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TM 9-1767E

WAR DEPARTMENT TECHNICAL MANUAL

ORDNANCE MAINTENANCE

Semitrailer M15, Component of
40-Ton Tank Transporter Trailer
Truck M25

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17 FEBRUARY 1944

ORDNANCE MAINTENANCE

Semitrailer M15, Component of
40-Ton Tank Transporter Trailer
Truck M25



WAR DEPARTMENT

Washington 25, D. C., 17 February 1944

TM 9-1767E, Ordnance Maintenance: Semitrailer M15, Component of 40-Ton Tank Transporter Trailer Truck M25, is published for the information and guidance of all concerned.

[A.G. 300.7 (10 Aug 43)
O.O.M. 461/(TM 9) RA (18 Feb 44)]

BY ORDER OF THE SECRETARY OF WAR:

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(For explanation of symbols, see FM 21-6.)

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**ORDNANCE MAINTENANCE — SEMITRAILER M15, COMPONENT OF
40-TON TANK TRANSPORTER TRAILER TRUCK M25**

CHAPTER 1

INTRODUCTION

	Paragraph
Scope	1
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1. SCOPE.

a. The instructions contained in this manual are for the information and guidance of personnel charged with the maintenance and repair of the Semitrailer M15 which is a component of the 40-ton Tank Transporter Trailer Truck M25 (figs. 1 and 2). This manual does not contain information which is intended primarily for using arms, since such information is available to ordnance maintenance personnel in TM 9-767.

b. This manual contains a description of and procedure for disassembly, inspection, repair, and assembly of the slack adjuster, internal brake assembly, relay-emergency valve, trunnion axle, walking beam, supports, hoist, hubs, drums, and related items.

c. TM 9-767 contains operating and organizational maintenance instructions for the 40-ton Tank Transporter Trailer Truck M25, of which the Semitrailer M15 is a part.

d. Ordnance maintenance instructions for the Tractor Truck M26, which is the forward component of the 40-ton Tank Transporter Trailer Truck M25, are contained in the following:

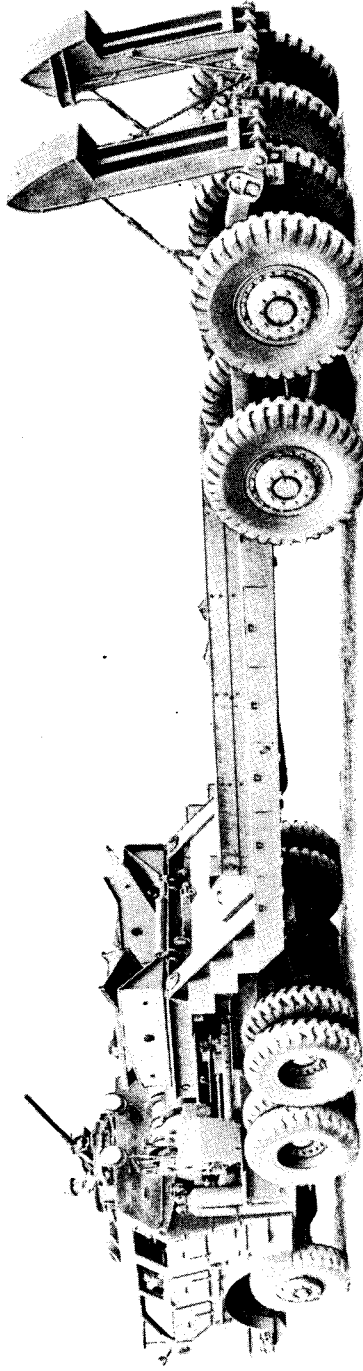
- (1) TM 9-1767A covers the engine and engine accessories.
- (2) TM 9-1767B covers the power train.
- (3) TM 9-1767C covers the body, chassis, and winches.

2. MWO AND MAJOR UNIT ASSEMBLY REPLACEMENT RECORD.

a. **Description.** Every vehicle is supplied with a copy of AGO Form No. 478, which provides a means of keeping a record of each MWO (FSMWO) completed or major unit assembly replaced. This form includes spaces for the vehicle name and U. S. A. registration number, instructions for use, and information pertinent to the work accomplished. It is very important that the form be used as directed, and that it remain with the vehicle until the vehicle is removed from service.

b. **Instructions for Use.** Personnel performing modifications or major unit assembly replacements must record clearly on the form a description of the work completed, and must initial the form in the

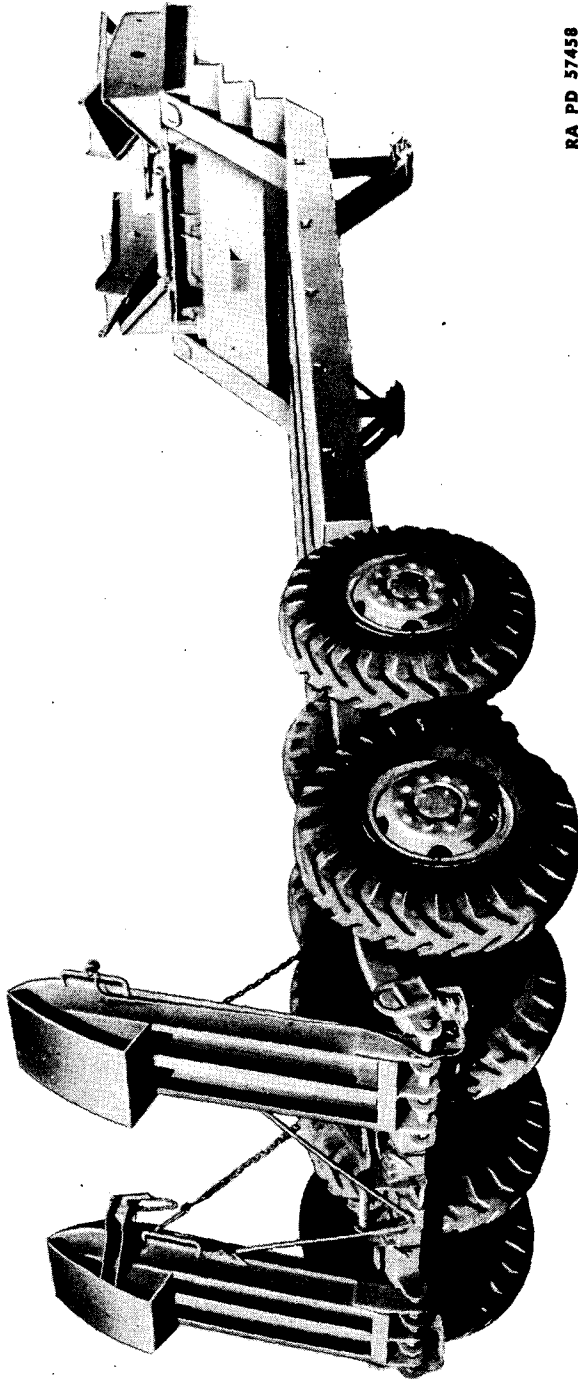
INTRODUCTION



RA PD 48207

Figure 1 — 40-ton Tank Transporter Trailer Truck M25

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RA PD 57458

Figure 2 — Semitrailer M15

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columns provided. When each modification is completed, record the date, hours and/or mileage, and MWO number. When major unit assemblies, such as engines, transmissions, or transfer cases, are replaced, record the date, hours and/or mileage, and nomenclature of the unit assembly. Minor repairs and minor parts and accessory replacements need not be recorded.

c. **Early Modifications.** Upon receipt by a third or fourth echelon repair facility of a vehicle for modification or repair, maintenance personnel will record the MWO numbers of modifications applied prior to the date of AGO Form No. 478.

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CHAPTER 2
BRAKE SYSTEM

Section I
SLACK ADJUSTER

	Paragraph
Description and data	3
Test	4
Disassembly, cleaning, inspection, and assembly	5
Fits and tolerances	6

3. DESCRIPTION AND DATA.

a. **Description.** The slack adjusters (fig. 3) act as brake levers, and also provide a quick and easy method of adjusting the brakes. The slack adjusters are mounted on the brake camshafts, and are attached to the equalizers. Air pressure in the brake cylinder moves the slack adjusters and the camshafts, thus expanding the shoes against the brake drums.

b. **Data.**

Make	Fruehauf Trailer Company
Model	51430
Weight	2¾ lb
Length of leverage	6 in.
Quantity per trailer	8

4. TEST.

a. Place arm end of slack adjuster in vise with the adjusting screw up. Try turning adjusting screw with an 8-inch wrench. If adjusting screw fails to turn, this indicates the assembly lacks lubrication, a tooth is stripped on gear, or worm gear is broken. Replace the worn and defective parts. After testing worm assembly, place a ½-inch rod end pin through bushing. If pin is extremely loose, replace the bushing.

5. DISASSEMBLY, CLEANING, INSPECTION, AND ASSEMBLY.

a. **Disassembly** (fig. 3). Screw out worm assembly in a counter-clockwise direction, and remove assembly and lock washer from housing. **NOTE: Do not disassemble the worm assembly.** Pry snap ring out of adjuster housing. Lift out felt retainer, outer felt, worm gear, and inner felt. Remove lubrication fitting. Press bushings out of slack adjuster arm.

b. **Cleaning and Inspection.**

(1) Remove all grease from slack adjuster housing. Wash housing and all parts in dry-cleaning solvent.

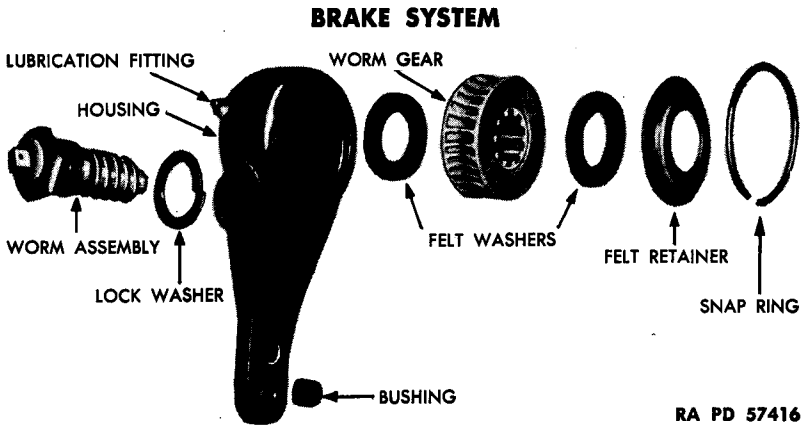


Figure 3 – Slack Adjuster – Disassembled

(2) Inspect worm gear for broken or sheared teeth and excessive wear. Replace if unserviceable. Check worm assembly for cracks, sheared or broken teeth, or worn threads. If defective, replace. After testing worm assembly, test bushing in slack adjuster arm for excessive wear by inserting $\frac{1}{2}$ -inch rod end pin through bushing. If pin fit is extremely loose, replace bushing (subpar. c, following). Check felts for wear and evidence of disintegration. Secure replacement if necessary.

c. Assembly. Press bushing into slack adjuster arm. Install lubrication fitting in adjuster housing. Place several drops of engine oil on the two felt washers, and work the oil into the felts. Install one felt in cavity of adjuster housing. Coat surface of teeth of worm gear with GREASE, general purpose, No. 1. Install worm gear in housing next to felt. Place other felt next to gear. Install felt retainer next to felt. Secure felt retainer to housing with snap ring, and make certain snap ring is fully seated in groove in housing. Place arm end of slack adjuster in vise with worm assembly hole up. Coat surface of worm assembly with general purpose grease No. 1. Place lock washer over worm. Turn worm assembly into housing and tighten. Fill housing with general purpose grease, using grease gun.

6. FITS AND TOLERANCES.

a. Bushing.

Ream diameter	0.501 in.
Outside diameter	0.628 in.
Length	$\frac{3}{8}$ in.

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**Section II
INTERNAL BRAKE**

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Disassembly of internal brakes into subassemblies	8
Brake shoes	9
Adapter	10
Assembly of subassemblies	11
Fits and tolerances	12

7. DESCRIPTION AND DATA.

a. The brakes (fig. 4) are of the internal-expanding, double-anchor, two-shoe type. The shoes are operated by an S-type cam. The brake shoes are mounted on eccentric anchor pins and a cam. The camshaft is provided with a 360-degree slack adjuster. The camshaft is carried on a self-aligning, ball-bearing plus needle bearing to prevent drag. The brakes are actuated by four air cylinders mounted in the hollow section of the walking beam. Forward movement of the cylinders operates the camshaft, which expands the two shoes against the drum.

b. Data.

Make	Fruehauf Trailer Company
Model	SP PL 480
Weight	94 lb
Quantity used	8
Diameter of shoes	16 in.
Width of shoes	6 in.
Number of mounting bolts	8
Number of linings per shoe	2

8. DISASSEMBLY OF INTERNAL BRAKES INTO SUBASSEMBLIES.

a. **Remove Brake Shoes.** Remove brake assembly from vehicle as outlined in part III of TM 9-767. Remove anchor pin bracket from the assembly by tapping bracket off anchor pins with a light hammer. Remove the two shoes from the assembly by pulling shoes off anchor pins and S-cam. Remove the two 3/8-inch bolts holding guide return spring to the shoe assemblies.

b. **Adapter.** Remove six cap screws holding dust shields to mounting plate adapter. Pry snap ring out of groove in camshaft, and pull snap ring, felt retainer, and felt washer off cam. Pull cam out of adapter. Remove the two locking nuts holding the two anchor pins in the adapter. Drive out the anchor pins.

