TM 9-888

WAR DEPARTMENT

6-TON PAYLOAD, 10-TON GROSS, 2-WHEEL, VAN SEMITRAILER

WAR DEPARTMENT *16 OCTOBER 1944*

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WAR DEPARTMENT TECHNICAL MANUAL

TM 9-888

This manual supersedes TM 9-888, 18 December 1943, and OFSTB 800-8, 30 March 1943.

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Washington 25, D. C., 16 October 1944

TM 9-888, 6-ton Payload, 10-ton Gross, 2-wheel, Van Semitrailer, is published for the information and guidance of all concerned.

[A.G. 300.7 (30 Sep 44)]
BY ORDER OF THE SECRETARY OF WAR:

G. C. MARSHALL,
Chief of Staff.

OFFICIAL:

J. A. ULIO,
Major General,
The Adjutant General.

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RESTRICTED

This manual supersedes TM 9-888, 18 Dec 1943, and OFSTB 800-8, 30 March 1943.

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 following van-type semitrailers, as well as descriptions of major units and their functions in relation to other components of the vehicles.

(1) Model STV-620 (American Bantam Car Company).

(2) Model DF-233-V (American Body and Trailer Company).

(3) Model C-15-935A (Carter Manufacturing Company).

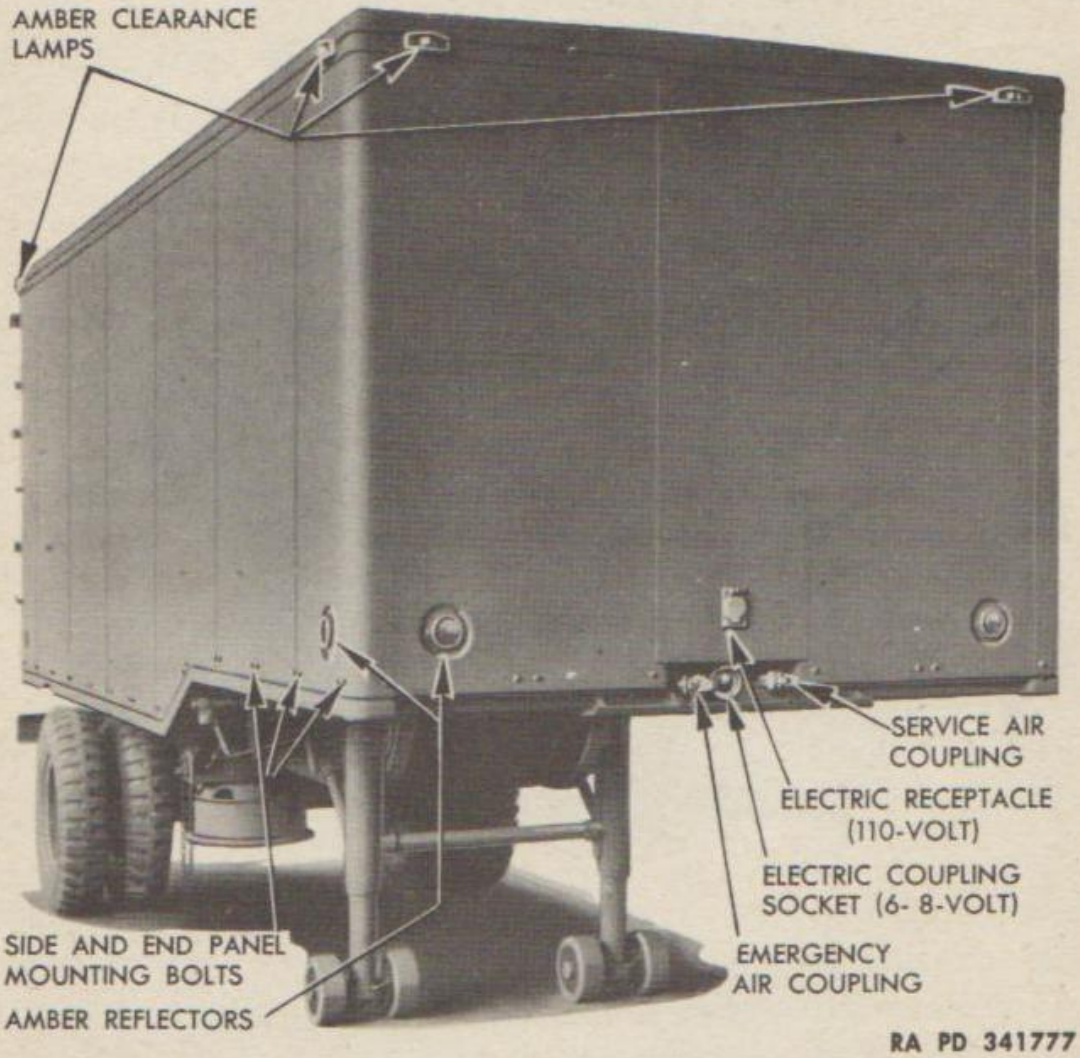

Figure 1—Right Front View (American Bantam Model STV-620)

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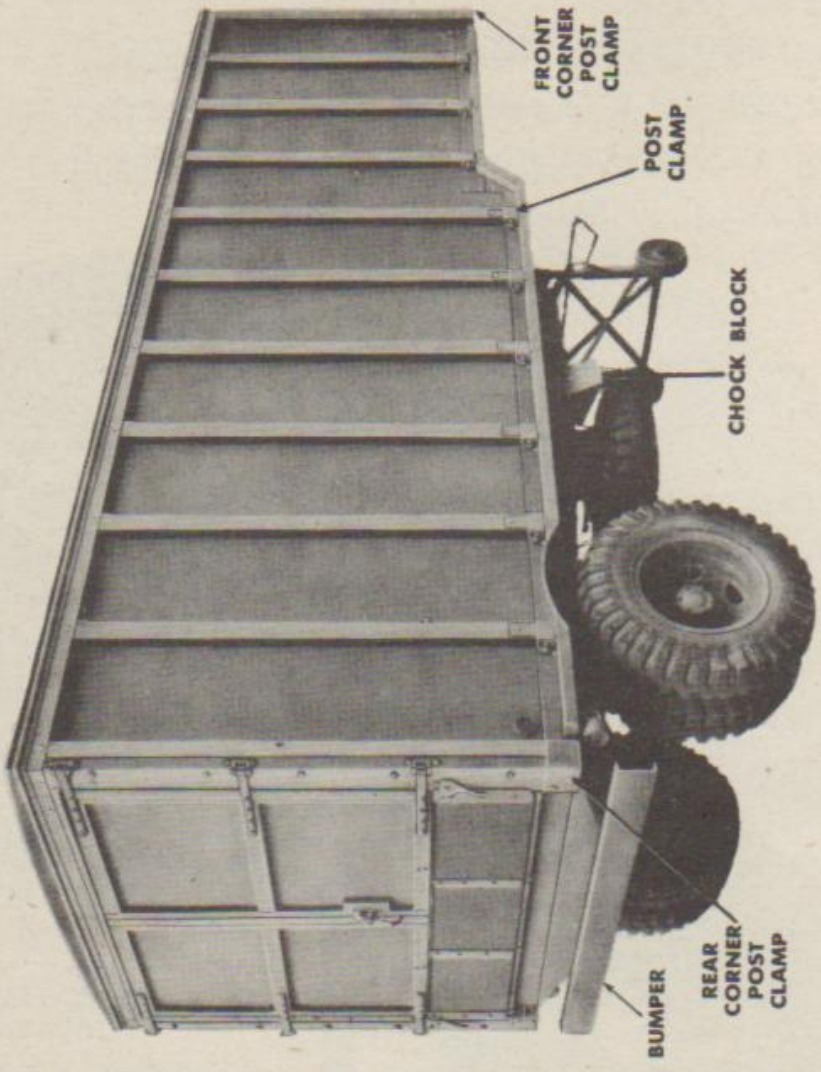


Figure 2—Right Rear View (Strick Model 400-W)

(4) Model E-14 (Dorsey Brothers).

(5) Model 1-ORD (Kentucky Manufacturing Company).

(6) Model KV-10 (Olson Manufacturing Company).

(7) Model LV-10 (Olson Manufacturing Company).

(8) Model 400-W (Strick Company).

(9) Model T-8-D (Timpte Brothers).

(10) Model GSW-4 (Utility Trailer Manufacturing Company).

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

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.

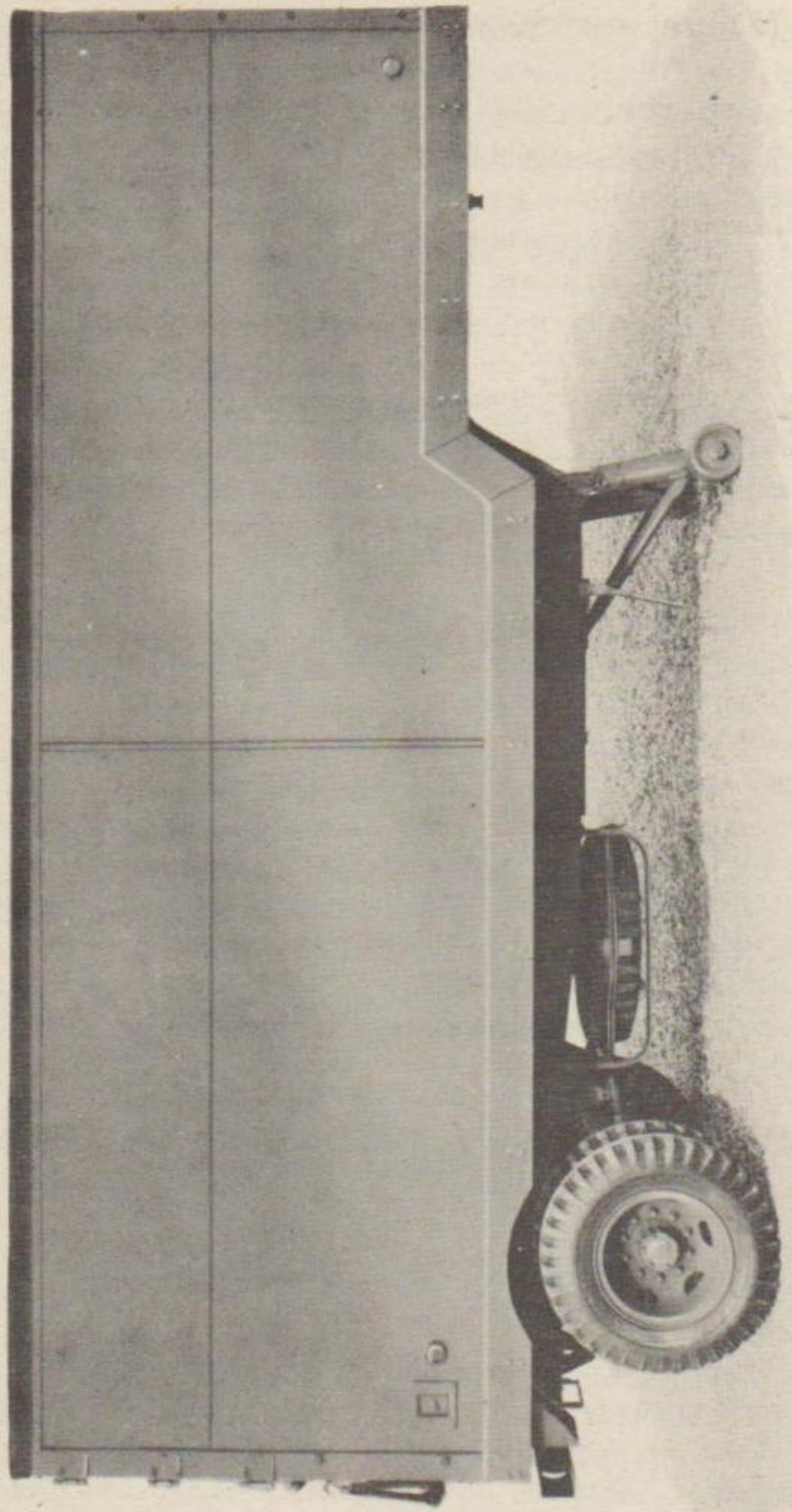
a. Forms and records applicable for use in performing prescribed operations are listed below with a brief explanation of each:

(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. 789 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 with the vehicle at all times. In case of an 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



RA PD 63885

Figure 3—Right Side View (Olson Model LV-10)

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 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. 7353, SPOT-CHECK INSPECTION REPORT FOR ALL MOTOR VEHICLES. This form may be used by all commanding officers or their staff representatives in making spot-check inspections on all vehicles.

(9) W.D., A.G.O. FORM 468, UNSATISFACTORY EQUIPMENT RECORD. 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.

(10) W.D., O.O. FORM NO. 7370, 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, 3, 4, and 5).

a. General. The semitrailer is a two-wheeled utility vehicle having dual wheels. A spare wheel and tire are carried on a bracket attached to the underside of the frame. A retracting-type landing gear is attached to the frame, and is operated by a worm screw and hand crank, located on the right front side. On Model Nos. 400-W, E-14, T-8-D, C-15-935A, GSW-4, 1-ORD, DF-223-V, KV-10, and LV-10, the body, which is mounted on a steel frame, is of the van

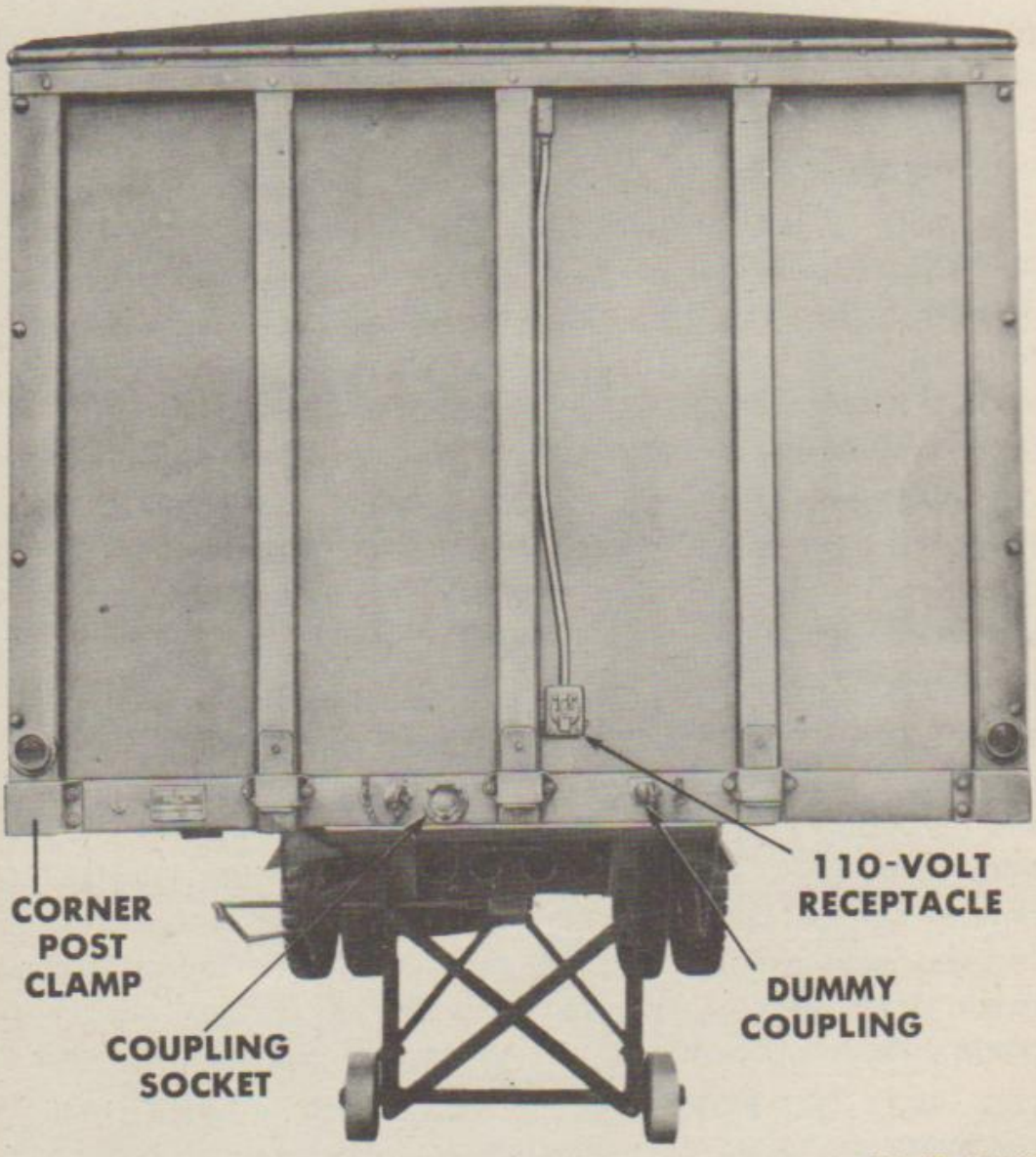


Figure 4—Front View (Strick Model 400-W)

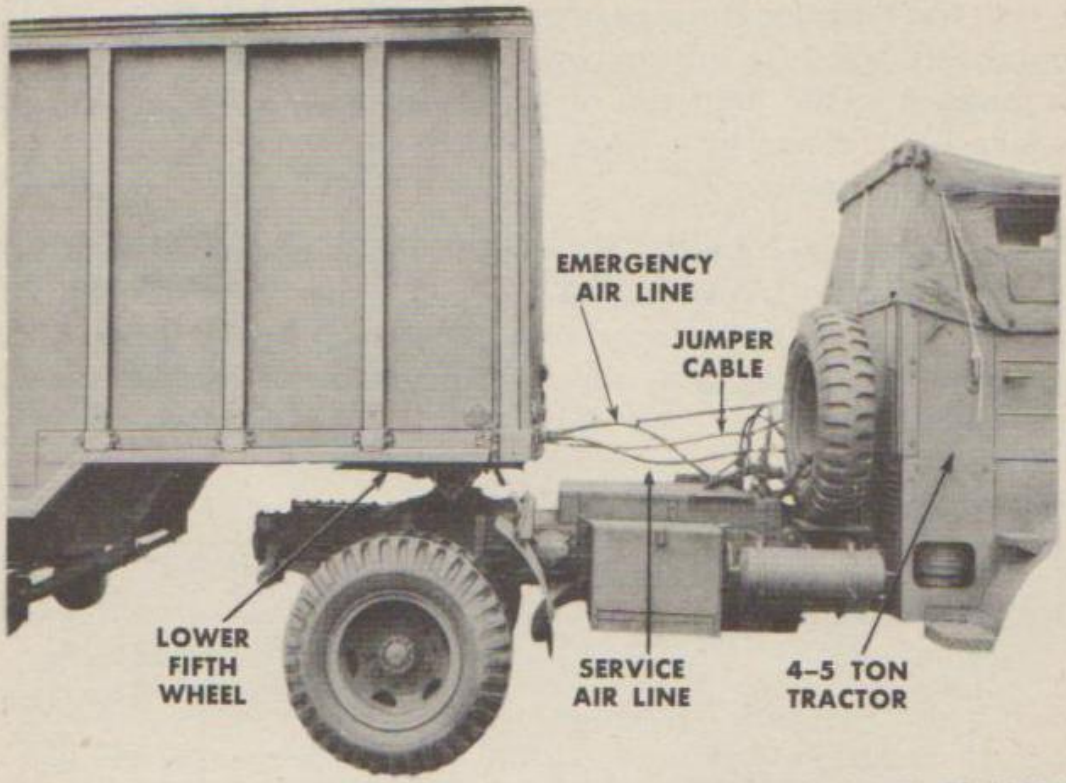


Figure 5—Semitrailer Coupled to Tractor-truck

type, constructed of wood, with a maximum payload of 12,000 pounds. The frame is carried on a one-piece axle through a slip end, semielliptical spring suspension. One combination service stop and taillight and blackout taillight, and one blackout stop and taillight are installed on the rear end. There are also six service clearance lights, two on each side, and two at the rear of the trailer. On Model No. STV-620, the body, which is mounted on a steel frame, is of the van type, constructed of steel, with a maximum payload of 12,000 pounds. The frame is carried on a one-piece axle through a fixed and semielliptical spring suspension. One combination service stop and taillight and blackout taillight, and one blackout stop and taillight are installed on the rear end. There are also eight blackout clearance lights, so arranged as to be on at all times when any lights are on the vehicle—two on each side, two on the front, and two on the rear of the trailer.

b. Braking. The braking for the trailer is done by means of internal expanding air-operated brakes, located on each of the inner dual wheels, and controlled by a relay-emergency valve as the control center of the brake equipment. This relay-emergency valve is in turn controlled by the brake valve on the tractor-truck.

c. Towing. For tactical use, the semitrailer is towed by a 4- to 5-ton, 4 x 4 tractor-truck equipped with a fifth wheel coupling. The upper fifth wheel for this coupling, consisting of a plate and kingpin, is attached to the front end of the trailer. For nontactical use, the semitrailer is towed by a 5-ton, 4 x 2 tractor-truck equipped with a fifth wheel coupling.

d. Differences Among Models. All models have the same general appearance (LV-10 and STV-620 bodies are not reinforced with stakes on outside). The only differences are in the methods of suspension and landing gear, which do not affect maintenance by the using arms.

4. DATA.

a. Vehicle Specifications.

Length, over-all	247½ in.
(LV-10)	252 in.
(STV-620)	250½ in.
Length, inside	240 in.
(STV-620)	240¾ in.
Width, over-all	95⅛ in.
(LV-10 and STV-620)	96 in.
Width, inside	88¼ in.
(STV-620)	88 in.
Height, over-all—empty	129⅝ in.
(STV-620)	128½ in.
Height, over-all—loaded	127⅛ in.
(STV-620)	126¼ in.
Height, inside (under center of bow):	
Rear	78 in.
Front	68¾ in.
Height of bed—empty	49⅜ in.
(LV-10)	48½ in.
(STV-620)	48⅛ in.
Height of bed—loaded	46⅞ in.
(LV-10)	45¼ in.
(STV-620)	45⅛ in.
Wheel size	20 x 8
Tire size	9.00 x 20
Track, rear axle	72 in.

Weight of vehicle—empty	7,200 lb
(LV-10)	7,970 lb
(STV-620)	7,400 lb
Weight of vehicle—loaded	19,200 lb
(LV-10)	19,970 lb
(STV-620)	19,400 lb
Ground clearance—under raised landing gear:	
Wheels (loaded)	14 in.
(LV-10)	13 in.
(STV-620)	16 in.
Ground clearance—under rear axle (loaded)	15⅞ in.
(LV-10)	14⅞ in.
(STV-620)	15⅞ in.

b. Performance.

Speeds allowable	45 mph
(LV-10 and STV-620)	50 mph

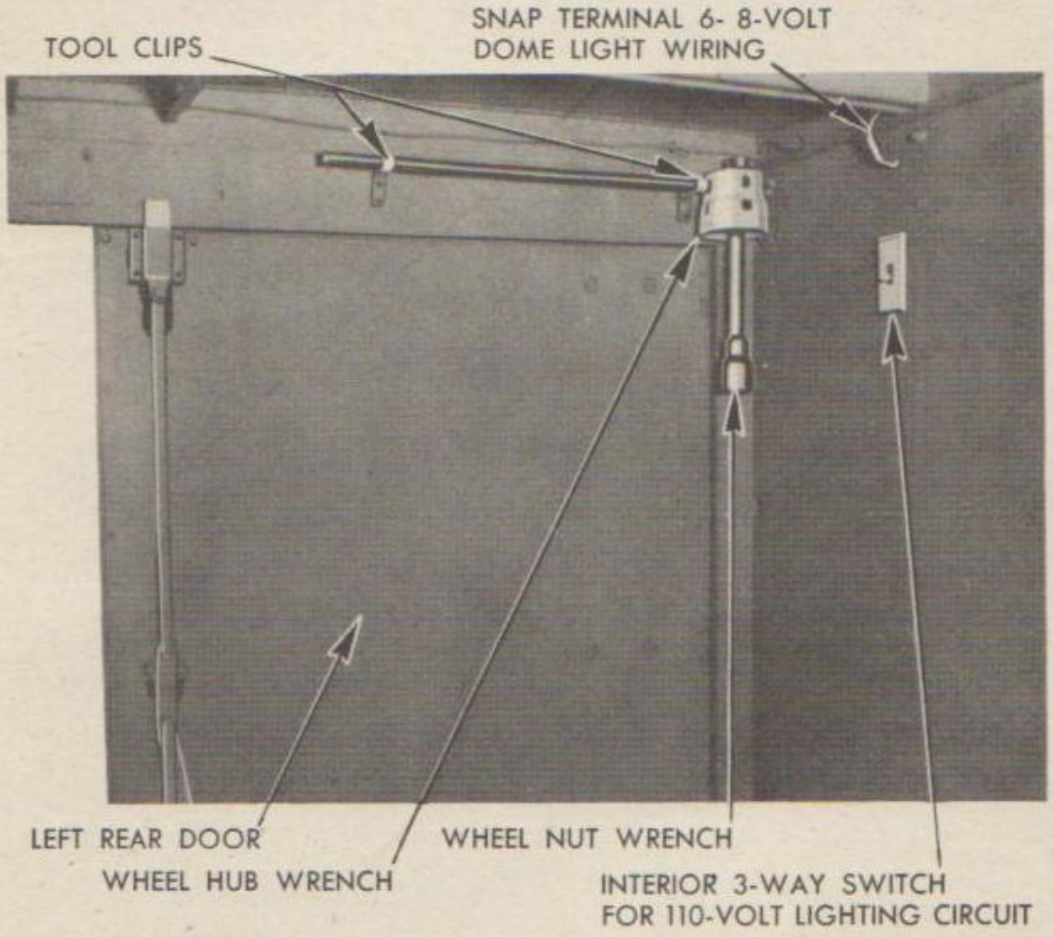


Figure 6—Stowage Position for Tools (American Bantam Model STV-620)

Departure angle	45 deg
Towing facilities (front)	Upper fifth wheel

c. Towing Vehicle Required for Tactical Use (Specifications).

Tractor-truck, 4- to 5-ton, 4 x 4

Weight—net	(lb)	12,200
payload	(lb)	9,000
gross	(lb)	21,200
Tires (10-ply)—size		9.00 x 20
Ground clearance	(in.)	11⅞
Tread, center-to-center	(in.)	Front 73¾ —rear 72
Electrical system		6 volts
Brakes (Bendix-Westinghouse)		Air

Section III

TOOLS, PARTS, AND ACCESSORIES

5. GENERAL.

a. No list of equipment was available for publication at the date this manual went to press. However, model STV-620 is equipped with a wheel hub wrench and a wheel nut wrench (fig. 6).

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 instruments.

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 or not 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.

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.

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. Body. Inspect the entire trailer body to see that all components are properly assembled and secure. Remove all corrosion-preventive material and examine paint for damage or rust spots. Paint as necessary.

d. Tires. All tires must be inflated to 70-pound (maximum) pressure when cool. Cell valve caps must be present and finger-tight. See that spare wheel and tire carrier is properly mounted, and the spare wheel and tire are secure.

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. Be sure upper fifth wheel plate and kingpin are secure to trailer, and are free from dirt and properly lubricated.

g. Landing Gear. Inspect all components of landing gear to be sure they are properly assembled and secure. Test wheels for tightness or excessive play. Test retracting mechanism for proper operation and adequate lubrication. Be sure all corrosion-preventive materials have been removed.

h. Vehicle Publications. The vehicle Technical Manual, Lubrication Order and Form No. 478 must be present, legible, and properly stowed. NOTE: *U.S.A. registration number and vehicle nomenclature must be filled in on Form No. 478 for new vehicles.*

Section VI

CONTROLS AND OPERATION

10. CONTROLS.

a. Landing Gear (fig. 7). The purpose of the landing gear is to support the trailer when not coupled to the tractor-truck. It is of the retracting type, and is operated by a worm screw and hand crank, located on the right front side. Raising the wheels is accomplished by unhooking the crank handle from its hanger and turning it with a counterclockwise motion.

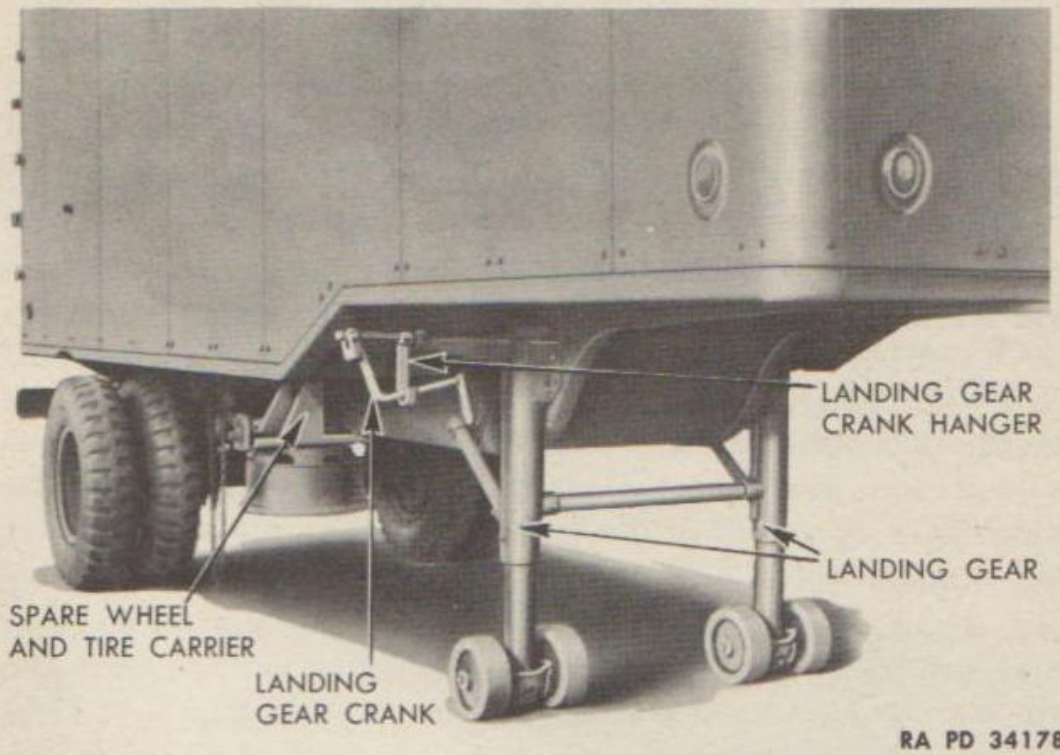


Figure 7—Landing Gear, Spare Wheel, and Tire Carrier (American Bantam Model STV-620)

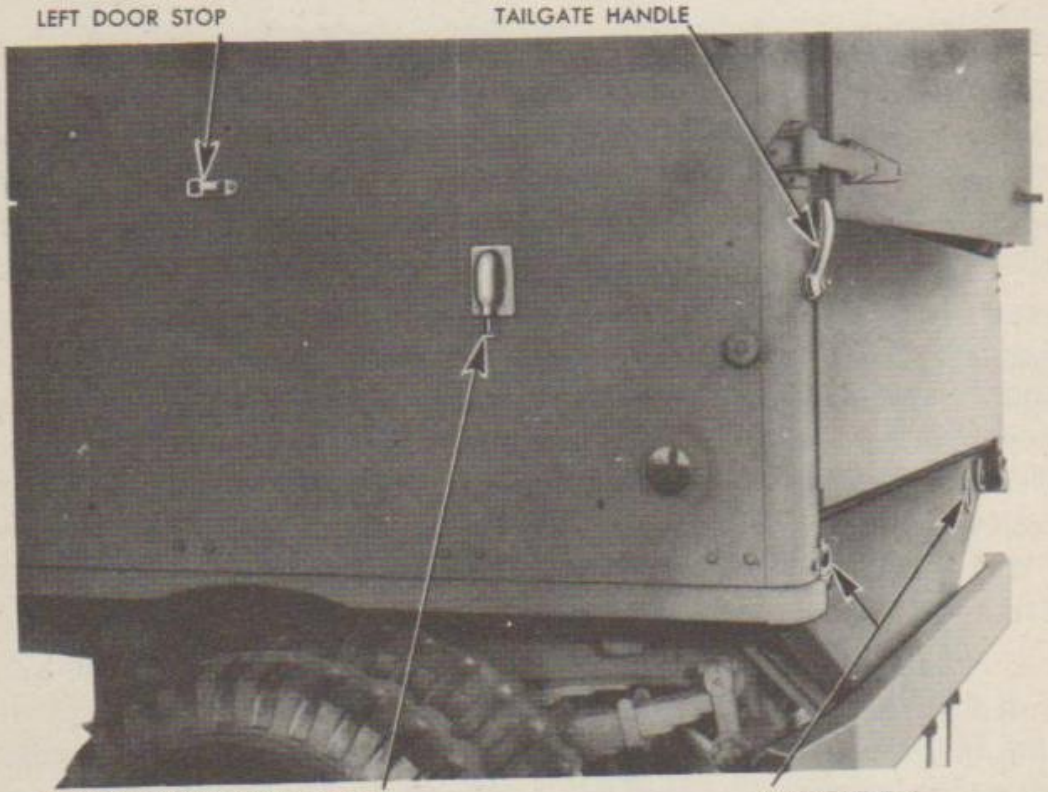
b. Brakes. The brakes are internal-expanding mechanical brakes, operated by the energy of compressed air, which provides the mechanical force necessary to expand the brake shoes, pressing them against the brake drums when brakes are applied. The air brake equipment consists chiefly of an air tank, a relay-emergency valve with exhaust check valve, two air filters, two brake chambers, two slack adjusters, two hose couplings located on front of trailer (figs. 1 and 4), and miscellaneous parts for connecting these devices (figs. 1 and 5). The function of the relay-emergency valve is to relay braking action from the tractor, and also to cause an automatic application of the trailer brakes should the trailer accidentally break away from the towing tractor. Dummy couplings are provided to seal the hose couplings at the front of the trailer from entrance of dirt when these connections are not being used.

c. Fifth Wheel. A fifth wheel is provided on the tractor, and is used in conjunction with the trailer to make a tractor-trailer operating unit (fig. 4). It consists of a base, provided with a slot opening toward the rear, for the entrance of the trailer kingpin. Two pivoted jaws are provided in the slot to grip the trailer kingpin securely when it is correctly engaged with the fifth wheel. An operating lever is provided to open the jaws when engaging or disengaging the

trailer kingpin. The base is mounted to the sub-base through crosswise and lengthwise pivot pins which allow the plate to tip lengthwise and crosswise. Adjustable wedges are provided to limit the sidewise tipping, which is undesirable when traveling at high speed over smooth roads. The sub-base plate is attached to the tractor by bolts through the upper flange of the tractor frame.

d. Trailer Light Socket. This vehicle is equipped with an electrical socket (figs. 1 and 4) located at the center of the front. It is located midway between the air line connectors. The socket is protected by a hinged cover which is raised when the jumper cable from the tractor truck is attached. The electrical circuit of the semitrailer is energized from the tractor truck when the plug of the jumper cable is inserted in the socket, and the switch in the tractor truck cab is turned to "ON" position.

e. Blackout Switch. The blackout switch is located at the front of the van body on the right or curb side. The switch is operated by means of a screwdriver or similar tool inserted in a slot in the switch head. This switch has no "OFF" or neutral position. It is



RA PD 341790

Figure 8—Exterior 3-way Switch for 6- 8-volt Lighting Circuit

either on blackout position or standard light position. The blackout circuit is energized and controlled from the towing tractor truck. An arrow on the face of the switch points to the blackout position.

f. Lights and Light Switches. There are six amber clearance lights mounted two on each side and two in front (fig. 1). These lights are not controlled by the blackout switch, and burn if the switch in the truck-tractor is turned to the "ON" position. There are five dome lights inside the vehicle, which have both 110-volt and 6-8-volt lamps. When a 110-volt supply is plugged into the receptacle (figs. 1 and 4), these 110-volt lamps light. To light the 6-8-volt lamps, either the exterior 3-way switch (fig. 8), or the interior 3-way switch (fig. 6), must be turned to the "ON" position.

g. Tailgate and Door Handles (fig. 8). The doors and tailgate are held in position by means of handles.

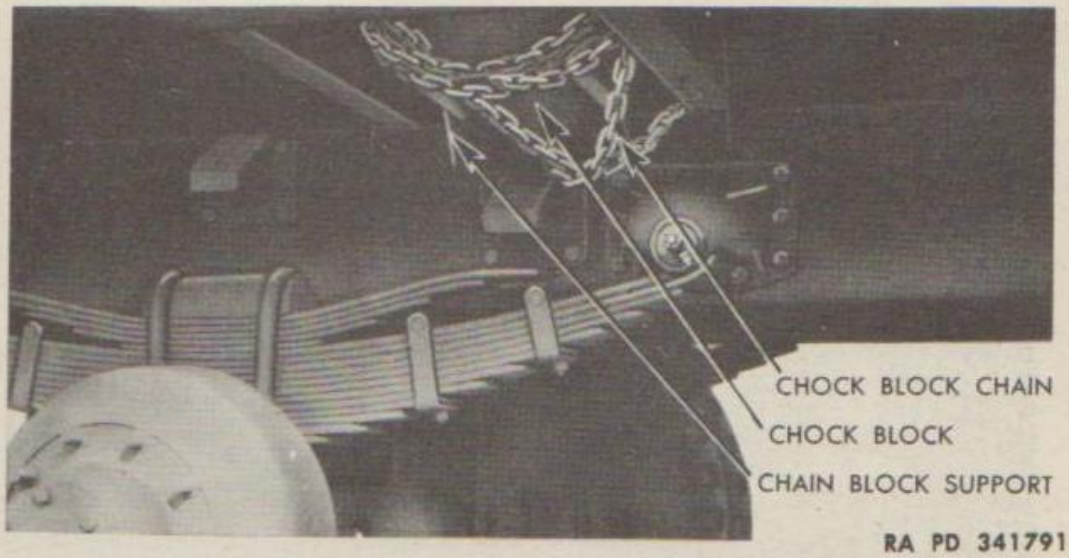


Figure 9—Chock Block Stowage

h. Chock Blocks. Two chock blocks are provided to prevent accidental movement of the semitrailer when uncoupled from the tractor truck. One block (fig. 9) is stowed on each side of the semitrailer and is attached by chains to the frame at points approximately above the axle spindles. The chock block chains are of adequate length to permit the blocks to be inserted either in front of the dual tires or behind them whichever the slope of the ground may require, when the semitrailer is disconnected from the tractor-truck.

i. Tire Carrier (fig. 10). The spare wheel and tire carrier assembly is riveted and welded to the right-hand frame side rail forward of the rear axle. The wheel and tire assembly is elevated to

position on the carrier by a winch-type double cable lift. The ends of the cable are secured by U-bolts, lock washers, and nuts to an anchor plate. The anchor plate of the elevating mechanism is passed through the hub opening of the wheel and retained in position by projecting stops. The elevating mechanism of the carrier is provided to raise the wheel and tire assembly in position on the four attaching studs of the tire carrier. The wheel and tire assembly is retained on the studs of the carrier by means of nuts of the same size and shape as those used to secure the wheel assembly to the hub of the semi-trailer. The winch of the elevating mechanism is retained in its elevated position by a ratchet wheel mounted on the outer end of the crankshaft of the winch. The ratchet is locked by a pawl attached to the frame of the carrier assembly, and positioned to engage the teeth of the ratchet. The winch of the tire carrier mechanism is operated by the tire wrench.

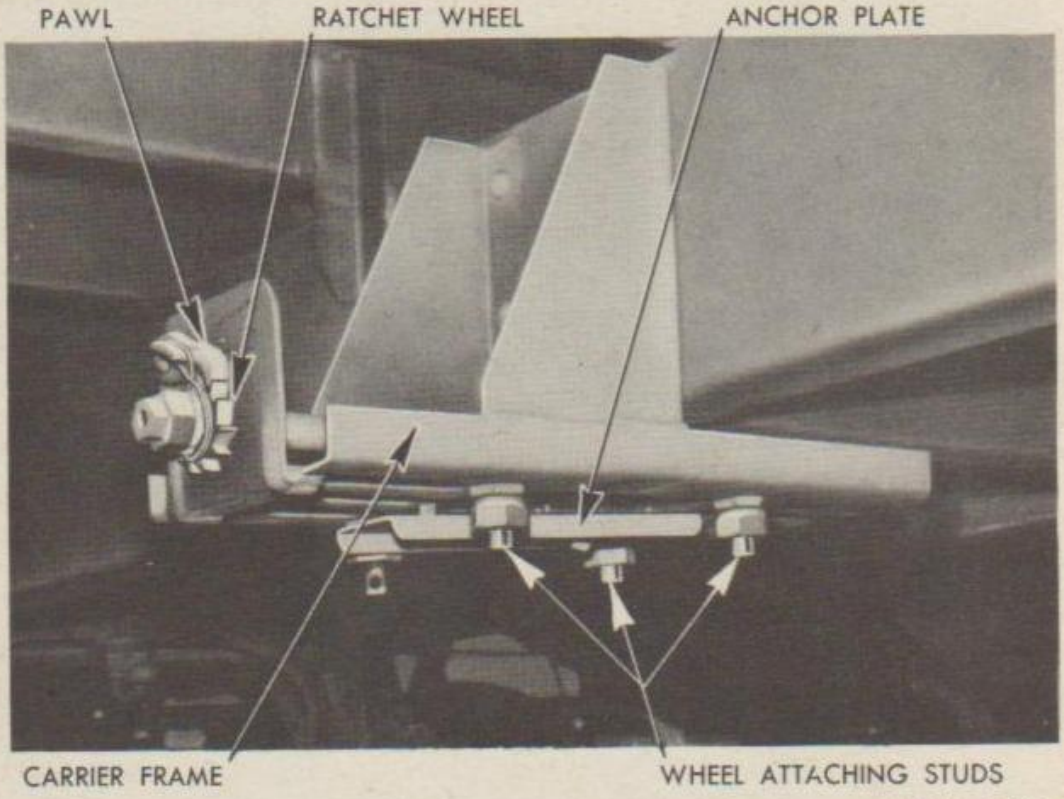


Figure 10—Tire Carrier

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 service in paragraph 22 before using the vehicle.

c. Coupling Semitrailer to Tractor-truck.

(1) Before connecting trailer to tractor-truck, remove chock blocks from hangers and place them under the rear of trailer wheels to prevent trailer from moving.

(2) Back tractor under front end of trailer so the kingpin under front of trailer enters V-opening of lower fifth wheel on tractor-truck. Continue backing until the fifth wheel coupling jaws lock on kingpin. To insure fifth wheel remaining locked, swing the safety latch on front of lower fifth wheel down over end of plunger. The fifth wheel on tractor is equipped with wedge blocks. These wedge blocks must be in the "OUT" position to permit universal movement of the lower fifth wheel in cross-country or off-the-highway operation, and in the "IN" position to restrict universal movement of lower fifth wheel, for high-speed operation on improved roads.

(3) Remove dummy couplings from hose couplings on front of trailer. CAUTION: *When trailer is disconnected, dummy couplings must be attached to hose couplings to prevent entrance of dirt.* After the above operation and precaution, connect the emergency hose from the right side of tractor to the emergency line coupling at front left side of trailer, and connect the service line hose from the left side of tractor to the service line coupling at front right side of trailer. This is accomplished by crossing the air line hoses. NOTE: *The emergency and service lines are properly identified by tags at front of trailer just back of the couplings. After the emergency and service lines are properly coupled, open the cut-out cocks for each line on tractor.*

(4) Connect electrical circuit of trailer to electrical circuit of tractor-truck by inserting one plug of jumper cable into receptacle provided on rear of tractor-truck, and the other plug of jumper cable into receptacle located on front of trailer. To operate the blackout switch turn the revolving cover up, and with a screwdriver (or small coin) turn the slotted center spindle clockwise for service taillight and stop light; turn this spindle counterclockwise for blackout taillight and stop light.

(5) Raise landing gear wheels by unhooking crank handle from its hanger and turning it counterclockwise until landing gear wheels have gained maximum clearance from the ground. Then hook crank handle back on its hanger.

(6) Remove chock blocks from rear of wheels and hang them up under body cross sill ahead of the trailer wheels by inserting the eye of the chock block into the snap provided or by placing the chock blocks on the rests and looping the chain over the pins. NOTE: *If the 110-volt dome lights have been in use, be sure to pull the plug from the outside receptacle and turn off all switches. Be sure tailgate and doors are properly closed and locked.*

d. Uncoupling Semitrailer from Tractor-truck.

(1) To uncouple from towing vehicle, apply trailer brakes by operation of foot or hand air brake controller in tractor cab. Remove chock blocks and place under front of wheels.

(2) Lower the landing gear wheels by turning crank clockwise until the landing gear legs are perpendicular to the ground. NOTE: *On Model STV-620 landing gear is of the vertical type, and wheels must be lowered as far as possible.*

(3) Pull plug of jumper cable free of trailer receptacle and hang loose end of jumper cable on the hook provided on the tractor.

(4) Shut off the cut-out cocks for both the emergency and air brake lines on tractor, disconnect the air brake hose at couplings on front of trailer, and cover these couplings with the dummy couplings provided at front of trailer.

(5) Unlock the lower fifth wheel by swinging the safety latch on front edge of lower fifth wheel upward, and pull forward on lever which is provided just under the front of lower fifth wheel. The tractor-truck is then moved sharply forward to free kingpin and move the fifth wheel from under the trailer.

e. Operating Tire Carrier (fig. 10).

(1) REMOVAL. Remove the four nuts securing the wheel and tire assembly to the carrier frame. Place the tire nut wrench on the operating nut of the winch, and release the tension against the pawl of the ratchet assembly. Disengage the pawl of the ratchet assembly, and lower the wheel and tire assembly to the ground. Disengage the anchor plate of the tire carrier operating mechanism from the wheel hub hole.

(2) INSTALLATION. Position the spare wheel and tire assembly directly under the operating mechanism of the carrier with the convex side of the wheel facing toward the carrier. Disengage the pawl from the ratchet, and lower the cable anchor plate to the spare wheel and tire assembly. Insert the anchor plate in the hub hole of the wheel. Engage the spacer stops of the anchor plate in

the hub hole of the wheel, and position the pawl in the teeth of the ratchet. Place the wheel nut wrench on the operating nut of the winch, and elevate the wheel and tire assembly into position on the four anchor studs of the tire carrier. Secure the nuts on the anchor studs to hold the wheel and tire in position. Disengage the pawl from the ratchet, and drop it back in position after the tension on the operating cable has been released.

12. STOPPING VEHICLE.

a. The brakes are applied by depressing the brake pedal located in the tractor cab. This will stop tractor and trailer simultaneously. The best possible stop will be made when the first brake application is as hard as the speed and condition of road permit, and then graduated off as the speed is reduced, so that at the end of the stop but little pressure remains in the brake chambers. Never apply the brakes lightly at first and increase the pressure as the speed diminishes. This stop not only requires more time but the final high pressure will produce a severe final stop. Do not fan the brake pedal, as this gives poor brake performance and wastes brake pressure. Fanning does not increase the brake line pressure, but rather decreases both the reservoir and brake line air pressure. The air brake is designed so that when the brake pedal is moved to the limit of its stroke, an emergency application results which will stop the vehicle in the shortest possible time. This application should be made in an emergency and not employed in ordinary braking services.

Section VII

OPERATION UNDER UNUSUAL CONDITIONS

13. CLIMATIC AND ROAD HAZARDS.

a. Extreme Heat and Cold. For proper lubrication under these conditions refer to section IX. Care must be taken before going into operation in extremely cold temperatures to check air brake system. Drain water (condensation) from air tank before reaching freezing temperature. No other special preparations are necessary.

b. Sand or Dust. Extremely sandy or dusty operation necessitates frequent inspection, cleaning, and lubrication of the working 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.

The trailer brakes under these conditions should be applied slightly ahead of the towing vehicle 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 the 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 construct one complete operating unit from several partially damaged ones.

15. DETAILED INSTRUCTIONS.

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

b. Method No. 1. Place 2-pound TNT charges inside each wheel over the axle. Insert tetryl nonelectric caps with at least 5 feet of safety fuze in each charge. Ignite the fuzes and take cover. CAUTION: *If charges are prepared beforehand and carried in the vehicle, keep the caps and fuzes separated from the charges until they are to be used.*

c. Method No. 2.

(1) 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.

(2) Fire on the vehicle, using tank, antitank or other artillery, or antitank rockets or grenades. If a good fire is started, the vehicle may be considered as destroyed.

d. Method No. 3.

(1) Smash the lights, reflectors, jumper cable and socket, air lines and conduits.

(2) Place an M14 incendiary grenade under each tire or deflate tires and destroy them with an ax, pick, or machine gun fire.

(3) Pour gasoline or oil over entire unit.

(4) 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 the 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 of 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, Volume 2, furnishes information on standard tools available to service the vehicle.

Section XI

LUBRICATION

18. GENERAL INSTRUCTIONS.

a. Scope. War Department Lubrication Order No. 789 prescribes lubrication maintenance for these semitrailers. Figures 11 and 12 contain the same information as does WDLO No. 789, although they are not exact facsimiles of the WDLO. Figure 12 illustrates lubrication points for landing gears which differ in construction from the landing gear illustrated in figure 11.

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 Commanding Officer, Fort Wayne Ordnance Depot, Detroit 32, Michigan.

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°F, +32°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 ensure a proper distribution of the lubricant. If lubrication fitting valves stick and prevent the entrance of lubricant, remove the fitting and determine 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, grease cups, oilers and oilholes are readily identifiable on the vehicle. Wipe clean such lubricators and the surrounding surface before lubricant is applied.

(2) Where relief valves are provided, apply new lubricant until the old lubricant is forced from the vent.

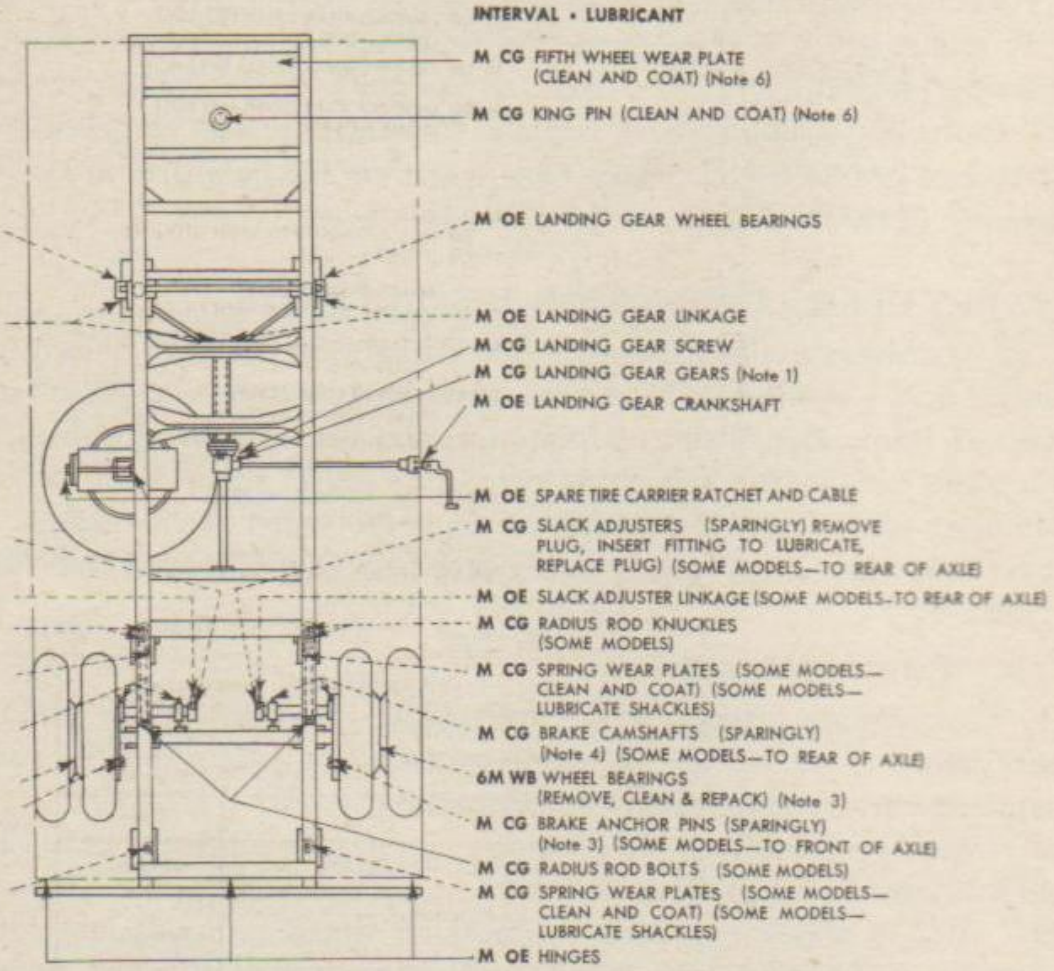
(3) Always wipe clean metal surfaces on which a film of lubricant must be maintained by manual application, before the film is renewed.

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) GEAR BOX. Remove cover of gear box on landing gear of some models and hand pack with grease.

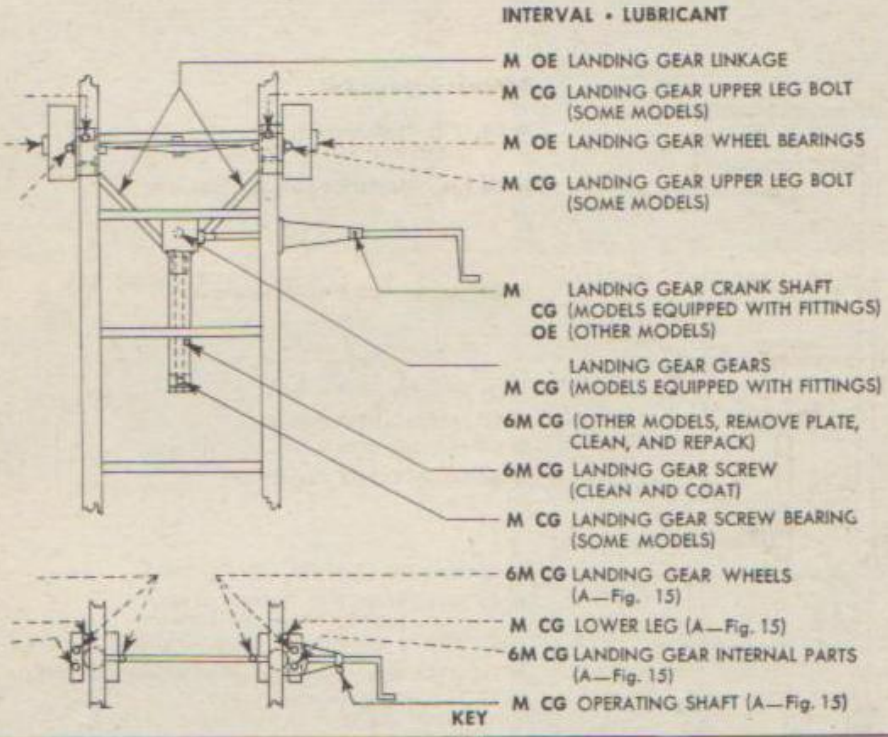
(2) HAND CRANKSHAFT BEARING. On models equipped with types of landing gears without lubrication fitting at this point, lubricate bearing with engine oil.



Caution: Lubricate dotted arrow points on both sides. Points on opposite side are indicated by dotted short-shaft arrows.

