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TM 9-897

WAR DEPARTMENT TECHNICAL MANUAL

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N5-096

22-TON, LOW-BED TRAILER (La Crosse Model DF6-22)

GEREGISTREERD
- 1 NOV. 1957
HKGS-STAF ADJ.-GEN.

RESTRICTED. DISSEMINATION OF RESTRICTED MATTER.
No person is entitled solely by virtue of his grade or position to knowledge or possession of classified matter. Such matter is entrusted only to those individuals whose official duties require such knowledge or possession. (See also paragraph 23b, AR 380-5, 15 March 1944.)

WAR DEPARTMENT

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15 FEBRUARY 1945

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Washington 25, D. C., 15 February 1945

TM 9-897, 22-ton, low-bed trailer (LaCrosse Model DF6-22), is published for the information and guidance of all concerned.

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The Adjutant General.*

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

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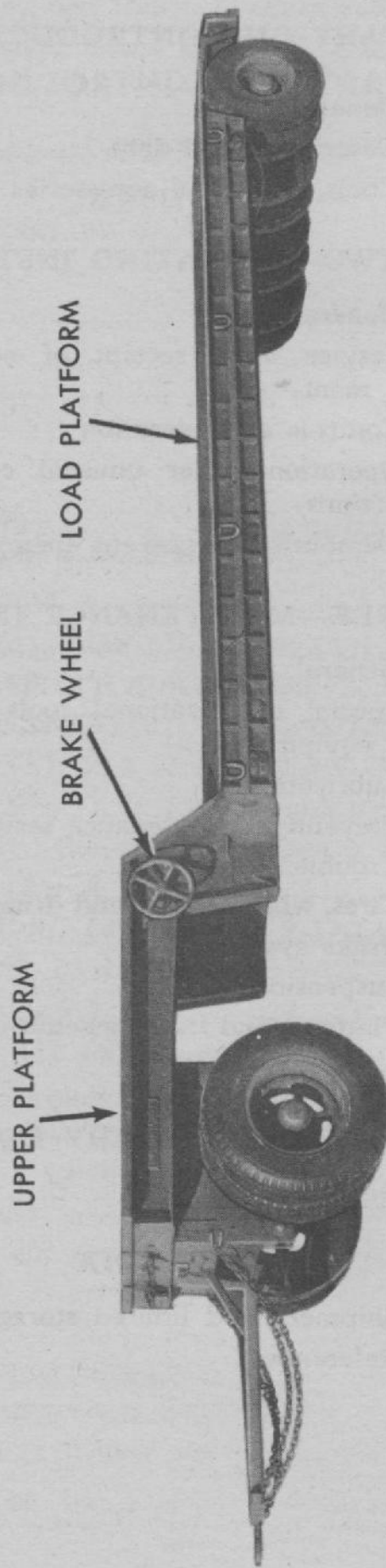
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Figure 1—22-ton, 6-wheel, Low-bed Trailer, DF6-22

RESTRICTED**PART ONE—INTRODUCTION****Section I****GENERAL****1. SCOPE.**

a. These instructions* are published for the information and guidance of all concerned. They contain information on operation and maintenance of the 22-ton, 6-wheel, low-bed trailer, DF6-22, as well as descriptions of major units and their functions in relation to other components of this vehicle.

b. This manual is arranged in four parts; Part One, Introduction; Part Two, Operating Instructions; Part Three, Maintenance Instructions; and Part Four, Auxiliary Equipment.

c. The appendix at the end of the manual contains instructions for shipment and limited storage and a list of references, including standard nomenclature lists, technical manuals, and other publications applicable to the vehicle.

2. RECORDS.

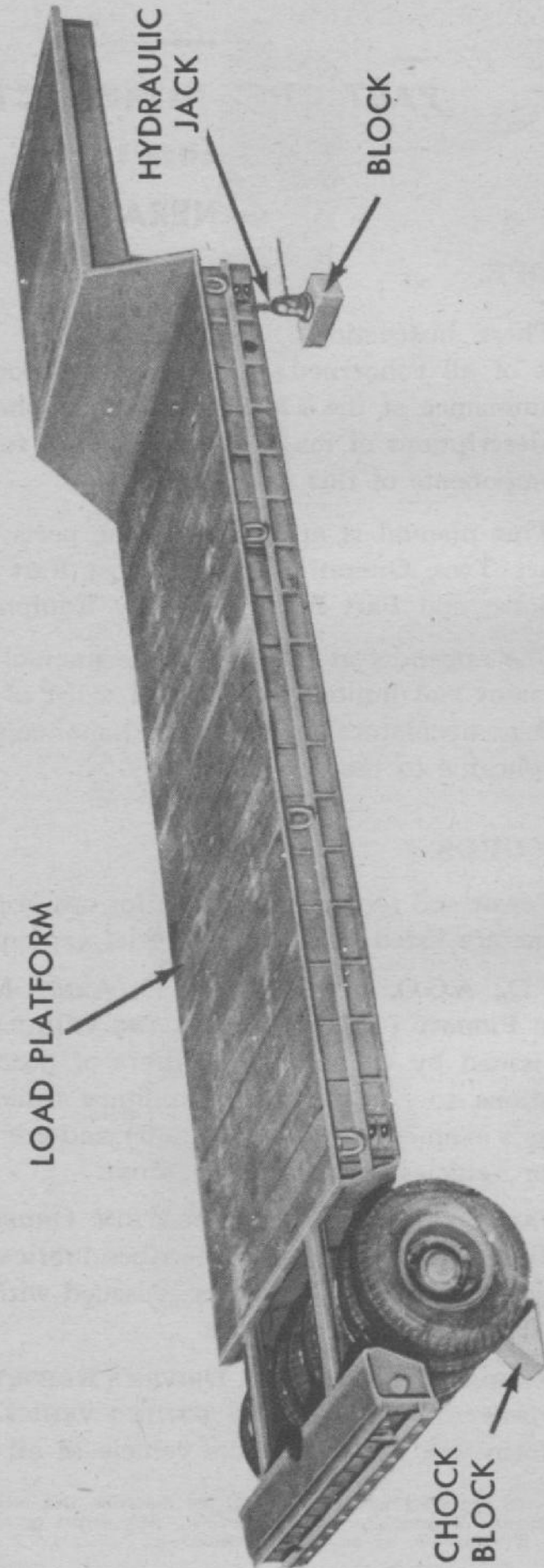
a. Forms and records applicable for use in performing prescribed operations are listed below with a brief explanation of each:

(1) W.D., A.G.O. FORM No. 7360, ARMY MOTOR VEHICLE OPERATOR'S PERMIT (APPLIES TO TOWING VEHICLE ONLY). This form will be issued by commanding officers of posts, camps, stations, or organizations, to all operators of military vehicles who have passed the driver's examination (TM 21-300) and are qualified to drive the particular vehicles noted on the permit.

(2) WAR DEPARTMENT LUBRICATION ORDER. War Department Lubrication Order No. 9-897 prescribes lubrication maintenance for this vehicle. A Lubrication Order is issued with each vehicle, and is to be carried with it at all times.

(3) STANDARD FORM No. 26, DRIVER'S REPORT—ACCIDENT, MOTOR TRANSPORTATION (APPLIES TO TOWING VEHICLE ONLY). One copy of this form will be kept in the vehicle at all times. In case of an

*To provide operating instructions with the materiel, this technical manual has been published in advance of complete technical review. Any errors or omissions will be corrected by changes or, if extensive, by an early revision.



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Figure 2—Right Rear View (Semitrailer)

General

accident resulting in injury or property damage, it will be filled out by the driver on the spot, or as promptly as practical thereafter.

(4) WAR DEPARTMENT FORM NO. 48, DRIVER'S TRIP TICKET AND PREVENTIVE MAINTENANCE SERVICE RECORD. This form, properly executed, will be furnished to the driver when his vehicle is dispatched on nontactical missions. The driver and the official user of the vehicle will complete in detail appropriate parts of this form. These forms need not be issued for vehicles in convoy or on tactical missions. The reverse side of this form contains the driver's daily and weekly preventive maintenance service reminder schedule.

(5) W.D., A.G.O. FORM NO. 478, MWO AND MAJOR UNIT ASSEMBLY REPLACEMENT RECORD. This form, carried with the vehicle, will be used by all personnel completing a modification or major unit assembly replacement to record clearly the description of work completed, date, vehicle hours and/or mileage, and MWO number or nomenclature of unit assembly. Personnel performing the operation will initial in the column provided. Minor repairs, parts, and accessory replacements will not be recorded.

(6) W.D., A.G.O. FORM NO. 6, DUTY ROSTER. This form, slightly modified, will be used for scheduling and maintaining a record of vehicle maintenance operations. It may be used for vehicle lubrication records.

(7) W.D., A.G.O. FORM NO. 461, PREVENTIVE MAINTENANCE SERVICE AND TECHNICAL INSPECTION WORK SHEET FOR WHEELED AND HALF-TRACK VEHICLES. This form will be used for all 1,000 mile (monthly) and 6,000 mile (semiannual) maintenance services, and all technical inspections performed on wheeled or half-track vehicles.

(8) W.D., A.G.O. FORM NO. 468, UNSATISFACTORY EQUIPMENT REPORT. This form will be used for reporting manufacturing, design, or operational defects in materiel with a view to improving and correcting such defects, and for use in recommending modifications on materiel. This form will not be used for reporting failures, isolated materiel defects, or malfunctions of materiel resulting from fair wear and tear or accidental damage; nor for the replacement, repair, or the issue of parts, and equipment. It does not replace currently authorized operational or performance records.

(9) W.D., A.G.O. FORM NO. 9-81, EXCHANGE PART OR UNIT IDENTIFICATION TAG. This tag, properly executed, may be used when exchanging unserviceable items for like serviceable assemblies, parts, vehicles, and tools.

Section II

DESCRIPTION AND DATA

3. DESCRIPTION (figs. 1, 2, and 3).

a. **General.** This vehicle is a low-bed, heavy-duty, 6-wheeled trailer, equipped with loading ramps for rear or side loading of heavy military equipment and supplies. The frame, which constitutes the main part of the trailer, is of all steel welded construction. The load platform or bed is floored with 2¼-inch thick wood planking. The trailer is intended primarily for use as a full trailer. However, the front wheels are part of a dolly attached to the frame by means of a kingpin and may be uncoupled if it is desired to haul the trailer as a semitrailer using a tractor-truck. The vehicle can be towed as a semitrailer only when the trailer is unloaded, or when the total load does not exceed the load limits of the towing vehicle. The trailer is equipped with a complete set of both service and blackout lights and reflectors for clearance. The dolly is also equipped with its own set of service and blackout lights so that it may be towed at night without the trailer if necessary.

4. DATA.

a. Vehicle Specifications.

Length, over-all	
Full trailer	34 ft 6 in.
Semitrailer	29 ft 6 in.
Length of platform bed	18 ft
Width, over-all	102 in.
Width of platform bed	
Over-all	102 in.
Inside stakes	90 in.
Height, over-all	
Empty	56¼ in.
Loaded (maximum load)	54½ in.
Height of platform	
Empty	33½ in.
Loaded	31¾ in.
Weight, light	
Full trailer	12,000 lb
Semitrailer	9,600 lb
Weight, loaded (maximum load)	
Full trailer	56,000 lb
Semitrailer	53,600 lb

Tools, Parts, and Accessories

Ground clearance, loaded	
Bottom of frame to ground	17½ in.
Dolly axle to ground	16½ in.

b. Performance.

Speeds allowable:	
Empty	20 mph
Loaded	15 mph
Approach angle (full trailer)	45 degrees
Departure angle	40 degrees
Towing facilities	
Full trailer	Drawbar
Semitrailer	Kingpin on upper fifth wheel plate

c. Towing Vehicle Requirements.

Electrical system	6 volts
Brake system	Air

Section III

TOOLS, PARTS, AND ACCESSORIES

5. GENERAL.

a. No list of equipment was available for publication at the printing date of this manual. However, the vehicle is equipped with a wheel nut wrench, two hydraulic jacks, and other common tools and parts necessary to perform simple maintenance on the vehicle.

PART TWO—OPERATING INSTRUCTIONS

Section IV

GENERAL

6. SCOPE.

a. Part Two contains information for guidance of personnel responsible for operation of this equipment. It contains information on operation of equipment, with description and location of controls and coupling equipment.

Section V

SERVICE UPON RECEIPT OF EQUIPMENT

7. PURPOSE.

a. When a new or reconditioned vehicle is first received by the using organization, it is necessary for second echelon personnel to determine whether the vehicle has been properly prepared for service by the supplying organization and to be sure it is in condition to perform any mission to which it may be assigned when placed in service. For this purpose inspect all assemblies, subassemblies, and accessories to be sure they are properly assembled, secure, clean, and correctly adjusted and/or lubricated. Check all tools and equipment to be sure every item is present, in good condition, clean, and properly mounted or stowed.

b. Whenever practicable, the first echelon personnel (driver) will assist in the performance of these services.

8. CORRECTION OF DEFICIENCIES.

a. Deficiencies disclosed during the course of these services will be treated as follows:

- (1) Correct any deficiencies within the scope of the maintenance echelons of the using organization before the vehicle is placed in service.
- (2) Refer deficiencies beyond the scope of the maintenance echelons of the using organization to a higher echelon for correction.
- (3) Bring deficiencies of a serious nature to the attention of the supplying organization through proper channels.

*Service Upon Receipt of Equipment***9. SPECIFIC PROCEDURES.**

a. **Electrical Wiring.** Examine all accessible wiring and conduits to be sure they have been securely connected and are properly supported. See that all protective materials and tape for the prevention of corrosion have been removed.

b. **Lights and Reflectors.** See that all tape and corrosion preventive material is removed from around light and reflector openings.

c. **Frame.** Inspect entire trailer and dolly frame center beams, side rails, crossmembers, and flooring to see that all components are properly assembled and that all units, brackets, attachments and connections are secure. Remove any corrosion preventive materials and examine paint for damage or rust spots. Paint as necessary.

d. **Tires.** Check tires for damage, and see that valve stems are in correct position. Remove objects lodged in treads and from between duals. All front (dolly) tires must be inflated to 65 pounds and rear tires to 100 pounds (maximum) cool. Install all valve caps finger tight.

e. **Wheels.** Inspect wheels to see if they are damaged, loose, or tight on axles, and if all assembly and mounting nuts and screws are present and secure. See that all rust and corrosion preventive materials have been removed from wheel surfaces.

f. **Towing Connections.** Inspect drawbar and lunette for looseness or damage. Be sure dolly is properly connected to trailer and that kingpin lock is secure.

g. **Springs and Suspensions.** Inspect dolly springs, clips, U-bolts, and radius rods to see if they are properly assembled and secure. Check rear oscillating axle brackets to see that they are secure.

h. **Parking Brake.** Test parking brake mechanisms to be sure they operate properly. Inspect cable, sheave, lever, long and short equalizer bars, return spring, and pull rods for damage or distortion and see that all connections are secure. Be sure operating shaft is properly mounted and that hand wheel is secure.

i. **Tools, Parts and Accessories.** Check tools, parts, and accessories to see that all items are present. All items must be in good operating condition. Test operation of hydraulic landing jacks. See that all items are properly mounted or stowed.

j. **Vehicle Publications and Reports.**

(1) **PUBLICATIONS.** See that vehicle Operator's Manual, Lubrication Order, and W.D., A.G.O. Form No. 478 (MWO and Major Unit Assembly Replacement Record), are in the vehicle, legible, and

properly stowed. NOTE: *U.S.A. registration number and vehicle nomenclature must be filled in on Form No. 478, for new vehicles.*

(2) **REPORTS.** Report general condition of the vehicle to designated individual in authority.

Section VI

CONTROLS AND OPERATION

10. CONTROLS AND COUPLING EQUIPMENT.

a. **Brake Wheel** (fig. 1). A brake wheel, for applying or releasing the brakes for parking, is located on the left side of the trailer, above and in front of the platform bed. Turning the wheel counterclockwise applies the brakes. The brakes are locked on by engaging a pawl in the teeth of a ratchet gear mounted on the brake wheel shaft, just inside the wheel. To release the brakes, turn the wheel counterclockwise to allow the pawl to fall away from the ratchet gear, then turn the wheel clockwise to release the brakes.

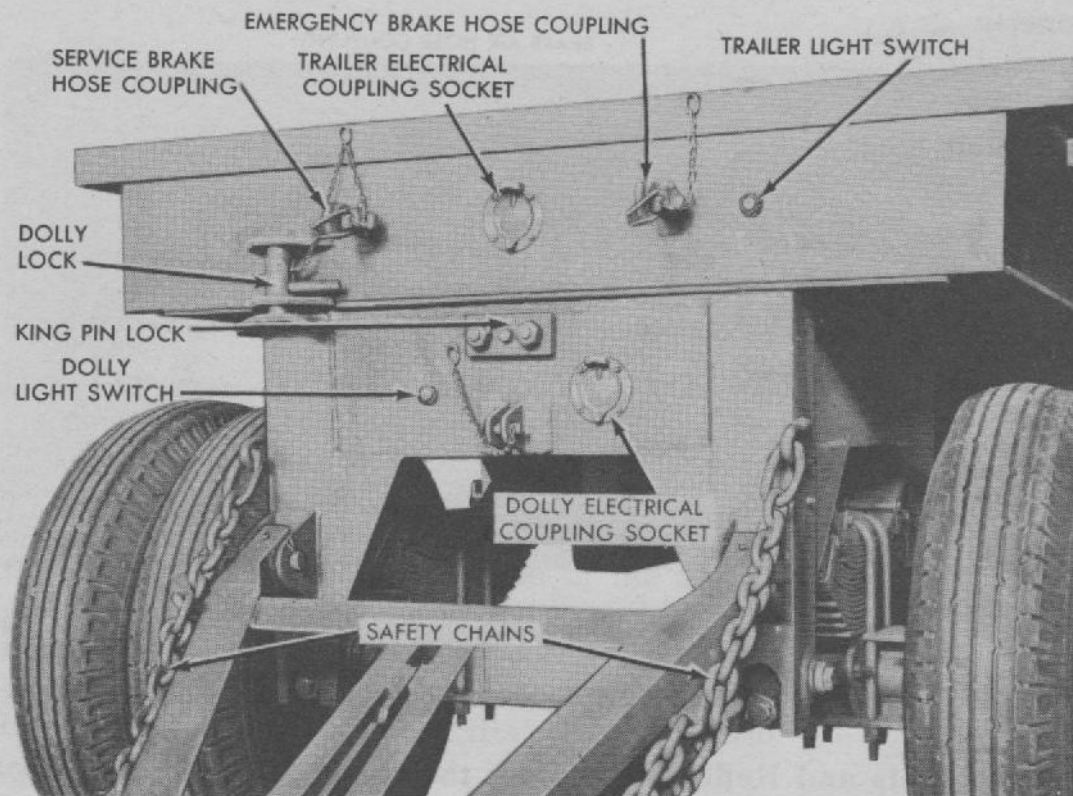
b. **Landing Jacks** (fig. 2). Two 10-ton hydraulic jacks are supplied with the vehicle, to be used in place of the conventional landing gear when coupling or uncoupling the fifth wheel, and to support the trailer when not coupled to the dolly or a tractor-truck.

c. **Chock Blocks** (fig. 5). Two chock blocks are provided to help prevent movement of the vehicle when as a semitrailer it is uncoupled from the dolly or tractor-truck. One block is attached by chain to each side of the trailer above the rear wheels. The chock blocks are to be placed at the front or rear of the wheels, whichever the slope of the ground may require, or at both front and rear in the case of level ground.

d. **Kingpin Lock** (figs. 3 and 24). The kingpin lock, consisting of a split collar which engages the kingpin when the dolly is coupled to the rest of the trailer, is controlled by means of a rod welded to one-half of the collar and extending out to the front of the dolly, where it may be bolted in the engaged position. Removing the two nuts which secure the accessible end of the kingpin lock control rod will allow the rod to be pulled out, thus disengaging one-half of the collar from the kingpin, allowing the upper fifth wheel plate with the kingpin attached to be lifted from the dolly.

e. **Trailer Air Hose Couplings** (fig. 1). Service and emergency air lines are coupled to the trailer by means of couplings mounted on the front of the trailer frame. They are marked "SERVICE" and

Controls and Operation



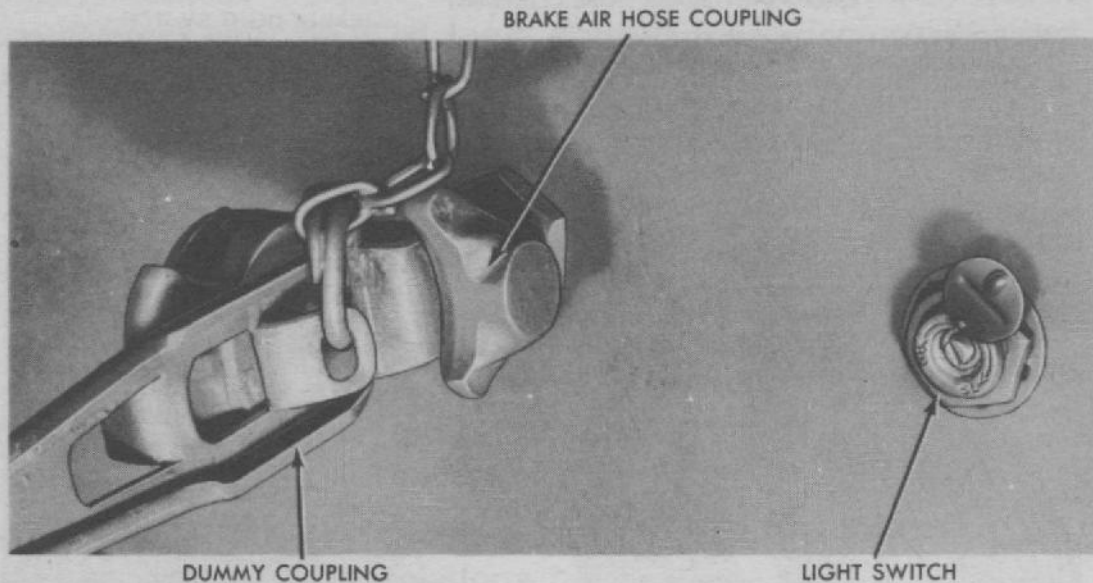
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Figure 3—Front End of Full Trailer

“EMERGENCY” to insure proper connection of the air hoses to the trailer. Each coupling is provided with a dummy coupling to be inserted in place in the coupling, when the air hoses are not connected (fig. 4), to prevent the entrance of dirt and moisture into the trailer air lines.

f. **Safety Chains** (fig. 3). Two safety chains are provided, to be used when the full trailer is coupled to a towing vehicle. These chains are connected merely as an added safety factor in case of failure of the towing connection.

g. **Electrical Coupling Sockets** (fig. 3). Both the trailer and trailer dolly have electrical coupling sockets mounted at the front of the vehicle. When the vehicle is used as a full trailer with the dolly attached, or used as a semitrailer without the dolly attached, only the socket mounted in the front of the trailer frame is to be used. However, if the dolly is to be towed alone, its lighting system is connected to the towing vehicle by means of the socket mounted in the front of the dolly. The sockets are provided with hinged covers to protect them when not in use. The socket is designed so that the cable plug cannot be inserted wrongly. This insures proper connection of the service and blackout light systems to the towing vehicle.



