

# The M715/M724/M725/M726 Lubrication Order

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**NOTE:** The first part of this page comes from the Kaiser maintenance manual and contains information not found in any other manual. After that is the original military lube order.

## LUBRICATION AND PERIODIC SERVICES

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### B-1. GENERAL

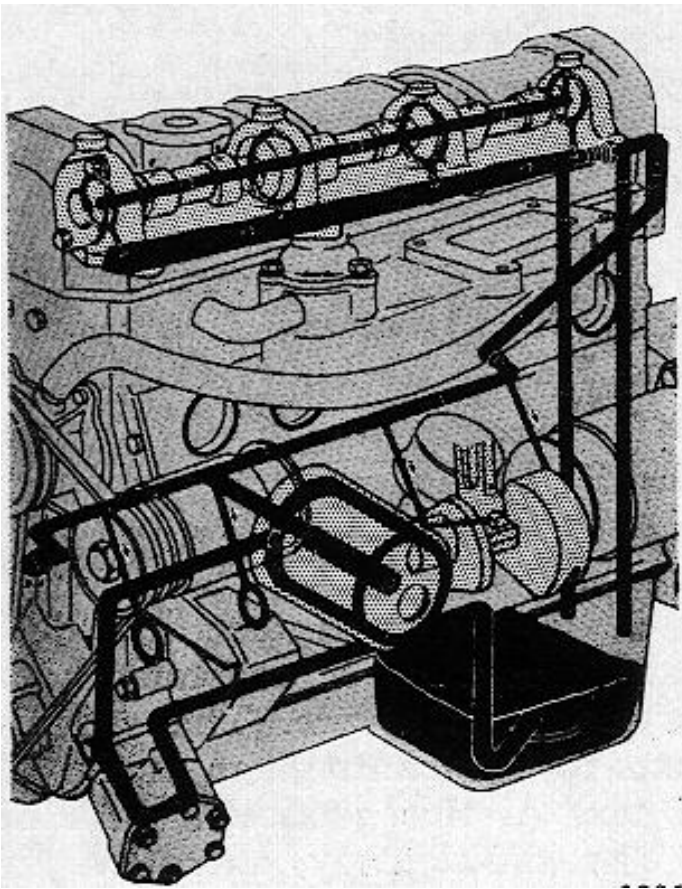
The M715 and M725 vehicles require periodic lubrication and other maintenance services to promote satisfactory operation, and prevent excessive wear. Under severe operating or atmospheric conditions, the vehicle may require these services more often than suggested in the maintenance operation schedules. It should be pointed out that common short trip, stop-and-go driving is the most severe usage which is further intensified during cold weather. In direct contrast, constant speed driving on highways is less severe. The specified types and amounts of lubricants given in the lubrication chart and text of this section should be closely followed. The off-highway operation lubrication notes, given in the last part of this section, should be followed when applicable.

### B-2. Special Lubricants

MIL lubricants are lubricants that carry the military specification number they conform to. Standard brands that meet with the "MIL SPEC" are in many cases marked on the container with this number.

### B-3. Applying Fresh Lubricant

When lubricating all lubrication points, it is important that all the old lubricant be removed. To assure this, force lubricant through the lube fittings until the lubricant being forced out of the joint is fresh lubricant, indicating that all old lubricant has been removed. When applying lubricant to the propeller shaft splines, clean and liberally apply lubricant with a clean brush.



**FIG. B-1—ENGINE LUBRICATION SYSTEM**

#### B-4. Engine Lubrication System

The engine is lubricated through a full-pressure lubrication system (Fig. B-1) that uses a progressing tooth gear oil pump driven by a helical gear on the crankshaft. Oil is drawn to the pump through a fixed intake screen that strains out the larger impurities in the oil supply. From the oil pump, the full flow of oil is directed through the oil filter where smaller particles are filtered out. The oil is then ported through passages in the block to supply lubrication to the main bearings. Oil passages in the crankshaft mate with the oil grooves in the main bearings, then these passages conduct the oil to the crankpin bearings in the connecting rods. Spurt holes in the connecting rods provide lubrication to the cylinder walls.

A passage in the block conducts oil to a fitting at the front of the block to provide a stream of oil to the timing chain, sprocket, and oil pump drive gear. An external hose at the rear of the engine connects the oil passage in the block to an oil passage in the cylinder head. Oil to the cylinder head is ported to the rear camshaft bearing and through passages in the camshaft to provide lubrication to the cam lobes. A passage in the cam bearing deck provides oil to each of the remaining camshaft bearings. Oil drips from a small projection in the rocker arm cover to lubricate the fuel pump eccentric. A tube is provided in the oil passage of the cam bearing deck to deliver the oil under pressure to the front of the bearing deck to make sure that oil does not drain back when the engine is stopped. This system provides immediate lubrication to the cam bearings when the engine is restarted. Ports are provided between the cylinder head and the crankcase and also between the timing chain cover area and the crankcase to allow the oil to flow back to the oil pan for recirculation.

#### B-5. Chassis Lubrication

The chassis should be serviced at periodic intervals. Most chassis lubricating points have standard lubrication fittings. Refer to the Lubrication Diagram and Chart for specific points and lubricating time intervals. It is not necessary to disassemble prepacked joints to lubricate them. Merely add new lubricant, as

described in Par. B-3, to remove all old lubricant.

At the appropriate interval, clean each lubrication fitting indicated on the Lubrication Chart. Use a pressure gun to lubricate. Be sure the grease channels are open to provide complete lubrication of bearing surfaces. In some cases it may be necessary to disassemble to clear plugged channels.

## B-6. LUBRICATION INTERVALS

Perform the following operations at the intervals shown.

INTERVALS	LUBRICATION SERVICE
Daily	Par. B-7
Weekly	Par. B-8
Monthly	Par. B-9
Annually	Par. B-10
1,000	Par. B-11
6,000	Par. B-12
12,000	Par. B-13

*When vehicles are driven primarily in abnormally dusty or wet areas or when subjected to severe operating conditions, perform these services more frequently. Under these conditions, no definite interval can be recommended because of the great variety of uses and conditions of use.*

