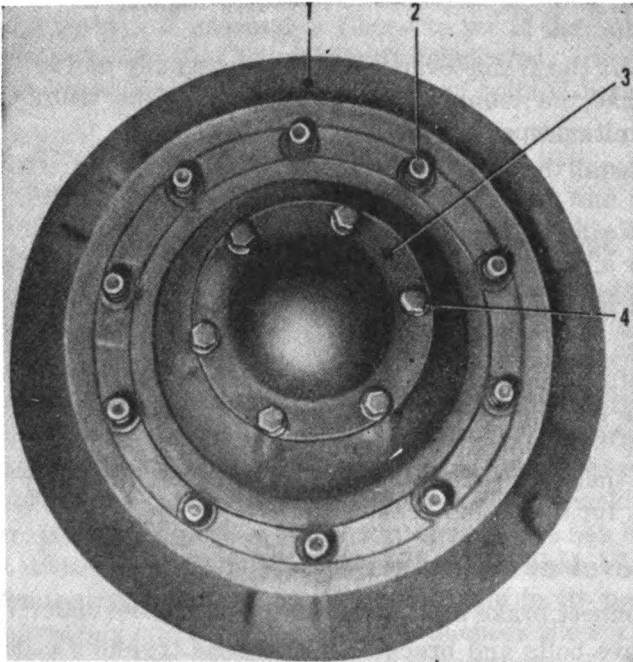
### **56. Installation of Axle Assembly**

- a.* Lift the trunnion axle and spring assembly and install it over the axles so that the bent ends of the springs will fit into the shackle box castings welded to the axle.
- b.* Assemble and install shackle box brackets and clamps.
- c.* Tighten clamps.

### **57. Wheels**

*a. Description.* The wheels are of the ventilated dual disc type. They are secured to the hubs of the axles by double cap nuts. The stud hole cap nuts are constructed in such a way that they are self-aligning, thus assuring even wear of the tires. Tires are secured on the wheels by snap type wheel rings.

*b. Inspection.* Inspect the wheels for cracks and dents. Check bolts and nuts for stripped or damaged threads. Inspect the wheel ring for cracks or damage.

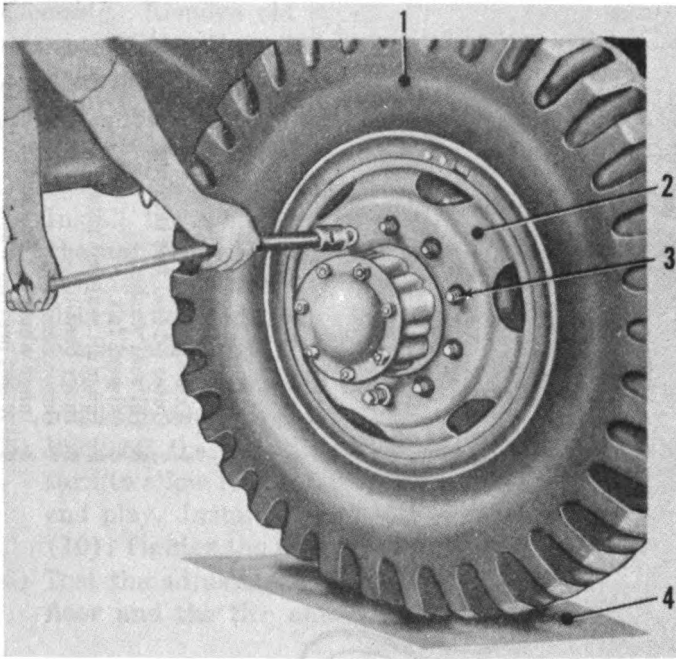


1	Hub	3	Hub cap
2	Wheel stud	4	Hub cap screw

*Figure 22. Hub cap removal points.*

**c. Removal.**

- (1) Remove the hub cap screws (4, fig. 22) and lockwashers and remove the hub cap (3, fig. 22).
- (2) Place a five-ton jack under the axle towards the side of the trailer from which the wheel is to be removed.
- (3) Jack up the axle until the tires are about 1 inch from the ground.
- (4) Slide a greased steel plate (4, fig. 23) about 12 inches wide and 36 inches long under the tires. The tire (1, fig. 23) wheel (2, fig. 23) drum assembly will slide on the greased plate (4, fig. 23) when the wheel is pulled out.
- (5) Unscrew the outer wheel bearing nut (10, fig. 24).
- (6) Remove the washer (9, fig. 24).
- (7) Remove the inner bearing nut (8, fig. 24).
- (8) Lower the jack until the tires start touching the greased plate.
- (9) Turn the wheel slightly to loosen the wheel from the brake shoes and at the same time pull the wheel outward.
- (10) Check oil seals (4, fig. 24) and bearings for damage. Pre-



- |         |                       |
|---------|-----------------------|
| 1 Tire  | 3 Wheel stud          |
| 2 Wheel | 4 Greased steel plate |

*Figure 23. Wheel removal.*

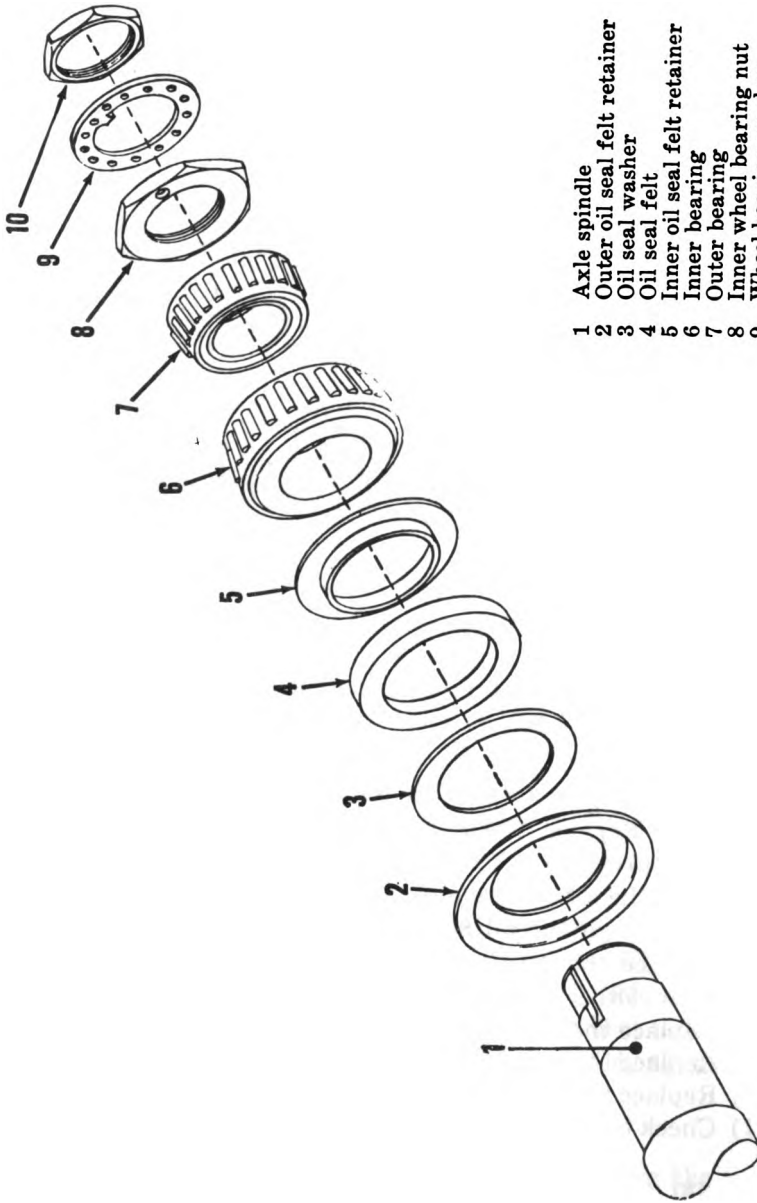
vent dirt or dust from penetrating the hub, bearings, and axle spindle.

*d. Installation (fig. 24).*

- (1) Clean bearings (6) (7), axle spindle (1), and oil seals (4). Replace worn or damaged parts. Pack bearings with grease.
- (2) Slide the wheel assembly over the axle, being careful not to damage the oil seals (4) and bearings (6) (7).
- (3) Replace the inner bearing nut (8) and adjust bearings (par. 58).
- (4) Replace the washer (9).
- (5) Replace the outer wheel bearing nut (10).
- (6) Replace the hub cap, hub cap screws, and lock washers.
- (7) Check the wheel assembly for free rotation.

## 58. Wheel Bearings (fig. 24)

*a. Inspection.* Inspect all wheel bearings (6) (7) for scratches, breaks, cracks, and wear. Inspect the inner and outer surfaces of the bearings for damage and brinelling of metal.



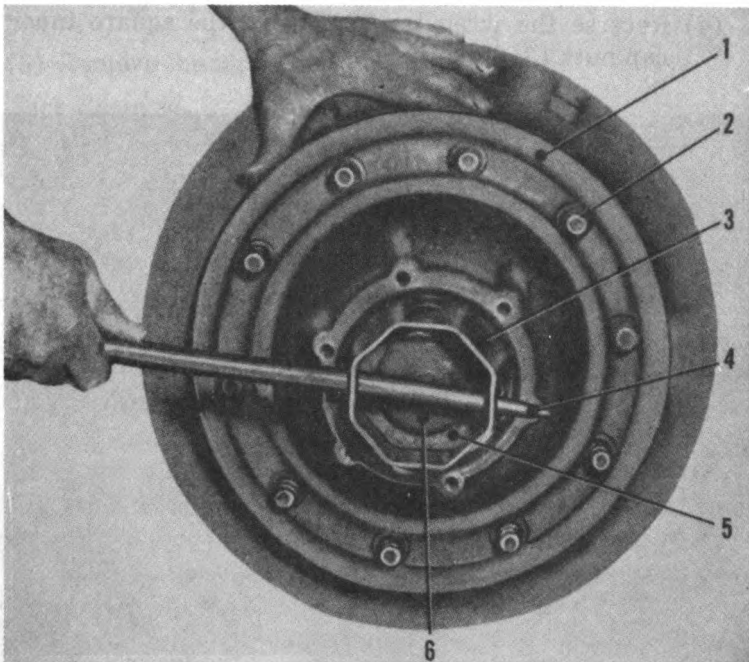
- 1 Axle spindle
- 2 Outer oil seal felt retainer
- 3 Oil seal washer
- 4 Oil seal felt
- 5 Inner oil seal felt retainer
- 6 Inner bearing
- 7 Outer bearing
- 8 Inner wheel bearing nut
- 9 Wheel bearing washer
- 10 Wheel bearing nut

*Figure 24. Axle bearings disassembled.*

*b. Cleaning.* Remove old grease from bearings (6) (7) and bearing cones. Clean the axle spindle (1).

*c. Adjustment.*

- (1) Assemble bearings (6) (7) and hub on the axle spindle (1).
- (2) Assemble and install wheels.
- (3) Install the wheel bearing adjusting nut (8). Tighten the nut (8) while rotating the wheel. See that there is sufficient clearance between the brake shoe and brake drum and that the wheel rotates freely without any brake shoe drag.
- (4) Use a 12-inch wrench to tighten the adjusting nut (8) until the wheel drags slightly.
- (5) Back off the adjusting nut (8) one-sixth to one-fourth turn to allow free rotation of the wheel without excessive end play. Install the wheel bearing washer (9) and nut (10). Tighten the wheel bearing nut (10).
- (6) Test the adjustment by placing a short bar between the floor and the tire and hold one finger against the cage



- |              |                 |
|--------------|-----------------|
| 1 Hub        | 4 Wrench bar    |
| 2 Wheel stud | 5 Adjusting nut |
| 3 Wrench     | 6 Axle spindle  |

*Figure 25. Wheel bearing adjustment.*

of the bearing. Move the bar up and down to raise and lower the wheel and feel for looseness or play at the bearing cage. When there is a barely perceptible movement of the cage and free wheel rotation, the bearing adjustment is correct.

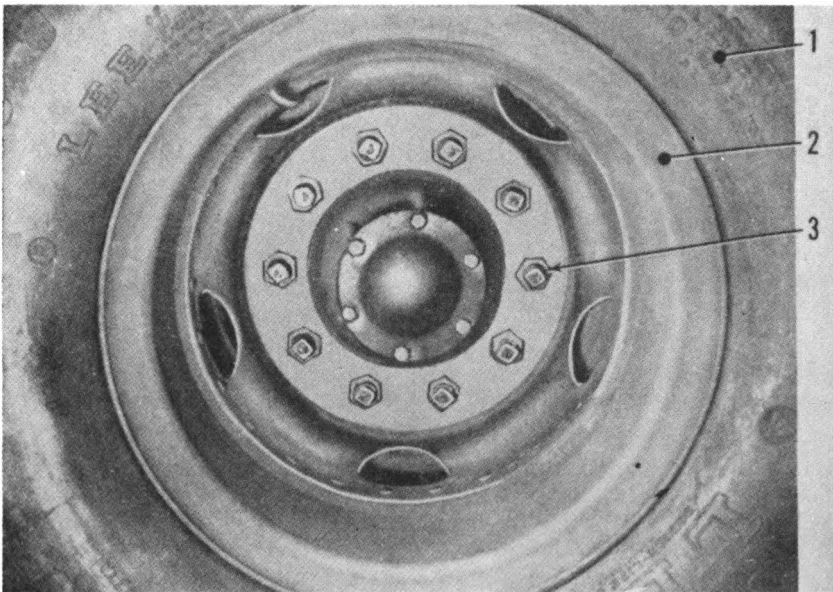
## 59. Tires

*a. Description.* The tires are military series, non-directional, cross country type, 11:00 x 20 dual pneumatics. Maximum tire pressure is 70 lbs.

*b. Inspection.* Inspect tires frequently for excessive wear, bruises, cuts, peeling of treads, and imbedded foreign matter in the treads. Check and maintain proper air pressure.

*c. Outer and Inner Wheel Removal.*

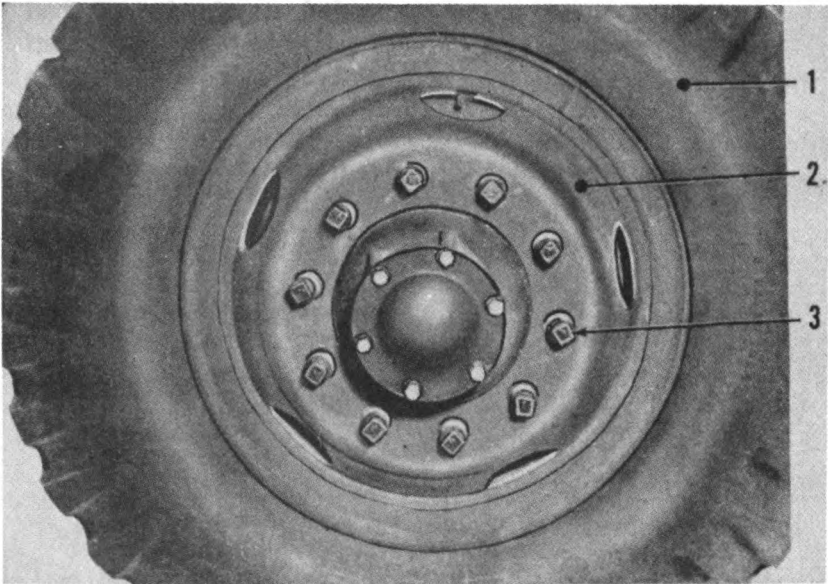
- (1) Place jack near the side on which the wheel is to be removed and jack up the axle.
- (2) Remove the hexagon nuts (3, fig. 26) from the wheel (2, fig. 26). Use the wrench provided with the trailer tools.
- (3) Remove the outer wheels (2, fig. 26).
- (4) Reverse the wrench and remove the square inner stud cap nuts (3, fig. 27).



1 Tire                      2 Outer wheel                      3 Wheel nut

*Figure 26. Outer wheel removal points.*





1 Tire                      2 Inner wheel                      3 Stud cap nut

*Figure 27. Inner wheel removal points.*

(5) Remove the inner wheel (2, fig. 27).

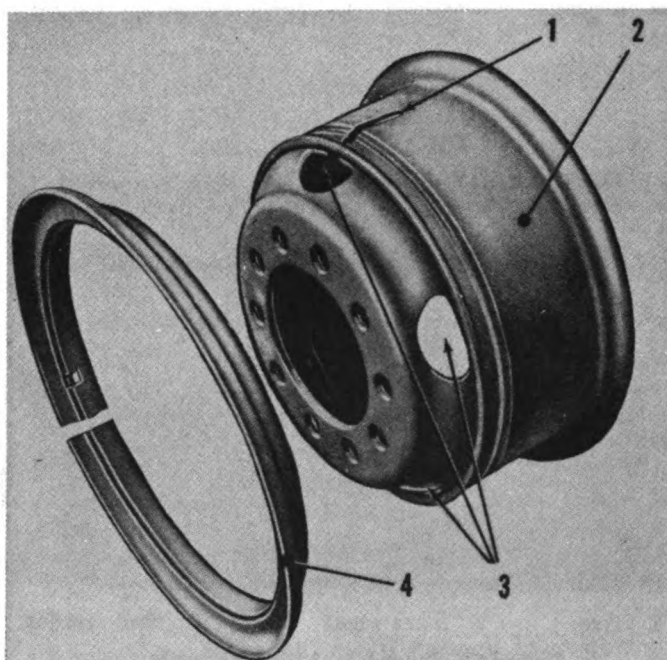
*d. Tire Removal.*

- (1) Lay the wheel down with the wheel ring face-up.
- (2) Remove the valve cap and valve core and deflate the tire.
- (3) Lift up the slotted end of the wheel ring with a screwdriver or sharp-pointed bar and remove the ring. Be careful not to bend the ring.
- (4) Lift the tire over the wheel and remove tire and tube.

*e. Installation.*

- (1) Replace the tire on the wheel. See that the tube is properly seated in the tire.
- (2) Replace the wheel ring (4, fig. 28).
- (3) Place two chains or  $\frac{1}{2}$ -inch rope through the vent holes in the wheel opposite each other and tie securely.
- (4) Replace the valve core and inflate the tire to proper pressure.

**Warning:** Never inflate the tire before placing two chains or  $\frac{1}{2}$ -inch rope through the vent holes in the wheel opposite each other and tying securely. The chain or rope will protect the operator from injury in case the wheel ring snaps off while inflating the tire.



1 Valve slot                      2 Wheel                      3 Vent hole                      4 Ring

*Figure 28. Wheel and ring.*

*f. Outer and Inner Wheel Installation.*

- (1) Replace the inner wheel (2, fig. 27) and tighten the square inner stud cap nuts (3, fig. 27). See that the beveled surface on the inner end of the cap nut is properly seated with the bevel in each of the wheel stud holes provided for this bevel.
- (2) Replace the outer wheel (2, fig. 26). See that the ventilating holes on both wheels are alined. See that the tire valve stem on the outer wheel is located opposite the valve stem on the inner wheel.
- (3) Tighten the hexagon nuts (3, fig. 26) on the outer wheel (2).
- (4) Lower and remove the jack.

## Section VIII. BRAKE SYSTEM

### 60. Description (fig. 29)

The trailer has conventional shoe-type brakes applied by air pressure to the brake drums. The trailer brake system is con-

ected in the front of the trailer at the hose couplings (1) with the brake system of the towing vehicle, which supplies compressed air for the operation of the trailer brakes. The compressed air is stored in the air reservoir (5) located under the trailer. When brakes are applied, the compressed air changes in the brake chambers (4) into mechanical force and acts through brake camshafts to expand the brake shoes against the brake drums.

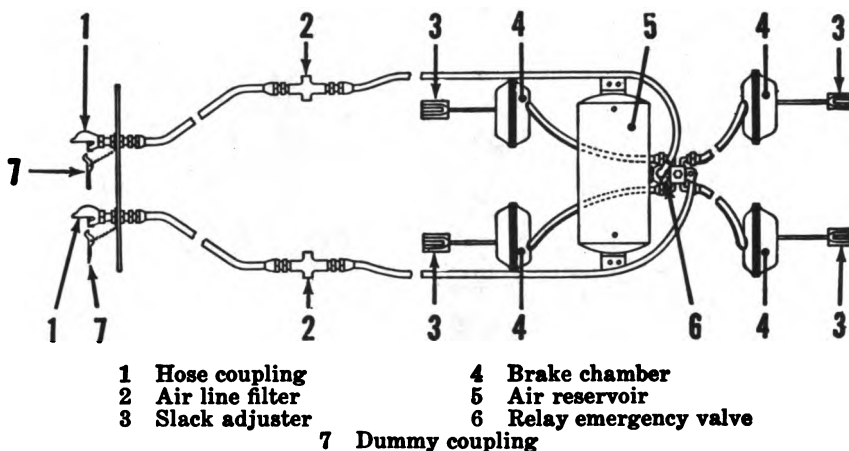


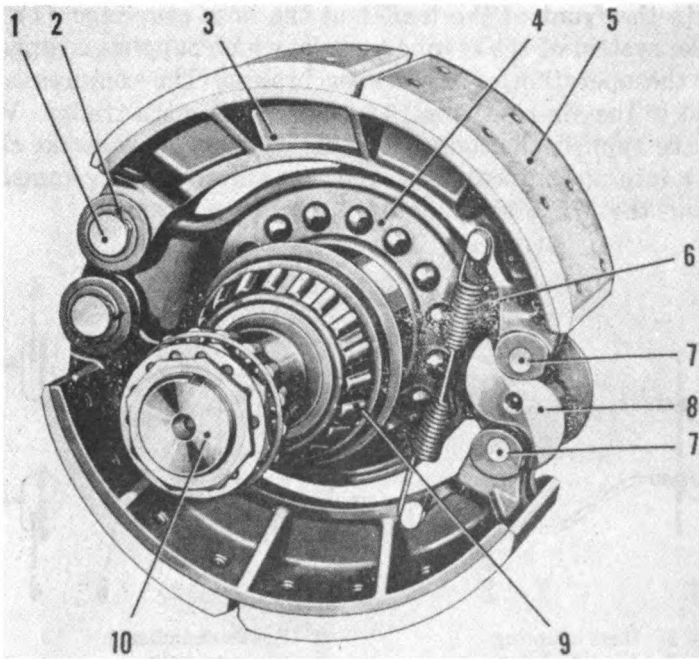
Figure 29. Brake system, schematic view.

## 61. Brakes

(fig. 30)

*a. Description.* The brake used on this trailer is a heavy duty two-shoe type air brake. Brake shoes are mounted with individual anchor pins (1) on open type spiders (4). Brakes are equipped with dust shields to prevent mud, dirt, and dust from entering the brake. Brakes are actuated by S-type constant lift cams. The lift cams are forged integral with the brake camshaft (8) and mounted in needle bearings. Cam pressure is applied to the roller cam (7) attached to the brake shoes (3). Brake shoes are connected by a shoe return spring (6), which returns brake shoes to their normal positions when air pressure in the brake system is released. The brake shoes have short linings (5) riveted or bolted to the brake shoe.

*b. Inspection.* Inspect brake linings and drums frequently. Inspect anchor pins and spiders for looseness or sheared rivets. Inspect brake shoes for wear at anchor pin holes and check brake lining for grease saturation, wear, and loose or sheared rivets or bolts. Check brake camshafts, brake camshaft bearings, and bushings for wear or brinelling. Inspect brake drums for cracks,



- |                |                      |
|----------------|----------------------|
| 1 Anchor pin   | 6 Shoe return spring |
| 2 Lock ring    | 7 Roller cam         |
| 3 Brake shoe   | 8 Camshaft           |
| 4 Brake spider | 9 Bearing            |
| 5 Brake lining | 10 Axle spindle      |

*Figure 30. Brake assembly.*

scoring, or other damage. Inspect dust shield for cracks or dents that may interfere with proper brake operation. Replace the shoe return spring when overhauling the brake.

*c. Adjustment.* There are three methods used to adjust the brakes:

- (1) Adjust slack adjusters (par. 66c) to obtain  $\frac{3}{4}$ -inch of free travel at 60 lbs pressure. When the travel increases to  $1\frac{1}{2}$  inches, readjust to  $\frac{3}{4}$ -inch.
- (2) Adjust the slack adjuster until the brakes lock the wheel. Release the slack adjuster until the wheel starts to rotate freely.
- (3) If brakes have been relined, adjust them as follows:
  - (a) Insert a 0.012 inch feeler gage of the spring scale between the brake lining and brake drum at the brake anchor end.
  - (b) Adjust the brakes with the slack adjuster until the spring scale readings are 3 to 5 pounds when pulling out the feeler gage.

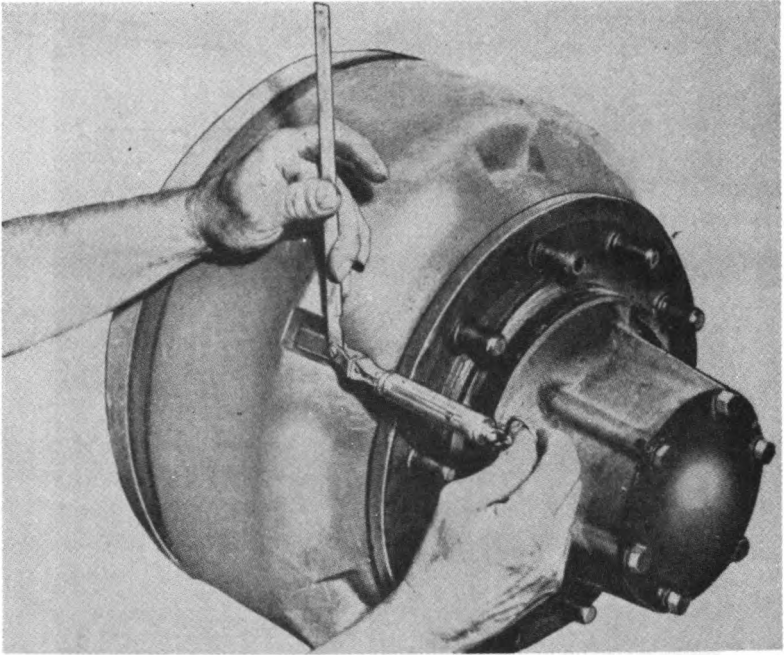


Figure 31. Brake adjustment.