RA PD 341778

Figure 11—Lubrication Points

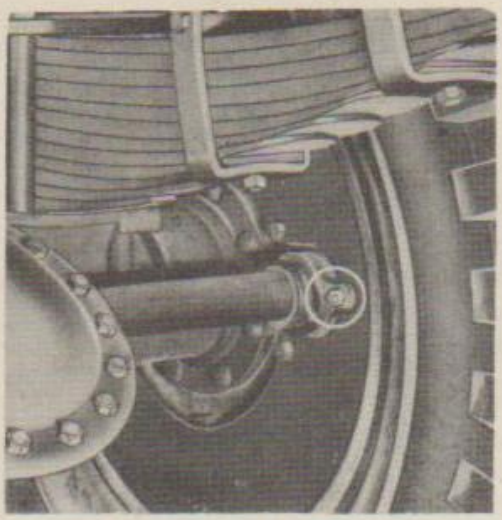


LUBRICANTS	Lowest Anticipated Air Temperatures		
	Above +32°F	+32°F to 0°F	Below 0°F
OE—Oil, Engine	**OE** SAE 30	**OE** SAE 10	PS
CG—Grease, general purpose	**CG** No. 1	**CG** No. 0	**CG** No. 0
WB—Grease, general purpose	No. 2—All Temperatures		Intervals M—Monthly 6M—6 Months
PS—Oil, lubricating, preservative, special			

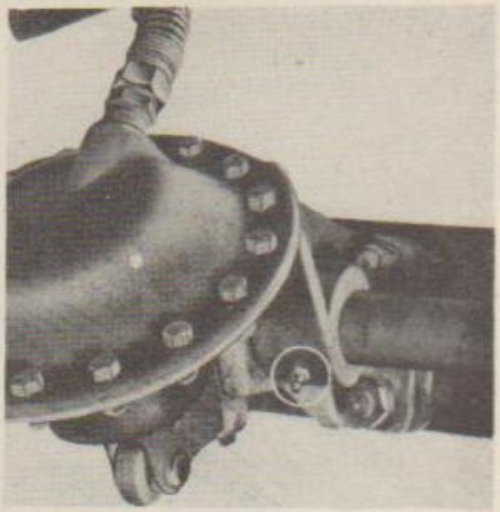
Caution: Lubricate dotted arrow points on both sides. Points on opposite side are indicated by dotted short-shaft arrows.

RA PD 341780

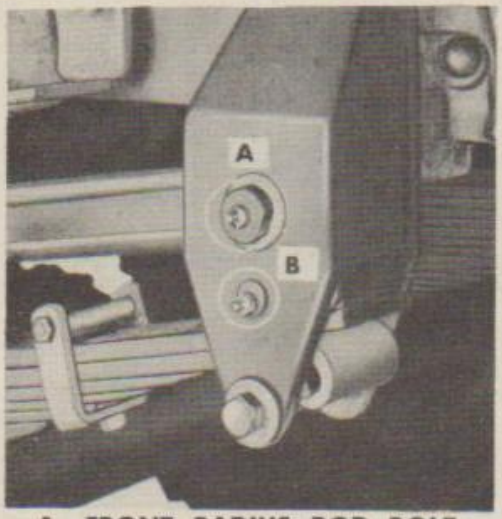
Figure 12—Lubrication Points for Landing Gears



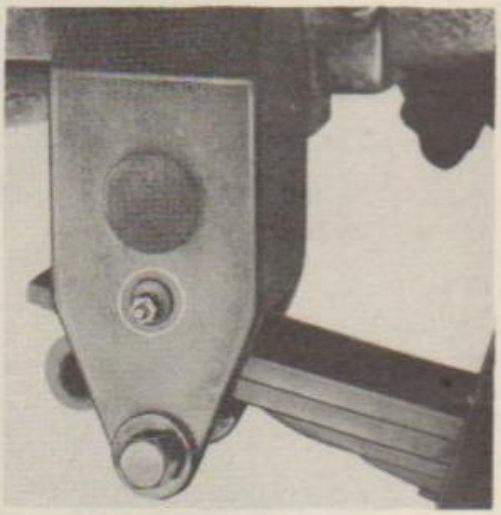
CAMSHAFT ANCHOR POINT



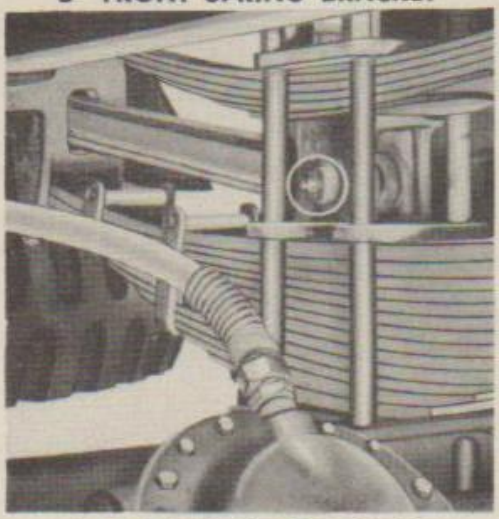
CAMSHAFT BRACKET



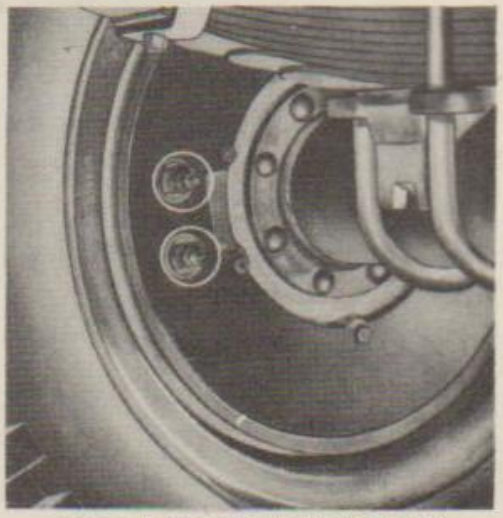
A FRONT RADIUS ROD BOLT
B FRONT SPRING BRACKET



REAR SPRING BRACKET



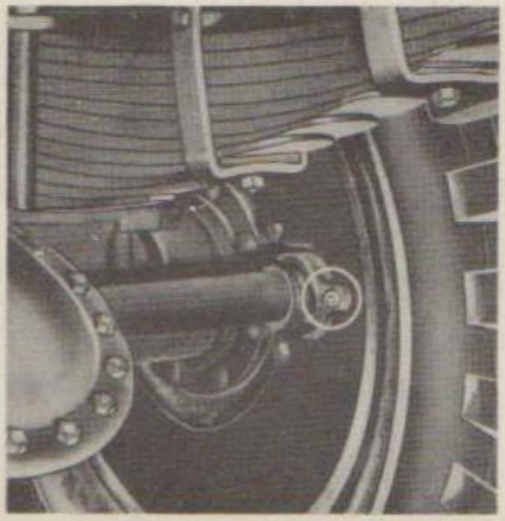
REAR RADIUS ROD BOLT



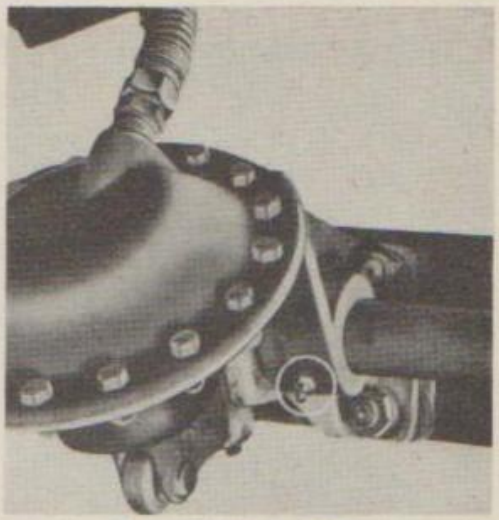
BRAKE SHOE ANCHOR PINS

RA PD 306049

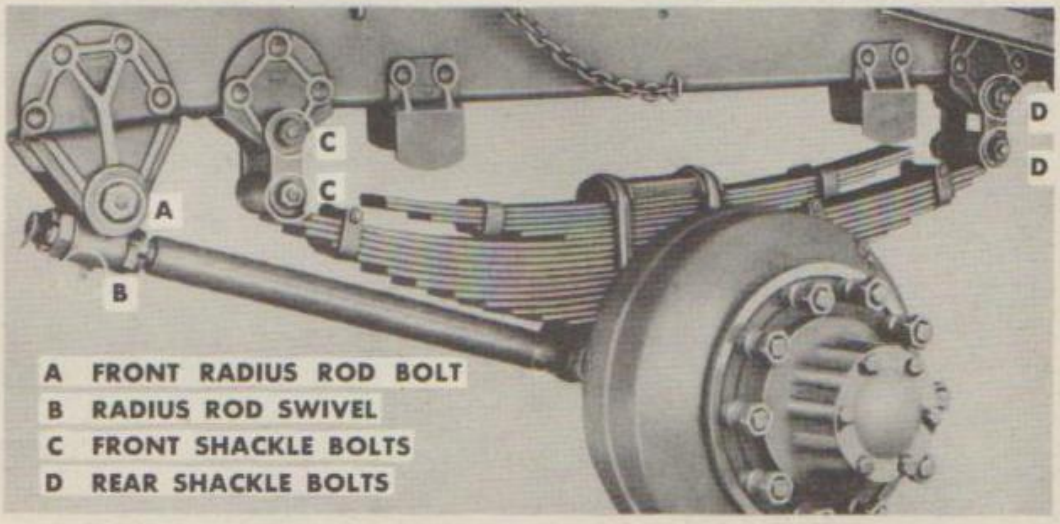
Figure 13—Lubrication Points (Strick Model 400-W)

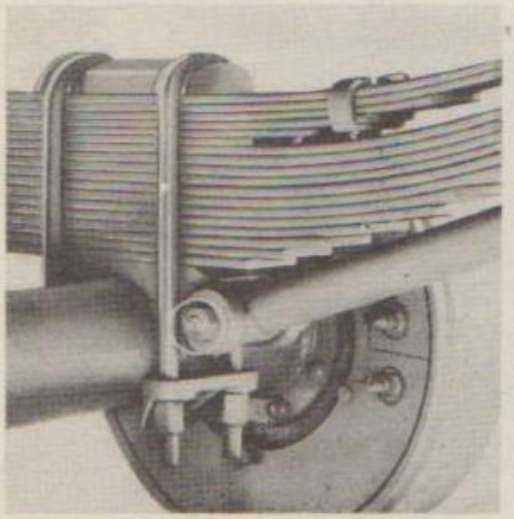


CAMSHAFT ANCHOR POINT



CAMSHAFT BRACKET





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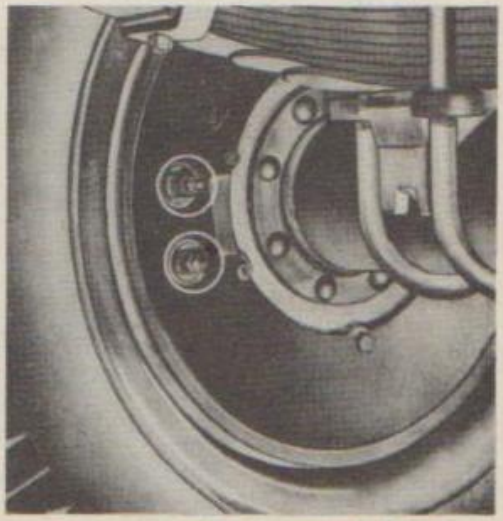
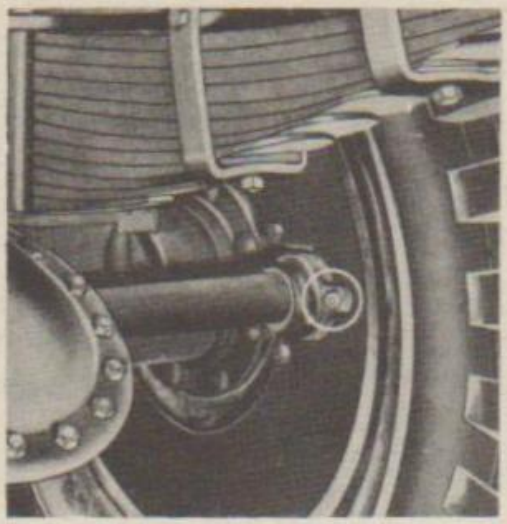


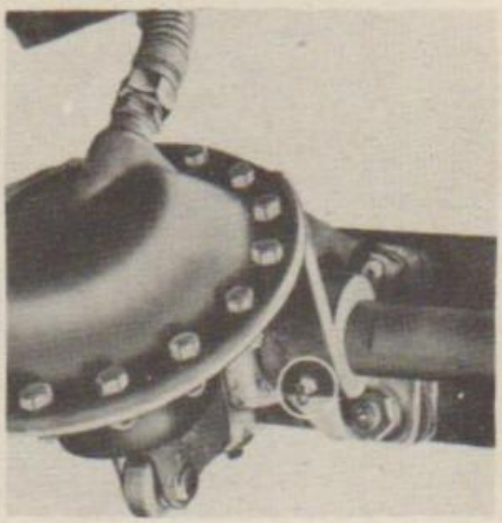
BRAKE SHOE ANCHOR PINS

RA PD 306050

Figure 14—Lubrication Points (Timpte Model T-8-D and Olson Model KV-10)



CAMSHAFT ANCHOR POINT



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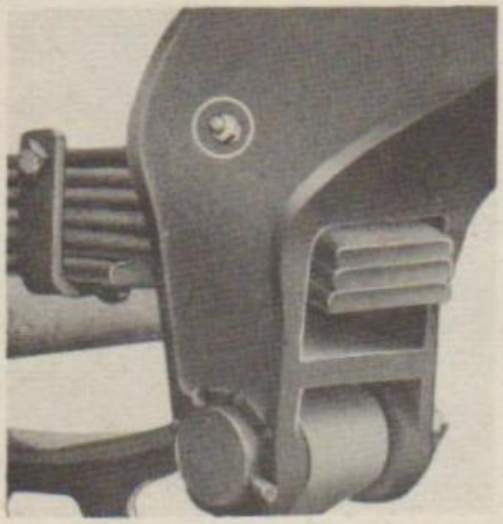
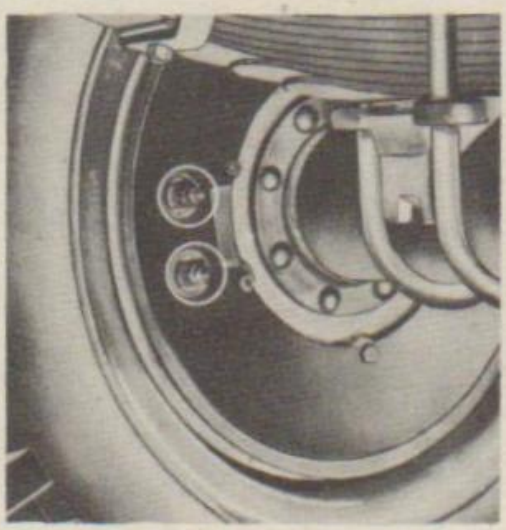


FRONT SPRING BRACKET

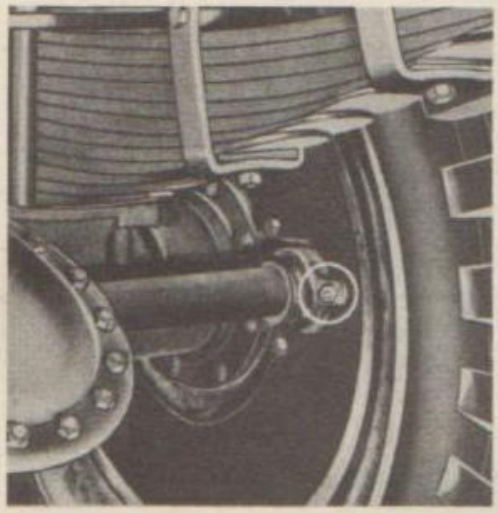
REAR SPRING BRACKET



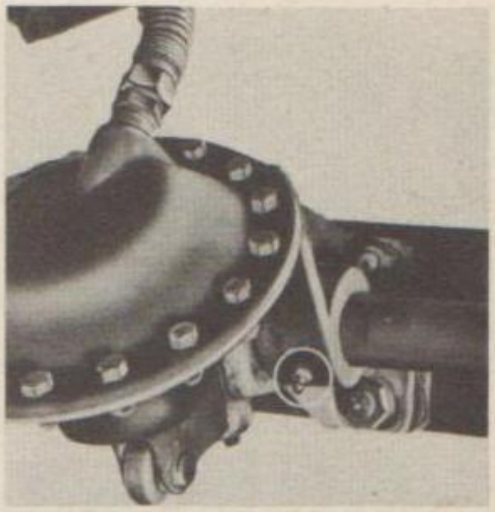
BRAKE SHOE ANCHOR PINS

RA PD 306051

Figure 15—Lubrication Points (Utility Model GSW-4)



CAMSHAFT ANCHOR POINT



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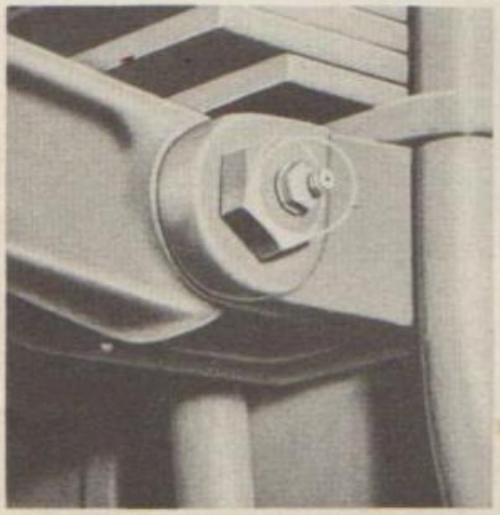

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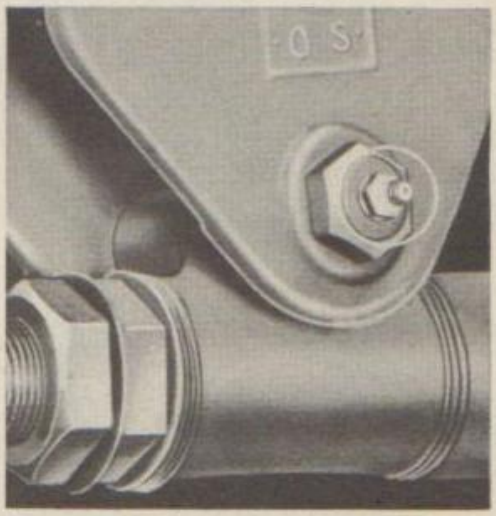
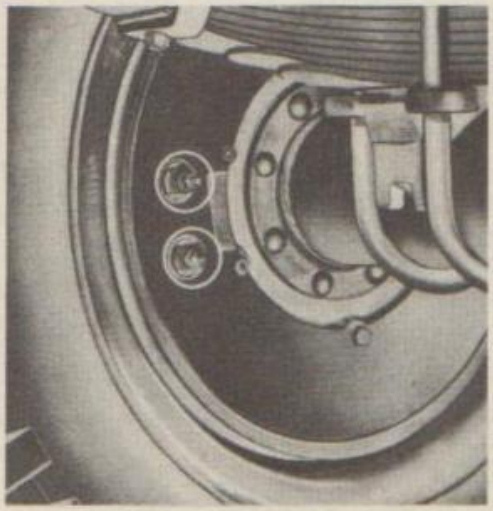


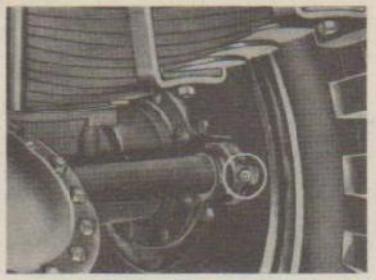
FRONT RADIUS ROD BOLT



BRAKE SHOE ANCHOR PINS

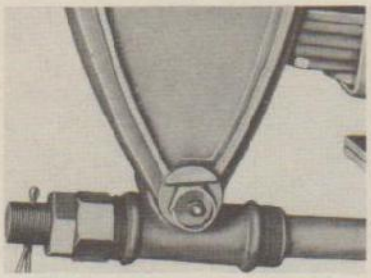
RA PD 306052

Figure 16—Lubrication Points (American Body Model DF-233-V)



CAMSHAFT ANCHOR POINT

CAMSHAFT BRACKET



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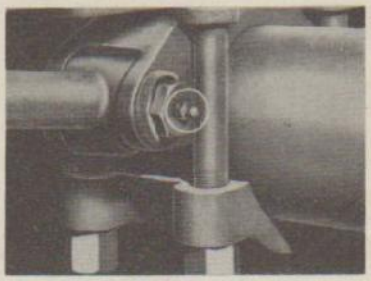
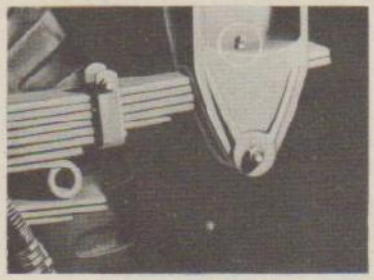


REAR RADIUS ROD BOLT



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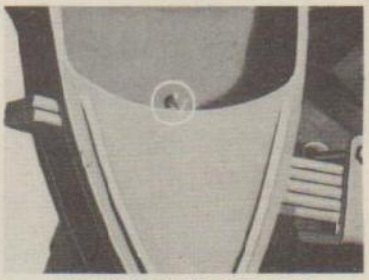

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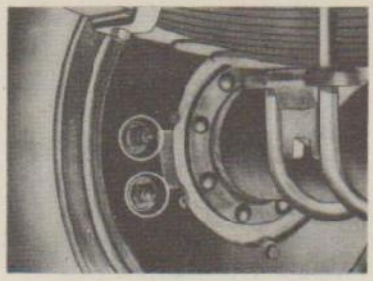
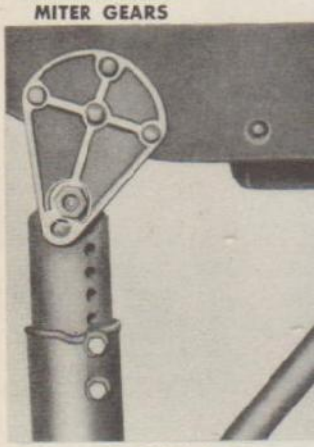


BRAKE SHOE ANCHOR PINS

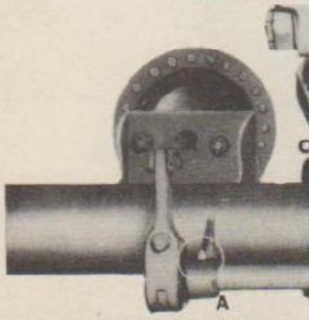
RA PD 306053

Figure 17—Lubrication Points (Carter Model C-15-935A)

LANDING GEAR
MITER GEARS

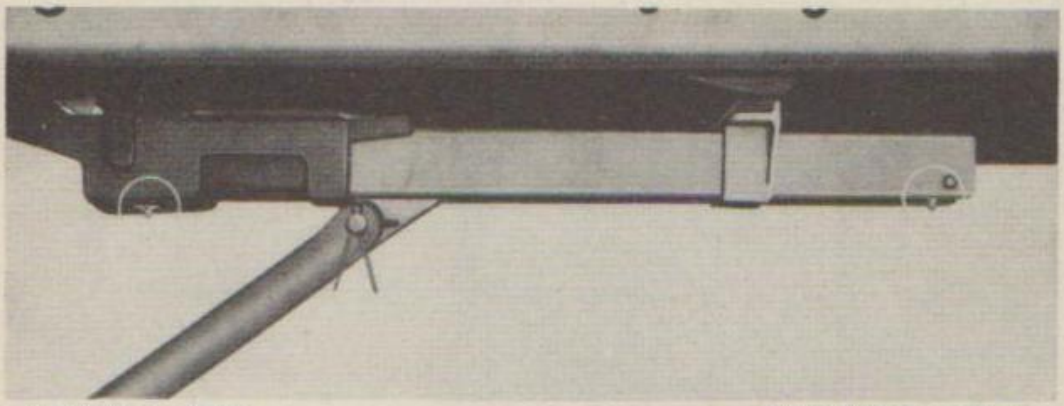


LANDING GEAR
PIVOT BOLT



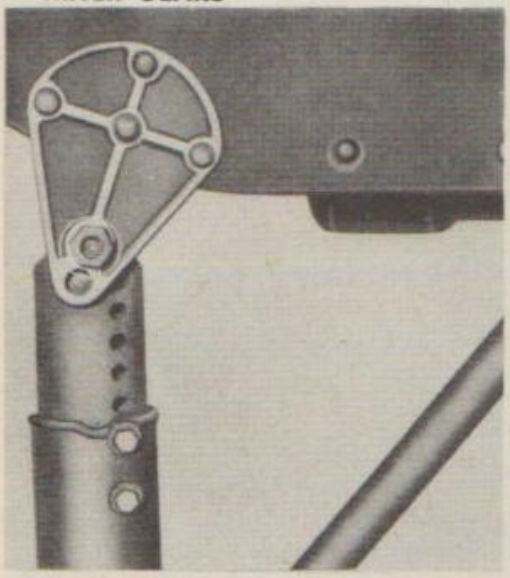
A CAMSHAFT BRACKET
B FRONT RADIUS ROD BOL
C RADIUS ROD SWIVEL
D REAR RADIUS ROD BOL
E CAMSHAFT ANCHOR PO

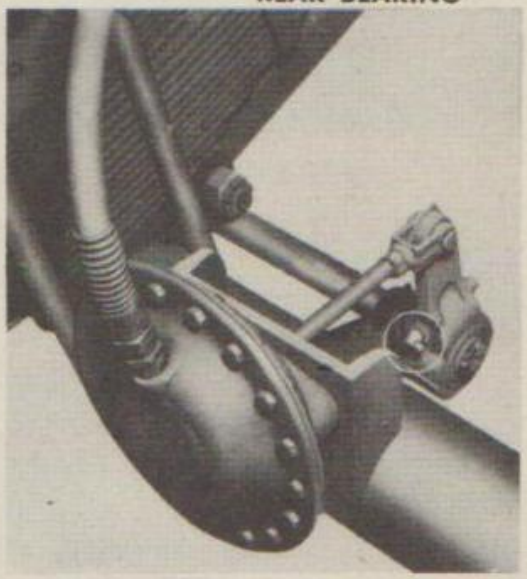
Figure 18—Lubrica



LANDING GEAR MITER GEARS

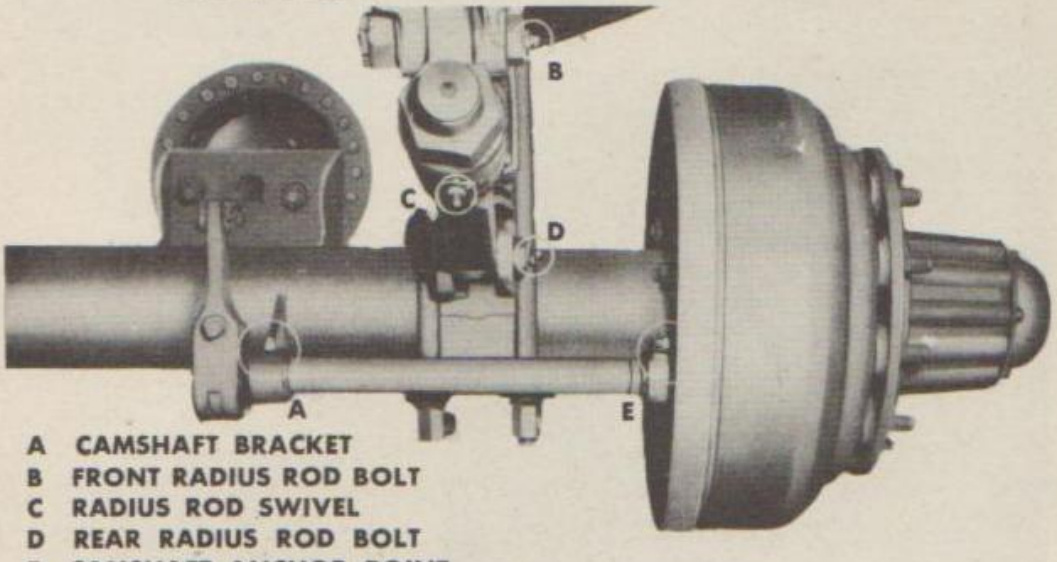
OPERATING SCREW REAR BEARING





LANDING GEAR PIVOT BOLT

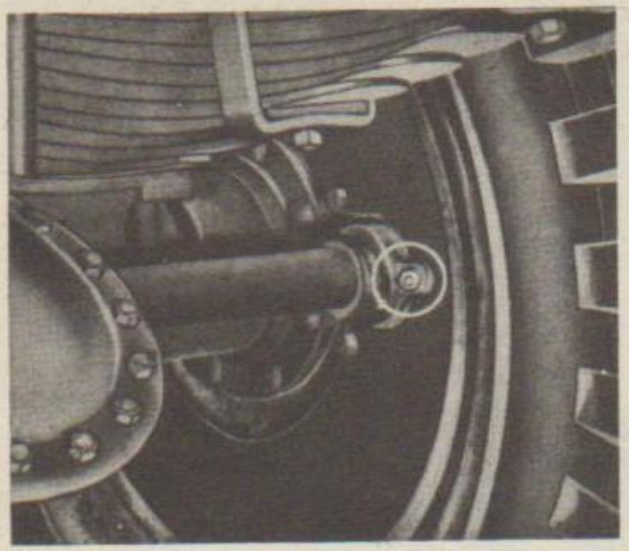
SLACK ADJUSTER



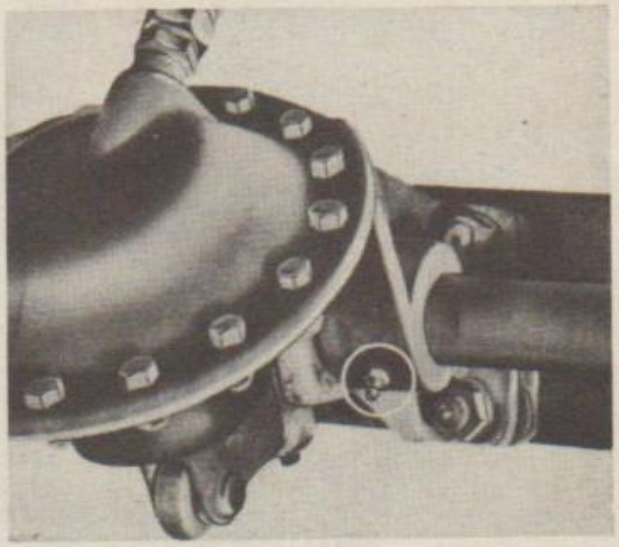
A CAMSHAFT BRACKET
B FRONT RADIUS ROD BOLT
C RADIUS ROD SWIVEL
D REAR RADIUS ROD BOLT
E CAMSHAFT ANCHOR POINT

RA PD 306054

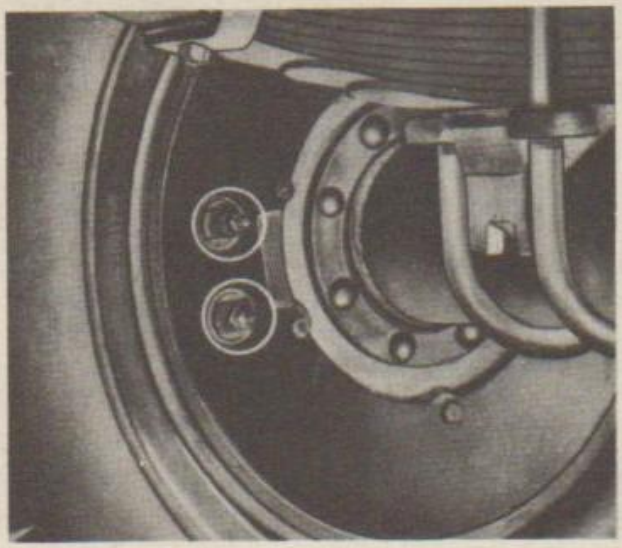
Figure 18—Lubrication Points (Dorsey Model E-14)



CAMSHAFT
ANCHOR
POINT



CAMSHAFT
BRACKET



RA PD 306055

Figure 19—Lubrication Points (Kentucky Model 1-ORD and American Bantam Model STV-620)

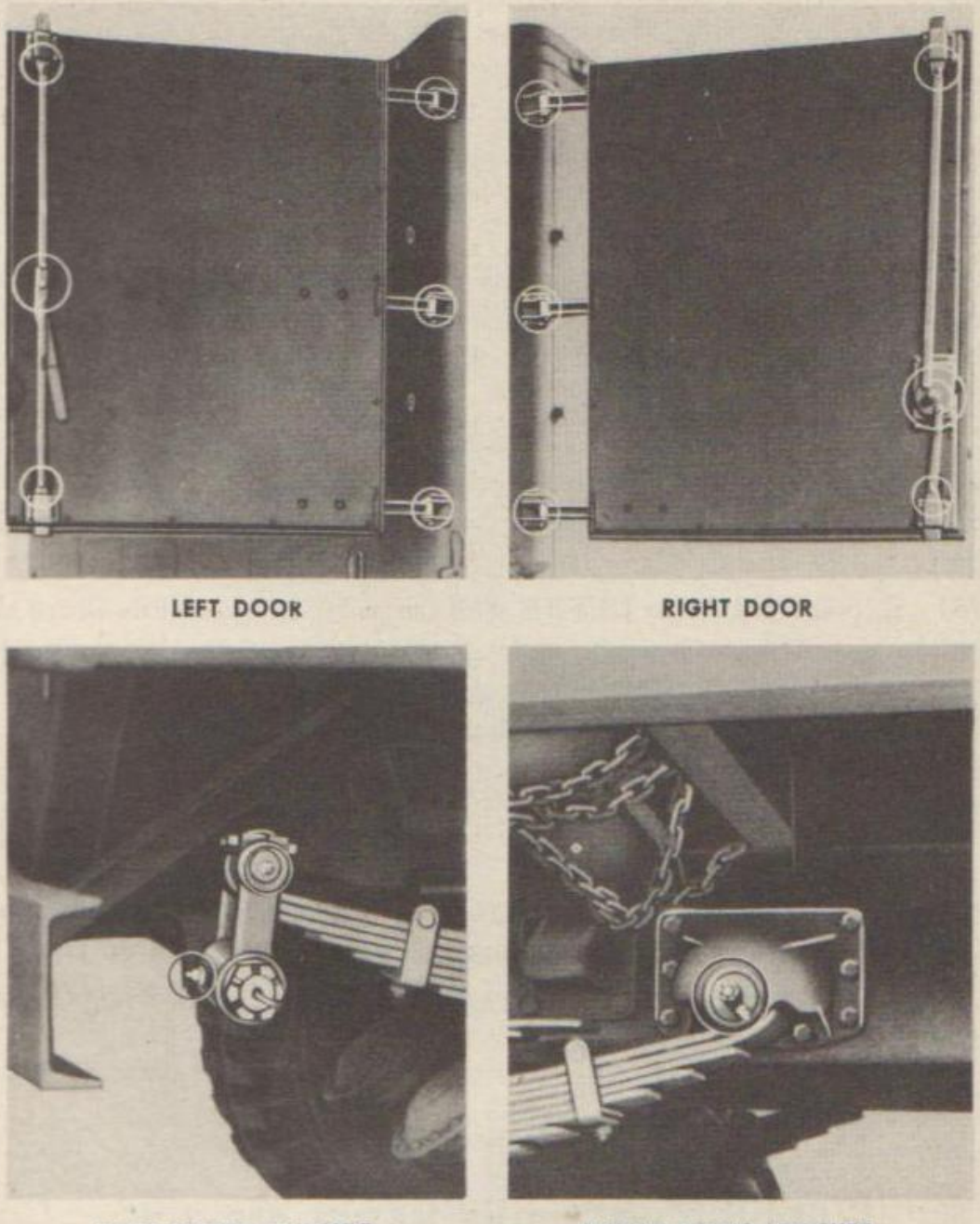


Figure 20—Additional Lubrication Points (American Bantam Model STV-620)

(3) WHEEL BEARINGS. Remove bearing cone assemblies (par. 45) from hub. Wash bearings, cones, spindle, and inside of hub, and dry thoroughly. Do not use compressed air. Inspect bearing races and replace if damaged. Wet the spindle and inside of hub and hub cap with general purpose grease No. 2, to a maximum thickness of $\frac{1}{16}$ inch only, to retard rust. Lubricate bearings with general purpose

grease No. 2, with a packer, or by hand, kneading lubricant into all spaces in the bearing. Use extreme care to protect the bearings from dirt, and immediately reassemble and replace wheel. Do not fill hub or hub cap. The lubricant in the bearing is sufficient to provide lubrication until the next service period. Any excess might result in leakage into the drum. Adjust bearings in accordance with instructions given in paragraph 47.

(4) CAMSHAFT AND BRAKE ANCHOR PINS. When lubricating these points, care must be exercised in not overlubricating. Overlubricating will cause grease to flow on brake shoes, thus causing faulty brakes.

(5) S-CAM. Coat top and bottom side of the S-cam 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.

(6) KING PIN AND UPPER FIFTH WHEEL PLATE. Clean the old lubricant from bearing surfaces and lubricate the king pin and upper fifth wheel plate with general purpose grease No. 1, for temperatures above +32°F, and general purpose grease No. 0 for temperatures from +32°F to 0°F. Apply lubricant by hand application to all points of wear.

e. Reports and Records.

(1) Report unsatisfactory performance of materiel to the Ordnance Officer responsible for maintenance as prescribed in TM 38-250.

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

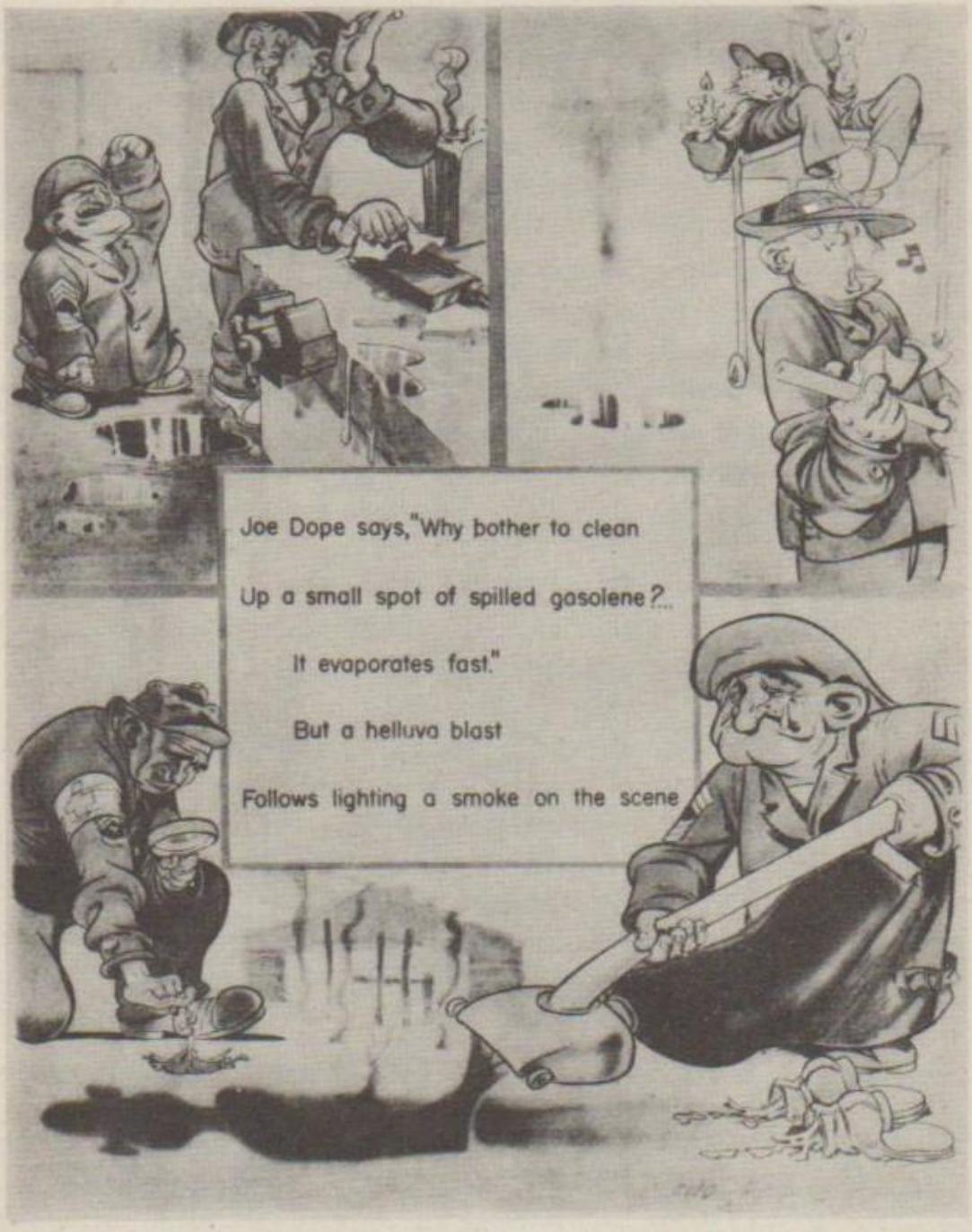
Section XII

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


Joe Dope says, "Why bother to clean
Up a small spot of spilled gasolene?...
It evaporates fast."
But a helluva blast
Follows lighting a smoke on the scene

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.

(1) The inspection for "good condition" is usually an external visual inspection to determine whether or not 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 ensure mechanical efficiency it is necessary that the vehicle be systematically inspected at intervals each day it is operated, and also weekly, so that 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 or not they are listed specifically on

W.D., Form No. 48. 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 or not 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 deficiences. 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 the air brake reservoir tank, air 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 tractor truck to semitrailer air couplings are securely connected; or, if not in use; that they are closed, 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 semitrailer is connected, and tactical situation permits, open and close semitrailer light switches 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 semitrailer tires, including spare, are properly inflated to 70 pounds (maximum) cool. Remove any

objects embedded in treads or carcasses, and from between the duals. Inspect all tires for damage.

(6) ITEM 15, SPRINGS AND SUSPENSIONS. Examine main and helper springs, brackets, clips, and U-bolts, and when used, shackles, and radius rods for looseness or damage. Look particularly for excessive spring sag or shifted leaves.

(7) ITEM 18, TOWING CONNECTIONS AND LANDING GEAR. Inspect all towing devices and landing gear components for looseness and damage. If semitrailer is connected to towing vehicle, be sure all air line and electrical connections are properly made, and that fifth wheel connection is securely made and locked. Landing gear must be raised and crank handle locked when not in use.

(8) ITEM 19, BODY AND LOAD. Inspect all body units and mountings for looseness and damage. See that doors and tailgate operate freely and latch securely. If loaded, cargo must be properly distributed and secured.

(9) ITEM 20, DECONTAMINATOR. If a decontaminator unit is furnished, be sure it is fully charged, and securely mounted.

(10) ITEM 21, TOOLS AND EQUIPMENT. Be sure all vehicle tools and chock blocks are present, in good condition, and securely mounted or stowed.

(11) ITEM 23, DRIVER'S PERMIT AND FORM NO. 26. The driver of the towing vehicle must have his operator's permit on his person, and must see that all vehicle manuals, Lubrication Order No. 789, Accident Report Form No. 26, and Form No. 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 components (such as brakes). 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 semitrailer are in motion, test the operation of the semitrailer brakes indepen-

dently, to see if they are effective, and if they will stop the vehicle without perceptible pull to one side, and without excessive noise.

(2) ITEM 34, RUNNING GEAR. Be alert for any unusual noise or unsatisfactory operating characteristics in the wheels, suspension units and (when in use) landing gear, that might indicate looseness or damage.

(3) ITEM 35, BODY AND LOAD. Be alert for any sidesway or sag that might indicate shifting of body or load.

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, inspection 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.

(5) ITEM 50, TOWING CONNECTIONS. Examine all air and electric connections and fifth wheel mechanism to be sure each item is in good condition and secure.

(6) ITEM 51, BODY AND LOAD. Examine the entire body externally for indications of damage or loose attachments. Open doors and see that any cargo carried is properly distributed and secure. Be sure doors and tailgate are closed and properly fastened.

(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 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.

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 the accessible wiring and conduits throughout the semitrailer for damage, and be sure they are properly and securely connected and supported.

(3) ITEM 68, *TIRES.

(a) Examine for damage and excessive wear. Remove objects lodged in treads, carcasses, and from between duals. Check for low pressure, proper position of valve stems, and presence of valve caps. Inflate to correct pressure, 70 pounds (maximum), cold.

(b) Weekly. Replace badly worn or otherwise unserviceable semitrailer 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 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 and lock nuts are secure.

(5) ITEM 75, *AIR BRAKE TANK.

(a) Inspect tank and filters on semitrailer 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 semitrailer air line rubber hose. Drain sediment and water from both air line filters.

(6) ITEM 76, REAR BUMPER. Inspect rear bumper for looseness or damage.

(7) ITEM 77, TOWING CONNECTIONS. Inspect the fifth wheel latch and locking mechanism to be sure they are not loose or damaged. See that upper and lower plates and kingpin are adequately lubricated. Inspect assembly and mounting nuts or screws to see if they are all present and secure.

(8) ITEM 78, BODY, FRAME AND ATTACHMENTS. Examine entire body for damage or loose parts. Be sure doors latch securely and operate properly. Inspect frame for broken welds, loose nuts, or rivets; for damaged rails, crossmembers, or brackets. Be sure all landing gear members, and assembly mounting and lock pins and bolts, are present and secure. Investigate any unsatisfactory landing gear operating characteristics noted during operation.

(9) 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, towing connections, and body assembly nuts or screws that experience or inspection indicate as necessary on a weekly or mileage basis.

(10) ITEM 83, *LUBRICATE AS NEEDED.

(a) Lubricate all points of the vehicle where inspection indicates a necessity, in accordance with Lubrication Order (par. 19).

(b) Weekly. Lubricate all points of the vehicle where inspection or experience indicates the necessity, or points listed on the Lubrication Order (par. 19) as requiring attention on a weekly or mileage basis.

(11) ITEM 84, *CLEAN VEHICLE.

(a) Clean excessive dirt, grease, and refuse from interior and

exterior of vehicle, particularly from around landing gear and brake operating shafts, rods, worm, or gears.

(b) Weekly. Wash semitrailer when possible. If not possible, wipe off thoroughly. Inspect paint or camouflage pattern for rust or bright spots which might cause reflections. See that all vehicle 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 wirings.*

(12) ITEM 85, *TOOLS AND EQUIPMENT.

(a) Check all items of special equipment to be sure all units are present and see that they are in good condition and properly mounted or stowed.

(b) Weekly. Clean up all tools and equipment. Report unserviceable items for repair or replacement. Mount or stow all items properly and securely.

26. ORGANIZATIONAL MAINTENANCE (SECOND ECHELON).

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 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 driver should accompany the vehicle 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.*

(1) 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.

(2) When installing new lubricant retainer seals, a coating of the lubricant should be wiped over the sealing surface of the lip of the seal. When the new seal is a leather seal, it should be soaked in SAE No. 10 engine oil for at least 30 minutes. The oil should be warm, if practicable. Then the leather lip should be worked carefully by hand before installing the seal. The lip must not be scratched or marred.

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 effective as a lubricant.

(3) SPECIAL LUBRICATION. This applies both to lubrication operations that do not appear on the vehicle Lubrication Order (par. 19), and to items that do appear on the Order, but which should be

performed in connection with the maintenance operations if parts have to be disassembled for inspection or service.

(4) SERVE. This usually consists of performing special operations, such as changing or cleaning the air filters.

(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. Use a torque-indicating wrench where specified. 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 situations, 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 which is the "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 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 1,000-mile (monthly) and 6,000-mile (6-month) maintenance procedures, whichever shall occur first, are described in the following chart. Each page of the chart has two columns at its left edge corresponding to the 6,000-mile and the 1,000-mile 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 that number.

ROAD TEST

MAINTENANCE	
6,000 Mile	1,000 Mile

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	1	BEFORE-OPERATION SERVICE. Perform this inspection as outlined in paragraph 22.
5	5	BRAKES, SERVICE AND EMERGENCY (BRAKING EFFECT, SIDE PULL, NOISE, CHATTER, AIR CONTROL). Test semitrailer 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 semitrailer and disconnect emergency line and observe if brakes automatically hold vehicle.
10	10	UNUSUAL NOISE (ATTACHMENTS, BODY OR WHEELS). Be on the alert during road test for any noise that may indicate loose or damaged attachments mounted on semitrailer. Listen particularly for indications of loose wheel mountings. Have assistant listen for any unusual noise in axles, suspension units or towing connections that would indicate looseness, damage or inadequate lubrication.
12	12	AIR BRAKE SYSTEM LEAKS. Test semitrailer 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 method. Open drain cock on semitrailer air tank and drain condensation.
13	13	TEMPERATURES (BRAKE DRUMS, HUBS). At completion of run, feel brake drums and hubs for abnormally high temperatures.

MAINTENANCE	
6,000 Mile	1,000 Mile

MAINTENANCE OPERATIONS

Raise Vehicle and Block Safely

47 | 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 cuts, bruises, breaks, blisters, and irregular wear. Also inspect spare tire carrier, all rims, lock rings, and flanges for good condition and security. Test spare tire and wheel winch to be sure it operates properly.

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

47 | *Serve.* With semitrailer tires properly inflated to 70 pounds (cool), check over-all circumferences of tires to be mounted on duals. The difference in over-all circumference must not exceed the ¾-inch limits as specified. CAUTION: *Do not reinstall wheels until wheel-bearing services are complete.*

48 | BRAKES. (On the 6,000-mile maintenance service, and for orderly reassembly.) Remove wheels (par. 37). Remove hubs and drums (par. 42), and inspect and service brakes as follows:

DRUMS AND SUPPORTS. Clean all dirt and grease from inside drums and from supports (spiders), and from dust shields. CAUTION: *Keep cleaning solvent away from brake linings.* Inspect drums for scored inside surfaces, and for cracks or distortion (fig. 24). Tighten hub to drum nuts securely.

CAMS AND SHAFTS (fig. 27). Inspect cams, camshafts, cam plates, and anchor pins for excessive wear. Make sure camshafts are free.

49 | BRAKE SHOES. Remove the dust shields (par. 53), and inspect the linings for excessive wear or contamination by dirt, water, or grease. If the vehicle has been operated in deep water, mud, or loose sand, remove right wheel and drum and examine the linings for damage. If these brake shoes must be replaced (par. 51), remove the other wheel and service its brake in a like manner.

MAINTENANCE	
6,000 Mile	1,000 Mile

Be sure to clean, lubricate and adjust all wheel bearings as described in paragraphs 19 and 47.

Adjust. After reassembly, adjust brakes (par. 49).

49	

With semitrailer wheels and drums removed, inspect linings to see if they are in good condition, tightly secured to brake shoe, in good wearing contact with drums, free of dirt or lubricant, and not excessively worn. Also see if shoes are in good condition, properly secured to anchors, and retracting spring; and that springs have sufficient tension to return shoes properly to released position. Thickness of lining at most-worn point should be enough for at least 1,000 miles of service before rivets are likely to contact drums.

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

Adjust. After subsequent related items to 52 inclusive are completed, adjust slack adjusters so diaphragm push rod travel is at minimum (par. 49).

50	50

RADIUS RODS. On vehicles so equipped, inspect the radius rods, brackets, swivels, and connections, to see if they are in good condition and secure. Test for worn bushings. Be sure adjustments are tight and properly locked. If axle appears to be out of line, check measurement according to instructions (par. 67, fig. 49). Adjust as necessary.

52	52

REAR WHEELS (BEARINGS, SEALS AND NUTS). Examine wheels for cracks, bent flange, or loose assembly. Check for wheel run-out. Without disassembling, spin wheels and test bearings for evidence of looseness and indications of dry and damaged bearings.

	52

Serve. When vehicle has been operated in deep water, mud, or similar conditions, remove right rear hub and drum and check bearing lubricant for contamination. If contaminated, remove bearings from all wheels (par. 44) and service in same manner as 6,000-mile procedure.

52	

Disassemble wheel bearings and seals. Clean thoroughly and inspect for excessive wear or damage. Lubricate according to Lubrication Order (par. 19). Re-

MAINTENANCE	
6,000 Mile	1,000 Mile
		assemble bearings, seals, hubs and wheels and adjust bearings (pars. 45 and 47).
70	70	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.
	70	*Clean.* Remove drain plugs from bottom of air filter (fig. 35), and drain off any accumulated sediment or water.
70		*Serve.* Renew elements in air filters and renew gaskets, (par. 62).
76	76	AIR BRAKE (CHAMBERS, RODS, SEALS, SLACK ADJUSTER). Examine these items to see if they are in good condition, correctly assembled, and secure; and that slack adjusters are properly adjusted according to paragraph 58. Examine chambers and air hose connections for indications of leaks. Tighten all assembly and mounting nuts or screws securely (fig. 30).
77	77	SPRINGS (CLIPS, LEAVES, U-BOLTS, HANGERS AND SHACKLES). See if all applicable items are in good condition, correctly assembled, and secure. Spring clips and bolts should be in place; spring leaves should not be shifted out of their correct position. This may be an indication of a sheared center bolt. See if deflection of both springs is normal and approximately the same. *Tighten.* Tighten all spring U-bolts and shackles securely and uniformly.
80	80	FRAME (SIDE RAILS AND CROSSMEMBERS AND OUTRIGGERS). Inspect all frame members, brackets, axle and spring stops, to be sure they are in good condition; that all bolts, rivets and welds are secure, and that members are in proper alinement. If frame appears to be bent or out of alinement, notify higher authority.
81	81	WIRING, CONDUITS AND GROMMETS. Inspect all accessible components throughout the semitrailer to see if they are in good condition; that all wiring is well supported, and that connections are clean and secure.

MAINTENANCE		
6,000 Mile	1,000 Mile	
		Refer to wiring and circuit diagrams (figs. 55 through 61).
83	83	BRAKE LINES (FITTINGS AND HOSE). Examine all lines and fittings and air brake hose under semitrailer 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 semitrailer air brake relay-emergency valve, clean thoroughly with brake fluid, and reinstall securely (par. 56, fig. 29).
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.
100	100	BODY (PANELS, DOORS, TAILGATE, PLATFORM, ROOF). Inspect the entire semitrailer body (figs. 1 through 4 and 68), to be sure all components are in good condition, correctly assembled, and secure. Be sure the corner and intermediate post clamps are tight. Examine rear doors and tailgate for proper alinement, and all hinges for good condition, correct assembly. See that they are secure, operating properly, and are not excessively worn. Check platform and wood posts and panels for rot or splinters.
101	101	REAR BUMPER. Inspect rear bumper and braces for looseness or damage.
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. Inspect semitrailer fifth wheel plate and kingpin to see if they are in good condition, well-lubricated, and not excessively worn. Test latch lever and locking mechanism to be sure they operate properly.
125	125	AIR AND ELECTRIC CONNECTIONS. Inspect semitrailer air line connections to truck to be sure they

MAINTENANCE	
6,000 Mile	1,000 Mile

are in good condition, not excessively worn, and will couple securely without leaking. If semitrailer 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 surface. Examine the jumper cable socket to see that contacts are secure and clean, and that cable can be properly connected. Inspect 110-volt receptacle (when used) for looseness or damage.

126	126

SAFETY DEVICES. See that chock blocks are present, in good condition, and properly placed or mounted.

127	127

LANDING GEAR (SHAFTS, WHEELS, LEGS, BRACKETS, BRACES, GEARS, SCREW, AND CRANK). Inspect the above listed components (figs. 51, 52, and 53), to see if they are in good condition, correctly assembled, securely mounted, adequately lubricated, and not excessively worn. Make an operating test to see if the crank, gears, and screw operate properly. Spin the wheels to be sure they are free and that the axle or bushings are not excessively worn.

128	128

AXLE. Inspect the axle beam to see if it is in good condition and secure. If axle appears to be out of alinement, check measurement (par. 67, fig. 49) and adjust radius rod as necessary to correct condition.