### B-7. Lubrication Service (Daily)

Crankcase — Check Crankcase level

### B-8. Lubrication Service (Weekly)

Winch Worm Case Level — Check Oil Level

Transmission — Check Oil Level

Transfer Case — Check Oil Level

Rear Differential — Check Oil Level

Front Differential — Check Oil Level

Winch Drum and Shaft Case — Check Oil Level

### B-9. Lubrication Service (Monthly)

Winch Universal Joint and Propeller

Shaft Yoke — Lubricate

Winch Universal and Slip Joint — Lubricate

Steering Gear — Check Oil Level

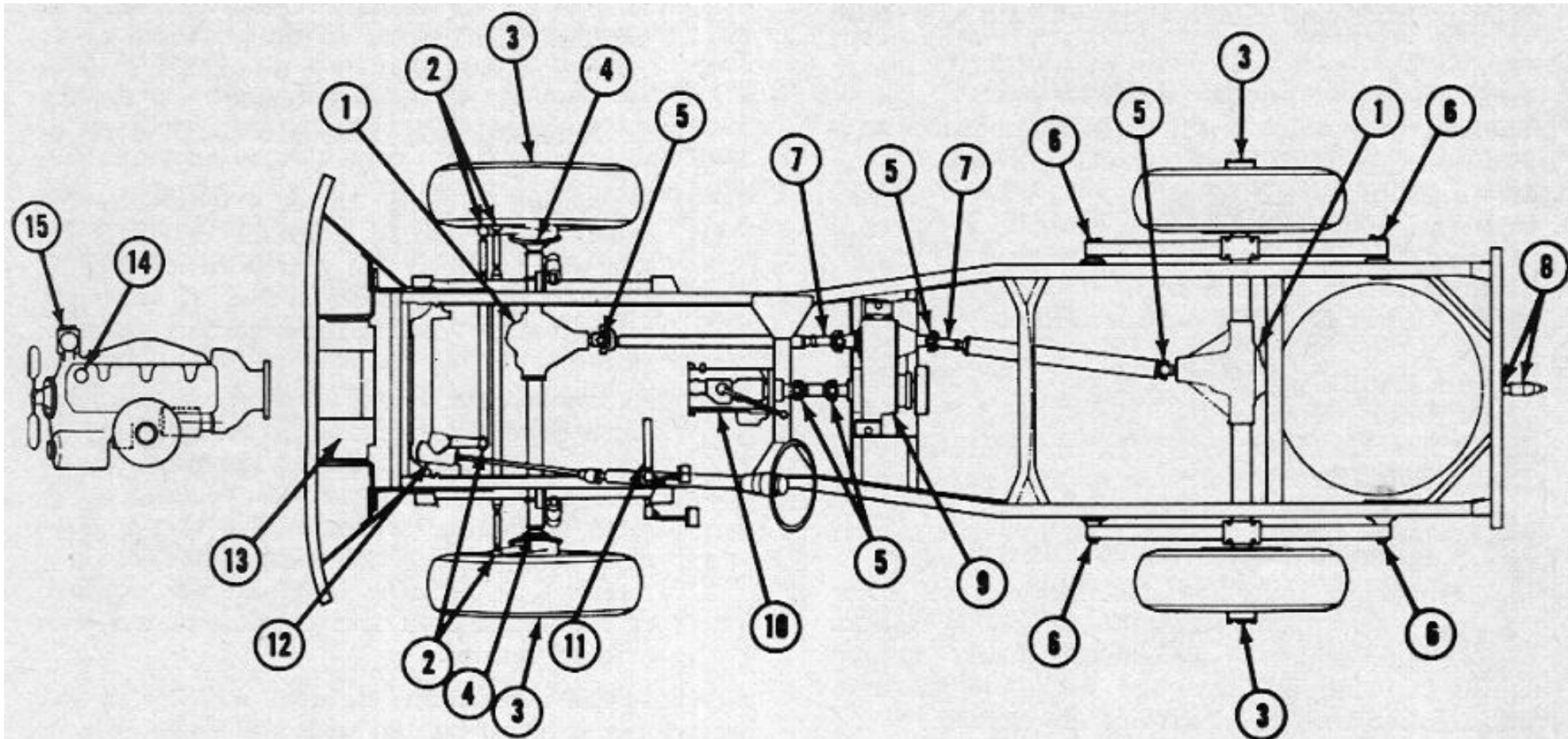


FIG. B-2—LUBRICATION CHART M715 AND M725

CHART NO.	ITEM TO BE LUBRICATED	MAINTENANCE OPERATION INTERVAL	QUANTITY	LUBRICANT	Grade	Grade
				Type	Summer	Winter
1.	Differential Front	Weekly, Check 12,000 Miles, Drain & Fill	6 pts.	MIL-L-2105	SAE 90	SAE 80
	Differential Rear	Weekly, Check 12,000 Miles, Drain & Fill	6 1/2 pts	MIL-L-2105	SAE 90	SAE 80
2.	Steering Linkage (Tie Rod and Drag Link Sockets)	1000 Miles	As Required	MIL-G-10924		
3.	Front Wheel Bearings:	12,000 Miles	Repack As Required	MIL-G-10924		
	Rear Wheel Bearings:	12,000 Miles	Repack As Required	MIL-G-10924		
4.	Front Axle Universal Joint	1000 Miles Check, 12,000 Miles Change	1 pts./joint	MIL-G-10924		

5.	Propeller Shaft Universal Joints	1000 Miles	As Required	MIL-G-10924		
6.	Spring Shackles and Pivots, Rear	1000 Miles	As Required	MIL-G-10924		
7.	Propeller Shaft Slip Joints	1000 Miles	As Required	MIL-G-10924		
8.	Pintle	1000 Miles	As Required	MIL-G-10924		
9.	Transfer Case	Weekly Check, 12,000 Miles Drain & Fill	4 pts.	MIL-L-2105	SAE 90	SAE 80
10.	Transmission	Weekly Check, 12,000 Miles Drain & Fill	6 1/2 pts.	MIL-L-2105	SAE 90	SAE 80
11.	Clutch Release Cross Shaft	1000 Miles	As Required	MIL-G-10924		
12.	Steering Gear	Monthly Check, 12,000 Miles, Drain & Fill	1 pt.	MIL-L-2105	SAE 90	SAE 80
13.	Winch Worm Case	Weekly Check, Drain & Refill Annually	2 pts.	MIL-L-2105	SAE 90	SAE 80
14.	Engine	6000 Miles — Drain & Refill	*5 qts.	Engine Oil **		
15.	Ignitor	6000 Miles	As Required	Lithium Grease	Soft	Soft

\* When oil filter is changed at the same time, add one quart.

\*\* Above 32 degrees F, OE-30, 40 degrees F to -10 degrees F, OE-10W, 0 degrees F to -50 degrees F, OES

#### B-10. Lubrication Service (Annually)

Winch Worm Case — Drain and refill

Winch Drum and Shaft Case — Drain and refill

#### B-11. Lubrication Service (1,000 Miles)

The following points must be lubricated and serviced every 1,000 Miles of vehicle operation:

Steering Links

Universal Joint and Steering Knuckle Housing

Steering Tie Rod Sockets

Clutch Release Cross Shaft

Brake Master Cylinder—Note: Fill to ½ in. from top

Universal and Slip Joints

Pintle Hook

Spring Shackle (Rear)

Spring Bolt (Rear)

#### B-12. Lubrication Service (6,000 Miles)

The crankcase must be drained and oil filter replaced every 6,000 miles of vehicle operation. Every 6,000 miles of vehicle operation remove ignitor cap and lubricate the wick, breaker arm and breaker arm pivot. Service air cleaner.

### B-13. Lubrication Service (12,000 Miles)

Front and Rear Wheel Bearings Remove, Clean, Dry and Repack.

Rear Differential — Drain and refill

Transfer Case — Drain and refill

Transmission Drain and refill

Front Differential — Drain and refill

Steering Gear — Drain and refill

### 3-14. Initial Lubrication

When a new vehicle is placed in service or after the engine has been overhauled, the engine oil must be changed and the oil filter replaced after the first 500 miles of operation, and then every 6,000 miles of normal highway driving. Under more severe service, change the oil more often. Common short trip, stop-and-go driving is the most severe and is further intensified during cold weather. In contrast, constant-speed driving on the highway is the least severe. The oil filter should be replaced each 6,000 miles of normal driving.

### B-15. General Procedures for all Services and Inspections

a. The following general procedures apply to organizational preventive-maintenance services and to all inspections, and are just as important as the specific procedures.

b. Inspections to see if items are in good condition, correctly assembled or stored, secure, not excessively worn, not leaking, and adequately lubricated apply to most items in the preventive-maintenance and inspection procedures. Any or all of these checks that are pertinent to any item (including supporting, attaching, or connecting members) will be performed automatically, as general procedures, in addition to any specific procedures given.

(1) Inspection for good condition is usually visual inspection to determine if the unit is safe or serviceable. Good condition is explained further as meaning: Not bent or twisted, not chafed or burned, not broken or cracked, not bare or frayed, not dented or collapsed, not torn or cut, not deteriorated.