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Figure 4—Light Switch and Brake Air Hose Dummy Coupling

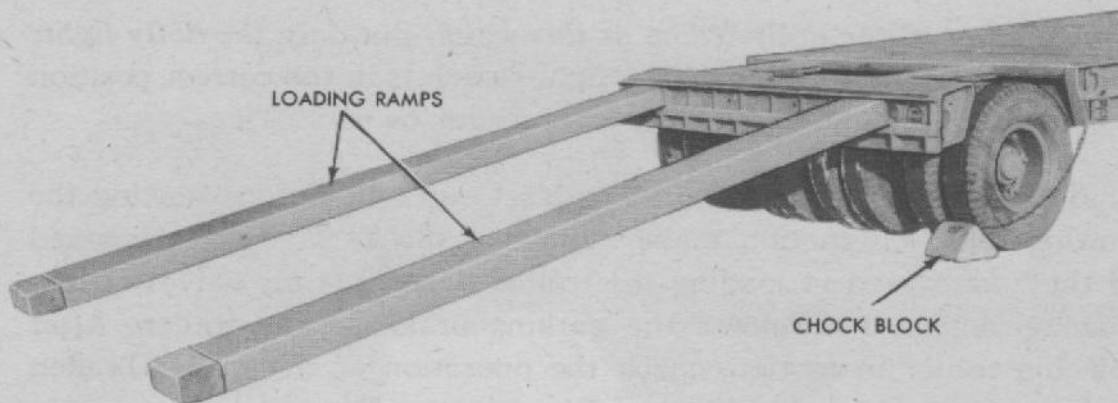
h. Lights and Reflectors. Both the trailer and dolly are supplied with service and blackout tail and stop lights as well as clearance reflectors. The service tail and stop lights are mounted on the left rear of the trailer frame and dolly, and the blackout tail and stop lights are mounted on the right rear of the trailer frame and dolly. Service and blackout clearance lights are mounted on each side of the trailer frame near the front and rear corners of the trailer.

i. Light Switches (figs. 3 and 4). Two switches are mounted on the front of the vehicle. One on the trailer frame, to control the trailer blackout and service lights, and one on the dolly, to control the blackout and service lights of the dolly when it is used alone. The switches are protected by a cover which may be slid to either side, exposing the slotted switch control. Operated by using a screwdriver, the switch is in blackout position when turned all the way counterclockwise, and is in service lights position when turned all the way clockwise. There is no neutral or "OFF" position. Either the blackout or service lights are connected for use by means of this switch. The lights must be turned on or off from the towing vehicle.

j. Dolly Lock (fig. 3). A bolt-type lock mounted on the front of the trailer is used to lock the dolly in a straightforward position for backing the trailer without possibility of the dolly jackknifing. The dolly is locked by simply dropping the bolt into position in the trailer frame portion of the lock.

k. Dolly Traveling Lock (fig. 6). The dolly traveling lock consists of a bar strap, which is secured between the drawbar and

Controls and Operation



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Figure 5—Loading Ramp in Position

the dolly, to stabilize the position of the drawbar when towing the dolly alone. The dolly end of the strap is secured in a clevis welded to the dolly frame by means of a cotter pin-secured clevis pin. This pin must be removed and the strap swung back in its resting position in the drawbar when the full trailer is to be used.

1. Loading Ramp (fig. 5). The trailer is supplied with two loading ramps which may be used singly or together, in getting materiel onto the trailer platform or cargo bed. The ramps are steel reinforced 4 x 12-inch wood planks. They may be used on either side or the rear of the trailer by simply dropping the angled end of the steel reinforcement into the rail designed for that purpose.

11. OPERATION.

a. Service Upon Receipt of Equipment. Before a new or reconditioned vehicle is placed in service, be sure that the services described in paragraphs 7, 8, and 9 have been performed.

b. Before-Operation Service. Perform the services in paragraph 22 before using the vehicle.

c. Coupling the Full Trailer to Towing Vehicle. When coupling the full trailer to the towing vehicle, place the drawbar lunette-eye in the pintle hook of the towing vehicle and lock into position. Attach the hook end of the safety chains to the two eyes provided for them on the rear of the towing vehicle. Remove the dummy couplings from the trailer air hose couplings and connect the air hoses to the trailer, making sure to connect the service line to the coupling marked "SERVICE" and the emergency line to the coupling marked "EMERGENCY." Connect the electric system by inserting the plug on the end of the electric cable into the socket provided on the front of the trailer frame. **CAUTION:** Do not insert the plug in the socket

on the front of the dolly frame as this would put only the dolly lights in service. Make sure the trailer light switch is in the correct position for the type of lighting required (blackout or service).

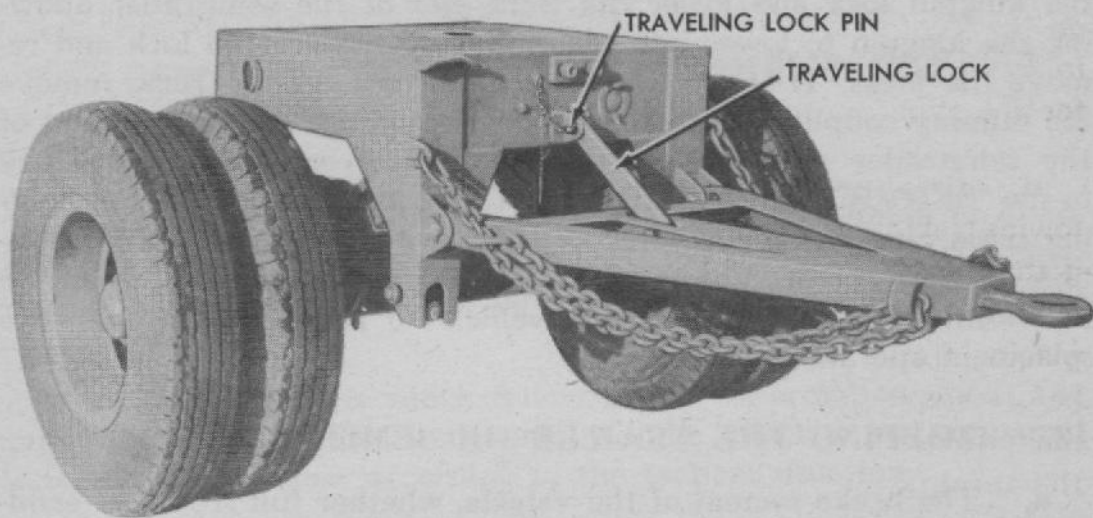
d. Driving with the Full Trailer Coupled. Before starting the towing vehicle in motion, make sure chock blocks have been removed if they were used in loading the trailer. Open the air valves on the towing vehicle and release the parking brake on the trailer. After placing trailer in motion, check the operation of the trailer brakes, before stepping up the speed of the vehicles. When turning corners make allowance for the fact that the trailer rear wheels track inside the turning radius of the towing vehicle. When parking the trailer and towing vehicle be sure to set the parking brake on the trailer. Before attempting to back full trailer straight back, center dolly in straight travel position and engage dolly lock.

e. Uncoupling Full Trailer from Towing Vehicle. Make sure the parking brake is set. Disconnect the safety chains from the towing vehicle. Shut off both air valves on the towing vehicle. Uncouple the two air lines from the front of the trailer and put the dummy couplings in place in the trailer couplings. Remove the electric cable plug from the socket at the front of the trailer. Place the chock blocks in position behind or in front of the trailer rear wheels if the trailer is not on level ground. Disconnect the drawbar lunette-eye from the pintle hook of the towing vehicle. Pull the towing vehicle ahead until the two units are completely separated.

f. Coupling the Dolly Without the Trailer to a Towing Vehicle. Secure the dolly traveling lock. Place the drawbar lunette-eye in the pintle hook of the towing vehicle and lock the pintle hook. Attach the hook end of the safety chains to the two eyes provided for them on the rear of the towing vehicle. Connect the dolly lighting system by inserting the plug on the end of the jumper cable into the socket provided at the front of the dolly. Make sure the light switch is in the correct position for the type of lighting required (blackout or service).

g. Uncoupling the Dolly from a Towing Vehicle. Remove the jumper cable plug from the socket on the front of the dolly. Unhook the two safety chains from the two eyes at the rear of the towing vehicle. Unlock the pintle hook and remove the drawbar lunette-eye from the hook and move the dolly away from the towing vehicle.

Controls and Operation



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Figure 6—Dolly in Traveling Position

h. Uncoupling Semitrailer from Dolly. Place chock blocks in position in front and in back of outside rear wheels. Hook the safety chains in the two eyes provided at each side of the drawbar lunette-eye. If dolly is to be withdrawn from the semitrailer without the aid of a towing vehicle, secure the dolly traveling lock in place. Place one hydraulic lifting jack under each side of the trailer bed as shown in figure 2, and release the kingpin lock (par. 10 d). Jack up the front of the semitrailer on both sides just enough to relieve pressure from the dolly, and move the dolly toward the rear of the trailer about 1 inch to release the kingpin. Then jack up the front of the semitrailer 3 or 4 more inches, or until the kingpin is completely out of the dolly, allowing the dolly to be moved away from the semitrailer.

i. Coupling Semitrailer to Dolly or Tractor-Truck. Make sure parking brake is set on semitrailer. Place chock blocks, one behind the right outside set of rear dual wheels and the other in front of the left outside set of rear dual wheels. If not already in position, place hydraulic jacks under the front of the semitrailer bed (fig. 2), and raise the front end up until the kingpin will clear the top of the dolly when the dolly is maneuvered into position to be coupled. **NOTE:** *If semitrailer is to be coupled to tractor-truck, raise the front end only high enough to allow the fifth wheel of the tractor-truck to begin to slide under the kingpin plate (upper fifth wheel).* Move the dolly or tractor truck into position under the kingpin plate so that the kingpin may be lowered into the dolly kingpin lock, or, in the case of a tractor-truck, so that the kingpin engages the "V" in the lower fifth wheel, allowing the jaws to close on the kingpin. Open

the kingpin lock and lower the front end of the semitrailer allowing the kingpin to lower into place. Secure the kingpin lock and remove the jacks. If semitrailer is coupled to a tractor-truck, remove the dummy couplings from the air hose couplings at the front end of the semitrailer and connect the air hoses from the tractor-truck to the "SERVICE" and "EMERGENCY" couplings. Plug in the lighting cable plug and make sure the light switch is in the desired position for the type of lighting needed (blackout or service). Open the brake line valves on the towing vehicle to place the trailer brake system in operation.

12. STOPPING THE TRAILER OR SEMITRAILER.

a. The brake system of the vehicle, whether full trailer or semitrailer, is operated from the towing vehicle, with the exception of the parking brake. When stopping the trailer or semitrailer from the cab of the towing vehicle, even if the trailer brakes are not operated by the same lever or pedal as the towing vehicle's brake system, apply the brakes of the trailer or semitrailer simultaneously with those of the towing vehicle so as not to overload the brakes of the trailer. Maximum braking efficiency will be obtained if the brakes are applied to a point just short of the skidding point.

Section VII

OPERATION UNDER UNUSUAL CONDITIONS

13. OPERATION PRECAUTIONS.

a. **Extreme Heat and Cold.** For proper lubrication under conditions of extreme heat and cold, refer to section IX. Care must be taken before going into operation in extremely cold temperatures to check air brake system. Keep air lines and tank free from water (condensation) to prevent the formation of ice thus preventing the proper operation of the brake system.

b. **Sand or Dust.** Extremely sandy or dusty operation necessitates frequent inspection, cleaning, and lubrication of the moving parts of the trailer.

c. **Snow, Ice, and Mud.** When operating on roads covered with snow, ice, or mud, chains should be attached to the trailer wheels to assist in proper braking of the trailer. The trailer brakes, under these conditions, should be applied slightly ahead of the towing vehicle's brakes to prevent, if possible, skidding or jackknifing of the trailer.

Section VIII

DEMOLITION TO PREVENT ENEMY USE

14. GENERAL.

a. Destruction of the vehicle, when subject to capture or abandonment in combat zone, will be undertaken by the using arm only when, in the judgment of the military commander concerned, such action is necessary.

b. The instructions which follow are for information only. The conditions under which destruction will be effected are command decisions in each case, according to the tactical situation.

c. If destruction is resorted to, the vehicle must be so badly damaged that it cannot be restored to a usable condition in the combat zone, either by repair or cannibalization. Adequate destruction requires that all parts essential to the operation of the vehicle may be destroyed or damaged beyond repair. Equally important, the same essential parts must be destroyed on all like vehicles so that the enemy cannot piece together a complete operating unit by using several damaged units.

15. DETAILED INSTRUCTIONS.

a. The following instructions contain several methods of demolition for this trailer, in the order of their effectiveness.

(1) METHOD NO. 1. Place 2-pound TNT charges inside each set of wheels, above the axles. Insert tetryl nonelectric caps with at least 5 feet of safety fuse in each charge. Ignite the fuzes and take cover. CAUTION: *If the charges are prepared beforehand and carried in the vehicle, keep the caps and fuzes separated from the charges until they are to be used.*

(2) METHOD NO. 2. Ignite an M14 incendiary grenade under each tire, or deflate the tires and destroy them with an ax, pick, or machine gun fire. Pour spare gasoline over each tire and ignite. Fire on vehicle, using antitank, tank, or other artillery, or antitank rockets or grenades. If a good fire is started, the vehicle may be considered as destroyed.

(3) METHOD NO. 3. Smash the lights, reflectors, light switches, sockets, air lines, and brake operating units. Place an M14 incendiary grenade under each tire or deflate tires and destroy them with an ax, pick, or machine gun fire. Pour gasoline over*the entire unit. Ignite the incendiary grenades, or, if not used, ignite the vehicle by other means.

PART THREE—MAINTENANCE INSTRUCTIONS

Section IX

GENERAL

16. SCOPE.

a. Part Three contains information for the guidance of personnel of the using organizations responsible for the maintenance (first and second echelon) of this equipment. It contains information for the performance of the scheduled lubrication and preventive maintenance services, as well as description and maintenance information on the major systems and units and their functions in relation to other components of the equipment.

Section X

SPECIAL ORGANIZATIONAL TOOLS AND EQUIPMENT

17. TOOLS AND EQUIPMENT.

- a. No special tools are required to service the vehicle.
- b. ORD 6, SNL G-27, Section 2, furnishes information on standard tools available to service the vehicle.

Section XI

LUBRICATION

18. GENERAL INSTRUCTIONS.

a. **Scope.** War Department Lubrication Order No. 9-897 prescribes lubrication maintenance for these trailers. Figure 7 contains the same information as does WDLO No. 9-897, although it is not a facsimile of the WDLO. Figures 8 and 9 illustrate localized points of lubrication.

b. **Availability.** A lubrication order is placed on, or is issued with, each vehicle, and is to be carried with it at all times. In the event the vehicle is received without an order, the using arm shall immediately requisition a replacement from the Adjutant General Depot (See lists in FM 21-6.)

c. **Responsibility.** Lubrication instructions on the order are binding on all echelons of maintenance and there shall be no deviation from these instructions.

d. **Intervals.** Service intervals specified on the order are for normal operating conditions. Reduce these intervals under extreme conditions such as excessively high or low temperatures, prolonged periods of high-speed, continued operation in sand or dust, immersion in water, or exposure to moisture, any one of which may quickly destroy the protective qualities of the lubricant and require servicing in order to prevent malfunctioning or damage to the materiel.

e. **Temperatures.** Lubricants are prescribed in the "Key" in accordance with three temperature ranges; above $+32^{\circ}\text{F}$, $+32^{\circ}\text{F}$ to 0°F , and below 0°F . Determine the time to change grades of lubricants by maintaining a close check on operation of the vehicle during the approach to change-over periods. Ordinarily it will be necessary to change grades of lubricants only when air temperatures are consistently in the next higher or lower range.

19. DETAILED LUBRICATION INSTRUCTIONS.

a. **Lubrication Equipment.** Operate lubricating guns carefully, and in such a manner as to insure a proper distribution of the lubricant. If lubrication fitting valves stick and prevent the entrance of lubricant, remove the fitting and determine the cause. Replace broken or damaged lubricators. If lubricator cannot be replaced immediately, cover hole with tape as a temporary expedient to prevent the entrance of dirt.

b. Points of Application.

(1) Lubrication fittings and oilholes are readily identifiable on the vehicle. Wipe clean such lubricators and the surrounding surface before lubricant is applied.

(2) Always wipe clean, metal surfaces on which a film of lubricant must be maintained by manual application, before the film is renewed.

c. **Cleaning.** Use dry-cleaning solvent or Diesel fuel oil to clean or wash all parts. Use of gasoline for this purpose is prohibited. After washing, dry all parts thoroughly before applying lubricant.

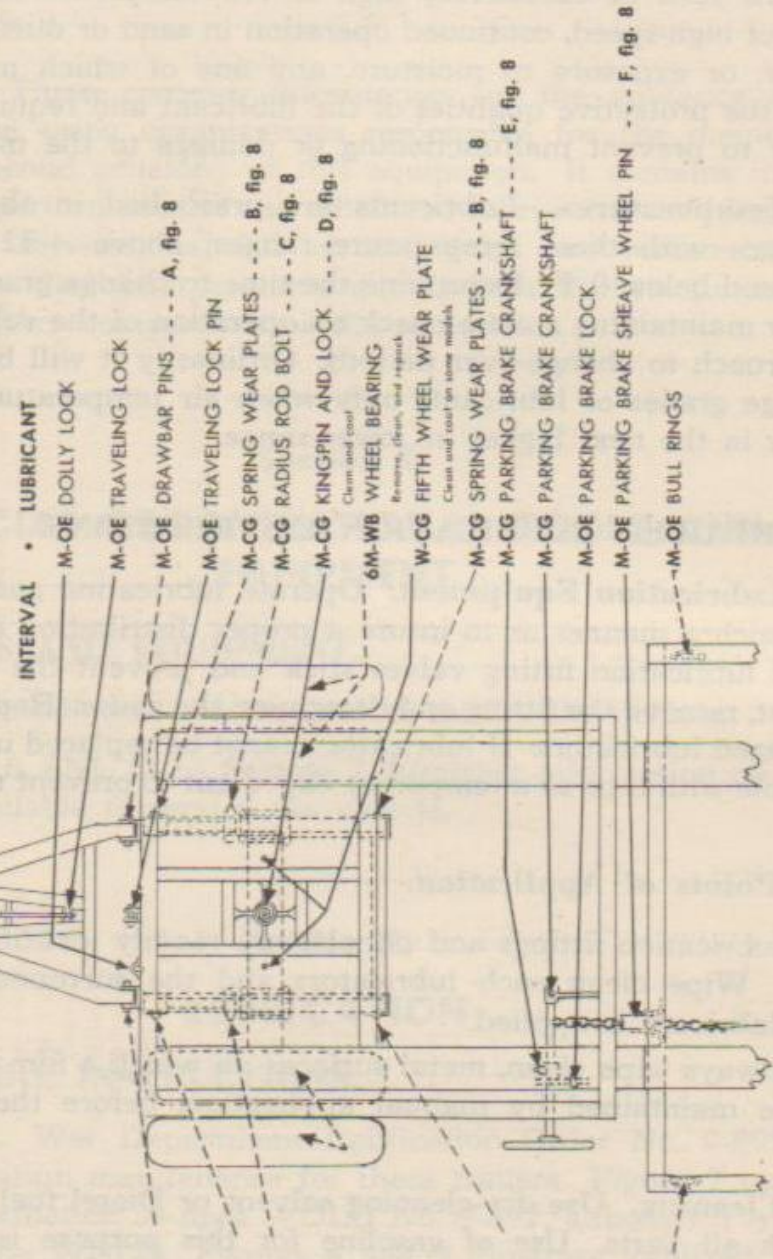
d. Lubrication Notes on Individual Units and Parts.

(1) **WHEEL BEARINGS.** Remove bearing cone assemblies from hub and spindle. Wash bearings, cones, spindle, and inside of hub with dry-cleaning solvent and dry thoroughly without using compressed air. Inspect bearing races and replace if damaged. Coat lightly the

Clean all parts with SOLVENT, dry-cleaning or OIL, fuel, Diesel.
Lubricate dotted arrow points on both sides.

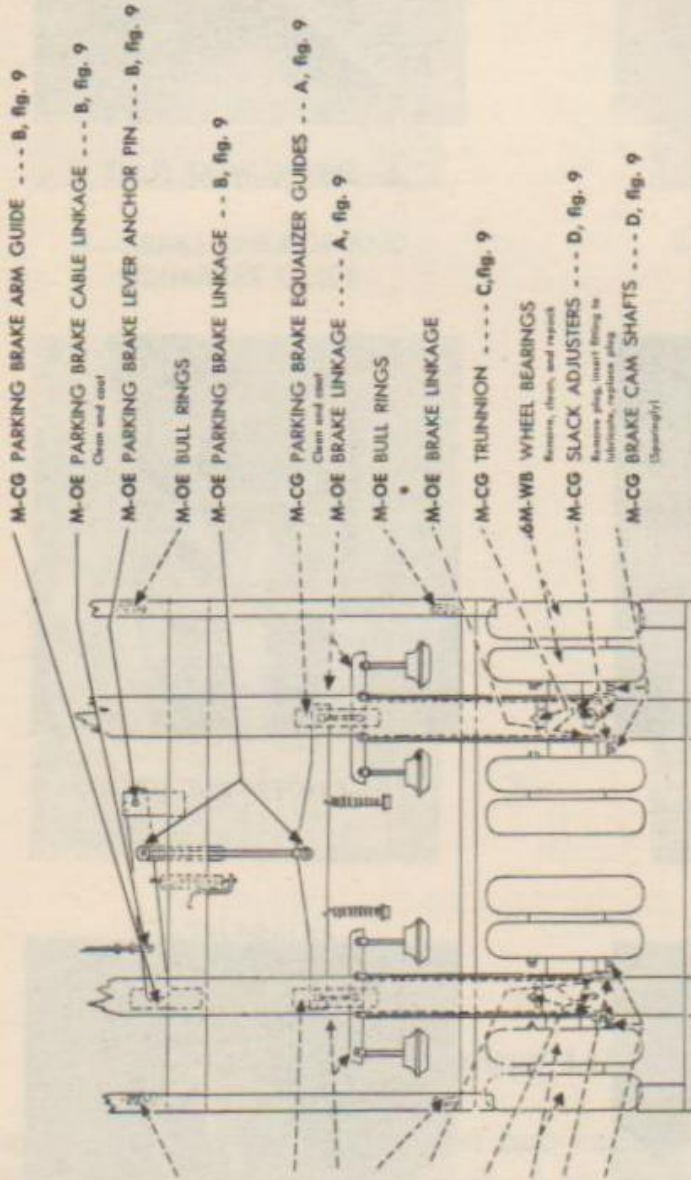
Service intervals are based on actual operation under normal conditions above 0° F. Reduce under extreme conditions. Extend when not in use.

Requisition additional Lubrication Order from Adjutant General Depot. See lists in FM 21-6.



RA PD 344137

Figure 7—Temporary

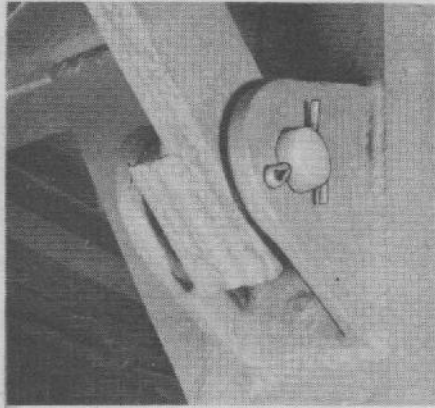


LUBRICANTS	LOWEST ANTICIPATED AIR TEMPERATURES	
	above +32° F.	+32° F. to 0° F., below 0° F.
OE—Oil, engine	SAE 30	SAE 10
CG—GREASE, general purpose	No. 1	No. 0
WB—GREASE, general purpose, No. 2 — ALL TEMPERATURES	No. 0	
PS—Oil, lubricating, preservative, special	No. 0	

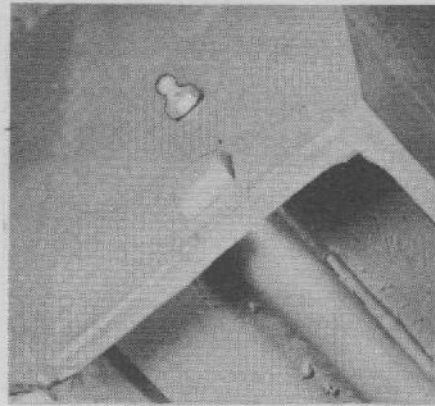
NOTE: This is not an exact reproduction of War Department Lubrication Order No. 9-897 although the same information is included.