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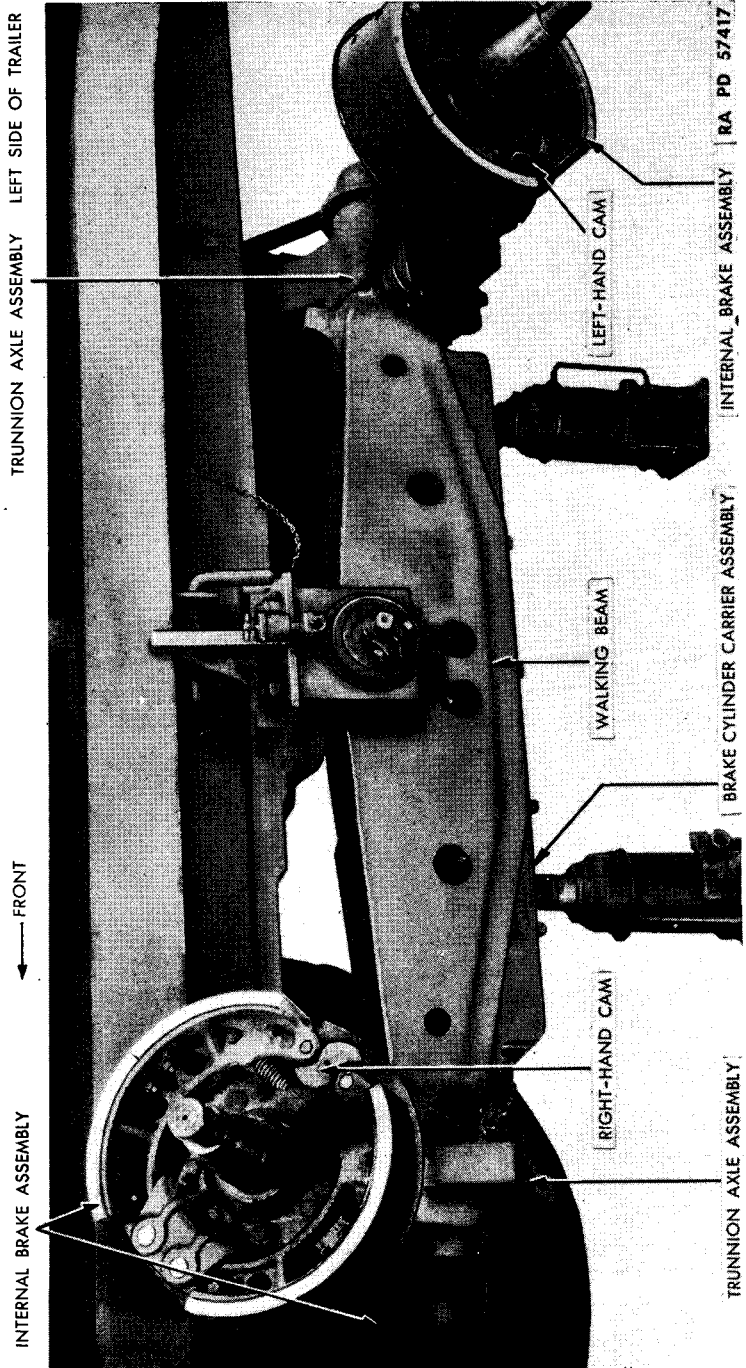


Figure 4 — Internal Brake and Under Carriage

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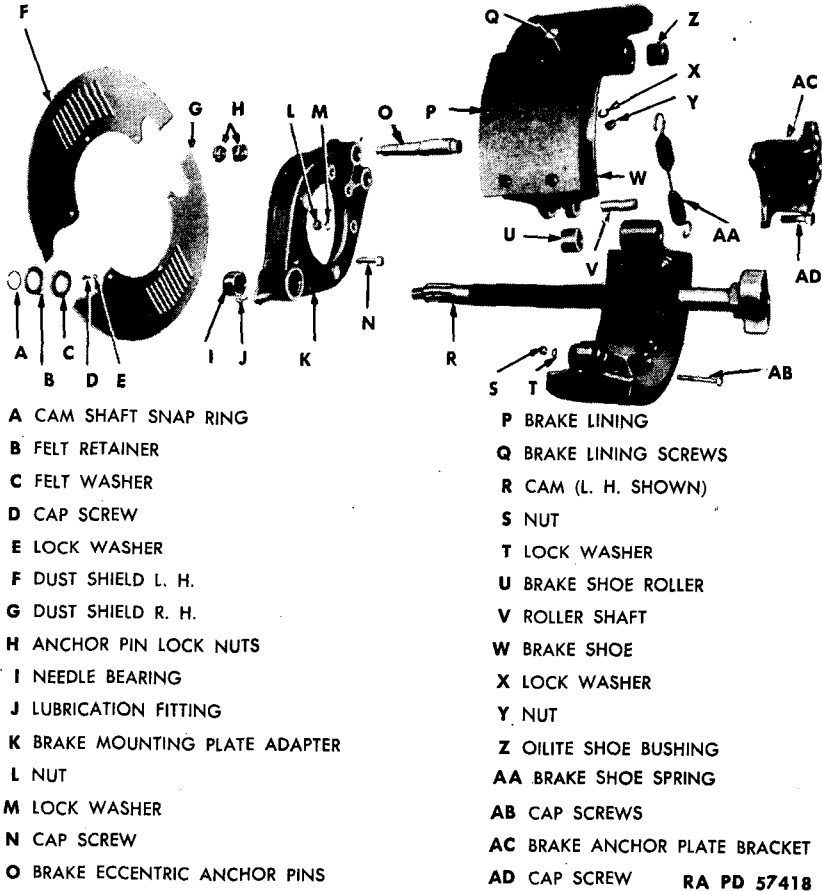


Figure 5 — Internal Brake Assembly — Disassembled

9. BRAKE SHOES.

a. **Cleaning.** Steam-clean all parts, including lining.

b. **Disassembly.** Remove all cap screws, lock washers, and nuts holding lining to shoes. **NOTE: If lining is to be reinstalled on shoe after disassembly, mark each lining and shoe for reassembly.** Roller shaft is held in shoe by four heavy punch marks. Try turning roller by hand. If roller fails to rotate, drive out roller shaft, and remove roller. **NOTE: Brake shoe bushings are of the Oilite-type, and replacement is rarely necessary.** If bushings are excessively worn or out-of-round, press out the bushings.

c. **Repair.**

(1) **BUSHING REPLACEMENT.** Press one bushing into bushing bore, leaving the end of bushing flush with face of shoe. Press other bushing

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into bushing bore from opposite side in the same manner. Shoe bushings come reamed to proper diameter. Try anchor pin through bushings for size. If reaming is necessary, ream to 1.132 inches (par. 12).

(2) **ROLLERS.** Position roller in slotted section of shoe. Aline hole in roller with shaft hole in shoe. Secure roller to shoe by driving roller shaft into position in roller bosses, using a soft hammer. Anchor roller shaft in shoe by placing four heavy center punch marks in shoe bosses adjacent to shaft at four different places equally spaced around end of roller shaft. **CAUTION:** *When making punch marks do not strike roller shaft with punch.*

(3) **LINING.** Remove all rust on surface of shoes. Place a screw in hole of brake lining. If screw head projects out beyond countersunk surface, discard lining. Secure the four linings to shoes using four screws, lock washers, and nuts in each lining. Fasten the guide return spring to the two shoes, using two $\frac{3}{8}$ -inch bolts and lock washers.

10. ADAPTER.

a. **Disassembly.** Needle bearings are a pressed fit. Prior to disassembly, place finger on needle bearings, and try to rotate rollers. If rollers do not revolve, press out the two needle bearing assemblies. Remove lubrication fitting.

b. **Cleaning.** Clean all parts, using SOLVENT, dry-cleaning. Polish the eccentric surface of anchor pins, using 5/0-180 abrasive cloth. Inspect inner surface of needle bearing hole for burrs and scraped metal surface. Remove burrs with a round file.

c. **Repair.** Check adapter for sheared dust shield cap screws. If a broken screw is found, remove broken portion. Check diameter of needle bearing hole (par. 12). Check threads in lubrication hole, and clean worn thread by retapping. Check diameter of anchor pin holes, making certain they are not out-of-round (par. 12).

d. **Assembly.** Press one needle bearing into adapter. Press needle bearing into bore of adapter until bearing is in $\frac{1}{16}$ inch beyond outer face of adapter. Press other needle bearing into adapter bore from opposite side in the same manner. Place a light film of grease over inner surface of anchor pins. Place the two anchor pins in anchor pin holes. Install the four lock nuts on the two anchor pins, but do not tighten.

11. ASSEMBLY OF SUBASSEMBLIES.

a. Place light film of general purpose grease No. 1 over surface of anchor pins, and in the space between the two shoe bushings. Fill the space between the two needle bearings with general purpose grease. Work the grease between each of the rollers. Place the cam through adapter. Place felt over shaft end. Place retainer next to felt. Move the felt and retainer next to adapter. Secure felt and retainer to camshaft, using snap ring. Place upper shoe assembly half-

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way onto anchor pins, with the roller end of shoe resting on S-cam. Place pry bar between lower shoe assembly and adapter. Pry down on lower shoe, working shoe on anchor pin and S-cam. Coat upper and lower surfaces of S-cam with general purpose grease No. 2. Install the two dust shields, but do not tighten cap screws holding dust shield to adapter. *NOTE: Cap screws holding dust shield to adapter, and the four nuts holding anchor pins, should not be tightened until after brake assembly is installed on trailer axle. These parts must be removed to accomplish major brake adjustment in accordance with procedure outlined in TM 9-767.*

12. FITS AND TOLERANCES.

a. Description.	Max. (in.)	Min. (in.)	Desired (in.)	Replace Beyond (in.)
Adapter				
Anchor pin hole	1.002	1.000	1.001	0.96875
Needle bearing hole	1.750	1.750	1.750	1.74995
Anchor pin at eccentric	1.129	1.125	1.127	1.0
Brake shoes				
Bushing outside diameter	1.3155			
Bushing ream diameter (after assembly)			1.132	1.0
Bushing length			1.0	
Lining			0.75	0.25
Brake shoe bushing hole			1.313	1.2805

Section III
RELAY-EMERGENCY VALVE

Description and data	Paragraph
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Check valve and diaphragm assembly	16
Emergency valve body	17
Valve plunger and diaphragm	18
Valve and cage assembly	19
Lower valve body	20
Assembly of subassemblies	21

13. DESCRIPTION AND DATA.

a. **Description.** The relay-emergency valve (fig. 11) serves as a relay station to speed up the application or release of the trailer brakes, and also provides a means of automatically applying the

BRAKE SYSTEM

trailer brakes in case the trailer breaks away from the tractor. Fundamentally, its function is to operate so as to deliver and maintain the same air pressure in the trailer brake cylinders as the brake valve on the tractor delivers to it.

b. Data.

Make Midland Steel Products Co.
Model N2504A
Weight 7½ lb
Interchangeable with Bendix-Westinghouse PC220353

14. TEST (figs. 6 and 11).

a. **Couple Relay-emergency Valve to Test Stand.** Using Westinghouse portable test stand, connect the relay-emergency valve to test stand in the same relative position as shown in piping diagram (fig. 6). Install one pipe plug in port marked "CYL" (cylinder); install one pipe plug in port marked "RES" (reservoir). Remove exhaust valve.

b. **Test Compensating Characteristics.** A properly functioning valve will admit the same air pressure to the brake cylinder (gauge "A") as is admitted to the service line (gauge "B"). Admit air in the emergency and service lines. Operate the tractor valve and observe gauges "A" and "B". Unbalanced pressures indicate that the by-pass port in the discharge valve is plugged. Slow response in gauge "A" indicates that the plunger is corroded and sticking. Disassemble and clean (par. 15).

c. **Test for Leakage in Release Position.** Admit air to emergency line; disconnect service line. Apply soapy water to the exhaust port and to service line coupling. A 3-inch bubble in 10 seconds is permissible. Excessive leakage at exhaust port is caused by a worn check valve body or a worn upper seal. Replace check valve body and upper seal. Excessive leakage at service line connection is caused by a dirty or worn inlet valve. Clean or replace inlet valve.

d. **Test Leakage in Applied Position.** Admit air to emergency and service lines, and apply soapy water to exhaust port. Permissible leakage at 20 pounds pressure in service line must not exceed a 3-inch bubble in 10 seconds. Excessive leakage is caused by one of the following:

- (1) **WORN OR DIRTY DISCHARGE VALVE.** Clean or replace.
- (2) **WORN DISCHARGE VALVE PLUNGER.** Replace plunger.
- (3) **WORN LOWER SEAL.** Replace lower seal.
- (4) **WORN CHECK VALVE PLUNGER.** Replace check valve plunger.
- (5) **WORN UPPER SEAL.** Replace upper seal.

e. **Test Leakage in Emergency Position.** Admit air to emergency line. Disconnect emergency line coupling. Disconnect service line coupling. Observe gauges "A" and "B". Apply soapy water to exhaust