85	85

VEHICLE LUBRICATION. If lubrication is due, proceed according to instructions and specifications in Lubrication Order. Refer to notes (par. 19 and figs. 11 and 12). Omit only those items that have received attention in the foregoing procedures. Replace missing or damaged grease fittings.

TOOLS AND EQUIPMENT

131	131

TOOLS. Check tools, parts, and accessories to be sure all listed items are present, in good condition, clean, and properly mounted or stowed.

135	135

PUBLICATIONS. Be sure vehicle manuals, Lubrication Order, Form No. 26, and Form No. 478 are present and properly stowed.

141	141

MODIFICATIONS (MWO's COMPLETED). Inspect semitrailer to be sure any modification work orders have

MAINTENANCE	
6,000 Mile	1,000 Mile
142	142

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. Trouble Shooting. The following service instructions apply only if condition named is present after the trailer is properly connected to a tractor whose equipment is functioning normally.

b. Insufficient Brakes.

(1) Brakes need adjusting, lubricating, or relining. Adjust (par. 49), lubricate (par. 19), or replace brake shoes (pars. 51 and 52).

(2) Low pressure in the air brake system (below 80 lb). Correct cause of low pressure in tractor air brake system.

(3) Defective relay-emergency valve. Replace (par. 56).

c. Brakes Apply too Slowly.

(1) Brakes need adjusting or lubricating. Adjust and lubricate brakes (pars. 49 and 19).

(2) Low air pressure in the tractor air brake system. Correct cause of low pressure in tractor air brake system.

(3) Restriction in tubing or hose line. Repair or replace line (par. 65). Clogged air line filter. Clean filter (par. 62).

(4) Excessive leakage with brakes applied. See subparagraph *i* below.

d. Brakes Release too Slowly.

(1) Brakes need adjusting or lubricating. Adjust and lubricate brakes (pars. 49 and 19).

(2) Defective exhaust check valve in exhaust port of relay-emergency valve. Replace (par. 61).

(3) Exhaust port of relay-emergency valve plugged with pipe plug. Remove plug.

(4) Restricted tubing or hose line. Repair or replace (par. 65).

(5) Clogged air line filter. Clean filter (par. 62).

e. Brakes Do Not Apply.

(1) Cut-out cocks closed. Open cut-out cocks (par. 11).

(2) Brake system not properly connected to brake system of towing vehicle. Connect lines correctly (par. 11).

(3) No air pressure in brake system. Charge brake system (par. 11).

(4) Restriction in tubing or hose line. Repair or replace (par. 65).

(5) Clogged air line filter. Clean filter (par. 62).

f. Brakes Do Not Release.

(1) Brake system improperly connected to brake system of towing vehicle. Connect lines correctly (par. 11).

(2) Brake valve in towing vehicle in applied position. Move brake valve to released position.

(3) Brake rigging binding. Lubricate or adjust brake rigging.

(4) Relay-emergency valve in emergency position. Build up pressure in tractor brake system, or open reservoir drain cock on trailer.

(5) Cut-out cocks improperly closed. Open cut-out cocks (par. 11).

(6) Restriction in tubing or hose line. Repair or replace (par. 65).

g. Brakes Grab.

(1) Grease on brake lining. Clean or replace brake shoes (pars. 51 and 52).

(2) Brake rigging binding. Lubricate brake rigging (par. 19).

(3) Improper operation of brake valve by driver of towing vehicle. Instruct driver in correct operation.

(4) Defective relay-emergency valve. Replace (par. 56).

h. Uneven Brakes.

(1) Brakes need adjusting, lubricating, or relining. Adjust, lubricate or replace brake shoes.

(2) Grease on brake lining. Replace brake shoes (pars. 51 and 52).

(3) Brake shoe release spring or brake chamber release spring broken. Replace broken spring (par. 50).

(4) Brake drum out-of-round. Replace brake drum (pars. 42 and 46)

(5) Leaking brake chamber diaphragm. Replace brake chamber diaphragm (par. 57).

i. Excessive Leakage with Brakes Released.

(1) Relay-emergency valve leaking. Replace relay-emergency valve (par. 56).

(2) Leaking lines and connections. Repair or replace (par. 65).

j. Excessive Leakage with Brakes Fully Applied.

(1) Leaking relay-emergency valve. Replace relay-emergency valve (par. 56).

(2) Leaking brake chamber diaphragms. Replace diaphragms (par. 57).

(3) Leaking lines or connections. Repair or replace (par. 65).

k. Excessive Leakage with Brakes Applied and Relay-emergency Valve in Emergency Position. Defective relay-emergency valve. Replace relay-emergency valve (par. 56).

l. Air Brake System Is Noisy.

(1) Relay diaphragm guide ring improperly installed. Replace relay-emergency valve (par. 56).

(2) Defective diaphragm in exhaust check valve. Install new exhaust check valve diaphragm (par. 61).

m. Excessive Oil and Water Present in the Air Brake System. Reservoirs not being drained often enough. Drain all reservoirs at least once a week—daily, if necessary. Clean system, if necessary.

28. SUSPENSION.

a. Trailer Leaning or Tipping.

(1) Not symmetrically loaded or load has shifted. Rearrange load.

(2) From previous overload spring has taken a permanent set and will not spring back to original shape. Replace affected spring (pars. 70 and 71).

(3) Broken leaf or leaves, or broken spring. Replace spring (pars. 70 and 71).

(4) Broken or lost rebound clips. Replace spring.

(5) Leaf ends shifted sidewise or fanned out due to broken or lost rebound clip. Replace spring.

(6) Leaf shifted, due to broken center bolt. Replace spring (pars. 70 and 71).

b. Spring Seat Shifted on Axle.

(1) Broken spring seat. Replace axle (pars. 73, 74 and 75) with consent of higher authority.

(2) Broken U-bolt or damaged threads. Replace U-bolt or nut as required (pars. 73, 74 and 75).

c. Spring Shifted.

(1) Loose or broken U-bolts. Tighten or replace U-bolts (pars. 73, 74 and 75).

(2) Broken or bent U-bolt top plate. Replace or straighten top plate (pars. 73, 74 and 75).

(3) Broken radius rod. Replace radius rod (pars. 68 and 69).

(4) Lost or broken radius rod pins, or radius rod pin nuts. Replace parts involved (pars. 68 and 69).

29. AXLE.

a. Bent Axle Beam. Unreasonable impact from striking obstructions or from overloading. Replace axle (pars. 73, 74 and 75) with the consent of higher authority.

b. Broken Spindle. Unreasonable impact from striking obstructions or from overloading. Replace axle (pars. 73, 74 and 75) with the consent of higher authority.

c. Loose Axle Flange. Faulty weld. Replace axle (pars. 73, 74 and 75) with the consent of higher authority.

30. WHEELS, HUBS, AND DRUMS.

a. Noise.

(1) Noisy brakes. Refer to trouble shooting for brakes (par. 27).

(2) Underinflation of tires. Inflate to 70 pounds pressure when tire is cool.

(3) Brake shoes drag on drum. Adjust brakes (par. 49).

(4) Brake drum out-of-round. Replace drum (pars. 42 and 46).

(5) Wheel not properly alined. Aline axle (par. 67).

(6) Foreign matter caught in wheel. Remove foreign matter.

(7) Dust shield bent against drum. Straighten or replace dust shield (par. 53).

(8) Wheel bearings not properly adjusted. Adjust wheel bearings (par. 47). Loose wheel stud nuts. Tighten wheel stud nuts.

b. Undue Tire Wear, Any and All Tires.

(1) Over- or underinflation of tires. Inflate tires to 70 pounds pressure.

(2) Overloading. Check load.

(3) Improper axle alinement with kingpin. Aline axle (par. 67). Strick Co. Model 400-W has nonadjustable radius rod.

(4) Wobbly or loose wheels. Tires and wheels out of alinement. Adjust wheel bearings (par. 47) and tighten wheel stud nuts.

(5) Too severe brake application. Check and adjust brakes (par. 49).

c. Undue Tire Wear Inside or Outer Only.

(1) Duals not properly matched. Match duals.

(2) Bent axle or bent spindle. Replace axle (pars. 73, 74 and 75) with the consent of higher authority.

d. Hot Hub.

(1) Lack of lubricant. Lubricate (par. 19).

(2) Damaged hubs, bearings, cones or cups. Replace (pars. 42, 43, 44, 45 and 46).

(3) Improper wheel bearing adjustment. Adjust wheel bearing (par. 47).

e. Hot Brake Drum.

(1) Dragging shoes. Adjust brakes (par. 49).

(2) Improper wheel bearing adjustment. Adjust wheel bearings (par. 47).

f. Oil or Grease in Brake Drum or Outside of Wheel.

(1) Defective oil seal. Replace oil seal (pars. 43 and 45).

(2) Cracked hub. Replace (pars. 42 and 46).

(3) Improper lubricant. Relubricate as per Lubrication Order (par. 19).

(4) Faulty hub cap, hub cap gasket, or loose screws. Replace with new hub cap and gasket or tighten screws.

31. FRAME.

a. Trailer Top Heavy, Leaning Toward One Side. Broken or weakened spring. Replace spring (pars. 70 and 71).

b. Bumper.

(1) Bent or broken bumper. Replace bumper.

(2) Sheared or bent bumper mounting bolts. Replace bolts.

c. Broken or Bent Tire Carrier Assembly. Unreasonable impact from striking obstructions. Replace carrier assembly (pars. 101 and 102).

32. LANDING GEAR (MODELS 400-W, E-14, T-8-D, G-15-935A, GSW-4, 1-ORD, DF-233-V, KV-10, AND LV-10).

a. Trailer Leans when Landing Gear Wheels are Down. Broken or bent back braces, broken or damaged pins or pivot bolts. Repair or replace parts (pars. 77, 78, and 79).

b. Landing Gear Cannot be Lowered to Right Position.

(1) Bent back braces or legs. Adjust and straighten (par. 78).

(2) Sheared or loose keys in bevel gears. Replace (pars. 77, 78, and 79).

c. Landing Gear Legs Do Not Move When Operating Crank Is Turned.

(1) Sheared or lost keys, pins or bolts. Replace keys, pins or bolts.

(2) Broken gears. Replace (pars. 77, 78, and 79).

(3) Back braces broken or pins disconnected. Replace missing pins and damaged parts (pars. 77, 78, and 79).

d. Operating Crank Moves Landing Gear Part Way and Then Jams. Replace damaged parts (pars. 77, 78, and 79).

e. Can't Turn Operating Shaft. Replace damaged parts (pars. 77, 78, and 79).

f. Crank Turns Hard.

(1) Lack of lubrication. Lubricate (par. 19).

(2) Bent screw, housing or shaft. Replace damaged parts (pars. 77, 78, and 79).

33. LANDING GEAR (MODEL STV-620).

a. Operating Crank Hard to Turn.

(1) Lack of lubrication or improper lubricant used. Lubricate according to Lubrication Order (par. 19).

(2) Bent operating shaft. Replace or straighten (pars. 80 and 81).

(3) Lower leg bent, causing bind in frame bracket. Replace assembly (pars. 80 and 81).

(4) Bevel gear worn. Remove bevel gear cover from right and left frame bracket and inspect gears. Replace assembly (pars. 80 and 81).

(5) Screw bent. Disconnect bevel gear shaft. Operate first the right-hand assembly with crank, then turn the left-hand assembly with pipe wrench to determine which screw is bent. Replace assembly (pars. 80 and 81).

b. One or Both Support Leg Assemblies Do Not Respond When Turning Crank. Bolt missing in operating shaft or in bevel gear shaft. Replace bolts, otherwise replace defective assembly (pars. 80 and 81).

c. One Leg Higher Than the Other When In the Up Position. Improper adjustment. Adjust lower leg (par. 80).

34. BODY.

a. Door Jams and Does Not Close.

(1) Hinge bolts loose. Secure bolts.

(2) Hinge bent. Replace hinges.

(3) Rear posts out of square. Square posts and tighten nuts on bolts connecting to component members.

b. Door Lock Does Not Operate.

(1) Keyway jammed. Clean keyway or replace handle.

(2) Center case damaged. Replace.

(3) Rods bent or broken. Replace rods.

c. Tailgate Jams and Does Not Close.

(1) Hinges bent or broken due to severe impact or accident. Replace tailgate, tailgate hinge threshold and hinge bar (pars. 106 and 107).

(2) Gate latch jams due to rust, collision or bent mounting bolt. Clean and lubricate (par. 19). Replace mounting bolt and sleeve if necessary.

d. Reflectors Broken. Impact. Replace reflector.

e. Body Sways and Rattles.

(1) Bolts in roof seals loose. Tighten bolts.

(2) Bolts in post clamps loose. Tighten bolts.

(3) Bolts connecting corner posts on side and front and side and rear are loose. Tighten bolts.

35. ELECTRICAL SYSTEM.

a. Dim or No Lights.

(1) Loose or dirty terminals. Clean and tighten.

(2) Lamps loose or burned out. Tighten or replace.

(3) Jumper cable damaged. Repair or replace (par. 92).

(4) Damaged coupling socket. Repair or replace (pars. 90 and 91).

(5) Worn or damaged switches. Replace (pars. 95 and 96).

(6) Short circuit caused by worn or water-soaked insulation. Replace faulty wire (pars. 93 and 94).

(7) Broken wire. Replace wire (pars. 93 and 94).

Section XIV

TIRES, WHEELS, HUBS, WHEEL BEARINGS, AND BRAKE DRUMS

36. WHEEL AND TIRE DESCRIPTION AND DATA.

a. Description. The wheels are of the pressed-steel ventilated type, having 20-inch disks and 8-inch rims. Each wheel is fastened to its hub by a separate set of nuts. All the stud nuts on the wheels on the right-hand side of the trailer have right-hand threads, and the stud nuts on the wheels on the left-hand side have left-hand threads. The inner dual wheel is individually held by the inner cap nuts. The outer wheel slips over the inner cap nuts and is independently held by the outer nuts. Each wheel and hub assembly is mounted on the spindle by two opposed tapered roller bearing assemblies.

b. Data.

Wheels:

Make	Budd
Type	Ventilated disks
Rim	R.H. on 20 x 8 in. rim
Number of studs	10
Tread	72 inches

Tires:

Size	9 x 20 inches
Number of plies	10
Air pressure carried	70
Tread	Non-directional

Wheel Bearings:

Make	Timken
Type	Roller
Inner bearing:	
Cone and roller assembly	5557
Cup	5520
Outer bearing:	
Cone and roller assembly	5557
Cup	5520

37. WHEEL AND TIRE ASSEMBLY REMOVAL.

a. Jack up the axle, place the jack near the lower axle clamp on the side on which the tires are to be removed. With a wheel bolt wrench remove the 10 special hexagon outer nuts. These are marked "R" on the right side of the trailer and must be removed by turning counterclockwise; or "L" on the left side, to be removed by turning clockwise. Remove the outer wheel and tire. After the outer wheel and tire have been removed, reverse the wrench and remove the 10 square inner stud cap nuts (marked "R" and "L"). This allows the inner wheel and tire to be removed.

38. WHEEL AND TIRE ASSEMBLY INSTALLATION.

a. Reassemble Tires and Wheels on Hub Assembly. Position inner wheel on hub, replace 10 square inner cap nuts, taking care to tighten them evenly and tightly before mounting the outer wheel. Then position outer wheel on cap nuts against inner wheel and replace outer hexagon nuts, also taking care to tighten them evenly.

b. Check Position of Cap Nut. Check to be sure that the beveled surface on the inner end of the cap nut is evenly seated with the bevel in each of the wheel stud holes provided for this bevel. This is important as the weight of the trailer must always be carried upon the beveled section of the cap nuts, and unless all of these bolts are evenly seated, the wheels will become loose and damage to the hub and the wheel may result.

c. Check Position of Valve Stem. In mounting the outer wheel, make sure that the tire valve stem on the outer wheel is located opposite the valve stem on the inner wheel. This will provide easy access to the valve stems for tire inflation.

39. TIRE REMOVAL.

a. Remove Wheel and Tire Assembly. Refer to paragraph 37.

b. Remove Tire. Remove the valve core from the tube by unscrewing the core with the forked end of the valve cap. This will allow deflation of the tube. Place wheel and tire on level flat surface with wheel lock ring up. With a tire tool, loosen and remove the tire lock ring and the side ring (fig. 21). Lift tire free of the wheel. Reinstall the valve core into the tube valve.

40. TIRE MAINTENANCE.

a. Tires and Tubes. Tires must be repaired in accordance with conventional methods. Punctures and tears causing exposure of cord or fabric must be vulcanized. Holes in inner tubes must be repaired

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Figure 21—Removing Tire Lock Ring

by cold patching. Hot patching or vulcanizing should not be attempted. Tires must be inflated equally and not operated when underinflated. Before pumping air into tubes, depress valve momentarily to let air blow out any dirt in the valve. Keep caps on valves to prevent entrance of foreign matter. Oil and grease have a harmful effect on rubber, and every attempt must be made to keep these substances from coming in contact with rubber equipment.

41. TIRE INSTALLATION.

*a. **Install Tire on Wheel.*** Install valve core in valve stem of inner tube and insert inner tube in tire casing. Slip tire and tube assembly into position over wheel rim, guiding the valve stem into hole in rim, and push tire onto rim. Place lock rim assembly in position and work snap ring over edge of wheel. Be sure that the valve stem points outward and that tire tread faces proper direction. Inflate tire to correct pressure and install valve cap. CAUTION: *When inflating tire, wrap a length of chain loosely around the tire at two points. This will prevent the lock ring from springing up and causing injury, if it is not securely fastened.*

*b. **Install Wheel and Tire Assembly.*** Refer to paragraph 38.

Figure 22—Removing Tire from Wheel

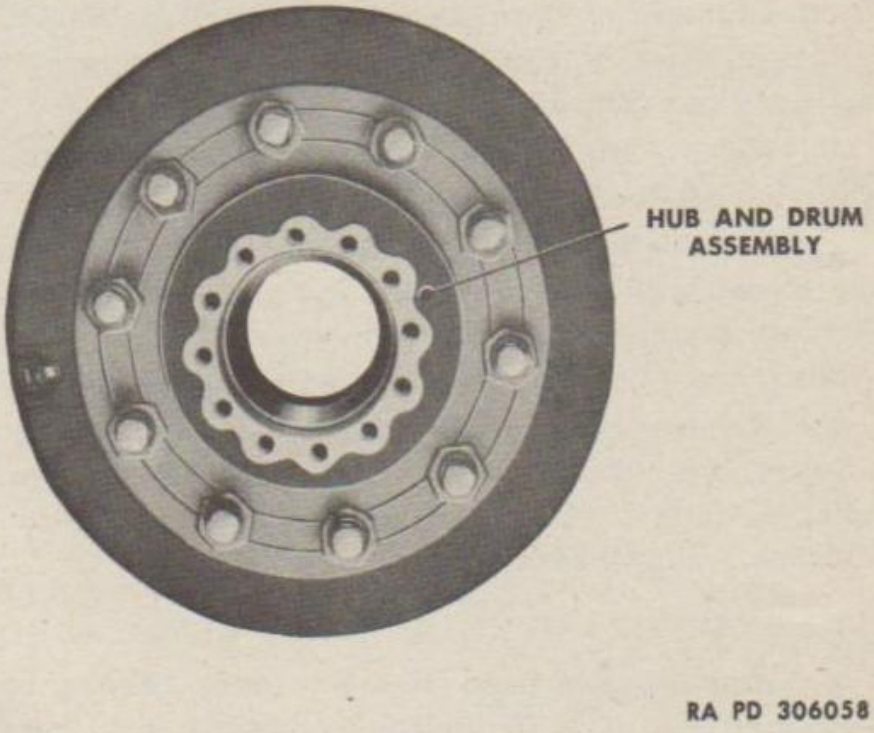

Figure 23—Hub and Drum Assembly

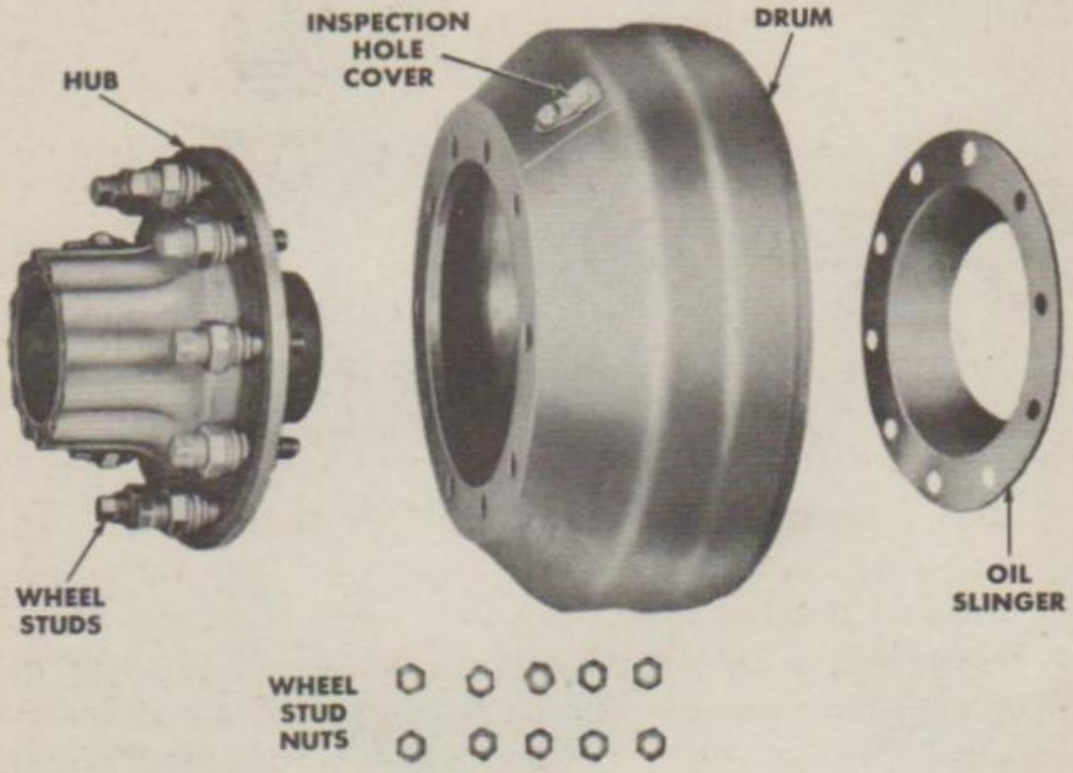

Figure 24—Hub and Drum Assembly Partially Disassembled

42. HUB AND DRUM ASSEMBLY REMOVAL (figs. 23 and 24).

a. Remove Wheel and Tire Assembly. Place chock blocks in front and rear of opposite wheels to act as brakes. Jack up axle sufficiently for wheels to clear ground. Remove wheel and tire assembly as outlined in paragraph 37.

b. Release Air Brakes. Open drain cock on bottom of air reservoir (fig. 33) to release air.

c. Remove Hub Cap and Bearing Nuts. Remove hub cap retaining screws and lift off hub cap and gasket. Avoid damaging gasket. Remove wheel bearing jam nut, wheel bearing, adjusting nut lock washer, and wheel bearing adjusting nut from spindle.

d. Remove Hub and Drum Assembly. Grasp the drum and pull forward until the hub and drum assembly is free from the axle spindle. Carefully support hub and drum, while removing, to avoid damage to the oil seal.

43. BEARING AND BEARING CUP REMOVAL (fig. 25).

a. Remove Bearings. Remove outer bearing cone and roller assembly from hub. Remove inner bearing from spindle. Inspect oil seal and replace if torn or otherwise damaged.

Figure 25—Bearing Assembly Partially Disassembled

b. Remove Bearing Cup. Place hub assembly on wood block with bearing cup to be removed facing down. Insert drift into hub opening and rest lower end of drift on inside shoulder or edge of bearing cup. Drive the drift on edge of cup. Move lower end of drift across to opposite edge of cup and strike drift again. By alternating in this manner, the cup will come out straight with the cup bore, and danger of wedging the cup in the bore of the hub will be minimized. Be careful not to drive lower end of drift into hub metal.

44. HUB AND BEARING MAINTENANCE (fig. 24).

a. Clean inner and outer cups and cone and roller assemblies with dry-cleaning solvent.

b. Inspect the bearing rollers for pits and wear. Replace bearing cone and cup, if rollers are damaged or worn.

c. Inspect the inner and outer bearing cups in hub assembly for wear, pits and scratches. If any one of these is evident, replace the cups and cones (pars. 43 and 45).

d. Inspect hub studs and replace any studs which have stripped threads or other damage.

e. Inspect brake drums for scoring. If drums are scored, they must be turned smooth; report to higher authority.

f. Inspect oil seal for wear. Always replace defective oil seal with new one.

g. Lubricate bearings and S-cam (par. 19).

45. BEARING AND BEARING CUP INSTALLATION (fig. 25).

a. Install Bearing Cup. Remove all old grease from inside hub and drum assembly and clean hub bore with dry-cleaning solvent. Dry and place hub on wooden block. Start new bearing cup square with the bore, having the smaller inside diameter placed so that it will be on the inside when cup is in place. Place a piece of hardwood over the cup face and drive cup in until flush with outer edge of hub. Place old cup over the new one and drive new cup in until it is absolutely tight with the cup bore flange. Be sure that new cup is properly seated. If not, it will alter the distance between the bearing center and prevent proper reassembly of the wheel.

b. Install Bearings. Remove all old grease from axle spindle and clean spindle with dry-cleaning solvent. Clean outer and inner bearing cone and roller assemblies with dry-cleaning solvent, dry and lubricate (par. 19). Install outer bearing in hub and inner bearing on spindle.

46. HUB AND DRUM ASSEMBLY INSTALLATION (figs. 23 and 24).

a. Install Hub and Drum Assembly. Slide hub and drum assembly onto axle spindle and push into position, carefully supporting it to avoid damage to the oil seal.

b. Install Bearing Nuts and Hub Cap. Install wheel bearing adjusting nut, adjusting nut lock washer, and wheel bearing jam nut. Adjust bearings as described in paragraph 47. Install hub cap and gasket and retain with lock washers and screws. Be careful not to damage gasket.

c. Install Wheel and Tire Assembly. Install wheel and tire assembly as outlined in paragraph 38 and remove jack.

d. Reestablish Air in Brakes. Close drain cock on air reservoir (fig. 33) to reestablish air.

47. BEARING ADJUSTMENT.

a. Jack Up Vehicle. Place chock blocks in front and rear of opposite dual wheels. Place jack under axle near wheels to be removed. Raise jack until tires are free from ground.

b. Release Air Brakes. Open drain cock on bottom of air reservoir (fig. 33) to release air in braking system so wheels can be turned.

c. Test Bearing Adjustment. With hands, test sidewise shake of wheels. Properly adjusted bearings allow only a perceptible shake of the wheel and also allow it to turn properly.

d. Adjust Bearings. Remove hub cap. Remove wheel bearing jam nut, and wheel bearing adjusting nut lock washer. Tighten wheel bearing adjusting nut until wheel binds, rotating wheel during this operation to ensure that all surfaces are in contact. Back off adjusting nut ⅙ turn, or more, until wheels rotate freely. Install adjusting nut lock washer and jam nut.

e. Check Adjustment. Refer to subparagraph *c* above, then install hub cap (par. 46 *b*), lower wheels to ground, and remove jack.

f. Reestablish Air in Brakes. Close drain cock in air reservoir.

Section XV

BRAKES

48. DESCRIPTION AND TABULATED DATA (fig. 26).

a. Description. The brakes are internal expanding mechanical brakes operated by the energy of compressed air and located on each of the inner dual wheels. The actuation of these brakes is through the brake operating system of the trailer, which is connected with the braking system of the towing vehicle and controlled by it. The connections are made by hose couplings at the front of the trailer.

b. Operation. The purpose of the brakes is to stop the trailer evenly and smoothly. This is done by forcing the brake shoes lined with heavy blocks of heat-resistant high-friction material against the surface of smoothly ground and polished brake drums. It is important that care be taken to protect the brakes against the entrance of dust, water, grease, and other foreign material which might become embedded in the surface of the brake lining, or which might score polished surface of the drums.

c. Data.

Make	Timken
Model	T. M.
Brake size	17¼ x 4
Lining size	¾ in. thick x 4 in. wide

49. MAINTENANCE AND ADJUSTMENTS (figs. 26 and 27).

a. Maintenance. The proper functioning of the brake system is of vital importance. A freely operating brake control system permits the shoes to return completely against their anchor pins at all times when the brakes are released. When taking up linkage or backlash

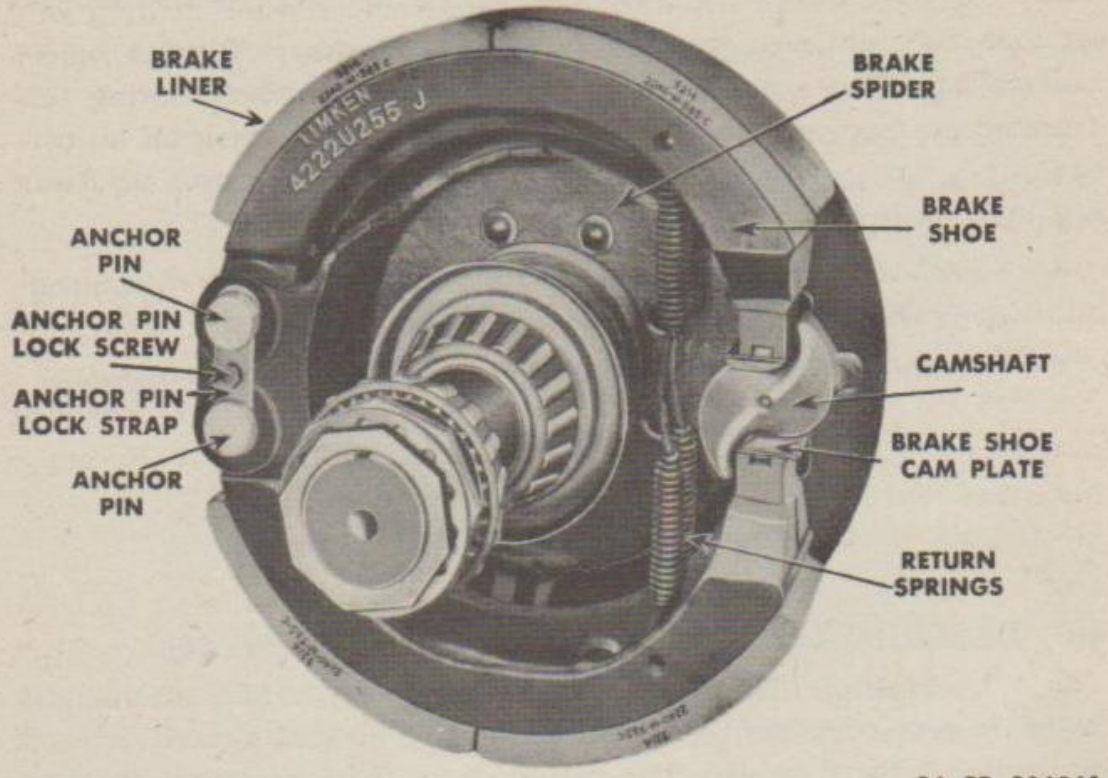

Figure 26—Brakes

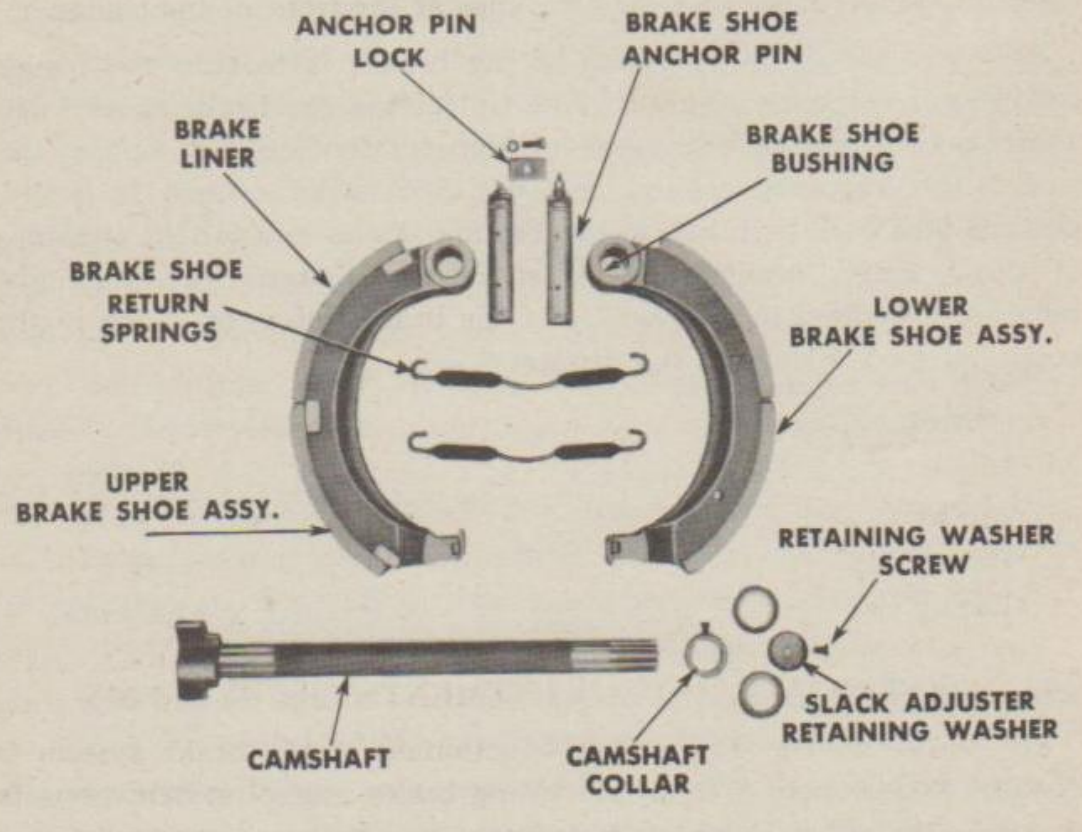

Figure 27—Brakes Disassembled

caused by wear, care must be taken to ensure that the shoes return against their anchors, and the cam block is free between the shoe ends. The return springs are provided to return the shoes to the released position, and weak or broken springs must be replaced.

b. Minor Adjustments. The only brake adjustment required to compensate for wear is performed by rotating the slack adjuster lever worn screw clockwise (fig. 31) until the brake drums begin to drag on the lining and then backing them off until the brakes are free. This should be done with the wheels jacked clear of the ground. Every 5,000 to 10,000 miles, the wheels and drums should be removed and lining checked to see that sufficient lining remains. The brake shoe assemblies must be replaced when they are worn to within $\frac{1}{32}$ to $\frac{1}{16}$ inch of the bolt heads holding the lining to the shoes.

c. Major Adjustments. If the brake linings are found to be worn to within $\frac{1}{16}$ to $\frac{1}{32}$ inch of the lining bolt heads, replace brake shoes (pars. 51 and 52). After new brake shoes have been installed, the usual brake adjustment must be completed by adjusting the slack adjusters. After the unit has been run 10 to 25 miles, it will be necessary to readjust the slack adjusters. The slack adjusters should be watched very carefully during the next 500 to 1,000 miles, and should be adjusted every day, or twice a day, if it is found that the travel of the slack adjusters increases very rapidly. NOTE: *There is no anchor pin or heel adjustment on this type of brakes. The slack adjuster is the only method provided for adjustment.*

50. BRAKE SHOE SUPPORTS, RETURN SPRINGS, AND ANCHOR PINS (fig. 27).

a. Purpose. The purpose of the brake shoe support spiders is to hold the brake shoes in proper alinement with the drums. The brake shoe return springs return the brake shoes to neutral or "OFF" position after the brake application. The anchor pins hold the heel end of the brake shoes in alinement with the drum. The anchor pins also take all of the braking thrust and are the only positive connection between the brake shoes and the axle.

b. Adjustments. There are no exacting adjustments for the brake shoe spider, the springs, or the anchor pins. It is necessary that these parts are in alinement to hold the brake shoes squarely against the drums. NOTE: *All clearances between pins and brackets must be a light drive fit; all clearances between bushings and pins must be a tight slip fit. If worn, notify higher authority.*

51. BRAKE SHOE ASSEMBLY REMOVAL (fig. 26).

a. Jack up vehicle, and remove wheel and tire assembly as outlined in paragraph 37.

b. Remove the cap screws holding the hub cap in place with an open end or socket wrench; remove the hub cap.

c. With an axle adjusting nut wrench, unscrew the wheel bearing jam nut, pull the adjusting nut lock washer off the spindle and unscrew the adjusting nut. Then pull the hub and drum assembly off the axle spindle, taking care not to damage the spindle threads or grease retainer. Pull the hub and drum assembly directly outward, rotating the drum slightly. Unhook and remove the springs from between the shoes. Remove the brake shoe anchor pin lock screw with an open-end wrench, a hammer, and a piece of wood (lightly tap the lock out of the way). Remove the anchor pin lock nuts and lock washers, and with a hammer and small piece of hardwood, drive out the brake shoe anchor pins. Lift out the brake shoes and remove the eight brass bolts and nuts that fasten the worn lining to the shoes. Replace the worn linings with new linings using new bolts and nuts if the old ones are burred or unsatisfactory. Remove all burs, marks, or rough edges from the surface of the linings that will come in contact with the brake drums. Before assembling, lubricate the brake cams and cam plates (par. 19).

52. BRAKE SHOE ASSEMBLY INSTALLATION.

a. Position brake shoes so that hole in heel end of shoes will be in line with hole in brake spider. With a hammer and small piece of hardwood, drive in brake shoe anchor pins (coated lightly with grease). Install anchor pin lock nuts and lock washers, replace anchor pin lock and tighten anchor pin lock screw. Hook brake shoe return springs into place. Before assembling with hub and drum, check to seee that brake spider is not bent and that the rivets holding it to the axle are secure. Test the brake shoe return springs to see that they are not damaged, also check anchor pins for excessive wear. Install hub and drum assembly as outlined in paragraph 46. Install tire and wheel assembly as outlined in paragraph 38. Adjust brakes as outlined in paragraph 49 *b* and *c*.

53. BRAKE DUST SHIELDS.

a. The purpose of the brake dust shields is to keep grit and gravel out of the brake assembly. The dust shields are fastened to the brake spiders with cap screws and lock washers.

b. Disassembly. To remove the dust shields, remove the nuts from the studs of each end of the shields with an open-end wrench. Remove the cap screws holding the shields to the brake spider and lift shields out of place.

c. Assembly. Place dust shields in position and fasten to brake spider with cap screws. Replace nuts onto studs at each end of the shields.

54. PURPOSE.

a. The purpose of the air brake equipment is to provide a means of operating the brakes through the medium of compressed air, and in conjunction with the air brake system on the tractor towing the trailer.

Section XVI

BRAKE OPERATING SYSTEM

55. COMPLETE AIR BRAKE SYSTEM (fig. 28).

a. Preparation. In order to test the trailer air brake system for serviceability, connect the trailer air brake system to the air brake system of a tractor. Start the engine, if necessary, to charge both air brake systems to 100 pounds as registered by the dash gage on the tractor.

b. Leakage Tests.

(1) With the motor stopped and brakes released observe the rate of drop in air pressure registered by the dash gage on the tractor. The rate of drop in air pressure should not exceed 3 pounds per minute.

(2) With engine stopped and brakes fully applied, observe the rate of drop in air pressure registered by the dash gage. The rate of drop in air pressure should not exceed 4 pounds per minute.

(3) Leakage in either of the above tests is the combined leakage in the air brake system on the tractor and the air brake system on the trailer. Leakage in the trailer air brake system may be determined by comparing the leakage in the above tests with the leakage found in similiar tests with the cut-out cocks in the hose lines connecting the tractor to the trailer closed.

(4) If leakage during either of the above tests is excessive, determine the source of the leaks by applying soapsuds on the outer surfaces of all devices and connections and make repairs or replacements where necessary.

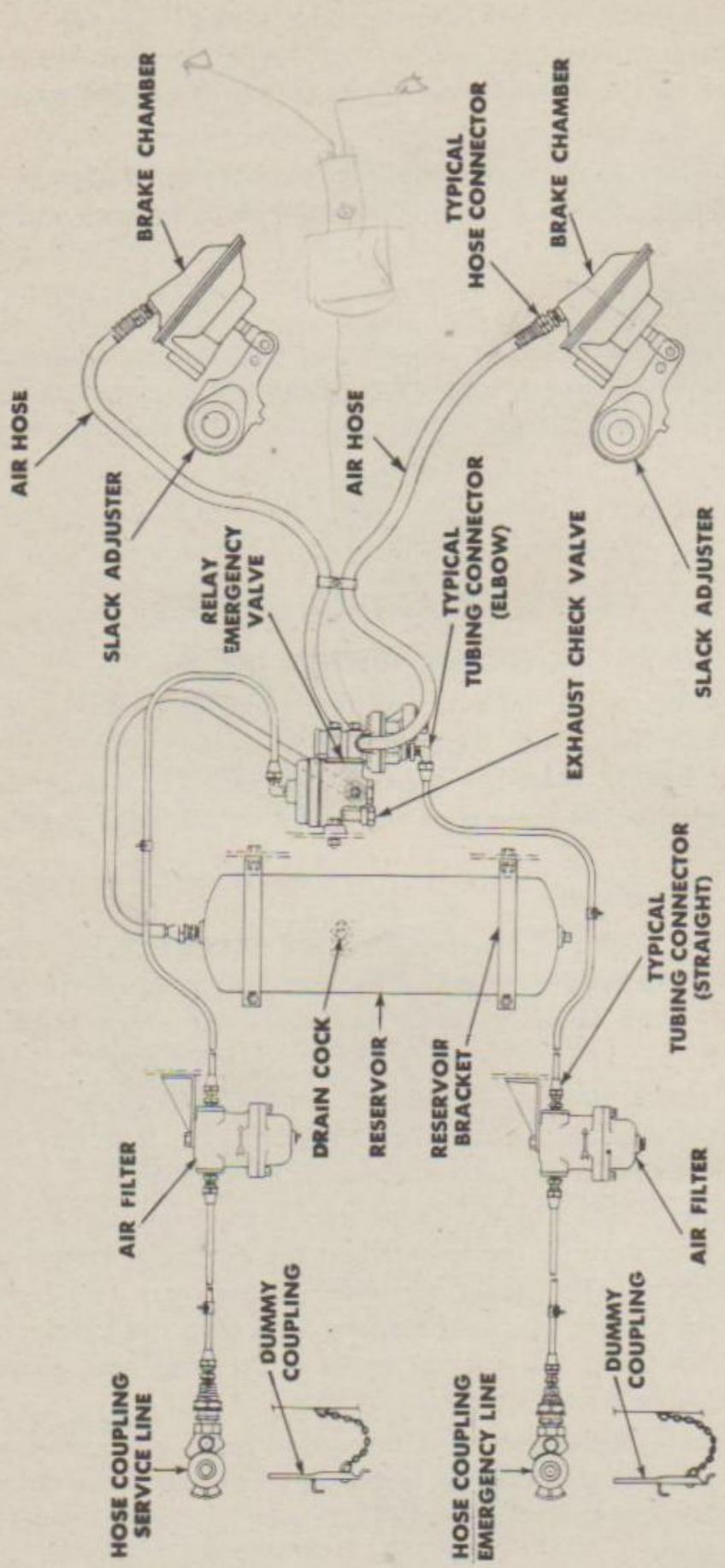

Figure 28—Air Brake Installation Diagram

c. Operating Tests.

(1) With vehicle moving, apply the brakes and check their effectiveness. Check for quick braking response during application and release of the brakes.

(2) Check to be sure the brakes on all wheels apply and release properly.

56. RELAY-EMERGENCY VALVE (fig. 29).

a. Function. The relay-emergency valve relays the braking action from the tractor and provides an automatic brake application on the trailer in the event the trailer breaks away from the tractor.

b. Operating Tests.

(1) With the air brake system charged, apply the brakes and check to be sure all brakes apply properly.

(2) Release brakes and check to be sure air pressure is promptly passed from the exhaust port of the relay-emergency valve through the exhaust check valve.

(3) With the air brake system fully charged, close the cut-out cock in the emergency line on the tractor and disconnect the emergency line from the trailer. Check to be sure the trailer brakes apply automatically.

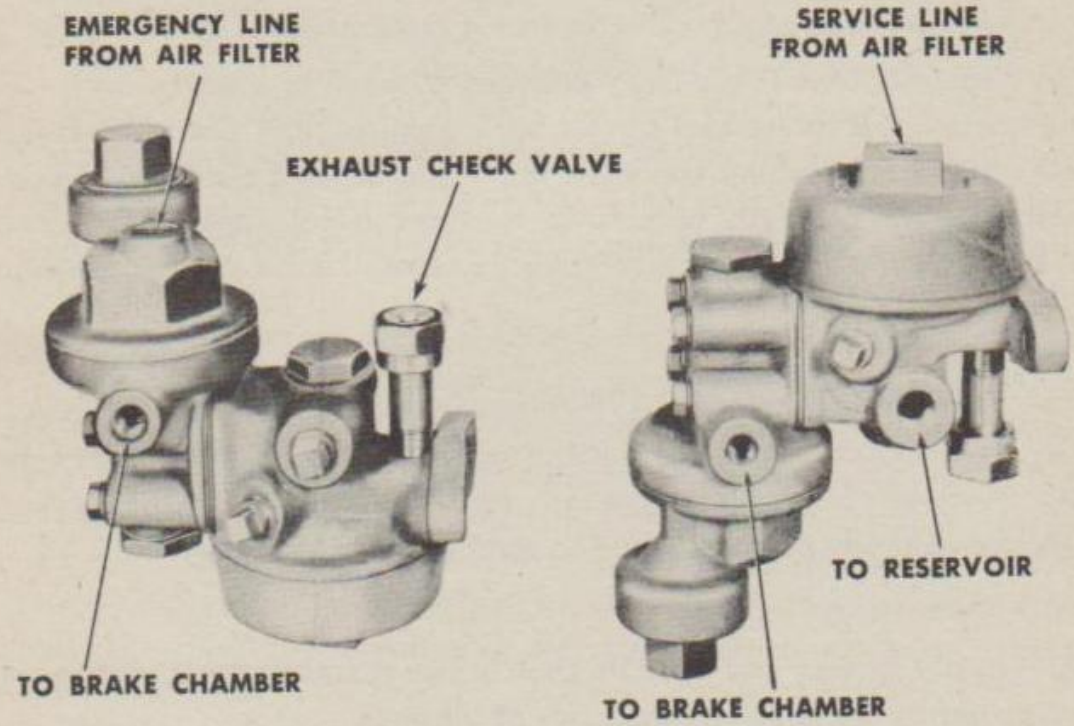

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Figure 29—Views of Relay-emergency Valve

c. Leakage Tests.

(1) With brakes released, coat the exhaust port of the relay-emergency valve with soapsuds (or the exhaust check valve if one is installed in the exhaust port of the relay-emergency valve) to determine leakage past the supply valve, or the upper seal of the emergency diaphragm.

(2) With brakes fully applied, coat the exhaust port with soapsuds to determine leakage past the relay diaphragm.

(3) With relay-emergency valve in emergency position, coat the exhaust port of the relay-emergency valve with soapsuds to determine leakage past the emergency valve. Also test for leakage at the emergency line hose coupling at the front of the trailer to determine leakage past the emergency diaphragm seal.

(4) Leakage in any of the above tests should not exceed a 3-inch soap bubble in 3 seconds. Excessive leakage will be caused by dirty or worn diaphragms, valves, and valve seats. Leakage due to dirt may be corrected by cleaning the valve. If leakage is due to worn parts, the valve must be replaced.

d. Removal. Before removing relay-emergency valve release air from reservoir by opening drain cock. Disconnect all hose and air lines from relay-emergency valve. Remove hex nuts from cap screws holding relay-emergency valve to frame crossmember.

e. Installation. Place relay-emergency valve in position on frame crossmember. Replace cap screws, lock washers, and hex nuts. Insert new sleeves into tubing connector nuts and replace air lines. If connector bodies (straight or elbow) were removed, apply white lead or similar substance before reassembly. Install hose and close drain cock on reservoir.

57. BRAKE CHAMBERS (fig. 30).

a. The brake chambers transform the energy of compressed air into mechanical force and motion necessary to operate the brakes. A brake chamber on each wheel is used to operate the brakes.

b. Operating Tests.

(1) Apply brakes and observe that brake chamber push rods move out promptly without any evidence of binding.

(2) Release brakes and observe that brake chamber push rods return to release position promptly without any evidence of binding.

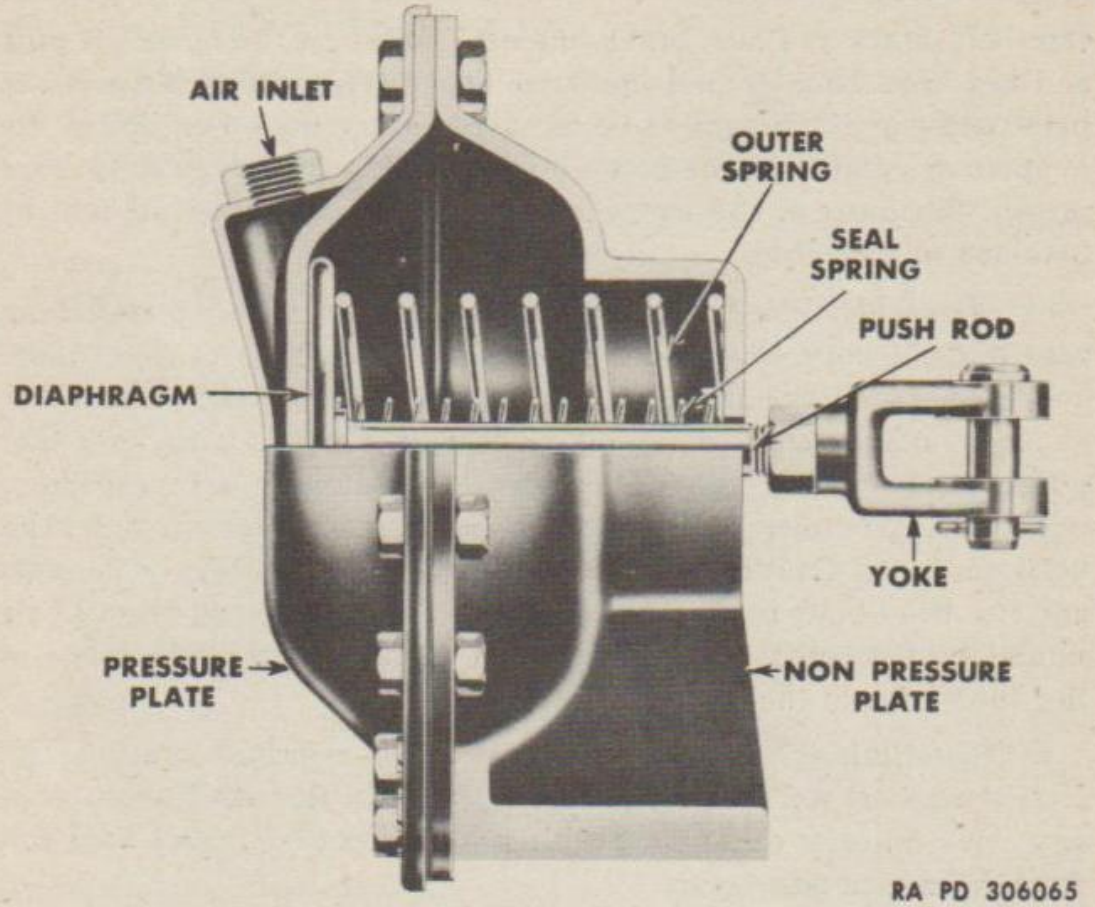


Figure 30—Brake Chamber and Linkage—Sectional View

c. Leakage Tests.

(1) With brakes fully applied, coat the bolting flanges, holding the diaphragm in place, with soapsuds to check for leakage. No leakage is permissible. If leakage is found, tighten flange bolts. All flange bolts must be tightened evenly to prevent leakage; otherwise the diaphragm will be distorted and premature failure will result.

(2) With brakes fully applied, check for leakage through the diaphragm by coating the clearance hole around the push rod, and the drain holes in the nonpressure plate, with soapsuds. No leakage is permissible. If leakage is found, the diaphragm must be replaced.

(3) Excessive push rod travel will cause premature failure of the brake chamber diaphragm. When diaphragms are inspected, brake chamber release springs must also be checked and replaced if necessary. It is important when replacing brake chamber springs to always install the same type of spring as the one removed, otherwise uneven braking will result.

d. Removal and Disassembly. Before removing brake chamber, release air from reservoir by opening drain cock. Disconnect hose, remove yoke pin cotter pin and yoke pin, releasing it from slack adjuster. Remove nut and washer, releasing brake chamber from

camshaft bracket. Place brake chamber in a vise. Remove all nuts and hex head bolts around the outer flange. This allows the pressure plate and the diaphragm to be removed. Mark the outer rim of the nonpressure plate and the pressure plate with a center punch, so that proper alinement of the air connection on the pressure plate will be obtained at assembly.

*e. **Assembly.*** Place diaphragm into recess of pressure plate taking care that all holes in both sections are in line. Place pressure plate and diaphragm against push rod, compressing spring until outer flange of nonpressure plate and diaphragm touch, taking care that punch marks on outer rim of both pressure plates are in proper alinement. Hold complete unit rigidly in vise and replace all hex head bolts and nuts. Caution must be exercised to tighten evenly the nuts and hex head bolts holding the diaphragm and plates together. These should be tightened just sufficiently to show a very slight bulge at the outer edge of the chamber diaphragm.

*f. **Installation.*** Place brake chamber on camshaft bracket and replace washers and hex nuts. Install yoke pin through hole in yoke and slack adjuster and secure with yoke pin cotter. Install hose and close drain cock on reservoir.

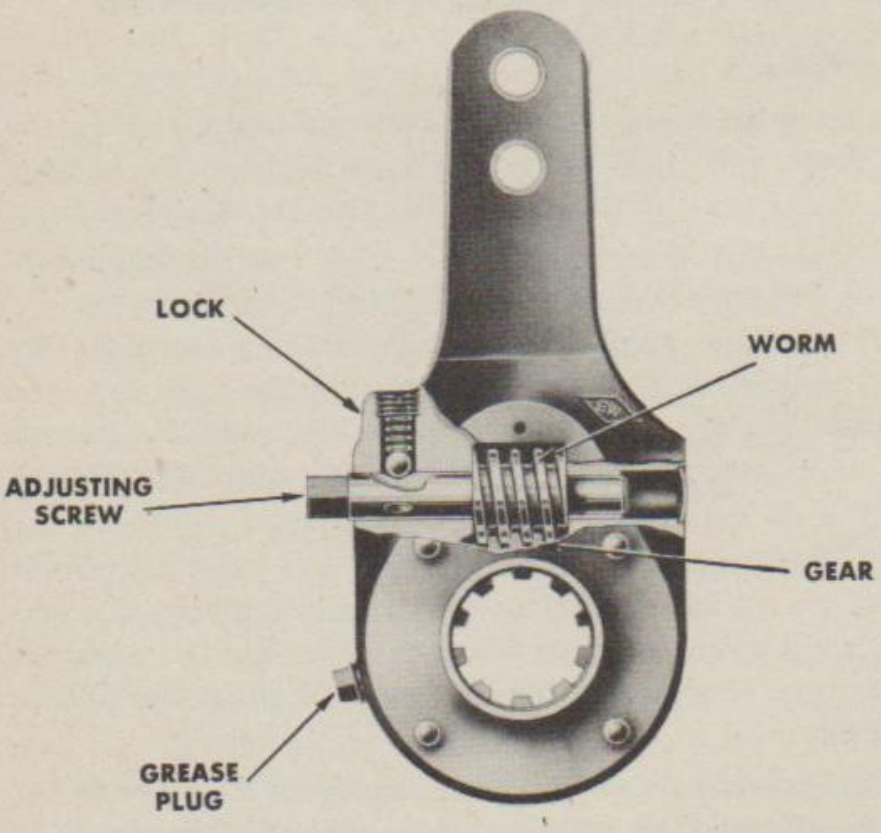


Figure 31—Slack Adjuster—Sectional View

58. SLACK ADJUSTER (fig. 31).

a. Slack adjuster mounted on the brake camshafts provide an easy means of adjusting the brakes to compensate for lining wear. One slack adjuster is used for the brakes on each wheel.

b. Operating Tests. Adjust brakes and note brake chamber push rod travel when brakes are applied. Make several brake applications and again check push rod travel. Push rod travel must remain the same as it was after adjustment. If the push rod travel increases, or if it is difficult to keep the brakes adjusted in service, the slack adjuster must be replaced.

c. Removal. Disconnect the slack adjuster from the brake chamber by removing yoke pin cotter pin and yoke pin. Remove slack adjuster retaining screw and washer at end of camshaft and pull off slack adjuster.

d. Installation. Slide slack adjuster on splined end of camshaft and secure with retaining washer and screw. Before connecting slack adjuster to brake chamber, check to see that the worm wheel is tight on the camshaft. This can be done by oscillating the slack adjuster slightly backward and forward. Connect slack adjuster to brake chamber with yoke pin and cotter pin. Rotate the adjusting worm and see that it operates easily and smoothly. It will be noticed that there is a distinct click every ¼ turn, which is caused by a spring-loaded ball check.

e. Adjust Slack Adjuster. Jack up wheel. Rotate the adjusting worm clockwise until the brakes drag, then back off the adjusting worm until the brakes run free. After this adjustment be sure that the push-rod travel of the brake chamber be held to its minimum, approximately ¾ inch.