INTERVALS
 W—Weekly
 M—Monthly
 ΔM—6 Months

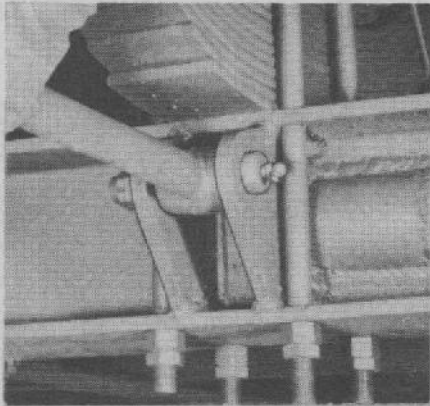
RA PD 344137B



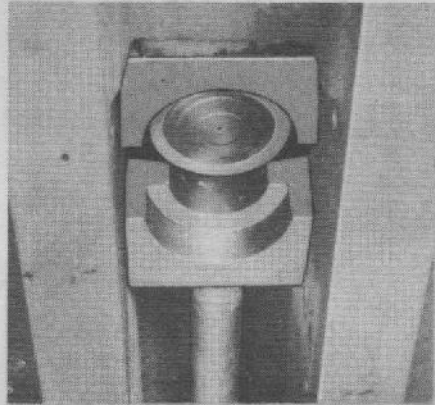
A—DRAWBAR PIN



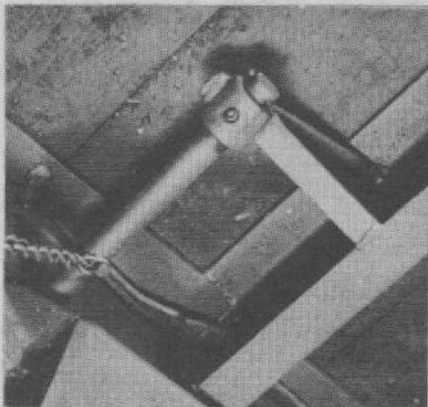
B—SPRING WEAR PLATE



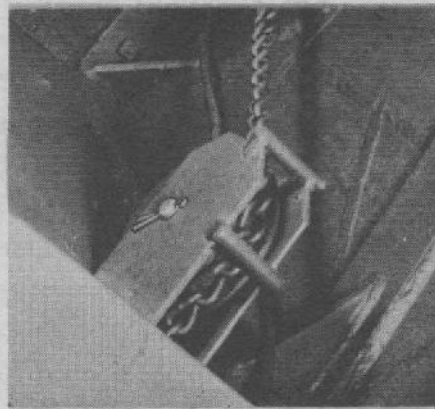
C—RADIUS ROD BOLT



D—KINGPIN AND LOCK



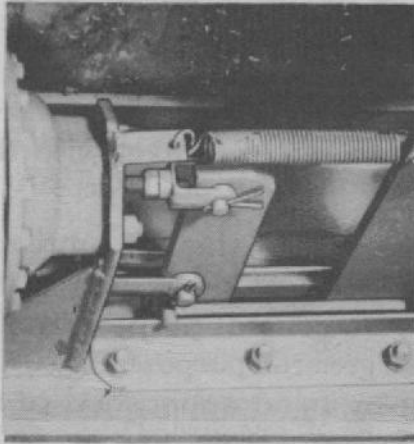
E—PARKING BRAKE CRANKSHAFT



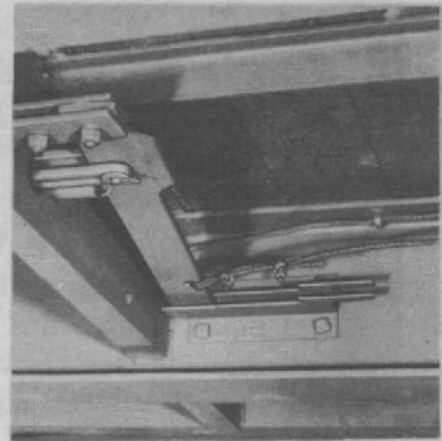
F—SHEAVE WHEEL PIN

RA PD 344138

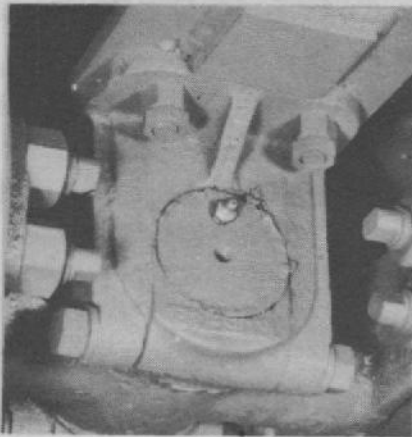
Figure 8—Localized Lubrication Views



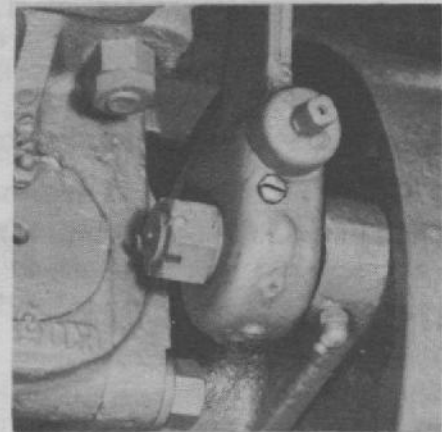
A—BRAKE LINKAGE AND
EQUALIZER GUIDE



B—PARKING BRAKE LINKAGE
AND BRAKE ARM GUIDE



C—TRUNNION



D—SLACK ADJUSTER AND
BRAKE CAM SHAFT

RA PD 344139

Figure 9—Localized Lubrication Views

spindle and inside of hub and hub cap with general purpose grease No. 2, to a maximum thickness of $\frac{1}{16}$ inch, to retard rust. Pack the bearings with general purpose grease No. 2, using care to protect the bearings from dirt. Immediately reassemble and replace the hub and drum assembly on the spindle. Do not fill the hub with grease. Any excessive lubrication will result in leakage past the retainer and onto the brakes. Adjust wheel bearings (par. 31).

(2) **BRAKE CAMSHAFTS AND ANCHOR PINS.** When lubricating these points, care must be exercised to not overlubricate. Overlubricating

will cause grease to flow onto the brake shoes, thus causing faulty brakes.

(3) **BRAKE CAM.** Coat the contact sides of the brake cam lightly with general purpose grease No. 2 when wheels are removed for wheel bearing lubrication. Do not allow grease to come in contact with the brake lining.

(4) **KINGPIN AND FIFTH WHEEL PLATES.** Clean the old lubricant from the kingpin, kingpin lock, upper fifth wheel plate, and lower fifth wheel plate. Lubricate these points with general purpose grease No. 1 for temperatures above +32°F, and general purpose No. 0 for temperatures below 0°F. Apply lubricant by hand application to all points of wear.

(5) **OILCAN POINTS.** Monthly, lubricate all brake linkage and anchor pins, parking brake lock, traveling anchor pin and lock pin, drawbar pins, dolly lock, bull rings, and other friction points with engine oil, SAE 30 above +32°F, SAE 10 between +32°F and 0°F, and special preservative lubricating oil below 0°F.

e. Reports and Records.

(1) Report unsatisfactory performance of materiel to the Ordnance Officer responsible for maintenance as prescribed in TM 37-250.

(2) A record of lubrication may be maintained in the duty roster (W.D., A.G.O. Form No. 6).

Section XII

PREVENTIVE MAINTENANCE SERVICES

20. GENERAL INFORMATION.

a. Responsibility and Interval. Preventive maintenance services as prescribed by AR 850-15 are a function of using organization echelons of maintenance, and their performance is the responsibility of the commanders of such organizations. These services consist generally of before, during, at-halt, after-operation, and weekly services performed by the driver and the scheduled services to be performed at designated intervals by organizational maintenance personnel.

b. Definition of Terms. The general inspection of each item applies also to any supporting member or connection, and is generally a check to see whether the item is in good condition, correctly assembled, secure, or excessively worn.

Preventive Maintenance Services

- (1) The inspection for "good condition" is usually an external visual inspection to determine whether the unit is damaged beyond safe or serviceable limits. The term "good condition" is explained further by the following: Not bent or twisted, not chafed or burned, not broken or cracked, not bare or frayed, not dented or collapsed, not torn or cut, not deteriorated.
- (2) The inspection of a unit to see that it is "correctly assembled" is usually an external visual inspection to see whether it is in its normal assembled position in the vehicle.
- (3) The inspection of a unit to determine if it is "secure" is usually an external visual examination, a wrench, hand-feel, or a pry-bar check for looseness. Such an inspection must include any brackets, lock washers, lock nuts, locking wires, or cotter pins used in assembly.
- (4) "Excessively worn" will be understood to mean worn beyond serviceable limits, or to a point likely to result in failure if the unit is not replaced before the next scheduled inspection.

21. DRIVER MAINTENANCE (FIRST ECHELON).

a. Purpose. To insure mechanical efficiency it is necessary that the vehicle be systematically inspected at intervals each day it is operated and weekly, so defects may be discovered and corrected before they result in serious damage or failure. Certain scheduled maintenance services will be performed at these designated intervals. Any defects or unsatisfactory operating characteristics beyond the scope of first echelon to correct, must be reported at the earliest opportunity to the designated individual in authority. The services set forth in paragraphs 22, 23, 24, and 25, are those performed by the driver before-operation, during-operation, at-halt, and after-operation and weekly.

b. Use of W.D. Form No. 48. Driver preventive maintenance services are listed on the back of Driver's Trip Ticket and Preventive Maintenance Service Record W.D., Form No. 48, to cover vehicles of all types and models. Items peculiar to this vehicle, but not listed on W.D., Form No. 48, are covered in manual procedures under the items with which they are related. Certain items listed on the form, that do not pertain to this vehicle, are eliminated from the procedures as written into the manual. Every organization must thoroughly school each driver in performing the maintenance procedures set forth in this manual, whether they are listed specifically on W.D., Form No. 48 or not. The items listed on W.D., Form No. 48, that apply to this vehicle are expanded in this manual to provide specific procedures for accomplishment of the inspections and services. The services are arranged to facilitate inspection and conserve the time of the driver, and are not necessarily in the same numerical order as

shown on W.D., Form No. 48. The item numbers, however, are identical with those shown on that form.

22. BEFORE-OPERATION SERVICE.

a. Purpose. This inspection schedule is designed primarily as a check to see that the vehicle has not been damaged, tampered with, or sabotaged since the "After-operation Service" was performed. Various combat conditions may have rendered the vehicle unsafe for operation and it is the duty of the driver to determine whether the vehicle is in condition to carry out any mission to which it is assigned. This operation will not be entirely omitted, even in extreme tactical situations.

b. Procedures. Before-operation Service consists of inspecting items listed below according to the procedure described, and correcting or reporting any deficiencies. Upon completion of the service, results will be reported promptly to the designated individual in authority.

(1) **ITEM 1, TAMPERING AND DAMAGE.** Examine the exterior of vehicle, attachments, and equipment, for injury caused by tampering, sabotage, collision, falling debris, or shell fire since parking.

(2) **ITEM 5, AIR BRAKE TANK AND AIR FILTERS.** Examine air brake reservoir tank filters, air lines, and connections for looseness or damage. If connected to tractor-truck, listen for air leaks, drain water from tank, and close drain cock. Be sure truck to trailer air couplings are securely connected, or if not in use, that they are closed and properly supported, and that dummy couplings are attached.

(3) **ITEM 12, LAMPS (LIGHTS) AND REFLECTORS.** Clean all light lenses and warning reflectors, and inspect units for looseness or damage. If trailer is connected, and tactical situation permits, try trailer lights with trailer light switch in each position to see if lamps respond properly.

(4) **ITEM 13, WHEEL AND HUB NUTS.** See that all wheel and hub assembly and mounting nuts are present and secure.

(5) **ITEM 14, TIRES.** Be sure all tires are properly inflated to 65 pounds front, and 100 pounds rear (maximum) when cool. Remove all objects lodged in treads or carcasses, and from between the duals. Inspect tires for damage, see that valve stems are in good condition and in correct position, and be sure all valve caps are finger tight.

(6) **ITEM 15, SPRINGS AND SUSPENSIONS.** Examine front radius rods, springs, spring clips and U-bolts for looseness or damage. Look for excessive spring sag or shifted leaves.

(7) **ITEM 18, TOWING CONNECTIONS.** Inspect drawbar and lunette assembly for looseness or damage. See that drawbar to dolly lock is secure if dolly is being towed without the rest of the trailer. If

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vehicle is being towed as a full trailer, be sure dolly is properly connected to trailer, and that kingpin locking device is secure.

(8) **ITEM 19, FRAME (DOLLY AND PLATFORM) AND LOAD.** Inspect all trailer and dolly frame beams, side and crossmembers, brackets and attachments for looseness or damage. Examine platform bed boards to be sure they are secure and look for broken or splintered boards. See that any load carried is properly distributed and secure.

(9) **ITEM 21, TOOLS, PARTS AND ACCESSORIES.** Be sure that all vehicle tools, spare parts and accessory items are present, in good condition, and properly mounted or stowed.

(10) **ITEM 23, DRIVER'S PERMIT AND FORM 26.** The driver must have his operator's permit on his person. He must see that the vehicle Technical Manuals, Lubrication Order, and Forms No. 26, 48, and 478 are present, legible, and properly stowed.

23. DURING-OPERATION SERVICE.

a. **Observations.** While vehicle is in motion, listen for any sounds such as: rattles, knocks, squeals, or hums that may indicate trouble. Be alert for odors indicating overheated brakes or other trouble. When brakes are used, or the vehicle turned, consider this a test and note any unsatisfactory or unusual performance.

b. **Procedures.** During-operation Services consist of observing items listed below according to the procedures following each item, and investigating any indications of serious trouble. Note minor deficiencies to be corrected or reported at earliest opportunity, usually the next scheduled halt.

(1) **ITEM 27, BRAKES.** While the towing vehicle and trailer are in motion, test the operation of the trailer brakes independently, if possible, to see if they are effective, and will stop the vehicle without pull to one side, and without excessive noise.

(2) **ITEM 34, RUNNING GEAR.** Be alert at all times during operation for any unusual noise or unsatisfactory operating characteristics in the wheels, suspension units or tires, that might indicate looseness, damage, inadequate lubrication or underinflated tires.

(3) **FRAME AND LOAD.** Be alert for any side sway, sag, or erratic tracking of the trailer that might indicate damage to frame members, shifting of load, or improperly connected towing devices.

24. AT-HALT SERVICE.

a. **Importance.** At-halt Services may be regarded as minimum maintenance procedures, and should be performed under all

tactical conditions even though more extensive maintenance services must be slighted, or omitted altogether.

b. Procedures. At-halt Services consist of investigating any deficiencies noted during operation, inspecting items listed below according to the procedures following the items, and correcting any deficiencies found. Deficiencies not corrected should be reported promptly to the designated individual in authority.

- (1) **ITEM 39, TEMPERATURES (HUBS AND DRUMS).** Cautiously hand-feel each wheel hub and brake drum to see if they are excessively hot.
- (2) **ITEM 42, SPRINGS AND SUSPENSIONS.** Inspect springs, suspensions, and radius rods for indications of looseness or damage.
- (3) **ITEM 44, WHEEL AND HUB NUTS.** Inspect all wheel and hub mounting or assembly nuts to be sure they are all present and secure.
- (4) **ITEM 45, TIRES.** Inspect all tires for underinflation and damage. Remove any objects lodged in treads or carcasses, and from between duals. *NOTE: Tire air pressure increase during operation should not be reduced.*
- (5) **ITEM 50, TOWING CONNECTIONS.** Examine air and electric connections, and dolly to trailer connection and kingpin locking device to be sure they are in good condition and secure.
- (6) **ITEM 51, FRAME AND LOAD.** Inspect entire frame, dolly and platform assemblies for looseness or damage. Be sure load is properly distributed and secured.
- (7) **ITEM 52, GLASS.** Wipe off all light and reflector glass and inspect units for looseness or damage.

25. AFTER-OPERATION AND WEEKLY SERVICE.

a. Purpose. After-operation servicing is particularly important because at this time the driver inspects the vehicle to detect any deficiencies that may have developed, and to correct those he is permitted to handle. He should promptly report results of the inspection to the designated individual in authority. If this schedule is performed thoroughly, the vehicle should be ready to roll again on a moment's notice. The Before-operation Service, with a few exceptions, is then necessary only to ascertain whether the vehicle is in the same condition in which it was left upon completion of the After-operation Service. The After-operation Service should never be entirely omitted, even in extreme tactical situations, but may be reduced to the bare fundamental services outlined for the At-halt Service, if necessary.

Preventive Maintenance Services

b. Procedures. When performing the After-operation Service the driver must remember and consider any irregularities noticed in the Before-operation, During-operation, and At-halt Services. The After-operation Service consists of inspecting and servicing the following items: Those items of the After-operation Service that are marked by an asterisk (*) require additional Weekly Services, the procedures for which are indicated in step (b) of each applicable item.

(1) **ITEM 59, LAMPS (LIGHTS) AND REFLECTORS.** Clean all units, and inspect them for looseness and damage. If tactical situation permits, open and close light switches to be sure they operate properly, and see if the lamps respond.

(2) **ITEM 64, ELECTRICAL WIRING.** Examine all accessible wiring and conduits under vehicle for damage, and see that it is properly and securely connected and supported.

(3) **ITEM 68, *TIRES.**

(a) Examine all tires for damage and excessive wear. Remove objects lodged in treads, carcasses, and between duals. Check for low pressure, proper position of valve stems and presence of valve caps. Inflate tires to correct pressure, 65 pounds front, and 100 pounds rear (maximum) cool.

(b) *Weekly.* Replace badly worn or otherwise unserviceable tires. Serviceable tires which show abnormal wear should be rotated to other wheel positions. Apparent mechanical defects causing such wear should be reported for attention by higher echelon.

(4) **ITEM 69, SPRINGS AND SUSPENSIONS.** Clean out all objects lodged in suspension system or between units and front springs, and inspect for excessive spring sag, shifted or broken leaves, loose or damaged clips, or radius rods or brackets. Be sure radius rod adjusting lock nuts are secure. Examine rear oscillating axle trunnion mountings to be sure they are in good condition and secure.

(5) **ITEM 75, *AIR BRAKE TANK AND FILTERS.**

(a) Inspect tank and filters on trailer for looseness and damage. See that all connections are tight, and that air lines are properly supported so as not to chafe on other vehicle parts. Drain water from tank and close drain cock.

(b) *Weekly.* Have assistant operate all brake control valves, and listen for air leaks. Tighten tank mountings and all connections where leaks are heard. Clean oil from all trailer air line rubber hose. Drain sediment and water from both air line filters.

(6) **ITEM 77, TOWING CONNECTIONS.** Be sure all tow hitch and air and electrical connections are in good condition and secure.

(7) **ITEM 78, FRAME AND LOAD.** Inspect all trailer and dolly frame members, platform floor, and all attachments or brackets to see that they are in good condition and securely assembled and mounted. Any loaded cargo or equipment must be properly distributed and secured.

(8) **ITEM 82, *TIGHTEN.**

(a) Tighten any loose assembly or mounting nuts or screws indicated as necessary during this inspection.

(b) *Weekly.* Tighten all wheel mounting and hub nuts, spring clips, U-bolts, rear trunnion shaft bearing caps, towing connections and assembly nuts or screws that experience or inspection indicate as necessary on a weekly or mileage basis.

(9) **ITEM 83, *LUBRICATE AS NEEDED.**

(a) Lubricate all points where inspection has indicated oilcan or hand greasing is necessary.

(b) *Weekly.* Lubricate all points listed on the vehicle lubrication order (fig. 7), or in the notes (par. 19) as requiring weekly attention.

(10) **ITEM 84, *CLEAN VEHICLE.**

(a) Clean all excess dirt and grease from entire dolly and trailer, particularly around wheels, suspensions, and brake operating mechanism.

(b) *Weekly.* Wash vehicle when possible. If not possible, wipe off thoroughly. Inspect paint for damage, rust spots, or bright spots that may cause glare or reflections. See that all markings (unless covered for tactical reasons) are legible. **CAUTION:** *When vehicles are driven into water for washing, care must be taken to see that water or dirt does not get into wheel bearings, or brakes or on electrical units or wiring.*

(11) **ITEM 85, *TOOLS, PARTS AND ACCESSORIES.**

(a) Be sure that all vehicle tools, spare parts and accessory items are present, in good condition, and properly mounted or stowed.

(b) *Weekly.* Clean all tools, hydraulic jacks and items of vehicle equipment, and see that all items are serviceable. Mount or stow them properly and securely.

26. ORGANIZATIONAL MAINTENANCE (SECOND ECHE-LON).

a. **Frequency.** The frequency of preventive maintenance services outlined herein is considered a minimum requirement for normal operation of vehicles. Under unusual operating conditions such

Preventive Maintenance Services

as extreme temperatures, severe dust, sandy or extremely wet terrain, it may be necessary to perform certain maintenance services more frequently.

b. First Echelon Participation. The drivers should accompany their vehicles and assist the mechanics while periodic second echelon preventive maintenance services are performed. Ordinarily the vehicle should be presented for a scheduled preventive maintenance service in a reasonably clean condition; that is, it should be dry, and not caked with mud or grease to such an extent that inspection and servicing will be seriously hampered. However, the vehicle should not be washed or wiped thoroughly clean, because certain types of defects, such as cracks, leaks, and loose or shifted parts or assemblies, are more evident if the surfaces are slightly soiled or dusty.

c. Sources of Additional Information. If instructions other than those contained in the general procedures in subparagraph **d**, or the specific procedures in subparagraph **i**, which follow, are required for proper performance of a preventive maintenance service or for correction of a deficiency, they may be secured from other sections of this manual or from the designated individual in authority.

d. General Procedures. These general procedures are basic instructions which are to be followed when performing the services on the items listed in the specific procedures. *NOTE: The second echelon personnel must be thoroughly trained in these procedures so that they will apply them automatically.* When new or overhauled subassemblies are installed to correct deficiencies, care must be taken to see that they are clean, correctly installed, and properly lubricated and adjusted.

e. Definition of Terms. Refer to paragraph 20 **b**.

f. Special Services. These are indicated by repeating the item numbers in the columns which show the interval at which the services are to be performed, and show that the parts or assemblies are to receive certain mandatory services. For example: an item number in one or both columns opposite a tighten procedure, means that the actual tightening of the object must be performed. The special services include:

(1) **ADJUST.** Make all necessary adjustments in accordance with the pertinent section of this manual, special bulletins, or other current directives.

(2) **CLEAN.** Clean units of the vehicle with dry-cleaning solvent to remove excess lubricant, dirt, and other foreign material. After the parts are cleaned, rinse them in clean solvent and dry them thoroughly. Take care to keep the parts clean until reassembled and be certain

to keep cleaning solvent away from rubber or other material which it will damage. Clean the protective grease coating from new parts since this material is usually not a good lubricant.

(3) **SPECIAL LUBRICATION.** This applies both to lubrication operations that do not appear on the vehicle lubrication order and to items that do appear on the order but should be performed in connection with the maintenance operations, if parts have to be disassembled for inspection or service.

(4) **SERVICE.** This usually consists of performing special operations, such as changing or cleaning the air filters, or exhaust check valve.

(5) **TIGHTEN.** All tightening operations should be performed with sufficient wrench torque (force on the wrench handle) to tighten the unit according to good mechanical practice. Do not overtighten, as this may strip threads or cause distortion. Tightening will always be understood to include the correct installation of lock washers, lock nuts, lock wire, or cotter pins provided to secure the tightening.

g. Special Conditions. When conditions make it difficult to perform all preventive maintenance procedures at one time, they can sometimes be handled in sections, planning to complete all operations within the week if possible. All available time at halts and in bivouac areas must be utilized, if necessary, to assure that maintenance operations are completed. When time is limited by the tactical situation, items with Special Services in the columns, should be given first consideration.

h. Work Sheet. The numbers of the preventive maintenance procedures that follow are identical with those outlined on W.D., A.G.O. Form No. 461, Preventive Maintenance Service Work Sheet for Wheeled and Half-track Vehicles. Certain items on the work sheet that do not apply to this vehicle are not included in the procedures in this manual. In general, the numerical sequence of the items on the work sheet is followed in the manual procedures, but in some instances there is deviation for conservation of the mechanic's time and effort.

i. Specific Procedures. The procedures for performing each item in the monthly and 6-month maintenance procedures are described in the following chart. Each page of the chart has two columns at its left edge corresponding to the 6-month and the monthly maintenance respectively. Very often it will be found that a particular procedure does not apply to both scheduled maintenances. In order to determine which procedure to follow, look down the column corresponding to the maintenance due, and wherever an item number appears, perform the operations indicated opposite the number.

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ROAD TEST

MAINTENANCE	
Six Month	Monthly
1	1
5	5
10	10
12	12
13	13
47	47

NOTE: *When the tactical situation does not permit a full road test, perform those items which require little or no movement of the vehicle. When a road test is possible, it should be for preferably 4 and not over 6 miles.*

1 **Before-operation Service.** Perform this inspection as outlined in paragraph 22.

5 **Brakes, Service and Emergency (Braking Effect, Side Pull, Noise, Chatter, Air Control).** Test trailer brakes separately by use of hand control or foot treadle, on truck tractor, and observe if they are effective. Note any erratic action, side pull or noise that might indicate uneven brake shoe pressure, dirty linings or scored drums. Stop trailer and disconnect emergency line and observe if brakes automatically hold vehicle.

10 **Unusual Noises (Frame, Dolly, Attachments, Wheels).** Be on the alert during road test for any noise that may indicate loose or damaged attachments mounted on dolly and trailer. Listen particularly for indications of loose wheel mountings. Have assistant listen for any unusual noises from axles, suspension units or towing connections that would indicate looseness, damage or inadequate lubrication.

12 **Air Brake System Leaks.** Test trailer air brakes for leaks with air pressure at governed maximum. Refer to tractor truck TM. With all brakes applied and engine stopped, there should not be a noticeable drop in pressure within one minute. If any pressure drop occurs during this check, test system for leaks by soapsuds methods (par. 41). Open drain cock on trailer air tank and drain condensation.