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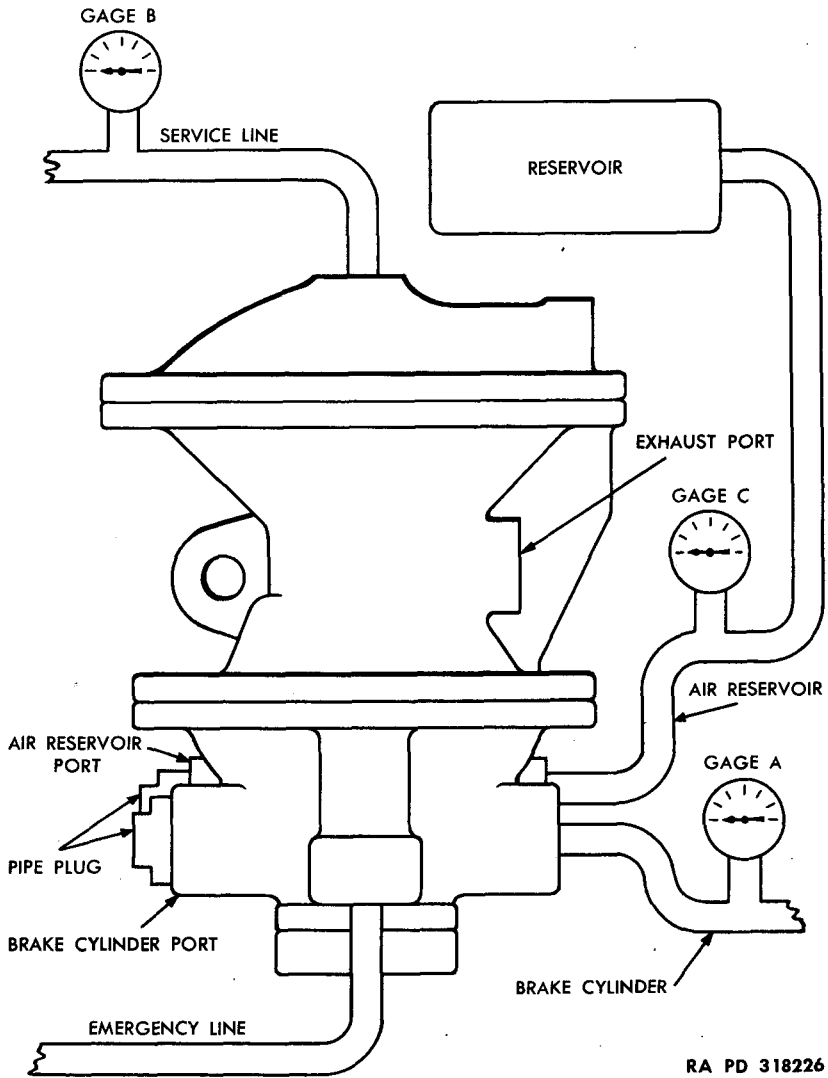


Figure 6 — Piping Diagram for Testing Relay-emergency Valve

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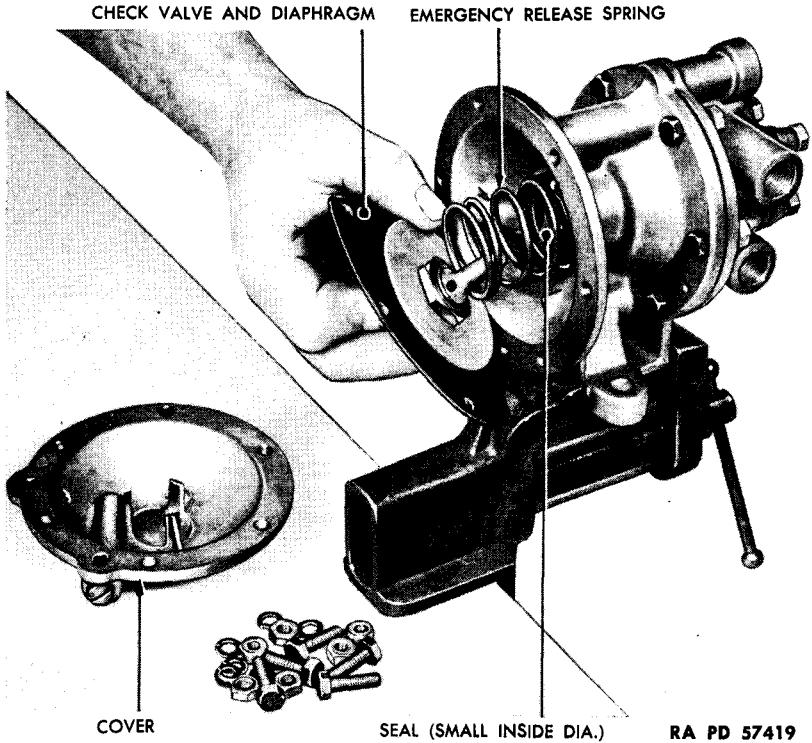


Figure 7 – Removing Check Valve and Diaphragm Assembly

port and to emergency line coupling. If gage "A" fails to show pressure when the emergency line coupling is disconnected, the failure is due to a frozen check valve plunger, frozen check valve disk, or a defective emergency valve diaphragm. Excessive leakage at exhaust port is caused by a worn or dirty discharge valve. Clean or replace discharge valve. Leakage at emergency line coupling is caused by a defective check valve disk, or a defective emergency valve diaphragm. Replace check valve disk or emergency valve diaphragm. Excessive leak at service line port is caused by a defective by-pass valve seat, or a defective relay valve diaphragm. Replace worn or damaged parts.

15. DISASSEMBLY OF RELAY-EMERGENCY VALVE INTO SUBASSEMBLIES.

a. Remove Check Valve and Diaphragm Assembly (fig. 7). With the valve held firmly in vise, remove six cap screws, six nuts, and six lock washers holding cover to body. Pry cover off emergency valve body. Lift out check valve and diaphragm assembly and emer-

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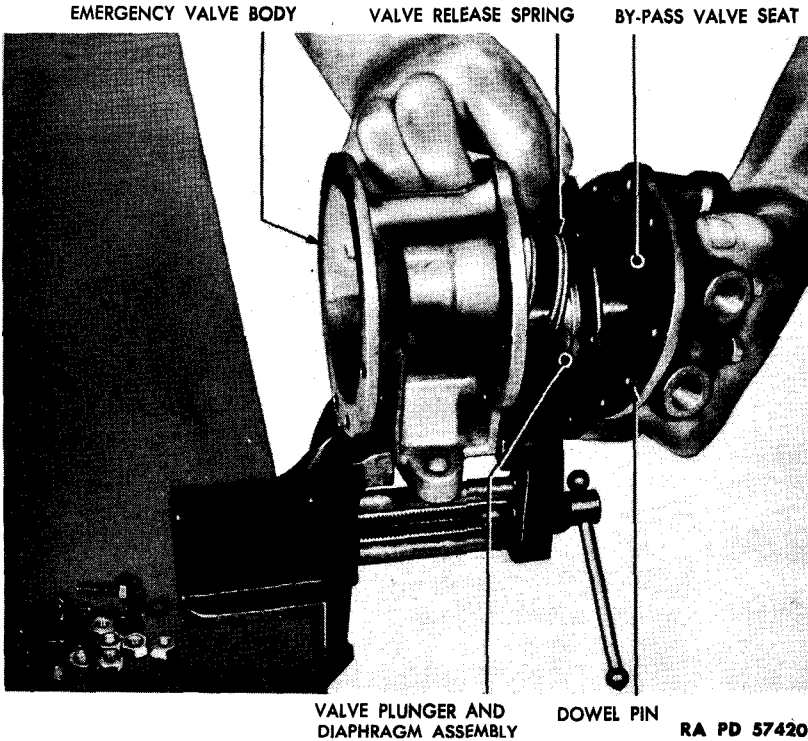


Figure 8 — Removing Valve Body and Valve Plunger Assembly

gency release spring. **CAUTION:** *When prying cover off emergency valve body, use care not to puncture diaphragm.*

b. Remove Valve Body and Valve Plunger Assembly (fig. 8). Remove six cap screws, six lock washers, and six nuts holding emergency valve body to lower valve body. Pry emergency valve body and lower valve body apart. Lift out valve release spring, dowel pin, valve plunger and diaphragm assembly from emergency valve body. **CAUTION:** *When prying emergency valve body from valve body, use care not to puncture relay valve diaphragm.*

c. Remove Inlet Valve Cage Assembly (fig. 9). Remove four nuts and four lock washers from four studs holding inlet valve cover to lower valve body. Lift off inlet valve cover and gasket. Lift out inlet valve return spring. Lift out inlet valve cage and valve assembly. Remove gasket.

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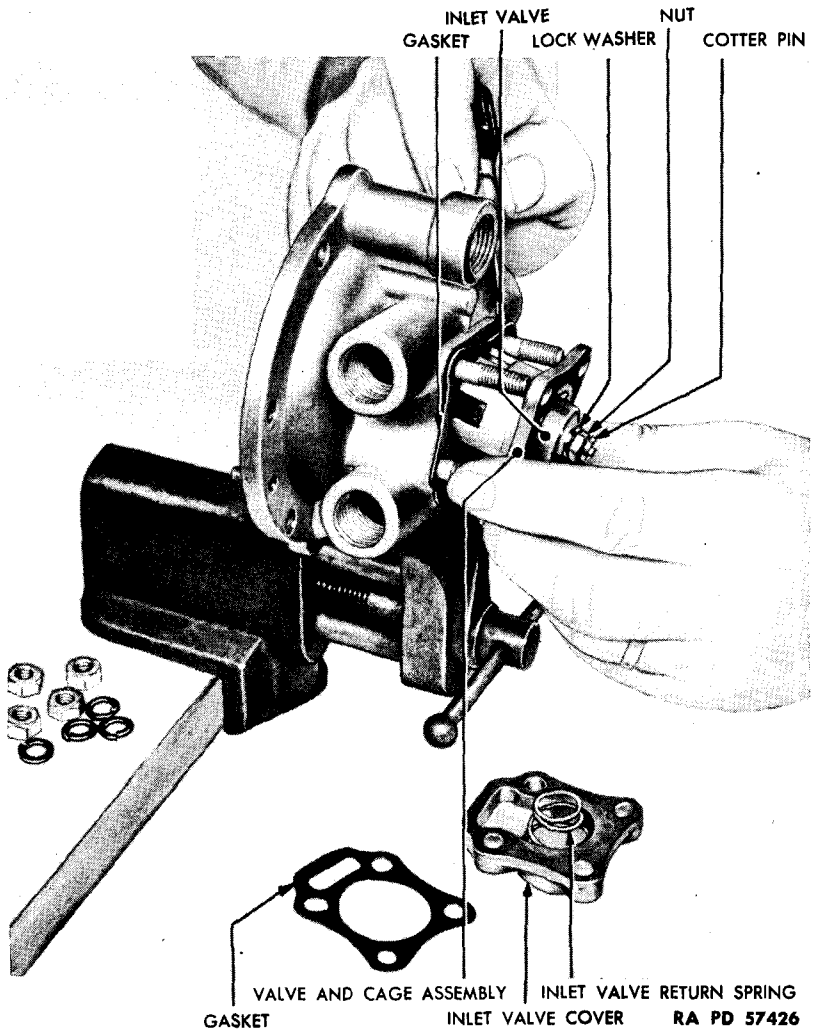


Figure 9 – Removing Valve and Cage Assembly

16. CHECK VALVE AND DIAPHRAGM ASSEMBLY.

a. **Disassembly** (fig. 10). Depress disk with thumb. Pry out snap ring holding check valve disk in check valve body. Lift out check valve disk and check valve spring. With two wrenches, remove nut from valve body. Separate diaphragm plates from diaphragm. **CAUTION:** Do not attempt to remove nut from valve body with assembly in vise. Vise jaws will score face of valve body.

b. **Cleaning.** Steam-clean all metal parts. Wipe rubber (Neo-

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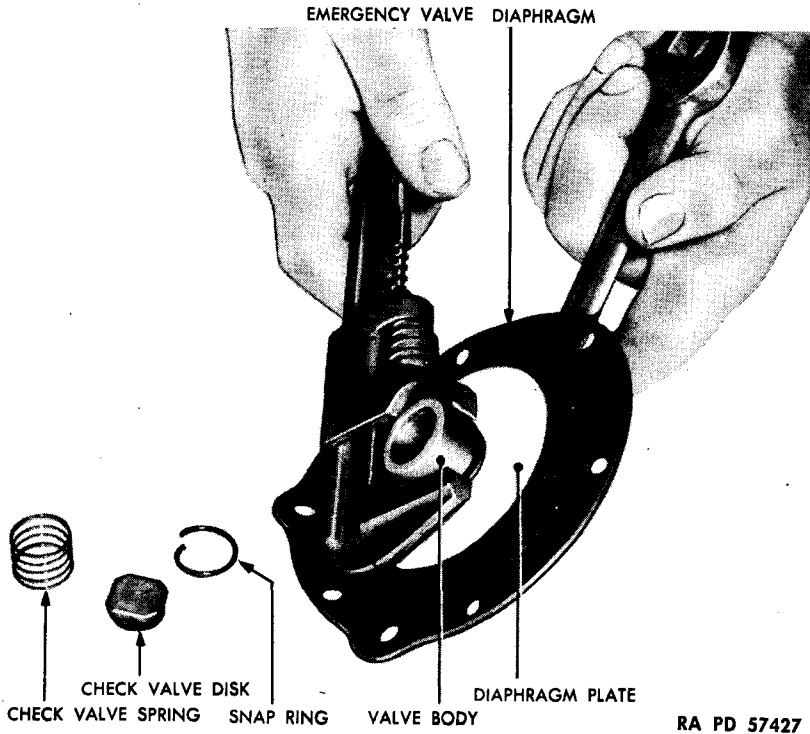


Figure 10 — Disassembly of Check Valve Body and Diaphragm

prene) portion of check valve disk with cloth entirely free from grease and oil. Scrape sealing compound off disk shaft with putty knife.

c. Inspection. Inspect rubber in check valve disk assembly. If a deep groove is worn in rubber, replace. Inspect check valve spring. If badly corroded, replace spring. Check emergency valve diaphragm. If the rubber appears checked or shows signs of wear, replace diaphragm.

d. Assembly. Place a light coat of type A sealing compound around shoulder of valve body plunger. With plunger nose up, place one diaphragm plate against plunger shoulder (bevel edge of plate must be up). Place diaphragm over check valve body seat with the word "TOP" embossed on diaphragm, down. Place diaphragm plate over check valve body with the beveled edge against diaphragm. Place a light coat of type A sealing compound on plunger threads and face of nut. Install nut and tighten, using two wrenches (fig. 9). Lock the nut to check valve seat by placing two sharp punch marks

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in face of nut and threads. Place punch marks directly opposite each other. Place check valve spring in cavity at top of valve body. Place check valve disk assembly on top of spring with the rubber surface down. Lock the spring and check valve disk in position, using snap ring (fig. 11).