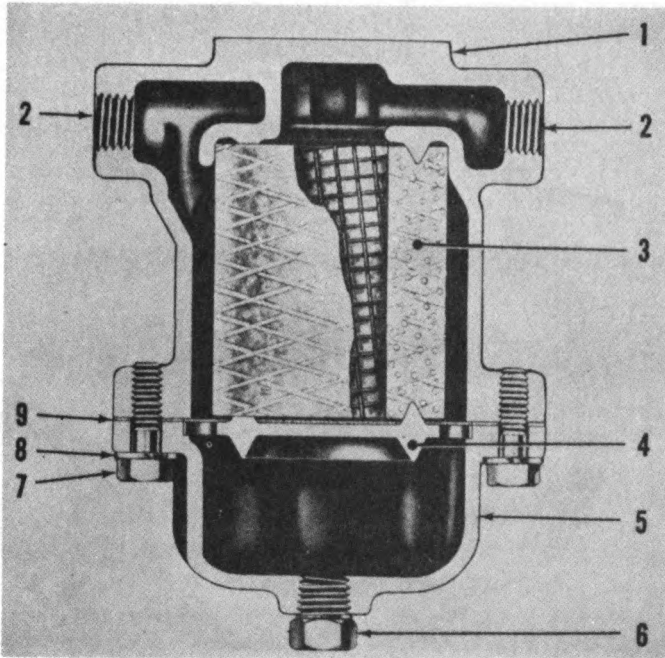
## 62. Air Line Filter

*a. Description.* The trailer has two air filters, one on the service and one on the emergency brake line. Filters trap dirt, moisture, and foreign matter which might get into the lines when the trailer is not connected with the towing vehicle (fig. 32). An arrow cast on the body of the filter (2, fig. 33) indicates the direction of the air flow through the filter. Air flowing from the towing vehicle must pass through the filter in the direction indicated by the arrow. Air flowing through the filter passes through the cotton element (3, fig. 32), and all dirt, moisture, and foreign matter is trapped in the element. Dust, dirt, and moisture accumulated in the cover (5, fig. 32) is drained by removing the drain plug (6, fig. 32) at the bottom of the cover.

*b. Inspection* (fig. 32). Apply soap suds to the air line connections (2) and check for leaks. Tighten or replace connections if necessary. Drain the cover (5) and inspect the cover plug (6) for leaks. Inspect gasket (9) and check for leaks. Replace the gasket if necessary.

*c. Removal.*

- (1) Remove the air lines on both sides of filter.
- (2) Remove the two bolts attaching filter to the bracket.



- |   |                     |        |             |
|---|---------------------|--------|-------------|
| 1 | Body                | 5      | Cover       |
| 2 | Air line connection | 6      | Plug        |
| 3 | Element             | 7      | Cap screw   |
| 4 | Element support     | 8      | Lock washer |
|   | 9                   | Gasket |             |

*Figure 32. Air line filter, sectional view.*

(3) Remove the filter.

*d. Disassembly (fig. 33).*

(1) Remove the filter.

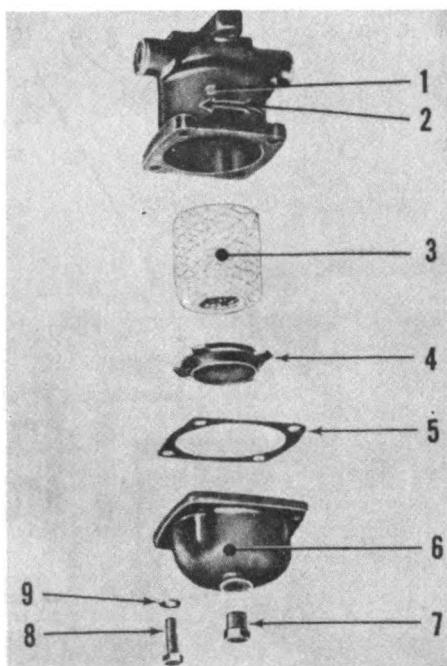
(2) Remove bolts (8) and lock washers (9) attaching the cover (6) to the filter body (1).

(3) Remove the gasket (5).

(4) Remove the filter element support (4) and filter element (3).

*e. Cleaning.* Clean all metal parts, using drycleaning solvent. Blow off the inlet and outlet ports with compressed air to remove any foreign matter blocking the passage. If the element is merely dusty, clean it by brushing. If it contains an oily or gummy deposit, the element must be replaced. Inspect and replace the gasket if necessary.

*Note.* Do not use inflammable solvents on compressed air equipment. After cleaning, all parts must be thoroughly dried before assembly.



- |   |                           |   |             |
|---|---------------------------|---|-------------|
| 1 | Body                      | 5 | Gasket      |
| 2 | Arrow indicating air flow | 6 | Cover       |
| 3 | Element                   | 7 | Plug        |
| 4 | Element support           | 8 | Cap screw   |
|   | 9                         |   | Lock washer |

*Figure 33. Air line filter disassembled.*

**f. Reassembly (fig. 33).**

- (1) Install the element (3) in the filter body (1).
- (2) Assemble the gasket (5) and element support (4) on the cover (6).
- (3) Attach the cover (6) to the filter body (1) and tighten bolts (8) and lock washers (9) securely.

**g. Installation.**

- (1) Position the air filter in its proper place on the mounting bracket and tighten the two bolts attaching the filter to the bracket.
- (2) Install air lines on both sides of the filter and see that the connections are tight and secure.

**h. Repair of the Air Filter Line.**

- (1) Disconnect the air filter line and release its clamping studs.
- (2) Remove the damaged air filter line.

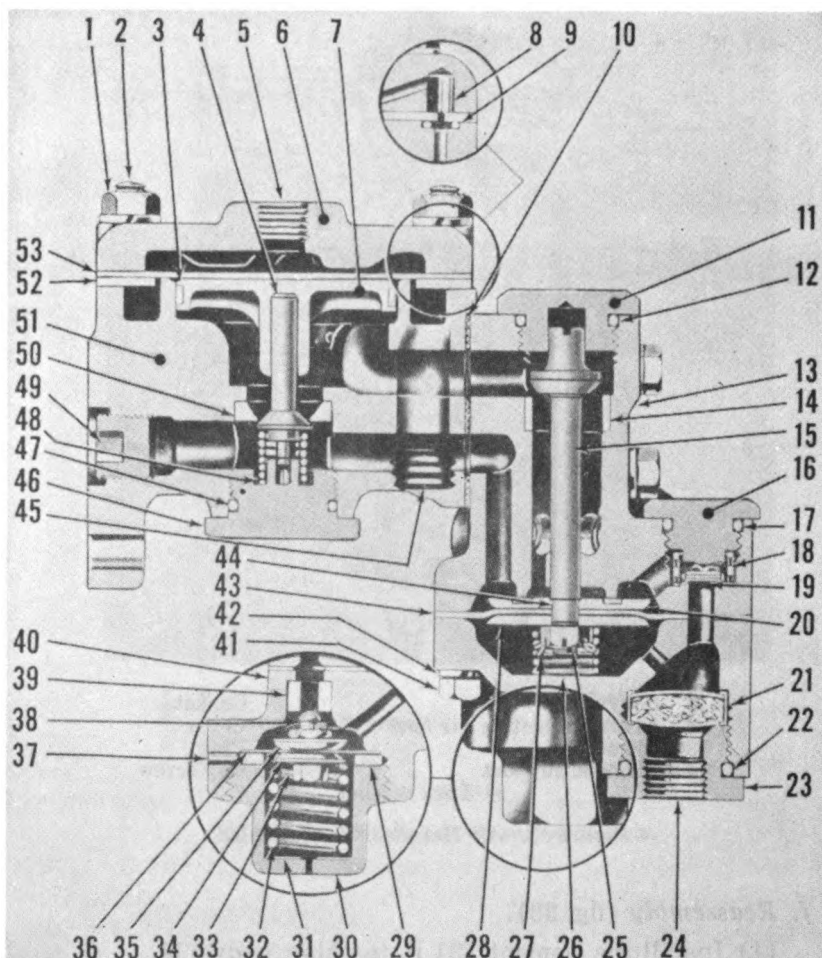


Figure 34. Relay emergency valve, sectional view.

- (3) Install a new filter line and see that it fits properly into connections. Tighten clamping studs and connections.
- (4) Apply soap suds around connections and check for leaks.

### 63. Relay Emergency Valve (fig. 34)

*a. Description.* The relay emergency valve acts as a relay station to control the brakes on the trailer and also to apply brakes on the trailer automatically in case the trailer breaks away from the towing vehicle. The relay emergency valve speeds up the operation of the trailer brakes both during application and release. The brake valve on the towing vehicle delivers air pressure to the top of the relay emergency valve through the service line.



- |  |                                   |
|--|-----------------------------------|
| 1 Nut                                      | 27 Cotter pin                     |
| 2 Stud                                     | 28 Diaphragm follower             |
| 3 Dampener ring                            | 29 Diaphragm ring                 |
| 4 Supply valve                             | 30 Pressure regulator cap nut     |
| 5 Service line port                        | 31 Shims, .010"                   |
| 6 Relay valve cover                        | 32 Pressure regulator spring      |
| 7 Diaphragm guide                          | 33 Stem lock nut                  |
| 8 Bleeder passage                          | 34 Lower follower                 |
| 9 Grommet, $\frac{1}{8}$ " O.D.            | 35 Upper follower                 |
| 10 Gasket                                  | 36 Pressure regulator diaphragm   |
| 11 Emergency valve cap nut                 | 37 Pin                            |
| 12 Grommet, .97" O.D.                      | 38 Pressure regulator valve       |
| 13 Emergency valve body                    | 39 Pressure regulator valve seat  |
| 14 Emergency valve seat                    | 40 Emergency valve cover          |
| 15 Emergency valve                         | 41 Cap screw                      |
| 16 Check valve cap nut                     | 42 Washer                         |
| 17 Grommet, .695" O.D.                     | 43 Emergency valve diaphragm      |
| 18 Check valve guide                       | 44 Grommet, $\frac{1}{8}$ " O.D.  |
| 19 Disc valve                              | 45 Exhaust port                   |
| 20 Diaphragm follower valve                | 46 Supply valve cap nut           |
| 21 Strainer                                | 47 Grommet, $1\frac{1}{2}$ " O.D. |
| 22 Grommet, $1\frac{1}{4}$ " O.D.          | 48 Supply valve spring            |
| 23 Emergency supply cap nut                | 49 Pipe plug, $\frac{3}{8}$ "     |
| 24 Emergency line port $\frac{3}{8}$ " NPT | 50 Supply valve seat              |
| 25 Nut                                     | 51 Relay valve body               |
| 26 Emergency valve spring                  | 52 Diaphragm ring                 |
|  | 53 Relay valve diaphragm          |

Figure 34—Continued.

The air pressure depresses the relay diaphragm, opens the supply valve, and permits air pressure from the trailer reservoir to flow to the trailer brake chambers, applying the brakes. The brakes on the trailer are always completely synchronized with the brakes on the towing vehicle. Uncoupling the emergency line (when parking the trailer or when the trailer breaks away) depresses the emergency diaphragm, closes the emergency valve, and allows full trailer reservoir pressure to flow into the trailer brake chambers, applying the brakes.

*b. Inspection.* Inspect the relay emergency valve and connections for leaks, dents, and damage. See that the relay emergency valve is properly and securely mounted on the air reservoir. Check to see if the brakes apply when the emergency line is disconnected and if they release when the emergency line is connected to the towing vehicle and the cut-out cock on the towing vehicle is open.

*c. Removal.*

- (1) Drain air from the brake system and air reservoir.
- (2) Disconnect the air lines.

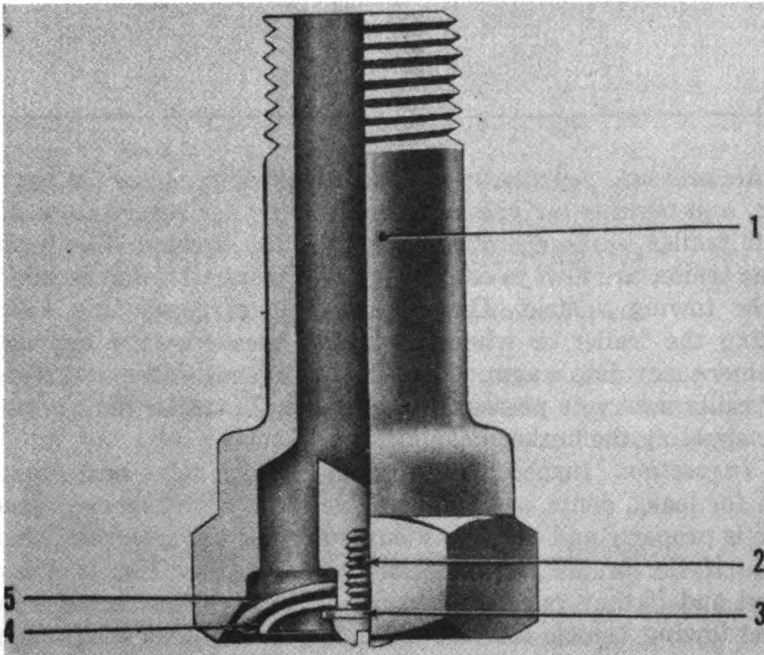
- (3) Remove the mounting bolts attaching the relay emergency valve to the air reservoir.
- (4) Remove the relay emergency valve.

*d. Installation.*

- (1) Place the relay emergency valve in its proper position on the air reservoir and install the mounting bolts.
- (2) Tighten all mounting bolts securely.
- (3) Connect the air lines.
- (4) Build up air pressure in the brake system and check the relay emergency valve for proper operation.

## 64. Exhaust Check Valve

*a. Description (fig. 35).* The exhaust check valve (1) is located in the exhaust port of the relay emergency valve. When air pressure is released through the exhaust port of the relay emergency valve, the air deflects the rubber diaphragm (5) of the exhaust check valve and is permitted to escape. When there is no air pressure in the exhaust check valve, the rubber diaphragm (5) snaps



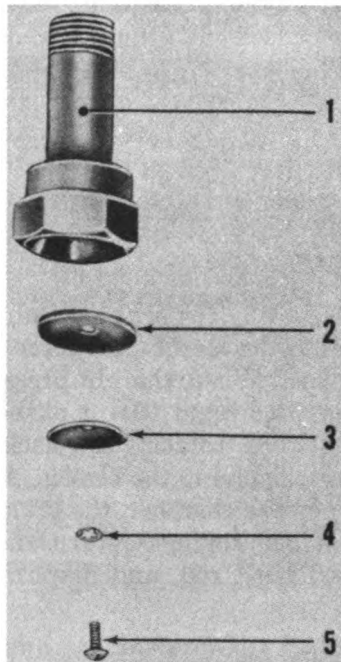
- |         |                    |
|---------|--------------------|
| 1 Body  | 3 Lockwasher       |
| 2 Screw | 4 Diaphragm washer |
|         | 5 Diaphragm        |

*Figure 35. Exhaust check valve, sectional view.*

back and plugs the hole in its body (1). The rubber diaphragm adheres firmly to the opening in the check valve and keeps dirt, mud, and water from entering.

*b. Removal.* Unscrew the exhaust check valve from the exhaust port of the relay emergency valve.

*c. Disassembly* (fig. 36). Remove the diaphragm screw (5) and lockwasher (4). Lift out the diaphragm washer (3) and diaphragm (2).



- |                   |                    |
|-------------------|--------------------|
| 1 Body            | 3 Diaphragm washer |
| 2 Diaphragm       | 4 Lockwasher       |
| 5 Diaphragm screw |                    |

*Figure 36. Exhaust check valve disassembled.*

*d. Cleaning.* Clean all metal parts with dry-cleaning solvent. Wipe off the diaphragm with soft absorbent cloth. Inspect the diaphragm for damage.

*e. Inspection.* Check the diaphragm seat, washer, and diaphragm for wear or damage. Inspect the diaphragm screw for stripped threads or a lost lockwasher. Remove the exhaust check valve and immerse the lower half of the valve containing the diaphragm in water. If the water leaks past the diaphragm into the check valve, inspect the diaphragm and diaphragm seat. If the leakage is caused by dirt, clean the diaphragm and seat. If

the diaphragm is defective, it must be replaced. If the diaphragm seat is damaged, the complete exhaust check valve must be replaced.

*f. Repair.*

- (1) If the diaphragm is damaged or pitted, it must be replaced.
- (2) If the diaphragm washer is bent or dented, it must be replaced. Do not use an old, dented, or damaged washer when installing a diaphragm.
- (3) If the diaphragm seat is damaged or pitted, the body of the exhaust check valve must be replaced.

*g. Reassembly (fig. 36).* Install the diaphragm (2) and diaphragm washer (3) in the body (1) of the exhaust check valve and secure with a lock washer (4) and screw (5).

*h. Installation.* Install the exhaust check valve in the exhaust port of the relay emergency valve; tighten the valve securely.

## **65. Brake Chamber**

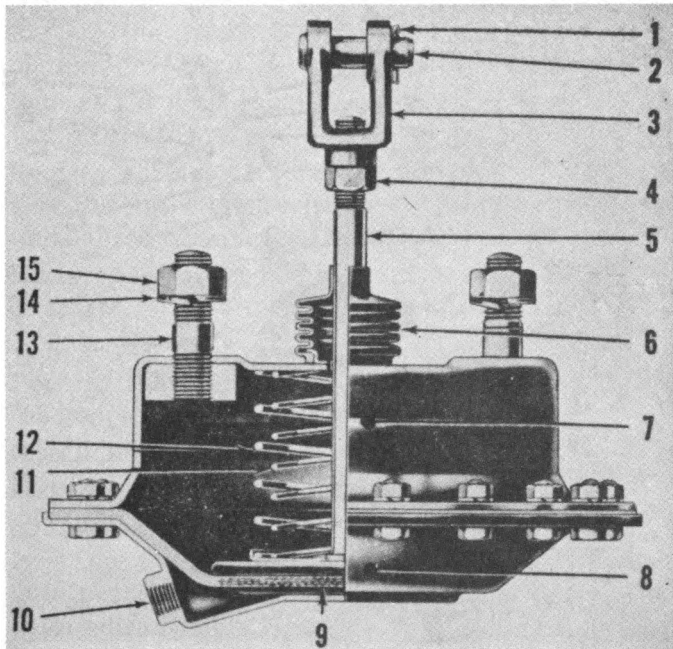
*a. Description (fig. 37).* The brake chamber converts the energy of compressed air into the mechanical force and motion necessary to operate the brakes. When the air pressure enters the brake chamber behind the diaphragm (9), it pushes the diaphragm and the push rod (5) outward, rotating the slack adjuster, brake camshaft, and brake cam, applying the brakes. When the air pressure is released from the brake chamber, the brake shoe release springs and the brake chamber springs return the brake shoes, brake cam, slack adjuster, push rod, and diaphragm to their released positions.

*b. Removal.*

- (1) Disconnect the air line from the brake chamber.
- (2) Remove a cotter pin from the push rod yoke pin, remove the yoke pin, and disconnect the push rod from the slack adjuster.
- (3) Remove nuts and lockwashers from the brake chamber studs which attach the brake chamber to the bracket.
- (4) Remove the brake chamber from the bracket.

*c. Disassembly (fig. 38).*

- (1) Before disassembling the brake chamber, be sure to mark the pressure plate (1) and non-pressure plate (6) so that the air inlet opening in the pressure plate will be at a correct angle with the bracket when the brake chamber is reassembled.
- (2) Remove all bolts, lock washers, and nuts clamping the outer edges of the diaphragm (2) between the pressure



- |   |                    |     |                |
|---|--------------------|-----|----------------|
| 1 | Cotter pin         | 8   | Pressure plate |
| 2 | Yoke pin           | 9   | Diaphragm      |
| 3 | Yoke               | 10  | Air port       |
| 4 | Locknut            | 11  | Inner spring   |
| 5 | Push rod           | 12  | Outer spring   |
| 6 | Rubber boot        | 13  | Stud           |
| 7 | Non-pressure plate | 14  | Lockwasher     |
|   | 15                 | Nut |                |

Figure 37. Brake chamber, sectional view.

plate (1) and the nonpressure plate (6). Remove the pressure plate (1) and diaphragm (2).

- (3) Loosen the yoke locknut (15) locking the yoke (13) in position on the push rod (3) and remove the yoke (13) from the push rod (3).

*d. Inspection.* Inspect the pressure and non-pressure plate for dents, cracks, or corrosion. Inspect the rubber diaphragm for signs of pitting or wear. Check the rubber boot for cracks in the folds and corroded or disintegrating rubber. Check the springs for damage or twisting.

*e. Cleaning.* Clean all metal parts with dry-cleaning solvent. Do not clean rubber parts in dry-cleaning or petroleum base solvents. Wipe off the diaphragm with a soft, absorbent cloth. Immerse springs in the dry-cleaning solvent and clean them, using a brush. Remove all rust or corrosion from springs, pressure, and nonpressure plates. Clean push rods and rubber boots.

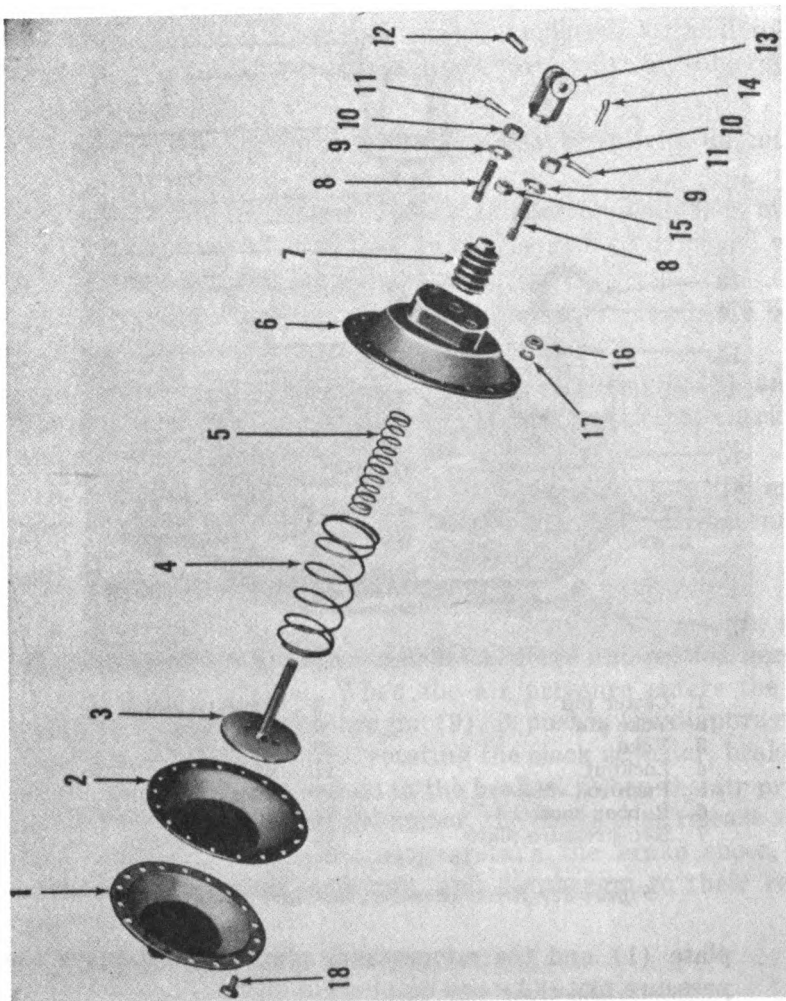


Figure 38. Brake chamber disassembled.

- 1 Pressure plate
- 2 Diaphragm
- 3 Push rod
- 4 Outer spring
- 5 Inner spring
- 6 Non-pressure plate
- 7 Rubber boot
- 8 Stud
- 9 Washer
- 10 Nut
- 11 Cotter pin
- 12 Yoke pin
- 13 Yoke
- 14 Yoke cotter pin
- 15 Yoke locknut
- 16 Nut, hex,  $\frac{5}{16}$ " - 24NF (16 req'd)
- 17 Washer, lock,  $\frac{3}{16}$ " (16 req'd)
- 18 Screw, cap, hex hd,  $\frac{1}{16}$ " - 24NF  
x  $\frac{3}{4}$ " (16 req'd)

*f. Repair.*

- (1) Replace the pressure and nonpressure plates if dented or bent, or if the edges are corroded or pitted.
- (2) Replace the diaphragm if any signs of wear, damage, or pitting are found.
- (3) Replace springs if corroded, twisted, or damaged. Be sure to replace them with the correct springs; otherwise, unbalanced braking may result.
- (4) Replace the rubber boot if worn or if the folds are pitted or scored.

*g. Reassembly (fig. 38).*

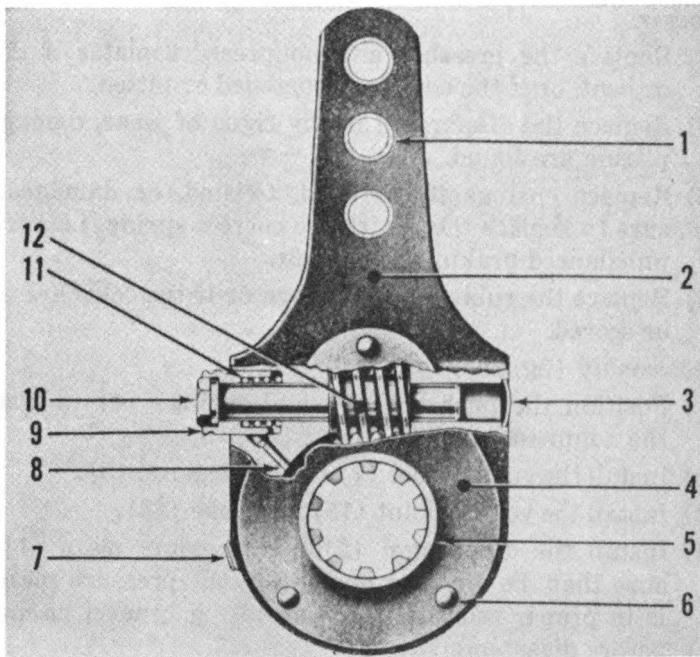
- (1) Position the push rod (3) and springs (4) in place in the nonpressure plate (6).
- (2) Install the rubber boot (7) on the push rod (3).
- (3) Install the yoke locknut (15) and yoke (13).
- (4) Install the diaphragm (2) and pressure plate (1). Be sure that the air inlet opening in the pressure plate (1) is in proper relation to the mounting bracket as marked before disassembly.
- (5) Install bolts, lockwashers, and nuts holding the diaphragm (2) between the pressure plate (1) and nonpressure plate (6). Tighten nuts just enough to insure an air-tight seal between the pressure plate and the diaphragm (2) but not enough to distort the diaphragm.

*h. Installation.*

- (1) Install the brake chamber on the bracket and tighten nuts.
- (2) Connect the yoke with the slack adjuster and secure the connection with a cotter pin.
- (3) Connect the air line with the brake chamber.
- (4) Adjust the brakes (par. 61). Apply brakes and see that the length of the push rod is correct. Adjust the push rod length by screwing the yoke on or off the push rod if necessary.