(2) Inspection of a unit to see if it is correctly assembled or stored is usually a visual inspection to see if the unit is in its normal position in the vehicle and if all its parts are present and in their correct relative position.

(3) Excessively worn is understood to mean worn beyond serviceable limits or likely to fail, if not replaced before the next scheduled inspection. Excessive wear of mating parts or linkage connections is usually evidenced by too much play (lash or lost motion). It includes illegibility as applied to markings, data and caution plates, and printed matter.

c. Where the instruction “tighten” appears in the procedures, it mean tighten with a wrench, even if the item appears to be secure.

d. Such expressions as “adjust if necessary” or “replace if necessary” are not used in the specific procedures. It is understood that whenever inspection reveals the need of adjustments, repairs, or replacements, the necessary action will be taken.

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

(1) Use drycleaning solvent or mineral spirits paint thinner to clean or wash grease or oil from all parts of the vehicle.

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

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

(4) When authorized to install new parts, remove any preservative materials such as rust-preventive compound, protective grease etc; prepare parts as required (oil seals etc.); and for those parts requiring lubrication, apply the lubricant prescribed in the lubrication order.

**Note: Steam cleaning will not be performed by organizational maintenance personnel.**

f. General precautions in cleaning are as follows:

(1) Drycleaning solvent or mineral spirits thinner is flammable and should not be used near an open flame. Fire extinguishers should be provided when this material is used. Use only in well ventilated places, Battery ground should be disconnected and taped.

(2) This cleaner evaporates quickly and has a drying effect on the skin. If used without gloves, it may cause cracks in the skin and, in the case on some

individuals, a mild irritation or inflammation.

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

(4) The use of diesel fuel oil, gasoline or benzene (benzol) for cleaning is prohibited.

g. Nameplates, caution plates, and instruction plates made of steel, rust rapidly. When plates are found in a rusty condition, they should be thoroughly cleaned and heavily coated with an application of clear lacquer.

#### B-16. General Procedures for Organizational Maintenance

a. Automatically Applied. All of the general procedures previously listed herein will be followed. Organizational mechanics must be so thoroughly trained in these procedures that they will apply them in the performance of their duties.

b. Operator's Participation. The driver or crew usually accompanies the vehicle and assists the organizational mechanics in the performance of organizational maintenance services.

c. Unwashed Vehicles. The driver or crew should present the vehicle for a scheduled preventive-maintenance service in a reasonably clean condition; that is, it should be dry and not caked with mud to such an extent as to seriously hamper inspection and services. However, washing of the vehicle should be avoided immediately prior to an inspection, since certain types of defects such as loose parts and oil leaks may not be evident immediately after washing.

d. Services. Organizational maintenance services are defined by and restricted to general procedures unless approval has been given by the direct support maintenance organization.

(1) Adjust. Make all necessary adjustments in accordance with instructions contained in the pertinent section of this manual, information contained in changes to the subject publication, or technical bulletins.

(2) Clean. Clean the unit to remove old lubricant, dirt, and other foreign material.

(3) Special lubrication. This applies either to lubrication operations that do not appear on the lubrication order, or to items that do appear but which should be performed in connection with the maintenance operations, if parts have to be disassembled for inspection or service.

(4) Service. This usually consists of performing special operations, such as replenishing battery water, draining and refilling units with oil, and changing and cleaning the oil filter, air cleaner or cartridges.

(5) Tighten. All tightening operations should be performed with sufficient wrench torque (force on the wrench handle) to tighten the unit according to good mechanical practice. Use a torque-indicating wrench where specified. Do not over tighten as this may strip threads or cause distortion. Tightening will always be understood to include the correct installation of lockwashers, locknuts, locking wire, or cotter pins to secure the tightened nut.

(6) Modification work order application. Enter all modification work orders (MWO) applicable to the equipment on DA Form 2408-5, upon receipt of the MWO, regardless of the category of maintenance responsible for applying it.

e. Special Conditions. When conditions make it difficult to perform the complete preventive-maintenance procedures at one time, they can sometimes be handled in sections. Plan to complete all operations within the week if possible. All available time at halts and in bivouac areas must be utilized, if necessary, to assure that maintenance operations are completed.

#### B-17. Semiannual "S" Preventive-Maintenance Services

a. Purpose. The "S" preventive-maintenance services insure the correct adjustment, securing, and assembly of all components of the materiel. Necessary replacements, cleaning, lubrication, and protection of parts and/or assemblies will be accomplished as required, to give reasonable assurance of trouble-free operation until the next "S" preventive-maintenance service is performed.

b. Intervals. The semiannual "S" preventive-maintenance services are performed by the organizational mechanics every 6 months or at every 6,000 miles of vehicle operation, whichever occurs first. Under unusual conditions, temporary deviation from the prescribed service or interval may be authorized at the direction of the commander. The commander will consult with the direct support maintenance officer prior to a decision to deviate from these services.

#### B-18. Specific Procedures for Organizational Maintenance

Specific procedures for performing each item in the semiannual "S" preventive-maintenance services on the materiel are given in table I, using DA Form 2404 as a worksheet, in accordance with procedures outlined. Results of inspection and checking during preventive-maintenance services is authorization to



take corrective action by performing the service or repair by organizational maintenance personnel. If repairs by a higher category of maintenance are required, DA Form 2407 (Maintenance Request) will be prepared and forwarded with equipment to the supporting maintenance activity.

## LUBRICATION AND PERIODIC SERVICES

### TABLE I PREVENTIVE MAINTENANCE CHECKS AND SERVICE

Organizational Maintenance Semiannual

Sequence No.	Items to be inspected	Procedure
	<b>PRIOR TO ROAD TEST</b>	<b>NOTE:</b> When tactical situation does not permit a full road test, perform only those items that require little or no movement of the vehicle.
1.	Oil and coolant	Check oil and coolant levels. Check spare containers for contents.
2.	Water Pump, fan, belts, and pulleys.	Inspect pulleys and fan for alinement. Check water pump for leaks. Check fan and alternator drive belts tension. Provide 50 to 60 lb. tenison.
3.	Electrical wiring	Visually inspect electrical wiring, conduits, connectors and shielding.
4.	Engine compartment	Inspect engine compartment for indications of fuel, engine oil, and water leaks. Look under the vehicle for indications of leaking gear oil or brake fluid.
5.	Tires	Note any apparent loss of air. Remove penetrating objects such as nails or glass. Note unusual wear or missing valve caps. Gage tires for correct pressure, as specified.
6.	Fire extinguisher	Visually inspect fire extinguisher (on vehicle so equipped). Note if fire extinguisher is charged and sealed.
7.	Tools and equipment	Inspect vehicle tools and equipment (including vehicle publications) for general conditions and proper stowage.
8.	Vehicle body	Check for any tampering or damage that may have occured since last inspection.
9.	Steering gear and controls.	Check steering system and component parts for loose or damaged parts.