17. EMERGENCY VALVE BODY.

a. **Cleaning and Inspection.** Wash all parts in dry-cleaning solvent. Blow out air port with compressed air. Clean sealing compound off outer surface of seals, using penknife. Check lip of leather seals for excessive wear. Check body for cracks. Replace damaged parts.

b. **Disassembly.** Do not remove seals if they are not damaged. Seals are of a pressed fit and will become damaged when removed. Drive out the damaged seal or seals, using a 1/4-inch, long-tapered punch with a blunt end.

c. **Assembly.** Coat outer edge of seals with a light coat of type A sealing compound. Press the two seals into emergency valve body cavity. *NOTE: The seal with the smaller inside diameter is pressed into top of emergency valve body (the cavity with the smallest stop flange). When pressing seals in, make certain that the free lip of seals is toward the outside.*

18. VALVE PLUNGER AND DIAPHRAGM.

a. **Cleaning and Inspection.**

(1) **CLEANING.** Clean all metal parts in dry-cleaning solvent. Wash rubber (Neoprene) parts in hydraulic brake fluid and dry immediately.

(2) **INSPECTION.** Inspect diaphragm for cracks and signs of wear. Inspect valve plunger for cracks. Inspect the four air ports, and make certain they are open. Secure replacements if parts are not serviceable.

b. **Disassembly** (figs. 8 and 9). Place valve plunger in vise. Do not permit vise jaws to contact small diameter of plunger; clamp on at the 1 1/2-inch diameter. Remove valve plunger nut. Lift off diaphragm plate and relay valve diaphragm.

c. **Assembly.** Place relay valve diaphragm over valve plunger. Place diaphragm plate over valve plunger next to relay valve diaphragm. Coat threads, face of nut, and face of diaphragm plate with type A sealing compound. Secure diaphragm and diaphragm plate to valve plunger with valve plunger nut. Wipe all excess sealing compound from the assembly. Lock valve plunger nut in position by placing four punch marks spaced equally around face of nut adjacent to plunger.

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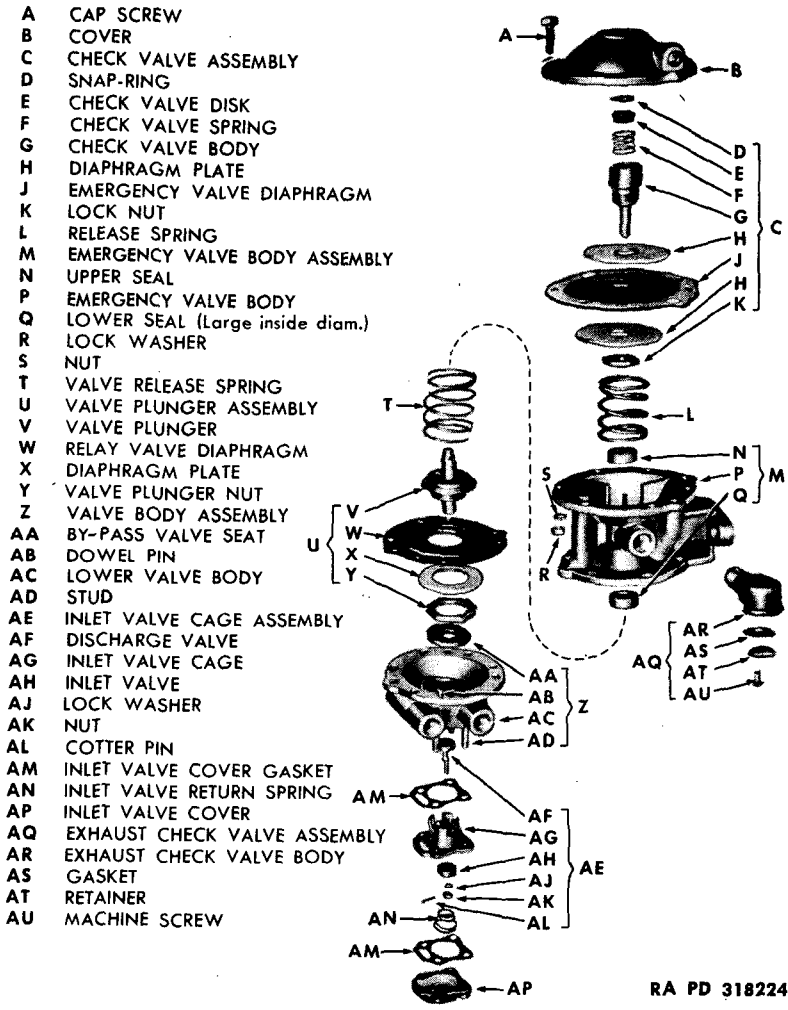


Figure 11 — Relay-emergency Valve — Disassembled

19. VALVE AND CAGE ASSEMBLY.

a. Disassembly. Pull cotter pin from stem of discharge valve. Remove nut and lock washer. Remove inlet valve and pull discharge valve out of cage.

b. Cleaning and Inspection.

(1) **CLEANING.** Wash all metal parts in dry-cleaning solvent. Wash rubber (Neoprene) parts in hydraulic brake fluid and dry immediately.

(2) **INSPECTION.** Inspect rubber parts for wear. Replace if

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deeply grooved or distorted. Inspect valve seat. Replace if damaged or worn.

c. **Assembly.** Place discharge valve in the pronged end of inlet valve cage with rubber surface toward the outside (fig. 11). Place inlet valve assembly over stem of discharge valve with the rubber surface down. Install lock washer and nut. Secure nut, using cotter pin. Coat metal surface of by-pass valve assembly with type A sealing compound.

20. LOWER VALVE BODY.

a. Cleaning and Inspection.

(1) **CLEANING.** Wash all metal parts in dry-cleaning solvent. Wash rubber (Neoprene) parts in hydraulic brake fluid and dry immediately.

(2) **INSPECTION.** Inspect body for cracks. Inspect rubber (Neoprene) seat of by-pass valve for grooves and excessive wear.

b. **Disassembly.** Drive out by-pass valve seat, using $\frac{1}{8}$ -inch diameter punch. Two holes are provided in body for this purpose.

c. **Assembly.** Press by-pass valve seat into cavity on upper side of lower body until stop is reached.

21. ASSEMBLY OF SUBASSEMBLIES.

a. **Assemble Valve and Cage Assemblies.** *NOTE: Place a light film of water pump grease over all friction surfaces. Do not allow any grease to contact any of the rubber assemblies (figs. 9 and 11).* Place lower valve body in vise. Place gasket over the four studs. Place inlet valve and cage assembly over studs and into cavity of valve body. Place inlet valve return spring over nut at end of discharge valve stem. *NOTE: Inlet valve return spring is cone-shaped; make certain the small end is installed over nut.* Place gasket over studs. Place inlet valve cover over studs. Secure cover to inlet valve cage, using four nuts and four lock washers.

b. **Install Valve Body** (figs. 8 and 11). Place emergency valve body assembly in vise. Install dowel pin in hole provided in valve body flange. Place valve release spring over embossed section of emergency valve body. Place valve plunger and diaphragm assembly in emergency valve body, making certain the long end is placed through seal. Secure valve body to emergency valve body, using six cap screws, nuts, and lock washers.

c. **Install Check Valve and Diaphragm Assembly** (figs. 7 and 11). Place emergency release spring between the three posts in emergency valve body. Place check valve assembly in spring. Place cover over diaphragm. Secure cover to emergency valve body, using six cap screws, lock washers, and nuts.

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40-TON TANK TRANSPORTER TRAILER TRUCK M25

CHAPTER 3
UNDER CARRIAGE AND SUSPENSION ASSEMBLY
(UNDERCONSTRUCTION)

Section 1
TRUNNION AXLE

	Paragraph
Description and data	22
Cleaning, inspection, disassembly, and assembly	23
Fits and tolerances	24

22. DESCRIPTION AND DATA.

a. **Description.** The trailer is equipped with four trunnion axles. One trunnion axle is mounted on each end of the two walking beams (fig. 4). The trunnion axles allow transverse movement of the under carriage assembly, permitting one wheel to pass over a 9-inch obstacle, while the three remaining wheels remain on the ground. The trunnion axle pivots on the walking beam on two heavy bronze bushings, and is held in place by an outer thrust washer, a cotter pinned axle nut, and a hub cap (fig. 12). Two internal brake mounting flanges are integral parts of the trunnion axle. An internal brake assembly is mounted on each brake flange. The ends of the trunnion axle form spindles on which are mounted the bearings, dust collars, felts, compression rings, and axle nuts which support and secure the hub and wheel assemblies (fig. 12).

b. **Data.**

Make	Fruehauf Trailer Company
Model	51428
Weight	302 lb.
Quantity per trailer	4
Length	59 $\frac{5}{8}$ in.
Bushings per axle	2
Diameter of inner bearing surface	3.3473 in.
Diameter of outer bearing surface	2.3748 in.

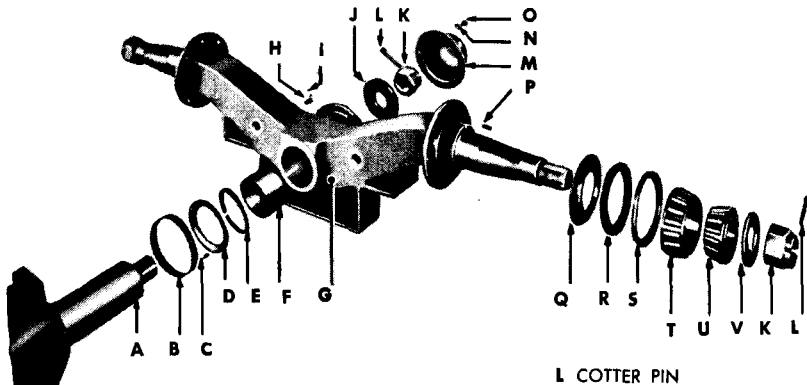
23. CLEANING, INSPECTION, DISASSEMBLY, AND ASSEMBLY.

a. **Cleaning and Inspection.**

(1) **CLEANING.** Install an axle nut on both spindles to prevent the threads from becoming damaged while handling the axle. Remove lubrication fitting. Steam-clean the assembly.

(2) **CHECK BUSHING.** Check bushing for excessive wear. If worn beyond 3.875 inches, replace the bushing.

**UNDER CARRIAGE AND SUSPENSION ASSEMBLY
(UNDERCONSTRUCTION)**



- | | |
|--|--------------------------------|
| A WALKING BEAM | L COTTER PIN |
| B FELT RETAINER SEAL | M HUB CAP |
| C DOWEL PIN | N LOCK WASHER |
| D TRUNNION AXLE INNER THRUST WASHER | O CAP SCREW |
| E TRUNNION AXLE FELT SEAL | P DUST COLLAR DOWEL PIN |
| F TRUNNION AXLE BUSHING | Q DUST COLLAR |
| G TRUNNION AXLE | R HUB FELT |
| H ELBOW 45 | S COMPRESSION RING |
| I LUBRICATION FITTING | T INNER BEARING |
| J TRUNNION AXLE OUTER THRUST WASHER | U OUTER BEARING |
| K AXLE NUT | V AXLE D-WASHER |

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Figure 12 – Trunnion Axle – Disassembled

(3) **CHECK SPINDLE THREADS.** Check spindle threads for burs. Axle nut must turn on spindle with minimum resistance. Clean up threads by using a 6-point, NF, 12-threads-per-inch die with a thread restorer, or by turning nut onto spindle while tapping nut with a hammer.

(4) **CHECK FOR BEND** (fig. 13). Place axle gage in position on front side of trunnion axle with the single-pronged end of gage held firmly against the inner bearing surface. Adjust the double prongs on the opposite end of the gage until they contact the inner and outer bearing surface. Now move the gage over to the rear side of the axle, and then to the top side. If either of the double prongs fails to make contact at the rear side or the top side, a bent axle is indicated. Use a feeler gage to determine the amount of bend. If bend is in excess of 0.010 inch, straighten axle. If checking three sides of one spindle reveals no bend, turn the gage end-for-end and check the opposite spindle in the same manner, without disturbing the setting of the prongs.