## **66. Slack Adjuster**

*a. Description (fig. 39).* Slack adjusters act as adjustable levers and provide a quick and easy means of adjusting the brakes to compensate for brake lining wear. Slack adjusters consist of a worm (12) and gear (5) inclosed in a body (2) which also serves as a lever. During brake operation, the entire slack adjuster rotates bodily with the brake camshaft. When adjusting brakes, the worm (12) moves the gear (5) to change the position of the lever arm in relation to the brake camshaft.



- |   |                  |    |                           |
|---|------------------|----|---------------------------|
| 1 | Arm hole bushing | 7  | Plug                      |
| 2 | Body             | 8  | Pin                       |
| 3 | Welch plug       | 9  | Worm shaft locking sleeve |
| 4 | Cover            | 10 | Worm shaft                |
| 5 | Worm gear        | 11 | Worm lock spring          |
| 6 | Rivet            | 12 | Worm                      |

Figure 39. Slack adjuster, sectional view.

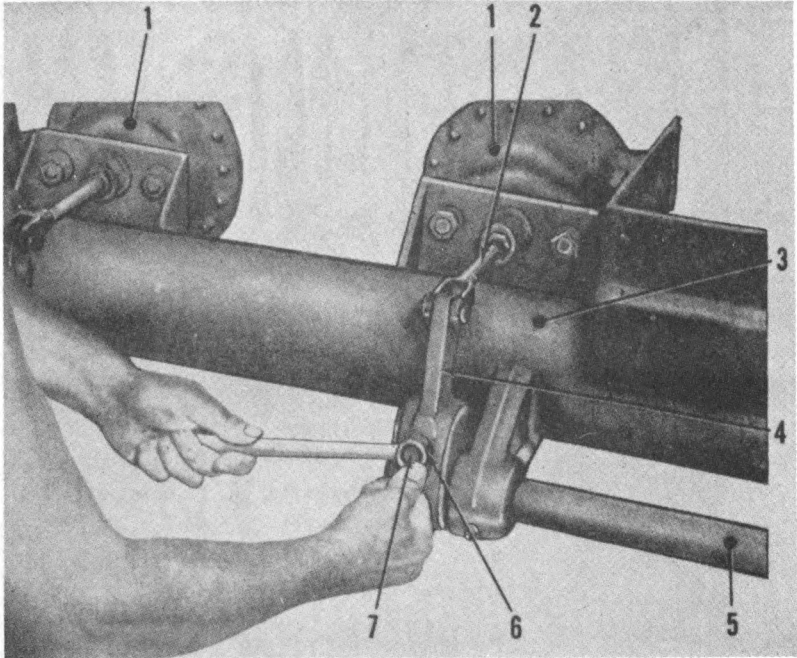
*b. Inspection* (fig. 39). Inspect the outside of the slack adjuster for broken or damaged parts. Inspect worm (12), gear (5), and worm shaft (10) for damage or wear. Inspect the condition of the arm bushings (1).

*c. Adjustment* (fig. 40). Position a box wrench (6) over the adjusting screw (7) and disengage the locking sleeve by depressing it. Make the necessary adjustment by turning the adjusting screw (7) with the locking sleeve in its depressed position. Apply brakes and note the travel of the brake chamber push rod. Apply brakes again and check push rod (2) travel; the travel of the push rod must remain the same. When the adjustment is completed, be sure that the locking sleeve is returned to its locked position by permitting the locking sleeve to engage the hexagon head of the adjusting screw.

*d. Removal.*

- (1) Remove the cotter pin and yoke pin and disconnect the slack adjuster from the push rod.





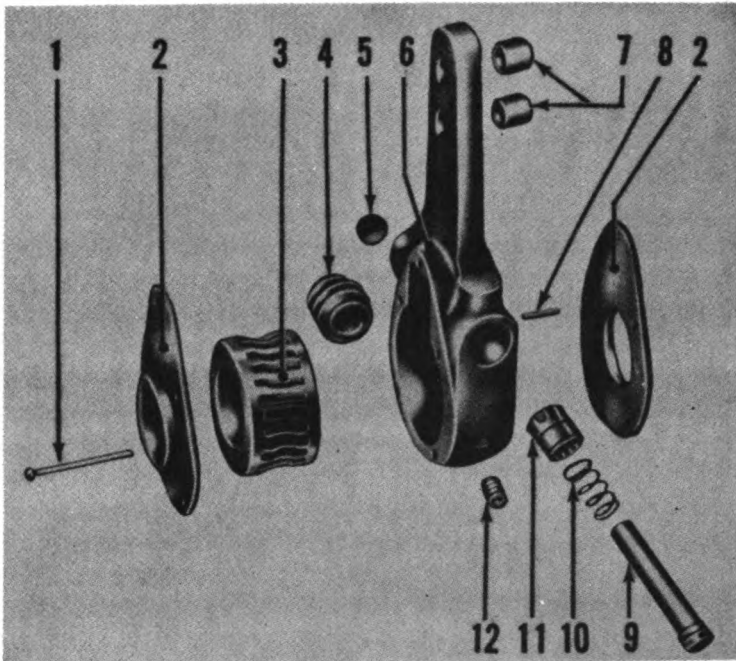
- |                   |                  |
|-------------------|------------------|
| 1 Brake chamber   | 4 Slack adjuster |
| 2 Push rod        | 5 Brake camshaft |
| 3 Axle            | 6 Wrench         |
| 7 Adjusting screw |                  |

*Figure 40. Adjusting slack adjuster.*

- (2) Remove the cap screw and washers holding the slack adjuster on the brake camshaft.
- (3) Pull the slack adjuster off the brake camshaft.

*e. Disassembly (fig. 41).*

- (1) Using a cold chisel, cut off the riveted ends of five rivets (1) securing the cover (2). Drive out the rivets and remove covers.
- (2) Remove the welch plug (5).
- (3) Press out the worm shaft (9) from the worm (4) by pressing on the end of the worm shaft opposite the adjusting screw nut.
- (4) Remove the worm shaft (9), worm shaft locking sleeve (11), and worm locking spring (10).
- (5) Remove worm (4) and gear (3) from slack adjuster body (6).
- (6) Remove the grease plug (12).
- (7) If the arm hole bushings (7) are worn, drive or press them out.



- |             |                    |                              |
|-------------|--------------------|------------------------------|
| 1 Rivet     | 5 Welch plug       | 9 Worm shaft                 |
| 2 Cover     | 6 Body             | 10 Worm lock spring          |
| 3 Worm gear | 7 Arm hole bushing | 11 Worm shaft locking sleeve |
| 4 Worm      | 8 Pin              | 12 Grease plug               |

*Figure 41. Slack adjuster disassembled.*

*f. Repair.*

- (1) If the arm hole bushings are worn or damaged, press them out. Press new bushings in place and ream to 0.501 inch minimum, 0.503 inch maximum.
- (2) Replace the worm gear if unserviceable.
- (3) Check the worm and worm shaft for wear, dents and damage. Replace if necessary.
- (4) Inspect the worm lock spring and replace it if worn, broken, or weak.
- (5) Inspect the worm shaft locking sleeve for scoring, dents, or damage and replace if necessary.
- (6) Replace the welch plug at each disassembly of the slack adjuster.

*g. Reassembly (fig. 41).*

- (1) Place the worm (4) and gear (3) in the slack adjuster body (6).
- (2) Position and press the worm shaft (9), worm shaft locking sleeve (11), and worm lock spring (10) into the worm and slack adjuster body (6).

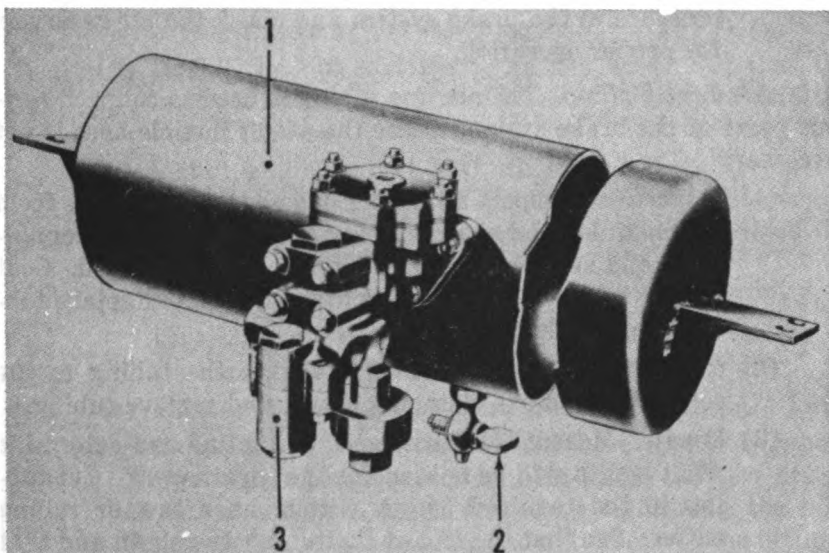
- (3) Press the worm shaft (9) into the body until its outer end is five-eighths of an inch from the welch plug (5) opening. Be sure to line up the recess in the worm shaft locking sleeve (11) with the pin (8) in the slack adjuster body.
- (4) Install a new welch plug (5).
- (5) Install covers (2) and rivet them in place, using new rivets (1). Covers must be flat and make good contact with the slack adjuster body.
- (6) Using a grease gun, fill the slack adjuster with grease. Refer to LO 5-9047.
- (7) Install the grease plug (12).

*h. Installation.*

- (1) Be sure that the slack adjuster is of the same size and type as that used on the brakes of the opposite wheel.
- (2) Install the slack adjuster on the brake camshaft.
- (3) Install and tighten washers and cap screw.
- (4) Connect the slack adjuster arm with the push rod and secure with a yoke pin and cotter pin.

## 67. Air Reservoir, Lines, Hose Coupling

*a. Air Reservoir* (fig. 42). The air reservoir (1) stores compressed air for immediate use in the brake operation. It has a sufficient amount of compressed air to permit several brake applications even after the motor on the towing vehicle has stopped.



1 Air reservoir                      2 Drain cock                      3 Relay emergency valve

*Figure 42. Air reservoir and relay emergency valve.*

- (1) *Inspection.* Inspect the air reservoir for dents, cracks, and corrosion. Coat the outside of the air reservoir with soap suds and check for leakage. Inspect the air line connections and drain cock. Check for leakage. Using a small flashlight, inspect the inside of the reservoir for corrosion.
- (2) *Draining.* The hot compressed air cools in the reservoir, and the oil and water vapors condense. Open the drain cock (2) on the bottom of the reservoir and drain the condensate. The drain cock is open when the handle is straight up and down and closed when the handle is at right angles to the drain cock body. Open and close the drain cock by hand. Never strike it with a hammer or other tool.
- (3) *Repair.* If corrosion or any other damage has weakened the air reservoir, it must be replaced. Except in unusual cases, the air reservoir must be replaced rather than repaired. Welding of small holes is not recommended. If the air reservoir is loose and rattles while driving, the mounting bolts must be tightened.
- (4) *Removal.* Drain the air brake system, disconnect air lines, remove mounting bolts, and remove the reservoir. Be careful not to drop or dent the air reservoir.
- (5) *Installation.* Install the reservoir (1) in its proper place and tighten mounting bolts. Connect air lines. Build up pressure in the brake system and check the air reservoir for proper operation.

*b. Air Line Tubing.* The air line tubing is used to connect various parts of the brake system where the use of flexible hose is not necessary.

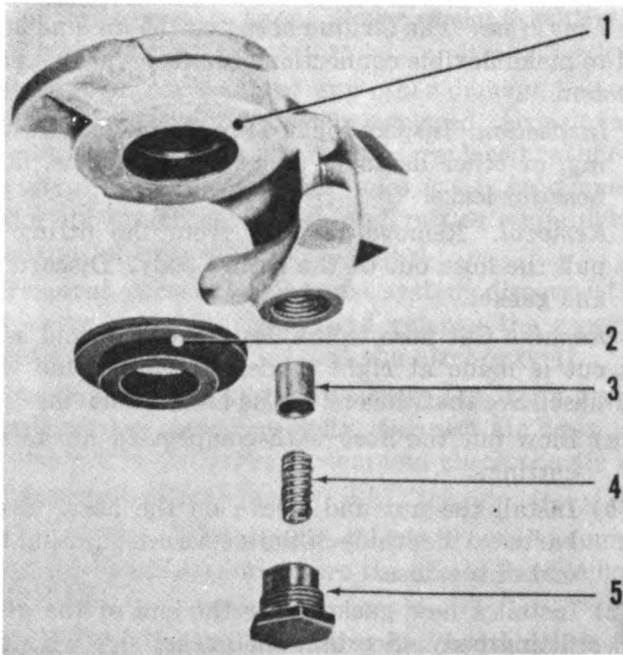
- (1) *Inspection.* Inspect all tubing and see that it is free from dents, kinks, and obstructions. Inspect all tubing connections and see that they are tight and not damaged. Coat tubing with soap suds and check for leaks. Replace tubing if any leakage is found.
- (2) *Removal.* Remove the nut attaching the tubing to the connector, remove clamping studs, and remove tubing.
- (3) *Repair.* Measure the damaged tubing line and determine what length will be needed for the repair work. Cut tubing to the required length with a hack saw or tubing cutter. See that the end of the tubing is smooth and that it is cut squarely with the outside wall. Make sure the ends of the tubing are not crimped or partially closed. File or ream the ends if necessary.

- (a) Blow out tubing with compressed air to remove all cuttings and filings from the tubing.
  - (b) Place a nut and sleeve on the tubing and put the end of the tubing in the recess in the tubing fitting body.
  - (c) Hold tubing at bottom of the recess in the fitting and tighten the nut to seal the joint against leakage. Always use a new sleeve when replacing tubing line. Tubing, fitting, nuts, and bodies may be used again, if they are in serviceable condition.
- (4) *Installation.* Place the nut and sleeve on the tubing and attach tubing to the fitting. Tighten nut and check connection for leaks.

c. *Air Line Hose.* The air line hose and the air line hose fittings are used to make flexible connections between various parts in the brake system.

- (1) *Inspection.* Inspect the hose for abrasions, swelling, peeling, or other damage. Inspect connections, fittings, and hose for leaks.
  - (2) *Removal.* Remove the nut from the fitting body and pull the hose out of the fitting body. Discard the sleeve and gasket.
  - (3) *Repair.* Cut hose to the desired length and see that the cut is made at right angles to the outside wall of the hose. See that the end of the hose is smooth.
    - (a) Blow out the hose with compressed air to remove all cuttings.
    - (b) Install the nut and sleeve on the hose. See that the barbs on the inside of the sleeve are pointing toward the end of the hose.
    - (c) Install a new gasket over the end of the guide in the fitting body. See that the gasket side with the removable protector cover is next to the hose. Remove the protector cover from the gasket.
    - (d) Put the end of the hose in the fitting body. Make sure that the hose and gasket are against the bottom of the recess in the fitting body.
    - (e) Tighten the fitting nut to insure a good, air-tight joint.
- (4) *Installation.* When installing the hose assembly where both ends are permanently connected, use the hose fitting at either end as a union to permit tightening the hose fittings in place by loosening the nut on one of the fittings. Turn the hose in the loose fitting before the fitting nut is again tightened. This will prevent the hose from kinking and twisting.

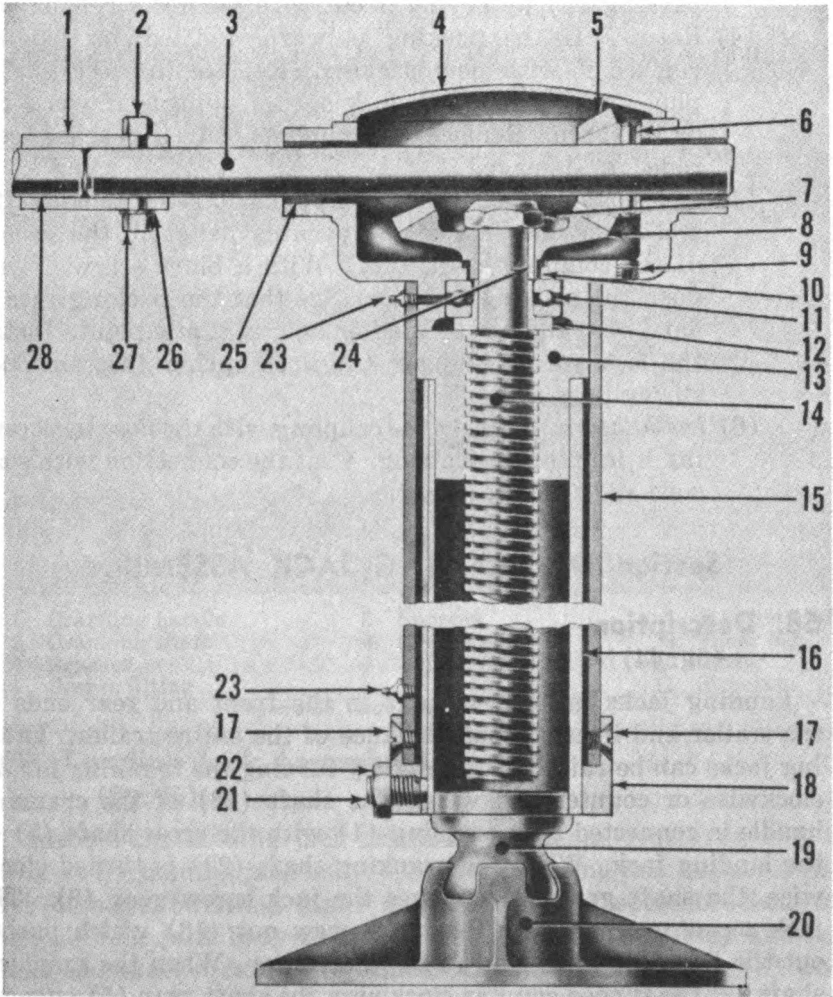
d. *Hose Coupling* (fig. 43). Hose couplings are used for easy and convenient connection and disconnection of air lines between the trailer and the towing vehicles. When two couplings are joined together, pressure is put on two packings (2), making an air-tight seal and providing a joint which can be easily connected or disconnected by hand. Hose couplings are provided with friction locks. The dummy couplings are attached with chains to the trailer and are used for blanking off the hose couplings on the trailer to prevent the entrance of dirt or water in the brake lines. The dummy couplings must be installed when the trailer is disconnected from the towing vehicle.



- |           |                       |
|-----------|-----------------------|
| 1 Body    | 3 Lock spring plunger |
| 2 Packing | 4 Lock spring         |
|           | 5 Spring plug         |

*Figure 43. Hose coupling disassembled.*

- (1) *Inspection* (fig. 43). Inspect the hose couplings for stripped threads, a cracked housing, and swollen or twisted packings. Check the friction lock spring (4), plunger (3), and lock spring plug (5) for corrosion or damage. Coat the connection with soap suds and check for leaks.
- (2) *Removal*. Remove the hose coupling by unscrewing it from the hose fitting.



- |    |                    |    |                |    |                      |
|----|--------------------|----|----------------|----|----------------------|
| 1  | Coupling           | 11 | Thrust bearing | 21 | Set screw            |
| 2  | Screw              | 12 | Collar         | 22 | Nut                  |
| 3  | Cross shaft        | 13 | Jack screw nut | 23 | Grease fitting       |
| 4  | Cover              | 14 | Jack screw     | 24 | Key                  |
| 5  | Shaft gear         | 15 | Outer leg      | 25 | Cross shaft bearing. |
| 6  | Pin                | 16 | Inner leg      | 26 | Lock washer          |
| 7  | Stop nut           | 17 | Bracket screw  | 27 | Nut                  |
| 8  | Screw gear         | 18 | Bracket        | 28 | Cranking shaft       |
| 9  | Pipe plug          | 19 | Knuckle        |    |                      |
| 10 | Jack screw bearing | 20 | Shoe           |    |                      |

Figure 44. Landing jack assembly, sectional view.

- (3) *Disassembly* (fig. 43). Remove the lock spring plug (5), lock spring (4), and lock spring plunger (3). Remove the packing (2) by prying it out with a blunt screw driver.
- (4) *Repair*. If the packing is worn, twisted, or swollen, replace it with new packing. Replace the lock spring plug, lock spring, and lock spring plunger if worn out or corroded. Replace the coupling body if cracked, corroded, or damaged.
- (5) *Reassembly* (fig. 43). Partially collapse the packing (2) and enter one side of the packing flange in the groove of the coupling cavity (1). With a blunt screw driver, push the packing in place. See that the packing face is flat, even, and not twisted or bulged at any point. Install the lock spring plunger (3), lock spring (4), and lock spring plug (5).
- (6) *Installation*. Connect the coupling with the hose by screwing it into the hose fitting. Coat the connection with soap suds and check for leaks.

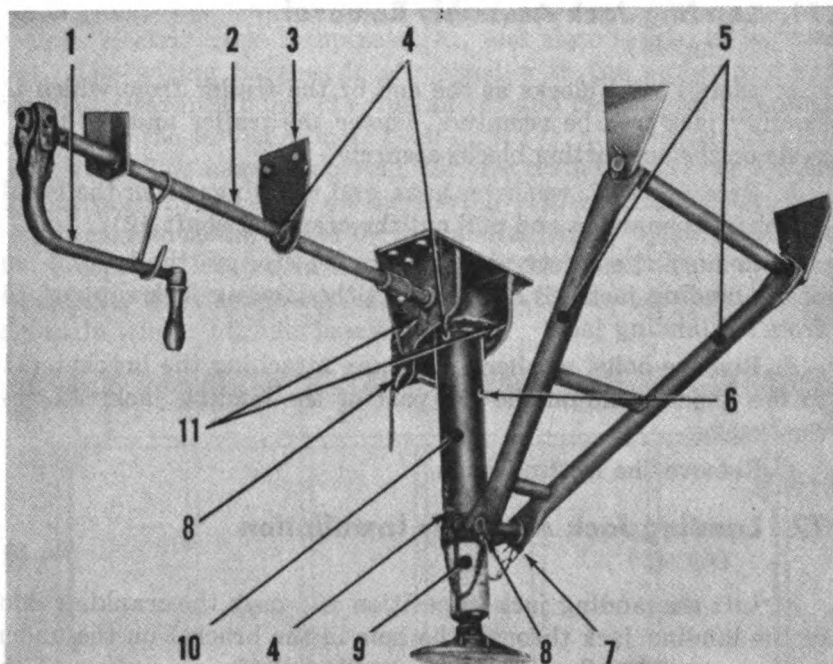
## Section IX. LANDING JACK ASSEMBLY

### 68. Description

(fig. 44)

Landing jacks provide support in the front and rear ends of the trailer and insure proper balance of the entire trailer. Landing jacks can be raised or lowered by turning the cranking handle clockwise or counter-clockwise. The shaft (28) of the cranking handle is connected by a coupling (1) with the cross shaft (3) of the landing jack. When the cranking shaft (28) is turned clockwise, the shaft gear (5) engages the jack screw gear (8). The jack screw gear engages the jack screw nut (13) which pushes out the inner leg (16) and raises the trailer. When the cranking shaft (28) is turned counter-clockwise, the shaft gear (5) engages the jack screw gear (8). The jack screw gear engages the jack screw nut (13) which pulls up the inner leg (16) and lowers the trailer. When the trailer is connected with the towing vehicle, the landing jacks are folded under the frame in a horizontal position and secured to the frame by brackets (11, fig. 45), bracket studs (8, fig. 45) and safety pins (7, fig. 45). When in a lowered position, the landing jacks are secured from tipping by the landing jack supports. The landing jack support bracket is attached to the trailer's frame by a bracket shaft, secured with two cotter pins. On the bottom part, the landing jack support (5, fig. 45) is connected with the bracket stud (8, fig. 45) and safety pin (7, fig. 45).





- |                   |               |                |
|-------------------|---------------|----------------|
| 1 Cranking handle | 5 Support     | 8 Bracket stud |
| 2 Cranking shaft  | 6 Grease plug | 9 Inner leg    |
| 3 Bracket         | 7 Safety pin  | 10 Body        |
| 4 Grease fitting  |               | 11 Bracket     |

*Figure 45. Landing jack assembly.*

## 69. Landing Jack Assembly Inspection

(fig. 45)

Inspect the landing jack assembly for dents, fractures, or pitting on the landing jack body. Check the landing jack supports (5) for damage, twisting, kinks and corrosion. Inspect brackets on the landing jack body and on the underframe assembly and see that the bracket holes are alined. Check bracket studs (8) and safety pins (7) for wear, corrosion, and proper mounting. Inspect the cranking handle (1) for twists, corrosion, and proper operation. See that the landing jack assembly is properly and sufficiently lubricated.

## 70. Landing Jack Assembly Adjustment

To insure proper balance of the trailer, the front and rear landing jacks must be adjusted to the correct height. See that the trailer deck is in a horizontal position. If the front end of the trailer is lower than the rear end due to a low spot on the ground, adjust the front landing jack by turning the cranking handle clockwise and raising the trailer deck.

**Caution:** Keep clear of jack when unfolding.

## **71. Landing Jack Assembly Removal**

(fig. 45)

*a.* Install solid blocks at the end of the trailer from which the landing jack will be removed. Lower the trailer and see that it rests on the supporting blocks securely.

*b.* Remove bolts, washers, nuts, and couplings from the cranking shaft connection and pull out the cranking shaft (2).

*c.* Remove the safety pin and bracket stud on the bottom part of the landing jack (8). Disconnect the landing jack support (5) from the landing jack.

*d.* Remove bolts, washers, and nuts attaching the bracket (11) to the underframe on the top part of the landing jack. Remove the bracket.

*e.* Remove the landing jack.

## **72. Landing Jack Assembly Installation**

(fig. 45)

*a.* Lift the landing jack in position and push the cranking shaft of the landing jack through the hole in the bracket on the underframe assembly. See that the cranking shaft is pointing to the left side of the trailer.

*b.* Install the bracket (11) on the landing jack stud. Attach the bracket to the underframe assembly and install bolts, washers, and nuts. Tighten nuts and see that the bracket is securely mounted. Check the landing jack to see that it swings freely in the brackets.

*c.* Connect the landing jack support (5) with the bottom part of the landing jack and secure the connection with the bracket stud (8) and safety pin (7).

*d.* Install the cranking shaft (2) and connect it with the cross shaft; install couplings, bolts, washers and nuts. Tighten nuts.

*e.* Raise the landing jack until the end of the trailer is sufficiently lifted to permit the removal of blocks.

*f.* Remove blocks.

*g.* Adjust the landing jack until the trailer is properly balanced.

