Notified in G.O.'s Dated 31st. July 1944

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AUSTRALIAN MILITARY FORCES

INSTRUCTION BOOK
DRIVING & MAINTENANCE

for

Trucks ¼ Ton (U.S.A)
(Inc. Trailers, 2 Wheel, 8 cwt.)

Make: Willys-Overland Model MB (4 x 4)
Ford Model GPW (4 x 4)

1944

Prepared by Staff of the Master-General of the Ordnance and issued under the direction of the Commander-in-Chief, Headquarters Australian Military Forces

By Authority

I.H.Q./9111/6477

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S C O P E A N D P U R P O S E

The scope and purpose of this Instruction Book is to provide the basic information necessary for the correct and economical operation of the vehicle concerned. The instructions contained in the following pages will be carried out by the driver in charge of the vehicle in accordance with the maintenance routines and intervals stated.

Drivers will not attempt to carry out repairs or make adjustments beyond their permitted scope, and where any adjustments are to be carried out by the driver under supervision, he will report to the appropriate tradesman (driver-mechanic or unit fitter) and have the benefit of his advice and assistance.

Some adjustments are to be carried out by driver mechanics only. These are listed in the end of the book and none of these will be attempted by the driver.

All driver's maintenance will be recorded in the Vehicle Log Book AAB 20B except the drills specially marked as not recorded.

GENERAL DESCRIPTION

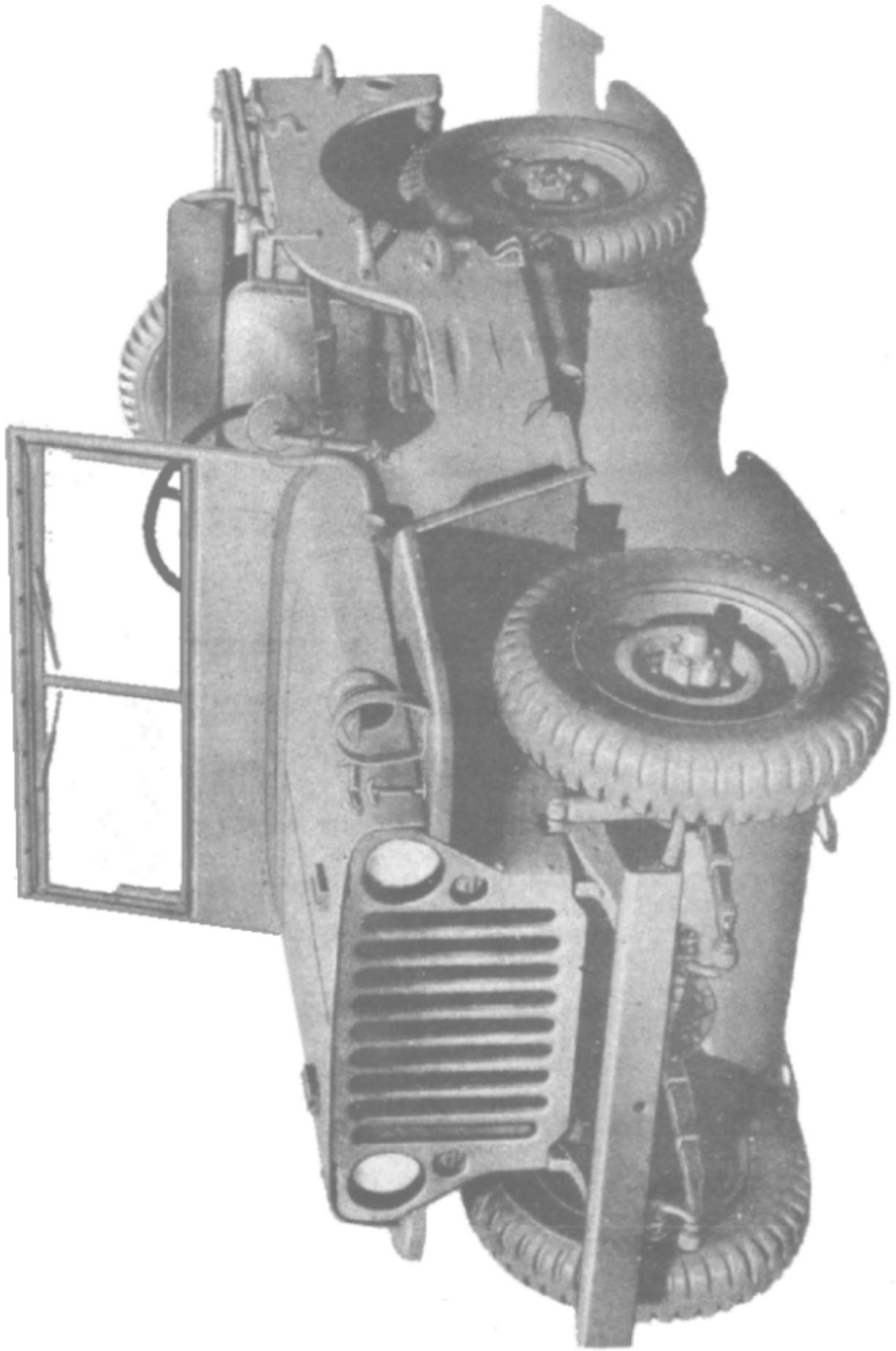
The vehicle described in this Instruction Book is known as the Truck ¼ ton (U.S.A.). Both the Willys-Overland Model MB (4 x 4) and Ford Model GPW (4 x 4) are identical. It has been introduced as a general purpose vehicle and fills a variety of roles.

For normal road operation, the vehicle utilizes the two rear driving wheels; four wheeled drive and low speed range through a transfer case (auxiliary gear box) are provided for cross country operation or steep gradients.

The power unit is the conventional 4 cylinder side-valve petrol engine and with the clutch, gear box, and transfer case, is built into a unit power plant which is mounted at four points in the chassis. The gear box is a synchromesh 3 speed type, with synchronized second and top speed gears, mounted to which is the dual range transfer case (auxiliary gear box) which incorporates the front axle drive engaging and disengaging mechanism.

Both hand and foot operated brakes are fitted, the former being mechanical and actuating an external contracting brake band at the rear of the transfer case, and the latter being hydraulic and operating on all four wheels.

The body is of the open type with an open driver's compartment. The folding top can be removed and stowed, and the windshield tilted forward on top of the hood or opened upward and outward. A spare wheel is mounted on the rear of the body, and a pintle hook is provided to haul trailed loads.



GENERAL VIEW OF TRUCK ¼ TON (U.S.A.)

GENERAL SPECIFICATION

Engine.

Make	Ford or Willys.
Type	S.1. Side Valve.
Horsepower (RAC Rating)	15.6
Brake Horsepower (at 3600 r.p.m.)	60
Number of cylinders	4
Firing Order	1-3-4-2

Clutch.

Single plate, dry-disc type	8" ¾" free pedal travel.

Cooling System.

Capacity	9-1/4 quarts.
Pump and fan drive	One V-belt (adjustable on generator).
Radiator	Fin and tube.
Thermostat control	Opens 145° - 155°F Fully open 170°F.