59. RESERVOIR (fig. 32).

a. Purpose. The reservoir is used to store the compressed air for brake operation.

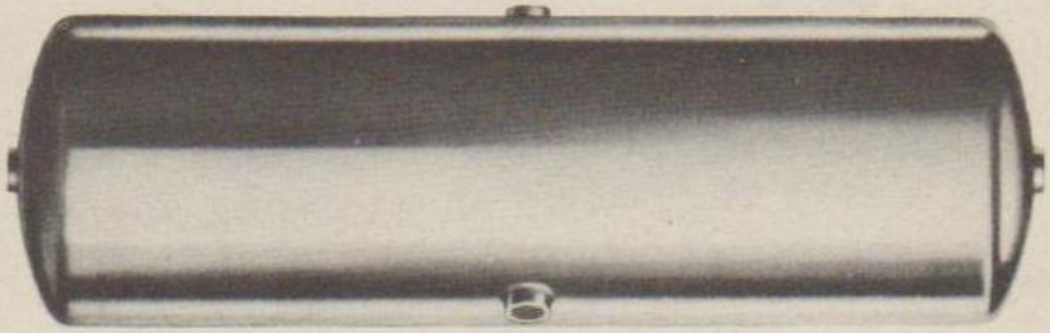
b. Leakage Test. With brake system charged, coat the outside of the reservoir with soapsuds to check for leakage. No leakage is permissible. If any leakage is found, the reservoir must be replaced.

c. Inspection. Inspect inside and outside surfaces for damage or corrosion. If any damage or corrosion is found that would weaken the reservoir, replace.

d. Removal. Open drain cock to release air. Disconnect air line at tubing connection. Remove 6-inch machine bolts from reservoir

mounting brackets, spreading brackets and permitting removal of reservoir.

e. Installation. Position reservoir between mounting brackets, install 6-inch machine bolts and secure with lock washers and hex nuts. Insert new sleeve into tubing connector nut and install air line. If connector body was removed apply white lead before assembly.



RA PD 306067

Figure 32—Air Reservoir

60. DRAIN COCK (fig. 33).

a. Drainage. The drain cock is mounted at the bottom of the reservoir to permit condensation, which normally collects there, to be drained. All reservoirs must be drained at least once a week.

b. Leakage Tests.

(1) With air brake system fully charged, test for leakage past the key, using the soapsuds. Also check for leakage through the body by coating the outside of the drain cock with soapsuds.

(2) Leakage in excess of a three-inch soap bubble in three seconds is not permissible.

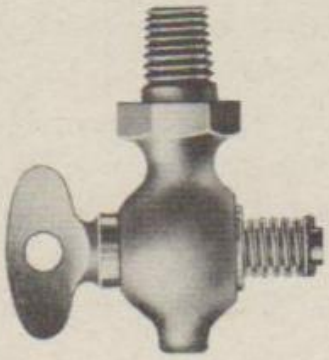


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Figure 33—Air Reservoir Drain Cock

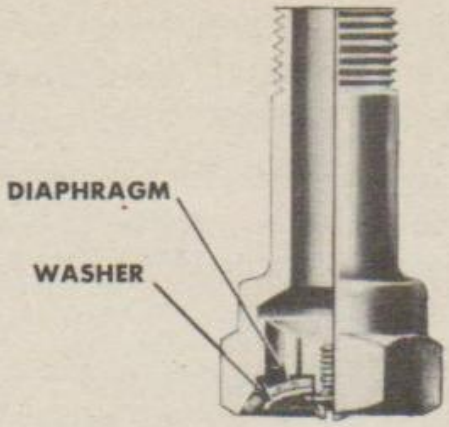

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Figure 34—Exhaust Check Valve—Sectional View

(3) Leakage will be caused by a dirty or damaged key or body. Leakage due to dirt can be corrected by cleaning and applying a coating of general purpose grease on the key before assembling. Leakage due to a damaged key or body necessitates replacement of the drain cock.

c. Removal and Disassembly. Open drain cock to release air from reservoir. Remove drain cock from reservoir with open-end wrench. Place in vise and remove cotter pin at end of tapered key. Remove spring lock washer, plain washer, and key.

d. Assembly and Installation. Install tapered key in drain cock body, slip plain washer, spring and lock washer over end of key and secure with cotter pin. When installing drain cock on reservoir apply white lead to pipe thread. Care must be taken not to bend the tapered key or to damage the body of the drain cock.

61. EXHAUST CHECK VALVE (fig. 34).

a. Position. The exhaust check valve is mounted in the exhaust port of the relay-emergency valve to protect the relay-emergency valve against the entrance of dirt or water.

b. Leakage Test. Remove the exhaust check valve and immerse the lower half of the valve containing the diaphragm in water. Check for leakage of water past the diaphragm into the check valve. No leakage is permissible. If leakage is found, remove diaphragm and inspect its condition, also that of the diaphragm seat. If leakage is caused by the presence of dirt, clean the diaphragm and diaphragm seat. If leakage is caused by a defective diaphragm, the diaphragm must be replaced. If leakage is caused by a damaged diaphragm seat, the complete exhaust check valve must be replaced.

62. AIR FILTERS (fig. 35).

a. The air filters are connected in the service line and in the emergency line leading to the air brake system on the tractor.

b. Operating and Cleaning. Remove cover and inspect condition of air strainer. Curled hair strainer must be washed in dry-cleaning solvent and dried before being replaced. Cotton-type strainers may be cleaned by carefully brushing dust or dirt off the outside. If either type of strainer is covered with an oily or gummy deposit, a new strainer should be installed. NOTE: *When assembling filters, always use a new gasket. Cotton-type strainers may be used to replace curled-hair-type strainers.* The frequency of cleaning the filter, or replacing the strainer, depends entirely upon the operating conditions and the amount of dirt passing into the filter.

c. Leakage Tests. With brakes applied, coat the outside of the filter with soapsuds to check for leakage. No leakage is permissible. If any leakage is found through the walls of the filter, the filter should be replaced. If leakage is found past the gasket between the cover and the body of the filter, the cover must be tightened or a new gasket installed.

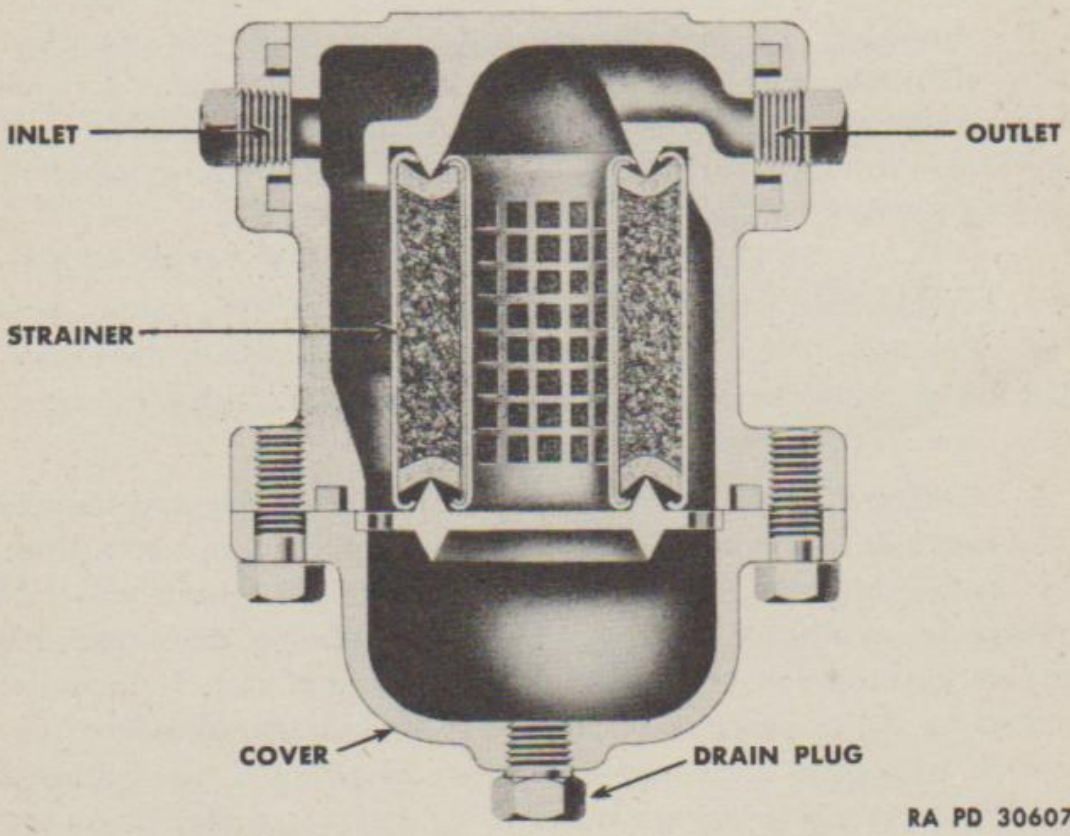

Figure 35—Air Filter—Sectional View

d. Removal. Before removing air filters, open drain cock to release air from reservoir. Remove air lines at tubing connectors. Remove cap screws holding filter to mounting bracket.

e. Disassembly. Remove the hex head bolts holding the dirt chamber to strainer body. This will permit removal of strainer support and strainer.

f. Assembly. Install strainer into strainer body. Install support and dirt chamber, secure with cap screws.

g. Installation. Position air filter on mounting bracket so that arrows on outside of filter body point toward the relay-emergency valve, and secure with lock washers and cap screws. Connect air lines and close drain cock on reservoir.

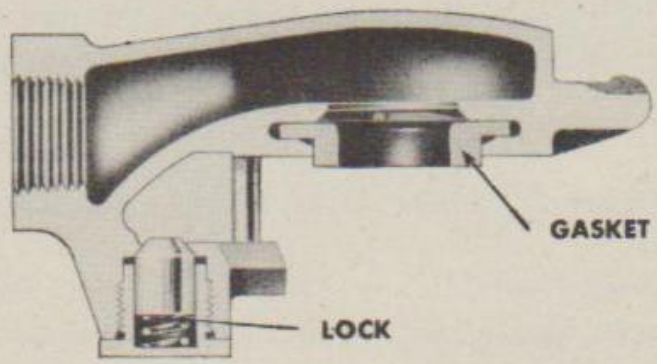

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Figure 36—Hose Coupling—Sectional View

63. HOSE COUPLINGS (fig. 36).

a. Mounting. Hose couplings are mounted at the service line and emergency line outlets to provide a simple means of attaching hose connections from the tractor air brake system.

b. Leakage Tests.

(1) With the hose couplings connected and brakes applied, coat the hose couplings with soapsuds. There must be no leakage.

(2) Leakage is usually caused by worn, damaged or improperly installed gaskets. Install a new gasket to correct leakage.

(3) Pry old gaskets out with a screwdriver.

(4) Before attempting to install a new gasket, be sure the groove in the coupling in which the gasket fits is thoroughly cleaned, otherwise it will be impossible to properly install a new gasket.

(5) To install a new gasket, partially collapse it with the fingers and enter one side of the gasket flange in the groove in the coupling. Then use a blunt nose screwdriver or some similar instrument to

push the gasket into place. When properly installed, the exposed face of the gasket will be flat, not twisted or bulged at any point.

c. Removal and Installation. All that is required for the removal or installation of hose couplings is an open-end wrench. Before assembly apply joint and thread compound.

64. HOSE ASSEMBLIES (fig. 37).

a. Connections. Hose assemblies are used to connect the air line between two points of the vehicle. All hose assemblies include detachable-type hose connectors.

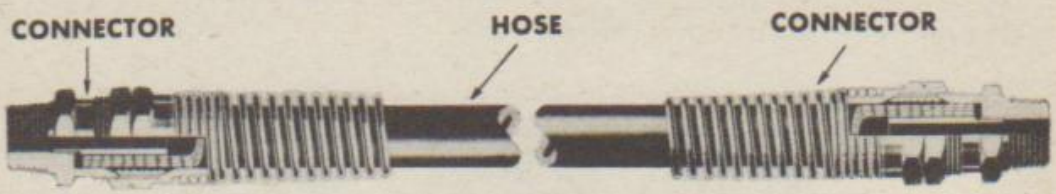

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Figure 37—Hose Assembly—Sectional View

b. Operating Tests. If any evidence is found indicating that a hose line is restricted, it should be removed, and air blown through it in both directions, to be sure the hose passage is clear and not obstructed in any way.

c. Leakage Tests. With brakes applied, to be sure the hose line being tested is under air pressure, coat the outside of the hose and hose connectors with soapsuds to check for leakage. No leakage is permissible. Leakage at the connectors can sometimes be corrected by tightening the connector nut. If this fails to correct the leakage, the connectors, or hose, or both, should be replaced.

d. Replacement. Remove connector nut, and pull hose out of connector body. Do not attempt to remove used sleeve from hose. Cut a new piece of hose to required length, being sure the cut is made at right angles to the outside wall of the hose, and that the end of the hose is smooth. Blow out hose with an air line to remove all cuttings. Position connector nut and sleeve on hose, being sure the barbs on the inside of the sleeve point toward the end of the hose. Position new gasket over the end of the guide in the connector body so the side with the removable protector covering will be next to the hose. Remove the protector covering from the gasket. Put the end of the hose in the connector body, making sure the end of the hose and the gasket are against the bottom of the recess in the

connector body. Move the sleeve, if necessary, until it is against the edge of the connector body. Tighten the connector nut sufficiently to ensure an air-tight joint. NOTE: *When installing the hose assembly, where both ends are permanently connected, the hose connector at either end may be used as a swivel by loosening the nut on one of the connectors. The hose should then be turned in the loose connector before the connector nut is again tightened. This permits the installation of the hose assembly without the hose being kinked or twisted.*

65. TUBING AND TUBING FITTINGS (fig. 38).

a. Tubing and Tubing Fittings. These are used to connect the air brake devices in the air brake system where the use of hose is not necessary.

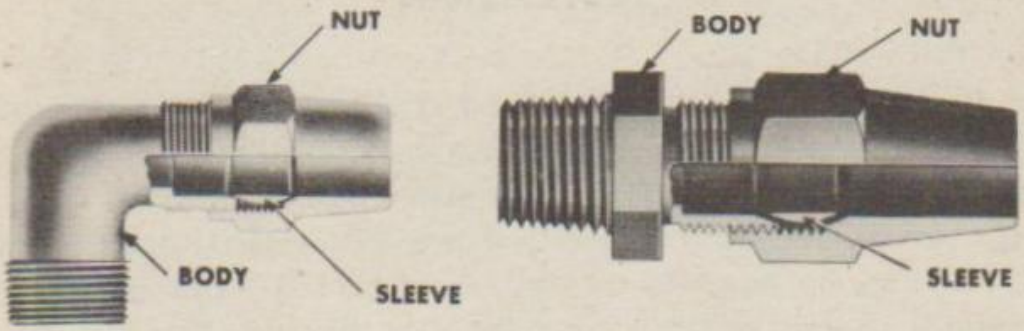

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Figure 38—Tubing Connectors—Sectional Views

b. Operating Tests.

(1) If any evidence is found indicating that a tubing line might be restricted, it should be removed and air blown through it in both directions to be sure the passage through the tubing is clear, and not obstructed in any way.

(2) Inspect tubing for partial restrictions caused by dents or kinks. Replace tubing having dents or kinks.

c. Leakage Tests. With the air brake system fully charged (governor cut out) and brakes applied, coat all tubing lines and fittings with soapsuds to check for leakage. No leakage is permissible. Leakage at a tubing fitting may sometimes be corrected by tightening the tubing fitting nut. If this fails to correct the leakage, the tubing fitting, the tubing, or both, should be replaced. If any leakage is found in the tubing, a new piece of tubing should be installed.

d. Replacement. When replacing tubing lines always be sure to use tubing having the same inside and outside diameter as the piece

being replaced. Cut tubing to required length with a hacksaw or tubing cutter. As the cut is made, make sure the end of the tubing is smooth and that it is cut squarely with the outside wall, and the ends of the tubing are not crimped or partially closed. Ream or file the ends of the tubing if necessary. Blow out tubing with an air line to remove all cuttings and filings. Place nut and sleeve on tubing and put the end of the tubing in the recess in the tubing fitting body. Hold tubing at the bottom of recess and tighten nut to seal joint against leakage. NOTE: *Always use a new sleeve when replacing tubing lines. Tubing fitting nuts and bodies may be used again provided they are in serviceable condition.*

Section XVII

SUSPENSION

66. DESCRIPTION.

a. On models Nos. 400-W, E-14, T-8-D, C-15-935A, GSW-4, 1-ORD, DF-233V, KV-10, and LV-10, the suspension (figs. 39, 41, 42, 43, 44, 45, 46, and 47) is an assembly consisting of springs, spring seats, radius rods, radius rod rear brackets, U-bolts, U-bolt top plates, spring brackets, as well as bolts, nuts, and cotter pins. The trailer frame is carried on the axle through the suspension assembly with the spring brackets, which are attached to the frame,

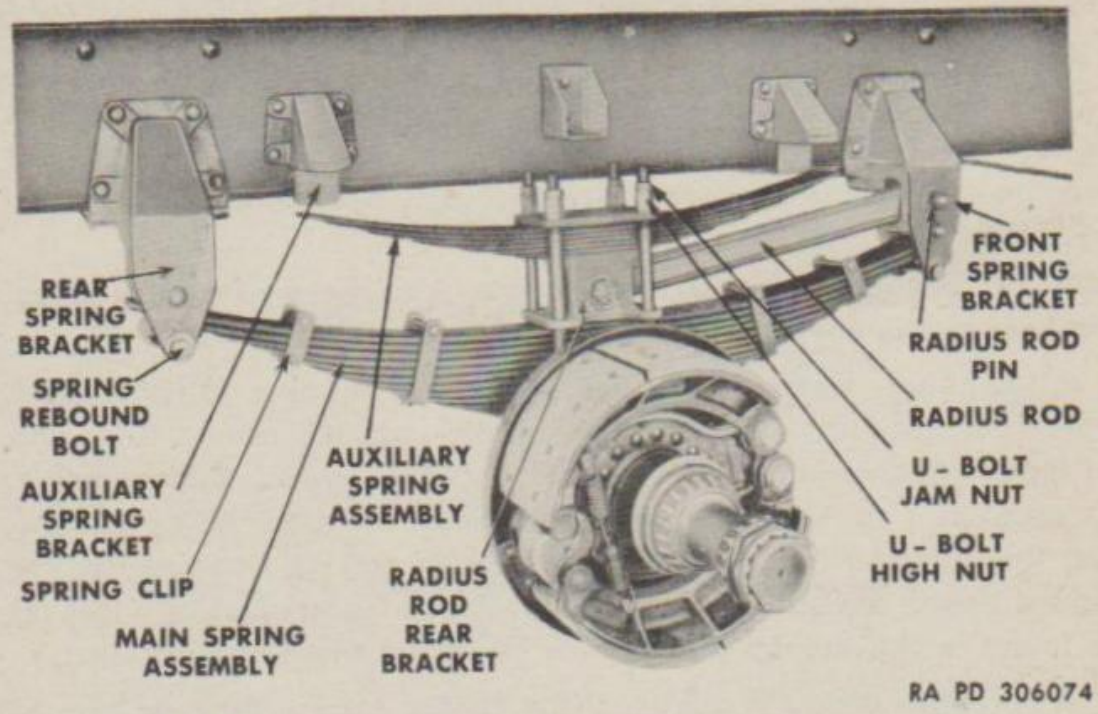


Figure 39—Suspension System (Strick Model 400-W)

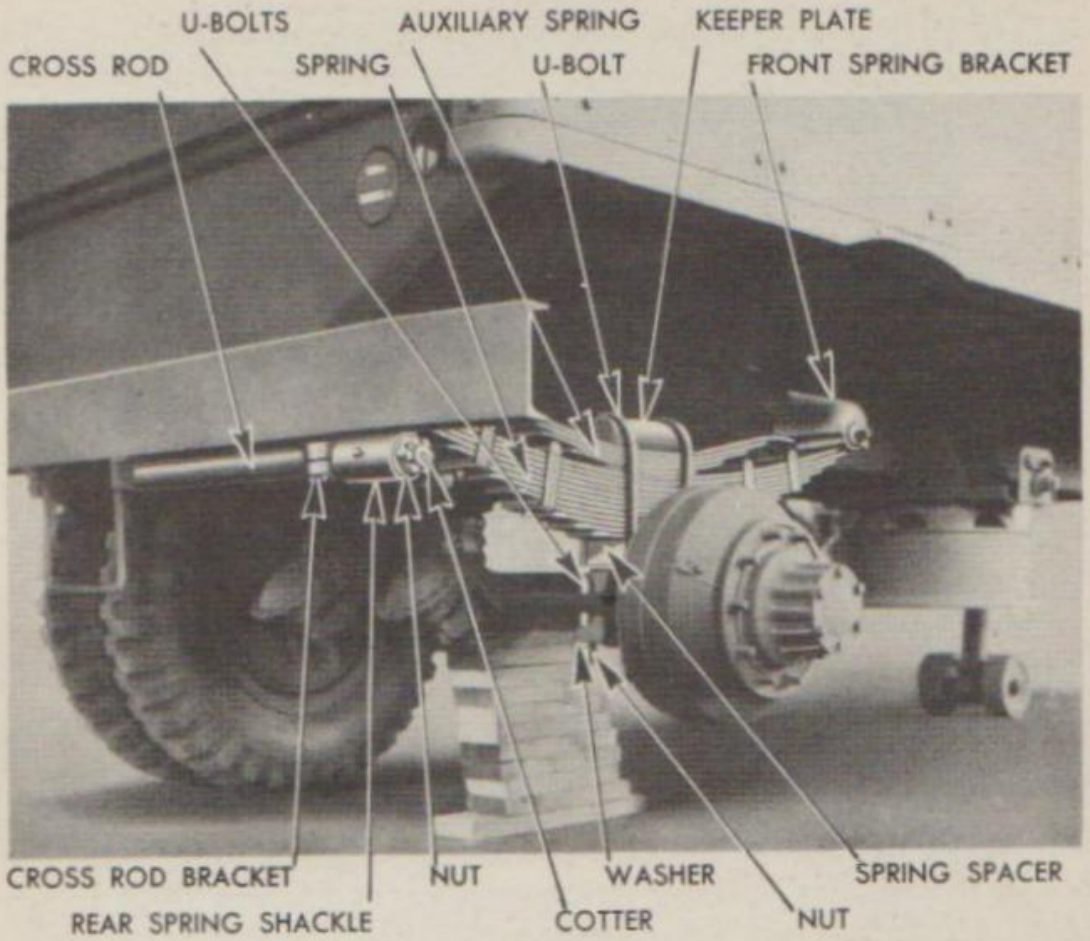


Figure 40—Suspension System (American Bantam Model STV-620)

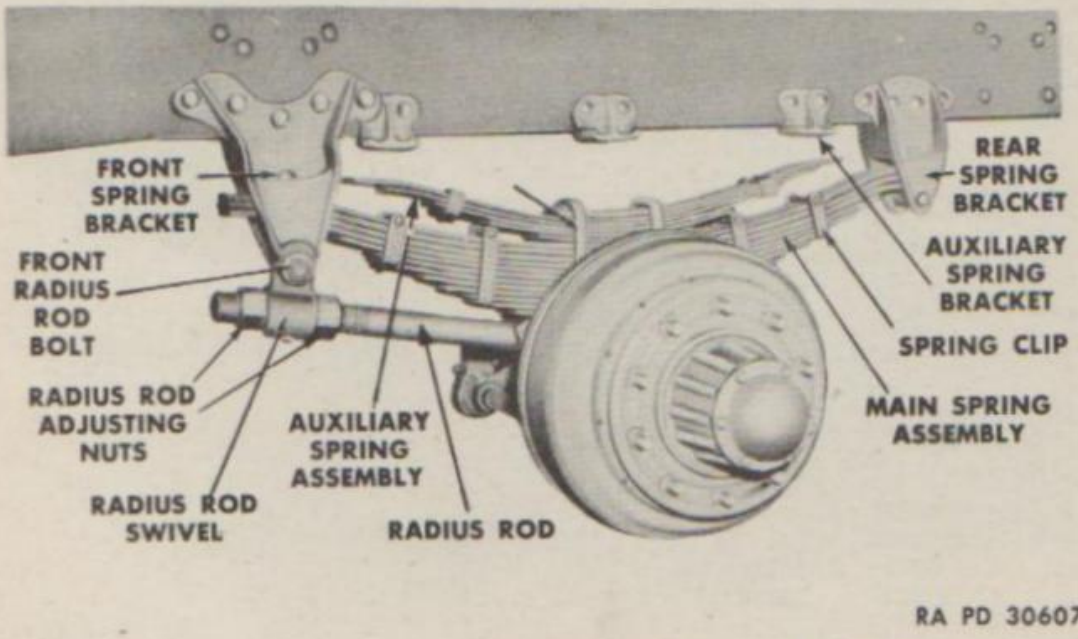


Figure 41—Suspension System (Dorsey Model E-14)

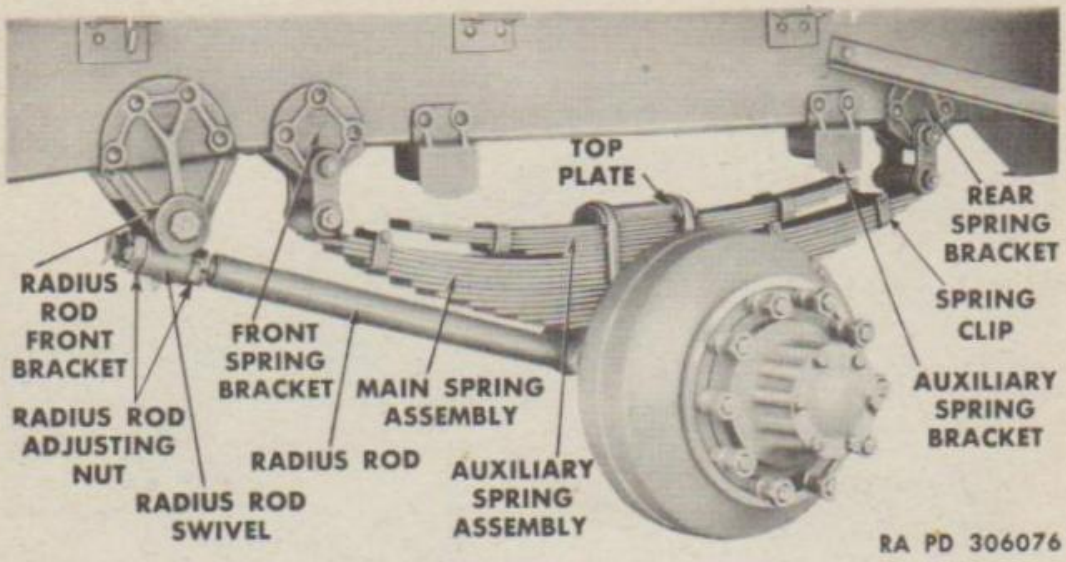


Figure 42—Suspension System (Timpte Model T-8-D and Olson Model KV-10)

riding on the main springs. The radius rods are the positive means for linking trailer frame to axle and thus keeping frame and axle alined. On model No. STV-620 (fig. 40), the suspension is an assembly consisting of spring hangers, auxiliary spring brackets, cross shaft, shackles, springs, spring pins, spring spacers, U-bolt seat, U-bolts and axle. The semitrailer frame is carried on the axle through the suspension assembly. The spring is of the fixed-end type, and no radius rod is used. The axle is alined at the factory, and no provision is made for further adjustment.

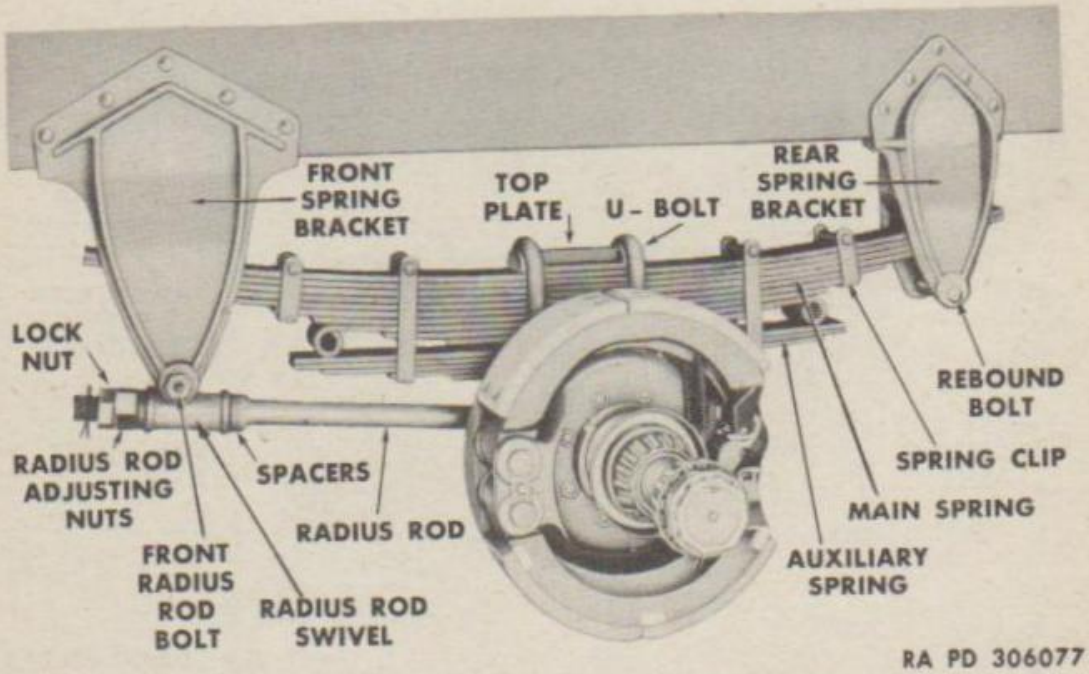


Figure 43—Suspension System (Carter Model C-15-935A)

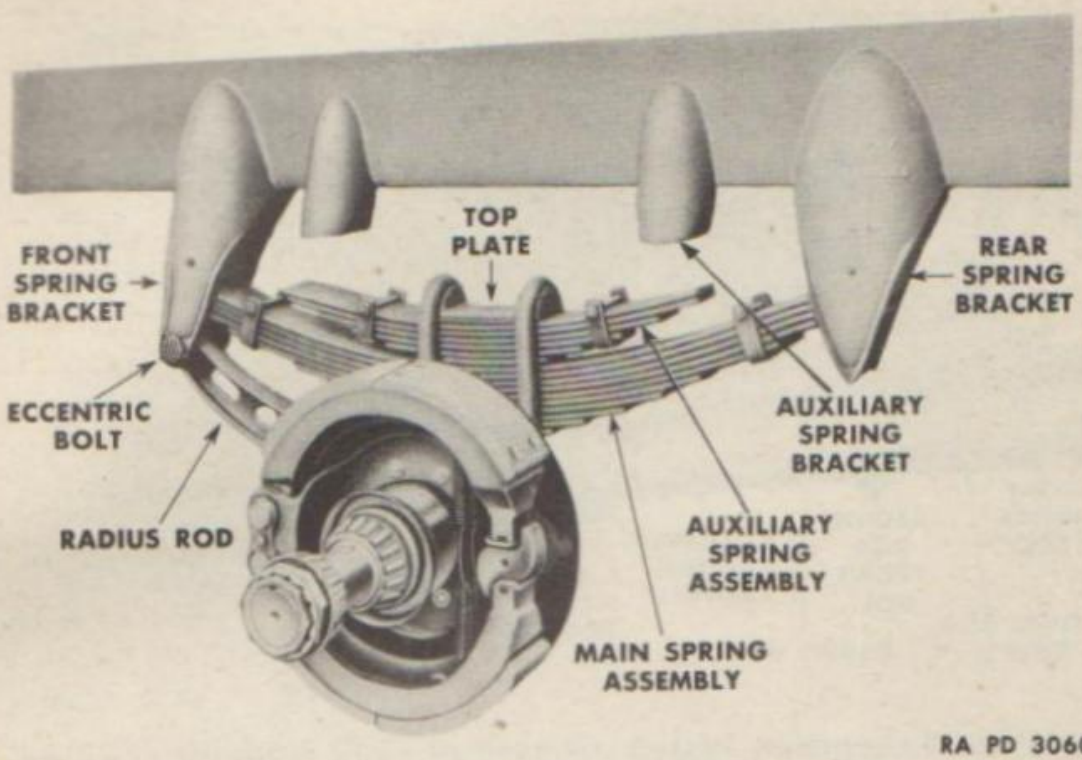


Figure 44—Suspension System (Utility Model GSW-4)

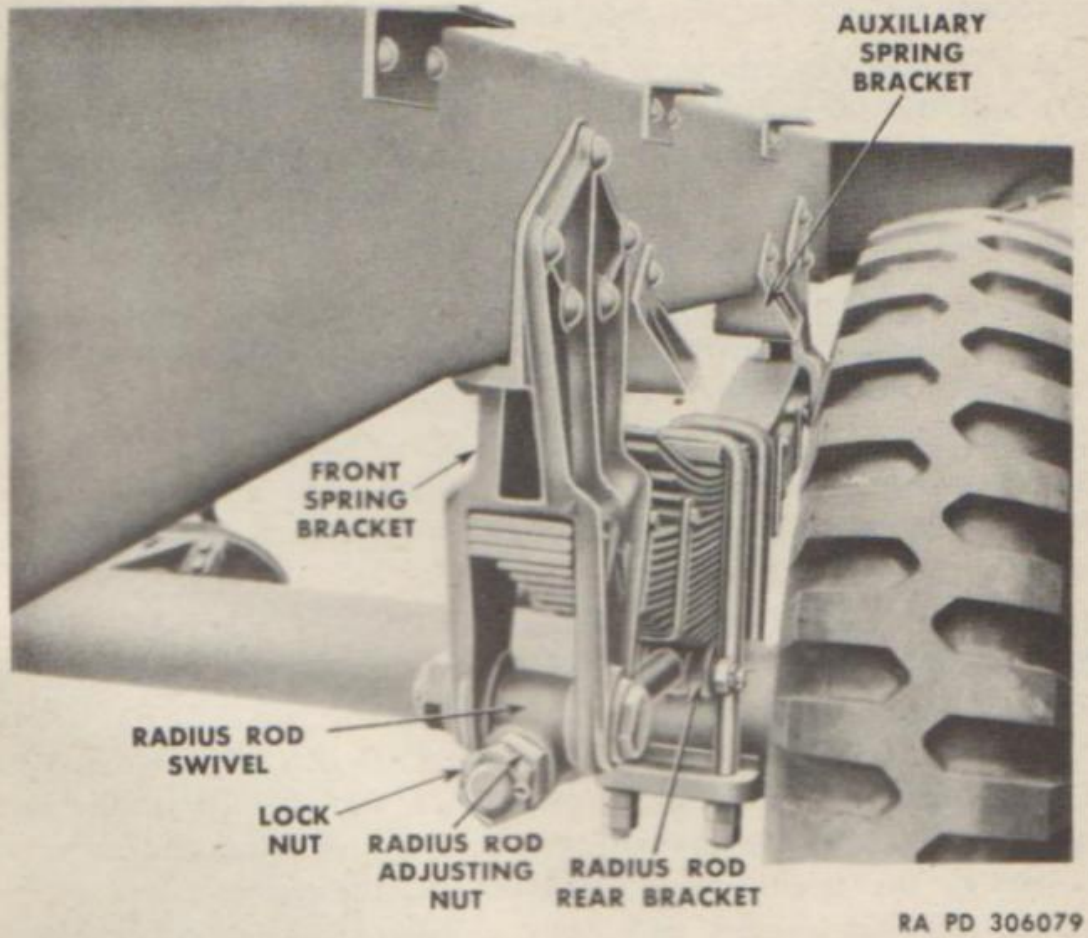


Figure 45—Suspension System (Kentucky Model 1-ORD)

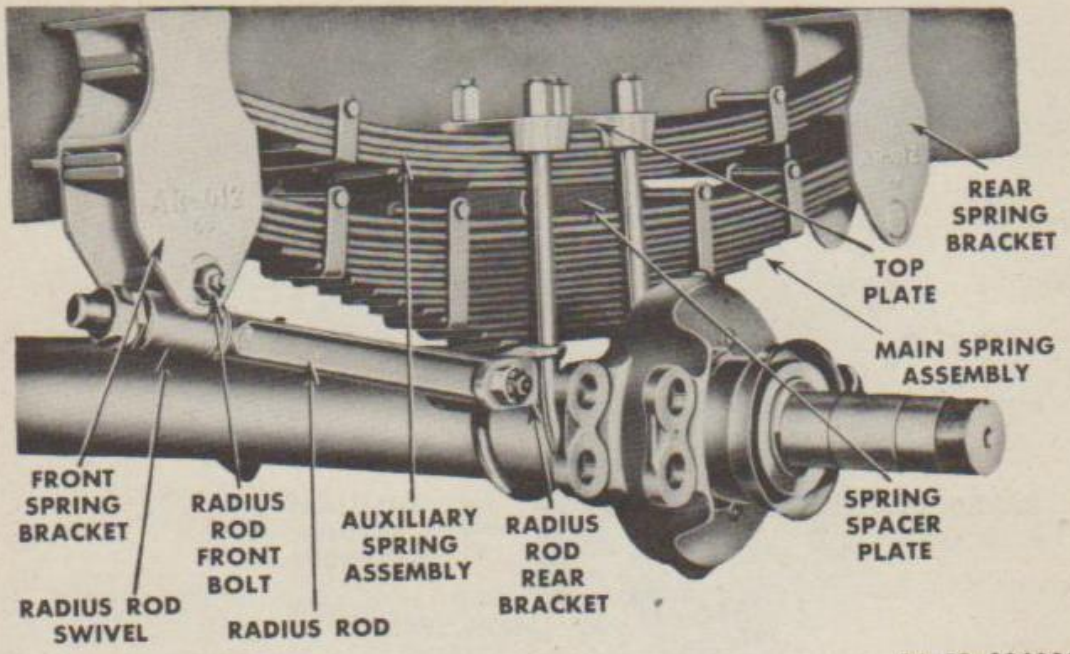


Figure 46—Suspension System (American Body Model DF-233-V)

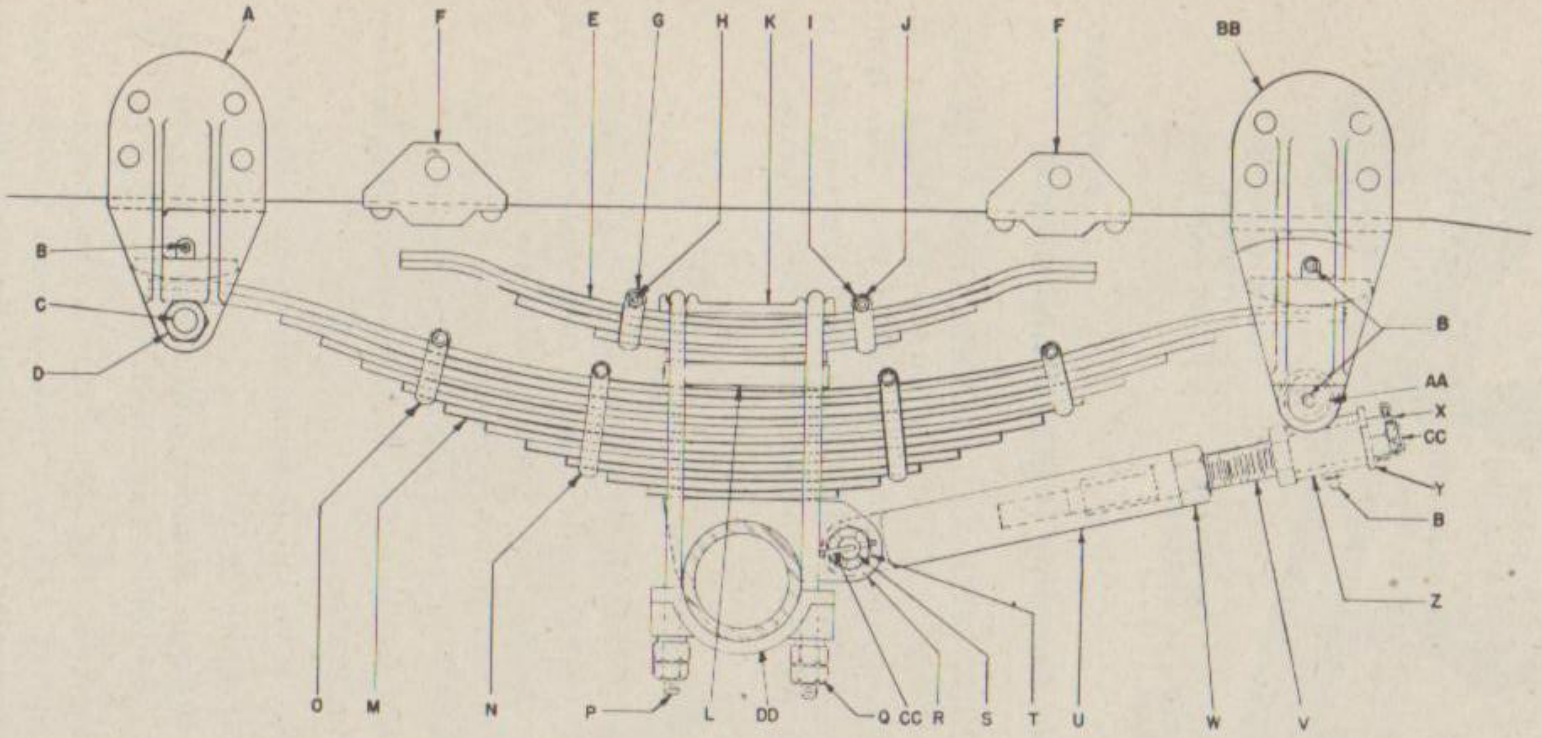
b. Axle (fig. 48). The axle is of seamless tempered steel, tubular in section with forged steel ends, and electrically welded.

c. Springs. Two types of springs are used, the shackle type (fig. 37) and the slipper type (fig. 41). The assembly consists of main spring and auxiliary spring assembled as one unit by the center bolt and spring clips. The top main spring leaf contacts the spring brackets which hold the springs in alinement.

d. Radius Rod. The function of the radius rods is to position the axle and keep it in proper alinement, and also to transmit the braking effort to the trailer frame.

(1) STRICK CO. MODEL 400-W. The radius rods used on this model are the nonadjustable type. The front end is mounted to the front spring bracket and the rear end to the radius rod rear bracket with bolts, nuts and cotters.

(2) TIMPTE BROS. MODEL T-8-D, OLSON MFG. CO. MODELS KV-10 AND LV-10, DORSEY BROS. MODEL E-14, CARTER MFG. CO. MODEL C-15-935A, AMERICAN BODY AND TRAILER CO. MODEL DF-233-V, AND KENTUCKY MFG. CO. MODEL 1-ORD (figs. 42, 47, 41, 43, and 46). The radius rods used in these models are adjustable. The rod front and swivel is bolted to the front spring brackets, and the rod rear end to the radius rod rear bracket, with bolts, sleeves, nuts, and cotter pins or washers.



Key	Item	Piece Mark	Group
A	HANGER	OL-2704	1509C
B	FITTING	AD-1610	1509C
C	SCREW, ⅞ x 5½	(BCAX3.1H)	1509C
D	NUT	BBAX2D	1509C
E	SPRING, assembly	OL-H2712	1509C
F	PAD	OL-2705	1509C
G	CLIP	OL-2914	1509C
H	SCREW	BCAX3.1Q	1509C
I	SPACER	OL-2909	1509C
J	NUT	BBAX1C	1509C

Key	Item	Piece Mark	Group
K	KEEPER	OL-2707	1509C
L	PLATE	OL-2749	1509C
M	SPRING, assembly	OL-M-2712	1509C
N	CLIP	OL-2906	1509C
O	CLIP	OL-2905	1509C
P	U-BOLT	OL-2749	1509C
Q	NUT	BBBX2C	1509C
R	SEAT	KY-P-3441-L	1509B
S	PIN	KY-P-3441-R	1509B
T	NUT	BBFX2D	1509B

Key	Item	Piece Mark	Group
U	SLEEVE	OL-2708	1509B
V	BOLT	OL-2709	1509B
W	NUT	BBAX3B	1509B
X	NUT	BBFX2E	1509B
Y	WASHER	OL-2775	1509B
Z	SWIVEL	KY-P-2950	1509B
AA	PIN	OL-2758	1509B
BB	HANGER	OL-2703	1509C
CC	PIN	BFAX1DT	1509B
DD	KEEPER	OL-2706	1509C

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Figure 47—Suspension System (Olson Model LV-10)

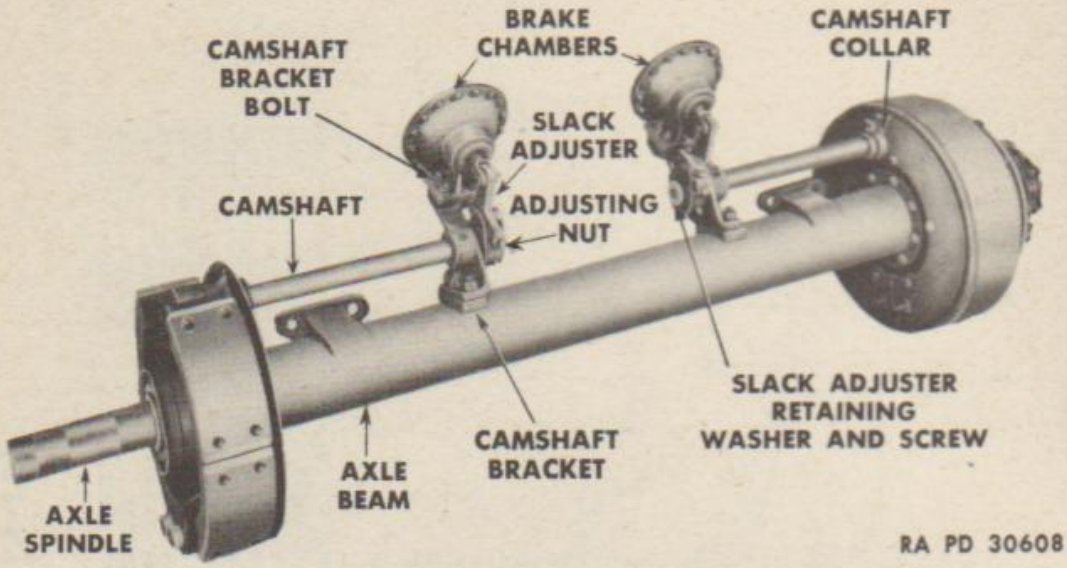

Figure 48—Axle Assembly (Utility Model GSW-4)

(3) UTILITY TRAILER MFG. CO. MODEL GSW-4 (fig. 48). The radius rods used in this model are adjustable by means of an eccentric adjustable bolt, sleeves, nut, and cotter pins. The front end is mounted to the front spring bracket, and the rear end is mounted to the radius rod rear bracket with a bolt, sleeves, nut, and cotter pin.

67. AXLE ALINEMENT (fig. 49).

a. On American Bantam Model STV-620, *notify higher authority* if measurements disclose that the axle is not in proper alinement with center of kingpin when springs and shackle bolts are in good condition. If replacement of radius rods does not correct alinement of axle on Strick Co. Model 400-W, *notify higher authority*.

b. Level Trailer. Pull trailer onto a level surface, lower landing gear, and disconnect from tractor.

c. Remove Hub Cap. Remove retaining screws and lift off hub cap to expose center point in end of axle.

d. Remove Outer Wheels. Remove outer wheels only, as outlined in paragraph 37. Lower vehicle to ground.

e. Check Axle Alinement (fig. 49). Drop a plumb line from center point of each end of axle and make a mark on the floor directly under each center point. Drop a plumb line from the center point of the kingpin and make a mark. Measure the distance "A" and "B" of the points established on the floor, with a measuring tape. Distances "A" and "B" must be equal or within ⅛ inch of

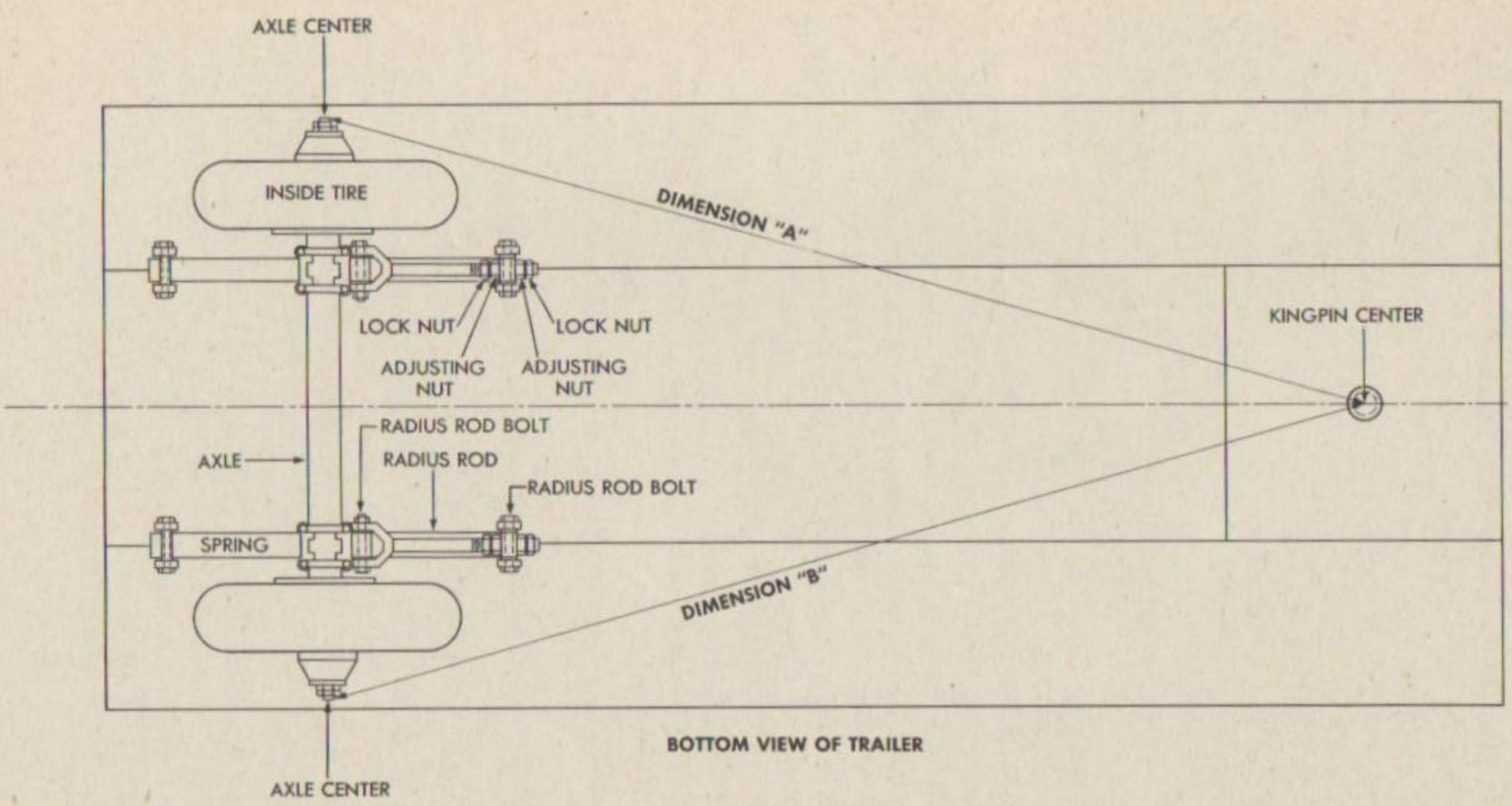

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Figure 49—Axle Alining Diagram

being equal. The floor or ground must be level for an accurate check. On Model STV-620 the dimension (A) on the right side of the trailer should be not less than ⅛ inch nor more than ¼ inch shorter than dimension (B) on the left side.

f. Adjust Axle Alinement.

(1) TIMPTE BROS. MODEL T-8-D, OLSON MFG. CO. MODELS KV-10 AND LV-10, DORSEY BROS. MODEL E-14, AND KENTUCKY MFG. CO. MODEL 1-ORD (figs. 42, 47, 41, and 45). Remove the adjusting nut cotter pin or loosen jam nut. With a large open-end wrench release the tension on the rear nut if the axle is to be moved forward, or on the front nut if it is to be moved backward. Using an open-end wrench on the opposite nut, draw the axle forward, or backward, as required. Install the cotter pin or tighten jam nut. Draw up the opposite nut until it is snug, then back off ⅙ turn and lock with cotter pin or jam nut.

(2) AMERICAN BODY AND TRAILER CO. MODEL DF-233-V AND CARTER MFG. CO. MODEL C-15-935A (figs. 46 and 43). Remove bolt from front spring bracket thereby releasing radius rod swivel and radius rod. Remove the two nuts from front end of radius rod. Pull off shims and swivel, and add, or reduce, number of shims to rear of swivel as required. Install swivel on radius rod, remaining shims, and secure with nuts and cotter pin if present.

(3) UTILITY TRAILER MFG. CO. MODEL GSW-4 (fig. 48). The alinement on this model is accomplished by rotating the eccentric bolt on the front end of the radius rod either backward or forward as required.

g. Install Hub Cap. Position hub cap and secure with retaining screws.

h. Install Outer Wheels. Proceed as outlined in paragraph 31.

68. RADIUS ROD REMOVAL.

a. Strick Co. Model 400-W (fig. 39). Lower landing gear to ground. Raise trailer frame high enough to free springs from bearing on the spring brackets. Open drain cock to release air from reservoir and disconnect air lines from brake chambers. Remove radius rod pins from spring brackets and remove the spring rebound bolts from both spring brackets. Roll the entire axle and spring assembly backward, gaining enough clearance for radius rods to clear front spring brackets. Raise trailer frame sufficiently to permit entire assembly to be rolled out from underneath trailer. Remove radius rod pin from radius rod rear bracket and pull out radius rod.

b. All Other Models. Remove cotter pins, nuts, and washers from radius rod bolts in front spring brackets and radius rod rear brackets, drive out bolts, and remove radius rod assemblies.

