PARTS LIST
AND
MAINTENANCE MANUAL
FOR
¼ TON
2 WHEEL TRAILER

BUILT FOR
U. S. GOVERNMENT

MODEL T3

Contract Number
W-2425-qm-672

U. S. A. Reg. Numbers
0253934 to 0277083

"This Publication supersedes TM-10-1281, Dated July 15, 1942"

Parts are designated in this book under both Willys and Bantam part numbers because all parts are interchangeable with vehicles produced by Willys-Overland Motors, Inc.

Contract W-2425-qm-673 Model MBT

U. S. A. Registration Numbers
0212994 to 0244966

TM-10-1230

AMERICAN BANTAM CAR COMPANY
BUTLER, PENNSYLVANIA, U. S. A.

TM-10-1281
September 30, 1942

Printed in U.S.A.

INDEX

* These numbers refer to Parts Group Classifications in Parts List.

INDEX

FOREWORD

This Vehicle has been thoroughly inspected and like any other piece of machinery, to maintain it in proper operating condition, it should be lubricated and receive periodic systematic inspections as outlined in this Manual.

All parts in this vehicle are completely interchangeable with those manufactured by Willys-Overland Motors, Inc., under the contract listed on the title page. Both Willys and Bantam part numbers are therefore listed.

In the following pages we have described how to take care of this unit and handle it in such a way that it will give maximum service and dependable performance.

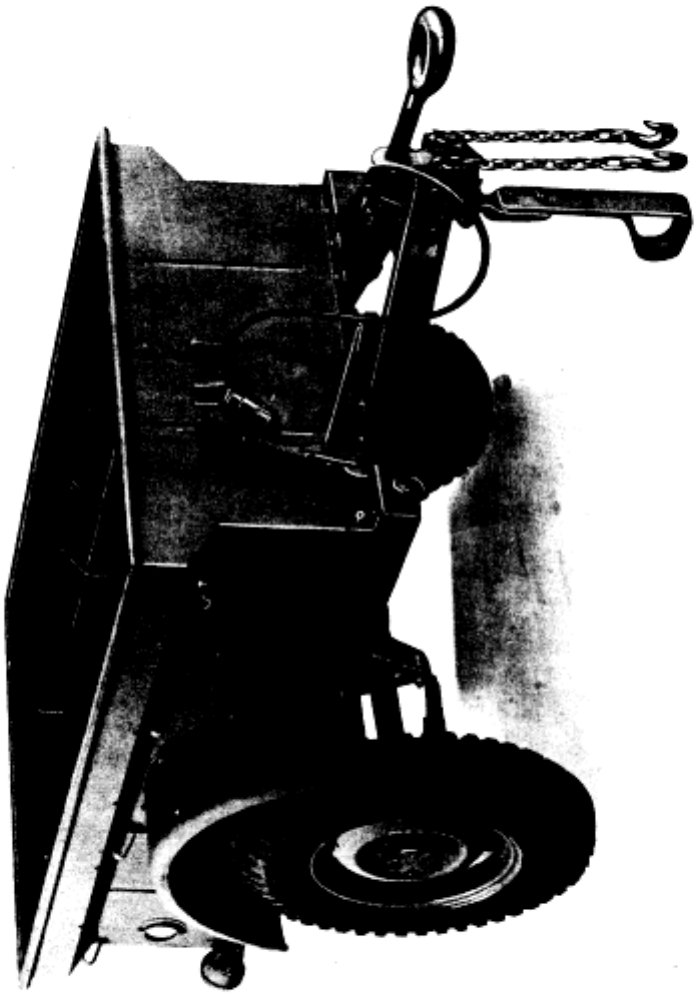
In the forepart of this Manual will be found complete instructions relative to Driver's Instructions, Lubrication and Inspection. In the back of the Manual will be found the Parts Section.

In the Maintenance and Repair Section will be found instructions which will enable one to make proper adjustments and repairs.

See Index on title page; bend back edge of pages to find Section desired.

Read and follow instructions carefully.

THE AMERICAN BANTAM CAR COMPANY



¼ TON 2 WHEEL GOVERNMENT TRAILER

GENERAL DATA

Type	2 Wheel	
Body Dimensions		
Inside Length	72″	1828.8 mm
Inside Width	38″	965.2 mm
Inside Depth of Side Vertical Wall	11″	279.4 mm
Inside Depth of Overall	18″	457.2 mm
Inside Depth of Front and Rear Panels	18″	457.2 mm
Width of Body at Top	46″	1168.4 mm
Capacity—Cubic Feet	30.4	.861 Cubic Meters
Capacity—Pounds	500 lbs.	226.8 Kgs.
Tire Size (Combat Tires) Inches	6.00 x 16	
Road Clearance	12½″	317.5 mm
Tread	49″	1244.6 mm
Overall Dimensions		
Length	108½″	2755.9 mm
Width	56″	1422.4 mm
Height (Loaded)	40″	1016.0 mm
Weight—		
Maximum Pay Load (Capacity)	500 lbs.	226.8 Kgs.
Shipping and Road	550 lbs.	249.5 Kgs.
Gross	1050 lbs.	476.3 Kgs.
Floating Water Line above Floor	12″	3048.8 mm

LAMP BULBS

Left Tail Lamp Bulb—Upper (1)	21-3 Cp. DC No. 1154
Left Tail Lamp Bulb—Lower (1)	3 Cp. SC No. 63
Right Tail Lamp Bulb—(2)	3 Cp. SC No. 63

IDENTIFICATION

Manufacturer's Serial Number & Nomenclature plate located on front of body at left upper corner.

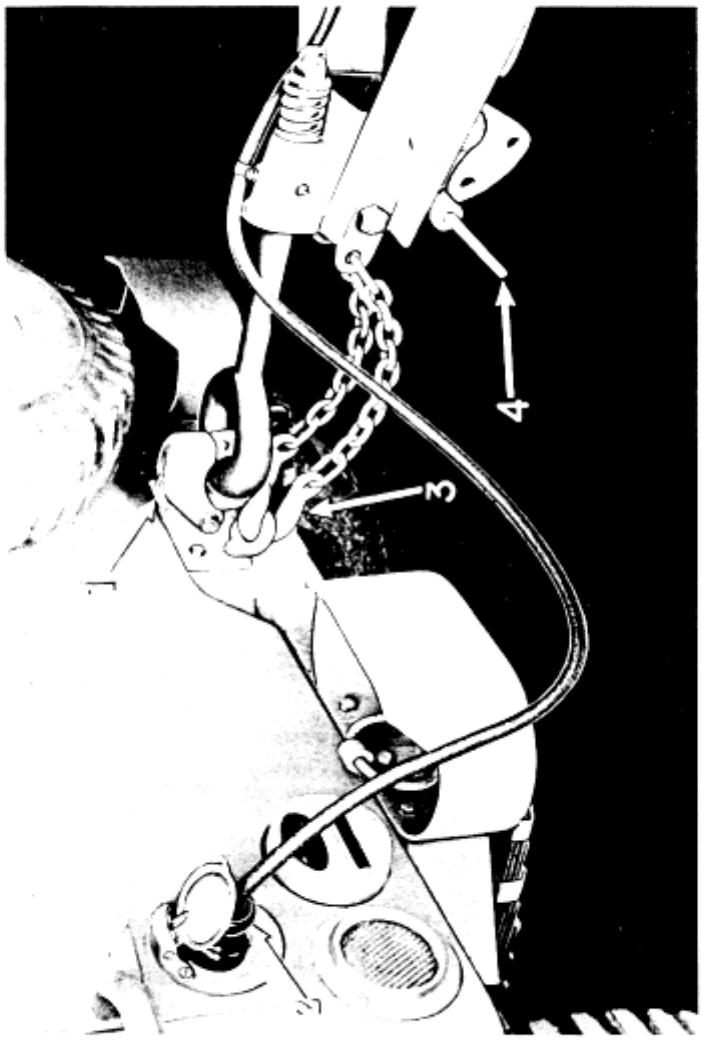


FIG. 1—TRAILER HOOK-UP

DRIVER'S INSTRUCTIONS

In the use of a two wheel trailer it is important to properly distribute the load for balance on the axle. Tires should be inflated to 30 pounds pressure. Due care should be exercised when coupling or uncoupling the trailer from the vehicle so that it will not get out of control. Set the hand brake when parking the trailer.

To couple up trailer, lift up the pintle hook lock on the truck and raise the latch, Fig. 1, No. 1, raise the trailer and place trailer draw bar or Lunette Eye in hook. Close the pintle hook and be sure that the lock is down in place.

Next hook up the safety chains. Do not cross them. Insert the hooks from the under side of the eye, Fig. 1, No. 3, then the hooks will not jump out in going over rough ground. Connect up the electrical system by raising the cover on the coupling socket in the left rear side of the truck body, Fig. 1, No. 2 turning the cable plug positioning lug to line up with groove in socket and push the plug well forward into the socket, Fig. 2.

Pull out on the support leg plunger, Fig. 1, No. 4 and raise leg to horizontal position.

Use one man to move vehicle and another to handle the hook-up when the trailer is heavily loaded or there is a possibility of the trailer getting out of control. In such instances back the vehicle to the trailer and release the brakes as the last operation.

