

## LUBRICATION ORDER

# LO 9-2320-218-12

26 July 1988

(Supersedes LO 9-2320-218-12,  
dated 31 October 1983)

**TRUCK, UTILITY: 1/4-TON, 4X4,  
M151, M151A1, M151A2, AND M151A2 W/ROPS  
TRUCK, UTILITY: 1/4-TON, 4X4, M151A1C AND M825  
TRUCK, AMBULANCE: FRONTLINE, 1/4-TON, 4X4, M718 AND M718A1**

REFERENCE: TM 9-2320-218-10, TM 9-2320-218-20-1-1, AND TM 9-2320-218-20-1-2

Intervals (on-condition or hard time) and the related man-hour times are based on normal operation. The man-hour time specified is the time you need to do all the services prescribed for a particular interval. On-condition (OC) oil sample intervals shall be applied unless changed by the Army Oil Analysis Program (AOAP) laboratory. Change the hard time interval if your lubricants are contaminated or if you are operating the equipment under adverse operating conditions, including longer-than-usual operating hours. The hard time interval may be extended during periods of low level activity. If extended, adequate preservation precautions must be taken. Hard time intervals will be applied in the event AOAP laboratory support is not available.

### **WARNING**

Drycleaning solvent is flammable and will not be used near an open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated places. Failure to do this may result in injury or death to personnel.

Clean fittings before lubricating. Clean parts with drycleaning solvent, (SD) type II or equivalent. Dry before lubricating. Broken arrows indicate required lubrication on both sides of the equipment.

Level of maintenance. The lowest level of maintenance authorized to lubricate a point is indicated by one of the following symbols: Operator/Crew (C); and Organizational Maintenance (O).

Relubricate after fording.

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### **DESTRUCTION NOTICE**

Destroy by any method that will prevent disclosure of contents or reconstruction of the document.

### **REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS**

You can help improve this lubrication order. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) direct to: Commander, U.S. Army Tank-Automotive Command, ATTN: AMSTA-MB, Warren, MI 48397-5000. A reply will be furnished to you.

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—KEY—

| <b>LUBRICANTS</b>  | <b>CAPACITIES</b>   | <b>EXPECTED TEMPERATURES</b>                     |  |                                 | <b>INTERVALS</b>   |
|--|---|--|--|---------------------------------|--|
|  |   | Above +15°F<br>(Above -9°C)                      | +40° to -15°F<br>(+4° to -26°C)            | +40° to -65°F<br>(+4° to -54°C) |  |
| OE/HDO-LUBRICATING OIL,<br>INTERNAL COM-<br>BUSTION ENGINE<br>(MIL-L-2104)<br><br>OEA-LUBRICATING OIL,<br>INTERNAL COM-<br>BUSTION ENGINE<br>(ARCTIC)<br>(MIL-L-46167)<br><br>CRANKCASE:<br><br>W/FILTER<br><br>W/O FILTER<br><br>AIR CLEANER:<br><br>OIL BATH | <br><br><br><br><br>5 qt<br>(4.7 l)<br><br>4 qt<br>(3.8 l)<br><br>2.5 pt<br>(1.2 l) | OE/HDO 15/40<br><br><br><br><br><br>OE/HDO 15/40 | OE/HDO 10<br><br><br><br><br><br>OE/HDO 10 | OEA<br><br><br><br><br><br>OEA  | D-Daily<br><br>M-1,000 miles<br>(1,600 km) or<br>monthly, which-<br>ever occurs first.<br><br>S-6,000 miles<br>(9,600 km) or<br>semiannually,<br>whichever<br>occurs first.<br><br>A-12,000 miles<br>(19,300 km) or<br>annually, which-<br>ever occurs first.<br><br>C/MR-Change gear<br>lubricant only when<br>required by mainte-<br>nance repair action,<br>or if contaminated<br>by water or other<br>foreign materials. |
| GO-LUBRICATING OIL,<br>GEAR (MIL-L-2105)<br><br>TRANSMISSION<br><br>STEERING GEAR<br><br>DIFFERENTIALS   | <br><br>5.5 pt<br>(2.6 l)<br><br>0.6 pt<br>(0.3 l)<br><br>2 pt<br>(0.95 l)          | GO 80/90<br><br>GO 80/90<br><br>GO 80/90         | GO 80/90<br><br>GO 80/90<br><br>GO 80/90   | GO 75<br><br>GO 75<br><br>GO 75 |  |
| GAA-GREASE, AUTOMO-<br>TIVE AND ARTILLERY<br>(MIL-G-10924)   |   | ALL TEMPERATURES                                 |  |                                 |  |
| BFS-FLUID, SILICONE BRAKE,<br>NON-PETROLEUM BASE,<br>AUTOMOTIVE<br>(MIL-B-46176)   |   | ALL TEMPERATURES                                 |  |                                 |  |
| PL-S-LUBRICATING OIL<br>GENERAL PURPOSE<br>PERSERVATIVE,<br>(WATER DISPLACING<br>LOW TEMPERATURE)<br>(VV-L-800)<br><br>-PENETRATING OIL<br>(VV-P-216)<br><br>OIL CAN POINTS  |   | ALL TEMPERATURES                                 |  |                                 |  |