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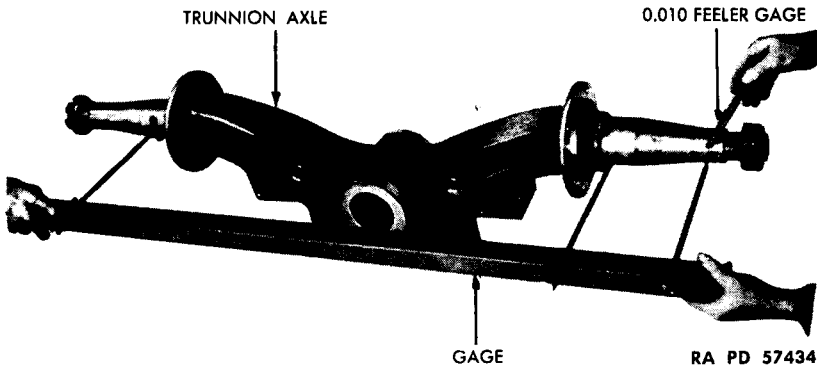


Figure 13 — Checking Trunnion Axle for Bend

b. **Disassembly.** Drill out the two ¼-inch dowel pins (at top of axle) which prevent bushings from turning. Press out bushings on arbor press. Remove lubrication fitting.

c. **Assembly.** Press one bushing in until outer end of bushing is flush with outer surface of trunnion axle face. Turn trunnion axle over, and press second bushing in from opposite side, leaving the end of bushing flush with face of trunnion axle. Ream bushings to 3.750 inches (par. 24). Blow out lubrication hole with compressed air. Install lubrication fitting. Place ¼-inch drill in each of the two holes at top side of trunnion axle, and drill a ¼-inch hole ¼ inch deep in the bushing. Drive ¼-inch dowel pins into the two holes to prevent bushings from turning. Place several punch marks adjacent to dowel pins to prevent dowel pins from coming out.

24. FITS AND TOLERANCES.

a. Description.	Max. (in.)	Min. (in.)	Desired (in.)	Replace Beyond (in.)
Bushing (outside diameter)	4.256	4.254		
Bushing ream diameter (after assembly)	3.752	3.750		3.875
Bushing length			3.500	
Trunnion axle bushing hole	4.252	4.250		
Diameter of spindle bearing surface (inner)	3.3473	3.3463		3.34305
Diameter of spindle bearing surface outer	2.3748	2.3743		2.3735
Spindle threads	National fine, 12 threads-per-inch			

**UNDER CARRIAGE AND SUSPENSION ASSEMBLY
(UNDERCONSTRUCTION)**

Section II

WALKING BEAM AND TRUNNION SHAFT

	Paragraph
Description and data	25
Cleaning, inspection, disassembly, and assembly	26
Fits and tolerances	27

25. DESCRIPTION AND DATA.

a. **Description** (fig. 14). The walking beam is hinged from the trailer frame by the trunnion shaft and mounting brackets. The trunnion shaft is stationary in its mountings. The walking beam is adjustable in and out through the use of a screwing mechanism installed in the hollow of the trunnion shaft. The walking beam furnishes the longitudinal movement of the undercarriage assembly.

b. Data.

(1) **WALKING BEAM.**

Make Fruehauf Trailer Company
 Model 53291
 Weight 450 lb

(2) **TRUNNION SHAFT.**

Make Fruehauf Trailer Company
 Model 565112
 Weight 87 lb

26. CLEANING, INSPECTION, DISASSEMBLY, AND ASSEMBLY.

a. **Cleaning.** Place the axle nuts on both walking beam spindles to prevent threads from becoming damaged through handling. Steam-clean the assembly.

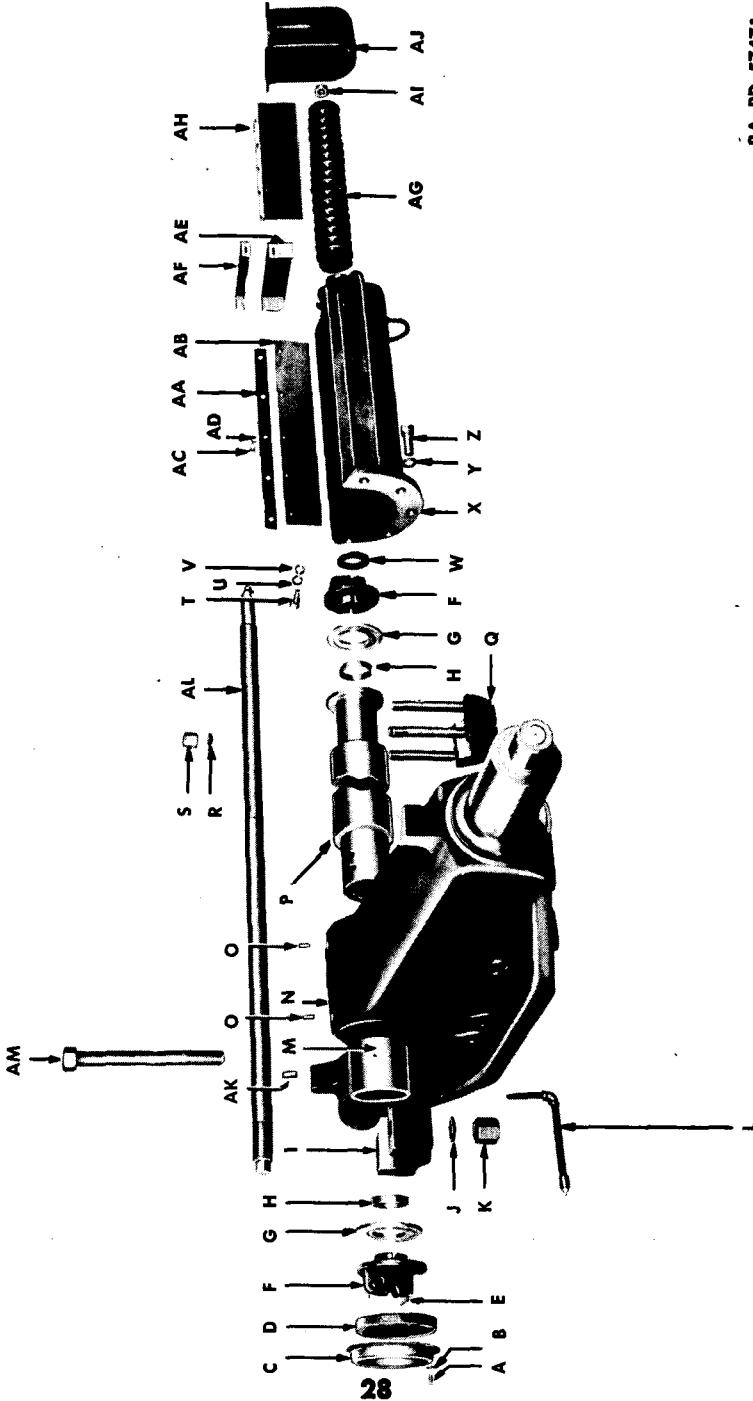
b. Inspection.

(1) **CHECK SPINDLES.** Check the two spindles for excessive wear. If worn beyond 3.6835 inches, replace walking beam.

(2) **CHECK BUSHINGS.** Check inside diameter of bushings for excessive wear. Replace bushing if worn beyond 4.375 inches (par. 27).

(3) **CHECK FOR BEND** (fig. 15). Place the gage in position on front side of walking beam, with the single-pronged end of the gage held firmly against the extreme outer end of rocker beam bearing surface. Adjust the double prongs on the other end of the gage until they contact the bearing surface. Now move the gage over to the rear side of the walking beam. If either of the two prongs fails to contact the spindle, a bend in the walking beam is indicated. Use a feeler gage to determine the amount of the bend. If it is in excess of 0.025 inch, replace walking beam. If checking both sides of one spindle

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Figure 14 — Walking Beam and Shifting Screw Assembly — Disassembled

**UNDER CARRIAGE AND SUSPENSION ASSEMBLY
(UNDERCONSTRUCTION)**

- | | |
|--|---|
| A 1/4-INCH ROUND HEAD SLOTTED SCREW | U 7/16-INCH LOCK WASHER |
| B 1/4-INCH LOCK WASHER | V 7/16-INCH CASTELLATED NUT |
| C DUST FELT COVER | W FELT WASHER |
| D DUST FELT | X SHIFTING BRACKET |
| E 3/16-INCH x 2 1/2-INCH COTTER PIN | Y 3/4-INCH LOCK WASHER |
| F SPECIAL NUT | Z 3/4-INCH CAP SCREW |
| G TRUNNION SHAFT WASHER | AA SIDE WEATHER STRIP MOUNTING PLATE |
| H SPACER | AB SIDE WEATHER STRIP |
| I OUTSIDE TRUNNION SHAFT CAP | AC 5/16-INCH CAP SCREW |
| J LOCK WASHER | AD 5/16-INCH LOCK WASHER |
| K CAP BOLT NUT | AE END WEATHER STRIP |
| L WALKING BEAM BUSHING LUBRICATION LINE | AF END WEATHER STRIP MOUNTING PLATE |
| M WALKING BEAM BUSHING | AG SHIFTING SCREW RUBBER BOOT |
| N WALKING BEAM (ROCKER ARM) | AH PROTECTION PLATE |
| O BUSHING DOWEL PIN | AI RETAINER COLLAR |
| P TRUNNION SHAFT | AJ U-BRACKET |
| Q TRUNNION SHAFT CAP AND STUDS | AK TRUNNION SHAFT DOWEL PIN |
| R LOCK WASHER | AL WALKING BEAM SHIFTING SCREW |
| S NUT | AM TRUNNION SHAFT CAP NUT |
| T 7/16-INCH CAP SCREW | RA PD 57471-B |

Legend for Figure 14 — Walking Beam and Shifting Screw Assembly — Disassembled

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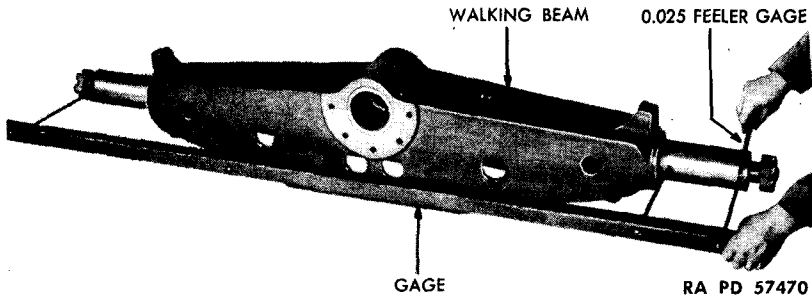


Figure 15 — Checking Walking Beam for Bend

reveals no bend, turn gage end-for-end and check the other spindle on the opposite end without disturbing the setting of the prongs. If there is a clearance at either of the prong ends, check with a feeler gage. If the prongs are in contact at both points, the walking beam is not bent.

c. **Disassembly.** Remove lubrication pipe extension assembly. Drill out the two 1/4-inch dowel pins at top of walking beam which prevent bushing from turning. Press out the two bushings.

d. **Assembly.** Press bushing in from one side so that end of bushing is flush with the outer surface of walking beam face. Press bushing in from opposite side in the same manner. Ream bushing to correct size (par. 27). Place a 1/4-inch drill in each of the two dowel pin holes, and drill a 1/4-inch hole into bushings. Drive a 1/4-inch dowel pin into each of the two holes to prevent bushing from turning. Rivet the dowel pin in place by making several punch marks around dowel pin edge. Install lubrication pipe extension assembly (fig. 14).

27. FITS AND TOLERANCES.

a. Description.	Max. (in.)	Min. (in.)	Replace Beyond (in.)
Walking beam bushing hole	5.002	5.000	
Spindle diameter	3.747	3.745	
Bushing (outside diameter)	5.006	5.004	4.275
Bushing (ream diameter)	4.252	4.250	
Trunnion shaft	4.242	4.240	When extremely scored or grooved.

CHAPTER 4
FRAME AND MISCELLANEOUS PARTS

Section I
WHEEL CABLE GUIDE

	Paragraph
Description and data	28
Disassembly, cleaning, inspection, and assembly	29

28. DESCRIPTION AND DATA.

a. **Description.** The wheel cable guide assembly (fig. 16) is mounted on the top deck of the trailer. The two cable guide wheels are held in a support frame by two shafts. The cable end of the winch is passed between the two wheels, thus allowing the winch operator to pull from any angle desired.

b. **Data.**

Make	Fruehauf Trailer Company
Model (wheel cable guide)	54493
Model (shaft)	600573

29. DISASSEMBLY, CLEANING, INSPECTION, AND ASSEMBLY.

a. **Disassembly (fig. 16).** Pull two cotter pins from the two shafts. Place small steel bar in hole provided at end of shafts, and pull the shafts out of wheels with a turning motion. Place a cant bar between the two wheels and work them out of support frame. Remove lubrication fitting from top side of each wheel.

b. **Cleaning and Inspection.**

(1) Steam-clean cable guide wheel and shaft.