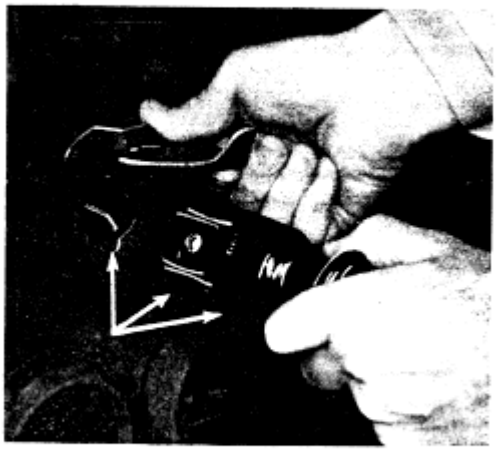


FIG. 2—SOCKET PLUG

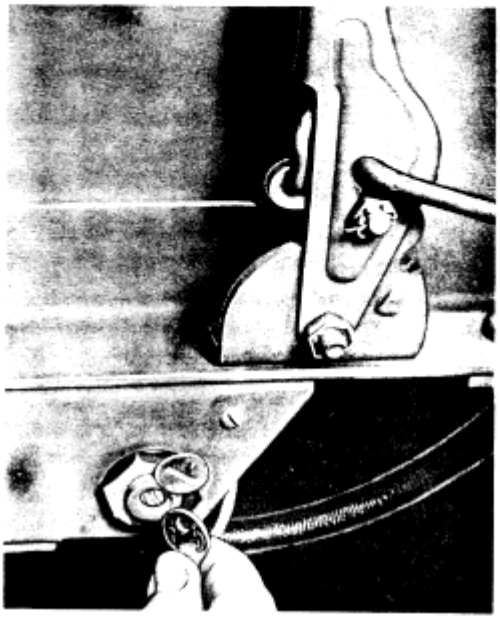


FIG. 3—LIGHT SWITCH

To uncouple trailer, pull cable plug out of socket, unhook chains and hook over chain attachment link on trailer, drop support leg by pulling out on plunger handle. Be sure support leg locks in down position. Unlock pintle hook and uncouple trailer.

Light switch, Fig. 3—When the trailer is coupled to the truck, tail and stop lights can be controlled by operation of the lighting system or brake application in driving the vehicle. When the main lighting switch is changed to blackout position it is necessary to turn the switch provided on the trailer below the hand brake lever, otherwise the trailer service tail and stop lights will continue to function. Push aside the cover on the switch, and, using the car key or a screw driver, turn the switch ¼ turn to the right side of the trailer for blackout lights and to the left for service lights.

DO NOT FORGET TO RELEASE TRAILER BRAKE BEFORE ROLLING.

The body is waterproof and designed so the vehicle will float carrying a load of 500 pounds. The loaded water line is 12 inches above the floor.

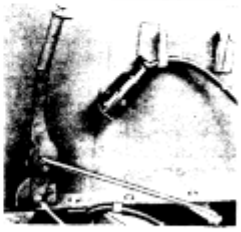
A tarpaulin cover is provided and is easily installed by taking a half hitch in the ropes around the hooks.

LUBRICATION AND SERVICING

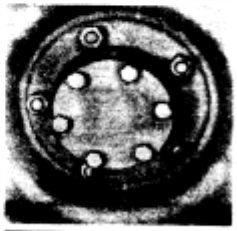
1—Spring Shackle(2)
2 hydraulic fittings
Pressure gun
Chassis grease

2—Spring Bolt (2)
1 hydraulic fitting
Pressure gun
Chassis grease

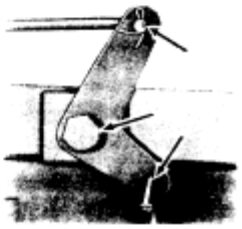
10—Lever Shaft
Hand brake
Oil can
Engine oil



19—Wheel Bearings (2)
Remove and repack
Chassis grease



21—Linkage
All pins and rods
Oil can
Engine oil



54—Flexible Cable-Brake (2)
Dismantle and grease by hand
Chassis grease

66—Swivel-Lunette Eye
1 hydraulic fitting
Pressure gun
Chassis grease

82—Pivot-Landing Gear and Lock
Oil Can
Engine Oil

Lubrication of any vehicle is important to prevent damage to moving parts. To secure maximum useful service from the vehicle, it is important to use the proper grade of lubricant and apply it in accordance with a definite schedule.

The chart in this section should be referred to for instructions on mileage of application, grade and quantity of lubricant required for all parts of the vehicle.

Standardized Army item numbers are used above and on the Lubrication Chart to indicate points to be lubricated. Those numbers not shown are for items not used on this trailer.

Under normal operating conditions the hub bearings require lubrication approximately every 6,000 miles of continuous service or in the Spring and Fall if trailer is used only intermittently. The hubs and bearings should be removed and thoroughly washed in suitable cleaning fluid. Inspect for pitted races and rollers, renew if necessary and repack with grease. Lightly pack grease in the wheel hubs. See "Wheels" Section, Page 15, concerning bearing adjustment.

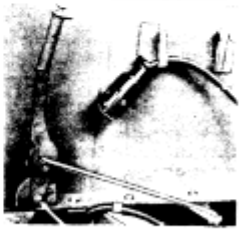
Should the brakes fail to release due to the cables sticking in the conduits, the front brackets should be removed from the frame and the conduits loosened at the brake backing plates. Clean the brake cables ahead of the conduits and slide conduits forward after which clean the cables and lubricate, then replace conduits. Be sure conduits fit into front brackets; check brake operation and adjust if necessary.

LUBRICATION AND SERVICING

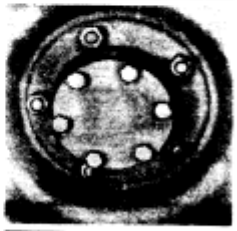
1—Spring Shackle(2)
2 hydraulic fittings
Pressure gun
Chassis grease

2—Spring Bolt (2)
1 hydraulic fitting
Pressure gun
Chassis grease

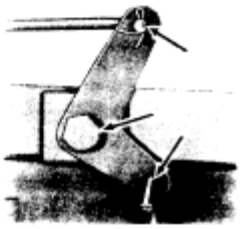
10—Lever Shaft
Hand brake
Oil can
Engine oil



19—Wheel Bearings (2)
Remove and repack
Chassis grease



21—Linkage
All pins and rods
Oil can
Engine oil



54—Flexible Cable-Brake (2)
Dismantle and grease by hand
Chassis grease

66—Swivel-Lunette Eye
1 hydraulic fitting
Pressure gun
Chassis grease

82—Pivot-Landing Gear and Lock
Oil Can
Engine Oil

Lubrication of any vehicle is important to prevent damage to moving parts. To secure maximum useful service from the vehicle, it is important to use the proper grade of lubricant and apply it in accordance with a definite schedule.

The chart in this section should be referred to for instructions on mileage of application, grade and quantity of lubricant required for all parts of the vehicle.

Standardized Army item numbers are used above and on the Lubrication Chart to indicate points to be lubricated. Those numbers not shown are for items not used on this trailer.

Under normal operating conditions the hub bearings require lubrication approximately every 6,000 miles of continuous service or in the Spring and Fall if trailer is used only intermittently. The hubs and bearings should be removed and thoroughly washed in suitable cleaning fluid. Inspect for pitted races and rollers, renew if necessary and repack with grease. Lightly pack grease in the wheel hubs. See "Wheels" Section, Page 15, concerning bearing adjustment.

Should the brakes fail to release due to the cables sticking in the conduits, the front brackets should be removed from the frame and the conduits loosened at the brake backing plates. Clean the brake cables ahead of the conduits and slide conduits forward after which clean the cables and lubricate, then replace conduits. Be sure conduits fit into front brackets; check brake operation and adjust if necessary.

LUBRICATION CHART
¼ Ton 2 Wheel Trailer Chassis
Mechanical Brakes

Make Willys Model MBT | **Make Bantam Model T3**

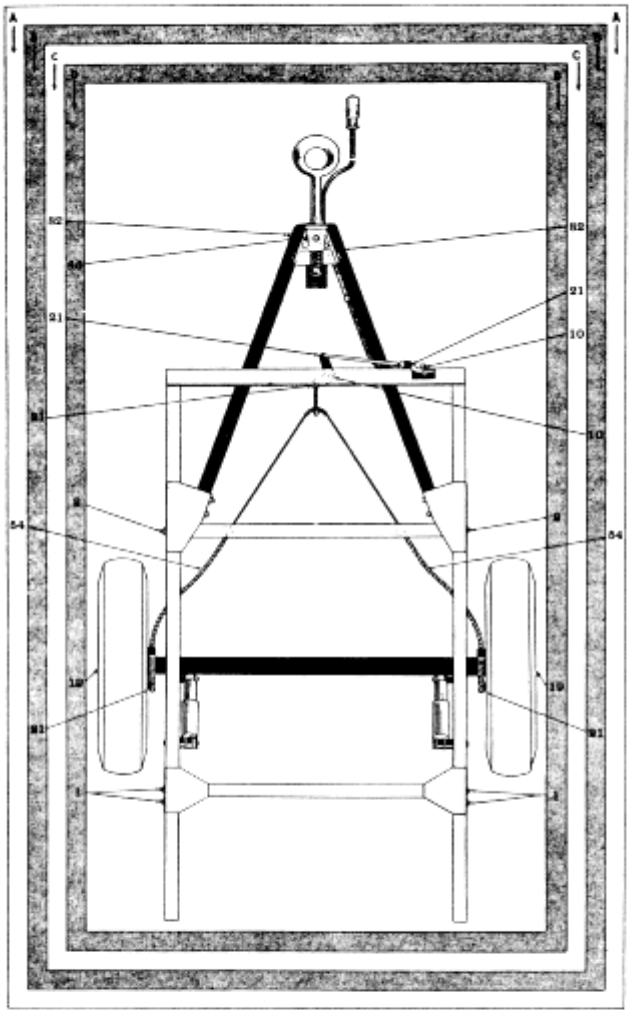
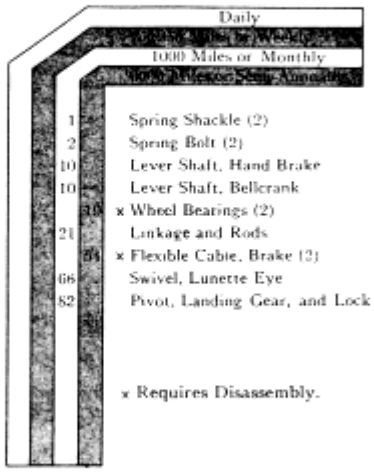


FIG. 4—LUBRICATION CHART



PREDOMINATING TEMPERATURE

	Above and 32° F.	Between 32° F. 0° F.	Below 0° F.
Chassis Grease	#1	#1	#1
Engine Oil	30	10	10

Chassis grease No. 1 is U. S. Army Specification No. 2-107
Engine Oil No. 30 is U. S. Army Specification No. 2-104A, SAE 30
Engine Oil No. 10 is U. S. Army Specification No. 2-104A, SAE 10

TOOLS

Cleaning Rag
Wheel Bearing Nut Wrench
Screw Driver
Hammer

INSTRUCTIONS

Clean and lubricate all points in the order indicated, except those which require disassembly. Disassemble as separately instructed.