FOR ARCTIC OPERATION, REFER TO FM 9-207

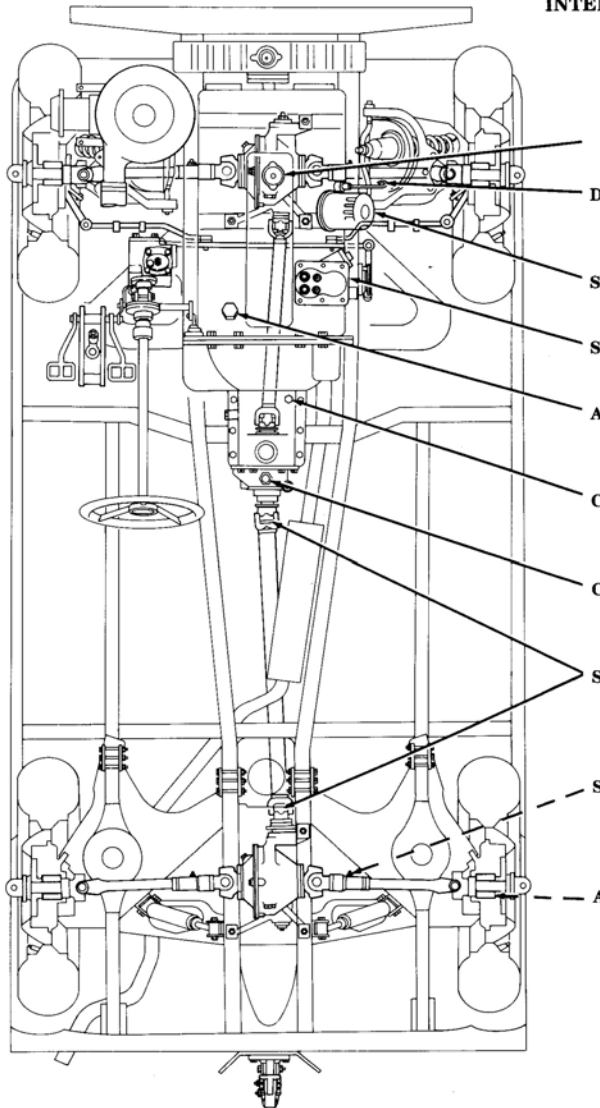
| TOTAL MAN-HRS |         | TOTAL MAN-HRS |         |
|---------------|---------|---------------|---------|
| INTERVAL      | MAN-HRS | INTERVAL      | MAN-HRS |
| D             | .1      | S             | 1.4     |
| M             | 1.7     | C/MR          | 1.2     |
| A             | 2.4     |               |         |

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# NOTE

An appropriate localized view (LV) letter key is provided after the lubrication entry. Localized views begin on card 6.