Electrical Equipment.

Battery	One 15 plate, 6 volt.
Starting System	6 volt
Generating System	6 volt
Lighting System	6 volt

Gear Box.

Type	Selective, synchro-mesh 2nd and top gear.
Speeds	3 forward - 1 reverse.
Transfer case (auxiliary gear box)	High and low range. Front axle drive engage lever.

Tyres.

Size	6.00 x 16 x 6 ply, non-directional, bar tread. (Combat tyres may be identified as split rim type).

Inflation pressure	30 lbs.

Fuel & Lubricating Oil Capacities (Imp. Measure).

Engine	3½ quarts.
Gear Box	1 pint.
Transfer Case	2½ pints.
Differential (front & rear)	2 pints (each)
Air Cleaner	½ pint
Fuel Tank	12½ gals.

Dimensions.

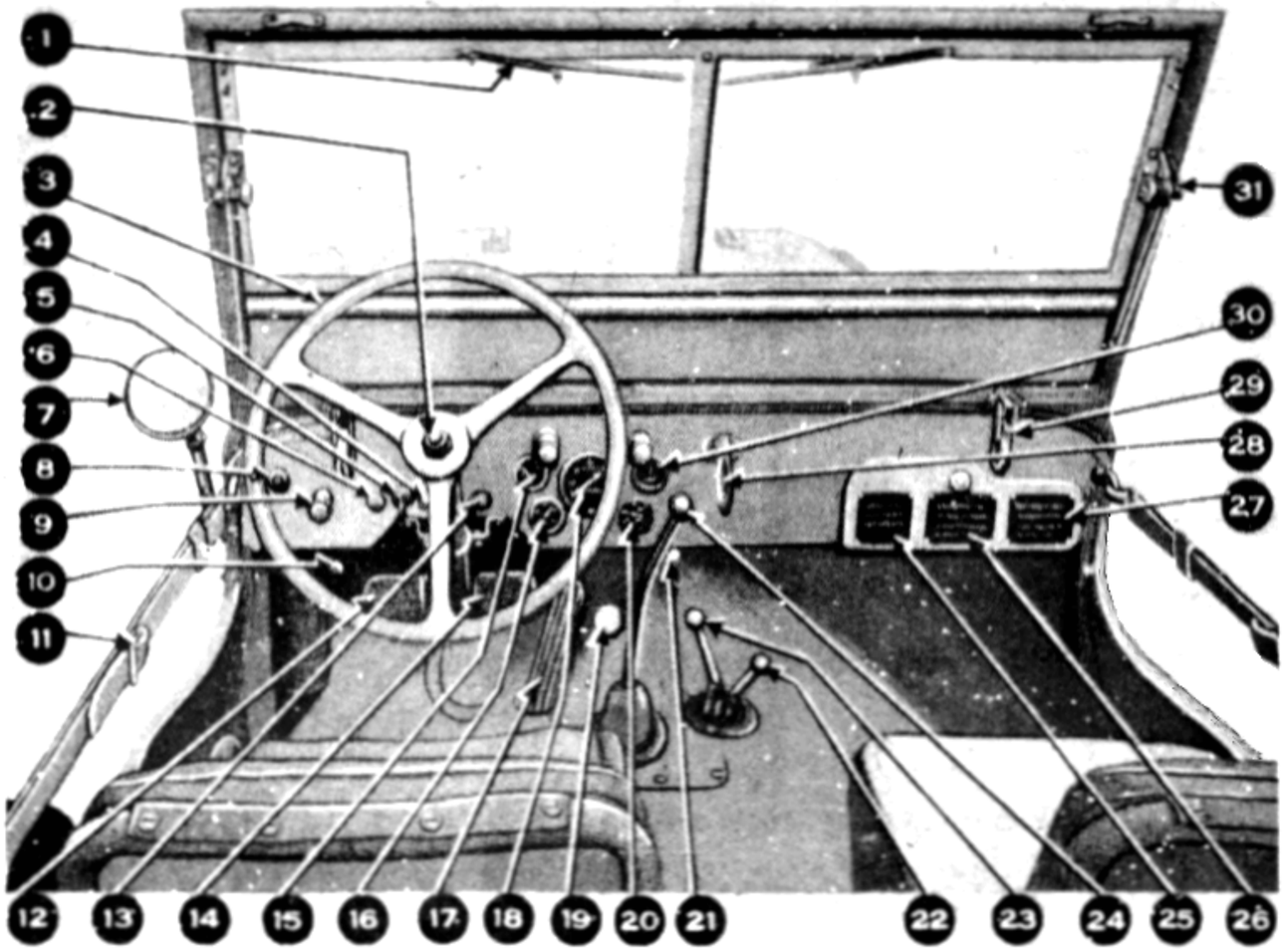
Wheelbase	80 ins.
Length (overall)	132¼ ins.
Width (overall)	62 ins.
Height (overall-top up)	69¾ ins.
Height (overall-top down)	52 ins.
Track (with "Combat" tyres)	49 ins.

Weights.

Gross weight	3125 lbs.
Maximum pay load	800 lbs.
Maximum trailed load (incl. trailer)	1330 lbs.

Performance.

Speed at maximum r.p.m.	65 m.p.h.
Maximum grade ascending ability	30°
Minimum turning radius (left)	17'6"
Minimum turning radius (right)	17'6"
Maximum fording depth (fan operating)	21"
Maximum fording depth (fan disconnected)	27"
Road clearance	8½"



INSTRUMENTS AND CONTROLS

1. Windscreen wipers
2. Horn button
3. Steering wheel
4. Hand throttle
5. Ignition Switch
6. Choke control
7. Rear vision mirror
8. Blackout driving light switch
9. Blackout light switch
10. Headlight foot switch (beam control)
11. Safety strap
12. Clutch pedal
13. Instrument panel light switch
14. Brake pedal
15. Fuel gauge
16. Oil pressure gauge
17. Accelerator pedal
18. Speedometer
19. Accelerator foot rest
20. Temperature gauge
21. Starting switch
22. Transfer case shift lever
23. Front axle engage lever
24. Gear shift lever
25. Gear shift diagram
26. Vehicle name plate
27. Warning plate
28. Hand brake lever
29. Windscreen clamps
30. Ammeter
31. Windscreen adjusting arms.

DRIVER'S ROUTINE MAINTENANCE

●

DAILY BEFORE DUTY (Not recorded in Log Book)

Check:

Level of fuel in tank; no leaks; filler cap secure.

Level of oil in sump; no leaks; filler cap secure.

Level of water in radiator; no leaks; filler cap and rubber seat secure.

Fuel tank sump drain covers correctly fitted.

Start engine; run at fast idling speed:

Check:

Oil pressure gauge registers; pressure normal.

Ammeter working; reading normal.

Fuel gauge registers correctly.

Horn and windscreen wiper for operation.

All lights (incl. black out lights) for correct operation.

Tyres, including spare, for correct pressure (use gauge); valve dust caps fitted.