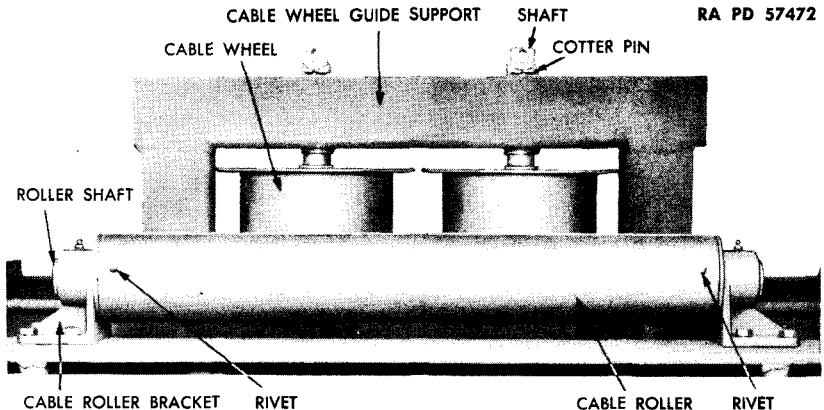


Figure 16 — Wheel Cable Guide and Cable Roller Assembly

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(2) Inspect drum surface of wheels for cracked welds and bent flanges. Reweld and straighten if necessary. Check shaft for excessive wear and for bend. Straighten shaft if bent. Replace if worn.

c. **Assembly.** Place one wheel in support frame with the lubrication hole toward top of support frame. Place a film of wheel bearing grease No. 2 over surface of shaft. Place shaft down through support frame and wheel. Secure shaft to frame, using ¼-inch cotter pin.

**Section II
CABLE ROLLER**

	Paragraph
Description and data	30
Disassembly, cleaning, inspection, and assembly	31

30. DESCRIPTION AND DATA.

a. **Description.** The cable roller (fig. 16) is mounted on the second crossmember from the front on the top deck. Two mounting brackets are provided to furnish bearings for the shaft. The cable roller consists of a tube, shaft sleeves, and rivets. The roller revolves with the shaft. The shaft revolves in the two mounting brackets. When pulling from the rear of trailer, the cable from the winch, which is mounted on the towing vehicle, is passed over the top of the cable roller. This furnishes a rolling bearing surface for the cable, preventing excessive cable wear.

b. Data.

Make	Fruehauf Trailer Company
Model	54487
Weight	83 lb
Length of tubing	31½ in.
Length of shaft	36½ in.
Diameter of shaft	2 in.
Diameter of tubing	4½ in.

31. DISASSEMBLY, CLEANING, INSPECTION, AND ASSEMBLY.

a. **Disassembly (fig. 16).** Remove nuts, lock washers, and cap screws holding the two roller brackets to trailer crossmember. Drive the roller bracket off roller shaft. Remove the assembly. Remove the lubrication fittings from the two brackets. To remove the shaft, cut the heads off the two countersunk rivets located at each end of the tubing. Use an acetylene cutting torch, or place punch mark in

FRAME AND MISCELLANEOUS PARTS

the center of rivet head and drill rivet head out, using a 3/8-inch drill. With long-tapered, 1/4-inch punch, drive out the two rivets. Pull shaft out of sleeve.

b. **Cleaning.** Steam-clean.

c. **Inspection.** Check roller shaft for bend, and bearing surface for scores and excessive wear. Check inside diameter of brackets for excessive wear, cracks and sheared lubrication fittings. Check the tubing for bend. Straighten or replace.

d. **Assembly** (fig. 16). Place shaft into bushing. Make certain the two pin holes in shaft are in alignment with the two holes in bushing and roller. Secure shaft and bushing to tubing, using two rivets. Peen end of pins. Bolt one roller bracket to crossmember, but do not tighten bolts. Place roller assembly in bracket. Place bracket over end of roller shaft. Bolt bracket to crossmember. Tighten bolt at opposite end of shaft. Install lubrication fittings into brackets, and lubricate brackets.

Section III
SUPPORTS

	Paragraph
Description and data	32
Disassembly, cleaning, inspection, and assembly	33

32. DESCRIPTION AND DATA.

a. **Description.** The supports (fig. 20) are of the fold-up type, and are mounted on the trailer main frame at the front of drop in frame. They support the front of the trailer when the trailer is disconnected from the towing vehicle.

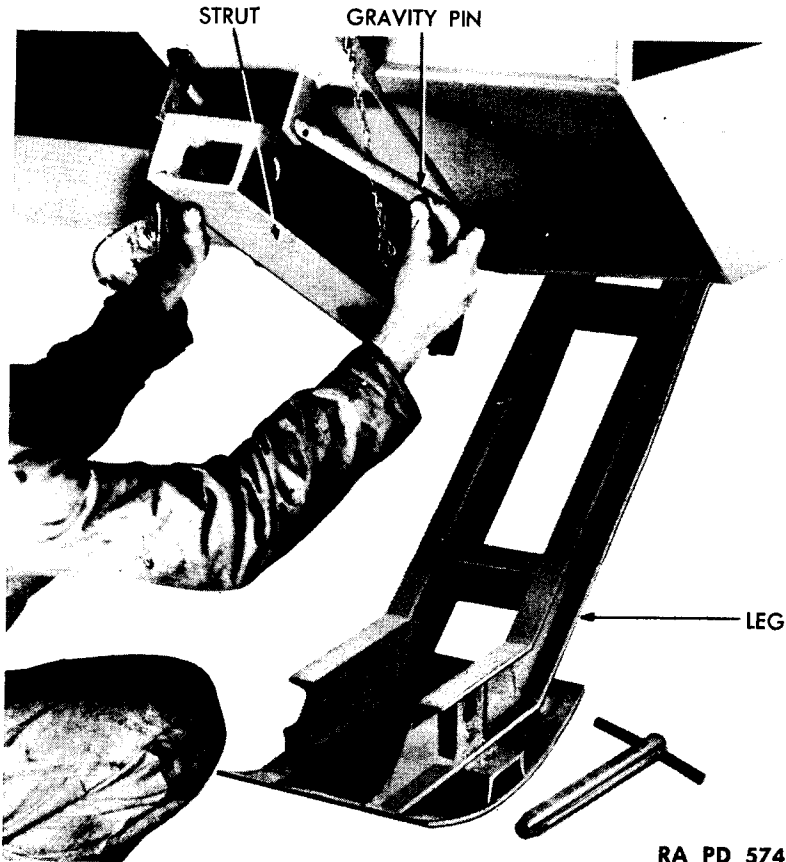
b. **Data.**

Make	Fruehauf Trailer Company
Model	53805 lefthand — 53806 righthand
Weight	133 lb

33. DISASSEMBLY, CLEANING, INSPECTION, AND ASSEMBLY.

a. **Disassembly.** *NOTE: Do not attempt to disassemble support unless trailer is coupled to towing vehicle or properly jacked up at front end.* Remove cotter pin from gravity pin holding support leg in the up position, and lower the support leg (fig. 17). Remove lock ring from one side of leg hinge pin and drive pin out. Place screwdriver under slot in lock ring, and pry lock ring off hinge pin. Remove lock nut and set screw from rear side of strut, and drive the two hinge pins out (figs. 18 and 19). Lift strut out.

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Figure 17 — Removing Support Leg

b. Cleaning. Steam-clean all parts.

c. Inspection. Check all grooves in hinge pins to make certain the ends are not burred. Remove burs if present. Inspect lock rings to make certain the inside diameter has not been distorted and spread open beyond $\frac{7}{8}$ inch in diameter. Reduce the inside diameter of lock rings by pressing ends together with a pair of pliers.

d. Assembly (fig. 20). Place support leg between the two mounting brackets which are welded to trailer frame. Install hinge pin. Place a lock ring over each end of hinge pin, making certain they are seated in the grooves provided. **NOTE:** *Inside diameter of lock rings is supposed to be smaller than the outside diameter of hinge pin. However, when removing lock rings they are generally spread open*

FRAME AND MISCELLANEOUS PARTS

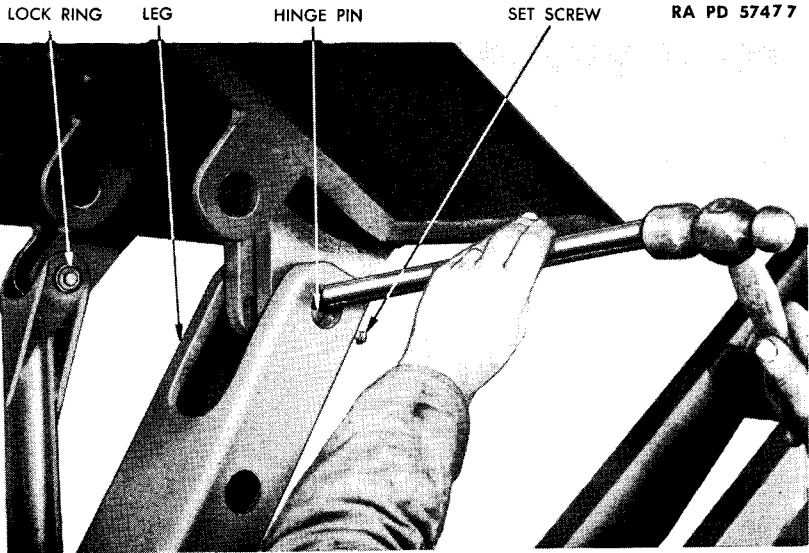


Figure 18 – Removing Support Leg Pin

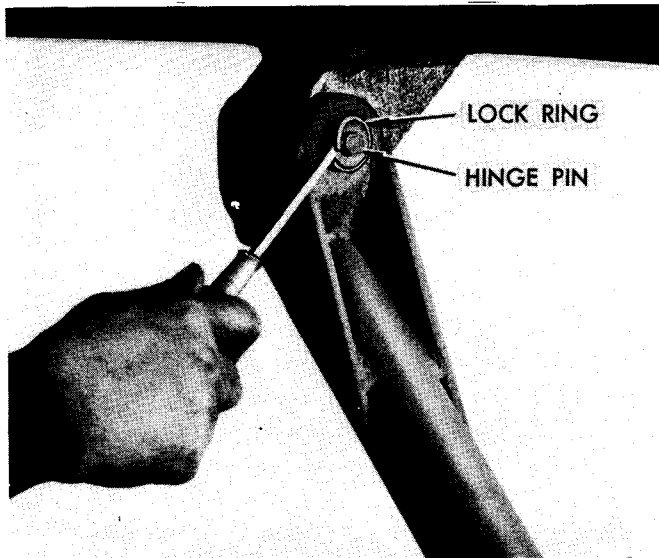


Figure 19 – Removing Lock Ring

beyond the diameter of hinge pin. If the lock ring appears to be too loose on hinge pin, remove the lock ring and spread the two ends together, making the inside diameter of lock ring smaller. Place strut between the two mounting brackets welded to under side of frame.

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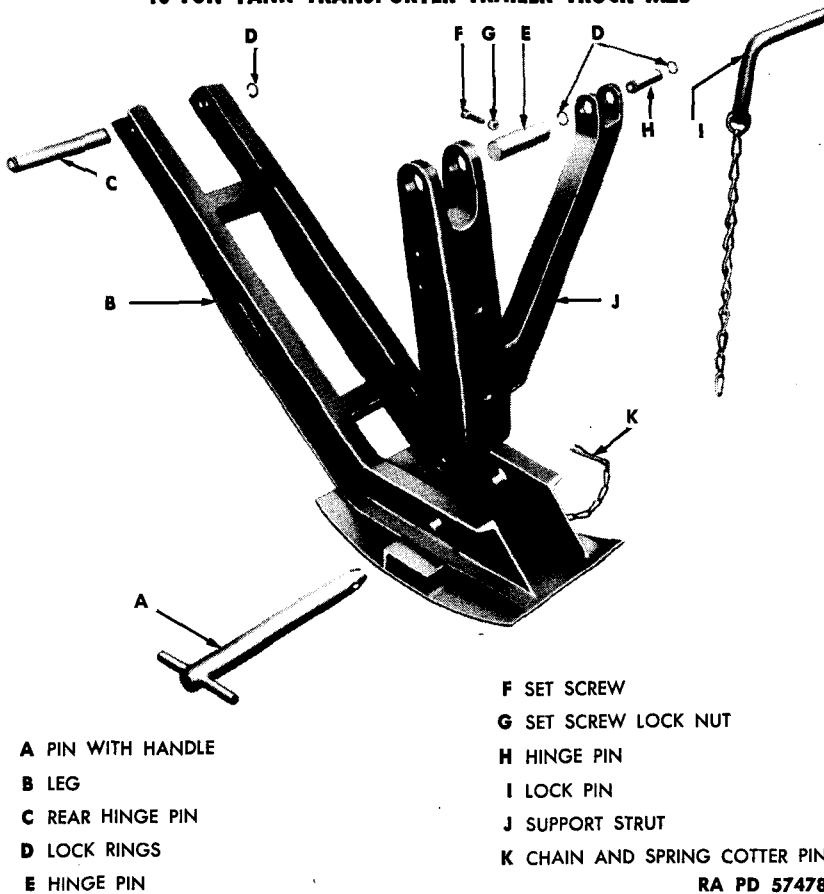


Figure 20 — Supports — Disassembled

Secure the vertical part of strut to frame mounting bracket, using the large hinge pin. Turn lock nut on the set screw. Install set screw in top of strut and hinge pin. Place small hinge pin in strut arm. Install the two snap rings on hinge pin. Raise up on leg until pin hole in leg contacts hole in strut. Install the pin with handle. Install spring cotter pin, which is attached to chain, in the pin with handle.