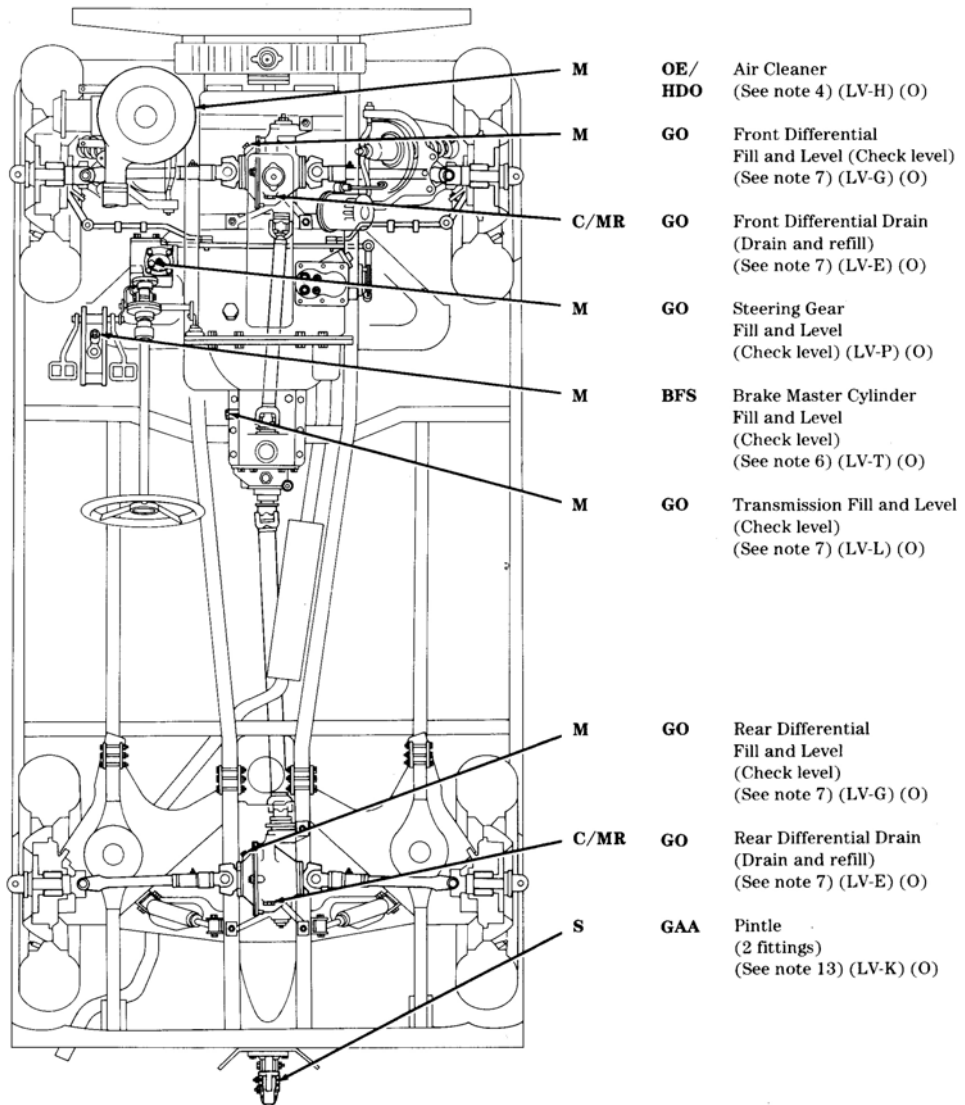
## INTERVAL • LUBRICANT



|                    |   |
|--------------------|---|
| <b>OE/<br/>HDO</b> | Crankcase Fill<br>(See note 2) (LV-A) (C)   |
| <b>OE/<br/>HDO</b> | Crankcase Level<br>(Check level)<br>(See note 2) (LV-C) (C)   |
| <b>OE/<br/>HDO</b> | Engine Oil Filter<br>(See note 3) (LV-B) (O)  |
| <b>PL-S</b>        | Distributor<br>(See note 5) (LV-J) (O)  |
| <b>OE/<br/>HDO</b> | Crankcase Drain<br>(Drain and refill)<br>(See note 2) (LV-U) (O)                                      |
| <b>C/MR</b>        | <b>GO</b> Transmission Drain<br>(Drain and refill)<br>(See note 7) (LV-M) (O)                         |
| <b>C/MR</b>        | <b>GO</b> Transfer Case Drain<br>(Drain and refill)<br>(See note 7) (LV-N) (O)                        |