BELOW VEHICLE

Frame A—Chassis Grease
Frame B—Engine Oil

ABOVE VEHICLE

Frame C—Engine Oil
Frame D—Chassis Grease

PREVENTATIVE MAINTENANCE

The importance of regular inspection cannot be over-emphasized. Making adjustments, tightening bolts, nuts and wiring connections when needed, will go far towards avoiding trouble and delay on the road and uphold the high standards of reliability built into the vehicle by the Manufacturer.

The following recommendations are made considering the service that the vehicle must render on maneuvers.

After completing maneuvers involving operations in swamps and streams inspect for water in wheel bearings and electrical system.

OPERATION	Daily by Driver	Each 1000 Miles	Each 6000 Miles	12,000
Axle				
Check Axle Alignment (After hard maneuvers or excessive loads)		X		
Check Wheel Bearings for Looseness and Wear		X		
Inspect for Oil Leaks		X		
Body				
Check Bolts in Body Side Rails		X		
Brakes				
Makes Visual Inspection of Brake Cable and Linkage	X			
Remove Wheels; inspect brake lining			X	
Check Brake Pull Back Springs			X	
Test Hand Brake; adjust if necessary	X			
Wiring, Lights & Switches				
Inspect all Connections		X		
Inspect for Chafed or Broken Wires		X		
Inspect Retaining Clips and Grommets		X		
Check Operation of Lights	X			
Lubrication				
Refer to Lubrication Chart	X	X	X	X
Springs				
Inspect Spring Clips to Axle for Tightness		X		
Inspect Spring Shackles and Bushings		X		
Check condition of Springs		X		
Shock Absorbers				
Inspect Mounting Bushings, replace when necessary		X		
Inspect Mounting Brackets		X		
Check for Control; adjust or replace				X
Wheels and Tires				
Check Tire Pressures	X			
Tighten Wheel Hub Bolt Nuts			X	
Remove Wheel Bearings, inspect, repack and adjust			X	
Check Tire Wear		X		

ELECTRICAL SYSTEM

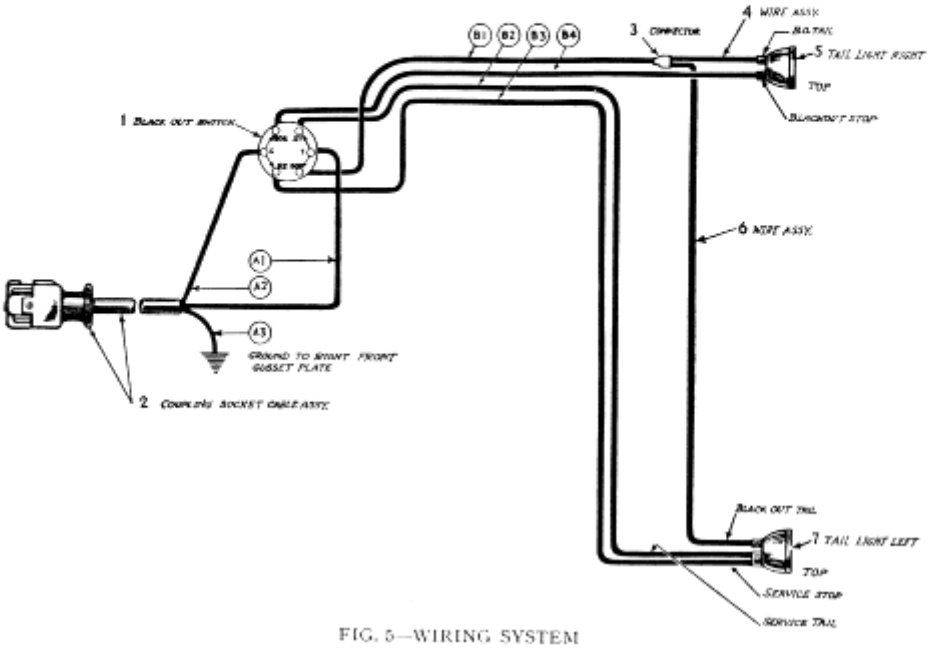


FIG. 5—WIRING SYSTEM

Item No.	Gov't Group No.	Bantam Part No.	Willys Part No.	Name
1	0606	14276	A-6021	Blackout Switch
2	0606	14317	A-6387	Coupling Socket Plug & Cable Assem.
3	0606	14356	633885	Connector (3-Way)
4	0606	14318	A-6340	Cable, Right (Connector to Blackout Tail Light)
5	0608	R-11540	A-1085	Tail Light Assembly—Right
6	0606	14342	A-6339	Cable, Left (Connector to Blackout Tail Light)
7	0608	R-11544	A-1084	Tail Light Assembly—Left

The wiring system Fig. 5, shows the general arrangement of all electrical circuits together with the units in relation to the position in which they are found. When inserting the socket plug in the back of the truck it is necessary to turn the lugs on the plug so that they line up with the slot in the socket. See Fig. 3.

Regular inspection of all connections avoids failures in the electrical system. To facilitate wiring, the terminals on the socket plug and light switch are marked. When tracing any one particular circuit in the wiring diagram, refer to the Wiring Chart below for color of wire and tracer.

COUPLING SOCKET CABLE ASSEMBLY

No.	Color	Name
A-1	Brown	Coupling Socket Terminal "TL" to Trailer Switch Terminal "T"—Cable
A-2	White	Coupling Socket Terminal "SL" to Trailer Switch Terminal "S"—Cable
A-3	Red	Coupling Socket Terminal "GR" to Trailer Ground—Cable

TRAILER WIRING HARNESS EXTENSION

No.	Color	Name
B-1	Yellow with 2 Black Tracers	Trailer Switch "BOT" to Blackout Tail Light Connector—Cable
B-2	Blue with 2 White Tracers	Trailer Switch "ST" to Service Tail Light—Cable
B-3	Red with 2 White Tracers	Trailer Switch "SS" to Service Stop Light—Cable
B-4	White with 2 Black Tracers	Trailer Switch "BOS" to Blackout Stop Light—Cable, Right side

OPERATION OF CAR AND TRAILER LIGHTING SYSTEM

Truck Main Light Switch Position	Foot Brake Off or On	Truck Tail Lights	Trailer Tail Light With Trailer Switch In Service Position	Trailer Tail Light With Trailer Switch Blackout Position
Off	Off	Off	Off	Off
Stoplight	Off	Off	Off	Off
Stoplight	On	Service Stop	Service Stop	Blackout Stop
Service Head	Off	Service Tail	Service Tail	Blackout Tail
Service Head	On	Service Tail & Service Stop	Service Tail & Service Stop	Blackout Tail & Blackout Stop
Blackout Head	Off	Blackout Tail	Service Tail	Blackout Tail
Blackout Head	On	Blackout Tail & Blackout Stop	Service Tail & Service Stop	Blackout Tail & Blackout Stop

The trailer lighting system operates in connection with the truck except in changing over from service to blackout or vice versa. In this case it is necessary to operate the light switch on the trailer located just below the hand brake lever. Push the switch cover aside, use a screw driver or the handle end of the car key to turn the switch ¼ turn to the right side of the trailer for blackout lights and to the left for service lights. When the truck main light switch is in position for the lights to operate, the stop lights function as the brakes are applied by the driver. Keep the trailer light switch turned to the left side of the trailer (Service Position), except when Blackout is desired.

The tail and stop lamps, Fig. 6, consist of two separately sealed units placed in the Lamp Body.

The upper left rear stop light, or service unit is a combination tail and stop light and consists of lens, gasket, reflector and a 21-3 C.P. Bulb. The upper right rear is a blackout stop light and uses a 3 C.P. bulb. The lower unit in each lamp is the blackout tail light. These bulbs, lenses and reflectors are sealed units. When a filament burns out, the bulb and lens unit must be replaced.

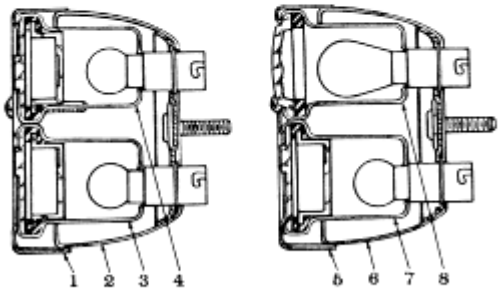


FIG. 6—TAIL LAMPS

Item No.	Gov't Group No.	Bantam Part No.	Willys Part No.	Name
1	0608	R-21380	A-1079	Door—Tail and Stop Lamp Assembly (Right)
2	0608	R-21379	A-1073	Housing Sub-Assembly
3	0608	R-21357	A-1075	Lower Tail Lamp Unit Assembly
4	0608	R-21356	A-1078	Upper Stop Lamp Unit Assembly—Tail and Stop Lamp Assembly (Right)
5	0608	R-21381	A-1076	Door—Tail and Stop Lamp Assembly (Left)
6	0608	R-21379	A-1073	Housing Sub-Assembly
7	0608	R-21357	A-1075	Lower Tail Lamp Unit Assembly
8	0608	R-21355	A-1074	Upper Service Assembly—Tail and Stop Lamp Assembly (Left)

ELECTRICAL TROUBLES AND REMEDIES

SYMPTOMS	PROBABLE REMEDIES
Lights Burn Dim	
Loose or dirty terminals	Clean and tighten
Leak in wires	Check entire circuit for broken insulation
Poor switch contact	Install new switch
Poor ground connection	Clean and tighten
Poor plug connection	Re-connect to get good contact
Battery in truck not fully charged	Recharge or replace
Do Not Light	
Bulb burned out	Replace service unit
Broken wire	Splice and tape
Connector dirty or loose	Clean and repair
Trailer light switch not fully on	Switch on
Trailer light switch in wrong position	Turn switch
Ground connection poor	Clean and tighten
Coupling socket connection poor	Re-connect
Wires loose on switch or socket	Tighten
Wrong Lights On	
Connectors at light in wrong sockets	Change around
Trailer light switch turned to wrong position	Turn switch