## **Section X. LIGHTING SYSTEM**

### **73. Description**

(fig. 46)

The electric current for the lighting system of the trailer is supplied from the towing vehicle. The lighting system consists of an electrical cable assembly connecting the trailer with the towing

vehicle, electric cable receptacle (5), and electric wiring harness (6). The wiring harness is connected with the amber and red blackout clearance lamp (1), the amber and red service clearance lamps (1), the service stop and tail light (4), and the blackout tail light (3). The electric current for the trailer's lighting system is controlled by a switch on the towing vehicle. The electric current is carried to the trailer by the cable assembly which plugs into the receptacle located in the center of the front sill. From the receptacle, the electric current is carried to the various lights by the main wiring harness assembly.

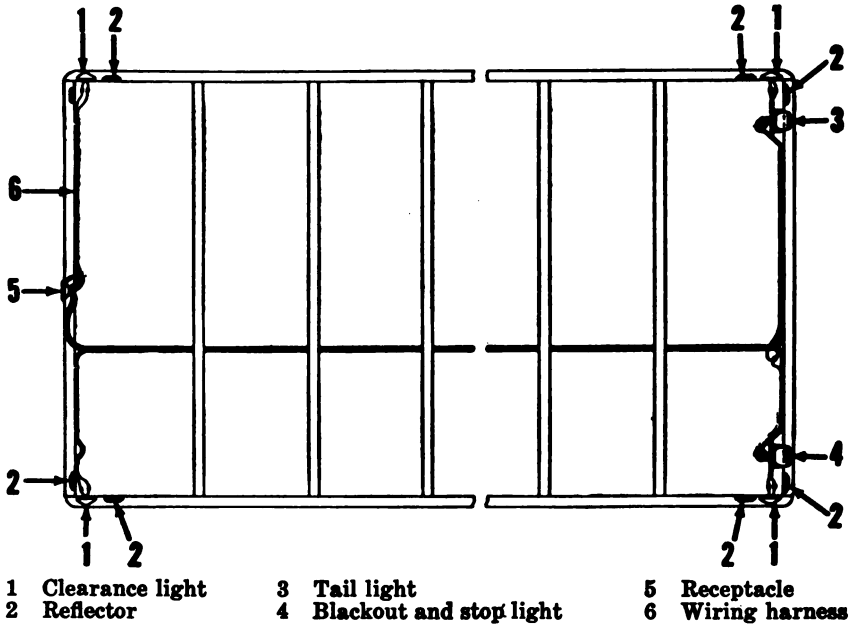


Figure 46. Practical wiring diagram.

## 74. Clearance Lights

(fig. 47)

### a. Removal.

- (1) Disconnect the clearance light cable from the wiring harness of the trailer.
- (2) Remove the two door screws (1) and door (2).
- (3) Remove the four screws (13) attaching the clearance light to the frame.
- (4) Remove the clearance light.

### b. Disassembly.

- (1) Remove the clearance light (a above).
- (2) Remove the two speed nuts (5) attaching the door glass (4) to the door (2).



*e. Reassembly.*

- (1) Assemble the plate (11) on the grommet and wiring assembly (10) and install the plain washer (9) and socket screw (8). Tighten the socket screw securely.
- (2) Install the light bulb (7).
- (3) Install the gasket (3) and glass (4) in the door (2).
- (4) Install the two speed nuts (5). Be careful not to break the door glass while tightening the speed nuts.
- (5) Install the filter assembly (6).

*f. Installation.*

- (1) Attach the mounting gasket (12) to the clearance light plate (11).
- (2) Push the clearance light cable through the hole in the frame and install the clearance light in its proper place. See that the mounting holes are properly alined.
- (3) Tighten the four mounting screws (13) attaching the clearance light to the frame.
- (4) Install the door (2) and tighten the door screws (1).
- (5) Connect the clearance light cable with the trailer's wiring harness.
- (6) Check the clearance light for proper operation.

## **75. Stoplight**

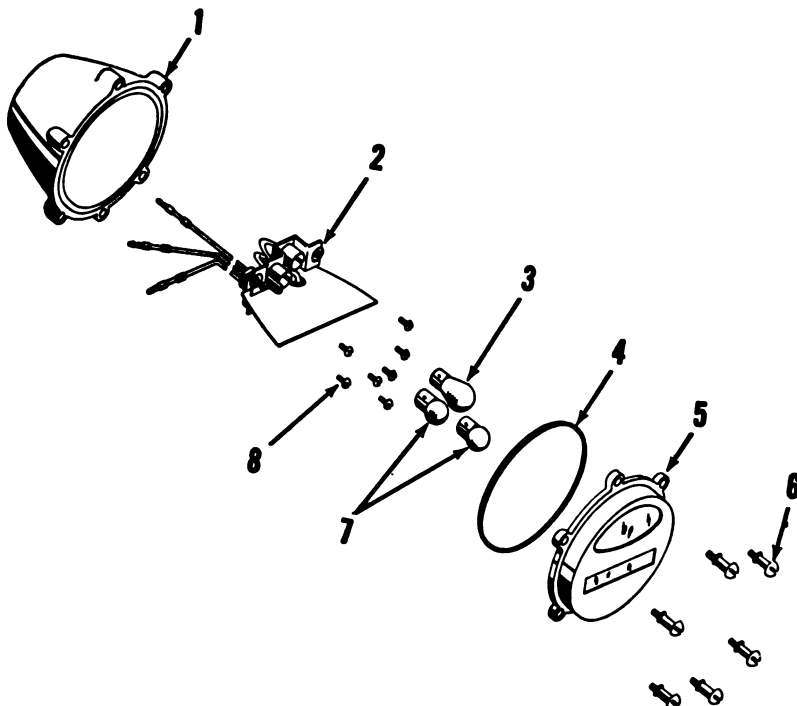
*a. Inspection.* Inspect stoplight cables and connections for corrosion and damaged insulation. Check all light bulbs and see that they are not burned out or damaged. Inspect light bulb sockets for corrosion, kinks, or moisture. Inspect the cover glasses to see that they are not broken or discolored. Inspect screws and mounting bolts for stripped threads and corrosion. See that the light bulbs fit in the sockets snugly.

*b. Removal.*

- (1) Disconnect the stoplight cables from the trailer's wiring harness.
- (2) Remove the stoplight mounting bolts and lock-washers.
- (3) Remove the stoplight.

*c. Disassembly (fig. 48).*

- (1) Remove six screws (6) attaching the door assembly (5) to the stoplight body (1).
- (2) Remove the door assembly (5) and gasket (4).
- (3) Remove the light bulbs (3 and 7).
- (4) Remove screws (8) attaching the socket and wiring assembly to the body and remove from the stoplight body (1).



- |                              |                          |
|------------------------------|--------------------------|
| 1 Body                       | 5 Door assembly          |
| 2 Socket and wiring assembly | 6 Cover screw (6 req'd)  |
| 3 Bulb, 32 C.P.              | 7 Bulb, 3 C.P. (2 req'd) |
| 4 Gasket                     | 8 Screw (7 req'd)        |

Figure 48. Stoplight disassembled.

*d. Repair.* If the stoplight fails, inspect cable connections and clean off corrosion and moisture. Clean lamp bulb sockets and see that the lamp bulbs are seated snugly in the sockets. Inspect lamp bulbs and see that they are not burned out. If the glass in the cover is broken or discolored, replace the door assembly. If the stoplight still fails, inspect the stoplight switch on the towing vehicle and repair or replace if necessary.

*e. Reassembly* (fig. 48).

- (1) Install the socket and wiring assembly (2) in the stoplight body (1). Tighten screws (8).
- (2) Install and tighten screws (8) on the service and stoplight sockets (2).
- (3) Install the light bulbs (3 and 7). Be sure to install the stoplight bulb in its proper place in the socket (2) on the upper right side.
- (4) Install the gasket (4) and door assembly (5). Tighten the screws (6).

*f. Installation.*

- (1) Install the stoplight on the bracket and tighten mounting bolts and lock washers.
- (2) Connect the stoplight cables with the trailer's wiring harness.
- (3) Check the stoplight for proper operation.

## **76. Electric Wiring Receptacle**

(fig. 11)

*a. Inspection.* Inspect the electric wiring receptacle for damage, corrosion, or moisture. See that the contacts are clean and tight. Remove all dirt and mud splashed on the receptacle, cables, and cable connections.

*b. Removal.*

- (1) Disconnect all cables connected to the receptacle.
- (2) Remove the mounting bolts.
- (3) Remove the receptacle.

*c. Replacement.* If the receptacle is broken or cracked or if its contacts are damaged, it must be replaced. Disconnect the wiring cables, remove the mounting bolts, remove the receptacle, and install a new one. Be sure to connect wiring cable in the proper order.

*d. Installation.*

- (1) Install the receptacle in the hole in the front end sill.
- (2) Install and tighten all mounting bolts.
- (3) Connect the wiring cable.
- (4) Insert the electric cable from the towing vehicle into the receptacle; switch on lights and see that the lights are operating properly.

# CHAPTER 4

## FIELD AND DEPOT MAINTENANCE

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### Section I. INTRODUCTION

#### 77. General

Instructions in this chapter are published for the information and guidance of maintenance personnel responsible for third and higher echelons of maintenance of the trailer. It contains information on maintenance which is beyond the scope of the tools, equipment, or supplies normally available to using organizations.

#### 78. Procedure

Paragraphs 80 through 98 describe the complete disassembly, repair, and reassembly of each major unit or system comprising the trailer. Before proceeding with overhaul, check to see that replacement parts are available.

#### 79. Special Tools and Equipment

No special tools or equipment are required for the overhaul of this equipment.

### Section II. FRAME AND DECK ASSEMBLY

#### 80. Description

The trailer frame is constructed of structural steel and steel castings. The frame has two main longitudinal members (13 and 19) running through the center of the trailer. The longitudinal members are crossed by a series of channel cross-members (1). The cross-members are welded at both sides of the trailer to the side sills (4 and 20). In the front and rear, they are welded to the front (12) and rear (2) sills. The drawbar (14 and 17) is welded to the two main longitudinal members and is reinforced by three gusset plates (15) welded at the apex and at the front sill. The trailer deck boards are bolted to the frame and can be removed. The brake system, the electric wiring harness, and lamps can be removed. No other disassembly of the frame is possible.



## **81. Underframe Assembly**

*a. Cleaning.* Refer to paragraph 48.

*b. Inspection.* Inspect the drawbar for cracks, dents, and broken welds. Check both longitudinal members for damage, improper alinement or splitting welds. Inspect the trunnion pedestal for damage, corrosion, cracks, or splintering. Check the entire underframe assembly for corrosion and pitting caused by rust.

*c. Replacement of Individual Members.* If it is necessary to replace a damaged frame member, remove it by using a cutting torch. Clean drippings from the cut and file it smooth. Make sure that the new member fits snugly in its place. Electrically weld the new member, using the proper welding rod. Clean the weld.

## **82. Wideframe Assembly**

*a. Cleaning.* Remove mud, dirt, and road tar from the wideframe assembly. Wash the wideframe assembly, using a water hose and strong water pressure. Clean corroded or pitted places by sand blasting or scrubbing with a wire brush.

*b. Inspection.* Inspect the wideframe assembly for broken, bent, or cracked members. Check the welds to see that they are not splitting apart. Check alinement of the members in relation to each other. Inspect the wideframe assembly for corrosion and pitting caused by rust.

*c. Replacement of Individual Members.* Remove bent or broken members. Use a cutting torch; clean and file the cut. See that the new member fits snugly into the assembly. Electrically weld the member, using the proper welding rod. Clean the weld.

## **83. Deck Assembly**

*a. Cleaning.* Clean the deck assembly with a stiff broom. Remove all dirt, chippings, and imbedded foreign matter between decking boards. Remove and clean grease and oil drippings. Remove all protruding nails and splintered wood.

*b. Inspection.* Inspect the deck assembly for loose, broken, or splintered boards. Check the decking boards for warping, cracks, and decay. Inspect bolts and nuts for corrosion, kinks, stripped threads, and pitting. Inspect the bottom part of the boards and check for signs of fungus, worm damage, or wood decay.

*c. Replacement of Individual Boards.* Before replacing individual boards, make sure that they are given creosote or sealer treatment. Remove the old board and use it as a template to drill holes in the new board. Counterbore the holes to sufficient depth to permit forming a satisfactory head for the carriage bolt. Lay

the new board in its proper place on the deck of the trailer and see that the holes in the board are properly aligned with the holes in the frame of the trailer. Insert the carriage bolts with the bolt heads up through the board and frame and install lock-washers and nuts. Tighten the nuts securely. Lay the boards with  $\frac{1}{8}$ -inch to  $\frac{1}{4}$ -inch spacing between the edges. Fasten all board ends and all boards over 4 inches wide with at least two carriage bolts.

## Section III. SPRINGS AND TRUNNIONS

### 84. Description

The front and rear axles, spring assembly, and trunnion axle form an integral unit. The spring assembly is secured in the center to the trunnion axle by a spring saddle. Spring ends are encased in shackle box brackets secured to the axles. The frame is attached to this unit by the trunnion pedestal, secured on the trunnion axle by clamps and bolts.

### 85. Spring and Trunnion Mounting

*a. Cleaning.* Remove all dirt, mud, and road tar from the trunnion axle, springs, and trunnion pedestal. Clean all corroded or pitted parts with a wire brush. Remove all dust with compressed air.

*b. Inspection.* Inspect the spring assembly for broken leaves, loose spring bolts, and broken or damaged spring clips. Check and tighten the wedges on the spring saddle. Inspect all bolts for stripped, damaged, or worn threads. Inspect the lubrication of the trunnion axle bearing. Inspect the cover caps and grease fittings on the trunnion axle.

*c. Repair.*

- (1) *Springs.* If the spring leaf is broken or cracked, it must be replaced. Remove the spring assembly. Remove the broken leaf. Install a new spring leaf. Make sure that the new spring leaf is of the same size, type, and steel specifications as the old one.
- (2) *Spring saddle.* If the spring saddle is broken or cracked, it must be replaced. If the spring saddle bearing is pitted, scored, or worn out of round, the spring saddle must be replaced.
- (3) *Wedges and bolts.* Remove and replace spring saddle wedges and bolts if worn out or damaged. Replace bolts if the threads are stripped or damaged.

*d. Alinement.* If the spring and trunnion assembly is out of alinement or if the trunnion pedestal brackets or clamps are broken, the assembly must be realined. Proceed as follows:

- (1) Remove trailer deck from trunnion shaft and turn on its back.
- (2) Check, with a steel tape, dimensions from centerline of lunette ring to front outside edges of trunnion shaft seats. These dimensions should be equal to within one-eighth of an inch.
- (3) Check dimensions between inner edges of trunnion shaft, seats and centerline of trailer frame drawn through centerline of lunette. These should be equal to within one-sixteenth of an inch.
- (4) Check dimensions between outer face of trunnion shaft seats and inner edge of spring saddle bracket. The latter should be one-fourth of an inch greater than the former.

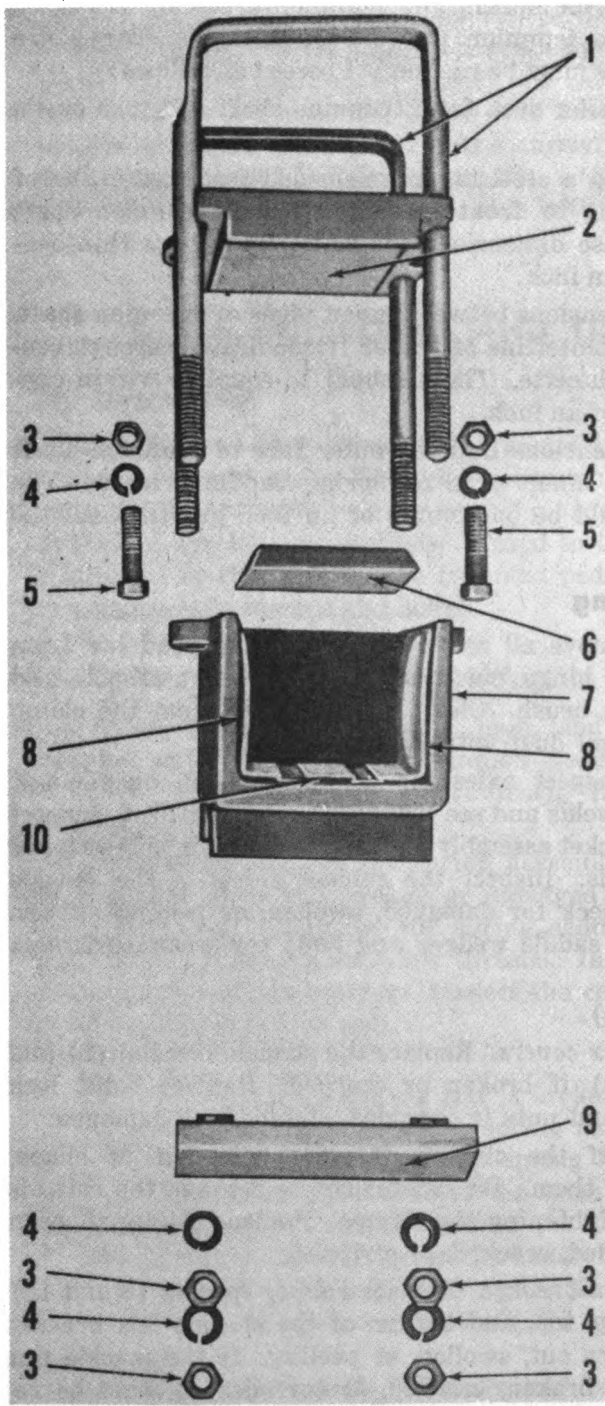
## **86. Axle Mounting**

*a. Cleaning.* Remove all caked dirt, mud, and road tar from axles, springs, and hinge pin brackets. Remove rust spots and scale, using a wire brush. Clean the corrosion from the clamp threads. Blow off all dust with compressed air.

*b. Inspection.* Inspect axles for dents, warping, or damage. Check the bracket welds and see that they are not cracked. Inspect the shackle box bracket assembly for wear, corrosion, and stripped or worn-out threads. Inspect the rubber lining in the shackle box bracket and check for damaged, swollen, or peeling rubber. Inspect the spring saddle wedges and bolts for wear, corrosion, pitting, or damage.

*c. Repair (fig. 49).*

- (1) *Shackle box covers.* Replace the shackle box top (2) and clamps (9) if broken or cracked. Replace bolts, lock washers, and nuts if corroded, stripped, or damaged.
- (2) *Clamps.* If the clamps (1) are bent out of shape, straighten them. Be careful not to damage the threads while straightening the clamps. Replace clamps if worn out, corroded, cracked, or stripped.
- (3) *Shackle box bracket.* Replace rubber spacers (8 and 10) on the side, top, and bottom of the shackle box bracket (7) if worn out, swollen, or peeling. If the shackle box bracket is broken, cracked, or corroded, it must be replaced. Re-weld the bracket if the welding seams are cracked or splitting.



- 1 Clamp
- 2 Cover
- 3 Nut ( $\frac{3}{8}$ "-18 NF, Hex Hd, 8 req'd)
- 4 Lock washer ( $\frac{3}{8}$ "-std., 16 req'd)
- 5 Bolt ( $\frac{3}{8}$ "-18 NF, Hex Hd, 2" lg, 8 req'd)
- 6 Rubber spacer, top
- 7 Shackle box bracket
- 8 Rubber spacer, side
- 9 Clamp
- 10 Rubber spacer, bottom

Figure 49. Shackle box bracket disassembled.

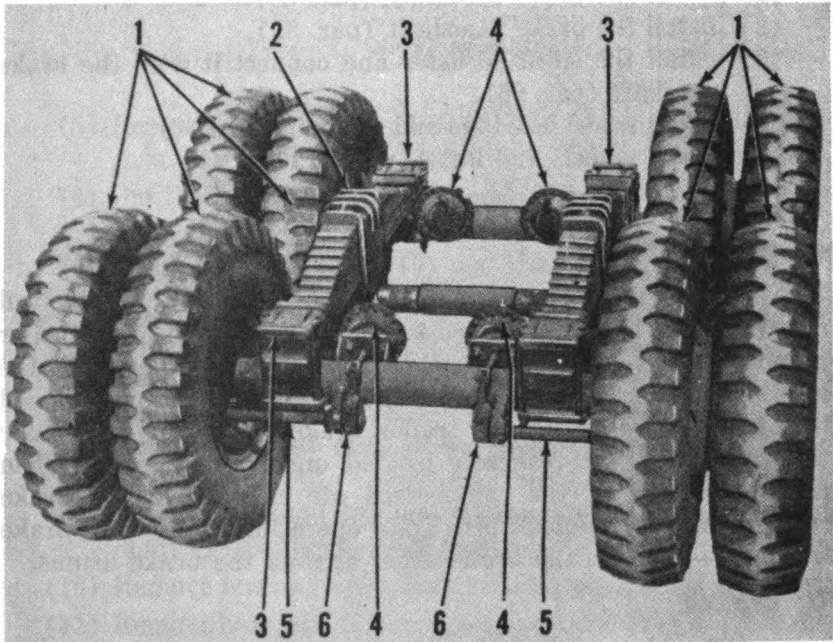
*d. Adjustment.*

- (1) Install spring ends into the shackle box bracket. See that the bent end of the spring bottom leaf fits properly into the slot of the shackle box bracket.
- (2) Tighten the hexagon bolt in the center of the spring assembly and the spring clips on each end of the sixth spring leaf.
- (3) Tighten the bolts compressing the wedges on the spring saddle. Tighten the compressing bolts frequently. This is important to keep axles in proper alinement.

## Section IV. AXLE ASSEMBLY

### 87. Description

The trailer axles are tubular, with forged steel ends, electrically welded to form an integral unit. The spring ends fit into a slot in the shackle box (3) welded to the axle. The springs are secured by a shackle box bracket and clamps with lockwashers and nuts.



- |   |               |   |               |   |                |
|---|---------------|---|---------------|---|----------------|
| 1 | Wheels        | 3 | Shackle box   | 5 | Brake camshaft |
| 2 | Spring saddle | 4 | Brake chamber | 6 | Slack adjuster |

*Figure 50. Axle assembly, removal points.*

## 88. Axle Member

### a. *Disassembly* (fig. 50).

- (1) Remove the U-bolts, clamps, and shackle box brackets (3) at each end of the spring. Remove the spring saddle wedges and spring saddle (2). Remove the springs.
- (2) Block up the axle in a secure position.
- (3) Remove wheels and hubs (par. 57).
- (4) Remove slack adjusters (par. 66).
- (5) Remove wheel bearings and oil seals (par. 58).
- (6) Remove the brake assembly (par. 89).
- (7) Remove the brake camshaft (par. 89).

b. *Cleaning*. Remove old grease from the axle spindle. Wipe off the axle spindle with a soft, absorbent cloth. Clean mud, rust, and corrosion from the axle member.

c. *Inspection*. Inspect the axle spindle for damage, abrasions, cracks, and pitting. Check the axle member for twisting, cracks, or other damage. Inspect the threads on the axle spindle for stripping or wear. Inspect the weld around the brake spider and axle for cracks or splitting welding seams.

### d. *Reassembly*.

- (1) Install the brake assembly (par. 89).
- (2) Install the brake camshaft (par. 89).
- (3) Install the slack adjuster and connect it with the brake camshaft (par. 66).
- (4) Install wheel bearings and oil seals (par. 58).
- (5) Install wheels and hubs (par. 57).

## Section V. BRAKE SYSTEM

### 89. Description

The trailer brakes are conventional shoe-type mechanical brakes applied by air pressure to the brake drums. The trailer brake system is connected in the front of the trailer with the brake system of the towing vehicle, which supplies compressed air for the operation of the trailer brakes. The compressed air is stored in the air reservoir located under the trailer. When brakes are applied, the compressed air changes in the brake chambers into mechanical force and—operating through the brake camshafts—expands the brake shoes against the brake drums.

### 90. Brakes

(fig. 51)

#### a. *Disassembly*.

- (1) Remove wheels and hubs (par. 57).
- (2) Remove the shoe return spring (6).

- 1 Brake camshaft
- 2 Washer, camshaft spacer
- 3 Retainer washer
- 4 Packing
- 5 Needle bearing
- 6 Shoe return spring
- 7 Camshaft lockwasher
- 8 Bushing
- 9 Roller cam follower
- 10 Shaft
- 11 Allen lock screw
- 12 Brake shoe
- 13 Brake lining, top
- 14 Dust shield
- 15 Packing retainer spring
- 16 Retainer bolt
- 17 Lock wire
- 18 Rivet
- 19 Anchor pin
- 20 Brake lining, bottom
- 21 Brake spider

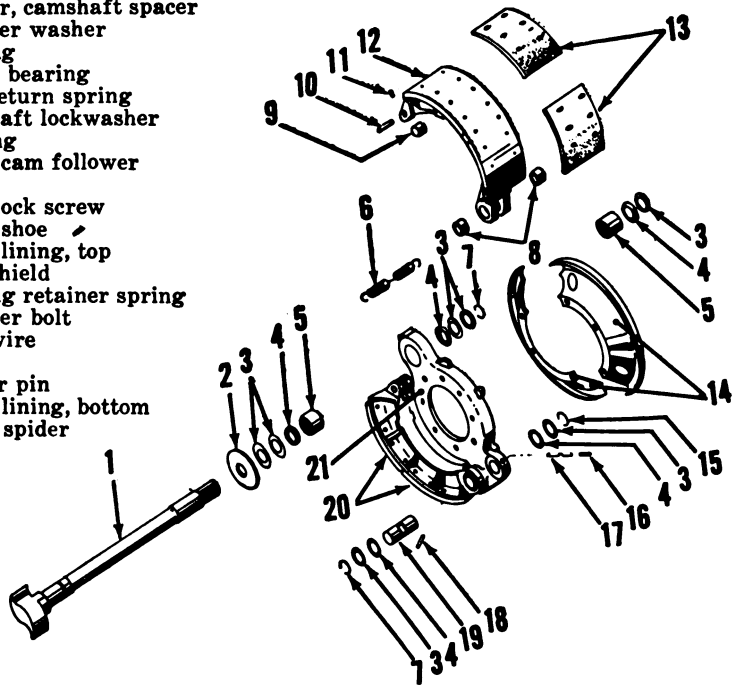


Figure 51. Brake disassembled.

- (3) Remove retainer springs (15), retainers (3), and packings (4) from shafts (10).
- (4) Cut the lock wire (17) and remove the anchor pin retainer bolts (16).
- (5) Remove anchor pins (19) and shoe assemblies (12).
- (6) Loosen the Allen screws (11) and remove roller cam followers (9) and shafts (10).
- (7) Remove the slack adjuster (par. 66).
- (8) Remove the lockwasher (7) from spacer and remove brake camshaft (1). Wire spacers to the brake spider (21).
- (9) Remove washers (2) and packings (4) from brake camshaft (1) and brake spider (21).
- (10) Remove bushings (8) from brake shoe (12) if necessary.
- (11) Remove bearings (5) from brake spider (21) if necessary.