Brake operating normally; pedal firm and no excessive travel.

All tools and equipment securely stowed.

Driver carries G2, G11, G13, G14, G17, and S.O.D.'s; Log Book carried in vehicle.

★ NOTE: Oil pressure and temperature gauge must be constantly checked during running.

INSPECT MAINTENANCE. (Not recorded in Log Book)

Check:

Fuel level in tank.

Oil level in sump.

Air cleaner; check oil level, drain and refill as necessary.

Water level in radiator (particular attention to filler cap.)

Radiator and hoses for leaks.

Tyres for damage or under inflation; inflate as necessary; check carefully for nails in treads.

Wheel studs and rim bolt nuts - do not over-tighten.

Hydraulic brake lines for damage or chafing.

Bow assembly and cover for security including wing nuts and front brackets.

Windscreen for security, tighten knurled and wing nuts.

Tighten any loose nuts and bolts.

Spring leaves, clips and "U" bolts for damage.

Tools and equipment carried externally and load for security.

Make any minor adjustments. Report any defects beyond driver's scope.

DAILY AFTER DUTY (Not recorded in Log Book)

Clean Vehicle:

Check:

Level of fuel in tank; replenish if necessary.

Fuel tank and pipes for leaks; fuel tank sump correctly fitted; drain sump after fording operations.

Level of oil in sump; replenish if necessary; drain and refill if due for oil change.

Sump, oil pipes, valve cover and filter for leaks.

Sump skid plate secure and not damaged (no cracks in weld.)

Gear box, transfer case and differentials for oil leaks.

Exhaust pipe and muffler secure and undamaged.

Level of water in radiator; replenish if necessary. (Report any signs of oil in water).

Radiator, hoses, water pump and engine block for leaks.

Tyres for damage, cuts and correct pressure (no nails, in treads); valve caps fitted; report damage to tyres, and inflate as necessary.

Tighten up any loose nuts and bolts.

Make any minor adjustments.

Steering Group

Check:

Steering box and linkage for security; play normal.

Shackle Group

Check:

Shackle and spring anchorages undamaged.

Spring Group

Check:

Spring leaves and centre bolts unbroken "U" bolts for signs of movement and unbroken. Clips secure.

Brake Group

Check:

Hydraulic brake pipes and flexible hoses for leaks and damage.

Pedal firm, no excessive travel.

Have brakes adjusted by a tradesman if not fully effective.

Body Group

Check:

No fittings or parts missing, hood secure and undamaged.

Tools and equipment correctly stowed.

Wheel Alignment and Tyre Group

Check:

No obvious misalignment, rims not damaged; rim and wheel nuts tight; stud threads not rusty or damaged.

REPORT ANY DEFECTS OR ADJUSTMENTS BEYOND DRIVER'S SCOPE ON G.17.

WEEKLY MAINTENANCE (Recorded in Log Book)

(Carried out whether the vehicle is in use or not)

(a) Battery.

Remove battery from carried and clean externally.

Check battery terminals for corrosion, if corroded, clean thoroughly.

Check battery charge with hydrometer; report if reading below 1.200. (Do not test directly after adding distilled water. If too low to test, top up and test after a run has mixed electrolyte evenly.)

Check level of electrolyte in each cell, if low bring level to ½" above plates by adding distilled water only.

Check filler caps for security and air vents for blockage.

Check battery top for cracks, leaks, and terminal posts for security.

Clean carrier of corrosion and rust where spillage has occurred, by neutralization. If necessary touch up with paint.

Replace battery in carrier; make secure but do not overtighten; see that both securing straps are properly positioned.

Tighten terminal clips and smear with mineral jelly as a safeguard against corrosion.

Check earth strap to frame secure and undamaged.

(b) Tools

Check all items for completeness and serviceability; freedom from rust or deterioration.

(c) Tyres

Report any signs of abnormal wear or damage.

(d) Fire Extinguisher.

See that fire extinguisher is full and ready for immediate use. Place thumb over the outlet, turn handle to the left and operate the plunger just enough to feel that pressure is being applied. Lock handle by turning to the right.

Check bracket and tighten if necessary.

★ NOTE: Set out tools and equipment for weekly inspection. Report any defects or shortages. Any other periodical maintenance falling due on same day will be carried out in addition to the above.

BASIC GROUP MAINTENANCE (Recorded in Log Book)

All Groups must be completed each 500 miles.

★ NOTE: Where Basic Group Maintenance is to be completed in any one day, the vehicle should be raised onto blocks to provide easy access to components, and the following should be removed before commencement:

Battery
Oil bath air cleaner assembly.
Gear box cover plate in drivers compartment.
Gear box skid plate.

The above will be replaced when the appropriate Group is completed. When refitting the skid plate, care must be taken to ensure that the bolt heads are to the outside.

Wipe all grease nipples clean before and after lubrication.

Report any missing or damaged nipples.

Steering Group Clean exterior of components.

Jack up front axle.

Lubricate:

Drag link.....2 nipples.
Bell crank.....1 nipple.
Track rods.....4 nipples.

Check:

Steering lock stops secure, weld intact.

Steering wheel for excessive backlash; holding bolt secure.

Steering column bracket secure to dash board, clamp bolt secure.

Steering box secure to frame; no movement. Cover plate bolts tight; box not leaking.

Drop arm securing bolt tight, washer intact.

Linkage and track rod ends for security and normal movement; all split-pins intact.

Lever anchor bolts secure.

Steering knuckle flange nuts secure.

Nuts securing lower spindle pin cap tight.

Front wheel bearings and pivot pins for excessive play.

Shackle Group Clean exterior of components.

Lubricate:

Front spring shackles..... 6 nipples.
Rear spring shackles..... 6 nipples.
Torque reaction spring bolt..... 1 nipple.
(on left front spring).
Ensure grease goes through; report any seized, loose or worn shackles...

Check:

Shackles and spring anchorages for security; welding not cracked.

Spring Group Clean exterior of components.

Check:

Spring leaves and centre bolts not displaced or broken. Examine end of main and torque reaction leaves for cracks.

"U" bolts for signs of movement; spring clips for security and correct positioning; nuts and lock nuts tight.

Arrestor pads secure to frame.

Clutch Group Clean exterior of components.

Lubricate:

Clutch pedal shaft..... 1 nipple.
Linkage joints..... Oil can.

Check:

Pedal free travel $\frac{3}{4}$"; adjust if necessary (under supervision of driver mechanic).

Security of pedal securing nuts, split pins, and return spring.

Pedal not fouling electrical cable under toe board.

Pedal stop pad correctly positioned.

Pull out cable and yoke for signs of damage, cable not rusted - smear with oil.

Brake Group Clean exterior of components.

Lubricate:

Brake pedal shaft..... 1 Nipple.
Push rod pivot..... Oil Can.
Hand brake actuating joints (4 points) Oil Can.
Hand brake control lever slide, inner cable..... Oil Can.

Check:

Brake pedal securing nuts, clevis pins and return spring.

Master cylinder secure to chassis.