ELECTRICAL SYSTEM SPECIFICATIONS

Lamps:

Light switch make	Douglas
Coupling and socket	Wagner
Tail and stop lamps	Bantam—Arrow Safety
Tail and stop lamp bulbs 6-8V 3-21CP, DC	Mazda No. 1154—6-8V 3 CP. SC. Mazda No. 63
Blackout bulbs—6-8V 3CP. SC	Mazda No. 63

AXLE

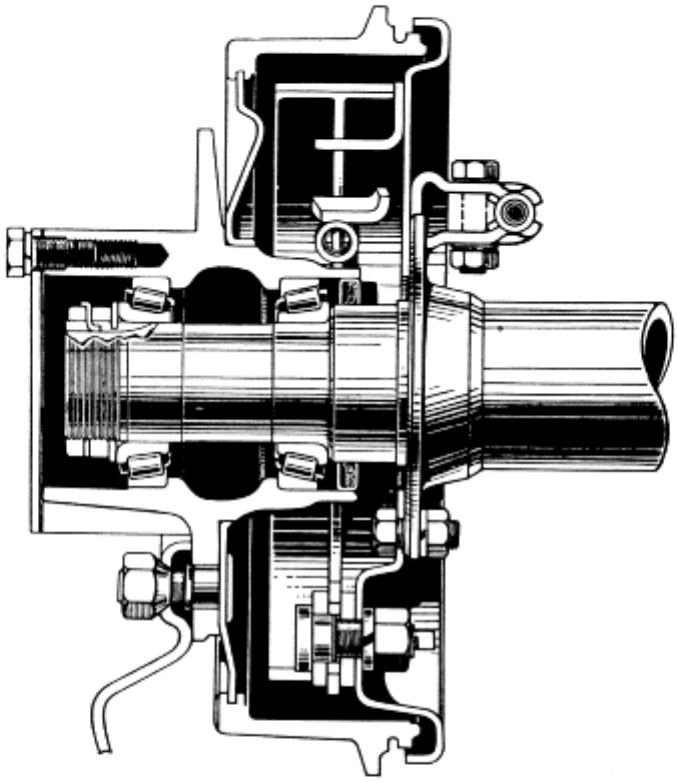


FIG. 7—SECTIONAL VIEW OF AXLE

The axle, Fig. 7, is of the tubular type. Wheels are supported on two taper roller bearings on the axle housing. The bearing races are pressed into the wheel hub and the adjustment of the bearings made by adjusting nuts on each end of the axle.

A removable steel cover or cap is used on the wheel hub to permit inspection and access to the wheel bearings.

Removing Axle from Vehicle

To remove the axle, first raise the vehicle and support the frame under the body so that the wheels will clear the floor. Next remove six screws and the wheel hub cap from each wheel; bend back lugs on the wheel bearing outer nut lockwasher, remove nut, washer and wheel bearing adjusting nut after which remove wheel and hub assembly. Remove six bolts from the brake backing plates. Next remove the axle spring clip nuts and clips after which the axle can be removed from the vehicle.

Reassembly is the reverse procedure. Due attention should be given to the wheel bearings so that they are properly adjusted. Tighten the inner adjusting nut until the wheel binds, at the same time rotate the wheel and make sure that all surfaces are seating properly. Back off the nut ⅙ turn or more, if necessary, until the wheel turns freely, after which replace the outer nut lock washer and lock nut and be sure to bend over the lock washer lug. Make sure wheel turns freely after tightening lock nut. See Lubrication Section for details concerning proper lubricant.

AXLE TROUBLES AND REMEDIES

SYMPTOMS	PROBABLE REMEDY
Swaying	
Bent axle	Check and straighten
Broken spring main leaf	Replace
Axle shifted	Spring center bolt broken
Loose spring shackles or clips	Adjust or replace
Tire pressure uneven	Inflate to 30 lbs.
Loose wheel bearings	Adjust
Broken wheel bearing	Replace
Springs settled or broken	Repair or replace
Trailer load on one side	Reload to distribute weight
One brake dragging	Adjust

AXLE SPECIFICATIONS

Axle		
Type	Tubular	
Tread	49"	
Bearings		
Make—Wheel Hub	Timken	
Cone and Roller	Inner 18590	Outer 18590
Cup	Inner 18520	Outer 18520

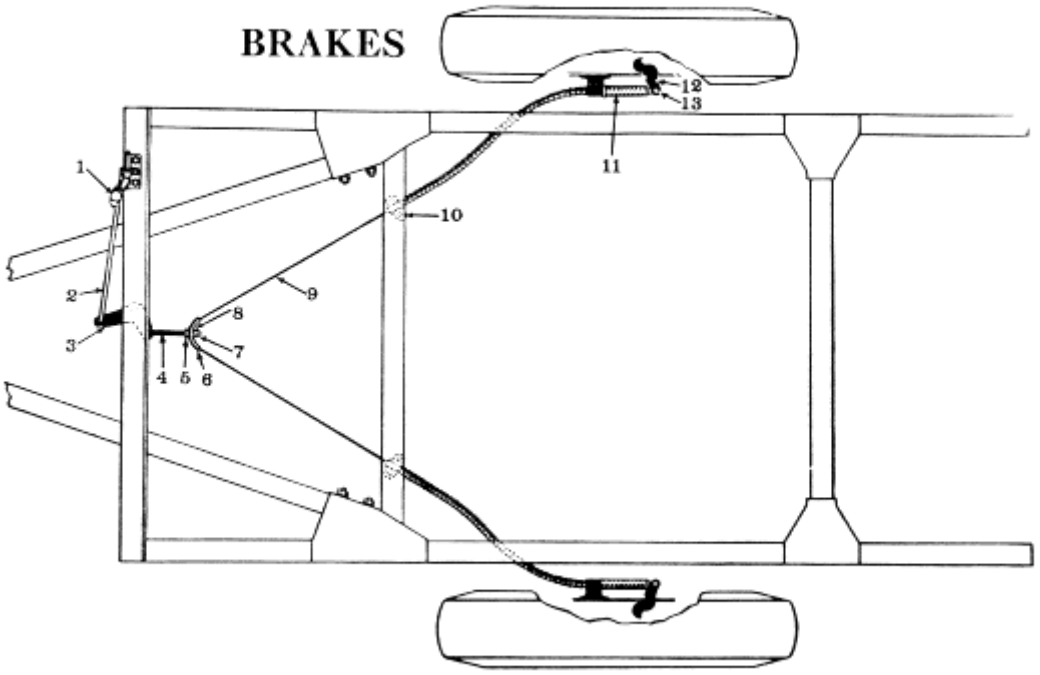


FIG. 8—BRAKE SYSTEM

Item No.	Gov't Group No.	Bantam Part No.	Willys Part No.	Name
1	1201	14302	A-6378	Hand Brake Lever Assembly Complete
2	1201	14305	A-6400	Hand Brake Lever Rod
3	1201	14306	A-6000	Hand Brake Bell Crank
4	1201	14328	A-6516	Hand Brake Cable Hook Bolt
5	1201	31x2-R	56802	Hand Brake Cable Hook Bolt Nut
6	1201	14327	A-6768	Hand Brake Cable Equalizer
7	1201	35x27	53049	Hand Brake Cable Hook Bolt Pal Nut (Lock Nut)
8	1201	31x2-R	56802	Hand Brake Cable Hook Bolt Nut
9	1201	14325	A-6406	Hand Brake Cable and Conduit Assem.
10	1201	14156	A-6716	Hand Brake Cable Conduit to Frame Clip
11				Hand Brake Return Spring (Part of Cable)
12	1203	14372	632906	Hand Brake Cam Lever
13	1201	14436	A-6526	Hand Brake Cable Clevis Pin (End to Cam Lever)

The Brake System is a hand operated parking brake, Fig. 8. The brakes are the Bendix, internal expanding, double anchor, two shoe type, cable controlled. The hand lever is on the front side of the body at the right; pull to the right to apply the brakes. A button type release is located in the top of the lever.

When the hand lever goes almost to the limit of the ratchet quadrant, adjust the brakes as follows:

Jack up the wheels to clear the floor. With a wrench loosen the lock nut Fig. 9, No. 1, on the forward brake shoe. Hold lock nut and with another wrench turn the eccentric toward the front of the vehicle until the brake shoe strikes the drum, then turning wheel with one hand release the eccentric until the wheel turns freely; hold the eccentric and tighten the lock nut. Repeat this operation on the reverse shoe only turn the eccentric toward the back of the vehicle. Do this on both wheels.

Brake Shoe Adjustment—Major

To make major brake adjustment involving the setting of the anchor pins, Fig. 9, No. 2; after the above minor adjustment, loosen the anchor pin lock nuts on the rear of the backing plate and turn the eccentric anchor pins toward each other and down until the shoes are set to the proper clearance .005 inch clearance at the heel (lower end) and .008 inch at the toe (upper end) of the brake shoe lining as determined by feeler gauges. A slot is provided in the brake drum for checking these clearances when the wheel is off. Do this on both wheels.

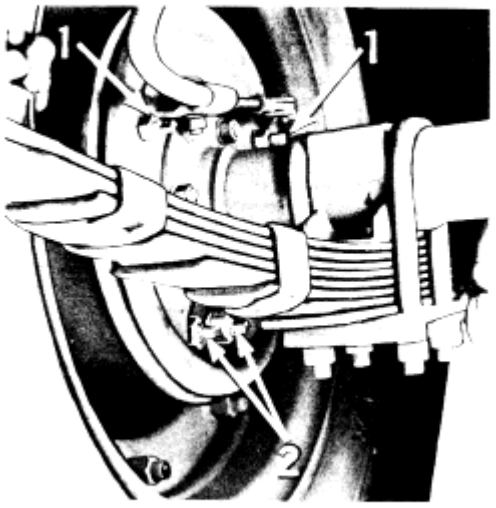


FIG. 9—BRAKE ADJUSTMENTS

Relining Brakes

Relining of brakes will not be required except in unusual instances. When necessary to reline the brakes, raise both wheels free from the floor. Remove the wheels and then the hubs and drums which will then give access to the brake shoes. See "Wheel" Section, Pg. 15, for instructions.