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Section IV
TROLLEY HOIST

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Description and data	34
Disassembly of trolley hoist into subassemblies	35
Trolley side plates	36
Ratchet case	37
Pinion gear assembly	38
Assembly of subassemblies	39

34. DESCRIPTION AND DATA.

a. Description. The trolley hoist (fig. 21) is a component of the crane and hoist assembly. The primary use of the hoist is to remove the inner tire and wheel assembly when it becomes necessary to change a tire. However, it can be used to remove and replace any component on the trailer undercarriage.

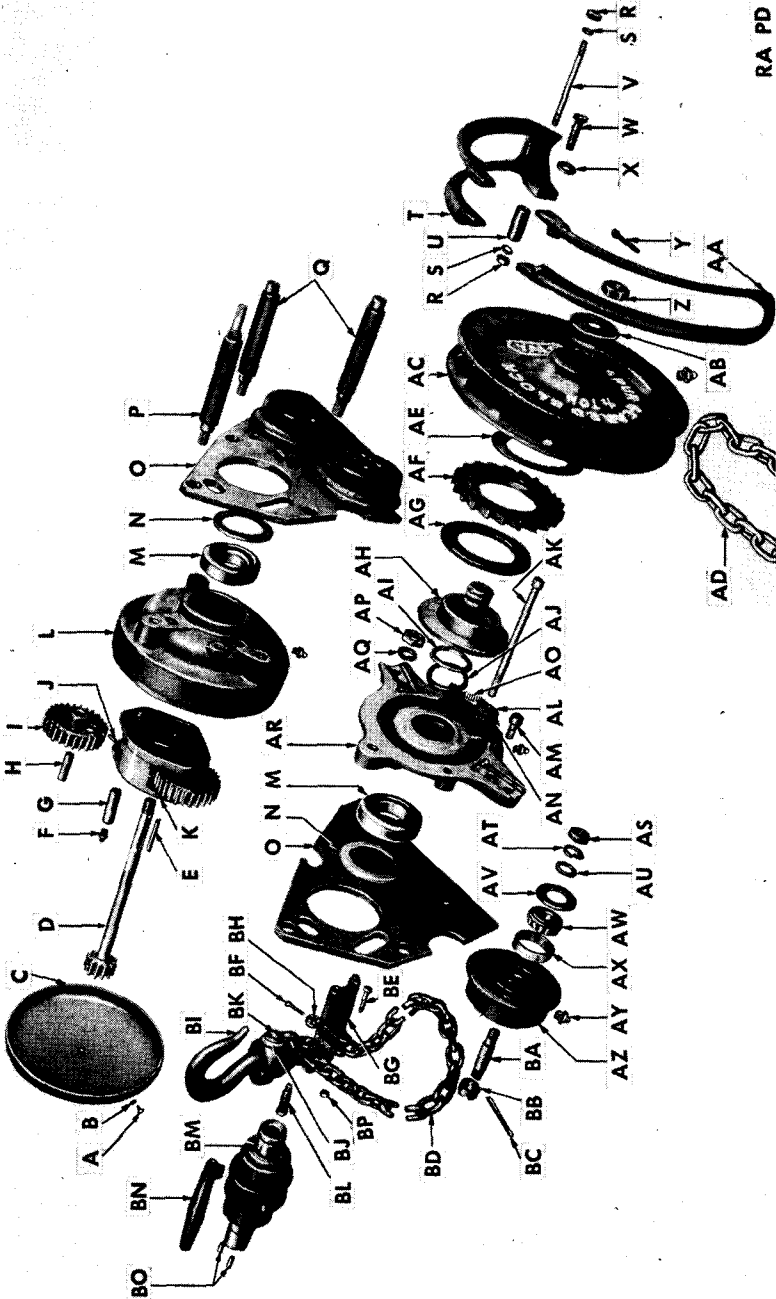
b. Data.

Make Yale and Towne Mfg. Company
 Model Spur-gearred army-type, 1/2-ton capacity
 Weight 86 lb

35. DISASSEMBLY OF TROLLEY HOIST INTO SUBASSEMBLIES.

a. Disassembly (fig. 21). Pull cotter pin (Y) from driving pinion. Remove driving pinion nut (Z) and check washer (AB) from pinion. Remove the two tap bolts (W) and lock washer (X), holding hand chain guides (T) and (AA) to ratchet case (AR). Lift the hand chain guards off handwheel (AC). Remove nut (R) and lock washer (S) from hand chain bolt (V), and pull the hand chain guide bolt out of hand chain guide. Remove hand chain guide separator (U). Lift hand chain (AD) off handwheel (AC). Turn handwheel (AC) off disk hub (AH). Pull handwheel (AC), galvanized iron disk (AE), ratchet disk (AF), leather disk (AG), and disk hub (AH), off drive pinion. Tap disk hub key (E) out of keyway in drive pinion. Remove nut (AP), and lock washer (AQ) from large separator (P). Remove load chain guide bolt (AK). Remove screw (AM) from the two small separators (Q) and lift side plate (O) off the separators. Screw the three separators (P and Q) out of internal gear and case (L). Remove the three screws (A) and lock washers (B) from gear cover (C), and tap gear cover off internal gear and case (L). Pull out pinion cage (K) with pinion gears and intermediate gear. Remove cotter pin (BF) from detachable shackle bolt (BL). Remove nut (BH) from detachable shackle bolt (BL). Remove the detachable shackle bolt and load chain (BD). Remove bolt (BE) from load chain guide.

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Figure 21 — Trolley Hoist — Disassembled

FRAME AND MISCELLANEOUS PARTS

- | | | |
|--|--|--|
| A SCREW | W HAND CHAIN TAP BOLT | AT LOCK WASHER |
| B LOCK WASHER | X HAND CHAIN TAP BOLT LOCK WASHER | AU ADJUSTING WASHER |
| C GEAR COVER | Y DRIVING PINION COTTER | AV DUST GUARD |
| D DRIVING PIN | Z DRIVING PINION NUT | AW TRACK WHEEL BEARING |
| E DISK HUB KEY | AA HAND CHAIN GUIDE R. H. | AX BEARING CUPS |
| F LUBRICATION FITTING | AB CHECK WASHER | AY LUBRICATION FITTING |
| G INTERMEDIATE GEAR PIN | AC HAND WHEEL | AZ PLAIN TRACK WHEEL |
| H BUSHING (FOR INTERMEDIATE GEAR) | AD HAND CHAIN 16 FOOT | BA TRACK WHEEL AXLE |
| I INTERMEDIATE GEAR | AE GALVANIZED IRON DISK | BB AXLE NUT—TRACK WHEEL |
| J PINION CAGE PIN | AF RATCHET DISK | BC AXLE COTTER |
| K PINION CAGE | AG LEATHER DISK | BD LOAD CHAIN 9 FOOT |
| L INTERNAL GEAR AND CASE | AH DISK HUB | BE LOAD CHAIN TAIL END BOLT |
| M BALL BEARING | AI OUTER FELT RETAINER | BF COTTER PIN |
| N OIL RETAINER | AJ OUTER FELT WASHER | BG LOAD CHAIN GUIDE |
| O TROLLEY HOIST SIDE PLATE | AK LOAD CHAIN GUIDE BOLT | BH DETACHABLE SHACKLE BOLT NUT |
| P LARGE SEPARATOR | AL PAWL STUD | BI BOTTOM HOOK |
| Q SMALL SEPARATOR | AM SMALL SEPARATOR SCREW | BJ DETACHABLE SHACKLE LINK |
| R NUT | AN PAWL | BK BOTTOM CROSSHEAD WASHER |
| S LOCK WASHER | AO PAWL SPRING | BL DETACHABLE SHACKLE BOLT |
| T HAND CHAIN GUIDE L. H. | AP SEPARATOR NUT | BM LOAD SHEAVE |
| U HAND CHAIN GUIDE SEPARATOR | AQ LOCK WASHER | BN STRIPPER |
| V HAND CHAIN BOLT | AR RATCHET CASE | BO LOAD SHEAVE KEY |
| | AS ADJUSTING NUT | BP LOAD CHAIN TAIL END BOLT NUT |

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Legend for Figure 21 — Trolley Hoist — Disassembled

**ORDNANCE MAINTENANCE — SEMITRAILER M15, COMPONENT OF
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a. **Disassembly** (fig. 21). *NOTE: Trolley side plates are equipped with four track wheels. Servicing procedure for all four wheels is identical.* Remove adjusting nut (AS), lock washer (AT), and adjusting washer (AU) from track wheel axle. Remove axle cotter (BC) from track wheel axle nut (BB). Pull track wheel axle (BA) out of wheel. Lift dust guard (AV) off face of bearing. Pull the two bearings (AW) from wheel (AZ). Remove lubrication fitting (AY). With a long-tapered 1/4-inch drift punch, tap the two bearing cups (AX) out of track wheel.

b. **Cleaning and Inspection.** Steam-clean all parts. Inspect bearing cups for wear, cracks, and pitting. Check bearing for pits, cracks, and chipped rollers. Replace if badly worn or defective.

c. **Assembly.** Start bearing cup (AX) into hub of track wheel with small inside diameter toward inner side of bore. Press one cup into position. Turn track wheel over, and install other bearing cup from opposite side in exactly the same manner. Coat two roller bearing assemblies with roller bearing grease, working grease between each roller. Place roller bearing assembly in track wheel from both sides. Place dust guard (AV) next to each roller bearing. Place wheel in position on side plate making certain the flange on wheel is next to the side plate. Install axle nut (BB) on axle (BA). Install axle cotter (BC) through nut and axle. Secure track wheel to trolley side plate, using axle (BA), adjusting washer (AU), lock washer (AT), and nut (AS).

37. RATCHET CASE.

a. **Disassembly** (fig. 21). Tap felt retainer (AI) and felt washer (AJ) out of ratchet case (AR). With a long-tapered punch, drive out the ball bearing (M) and the oil retainer (N).

b. **Cleaning and Inspection.** Wash all parts in dry-cleaning solvent. Inspect ball bearings for ease of operation. Inspect felts for excessive wear.

c. **Assembly.** Place ratchet case (AR) on arbor press with the groove for attaching the chain guards down. Press ball bearing (M) into ratchet case. Place oil retainer (N) next to ball bearing. Install felt washer (AJ) and felt retainer (AI) in ratchet case from the opposite side.

38. PINION GEAR ASSEMBLY.

a. **Disassembly** (fig. 21). Remove lubrication fitting (F) from the two intermediate gear pins (G). Drive out the two pinion cage pins (J). Drive out the two intermediate gear pins. *NOTE: Bushing (H) is a pressed fit. Removal of this bushing is not necessary.*

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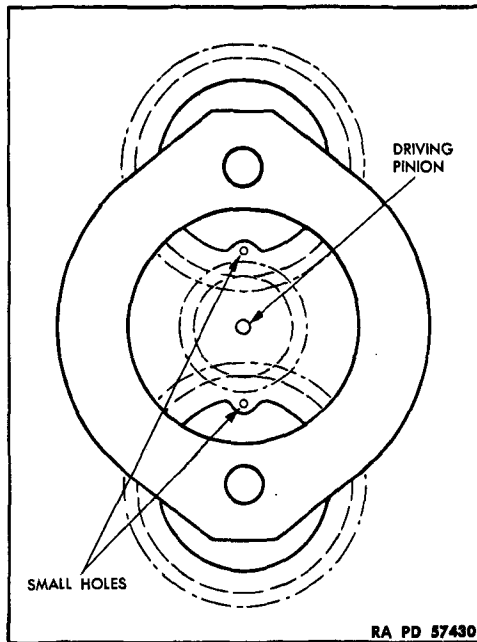


Figure 22 - Cage and Gear Assembly Diagram

b. Cleaning and Inspection. Steam-clean all parts. Inspect intermediate gears for excessive wear and broken teeth. Replace worn or defective parts. Run a wire into lubrication holes to make certain they are free from obstructions.

c. Assembly. Place one intermediate gear (I) into pinion cage. **NOTE: Make certain the side with the small hole in gear face is facing the outer side of pinion cage. The two intermediate gears are interchangeable.** Place intermediate gear pin (G) through the pinion cage and intermediate gear, making certain the lubrication fitting hole is toward the outer side of cage. Install lubrication fitting (F) in intermediate gear pin. Rotate the intermediate gear pin until slot in pin is in alignment with small pin hole in cage. Secure intermediate gear and pin to cage, using pin (J). Install the second intermediate gear in cage in exactly the same manner as the first intermediate gear. When assembling the second intermediate gear to cage, make certain the small holes are directly across the center line of the driving pinion (fig. 22).