13 **Temperatures (Brake Drums, Hubs).** At completion of run, feel brake drums and hubs for abnormally high temperatures.

MAINTENANCE OPERATIONS

Raise Vehicle and Block Safely

47 **Tires and Rims.** See that valve stems are in correct position and undamaged, and that all caps are present and well seated (finger-tight). Examine all tires for

MAINTENANCE	
Six Month	Monthly
47	
48	
49	
49	

cuts, bruises, breaks, blisters, and irregular wear. Also inspect all rims, lock rings, and flanges for good condition and security.

TIGHTEN. Tighten all wheel inner and outer mounting nuts. Replace missing or damaged nuts.

SERVE. With trailer front and rear tires properly inflated to 65 pounds front, 100 pounds rear, (cool), check over-all circumferences of tires to be mounted on duals. The difference in over-all circumference must not exceed the 3/4-inch limits as specified. **CAUTION:** *Do not reinstall wheels until wheel bearing services are complete.*

Brakes (Service). On the 6-month maintenance service, the several wheel bearing and brake items, numbers 48, 49, and 52, are group services in which there will be some overlap. Perform these services in the best order for economy of time and effort and for orderly reassembly. Remove hubs and drums (par. 33) and inspect and service brakes as follows:

DRUMS AND SUPPORTS. Clean all dirt and grease from inside of drums and from supports (spiders) and from brake operating mechanisms. **CAUTION:** *Keep cleaning solvent away from brake linings.* Inspect drums for scored inside surfaces and cracks or distortion.

CAMS AND SHAFTS. Examine cams and wear plates for excessive wear (fig. 18). Make sure camshafts are free and that shafts or bearings are not excessively worn.

Brake Shoes. Without removal of the wheels, hubs or drums, examine the brake lining to see if it is in good condition and not excessively worn. If the vehicle has been operated in deep water, mud or loose sand, remove the outer right rear wheel hub and drum assembly (par. 33). Examine the linings for damage. If this lining must be replaced, remove all wheels and inspect and service their brakes as necessary. Be sure to clean, lubricate and adjust all removed wheel bearings as described in paragraphs 19 and 31.

While trailer wheels and drums are removed, inspect the linings to see if they are in good condition, correctly secured to brake shoes and in good wearing contact with the drum, free of dirt or lubricant and not excessively worn. Also see that shoes are in good condition, properly secured to the anchors and retracting spring, and observe

Preventive Maintenance Services

MAINTENANCE	
Six Month	Monthly
50	50
50	
52	52
	52
52	

if springs have sufficient tension to return shoes properly to released position. Thickness of lining at the most worn point should be enough for at least 1,000 miles of service before the rivets are likely to contact drums.

CLEAN. Clean all dirt or grease from linings with wire brush, cloth or compressed air.

ADJUST. After subsequent related items to 52 inclusive are completed, adjust the eccentric anchors, and slack adjusters so diaphragm pushrod travel is at minimum, (par. 35 b).

Radius Rods. Examine radius rods on dolly to see that they are in good condition, correctly assembled and secure. Shake the rods to test them for excessive wear. Be sure adjusting nuts are tight and locked.

REMOVE the front end of the radius rods and inspect the rubber mountings to see if they are in good condition. If the rubber appears to be hard or cracked, apply a few drops of hydraulic brake fluid. Reassemble securely.

Rear Wheels (Bearings, Nuts, Spindles). Examine the wheels to see if they are in good condition, properly assembled and secure. Look particularly for bent flanges and for rust spots. Spin the wheels and observe if there are any indications of run-out and test the bearings for indications of looseness, dryness or damage.

SERVE. If the vehicle has been operated in deep water, mud or loose sand, remove the outer rear wheel hub and drum assembly and check the bearing lubricant for contamination. If contaminated, remove bearings from all wheels (par. 32) and service in the same manner as for 6-month procedure following.

SERVE. Disassemble all wheel bearings. Clean them thoroughly with dry-cleaning solvent and examine them to see if they are in good condition and not excessively worn. Examine the axle spindles to be sure that they are in good condition and not excessively worn. As bearings are reassembled and wheel and hub assemblies replaced, proceed as follows:

SPECIAL LUBRICATION. Lubricate the wheel bearings according to instructions in lubrication order (fig. 7, par. 19).

MAINTENANCE	
Six Month	Monthly
56	56
60	60
	60
60	
70	70
	70
70	
76	76

ADJUST. Adjust wheel bearings according to instructions in paragraph 31, and replace hub caps securely.

Front (Dolly) Spring (Clips, Leaves, U-Bolts and Brackets). Inspect all applicable items to see if they are in good condition, correctly assembled and secure. Look particularly for loose or missing rebound plates, broken or shifted spring leaves, and excessive sag. Observe if the deflection of both springs is normal and approximately the same.

TIGHTEN. Tighten all spring U-bolts and rebound plates and brackets securely.

Front Wheels (Bearings, Nuts, Spindles). Inspect and service in same manner as for rear wheels, Item 52.

SERVE. Inspect and service in same manner as for rear wheels, Item 52.

SERVE. Inspect and service in same manner as for rear wheels, Item 52.

Air Brake Tank and Filters. Inspect these units for loose mountings and connections and for indications of damage or leaks. Open reservoir tank drain cock and drain off water and sediment.

CLEAN. Remove drain plugs from bottom of air filters (fig. 17), and drain off any accumulated sediment or water.

SERVE. Renew elements in air filters and renew gaskets (par. 38 b).

Air Brakes (Chambers, Rods, Seals, Slack Adjusters and Equalizer Bars). Examine all applicable items to see if they are in good condition, correctly assembled and secure. Be sure slack adjusters are properly adjusted, according to paragraph 35 a. See that chambers and air hose connections and rubber dirt seals are in good condition. Look for indications of leaks. Pay particular attention to see that equalizer bars and guides, operating rods and connections are not distorted or excessively worn. Tighten all assembly and mounting nuts and screws securely.

Preventive Maintenance Services

MAINTENANCE		
Six Month	Monthly	
80	80	Frame (Main, Side and Crossmembers). Examine trailer and dolly frame members to see that they are in good condition. Look particularly for broken assembly welds and loose or damaged brackets or attachments. Also look to see that skid rails and lash rings are intact, and that platform boards are not broken or splintered. If the frame appears to be out of alinement, report condition to designated individual in authority.
81	81	Wiring, Conduit, and Grommets. Observe these items underneath trailer to see if they are in good condition, properly supported, connected, and secure.
83	83	Brake Lines (Fittings and Hose). Examine all lines and fittings and air brake hose under trailer to see if they are in good condition, securely connected, and supported so that lines or hose will not chafe against other vehicle parts.
83		Remove trailer air brake relay-emergency valve, clean thoroughly with dry-cleaning solvent. Clean rubber parts with hydraulic brake fluid and reinstall securely (par. 37).
91	91	Lamps (Lights). Examine all light units or sockets, to be sure they are in good condition, clean, and secure. If tactical situation permits, test all switches to be sure lamps respond properly.
92	92	Safety Reflectors. See if they are all present, in good condition, clean and secure.
103	103	Paint and Markings. Examine paint of entire trailer. Look for bright and shiny spots, oil and grease, rust, scratches or bare spots. Make sure markings and identifications are legible.
124	124	Tow Hitch (Kingpin and Lock, Upper Fifth Wheel Plate, Drawbar, Lunette and Lock). Inspect the trailer upper fifth wheel plate to see that it is secure. Examine the drawbar and lunette assembly to see that they are in good condition, properly assembled and that the lock bar is properly installed or stowed.
124		Chock the rear wheels and place the hydraulic landing jacks under the frame of the trailer and raise until the weight is released from the kingpin connections.

MAINTENANCE	
Six Month	Monthly
125	125
126	126
128	128
130	130
85	85

Loosen the kingpin lock mechanism and disconnect the dolly from the trailer (par. 11 h). Examine the kingpin and locking mechanism for excessive wear.

SPECIAL LUBRICATION. Before reassembling the dolly to the trailer, thoroughly hand-grease kingpin and plate surfaces with general purpose grease, see paragraph 19. Reassemble the dolly to the trailer properly and securely and remove the landing jacks.

Air and Electric Connections. Inspect trailer air line and electric connections to truck to be sure they are in good condition, not excessively worn, and will couple securely without leaking. If trailer is not connected, be sure dummy couplings are present and connected. If rubber seals are hard or cracked, apply a film of brake fluid to rubber surfaces.

Safety Devices (Chains, Chock Blocks). Inspect safety chains and chock blocks and attaching chains to see if they are in good condition and secure. Chock blocks, when not in use, should be properly stowed to snap fastener on underside of frame in front of outer rear wheels.

Front and Rear Axles. Inspect front (dolly), axle assembly, and rear (trailer) oscillating trunnion assemblies, brackets and bearing caps to see that they are in good condition, properly assembled and secure. Be sure trunnion shafts are free and that shafts or bearings are not excessively worn.

Parking Brakes (Wheel, Shaft, Cable, Lever, Equalizer, Bars, Guides, and Return Springs). Inspect all applicable items to see that they are in good condition, correctly assembled and securely mounted or connected. Examine the chain and cable for broken links or strands or excessive rust. Be sure all equalizer bars and guides are not bent and that they are operating freely. See that return springs are intact and have sufficient tension. Make an operating test of the parking brake mechanism to be sure all components function properly.

Vehicle Lubrication. If lubrication is due, proceed according to instructions and specifications in lubrication order (sec. XI). Refer to notes (par. 19, and figs. 7, 8, and 9). Omit only those items that have received attention in the foregoing procedures. Replace missing or damaged grease fittings.

Trouble Shooting

MAINTENANCE	
Six Month	Monthly
131	131
135	135
141	141
142	142

TOOLS AND EQUIPMENT

Tools. Check all vehicle tools to be sure all items are present, in good condition, clean and properly mounted or stowed.

Publications and Form No. 26. Be sure vehicle Technical Manual TM 9-897, Lubrication Order and Form No. 26 and Form No. 478 are present, legible and properly stowed.

Modifications (MWO's Completed). Inspect trailer and dolly to be sure any modification work orders have been completed, and enter any MWO's or major unit assembly replacements made at time of this service on W.D., A.G.O. Form No. 478.

Final Road Test. Make a final road test, rechecking items 5, 10, 12, and 13. Confine road test to the minimum distance necessary to make proper observations. **NOTE:** *Correct or report to designated authority all deficiencies found during final road test.*

Section XIII

TROUBLE SHOOTING

27. BRAKES.

a. **Symptoms.** The following trouble shooting instructions apply only if the symptom is present after the trailer is properly connected to a towing vehicle the brake application system of which is functioning properly. For trouble shooting of the brake application system of the towing vehicle, refer to the pertinent 100-series TM pertaining to that vehicle.

b. **Insufficient Brakes.** See that cut-out cocks at rear of towing vehicle are open. Make sure air brake pressure is 80 to 90 pounds. See that all drain cocks on both towing vehicle and trailer are closed. Check brake shoe adjustment (par. 35 b). Test relay-emergency valve operation and replace if necessary (par. 41 e). Operate brakes and observe whether brake chamber pushrods are all extending to normal operating position when brakes are applied. If not, replace diaphragm of faulty brake chamber (par. 36).

c. **Brakes Apply Too Slowly.** Make sure air brake pressure supply from towing vehicle is 80 to 90 pounds. If not, this fault will have to be rectified by reference to applicable technical manual on maintenance of towing vehicle. Listen for leakage of air from lines or units when brakes are applied. If excessive leakage is believed to be present, check drop in pressure on gage of towing vehicle. If pressure drops more than 4 pounds per minute when brakes are held in applied position, make tests for leaks on units of brake system and lines (par. 41). If no loss in pressure due to leaks is present, inspect filters and lines for clogging. Clean if clogging is present. Check brake linkage for free action and inspect linkage and slack adjusters for sufficient lubrication and lubricate if necessary (par. 19).

d. **Brakes Release Too Slowly.** Inspect exhaust check-valve to see if it is operating properly (par. 41 d). Examine air filters and clean or replace element if necessary (par. 38). Look for restrictions in lines and if restrictions cannot be cleared, replace the line at fault. Inspect brakes and linkage for free action and correct any interference found. Lubricate if necessary (par. 19).

e. **Brakes Do Not Release.** Check to see if brake hoses are properly connected to towing vehicle. If lines are reversed, correct by connecting the towing vehicle "SERVICE" coupling to the trailer "SERVICE" coupling and the towing vehicle "EMERGENCY" coupling to the trailer "EMERGENCY" coupling. Inspect cut-out cocks on towing vehicle to make sure they are fully open. Examine brake linkage for any binding. Inspect lines for broken or damaged lines or connections. Replace damaged lines.

f. **Brakes Grab.** Observe action of brake chambers to see that they are all operating fully. If not, replace diaphragm on faulty brake chamber (par. 36). See that brake linkage is adjusted so there is equalized action on both brakes of each trunnion beam assembly. Operate brakes and observe whether shoes are contacting evenly around drum when brakes are in applied position. If not, adjust brake anchor pin of offending brake. If this will not correct the fault, replace the brake shoe (par. 39). Inspect relay-emergency valve assembly (par. 41) and replace valve assembly if found defective (par. 37).

g. **Uneven Brakeage.** If brake action is uneven, observe operation of brake chamber push rods to see if all are operating properly. Replace defective brake chamber diaphragm (par. 36), or brake chamber. If brakes still operate unevenly, make brake adjustment (par. 35). Inspect brake linings to see if any brake shoes need replacing and if so, replace brake shoe (par. 39). Inspect brake drums

to see if any are out of round or damaged. If defective drum is found, replace the hub, wheel, and drum assembly (par. 33).

28. WHEELS AND TIRES.

a. Undue or Uneven Tire Wear.

(1) **FRONT TIRES.** See that duals are properly matched. Examine radius rods to make sure they are not bent or broken and are properly secured. If damaged, replace radius rod. If radius rod is bent, look for bent front axle or axle spindle. Replace axle if spindle or axle is damaged (par. 44 or 45). Inspect wheels for damage and replace if necessary (par. 33).

(2) **REAR TIRES.** Inspect rear duals for proper match. Examine axle trunnion mounting to see that it is not loose or broken. Tighten or replace axle trunnion beam bracket if necessary (par. 45). If trunnion is securely mounted on frame, examine spindle to see if it is bent, and replace axle trunnion beam assembly if damaged or bent spindle is found (par. 45). Inspect wheels for damage and replace hub, wheel, and drum assembly if damaged (par. 33).

b. **Heating of Wheels and Hubs.** Check to see if brake is dragging. Adjust brakes if necessary (par. 35). If brakes are operating properly, remove the hub, wheel, and drum assembly and inspect wheel bearings for damage, excessive wear, or improper lubrication. If bearing is damaged or worn, replace wheel bearing and cup (par. 32). If lubrication is necessary, lubricate bearing (par. 19) and install hub, wheel, and drum assembly.

Section XIV

TIRES, WHEELS, HUBS, AND DRUMS

29. DESCRIPTION AND DATA.

a. **Description.** The vehicle is equipped with six dual tire and rim sets (12 tires). The rear tires and rims are secured to the wheels with spacers, clamps, and stud nuts. The dolly tires and rims are secured to the wheels with spacers, wedge rings and stud nuts. The rear wheel, hub, and drum assemblies are cast as one piece with the inner and outer wheel bearing cups pressed into the hubs. The dolly wheel and hub assemblies are also one piece castings with the bearing cups pressed in but with no brake drums. All the assemblies are

mounted on the wheel spindles with inner and outer roller bearings (fig. 11) and secured with wheel bearing adjusting nuts. The adjusting nuts are kept from turning on the spindle by cotter pins (fig. 10).

b. Data.

Dolly tires	4 used
Tire pressure	65 pounds
Tire size	9:00 x 20, 10 ply
Semitrailer (rear) tires.....	8 used
Tire pressure	100 pounds
Tire size	8:25 x 15, 14 ply
Dolly wheel bearings.....	4 used
Cone and rollers.....	Timken 644
Bearing cups	Timken 632
Semitrailer (rear) wheel bearings.....	8 used
Cones and rollers.....	Timken 639
Bearing cups	Timken 632

30. TIRE AND RIM REPLACEMENT.

a. Removal. With vehicle jacked up so tire does not contact the ground or any trailer surfaces, remove the stud nuts and clamps (fig. 10). On dolly, remove the wedge ring instead of clamps. Pull outer tire and rim from wheel. If inner tire is to be removed, remove the spacer and inner tire and rim from the wheel.

b. Installation. Position inner tire and rim and spacer on wheel, making sure that the valve stem is centered in the opening in the wheel provided for tire inflation purposes. Position outer tire and rim on wheel and install clamps and stud nuts (fig. 10). If installing dolly tires and rims, install wedge ring instead of clamps to secure rim on wheel.

31. WHEEL BEARING ADJUSTMENT (fig. 10).

a. Block the vehicle with chock blocks to prevent its rolling. With axle or trunnion beam assembly jacked or blocked up so the tire of the wheel involved is not touching the ground or any part of the vehicle, release the parking brake and open the service brake reservoir drain cock, to be sure the brakes are fully released. Rotate wheel by hand to make sure it is free from brake drag. Remove the hub cap. Remove the cotter pin from the wheel bearing adjusting nut and wheel spindle. While rotating wheel, tighten wheel bearing adjusting nut with wheel bearing adjusting wrench until wheel begins to bind. Check wheel for movement on spindle by attempting to pry the wheel back and forth on the spindle. If end play is evident,

Tires, Wheels, Hubs, and Drums

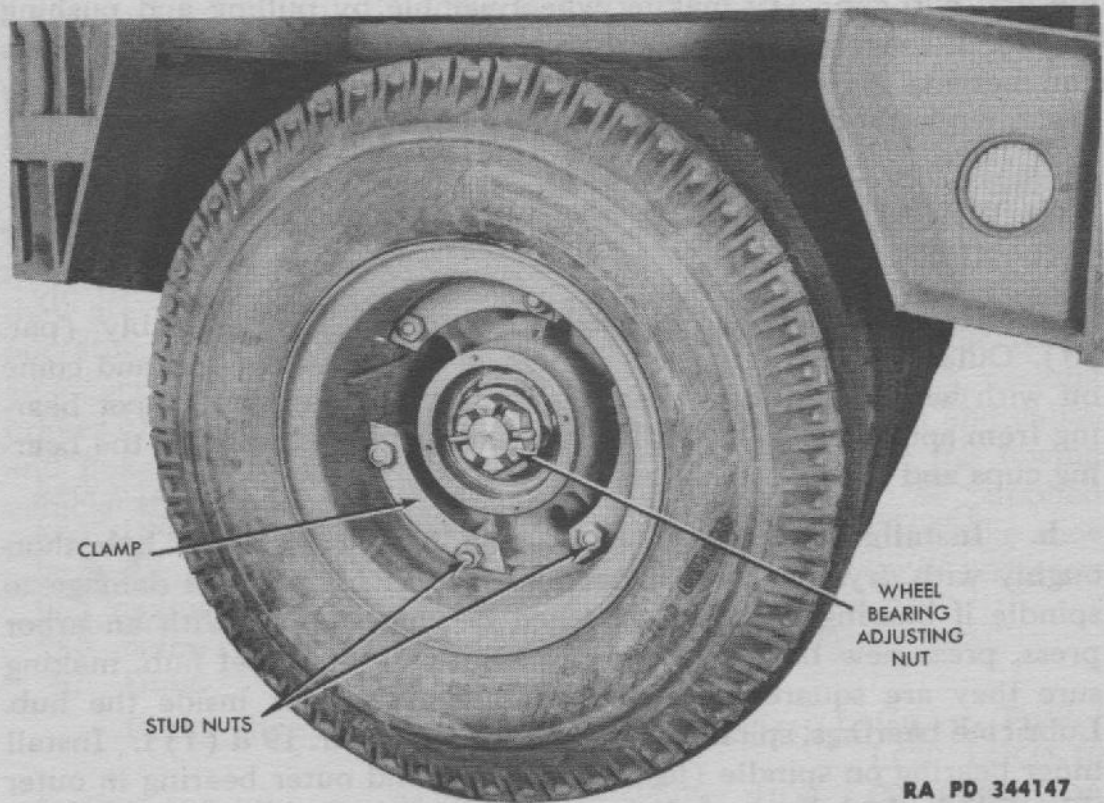


Figure 10—Rear Wheel and Tire, Hub Cap Removed

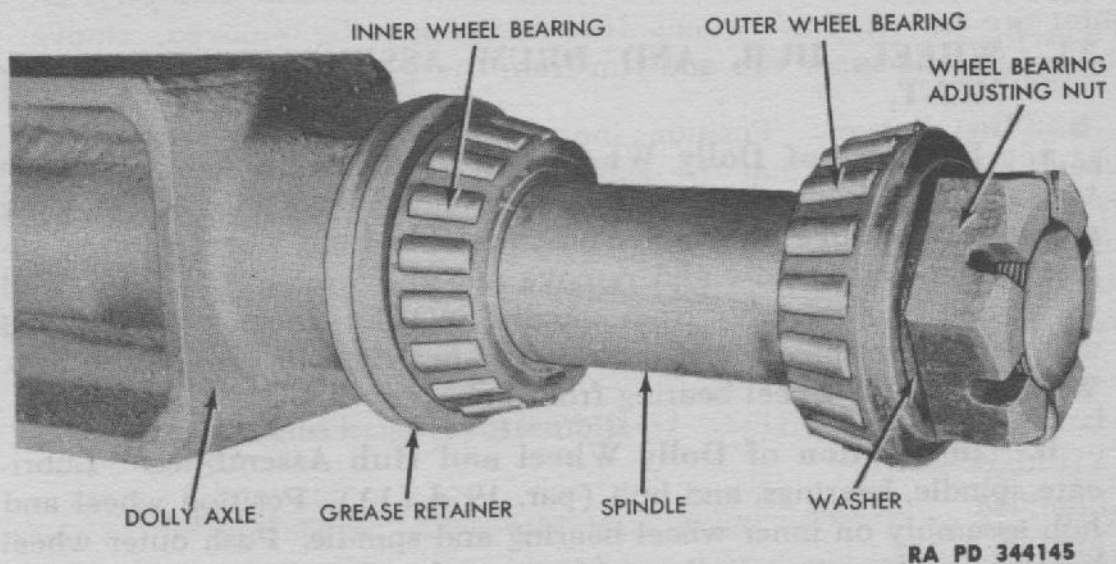


Figure 11—Wheel Bearings in Position on Dolly Axle

tighten wheel bearing adjusting nut until it can no longer be tightened without using force. This will take up slack still remaining. Back adjusting nut off three turns, then tighten again while revolving the wheel by hand. Stop tightening when wheel begins to bind or until a slight drag on wheel is evident. Back off nut one-sixth turn or slightly farther, if necessary, to line up cotter pin hole. Install cotter

pin and hub cap. Try making wheel wobble by pulling and pushing on tire. If movement is more than barely noticeable, replace bearings and bearing cups (par. 32) and repeat bearing adjustment. Close brake reservoir drain cock and lower vehicle to ground.

32. WHEEL BEARINGS AND BEARING CUPS REPLACEMENT.

a. **Removal.** Remove wheel, hub, and drum assembly (par. 33). Outer wheel bearing will remain in outer bearing cup and come off with wheel. Withdraw bearing from wheel hub. Pull inner bearing from spindle (fig. 11). Use chisel and hammer to crack the bearing cups and remove them from each side of the hub.

b. **Installation.** Clean wheel spindle and inside of hub thoroughly with dry-cleaning solvent and inspect for possible damage to spindle if bearing was badly burned or chewed up. With an arbor press, press new bearing cups into each side of wheel hub, making sure they are squarely seated against the shoulder inside the hub. Lubricate bearings, spindle, and inside of hub (par. 19 d (1)). Install inner bearing on spindle (figs. 10 and 11) and outer bearing in outer side of hub. Install wheel, hub, and drum assembly on wheel spindle (par. 33).

33. WHEEL, HUB, AND DRUM ASSEMBLIES REPLACEMENT.

a. **Removal of Dolly Wheel and Hub Assemblies.** Remove tires and rims from wheel (par. 30 a). Remove four hub cap retaining screws and remove hub cap. Pull cotter pin from wheel bearing adjusting nut and spindle and remove nut and washer (fig. 11). Pull wheel and hub assembly from spindle. **NOTE:** *Inner wheel bearing will remain on spindle and outer wheel bearing will come off in hub.* Withdraw outer wheel bearing from hub.

b. **Installation of Dolly Wheel and Hub Assemblies.** Lubricate spindle, bearings, and hub (par. 19 d (1)). Position wheel and hub assembly on inner wheel bearing and spindle. Push outer wheel bearing in place on spindle and in outer bearing cup in hub. Install washer and wheel bearing adjusting nut. Install tires and rims (par. 30 b). Adjust wheel bearings (par. 31).

c. **Replacement of Rear Wheel, Hub, and Drum Assemblies.** Block vehicle to prevent rolling and release parking brake. Make sure service brakes are all released by opening the service brake reservoir drain cock. Continue by using the same procedure as used to replace dolly wheel and hub assemblies (subpar. a and b above).