69. RADIUS ROD INSTALLATION.

a. Strick Co. Model 400-W (fig. 39). Position radius rod into radius rod rear bracket underneath auxiliary spring, drive in radius rod pin, and secure with nut and cotter pin. Roll entire axle and spring assembly into position underneath trailer, lower frame sufficiently to allow front end of radius rods to be inserted into front spring brackets. Drive radius rod pins into front spring brackets and secure with nuts and cotter pins. Replace rebound bolts into both spring brackets and secure with nuts and cotter pins. Lower rear end of trailer to normal position, connect air hose to brake chambers and close drain cock on reservoir to reestablish air.

b. All Other Models. Place radius rod in position so that hole in rear end lines up with hole in rear bracket. Drive in bolt and secure with nut and cotter pin. Position radius rod in front bracket, install bolt and secure with nut and cotter pin. Adjust axle alinement (par. 67).

70. SPRING ASSEMBLY REMOVAL.

a. Remove Spring Assembly. Lower landing gear. Raise trailer frame high enough to free springs from bearing on the spring brackets. Open drain cock to release air from reservoir and disconnect air hose from brake chambers.

(1) STRICK CO. MODEL 400-W (fig. 39). Remove the radius rod pin from the front spring bracket and the spring rebound bolts from both spring brackets. Roll out entire axle, wheel, and suspension assembly from underneath trailer. Remove the four U-bolt jam nuts and high nuts. Pull off U-bolt top plate, auxiliary spring and radius rod rear bracket from U-bolts and remove main spring from spring seat.

(2) KENTUCKY MFG. CO. MODEL 1-ORD, UTILITY TRAILER MFG. CO. MODEL GSW-4, CARTER MFG. CO. MODEL C-15-935A, AND DORSEY BROS. MODEL E-14 (figs. 45, 48, 43, and 41). Remove U-bolt nuts and pull up U-bolts as far as possible. Remove spring top plate. Slide spring assembly forward until rear end is free of spring bracket. Tilt rear end and pull out from underneath trailer.

(3) AMERICAN BODY AND TRAILER CO. MODEL DF-233-V (fig. 46). Remove U-bolt nuts and lock washers. Remove top plate and U-bolts. Slide auxiliary spring forward to clear rear bracket and remove spring. Remove spring spacer and remove main spring in the same manner as auxiliary spring.

(4) TIMPTE BROS. MODEL T-8-D AND OLSON MFG. CO. MODELS KV-10 AND LV-10 (figs. 42 and 47). Remove the U-bolt nuts and lock washers. Remove lower axle clamp. Remove cotter pins from the lower shackle bolts and remove shackle bolt nuts. With a flat-nose punch, drive out lower shackle bolts and remove the spring.

(5) AMERICAN BANTAM CAR CO. MODEL STV-620 (figs. 40 and 50). Remove four U-bolt nuts and lock washers. Tap the U-bolts up, using care not to damage the threads. Place a bar between the U-bolt seat and the U-bolts, prying U-bolts out of the spring seat. Remove the U-bolts and U-bolt seat. Remove the cotter pin and nut from the spring front bracket stud, and pull stud out (fig. 50). Remove the grease caps (one outside and one inside the frame). Drive spring pin out of hanger by driving from the inside

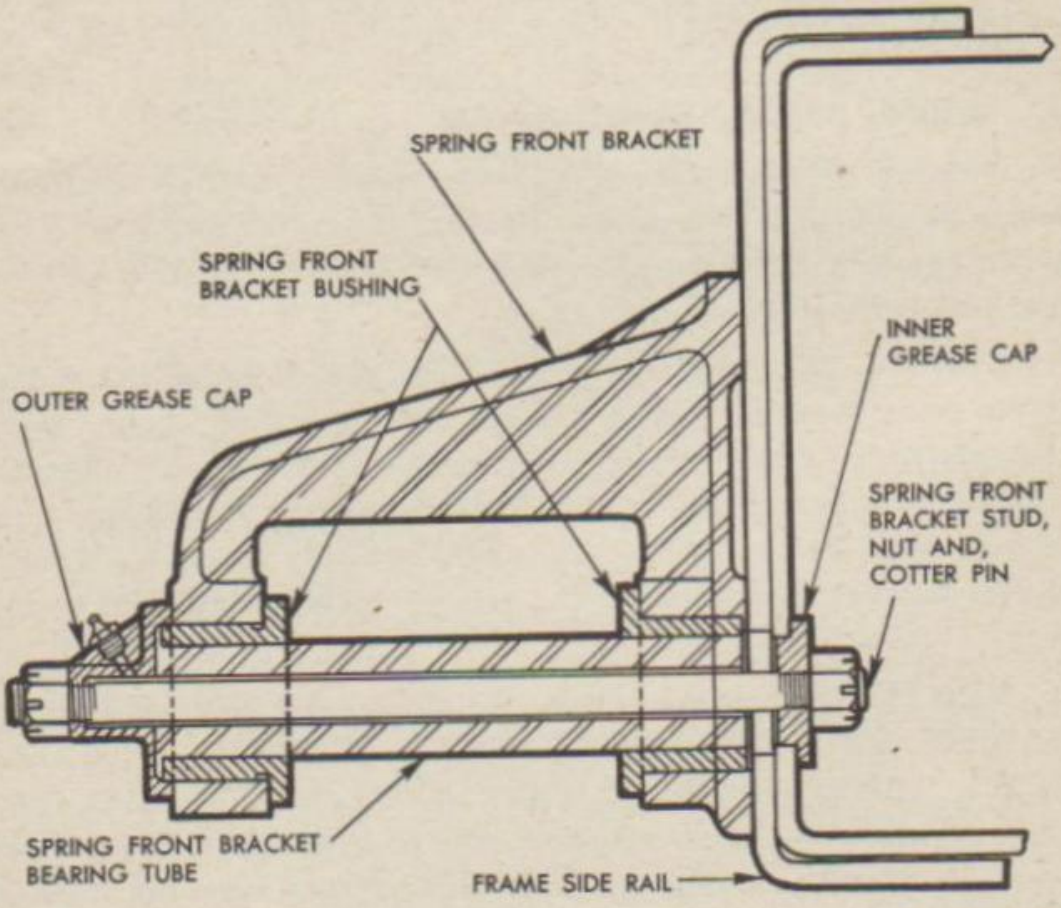

Figure 50—Details of Spring Front Bracket

of the frame. Lift the spring off the spring seat and allow spring to drop forward and down to turn the rear shackle to a position where shackle pin can be driven out. Remove the nuts and washers from the shackle pin retaining bolts and remove the bolts. Drive the shackle pin out and tap the shackle toward the rear of the trailer until the spring is free. Remove spring from under trailer.

71. SPRING ASSEMBLY INSTALLATION.

a. Strick Co. Model 400-W (fig. 39). Position main spring on spring seat with spring center bolt head in spring seat recess. Slide radius rod rear bracket (with radius rod attached) auxiliary spring and top plate onto U-bolts. Replace U-bolt high nuts and tighten. Replace U-bolt jam nuts and tighten. Roll complete assembly into position underneath trailer with radius rods pointing toward front. Raise assembly and move slightly backward, gaining enough clearance to permit radius rods to be inserted into slots in front spring brackets. Raise assembly until top leaf of main spring contacts spring brackets. Insert spring rebound bolts into holes in lugs of spring brackets, and secure with nut and cotter pin. Replace front radius rod pin and secure with nut and cotter pin. Replace air hose on brake chambers and close drain cock.

b. Kentucky Mfg. Co. Model 1-ORD, Utility Trailer Mfg. Co. GSW-4, Carter Mfg. Co. Model C-15-935A, and Dorsey Bros. Model E-14 (figs. 45, 48, 43, and 41). Position top plate and U-bolts on spring assembly. Slide front end of spring assembly into front spring bracket, and position assembly on rear radius rod bracket with center bolt head resting in recess. Replace axle lower clamp, and secure with nuts.

c. American Body and Trailer Co. Model DF-233-V (fig. 46). Position main spring assembly on rear radius rod bracket with center bolt head resting in spring seat recess. Replace U-bolts through holes in spring seat lugs. Place spring spacer plate on top of main spring assembly, and replace auxiliary spring with center bolt head resting in recess of spacer plate. Drive U-bolts through, replace top plate, and secure with nuts and lock washers.

d. Timpte Bros. Model T-8-D and Olson Mfg. Co. Models KV-10 and LV-10 (figs. 42 and 47). Position spring on axle, taking care to place the spring so that the end, which is equipped with two spring clips, is toward the rear of the trailer, with the spring center bolt head resting in recess of rear radius rod bracket. Install U-bolt and axle lower clamp, secure with nuts and lock washers. Replace

lower shackle bolts and secure with nuts and cotter pins. CAUTION: *Shackle bolt nuts must not be drawn tight, as this will bind links against sides of spring. A minimum clearance of 0.005 must be provided.*

e. American Bantam Car Co. Model STV-620 (fig. 40). Aline spring eye with rear shackle, with the spring clip bolt nuts toward the tire, and tap the shackle over the spring eye. Remove the lubrication fitting from the shackle pin, lubricate pin (par. 19) and place pin in shackle with the slots in the pin in alinement with the cap screw holes in shackle. Place a block of wood over the pin and drive pin into shackle. CAUTION: *Do not strike shackle pin with a steel hammer. The pins are of a hardened steel, and chips may fly, causing injury.* Install the pinch bolts of rear shackle with heads toward rear of vehicle. Install lock washer and nut and tighten. Install lubrication fitting, swing spring forward and up until shackle is in an upright position with the spring end above the shackle cross rod. Place spring on seat, making certain that the bolt is fully down into the recess in the spring spacer. Aline spring eye with hole in spring front bracket (fig. 50), lubricate pin (par. 19) and drive pin into hanger. Install the grease caps, stud, nut and cotter. Place the U-bolt seat on the spring, install the U-bolts, lock washers and nuts, and tighten.

72. SPRING SHACKLE CROSS ROD (AMERICAN BANTAM MODEL STV-620) (fig. 40).

a. Removal. Remove eight cap screws and lock washers from cross rod brackets, and remove bracket caps. Raise the rear of the trailer, and remove the shackle pin retainer bolts, nuts, and lock washers. Drive out the pins, and slide the shackles off the spring. Remove the cross rod assembly from under the trailer.

b. Disassembly. Remove the cotter pin, nut, and washer from the cross shaft and slide off spring shackle, spring shackle spacer, and washer.

c. Assembly. Slide washer and spring shackle spacer on cross shaft. Slide spring shackle over spacer. Install washer and nut. NOTE: *Do not install cotter pin until cross shaft is placed in position on trailer.*

d. Installation. Place shackles on springs and install spring pins and retaining bolts. Lower trailer until cross shaft brackets rest on cross shaft. Install cross shaft bracket caps, lock washers, and bolts. Tighten cross shaft nut and insert cotter pin.

73. AXLE REMOVAL (ALL MODELS EXCEPT STV-620).

a. Raise Rear End of Trailer. Lower landing gear to ground. Jack up the trailer frame and axle assembly until the tires are clear of the ground. Place blocks or wooden horse under rear of frame to support trailer weight.

b. Remove Air Hose. Open drain cock to release air from reservoir and disconnect air lines from brake chambers.

c. Remove Wheel and Tire Assembly. With a wheel bolt nut wrench remove the 10 special hexagon outer nuts. These are marked "R" on the right side of the trailer and should be removed by turning counterclockwise; or "L" on the left side, to be removed by turning clockwise. The outer wheel and tire may now be removed. Reverse the wrench and remove the 10 square inner stud cap nuts (these are also marked "R" and "L"). This allows the inner wheel and tire to be removed.

d. Remove Axle and Spring Assembly. Lower jack enough to free springs from bearing on the spring brackets, leaving trailer frame supported on blocks or horse.

(1) STRICK CO. MODEL 400-W (fig. 39). Remove cotter pin and nut from front radius rod pin. Drive out radius rod pin. Remove cotter pins and nuts from spring rebound bolts and pull out bolts. Roll entire assembly from under trailer.

(2) TIMPTE BROS. MODEL T-8-D AND OLSON MFG. CO. MODELS KV-10 AND LV-10 (figs. 42 and 47). Remove cotter pins from the lower shackle bolts and remove shackle bolt nuts. With a flat-nose punch drive out lower shackle bolts. Remove radius rod bolt, cotter pin, and nut and drive out radius rod bolt from front radius rod bracket. Roll entire assembly out from under trailer.

(3) DORSEY BROS. MODEL E-14, UTILITY TRAILER MFG. CO. MODEL GSW-4, AMERICAN BODY AND TRAILER CO. MODEL DF-233-V, CARTER MFG. CO. MODEL C-15-935A, AND KENTUCKY MFG. CO. MODEL 1-ORD (figs. 41, 48, 46, 43, and 45). Remove radius rod bolt, cotter pin and nut and drive out radius rod bolt from front spring bracket. Remove rear rebound bolts where present. Work assemblies free from brackets and roll out from under trailer.

e. Remove Springs from Axle.

(1) STRICK CO. MODEL 400-W (fig. 39). Remove the eight U-bolt jam nuts and U-bolt high nuts. Remove U-bolt top plates, auxiliary springs, and radius rod rear bracket with radius rods

attached, and lift main springs from spring seats. Remove U-bolts from axle.

(2) ALL OTHER MODELS (EXCEPT STV-620). Remove U-bolt nuts, take off axle clamp where present, remove top plate, pull out U-bolts and lift spring assembly off spring seat.

74. AXLE INSTALLATION (ALL MODELS EXCEPT STV-620).

a. Install Springs on Axle.

(1) STRICK CO. MODEL 400-W (fig. 39). Position U-bolts on axle. Place main springs on spring seats with spring center bolt head in spring seat recess. Slide radius rod rear bracket with radius rods attached, auxiliary springs and top plates onto U-bolts. NOTE: *Be sure that radius rods point in opposite direction to brake chamber mounting brackets.* Replace U-bolt high nuts, and tighten. Replace U-bolt jam nuts and tighten.

(2) ALL OTHER MODELS. Place spring assembly on rear radius rod bracket where both main and auxiliary springs are held together without spring spacer plate. On models where spacer plate is present, place main spring on spring seat with center bolt head in spring seat recess. Replace lower axle clamp where present and replace U-bolts. On models where main and auxiliary springs are separate units replace spacer plate on main spring. Replace auxiliary spring and top plate. Secure with nuts and lock washers where present.

b. Position Axle and Spring Assembly. Place assembly on jack, and roll into position underneath trailer, with radius rods pointing toward front.

(1) STRICK CO. MODEL 400-W (fig. 39). Raise assembly, and move slightly backward, gaining enough clearance to permit radius rods to be inserted into slots in front spring brackets. Raise assembly until top leaf of main spring contacts spring brackets. Insert spring rebound bolts into holes in lugs of spring brackets, and secure with nuts and cotter pins. Replace front radius rod pins, and secure with nuts and cotters.

(2) TIMPTE BROS. MODEL T-8-D AND OLSON MFG. CO. MODELS KV-10 AND LV-10 (figs. 42 and 47). Raise assembly, replace lower shackle bolts, and secure with nuts and cotter pins. CAUTION: *Shackle bolt nuts must not be drawn tight, as this will bind links against sides of spring. A minimum clearance of 0.005 must be provided. Install radius rod and secure with nuts and cotter pins.*

(3) ALL OTHER MODELS (EXCEPT STV-620). Raise assembly and slide springs into brackets. Replace radius rods and secure with nuts and cotter pins.

c. Install Wheel and Tire Assemblies. Proceed as outlined in paragraph 39.

d. Install Air Hose. Connect air hose to brake chambers. Close drain cock on air reservoir.

e. Aline Axle. Proceed as outlined in paragraph 67.

75. AXLE REPLACEMENT (MODEL STV-620) (fig. 40).

a. Removal. Lower landing gear. Raise trailer frame so that rear wheels of trailer clear ground about two inches. Open drain cock of air reservoir and disconnect air hose from brake chambers. Remove four U-bolt nuts and lock washers from each spring. Tap U-bolts up far enough to clear axle. Roll axle away from trailer. Support axle and remove wheel and tire assemblies (par. 73 *c*).

b. Installation. Install wheel and tire assemblies on axle (par. 73 *c*). Position axle under springs of trailer. Secure axle to springs of trailer with U-bolts, lock washers, and nuts. Tighten nuts. Connect air hoses to brake chambers and remove support under trailer frame.

Section XVIII

LANDING GEAR

76. DESCRIPTION (figs. 51, 52, 53, and 54).

a. All landing gear used on these various model trailers are either of the American Bantam, Holland, Austin, or Dayton make, (figs. 1, 51, 52, 53, and 54). All types are of the horizontal type, retractable, and are hand-operated by a hand crank, except the one used on model STV-620. The landing gear used on the semitrailer model STV-620 is of the rigid type, with two pivot-mounted wheels on each leg to accommodate uneven ground conditions.

77. REMOVAL (RETRACTABLE TYPE) (figs. 51, 52, and 53).

a. Remove Back Braces. Remove nuts, washers, and bolts from screw nut assembly. Remove cotter pins and pins from lower legs and remove braces.

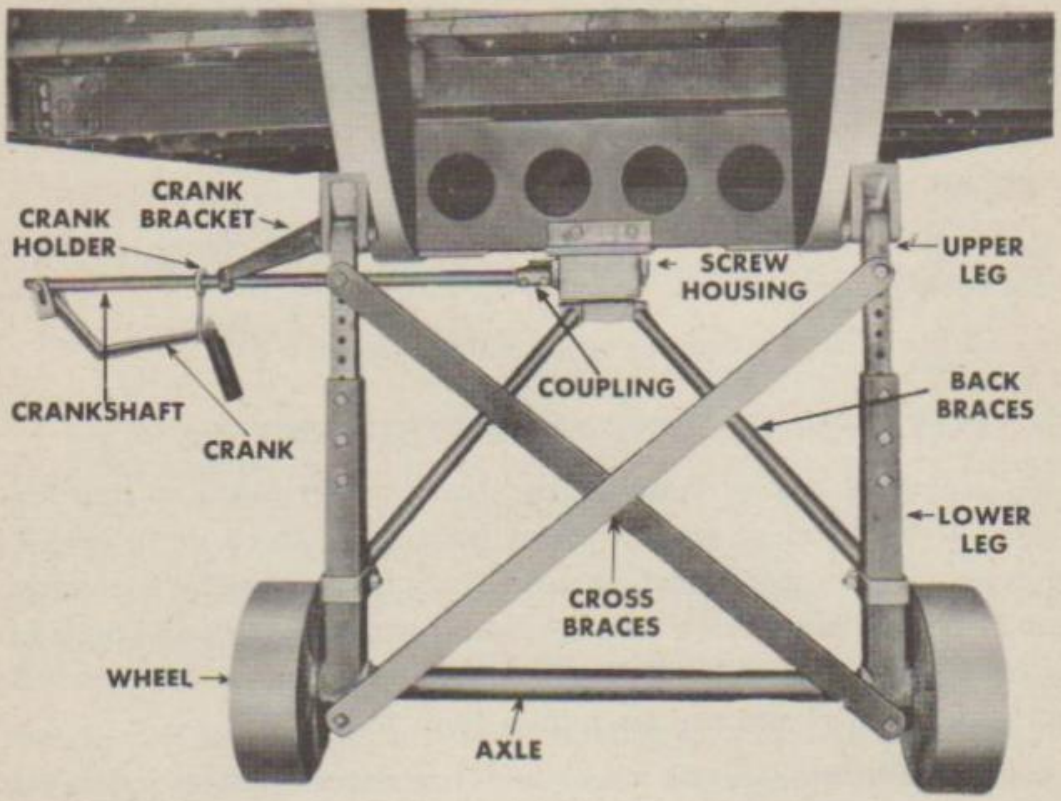

Figure 51—Landing Gear (Dayton)

b. Remove Legs from Frame Brackets. Remove cotter pins from each bracket pin and tap out pins. Remove landing gear assembly from the brackets.

c. Remove Upper Leg from Lower Leg. Remove three nuts, washers, and bolts holding leg in position. Remove legs.

d. Remove Wheels. Remove bolts, nuts, and lock washers from hub caps, holding bolt head with wrench. Slide wheels from axle.

e. Remove Axle. Loosen axle clamping bolts at the lower end of the leg and drive out axle.

f. Remove Cross Braces. Remove nuts, lock washers, and bolts, attaching cross braces to legs, and remove braces. NOTE: *Cross braces may be separated by removing center bolt.*

78. MAINTENANCE AND ADJUSTMENTS.

a. Clean all parts in dry-cleaning solvent.

b. Inspect all parts for fractures. Check back braces, cross braces, leg assemblies, and axle for distortion. Replace damaged parts. Replace all worn bracket pins. Inspect threads on bolts and nuts, and replace if stripped or burred.

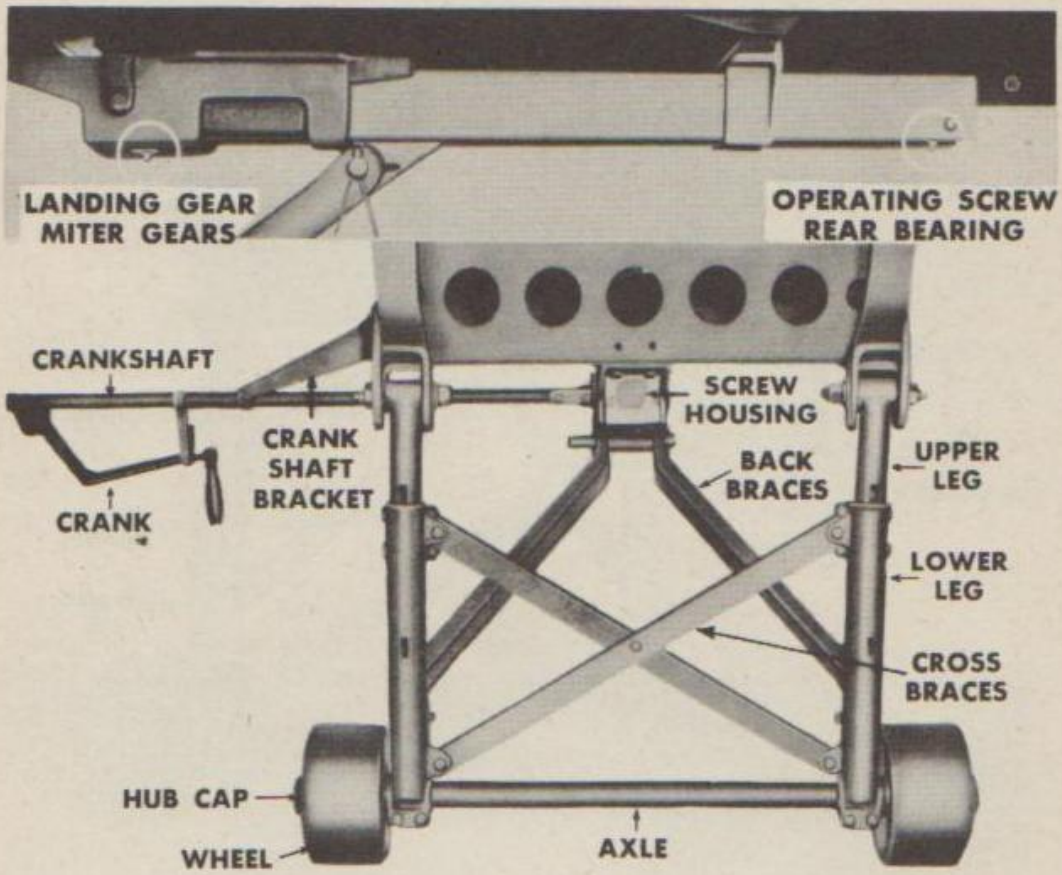

Figure 52—Landing Gear (Holland)

c. The landing gear legs must be adjusted for length so that they are not more than 2 inches from the ground when the tractor-truck and trailer are coupled on level ground. This adjustment is made by removing the leg adjusting bolts and replacing them into holes which give the proper adjustment. To help avoid failure of the back braces of the Dayton landing gear, adjust their length to have the landing gear legs slightly *forward* of vertical, so the back braces will be in tension when the landing gear is in use.

79. INSTALLATION (RETRACTABLE TYPE) (figs. 51, 52, and 53).

a. Install Cross Braces. Place the cross braces on the legs so that the bolt holes line up, and install bolts, nuts, and lock washers.

NOTE: *Do not tighten cross brace bolts solid until axle has been installed.*

b. Install Axle. Drive axle through the leg clamp bearings so that the axle extends the same distance on each side of the legs. Tighten clamp bolts.

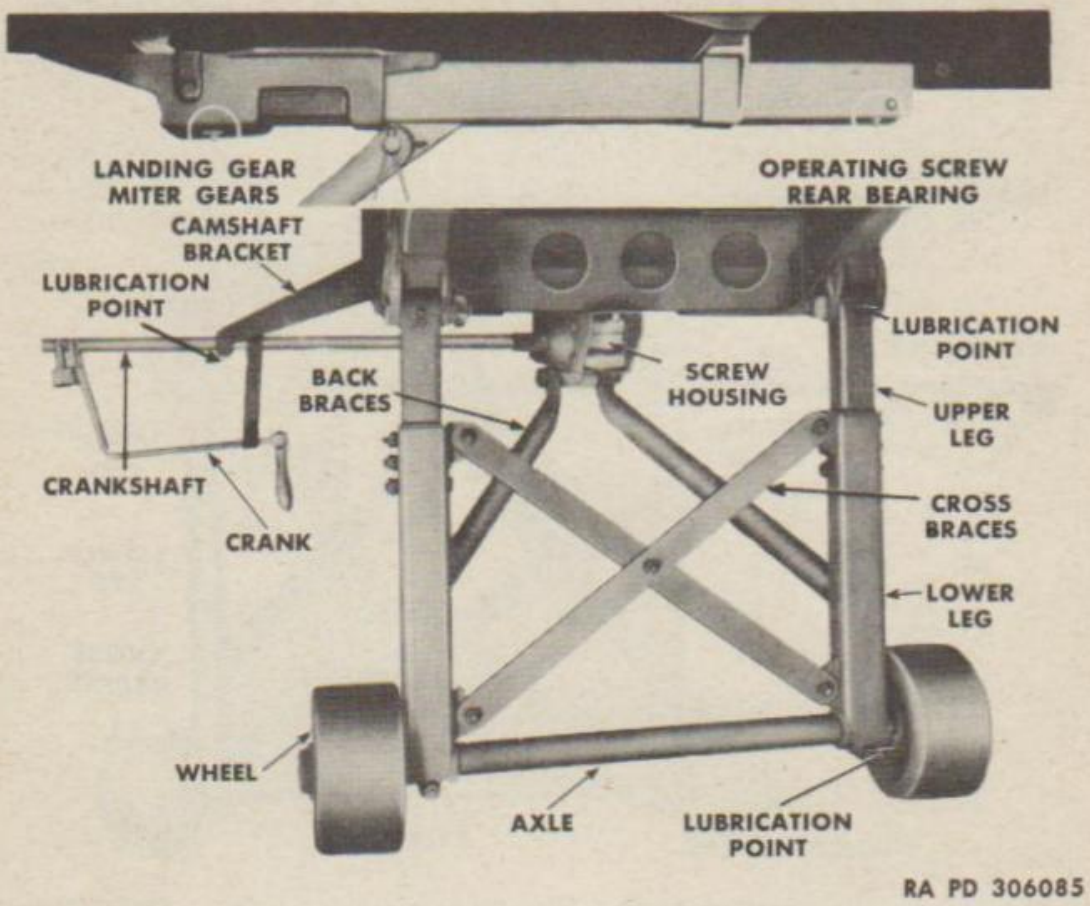

Figure 53—Landing Gear (Austin)

c. Install Leg on Frame Brackets. Position the legs in frame brackets. Insert and tap bracket pin through bracket and leg bearing, and install cotter pins.

d. Install Upper Leg on Lower Leg. Position upper leg into lower leg. Insert bolts. Install nuts and tighten.

e. Install Wheels. Slide wheels on axle. Position hub cap on axle so that bolt holes line up, and install bolts, nuts, and lock washers.

f. Install Back Braces. Position back braces on screw nut assembly, and install bolt, washer, and two nuts. Position lower brace to lower leg. Insert pin. Install cotter pin. Adjust length (par. 78).

80. RIGHT-HAND LANDING GEAR (RIGID TYPE) (fig. 54).

a. Removal (fig. 54). Do not remove any part of the landing gear assemblies unless the semitrailer is coupled to towing vehicle, or properly blocked up at front to prevent the semitrailer from falling.

(1) Remove cap screw and nut from crank and operating shaft. Pull the crank off operating shaft. Remove crank holder.

(2) Remove three cap screws and three lock washers from crank bracket. Pull crank bracket off crank shaft.

(3) Remove two cap screws, nuts, and lock washers from crank shaft coupling. Pull the crank shaft and crank shaft coupling off the bevel gear shaft which protrudes from the frame bracket.

(4) Remove cap screw nut and lock washer from cross shaft tubing. Remove cap screw, nut and lock washer from back brace. Remove cap screw, nut and lock washer from bevel gear shaft tubing. Remove eight cap screws, nuts and lock washers holding the landing gear assembly to frame. Remove the assembly.

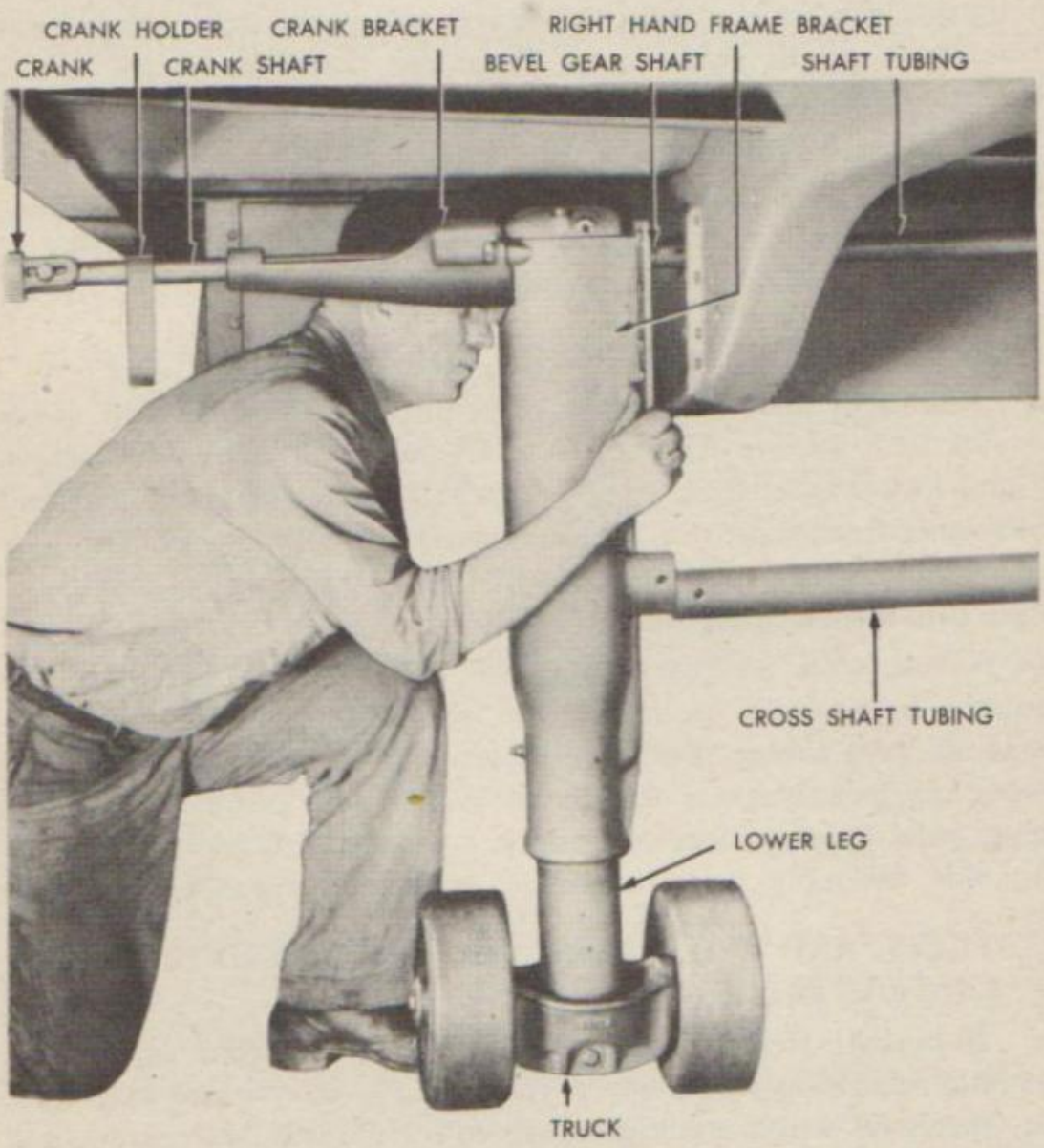

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Figure 54—Removing Right-hand Landing Gear Assembly

b. Installation.

(1) Place the assembly in position on the frame. Install cross shaft tubing into socket on housing. Place shaft tubing over bevel gear shaft. Install back brace into socket on housing. Aline holes in frame bracket with those in semitrailer frame. Install the eight cap screws, lock washers and nuts, and tighten the nuts. Install cap screw, nut and lock washers in operating shaft tubing and back brace.

(2) Install crank brace, using three cap screws and three lock washers. Place crank shaft through the crank bracket. Couple crank shaft to bevel gear shaft, using coupling, two cap screws, two lock washers and two nuts. Place crank holder over crank shaft with the hook side toward rear of vehicle.

(3) Attach crank to operating shaft, using cap screw and nut. Do not tighten cap screw. Tight cap screw will prevent free movement of the crank on the crank shaft. Place two punch marks on nut to prevent it from coming loose.

(4) Measure length of lower leg on landing gear at the opposite side. Turn crank until length of both legs are identical. Aline hole in bevel gear shaft with hole in shaft tubing. Secure shaft tubing to bevel gear shaft, using cap screw, lock washer and nut.

81. LEFT-HAND LANDING GEAR (RIGID TYPE).

a. Removal. Block up front of semitrailer. Remove cap screw nut and lock washer from cross shaft tubing. Remove cap screw, nut and lock washer from back bracket. Remove cap screw, nut and lock washer from shaft tubing. Remove eight cap screw nuts and lock washers holding the left-hand landing gear assembly to semitrailer frame. Lift the assembly out.

b. Installation. Adjust lower leg (par. 80 *b* (4). Place the assembly in position on frame and slip the operating shaft into operating shaft tubing. Secure the assembly to frame, using six cap screws, six lock washers and nuts. Aline hole in operating shaft tubing with hole in operating shaft by turning the crank on the right side assembly and install cap screw, lock washer, and nut.

82. TRUCK AND WHEEL ASSEMBLY FOR RIGID-TYPE LANDING GEAR (figs. 1 and 54).

a. Removal. Remove nuts and lock washers from cap screws that hold wheels to wheel truck. Remove cap screws and axle caps. Pull wheels off wheel truck. Remove cotter pin, nut, cap screw, and two plain washers from truck pin. Drive truck pin out of wheel truck and lower leg.

b. Installation. Lubricate truck pin (par. 19). Place truck in position on lower leg. Aline hole in lower leg with hole in truck. Install truck pin. Secure truck pin to truck, using two plain washers, cap screw, nut and cotter pin. Lubricate spindles on truck (par. 19). Install wheels on truck spindles. Secure wheels to truck, using caps, cap screw, lock washer, and nut.

Section XIX

LANDING GEAR OPERATING MECHANISM (RETRACTABLE TYPE)

83. DESCRIPTION.

a. Description. The landing gear operating mechanism is attached on the under side of the two central frame crossmembers. The principal parts consist of a hand crank, hand crank shaft, coupling, and a long worm screw and nut with a guide bracket attached, which is connected to the landing gear back braces. A pair of miter gears, one gear on the hand crank shaft, the other on the worm screw shaft, provides the means for rotating the worm screw.

b. Operation. Turning the crank handle in either direction rotates the worm screw. The nut and guide brackets, which are connected to the landing gear back braces, follow the thread of the worm screw, thereby raising or lowering the landing gear, depending on the direction of rotation.

84. REMOVAL AND DISASSEMBLY.

a. Remove Gear Housing Cover Plate. Remove nuts from cover plate studs and lift off cover plate.

b. Remove Hand Crank Connecting Sleeve, Crank, and Shaft. Remove bolt, nut, and lock washer from each end of the sleeve. Pull hand crank and shaft from bearing, and remove sleeve from miter gear shaft.

c. Remove Hand Crank Miter Gear, Thrust Bearing, and Shaft. Drive taper pin from gear hub, and drive shaft from gear. Then remove the thrust bearing, sleeve, gear, and shaft.

d. Remove Miter Gear, Thrust Bearing, and Sleeve from Worm Shaft. Remove jam nut from end of worm screw shaft, and drive out the key from the gear hub. Remove gear, thrust bearing, and sleeve by tapping the gear off the end of the worm screw.

e. Remove Worm Screw Rear Thrust Bearing, Worm Screw, and Guide Bracket. Remove bolt, nut, and lock washer at rear of worm screw housing. Push the worm screw back until the thrust bearing is out of the housing and remove bearing from end of worm screw. Then pull the worm screw and guide bracket from the housing.

f. Remove the Guide Bracket from Worm Screw. Hold the guide bracket and turn worm screw until bracket is free from the worm screw.

85. CLEANING, INSPECTION AND REPAIR.

a. Wash all parts thoroughly in dry-cleaning solvent. Inspect miter gear and worm gear teeth for cracks, chips, or breaks. Replace if defective. Replace thrust bearing and sleeve if worn or bent. Repair or replace hand crank handle if bent. NOTE: *The worm screw and gear housing is of one-piece construction, welded to the frame, and can be removed only by burning the weld loose.*

86. INSTALLATION.

a. Install Guide Bracket on Worm Screw. Start the guide bracket nut on the worm screw, and, holding the bracket, turn worm screw until bracket is at front end of screw.

b. Install Worm Screw, Guide Bracket, and Rear Thrust Bearing in Housing. Place the thrust bearing on the rear end of the worm screw, and slide the worm screw and bracket assembly in the housing until the thrust bearing lines up with the bolt holes in the housing. Secure rear thrust bearing by installing bolt, nut, and lock washer through rear end of housing.

c. Install Miter Gear, Thrust Bearing, and Sleeve on Worm Screw. Place the sleeve, thrust bearing, and gear on the front end of the worm screw, lining up the keyway on the worm screw shaft and gear hub. Install key and secure with jam nut.

d. Install Hand Crank Miter Gear, Thrust Bearing Sleeve, and Shaft. Place the thrust bearing and sleeve on the shaft and install in hole in gear housing. With the gear teeth in mesh, tap the gear on the end of the shaft, at the same time lining up the taper pin holes in the gear hub and shaft. Secure by inserting and driving home taper pin.

e. Install Hand Crank Connecting Sleeve, Crank and Shaft. Slide the connecting sleeve on the gear shaft, and the hand crank shaft through the bracket bearing. Install crank holder on hand crank shaft and enter the hand crank shaft in the connecting sleeve. Line up the bolt holes and install bolts, nuts, and lock washers.

f. Install Gear Housing Cover Plate. Position cover plate on the gear housing studs and install nuts.

Section XX

ELECTRICAL SYSTEM

87. DESCRIPTION.

a. Description. There are two electrical systems provided on the trailer. The 6- to 8-volt system functions through the electrical system of the towing tractor-truck and is connected to it by a jumper cable inserted into a coupling socket at rear of tractor-truck, and a coupling socket at front of trailer. A receptacle mounted near the center post on front panel assembly provides the connection for the 110-volt system which operates the dome lights when other tractor power is available.

(1) The chassis wiring diagrams (figs. 55, 57, 58, 60, and 61) show the coupling socket, blackout switch, taillights, junction block, and four wiring harnesses connecting these devices.

(2) The body wiring diagrams (figs. 56 and 59) show the receptacles for the 110-volt system, the three-way switches for the 6- to 8-volt system, the dome lights, and four wiring harnesses connecting these devices.

88. TAILLIGHT REPLACEMENT (fig. 62).

a. Removal of Sealed Lamp Unit. Pull out cable and remove two nuts from the studs holding taillight to bracket. Remove taillight. With a screwdriver remove two screws from taillight cover and remove cover. Slide sealed lamp unit from light body.

b. Installation of Sealed Lamp Unit. Insert new unit into light body, replace cover, and secure with screws. Position taillight on bracket and secure with stud nuts and lock washer.

89. CLEARANCE LIGHTS (fig. 63).

a. Remove Lamp. Remove light housing by removing two screws. Remove lens and lamp.

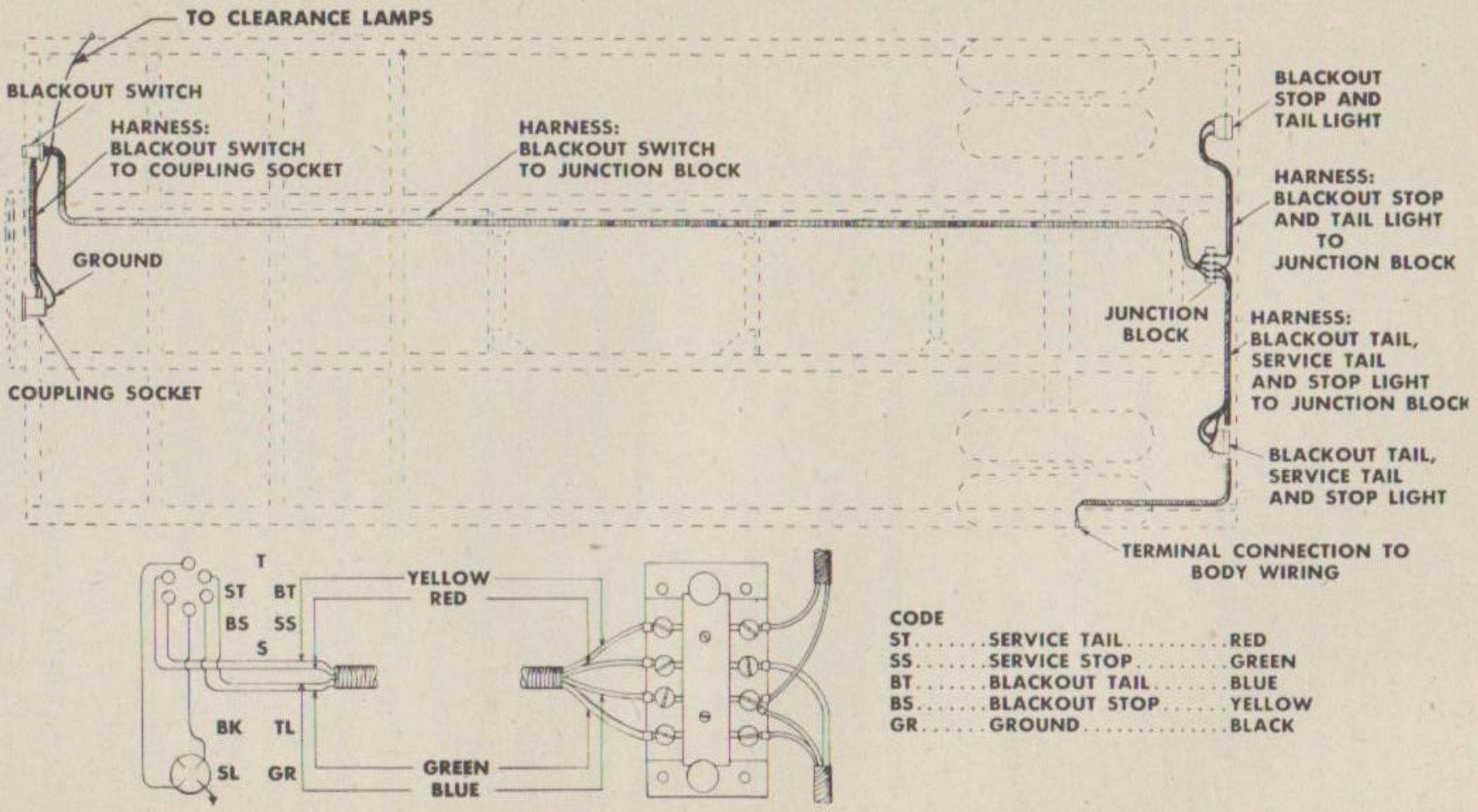


Figure 55—Chassis Wiring Diagram (American Bantam Model STV-620)

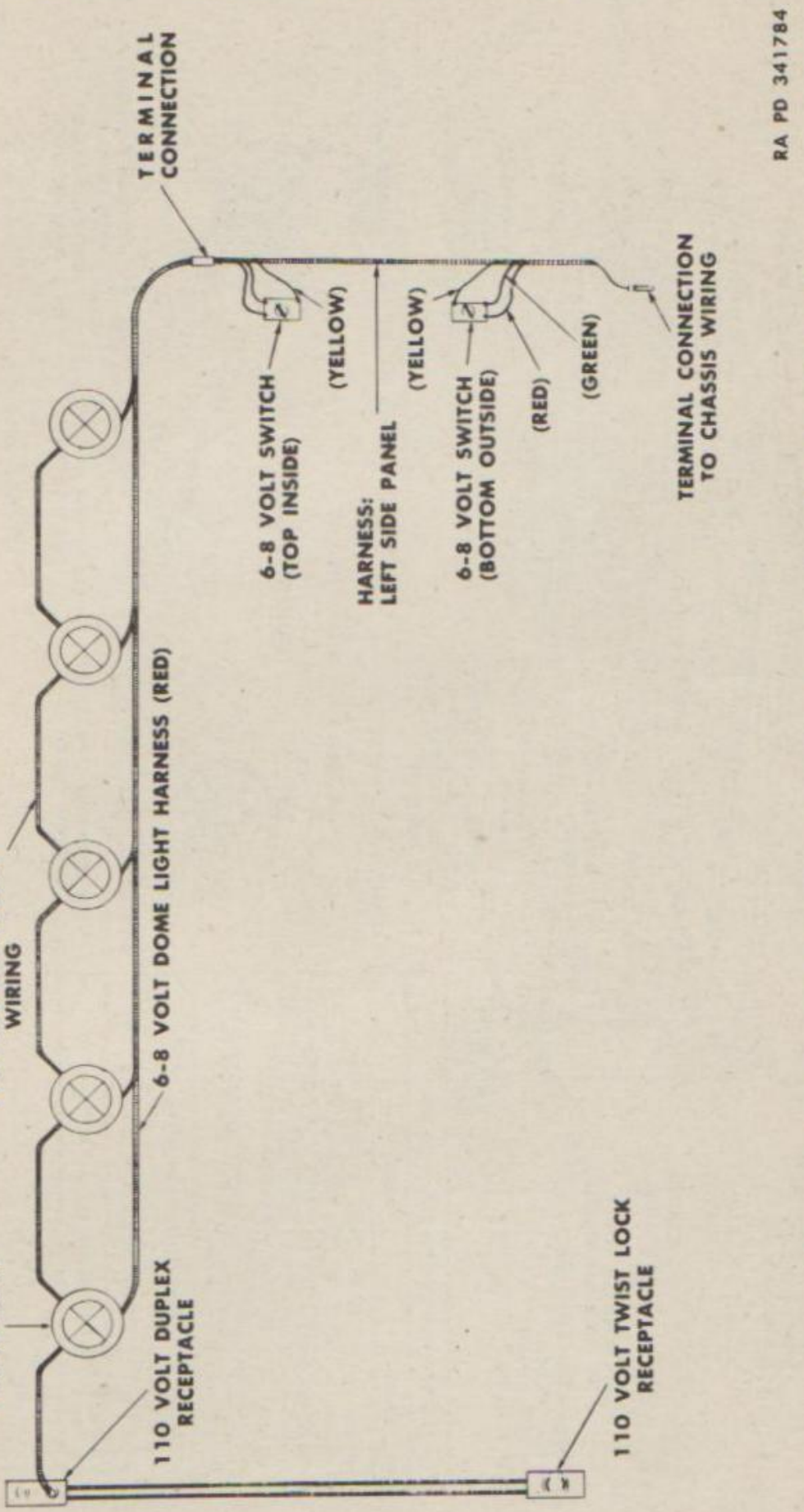
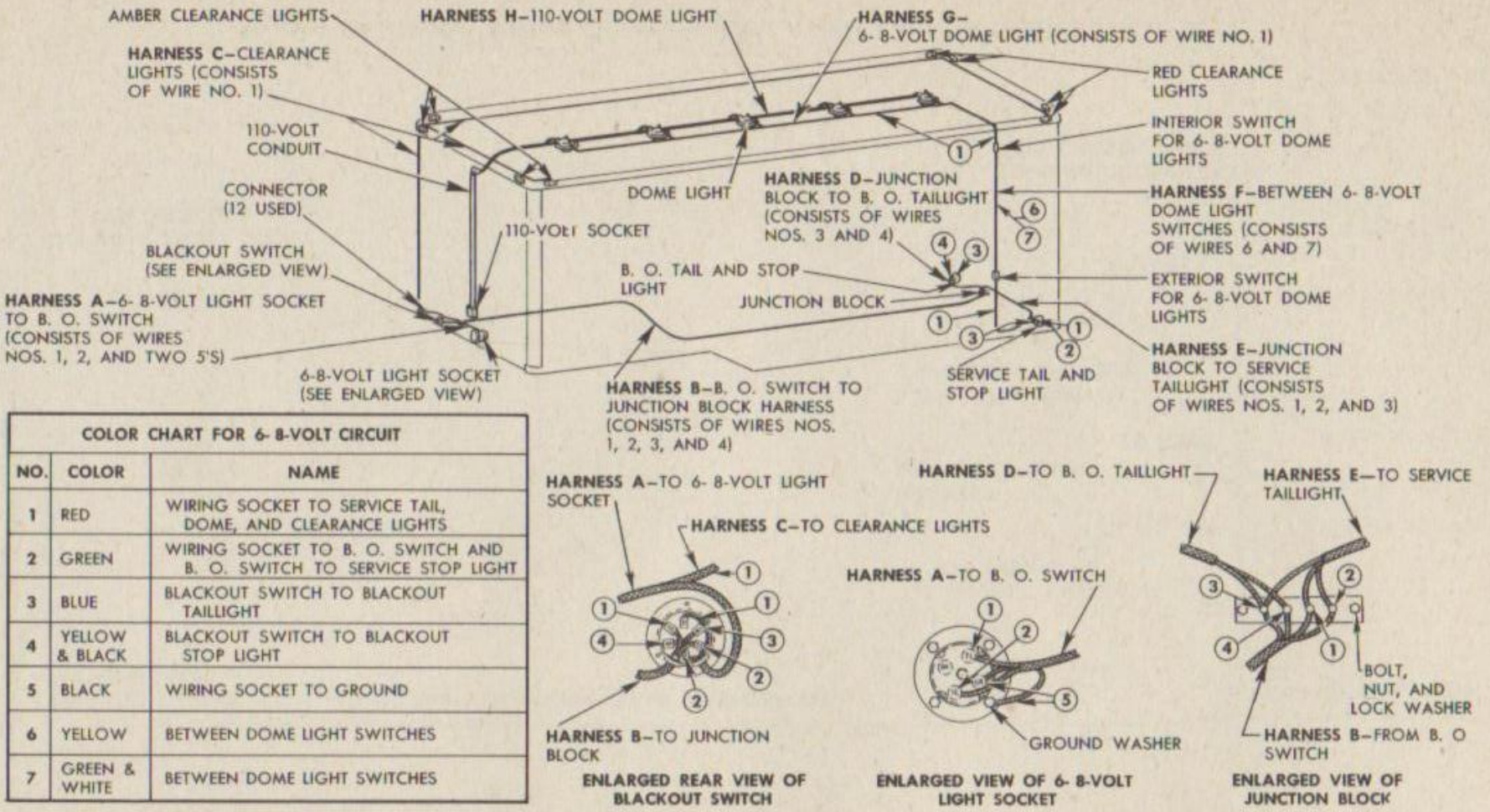


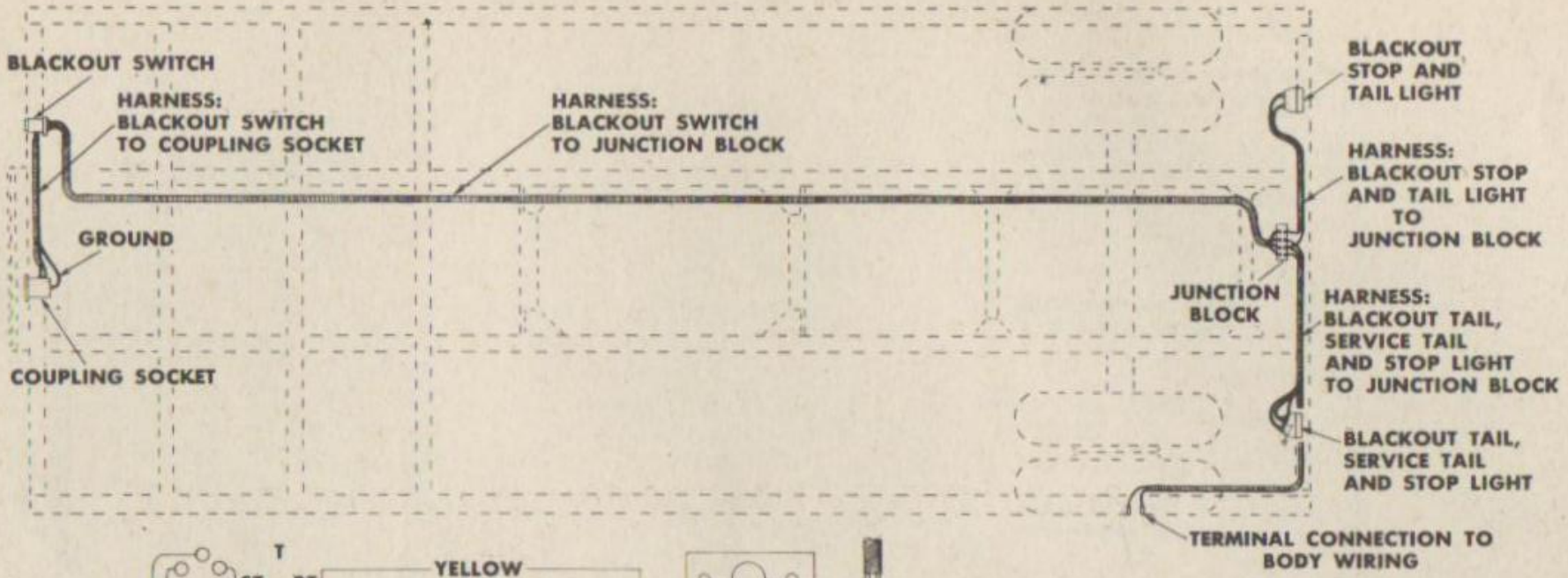
Figure 56—Body Wiring Diagram (American Bantam Model STV-620)