10.	Cab: doors, glass, top, frame, curtains, fasteners, straps.	Inspect these items, paying particular attention to cab, body mountings, including springs. Test operation of doors, windows, windshield, hoodhinges, and fasteners. Observe seat mountings and upholstery. Inspect litter racks and operation of personnel heater (Ambulance Truck M725). Make a general inspection of body, including glass, panels, tops, fenders, tailgate, chains, stakes, bows, paulins, curtains, radiator, and lamp guards. Examine condition of paint and legibility of markings, and identification and caution plates.
11.	Lights, horn, windshield wipers, blowers, and heater.	Operate horn and windshield wipers. Inspect rear view mirrors. Check operation of exterior lights and light switches. Note whether the headlights appear to be properly aimed. Note condition of all lights and reflectors. Test the spotlight switch and handle for proper operation (Ambulance Truck M725). Test operation of surgical light, dome light, blowers, and heater (Ambulance Truck M725).
12.	Brake pedal.	Check service brake pedal for proper travel and handbrake linkage for proper adjustment (correct service brake pedal free travel is 1/2-inch)
<b>ROAD TEST</b>		
13.	Instruments-functional check.	Prior to starting engine, turn ignition switch on and observe instrument operation. Battery alternator indicator should indicate alternator is not charging — pointer in yellow band. Fuel quantity gage should move to indicate fuel tank level. Oil pressure gage should indicate 0 psi and water temperature gage should move from an off scale reading to actual coolant temperature reading.
14.	Starter and switch.	Note if the starter switch requires more than normal pressure, and if the starter engages smoothly without unusual noise, and turns the engine with adequate cranking speed. With ignition switch on, start engine. CAUTION: If oil pressure is excessively low or at zero stop engine after a maximum of 10 seconds running and determine cause.

15.	Instrument operational check.	Note alternator output on charge indicator immediately after starting engine, before alternator regulator has reduced the charging rate. Observe all instruments for normal readings. Note whether the ignition switch and light switch levers operate freely and make positive contact. Check all other instruments for normal operation.
16.	Engine operation.	In warming up engine, observe if choke operates satisfactorily. Note if idling speed is correct. Listen for any unusual noises at idle and higher speeds. When operating vehicle, note if it has normal power and acceleration in each speed range. Listen for any unusual noises when the engine is under load. Speed up vehicle, on a level stretch, to see if it will reach, but not exceed, the specified top speed.
17.	Alternator.	Observe charge indicator to note whether alternator is charging properly. Listen for unusual noises.
18.	Clutch.	Note if the clutch pedal has one (1) inch free travel and if action of pedal return spring is satisfactory. Note whether clutch disengages completely or has a tendency to drag. Observe smoothness of engagement and tendency to drag. Observe smoothness of engagement and tendency to chatter, grab, slip, or any unusual noise. With transmission in neutral, depress and release clutch pedal listening for noises indicating a defective release bearing.
19.	Transmission and transfer.	Shift transmission into all speeds and transfer into high and low ranges, observing any unusual stiffness of shift levers, tendency to slip out of gear, unusual noises, or excessive vibration. Make similar observations of the transfer clutch lever.

20.	Service and parking brake (handbrake) operation.	Note if action of brake return spring is satisfactory. Observe if pedal goes too close to floor. Make several stops, noting side pull, noise, chatter, grabbing, or any other abnormal condition. Observe if the handbrake lever ratchet holds and if the lever requires more than three-quarters travel for full application. (With the brake band and control rod properly adjusted, the pawl should be engaged in the third to fifth notch of the sector for full application of the brake). Stop vehicle on an incline and apply handbrake to determine if it holds vehicle.
21.	Steering system.	With vehicle moving straight ahead, determine if there is any tendency to wander, shimmy or pull to one side. Turn steering wheel through its entire range and note any binding.
22.	Power train, wheels, and body.	At all times during road test, be alert for unusual noises that may indicate looseness, defects, or deficient lubrication at any point.
<b>AFTER ROAD TEST</b>		
23.	Hub, drums, axles, powertrain.	Immediately after the road test, feel these units cautiously. <b>WARNING:</b> Full floating hypoid axles operate quite hot. If lubrication levels are correct and no unusual noises occurred during road test, assume axles are functioning properly. Do not touch hypoid axles with bare hand after vehicle has been operated a considerable distance, serious burns may result. An overheated wheel hub and brake drum indicates an improperly adjusted, defective or dry wheel bearing or a dragging brake. An abnormally cool condition indicates an inoperative brake. An overheated gear case indicates lack of lubrication, gears out of adjustment, or defective parts.
24.	Battery-specific gravity.	Make hydrometer test of electrolyte in each cell of both batteries (1.275—1.300 at 80°F.) and record readings on DA Form 2404.

25.	Battery voltage.	Perform starting motor cranking voltage test (24v) using test meter. Record voltage registered on DA Form 2404. On vehicles so equipped, check insulator on positive (+) post of the inside battery between cover and terminal.
26.	Battery terminals, carrier, and fluid level.	Clean cable terminals and battery posts. Clean top of battery. Clean and paint carrier as required. Install cables to battery and coat terminals lightly with grease. Check electrolyte level to determine if it covers plates. <b>NOTE:</b> If distilled water is not available, clean water, preferably rain water, may be used.
27.	Spark Plugs.	Remove and inspect plugs. Clean and set at gap 0.030 inch. Replace if necessary.
28.	Compression test.	With engine at normal operating temperature, throttle and choke open, test compression of each cylinder. Record readings on DA Form 2404.
29.	Ignition components.	Test operation of advance mechanism by hand. Test ignitor shaft for looseness. Replace breaker points if required, adjust gap 0.020 inch. Replace other ignition component as required.
30.	Carburetor, choke, linkage.	Inspect these items, noticing particularly if the shafts and linkage operate freely and are not excessively worn. Observe if the choke valve opens fully.
31.	Carburetor, fuel pump, timing, and alternator regulator.	Perform an engine vacuum test and adjust carburetor. Be sure fuel pump is between 4 and 5 1/2 psi at idling speed. Check the ignition timing with timing light for correct timing and proper advance (5° BTDC). Test alternator regulator with low voltage circuit tester.
32.	Fuel filter engine compartment.	If vehicle is so equipped, clean fuel filter sediment bowl, if required.
33.	Manifolds and heat control.	Inspect these items. Look particularly for leakage signs at the manifold gaskets. Check manifold heat control valve seasonal adjustment.
34.	Vehicle exhaust system and fuel burning personnel heater.	Inspect entire vehicle exhaust system for excessive noise and leaks. Tighten mountings. On ambulance truck operate patient's compartment heater and inspect heater exhaust system for leaks and proper operation. Pay special attention to body floor and side panels for leaks.

35.	Crankcase ventilation.	Inspect carburetor air cleaner and air cleaner elbow and the crankcase ventilation metering valve for cleanliness and condition. On vehicles so equipped, inspect operation of the ventilation shutoff valve dual control.
36.	Radiator and cap.	Inspect these items, noting particularly if the radiator core is obstructed by foreign matter or if the core fins are bent. Check gasket in the pressure cap. Observe coolant level and examine coolant for contamination. Test coolant with hydrometer to see if it contains sufficient antifreeze to correspond with seasonal requirements. Tighten radiator hose clamps and mounting bolts. If need is indicated, drain cooling system, clean and fill, adding corrosion inhibitor unless antifreeze, which contains inhibitor, is used.
37.	Fuel tank strainer and filter.	Clean strainer in the fuel tank filler pipe. Clean fuel filter in fuel tank (as equipped). If excessive contamination is noted in the fuel tank filter or in the sediment bowl of the engine compartment fuel filter (as equipped), drain water and sediment from fuel tank using a container to catch draining. Also, check fuel filter line at fuel tank cover for looseness on fuel tank filter equipped vehicles. Tighten nut securely.
38.	Bumpers, pintles and shackles.	Bumpers, front and rear, pintle, and lifting shackles will be inspected. Check operation of pintle assembly and note whether it locks securely.
39.	Power take-off, winch.	Inspect power take-off, winch drive shaft, and shear pin. Inspect winch cable. Test winch operation. Check if vent in the worm housing is clear.
40.	Winch cable.	Clean and lubricate winch cable in accordance with current lubrication order (LO 9-2320-244-12).
41.	Propeller shaft and U-joints.	Inspect propeller shaft assemblies. Tighten universal joint companion flange nuts, wheel and drum flange stud nuts.
42.	Vents and leaks.	Make observation under vehicle for evidence of oil, water, hydraulic fluid, or lubricant leaks. Inspect if vents in front and rear axles, transfer, and steering gear housing are clear.