Brake System

Section XV

BRAKE SYSTEM

34. DESCRIPTION AND DATA.

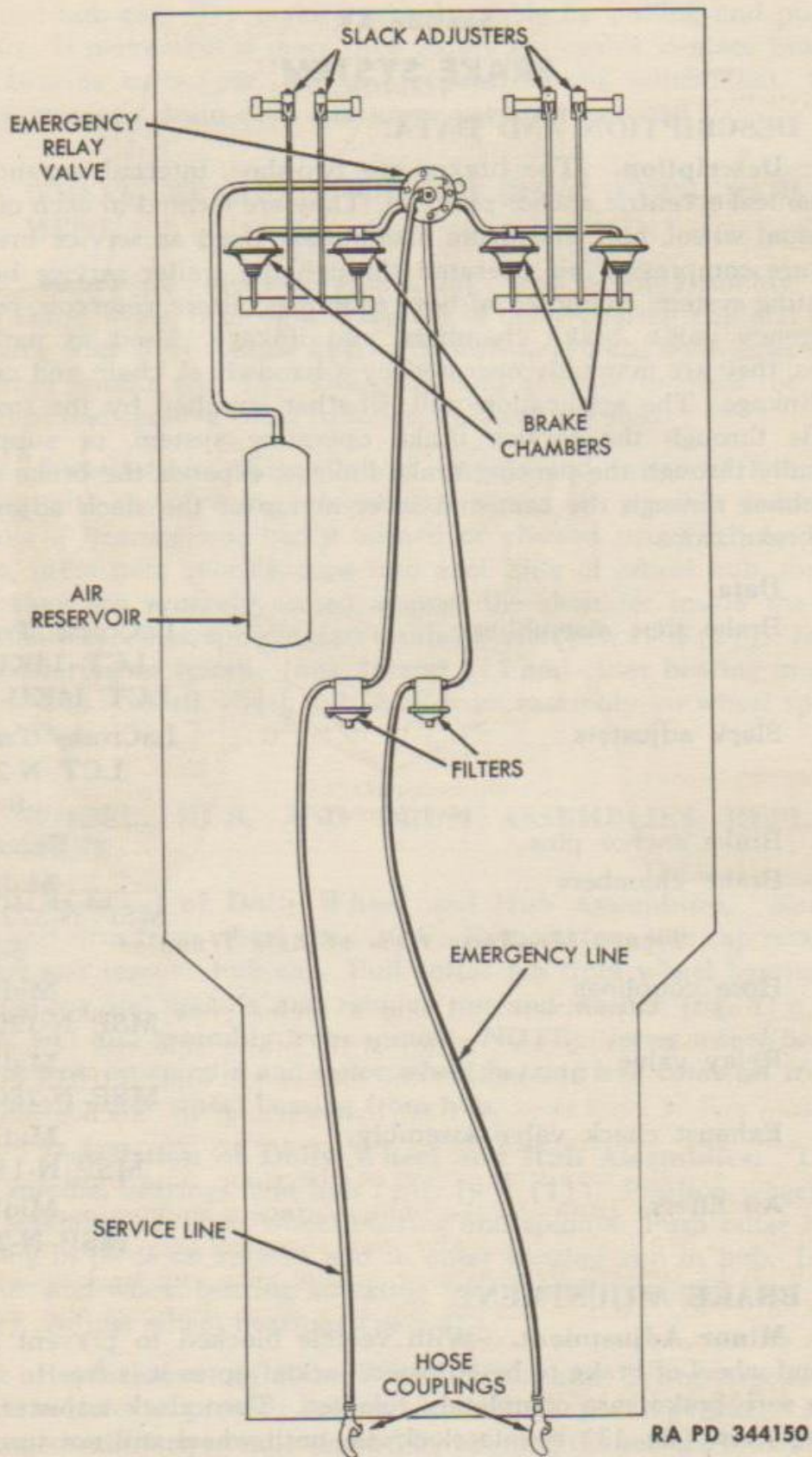
a. **Description.** The brakes are two-shoe, internal expanding, mechanical eccentric anchor pin type. They are located in each of the rear dual wheel, hub, and drum assemblies. Used as service brakes, they are compressed air operated through the trailer service brake operating system, composed of hose couplings, filters, reservoir, relay-emergency valve, brake chambers, and linkage. Used as parking brakes, they are manually operated by a handwheel, chain and cable, and linkage. The application pull, whether supplied by the towing vehicle through the service brake operating system, or supplied manually through the parking brake linkage, expands the brake shoe assemblies through the cam and lever action of the slack adjusters and brake cams.

b. **Data.**

Brake shoe assemblies	LaCrosse Trailer LCT 14KU-10 LCT 14KU-10A
Slack adjusters	LaCrosse Trailer LCT N-2195 8-inch
Brake anchor pins	Eccentric
Brake chambers	Midland MSP N-3227-M 8-inch
Hose couplings	Midland MSP N-1202-E
Relay valve	Midland MSP N-2504-A
Exhaust check valve assembly	Midland MSP N-11072
Air filters	Midland MSP N-2524

35. BRAKE ADJUSTMENT.

a. **Minor Adjustment.** With vehicle blocked to prevent rolling, and wheel of brake to be adjusted, jacked up so it is free to turn, make sure brakes are completely released. Turn slack adjuster adjusting screw (fig. 13) counterclockwise until wheel will not turn by hand. Back off adjusting screw by turning clockwise until wheel begins to turn freely. Repeat procedure on remaining three brakes.



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Figure 12—Brake System Diagram

Brake System

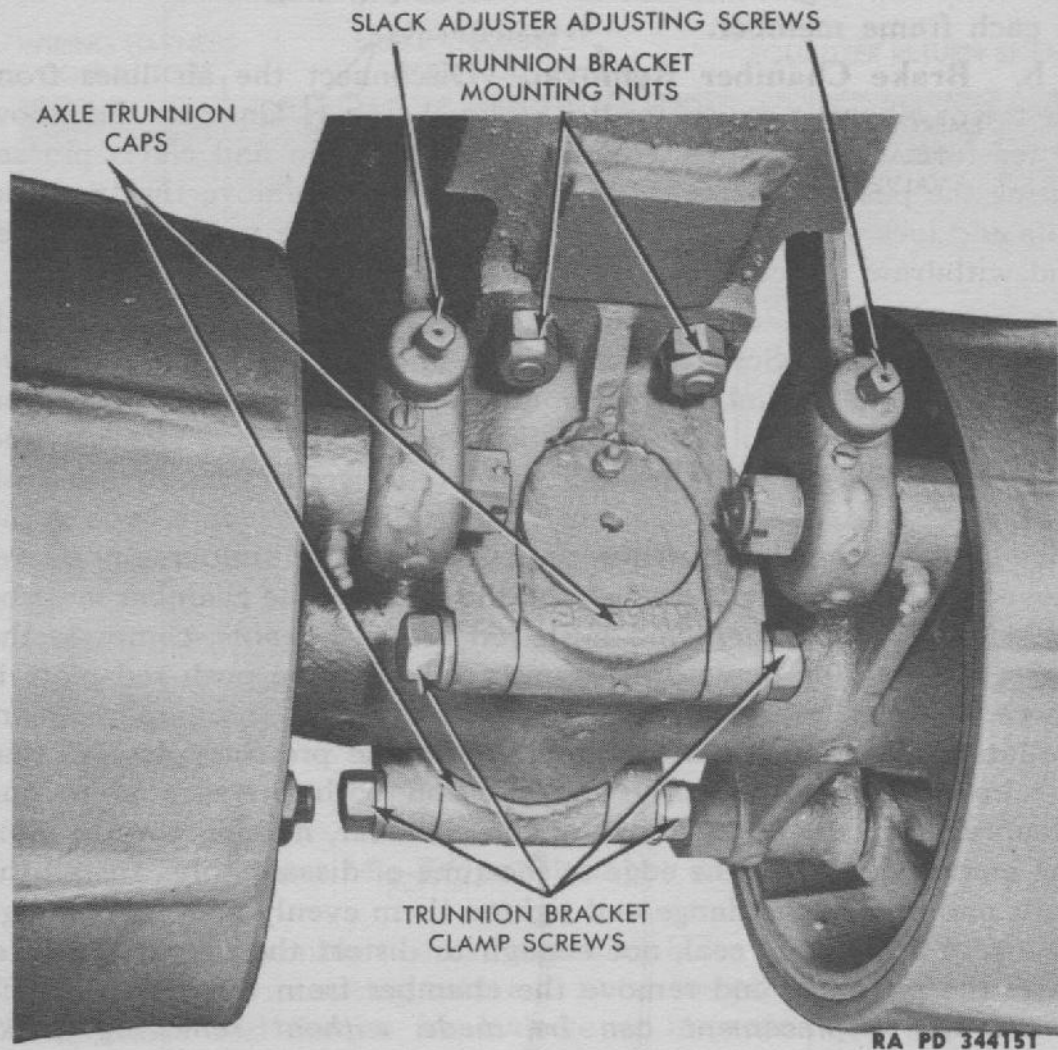


Figure 13—Rear View of Axle Trunnion

b. Major Adjustment. Using a feeler gage, check clearance between brake lining and drum with brake released. Clearance should range from 0.010 inch at the anchor pin end to 0.015 inch at the cam end of each shoe. Adjust by loosening the anchor pin lock nuts (fig. 23) and turning the eccentric anchor pin and tightening the slack adjuster adjusting screw at the same time until the shoe is centered in the drum and the lining surface is making contact with the drum. Then install the above clearances between the lining and the drum by turning the eccentric anchor pins and backing off the slack adjuster. Tighten anchor pin lock nuts. Perform this adjustment on all four sets of brakes.

36. BRAKE CHAMBERS.

a. Description. Four 8-inch, diaphragm type brake chambers are used to convert the air pressure into the motion necessary to operate the brake cams. The brake chambers are bracket mounted to

the two main longitudinal frame members (fig. 14), one on each side of each frame member.

b. Brake Chamber Removal. Disconnect the air lines from the tee or elbow at the top of the brake chamber. Unscrew the elbow or tee from the chamber. Remove the cotter pin and clevis pin securing the push rod yoke to the equalizer bar. Remove the two stud nuts and lock washers securing the chamber to the mounting bracket and withdraw the chamber from the bracket.

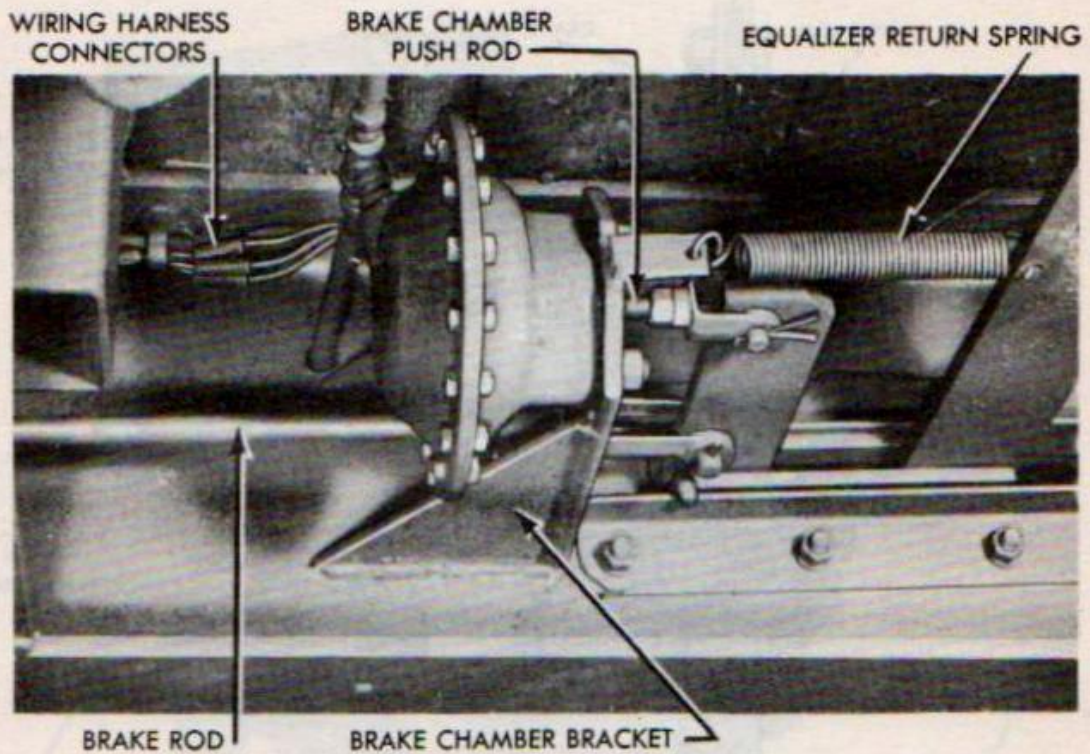
c. Diaphragm Replacement. Place chamber in vise with pressure plate up. Scribe an alinement mark on the edge of the two sections of the chamber to use in reassembly. Remove nuts and bolts holding the two sections of the chamber housing together and lift off pressure plate and diaphragm. If the springs under the push rod plate do not push the push rod plate 2 inches or more beyond the edge of the chamber when the pressure plate and diaphragm are removed, the springs are too weak and the whole brake chamber must be replaced. If the springs and push rod are serviceable, compress the springs by pulling down on the push rod until the push rod plate is down in the chamber so it will not interfere with the diaphragm installation. Position the new diaphragm in the pressure plate so that the holes line up perfectly and position both pressure plate and diaphragm on the outer flange of the chamber, making sure to aline the marks scribed on the edge at the time of disassembly. Install the bolts and nuts in the flange and tighten them evenly and only enough to insure an airtight seal, not enough to distort the diaphragm. Release the push rod and remove the chamber from the vise. **NOTE:** *Diaphragm replacement can be made without removing brake chamber from vehicle. If this is done apply parking brake to compress push rod springs when installing new diaphragm and pressure plate.*

d. Brake Chamber Installation. Position chamber against mounting bracket with air line opening up and secure with stud nuts and lock washers. Coat threads of air line tee or elbow with joint and thread compound and screw the tee or elbow into air line opening of brake chamber. Release parking brakes and make sure equalizers are pulled to normal or brakes released position by the equalizer return springs (fig. 14). Line up hole in equalizer bar with yoke on end of brake chamber push rod and install pin and cotter pin. Tighten push rod yoke jam nut. Connect air lines to tee or elbow. Test chamber and connections for leakage (par. 41).

37. RELAY-EMERGENCY VALVE ASSEMBLY.

a. Replacement. Open the air reservoir drain cock. Disconnect lines from relay-emergency valve assembly. Remove bolts and nuts securing assembly to frame crossmember and remove assembly.

Brake System



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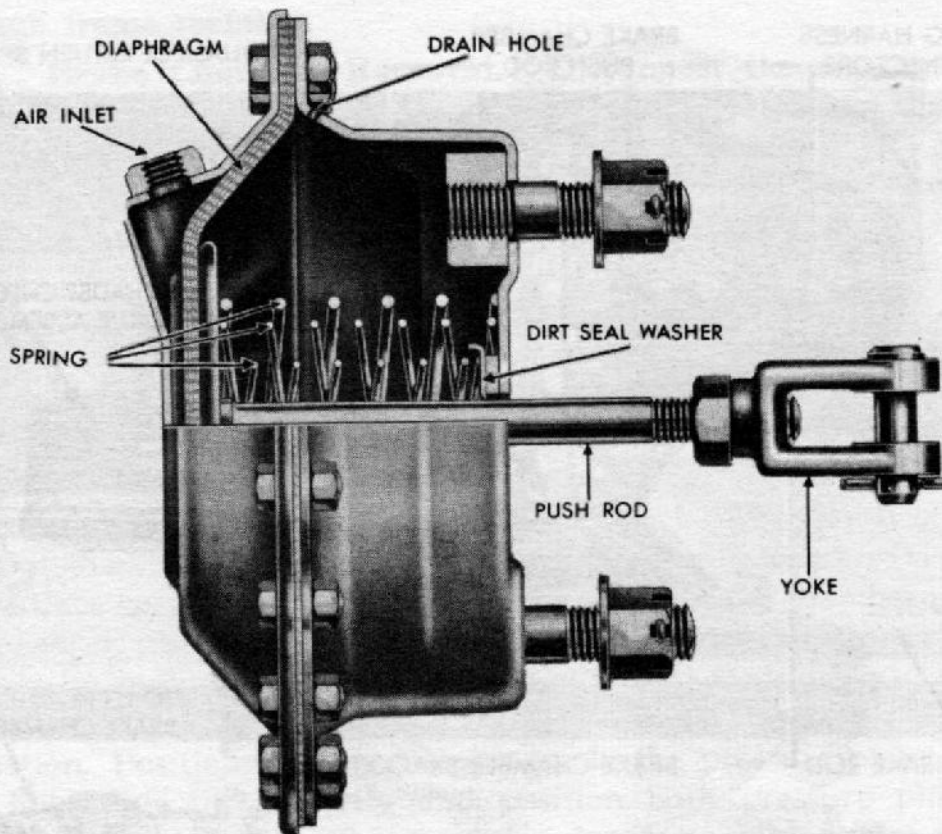
Figure 14—Brake Chamber and Linkage

Position new assembly against mounting holes in frame crossmember and secure with mounting bolts and nuts. Install lines (fig. 16). Check connections and flanges for leakage or improper operation of new assembly (par. 41).

b. Check-valve Replacement (fig. 16). Unscrew check-valve from relay-emergency valve assembly. Coat threads of new exhaust check valve assembly with joint and thread compound being careful not to get any excess compound where it can get into the opening into the check-valve. Screw check-valve into relay-emergency valve assembly body.

38. AIR FILTERS.

a. General. Two air filters are mounted on the trailer frame crossmember just to the rear of the air reservoir. One filters the air coming in through the emergency line and the other filters the air coming in through the service line (fig. 12). The lower part or cover of the filter body forms a moisture trap and may be drained by removing the drain plug at the bottom (fig. 17). The upper part of the body contains a replaceable wound-cotton or curled-hair type air strainer.



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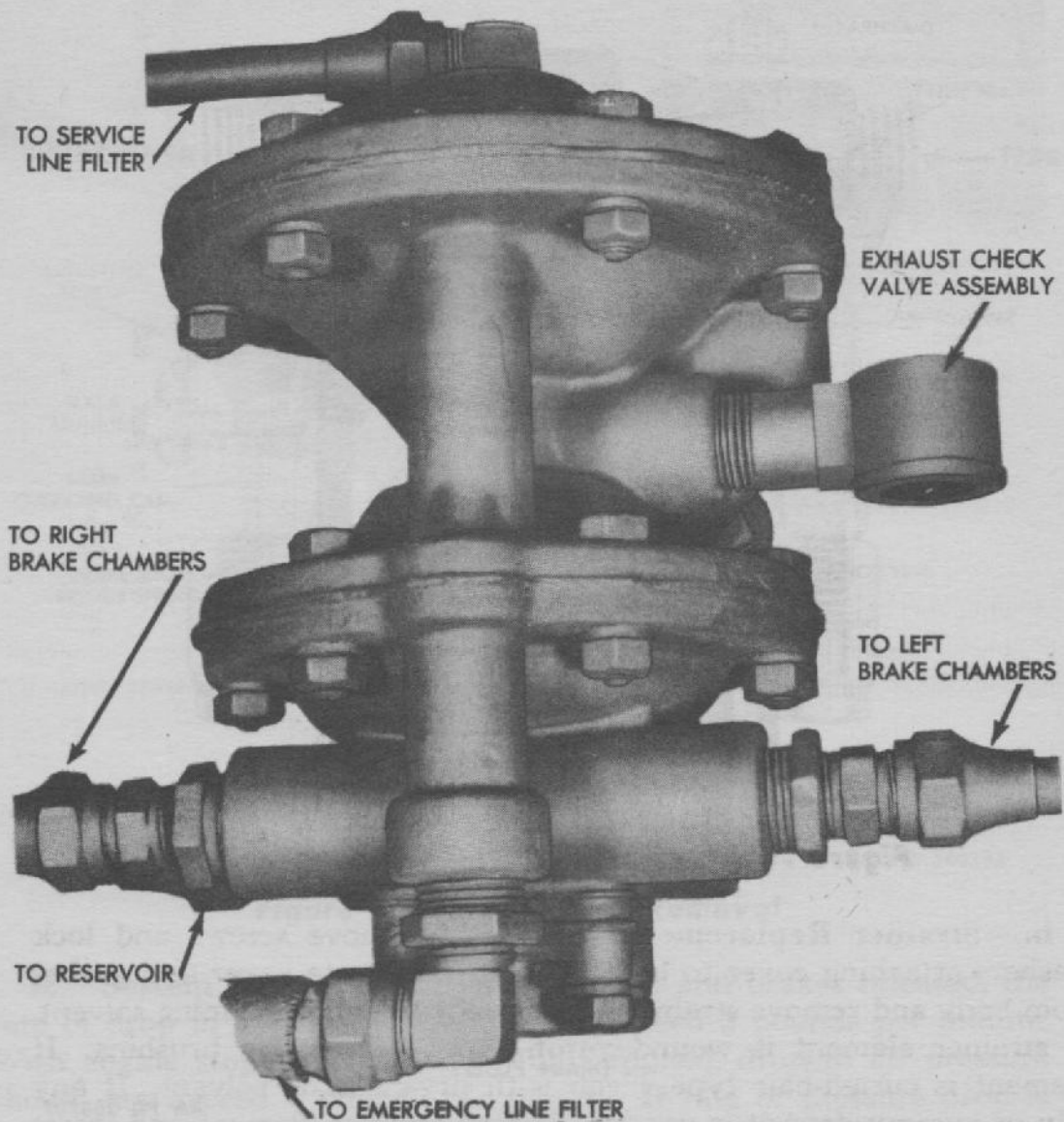
Figure 15—Brake Chamber—Sectionalized

b. Strainer Replacement (fig. 17). Remove screws and lock washers attaching cover to body of filter. Separate cover and gasket from body and remove strainer. Clean body with dry-cleaning solvent. If strainer element is wound-cotton type, clean it by brushing. If element is curled-hair type, clean with dry-cleaning solvent. If any oily or gummy deposit is present, discard strainer element and insert a new one. To install strainer element, place element on filter cover, making sure element is squarely seated on the lip or bead provided on the cover to hold the element in position. Position gasket on cover and position cover up against filter body, guiding element to exact center of filter body so it will squarely engage bead or lip provided in upper part of filter body. Install cap screws and lock washers securing cover and element in place. Test for leakage (par. 41).