Turn all eccentrics to the lower side of the cam, and then remove the brake shoe contracting spring. Remove anchor pin nut, lockwashers and anchor pins from backing plate.

Remove brake shoes and install new linings or replacement shoes.

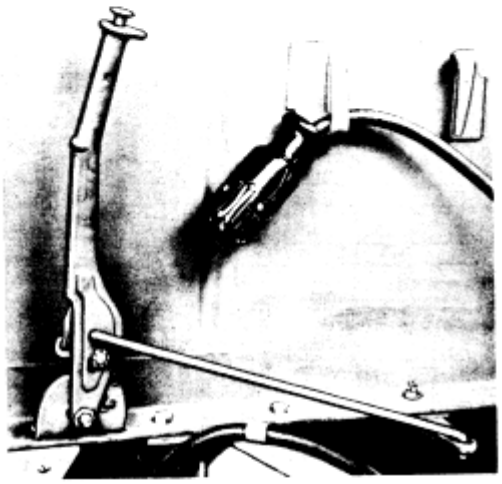


FIG. 10—HAND BRAKE LEVER

FIG. 11—BRAKE EQUALIZER

Inspect the oil seals in the wheel hubs and if grease has been leaking, install new oil seals.

Install brake shoes on the brake backing plate, the shoe with the longest lining is the forward shoe. Install anchor pin, pin plate and pin cam; then install anchor pins so the punch mark on the ends are facing each other. Install lock washer and nut, install brake shoe returning spring. Install the hubs and drums, then make a "Major" adjustment of the brakes. See Pg. 13.

Hand Brake

The brake system should be adjusted only after the wheel brakes are adjusted. Pull up the hand brake lever, Fig. 10, two notches and adjust the brake cable hook bolt No. 4 in Fig. 8 by loosening the lock nuts on either side of the cable equalizer. See Fig. 11. Take up the adjustment until a slight drag is felt at the wheels, then lock in place. The wheels must be free from drag when the hand brake is released.

BRAKE TROUBLES AND REMEDIES

SYMPTOMS	PROBABLE REMEDY
Brakes Drag	
Brake shoes improperly adjusted	Readjust
Lever does not fully release	Lubricate cables in conduits.
One Brake Drags	
Cable stuck	Free and lubricate
Brake shoe adjustment incorrect	Adjust
Retracting spring broken	Replace
Loose or damaged wheel bearings	Adjust or replace
Trailer Pulls to One Side	
Brake anchor pin adjustment incorrect	Adjust
Dirt between lining and drum	Clean with wire brush
Drum scored or rough	Turn drum and replace lining
Loose wheel bearings	Adjust
Axle spring clips loose	Tighten
Brake backing plate loose	Tighten
Tires under-inflated	Inflate to 30 lbs. pressure
Tires worn unequally	Replace
Brakes Do Not Hold	
Oil on lining	Replace lining
Improperly adjusted	Major adjustment
Brake lever or cable stuck	Free and lubricate

BRAKE SPECIFICATIONS

Brakes	
Type	2 Wheel Mechanical
Size	9" x 1¾"
Brake Shoes	Bendix
Lining area (total)	58.79 Sq. in.
Length Lining—Forward shoe	$10\frac{7}{32}$"
Length Lining—Reverse shoe	$6\frac{31}{64}$"
Width	$1\frac{3}{4}$"
Thickness	$\frac{3}{16}$"
Brake Return Springs:	
Brake Shoe Return Spring	
Free Length	$5\frac{13}{16}$"
Load when extended to $6\frac{3}{16}$"	40 lbs.

WHEELS—WHEEL BEARINGS

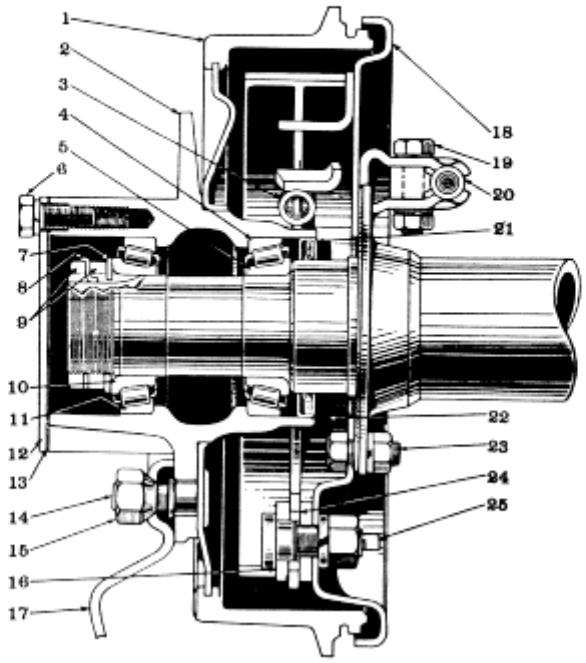


FIG. 12—WHEEL BEARINGS

Item No.	Gov't Group No.	Bantam Part No.	Willys Part No.	Name
1	1302	R-20731	A-472	Brake Drum
2	1302	R-20411	A-1691	Wheel Hub (with Bearing Cups)
3	1203	14371	637905	Brake Shoe Return Spring
4	1302	R-21160	52943	Roller Bearing Cup
5	1302	R-21159	52942	Cone and Roller Bearing
6	1302	1X10-R	6299	Hub Cap Screw
7	1302	R-21161	A-865	Outer Wheel Bearing Washer
8	1302	R-21163	A-867	Outer Wheel Bearing Nut Lockwasher
9	1302	R-21162	A-866	Wheel Bearing Nut
10	1302	R-21159	52942	Cone and Roller Bearing
11	1302	R-21160	52943	Roller Bearing Cup
12	1302	14255	A-6038	Hub Cap
13	1302	R-21031	A-904	Wheel Flange Gasket
14	1302	R-20051	A-473	Wheel Hub Bolt L.H. thd. (Willys A-474; Bantam R-20050, R.H. thd.)
15	1302	R-11028	A-475	Wheel Hub Bolt Nut L. H. thd. (Willys A-476; Bantam R-11027, R.H. thd.)
16	1203	14369	637901	Brake Shoe Anchor Pin Plate
17	1301	14231	A-5467	Divided Combat Wheel Assembly
18	1208	14358	A-6458	Brake Backing Plate Assembly L.H. (Willys A-6459; Bantam 14357, R.H.)
19	1208	1X46-R	6609	Conduit Bracket Backing Plate Screw
20	1201	14325	A-6406	Cable and Conduit Assembly
21	1302	R-21164	A-884	Hub Oil Seal Assembly
22	1202	14359	116549	Brake Shoe Lining Assembly—Forward (Willys 116550; Bantam 14362, Reverse)
23	1200	1X26-R	A-903	Brake Backing Plate Screw
24	1203	14368	637900	Brake Shoe Anchor Pin Cam
25	1203	14367	637899	Brake Shoe Anchor Pin

The wheels are carried on two opposed tapered roller bearings. Bearings are adjustable for wear and their satisfactory operation and long life depend upon periodic attention and correct lubrication. See Fig. 12.

Wheel bearings cannot be checked for adjustment properly unless brakes are free from dragging on brake drums and are in fully released position.

Wheel Bearings

1. Raise vehicle with jack so that tires clear the floor.
2. With hands test sidewise shake of the wheel. If bearings are adjusted too loose, shake of wheel will be perceptible. If bearing adjustment is too tight, the bearings will bind and the rollers may break or become overheated.

If this test indicates adjustment is necessary, proceed as follows:

Adjustment

1. With wheels still on jack remove hub cap.
2. Bend lip of nut lockwasher so that adjustment locknut and lock can be removed.
3. Tighten adjusting nut until wheel binds, at the same time rotating wheel to make sure all bearing surfaces are in proper contact.
4. Then back off nut about ⅙ turn or more if necessary making sure wheel rotates freely.
5. Replace locknut and lockwasher. Do not fail to bend over lip on nut lockwasher.
6. When hub is completely assembled, test wheel shake before removing jack.

When reinstalling hubs and drums, the hubs with the right hand threaded studs are placed on the right hand side of vehicle. The left hand threaded studs are on the left hand side, viewing vehicle from the rear.

Brake Drum

The brake drums are attached to the wheel hubs by five serrated bolts. These bolts are also used for mounting the wheels to the hubs.

To remove a brake drum, drive out the serrated bolts and remove the drum from hub.

When placing drum on hub, make sure that the contacting surfaces are clean and flat. Line up holes in drum with those in hub and force drum over shoulder on hub. Insert five new serrated bolts through drum and hub and drive the bolts into place solidly. Place a round piece of stock in vise approximately the diameter of the head of the bolt and place hub and drum assembly over it so that it rests against head of the bolt then swedge bolt into countersunk section of hub with punch.

The runout of the face of the drum should be within .003". If runout is found to be greater than .003" it will be necessary to reset bolts to correct the condition.

Left hand hub bolts are identified with an "L" stamped on head of the bolt.

The left hand threaded nuts can be identified by a groove around the hexagon faces.

Hubs containing the left hand threaded hub bolts are installed on the left hand side of vehicle.

Tires

One of the most important factors of safe vehicle operation and probably the most neglected is correct tire maintenance. Tires must sustain the weight of the loaded vehicle, withstand more than ordinary rough service, provide maximum safety over all types of territory, and furnish the medium on which the vehicle can be maneuvered with ease.

Tire pressures should be consistently maintained for safe operation. An under inflated tire is dangerous and too much flexing causes breakage of the casing fabric resulting in a failure. Over-inflation in time may cause a blowout. Inflate tires to 30 pounds pressure.