Brake lines and flexible hoses for leaks or damage line mountings and clamps secure.

Master cylinder reservoir for fluid level; replenish if necessary to within $\frac{1}{4}$" of top with H.B.F.

Pedal free travel by hand $\frac{1}{2}$"

Pedal stop pads correctly positioned.

Lock wire on hand brake mounting to transfer case.

Lock wire on hand brake mounting to pivot adjustment.

Clevis pins in hand brake linkage, nuts and split pins secure.

★ NOTE: On completion of maintenance or immediately after any adjustment of brakes, carry out road test for brake equality and stopping power. Test hand brake for holding power on steep incline. Have brakes adjusted by workshops if not fully effective.

Propellor Shaft Group Clean exterior of components.

Lubricate:

Propellor shaft splines (front and rear)..2 Nipples.
Rear propellor shaft universal joints (Special grease gun adaptor).....2 Nipples.
Front propellor shaft universal joints (Special grease gun adaptor).....2 Nipples.

Transfer Case shift lever shaft.....1 Nipple
Front axle constant velocity joints..Level plugs

Check:

All splines and universal joints for excessive wear.

Security of universal joint nuts and bolts; pay particular attention to nuts immediately rear of hand brake drum.

Security of splined shaft seals, front and rear.

Front axle constant velocity joint housings for leaks.

Engine Group Clean exterior of components.

Lubricate:

Carburettor hand and foot controls....Oil Can.
Hand control slides.....Oil Can.
Distributor shaft bearing.....2 drops through oiler.
Starter motor.....Oil Can.

Check:

Radiator hose clips for security; hoses for signs of deterioration or damage. (feel hose for internal breaks).

Radiator core for condition; remove any dirt, insects or debris.

Radiator mountings and bracing stays for security.

Operation of thermostat; if correct, engine should warm up quickly, then water should circulate freely.

Fan belt for condition and correct tension; replace or adjust as necessary (under supervision of driver mechanic).

Drain cocks for freedom of operation.

Security of timing case cover.

Engine mounting studs, front and rear.

Operation of generator quick release mechanism, freedom of action; return spring properly positioned.

Generator and starter motor mountings.

Temperature gauge, engine unit.

Oil gauge, engine unit.

Oil filter pipe security to engine.

Oil pump housing secure and no leaks.

Crankcase ventilation pipes securely mounted.

Security of exhaust and intake manifold, oil filter mountings, and bond strapping.

Water pump drain hole free.

Fan blade rivets for security.

Fuel Line Group Clean exterior of components.

Remove:

Air cleaner; change oil, wash filter element in petrol and re-oil. Clean inside of container before replacing.

Check:

Security of air cleaner quick release links and container; flexible hose not damaged, air intake to carburettor, no leaks.

Carburettor mounting bolts.

Security of fuel pump mounting bolts. Clean pump filter screen and sediment trap; check gasket serviceable on replacement.

Fuel lines to primary filter; no leaks or damage.

Remove and clean primary filter element.

Fuel lines to tank; no leaks or damage.

Fuel tank drain plug not rusted up.

Fuel tank sump for damage.

Fuel tank strapping, filler cap and gauge unit for security.

Ignition Group Clean exterior of components.

Lubricate:

Cam profiles.....Lightly smear) Under supervision
Rotor wick.....Two drops) of
Breaker arm pivot.One drop) Driver mechanic.

Check:

Contact breaker points for correct gap (under supervision of driver mechanic).

H.T. Leads, caps and suppressors secure; not frayed, cracked or liable to short circuit.

Security of distributor and coil mountings.

L.T. Leads not liable to short circuit.

Terminals clean and tight.

Remove and clean spark plugs; reset gaps to .030" if necessary (under supervision of driver mechanic).

Oil Level Group Clean exterior of components.

Check and replenish as necessary:

Steering box.
Gear box.
Transfer Case.
Front differential.
Rear differential.

Check:

Breather caps for cleanliness and security.

All plugs for security, no leaks.

★ NOTE: Oil will be changed (under supervision) at intervals stated in Lubrication Schedule Appendix "A".

Body Group Clean exterior of components.

Lubricate:

Bonnet and windscreen hinges, fasteners clips and pivots.....Oil Can.
Head lamps hinges.....Oil Can.
Passenger seat hinges.....Oil Can.
Windscreen wiper shafts.....Oil Can.
Pintle hook.....Oil Can.
Tool and equipment clamps, hinges, and wing nuts.....Oil Can.

Check:

Body mounting bolts for security to chassis.
Spare wheel carrier secure.

Tool lockers for cleanliness and operation of locks.

No fittings or parts missing.

Hood secure and undamaged.

Tools and equipment correctly stowed.

Wheel Alignment and Tyre Group Clean exterior of components.

Check:

Inside wall of front tyres for damage.

No obvious misalignment or wheels untrue.

Tyres for abnormal wear. REPORT any signs of undue wear.

Tyres not creeping. Rim flanges not damaged.

Tyres valves undamaged and valve caps fitted.

Wheel and detachable rim stud nuts tight and threads not rusty.

Hub caps secure.

Rear axle shaft flange studs tight.

Withdrawal studs not distorting flange.

Change over tyres if due according to current DME Technical Instructions.

Rim nuts painted Warning Red.

Electrical, Wiring and Lighting Group Clean exterior of components.

Check:

Exposed electrical wiring insulation for cracks, kinks, frays, and fouling of moving parts.

Terminals clean and tight.

Lamps for security of-mounting; lenses and rims firm and weatherproof. All lamps for correct operation and black-out modifications as ordered from time to time.

Voltage Regulator secure to body - seals intact.

★ NOTE: Maintenance Radio Suppression Equipment.

All assemblies employed in the radio suppression system must be inspected by the driver every 500 miles and attention payed to the following points:-

a. Filters.

Check to see that filter mounting screws are drawn up tight, and that connecting wires are tight and in good condition.

b. Condensers.

Check each condenser mounting and terminal connection and see that they are clean and tight.

c. Suppressors.

Check each spark plug suppressor for cracked or broken housing and make certain that none are missing. See that suppressors are properly screwed into wires in cables. Snap-on terminals must be free from corrosion and dirt and must be tight, to make a good contact with plug.

d. Bonding.

Inspect all points of bond strap attachment to be sure that they are clean and that all bolts and shakeproof washers are drawn up tight.

REPORT ANY DEFECTS OR ADJUSTMENTS BEYOND DRIVER'S SCOPE ON G.17.

TRAILER MAINTENANCE

★ NOTE: The following notes on trailer maintenance are provided only as a guide, and may be applied to all types of trailers 2 wheel, 8 cwt.

Daily Before Duty.

Check:

Operation of lights; cable and socket plug for security.

Brake cable and linkage.

Hand brake for correct operation.

Tyres for correct inflation pressure (30 lbs),use gauge.

Towing eye correctly positioned in pintle hook. Safety chains in place.

Parking support securely clamped in "Up" position.

Load for security, tarpaulin correctly lashed down.

Daily After Duty.