| <b>GAA</b>         | Rear Propeller Shaft<br>Universal Joints<br>(1 fitting each end)<br>(See note 8) (LV-D) (O)           |
| <b>GAA</b>         | Rear Wheel Drive Shafts<br>and Universal Joints<br>(3 fittings each shaft)<br>(See note 8) (LV-F) (O) |
| <b>GAA</b>         | Rear Wheel Bearings<br>(See note 9) (O)   |

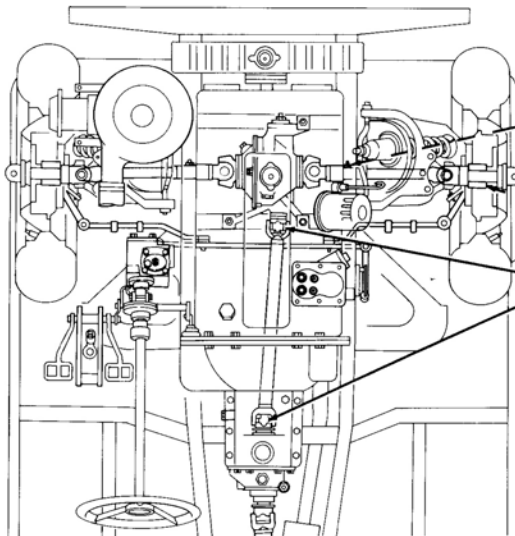
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# INTERVAL • LUBRICANT



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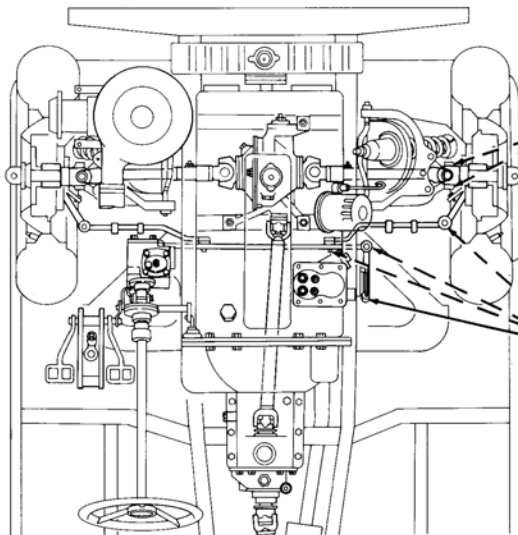
# INTERVAL • LUBRICANT



**GAA** Front Wheel Drive Shafts and Universal Joints  
(3 fittings each shaft)  
(See note 8) (LV-F) (O)

**GAA** Front Wheel Bearings  
(See note 9) (O)

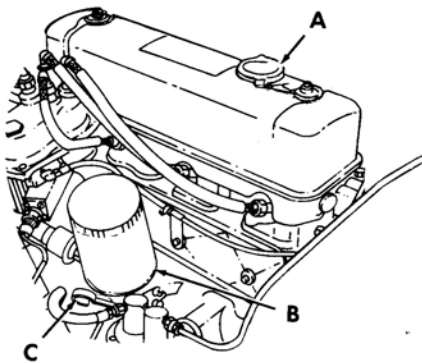
**GAA** Front Propeller Shaft Universal Joints  
(1 fitting each end)  
(See note 8) (LV-D) (O)