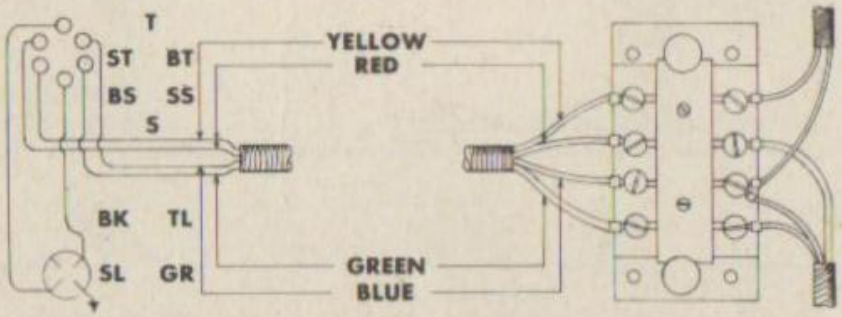


COLOR CHART FOR 6- 8-VOLT CIRCUIT		
NO.	COLOR	NAME
1	RED	WIRING SOCKET TO SERVICE TAIL, DOME, AND CLEARANCE LIGHTS
2	GREEN	WIRING SOCKET TO B. O. SWITCH AND B. O. SWITCH TO SERVICE STOP LIGHT
3	BLUE	BLACKOUT SWITCH TO BLACKOUT TAILLIGHT
4	YELLOW & BLACK	BLACKOUT SWITCH TO BLACKOUT STOP LIGHT
5	BLACK	WIRING SOCKET TO GROUND
6	YELLOW	BETWEEN DOME LIGHT SWITCHES
7	GREEN & WHITE	BETWEEN DOME LIGHT SWITCHES

RA PD 341792

Figure 57—Wiring Harnesses (American Bantam Model STV-620)





CODE

ST	SERVICE TAIL	RED
SS	SERVICE STOP	GREEN
BT	BLACKOUT TAIL	BLUE
BS	BLACKOUT STOP	YELLOW
GR	GROUND	BLACK

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Figure 58—Typical Chassis Wiring Diagram

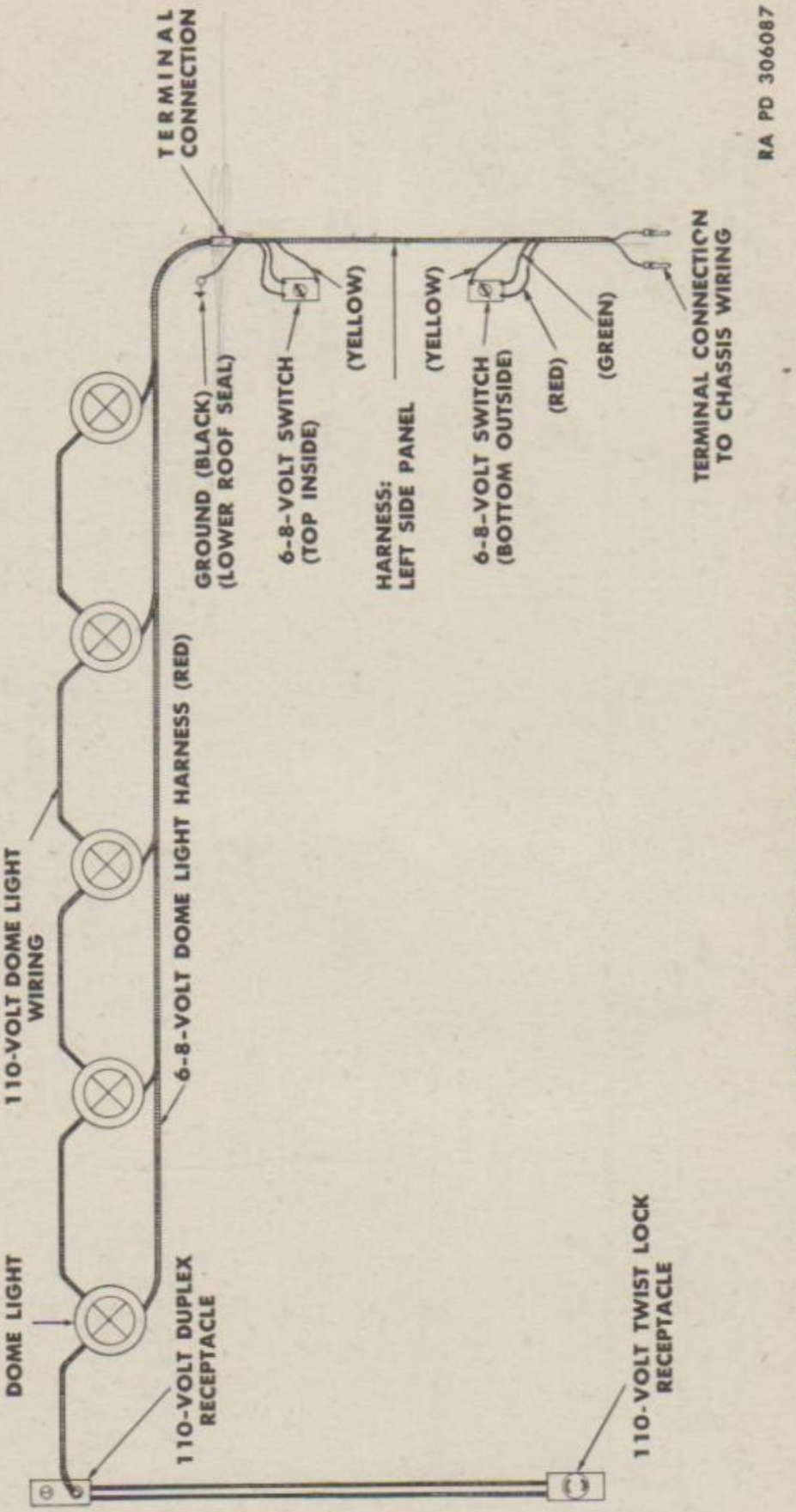

Figure 59—Typical Body Wiring Diagram

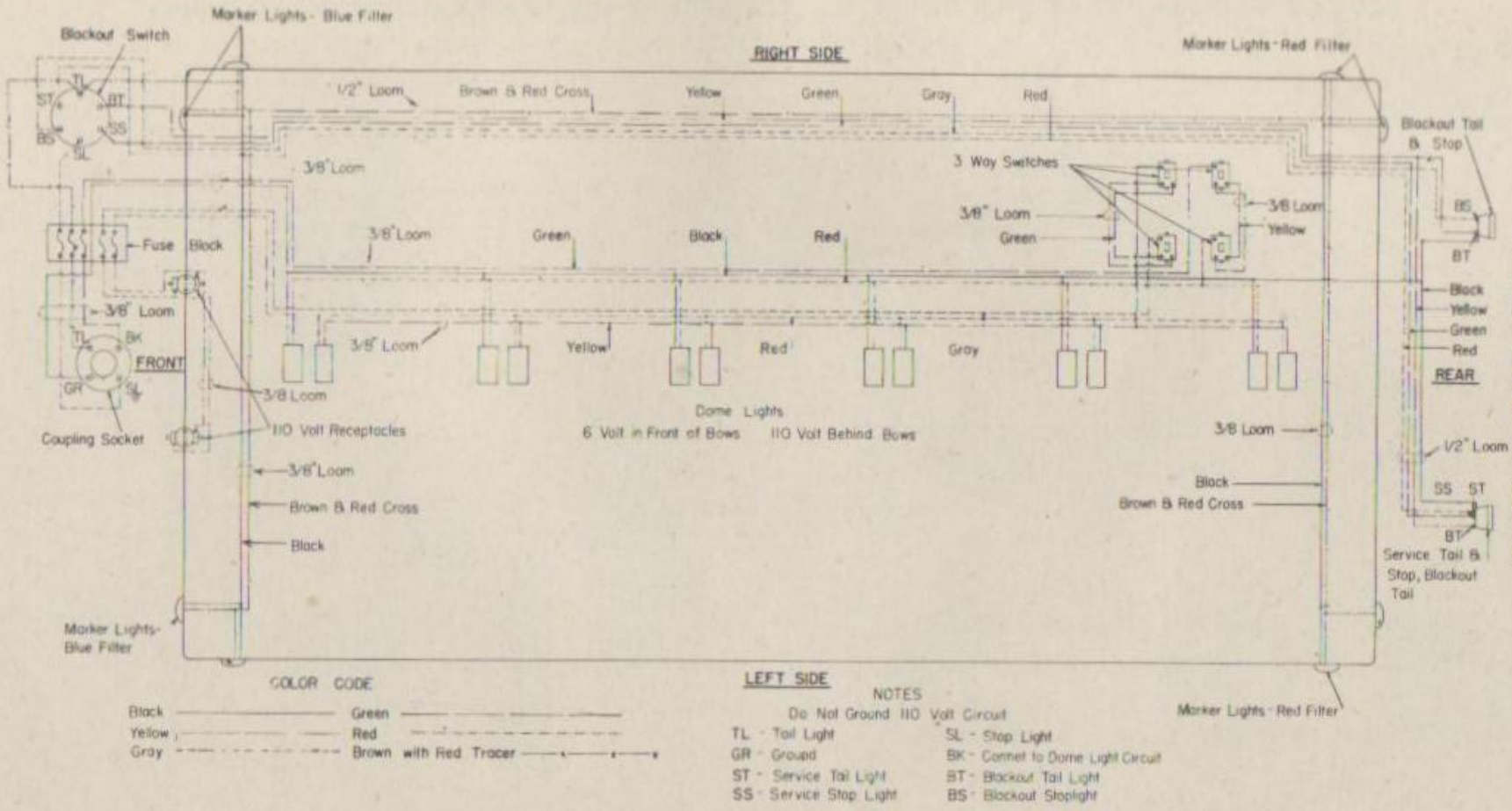

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Figure 60—Wiring Diagram (Olson Model LV-10. Serial Nos. 27001 Through 27167)

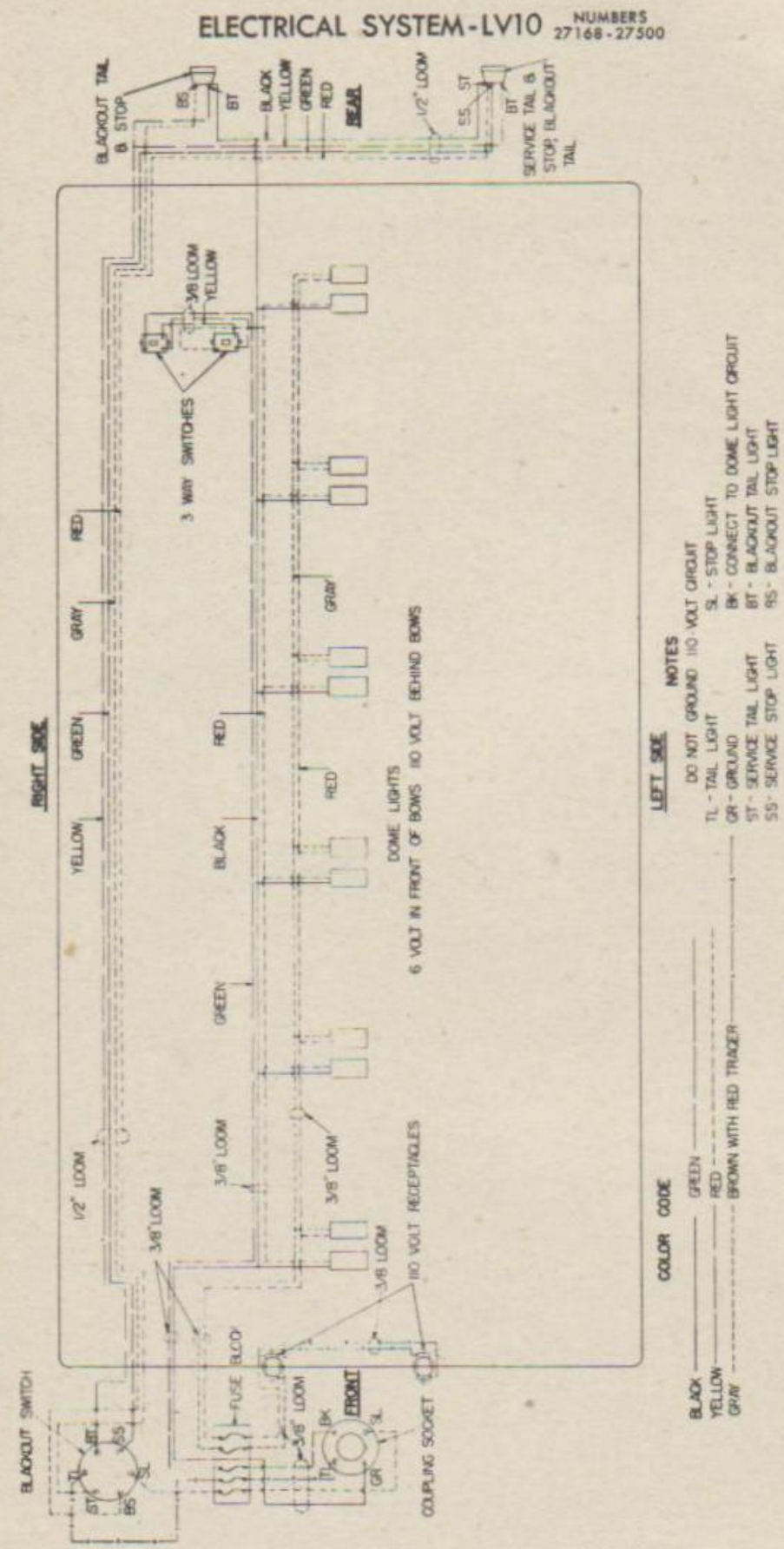


Figure 61—Wiring Diagram (Olson Model LV-10. Serial Nos. 27168 Through 27500)

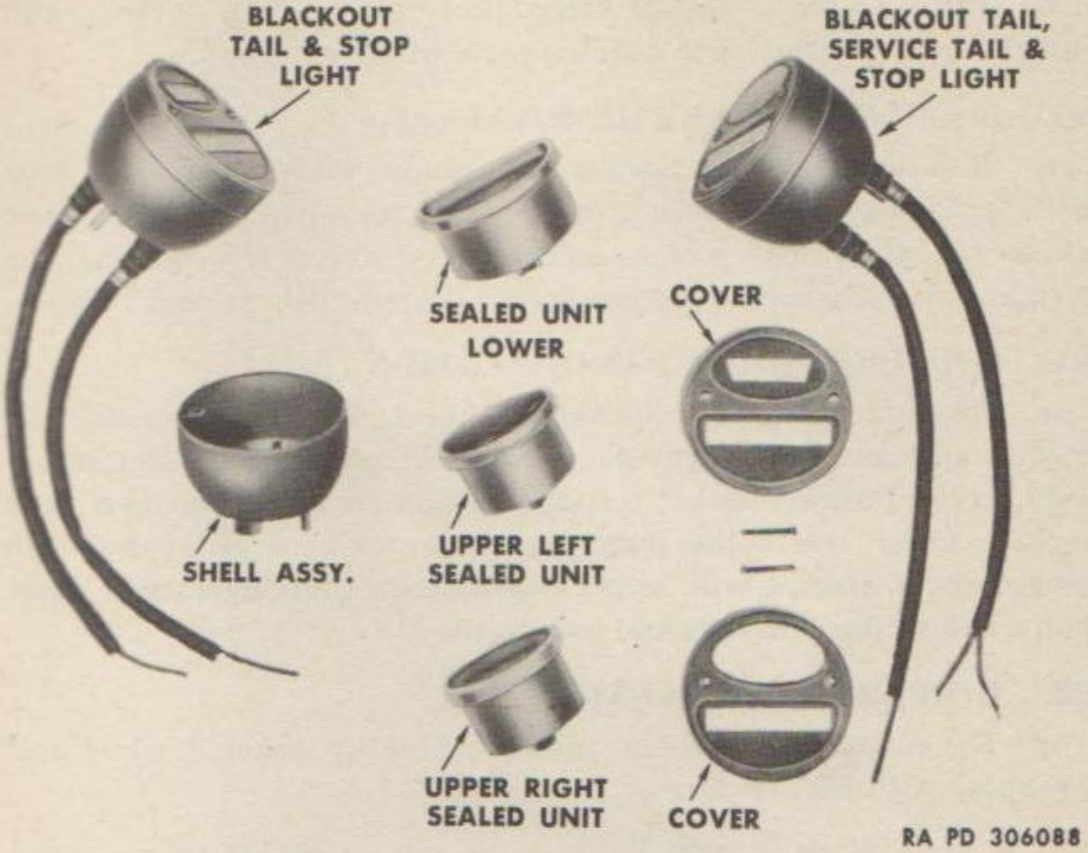
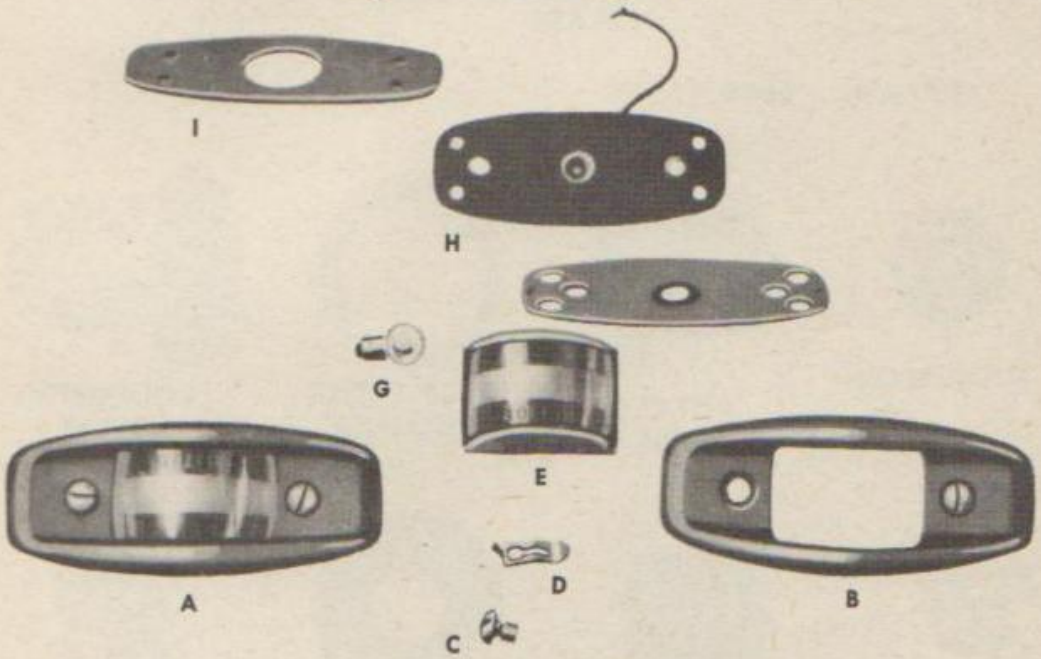


Figure 62—Taillights



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

RA PD 341793

Figure 63—Clearance Light

b. Install Lamp. Install lamp. Position lens in housing and attach housing with lens to backing plate with two screws.

90. COUPLING SOCKET REMOVAL (fig. 64).

a. Remove Coupling Socket. Disconnect wires and remove four bolts and nuts holding socket to front crossmember. Pull socket out as far as wires will permit, and unscrew the screw holding the terminal cover to socket. Loosen screws on terminals to remove wires.

91. COUPLING SOCKET INSTALLATION (fig. 64).

a. Replace Coupling Socket. Connect wires to terminals on socket, and secure by tightening screws. Replace cover, and secure with screw. Position socket through hole in front crossmember, and replace lower two bolts, nuts, and lock washers. Aline holes in hinged cover bracket with upper two holes in coupling socket, insert bolts, and secure with nuts and lock washers.

92. JUMPER CABLE REPAIR.

a. Repair torn or broken jumper cable by splicing wires and wrapping with friction tape.

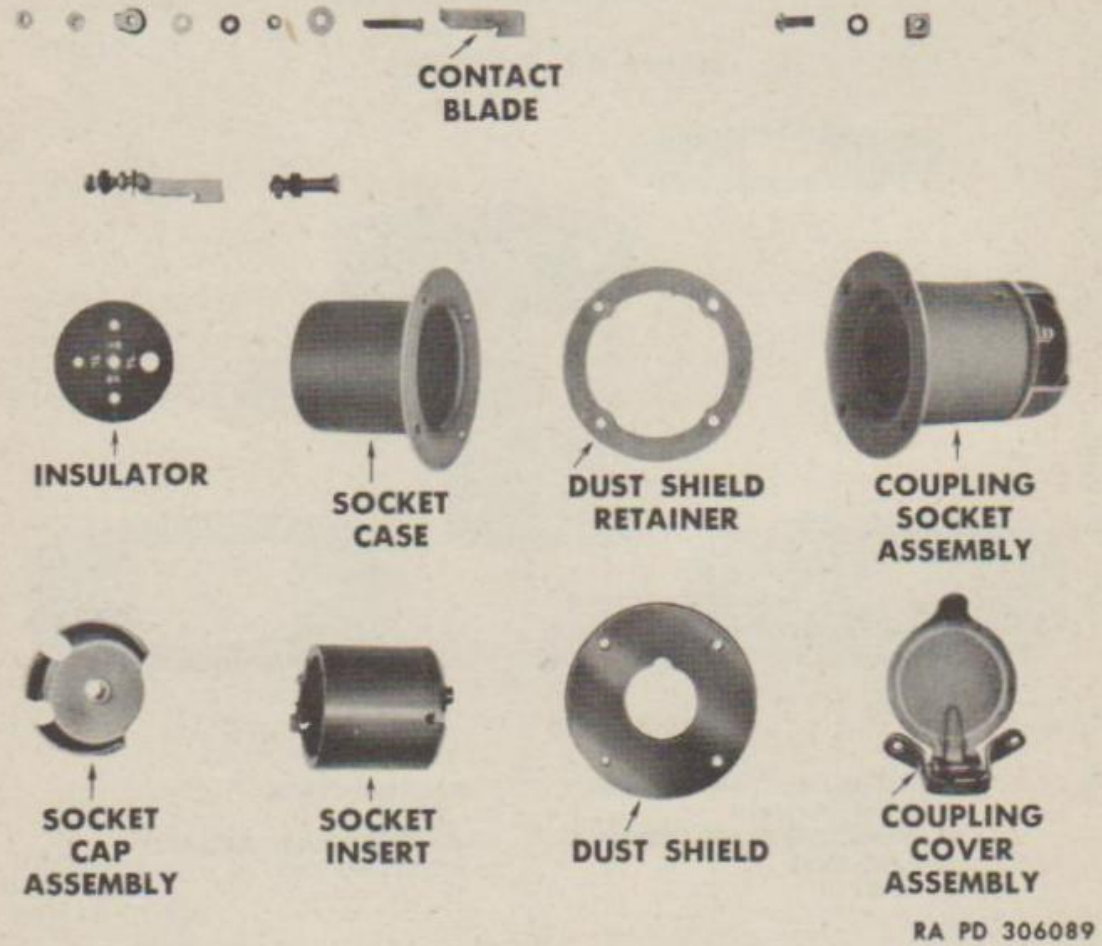


Figure 64—Coupling Socket and Cover Partially Disassembled

93. WIRING HARNESS REMOVAL (fig. 57).

a. Chassis Harness Removal.

(1) BLACKOUT SWITCH TO JUNCTION BLOCK. Remove harness from blackout switch. Disconnect from terminals on junction block by removing screws. Remove clamps holding harness to frame side member, and pull out harness through holes in crossmembers.

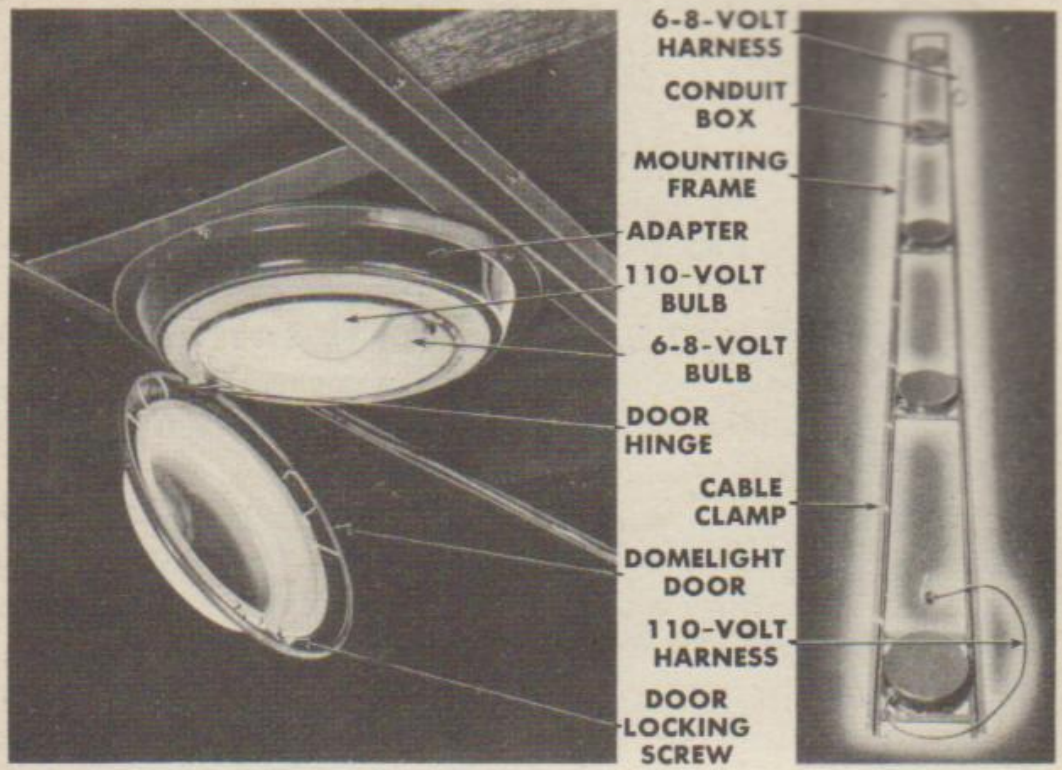
(2) COUPLING SOCKET TO BLACKOUT SWITCH. Remove harness from blackout switch and coupling socket. Remove clamp holding harness to front crossmember. On model STV-620 disconnect from front panel wire.

(3) JUNCTION BLOCK TO BLACKOUT TAIL AND STOP LIGHT. Disconnect from terminals on junction block by removing screws. Disconnect from taillight by pulling plugs out of socket. Remove clamps holding harness to rear crossmember.

(4) JUNCTION BLOCK TO SERVICE TAIL AND STOP AND BLACKOUT TAILLIGHT. Disconnect from terminals on junction block by removing screws. Disconnect from taillight by pulling plugs out of socket. Disconnect from body harness at lower end of wire cover and pull through holes inside rail. Remove clamps holding harness to rear crossmember.

b. Body Harness on Roof Removal. Disconnect the 110-volt system by pulling plug out of receptacle located inside at top of front panel. Disconnect the 6- to 8-volt system by pulling male snap terminals out of connections located inside at top rear of left-hand panel. Remove clamps holding the above wires to bows. Carefully support dome light and mounting frame assembly and remove wood screws mounting frame to bows. NOTE: *On Model STV-620 the dome light mounting frame is an integral part of the roof, and the dome lights must be removed separately.* Remove the entire assembly from inside of trailer. Loosen screw in dome light doors, and remove doors by sliding out of hinge retainer. Remove screws holding reflector body to adapter. This will permit reflector bodies, with fixtures and harnesses attached, to hang loose from conduit box, and give access to terminals. Remove 6- to 8-volt wiring harnesses by pulling male snap terminals out of their sockets on dome light fixtures. Remove 110-volt wiring harnesses by loosening screws on terminals. Remove clamps holding harnesses to dome light mounting frame.

c. Body Harness on Front Panel Removal. Pull plug out of receptacle located inside at top of front panel. Remove screws that



RA PD 306090

Figure 65—Dome Light Assembly

hold the duplex receptacle. Pull receptacle out of condulet as far as attached wires will permit, and loosen screws on terminals. Detach receptacle from wires. Remove hinge cover from twist-lock receptacle located outside, at lower end of front panel. Remove screws holding twist-lock receptacle to condulet. Pull receptacle with wires attached out of condulet, and detach wires by loosening screws on terminals.

d. Body Harness on Side Panel Removal. Disconnect body harness from roof harness at snap terminals located inside at top rear of left-hand corner. Disconnect from chassis harness at terminals located at lower end of wire cover. Remove screws and cover from three-way switch at lower end of wire cover. Remove screws holding receptacle to wire cover, and pull out switch as far as wires will permit. Detach switch from wires. Remove screws and cover from three-way switch located inside at top rear of left-hand panel. Remove screws holding receptacle to panel, and pull out switch as far as wires will permit. Detach switch from wires. Remove screws and wire cover from outside of panel. Remove screw from ground terminal at roof seal, and pull off harness.

94. WIRING HARNESS INSTALLATION (fig. 57).

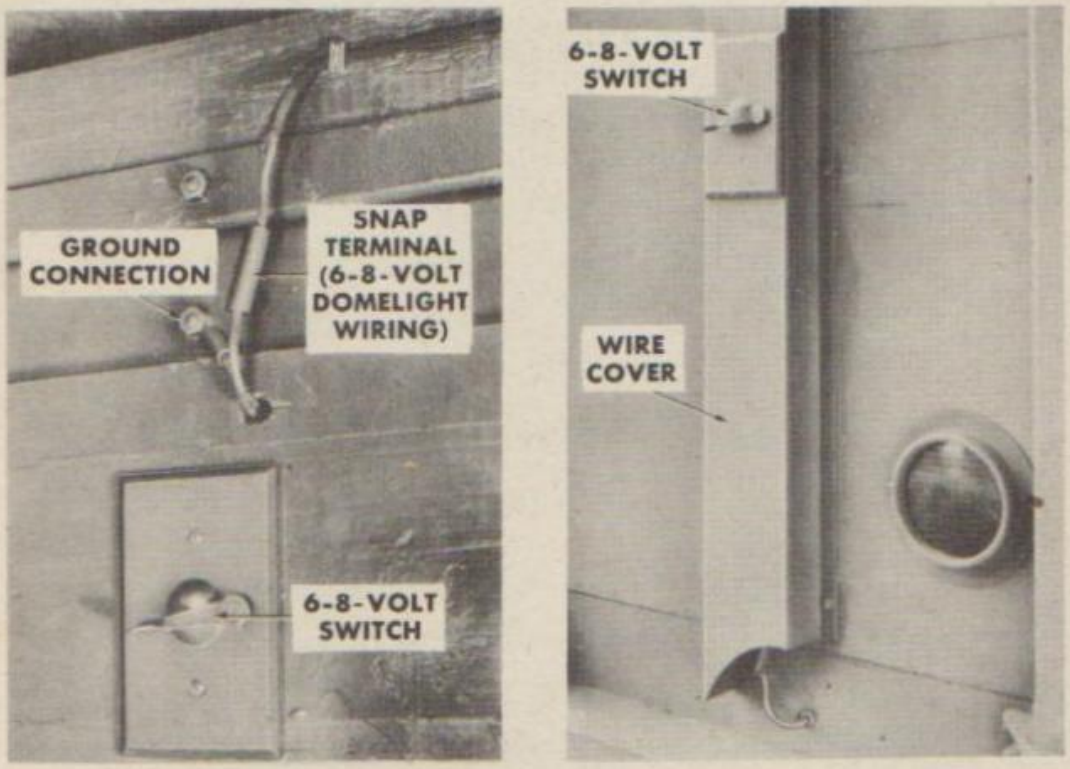
a. Chassis Harness Installation.

(1) BLACKOUT SWITCH TO JUNCTION BLOCK. Connect harness to blackout switch as outlined in paragraph 93. Connect to terminals on junction block by replacing screws. Replace clamp to secure harness to frame side member.

(2) COUPLING SOCKET TO BLACKOUT SWITCH. Connect harness to blackout switch and coupling socket as outlined in paragraph 80. Replace clamps to secure harness to front crossmember.

(3) JUNCTION BLOCK TO BLACKOUT TAIL AND STOP LIGHT. Connect to terminals on junction block by replacing screws. Connect to taillight by inserting plugs into sockets. Replace clamps securing harness to rear crossmember.

(4) JUNCTION BLOCK TO SERVICE TAIL AND STOP AND BLACKOUT TAILLIGHT. Connect to terminals on junction block by replacing screws. Connect to taillight by inserting plugs into sockets, twisting slightly. Insert the two remaining ends of harness with female snap terminals attached through holes in side rail, and connect to wiring harness at lower end of wire cover on side panel. Replace clamps securing harness to rear crossmember.



RA PD 306091

Figure 66—Interior and Exterior 3-way Switch

b. Install Body Harness on Roof. Position harnesses on dome light mounting frame and insert connecting ends into holes in conduit boxes. Connect 110-volt wires to terminals on fixtures and secure by tightening screws. Connect 6- to 8-volt wires by pushing male snap terminals into their sockets on fixtures. Position reflector bodies and secure to adapter with screws. Tighten clamps of the nonmetallic connectors on the conduit boxes and secure the harnesses to mounting frame by replacing clamps. Place entire assembly inside trailer under bows and secure with wood screws. Replace dome light doors by inserting door hinge into retainer, close door and secure with wood screws. Fasten ends of harnesses to bows at front and rear with clamp and plug in rear to reestablish connections.

c. Install Body Harness on Front Panel. Connect wires to terminals on duplex receptacle and insert wires through hole at top of front panel. Push wires through until the receptacle contacts condulet. Secure receptacle to condulet with screws. Connect other end of wires to twist-lock receptacle, and insert receptacle into condulet, securing with screws. Replace hinged cover and screws.

d. Install Body Harness on Side Panel. Insert top end of harness through hole in side panel. Replace screw and lock washer in terminal to connect ground wire to roof seal. Attach three-way switch from the outside and mount switch to panel with wood screws. Replace cover on switch and secure with screws. Position wire cover and secure with wood screws. Attach three-way switch to wire terminals at lower end of wire cover. Mount switch to wire cover with screws. Replace cover on switch and secure. Connect lower end of harness to chassis harness except on Model STV-620. No ground wire is necessary on Model STV-620.

95. SWITCH ASSEMBLY REMOVAL (figs. 6, 8, and 66).

a. Removal of 6- to 8-Volt Switch. Remove screw from cover and remove cover. Remove the two screws holding switch to panel or wire cover. Pull out switch as far as wires will permit, and disconnect wires by removing screws on terminals.

b. Blackout Switch Removal. With an adjustable open-end wrench, remove the outside hexagon lock nut. The switch may then be pushed back and down through a hole in the upper fifth wheel plate to remove the wires. Remove the cover. Loosen screws on terminals, and pull out wires.

96. SWITCH ASSEMBLY INSTALLATION (figs. 6, 8, and 66).

a. 6- to 8-Volt Switch Installation. Connect three tails of harness to terminals on switch by replacing screws. Insert switch into hole in wire cover, and secure with screws. Replace cover on switch, and secure with screws.

b. Blackout Switch Installation. Connect harnesses to terminals on switch by tightening screws. Replace cover, and secure with bolts and nuts. Push blackout switch back through hole in upper fifth wheel plate, insert into hole in front crossmember, and secure with hexagon lock nut.

97. DOME LIGHT ASSEMBLY REMOVAL (fig. 65).

a. Loosen screws in dome light door, and remove door by sliding out of hinge retainer. Loosen clamps of the nonmetallic connectors on the conduit box. Remove screws holding reflector body to adapter. This will permit reflector body, with fixtures and harnesses attached, to hang loose of conduit box and give access to terminals. Remove 6- to 8-volt wiring harness by pulling male snap terminals out of their sockets. Remove 110-volt harness by loosening screws on terminals. Remove four bolts holding adapter and conduit box to mounting frame.

98. DOME LIGHT ASSEMBLY INSTALLATION (fig. 65).

a. Place conduit box and adapter into mounting frame and secure with four bolts. Insert connecting ends of harnesses into holes in conduit box. Connect 110-volt wires to terminals on fixtures and secure by tightening screws. Connect 6- to 8-volt wires by pushing male snap terminals into their sockets on fixtures. Position reflector body and secure to adapter with screws. Tighten clamps of the nonmetallic connectors on the conduit box. Replace dome light door by sliding hinge into retainer, and secure by tightening screws.

Section XXI

SPARE WHEEL AND CARRIER

99. DESCRIPTION (fig. 67).

a. The spare wheel and tire are mounted on the tire carrier by means of studs and nuts, similar to those used to hold the wheel to the axle hub. The carrier is the winch type, cable lift, located on the right-hand side of trailer frame and mounted to it with four bolts, nuts, and lock washers (fig. 61).

100. MAINTENANCE (fig. 67).

a. Precaution must be taken to see that the nuts holding the carrier to the trailer frame and the spare wheel and tire to the carrier are kept tight at all times.

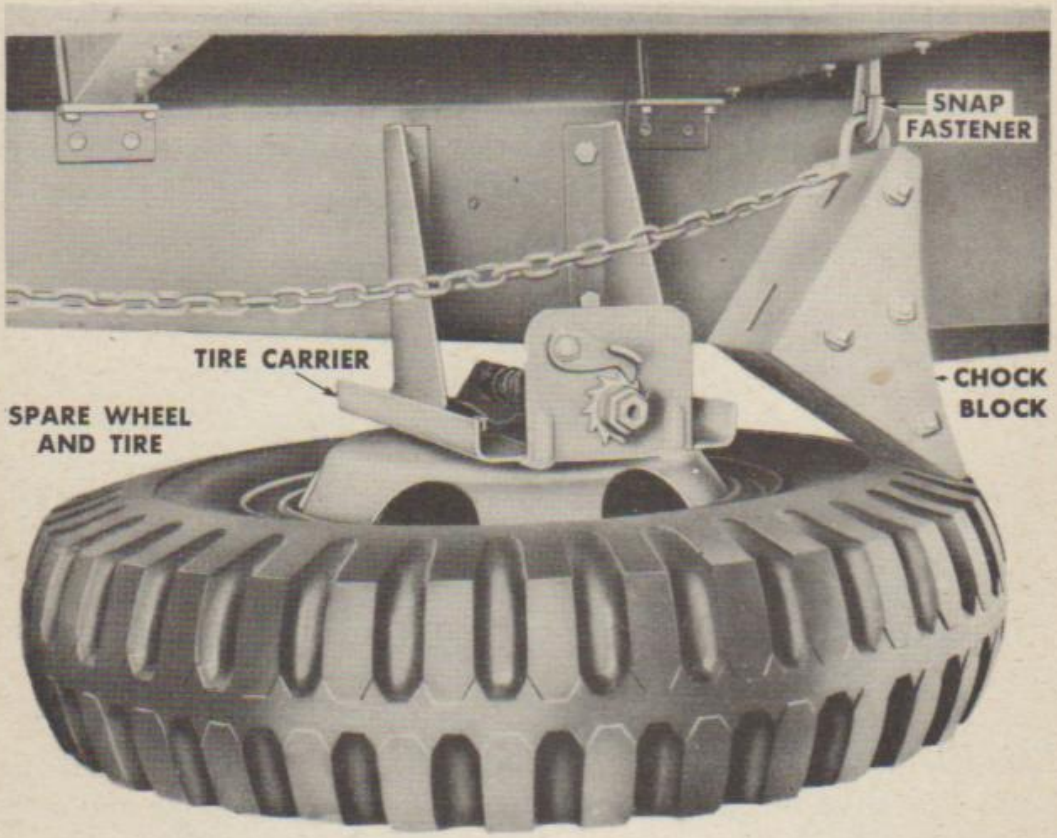


Figure 67—Spare Wheel and Tire Carrier

101. SPARE WHEEL REMOVAL (fig. 67).

a. Remove the four stud nuts holding wheel to carrier with a wheel nut wrench. Release the ratchet pawl on the lift shaft, and turn counterclockwise with a wheel-nut wrench to lower the wheel to ground. Release cable from center hole of wheel disk with cross-tee lifting bracket attached.

102. SPARE WHEEL INSTALLATION (fig. 67).

a. Place spare wheel on ground directly under tire carrier. Insert cross-tee lifting bracket into center hole of wheel disk, and with wheel-nut wrench turn carrier lift shaft nut clockwise until wheel contacts carrier. Position wheel on studs, and secure with nuts.

Section XXII

BODY

103. DESCRIPTION (fig. 68).

a. The body is of the van type, with closed top, and is constructed of wood or metal (LV-10 is not knock-down type, other models are). The main parts are a platform or bed, front and side panel assemblies, roof assembly, rear doors, header and corner posts, and a tailgate. NOTE: *Of the various models covered in this manual, the LV-10 model bears more different characteristics than the other models. Though the LV-10 is different in appearance, its function and performance are practically the same as the other models covered herein.*

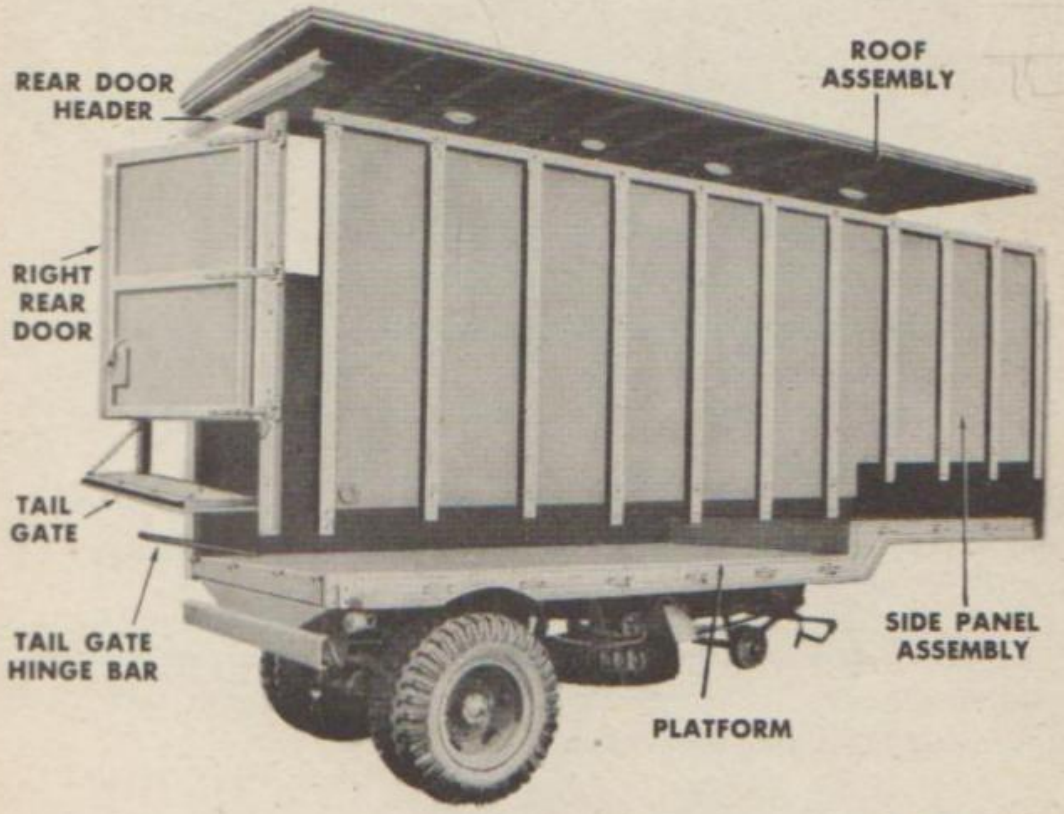


Figure 68—Body Partially Disassembled

104. PANEL REMOVAL (fig. 68).

a. Remove Roof Assembly. Unscrew hex head cap screws or carriage bolts through opposite holes in the lower and upper roof seal channels. This will allow roof assembly to be removed.

b. Remove Front Panel Assembly. Remove carriage bolts and nuts from corner posts. Unscrew nuts and remove all clamps from

lower end of posts. On Model STV-620 there are no clamps. For this model reference to clamps will mean the bolts around the side panel (figs. 69 and 70) above the rub rail. Lift front panel out.

c. Remove Slide Panel Assembly. Remove hinge pins from hinges to remove doors. Release tailgate chains from U-bolt anchor on corner post by removing nuts from U-bolt anchor. Remove carriage bolts and nuts from front and rear corner posts. Remove carriage bolts or bolts and nuts at upper end of rear corner posts tying rear corner posts to rear door header. Remove header. Unscrew nuts, and free rear and front corner post clamps. Remove rear corner posts. Unscrew nuts and remove all clamps from lower end of posts. Lift side panel out of post pockets in rub rail, and lower to ground.

105. PANEL INSTALLATION (fig. 68).

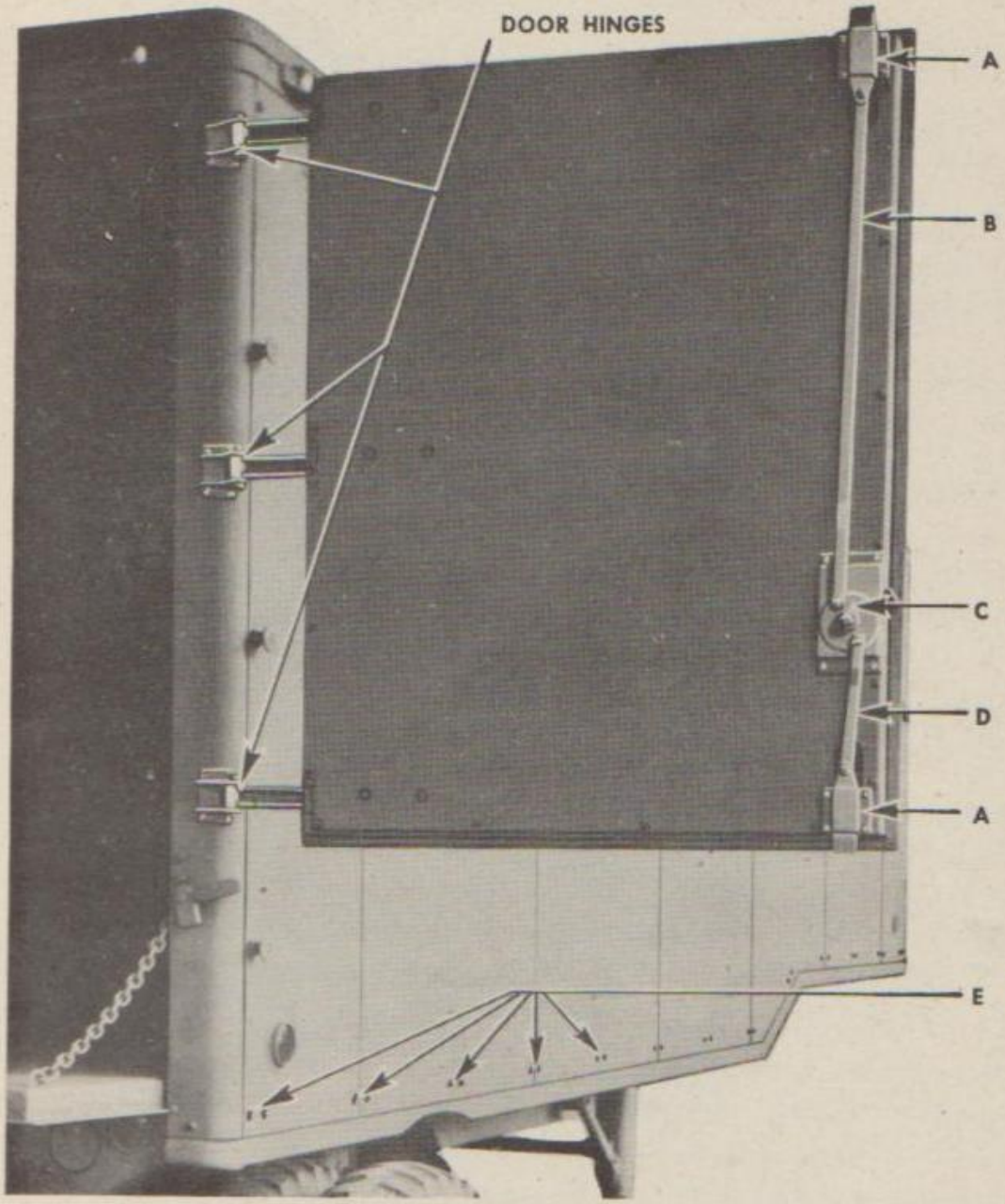
a. Install Front Panel Assembly. Place panel in position, replace clamps, and secure with bolts and nuts. Replace all carriage bolts and nuts through corner posts.

b. Install Side Panel Assembly. Place panel in position on platform by lowering the extended end of posts into pockets in rub rail. Replace clamps, and secure with bolts and nuts. Replace carriage bolts and nuts through front corner posts. Place rear corner post in position, and secure to panel with carriage bolts and nuts. Replace front and rear corner post clamps, and secure. Replace header connecting rear corner posts. Position doors on hinges, and secure with hinge pins and cotters. Connect tailgate chain to rear corner post by replacing U-bolt anchor and securing anchor.

c. Roof Assembly Installation. Place roof in position, and secure with hex head cap screws through opposite holes in each of the upper and lower roof seal channels.

106. TAILGATE REMOVAL.

a. Release tailgate chains by removing U-bolt chain anchor from tailgate. Remove nuts from step bolts projecting through tailgate threshold and upper flange of rear cross-sill, underneath floor. Pull out step bolts, making sure to hold tailgate during this operation so it will not drop of its own weight and be damaged. This will allow tailgate and threshold assembly to be removed. To remove threshold from tailgate, pull out tailgate hinge bar. Tap lightly at one end if hinge bar is tight.



A—LATCH ASSEMBLY
B—UPPER LINK
C—LOCKING HANDLE ASSEMBLY
D—LOWER LINK
E—SIDE PANEL ATTACHING BOLTS

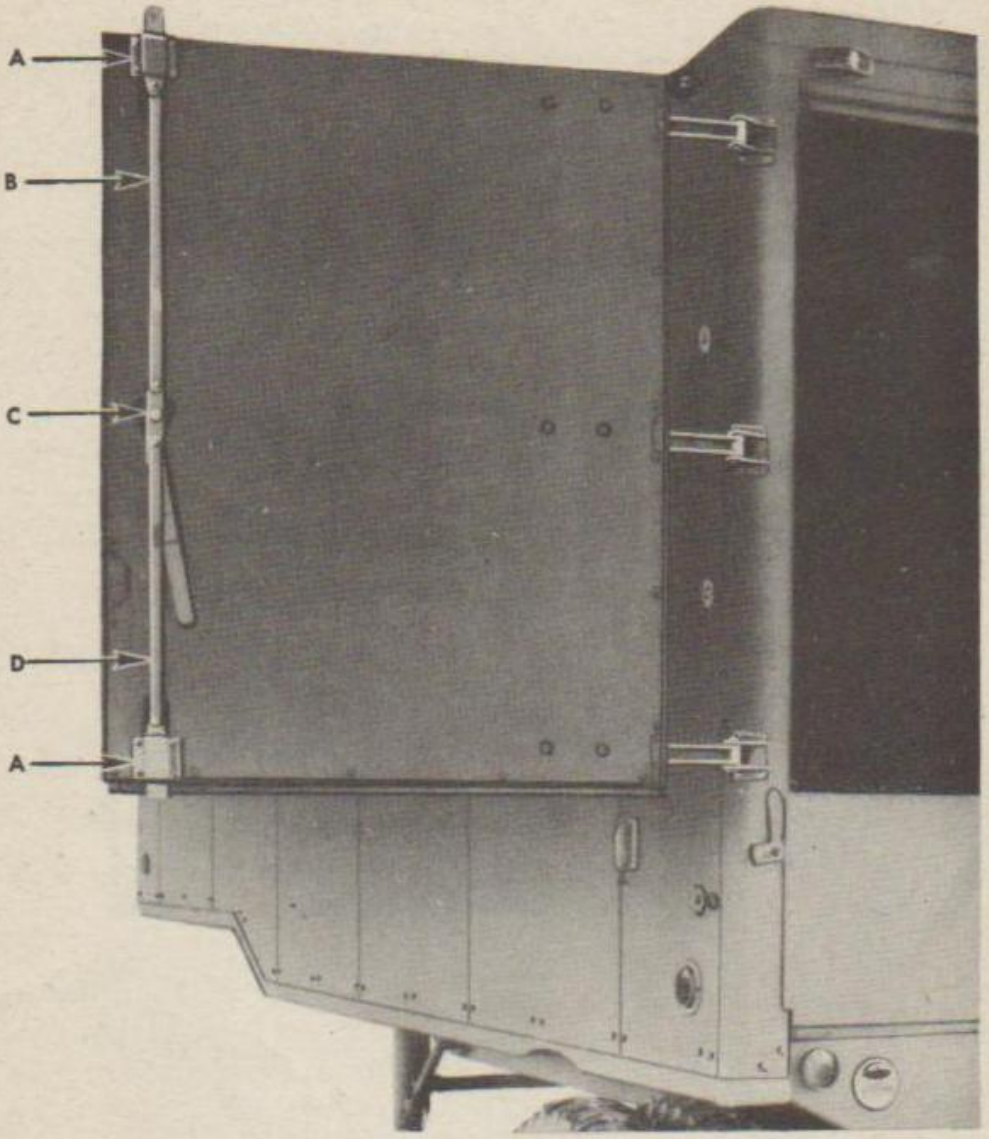
R. H. DOOR

RA PD 341786

Figure 69—Right-hand Door (American Bantam Model STV-620)

107. TAILGATE INSTALLATION.

a. Assemble tailgate threshold to tailgate with hinge bar, lightly coated with general purpose grease. Position tailgate and threshold assembly on platform and insert slip bolts through holes in threshold,



A—LATCH ASSEMBLY
B—UPPER LINK
C—LOCKING HANDLE ASSEMBLY
D—LOWER LINK

L. H. DOOR

RA PD 341796

Figure 70—Left-hand Door (American Bantam Model STV-620)

floor, and rear cross-sill, always making sure to hold tailgate so it will not drop of its own weight and be damaged. Attach nuts and washers to step bolts and tighten. Replace chain and U-bolt anchor on tailgate.

108. DOOR REMOVAL (figs. 69 and 70).

a. Remove hinge pin cotter pins and hinge pins from hinges. Remove door.

109. DOOR INSTALLATION (figs. 69 and 70).

a. Position door on hinge butts, and secure with hinge pins and cotter pins.

110. FLOORBOARD REMOVAL.

a. Unscrew nuts and remove bolts projecting through board and cross-sills underneath body. Pry floorboard loose and lift out. NOTE: *If board to be removed is located in front over steel outriggers, unscrew and remove self-tapping screws.*

111. FLOORBOARD INSTALLATION.

a. Place new floorboard in position, and install bolts and nuts or self-tapping screws.

Section XXIII

FRAME AND UPPER FIFTH WHEEL

112. FRAME.

a. Description. The purpose of the frame is to provide a foundation for the trailer. It is constructed of pressed steel, riveted and welded together. Attached to the frame are the brackets for the springs, radius rods, and landing gear, as well as the body cross-members, outriggers, and the upper fifth wheel plate, and kingpin.

b. Maintenance. The frame can be damaged only by extreme overloading or collision or by other accidental means. Inspect frame for cracks, in frame or at welds. When found, notify higher authority.

113. UPPER FIFTH WHEEL.

a. Description. The upper fifth wheel is composed of a kingpin welded or riveted to a pick-up plate, which, in turn, is welded to the frame.

b. Maintenance. Inspect upper fifth wheel plate for cracks. When found, notify higher authority. Inspect upper fifth wheel kingpin for wear. Inspect kingpin flange for broken weld or sheared rivets. When found, notify higher authority.

PART FOUR—AUXILIARY EQUIPMENT

Section XXIV

GENERAL

114. GENERAL.

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

PART FIVE—REPAIR INSTRUCTIONS

Section XXV

GENERAL

115. SCOPE.

a. These instructions are published for information and guidance of personnel responsible for third and higher echelons of maintenance on this equipment. They contain information on the maintenance which is beyond the scope of the tools, equipment, or supplies normally available to using organizations.