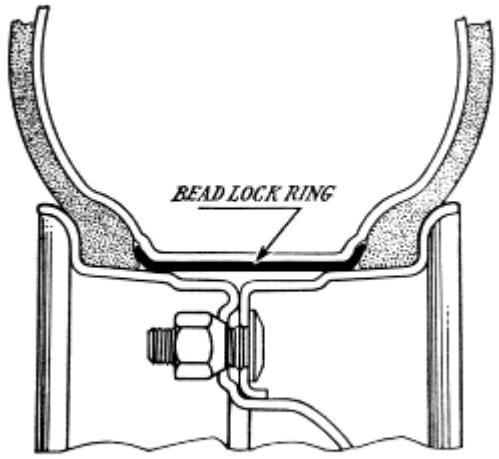


FIG. 13—COMBAT WHEEL

When removing a tire, first remove the wheel and be sure to deflate the tire before removing the rim nuts. After removing the rim nuts, remove the outer rim then remove the tire after which remove the bead locking ring and tube from the tire. When mounting the tire the procedure is reversed. See Fig. 13. Do not put too much air in the tube when mounting. Combat wheel rim bolt and hub bolt torque reading 60-70 ft. lbs.

When tightening the wheel stud nuts, alternately tighten opposite nuts to prevent wheel runout. After nuts have been tightened with the wheel jacked up, lower jack until wheel rests on the floor and retighten the nuts.

WHEEL SPECIFICATIONS

Wheels:		
Make	Kelsey-Hayes	
Rim	16x4.50 Combat Wheels	
Tires	Straight Side—6 Ply—16 x 6.00	
Type Tread	Non-directional	
Make	Goodyear "All Service"	
Tire Pressure	30 lbs.	
Bearings:	**Inner**	**Outer**
Make	Timken	Timken
Cone and roller	18590	18590
Cup	18520	18520

FRAME

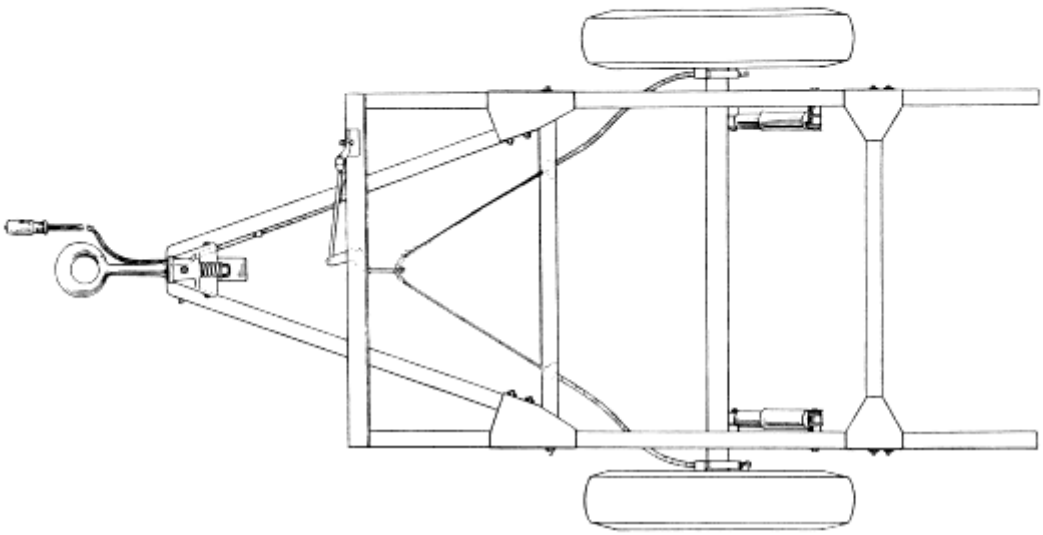


FIG. 14—FRAME

The frame assembly Fig. 14 is constructed of heavy channel steel draw bars with angle steel side members welded into one unit with the body. It is reinforced so that it has a high factor of safety. The draw-bar and side rails are bolted together to simplify replacement. Due to this rugged design, the frame requires very little attention other than to see that the bolts are kept tight.

Vehicles which have been in an accident of any nature which may result in swayed or sprung parts should be carefully checked for proper alignment to avoid tire wear.

Checking Alignment

When checking the frame or draw-bar for alignment, the most efficient method is "X" checking from given points on each side rail. The most convenient way to check alignment is to turn the trailer bottom side up. Checking should be done from the front end of each frame side rail, also from the rear end. The draw-bar should be checked to see that it is in alignment with the frame side rails.

Straightening Frame

Where the bending or twisting of the side rails or draw-bar is not excessive, they may be straightened. Do not apply excessive heat, for it may weaken the frame. It is recommended that badly damaged draw-bar parts be replaced.

Draw-Bar Support Leg

The draw-bar support leg Fig. 15 is controlled by a locking plunger, which is operated by pulling out on the handle on the left side. Three different positions are available. When the draw-bar leg is down to support the weight of the trailer, be sure that it is locked in the forward position. A half raised position is available.

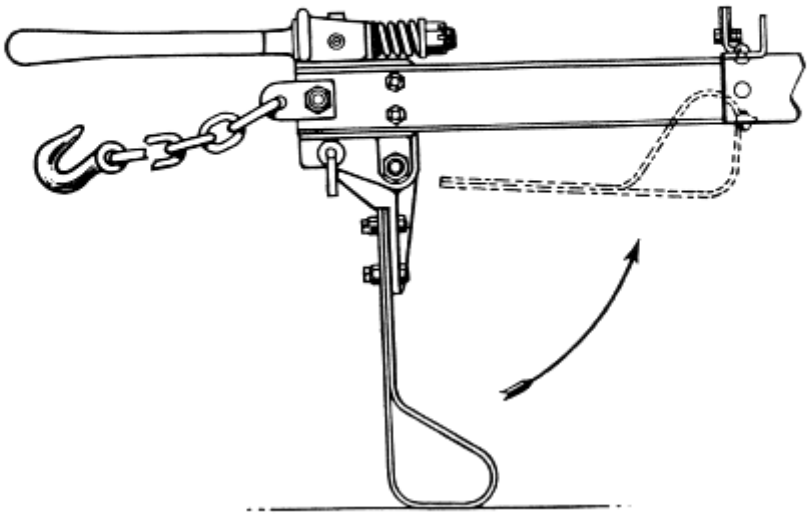


FIG. 15—LUNETTE EYE AND SUPPORT

FRAME SPECIFICATIONS

Frame

Frame Width ..... 37⅞"
Number Cross Members 3

Side Members

Depth ..... 3 3/16"
Thickness ..... 3/32"
Flange Width ..... 1¾"
Length ..... 74"

Draw Bar Type ..... "V"
Channel ..... "U"
Depth ..... 3"
Thickness ..... 1345"
Flange Width ..... 1¾"
Length ..... 42½"

SPRINGS

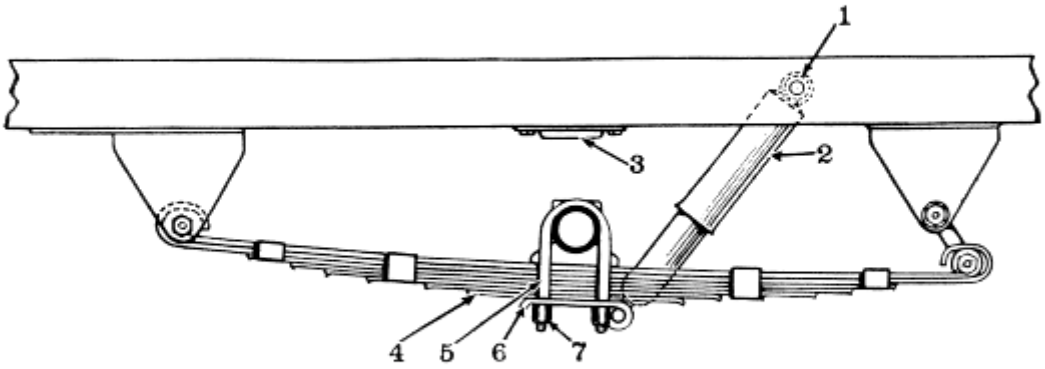


FIG. 16—SPRING AND SHOCK ABSORBER

Item No.	Gov't Group No.	Bantam Part No.	Willys Part No.	Name
1	**1603**	R-10246	637936	Shock Absorber Mounting Pin Bushing
2	**1603**	14297	A-169	Shock Absorber Assembly
3	**1506**	14316	A-6377	Axle Bumper
4	**1601**	14268	A-612	Spring
5	**1000**	14257	A-6511	Spring Clip (Axle to Spring)
6	**1000**	14332	A-572	Spring Clip Plate and Shaft Assembly—Right
7	**1000**	14421	A-6508	Spring Clip Nut

The specially designed springs used on this vehicle are constructed of chromium alloy steel to stand the severe service to which they may be subjected.

The springs Fig. 16 are the semi-elliptic type, $36\frac{1}{4}$" long and $1\frac{3}{4}$" wide. There are eight leaves in each spring with No. 2 leaf military wrapped over the eye of No. 1 leaf. The cross section of the leaves (except the shortest leaf) is so designed to equalize the stresses of spring action thereby minimizing spring breakage. The ends of the leaves are turned down to eliminate squeaks. Each spring is equipped with four rebound clips.

The spring requires a load of 525 lbs. for a $\frac{5}{16}$" camber.

The front end of the spring is bronze bushed and is pivoted by a pivot bolt at frame bracket, flexible "U" shackles are used at the rear.

The spring saddles on axle are welded in place and springs are held in position through "U" bolts, using the spring center bolt inserted in spring saddle to prevent shifting of the axle.

Spring Shackles and Pivot Bolts

The spring shackles are of the "U" type, Fig. 17, with threaded core bushings using right and left hand threads, depending on which position they are to be used in the chassis.

The bushings are anchored solidly in frame bracket and spring eyes and the oscillation taken between the threads of the "U" shackle and the inner threads of the bushing.

There are three bushings used with right hand threads and one with left hand threads. The right hand threaded type bushing has a plain hexagon head. The left hand threaded bushing has a groove around the head and is used only in the right rear spring eye. This is to prevent the bushing from burning out due to the load and spring action.

The left hand threaded "U" shackle can be identified by a forged boss on the lower shank of the shackle.