*b. Cleaning.* Clean all metal parts with dry-cleaning solvent and wipe off with a soft, absorbent cloth. Remove dust and dirt from brake shoes and remove any foreign matter imbedded between the brake shoe and brake lining. Clean the brake spider

and brake spider bearings with dry-cleaning solvent and wipe them dry with a clean cloth to protect them from dirt and dust.

*c. Inspection.* Inspect all parts for wear and damage. Check the brake shoe bushings and brake spider bearings for wear, cracks, and pitting. Inspect Allen screws and anchor pin retainer bolts for stripped threads. Check lockwashers, retainers, and packings for damage and twisting or metal fatigue. Check tension of the brake shoe return spring. Inspect the brake shoe and brake lining for loose, missing, or broken rivets or bolts.

*d. Repairs.*

- (1) *Brake shoe lining.* If the brake shoe lining is replaced, it must be replaced on both axles simultaneously. Otherwise, uneven braking will result. When a set of brake linings with a different grade of friction for the forward and reverse shoes is used, remember that the forward lining must be installed on the forward shoe. If the cam is behind the axle, the top shoe is the forward and the lower shoe the reverse acting shoe; if the cam is ahead of the axle, the lower shoe is the forward acting shoe. When relining brake shoes, proceed as follows:
  - (a) Clean lining and brake shoe contact faces before clamping the lining in position.
  - (b) Use bolts or rivets of the correct body diameter, head size, shape, length, and material.
  - (c) If bolt or rivet holes are not provided, drill and counterbore the holes one sixty-fourth of an inch larger than the bolt or rivet body and head.
  - (d) Counterbore holes to sufficient depth to permit forming a satisfactory head.
  - (e) Start bolts or rivets at the center and move forward alternately to the ends.
  - (f) Check the lining installation by inserting a 0.002-inch feeler gage between the lining and brake shoe. A 0.002-inch feeler gage should fit snugly and not tight enough to bend.
  - (g) Adjust the cam in full release position and circle-grind the lining to a few thousandths of an inch less than the drum diameter. If 80 percent of the liner has not cleaned up, adjust the cam and grind the lining until 80 percent contact at the drum diameter is obtained.
- (2) *Bushings and bearings.* If the bushings in the brake shoes are pitted, cracked, or worn out, they must be replaced. Remember that new bushings must be line-



reamed to size before assembling brake shoes. Replace bearings in the brake spider if the old bearings are worn out or damaged.

- (3) *Anchor pins.* Replace anchor pins if they are worn out of alinement. When replacing anchor pins, replace at the same time all packings, retainers, and lock rings.
- (4) *Brake spider.* If the welded seam on the brake spider is cracked or splitting, reweld the brake spider, using the proper electrode and current. If the rivets or bolts on the brake spider are sheared off or loose, remove them and replace with new rivets or bolts of the same size and material.
- (5) *Shoe return spring.* Replace the shoe return spring when overhauling the brake assembly.
- (6) *Brake shoes.* Replace brake shoes if they are worn out at the anchor pin holes or if they are cracked, twisted, or bent.

*e. Reassembly (fig. 51).*

- (1) Install roller cam followers (9) and shafts (10). Tighten Allen lock screws (11) securely.
- (2) Install the camshaft spacer (2), packing (4), and retainer washer (3) on the cam end of the brake camshaft (1).
- (3) Insert the brake camshaft (1) through the brake spider (21).
- (4) Install retainer washers (3), packing (4), and spacers on the brake camshaft; install the lockwasher (7) on the spacer.
- (5) Position the brake shoe (12) over the brake spider (21) and the anchor pin (19). See that the flat spot on the anchor pin (19) is properly alined with the lock screw hole. The lock screw hole must be in the center of the flat spot on the anchor pin.
- (6) Repeat the same procedure with the opposite shoe assembly.
- (7) Install retainer bolts (16) and tighten securely. Thread the retainer bolts (16) with the lock wire (17).
- (8) Install packing (4), retainers (3), and retainer springs (15).
- (9) Install the brake shoe return spring (6).
- (10) Install brake dust shields (14).
- (11) Install slack adjusters (par. 66).

*f. Adjustment.* Refer to paragraph 61c.

## 91. Relay Emergency Valve

### a. Disassembly.

- (1) Remove four cap screws (9) and lockwashers (8) attaching the relay valve to the emergency valve. Remove the gasket (31) and separate the relay valve from the emergency valve.

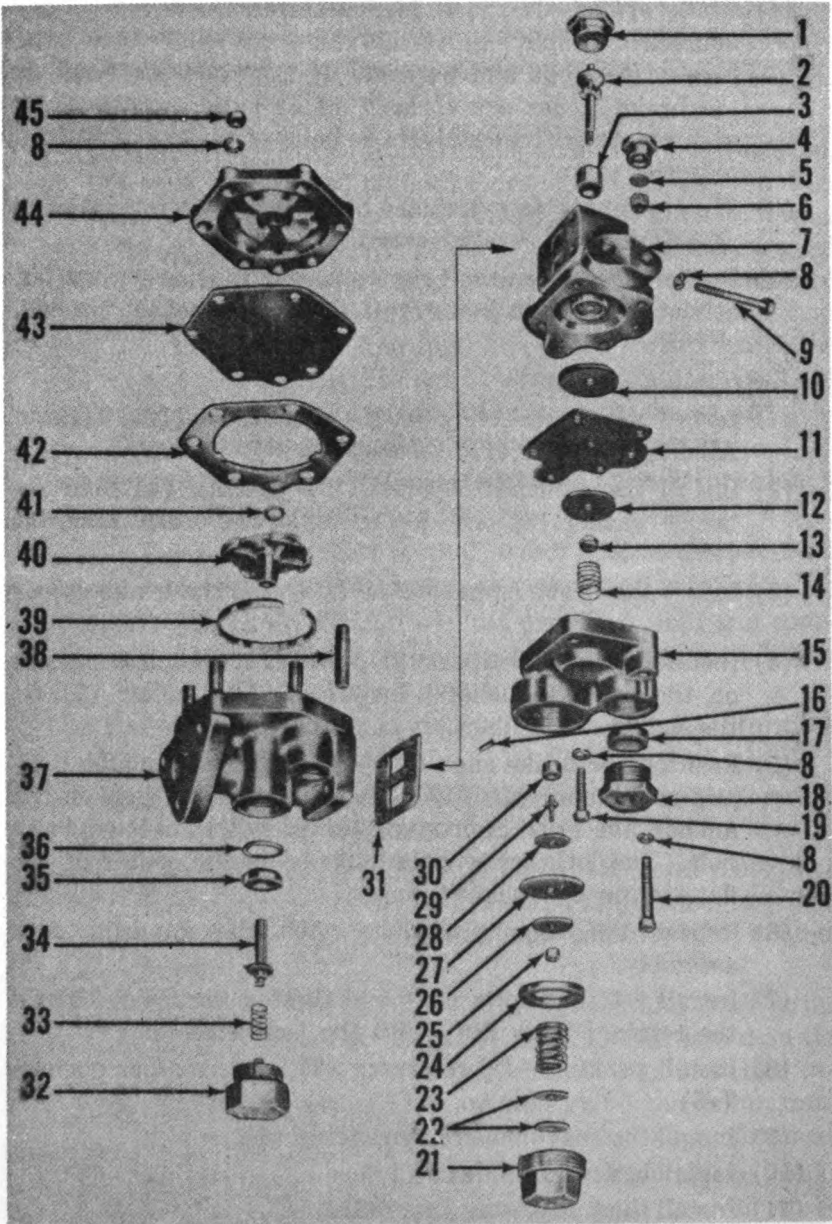


Figure 52. Relay emergency valve disassembled.

1	Emergency valve cap nut	24	Diaphragm ring
2	Upper emergency valve	25	Locknut
3	Valve seat	26	Lower follower
4	Check valve cap nut	27	Pressure regulator diaphragm.
5	Check valve	28	Upper follower
6	Check valve body	29	Valve stem
7	Emergency valve body	30	Valve seat
8	Lockwasher	31	Gasket
9	Cap screw	32	Supply valve cap nut
10	Lower emergency valve	33	Supply valve spring
11	Emergency valve diaphragm	34	Supply valve
12	Diaphragm follower	35	Supply valve seat
13	Locknut	36	Grommet, 1" od
14	Emergency valve spring	37	Relay valve body
15	Cover body	38	Stud
16	Pin	39	Dampener
17	Air strainer	40	Diaphragm guide
18	Supply cap nut	41	Grommet, 5/16" O.D.
19	Cap screw	42	Diaphragm ring
20	Cap screw	43	Relay valve diaphragm
21	Pressure regulator cap	44	Seat
22	Shim, 0.010"	45	Nut
23	Pressure regulator spring		

*Figure 52—Continued.*

- (2) Remove the seat (44), diaphragm (43), diaphragm ring (42), and bleeder passage grommet (41) from the relay valve body.
- (3) Using fingers, pull out the diaphragm guide (40) and dampener (39).
- (4) Unscrew the supply valve cap nut (32) and remove the supply valve spring (33) and supply valve (34).
- (5) Do not remove the supply valve seat unless replacement is absolutely necessary. Remove the valve seat by pressing it out through the bottom of the body.
- (6) Put all parts of the relay valve in a safe place and cover them with cloth.
- (7) Remove the pressure-regulating cap (21) from the emergency valve and lift out the pressure-regulating spring (23) and shims (22) from the cavity in the cap nut.
- (8) Put shims in a safe place and do not misplace any shims, as the same number must be replaced in the valve during assembly.
- (9) Lift out the diaphragm seal ring (24). Lift out the pressure-regulating diaphragm assembly (27).
- (10) The pressure-regulating valve seat (30) should not be removed unless it has to be replaced. Remove the valve seat (30) by drilling it out.

- (11) Remove the supply cap nut (18) and air strainer (17) from the emergency valve cover.
- (12) Remove the check valve cap nut (4). Lift out the check valve guide (6) and check valve (5) from the cavity in the emergency valve body.
- (13) Remove four cap screws (20 and 19) and emergency valve cover (15). Then remove the emergency valve spring (14) from the emergency valve body (7).
- (14) Remove the emergency valve cap nut (1). Use a screw driver to keep the upper emergency valve stem (2) from turning and remove the emergency diaphragm locknut (13).
- (15) Remove the diaphragm follower (12), diaphragm (11), and lower emergency valve (10). Remove the upper emergency valve (2).
- (16) Do not remove the emergency valve seat (3) unless replacement is absolutely necessary. Remove the valve seat (3) by pressing it out through the emergency valve cap nut hole.

*b. Cleaning.* Clean all metal parts of the relay valve and the emergency valve with dry-cleaning solvent. Check to see that bleeder passage of the relay valve is open and clean. Inspect the emergency valve and see that the passages leading to the pressure-regulating valve cavity are open and clean.

*c. Inspection.*

- (1) Inspect all diaphragms, grommets, and the gasket of the relay valve; replace if worn or damaged.
- (2) Inspect fit of the diaphragm guide in the relay valve body; it must be a free sliding fit.
- (3) Inspect the condition of dampener. The dampener must be twisted so that one end is three-eighths of an inch higher than the other.
- (4) Inspect the supply valve and seat; replace if worn or damaged.
- (5) Inspect the diaphragm seat on top of the body; it must be free from dents or scratches.
- (6) Inspect the diaphragm ring; both sides must be smooth and the inside must be smooth and free from nicks, scratches, burrs, and sharp edges.
- (7) Inspect the relay valve cover; the outer rings must be smooth and free from nicks, scratches, and sharp edges. See that the bleeder passage is open and clean.
- (8) Inspect emergency valve passages leading to the pressure-regulating valve cavity and see that they are open and clean.

- (9) Inspect the emergency valve diaphragm, check valve, and lower emergency valve.
- (10) Inspect the upper emergency valve and seat; replace if worn or damaged.
- (11) Inspect the lower emergency valve and seat on body; if valve or seat are worn or damaged, the valve or body must be replaced.
- (12) Inspect radii on body and cover where diaphragm is clamped. They must be free from nicks, scratches, and sharp edges.
- (13) Inspect the check valve seat and see that it is flat and smooth.
- (14) Inspect the pressure-regulating ball valve and seat. Replace if worn or damaged.
- (15) Inspect the air strainer for dirt and corrosion. Replace if necessary.

*d. Reassembly of the Relay Valve.*

- (1) Position the supply valve (34) and spring (33) and install supply valve cap nut (32). Tighten supply valve cap nut securely.
- (2) Position the dampener (39) in groove of diaphragm guide (40). Holding it in place with the fingers, push diaphragm guide in place.
- (3) Install the bleeder passage grommet (41) in body.
- (4) Install the diaphragm ring (42).
- (5) Install the relay diaphragm (43).
- (6) Position the seat (44) on body (37). See that the bleeder passage openings in body, diaphragm ring, diaphragm, and seat line up.
- (7) Install lockwashers (8) and tighten nuts (45) securely.

*e. Reassembly of the Emergency Valve.*

- (1) Hold the check valve cap nut (4) so that threads are up and place the check valve guide (6) in groove in cap nut (4) and place check valve (5) in guide.
- (2) Hold the emergency body (7) upside down and screw check valve cap nut (4) into body; tighten securely.
- (3) Position the upper emergency valve (2) in emergency valve body; install lower emergency valve (10), diaphragm follower (12) on the emergency valve stem (2). Curved sides of the lower emergency valve and diaphragm follower must be against diaphragm.

- (4) Install the emergency diaphragm retaining nut (13). Keep valve stem (2) from turning with a screwdriver and tighten nut (13) securely.
- (5) Position the strainer (17) in the emergency valve cover (15) and install supply cap nut (18) ; tighten up securely.
- (6) Position the pressure-regulating diaphragm assembly, consisting of the pressure-regulating valve (29), upper follower (28), pressure-regulating diaphragm (27), lower follower (26), and lockout (25), in the emergency valve cover (15) and see that edges of diaphragms are beneath the end of the pin (16).
- (7) Position the diaphragm ring (24) so that curved side is toward diaphragm (27) and the notch in the ring engages the pin.
- (8) Position the same number of shims (22) and the same spring (23) that were removed during disassembly in the pressure-regulating cap (21) and screw cap into position. Tighten cap securely.
- (9) Position the emergency valve spring (14) under the emergency diaphragm retaining nut (13).
- (10) Line up holes in the emergency diaphragm (11) with holes in emergency body (7) and install emergency cover (15).
- (11) Tighten four cap screws (19) (20) and lockwashers (8) holding cover (15) to body (7).
- (12) Make sure that the emergency valve (2) can move up and down freely without binding.
- (13) Install the emergency valve cap nut (1) and tighten securely.
- (14) Using a new gasket (31), position the relay valve and emergency valve and install and tighten four cap screws (9) and lockwashers (8) attaching relay valve to emergency valve.

*f. Testing.*

- (1) If facilities are available, the relay emergency valve should be tested on a suitable test rack. If such facilities are not available, the valve must be tested on the trailer for proper operation.
- (2) The relay emergency valve must promptly deliver the same air pressure to the brake chambers as the brake valve is delivering to the relay emergency valve. Two accurate air pressure test gages must be used in this test. One air gage is connected to show the pressure being delivered to the relay emergency valve by the

brake valve, and the other is connected to show the pressure being delivered to the brake chambers by the relay emergency valve.

- (3) When the brake valve is moved to its applied position, the relay emergency valve must quickly deliver the same pressure (within 3 pounds) to the brake chambers. Failure to do this indicates that the top of the diaphragm guide is too far below the relay diaphragm seat. Correct this condition by replacing the supply valve or diaphragm guide or both.
- (4) Excessive leakage with the brakes lightly applied indicates that the diaphragm guide is too high in relation to the relay diaphragm seat. Correct this by grinding the top of the supply valve stem to the proper length.
- (5) With brakes released, coat the exhaust port with soap suds and check for leakage. With brakes fully applied, coat the exhaust port with soap suds and check for leakage. With the relay emergency valve in emergency position, coat the exhaust port with soap suds and check for leakage. Leakage in any of these tests should not exceed a one-inch soap bubble in one second. If excessive leakage is found, the relay emergency valve must be repaired or replaced.

## **Section VI. LANDING JACK ASSEMBLY**

### **92. Description**

Refer to paragraph 68.

### **93. Landing Jack and Support Bracket**

(fig. 42)

*a. Removal.* Refer to paragraph 71.

*b. Disassembly* (fig. 53).

- (1) Put the landing jack on a bench, table, or other place suitable for reassembly work.
- (2) Remove cover screws (1) on the top of landing jack; remove the cover (2).
- (3) Remove the pipe plug (9) and drive out the cross shaft pin (5).
- (4) Pull out the cross shaft (25) and remove the shaft gear (6).
- (5) Remove the stop nut (3), jack screw gear (4), and gear key (14).

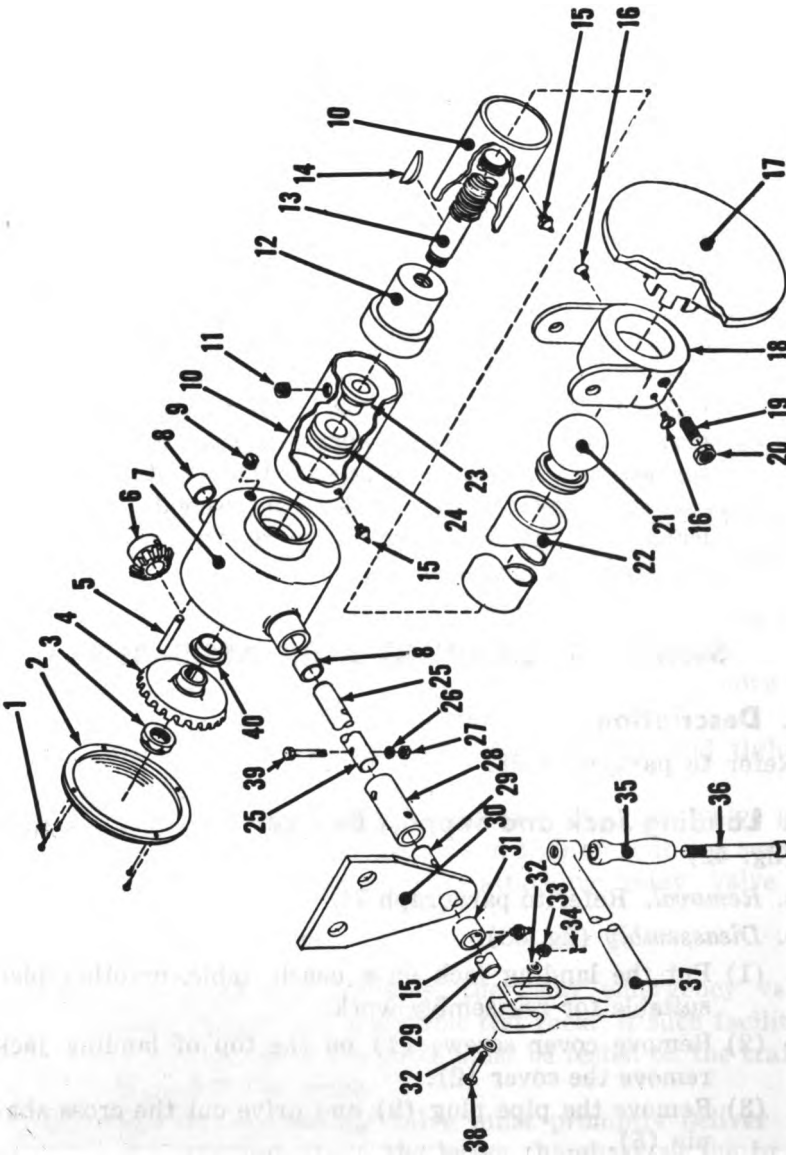


Figure 53. Landing jack disassembled.



- |    |   |    |   |
|----|---|----|---|
| 1  | Cover screw (RH #10 x 32T<br>x 1/2", 8 req'd)             | 20 | Jam nut (3/8" x 18T, 2 req'd)                             |
| 2  | Cover   | 21 | Inner leg knuckle   |
| 3  | Elastic stop nut (#42-TE-164,<br>2 req'd)                 | 22 | Inner leg   |
| 4  | Jack screw gear   | 23 | Jack screw collar   |
| 5  | Groove pin (5/16" x 1 3/4",<br>2 req'd)                   | 24 | Thrust bearing (Ohio b.b.<br>#MS-13, 2 req'd)             |
| 6  | Cross shaft gear  | 25 | Cross shaft   |
| 7  | Head bracket  | 26 | Lockwasher (3/8", std.,<br>4 req'd)                       |
| 8  | Cross shaft bearing (Johnson,<br>#A-6-GP, 4 req'd)        | 27 | Nut (hex, 3/8" x 24T, 4 req'd)                            |
| 9  | Pipe plug (sunken head, 1/4",<br>std., 2 req'd)           | 28 | Coupling  |
| 10 | Outer leg   | 29 | Crank shaft   |
| 11 | Pipe plug (sunken head, 3/8",<br>std., 2 req'd)           | 30 | Bracket   |
| 12 | Screw nut   | 31 | Bracket boss  |
| 13 | Jack screw  | 32 | Washer (plain, 3/8", std.,<br>4 req'd)                    |
| 14 | Woodruff key (#807, 1/4" x 3/8",<br>2 req'd)              | 33 | Nut (hex, castle, 3/8" x 24T,<br>2 req'd)                 |
| 15 | Fitting (Alemite, 1/8", straight,<br>6 req'd)             | 34 | Cotter pin (3/32" x 1/2", 2 req'd)                        |
| 16 | Screw (flat head, 3/8" x 1/2"<br>x 16T, 4 req'd)          | 35 | Crank handle  |
| 17 | Inner leg shoe  | 36 | Screw (socket head, cap, 1/2"<br>x 4 1/2" x 13T, 2 req'd) |
| 18 | Inner leg bracket   | 37 | Crank   |
| 19 | Setscrew (half dog point<br>3/8" x 1 1/4" x 18T, 2 req'd) | 38 | Screw (hex, cap, 3/8" x 2 1/2"<br>x 24T, 2 req'd)         |
|    |   | 39 | Screw (hex cap, 3/8" x 2"<br>x 24T, 4 req'd)              |
|    |   | 40 | Jack screw bearing  |

Figure 53—Continued.

- (6) Remove the nut (20) and set screw (18) on the bottom part of the landing jack.
- (7) Remove screws (16) and bracket (19) on the bottom part of the landing jack.
- (8) Remove the inner leg (22) of the landing jack.
- (9) Remove the landing jack screw (13), jack screw nut (12), and jack screw collar (23).
- (10) Remove the thrust bearing (24) and jack screw bearing (40).
- (11) Remove grease fittings (15) and grease pipe plug (11).

*c. Cleaning.* Clean all metal parts with dry-cleaning solvent and wipe off with a soft, absorbent cloth. Remove dust, dirt, and old grease from the inner and outer legs. Clean the threads on the jack screw and jack screw nut.

*d. Inspection.* Inspect all parts for wear and damage. Check the operation of the jack screw in the jack screw nut. Inspect

the thrust bearing and jack screw gear bearing for damage and wear. Inspect the jack screw gear and shaft gear for damage and wear. Inspect the inner and outer legs for dents, cracks, and corrosion.

*e. Repairs.*

- (1) *Elastic stop nut.* Replace the elastic stop nut if worn out or damaged, or if the threads are stripped.
- (2) *Gears.* Replace the jack screw gear and shaft gear if worn out, damaged, or cracked.
- (3) *Jack screw.* Replace the jack screw if the threads are cracked, chipping off, or stripped.
- (4) *Setscrew.* Replace the setscrew if broken, damaged, bent, or if the threads are stripped.

*f. Reassembly (fig. 53).*

- (1) Install the jack screw bearing (40) and thrust bearing (24).
- (2) Assemble the jack screw collar (23) and jack screw nut (12) on the jack screw (13); install jack screw (13).
- (3) Install the brackets (18) and screws (16) on the bottom part of the landing jack; install setscrew (19) and nut (20).
- (4) Install the inner leg (22) of the landing jack; see that the groove on the inner leg is properly aligned with the setscrew.
- (5) Install the jack screw gear (4) and key (14).
- (6) Install and tighten the stop nut (3).
- (7) Install the cross shaft (25) and gear (6); install gear pin (5) and pipe plug (9); pack the housing with grease.
- (8) Install cover (2) and cover screws (1); tighten cover screws (1).
- (9) Install the grease fittings (15) and grease pipe plug (11).
- (10) Install the landing jack in its proper place; install and tighten bracket.
- (11) Install the cranking shaft (29) and secure the connection with couplings (28), screws (39), and nuts (27). Tighten nuts.
- (12) Install the landing jack support bracket and support bracket shaft; secure the shaft on both ends with cotter pins.
- (13) Connect the landing jack support bracket with the landing jack. Secure the connection with the bracket stud and safety pin.

(14) Lubricate the landing jack.

(15) Jack up the trailer and remove blocks.

*g. Adjustment.* The inner leg of the landing jack can be adjusted by turning the cranking handle clockwise or counterclockwise. Prevent the inner leg from turning, while the screw is being turned, by tightening the setscrew at the base of the outer leg.