43.	Brake shoes, lining, anchor pins, springs.	Test brake linkages for freedom of action. Examine brake drums, shoes anchor pins and supports. Check wheel cylinders for leakage. Check operation of master cylinder.
44.	Wheel bearings.	Disassemble, clean, and pack wheel bearings as directed by current lubrication order.
45.	Tires	Rotate and inspect tires according to tread design and degree of wear. Refer to TM 9-1870-1 for acceptable limits in matching tires. Tighten axle drive flange nuts.
46.	Springs and shock absorbers.	Inspect springs, shackles, shock absorbers, and attaching parts for damage and breakage.
47.	Body and frame.	Tighten body holddown bolts.
48.	Clean.	Wash vehicle, clean inside of cab, glass, and mirror. Clean engine and engine compartment as required. Do not steam clean.
49.	Lubricate.	Lubricate vehicle in accordance with intervals as specified in current lubrication order.
50.	Fuel.	Fill fuel tank as necessary.
51.	Test.	Final road test vehicle and particularly observe items which required repair, replacement, or adjustment.

#### B-19. General Lubrication and Preventive Maintenance Instructions

Items included in Par. B-7 through Par. B-14 should be lubricated and serviced at the specified interval under normal operating conditions. However, under severe operating or atmospheric conditions, these operations should be performed at more frequent intervals.

#### B-20. Engine Oil

It may be necessary to change engine oil more frequently than normally recommended, depending upon the type and quality of oil used, the severity of operation conditions, if the engine is used for short periods in cold weather, or if the engine is allowed to idle for excessive periods.

Always drain the crankcase while the engine is hot since dirt and contaminants are then more likely to be held in suspension and therefore will drain out more completely. Drain the crankcase as follows:

- a. Position the drain receptacle under the drain plug.
- b. Remove the drain plug using the correct size wrench. Be careful of hot oil.
- c. Carefully clean the drain plug. Inspect and replace the gasket, if deteriorated.
- d. When the oil has drained, replace and tighten the crankcase drain plug.
- e. Check for the presence of excess water in the oil that might indicate an internal leak from the cooling system.
- f. Pour oil into the oil filler tube on the top of the rocker arm cover. Replace the oil filler cap.

#### B-21. Engine Oil Filter

The oil filter should be replaced at 500 miles and, thereafter, at every scheduled interval. To remove the oil filter use an Oil Filter Wrench. To install a new oil filter, wipe the gasket-contact surface with engine oil, screw on the filter unit until gasket contacts the engine, and then tighten at least half a turn more. Do

not use tools. Turn by hand only.

#### B-22. Positive Crankcase Ventilating Valve

For information on servicing the Positive Crankcase Ventilating Valve, refer to Par. C-7.

#### B-23. Transmission and Transfer Case

Check Pars. B-24 through B-26 where applicable.

#### B-24. Checking Lubricant Level

The transfer case and transmission must be serviced separately. The procedure in Pars. B-25 and B-26 should be followed to check the lubricant level of the transfer case and transmission. If the transfer case or transmission fluid levels are found to be abnormally low, check for any possible leaks.

#### B-25. Transfer Case and Linkage

The transfer case fill-hole is located on the right side of the transfer case housing. To check the lubricant level, remove the fill plug. Lubricant should be level with this fill-hole. If not, bring up to level by adding sufficient lubricant as specified in the Lubrication Specifications. The transfer case shift linkage should be lubricated periodically. All bearing surfaces that are assembled with studs and cotter pins should be disassembled, cleaned, and coated with a good waterproof grease.

The bearing surfaces that cannot be disassembled should be lubricated with a lubricant that will penetrate the bearing area. These bearings include the two on the cross shaft assembly and the threaded stud.

#### B-26. Transmission

The transmission fill-hole is located on the right side of the transmission housing. To check the lubricant level, remove the fill plug. Lubricant should be level with this fill-hole. If required, bring up to level by adding sufficient lubricant as specified in the Lubrication Specifications.

#### B-27. Differentials

The lubricant level of all front and rear differentials should be at the level of the fill-hole.

#### B-28. Steering Gear

Check that the steering gear lubricant is at the level of the fill-hole. If required, add lubricant to the level of the fill-hole with the lubricant recommended in the Lubrication Chart. If abnormally low, check the steering gear for possibility of leaks.

#### B-29. Lights and Controls

a. Check all interior and exterior lights and light switches for proper operation, including; parking lights, headlamps (high beam and low beam), tail lights, brake lights, directional lights, dome light, and instrument panel lights.

b. Check all instrument panel controls and instruments for proper operation.

#### B-30. Front Axle Universal Joint

Check the level of the front axle universal joint lubricant by removing the fill-hole plug. The lubricant should be level with the fill-hole. If required, add lubricant as specified in Lubrication Specifications.

**Note: The forward inboard lower king pin bearing cap bolt should be used to drain any water contaminant from knuckle housings after fording operations.**

#### B-31. Clutch Cross Shaft

Lubricate the clutch cross shaft in accordance with specifications given in the Lubrication Chart.

#### B-32. Cooling System



Check the coolant level in the radiator. It should be half an inch below the neck. If required, fill the radiator to half-inch below the neck with the proper coolant. Refer to Section 05. If the level of the coolant is abnormally low, check the radiator, hoses and waterpump for possible leaks. If a leak is suspected, refer to Section 05.

#### B-33. Door Latch Striker Plates

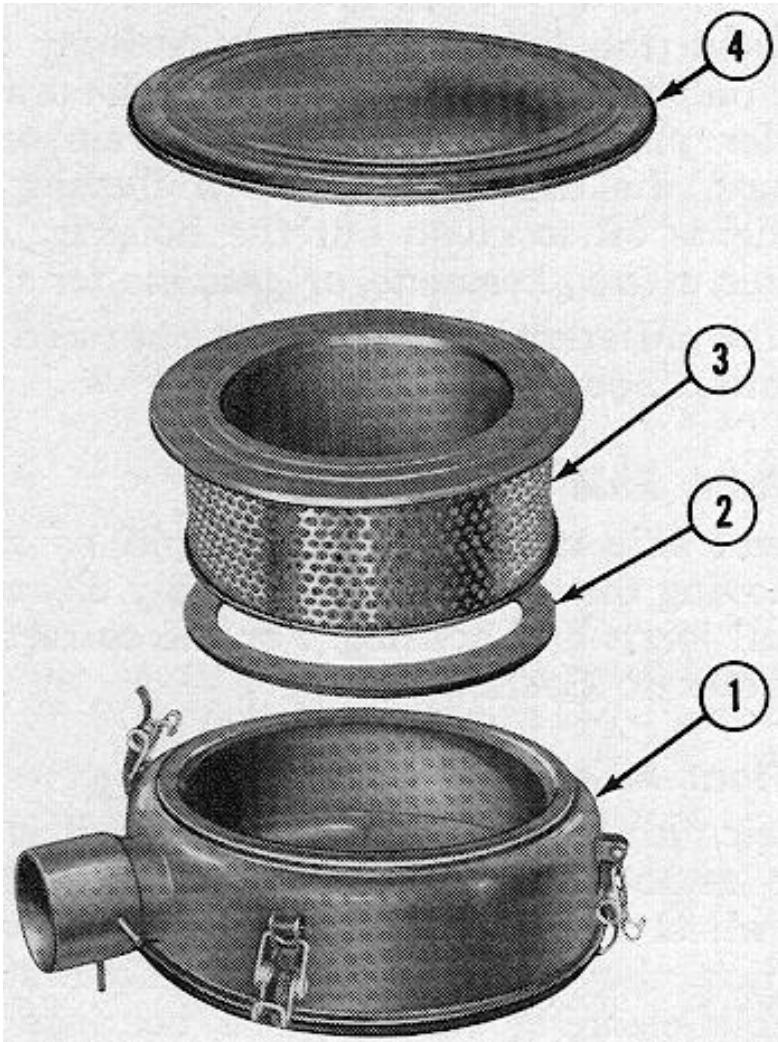
Clean all contact surfaces of the door latch striker plates. Apply a thin coat of Lubriplate to these surfaces. After lubrication, close the door several times to insure complete distribution of the lubricant. Wipe off excess lubricant from the striker plate.