Section XXVI

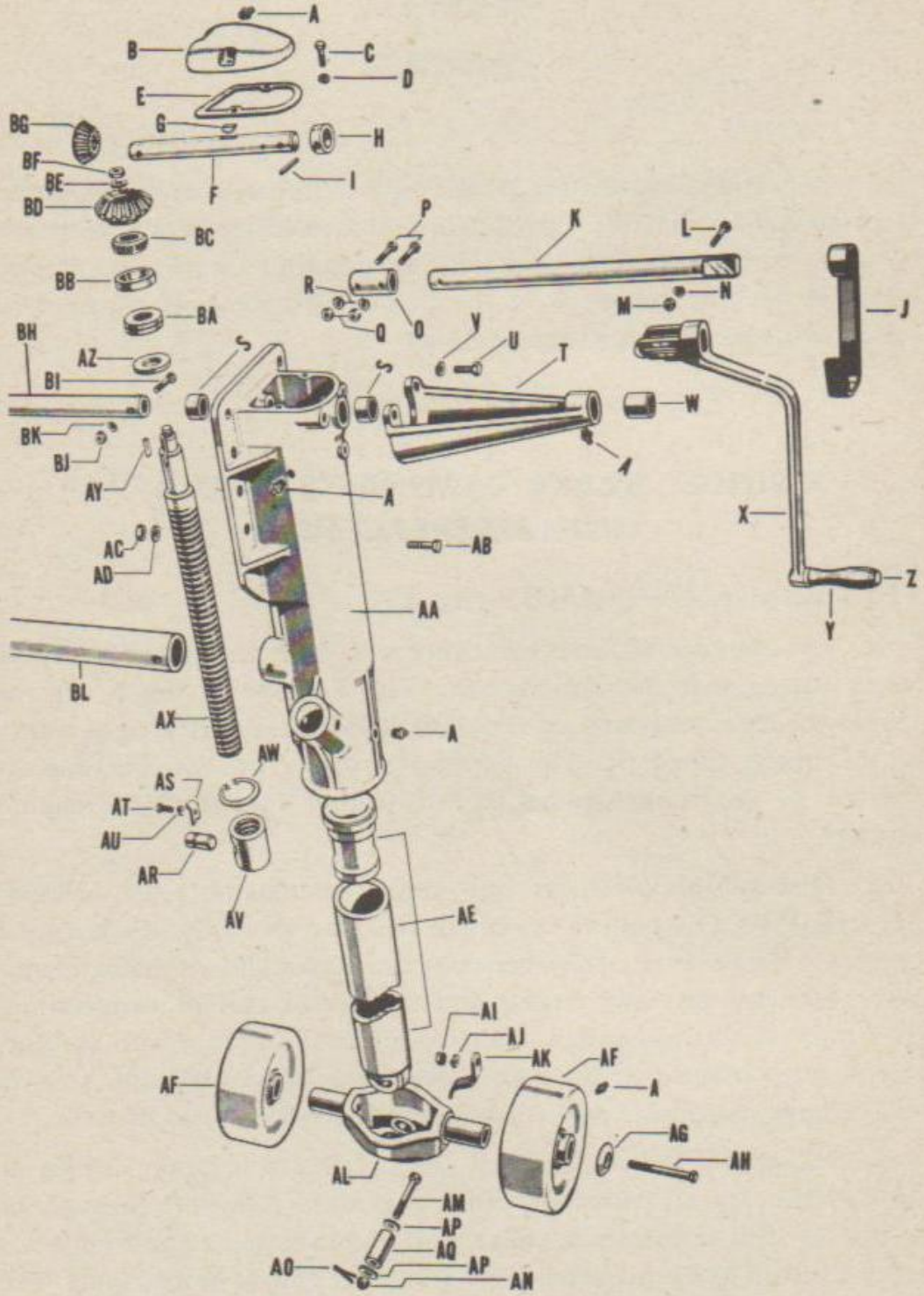
SPRINGS, BRAKE CAMSHAFTS AND BRAKE LINING REPLACEMENT

116. BRAKE CAMSHAFTS (fig. 25).

a. The purpose of the brake cams is to force the ends of the brake shoes out against the brake drum. The S-shape of the brake cams moves the shoes outward an equal distance for each degree of rotation of the brake camshaft. The camshaft rotates on two bearings, one located in the brake spider and the other in the brake chamber bracket.

b. Disassembly. Remove hub and drum assembly as outlined in paragraph 42. Disconnect the brake chamber from the slack adjuster by removing the brake chamber yoke pin cotter and yoke pin. Remove slack adjuster retaining screw and washer at end of camshaft and then pull off slack adjuster. Unhook the brake shoe return spring, to release the pressure on the cam. Loosen the camshaft collar set screw and remove camshaft, pulling same toward spindle end of axle.

c. Assembly. Insert camshaft through holes in brake spider and dust shield. Install camshaft collar and slide camshaft through hole in bracket. Place camshaft collar against brake spider and tighten set screw. Install slack adjuster with adjusting end of worm shaft facing down. Install slack adjuster retaining washer and retaining screw. Before connecting slack adjuster to brake chamber, move slack adjuster back and forth to see that camshaft is free. Connect slack adjuster to brake chamber by installing yoke pin and securing with cotter pin. Install hub and drum assembly (par. 46).



RA PD 341794

Figure 71—Right-hand Landing Gear Assembly Disassembled

A	ALEMITE FITTING
B	BEVEL GEAR COVER
C	CAP SCREW
D	LOCK WASHER
E	GEAR COVER GASKET
F	RIGHT HAND BEVEL GEAR SHAFT
G	WOODRUFF KEY, NO. 15
H	BEVEL GEAR SHAFT COLLAR
I	BEVEL GEAR SHAFT COLLAR PIN
J	CRANK HOLDER
K	CRANK SHAFT
L	CRANK HANDLE BOLT
M	CRANK HANDLE NUT
N	LOCK WASHER
O	CRANKSHAFT COUPLING
P	CRANKSHAFT COUPLING BOLT
Q	NUT
R	PLAIN WASHER
S	BEVEL GEAR SHAFT BUSHING
T	CRANK BRACKET
U	CRANK BRACKET CAP SCREW
V	LOCK WASHER
W	CRANK BRACKET BUSHING
X	CRANK
Y	CRANK HANDLE
Z	CRANK HANDLE RIVET
AA	RIGHT HAND BRACKET, FRAME
AB	BOLT
AC	NUT
AD	LOCK WASHER
AE	LOWER LEG
AF	WHEEL
AG	AXLE CAP
AH	WHEEL BOLT
AI	NUT
AJ	LOCK WASHER
AK	WHEEL TRUCK SPRING
AL	TRUCK, CONNECTOR
AM	TRUCK WHEEL BOLT
AN	NUT
AO	COTTER PIN
AP	WHEEL TRUCK WASHER BOLT
AQ	TRUCK PIN
AR	SCREW NUT GUIDE KEY
AS	GUIDE KEY KEEPER PLATE
AT	CAP SCREW
AU	LOCK WASHER
AV	MAIN SCREW NUT
AW	RETAINING RING
AX	MAIN OPERATING SCREW
AY	MAIN SCREW FEATHER KEY
AZ	THRUST WASHER
BA	THRUST BEARING
BB	BEARING CUP
BC	BEARING CONE
BD	BEVEL GEAR
BE	WASHER
BF	JAM NUT
BG	BEVEL GEAR
BH	INTER-BEVEL GEAR SHAFT
BI	BOLT
BJ	NUT
BK	LOCK WASHER
BL	CROSS TUBE

RA PD 341794B

Legend for Figure 71

117. BRAKE LINING REPLACEMENT.

a. If the brake linings are worn to within $\frac{1}{16}$ to $\frac{1}{32}$ inch of the lining bolt heads, remove the lining attaching bolts and nuts, and install new lining.

118. SPRINGS (ALL MODELS EXCEPT STV-620).

a. Disassembly. Remove nuts from spring clip bolts and pull out bolts and spacers. Remove nut from spring center bolt, and drive out center bolt to release spring leaves.

b. Assembly. Assemble spring leaves in position, line up leaf holes, and insert new center bolt with head on bottom. Clamp all leaves together until center bolt nut can be started on bolt threads; tighten nut. Install spring clip bolts and spacers, and tighten with clip bolt nuts.

Section XXVII

LANDING GEAR (RIGID TYPE)

119. DESCRIPTION AND DATA.

a. Description. The landing gear consists of two assemblies, right-hand and left-hand. The right-hand assembly is bolted to the right side of the semitrailer, and the left-hand assembly is bolted to the left side of semitrailer. The two assemblies are manually operated from one crank which is located on the right side of the semitrailer; the right- and left-hand assemblies are connected with a crank shaft and gear shafts, thus permitting both assemblies to retract and extend simultaneously. All parts are interchangeable from one assembly to another, with the exception of the frame brackets and the bevel gear shafts. The disassembly, assembly, cleaning, and inspection instructions apply to either the right- or left-hand assembly.

b. Data.

Make	American Bantam
Model	LG-B
Height (extended)	3 ft 10 in.
Height (retracted)	2 ft 7 in.
Weight	450 lb

120. DISASSEMBLY.

a. Disassembly (fig. 71).

(1) Remove three cap screws and lock washers from bevel gear cover. Lift the bevel gear cover and gear cover gasket off the frame bracket.

(2) This paragraph applies to the right-hand assembly only. Remove three cap screws (U) and three lock washers from crank bracket (T). Remove two bolts, nuts and lock washers from crank shaft coupling (O) and lift the crank bracket and crank shaft off the frame bracket.

(3) Place a $\frac{3}{8}$-inch drift punch in the bolt hole of the bevel gear shaft, and turn the bevel gear shaft until stop is reached and the wheels are in the retracted position.

(4) Drive the bevel gear shaft (E) partly out of frame bracket or until Woodruff key is exposed. Remove Woodruff key and pull out the bevel gear shaft and lift the bevel gear (BG) out of the frame bracket.

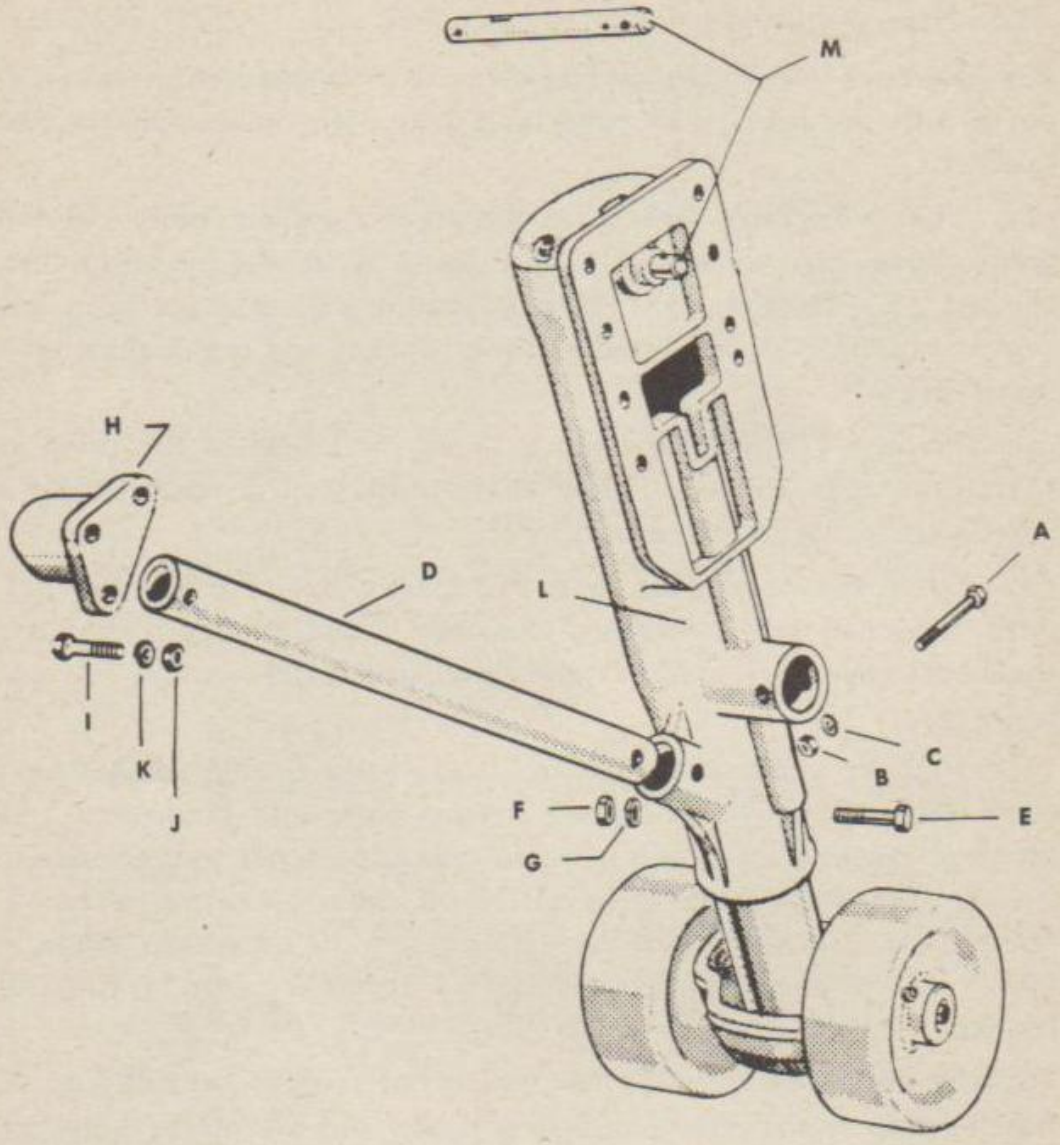
(5) Remove cap screw (AT) and lock washer from guide key keeper plate (AS). Remove guide key keeper plate and guide key (AR). Remove jam nut from end of main operating screw and remove lock washer. Drive the bevel gear (BD) off main operating screw. Tap out the main screw feather key (AY). Turn the main operating screw (AX) out of the frame bracket. Pull lower leg out of the frame bracket.

(6) Remove bearing cone (BC). Do not remove bearing cup. The bearing cup is a pressed fit and will last the life of the hand gear. Wipe the grease off bearing cup and inspect the cup for cracks. If the cup is cracked, pull the cup out. Remove thrust bearing (BA) and thrust washer (AZ). Place a screwdriver under end of retainer ring (AW), pry the retainer ring out of the lower leg and remove the main screw nut (AV).

(7) Remove wheel bolt and axle cap from the two truck spindles and pull off the two wheels. Remove cotter pin, nut and truck wheel washer from truck wheel bolt. Drive out the truck pin (AQ) and remove the truck connector (AL). Remove lubrication fittings, wheels, frame bracket and bevel gear cover.

121. CLEANING AND INSPECTION.

a. Cleaning. Steam clean all parts with the exception of the gear cover gasket.



A	CROSS TUBE BOLT
B	NUT
C	LOCK WASHER
D	BACK BRACE
E	BOLT
F	NUT
G	LOCK WASHER
H	BACK BRACE BRACKET
I	BOLT
J	NUT
K	BACK BRACE BRACKET BOLT LOCK WASHER
L	FRAME BRACKET
M	LEFT HAND BEVEL GEAR SHAFT

RA PD 341787

Figure 72—Left-hand Landing Gear Assembly

b. Inspection. Inspect bevel gear shaft bushings for excessive wear, replace if necessary. Check crank bracket bushing for excessive wear and make certain the bushing is tight in the crank bracket and that bushing has not turned and closed the lubrication fitting hole. Check all bearings to make certain they are not chipped or damaged. Secure replacement if necessary. Inspect the thread of main operating screw for damage. If the threads are burred, dress up the threads using a file. Lay the main operating screw on a flat surface and roll the screw to detect for bend. If screw is bent, straighten or replace with new. Insert a ⅛-inch rod into the lubrication fitting holes to make certain the holes are open.

122. ASSEMBLY (fig. 71).

a. Assembly.

(1) If bevel gear shaft bushing (S) has been removed from frame bracket, press in new bushing and ream to 1 inch diameter. Press new bushing into crank bracket if the bushing has been removed and ream to 1 inch diameter. Drill ⅛-inch hole into crank bracket bushing through lubrication fitting hole to permit passage of lubricant.

(2) Place a light film of grease over truck spindles. Install wheel on truck spindle. Place axle cup (AG) over wheel bolt (AH). Place the wheel bolt through the hole in truck spindle and wheel truck spring (AK) over inner end of wheel bolt. Install lock washer and nut on wheel bolt and tighten the bolt. Install wheel on opposite truck spindle in the same manner.

(3) Place truck connector (AL) over end of lower leg (AE). Aline hole in lower leg with holes in connector truck (AL) and drive truck pin (AQ) through the leg and truck. Secure the truck pin to the truck connector using truck wheel bolt, truck wheel washer, nut and cotter pin. NOTICE: *Do not tighten wheel truck bolt too tight as the truck connector must move freely on the lower leg.*

(4) Place main screw nut (AV) into cavity at top of lower leg and lock the main screw in position using retainer ring (AW). If bearing cup (BB) has been removed, press in the bearing cup. Place thrust washer (AZ) over end of main operating screw. Place thrust bearing next to thrust washer and place the main operating screw into lower end of frame bracket. Install feather key (AY) into end of main operating screw. Install bevel gear on end of main operating screw and secure the bevel gear to main operating screw, using lock washer and jam nut (BF).

(5) Place frame bracket over lower leg, and turn the main operating screw into lower leg. Continue turning main operating screw until

main screw nut is visible through hole on inner side of frame bracket. Install screw nut guide key (AR) into main screw nut, and secure the screw nut guide to frame bracket using guide key keeper plate (AS), lock washer and nut.

(6) Install bevel gear shaft into frame bracket from the outer side, and turn the bevel gear shaft so that the keyway is visible from top of frame bracket. Install Woodruff key into bevel gear shaft. Place bevel gear into frame bracket, and aline the hole in bevel gear with hole in frame bracket. Aline Woodruff key with keyway in bevel gear and drive the bevel gear shaft into the bevel gear until the Woodruff key is in the center of the bevel gear, or nearly so.

(7) Place bevel gear shaft collar (H) over inner end of bevel gear shaft. Secure the bevel gear shaft collar in position using pin (I). If the left-hand landing gear is being assembled, place a bevel gear shaft collar over both ends of the bevel gear shaft and secure the collar in position, using pin. Fasten crankshaft coupling to bevel gear shaft using one ⅜-inch bolt, nut and lock washer.

(8) Place bevel gear cover gasket over top of frame bracket. Place bevel gear cover over gasket, and aline holes in gear cover and gear cover gasket. Secure gear cover to frame bracket using four lock washers and four cap screws.

(9) Maintenance instructions in this paragraph apply to the right-hand landing gear assembly. Fasten crank bracket to right-hand frame bracket using three cap screws and three lock washers. Insert crankshaft through crank bracket and fasten end of crankshaft to coupling using ⅜-inch bolt, lock washer and nut.

(10) Install one lubrication fitting into bevel gear cover and one lubrication fitting into each of the two wheels. Install one lubrication fitting into top rear side, and another in lower outside support bracket and lubricate the assembly (par. 19).

Section XXVIII

APPENDIX

SHIPMENT AND LIMITED STORAGE

123. 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.

124. PREPARATION FOR LIMITED STORAGE.

a. Vehicles to be prepared for limited storage are those ready for immediate service but not used for less than 30 days. 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, including spares. 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 time permits, remove rust from any part of 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 medium grade preservative lubricating oil. Close the tailgate, and rear doors.

(5) INSPECTION. Make a systematic inspection just before shipment or limited storage, to insure that all above steps have been covered, and that the vehicle is ready for operation on call. Make a list of all missing or damaged items, and attach it in a conspicuous place. Refer to Before-operation Service (par. 22).

(6) BRAKES. Release brakes and chock wheels.

c. Inspection in Limited Storage. Vehicles in limited storage will be inspected weekly for tire failures, evidence of vandalism, tampering, etc.

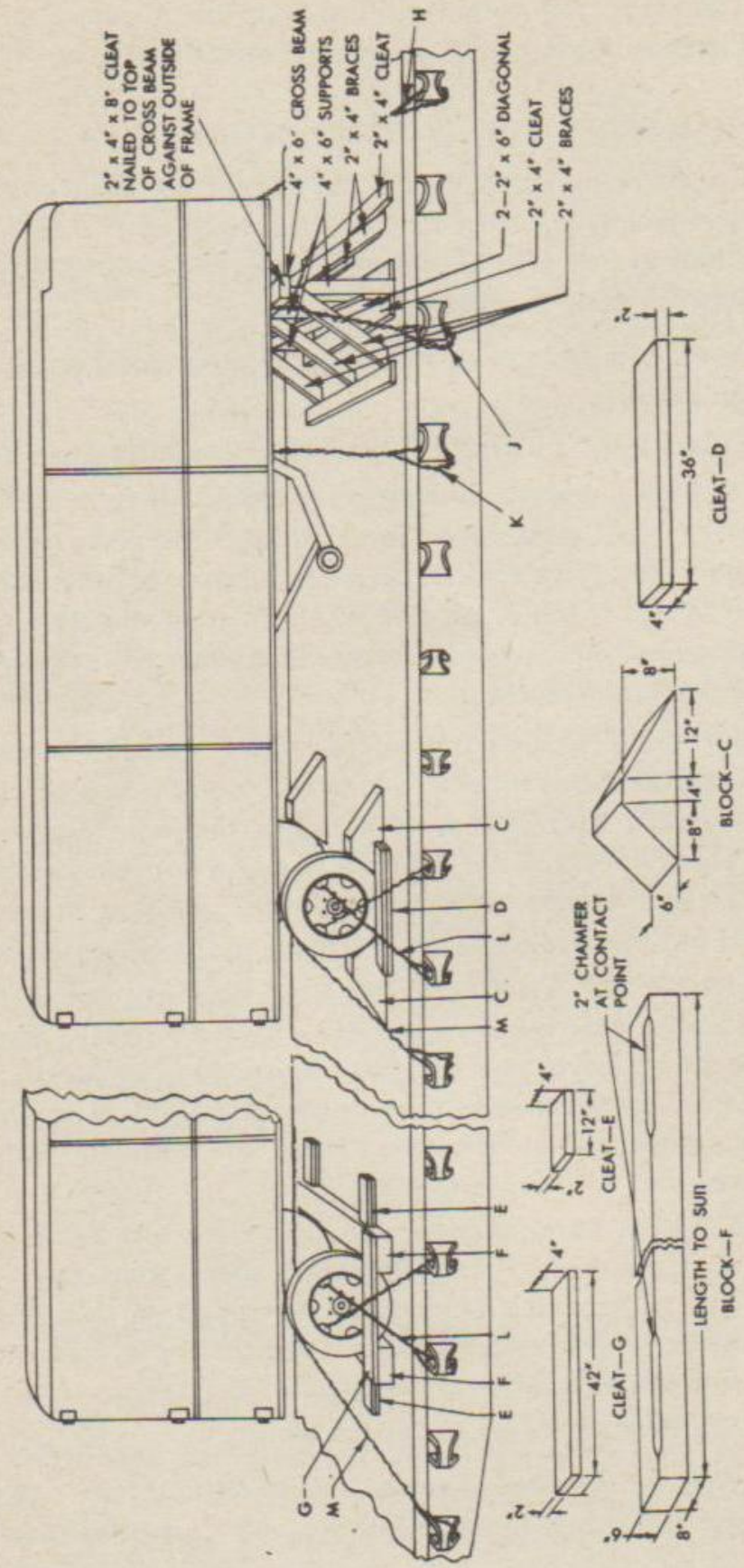


Figure 73—Block Requirements for Rail Shipment

125. LOADING AND BLOCKING FOR RAIL SHIPMENT.

a. Preparation. In addition to the preparation described in paragraph 124 when vehicles are prepared for domestic shipment, the following preparation and precautions must be taken:

(1) Place the vehicle in position with a railroad brake wheel clearance of at least 6 inches. Locate it on the car in such a manner as to prevent the car from carrying an unbalanced load.

(2) All cars containing ordnance vehicles must be placarded "DO NOT HUMP."

(3) Ordnance vehicles may be shipped on flat cars, end-door box cars, side door cars, or drop-end gondola cars, whichever type car is the most convenient.

b. Facilities for Loading. Whenever possible, load and unload vehicles from open cars, using permanent end ramps and spanning platforms. Movement from one flat car to another along the length of the train is made possible by cross-over plates or spanning platforms. If no permanent end ramp is available, an improvised ramp can be made from railroad ties. Vehicles may be loaded in gondola cars without drop ends by using a crane.

c. Securing Vehicles. In securing or blocking a trailer, three motions, lengthwise, sidewise, and bouncing, must be prevented. Two methods for blocking vehicle on freight cars (fig. 73) are given below. NOTE: *All wheel blocking must be located against the outside wheel of the dual.*

(1) FIRST METHOD.

(a) Front of Vehicle. Prepare and position supporting frame (fig. 73) to the rear of, and against, the kingpin so that crossbeam is at right angles to the trailer frame. Nail one cleat (2 x 4 x 8 in.) to the top of the crossbeam against the outside of the frame on each side, using 40-penny nails for each cleat. Toe-nail the three supports to the car flooring, using 40-penny nails. Toe-nail braces, and nail all cleats to the car floor with 40-penny nails.

(b) Rear of Vehicle (fig. 73). Place one block (C) at the front, and one at the rear, of each outside wheel (four blocks (C) required). Nail the heel of the block to the car floor with five 40-penny nails, and nail the portion of the block under the tire to the car floor with two 40-penny nails. Place two cleats (D) to the outside of each wheel (four cleats (D) required). Nail the lower cleat to the car floor with three 40-penny nails, and nail the top cleat to the cleat below with three 40-penny nails.

(c) Strapping Vehicle (fig. 73). Secure vehicle in front (H) and at the side (J) by strapping, consisting of four strands, two wrappings, of No. 8 gage, black annealed wire, secured at the stake pockets of the railroad car. Secure center of vehicle (K) by strapping, passing wire around chassis frame and attaching at the closest stake pocket. Secure vehicle at axle (L) by passing wire through opposite openings in the wheels, and attaching at the closest stake pocket of the car. Secure vehicle at the rear by passing wire through the spring shackles (M), and attach at stake pockets of the car. NOTE: *Angularity of strapping at the rear should be approximately 45 degrees.*

(2) SECOND METHOD.

(a) Front of Vehicle. The front of the vehicle is blocked the same as in first method (step (1) *(a)* above).

(b) Rear of Vehicle (fig. 73). Place one block (F) across the front, and one across the rear of the wheels. Blocks (F) must be at least as long as the over-all width of the vehicle at the car floor. Place cleats (G) against the outside face of the wheels on top of blocks (F). Nail cleats (G) to blocks (F) with 40-penny nails, using two nails at each end of cleats. Place cleats (E) against blocks (F), two to the front, and two to the rear, of each outside wheel. Nail each lower cleat to the car floor with three 40-penny nails, then nail each top cleat to the cleat below with three 40-penny nails.

(c) Strapping Vehicle. Strapping is applied in the second method as in step (1) *(c)* above.

d. Shipping Data.

Length of vehicles (over-all):	
LV-10	252 in.
STV-620	250½ in.
All others	247½ in.
Width of vehicle (over-all):	
LV-10 and STV-620	96 in.
All others	95⅛ in.
Height of vehicle (over-all)—empty:	
STV-620	128½ in.
All others	129⅝ in.
Shipping weight of vehicle—empty:	
LV-10	7,970 lb
STV-620	7,400 lb
All others	7,200 lb

Area of floor occupied per vehicle (approx.):

LV-10	168 sq ft
STV-620	167 sq ft
All others	164 sq ft

Volume occupied per vehicle (approx.):

LV-10	1,814 cu ft
STV-620	1,789 cu ft
All others	1,771 cu ft

Bearing pressure (lb per sq ft of area occupied per vehicle—approx.):

LV-10	47.4
STV-620	44.7
All others	43.9

Section XXIX

REFERENCES

126. PUBLICATIONS INDEXES.

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

Introduction to ordnance catalog (explains SNL system)	ASF Cat. ORD-1 IOC
Ordnance publications for supply index (index to SNL's)	ASF Cat. ORD-2 OPSI
Index to ordnance publications (lists FM's, TM's, TC's of interest to ordnance personnel, FSMWO's, OPSR's, BSD, S of SR's, OSSC's and OFSB's. Includes alphabetical listing of ordnance major items with publications pertaining thereto)	OFSB 1-1
List of publications training (lists MR's, MTP's, T/BA's, T/A's, and FM's, TM's, TR's, SB's, WDTB's, MWO's, WDLO's, numbered pamphlets and firing tables concerning training)	FM 21-6

List of training films, film strips and film bulletins (lists TF's, FS's, and FB's by serial number and subject)	FM 21-7
Military training aids (lists graphic training aids, models, devices and displays)	FM 21-8

127. STANDARD NOMENCLATURE LISTS.

a. Vehicular.

Semitrailer, 6-ton payload, 10-ton gross, 2-wheel (2dt), van (model STV-620)	SNL G-707
Semitrailer, 6-ton payload, 10-ton gross, 2-wheel (2dt), van (knockdown body), 1943 (American Body DF-233-V; Carter C-15-935A; Dorsey E-14; Kentucky 1-ORD; Olson KV-10; Strick 400-W; Timpte T-8-D; Utility GSW-4)	SNL G-665
Semitrailer, 6-ton payload, 10-ton gross, 2-wheel, van (Olson LV-10)	SNL G-545

b. Maintenance.

Cleaning, preserving and lubricating materials: recoil fluids, special oils, and miscellaneous related items	SNL K-1
Tool-sets (common), specialists' and organizational	SNL G-27 (Section 2)
Tool-sets (special), automotive and semi-automotive	SNL G-27 (Section 1)
Soldering, brazing, and welding material, gases, and related items	SNL K-2

128. EXPLANATORY PUBLICATIONS.

a. Fundamental Principles.

Automotive brakes	TM 10-565
Automotive electricity	TM 10-580
Basic maintenance manual	TM 38-250
Chassis, body, and trailer units	TM 10-560
Driver's manual	TM 10-460
Driver selection and training	TM 21-300
Electric fundamentals	TM 1-455

References

Fuels, cleaners, lubricants, and preservatives	TM 9-2835
Military motor vehicles	AR 850-15
Motor vehicle inspection and preventive maintenance service	TM 9-2810
Precautions in handling gasoline	AR 850-20
Sheet metal work, body, fender, and radiator repairs	TM 10-450
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 systems (Bendix-Westinghouse)	TM 9-1827A
Ordnance service in the field	FM 9-5

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 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
The ordnance company, depot	FM 9-25

INDEX

TECHNICAL MANUAL

6-TON 2-WHEEL VAN SEMITRAILER

CHANGES No. 1

DEPARTMENT OF THE ARMY
WASHINGTON 25, D. C., *9 February 1951*

TM 9-888, 16 October 1944, is changed as follows:

The title of this manual is changed to 6-TON 2-WHEEL VAN SEMITRAILER.

1. Scope

a. These instructions are * * * of the vehicles.

* * * * * * *

(5) Model 1-ORD (Kentucky Manufacturing Company). (Rescinded.)

* * * * * * *

b. This manual is arranged in **six** parts: Part One, Introduction; Part Two, Operating Instructions; Part Three, Maintenance Instructions; Part Four, Auxiliary Equipment; Part Five, Repair Instructions; **and Part Six, Shipment and Limited Storage and Destruction to Prevent Enemy Use.**

c. The appendix at the end of the manual contains a list of references including standard nomenclature lists, **forms,** technical manuals, and other publications applicable to the vehicle.

Note. (Added.) All references throughout this manual to Kentucky Manufacturing Company Model 1-ORD are to be ignored as this model has been obsoleted.

2. Forms, Records, and Reports

(Superseded)

a. GENERAL. Forms, records, and reports are designed to serve necessary and useful purposes. Responsibility for the proper execution of these forms rests upon commanding officers of all units operating and maintaining vehicles. It is emphasized, however, that forms, records, and reports are merely aids. They are not a substitute for thorough practical work, physical inspection, and active supervision.

b. AUTHORIZED FORMS. The forms generally applicable to units operating and maintaining these vehicles are listed in the appendix. No forms other than those approved for the Department of the Army will be used. Pending availability of forms listed, old forms may be used. For a current and complete listing of all forms, refer to current

SR 310–20–6. For instructions on use of these forms, refer to FM 9–10.

c. FIELD REPORT OF ACCIDENTS. The reports necessary to comply with the requirements of the Army safety program are prescribed in detail in the SR 385–10–40 series of special regulations. These reports are required whenever accidents involving injury to personnel or damage to matériel occur.

d. REPORT OF UNSATISFACTORY EQUIPMENT OR MATERIALS. Any suggestions for improvement in design, maintenance, safety, and efficiency of operation prompted by chronic failure or malfunction of the matériel, spare parts, or equipment or as to defects in the application or effect of prescribed lubricants and/or preserving materials will be reported through technical channels, as prescribed in SR 700–45–5, to the Chief of Ordnance, Washington 25, D. C., ATTN: ORDFM, using DA AGO Form 468, Unsatisfactory Equipment Report. Such suggestions are encouraged in order that other organizations may benefit.

3. Description

(figs. 1, 2, 3, 4, and 5)

a. GENERAL. The semitrailer is * * * of the frame. A retracting-type landing gear is attached to the frame **of most of these vehicles,** and is operated by a worm screw and hand crank, located on the right front side. **A vertical-lift-type landing gear, with two pivot-mounted wheels on each leg, is used on all STV 620 models.** On Models Nos 400–W, * * * of the trailer.

* * * * * * *

The nomenclature on figure 6, RA PD 341788 Stowage Position for Tools (American bantam model STV–620), is changed as follows: "WHEEL HUB WRENCH" to "WHEEL BEARING NUT WRENCH—41–W–2612–25."

Section III

(Rescinded)

Note. (Added.) For information on parts, special tools, and equipment for organizational maintenance, refer to section X.

9. Specific Procedures

* * * * * * *

d. TIRES. All tires must * * * pressure when cool. **Valve** caps must be present and fingertight. See that spare * * * tire are secure.

* * * * * * *

i. Springs and Suspensions. (Added.) Inspect springs for sag, broken or shifted leaves, loose rebound clips, eye bolts, "U" bolts, and shackles.

10. Controls

a. Landing Gear. (Superseded.) The landing gear supports the semitrailer when it is not coupled to the tractor truck. On all the STV-620 models, this landing gear is of the vertical-lift type (fig. 7), while on all other models, it is of the retractable type (figs. 51, 52, and 53). Operation of both types is accomplished by means of a hand crank; to raise the wheels the crank should be turned in a counterclockwise motion.

* * * * * * *

Section VII. OPERATION UNDER UNUSUAL CONDITIONS

(Superseded)

13. General Conditions

a. In addition to the operating procedures described for usual conditions, special instructions of a technical nature for operating and servicing this vehicle under unusual conditions are contained or referred to herein. In addition to the normal preventive maintenance service, special care in cleaning and lubrication must be observed where extremes of temperature, humidity, and terrain conditions are present or anticipated. Proper cleaning, lubrication, and storage and handling of lubricants not only insure proper operation and functioning, but also guard against excessive wear of the working parts and deterioration of the matériel.

b. Refer to section XI.1 for lubrication under unusual conditions, to tables II and III for preventive maintenance checks, and to section XXIII.1 for maintenance procedures.

c. When chronic failure of matériel results from subjection to extreme conditions, report of the condition should be made on DA AGO Form 468 (par 2).

d. For correct tire pressure, refer to paragraph 36.

13.1. Extreme-Cold Weather Conditions

a. General Problems.

(1) Extensive preparation is necessary of matériel scheduled for operation in extreme cold weather. Generally, extreme cold will cause lubricants to thicken or congeal, insulation to crack resulting in electrical short circuits, and various construction materials to become hard, brittle, and easily damaged or broken.

(2) For description of operations in extreme cold, refer to FM 70–15 and TM 9–2855.

Caution: It is imperative that the approved practices and precautions be followed if satisfactory operation of vehicle is to be obtained.

b. Lubricants, (Storage, Handling, and Use). The operation of equipment at arctic temperatures will depend to a great extent upon the condition of the lubricants used in the equipment. Immediate effects of careless storage and handling or improper use of these materials are not always apparent, but any deviation from proper procedures may cause trouble at the least expected time. Refer to TM 9–2855 for detailed instructions.

13.2. Extreme-Cold Weather Operations

a. Operating the Vehicle.

(1) The driver must be alert for indications of the effect of cold weather on his vehicle.

(2) The driver must be very cautious when placing the trailer in motion after a halt. Congealed lubricants may cause failure of parts. Tires frozen to the ground or frozen to shape while underinflated must be considered. One or more brake shoes may be frozen fast and require preheating to avoid damage to the clutch surfaces of the towing vehicle.

b. At Halt or Parking.

(1) When halted for short shutdown periods, the tractor and semitrailer should be parked in a sheltered spot out of the wind. For long shutdown periods, if high ground is not available, effort should be made to prepare a footing of planks or brush. Chock in place if necessary.

(2) Clean all parts of the vehicle of snow, ice, and mud as soon as possible after operation. Refer to table II for detailed after-operation procedures. Cover and shield the vehicle, keeping canvas paulins off the ground to prevent them from freezing to the ground.

13.3. Operation in Extreme-Hot Weather Conditions

a. Do not park the vehicle in the sun for long periods, as the heat and sunlight will shorten the life of the tires. If possible, place vehicle under cover to protect it from sun, sand, and dust. Completely cover tires with paulins if no suitable shelter is available.

b. Trailers inactive for long periods in hot humid weather are subject to rapid rusting and accumulation of fungi growth. Frequent

inspection and any necessary cleaning and lubricating are recommended to prevent excessive deterioration.

13.4. Operations on Unusual Terrain

Clean all parts of the vehicle of snow, ice, mud, dust, and sand as soon as possible after operation. Particular care should be taken to remove collections of ice, snow, and mud from towing and electrical connections.

Caution: Carefully remove large collections of ice, caked mud, etc., from around wheels.

13.5. Fording Operations

a. Normal Fording. Fording of bodies of water up to the maximum towing vehicle fording depth is based on the standard towing vehicle with special protection provided for critical units, but without deep-water fording kit. Observe the following precautions:

(1) The brakes of the towing vehicle and trailer will usually be "lost," but in some cases may "grab" after emergence. Applying the brakes a few times will help dry out the brake lining after dry land has been reached.

(2) If accidental complete submersion occurs, the trailer will be salvaged, temporary preservation applied as outlined in section XI and then sent to the ordnance maintenance unit as soon as recovered for necessary permanent maintenance.

b. Deep-Water Fording. Refer to TM 9–2853 for general information on preparing trailer for deep-water fording.

c. After-Fording Operations. Refer to paragraph 113.3 for maintenance operations after fording.

Section VIII

(Rescinded)

PART THREE
ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

Section X. PARTS, SPECIAL TOOLS, AND EQUIPMENT FOR ORGANIZATIONAL MAINTENANCE

(Superseded)

17. General

Tools and equipment and spare parts are issued to the using organization for maintaining the matériel. Tools and equipment should not be used for purposes other than prescribed and, when not in use, should be properly stored in the chest and/or roll provided for them.

17.1. Parts

Spare parts are supplied to the using organization for replacement of those parts most likely to become worn, broken, or otherwise unserviceable, providing such operations are within the scope of organizational maintenance functions. Organizational spare parts, tools, and equipment supplied for the 6-ton 2-wheel semitrailers are listed in Department of the Army Supply Catalog ORD 7 SNL's G–545 (Olsen Model LV 10), G–665 (American Body, Model DF 233V; Carter, Model C15–935A; Dorsey, Model E14; Olsen, Model KV 10; Strick, Model 400W; Timpte, Model T8D; and Utility, Model GSW4, 1943), and G–707 (American Bantam, Model STV 620) which are the authorities for requisitioning replacements.

17.2. Common Tools and Equipment

Standard and commonly used tools and equipment having general application to these semitrailers are authorized for issue by ORD 7 catalogs and by T/A and T/O & E.

17.3. Special Tools and Equipment

Certain tools and equipment specially designed for organizational maintenance, repair, and general use with the matériel are listed in table I for information only. This list is not to be used for requisitioning replacements.

Table I. Special Tools and Equipment for Organizational Maintenance

Item	Identifying number	References		Use
		Fig	Par	
WRENCH, wheel brg nut, dble end, oct, opngs 3 5/16 and 3 7/8 in.	41–W–2612–25	6 and 10.1	42	Used in removal and installation of wheel bearing nuts.

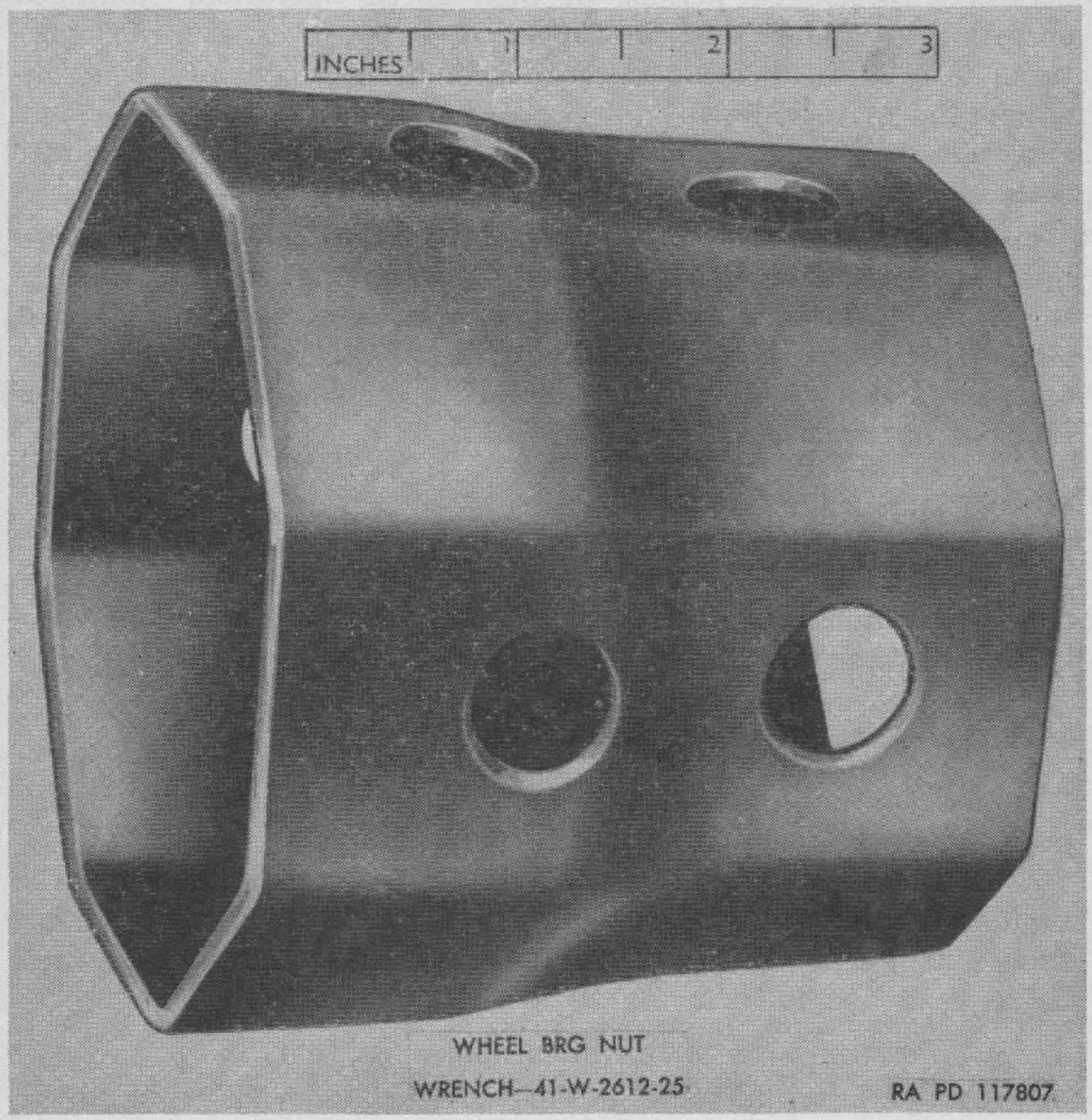


Figure 10.1. Special organizational tool.

Section XI.1. LUBRICATION UNDER UNUSUAL CONDITIONS

(Added)

19.1. General

a. Unusual Conditions. Reduce service intervals specified on the lubrication order, that is, lubricate more frequently, to compensate for abnormal or extreme conditions, such as high or low temperatures, prolonged periods of high speed operation, continued operation in sand or dust, immersion in water, or exposure to moisture. Any one of these operations or conditions may cause contamination and quickly destroy the protective qualities of the lubricants. Intervals may be extended during inactive periods commensurate with adequate preservation.

b. Changing Grade of Lubricants. Lubricants are prescribed in the "Key" in accordance with three temperature ranges. Change the grade of lubricants whenever weather forecast data indicate that air temperatures will be consistently in the next higher or lower temperature range. No change in grade will be made when a temporary rise in temperature is encountered.

19.2. Lubrication for Continued Operation Below 0° F.

Refer to TM 9–2855 for information on necessary special preliminary lubrication of the trailer in preparation for continued operation in temperatures below 0° F.

19.3. Lubrication After Fording Operations

a. After any prolonged fording operation, lubricate all chassis points to cleanse bearings of water or grit.

b. If the vehicle has been in deep water for a considerable length of time or has been completely submerged, precautions must be taken as soon as practicable to avoid serious damage to axles, brakes, wheel bearings, etc., as follows:

(1) Perform a complete lubrication service (par. 19).

(2) Operations in bodies of salt water enhances the rapid growth of rust and corrosion, especially on unpainted surfaces. It is most important to remove all traces of salt water or salt deposits from every part of the vehicle. For assemblies which have to be disassembled, dried and relubricated, perform these operations as soon as the situation permits. Wheel bearings must be disassembled and repacked after

each submersion. Regardless of the temporary measures taken, the vehicle must be delivered as soon as practicable to the ordnance maintenance unit.

19.4. Lubrication After Dust or Sand Operations

After operation under dusty or sandy conditions, clean and inspect all points of lubrication for fouled lubricants to avoid abrasion caused by dust and sand. Lubricate as directed in the lubrication order.

20. General

a. Responsibility and Intervals. (Superseded.) Preventive maintenance services are the responsibility of the using organization. These services consist generally of before-operation, during-operation, at-the-halt, after-operation, and weekly services performed by the driver or operator and scheduled services to be performed at designated intervals by organization mechanic or maintenance crews. Intervals are based on normal operations. Reduce intervals for abnormal operations or severe conditions. Intervals during inactive periods may be extended accordingly.

* * * * * * *

21. Cleaning

(Superseded)

a. General. Any special cleaning instructions required for specific mechanisms or parts are contained in the pertinent section. General cleaning instructions are as follows:

(1) Use dry-cleaning solvent or volatile mineral spirits paint thinner, to clean or wash grease or oil from all parts of the vehicle.

(2) A solution of one part grease-cleaning compound to four parts of dry-cleaning solvent or volatile mineral spirits paint thinner may be used for dissolving grease and oil from chassis and other parts. Use cold water to rinse off any solution which remains after cleaning.

(3) Use clean water or a soap solution of ¼ pound of soap chips to a gallon of hot water for all rubber parts and over-all general cleaning of painted surfaces.

(4) After the parts are cleaned, rinse and dry them thoroughly. Apply a light grade of oil to all parts having a polished surface, to prevent rusting.

(5) Before installing new parts, remove any preservative materials, such as rust-preventive compound, protective grease,

etc.; prepare parts as required (oil seals, etc.); and for those parts requiring lubrication, apply the lubricant prescribed in the lubrication order.

b. General Precautions in Cleaning.

(1) Dry-cleaning solvent and volatile mineral spirits paint thinner are inflammable and should not be used near an open flame. Fire extinguishers should be provided when these materials are used. Use only in well-ventilated places.

(2) These cleaners evaporate quickly and have a drying effect on the skin. If used without gloves, they may cause cracks in the skin and, in the case of some individuals, a mild irritation or inflammation.

(3) Avoid getting petroleum products such as dry-cleaning solvent, volatile mineral spirits paint thinner, engine fuels, or lubricants on rubber parts as they will deteriorate the rubber.

(4) The use of gasoline or benzine for cleaning is prohibited.

22. Preventive Maintenance by Driver or Operator

(Superseded)

a. Purpose. To insure mechanical efficiency, it is necessary that the vehicle be systematically inspected at intervals each day it is operated, and also 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 the driver or operator to correct must be reported at the earliest opportunity to the designated individual in authority. The services set forth in table II are those performed by the driver or operator before-operation, during-operation, at-the-halt, after-operation, and weekly.

b. Services. Table II lists the services to be performed by the driver or operator at the designated intervals. Every organization must thoroughly school its personnel in performing the maintenance procedures for this vehicle as set forth in this manual.

Table II. Driver's or Operator's Preventive Maintenance Services

Intervals					Procedure
Before-operation	During-operation	At-the-halt	After-operation	Weekly	
X				X	*Tires.* Gage tires for correct pressure.
		X	X	X	Remove penetrating objects such as nails, glass, or stones. Note any apparent loss of air, unusual wear, or missing valve caps.
				X	Check tires for proper matching and irregular wear and change position as required. Check wheel nuts and ring bolts for proper tightness.
X					*Vehicle equipment.* Visually inspect vehicle publications, including necessary forms.
X			X	X	Operate lights if tactical situation permits. Visually inspect reflectors.
X			X	X	Visually inspect body, towing connections, doors, paulins, etc.
X					Check for any tampering or damage that may have occurred since last inspection.
				X	Check that all tools and equipment are serviceable and in their proper place.
	X				*Operating observations.* While the vehicle is in operation, the driver or operator should be alert for any sounds that may be a sign of trouble, such as rattles, knocks, squeaks, or hums. Every time the brakes are used or the vehicle turns, the driver or operator should instinctively consider it a test and note any unusual or unsatisfactory performance.
		X	X	X	*Operating faults.* Investigate and correct or report any faults noted during operation.
			X	X	*Lubricate.* Lubricate daily and weekly items specified on lubrication orders.
			X		*Clean equipment.* Clean dirt and trash from inside trailer when practicable, wipe off exterior of equipment.
				X	Wash the vehicle when possible. If not possible, wipe off thoroughly. Thoroughly clean compartments of all dirt and trash.
				X	*Electrical wiring.* Check all accessible wiring and ascertain that it is securely connected and supported, that insulation is not cracked or chafed, and that conduits and shielding are in good condition and secure. Report any unserviceable wiring.
			X	X	*Tighten and repair.* Tighten any nuts or screws where inspection indicates necessity. Correct deficiencies noted, if within organizational scope, or if not, report to proper authority.

Table II. Driver's or Operator's Preventive Maintenance Services—Continued

Intervals					Procedure
Before-operation	During-operation	At-the-halt	After-operation	Weekly	
X				X	*Air brake.* Open pet cocks and drain off condensation. Check to see that tanks and air line connections are secure.
			X		Place hand cautiously on each wheel and brake drum to see if they are abnormally hot or abnormally cool.
				X	*Towing connections and landing gear.* Inspect all towing devices and landing gear components for looseness and damage. Clean and lubricate as required and inspect for abnormal wear.
	X				*Brakes.* Check brake for proper response.
			X		*Springs and suspensions.* Check springs for abnormal sag, broken or shifted leaves, loose or missing rebound clips, eye bolts, "U" bolts, or shackles. Also check radius rods to see if they are damaged.
			X		*Body and load.* Inspect all units and mountings for looseness and damage. See that doors and tailgate operate freely and latch securely.
X		X			Check cargo to ascertain that it is properly distributed and secure.
					UNUSUAL CONDITIONS
					Preventive maintenance services for usual conditions will apply, with emphasis on servicing by the operator to combat the effect of unusual conditions of extreme cold (par 113.1 and TM 9–2855), extreme heat (par 113.2), unusual terrain (par 113.4), and fording (par 113.3 and TM 9–2853). The services described below are those required to assure optimum results with special services that may be required under unusual conditions.
					EXTREME COLD
X		X			*Tires.* Look for tires frozen to the ground, and frozen flat spots. Check for proper inflation.
X		X	X		*Clean equipment.* Clean all snow, ice, or mud from all parts of vehicle.
X					*Air brakes.* Make certain alcohol evaporator kit, if available, is functioning.
					UNUSUAL TERRAIN
			X		*Clean equipment.* Clean all parts of the vehicle after each operation in sand, dust, mud, or snow. Touch up paint where exposed surfaces are discovered.
					FORDING OPERATIONS
			X		Refer to paragraph 113.3 for maintenance after fording.

23. During-Operation Service

(Rescinded)

24. At-Halt Service

(Rescinded)

25. After-Operation and Weekly Service

(Rescinded)

26. Organizational Maintenance (Second Echelon)

* * * * * * *

i. SPECIFIC PROCEDURES. The procedures for performing each item in the 1,000 **miles or 60 days** and 6,000 **miles or** 6 **months** maintenance procedures, whichever shall occur first, are described in **table III. Usually, a trailer will be presented for service on a "time" basis; however, it is possible for a trailer to be permanently assigned to a towing vehicle and both be presented on a "mileage or time" basis.** Each page of the **table** has two columns at its left edge corresponding to the 6,000 **miles or 6 months** and the 1,000 **miles or 60 days** maintenance respectively. Very often it * * * opposite that number.

Table III. Organizational Mechanic or Maintenance Crew Preventive Maintenance Services

Intervals		Procedure
6,000 miles [1] or 6 months [2]	1,000 miles [1] or 60 days [2]	
		ROAD TEST
		Note. When the tactical * * * over 6 miles.
1	1	*Before-operation service.* (Superseded.) Perform the before-operation service as outlined in table II as a check to determine whether the vehicle is in a satisfactory condition to make the road test safely.
*	*	* * * * *
13	13	*Temperatures (brake drums and hubs).* (Superseded.) Feel all the brake drums and wheel hubs cautiously for abnormal temperatures. An overheated brake drum or wheel hub is an indication of a dragging brake, or a defective, dry, or improperly adjusted wheel bearing; an abnormally cool brake drum is an indication of an inoperative brake.
*	*	* * * * *

[1] The chart which appears on pages 49 through 55 will be changed so that the "6,000 miles" and "1,000 miles" columns will read "6,000 miles or 6 months" and "1,000 miles or 60 days," as above.

[2] Whichever is first.

Table III. Organizational Mechanic or Maintenance Crew Preventive Maintenance Services—Continued

Intervals		Procedure
6,000 miles [1] or 6 months [2]	1,000 miles [1] or 60 days [2]	
		MAINTENANCE OPERATIONS
*	*	* * * * *
85	85	*Vehicle lubrication.* If lubrication is * * * in Lubrication Order. Omit only those * * * damaged grease fittings.
*	*	* * * * *
135	135	*Publications.* Be sure vehicle manuals, Lubrication Order, *Standard* Form **91 (Operator's Report of Motor Vehicle Accident)**, and **DA AGO** Form 478 **(MWO and Major Unit Assembly Replacement Record and Organizational Equipment File)** are present and properly stowed.
*	*	* * * * *
		UNUSUAL CONDITIONS (Added)
		Maintenance operations and road tests as prescribed under usual conditions will apply under unusual conditions for operations for all occasions except in extreme cold weather. Intervals are necessarily shortened in extreme cold weather servicing and maintenance. Vehicles subjected to salt-water immersion or complete submersion should be evacuated to ordnance maintenance unit as soon as possible after the exposure.

[1] The chart which appears on pages 49 through 55 will be changed so that the "6,000 miles" and "1,000 miles" columns will read "6,000 miles or 6 months" and "1,000 miles or 60 days," as above.
[2] Whichever is first.

40. Tire Maintenance

a. TIRES AND TUBES. Tires must be * * * must be vulcanized. **Tube repairs shall be accomplished with authorized organization equipment.** Tires must be * * * with rubber equipment.