The "U" shackles are installed so that the bushing hexagon heads are to the outside of the frame. When making installation of a new "U" shackle or shackle bushing the following procedure should be followed:

Install shackle grease seal and retainer over threaded end of shackle up to the shoulder. Insert new shackle through frame bracket and eye of spring. Holding "U" shackle tightly against frame, start upper bushing on shackle, care being taken when it enters the thread in the frame that it is not cross threaded. Screw up about halfway, and then start lower bushing holding shackle tightly against spring eye and thread bushing in approximately half way, then alternating from top bushing to lower bushing turn them in until the head of the bushing is snugly against the frame bracket, and the bushing in spring eye is $\frac{1}{32}$" away from spring measured from inside of hexagon head to spring.

Lubricate the bushings with chassis lubricant and then try the flex of the shackle, which should be free. If shackle is tight it will be detrimental to the bushings as well as to the spring and it will be necessary to re-thread the bushing on shackle.

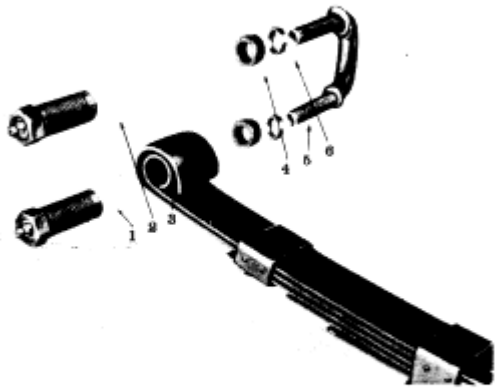


FIG. 17—SPRING SHACKLE—RIGHT SPRING

Item No.	Gov't Group No.	Bantam Part No.	Willys Part No.	Name
1	1602	14315	635532	Spring Shackle Bushing Assembly (L. H. thread)
2	1602	14314	634432	Spring Shackle Bushing Assembly (R.H. thread)
3	1601	14268	A-612	Spring Assembly
4	1602	14408	A-515	Spring Shackle Grease Seal
5	1602	14313	A-513	Spring Shackle U-Bolt (L.H. thread)
6	1602	14409	A-1252	Spring Shackle Grease Seal Retainer

Remove and Replace Spring

To remove a spring raise the vehicle, then place two stand jacks under frame side rail, adjusted to a distance so that the load is relieved on the spring and yet the wheel still rests on the floor, remove the four axle "U" bolt nuts and lock washers. Remove spring plate. Lower jack at side rail so that the spring is free from axle.

Remove spring front bolt nut and drive out bolt from spring bracket and bushing Fig. 18.

Remove bushing from "U" shackle.

To install spring, replace front bolt first and then the "U" shackle bushing. Raise jack and place center bolt in spring saddle and install "U" bolts and nuts. "U" bolt nut, torque wrench reads ing, 50-55 ft. lbs.; Spring front bolt nut, 27-30 ft. lb.

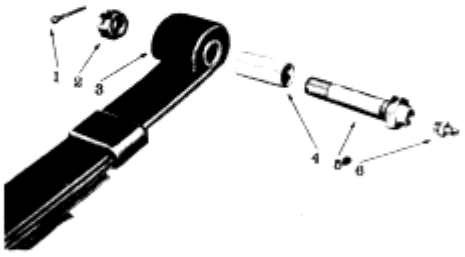
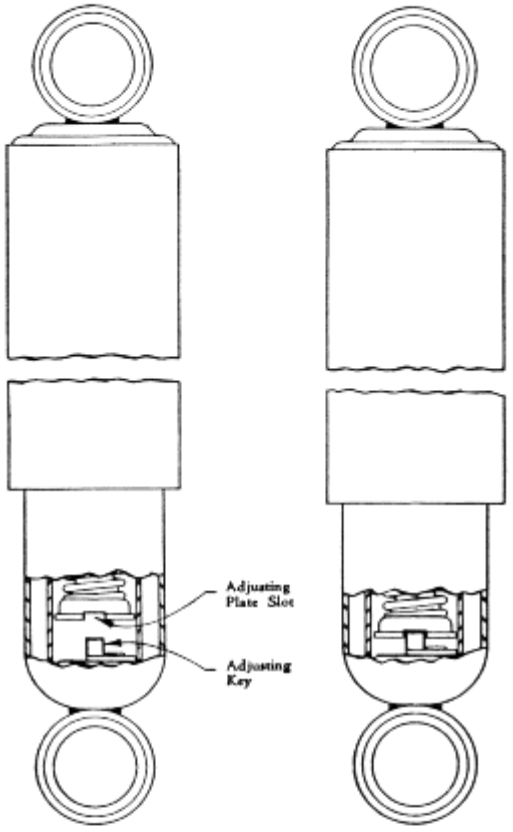


FIG. 18—SPRING BOLT

Item No.	Gov't Group No.	Bantam Part No.	Willys Part No.	Name
1	1506	115x31	5021	Cotter Pin
2	1602	33x81-R	53043	Spring Bolt Nut
3	1601	14268	A-612	Spring Assembly
4	1601	14383	359039	Spring Bolt Bushing
5	1602	14270	A-6776	Spring Bolt
6	1602	14338	392909	Grease Fittings



Sketch showing shock absorber before engaging adjusting slot and key.

Sketch showing shock absorber completely collapsed with adjusting key engaged in adjusting plate slot.

FIG. 19—SHOCK ABSORBER

Shock Absorbers

The shock absorbers, Fig. 19 dampen the spring action as the vehicle passes over irregularities in the road.

The shock absorbers are the direct action type, two-way control and adjustable. The range of adjustment is four turns. To adjust the shock absorber, remove the lower end from the spring plate, push the unit together to engage the adjusting key and turn in a clockwise direction until the limit of the adjustment is reached. Holding adjusting key in slot, turn lower end anti-clockwise two turns. This is the average adjustment. Turning the adjustment to the right, or clockwise, gives a firmer control for rough roads, while turning in the opposite direction gives a softer control, allowing faster spring action.

The shock absorber is sealed at the factory with the proper amount of fluid and is non-refillable.

SPRING AND SHOCK ABSORBER TROUBLES AND REMEDIES

SYMPTOMS	PROBABLE CAUSE AND REMEDY
Spring Breakage—At center Bolt	Spring to Axle Clip Nuts Loose—Tighten
Main Leaf Breakage on Ends	Tight Shackle or Pivot Bolt—Free Up Shock Absorber Control Weak—Adjust No Shock Absorber Control—Replace Springs Lubricated—Discontinue
Excessive Wear on Shackle Bushings	Inside Spring Eye Opened Up—Repair or Replace Leaf Bushing Improperly Installed—Re-install Lack of Lubrication—Periodically Lubricate Worn Bushings—Replace
Shock Absorber Noise	Lack of fluid—Replace Shock Absorber Damaged Cylinder—Replace Shock Absorber Loose Mounting Brackets—Reweld Mounting rubber bushings—Replace
Shock Absorber Control	Adjust Lack of Fluid —Replace shocks

SPRING SPECIFICATIONS

Spring

Make	Mather
Type Leaf	Parabolic Cross Section
Length Center to Center of Eye	36¼"
Width	1¾"
Number of Leaves	8
Front Eye Center to Center Bolt	18⅛"
Rear Eye Center to Center Bolt	18⅛"
Camber under 525 lbs.	5/16"
Eye Bushing	1¾" long I.D., .5655"
Rebound Clips	4

Shock Absorber

Make	Gabriel
Type	Hydraulic
Action	Double
Length Compressed	10 7/16"
Length Extended	16⅛"
Adjustable	Yes
Mountings	Rubber

BODY

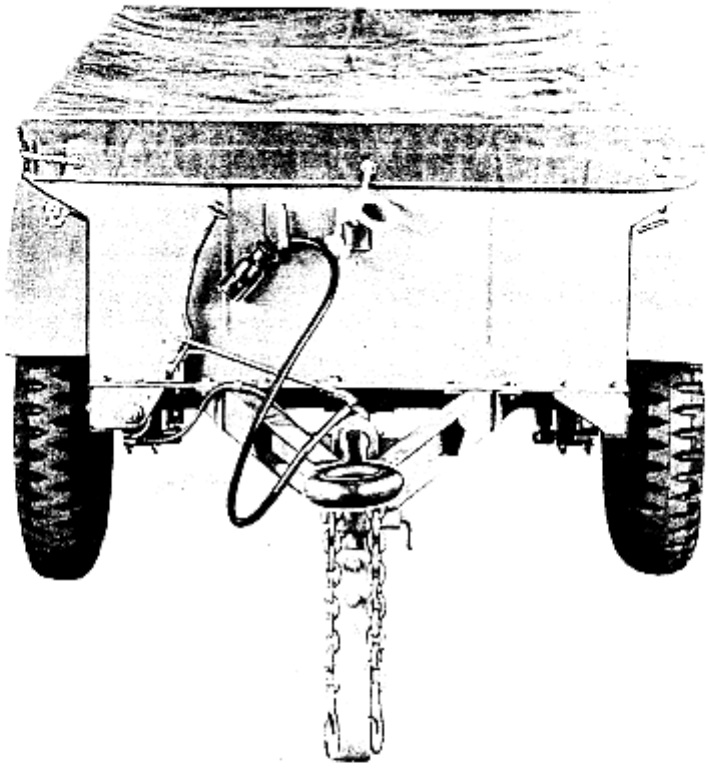


FIG. 20—BODY AND TARPAULIN

The body is of all steel construction and welded into one unit with the frame side rails. The box panels are all of 18 gauge steel strengthened with 16 gauge, 1" O.D. welded tubular frame around the top of the box. All panels have wide welding flanges which strengthen the box and provide large welding and sealing surfaces. They are reinforced with webs for further strength. The box is water tight and will float the vehicle when loaded with a 500 pound load. The water line is 12 inches above the box floor.

A manually operated drain valve is provided in the right rear corner of the floor which seals against a seat welded to the body.

The fenders are replaceable and bolted to the frame and brackets on the body. The fenders are interchangeable and can be used on either side.

The brake hand lever is mounted on the front side of the body at the right.