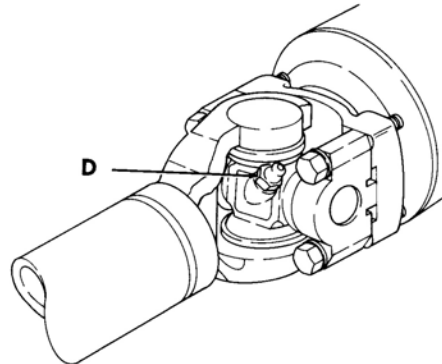
**GAA** Upper and Lower Suspension Ball Joints  
(2 fittings)  
(See note 13) (LV-Q) (O)

**GAA** Steering Linkage  
(See note 13) (LV-S)  
(6 fittings) (LV-R)  
(1 fitting)  
(O)

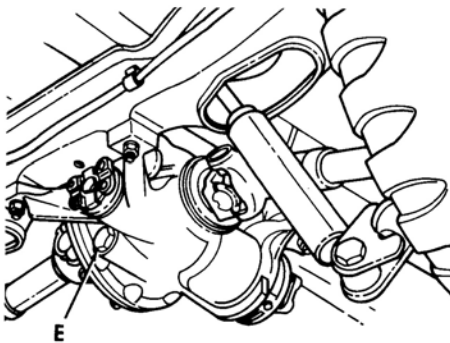
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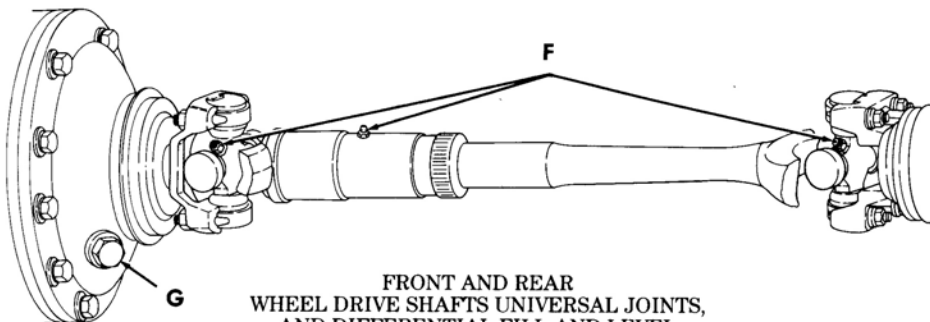
CRANKCASE FILL, ENGINE OIL FILTER,  
AND CRANKCASE LEVEL



FRONT AND REAR  
PROPELLER SHAFTS UNIVERSAL JOINTS



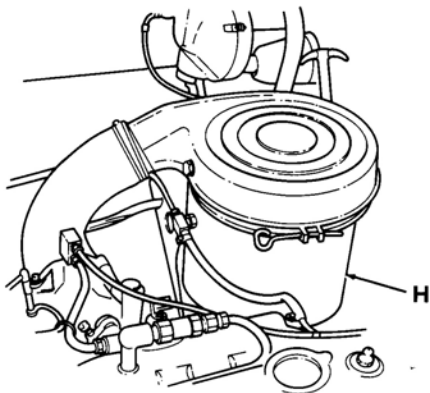
FRONT AND REAR  
DIFFERENTIAL DRAIN



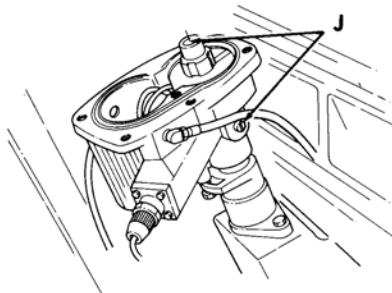
FRONT AND REAR  
WHEEL DRIVE SHAFTS UNIVERSAL JOINTS,  
AND DIFFERENTIAL FILL AND LEVEL