Check:

Towing eye and pintle hook for security and damage.

Tyres for damage, cuts, and correct pressure - valve caps fitted.

Shackle and spring anchorages undamaged.

Spring leaves and centre bolts unbroken; "U" bolts for signs of movement, clips secure.

Body bolts tight; tarpaulin correctly lashed down.

Basic Group Maintenance

All groups must be completed each 500 miles.

Shackle Group Clean exterior of components.

Lubricate:

Spring shackles..... 6 nipples.
Ensure grease goes through; report any seized, loose or worn shackles.

Check:

Shackles and spring anchorages for security;

welding not cracked.

Spring Group Clean exterior of components.

Check:

Spring leaves and centre bolts not displaced or broken.

"U" bolts for signs of movement, spring clips secure; nuts and bolts tight.

Shock absorbers for security.

Brake Group Clean exterior of components.

Lubricate:

Hand brake lever shaft and linkage.....Oil Can.
Flexible brake cable; dismantle and grease by hand.

Check:

Brake cables and linkage for security.
Brakes for correct operation.

Body Group Clean exterior of components.

Lubricate:

Towing eye swivel.....1Nipple.
Parking support hinge.....Oil Can.

Check:

Body mounting bolts for security.

Draw bar mounting bolts tight.

Towing eye assembly for security.

No fittings or parts missing.

All body bolts tight.

Tarpaulin and lashings complete and serviceable.

Wheel Alignment and Tyre Group Clean exterior of components.

Check:

Wheel and axle alignment.

Tyres for abnormal wear; report any undue wear; rim flanges not damaged; tyre valves undamaged and valve caps fitted.

Wheel and detachable rim stud nuts tight and threads not rusty; hub caps secure.

Change over tyres if due (See instructions in Vehicle log book AAB 20B).

Electrical Wiring and Lighting Group Clean exterior of components.

Check:

Wiring for chafed or broken wires.

Retaining clips and grummets for security.

All connections for tightness.

Operation of all lights.

●

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6000 MILE MAINTENANCE (OR HALF-YEARLY)

(The following will be carried out by the driver under supervision, while the vehicle is in workshops)

Engine Group

Drain radiator and cylinder block and flush the cooling system under pressure.

Drain points are positioned as follows:

1. Lower left hand corner of radiator.
2. Right front lower corner of cylinder block.

Capacity of cooling system - 9½ quarts.

Fuel Line Group

Remove, drain, and clean fuel tank - check for leaks.

Clean out fuel tank sump; repaint if necessary.

Oil Level Group

Drain and refill:

Steering box.
Gear box.
Transfer case.
Front and rear differentials.

Examine drainings carefully for sediment and metal particles; report if anything unusual found.

Wheel Alignment and Tyre Group

Remove wheels from vehicle and tyres from wheels.

Clean hub faces, brake drums, wheels and rims and inside of tyres.

Paint with suitable paint all rims; all wheels where rusty or chipped.

Change tyres round as directed. (See Instructions in Vehicle Log Book AAB 20B).

CAUTION: This vehicle has been specially designed with a short wheel base and high ratio steering, to enable it to negotiate difficult country. Inexperienced drivers, or those new to the vehicle, must not attempt to use its high speed capabilities on good roads, as under these conditions, the factors mentioned above tend to make the vehicle swing sharply.

Transfer Case Operation.

Instructions for shifting gears in transfer case and engagement of the front axle drive are as follows:

Transfer case may be operated in either high or low speed range when front axle drive is engaged.

The transfer case can be operated only in high range when front axle drive is DISENGAGED.

To engage front axle drive, depress clutch pedal, release accelerator and move front axle engage lever to rear position.

To disengage front axle drive, release accelerator and shift lever to forward position.

Shifting from high to low speed range should not be attempted except when the vehicle is being operated at low speeds or at a standstill. The front axle drive must be engaged for this shift. Release accelerator and depress clutch pedal; move front axle engage lever to rear position, engaging front wheel drive, then move transfer case change speed lever, to forward position.

Shifting from low to high speed range may be accomplished at any time, regardless of vehicle speed. Release accelerator and depress clutch pedal; shift transfer case change speed lever into rear position.

Towing Vehicle.

When necessary to tow the vehicle; the tow chain, rope or cable, should be attached to the front bumper bar and frame side rail gusset.

Loop chain or rope over top of bumper and frame gusset, brining it up across face of bumper and back on opposite side of frame, then hook or tie. Do not tow from the middle of the bumper.

Driving Through Water

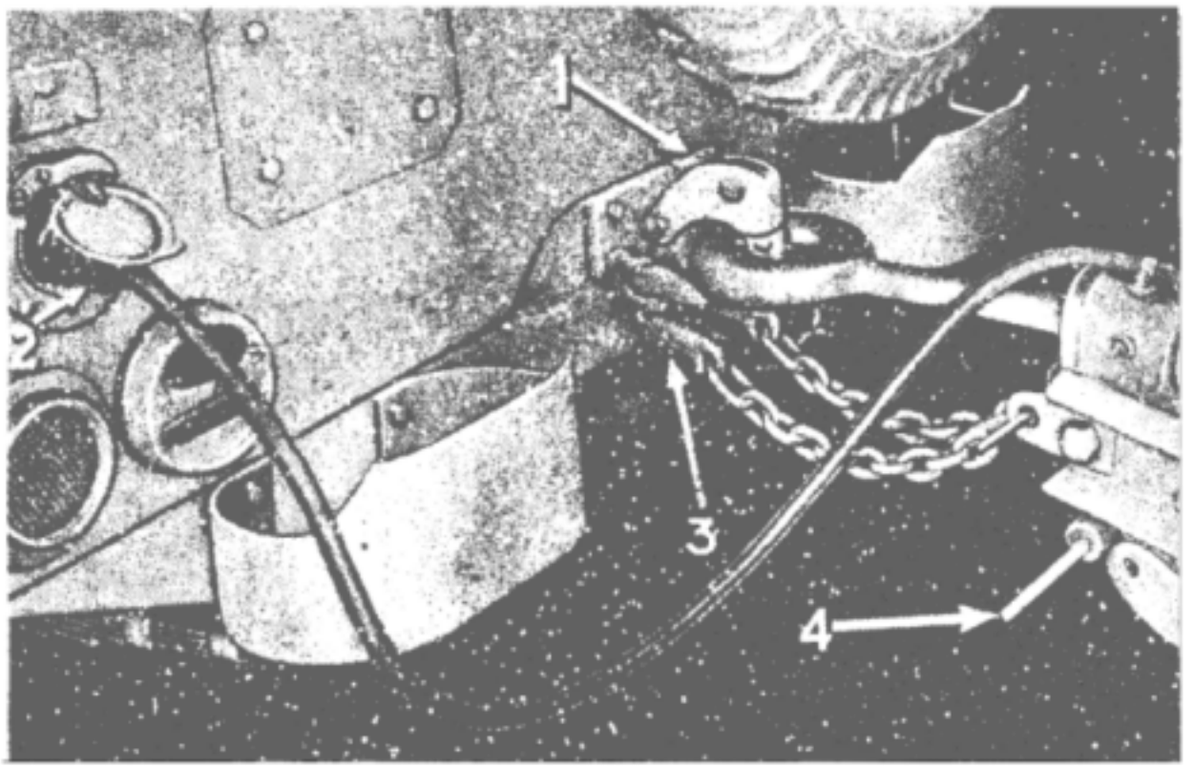
When driving through water, see that the cap is on the front drain hole under the fuel tank. An extra cap carried in the glove compartment should be installed on the rear drain hole. Remove this cap and return it to the glove compartment after passing through the water. After operations in swamps and streams, inspect for water in engine, gearbox, transfer case, front and rear axles, wheel bearings and front universal joints.