A tarpaulin Fig. 20 is provided to cover the box and is held on by taking a half hitch around the body hooks. When not in use it is carried folded in the box.

TOOLS

The manufacturers of this vehicle recommend the use of special precision tools and close inspection of each part for assurance of proper operation and maximum service.

When necessary, special tools facilitate disassembling, checking and reassembling of the unit.

To aid the mechanic in performing satisfactory repairs, we suggest that tools as listed in this section or their equivalent be available when making repairs.

OPERATING INSTRUCTIONS FOR SERVICE TOOLS

Supplied by Kent-Moore Organization

Detroit, Michigan

	Willys Part No.
J-270-1—DRIVER HANDLE. A heavy duty driving handle with a threaded end, on which can be mounted various adapters for removing and replacing bearing cups, oil seals, etc.	A-6221
J-1436—WHEEL BEARING CUP AND OIL SEAL AND UTILITY PULLER. This item is a general utility tool with a wide range of uses such as removing oil seals, bearing cups, etc. Fingers are expanded or retracted by merely turning the handle right or left. A heavy sliding knocker that guides on the tool shaft and strikes against a lug welded to end of shaft, provides powerful leverage in removing parts pressed in place in various assemblies.	A-6226
J-1743—WHEEL BEARING RACE AND HUB OIL SEAL REPLACER. Designed to replace the bearing race and oil seal without damage.	A-6230
J-1744—WHEEL BEARING ADJUSTING NUT WRENCH AND HANDLE. This hollow wrench is designed with a pilot guide ring on the inside of the body to prevent the wrench from slipping off the thin adjusting nuts. This construction permits tremendous pressure being applied without danger of the wrench slipping off and injuring the operator.	A-6231
J-1764—PAIR OF HOOKS FOR REMOVING SPINDLE LOCK WASHERS. The lock washer which is placed between the bearing adjusting nut and the lock nut has a tongued ear that rides in the spindle keyway. Removal is sometimes difficult because of housing interferences, and these hooks will materially assist in withdrawing the washer from the spindle.	A-6238
J-1765—BRAKE ECCENTRIC ADJUSTING TOOL. This tool has two rectangular slots to fit the eccentric adjusting lugs on brake shoe anchor pins. The tool is designed to operate with box type wrenches such as are supplied with mechanics hand tool sets.	A-6239

Memo

PARTS SECTION

FOR

¼ TON—2 WHEEL TRAILER

Built For
U. S. GOVERNMENT

BANTAM
MODEL T3

Contract Number
W-2425-qm-672

U. S. A. Reg. Numbers
0253934 to 0277083

WILLYS
MODEL MB-T

Contract Number
W-2425-qm-673

U. S. A. Reg. Numbers
0212994 to 0244966

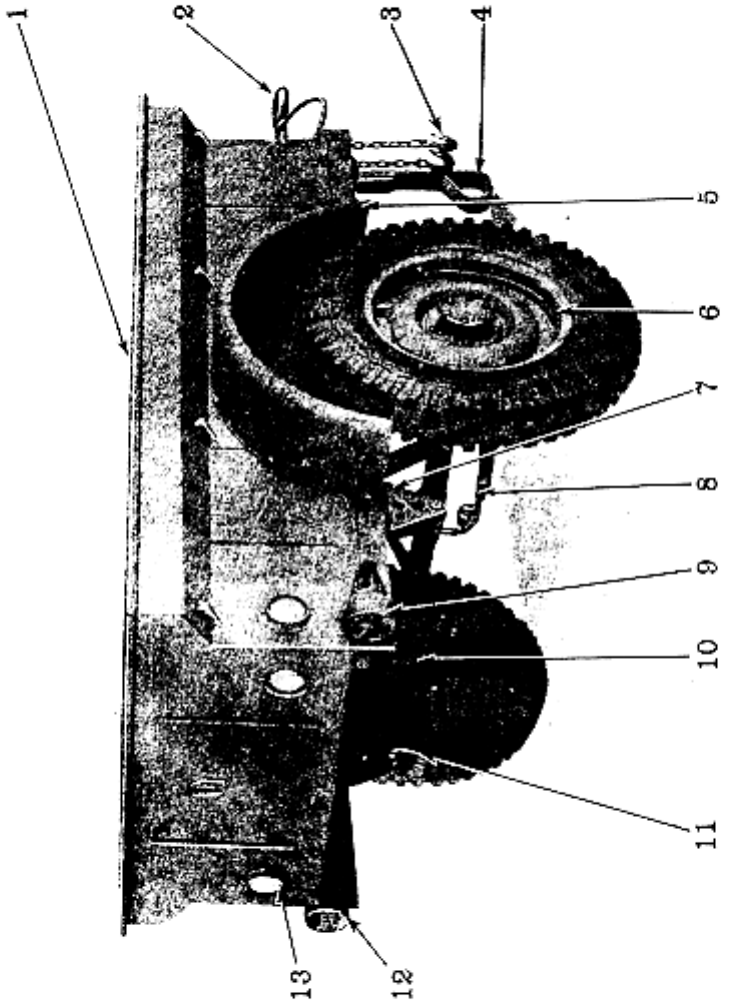


FIG. 22—REAR VIEW OF TRAILER

Item No.	Gov't Group No.	Bantam Part No.	Willys Part No.	Name
1	1600	14319	A-3977	Body Assembly
2	1506	14290	A-6370	License Plate
3	1506	14282	A-6369	Safety Chain
4	1506	14229	A-6358	Support Leg
5	1701	14245	A-3994	Fender Assembly
6	1301	14231	A-5487	Wheel Assembly
7	1506	14304	A-6455	Spring Shackle Bracket—Rear Right
8	1601	14308	A-612	Spring Assembly
9	0668	BL-11540	A-1065	Tail and Stop Lamp—Right
10	1603	14297	A-1069	Stake Pocket
11	1603	14312	A-519	Spring Shackle "U" Bolt
12	0668	R-11544	A-1064	Tail and Stop Lamp—Left
13	0668	14084	A-1305	Reflex Reflector

Foreword

This Parts List includes parts required to service the Willys and Bantam ¼ Ton 2 Wheel Trailer and consists of three sections as follows:

1st. Alphabetical Section

2nd. Government Grouping

3rd. Numerical and Price List.

1st. A part may be located in the Alphabetical Section by first ascertaining the proper noun properly describing the part then locating this word in its proper Alphabetical Order.

2nd. In the Government Grouping Section it is necessary to determine that unit of the vehicle in which the part required is used such as Axle, Body, Etc., then refer to the Government Group Index (See below) and determine group number which may be found in numerical order in this section.

3rd. Part Numbers may be found in their proper numerical order in this Section.

SYMBOLS

(●) When this symbol appears in the numerical section, preceding a Part Number it indicates this part is also used on Commercial Cars.

(R) When the letter "R" appears superseding a Bantam Part Number it indicates that part is also used on the Bantam ¼ Ton Truck Model BRC.

GOVERNMENT INDEX

Covering grouping as recommended by the office of Quartermaster General.

Description	Gov't Group
P	
Pawl, Hand Brake Lever	1201
Pin, Brake Shoe Anchor	1203
Pin, Clevis (Cable End to Cam Lever)	1201
Pin, Hand Brake Bell Crank Pivot	1201
Pin, Hand Brake Lever Pawl Rod	1201
Plate, Backing—Assembly, Left	1208
Plate, Backing—Assembly, Right	1208
Plate, Brake Shoe Anchor Pin	1203
Plate, Cover	0606
Plate, Instruction	1301
Plate, Name	2202
Plate and Shaft Assembly, Spring Clip—Left (On Right Spring)	1000
Plate and Shaft Assembly, Spring Clip—Right (On Left Spring)	1000
Plug, Coupling Socket Cable	0606
R	
Ratchet, Hand Brake Lever	1201
Reflector, Reflex	0608
Retainer, Spring Shackle Grease Seal	1602
Ring, Tire Bead Lock (16 x 6.00) (For .55 wide Tire Bead)	1301
Rivet, Tubular for Brake Lining	1202
Rod, Hand Brake Lever	1201
Rod, Hand Brake Lever Pawl	1201
Rope, Tarpaulin Anchor Assembly	1800
S	
Screw	0606
Screw, Brake Disc	1200
Screw, Frame to Draw Bar Bracket	1506
Screw, Safety Chain to Draw Bar Bracket	1506
Screw, Support Leg to Support Brace	1506
Screw, Tail and Stop Lamp Door	0608
Seal, Hub Oil—Assembly	1302
Seal, Spring Shackle Grease	1602
Seat, Drain Hole Ball	1800
Service Unit, Tail and Stop Lamp Upper—Assembly, Left	0608
Service Unit, Tail and Stop Lamp Upper—Assembly, Right	0608
Service Unit, Tail and Stop Lamp Lower—Assembly	0608
Shield, Dust	0606
Shoe and Lining Assembly, Forward—Brake	1202
Shoe and Lining Assembly, Reverse—Brake	1202
Sleeve, Tire Mounting	1301
Sleeve, Insulator	0606
Socket, Frame Draw Bar—Left	1800
Socket, Frame Draw Bar—Right	1800
Spring Assembly (8 leaves)	1601
Spring, Brake Shoe Return	1203
Spring, Hand Brake Lever Pawl Rod	1201
Spring, Lunette Eye	1506
Spring, Plunger (For Draw Bar Bracket)	1506
Strut, Brake—Left	1203
Strut, Brake—Right	1203
Support, Body Drain Hole Valve	1800
Switch, Blackout Light	0606
T	
Tarpaulin Assembly, Complete	1800
Terminal	0606
V	
Valve, Body Drain Hole—Assembly	1800
W	
Washer, Plain	0606
Washer, Special	0608
Washer, Eyelet	1800
Washer, Lunette Spring, Plain	1506
Washer, Lunette Spring (Tongued)	1506
Washer, Outer Wheel Bearing	1302
Washer, Special (For Shock Absorber)	1603
Wheel, Divided Combat (16 x 4.50 Rim)	1301
Wheel, Inner Half Combat	1301
Wheel and Bolt Assembly, Outer Half Combat	1301