39. BRAKE SHOE REPLACEMENT.

a. Removal. Remove wheel (par. 33 c). Unhook brake shoe return spring from pin in brake shoe and pull shoe from brake anchor pin (fig. 18).

b. Installation. Lubricate anchor pin (par. 19), and slip brake shoe onto anchor pin (fig. 18). Lock shoes in place against brake



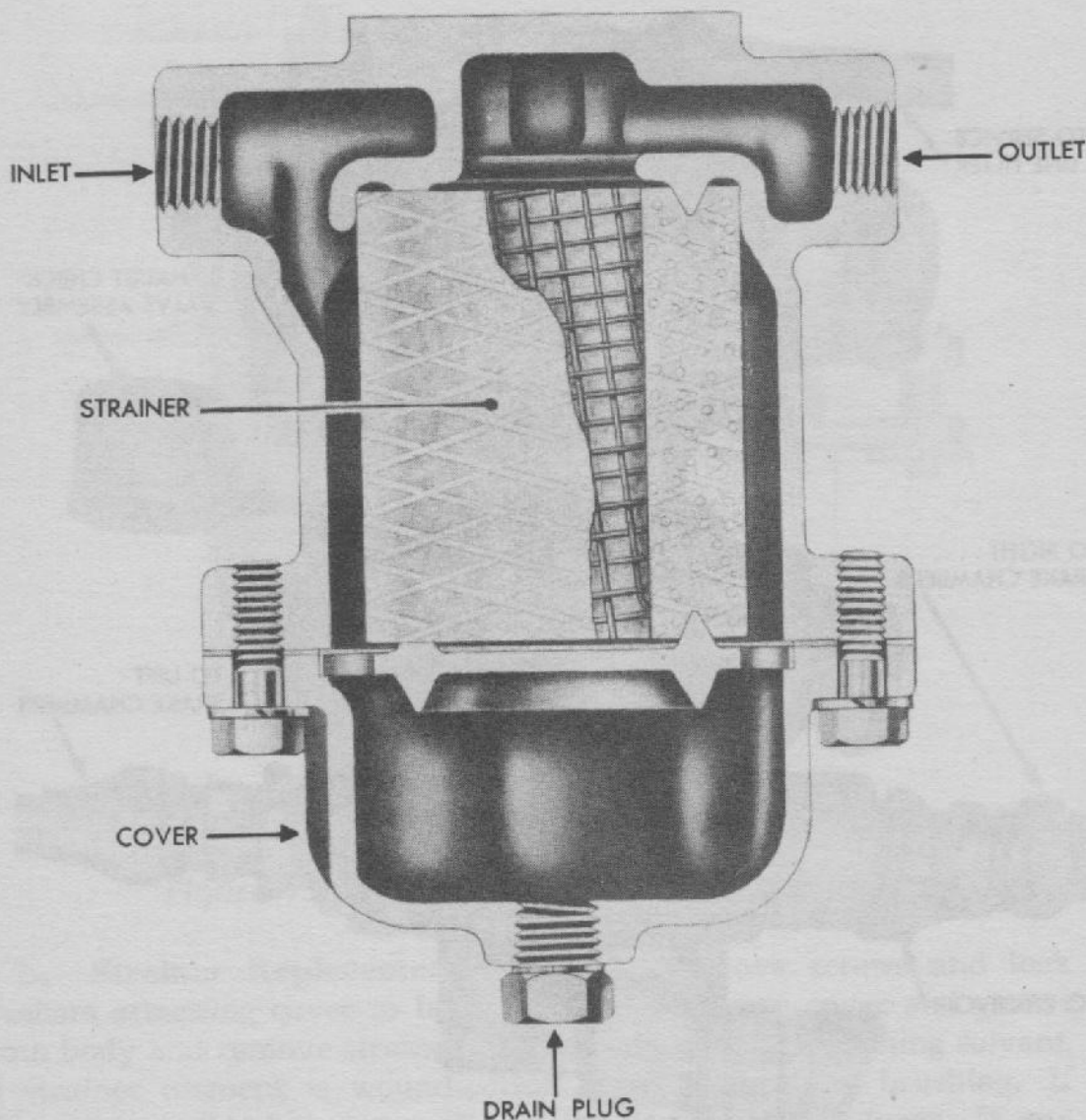
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Figure 16—Relay-emergency Valve Assembly

cam by hooking the brake shoe return spring over the pins provided on the brake shoe (fig. 18). Install wheel (par. 33 c). Perform major brake adjustment (par. 35 b).

40. PARKING BRAKE HANDWHEEL AND LINKAGE.

a. Description. The parking brake operating mechanism consists of a brake handwheel, crankshaft, chain, and chain guiding sheave (fig. 19); cable, lever, lever guide, lever return spring, brake rod and equalizer guide (fig. 20); and equalizer, equalizer return spring, and brake rod (fig. 14). Turning of the handwheel winds the chain up on the parking brake crankshaft, pulling on the cable, and thru the linkage, pulling on the slack adjusters, thus applying the brakes.



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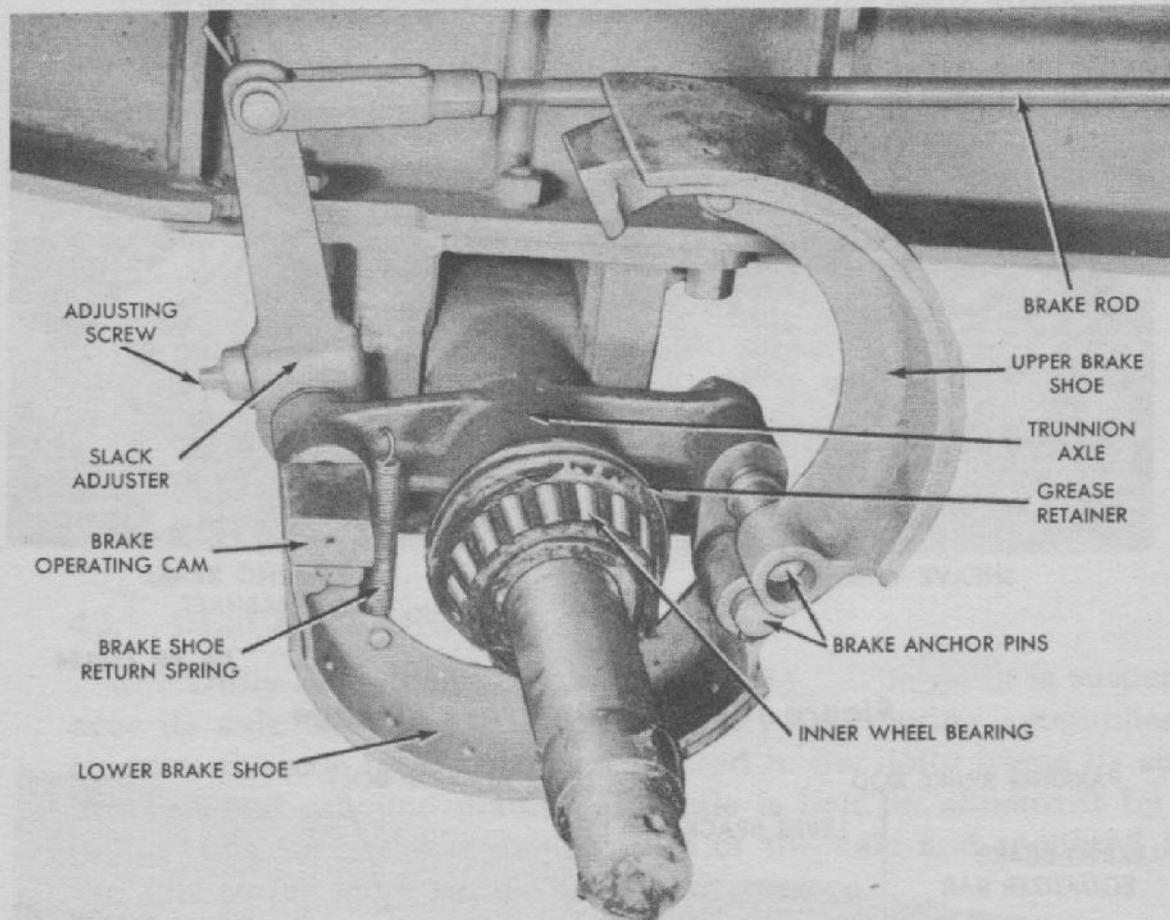
Figure 17—Air Filter

b. Maintenance. Maintenance of the brake linkage consists of replacing or straightening bent or damaged parts of the linkage. Components of brake linkage may be replaced individually. When installing a new or repaired linkage component, position component in place with brakes released. Aline holes or yokes with companion linkage and install linking pins, mounting bolts, and nuts.

41. TESTS.

a. General. Tests of the trailer brake system must be made with the trailer coupled to a towing vehicle with air brake lines connected. Start engine of vehicle supplying air pressure and make sure air pressure registered on dash gage of the towing vehicle shows at least 80 pounds pressure being supplied to both systems.

Brake System

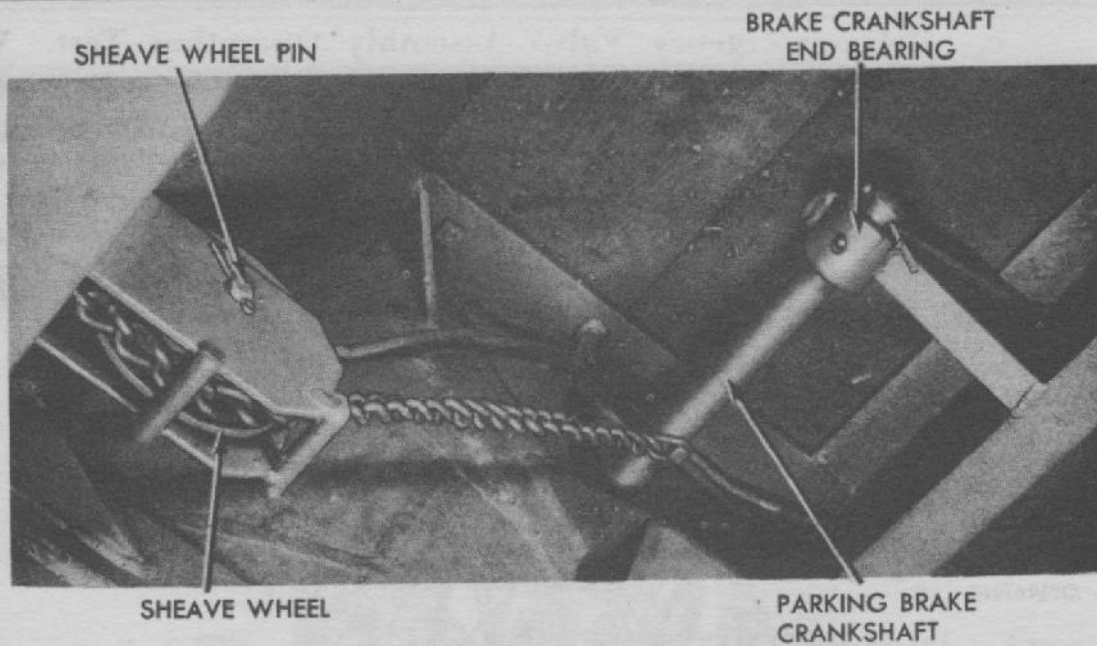


RA PD 344153

Figure 18—Brake Shoe Removal

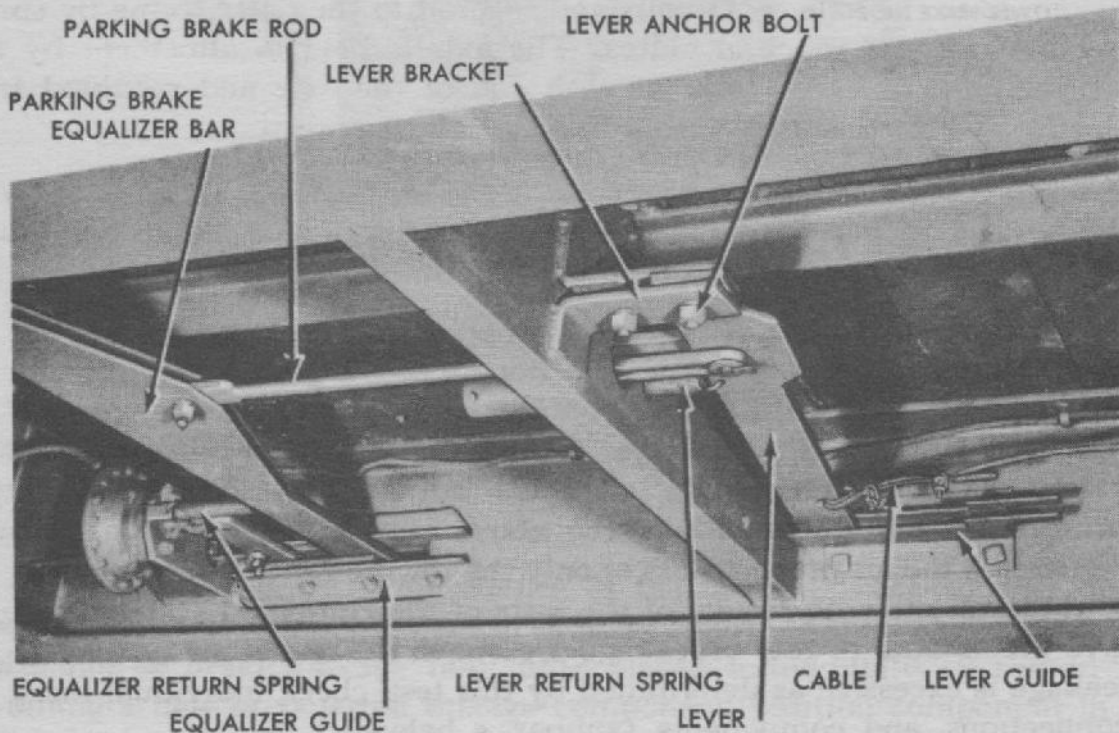
b. System Tests. With engine stopped and brakes released, the rate of drop in air pressure should not exceed 3 pounds per minute. With engine stopped and brakes fully applied, drop in air pressure should not exceed 4 pounds per minute. If rate of pressure drop is greater than these amounts, close the cut-out cocks supplying air pressure to the trailer. Make the above tests again with the gage registering the air pressure loss of only the towing vehicle. Comparison of these results with results of the tests of the combined systems will give the amount or rate of leakage present in the trailer air system. If leakage is excessive as determined by this test, check individual lines, connections, and components (subpar. c below).

c. Soap-bubble Tests. Coat connections, joints, or gasket flanges of component or line being checked, with soap bubbles and apply brakes to charge the system. If leakage at joints or connections is present, tighten or replace the coupling connection or component. If leakage at a gasket or diaphragm flange is present and tightening of flange nuts will not correct it, replace the gasket or diaphragm or in the case of the relay-emergency valve assembly, replace the assembly (par. 37).



RA PD 344154

Figure 19—Parking Brake Linkage



RA PD 344155

Figure 20—Brake Linkage

d. **Check-valve Test.** Unscrew check-valve from relay-emergency valve assembly. Immerse valve end completely in water. If any water leaks into valve body, remove diaphragm retaining screw and washer and replace the diaphragm. If leakage still persists, the diaphragm seat is damaged. Replace the whole check-valve assembly.

Suspension

e. **Relay-emergency Valve Assembly Operating Test.** With brake system charged, apply the brakes and check to be sure all brakes apply properly. Release brakes and notice whether air is promptly discharged through the exhaust check-valve. With the brake system fully charged, close the cut-out cock in the emergency line on the tractor, and disconnect the emergency line. Notice whether trailer brakes apply automatically. If brake system fails to respond promptly in either of these tests, replace the relay-emergency valve assembly (par. 37).

Section XVI**SUSPENSION****42. DESCRIPTION.**

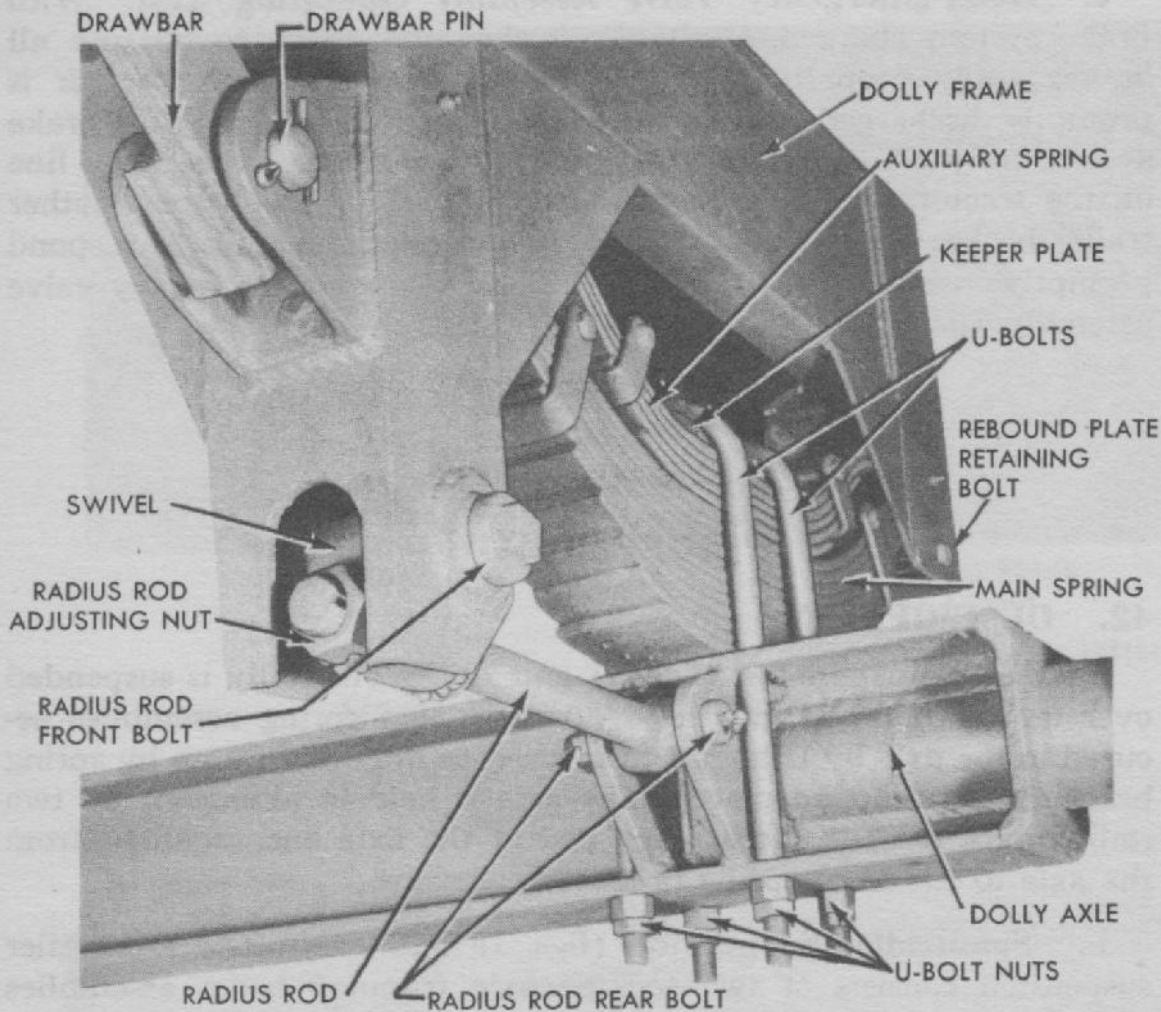
a. **Dolly Suspension** (figs. 21 and 22). The dolly is suspended over its axle by two main and auxiliary leaf spring assemblies secured to the axle by U-bolts and secured to the dolly frame by spring brackets and rebound plates. The axle is held in alinement by two radius rods, located one at each end of the axle and mounted from the axle to the front spring bracket extensions.

b. **Semitrailer Suspension** (figs. 18 and 23). The semitrailer suspension consists of two rocking axle trunnion beam assemblies mounted in line at the rear of the trailer bed, one on each of the trailer main longitudinal frame members.

43. SPRING ASSEMBLIES.

a. **Description** (fig. 21). Each spring assembly consists of a 12-leaf main spring and 5-leaf auxiliary spring. They are slip type springs secured in the spring bracket by rebound plates and secured to the dolly axle by U-bolts and a keeper plate.

b. **Removal.** Remove dolly from semitrailer (par. 11 h). With dolly traveling lock engaged, lower drawbar to ground to give added stabilization to dolly. Remove rebound plate retaining bolt and remove rebound plate from rear of spring to be removed (fig. 22). Remove radius rod rear bolt (fig. 21). Remove the U-bolt nuts. Using a chain and hoist or jack and blocking, raise rear corner of dolly frame until spring may be slipped clear of rear, and then front spring brackets. **CAUTION:** *Be sure dolly is blocked securely so it will not slip or travel during the spring replacement.* Remove U-bolts and keeper plate from axle and spring assembly (fig. 21). Main spring and auxiliary spring are now free as separate sub-assemblies.



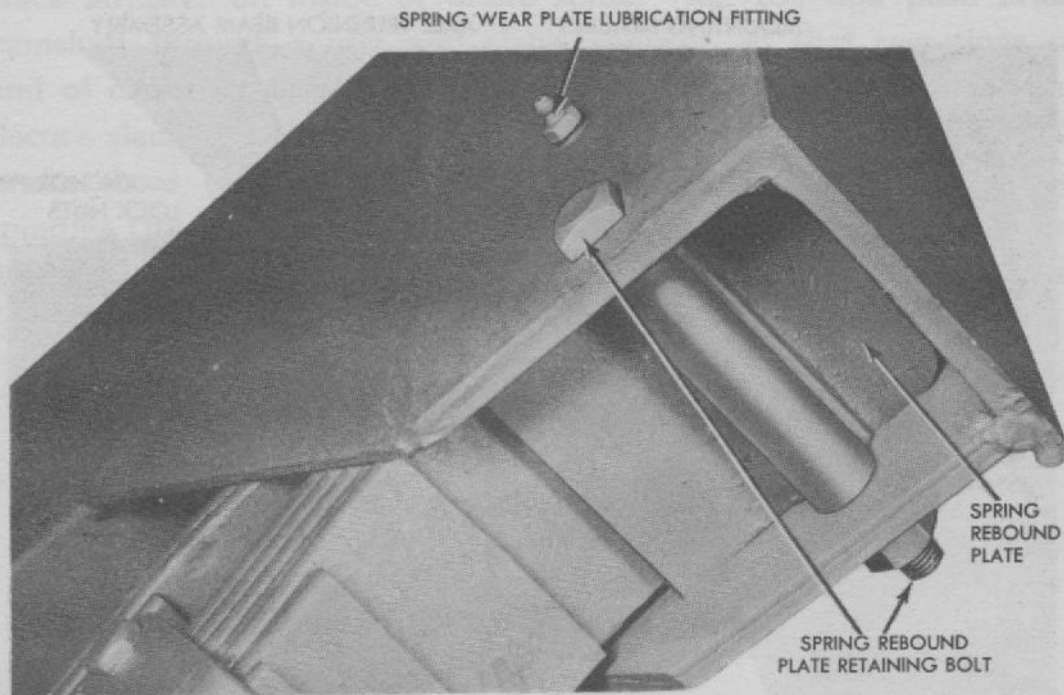
RA PD 344144

Figure 21—Left-hand Dolly Suspension Assembly

c. **Installation** (fig. 21). Position spring assemblies in place on axle and position keeper plate and U-bolts without installing U-bolt nuts. Work front end of spring assemblies in place between front wear plate and rebound plate. Lower frame of dolly until rear end of spring assemblies are in place against rear wear plate. Position rebound plate and secure with retaining bolt. Position axle end of radius rod in radius rod axle bracket and install radius rod rear bolt and nut. Install U-bolt nuts.

44. DOLLY AXLE.

a. **Description** (fig. 21). The dolly axle is of steel I-channel type, with the wheel spindles welded into the ends of the axle. The axle is secured to the dolly frame by the U-bolt and spring assemblies and kept in alignment by radius rods, one at each end in front of the axle.



RA PD 344148

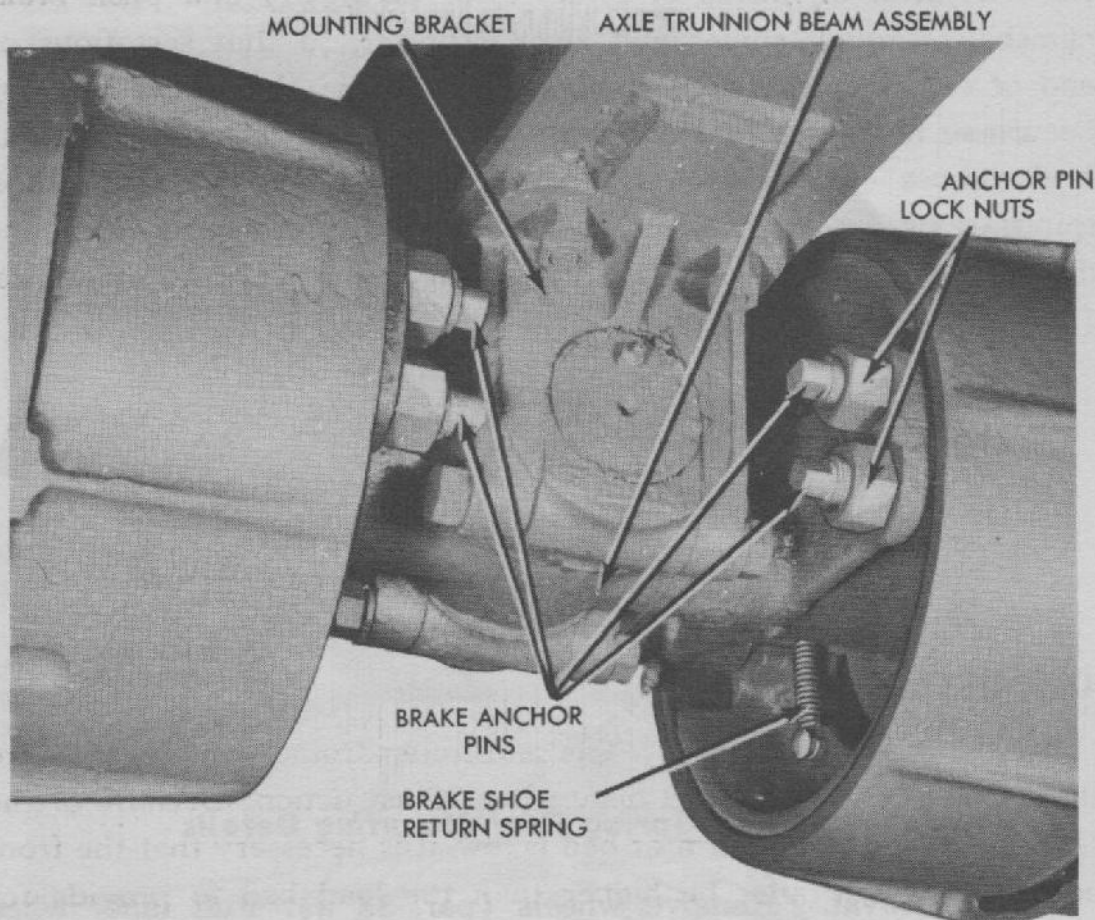
Figure 22—Spring Rear Mounting Details

b. Removal. Remove wheels (par. 33 a). Pull inner wheel bearings from spindles (fig. 11). With dolly securely blocked up to prevent its falling, remove U-bolt nuts and radius rod rear bolts. Lower axle and remove from dolly. **NOTE:** *Axle may be removed from dolly before wheels are removed if desired.*

c. Installation. Position axle between U-bolts (fig. 21) and align hole in radius rod axle brackets with radius rod rear mounting hole and with axle firmly supported install radius rod rear bolt. Install and tighten U-bolt nuts. Install inner wheel bearings on spindle (fig. 11). Install wheels (par. 33 b). Adjust wheel bearings (par. 31).