LOCALIZED LUBRICATION POINTS (A THROUGH G)

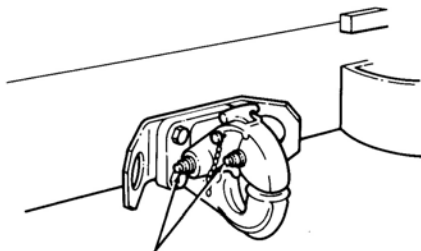
TA 484633



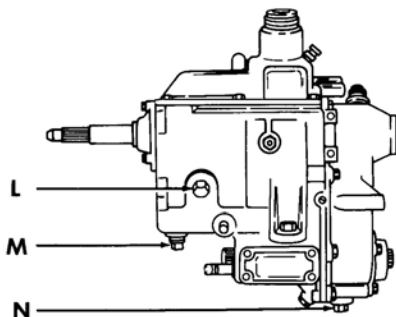
AIR CLEANER



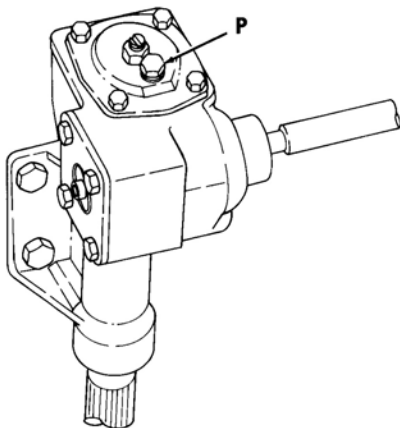
DISTRIBUTOR



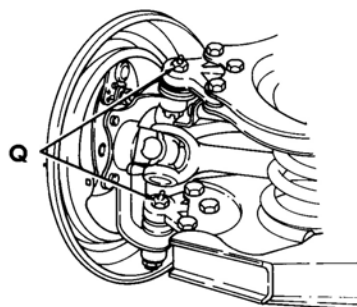
PINTLE



TRANSMISSION FILL AND LEVEL,  
TRANSMISSION DRAIN, AND  
TRANSFER CASE DRAIN



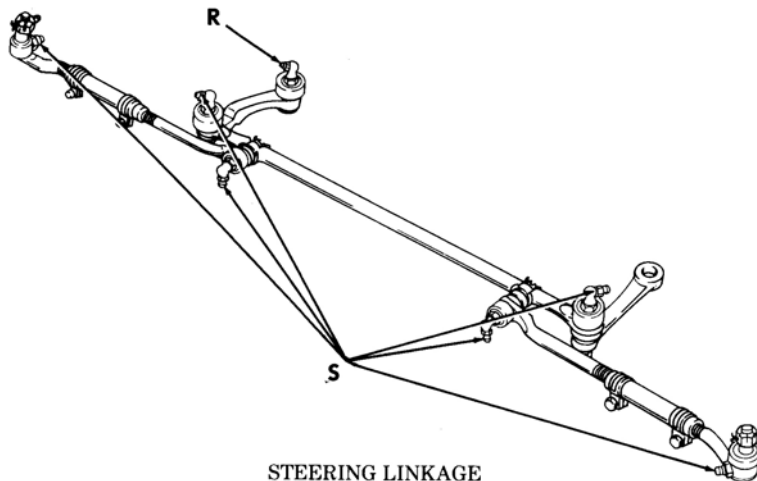
STEERING GEAR  
FILL AND LEVEL



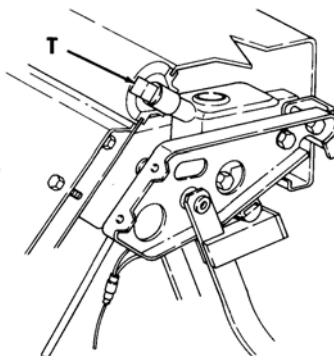
UPPER AND LOWER  
SUSPENSION BALL JOINTS