#### B-34. Brake Master Cylinder

Clean the top of the fill cap and also the housing area around it. Remove the cap and observe the fluid level. It should be half an inch below the top of the fill-hole. If required, add brake fluid to one-half-inch below the top of the fill-hole, using only heavy-duty brake fluid conforming to specification VV-B-680. Be sure to handle the brake fluid in clean dispensers and containers that will not introduce even the slightest amount of other liquids or foreign particles. Replace and tighten the fill cap.

#### B-35. Air Cleaner

Standard air cleaner is a dry - type as shown in Fig. B-3. For service refer to Par. B-36.



**FIG. B-3—DRY TYPE AIR CLEANER**

- 1—Air cleaner Housing
- 2—Gasket
- 3—Cartridge
- 4—Top cover

#### B-36. Dry-Type Air Cleaner

Within the air cleaner housing is a replaceable element. Remove the element by unsnapping the retaining clips securing the top of the air cleaner and then removing the top cover. Refer to Fig. B-3. Shake dust from the cartridge by tapping it against a flat surface, being careful not to deform the plastic seal. Compressed air may also be used to clean the element, if so exercise caution to avoid damaging the filter material. Direct the air from inside the element toward the outside.

**Caution: Do not oil the element.**

#### B-37. Tune Engine

Refer to Section C.

B-38. Rotate Tires  
Refer to Section 13.

B-39. Adjust Clutch  
Refer to Section 02.

B-40. Adjust Brakes  
Refer to Section 12.

8-41. Adjust Fan Belt  
Refer to Section C.

B-42. Clean Exterior Radiator  
For proper cooling efficiency the radiator should be cleaned of foreign objects. Refer to Section 05.

B-43. Clean Body and Door Drain Holes  
The M715 cab has three door drain holes on the bottom of the door just outboard of the rubber seal and three body drain holes on each rocker panel. Also, one in front left floor and one at rear floor corner.  
The M725 body has three door drain holes on each door and four body drain holes located on the lower inside lip of each rocker panel. Two other body drain holes are located about one door width rearward of each rear wheel well.

B-44. Door and Window Weatherstrips  
Sparingly wipe silicon lubricant on all door weatherstrips and window weatherstrips. Wipe off any excess lubricant.

B-45. Door Latch Rotors  
Clean and then apply a slight amount of Lubriplate to the door latch rotors. Wipe off any excess lubricant. Operate the latches several times. Again 12821 wipe off excess lubricant.

B-46. Tailgate Latch, Supports and Hinges  
Lubricate the friction points of the tailgate hinges with a few drops of lightweight engine oil.

8-47. Door and Hood Hinge Pivot Points  
Lubricate the frictional points of the door and hood hinge pivot points with a few drops of lightweight engine oil.

8-48. Glove Compartment Door Latch and Hinges Sparingly wipe Lubriplate on the glove compartment door latch. Lubricate hinges with a few drops of lightweight engine oil.

B-49. Heater Controls  
Apply Lubriplate to all friction points and pivot points on the heater controls. Apply a few drops of penetrating oil all along the Bowden cable. This oil will penetrate into the center wire.

B-50. Windshield Wiper  
Lubricate friction points and pivot points on the windshield wiper transmission and linkage arms with a slight amount of Lubriplate.

8-51. Headlights  
Refer to Section 06.

B-52. Brake Linings

Refer to Section 12.

B-53. Exhaust System

Check the exhaust system for leaks. Refer to Section 04.

B-54. Front and Rear Axle U-Bolts

Torque the front and rear axle U-bolts. Refer to Sections 10 and 11.

B-55. Shock Absorbers

Visually check for broken mounts or bolts, worn or missing bushings on the shock absorbers. Refer to Section 18.

B-56. Front and Rear Springs Bushings The condition of the spring bushings is indicated by the alignment of the spring pivot and spring shackle bolts. Check the alignment of these bolts, make sure that nuts are tightened securely.

B-57. Spark Plugs

Replacement: Refer to Section C.

B-58. Starting Circuit

Check the starting circuit. Refer to Section 05.

B-59. Charging Circuit

Check the charging circuit. Refer to Section 06.

B-60. Tie Rod and Drag Link Sockets The tie rod and drag link sockets are equipped with lubrication fittings and should be lubricated at the interval specified in the Lubrication Chart.

8-61. Propeller Shaft Universal Joints and Slip Joints

The propeller shaft universal joints and slip joints are equipped with lubrication fittings. Proper lubrication of the U-joints, trunnion bearings and slip joint splines require special lubricants and not regular chassis lubricant.

**Note: It is important that the universal joints be properly and fully lubricated. Whenever lubricating U-joints, add lubricant until it is visible coming out of each one of the four bearing seals.**

B-62. Transmission

To change the lubricant, drain the old fluid by first removing the fill-hole plug and then removing the drainhole plug.

When all the fluid is completely drained, replace the drainhole plug only. For the correct specifications and quantity, refer to the Lubrication Chart. After filling transmission to correct level, install filler plug and tighten securely.

B-63. Transfer Case

Remove the transfer case fill-hole plug and then the transfer case drainhole plug. Let all fluid drain from case. Then install the transfer case drainhole plug, and refill the transfer case through the fill-hole using the correct lubricant as specified in the Lubrication Chart. After filling transfer case to the correct level, install the filler plug and tighten securely.

B-64. Front and Rear Axle Differentials

Check Par. B-65 where applicable.

#### 8-65. Differentials

To remove the lubricant from the front or rear differential, it is necessary to remove the drain plug and filler plug. Let the lubricant drain out, and then flush the differential with a flushing oil or light engine oil to clean out the housing. Do not use water, steam, kerosene, or gasoline for flushing. Refill the differential housing as specified in the Lubrication Specifications.

#### B-66. Front Axle Universal Joint

The front axle universal joint should be serviced by removing the shaft and thoroughly cleaning the universal joints and housing. For the correct procedures, refer to Section 10.

#### 8-67. Front Axle Wheel Bearings

To lubricate the front wheel bearings, it is necessary to remove, clean, repack, and adjust them. When wheel hubs and bearing are removed for lubrication, they should be thoroughly washed in a suitable cleaning solvent. The bearings should be carefully dried and then given a thorough cleaning and inspection. Use a clean brush to remove all particles of old lubricant from bearings and hubs. After the bearings are cleaned, inspect them for pitted races and rollers. Also, check the hub oil seals. Repack the bearing cones and rollers with grease and reassemble hub in the reverse order of the disassembly. Test the bearing adjustment as outlined in Section 13.