45. AXLE TRUNNION BEAM AND BRACKET ASSEMBLIES.

a. There are two axle trunnion beam and bracket assemblies mounted in line at the rear of the trailer. Each beam assembly is bracket mounted to one of the main longitudinal frame members (figs. 18 and 23). Each axle trunnion beam is a casting which forms the trunnion shaft, the wheel spindles or stub axles support, two brake spiders to support the brake shoes and operating cam, and grease retainers to retain the wheel bearing grease. Axle stub shafts which are machined to form the wheel spindles are sweated and welded into the casting to complete the axle trunnion beam assembly.



RA PD 344146

Figure 23—Axle Trunnion Mounting Details

b. Removal. Remove wheel, hub, and drum assemblies from trunnion axle shaft (par. 33 c). Pull inner wheel bearings from wheel spindles (fig. 18). Remove brake shoes (par. 39). Remove slack adjuster retaining nut and cotter pin from each brake operating cam shaft (fig. 13), and tap the shafts out of the slack adjusters and shaft supporting spiders (fig. 18). **NOTE:** *On some models the slack adjuster is held on the brake camshaft with a cap screw and lock washer.* Remove anchor pin lock nuts (fig. 23) and remove anchor pins from supporting spiders. Remove trunnion bracket lock nuts and mounting nuts (fig. 13) and remove axle trunnion beam and bracket assembly from trailer.

c. Installation. Position axle trunnion beam and bracket assembly against under side of main longitudinal frame member with the brake spider brake camshaft hole toward the rear of the vehicle and secure in place with bolts, nuts and lock nuts (fig. 13). Install brake anchor pins with pins turned to the position in which the shoe mounting end of each pair of pins are closest to each other. Position

slack adjuster on inside of brake spider (fig. 18) and push brake camshaft through spider and slack adjuster, so that serrations on end of camshaft engage serrations on inside of slack adjuster gear. Secure slack adjuster on camshaft with nut and cotter pin. Install brake shoes (par. 39 h). Install inner wheel bearings on wheel spindles (fig. 18) and install wheel outer bearings, wheels, hubs, and drums (par. 33 c). Adjust wheel bearings (par. 31). Adjust brakes (par. 35).

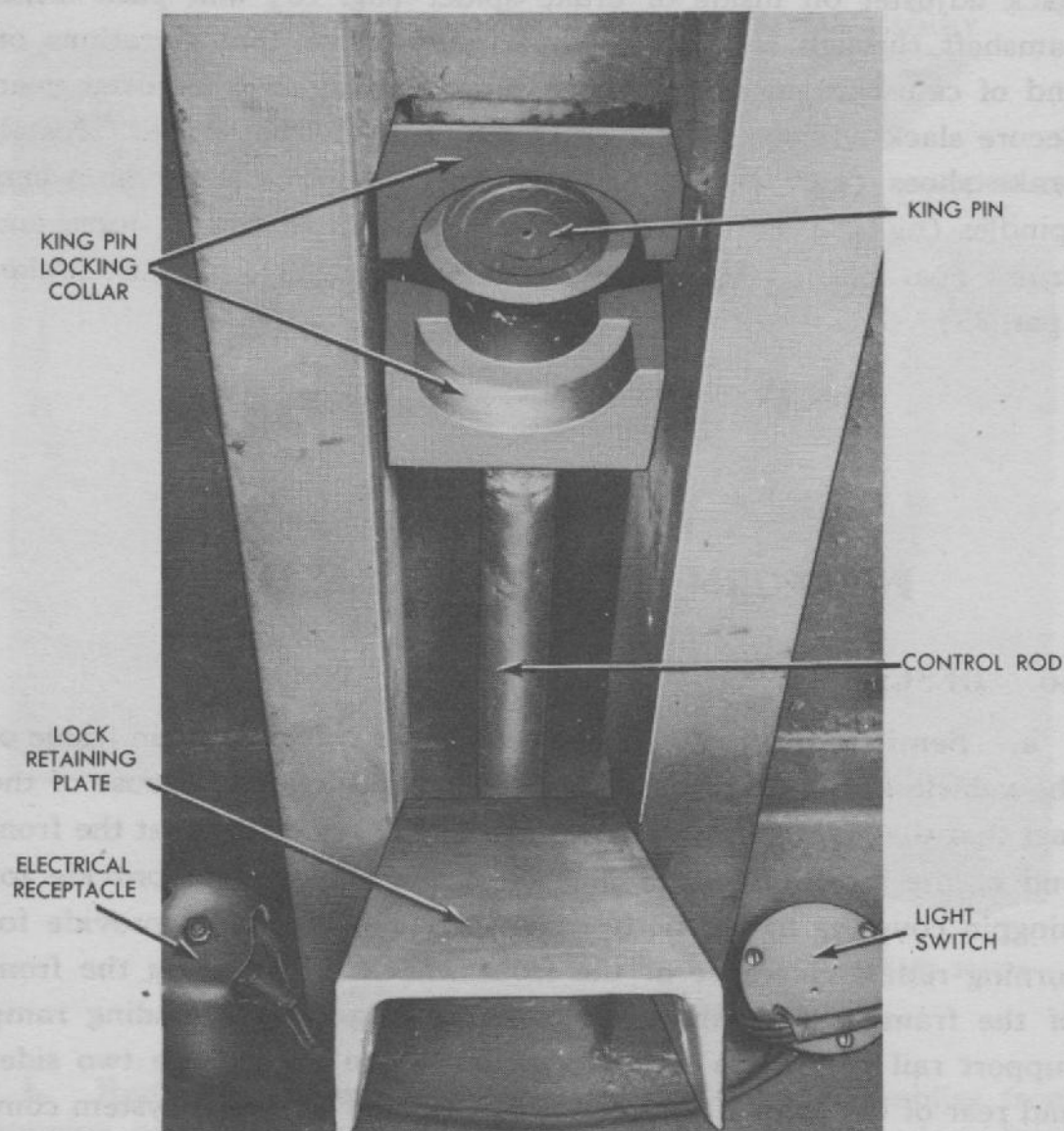
Section XVII

PLATFORM AND FRAME ASSEMBLY

46. DESCRIPTION.

a. Semitrailer Frame. The semitrailer frame, or main frame of the vehicle is of all welded heavy steel construction. Because of the fact that the load platform or bed is low, it is necessary that the front end of the semitrailer be higher than the load bed to provide for kingpin coupling to the dolly or towing vehicle, and to provide for turning radius clearance of the front wheels. This gives the front of the frame a "gooseneck" appearance (fig. 1). A loading ramp support rail (fig. 3) is welded and braced in around the two sides and rear of the frame. All mounting brackets for brake system components are welded to the frame members so maintenance to the semitrailer or main frame requires welding or heavy straightening equipment and must be referred to higher authority.

b. Dolly Frame and Drawbar. The dolly frame is composed of steel plate and reinforcing channel members, welded into a box-like structure. The dolly upper plate serves as the lower fifth wheel plate when coupled to the semitrailer. The sides of the dolly frame are extended down at the corners to form the spring brackets of the dolly. The center dolly frame channel members also serve as retainers and guides for the kingpin locking collar (fig. 24). Repair or replacement of parts of the dolly frame other than the kingpin locking components, require the use of welding equipment and must be referred to higher authority.



RA PD 344156

Figure 24—Kingpin Lock

47. KINGPIN LOCK.

a. **Removal.** With the dolly uncoupled from the semitrailer, lower the kingpin lock retaining plate by removing the bolts and nuts securing it in place between the dolly frame members (fig. 24). Remove the kingpin locking nuts and lock washers on the front of the dolly (fig. 3) and unscrew cap screw holding the locking plate to the plunger and remove the plunger and front section of the locking collar from the dolly. Remove the cotter pins holding the rear section of locking collar in place.

b. **Installation.** To install the kingpin lock, reverse the removal procedure (subpar. a above).

Section XVIII

LIGHTS AND WIRING

48. DESCRIPTION AND DATA.

a. **Description.** The lighting system of the vehicle is energized by current from the towing vehicle through a jumper cable plugged into either the trailer or dolly electrical coupling socket (fig. 3). The wiring of the trailer supplies current to blackout clearance, tail, stop, and marker lights or service clearance, tail, and stop lights (fig. 25). Current from the towing vehicle is supplied to the service or blackout wiring and lights depending on the position of the trailer light switch (fig. 4). The blackout and service tail, stop, and marker lights on the dolly are wired separately from the trailer main lighting system and are supplied through separate coupling socket and lighting switch (fig. 3). The trailer main lighting system wiring harnesses are divided by front and rear junction blocks (figs. 31 and 32).

b. **Data.**

Circuit voltage.....	6 volts
Coupling sockets.....	Warner Electric Brake 3529
Lighting switches.....	Cole-Hersee 2480
Service tail and stop light assemblies.....	K-D lamp 950-1-6
Blackout tail and stop light assemblies.....	K-D lamp 951-1-6
Service clearance light assemblies	Two, K-D lamp 541-OD-amber Two, K-D lamp 541-OD-red
Blackout clearance light assemblies	Two, K-D lamp 541-BO-blue Two, K-D lamp 541-BO-red

49. TAIL AND STOP LIGHT ASSEMBLIES.

a. **Description.** (fig. 26). The service tail and stop light assemblies and blackout tail and stop light assemblies are similar in construction and identical in mounting. The lower or blackout marker lamp unit is the same in both service and blackout light assemblies. The upper sealed unit of the left or service light assembly contains the service tail and stop lamps, while the upper sealed unit of the right or blackout light assembly contains only the blackout stop light.

b. **Replacement of Sealed Unit (either unit)** (fig. 26). Remove two screws from cover and remove cover. Slide sealed unit to be replaced from light body. Insert new unit into body, position cover, and secure with cover retaining screws.

c. **Replacement of Light Assembly.** Pull out cables, remove two light mounting nuts, and pull light assembly from frame. Position new light assembly and secure with two mounting nuts.

Part Three—Maintenance Instructions

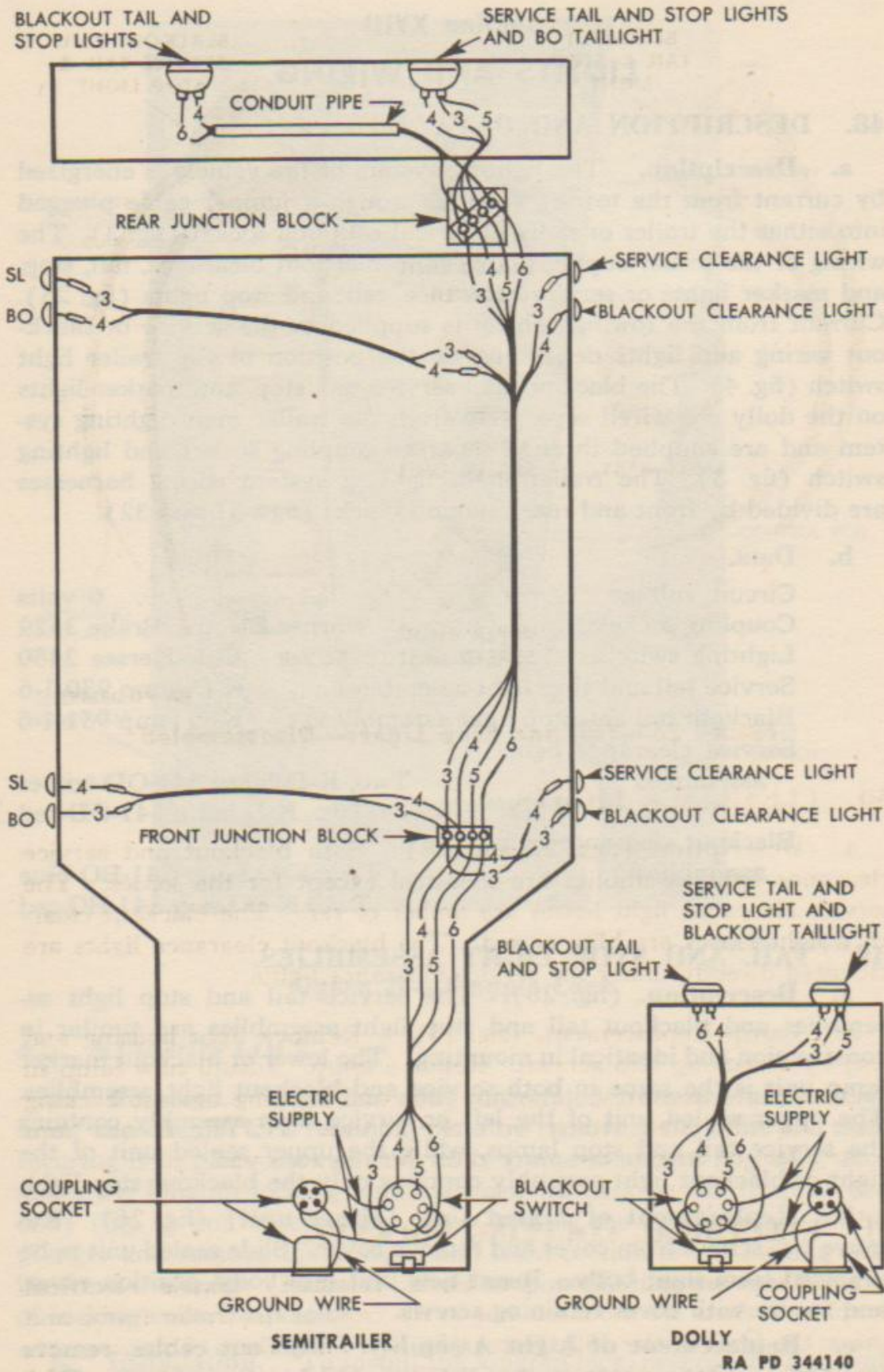


Figure 25—Vehicle Wiring

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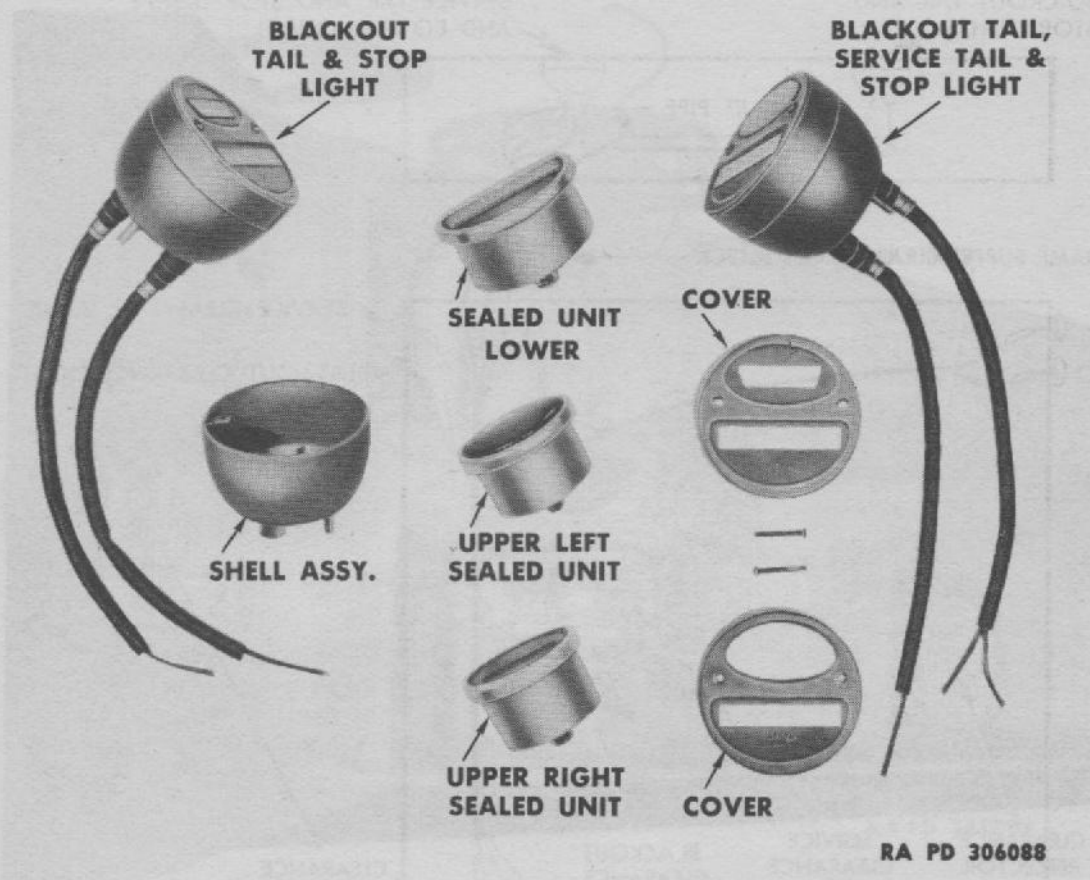


Figure 26—Tail and Stop Lights—Disassembled

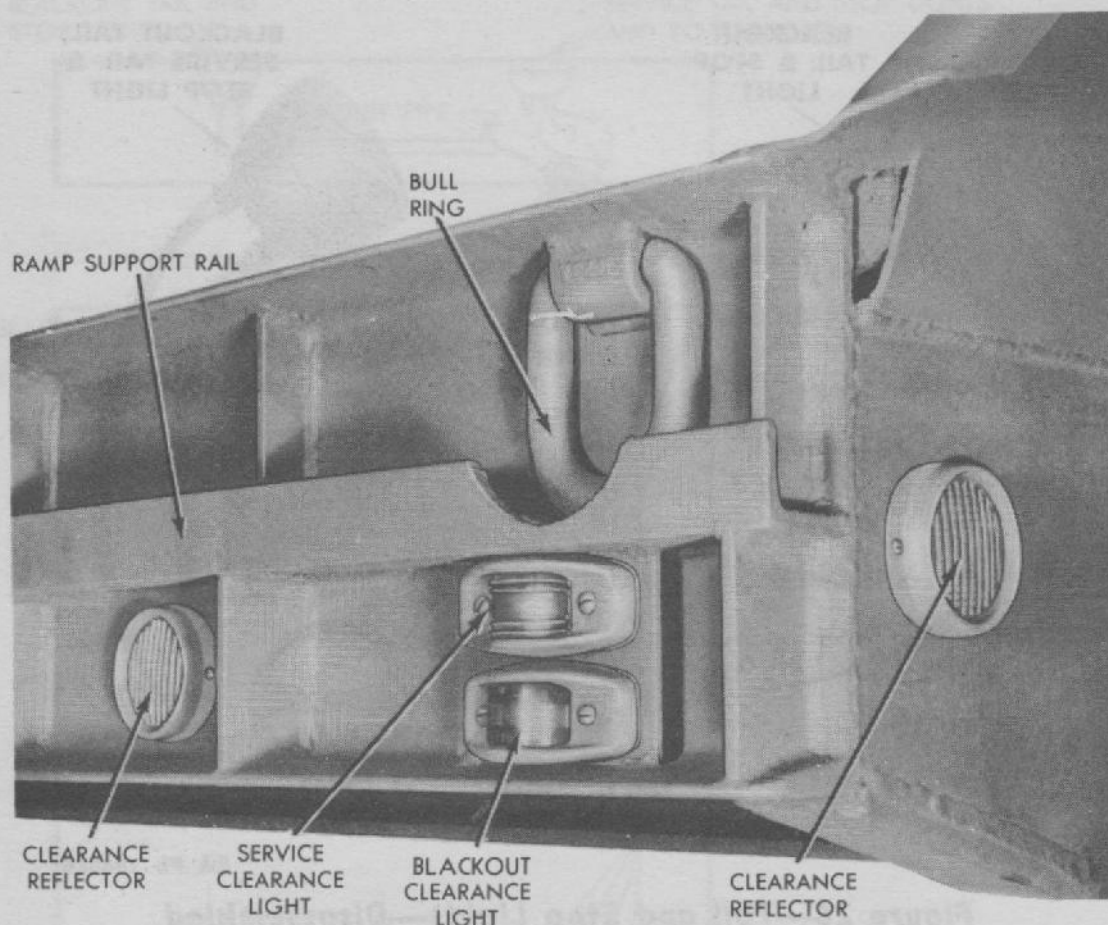
50. CLEARANCE LIGHTS.

a. **Description** (figs. 27 and 28). Both blackout and service clearance light assemblies are identical except for the lenses. The service clearance light lenses are amber or red. The blackout clearance light lenses are blue or red. The blackout clearance lights are mounted directly under the service clearance lights.

b. **Lamp Replacement.** (fig. 28). Remove light housing and lens by removing two screws. Remove lamp. Install new lamp in backing plate assembly. Position lens and housing against backing plate assembly and attach with two screws. **NOTE:** *If new lens is installed, be sure to use same color lens as removed.*

51. ELECTRICAL COUPLING SOCKETS.

a. **Description.** Two four-blade (contact) female electrical coupling sockets are mounted, one in the front of the trailer frame and one in the front of the dolly frame (fig. 3). Only three of the contacts are used. These contacts are marked "TL" (service tail), "SL" (service stop), and "GR" (ground).



RA PD 344143

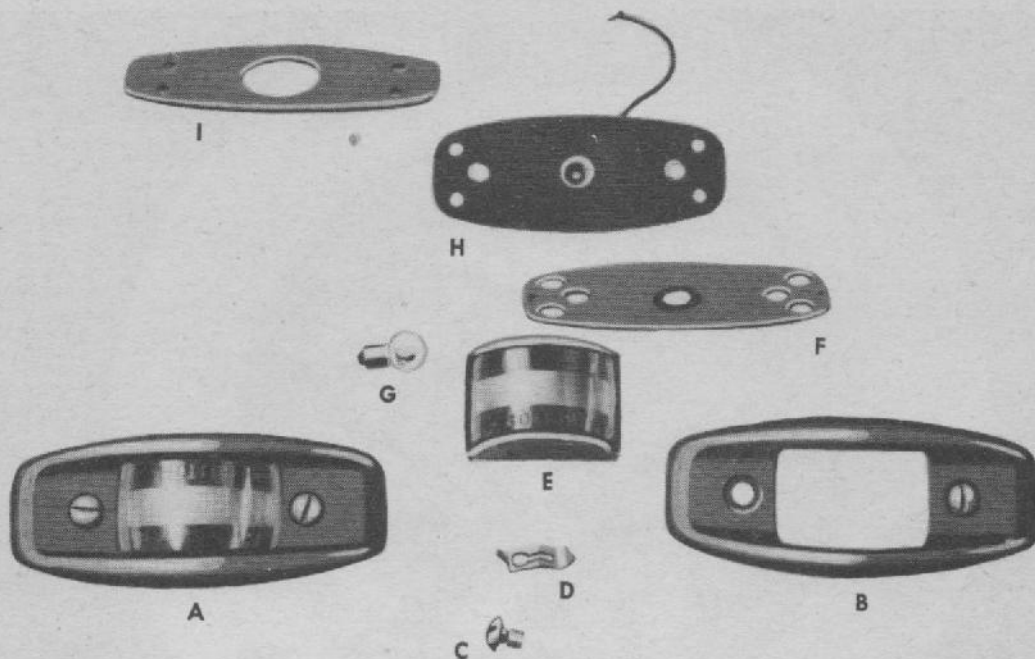
Figure 27—Clearance Lights

b. Replacement. Remove nut and toothed washer from center of cap and pull cap from case (fig. 29). Remove the two nuts and cupped washer from the terminals to which wires are attached and remove the three wires. Remove the four mounting screws and washers and pull socket through and out of the front of the frame. Position new socket, with cap removed from rear, in the frame with the cover hinge at the top. Secure to frame with four screws and washers. Connect wires to terminals "TL", "SL", and "GR", using cupped washer and two nuts (L, R, and Q, fig. 29) on each terminal. Install cap over terminals with toothed washer and nut.