## Section VII. ENGINEERING DATA

### 94. Chassis Structural Steel Dimensions

Longitudinal member, length	22'11 $\frac{1}{4}$ "
Longitudinal member spacing, inside to inside	27"
Longitudinal member, width	7"
Longitudinal member, height	10"
Drawbar, lunette center to front sill	54"
Cross-member, channel	8" x 93 $\frac{1}{2}$ "
Tool box, height	15"
Tool box, width	29"
Tool box, depth	22"
Pinch bar locker, depth	62"
Pinch bar locker, height	3 $\frac{1}{2}$ "

### 95. Axles

Axles, center to center	52"
Front axle to trunnion axle, center to center	26"
Rear axle to trunnion axle, center to center	26"
Axle diameter	5"
Trunnion axle diameter	3 $\frac{5}{8}$ "
Tire to tire, inside	47 $\frac{1}{4}$ "
Tire to tire, outside	96 $\frac{3}{4}$ "
Tire track	72"

### 96. Flooring

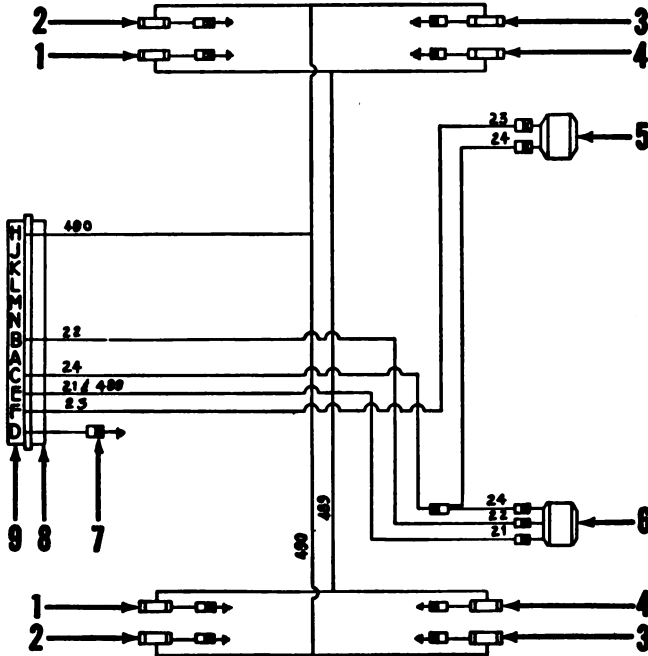
Floor, overall width	93 $\frac{1}{2}$ "
Floor, overall length	271 $\frac{1}{4}$ "

### 97. Air Brakes

Brake lining	8" x 6" x $\frac{3}{4}$ "
Brake drum, 10 stud	16 $\frac{1}{2}$ " x 6"
Brake chamber	Bendix-Westinghouse or Midland Steel Products
Brake slack adjuster	Bendix-Westinghouse or Midland Steel Products

## 98. Landing Jack Dimensions

Underframe to cranking shaft.....	14"
Underframe to jack shoe, closed.....	26½"
Cranking shaft to jack shoe, closed.....	22½"
Outer leg diameter.....	4"
Jack shoe diameter.....	10"



- |                                   |                                 |
|-----------------------------------|---------------------------------|
| 1 Service clearance light, amber  | 5 Tail light                    |
| 2 Blackout clearance light, amber | 6 Stop and tail light           |
| 3 Blackout clearance light, red   | 7 Connector assembly (17 req'd) |
| 4 Service clearance light, red    | 8 Receptacle cover              |
| 9 Receptacle                      |                                 |

Figure 54. Schematic wiring diagram.

# CHAPTER 5

## SHIPMENT, LIMITED STORAGE, AND DEMOLITION TO PREVENT ENEMY USE

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### Section I. SHIPMENT AND LIMITED STORAGE

#### 99. Limited Storage

*a. Inspection.* Inspect the entire trailer for damage or deficiencies.

*b. Cleaning and Painting.* Clean rust and corrosion from all metal parts and repaint painted surfaces. Clean the wood boards on the trailer deck and remove all debris, splinters, and protruding nails. Coat the lashing chains with a medium-grade rust preventive lubricating oil.

*c. Complete Lubrication.* Lubricate the trailer according to LO 5-9047.

*d. Protection in Storage.* Release the compressed air from the brake system and drain the air reservoir. Block trailer wheels in front and rear. Balance the trailer properly with landing jacks and install blocks at the front and rear end of the trailer; raise landing jacks and fasten them securely under the frame. Cover the trailer with a canvas cover.

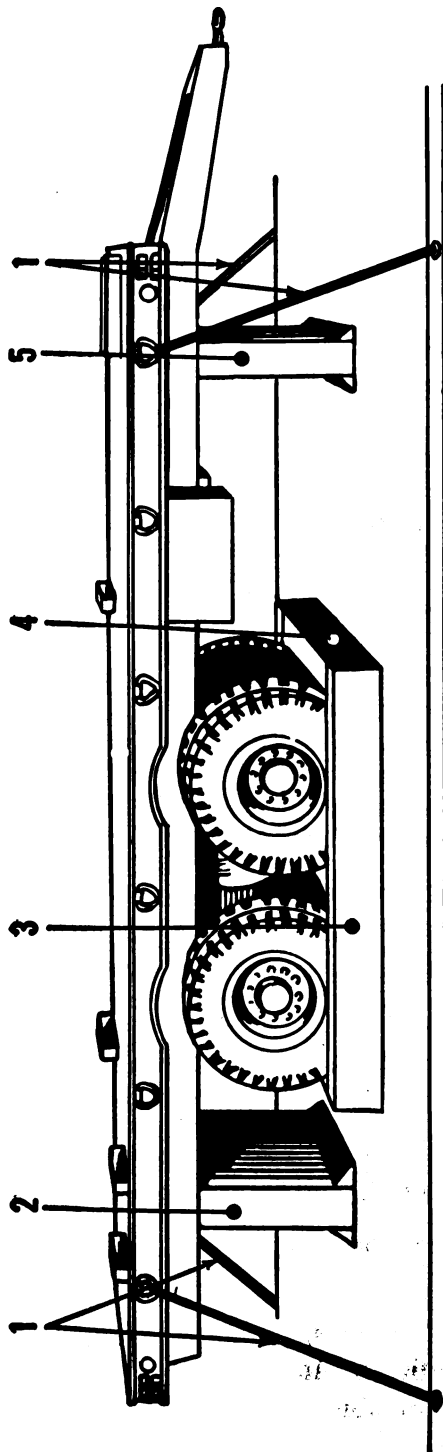
#### 100. Domestic Shipment

(fig. 55)

*a. General.* The trailer is loaded and unloaded from a flatcar by the use of a ramp. If no ramp is available, one must be constructed according to the instructions in paragraph 7.

*b. Hoisting and Handling.* Connect the crane lashing wires with the four lashing rings on the deck of the trailer. Take out slack slowly and see that the cables did not slip from the lashing rings. Lift and lower the trailer slowly and without jerking. Position the trailer on the car, block the wheels, and remove lashing cables.

*c. Blocking (fig. 55).* Balance the trailer properly with landing jacks and install solid blocking at the front (5) and rear (2) ends of the trailer. Pass lashing wires (1) or cables at each corner of the trailer through the lashing ring and through the nearest stake pocket on each side of the freight car and tighten enough to remove slack. Place blocks in front and rear (4) and on the sides (3) of wheels. Nail blocks securely to the freight car floor.



- 1 Lashing cable
- 2 Rear blocking
- 3 Wheel side block
- 4 Wheel rear block
- 5 Front blocking

*Figure 55. Trailer blocking and lashing.*

Check to see that the trailer is secure enough to prevent lengthwise and sidewise motion and bouncing. Cover the trailer with a canvas cover; secure the cover properly to prevent flapping during shipment.

## **Section II. DEMOLITION TO PREVENT ENEMY USE**

### **101. General**

When capture or the abandonment of the trailer to an enemy is imminent, the responsible unit commander makes the decision either to destroy the unit or render it inoperative. Based on this decision, orders are issued which cover the desired extent of destruction. Whatever method of demolition is employed, it is essential to destroy the same vital parts of all trailers and all corresponding repair parts.

### **102. Preferred Demolition Methods**

Explosives and mechanical means, either alone or in combination, are the most effective methods to employ. Listed below are the vital parts in order of priority of demolition for each preferred method. In each case, completion of the first two steps will render the unit inoperative. Completion of the additional steps listed will further destroy the unit.

*a. By Explosives* (fig. 56). Place as many of the following charges as the situation permits and detonate them simultaneously with detonating cord and suitable detonator:

- (1) One 4-pound charge at each end of springs.
- (2) One 4-pound charge on trunnion axle.

*Notes.* The above charges are the minimum requirement for this method.

- (3) One 1-pound charge between each pair of tires.

*b. By Mechanical Means.* Use sledge hammers, crowbars, picks, axes, or any other heavy tools which may be available, together with the tools normally included with the trailer, to destroy the following:

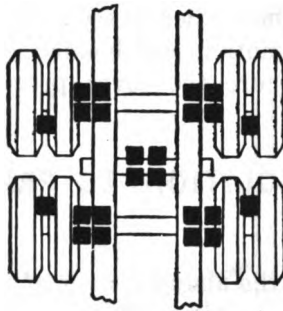
- (1) The entire brake system, including air reservoir, emergency valve, brake chambers, slack adjusters and tubing.
- (2) Wheels and tires.

*Note.* The above charges are the minimum requirement for this method.

- (3) Electric wiring.
- (4) All receptacles, bulbs, and lights.

### **103. Other Demolition Methods**

If the situation prohibits employing either of the preferred methods, use the following, either singly or in combination.



**LEGEND**

■ 1-POUND CHARGE

**TOP VIEW**

*Figure 56. Placement of charges.*

*a. By Weapons Fire.* Fire on the trailer and tandem suspension assembly with the heaviest weapons available.

*b. By Scattering and Concealment.* Remove all easily accessible vital parts such as tires, brake lines, tubing, connections, and electric wiring and scatter them through dense foliage, bury them in dirt or sand, or throw them in a lake, stream, well, or other body of water.

*c. By Burning.* Pack rags, clothing, or canvas under and around the unit, especially around the wheels, tires, and under the flooring. Saturate this packing with gasoline, oil, or diesel fuel, and ignite.

*d. By Submersion.* Totally submerge the unit in a body of water to provide some water damage and concealment. Salt water will do the greatest damage to metal parts.

*e. By Misuse.* Perform the steps listed below to make the unit inoperative.

- (1) Puncture, cut, and rip tires.
- (2) Push the trailer over a bank, or let it roll against rocks, into a precipice or swamp, or against a solid object to damage it.

## **104. Training**

All operators should receive thorough training in the destruction of the trailer. Simulated destruction, using all the methods listed above, should be included in the operator training program. It must be emphasized in training that demolition operations are usually necessitated by critical situations, when the time available for destruction is limited. For this reason, it is necessary that operators be thoroughly familiar with all methods of destruction and be able to carry out demolition instructions without reference to this or any other manual.



# APPENDIX I

## REFERENCES

---

### 1. Accessory Equipment

TM 9-1827A Power Brake Systems (Bendix-Westinghouse).

### 2. Dictionaries of Terms and Abbreviations

SR 320-5-1 Dictionary of U. S. Army Terms.  
SR 320-50-1 List of Authorized Abbreviations.

### 3. Lubrication and Painting

LO 5-947 Lubrication Order.  
TM 9-2851 Painting Instructions for Field Use.

### 4. Preparation for Export Shipment

TB 5-9711-1 Preparation of Corps of Engineers Equipment for Oversea Shipment.  
TB 5-9713-1 Preparation for Export, Spare Parts for Corps of Engineers Equipment.

### 5. Preventive Maintenance

TB 5-9047-1 Preventive Maintenance Services.  
TM 5-505 Maintenance of Engineer Equipment.

### 6. Publication Indexes

ENG 1 Introduction and Index, Department of the Army Supply Manual.  
SR 110-1-1 Index of Army Motion Pictures, Kinescope Recordings and Film Strips.  
SR 310-20-3 Index of Army Training Publications.  
SR 310-20-4 Index of Technical Manuals, Technical Regulations, Technical Bulletins, Supply Bulletins, Lubrication Orders and Modification Work Orders.  
SR 310-20-5 Index of Administrative Publications.  
SR 310-20-6 Index of Blank Forms.

### 7. Training Aids

FM 21-8 Military Training Aids.

## APPENDIX II

### IDENTIFICATION OF REPLACEABLE PARTS

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*Index of Manufacturers' Code Numbers*

203	Bendix-Westinghouse Automotive Air Brake Co.
204	Budd Co., Wheel Div., The
238	Dorsey Trailers
244	Guide Lamp Div., General Motors Corp.
250	Hobbs Mfg. Co.
258	K-D Lamp Co.
286	Standard Forge and Axle Co.
290	Timken-Detroit Axle Co.
293	Trailmobile Co.
391	Torrington Co., The
497	Eidal Mfg. Co.
683	Scintilla Magneto Division, Bendix Aviation Corp.
806	Alemite Div., Stewart-Warner Corp.
846	Trailer, 4 Wheel, Special Tandem, 10-Ton, 4 D.T., Flat Bed, With 11 X 20 Tires, for Shovel Attachments Eng. Dwg. D7749-1 to 14
892	Timken Roller Bearing Co., The
906	Homan & Co., Inc.
910	Federal Class 08 through 40
912	Federal Class 42
913	Federal Class 43
914	Federal Class 44 through 66

Corps of Engineers stock No.		Manufacturer's part No.		Federal supply class and item ident. No.	Description	Qty. per unit
Code No.	Part No.	Code No.	Part No.			
912	42-1100.500.035	203	201327	424-8804	Section I. STANDARD HARDWARE—ALL MODELS BALL: steel; $\frac{5}{8}$ in. diam. BOLT, brake lining: brass; NC; w/hex nut; FS FF-S-91; Type I; $\frac{5}{8}$ in. dia, 1 $\frac{1}{4}$ in. long; 16 threads per in. (IMO 25).	4
913	43-1350.040.013	286	6808			64
913	43-1424.030.010	293	50-12-21	---	BOLT, carriage: FS FF-B-571; steel; NC; regular hd; w/sq nut; black; $\frac{1}{4}$ in. dia, 1 in. long; 20 threads per in. (IMO 25).	24
913	43-1424.040.027	293	50-1U-64	---	BOLT, carriage: FS FF-B-571; steel; NC; regular hd; w/sq nut; black; $\frac{5}{8}$ in. dia, 2 $\frac{1}{2}$ in. long; 16 threads per in. (IMO 10).	300
913	43-1424.040.030	293	50-1U-65	---	BOLT, carriage: FS FF-B-571; steel; NC; regular hd; w/sq nut; black, $\frac{5}{8}$ in. dia, 3 in. long; 16 threads per in. (IMO 50).	300
913	43-1424.050.065	293	50-1U-122	---	BOLT, carriage: FS FF-B-571; steel; NC; regular hd; w/sq nut; black; $\frac{1}{2}$ in. dia, 6 $\frac{1}{2}$ in. long; 13 threads per in. (IMO 10).	12
913	43-2325.040.013	846	7749-12-10	496-8212	BOLT, machine: FS FF-B-571; steel; NC; sq hd; w/sq nut; black; $\frac{5}{8}$ in. dia, 1 $\frac{1}{4}$ in. long; $\frac{5}{8}$ in. thread length, 16 threads per in. (IMO 25).	4
910	17-3045.700.050	293	50-9AA-10A	---	CLAMP, cable or conduit: 1 hole type; size conduit $\frac{1}{2}$ in.; cable $\frac{5}{8}$ in. (IMO 5).	12
914	45-3772.830.001	293	7-37-2	---	ELBOW, pipe: malleable iron; 150 lb pressure; FS WW-P-521; street; straight; threaded; 90-deg; black; Type I; $\frac{1}{2}$ in.	4

Corps of Engineers stock No.		Manufacturer's part No.		Federal supply class and item ident. No.	Description	Qty. per unit
Code No.	Part No.	Code No.	Part No.			
910	17-6796.030.600	244	190877	---	LAMP, incandescent; tungsten filament; miniature; FS W-L-111; automobile service; 3 candle power; 24-28v; G-6 bulb; bayonet std base; Trade No. 2151.	10
910	17-6796.320.600	244	446914	---	LAMP, incandescent; tungsten filament; miniature; FS W-L-111; automobile service; 32 candle power; 28v; bayonet std base; Trade No. 1683.	1
913	43-4074.030.280	203	233704	---	NUT, castellated: FS FF-B-571; Type A4; steel; semi-finished; NF; hex; rh; $\frac{1}{4}$ in.; 28 threads per in.	8
913	43-4074.040.240	293	50-2M-3	---	NUT, castellated; FS FF-B-571; Type A4; steel; semi-finished; NF; hex; rh; $\frac{1}{2}$ in.; 24 threads per in.	2
913	43-4162.070.160	846	7749-9-9	---	NUT, jam: regular; steel; finished; FS FF-B-571; grade 6; NF; hex; Type A, rh; $\frac{1}{2}$ in.; 16 threads per in.	8
913	43-4162.070.160	293	50-2F-8	---	NUT, jam: regular; steel; finished; FS FF-B-571; grade 6; NF; hex; Type A; rh; $\frac{1}{2}$ in.; 16 threads per in.	8
913	43-4286.030.200	290	X-1015	011-4378	NUT, machine screw: steel; NC; hex; rh; $\frac{1}{4}$ in.; 20 threads per in.	16
913	43-4445.030.200	203	231764	---	NUT, regular: steel; black; semifinished; FS FF-B-571; NC; hex; Type A2; $\frac{1}{4}$ in.; 20 threads per in. (IMO 50).	6
913	43-4445.035.180	293	50-2B-2	---	NUT, regular: steel; black; semifinished; FS FF-B-571; NC; hex; Type A2; rh; $\frac{1}{8}$ in.; 18 threads per in. (IMO 25).	24
913	43-4489.035.240	293	50-2D-2	---	NUT, regular: steel; black; semifinished; FS FF-B-571; NC; hex; Type A2; $\frac{1}{8}$ in.; 24 threads per in. (IMO 100).	24

913	43-4489.040.240	846	6301	64	NUT, regular; steel; black; semifinished; FS FF-B-571; NC; hex; Type A2; $\frac{1}{2}$ in.; 24 threads per in.
913	43-4460.050.130	293	50-2L-5	12	NUT, regular; steel; black; semifinished; FS FF-B-571; NC; sq; Type B2; rh; $\frac{1}{2}$ in.; 13 threads per in. (IMO 25).
913	43-4445.050.130			20	NUT, regular; steel; black; semifinished; FS FF-B-571; NC; hex; Type A2; $\frac{1}{2}$ in.; 13 threads per in. (IMO 25).
913	43-4489.050.280			12	NUT, regular; steel; black; semifinished; FS FF-B-571; NF; hex; Type A2; rh; $\frac{1}{2}$ in.; 28 threads per in. (IMO 100).
913	43-4489.050.200	286	6304	64	NUT, regular; steel; black; semifinished; FS FF-B-571; NF; hex; Type A2; rh; $\frac{1}{2}$ in.; 20 threads per in. (IMO 25).
913	43-4489.040.240	290	13 x 3	16	NUT, regular; steel; black; semifinished; FS FF-B-571; NF; hex; Type A2; rh; $\frac{1}{2}$ in.; 24 threads per in. (IMO 25).
913	43-4489.060.180	293	50-2D-7	14	NUT, regular; steel; black; semifinished; FS FF-B-571; NF; hex; Type A2; rh; $\frac{1}{2}$ in.; 18 threads per in.
913	43-4530.035.240	203	BW 203145	72	NUT, regular steel; cadmium plated; semifinished; FS FF-B-571; NF; hex; Type A2; rh; $\frac{1}{2}$ in.; 24 threads per in.
913	43-4530.050.200	203	BW 203575	4	NUT, regular; steel; cadmium plated; semifinished; FS FF-B-571; NF; hex; Type A2; rh; $\frac{1}{2}$ in.; 20 threads per in.
913	43-4530.060.180	203	211104	8	NUT, regular; steel; cadmium plated; semifinished; FS FF-B-571; NF; hex; Type A2; rh; $\frac{1}{2}$ in.; 18 threads per in.
913	43-4460.040.160	293	50-2J-11	324	NUT, regular; steel; black; unfinished; NC; sq; rh; FS FF-B-571; Type B2; $\frac{1}{2}$ in.; 16 threads per in. (IMO 50).

Corps of Engineers stock No.		Manufacturer's part No.		Federal supply class and item ident. No.	Description	Qty. per unit
Code No.	Part No.	Code No.	Part No.			
912	42-6880.050.100	203	BW 233709	---	PIN, cotter: split; FS FF-P-386; steel; Type B; $\frac{1}{8}$ x 1 in.	1
912	42-6880.100.200	846	7749-6-5	---	PIN, cotter: split; FS FF-P-386; steel; Type B; $\frac{1}{8}$ x 2 in.	4
912	42-6880.600.200	203	212641	184-6553	PIN, cotter: split; FS FF-P-386; steel; Type B; $\frac{1}{8}$ x 2 in.	1
912	42-6880.070.100	293	50-5A-18	010-3374	PIN, cotter: split; FS FF-P-386; steel; Type B; $\frac{3}{8}$ x 1 in.	2
912	42-6880.200.200	293	50-5A-67	---	PIN, cotter: split; FS FF-P-386; steel; Type B; $\frac{1}{8}$ x 2 in.	4
912	42-6880.200.400	293	50-5A-45	011-9466	PIN, cotter: split; FS FF-P-386; steel; Type B; $\frac{1}{8}$ x 4 in.	1
912	42-7000.100.037	203	BW 213224	187-1601	PIN, dowel: steel; $\frac{1}{8}$ in. dia., $\frac{1}{2}$ in. long	1
910	08-4700.700.060	203	BW 212357	---	PLUG, expansion: standard-type; $\frac{5}{8}$ in.	4
914	45-6030.500.001	203	BW 233410	---	PLUG, pipe: cast iron; 125 lb pressure; FS WW-P-471; threaded, Allen hd; black; $\frac{1}{2}$ in.	1
914	45-6040.500.001	203	203680	---	PLUG, pipe: cast iron; 125 lb pressure; FS WW-P-471; threaded; sq hd; black; Type I; $\frac{1}{2}$ in.	1
914	45-6040.500.004	846	BW 203098	---	PLUG, pipe: cast iron; 125 lb pressure; FS WW-P-471; threaded; sq hd; black; Type I; $\frac{1}{2}$ in. (IMO 5).	2
914	45-6040.500.001	203	203680	187-4206	PLUG, pipe: cast iron; 125 lb pressure; FS WW-P-471; threaded; sq hd; black; Type I; $\frac{1}{2}$ in. (IMO 5).	12
914	45-6074.500.004	203	233057	---	PLUG, pipe: malleable iron; 150 lb pressure; FS WW-P-471; threaded; slotted hd; black; $\frac{1}{2}$ in.	1
913	43-5445.080.101	290	R.V. 3810	---	RIVET: brass; semitubular; brake band; flat hd; No. 8-10 (IMO 100).	128

913	48-6247.030.070	846	7749-5-18	---	RIVET: steel; countersunk 90-deg; ¼ x ¼ in.	10
913	48-6353.015.171	203	212632	011-0803	RIVET: steel; rd hd; ⅝ x 1 ¼ in.	20
913	48-6353.050.171	293	X1260	010-4133	RIVET: steel; rd hd; ½ x 1 ¼ in.	64
913	48-6353.020.201	203	BW 232215	010-4078	RIVET: steel; rd hd; ⅝ x 2 in.	5
913	48-6792.030.100	203	7749-12-15	---	SCREW, cap: steel; NC; hex hd; heat treated; ¼ in. dia, 1 in. long; 20 threads per in.	6
913	48-6792.035.050	286	6212	---	SCREW, cap: steel; NC; hex hd; heat treated; ⅝ in. dia, ½ in. long; 18 threads per in.	24
913	48-6792.035.100	203	BW 203788	---	SCREW, cap: steel; NC; hex hd; heat treated; ⅝ in. dia, 1 in. long; 18 threads per in.	1
913	48-6792.035.130	203	BW 203821	---	SCREW, cap: steel; NC; hex hd; heat treated; ⅝ in. dia, 1 ¼ in. long; 18 threads per in.	2
913	48-6792.035.230	203	BW 210106	---	SCREW, cap: steel; NC; hex hd; heat treated; ⅝ in. dia, 2 ¼ in. long; 18 threads per in.	4
913	48-6792.045.070	288	6215	---	SCREW, cap: steel; NC; hex hd; heat treated; ⅝ in. dia, ¾ in. long; 14 threads per in.	24
913	48-6792.050.070	846	7749-6-2	---	SCREW, cap: steel; NC; hex hd; heat treated; ½ in. dia, ¾ in. long; 13 threads per in.	44
913	48-6792.050.100	846	7749-12-26	---	SCREW, cap: steel; NC; hex hd; heat treated; ½ in. dia, 1 in. long; 13 threads per in. (IMO 5).	4
913	48-6792.050.150	---	---	---	SCREW, cap: steel; NC; hex hd; heat treated; ½ in. dia, 1 ½ in. long; 13 threads per in. (IMO 5).	20
913	48-6777.035.180	203	BW 232223	496-8362	SCREW, cap: steel; NC; hex hd; NS 4255, class 2, free fit; ⅝ in. dia, 1 ¾ in. long; 18 threads per in.	2
913	48-6834.030.100	---	---	---	SCREW, cap: steel; NF; hex hd; heat treated; ¼ in. dia, 1 in. long; 28 threads per in.	12
913	48-6834.035.080	203	203148	---	SCREW, cap: steel; NF; hex hd; heat treated; ⅝ in. dia, ¾ in. long; 24 threads per in.	32
913	48-6834.035.100	---	---	---	SCREW, cap: steel; NF; hex hd; heat treated; ⅝ in. dia, 1 in. long; 24 threads per in.	36

Corps of Engineers stock No.		Manufacturer's part No.		Federal supply class and item ident. No.	Description	Qty. per unit
Code No.	Part No.	Code No.	Part No.			
913	48-6834.060.150				SCREW, cap: steel; NF; hex hd; heat treated; $\frac{5}{8}$ in. dia, $1\frac{1}{2}$ in. long; 18 threads per in.	6
913	48-6834.060.200				SCREW, cap: steel; NF; hex hd; heat treated; $\frac{5}{8}$ in. dia, 2 in. long; 18 threads per in. (IMO 5).	8
913	48-6834.070.250				SCREW, cap: steel; NF; hex hd; heat treated; $\frac{5}{8}$ in. dia, $2\frac{1}{2}$ in. long; 16 threads per in.	8
913	48-6830.050.160	286	6114		SCREW, cap: steel; NF; hex hd; NS 4255, class 2, free fit; $\frac{1}{2}$ in. dia, $1\frac{1}{2}$ in. long; 20 threads per in.	64
913	48-6792.035.230	203	210106		SCREW, cap: steel; NC; hex hd; heat treated; $\frac{1}{8}$ in. dia, $2\frac{1}{4}$ in. long; 18 threads per in.	4
913	48-6792.040.050	293	50-1A-31		SCREW, cap: steel; NC; hex hd; heat treated; $\frac{5}{8}$ in. dia, $\frac{1}{2}$ in. long; 16 threads per in. (IMO 5).	2
913	48-6792.040.070	293	50-1B-33		SCREW, cap: steel; NC; hex hd; heat treated; $\frac{5}{8}$ in. dia, $\frac{3}{4}$ in. long; 16 threads per in.	12
913	48-6792.040.100	293	50-1A-35		SCREW, cap: steel; NC; hex hd; heat treated; $\frac{5}{8}$ in. dia, 1 in. long; 16 threads per in. (IMO 5).	4
913	48-6777.035.050	290	X-1815		SCREW, cap: steel; NC; hex hd; NS 4255, class 2, free fit; $\frac{1}{8}$ in. dia, $\frac{1}{2}$ in. long; 18 threads per in.	4
913	48-6834.035.080	203	203148		SCREW, cap: steel; NF; hex hd; heat treated; $\frac{1}{8}$ in. dia, $\frac{3}{4}$ in. long; 24 threads per in.	18
913	48-6834.035.100	293	50-1B-19		SCREW, cap: steel; NF; hex hd; heat treated; $\frac{1}{8}$ in. dia, 1 in. long; 24 threads per in.	11
913	48-6834.040.100	293	50-1B-35	268-5789	SCREW, cap: steel; NF; hex hd; heat treated; $\frac{5}{8}$ in. dia, 1 in. long; 24 threads per in.	8