When there is a possibility of water being thrown over the engine by fan action in crossing streams, pull up on handle of the generator brace, then remove the fan belt. This will stop the fan. As soon as possible the belt should be replaced, then pull out on the generator. The generator will lock in place by spring action of the brace.

Trailer Operation (See Illustration "Trailer Coupling")

In the use of a two wheel trailer, it is important to properly distribute the load for balance. Tyres 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, No.1. Raise the trailer and place trailer draw bar or (Lunette Eye) in hook. Close the pintle hook and be sure that



TRAILER COUPLING

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 No.3, so that 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, No.2, turning the cable plug positioning lug to line up with groove in socket and push the plug well forward into the socket.

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

Use one man to move the vehicle and another to handle the coupling 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.

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

When the trailer is coupled to the truck, tail and stop lights are 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 MOVING OFF.

The body is waterproof and designed so that 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.

★ NOTE: The above notes are written for the American type of trailer, but may be applied in general, for all types.

APPENDIX "A"

LUBRICATION SCHEDULE

New and reconditioned vehicles: Drivers will regard a reconditioned engine, gear box, transfer case or differential as a new assembly and will drive, lubricate and maintain accordingly.

Drainings must be carefully examined for signs of water, sediment, sludge, metal particles, nuts or split pins or parts thereof. Report anything unusual found and keep drainings for further examination. If normal, drainings must be preserved separately and handed in for salvage in accordance with current L.H.Q. Instructions.

TABLE I - OIL CHANGES

Assembly	Lubricant	1st Change at	Subsequent Changes
Engine crankcase	OE-30	250	every 4000
Engine oil filter	Change element every 8000 miles.		
Gear Box	GO-90	1000	every 6000
Transfer Case	"	1000	" 6000
Differentials (front and Rear)	"	1000	" 6000
Steering Box	"	1000	" 6000

NOTE: Under severe conditions, the engine crankcase oil, and oil filter element will be changed at more frequent intervals.

TABLE 2 - GROUP LUBRICATION

Assembly	Lubricant	Type of Lubricator	No. of Points	Period of Lubrication	
				Daily	500 Miles
STEERING GROUP					
Drag Link	CG-1(AL)	Nipples	2	-	Grease Gun
Bell crank	"	"	1	-	" "
Track rods	"	"	4	-	" "
SHACKLE GROUP					
Front spring shackles	CG-1(AL)	Nipples	6	-	Grease Gun
Rear spring shackles	"	"	6	-	Grease Gun
Torque reaction spring bolt.	"	"	1	-	Grease Gun
CLUTCH GROUP					
Clutch pedal shaft	CG-1(AL)	Nipple	1	-	Grease gun
Linkage joints	OE-30	Oil Can	-	-	Few Drops
BRAKE GROUP					
Brake pedal shaft	CG-1(AL)	Nipple	1	-	Grease Gun
Push rod pivot	OE-30	Oil Can	1	-	Few drops
Hand Brake actuating joints	"	"	4	-	" "
Control lever slide inner cable	"	"	1	-	" "
Hydraulic system	H.B.F.	Reservoir	1	-	Replenish

Assembly	Lubricant	Type of Lubricator	No. of Points	Period of Lubrication	
				Daily	500 Miles
PROPELLOR SHAFT GROUP					
Prop. shaft splines (front and rear)	CG-1(AL)	Nipples	2	-	Grease Gun
Universal joints (front and rear)	"	"	4	-	" "
Transfer case lever shaft.	"	"	1	-	" "
Front axle C.V. Joints.	"	Level plugs	2	-	" "
ENGINE GROUP					
Crankcase	OE-30	Reservoir	1	Check level & replenish	Check level & replenish
Hand and foot controls	OE-30	Oil Can	-	-	Few drops
Distributor shaft bearing	OE-30	Oil Can	1	-	Two drops
Starter motor	"	"	1	-	Two drops
FUEL LINE GROUP					
Air cleaner	OE-30	Reservoir	1	Drain flush & refill if necessary.	Drain flush and refill
Fuel pump filter screen and sediment trap	-	-	-	-	Drain and clean
Primary filter	-	-	-	-	" " "

Assembly	Lubricant	Type of Lubricator	No. of Points	Period of Lubrication	
				Daily	500 Miles
IGNITION GROUP					
Cam profiles	WB-2	Smear by hand	1	-	Smear
Rotor wick	OE-30	Oil can	1	-	Two drops.
Breaker arm pivot	"	"	1	-	One drop
OIL LEVEL GROUP					
Steering box	GO-90	Reservoir	1	-	Replenish
Gear box	"	"	1	-	"
Transfer case	"	"	1	-	"
Differentials (front & rear)	"	"	2	-	"
BODY GROUP					
Bonnet and windscreen hinges and fasteners	OE-30	Oil can	-	-	Few drops
Lamp hinges	"	"	-	-	" "
Seat hinges	"	"	-	-	" "
Windscreen wiper shafts	"	"	-	-	" "
Pintle hook	"	"	-	-	" "
WHEEL ALIGNMENT AND TYRE GROUP					
Wheel bearings	WB -2	Pack by hand	4	-	Workshops every 6000 miles

APPENDIX "B"