42. Hub and Drum Assembly Removal

(figs 23 and 24)

* * * * * * *

c. REMOVE HUB CAP AND BEARING NUTS. Remove hub cap * * * cap and gasket. Avoid damaging gasket. Remove wheel bearing jam nut, wheel bearing adjusting nut lock washer, and wheel

bearing adjusting nut from spindle **using wheel bearing nut wrench—41–W–2612–25.**

* * * * * * *

46. Hub and Drum Assembly Installation

(figs 23 and 24)

* * * * * * *

b. INSTALL BEARING NUTS AND HUB CAPS. Install wheel bearing adjusting nut, **using wheel bearing nut wrench—41–W–2612–25, wheel bearing** adjusting nut lock washer, and wheel bearing jam nut. Adjust bearings as * * * to damage gasket.

* * * * * * *

Figure 45, RA PD 306079 Suspension System (Kentucky Model 1–ORD), is rescinded.

72.1. Coordination with Ordnance Maintenance Unit for Removal of Axle Assembly

(Added)

Replacement of the axle assembly with a new or rebuilt axle assembly is normally an ordnance maintenance operation, but may be performed in an emergency by the using organization, provided authority for performing this replacement is obtained from the appropriate commander. A replacement axle assembly, any tools needed for the operation which are not carried in the using organization, and any necessary instructions regarding accessories, may be obtained from the supporting ordnance maintenance unit.

Section XXIII.1. MAINTENANCE UNDER UNUSUAL CONDITIONS

(Added)

113.1. Extreme Cold Weather Maintenance

Refer to TM 9–2855 for a general discussion of maintenance problems, the application of arctic-type lubrication, and dewinterization procedures.

113.2. Extreme Hot Weather Maintenance

a. In hot, dry climates, a careful watch must be kept for evidence of the presence of moths and termites.

b. In hot, damp climates, corrosive action on all parts of the vehicle will occur and will be accelerated in areas of high humidity and during the rainy season. Evidences will appear in the form of rust and paint

blisters on metal surfaces and mildew or mold on fabrics and unpainted surfaces.

c. Protect exterior surfaces from atmosphere by touch-up painting. Cables and terminals will be protected by ignition-insulation compound.

d. Make frequent inspections of idle, inactive vehicles. Remove corrosion from exterior surfaces with abrasive cloth and apply a protective coating of paint, oil, or a suitable rust-preventive compound.

113.3. Maintenance After Fording

a. GENERAL. It is advisable that the following services be accomplished on all vehicles which have been exposed to some depths of water or complete submersion, especially in salt water, and that precautions be taken as soon as practicable to halt deterioration and to avoid damage before the vehicle is driven extensively in regular road service.

b. CLEANING AND LUBRICATION.

(1) *Body and chassis.* Clean out body; clean all exposed unpainted parts and coat with ignition-insulation compound. Lubricate the chassis thoroughly as directed in the lubrication order. Do more than the *usual* lubrication job, making sure that lubricant is generously forced into each bearing to force out any water present. Wheels will be removed for bearing cleaning and repacking in every case.

(2) *Wheels and brakes.*

(*a*) Remove all wheels and wash all wheel bearings thoroughly in dry-cleaning solvent or volatile mineral spirits paint thinner. Repack bearings and assemble.

(*b*) With wheels removed, dry out brake lining. Clean rust and scum from brake drum face.

c. ELECTRICAL CONNECTIONS. Check all electrical connections for signs of corrosion.

113.4. Maintenance After Operation on Unusual Terrain

a. MUD. Thorough cleaning and lubrication of all parts affected must be accomplished as soon as possible after operation in mud, particularly when a sea of liquid mud has been traversed. Repack wheel bearings if necessary.

b. SAND AND DUST. Paint any surfaces blasted by sand. Lubricate completely to force out lubricants contaminated by sand, salt, or dust.

Section XXV.1. PARTS, SPECIAL TOOLS, AND EQUIPMENT FOR FIELD AND DEPOT MAINTENANCE

(Added)

115.1. General

Tools and equipment and maintenance parts over and above those available to the using organization are supplied to ordnance field maintenance units and depot shops for maintaining, repairing, and/or rebuilding the matériel.

115.2. Parts

Maintenance parts are listed in Department of the Army Supply Catalog ORD 8 SNL's G–545 (Olsen, Model LV10), G–665 (American Body, Model DF233V; Carter, Model C15–935A; Dorsey, Model E14; Olsen, Model KV10; Strick, Model 400W; Timpte, Model T8D; and Utility, Model GSW4, 1943), and G–707 (American Bantam, Model STV620) which are the authorities for requisitioning replacements.

115.3. Common Tools and Equipment

Standard and commonly used tools and equipment having general application to this matériel are authorized for issue by TA and T/O & E.

115.4. Special Tools and Equipment

No special tools or equipment for field and depot maintenance are required.

PART SIX

(Added)

SHIPMENT AND LIMITED STORAGE AND DESTRUCTION TO PREVENT ENEMY USE

Section XXVII.1. SHIPMENT AND LIMITED STORAGE

122.1. Domestic Shipping Instructions

a. Preparation for Shipment in Continental United States. When shipping the 6-ton 2-wheel van semitrailer interstate or within continental United States, except directly to ports of embarkation, the officer in charge of preparing the shipment *will be responsible* for furnishing vehicles to the carriers for transport in a *servicable* condition

properly cleaned, preserved, painted, lubricated, etc., as prescribed in SB 9–4.

Note. For loading and blocking instructions of vehicles on freight cars, refer to paragraphs 122.3 and 122.4.

b. Preparation for Shipment to Ports.

(1) *Inspection standards.* All used vehicles destined for oversea use will be inspected prior to shipment to determine their serviceability in accordance with standards given in TB ORD 385.

(2) *Processing for shipment to ports.* All vehicles destined to ports of embarkation for oversea shipment will be further processed in accordance with SB 9–4.

Note. Ports of embarkation will supplement any necessary additional or previously omitted processing upon receipt of vehicle.

c. Removal of Preservatives for Shipment. Personnel withdrawing vehicles from a limited storage status for domestic shipment *must not remove preservatives* other than to insure that vehicles are complete and serviceable. If it has been determined that preservatives have been removed, they must be restored prior to domestic shipment. The removal of preservatives is the responsibility of depots, ports, or field installations (posts, camps, and stations) receiving the shipments.

d. Army Shipping Documents. Prepare all army shipping documents accompanying freight in accordance with TM 38–705.

122.2. Limited Storage Instructions

a. General.

(1) Vehicles received for storage already processed for domestic shipment, as indicated on the vehicle processing record tag (DA AGO Form 9–3), must not be reprocessed unless the inspection performed on receipt of vehicles reveals corrosion, deterioration, etc.

(2) Completely process trailer upon receipt directly from manufacturing facilities or if the processing data recorded on the tag indicates that the trailer has been rendered ineffective by operation or freight shipping damage.

(3) Vehicles to be prepared for limited storage must be given a limited technical inspection and be processed as prescribed in SB 9–63. The results and classification of vehicle will be entered on DA AGO Form 461–5.

b. Receiving Inspections.

(1) Report of vehicles received in a damaged condition or improperly prepared for shipment will be reported on DD Form 6 in accordance with SR 745–45–5.

(2) When vehicles are inactivated, they are to be placed in a limited storage status for periods not to exceed 90 days. Stand-by storage for periods in excess of 90 days will normally be handled by ordnance maintenance personnel only.

(3) Immediately upon receipt of vehicles for storage, they must be inspected and serviced as prescribed in section XII. Perform a systematic inspection and replace or repair all missing or broken parts. If repairs are beyond the scope of the unit and the vehicle will be inactivated for an appreciable length of time, place vehicles in a limited storage status and attach a tag to the vehicles specifying the repairs needed. The report of these conditions will be submitted by the unit commander for action by an ordnance maintenance unit.

c. INSPECTIONS DURING STORAGE. Perform a visual inspection periodically to determine general condition. If corrosion is found on any part, remove the rust spots, clean, paint, and treat with the prescribed preservatives.

Note. Touch-up painting will be in accordance with TM 9-2851.

d. REMOVAL FROM LIMITED STORAGE.

(1) If the vehicles are not shipped or issued upon expiration of the limited storage period, they may either be processed for another limited storage period or be further treated for stand-by storage (vehicles inactivated for periods in excess of 90 days up to 3 years) by ordnance maintenance personnel.

(2) If vehicles to be shipped will reach their destination within the scope of the limited storage period, they need not be reprocessed upon removal from storage unless inspection reveals it to be necessary according to anticipated in-transit weather conditions.

Note. All used vehicles that are to be reissued to troops within the continental limits of the United States will be inspected prior to shipment to determine their serviceability in accordance with TB ORD 385.

(3) Deprocess vehicles when it has been ascertained that they are to be placed into immediate service. Remove all rust-preventive compounds and thoroughly lubricate as prescribed in section XI. Inspect and service vehicles as prescribed in section XII.

(4) Repair and/or replace all items tagged in accordance with *b* (3) above.

e. STORAGE SITE. The preferred type of storage for vehicles is under cover in open sheds or warehouses whenever possible. Where it is found necessary to store vehicles outdoors, the storage site must be selected in accordance with AR 700-105 and protected against the elements as prescribed in TB ORD 379.

122.3. Loading the 6-Ton 2-Wheel Van Semitrailer for Rail Shipment

a. Preparation.

(1) When vehicles are shipped by rail, every precaution must be taken to see that they are properly loaded and securely fastened and blocked to the floor of car. All on vehicle matériel (OVM) will be thoroughly cleaned, preserved, packed, labeled, and securely stowed in or on the vehicle for transit. All doors must be locked and sealed by strapping.

(2) Prepare all vehicles for rail shipment in accordance with paragraph 122.1*a*. In addition take the following precautions:

(*a*) The vehicles must be loaded on the car in such a manner as to prevent the car from carrying an unbalanced load.

(*b*) Increase tire pressure slightly higher than normal for rail shipment except in cases where shipment is to be exposed to extremely hot weather conditions.

b. Type of Car. Instructions contained herein pertain to the loading of vehicles on flatcars (cars with wooden floors laid over sills and without sides or ends but equipped with stake pockets).

c. Method of Loading Vehicles on Freight Cars.

(1) *Flatcar loading.*

(*a*) When suitable hoisting equipment is not available for loading vehicles on or subsequent unloading from a flatcar, an end ramp must be used in cases where the vehicle is not on a level with the flatcar deck. Vehicles on a warehouse platform or loading dock can be pivoted over spanning platforms aboard a flatcar adjacent to the platform, then again pivoted into lateral position on the flatcar.

(*b*) When unboxed vehicles must be loaded from ground level, a ramp may be improvised ((2) below) by borrowing railroad ties normally found stacked in railroad yards and by procuring necessary planking. An end ramp is shown in place in figure 74.

Note Railroad ties alone, stacked without deck planking and not securely anchored, provide a very unstable ramp and must be rearranged upon each successive use.

(*c*) To accomplish loading, the vehicle is towed onto the improvised apron at base of ramp and unhitched. Attach a dolly under vehicle for towing up the ramp and spotting on flatcar. Using a cable laid along the center line of

the flatcar and attached to the dolly, the vehicle is steered to point towards the ramp.

Caution: Follow up forward movement of the vehicle by chocking behind one or more wheels on the ramp.

(*d*) For powering the towing cable, a vehicle with winch is spotted at *right angles* to the train, located at about the third or fourth flatcar to facilitate signaling and because of cable length limits. A single-sheave snatch block located between cars on the train center line will provide the necessary *lateral* pull. Vehicles passing this point can be towed (with landing gear down) by a vehicle on the ground with personnel guiding their passage. A long tow cable from the towing vehicle will lessen the tendency of the towed vehicle to stray from the center line of the train.

Note. When towing vehicle with landing gear down, the vehicle should be towed very slowly and cautiously in order to prevent damage to landing gear mechanism.

(*e*) After the first vehicle is loaded on the flatcar, lower landing gear and remove dolly from under vehicle and lower to ground by means of the wrecker. Additional vehicles may be similarly hauled aboard by passing the towing cable beneath the loaded vehicle. When a train of flatcars is being loaded, steel or wooden spanning platforms or bridges are used to cover the gaps between cars. Flatcar brake wheels must first be lowered to floor level to permit passage. A pair of improvised spanning platforms is shown in place in figure 74. These spanning platforms are moved along the train by hand as the vehicle advances.

(*f*) The above method of train loading requires careful advance planning as to the order of loading, so that vehicles are arranged on each flatcar under prescribed methods and combinations.

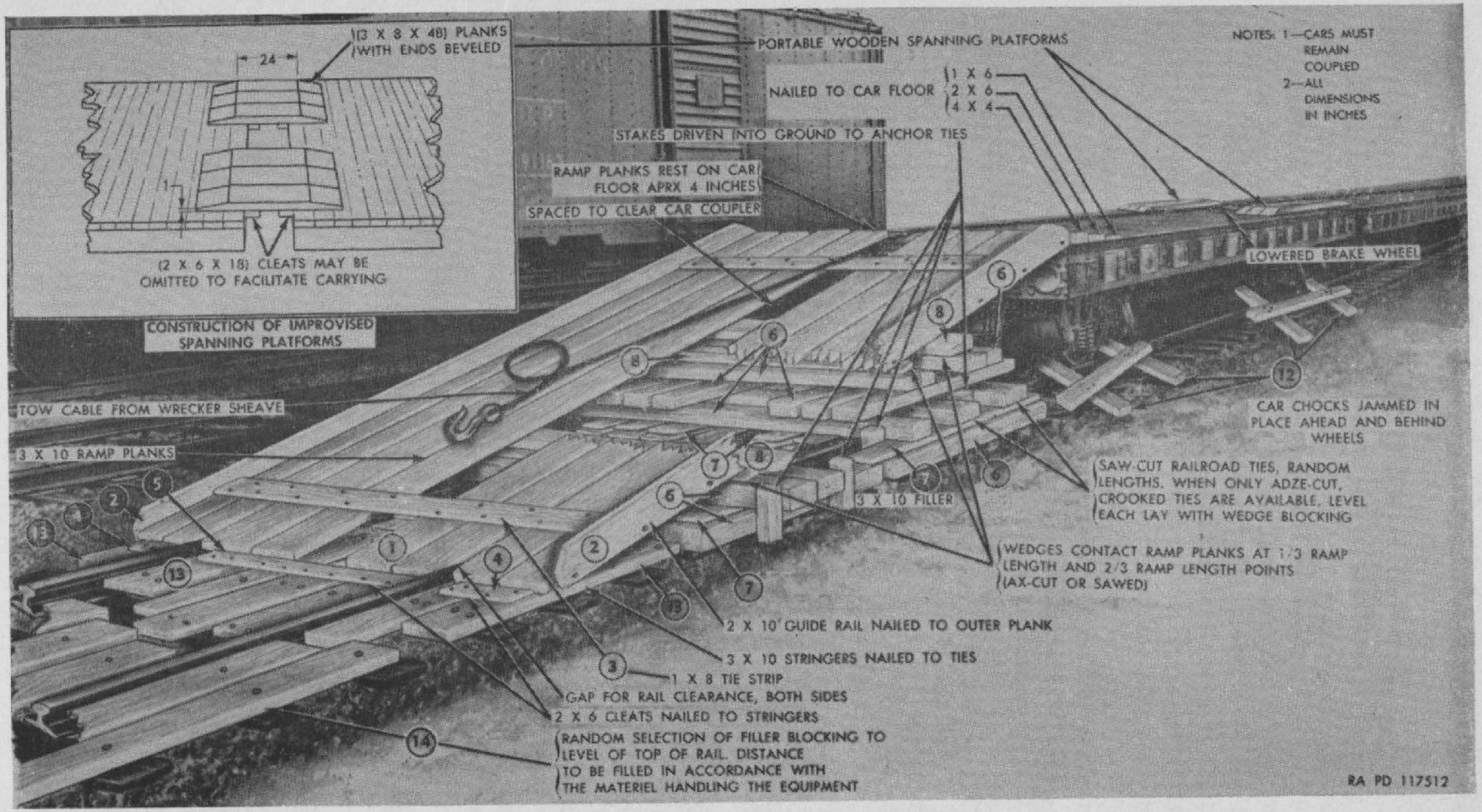


Figure 74. Construction of improvised loading ramp and spanning platforms.

BILL OF MATERIALS FOR RAMP AS ILLUSTRATED					
PART NO	QUANT REQ'D	PART NAME	LENGTH	WIDTH	THICKNESS
1	8	RAMP PLANKS	20 ft	10 in	3 in
2	2	GUIDE RAILS	20 ft	8 in	2 in
3	2	TIE STRIPS	6 ft	8 in	1 in
4	2	CLEATS	18 in	6 in	2 in
5	1	CLEAT	56 in	6 in	2 in
6	31	RAILROAD TIES	8 ft	8 in	8 in
7	AS REQD	FILLERS	AS REQD	10 in	3 in
8	AS REQD	WEDGES (CUT TO FIT)	8 ft	—	—
9	1	STEPDOWN PIECE	8 ft	4 in	4 in
10	1	STEPDOWN PIECE	8 ft	6 in	2 in
11	1	STEPDOWN PIECE	8 ft	6 in	1 in
12	4	CHOCK BLOCKS	AS REQD	4 in	4 in
13	AS REQD	STRINGERS	AS REQD	10 in	3 in
14	AS REQD	GROUND DUNNAGE	AS REQD		

NOTES:

1. RAMP SHOWN IS OF CAPACITY OF LARGEST END-LOADING FREIGHT CAR. FOR LESSER LOADS, REDUCE NUMBER OF RAMP PLANKS.
2. WIDTH DETERMINED BY TREAD OF MATERIEL BEING LOADED.
3. FOR LOADING TWO WHEELED ARTILLERY TRAILERS, OR SHORT WHEELBASE MATERIEL, RAMP PLANKS MAY BE SHORTER.

CAUTION: WHEN RAMP IS TOO SHORT, UNDERPINNING OF MATERIEL WILL STRIKE END OF RAMP (EX: 90 MM AA GUN).

4. OPENING AT CENTER MAY BE FILLED UP TO THE CAR COUPLER TO AVOID INJURY TO MANEUVERING PERSONNEL.
5. FOR LOADS OVER 40-TONS, APPROACH END OF FLATCAR MUST BE BLOCKED UP TO AVOID TIPPING OF FLATCAR.
6. THIS TYPE RAMP IS ADAPTABLE TO DROP-END GONDOLA AND AUTO END-DOOR BOX CAR LOADING.
7. WHEN LOADING AN AUTO END-DOOR BOX CAR, IT MAY BE NECESSARY TO LOAD A FLATCAR COUPLED TO THE BOX CAR, TO GAIN OVERHEAD LOADING CLEARANCE.
8. WHEN LOADING BY WRECKER CABLE, WITH PULL AT 90-DEGREES TO TRAIN, USING A SHEAVE, FLATCAR AT POINT OF PULL MUST BE LASHED TO ADJACENT RAILS, CARS, OR OTHER FIXED OBJECT.

RA PD 117513

Figure 74—Continued.

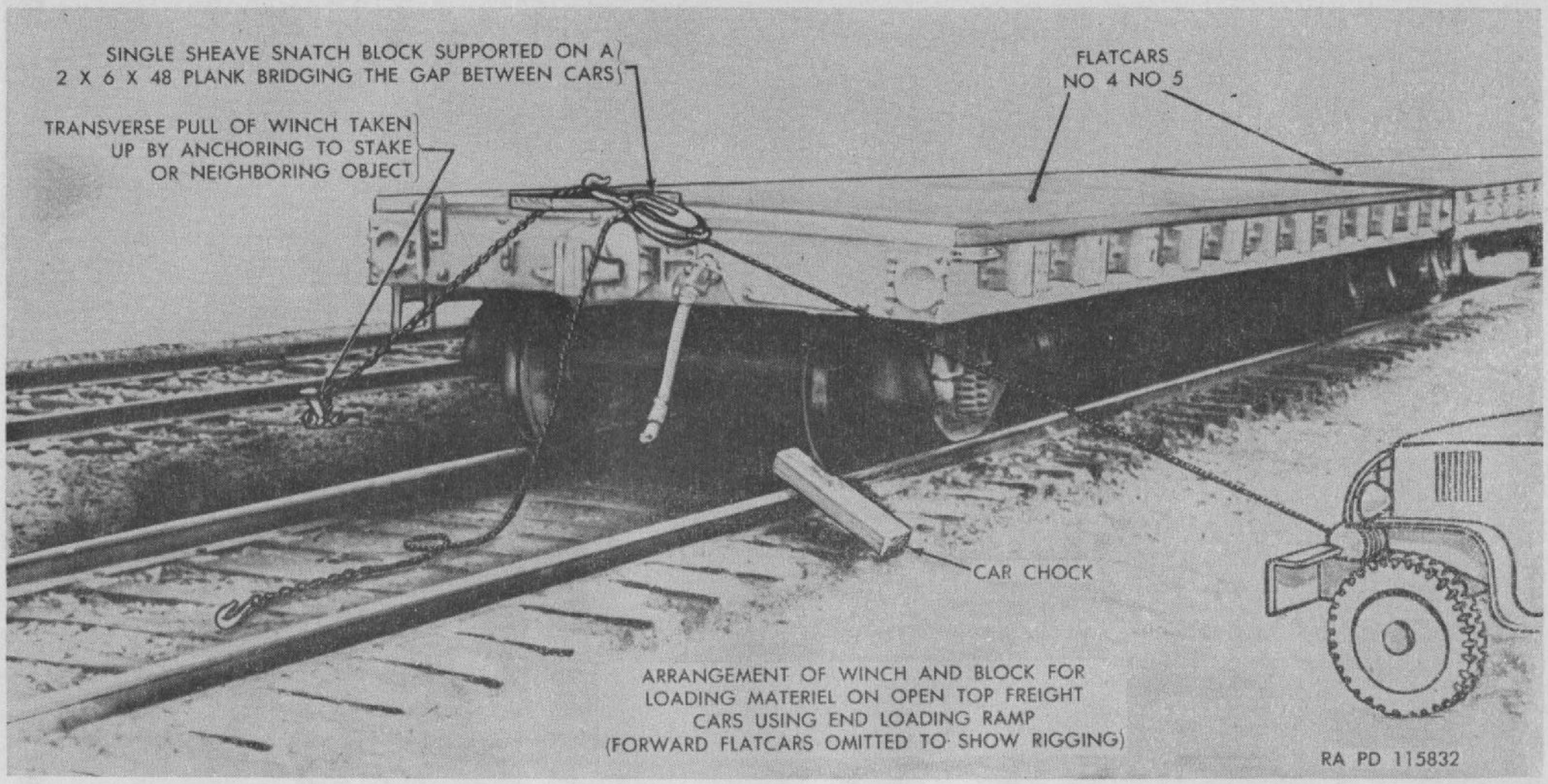


Figure 75. Method of powering the towing cable

Note. The snatch-block fastening chain must be lashed to an adjacent, solidly fixed object or stake to offset the cross pull of the powered winch (fig. 75).

(2) *Loading ramp.*

(*a*) A ramp for end-loading of vehicles on open-top freight cars may be improvised when no permanent ramps or hoisting facilities are available. A ramp suitable for the loading of most ordnance items is shown in figure 74. For loading the 6-ton 2-wheel van semitrailer, the width of the ramp may be reduced to two double-plank runways, each cleated together. Length of planking must be determined with consideration to underchassis clearance, in order to clear the hump at upper end of ramp.

Caution: Personnel guiding the vehicle up the ramp must exercise care when working close to the edges of the ramp planking.

(*b*) The flatcar bearing the ramp must be securely blocked against rolling, particularly when the car brakes are not applied as in train loading. Successive cars must remain coupled and be additionally chocked at several points along the train when ground towing of vehicles aboard the train is being effected.

(*c*) Whenever the freight cars are not on an isolated track or blocked siding, each end approach to the train must be posted with a blue flag or light to advise that men are at work and that the siding may not be entered beyond those points.

(*d*) Upon completion of the loading operation, the ramp planks and bridging devices should be loaded on the train for use in unloading operations. Random sizes of timbers used in building the approach apron up to rail level should be included. All material should be securely fastened to the car floor, after vehicles are blocked in place, and entered upon the bill of lading (B/L). Railroad ties borrowed for the operation should not be forwarded to the unloading point unless specifically required and only with the consent of the owner.

d. Loading Rules. For general loading rules pertaining to rail shipment of ordnance vehicles, refer to TB 9–OSSC–G.

Warning: The height and width of vehicle when prepared for rail transportation must not exceed the limitations indicated by the loading table, as prescribed in section II, AR 700–105. Whenever possible, load transportation officers must be consulted about the limitations of the particular railroad lines to be used for the movement, to avoid delays, dangers, or damage to equipment.

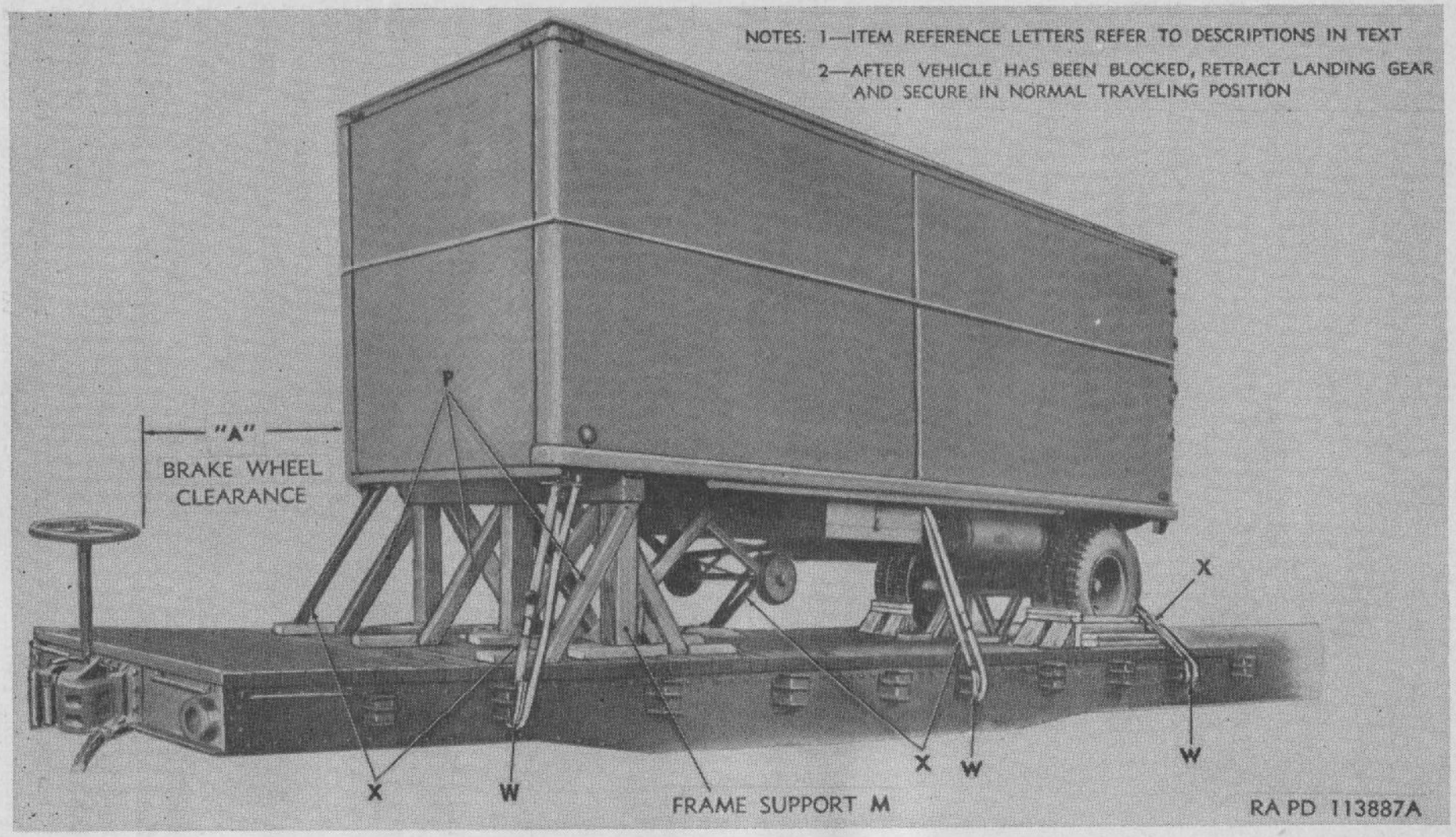


Figure 76. Blocking semitrailers for rail shipment.

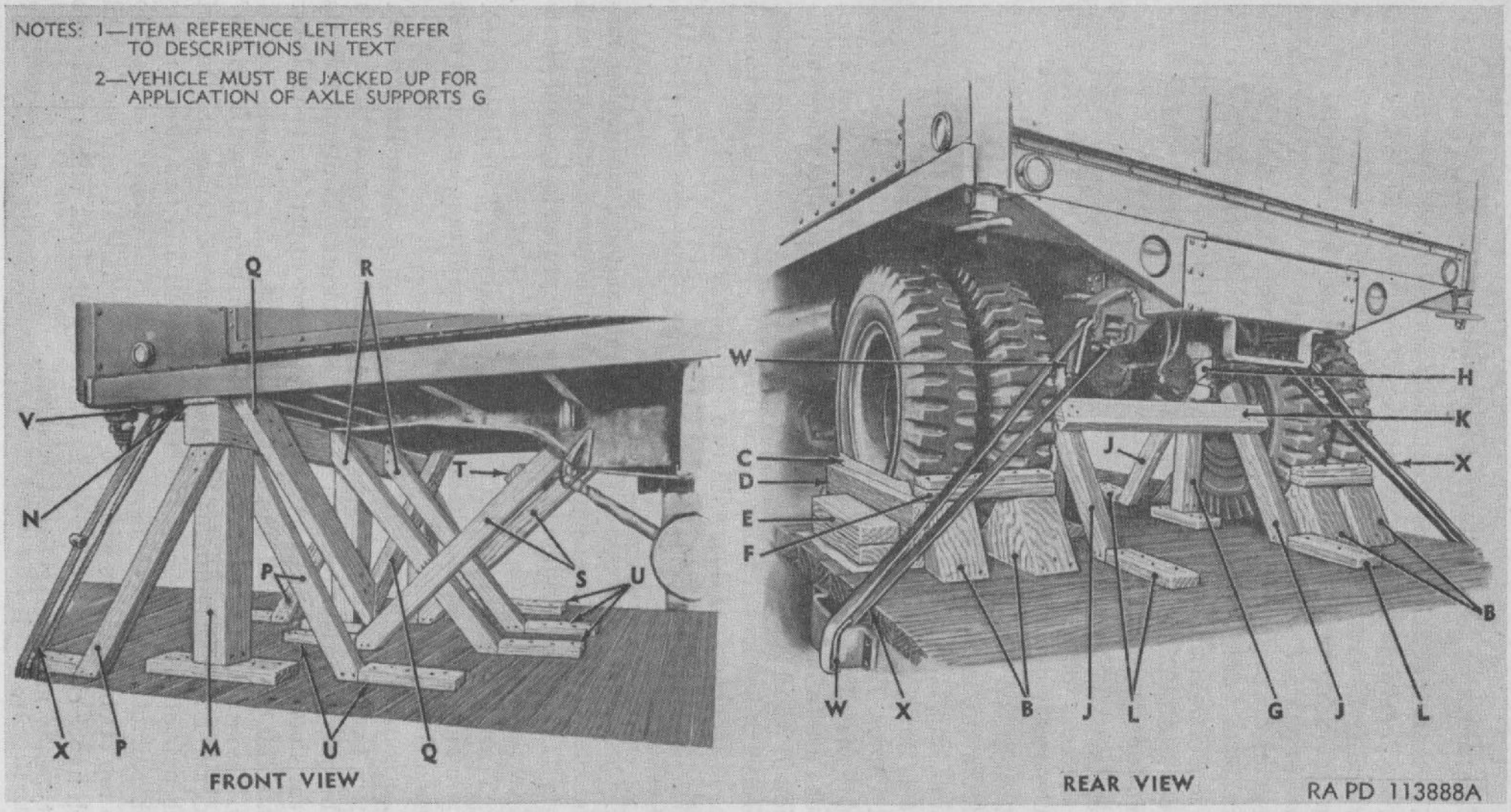


Figure 77. Blocking semitrailers for rail shipment—detail views.

122.4. Blocking Semitrailers for Rail Shipment

a. General. All blocking instructions specified herein are minimum and are in accordance with Association of American Railroads "Rules Governing the Loading of Commodities on Open Top Cars." Additional blocking may be added as required at the discretion of the officer-in-charge. Double-headed nails may be used if available, except in the lower piece of two-piece floor side cleats and two-piece cross cleats. All item reference letters given below refer to the details and locations as shown in figures 76 and 77. The semitrailer shown in figures 76 and 77 is *not* the 6-ton 2-wheel van semitrailer, but method of blocking shown is applicable.

Note. Any loading methods or instructions developed by any source which appear in conflict with this publication or existing loading rules of the carriers, must be submitted to the Chief of Ordnance, Washington 25, D. C., for approval.

b. Brake Wheel Clearance "A." Load semitrailers on cars with a minimum clearance of a least 4 inches below and 6 inches above, behind, and to each side of the brake wheel (fig. 76). Increase clearance as much as is consistent with proper location of load.

c. Chock Blocks "B" (6 x 8 x 24 Inches, Eight Required). Locate the 45° face of blocks against the front and rear of each wheel. Blocks are to be positioned in such a manner as to allow flush application of wheel side cleats "D" (*e* below) when nailed to chock blocks. Nail heel of blocks to car floor with three fortypenny nails and toenail sides of blocks to car floor with two fortypenny nails each.

Note.—Chock blocks may be cut from timber (or railroad ties when available) as shown in figure 78.

d. Cushioning Material "C." Locate suitable cushioning material such as waterproof paper, burlap, etc., between outer tires and cleats "D." The cushioning material must protrude beyond cleats "E" at floor and above cleats "D."

e. Wheel Side Cleats "D" (1 x 8 x 46 Inches, Two Required). Locate and nail cleats to chock blocks "B" with four tenpenny nails at each end.

f. Floor Side Cleats "E" (2 x 4 x 38 Inches, Four Required). Locate two floor side cleats against each wheel side cleat "D" with cushioning material protruding underneath cleats. Nail lower cleats to car floor with four thirtypenny nails and upper cleats to lower cleats and car floor with four fortypenny nails.

g. Cross Cleats "F" (2 x 4 Inches, Length to Bridge Two "B" Blocks; Eight Required). Locate two cleats across the top of each pair of "B" blocks at the front of wheels and two cleats across each pair of "B" blocks at rear of wheels. Nail each lower cleat to the top of chock blocks with two thirtypenny nails at each end. Nail each upper cleat to the lower cleat and top of chock blocks with two fortypenny nails, staggered at each end.

h. Axle Supports "G" (Two Required). Locate and nail one 2 x 4 x 16-inch cleat to the base of a 4 x 4-inch (height to suit) block with three thirtypenny nails. Jack up vehicle and place supports under axle, one near each wheel. Nail each floor cleat lengthwise to car floor with eight thirtypenny nails and toenail each block to cleat and car floor with four fortypenny nails. Place a 1¼- x 0.035-inch steel strap over the top of axle directly over each support and secure each end of straps to the sides of blocks with three eightpenny nails. Remove jacks from under axle.

i. Chassis Support Blocks "H" (4 x 4 Inches, Height To Suit Two Required). Locate one chassis block directly above each support "G," between the top of the axle and sill of unit. Secure blocks to the suspension with No. 11 gage wire.

j. Diagonal Braces "J" (2 x 4 Inches, Length To Suit, Four Required). Bevel ends to suit. Locate under suspension at about a 45° angle and toenail each brace to car floor with three twentypenny nails.

k. Cross Cleats "K" (2 x 4 Inches, Length To Suit, Two Required). Locate cleats across braces "J" approximately 12-inches from the top as shown in figure 77. Nail each end to braces with two twentypenny nails.

l. Back-up Cleats "L" (2 x 4 x 16 Inches, Four Required). Locate against diagonal braces "J" lengthwise of car. Nail each cleat to car floor with six twentypenny nails.

m. Frame Support "M." Locate frame support against and behind king pin as follows (figs. 76 and 77):

(1) *Floor cleats (2 x 6 x 24 inches, three required).* Cleats to be equally spaced and nailed to car floor with eight twentypenny nails.

(2) *Uprights (6 x 6 inches, height to suit, three required).* Locate one upright at the center on top of each floor cleat and toenail into cleat and car floor with eight fortypenny nails through each upright.

(3) *Horizontal support block (6 x 6 inches, length to suit, one required).* Locate block against and behind king pin on top of uprights and toenail to each upright with eight fortypenny nails.

Note. At this point of blocking retract landing gear and secure in normal traveling position.

n. Filler Blocks "N" (1 x 6 x 30 Inches, Two Required). Wedge blocks between horizontal support block and frame of semitrailer, one at each end. Toenail through support block and filler block with two eightpenny nails at each end.

o. Diagonal Braces "P" (2 x 4 Inches Length To Suit, Five Required). Bevel ends to suit. Locate two braces diagonally under horizontal support block against outer and inner sides of the

two end uprights. Locate one brace diagonally under horizontal support block in front of and against one side of the center upright (figs. 76 and 77). Nail each brace to the upper side faces of the uprights with three thirtypenny nails and toenail lower portion to car floor with three thirtypenny nails.

p. Cross Diagonal Braces "Q" (2 x 6 Inches, Length To Suit, Two Required). Bevel ends to suit. Locate upper portion of braces against frame and inner face of horizontal support block and the lower portion against lower inner face of center upright. Nail upper ends to horizontal support block and lower ends to center upright with three thirtypenny nails through each connection.

q. Diagonal Braces "R" (4 x 4 Inches, Length To Suit, Two Required). Bevel ends to suit. Locate braces to the rear and near center of horizontal support block. Toenail to horizontal support block and to car floor with four thirtypenny nails through each connection.

r. Diagonal Braces "S" (4 x 4 Inches, Length To Suit, Two Required). Bevel ends to suit. Locate against body of vehicle as shown in figure 77. Toenail to car floor and to diagnoal braces "R" at intersection with four thirtypenny nails through each connection.

s. Cross Cleat "T" (2 x 4 Inches, Length To Suit, One Required). Locate cleat across braces "S" approximately 12-inches from the top as shown in figure 77. Nail each end to braces with two twentypenny nails.

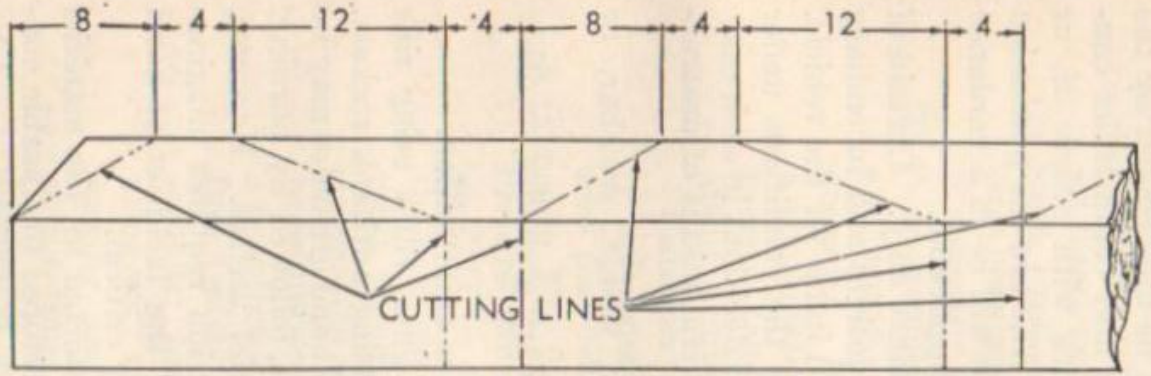
t. Back-up Cleats "U" (2 x 4 x 16 Inches, Nine Required). Locate one cleat against each diagonal brace "P", "R" and "S." Nail each cleat to car floor with six twentypenny nails.

u. Strap Support Blocks "V" (4 x 4 x 31 Inches, Two Required). Locate between one center frame member and the flange of the body side channel at front corners of vehicle for application of strapping "X." Wire block in place with No. 11 gage wire.

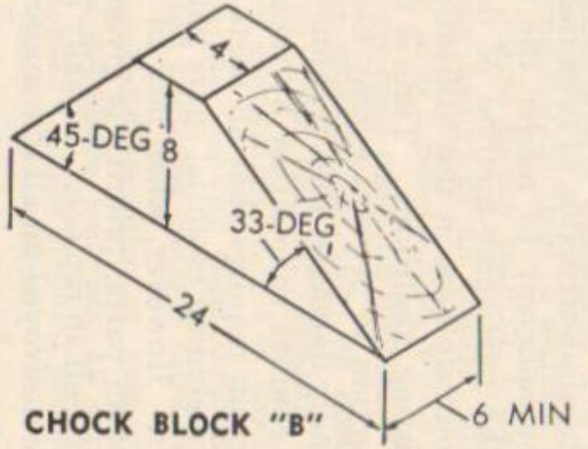
v. Protection Angles "W" (20 Gage x 4 Inches Wide Banding, Ten Required). Form into angles so as to prevent displacement. Locate where strapping "X" passes around frame of vehicle and stake pockets to protect the strapping from being cut. Refer to note in *w* below.

w. Strapping "X" (2 x 0.050-Inch High-Tension Banding, Six Required). Locate one strap at each corner of vehicle and one midway on each side. After positioning angles "W," pass strapping around the frame and through stake pockets, tighten and crimp seal.

Note. The strapping at the front end of vehicle will pass around blocks "V" (fig. 77) therefore they do not require protection angles. All strapping must be as secure as possible. As an added security measure it is recommended that the vehicle be additionally strapped at various points along the frame, by using six strands of No. 9 gage black annealed wire twist-tied together, and secured to stake pockets.



METHOD OF MARKING TIMBER FOR CUTTING CHOCK BLOCKS



CHOCK BLOCK "B"

NOTES: 1—RAILROAD TIES MAY BE SUBSTITUTED FOR TIMBERS WHEN AVAILABLE
2—ALL DIMENSIONS SHOWN ARE IN INCHES

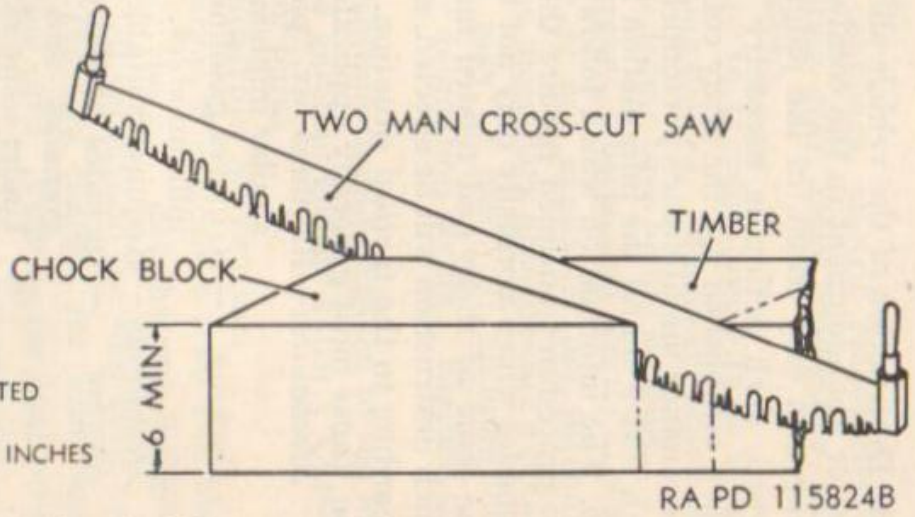


Figure 78. Cutting chock blocks from timbers.

Section XXVII.2. DESTRUCTION OF MATÉRIEL TO PREVENT ENEMY USE

122.5. General

a. Destruction of the vehicle and equipment, when subject to capture or abandonment in the combat zone, will be undertaken by the using arm only when, in the judgment of the unit commander concerned, such action is necessary in accordance with orders of, or policy established by, the army commander. When in the possession of ordnance maintenance personnel, destruction will be in accordance with FM 9–5 and the information below as is applicable.

b. The information which follows is for guidance only. Certain of the procedures outlined require the use of explosives and incendiary grenades which normally may not be authorized items for the vehicle. The issue of these and related materials, and the conditions under which destruction will be effected, are command decisions in each case, according to the tactical situation. Of the several means of destruction, those most generally applicable are:

Mechanical—Requires ax, pick mattock, sledge, crowbar, or similar implement.

Burning —Requires gasoline, oil, incendiary grenades, or other inflammables.

Demolition —Requires suitable explosives or ammunition.

Gunfire —Includes artillery, machine guns, rifles using rifle grenades, and launchers using antitank rockets. Under some circumstances hand grenades may be used. In general, destruction of essential parts, followed by burning, usually will be sufficient to render the matériel useless. However, selection of the particular method of destruction requires imagination and resourcefulness in the utilization of the facilities at hand under the existing conditions. Time is usually critical.

c. If destruction to prevent enemy use is resorted to, the matériel 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 matériel, including essential spare parts, be destroyed or damaged beyond repair. However, when lack of time and personnel prevents destruction of all parts, priority is given to the destruction of those parts most difficult to replace. Equally important, the same essential parts must be destroyed on all like matériel so that the enemy cannot construct one complete unit from several damaged ones.

d. If destruction is directed, due consideration should be given to—

(1) Selection of a point of destruction that will cause greatest obstruction to enemy movement and also prevent hazard to

friendly troops from fragments or ricocheting projectiles which may occur incidental to the destruction.

(2) Observance of appropriate safety precautions.

122.6. Destruction of the 2-Wheel Van Semitrailer

a. Method No. 1—By Burning.

(1) Smash lights, air hose couplings, electric receptacles and switches, reflectors, landing gear, relay emergency valve, air filters and brake chambers.

(2) Slash tires. Exercise care to prevent injury from inflated tires blowing out while being slashed. Whenever practicable, it is usually preferable to deflate tires before slashing.

(3) Pour gasoline over the brakes, wheels, and electrical wiring and ignite. If gasoline is not available, use incendiary grenades. If gasoline and incendiary grenades are available, a combination of them may be used. If ammunition is present, take cover before detonation occurs. Elapsed time: about 4 minutes.

Caution: Due consideration should be given to the highly inflammable nature of gasoline and its vapor. Carelessness may result in painful burns.

b. Method No. 2—with Demolition Materials.

(1) Prepare two 2-pound charges of explosives (two 1-lb blocks of TNT or equivalent per charge). Set the two charges on the axle, *one* close to the left spring and the *other* close to the right spring. Connect the two charges for simultaneous detonation with detonating cord. Provide for dual priming to minimize the possibility of a misfire. For priming, either a nonelectric blasting cap crimped to at least 5 feet of safety fuse (safety fuse burns at the rate of 1 foot in 30 to 45 seconds; test before using) or an electric blasting cap and firing wire may be used. Safety fuse, which contains black powder, and blasting caps must be protected from moisture at all times. The safety fuse may be ignited by a fuse lighter or a match; the electric blasting cap requires a blasting machine or equivalent source of electricity.

Caution: Keep the blasting caps, detonating cord, and safety fuse separated from the charges until required for use.

Note. For the successful execution of methods of destruction involving the use of demolition materials, all personnel concerned will be thoroughly familiar with the pertinent provisions of FM 5–25. Training and careful planning are essential.

(2) Destroy the tires by placing an incendiary grenade under each tire. The detonation of the explosives charges should be delayed until the incendiary fires are well started. This

will prevent the fires from being extinguished by the blast when the charges are detonated.

(3) Detonate the charges. If primed with nonelectric blasting cap and safety fuse, ignite and take cover. If primed with electric blasting cap, take cover before firing. Elapsed time: about 5 minutes.

c. Method No. 3—by Gunfire.

(1) Destroy the tires as in method No. 1 or 2 (above).

(2) Destroy the vehicle by gunfire using artillery, machine guns, rifles using rifle grenades, or launchers using antitank rockets. Fire on the vehicle aiming at the wheels, axles, and towing bracket. Although one well placed direct hit may destroy the vehicle, several hits are usually required for complete destruction unless an intense fire is started, in which case the vehicle may be considered destroyed. Elapsed time: about 6 minutes.

Caution: Firing at ranges of 500 yards or less should be from cover.

APPENDIX

Section XXVIII. Shipment and Limited Storage

(Rescinded)

APPENDIX

Section XXIX. REFERENCES

(Superseded)

1. Publication Indexes

The following publication indexes and lists of current issue should be consulted frequently for latest changes or revisions of references given in this appendix and for new publications relating to matériel covered in this manual:

Index of administrative publications	SR 310–20–5
Index of Army motion pictures and film strips	SR 110–1–1
Index of Army training publications	SR 310–20–3
Index of blank forms and Army personnel classification tests.	SR 310–20–6
Index of technical manuals, technical regulations, technical bulletins, supply bulletins, lubrication orders, modification work orders, tables of organization and equipment, reduction tables, tables of allowances, tables of organization, tables of equipment, and tables of basic allowances.	SR 310–20–4
Introduction and index (supply catlogs)	ORD 1
Military training aids	FM 21–8
Ordnance major items and major combinations, and pertinent publications.	SB 9–1

2. Supply Catalogs

The following Department of the Army supply catalogs pertain to this matériel:

a. DESTRUCTION TO PREVENT ENEMY USE.	
Land mines and fuzes, demolition material, and ammunition for simulated artillery and grenade fire.	ORD 11 SNL R–7
b. REPAIR, OVERHAUL, AND REBUILD.	
Antifriction bearings and related items	ORD 5 SNL H–12
Cleaners, preservatives, lubricants, recoil fluids, special oils, and related maintenance materials.	ORD 3 SNL K–1

Electrical fittings	ORD 5 SNL H–4
Items of soldering, metallizing, brazing and welding materials; gases and related items.	ORD 3 SNL K–2
Lubricating equipment, accessories, and related dispensers.	ORD (*) SNL K–3
Major items and major combinations of group G.	ORD 3 SNL G–1
Miscellaneous hardware	ORD 5 SNL H–2
Oil seals	ORD 5 SNL H–13
Ordnance maintenance sets	ORD 6 SNL N–21
Standard hardware	ORD 5 SNL H–1
Tool-sets (special), motor vehicles	ORD 6 SNL G–27, Sec 1
Tool-sets (common), specialists' and organizational.	ORD 6 SNL G–27, Sec 2
c. VEHICLE.	
Semitrailer, 6-ton, 2-wheel, van (Olson, model LV10).	ORD (*) SNL G–545
Semitrailer, 6-ton, 2-wheel, van (American Body, model DF233V; Carter, model C15–935A; Dorsey, model E14; Olson, model KV10; Strick, model 400W; Timpte, model T8D; and Utility, model GSW4CKD).	ORD (*) SNL G–665
Semitrailer, 6-ton, 2-wheel, van (Gramm, Checker, American Bantam, Carolina, and Edwards, model STV620).	ORD (*) SNL G–707
Semitrailer, 6-ton, payload, 10-ton gross, 2-wheel (2dt), van, cargo body and textile repair body (Utility Trailer, model GSW–4 steel).	ORD (*) SNL G–588

3. Forms

The following forms pertain to this matériel:

Standard Form 91, Operator's report of motor vehicle accident.
Standard Form 91A, Transcript of operator's report of motor vehicle accident.
Standard Form 93, Report of investigating officer.
Standard Form 94, Statement of witness.
DA Form 30b, Report of claims officer.
DA AGO Form 9–3, Processing record for storage and shipment.
DA AGO Form 9–68, Spot check inspection report for wheeled and half-track vehicles.
DA AGO Form 9–71, Locator and inventory control card.

(*) See ORD 1, Introduction and Index, for published catalogs of the ordnance section of the Department of the Army suply catalog.

DA AGO Form 9–72, Ordnance stock record card.
DA AGO Form 9–75, Daily dispatching record of motor vehicles.
DA AGO Form 9–76, Request for work order.
DA AGO Form 9–77, Job order register.
DA AGO Form 9–78, Job order.
DA AGO Form 9–79, Parts requisition.
DA AGO Form 9–80, Job order file.
DA AGO Form 9–81, Exchange part or unit identification tag.
DA AGO Form 460, Preventive maintenance roster.
DA AGO Form 461, Work sheet for wheeled and half-track vehicles—preventive maintenance services and technical inspection.
DA AGO Form 461–3, Work sheet for wheeled and half-track vehicles (for production line maintenance).
DA AGO Form 461–5, Limited technical inspection.
DA AGO Form 468, Unsatisfactory equipment report.
DA AGO Form 478, MWO and major unit assembly replacement records and organizational equipment file.
DA AGO Form 811, Work request and job order.
DA AGO Form 811–1, Work request and hand receipt.
DA AGO Form 865, Work order.
DA AGO Form 866, Consolidation of parts.
DA AGO Form 867, Status of modification work order.
DD Form 6, Report of damaged or improper shipment.
DD Form 317, Preventive maintenance service due (sticker).

4. Other Publications

The following explanatory publications contain information pertinent to this matériel and associated equipment:

a. Camouflage.

Camouflage	TM 5–267
Camouflage, basic principles	FM 5–20
Camouflage of vehicles	FM 5–20B

b. Decontamination.

Decontamination	TM 3–220
Decontamination of armored force vehicles	FM 17–59
Defense against chemical attack	FM 21–40
Miscellaneous gas protective equipment	TM 3–290

c. Destruction to Prevent Enemy Use.

Explosives and demolition	FM 5–25
Ordnance service in the field	FM 9–5

d. General.

Chassis, body, and trailer units	TM 10–560
General safety manual	TM 20–350
Inspection of ordnance matériel	TM 9–1100

Military vehicles	TM 9–2800
Motor transport	FM 25–10
Motor vehicles	AR 700–105
Principles of automotive vehicles	TM 9–2700
Supplies and equipment—general: Unsatisfactory equipment report.	SR 700–45–5

e. Repair, Overhaul, and Rebuild.

Basic maintenance manual	TM 38–650
Cleaning, preserving, sealing and related materials issued for ordnance matériel.	TM 9–850
Hand, measuring, and power tools	TM 10–590
Instruction guide: Care and maintenance of ball and roller bearings.	TM 37–265
Instruction guide: Welding theory and application.	TM 9–2852
Lubrication	TM 9–2835
Lubrication order	LO 9–888
Maintenance and care of hand tools	TM 9–867
Maintenance and care of pneumatic tires and rubber treads.	TM 31–200
Modification of ordnance matériel	SB 9–38
Motor vehicle inspection and preventive maintenance services.	TM 37–2810
Ordnance field maintenance	FM 9–10
Painting instructions for field use	TM 9–2851
Parts reclamation from tactical and administrative vehicles.	SR 750–130–10

f. Shipment and Limited, Stand-by, or Long-Term Storage.

Army marking directive	TM 38–414
Army shipping document	TM 38–705
Instruction guide: Ordnance packaging and shipping (posts, camps, and stations).	TM 9–2854
Ordnance storage and shipment chart—Group G	TB 9–OSSC–G
Preparation of unboxed ordnance matériel for shipment.	SB 9–4
Protection of ordnance general supplies in open storage.	TB ORD 379
Shipment of supplies and equipment: Report of damaged or improper shipment.	SR 745–45–5
Standards for overseas shipment and domestic issue of ordnance matériel other than ammunition and Army aircraft.	TB ORD 385

Storage, inspection, and issue of unboxed serviceable motor vehicles; preparation of unserviceable vehicles for storage; and deprocessing of matériel prior to operation. SB 9–63

[AG 300.7 (11 Jan 51)]

BY ORDER OF THE SECRETARY OF THE ARMY:

OFFICIAL:
EDWARD F. WITSELL
Major General, USA
The Adjutant General

J. LAWTON COLLINS
Chief of Staff, United States Army

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