913	48-6834.040.200	293	50-1B-39	-----	SCREW, cap; steel; NF; hex hd; heat treated; $\frac{3}{8}$ in. dia, 2 in. long; 24 threads per in.	4
913	48-6834.050.130	293	50-1B-68	-----	SCREW, cap; steel; NF; hex hd; heat treated; $\frac{1}{2}$ in. dia, $1\frac{1}{4}$ in. long; 20 threads per in.	16
913	48-6834.050.150	293	50-1B-69	-----	SCREW, cap; steel; NF; hex hd; heat treated; $\frac{1}{2}$ in. dia, $1\frac{1}{2}$ in. long; 20 threads per in.	8
913	48-6834.050.200	293	50-1B-101	-----	SCREW, cap; steel; NF; hex hd; heat treated; $\frac{3}{8}$ in. dia, 2 in. long; 18 threads per in. (IMO 5).	8
913	48-6834.060.330	293	50-1B-103	-----	SCREW, cap; steel; NF; hex hd; heat treated; $\frac{3}{8}$ in. dia, $3\frac{1}{4}$ in. long; 18 threads per in.	8
913	48-7405.060.035	244	121839	011-2871	SCREW, machine; FS FF-S-91; steel; NC; rd hd; bright; size No. 6; $\frac{5}{8}$ in. long; 32 threads per in.	1
913	48-7429.050.040	244	121832	-----	SCREW, machine; FS FF-S-91; steel; NC; rd hd; cadmium plated; $\frac{3}{8}$ in. long; 32 threads per in.	7
913	48-7500.030.100	293	50-1B-2C	-----	SCREW, machine; FS FF-S-91; steel; NF; flat fillister hd; bright; $\frac{1}{4}$ in. dia, 1 in. long; 28 threads per in.	4
913	48-7519.030.070	293	50-19K-58C	042-0623	SCREW, machine; FS FF-S-91; steel; NF; flat hd; bright; $\frac{1}{4}$ in. dia, $\frac{3}{8}$ in. long; 28 threads per in.	10
913	48-7710.100.050	293	50-19N-36C	-----	SCREW, machine; FS FF-S-91; steel; NF; rd hd; bright; size No. 10, $\frac{1}{2}$ in. long; 32 threads per in.	39
913	48-7731.030.050	293	50-19N-56C	014-9495	SCREW, machine; FS FF-S-91; steel; NF; rd hd; bright; $\frac{1}{4}$ in. dia, $\frac{1}{2}$ in. long; 28 threads per in.	28
913	48-7731.030.100	293	50-1H-162	014-8058	SCREW, machine; FS FF-S-91; steel; NF; rd hd; bright; $\frac{1}{4}$ in. dia, 1 in. long; 28 threads per in.	8
913	48-7946.030.030	286	6801	-----	SCREW, set; FS FF-S-103; steel; NC; Allen hd; Type III; cup point, style 4; single; $\frac{1}{4}$ in. dia, $\frac{1}{4}$ in. long; 20 threads per in.	8
913	48-7946.030.040	293	7-24-2	-----	SCREW, set; FS FF-S-103; steel; NC; Allen hd; Type III; cup point, style 4; single; $\frac{1}{4}$ in. dia, $\frac{3}{8}$ in. long; 20 threads per in.	16

Corps of Engineers stock No.		Manufacturer's part No.		Federal supply class and item ident. No.	Description	Qty. per unit
Code No.	Part No.	Code No.	Part No.			
913	43-9840.500.060	846	7749-5-22	---	WASHER: cold rolled steel; SAE; cut; bright; bolt size $\frac{1}{2}$ in.; $1\frac{1}{2}$ in. od, $\frac{3}{4}$ in. thick (IMO 25).	18
913	43-9840.500.041	846	7749-12-11	---	WASHER: cold rolled steel; SAE; rd; cut; bright; $\frac{3}{4}$ in. bolt size; $\frac{1}{2}$ in. od, $\frac{1}{2}$ in. thick.	4
913	43-9840.500.080	293	50-3A-10	---	WASHER: cold rolled steel; SAE; rd; cut; bright; single; bolt size $\frac{3}{4}$ in.; $1\frac{1}{2}$ in. od, $\frac{1}{2}$ in. thick.	4
913	43-9351.500.101	203	201946	013-8671	WASHER, lock: high carbon steel; Shakeproof; internal teeth; standard screw and bolt; bright; $1\frac{1}{2}$ in.	1
913	43-9533.500.044	286	6503	010-3322	WASHER, lock: spring steel; regular; std wt; bright; $\frac{1}{2}$ in.	24
913	43-9533.500.030	---	---	010-3319	WASHER, lock: spring steel; regular; std wt; SAE; bright; $\frac{1}{4}$ in. (IMO 100).	22
913	43-9533.500.033	286	6501	010-3320	WASHER, lock: spring steel; regular; std wt; SAE; bright; $\frac{1}{2}$ in.	50
913	43-9533.500.040	286	6502	010-3321	WASHER, lock: spring steel; regular; std wt; SAE; bright; $\frac{3}{8}$ in.	64
913	43-9533.500.050	846	7749-12-26	010-3323	WASHER, lock: spring steel; regular; std wt; SAE; bright; $\frac{3}{8}$ in. (IMO 25).	4
913	43-9533.500.061	203	202986	010-3325	WASHER, lock: spring steel; regular; std wt; SAE; bright; $\frac{3}{8}$ in.	34
913	43-9550.500.036	203	203574	012-0214	WASHER, lock: spring steel; regular; std wt; SAE; cadmium plated; $\frac{1}{2}$ in.	1

913	43-9550.500.050	286	6504	012-0384	WASHER, lock: spring steel; regular; std wt; SAE; cadmium plated; 1/8 in.	64
913	43-9533.500.031	290	X-527	010-3319	WASHER, lock: spring steel; regular; std wt; SAE; bright; 1/4 in. (IMO 100).	40
913	43-9533.500.041	293	50-4A-6	010-3321	WASHER, lock: spring steel; regular; std wt; SAE; bright; 1/2 in. (IMO 50).	356
913	43-9533.500.051	293	50-4A-8	010-3323	WASHER, lock: spring steel; regular; std wt; SAE; bright; 1/2 in. (IMO 25).	24
913	43-9533.500.071	293	50-4A-11	010-3326	WASHER, lock: spring steel; regular; std wt; SAE; bright; 1/2 in. (IMO 10).	16
913	43-9215.500.051	293	50-3B-6	187-5347	WASHER: wrought iron; rd; std; bright; single; JAN-W-1085; Type A; bolt size 1 in.; 1 1/2 in. od, 1/2 in. thick (IMO 50).	18
913	43-9215.500.101	846	7749-6-4	187-5353	WASHER: wrought iron; rd; std; bright; JAN-W-1085; Type A; bolt size 1 in.; 2 1/2 in. od, 1 1/2 in. thick.	4
910	15-2560.420.100				CABLE: single conductor; tinned copper; rubber insulated; braided in colors; flexible; No. 14; 19 x 27 stranding (FT)	
910	17-3232.030.630				(WIRE, Part Nos. 50-26K-1-6 and 50-26K-1-165, will be supported by Stock No. 910 15-2560.420.100).	
					CONDUIT, flexible: nonmetallic; NEC; std; 1/2 in. dia (FT)	
203	BW 170 M				(LOOM, Part No. 7749-12-14, will be supported by Stock No. 910 17-3232.030.630).	
203	BW 101 M				HOSE, arctic-type: 36 in. (HOSE, Part No. 1CA203, will be supported by Stock No. 203 BW 170 M).	
					HOSE, rubber: 1/2 in. id, 1/2 in. od; air brake (HOSE, Part No. 2CA203 will be supported by Stock No. 203 BW 101 M).	

Corps of Engineers stock No.		Manufacturer's part No.		Federal supply class and item ident. No.	Description	Qty. per unit
Code No.	Part No.	Code No.	Part No.			
208	3-8-ODX049				TUBING (FT) (TUBING, Part Nos. 17-20D-102, 17-20D-106 and 17-20D-76, will be supported by Stock No. 208 3-8-ODX049). WIRE: steel; carbon; annealed; FS QQ-W-461; bare; 5 lb reel; grade FS 1046; 0.0625 in. dia	
910	22-8011.500.380				(WIRE, Part No. 11725, will be supported by Stock No. 910 22-8011.500.380).	

Fig. No.	Index No.	Corps of Engineers stock No.		Code No.	Manufacturer's part No.	Federal supply class and item ident. No.	Description	Qty. per unit
		Code No.	Part No.					
1	5	846	7749-5-1	846	7749-5-1		Section II. REPLACEABLE PARTS LIST--MODELS 10FBS AND DCST LOCKER ASSEMBLY, chain-----	2
		846	7749-5-2	846	7749-5-2		BODY-----	2
		846	7749-5-17	846	7749-5-17		BOLT, with nut and lock washer (See Stock Nos. 913 48-6894.035.100, 913 48-4489.035.240 and 913 48-9633.500.-033).	4

846	7749-5-21	846	7749-5-21	846	7749-5-21	24
846	7749-5-19	846	7749-5-19	846	7749-5-19	16
846	7749-5-4	846	7749-5-4	846	7749-5-4	4
846	7749-14-6	846	7749-14-6	846	7749-14-6	4
846	7749-5-11	846	7749-5-11	846	7749-5-11	2
846	7749-5-8	846	7749-5-8	846	7749-5-8	4
846	7749-5-10	846	7749-5-10	846	7749-5-10	4
846	7749-5-14	846	7749-5-14	846	7749-5-14	4
846	7749-5-5	846	7749-5-5	846	7749-5-5	2
846	7749-5-6	846	7749-5-6	846	7749-5-6	2
846	7749-5-12	846	7749-5-12	846	7749-5-12	2
846	7749-5-7	846	7749-5-7	846	7749-5-7	1
846	7749-5-8	846	7749-5-8	846	7749-5-8	2
846	7749-5-9	846	7749-5-9	846	7749-5-9	2
846	7749-5-15	846	7749-5-15	846	7749-5-15	8
846	7749-5-13	846	7749-5-13	846	7749-5-13	4
846	7749-5-20	846	7749-5-20	846	7749-5-20	2
1	6	846	7749-14-1	846	7749-14-1	1
		846	7749-14-2	846	7749-14-2	2
		846	7749-14-6	846	7749-14-6	1
		846	7749-14-7	846	7749-14-7	1
		846	7749-5-10	846	7749-5-10	2

BOLT, with nut and lock washer (See Stock Nos. 913 43-6834.035.100, 913 43-4489.035.240 and 913 43-9533.500.-033).  
 BOLT, with nut and lock washer (See Stock Nos. 913 43-6834.060.150, 913 43-4489.060.180 and 913 43-9533.500.-061).  
 Channel -----  
 CLIP ASSEMBLY -----  
 DOOR -----  
 END -----  
 HINGE, door -----  
 LATCH -----  
 LOCKER ANGLE -----  
 LOCKER ANGLE -----  
 PIN, hinge -----  
 PLYWOOD -----  
 PLYWOOD -----  
 PLYWOOD -----  
 SCREW, with nut and lock washer (See Stock Nos. 913 43-6834.030.100, 913 43-4489.030.280 and 913 43-9533.500.-030).  
 STIFFENER -----  
 STRAP -----  
 LOCKER ASSEMBLY, pinch bar -----  
 CHANNEL -----  
 CLIP ASSEMBLY -----  
 DOOR ASSEMBLY -----  
 HINGE, door -----

Fig. No.	Index No.	Corps of Engineers stock No.		Manufacturer's part No.		Federal supply class and item ident. No.	Description	Qty. per unit
		Code No.	Part No.	Code No.	Part No.			
		846	7749-5-14	846	7749-5-14		LATCH	4
		846	7749-14-4	846	7749-14-4		PIN, hinge	1
		846	7749-14-3	846	7749-14-3		PLATE	1
		846	7749-14-15	846	7749-14-15		SCREW, with nut and lock washer (See Stock Nos. 913 43-6834.030.100, 913 43-4489.030.280 and 913 43-9533.500.-030).	4
		846	7749-14-8	846	7749-14-8		SPACER	1
		846	7749-14-5	846	7749-14-5		SUPPORT	1
1	9	846	7749-4-5	846	7749-4-5		LUNETTE, trailer drawbar	1
		846	7749-4-6	846	7749-4-6		NUT, anchor, lunette to drawbar	1
		846	7749-4-7	846	7749-4-7		COTTER, lunette	1
2	1	258	333-ODAMBER	846	B 161058		REFLECTOR, flange mounted: amber (IMO 2).	4
2	1	258	333-ODRED	846	B 161059		REFLECTOR, flange mounted: red (IMO 2).	4
11		846	7749-11-1A	846	7749-11-1A		RECEPTACLE AND COVER	1
		683	60-36397-28	846	7731428		COVER	1
		683	60-36028-51P	846	7731423		RECEPTACLE	1
		846	7749-11A	846	7749-11A		CABLE, jumper: 6 ft long; special	1
19		846	7749-3	846	7749-3		FRAME ASSEMBLY	1
19	1	846	7749-15-4	846	7749-15-4		MEMBER, cross	9
19	2	846	7749-15-9	846	7749-15-9		SILL, rear	1
19	3	846	7749-15-15	846	7749-15-15		POCKET	20
19	4	846	7749-15-11	846	7749-15-11		SILL, side, left	1

19	5	846	7749-15-21	288	326-1B	RING, lashing, straight	6
19	6	846	7749-16-1	846	7749-16-1	WELL, ring	6
19	9	846	7749-15-19	238	326-2	BRACKET, ring	16
19	10	846	7749-15-20	238	326-1A	RING, lashing, sill, bent	16
19	11	846	7749-15-5	846	7749-15-5	GUSSET	10
19	12	846	7749-15-8	846	7749-15-8	SILL, front	1
19	13	846	7749-3	846	D7749-3	MEMBER, main, left	1
19	14	846	7749-16-7	846	7749-16-7	DRAWBAR, channel, left	1
19	15	846	7749-17-6	846	7749-17-6	GUSSET	3
19	17	846	7749-16-6	846	7749-16-6	DRAWBAR, channel, right	1
19	20	846	7749-15-10	846	7749-15-10	SILL, side, right	1
21	1	846	8167-1-2	846	8167-1-2	CLIP, spring	4
21	2	846	7749-9-1	846	7749-9-1	SPRING ASSEMBLY, leaf, trailer	2
21	3	846	7749-9-2	846	7749-9-2	SADDLE, spring support, trailer	2
21	4	806	1610B	846	7749-9-10	FITTING, lubrication: steel; cadmium plated; hydraulic-type; $\frac{1}{4}$ in. overall height; stem $\frac{3}{8}$ in. long; $\frac{1}{8}$ in. dia. 27 threads per in., NPT, male, $\frac{3}{8}$ in. thread length; ball check valve.	2
21	5	846	7749-4-1	846	7749-4-1	CAP, trunnion axle	2
21	6	846	7749-4-3	846	7749-4-3	WASHER, trunnion, trailer	2
21	7	846	7749-4-4	846	7749-4-4	AXLE, trunnion	1
21	8	846	7749-9-4	846	7749-9-4	WEDGE, spring saddle	4
24		286	A16S60DW10	286	A-16S-60-DW10	AXLE ASSEMBLY	2
24	1	286	A15N1F	286	A-15-N1F	AXLE SPINDLE	2
24	2	286	A150037	286	A150037	RETAINER, grease, outer	4
24	3	286	A150035	286	A150035	WASHER, grease retainer	4
24	4	286	A150038	286	A150038	FELT, oil seal	4
24	5	286	A150036	286	A150036	RETAINER, grease, inner	4

Fig. No.	Index No.	Corps of Engineers stock No.		Manufacturer's part No.		Federal supply class and item ident. No.	Description	Qty. Per unit
		Code No.	Part No.	Code No.	Part No.			
24	---	892	572	892	572	100-0329	CUP, tapered roller bearing: single row; 5.5115 in. od, 1.1250 in. long, 1/2 in. back-face corner radius; SI No. 2 tolerances; MIL-STD-102A, identification code 711-00572-1000.	4
24	6	892	580	892	580	100-0643	CONE AND ROLLERS, tapered roller bearing: single row; straight bore; normal angle; 3.2500 in. bore dia, 1.4212 in. long, 5/8 in. back-face corner radius; w/roller retainer; SI No. 2 tolerances; MIL-STD-102A, 711-00580-3000.	4
24	---	892	553X	892	553X	142-4388	CUP, tapered roller bearing: single row; 4.8125 in. od, 1.1875 in. long, 1/2 in. back-face corner radius; SI No. 2 tolerances; MIL-STD-102A, identification code 711-00553-1078.	4
24	7	892	560	892	560	100-0283	CONE AND ROLLERS, tapered roller bearing: single row; straight bore; normal angle; 2.6250 in. bore dia, 1.4440 in. long, 5/8 in. back-face corner radius; w/roller retainer; SI No. 2 tolerances; MIL-STD-102A, identification code 711-00560-3000.	4
24	8	286	A150032B	286	A150032B	---	NUT, bearing, inner	4
24	9	286	A150034	286	A150034	427-2177	WASHER, wheel bearing nut	4



24	10	286	A150033	286	A150033	427-2176	NUT, plain hexagon	4
25	1	286	A150017-1	286	A150017-1	427-2174	HUB, 10 stud, 1 1/4 in.	4
25	2	204	13988	204	13988		STUD, shouldered, right-hand (IMO 2)	40
26	1	ORD	HO14-0514630				TIRE, pneumatic; truck and bus, 14 ply; mud and snow tread; 11.00x20.	8
26		ORD	HO14-0519450				TUBE, pneumatic; truck and bus; 10.50/ 11.00x20.	8
26	2	204	6595D8	286	D738820		WHEEL	8
26	3	204	37891	204	37891		NUT, wheel, outer: rh (IMO 5)	40
27	3	204	10708	204	10708		NUT, wheel, inner: rh (IMO 5)	40
33		203	221474	203	221474		FILTER, Type E	2
33		846	7749-16-13	846	7749-16-13		BRACKET, air filter	2
33	1	203	230107	203	230107		BODY	2
33	3	203	221053	203	221053		FILTER ELEMENT	2
33	4	203	214171	203	214171		SUPPORT	2
33	5	203	230109	203	230109		GASKET	2
33	6	203	230108	203	230108		COVER	2
33	7	203	230111	203	230111	426-8375	PLUG	2
33	8	203	203788	203	203788	496-2619	BOLT, machine	8
36		203	224667	846	BW224667		VALVE, exhaust check	1
36	1				234255		BODY, exhaust check valve	1
36	2				214232		DIAPHRAGM	1
36	3				214233		WASHER, diaphragm	1
36	4				214234		WASHER, lock	1
36	5				214235		SCREW, diaphragm	1
38		203	221818	846	BW221818		CHAMBER, air brake: stud Type B	4
38	1	203	202880	203	202880		PLATE, pressure	4
38	2	203	200001	203	200001		DIAPHRAGM (IMO 10)	4
38	3	203	205129	203	205129		ROD, push	4
38	4	203	212295	203	212295	249-2143	SPRING, outer, helical, compression (IMO 10).	4

Fig. No.	Index No.	Corps of Engineers stock No.		Manufacturer's part No.		Federal supply class and item ident. No.	Description	Qty. per unit
		Code No.	Part No.	Code No.	Part No.			
38	5	203	212294	203	212294	197-5885	SPRING, inner, helical, compression, (IMO 10).	4
38	6	203	223760	203	223760		PLATE, non-pressure	4
38	7	203	231609	203	231609		BOOT, rubber, push rod	4
38	8	203	202941	203	202941		STUD, non-pressure plate	8
38	13	203	205433	203	205433		YOKE (IMO 5).	4
		203	221914	846	BW221914		CHAMBER, brake, Type B (Identical to CHAMBER, Part No. BW221818 w/exception of the following two items).	4
38	3	203	217202	203	217202		ROD ASSEMBLY	4
38	8	203	212187	203	212187		STUD	8
41		203	222488	846	BW222488		ADJUSTER ASSEMBLY, slack, air brake (Replaced by ADJUSTER, Part No. 220269).	4
41	2	203	212631	203	212631		COVER, body	8
41	3	203	214465	203	214465		GEAR, worm	4
41	4	203	214463	203	214463		WORM	4
41	5	203		203	212357		PLUG, welch	4
41	6	203	231764	203	231764		BODY	4
41	7	203	201225	203	201225		BUSHING, arm	8
41	8	203	231746	203	231746		PIN, worm shaft lock	4
41	9	203	231747	203	231747		SHAFT, worm	4
41	10	203	231883	203	231883		SPRING, lock, worm shaft	4
41	11	203	231885	203	231885		LOCK, worm shaft	4
		203	220269	203	220269		ADJUSTER, slack	4

---	---	203	214463	203	214463	---	---	WORM	---	4
---	---	203	213086	203	213086	---	426-8216	BODY	---	4
---	---	203	201225	203	201225	---	---	BUSHING	---	4
---	---	203	212631	203	212631	---	---	COVER	---	12
---	---	203	212628	203	212628	---	---	GEAR	---	8
---	---	203	212629	203	212629	---	---	GEAR, worm	---	4
---	---	203	201326	203	201326	---	---	PLUG, screw	---	4
---	---	203	212630	203	212630	---	447-1118	SHAFT, worm	---	4
---	---	203	212109	203	212109	---	246-7019	SPRING, helical, compression	---	4
---	---	846	BW222487	846	BW222487	---	---	ADJUSTER ASSEMBLY, slack (Identical to ADJUSTER, Part No. BW222488 w/exception of BODY, Part No. 231765).	---	4
---	---	203	231765	203	231765	---	---	BODY	---	4
---	---	203	217904	203	217904	---	---	SLACK ADJUSTER, air brake (Identical to ADJUSTER, Part No. 220269, w/exception of BODY, Part No. 212708).	---	4
---	---	203	212708	203	212708	---	---	BODY	---	4
42	---	203	224821	846	BW224821	---	---	RESERVOIR AND VALVE ASSEMBLY, emergency relay (Includes 222705 VALVE ASSEMBLY and 7749-16-10 BRACKET).	---	1
42	1	203	224820	203	224820	---	---	RESERVOIR	---	1
42	3	203	222705	203	222705	---	---	VALVE, relay emergency	---	1
43	---	203	220165	846	BW2201 '5	---	---	COUPLING ASSEMBLY, air hose (IMO 10).	---	2
43	1	203	212953	203	212953	---	---	BODY	---	2
43	2	203	213630	203	213630	---	---	PACKING, preformed: rubber, $\frac{3}{4}$ in. id, $1\frac{1}{2}$ in. od, $\frac{3}{8}$ in. thickness of material, $\frac{1}{2}$ in. + 0.015 - 0.000 height.	---	2
43	3	203	212108	203	212108	---	447-1107	PLUNGER, locking	---	2

Fig. No.	Index No.	Corps of Engineers stock No.		Manufacturer's part No.		Federal supply class and item ident. No.	Description	Qty. per unit
		Code No.	Part No.	Code No.	Part No.			
43	4	203	212109	203	212109	246-7019	SPRING, helical, compression	2
43	5	203	212107	203	212107	447-1106	PLUG, spring	2
47	1	244	5941090	244	5941090		SCREW, door	8
47	2	244	5939830	244	5939830		DOOR	4
47	3	244	5939775	244	5939775		NUT, speed, sheet spring	8
47	4	244	5939843	244	5939843		FILTER ASSEMBLY, red, plastic (Used on LAMP ASSEMBLY, Part No. 7261918).	1
47	4	244	5939842	244	5939842		FILTER ASSEMBLY, amber, plastic (Used on LAMP ASSEMBLY, Part No. 7261917).	1
47	7	244	131014	244	131014		WASHER, plain	4
47	8	244	5939837	244	5939837		GROMMET AND WIRING ASSEMBLY	4
47	9	244	5939831	244	5939831		PLATE	4
47	10	244	5939841	244	5939841		GASKET, mounting	4
48	1	244	5939694	244	5939694		BODY	1
48	2	244	5939704	244	5939704		SOCKET AND WIRING ASSEMBLY	1
48	4	244	5936191	244	5936191		GASKET, door	1
48	5	244	5939712	244	5939712		DOOR ASSEMBLY	1
48	6	244	5940365	244	5940365		SCREW	6
49	1	846	8167-1-4	846	8167-1-4		CLAMP, shackle box	8
49	2	846	8167-1-3	846	8167-1-3		COVER, shackle box	4
49	6	846	8167-1-5	846	8167-1-5		SPACER: rubber, top	4
49	7	846	8167-1-8	846	8167-1-8		SHACKLE BOX	4
49	8	846	8167-1-7	846	8167-1-7		SPACER: rubber, side	8

49	10	846	8167-1-6	846	8167-1-6					4
51	1	286	UB5006R2	286	UB5006R2					2
51	1	286	UB5006L2	286	UB5006L2					2
51	2	286	UB5014	286	UB5014			496-3288		4
51	3	286	UB1017	286	UB1017					8
51	4	286	UB1014	286	UB1014			247-8649		8
51	4	286	UB1012	286	UB1012			247-8648		8
51	5	381	B2420	286	UB-1005			120-3114		4
51	6	286	UB1021	286	UB1021					4
51	7	286	UB1019	286	UB1019					4
51	8	286	UB1024	286	UB1024					2
51	9	286	UB1660-1	286	UB1660-1					8
51	10	286	UB5009	286	UB5009					8
51	11	286	UB1056-2	286	6801					4
51	12	286	UB1063	286	UB1056-2					2
51	13	286	UB1046-2	286	UB1046-2					8
51	14	286	UB1025	286	UB1025			427-2197		2
51	15	286	UB1013	286	UB1013					4
										16