52. LIGHT SWITCHES.

a. Description. Two lighting switches are mounted one in the front of the trailer frame and one in the front of the dolly frame (fig. 3). Six terminals on the rear of the switch are marked "ST" (service tail), "TL" (service tail), "BOT" (blackout tail), "SS" (service stop), "SL" (service stop), and "BOS" (blackout stop). The switch has two

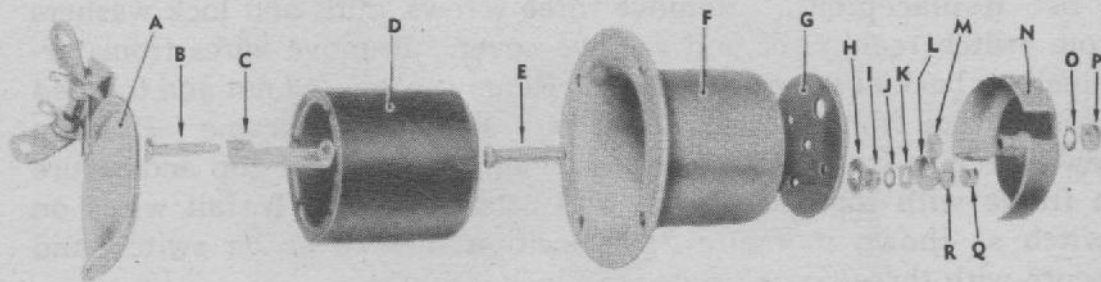
Lights and Wiring



- | | |
|---------------------------|--------------------------|
| A—CLEARANCE LAMP ASSEMBLY | F—BACKING PLATE |
| B—LIGHT HOUSING | G—LAMP |
| C—MOUNTING PLATE SCREWS | H—BACKING PLATE ASSEMBLY |
| D—LENS CLIPS | I—MOUNTING PAD |
| E—LENS | |

RA PD 341793

Figure 28—Clearance Light—Disassembled



- | | |
|--------------------|------------------|
| A — COVER ASSEMBLY | J — WASHER |
| B — BOLT | K — WASHER |
| C — BLADE | L — WASHER |
| D — INSERT | M — NUT |
| E — BOLT | N — CAP ASSEMBLY |
| F — CASE | O — WASHER |
| G — INSULATOR | P — NUT |
| H — WASHER | Q — NUT |
| I — NUT | R — NUT |

RA PD 90028

Figure 29—Electrical Coupling Socket—Disassembled

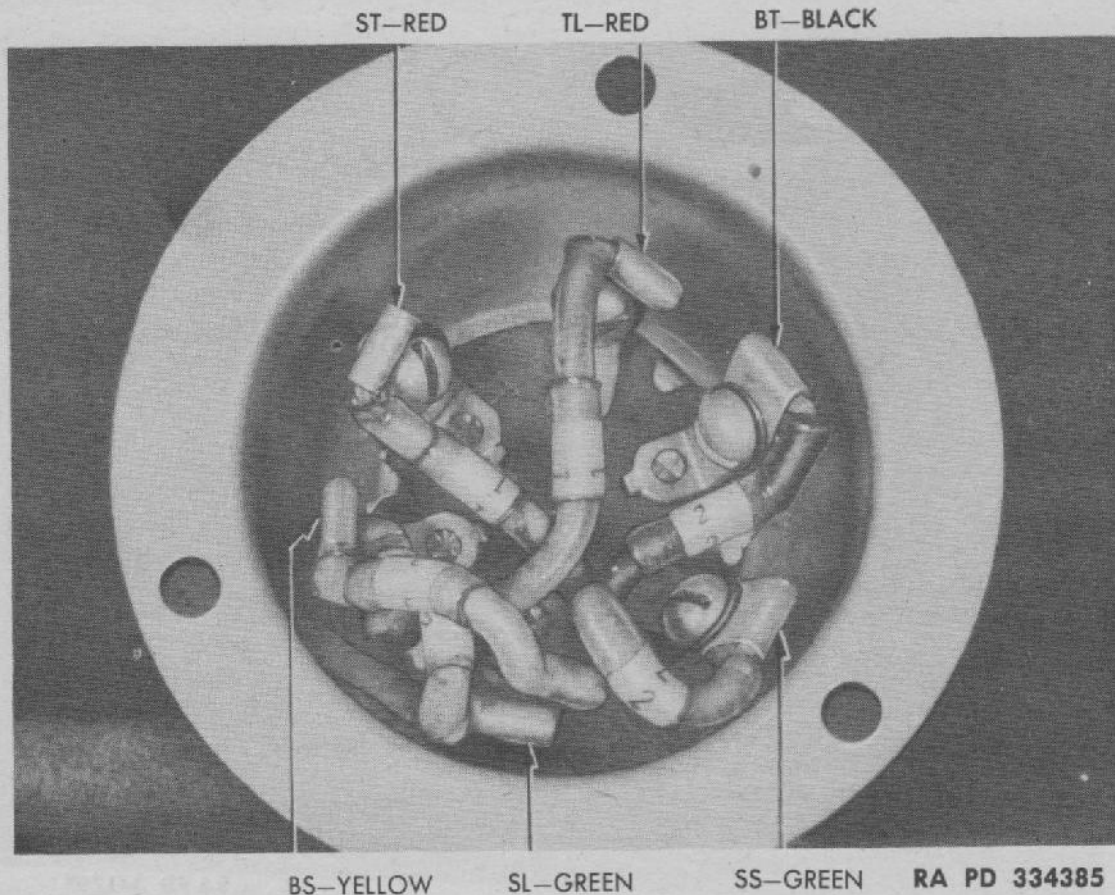


Figure 30—Light Switch—Cover Removed—Rear View

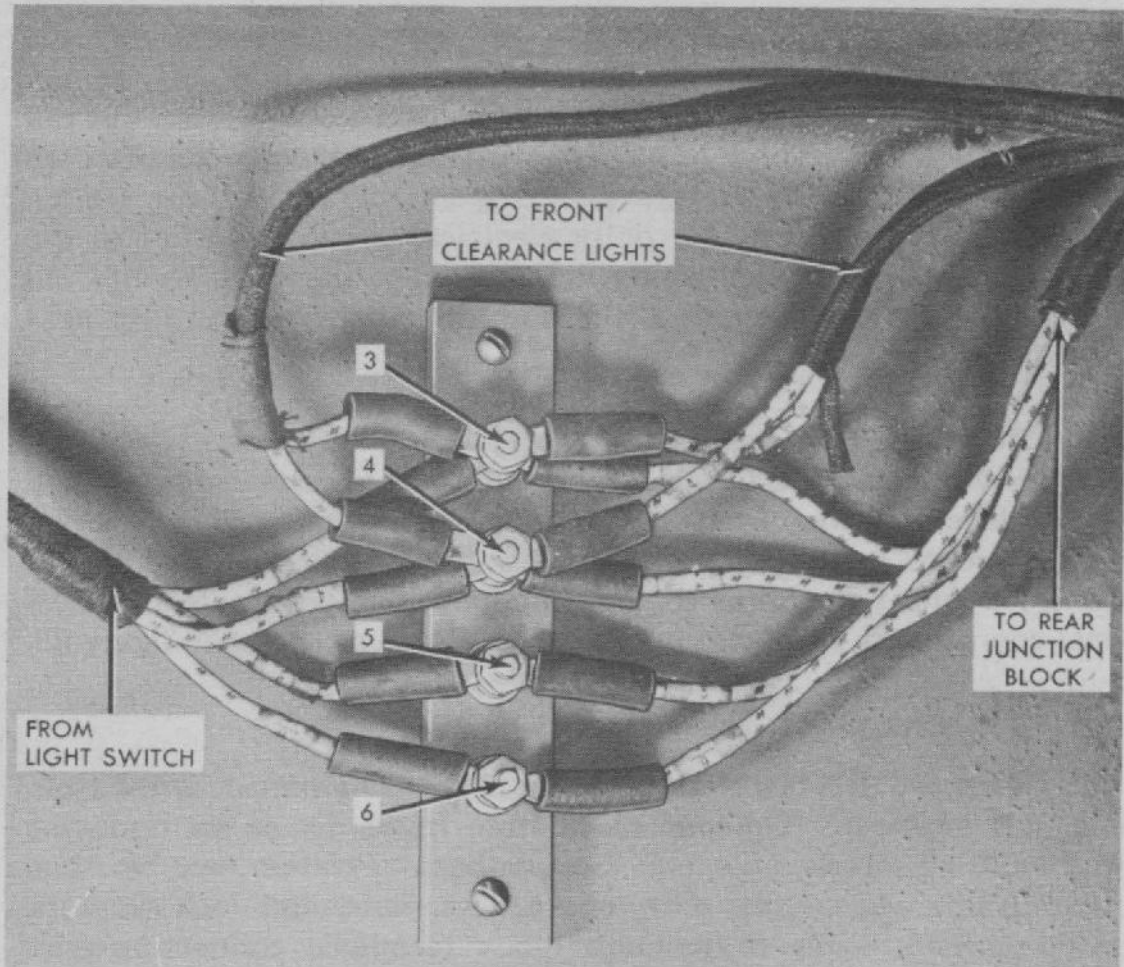
positions, one for blackout operation and one for service operation. These positions are marked on the front of the switch "BO" and "SL."

b. **Replacement.** Remove three screws, nuts, and lock washers from switch rear cover and remove cover. Remove wires from terminals on back of switch (fig. 30). Remove retaining nut and toothed washer from front of switch and pull switch from frame. Position new switch in frame with front cover hinge pin to the top and secure in frame with toothed washer and retaining nut. Install wires on switch as shown in figure 25. Position rear cover on switch and secure with three screws, nuts, and lock washers.

53. WIRING AND JUNCTION BLOCKS.

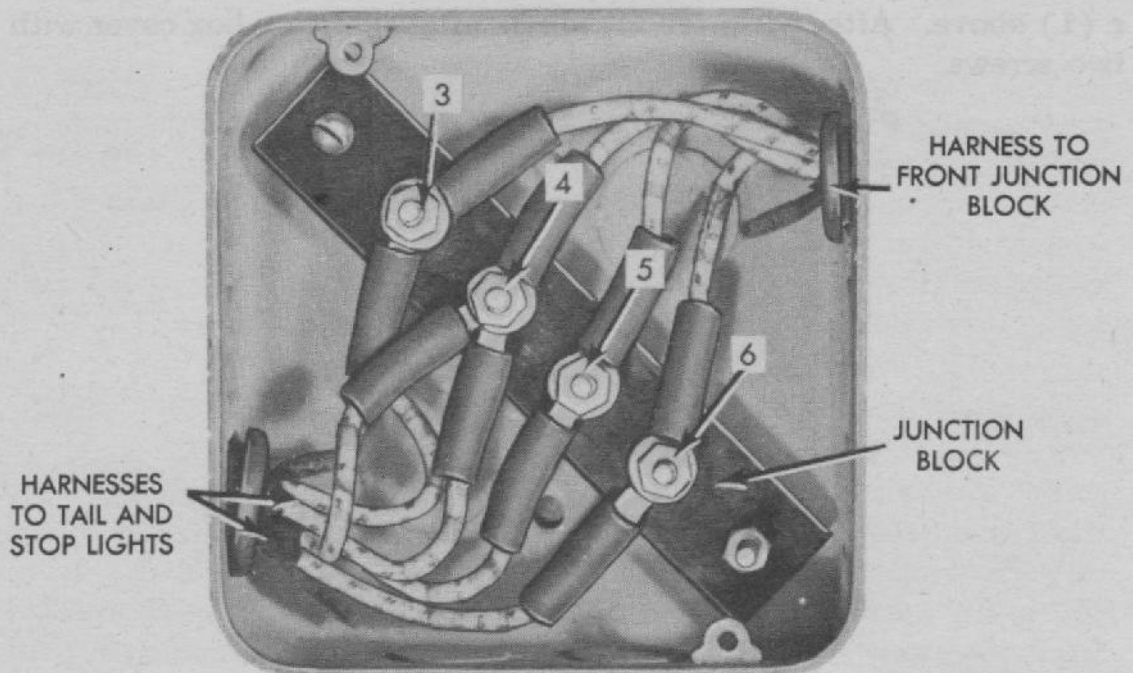
a. **Description.** The trailer wiring harnesses are divided into three main harnesses by front and rear junction blocks (figs. 31 and 32). Separate minor harnesses run from the electrical coupling socket to the light switch, from the light switch to the front junction block, from the front junction block to the front left clearance light, from the front junction block to the front right clearance light, from the front junction block to the wiring harness connectors (fig. 14), from

Lights and Wiring



RA PD 344142

Figure 31—Front Junction Block



RA PD 344141

Figure 32—Rear Junction Block

the connectors to the rear junction block and left and right rear clearance lights, from the rear junction block to trailer service tail and stop light assembly, and from rear junction block to blackout tail and stop light assembly. The dolly wiring harnesses comprise an electrical system completely separate from the rest of the trailer. The harnesses run from the dolly electrical coupling socket to the dolly light switch, from the dolly light switch to the dolly service tail and stop light assembly and to the dolly blackout tail and stop light assembly.

b. Harness Replacement. Disconnect the harness from the junction block and electrical units to which it is connected and pull harness from vehicle. Place new harness in position in vehicle, being sure to secure harness under clamps or in conduit provided in the frame. Connect the wires to the junction block terminals and electrical components with wire numbers connected as shown in figure 25.

c. Junction Block Replacement.

(1) **FRONT JUNCTION BLOCK** (fig. 31). Disconnect wires from terminals on block. Remove block from trailer frame by removing two mounting screws, nuts, and lock washers. Position new block on trailer frame and secure with two screws, nuts, and lock washers. Install harness wires to junction block terminals connecting wire numbers as shown in the illustration.

(2) **REAR JUNCTION BLOCK** (fig. 32). Remove two junction box cover retaining screws and then proceed as outlined in subparagraph c (1) above. After wires are installed, install junction box cover with two screws.

PART FOUR—AUXILIARY EQUIPMENT**Section XIX****GENERAL****54. GENERAL.**

a. Due to the use for which this trailer was designed, no items of auxiliary equipment are present.

APPENDIX**Section XX****SHIPMENT AND LIMITED STORAGE****55. GENERAL INSTRUCTIONS.**

a. Preparation for domestic shipment of the vehicle is the same, with the exception of minor added precautions, as preparation for limited storage. Preparation for shipment by rail includes instructions for loading the vehicle, blocking necessary to secure the vehicle on freight cars, and other information necessary to properly prepare the vehicle for domestic rail shipment. For more detailed information and for preparation for indefinite storage refer to AR 850-18 and FM 9-25.

56. PREPARATION FOR LIMITED STORAGE OR DOMESTIC SHIPMENT.

a. Vehicles to be prepared for limited storage or domestic shipment are those temporarily out of service for less than 30 days or vehicles that must be ready for operation on call. If vehicles are to be indefinitely stored after shipment by rail, they will be prepared for such storage at their destination.

b. If the vehicles are to be placed in limited storage, take the following precautions:

(1) **LUBRICATION.** Lubricate the vehicle completely (par. 19).

(2) **TIRES.** Clean, inspect, and properly inflate all tires. Replace, with serviceable tires, all tires requiring repairing or retreading. Do not store vehicles on floors, cinders, or other surfaces which are soaked with oil or grease. Wash off immediately any oil, grease, gasoline, or kerosene which comes in contact with tires or air hose under any circumstances.

(3) **ROAD TEST.** The preparation for limited storage will include a road test after the lubrication service to check on the general condition of the vehicle. Correct defects noted in the vehicle operation before the vehicle is stored, or attach a tag in a conspicuous place, stating the repairs needed, or describing the condition present. A written report of these items will then be made to the officer in charge.

(4) **EXTERIOR OF VEHICLE.** If practicable, remove rust appearing on the vehicle exterior with flint paper. Repaint painted surfaces whenever necessary to protect wood or metal. Coat exposed polished metal surfaces susceptible to rust, such as chains, with light rust preventive compound.

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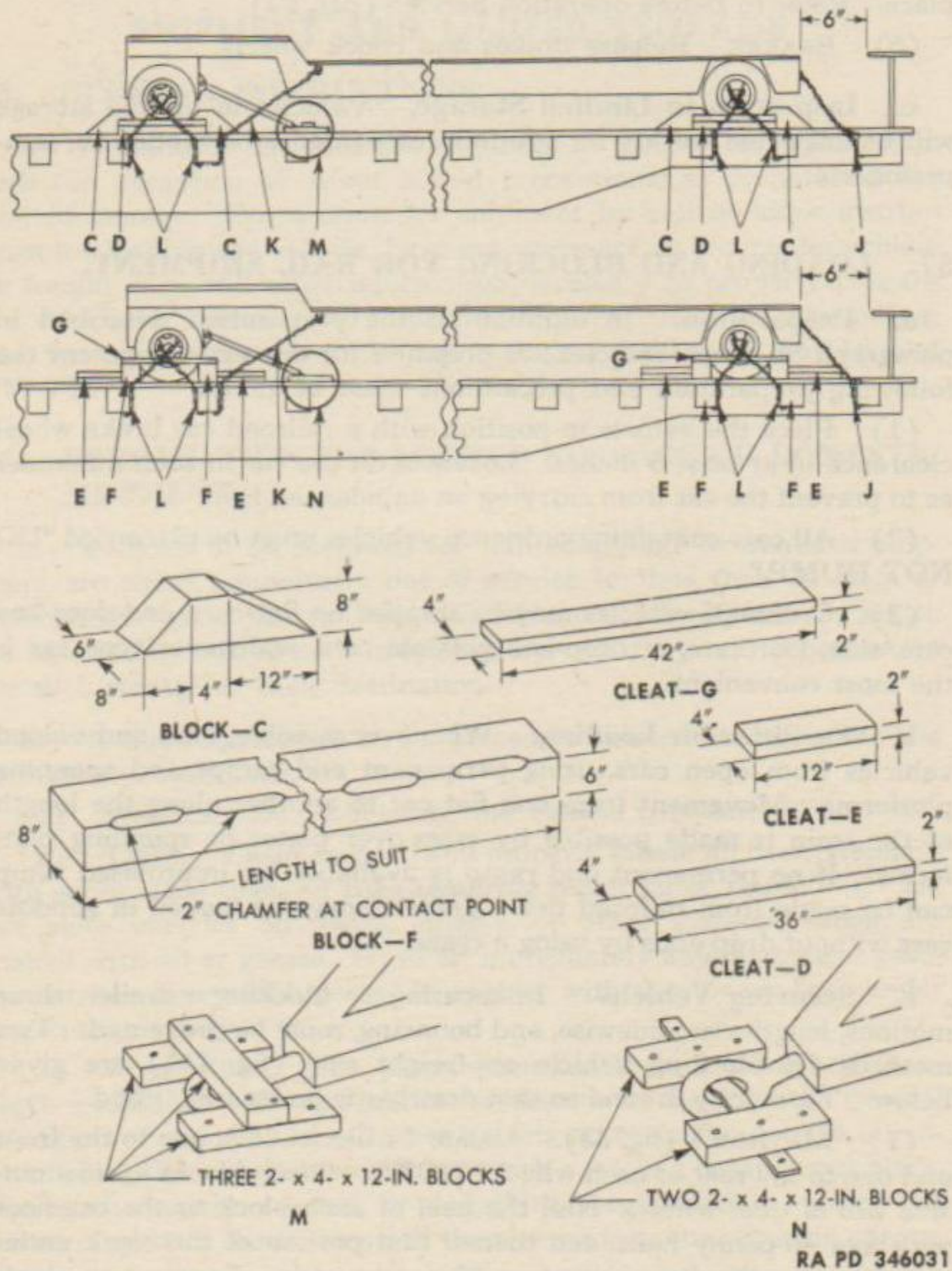


Figure 33—Blocking Requirements for Rail Shipment

Shipment and Limited Storage

outside wheels and through stake pockets on the freight car. Pass four strands, two wrappings of No. 8 gage, black, annealed wire (J) through bull rings at the rear of the trailer to each side of freight car through the nearest stake pockets. Pass four strands, two wrappings of No. 8 gage, black, annealed wire (K) through the forward side rings to stake pockets at each side of the freight car. Tighten all wires enough to remove slack. Block drawbar as shown in M, figure 33. Locate two blocks, one on each side of lunette, and nail each to car floor with three 30-penny nails. Locate third cleat crosswise over lunette, and nail to cleats and car floor with two 40-penny nails at each end.

(2) **METHOD 2** (fig. 33). Place four blocks (F), one to the front and one to the rear of each wheel. These blocks are to be at least 8 inches wider than the overall width of the vehicle at the car floor. Locate 16 cleats (E), two to the front and two to the rear of each outside dual wheel, against block (F). Nail lower cleat to the car floor with five 40-penny nails, then nail the top cleat (E) to the lower cleat with five 40-penny nails. Position four cleats (G) over blocks (F) against each outside wheel. Nail each end of cleat (G) to block (F) with three 40-penny nails. Pass four strands, two wrappings of No. 8 gage, black, annealed wire (L) through the four outside wheels and through stake pockets on the freight car. Pass four strands, two wrappings of No. 8 gage, black, annealed wire (J) through bull rings at the rear of the trailer to each side of the freight car through the nearest stake pockets. Pass four strands, two wrappings, of No. 8 gage, black, annealed wire (K) through the forward side rings to stake pockets at each side of the freight car. Tighten all wires enough to remove slack. Block drawbar as shown in N, figure 33. Pass a 1-inch piece of No. 14 B.W. gage, hot rolled steel through lunette and under two blocks along side lunette. Nail each end of steel strap to car floor with two 30-penny nails. Nail the blocks to the car floor with four 30-penny nails.

d. Shipping Data.

Length (over-all).....	29 ft 6 in.
Width (over-all).....	8 ft 6 in.
Height (over-all).....	4 ft 8¼ in.
Weight	12,000 lb
Area of car floor occupied by vehicle (approx).....	25 sq ft
Volume occupied per vehicle (approx).....	1,165 cu ft

Section XXI

REFERENCES

58. 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
Index (Index to SNL's)	ASF Cat. ORD 2 Index
Index to Ordnance Publications Vol 2 (lists FM's, TM's, TC's, and TB's of interest to Ordnance personnel, FSM MWO's, BSD ...	OFSB 1-1
List of publications for training (lists MTP's, TR's, TC's, FM's, TM's, WDTB's, Firing Tables and charts and Lubrication Orders) ..	FM 21-6
List of miscellaneous publications (lists MR's, MWO's, SB's, RR's, and War Department Pamphlets)	WD Pamphlet 12-6
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, devices, and displays)	FM 21-8

59. STANDARD NOMENCLATURE LISTS.

a. Vehicular.

Trailer, 22-ton, low bed (La Crosse Model DF6t-22)	SNL G-720
--	-----------

b. Maintenance.

Cleaning, preserving and lubricating materials, recoil fluids, special oils, and miscellaneous items	SNL K-1
Lubricating equipment, accessories and related dispensers	SNL K-3
Soldering, brazing and welding material, gases and related items	SNL K-2
Tool-sets, for ordnance service command automotive shops	SNL N-30
Tool-sets (common), specialists' and organizational	SNL G-27 (Section 2)

References

Tool sets (special), automotive and semiautomotive SNL G-27
(Section 1)

60. EXPLANATORY PUBLICATIONS.**a. Fundamental Principles.**

Basic maintenance manual TM 38-250
Driver's manual TM 10-460
Driver selection and training TM 21-300
Electrical fundamentals TM 1-455
Military motor vehicles AR 850-15
Motor vehicle inspections and preventive maintenance service TM 9-2810
Ordnance service in the field FM 9-5
Precautions in handling gasoline AR 850-20
Standard military motor vehicles TM 9-2800

b. Maintenance and Repair.

Cleaning, preserving, lubricating and welding materials and similar items issued by the Ordnance Department... TM 9-850
Maintenance and care of pneumatic tires and rubber treads TM 31-200
Ordnance maintenance: Power brake system (Bendix-Westinghouse) TM 9-1827A

c. Protection of Materiel.

Camouflage FM 5-20
Chemical decontamination, materials and equipment TM 3-220
Decontamination of armored force vehicles FM 17-59
Defense against chemical attack FM 21-40
Explosives and demolitions FM 5-25

d. Storage and shipment.

Ordnance company, depot FM 9-25
Ordnance 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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