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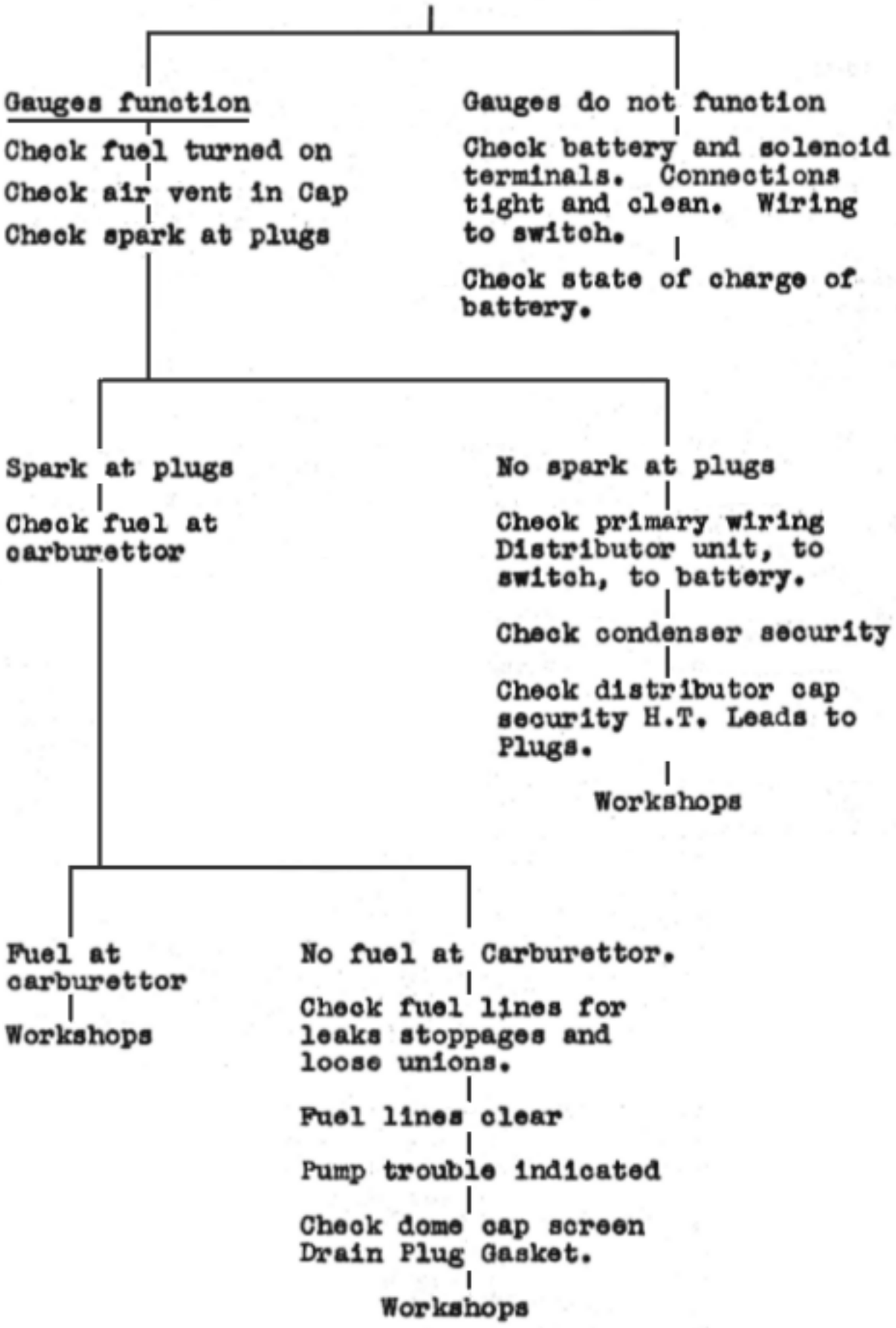
FAULT FINDING CHART



APPENDIX "C"

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DRIVER MECHANIC OPERATIONS

The following operations and adjustments will be carried out by driver mechanics only.

BRAKE GROUP

There should always be at least ½" free pedal travel before the push rod engages the piston.

This adjustment is accomplished by the shortening or lengthening of the brake master cylinder eye bolt. This is done so the primary cup will clear the port, when the piston is in the off position, otherwise the compensating action of the master cylinder will be destroyed and cause the brakes to drag.

Brake Shoe Adjustment (Minor)

When the brake lining becomes worn, as indicated by foot pedal going almost to the floor board, necessary adjustment can readily be made as described in the following paragraph. Make certain that there is ½" free brake pedal travel.

Jack up the wheels to clear the ground. Adjustment is made by rotating the brake shoe eccentric. With a wrench, loosen the eccentric lock nut on the forward brake shoe. Hold the lock nut, and with another wrench, turn the eccentric towards the front of the vehicle until the brake shoe binds on the drum. Turn the wheel with one hand and release the eccentric until the wheel turns freely. Hold the eccentric and tighten the lock nut. To adjust the rear shoe, repeat the above operation except to turn the eccentric toward the rear of the vehicle. Repeat for all wheels.

Brake Shoe Adjustment (Major)

In the event of the minor adjustment not giving adequate brakes, it will be necessary to reset the anchor pins. The brake adjustments should be made as follows:

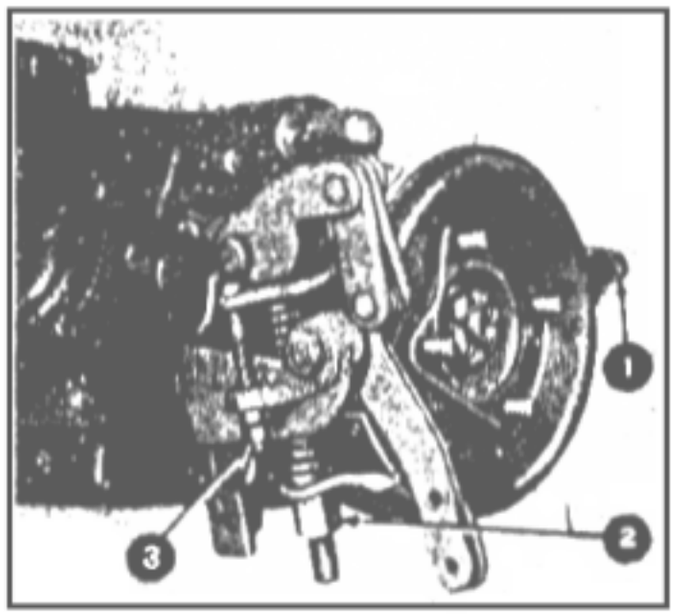
Loosen the anchor pin lock nuts on the rear of the backing plate. Adjustment is made by turning the eccentric anchor pins towards each other and down, until the shoes are set to the proper clearance, as determined by feeler gauges. The recommended shoe setting is .005" clearance at the heel (lower end) and .008" at the toe (upper end) of the brake shoe lining. A slot is provided in the brake drum for checking these clearances.

Hand Brake Adjustment (See Illustration "Hand-brake adjustment").

The hand brake is applied to the rear propeller shaft at the transfer case. The operation of the brake is positive through a cable connection.

To adjust the hand brake the following operations should be performed:

Have the hand brake on the dash in the released position. Under the vehicle, see that the brake cable has released the brake and that the relay crank is in the fully released position. Adjust the anchor screw No.1, so that there will be .005" - .010" clearance between the band and the drum at the screw. Tighten nut No.2 until the band is brought tight against the drum. Adjust bolt No.3 so that the head just rests on the upper half of the band and the locking nut is against the under side of bracket. Back off two turns on the adjusting nut No. 2. This will give the brake band approximately .010" clearance from the drum. Due attention should be given to the cable and linkage to see that they do not bind.



HAND BRAKE ADJUSTMENT

The length of the cable from the hand grip to the brake levers is of a predetermined length and cannot be changed. (Local modification No.1497 makes provision for length of cable to be adjusted). At regular periods, it is advisable to put a few drops of oil in the upper end of the conduit tube at the cable to keep it free to slide within the conduit.

This brake is designed only for holding the vehicle while parked, and should not be used whilst the vehicle is in motion.