#### 3-68. Rear Axle Wheel Bearings

To lubricate the rear wheel bearings, it is necessary to remove, clean, repack, and adjust them. When wheel hubs and bearings are removed for lubrication, they should be thoroughly washed in a suitable cleaning solvent. The bearings should be carefully dried and then given a thorough cleaning and inspection. Use a clean brush to remove all particles of old lubricant from bearings and hubs. After the bearings are cleaned, inspect them for pitted races and rollers. Also, check the hub oil seals. Repack the bearing cones and rollers with grease and reassemble hub in the reverse order of the disassembly. Test the bearing adjustment as outlined in Section 13.

#### B-69. Igniter

Every 6,000 miles, remove the cap and rotor and apply 5 drops of medium engine oil to the felt in the top of the cam. Apply one drop of light oil to the breaker arm pivot pin. Operate arm once or twice, then remove excess oil. Apply a light film of grease to the breaker cam.

At overhaul, soak drive shaft bearing in medium engine oil and drain before reassembling the distributor. Wipe all oil from upper part of base. At assembly apply a film of grease to the upper drive shaft washer and put a small amount of grease in the bearing bore just above the bearing. Lubricate the governor mechanism sparingly with medium engine oil. Put enough light grease in the felt wick reservoir so that when the wick is inserted the reservoir will be full.

#### B-70. LUBRICATION OF OPTIONAL EQUIPMENT

##### B-71. Pintle Hook

The pintle hook and safety latch pivot pins are equipped with lubrication fittings and should be lubricated at the interval specified in the lubrication chart.

##### B-72. Winch

Lubricate and service in accordance with the specifications given in par. B-8 through B-10 and Lubrication Chart.

#### B-73. PARTS REQUIRING NO LUBRICATION

##### B-74. Water Pump Bearing, Clutch Release Bearing

These bearings are prelubricated for life when manufactured and cannot be relubricated.

##### B-75. Starter Motor Bearings

These bearings are lubricated at assembly to last between normal rebuild periods.

##### B-76. Alternator Bearings

These bearings are lubricated at assembly and require no further lubrication.

#### B-77. Springs

The vehicle springs should not be lubricated. At assembly the leaves are coated with a long-lasting special lubricant designed to last the life of the springs. Spraying with the usual mixture of oil and kerosene has a tendency to wash this lubricant from between the leaves, making it necessary to relubricate often to eliminate squeaking.

#### B-78. Shock Absorbers

Hydraulic direct-action shock absorbers are permanently sealed and require no periodic lubrication service. Shock absorber mounting bushings are not to be lubricated.

#### B-79. Spring Shackles

Front springs are equipped with rubber bushings on the spring shackles and pivot bolts. These rubber bushings have no lubrication fitting and it is very important that they never be lubricated. Rear spring pivot fittings must be lubricated with a pressure gun.

#### B-80. LUBRICATION REQUIREMENTS FOR OFF-HIGHWAY OPERATION

Adequate lubrication becomes increasingly important when vehicles are used in off-highway operation. Under these conditions all operating parts of both the engine and chassis are subjected to unusual pressures. At the same time such operation is usually under abnormal dust and dirt conditions making additional precautions necessary. The importance of correct lubrication for the conditions of operation cannot be overestimated.

#### B-81. Engine Oil

It is important that the oil in a new or rebuilt engine be changed after the first 500 miles of operation, and every 6,000 miles thereafter. Watch the condition of the oil closely and change it immediately if it appears to be contaminated.

#### B-82. Oil Filter

Replace the oil filter at the end of the first 500 miles of service. Under extreme operating conditions, more frequent replacement may be required. The condition of the oil is a reliable indicator of the condition of the filter element. If the oil becomes discolored and shows evidence of contamination, change the filter without delay. (Refer to Par. B-2 1 for the correct procedure for replacing the oil filter.)

#### B-83. Chassis Lubrication

The period of lubrication depends entirely upon the type of work being done. Using the specified interval given in the Lubrication Chart, lubricate at safe intervals required for the particular type of operation. Under extremely dusty conditions lubricate these points daily.

Be sure to force enough lubricant into each fitting to force out the old lubricant which might be contaminated with grit and which would cause rapid wear if allowed to remain.

Do not place lubricant on the various ball and socket joints or pivot points of the linkage as dirt will accumulate to form an abrasive mixture. It is best to simply wipe these parts clean with a cloth.

#### B-84. Front Axle Shaft Universal Joints

For off-highway use remove the universal joints twice yearly, thoroughly clean both the housings and joints with a suitable solvent, and refill the housings to the fill plug opening levels with the correct lubricant as given in the Lubrication Specifications.

#### B-85. Transmission and Transfer Case

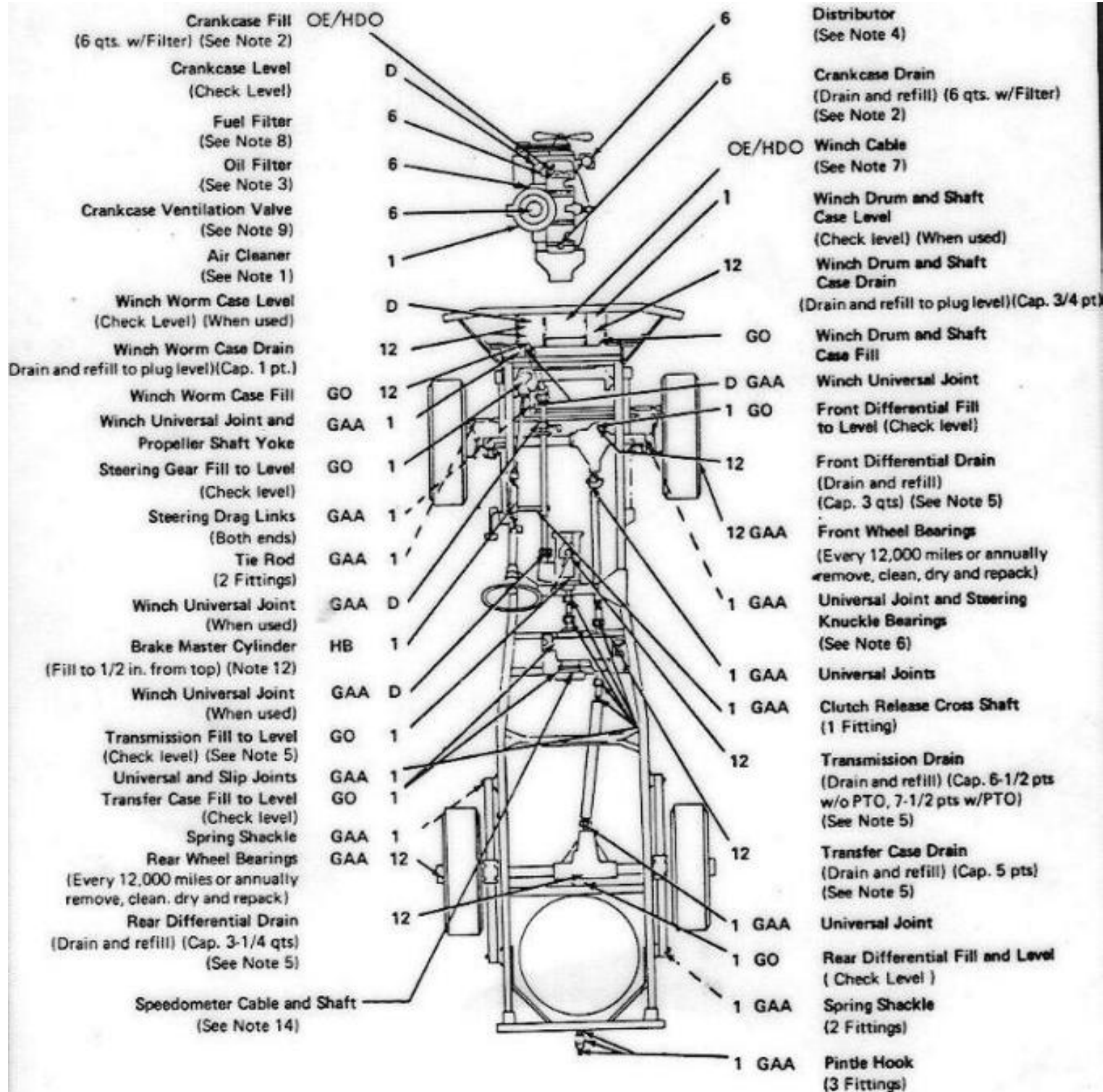
For off-highway use, drain both housings every 300 hours of operation and refill to the fill plug opening levels. Refer to Pars. B-62 and B-63 when changing lubricant.