39. ASSEMBLY OF SUBASSEMBLIES.

a. Assembly. Coat ball bearing (M) with a heavy film of No. 2 general purpose grease. Tap ball bearing into cavity of internal gear and case (L). Place oil retainer (N) next to ball bearing. Place load sheave (BM) through ball bearing. Secure pinion cage (K) to

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load sheave, using two load sheave keys (BO). Place drive pinions through sheave hub. Pack the internal gear with 1 pound of general purpose grease No. 1. Lubricate the two intermediate gear pins, using lubricating fittings at end of pins. Place gear cover (C) on internal gear and case (L). Secure cover to internal gear using three screws (A) and three lock washers (B). Secure trolley plate (O) to internal gear and case (L) using two small separators (Q) and one large separator (P). Stand hoist on cover end. Insert the load chain guide (BG) in the elongated hole in trolley plate. Place stripper (BN) into hole in trolley plate and cavity in internal gear. Place trolley plate and track roller assembly over the three separators. Secure ratchet case (AR) to the three separators, using two screws (AM), one lock washer (AQ), and one separator nut (AP). Secure load chain guide (BG) to the assembly, using load chain guide bolt (AK). Drive disk hub key (E) into keyway provided in drive pinion. Lubricate threaded portion of disk hub (AH) and flange with engine oil. Install the disk hub (AH) on drive pinion. Pack the recess in disk hub with wheel bearing grease. Soak leather disk (AG) in a solution of engine oil and graphite. Install the leather disk (AG) on hub disk. Coat the ratchet disk with wheel bearing grease, and install the ratchet disk (AF) over disk hub. Coat the galvanized disk (AE) with wheel bearing grease. Secure handwheel (AC) to drive pinion, using check washer (AB), nut (Z), and cotter pin (Y). Place hand chain (AD) over handwheel. Secure the hand chain guides (T and AA) to ratchet case, using two lock washers (X) and two tap bolts (W). Place separator (U) between the two chain guides, and secure in place using bolt (V), lock washers (S), and nuts (R). Place the load chain (BD) on the load sheave (BM) with the first link in vertical position, or so that it fits in the groove. Run chain over sheave and through the groove on the load chain guide (BG). Fasten the first chain link to the guide, using tail end bolt (BE) and nut (BP). Fasten opposite end of load chain to hook assembly using shackle bolt (BL), nut (BH), and cotter pin (BF).

CHAPTER 5
WHEELS, HUBS, AND DRUMS

Section I
HUBS

	Paragraph
Description and data	40
Disassembly, cleaning, inspection, and assembly	41
Fits and tolerances	42

40. DESCRIPTION AND DATA.

a. Description. The vehicle is equipped with eight hub assemblies (fig. 23). Single wheels are mounted on each hub. The two outer hub assemblies on the right side of the vehicle, and the inner hub assemblies on the left side, are equipped with wheel studs having right-hand threads. The two outer hub assemblies on the left side and the inner hubs on the right side are equipped with wheel studs having left-hand threads. The studs and stud nuts are stamped with the letter "L" or "R", indicating right and left. The wheels and hubs are interchangeable. The wheel studs are not interchangeable. However, studs stamped with the letter "R" are interchangeable with hubs equipped with right-hand studs.

b. Data.

Make	Fruehauf Trailer Company
Model	536081
Weight	90 lb

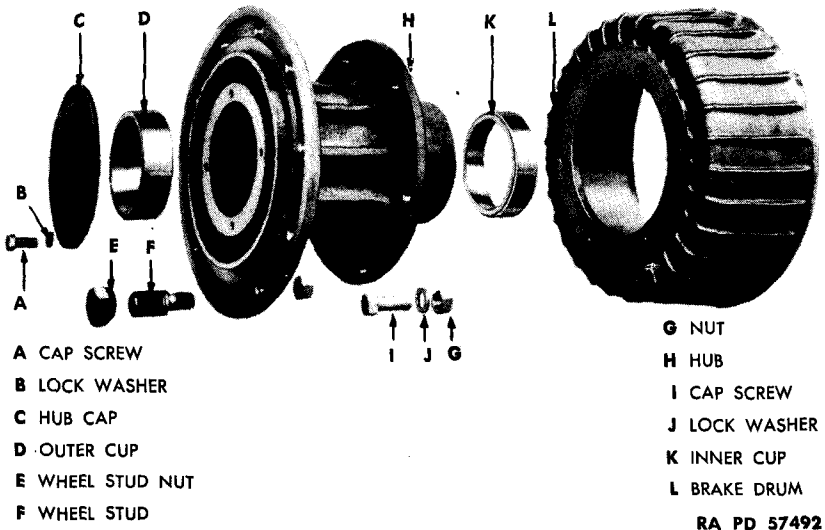
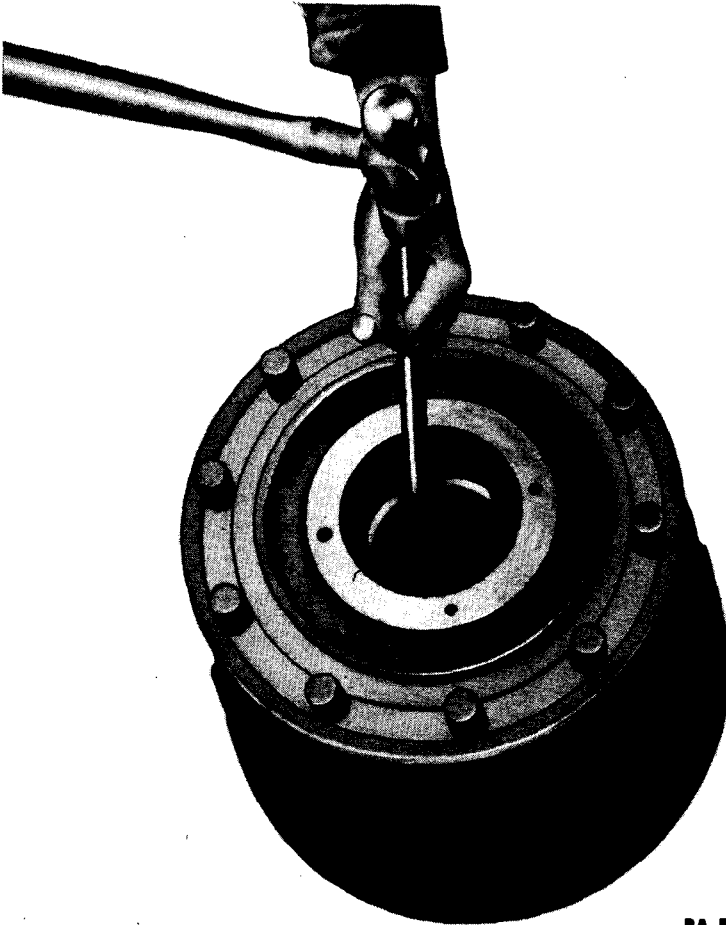


Figure 23 – Hub and Drum Assembly – Disassembled

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Figure 24 — Removing Bearing Cup

41. DISASSEMBLY, CLEANING, INSPECTION, AND ASSEMBLY.

a. **Disassembly** (fig. 23). Place hub assembly on its side. Remove six cap screws, nuts, and lock washers holding drum to hub. Remove the drum. Remove nuts holding studs to hub. Press out studs in arbor press, or drive them out, using a copper hammer.

(1) **BEARING CUP REMOVAL.** Place a soft steel bar on the inside shoulder or edge of cup. Using a heavy hammer, hit first one side of the cup and then the other. By alternating in this manner, the cup will come out straight with the cup bore. Danger of wedging cup in the bore is minimized (fig. 24).

WHEELS, HUBS, AND DRUMS

b. Cleaning. Steam-clean all parts. Scrape rust and other foreign matter off drum pilot.

c. Inspection. Check bearing cups for pits and ridges, and replace if unserviceable. Check threads on wheel studs by placing stud in vise, and screwing stud nut onto studs. If they are in poor condition, replace studs. Threads not too badly burred can be recut with a thread restorer. Check inside diameter of hub cup bore. Visually, inspect hub for cracks and excessive wear in stud holes.

d. Assembly. Place outer bearing cup in cup hub bore with the smallest diameter of cup toward the inside of hub. Press the cup in, making certain the cup is pressed until it hits the stop flange in hub. Turn hub over, and press the inner cup into hub in the same manner. Press wheel studs into hub, making certain they are of the desired thread. Each stud is marked with the letter "L" or "R" indicating left- and right-hand thread. Install nuts on studs and tighten. Place drum over drum pilot. Secure drum to hub using six cap screws, nuts, and lock washers.

42. FITS AND TOLERANCES.

a. Description.	Max. (in.)	Min. (in.)	Replace Beyond (in.)
Outer cup bore	5.117	5.115	5.118
Inner cup bore	5.908	5.906	5.909
Wheel stud bore	0.78125	+0.002 -0.000	Replace hub if studs are ex- tremely loose in hub.

**Section II
DRUMS**

	Paragraph
Description and data	43
Disassembly, cleaning, inspection, repair, and assembly	44
Fits and tolerances	45

43. DESCRIPTION AND DATA.

a. Description. The trailer is equipped with eight drums (fig. 23). They are all identical in construction, and are interchangeable. Thirty cooling ribs are provided around the outside diameter. The drums are bolted to the hub flange with six bolts.

b. Data.

Make	Fruehauf Trailer Company
Model	535830
Weight	95 lb

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44. DISASSEMBLY, CLEANING, INSPECTION, REPAIR, AND ASSEMBLY.

a. **Disassembly** (fig. 23). Remove six nuts, lock washers, and cap screws holding drum to hub. Remove drum.

b. **Cleaning.** Steam-clean all parts.

c. **Inspection.** Check for out-of-round. Drums must be true within 0.010 inch total indicator reading. Replace or reface if necessary. Inspect for cracks and severe scoring. Heat checking, unless extremely severe, does not necessitate drum replacement. Check inside diameter for excessive wear. Replace or reface if necessary.

d. **Repair.** Brake drums may be re-machined to 0.030 inch beyond their original diameter without shimming the lining. If it is necessary, machine beyond 0.030 inch to "clean-up" drum. Shims must be inserted between brake lining and shoes to maintain uniform tolerance between lining and drum.

e. **Assembly.** Place drum over drum pilot on hub. Secure drum to hub, using six cap screws, lock washers, and nuts. *NOTE: Successively tighten opposite nuts to bring drum down evenly to prevent its "cocking" on pilot.*

45. FITS AND TOLERANCES.

a. Description.	Re-machine if Worn	
	Dimensions Beyond	
	(in.)	(in.)
Inside diameter	16.0	16.030
Bore	9.5	
Diameter of bolt circle	11.25	

REFERENCES

PUBLICATIONS INDEXES.

The following publications indexes should be consulted frequently for latest changes to or revisions of the publications given in this list of references and for new publications relating to materiel covered in this manual:

Introduction to Ordnance Catalog. (explains SNL system)	ASF Cat.	ORD 1 IOC
Ordnance publications for supply index (index to SNL's)	ASF Cat.	ORD 2 OPSI
Index to ordnance publications (lists FM's, TM's, TC's, and TB's of interest to Ordnance personnel, OPSR, MWO's (FSMWO's), BSD, S of SR's, OSSC's and OFSB's. Includes alphabetical listing of Ordnance major items with publications pertaining thereto)		OFSB 1-1
List of publications for training (lists MR's, MTP's, T/BA's, T/A's, and FM's, TM's, and TR's concerning training)		FM 21-6
List of training films, film strips and film bulletins (lists TF's, FS's, and FB's by serial number and subject)		FM 21-7
Military training aids (lists graphic training aids, models and displays)		FM 21-8

STANDARD NOMENCLATURE LISTS.

Cleaning, preserving and lubricating materials; recoil fluids, special oils, and miscellaneous related items	SNL K-1
Ordnance maintenance sets	SNL N-21
Soldering, brazing and welding materials, gases and related items	SNL K-2
Tools, maintenance, for repair of automotive vehicles	SNL G-27
Tool-sets, for ordnance service command, automotive shops	SNL N-30
Tool-sets, motor transport	SNL N-19
Truck, trailer, 40-ton, tank transporter, M25 (T21) (composed of Truck, tractor, M26 (T25); Trailer, M15 (T28)	SNL G-160

EXPLANATORY PUBLICATIONS.

Fundamental Principles.	
40-ton tank transporter trailer truck M25	TM 9-767

**ORDNANCE MAINTENANCE — SEMITRAILER M15, COMPONENT OF
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Basic maintenance manual	TM 38-250
Chassis, body, and trailer units	TM 10-560
Military motor vehicles	AR 850-15
Motor vehicle inspections and preventive main- tenance services	TM 9-2810
Precautions in handling gasoline	AR 850-20
Standard military motor vehicles	TM 9-2800
Maintenance and Repair.	
Cleaning, preserving, lubricating, and welding materials and similar items issued by the Ord- nance Department	TM 9-850
Ordnance maintenance: Engine for tractor truck M26, component of 40-ton tank transporter trailer truck M25	TM 9-1767A
Ordnance maintenance: Power train for tractor truck M26, component of 40-ton tank trans- porter trailer truck M25	TM 9-1767B
Ordnance maintenance: Body, chassis, and winches for 40-ton tank transporter trailer truck M25	TM 9-1767C
Ordnance maintenance: Power brake systems (Bendix-Westinghouse)	TM 9-1827A
Decontamination.	
Chemical decontamination materials and equip- ment	TM 3-220
Decontamination of armored force vehicles	FM 17-59
Defense against chemical attack	FM 21-40
Storage and Shipment.	
Ordnance field service storage and shipment Chart, group G—major items	OSSC-G
Registration of motor vehicles	AR 850-10
Rules governing the loading of mechanized and motorized army equipment, also, major caliber guns, for the United States Army and Navy, on open top equipment published by Operations and Maintenance Department of Association of American Railroads.	
Storage of motor vehicle equipment	AR 850-18

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