Bleeding the Brakes

The hydraulic brake system must be bled whenever a fluid line has been disconnected, or air gets into the system. A leak in the system may sometimes be evidenced through the presence of a spongy brake pedal. Air trapped in the system is compressible and does not permit pressure applied to the brake pedal to be transmitted solidly through to the brakes.

The system must be absolutely free from air at all times. When bleeding the brakes it is advisable that the longest fluid line from the master cylinder be bled first. The proper sequence of bleeding is right rear; right front; left rear; left front. During the bleeding operation the master cylinder must be kept at least ⅔ full of hydraulic brake fluid.

To bleed the brakes, first carefully clean all dirt from around the master cylinder filler plug. Remove the filler plug and fill the master cylinder to the lower edge of the filler neck. Clean off all bleeder connections at all four wheel cylinders. Attach bleeder hose and fixture to right rear wheel cylinder bleeder screw, and place the end of the tube in a glass jar, end submerged in fluid. Open the bleeder valve ½ to ¾ of a turn.

Depress the foot pedal by hand, allowing it to return very slowly. Continue this pumping action to force the fluid through the line and out the bleeder hose which carries with it any air in the system.

When bubbles cease to appear at the end of the bleeder hose, tighten the bleeder valve and remove the hose.

After the bleeding operation has been completed at all four wheels, fill the master cylinder reservoir and replace the filler plug.

It is not advisable to re-use the fluid which has been removed from the lines through the bleeding process.

CLUTCH GROUP

Clutch Pedal Adjustment

As the clutch facings wear, the free pedal travel is diminished. When the clutch pedal rests against the toe board it is necessary to adjust the clutch cable. Lengthening or shortening the clutch control lever cable governs the clearance of the clutch release bearing to the clutch fingers which should be maintained at 1/16". This represents 3/4" free pedal travel. This also disengages the clutch release bearing and prevents unnecessary wear while the engine is running.

Loosen the clutch control lever cable adjusting yoke locknut. With a wrench, unscrew the cable to the desired position, then tighten locknut.

ENGINE GROUP

Valve Adjustment (This is a temporary adjustment and

must be reported to workshops at the first opportunity).

Remove the valve spring cover.

Adjust the self locking tappet screws while they are cold to .014 inch.

Set the tappet screw, (starting with No.1 cylinder on compression stroke at top centre), then adjust valves in cylinder firing order, turning the crankshaft one-half turn for each cylinder (Note: The valve tappets will then be on the heel of the cam.

After adjusting, replace the valve spring cover.

Fan Belt Adjustment

To install the fan belt, loosen the clamp bolt on the slotted bracket at the generator and move generator towards the engine. Slide the belt over the crankshaft pulley, up through the fan blade assembly and over the fan pulley, then over generator pulley. Adjust the fan belt by bringing the generator away from the engine to a point where the fan belt can be depressed 1" midway between the fan pulley and the generator pulley. The drive of the fan and generator is on the sides of the "V" belt, therefore it is not necessary to have the fan belt tight which might cause excessive wear on the generator and the water pump bearings.

FUEL LINE GROUP

Idling Adjustment

The idle adjustment screw is the only service adjustment provided on the carburettor. To obtain the approximate correct setting, turn the adjustment screw to the right and all the way in, but do not jam the screw against the seat; then, back out adjustment screw between one and two turns. To make the final adjustment warm up the engine, and adjust the screw until the engine runs smoothly. Set the throttle stop screw so the engine will idle at 600 revolutions per minute (vehicle speed, 8 mph).

WHEEL ALIGNMENT AND TYRE GROUP

Wheel Bearing Adjustment

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

Front Wheel Bearings

1. Raise front end of vehicle with jack so that

clear the floor.

2. With hands, test sideways movement of the wheel. If bearings are correctly adjusted, shake of wheel will be just perceptible and wheel will turn freely with no drag. If bearing adjustment is too tight, the rollers may break or become overheated. Loose bearings may cause excessive wear and possibly noise.

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

Adjustment

1. With wheels still on jack, remove the hub cap, axle shaft nut, washer and driving flange. Wheel bearing adjustment will then be accessible.

2. Bend the lip of the nut lock so that the adjustment locknut and lock can be removed.

3. Tighten the adjusting nut until the wheel binds at the same time rotating the wheel to make sure all surfaces are in proper contact.

4. Then back off the nut about 1/ 6 turn or more if necessary making sure the wheel rotates freely.

5. Replace the lock and do not fail to bend over the locknut.

6. Check adjustment and reassemble the driving flange. When the front hub is completely assembled, test the wheel shake before removing jack.

Rear Wheel Bearings.

Raise the wheel on which the adjustment is to be made by placing jack under the axle housing. Test the wheel for loose bearing. If adjustment is necessary proceed as follows:

Adjustment

1. Remove the axle shaft flange cap screws and axle shaft.

2. Bend the lip of the nut lock so that the locknut can be removed.

3. Tighten the inner adjusting nut until the wheel binds, at the same time rotate the wheel to make sure that all surfaces are seating properly.

4. Back off the nut 1/6 turn or more if necessary until the wheel turns freely.

5. Replace the nut lock and the locknut and be sure to bend the lock over.

6. Replace the axle shaft with gasket, and install the cap screws.

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APPENDIX "D"

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TYPES OF TRAILERS IN USE WITH TRUCKS ¼ TON

In order that the types of Trailers used with Trucks, ¼ ton (U.S.A.) may be readily identified, the following descriptions are provided:

Trailers, 2 Wheeled 8 Cwt. (Aust.) No.2.

Consists of a light shallow steel body with provision for carrying standard Army stretches. A waterproofed canvas canopy is provided and the trailer is fitted with 1-3/8" sq. steel axle, and 6.00 x 16 conventional tyres. This unit is capable of being quickly dismantled for transport.

Trailers, 2 Wheeled 8 Cwt. (Aust.) No.3.

Consists of a watertight steel body of welded construction mounted on a channel iron chassis. It is fitted with sprung towing eye, hinged parking support, 1-3/8" square steel axle, 6.00 x 16 conventional tread tyres and waterproofed canvas cover.

Trailers, 2 Wheeled 8 Cwt. (Aust.) No.3A.

The body of this trailer is identical with (Aust.) No.3, but has imported wheels, hubs, brake drums and bearings which are interchangeable with Trucks, 1/4 ton. The axle is of tubular steel and is locally manufactured. The tyres are 6.00 x 16 non-directional Bar Tread identical with those fitted to Trucks, 1/4-ton. No brakes are fitted.

Trailers, 2 Wheeled 8 Cwt.(U.S.A.)

This trailer is of overseas manufacture and consists of a watertight steel body of welded construction, mounted on a channel iron chassis, having a sprung towing eye, a hinged parking support, tubular axle and 6.00 x 16 non-directional Bar Tread tyres. This trailer is also fitted with electrical connections, shock absorbers, safety chains and hand brake. The wheels, bearings, shock absorbers, brake drums and tyres are interchangeable with Trucks, 1/4-ton.

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