#### B-86. Front and Rear Axle Differentials

Because of the higher pressure developed in the axle assemblies with heavy-duty operation, drain, flush, and refill the differential assemblies each 300 hours of operation. Use only flushing oil or light engine oil to clean out the housings. Refer to B-65 for draining and flushing differential.

**NOTE:** The following 2 pages are directly scanned from the Lube Order. I know these are large files but I can't find a way to reduce them without sacrificing clarity, so please be patient while they load.

<b>LUBRICATION ORDER</b>	<b>LO 9-2320-244-12</b> 31 AUGUST 1973 SUPERSEDES LO9-2320-244-12. 16 OCTOBER 1967
Reference. TM 9-2320-244-10	TRUCK, CARGO: 1¼-TON, 4 X 4, M715 TRUCK, AMBULANCE: 1¼-TON, 4 X 4, M725 TRUCK, CHASSIS: 1¼-TON, 4 X 4, M724 TRUCK, MAINTENANCE: 1¼-TON, 4 X 4, M726
Lubrication will be performed only as prescribed by this order except as required under unusual conditions as described in referenced TM.	Clean fittings before lubricating. Clean parts with THINNER, paint, volatile mineral spirits (TPM) or SOLVENT, dry cleaning (SD). Dry before lubricating. Lubricate dotted arrow points on both sides of the equipment.
LUBRICANT INTERVAL	INTERVAL LUBRICANT





## - KEY -

LUBRICANTS	EXPECTED TEMPERATURE			FOR ARCTIC OPERATION Refer to TM 9-207	LUBRICANTS	INTERVALS See NOTE 10	Man Hrs
	above +32°F	+40°F to -10°F	0°F to -50°F				
OE/HDO - OIL LUBR, ENGINE	OE/HDO 30	OE/HDO 10	OES		OES - OIL, LUBR, ENGINE, SUB-ZERO	D - Dally (Operator)	0.5
GO - LUBRICANT, GEAR, UNIVERSAL	GO 90	GO 80	GOS		GOS - LUBRICANT, GEAR UNIVERSAL, SUB-ZERO	1 - 1,000 Miles	1.5
GAA - GREASE, LUBR, AUTOMOTIVE AND ARTILLERY	GAA	GAA	GAA			6 - 6,000 Miles or semiannually *	4.5
HB - FLUID, HYDRAULIC, BRAKE	HB	HB	HBA		HBA - FLUID, HYDRAULIC, BRAKE, ARCTIC	12 - 12,000 Miles or annually *	6.5
					CW - LUBR, CHAIN, EXPOSED GEAR AND WIRE ROPE	*Whichever occurs first	

## - NOTES -

**1. AIR CLEANER (Dry Type)**

Daily (under normal conditions) remove air cleaner cover and inspect air cleaner cartridge (element). Clean (early type w/governor) if contaminated by shaking out (tapping) accumulated dirt. Clean (late type w/governor) by shaking out (tapping) accumulated dirt or by washing with water and non-sudsing detergent. Rinse until water is clear. Shake off excess water and dry. Replace (early type w/governor) air cleaner element at 1,000 miles and (late type w/governor) air cleaner element at 3,000 miles or sooner if plugged and causing loss of engine power.

**2. CRANKCASE**

Drain every 4,000 miles or semiannually. Drain only when hot after operation. Before filling crankcase remove filter screen in oil filler neck and clean. Check gasket in oil filler cap, replace if required. Reinstall screen and refill to FULL mark on gage. Run engine a few minutes and re-check oil level.

**3. OIL FILTER**

Replace oil filter after first 500 miles. Every 4,000 miles or semiannually, while draining crankcase, remove oil filter assembly and discard. Install new oil filter assembly. Hand tighten only.

**4. DISTRIBUTOR**

Every 6,000 miles or semiannually remove distributor. Remove plug under nameplate and withdraw felt wick. Soak wick in OE. Fill plug opening with GAA. Insert wick, remove excess grease and install plug. Wipe breaker cam lightly with GAA and breaker arm pivot with 1 to 2 drops of OE. Install distributor.

**5. GEAR CASES**

Drain every 12,000 miles or annually. Drain only when hot after operation. Fill to plug level. Check level after gear case has been allowed to cool to ambient temperature. (W/O PTO-without power take-off; W/PTO-with power take-off).

**6. FRONT WHEEL UNIVERSAL JOINTS AND STEERING KNUCKLE BEARINGS**

Every 1,000 miles remove plug and lubricate through plug located at side of steering knuckle housing until lubricant appears at plughole. Install plug. If required, disassemble constant velocity universal joints every 12,000 miles or annually. (Remove lower screw on housing after fording.)

**7. WINCH CABLE**

After each operation, clean and oil with engine oil OE/HDO. Every 6,000 miles or semiannually if cable is not generally used, unwind entire cable, clean and soak by means of a brush with OE/HDO. Wipe off excess and coat cable with CW. Coat winch drum also with CW before rewinding cable on drum.

**8. FUEL FILTER**

Every 12,000 miles or annually replace in-line fuel filter. Also remove screen in fuel tank filler neck and clean.

**9. CRANKCASE VENTILATION VALVE**

Every 4,000 miles or semiannually remove crankcase ventilation valve and wire mesh. Clean hose and fittings as required. Install mesh and valve in hose and install to engine. Check oil filler cap gasket (See note 2). Every 12,000 miles or annually replace crankcase ventilation valve.

**10. LUBRICATION INTERVALS**

When practicable, Lubrication Service will be made to coincide with the vehicle "S" P.M. Service. For this purpose a 10% tolerance (variation) in specified lubrication point mileage is permissible.

**11. OIL CAN POINTS**

Every 1,000 miles lubricate clutch and brake pedal shafts and linkage, accelerator pedal shaft and pivots, throttle bellcrank, parking brake linkage, winch shifter shaft, seat hinges and adjuster, all compartment hinges, catches, and locks, door handles, tail gate hinges and catches, lifting eye pins (4), spare tire carrier bolt.

**12. BRAKE FLUID**

Use hydraulic brake fluid (HB) non-petroleum base only. Use of hydraulic brake fluid petroleum base renders brakes inoperative.

**13. DO NOT LUBRICATE**

Shock absorbers and mounting bushings, front spring shackles, spring leaves, generator, and starter. Water pump and clutch release bearings are prelubricated at manufacture and cannot be relubricated.

**14. LUBRICATE AT TIME OF DISASSEMBLY BY DIRECT SUPPORT PERSONNEL**

Speedometer cable and shaft.

Copy of this lubrication order will remain with the vehicle at all times. Instructions contained herein are mandatory and supersede all conflicting lubrication instructions dated prior to the date of this lubrication order.

By Order of the Secretary of the Army:

CREIGHTON W. ABRAMS  
General, United States Army,  
Chief of Staff

Official:

VERNE L. BOWERS  
Major General, United States Army,  
The Adjutant General