LOCALIZED LUBRICATION POINTS (H THROUGH Q)

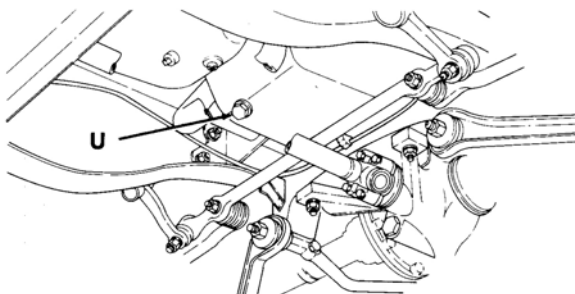
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STEERING LINKAGE



BRAKE MASTER CYLINDER  
FILL AND LEVEL



CRANKCASE DRAIN

LOCALIZED LUBRICATION POINTS (R THROUGH U)

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## NOTES

### 1. Intervals

This LO complies with DA programming to extend intervals and conserve lubricants. When practicable, lubrication services will be made to coincide with the vehicle Semiannual ("S") Preventive Maintenance Service. For this purpose a 10 percent tolerance (variation) in specified lubrication point mileage is permissible. Those vehicles not accumulating 1,000 miles (1,600 kilometers) in a 6 month period will be lubricated at the time of "S" Preventive Maintenance Service.

### 2. Crankcase

#### CAUTION

- Withdraw dipstick slowly to ensure accurate reading. There are two marks on dipstick, "ADD OIL" and "FULL". Safe operating level is between "ADD OIL" and "FULL". Do not overfill crankcase. Overfilling will result in damage to crankcase.
- If water or metal particles are detected during crankcase draining, notify Direct Support Maintenance personnel before refilling crankcase.

#### NOTE

Replace engine oil filter each time crankcase is drained. Fill crankcase with 5 quarts (4.7 liters) of engine oil. Crankcase capacity is 4 quarts (3.8 liters) and engine oil filter capacity is 1 quart (0.9 liter).

Check crankcase oil level daily. Start engine and visually check for oil leaks at drainplug and oil filter. Stop engine and allow approximately one minute for oil to drain back into oil pan. Recheck oil level with dipstick and adjust as required.

Drain oil every 12,000 miles (19,300 kilometers) or annually, whichever occurs first. Drain only when engine is hot. Inspect for presence of metal particles and water while draining into a drainage container. Clean magnetic drainplug before replacing. Tighten drainplug 25-35 lb-ft (34-47 N-m).

Under adverse conditions it may be necessary to change crankcase oil more frequently.

### 3. Engine Oil Filter

#### CAUTION

If water or metal particles are detected during oil filter replacement, notify Direct Support Maintenance personnel before refilling crankcase.

## NOTE

Ensure oil filter gasket is coated with clean engine oil prior to installation.

Replace engine oil filter every 6,000 miles (9,600 kilometers) or semiannually, whichever occurs first. Install new oil filter and tighten by hand until filter gasket contacts filter base. Tighten an additional 3/4 turn. Check oil level with dipstick and adjust as required.

### 4. Air Cleaner

#### WARNING

- NBC contaminated filters must be handled using adequate precaution (FM 3-5) and must be disposed of by trained personnel.
- The oil contained in the reservoir of oil bath type air filters will be taken to a segregation area and disposed of in accordance with FM 3-5.

Every 1,000 miles (1,600 kilometers) or monthly, whichever occurs first, clean oil reservoir, disassemble and clean all parts, and refill with approximately 2-1/2 pints (1.2 liters) of engine oil. Refill with engine oil, as above, whenever crankcase oil is changed. For desert, or extremely dusty conditions, disassemble, clean all parts, and refill with engine oil once every operating day, or more frequently if required. Inspect air cleaner intake tube for splitting, tightness of connection to air cleaner, and security of attachment to air cleaner.