Fig. No.	Index No.	Corps of Engineers stock No.		Manufacturer's part No.		Federal supply class and item ident. No.	Description	Qty. per unit
		Code No.	Part No.	Code No.	Part No.			
51	16	286	6203	286	6203	427-2201	BOLT, retainer	4
51	17	286	UB1055	286	UB1055		WIRE, retaining, brake	4
51	19	286	UB1008-1	286	UB1008-1	496-3237	PIN, anchor	8
51	21	286	UB5001A	286	UB5001A		SPIDER, brake, wheel: 16 hole, $\frac{1}{4}$ in. dia; 6% in. bolt circle; 5% in. pilot.	4
52		203	222705	203	222705	426-8369	VALVE ASSEMBLY, relay emergency	1
52	1	203	232038	203	232038		NUT, valve cap	1
52	2	203	224119	203	224119		VALVE, upper emergency	1
52	3	203	232019	203	232027		SEAT, valve	1
53	4	203	232049	203	232049		NUT, check valve cap	1
52	5	203	232040	203	232040		VALVE, disc	1
52	6	203	232039	203	232039		GUIDE, check valve	1
52	7	203	232026	203	232026		BODY, emergency valve	1
52	8	203	232850	203	232850		WASHER, lock	6
52	9			203	210106		SCREW, cap	4
52	10	203	233714	203	233714		VALVE, lower emergency	1
52	11	203	232031	203	232031	4268390	DIAPHRAGM, emergency valve	1
52	12	203	232032	203	232032		FOLLOWER, diaphragm	1
52	13	203		203	233704		NUT, lock	1
52	14	203	232034	203	232034	249-2141	SPRING, helical, compression	1
52	15	203	232035	203	232035		BODY, cover	1
52	16	203		203	213224		PIN	1
52	17	203	204261	203	204261		STRAINER, air	1
52	18	203	232043	203	232043	462-8391	NUT, supply cap	1
52	19			203	203821		SCREW, cap	2



Fig. No.	Index No.	Corps of Engineers stock No.		Manufacturer's part No.		Federal supply class and item ident. No.	Description	Qty. per unit
		Code No.	Part No.	Code No.	Part No.			
53	10	906	C1628	906	C-1628		LEG, outer	2
53	12			906	B-1627		NUT, screw	2
53	13	906	C1625	906	C-1625		SCREW, jack	2
53	17	906	D1623	906	D-1623		SHOE, lower leg	2
53	18	906	C1630	906	C-1630		BRACKET, inner leg	2
53	21	906	D1624	906	D-1624		KNUCKLE, inner leg	2
53	22	906	C1629	906	C-1629		LEG, inner	2
53	23	906	B1706	906	B-1706		COLLAR, jackscrew	2
53	24				No. MS-13		BEARING, thrust (Ohio ball bearing, No. MS-13).	2
53	25	906	B1631	906	B-1631		SHAFT, cross	2
53	28			906	B-979		COUPLING, shaft crank	2
53	29			906	B-1632		SHAFT, crank	2
53	30				4-16-36		BRACKET, shaft, crank	2
53	31				B-1077		BOSS, bracket	2
53	35				B-1213		HANDLE, crank	2
53	37				D-924		CRANK	2
53	40	906	B1733	906	B-1733		BEARING, jackscrew gear	1
57	1	GE	41-1290.070.200				BAR, socket wrench: cross; ¼ in. dia, 20 in. approx length; MIL-W-15838; Type III; class 6.	2
57	2	GE	41-9702.105.150				WRENCH, rim: truck; Budd No. 18806; 1½ in. hex opening; 1½ in. sq opening; 14½ in. long.	1



57 5 GE 24-1882.850.150 --- --- --- BAG: canvas; tool; mechanic's; size 15x 21 in. 1

Fig. No.	Index No.	Corps of Engineers stock No.		Manufacturer's Part No.		Federal supply class and item ident. No.	Description	Qty. per unit
		Code No.	Part No.	Code No.	Part No.			
1	5	846	7749-5-1	293	25-0-8		<b>Section III. REPLACEABLE PARTS</b>	2
		846	7749-14-6	293	25-A4-3		LOCKER ASSEMBLY, chain	2
		293	517-185-5	293	517-18-5		CHAIN ASSEMBLY, lock	1
		293	25-4-7	293	25-4-7		CHAIN	1
		846	7749-5-11	293	25-2-7		CLIP	1
		846	7749-5-10	293	25-8-6		DOOR, right-hand	1
		293	25-16-1A	293	25-16-1A		HINGE, door	2
		293	25-16-2	293	25-16-2		LINING, plywood, bottom	1
		293	25-16-1B	293	25-16-1B		LINING, plywood, side	2
		846	7749-5-14	293	25-A4-2		LINING, plywood, rear	1
		293	25-1-18	293	25-1-18		LOCK ASSEMBLY	2
		293	25-1-19	293	25-1-19		PANEL, bottom	1
		293	25A1-2	293	25-A1-2		PANEL, top and rear	1
		293	25-9-2	293	25-9-2		PANEL ASSEMBLY, side, left-hand	1
		293	25-1-20	293	25-1-20		LATE, reinforcing	1
		293	25A1-1	293	25-A1-1		PANEL, side	1
		846	7749-5-12	293	25-7-2		PANEL ASSEMBLY, side, right-hand	1
		293	50-18Z53	293	50-18Z53		(Same as PANEL, Part No. 25-A1-2).	1
		293	25-11-2B	293	25-11-2B		PIN, door hinge	4
							RIVET, mounting	1
							SLAM, door, left-hand	1

Fig. No.	Index No.	Corps of Engineers stock No.		Manufacturer's Part No.		Federal supply class and item ident. No.	Description	Qty. per unit
		Code No.	Part No.	Code No.	Part No.			
		846	7749-5-5	293	25-11-2A		SLAM, door, right-hand	1
		293	25-15-3	293	25-15-3		STRAP, mounting	1
1	6	293	25-0-9	293	25-0-9		LOCKER ASSEMBLY, pinch bar	1
		293	25-1-23	293	25-1-23		BOTTOM, locker box	1
		846	7749-14-6	293	25-A4-3		CHAIN ASSEMBLY, lock	2
		293	517-18-5	293	517-18-5		CHAIN	1
		293	25-4-7	293	25-4-7		CLIP	1
		293	25-9-3	293	25-9-3		CHANNEL, reinforcing	1
		293	25-2-8	293	25-2-8		DOOR	1
		846	7749-5-10	293	25-8-6		HINGE, door	2
		846	7749-5-14	293	25-A4-2		LOCK ASSEMBLY	1
		293	25-9-4	293	25-9-4		PLATE, end	1
		293	25-7-3	293	25-7-3		PIN, hinge	1
		293	50-18Z-53	293	50-18Z-53		RIVET, lock	2
		293	25-1-22	293	25-1-22		TOP, locker box	1
1	9	846	7749-4-5	293	20-1-14		LUNETTE, trailer drawbar	1
		846	7749-4-6	293	50-22-18		NUT, lunette mounting	1
		293	20-26-2	293	20-26-2		WASHER, taper	2
2	1	293	333-ODAMBER	293	29-31-27		REFLECTOR, amber (IMO 2)	4
2	1	293	333-ODRED	293	29-31-28		REFLECTOR, red (IMO 2)	4
11		846	7749-11-1A	846	7749-11-1A		RECEPTACLE AND COVER	1
19		293	10-0-25	293	10-0-25		FRAME ASSEMBLY	1
19	1	293	10-5-50	293	10-5-50		MEMBER, cross	9
19	2	293	10-3-61	293	10-3-61		SILL, rear	1
19	3	293	10-A10-2	293	10-A10-2		POCKET, rear stake	4

19	4	293	10A1-5	293	10-A1-5	SILL, side, left.	1
19	5	846	7749-15-21	293	523-7-4	RING, deck lashing.	6
19	6	846	7749-16-1	293	523-8-5	BRACKET, deck lashing ring.	6
19	7	293	10A10-1	293	10-A10-1	POCKET, side stake.	12
19	9	846	7749-15-19	293	523-13-12	BRACKET, ring.	16
19	10	846	7749-15-20	293	523-7-5	RING, lashing, sill, bent.	16
19	11	293	1-13-106	293	1-13-106	GUSSET	10
19	12	293	10-3-60	293	10-3-60	SILL, front.	1
19	13	293	1A1-16B	293	1-A1-16B	MEMBER, main, left.	1
19	14	293	20-6-25	293	20-6-25	DRAWBAR, channel, left.	1
19	15	293	20-6-22	293	20-6-22	GUSSET	3
19	17	293	20-6-24	293	20-6-24	DRAWBAR, channel, right.	1
19	20	293	10A1-4	293	10-A1-4	SILL, side, right.	1
21	1	846	7749-10-3	293	3-81-32	CLIP, spring.	4
21	2	846	7749-9-1	293	3-A3-20	SPRING ASSEMBLY.	2
21	3	846	7749-9-2	293	3-A5-6	SADDLE, spring support, trailer.	2
21	4	806	1610B	293	50-7A-1	FITTING, lubrication: steel, cadmium plated, hydraulic-type; $\frac{1}{4}$ in. overall height; stem $\frac{3}{8}$ in. long; $\frac{1}{8}$ in. dia, 27 threads per in., NPT, male, $\frac{3}{8}$ in. thread length; ball check valve.	2
21	6	846	7749-4-3	293	3-36-6	WASHER, trunnion, trailer.	2
21	7	846	7749-4-4	293	3-40-14	AXLE, trunnion.	1
21	8	846	7749-9-4	293	3-37-3	WEDGE, spring saddle.	4
24	1	293	60-0-104	293	60-0-104	AXLE, front.	1
24	1	293	60-0-105	293	60-0-105	AXLE, rear.	1
24	2	293	1205L272	293	6-8-2	RETAINER, outer.	4
24	3	290	1229K713	293	6-10-1	WASHER, grease retainer.	4
24	4	290	5X265	293	6-9-1	FELT, oil seal.	4
24	5	290	1205K271	293	6-8-1	RETAINER, grease, inner.	4
24	6	892	663	892	663	CONE, wheel bearing, inner.	4

Fig. No.	Index No.	Corps of Engineers stock No.		Manufacturer's part No.		Federal supply class and item ident. No.	Description	Qty. per unit
		Code No.	Part No.	Code No.	Part No.			
24		892	653	892	653		CUP, wheel bearing, inner	4
24	7	892	560	892	560		CONE, wheel bearing, outer	4
24		892	553X	892	553X		CUP, wheel bearing, outer	4
24	8	290	T-6879	290	T-6879		NUT, inner, left-hand	4
24	8	290	T-6880	290	T-6880		NUT, inner, right-hand	4
24	9	290	T-3840	290	T-3840		WASHER, wheel bearing nut	4
24	10	290	T-3564	293	6-4-2		NUT, wheel bearing, outer	4
25	1	290	A1-333H476	293	8-4A-40		HUB AND STUD ASSEMBLY, left-hand	1
25	1	290	A2-333H476	293	8-4A-4B		HUB AND STUD ASSEMBLY, right-hand.	1
25	2	204	18096	293	50-33A-9		STUD, hub and drum	10
26	1	ORD	HO14-0514630				TIRE, pneumatic; truck and bus, 14 ply; mud and snow tread; 11.00x20.	8
26		ORD	HO14-0519450				TUBE, pneumatic; truck and bus; 10.50/11.00x20.	8
26	2	204	65950D8	293	8-A1-493		WHEEL: 10 stud	8
26	3	204	37891	293	50-34C-1		NUT, wheel, outer	40
27	3	204	10708	293	50-34B-1		NUT, wheel, inner	40
33		203	221474	203	221474		FILTER, Type E	2
33	1	203	230107	203	230107		BODY	2
33	3	203	221053	203	221053		FILTER ELEMENT	2
33	5	203	214171	203	214171		SUPPORT	2
33	6	203	230109	203	230109		GASKET	2
33	7	203	230108	203	230108		COVER	2
				203	230111		PLUG	2
						426-8375		
						496-2619		

33	203	203788	203	203788	BOLT, machine	8
36	203	224667	846	BW224667	VALVE, exhaust check	1
36				234255	BODY, exhaust check valve	1
36				214232W	DIAPHRAGM	1
36				214233	WASHER, diaphragm	1
36				214234	WASHER, lock	1
36				214235	SCREW, diaphragm	1
38			846	BW221818	CHAMBER, air brake: stud Type B	4
38			203	202880	PLATE, pressure	4
38			203	200001	DIAPHRAGM (IMO 10)	4
38			203	205129	ROD, push	4
38			203	212295	SPRING, outer, helical, compression (IMO 10).	4
38			203	212294	SPRING, inner, helical, compression (IMO 10).	4
38			203	223760	PLATE, non-pressure	4
38			203	231609	BOOT, rubber, push rod	4
38			203	202941	STUD, non-pressure plate	8
38			203	205433	YOKE (IMO 5)	
38			203	217202	ROD ASSEMBLY	4
38			203	212187	STUD	8
41			846	BW222488	ADJUSTER ASSEMBLY, slack, air brake (Replaced by ADJUSTER, Part No. 220269).	4
41			203	212631	COVER, body	8
41			203	214465	GEAR, worm	4
41			203	214463	WORM	4
41			203	212357	PLUG, wetch	4
41			203	231764	BODY	4
41			203	201225	BUSHING, arm	8
41			203	231746	PIN, worm shaft lock	4

Fig. No.	Index No.	Corps of Engineers stock No.		Manufacturer's part No.		Federal supply class and item ident. No.	Description	Qty. per unit
		Code No.	Part No.	Code No.	Part No.			
41	9	203	231747	203	231747		SHAFT, worm	4
41	10	203	231883	203	231883		SPRING, lock, worm shaft	4
41	11	203	231885	203	231885		LOCK, worm shaft	4
42		203	224821	846	BW224821		RESERVOIR AND VALVE ASSEMBLY, emergency relay (Includes 222706 VALVE ASSEMBLY and 7749-16-10 BRACKET).	1
42	1	203	224820	203	224820		RESERVOIR	1
42	3	203	222705	203	222705		VALVE, relay emergency	1
43		203	220165	846	BW220165		COUPLING ASSEMBLY, air hose (IMO 10).	2
43	1	203	212953	203	212953		BODY	2
43	2	203	213620	203	213620		PACKING, preformed: rubber, 3/4 in. id, 1 1/2 in. od, 1/8 in. thickness of material, 1/2 in. + 0.015 — 0.000 height.	2
43	3	203	212108	203	212108	447-1107	PLUNGER, locking	2
43	4	203	212109	203	212109	246-7019	SPRING, helical, compression	2
43	5	203	212107	203	212107	447-1106	PLUG, spring	2
47	1	244	5941090	244	5941090		SCREW, door	8
47	2	244	5939830	244	5939830		DOOR, with glass and gasket	4
47	5	244	5939775	244	5939775		NUT, speed, sheet spring	8
47	6	244	5939843	244	5939843		FILTER ASSEMBLY, red, plastic (Used on LAMP ASSEMBLY, Part No. 7261918).	1

47	6	244	5939842	244	5939842	1	FILTER ASSEMBLY, amber, plastic (Used on LAMP ASSEMBLY, Part No. 7261917).
47	9	244	131014	244	131014	4	WASHER, plain
47	10	244	5939837	244	5939837	4	GROMMET AND WIRING ASSEMBLY
47	11	244	5939831	244	5939831	4	PLATE
47	12	244	5939841	244	5939841	4	GASKET, mounting
48	1	244	5939894	244	5939894	1	BODY
48	2	244	5939704	244	5939704	1	SOCKET AND WIRING ASSEMBLY
48	4	244	5936191	244	5936191	1	GASKET, door
48	5	244	5939712	244	5939712	1	DOOR ASSEMBLY
48	6	244	5940365	244	5940365	6	SCREW
49	1	244	8167-1-4	293	3-26-37	8	CLAMP, shackle box
49	2	846	8167-1-3	293	3-21-5	4	COVER, shackle box
49	6	846	8167-1-5	293	3-34-13	4	SPACER: rubber, top
49	7	846	8167-1-8	293	3-5-60	4	SHACKLE BOX
49	8	846	8167-1-7	293	3-34-12	8	SPACER: rubber, side
49	10	846	8167-1-6	293	3-34-14	4	SPACER: rubber, bottom
51	1	290	2210T2490	290	2210-T-2490	2	SHAFT AND CAM, right-hand
51	1	290	2210U2491	*290	2210-U-2491	2	SHAFT AND CAM, left-hand
51	2	286	UB5014	293	7-9-1	4	WASHER, camshaft spacer
51	3	286	UB1017	293	7-27-3	8	WASHER, grease retainer, brake cam- shaft.
51	4	286	UB1012	293	7-25-2	8	PACKING, preformed
51	4	286	UB1014	293	7-26-3	8	PACKING, preformed
51	5	381	B2420-OH	293	50-12-18	4	BEARING, needle
51	6	290	2258P354	290	2258-P-354	4	SPRING, brake shoe return
51	7	286	UB5015	293	7-9-23	4	WASHER, camshaft retainer
51	8	286	UB1020	293	7-22-3	2	BUSHING
51	9	286	UB1006-1	293	7-23-3	8	ROLLER, brake shoe cam
51	10	286	UB5009	293	7-24-1	8	SHAFT, brake shoe roller

Fig. No.	Index No.	Corps of Engineers stock No.		Manufacturer's part No.		Federal supply class and item ident. No.	Description	Qty. per unit
		Code No.	Part No.	Code No.	Part No.			
51	11	290	S265D	290	S-265-D		SCREW, Allen lock	4
51	12	290	A2-3222W673	290	A2-3222-W-673		SHOE ASSEMBLY, brake, primary lower.	4
51	12	290	A3-3222W673	290	A3-3222-W-673		SHOE ASSEMBLY, brake, secondary upper.	4
51	13	290	2240X1246	290	2240-X-1246		LINING, anchor end, primary lower	4
51	13	290	2240W1245	290	2240-W-1245		LINING, cam end, primary lower	4
51	13	290	2240Z1248	290	2240-Z-1248		LINING, anchor end, secondary upper	4
51	13	290	2240Y1247	293	2240-Y-1247		LINING, cam end, secondary upper	4
51	14	290	A2-3236N716	293	7-A2-23		SHIELD, dust, left-hand lower and right-hand upper.	8
51	15	290	1205W205	293	7-18-4		RETAINER, felt	16
51	16	290	2X68	298	7-78-4		BOLT, retainer	4
51	17	290	11725	290	11725		WIRE, retaining, brake, 6 in. long	8
51	19	286	UB1008-1	293	7-12-1		PIN, anchor	8
51	21	290	3211A833	290	3211-A-833		SPIDER, brake	4
52		203	222705	203	222705	426-8369	VALVE ASSEMBLY, relay emergency	1
52	1	203	232038	203	232038		NUT, valve cap	1
52	2	203	224119	203	224119		VALVE, upper emergency	1
52	3	203	232619	203	232027		SEAT, valve	1
52	4	203	232049	203	232049		NUT, check valve cap	1
52	5	203	232040	203	232040		VALVE, disc.	1
52	6	203	232039	203	232039		GUIDE, check valve	1
52	7	203	232026	203	232026		BODY, emergency valve	1
52	8	203	232850	203	232850		WASHER, lock	6



52	9	203	210106	SCREW, cap	4
52	10	203	233714	VALVE, lower emergency	1
52	11	203	232031	DIAPHRAGM, emergency valve	1
52	12	203	232032	FOLLOWER, diaphragm	1
52	13	203	233704	NUT, lock	1
52	14	203	232034	SPRING, helical, compression	1
52	15	203	232035	BODY, cover	1
52	16	203	213224	PIN	1
52	17	203	204261	STRAINER, air	1
52	18	203	232043	NUT, supply cap	1
52	19	203	203821	SCREW, cap	2
52	20	203	232223	SCREW, cap	2
52	21	203	213230	CAP, pressure regulator	1
52	22	203	213229	SHIM: 0.010 in. (as required)	1
52	23	203	213228	SPRING, helical, compression	1
52	24	203	213226	RING, diaphragm	1
52	25	203	211542	NUT, plain, hexagon	1
52	26	203	211541	FOLLOWER, lower	1
52	27	203	213227	DIAPHRAGM	1
52	28	203	211595	FOLLOWER, upper	1
52	29	203	211538	STEM	1
52	30	203	232036	SEAT, valve	1
52	31	203	202735	GASKET: blanking cover	1
52	32	203	232065	NUT, cap, supply valve	1
52	33	203	232064	SPRING, helical, compression	1
52	34	203	232063	VALVE, supply	1
52	35	203	232061	SEAT, valve supply	1
52	36	203	232068	GROMMET, 1 in. od	1
52	37	203	232191	BODY	1
52	38	203	230992	STUD	4
52	39	203	232066	RING, decompress, air supply valve	1

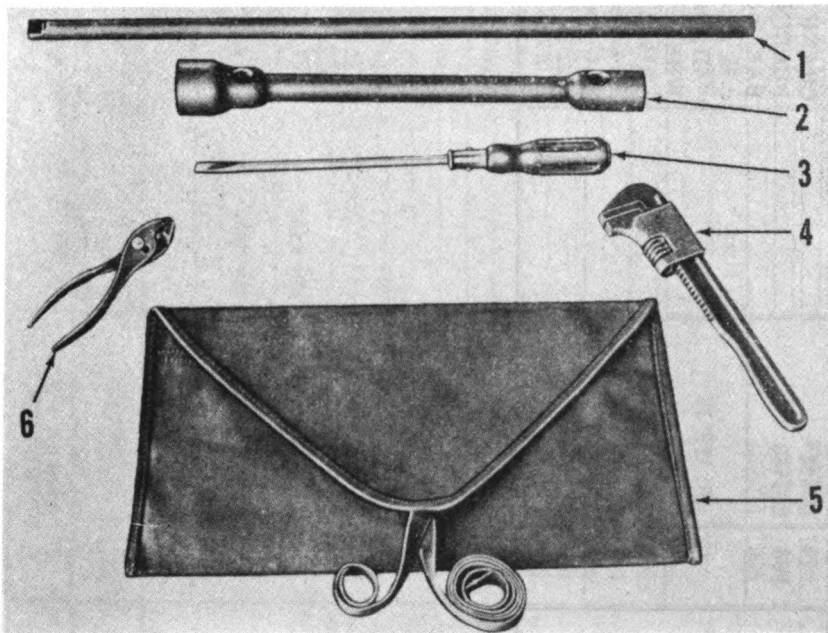
Fig. No.	Index No.		Corps of Engineers stock No.		Manufacturer's part No.		Federal supply class and item ident. No.	Description	Qty. per unit
	Code No.	Part No.	Code No.	Part No.	Code No.	Part No.			
52	40	203	232067	203	232067		GUIDE, diaphragm	1	
52	41	203	232068	203	232068		GROMMET: $\frac{1}{4}$ in. od	1	
52	42	203	232069	203	232069	426-8395	RING, diaphragm	1	
52	43	203	233794	203	233794		DIAPHRAGM	1	
52	44	203	232072	203	232072	426-8392	SEAT	1	
52	45			203	203145		NUT	6	
53	2	906	C-1258	906	C-1258		COVER, frame bracket	2	
53	3			906	B-1069		NUT, stop, elastic (#42-TE-164)	2	
53	4	906	C-1626	906	C-1626		GEAR, jackscrew	2	
53	6	906	B978	906	B-978		GEAR, cross shaft	2	
53	7	906	D1622	906	D-1622		BRACKET, head	2	
53	10	906	C1628	906	C-1628		LEG, outer	2	
53	12			906	B-1627		NUT, screw	2	
53	13	906	C1625	906	C-1625		SCREW, jack	2	
53	17	906	D1623	906	D-1623		SHOE, lower leg	2	
53	18	906	C1630	906	C-1630		BRACKET, inner leg	2	
53	21	906	D1624	906	D-1624		KNUCKLE, inner leg	2	
53	22	906	C1629	906	C-1629		LEG, inner	2	
53	23	906	B1706	906	B-1706		COLLAR, jackscrew	2	
53	24				No. MS-13		BEARING, thrust (Ohio ball bearing, No. MS-13)	2	
53	25	906	B1631	906	B-1631		SHAFT, cross	2	
53	28			906	B-979		COUPLING, shaft crank	2	
53	29			906	B-1632		SHAFT, crank	2	
53	30				4-16-36		BRACKET, shaft, crank	2	

53	31					B-1077				BOSS, bracket.	2
53	35					B-1213				HANDLE, crank	2
53	37					D-924				CRANK	2
53	40	906	B-1733			B-1733	906			BEARING, jackscrew gear	2
57	1	GE	41-1290.070.200							BAR, socket wrench; cross; $\frac{1}{4}$ in. dia, 20 in. approx length; MIL-W-16638; Type III; class 6.	1
57	2	GE	41-9702.105.150							WRENCH, rim; truck; Budd No. 18806; $1\frac{1}{2}$ in. hex opening; $\frac{1}{4}$ in. sq opening; $14\frac{1}{2}$ in. long.	1
57	5	GE	24-1882.850.150							BAG: canvas; tool; mechanic's; size 15x 21 in.	1

# APPENDIX III

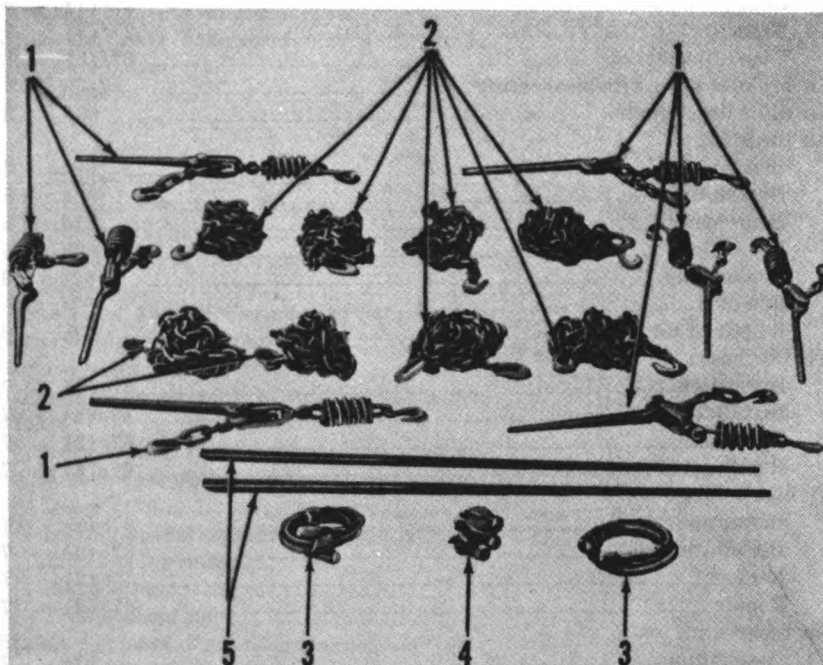
## ON-EQUIPMENT TOOLS AND ACCESSORIES

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- |   |                     |   |                   |
|---|---------------------|---|-------------------|
| 1 | Wheel wrench handle | 4 | Adjustable wrench |
| 2 | Wheel wrench        | 5 | Tool bag          |
| 3 | Screw driver        | 6 | Pliers            |

*Figure 57. On-equipment tools.*



- |                         |                         |
|-------------------------|-------------------------|
| 1 Loadbinder (8 pcs)    | 3 Air hose (2 pcs)      |
| 2 Lashing chain (8 pcs) | 4 Hose coupling (2 pcs) |
| 5 Pinch bar (2 pcs)     |                         |

*Figure 58. Accessories.*

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