### 5. Distributor (Standard and Solid State)

Every 6,000 miles (9,600 kilometers) or semiannually, whichever occurs first, remove cover assembly and rotor. Saturate felt at rotor end of shaft with 2 to 3 drops of PL-S. Remove slotted plug under nameplate on distributor housing and withdraw wick. Soak wick in PL-S. Fill plug opening with GAA. Insert wick, remove excess grease, and install plug. Wipe breaker cam sparingly (standard only) with GAA and lubricate breaker arm pivot with 1 or 2 drops of PL-S.

### 6. Brake Master Cylinder

#### CAUTION

Use Silicone Brake Fluid (BFS) MIL-B-46176 only. Failure to use BFS will render brakes inoperative and damage brake system.

Check brake master cylinder fluid level every 1,000 miles (1,600 kilometers) or monthly, whichever occurs first. Fill with BFS to bottom threads of filler hole. Install filler plug and tighten 15-20 lb-ft (20-27 N-m). Fluid does not require periodic changing.

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## 7. Gearcases

### **CAUTION**

If water or metal particles are detected during gearcase draining, notify Direct Support Maintenance personnel before refilling gearcase.

### **NOTE**

If oil is checked when hot, expansion from heat may cause oil to run out of filler plug opening. This is normal and oil should not be drained. Do not check during road halts unless a class III leak is identified.

Check gear lubricant level every 1,000 miles (1,600 kilometers) or monthly, whichever occurs first. Change gear lubricant only when required by maintenance repair action, or if contaminated by water or other foreign material. Drain only after operation when hot. Inspect for presence of metal particles or water while draining into a drainage container. Clean magnetic drainplug before replacing. After draining, reinstall drainplug and tighten 25-35 lb-ft (34-47 N-m). Fill to plug level before operation and after draining. Clean vents, especially after operation in water or mud.

## 8. Front and Rear Propeller Shafts Universal Joints, and Front and Rear Wheel Drive Shafts and Universal Joints

Every 6,000 miles (9,600 kilometers) or semi-annually, whichever occurs first, lubricate using low pressure lubrication gun. Lubricate each lube point until clean lubricant comes through seals.

## 9. Wheel Bearings

Every 12,000 miles (19,300 kilometers) or annually, whichever occurs first, remove, clean, dry, inspect, repack, and install front wheel and rear wheel bearings.

By Order of the Secretary of the Army:

Official:

R.L. DILWORTH  
Brigadier General, United States Army  
The Adjutant General

Distribution:

To be distributed in accordance with DA Form 12-38, Operator Maintenance requirements for Truck, Utility, 1/4 Ton, 4x4, M151 Series, M718 Series.

## 10. Oil Can Points

Every 1,000 miles (1,600 kilometers) or monthly, whichever occurs first, lubricate all doors and compartment hinges, latches, hood catches, throttle bellcrank, carburetor linkage, seat adjusting screw, spare tire wingnut, accelerator pedal pivot pin, seat retaining pins, rear seat pivot pins, and vehicle lifting eyes with PL-S.

## 11. Do Not Lubricate

Shock absorber bushings, or front and rear suspension support arm pivots.

## 12. Lubricate at Time of Assembly by Direct Support Personnel

Ventilator valve assembly, generator assembly, starter assembly, and speedometer cable assembly.

## 13. Special Instructions

Lubricate only those suspension ball joints, steering linkage joints, and pintle assemblies having lubrication fittings. Lubricate each lube point until clean lubricant comes through the seals.

Lube-for-life components do not require lubrication except for vehicles with pintle assemblies that contain lube-for-life bolts. Lubricate bolts and pintle pivot areas every 12,000 miles (19,300 kilometers) or annually, whichever occurs first, with penetrating oil VV-P-216.

CARL E. VUONO  
General, United States Army  
Chief of Staff

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