LUBRICATION ORDER

LO 10-3930-243-12

22 February 84

(Supersedes LO 10-3930-243-12-1, -2, and -3, 24 JANUARY 1975)

TRUCK, LIFT, FORK, DIESEL ENGINE:
PNEUMATIC TIRED WHEELS; ROUGH TERRAIN;
10,000 LB CAPACITY, 24 INCH LOAD CENTER
(PETTIBONE-MULLIKEN MODEL RTL10, ARMY
MODEL MHE-199) (NSN 3930-00-903-0899) AND
(MODEL RTL10-1, ARMY MODEL MHE-215)
(3930-00-465-5869)

Reference: TM 10-3930-243-12 and FEDERAL SUPPLY CATALOG C9100-IL.

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 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
Dry cleaning fluid is flammable. Do not use near a flame or excessive heat. Use only with adequate ventilation. Avoid prolonged breathing of vapors and minimize skin contact.

The time specified is the time required to perform all services at the particular interval (on-condition or hard times).

<table>
<thead>
<tr>
<th>INTERVAL</th>
<th>MAN-HOURS</th>
<th>INTERVAL</th>
<th>MAN-HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>0.2</td>
<td>500</td>
<td>3.0</td>
</tr>
<tr>
<td>100</td>
<td>3.0</td>
<td>1000</td>
<td>3.5</td>
</tr>
<tr>
<td>250</td>
<td>2.0</td>
<td>1000</td>
<td>4.2</td>
</tr>
</tbody>
</table>

Clean parts or fittings with dry cleaning solvent (SD), Type II or equivalent. Dry before lubricating. Dotted arrow shafts indicate lubrication on both sides of equipment. A dotted circle indicates a drain below. Relubricate all items found contaminated after fording or washing.

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

Reporting errors and recommending improvements. You can help improve this manual. 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, US Army Tank-Automotive Command, ATTN: DRSTA-MB, Warren, MI 48090. A reply will be furnished to you.

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LUBRICANT • INTERVAL

Front Differential Fill and Level Plug (O)
(Check level)
(See Key)

Front Differential Drain Plug (O)
(Drain and refill)
(See Note 11)

Front Propeller Shaft Spline and Universals (O)
(Sparingly)

Rear Propeller Shaft Spline and Universal (O)
(Sparingly)

Rear Differential Drain Plug (O)
(Drain and refill)
(See Note 11)

Rear Differential Fill and Level Plug (C)
(Check level)
(See Key)

Lift Cylinder Pivots (O)

Extension Slides (O)
(Clean and coat)
(See Key)

Tilt Cylinder Pivot (O)

Boom Pivot Points (O)

Engine To Transmission Propeller Shaft Spline and Universals (O)
(Sparingly)

Towing Pintle (O)
(2 fittings)
LUBRICANT • INTERVAL

Hydraulic Reservoir
Level Gage (C)
(Check level)

Magnetic Strainer
Plug (O)
(Remove and clean magnets)

Hydraulic Reservoir
Fill Cap (O)
(See Key)

Hydraulic Reservoir
Drain Plug (O)
(Drain and refill)

50

500

500

REAR

250 OE/
HDO

1000 GAA
Constant Velocity Joint (O)
(Repack with 12 lbs each end)

50 GAA
Oscillation Cylinder (O)
(Upper and lower)

Hydraulic Reservoir
Filter (O)
(Remove element, clean filter shell, install new element. After replacement, operate for 5 minutes, check for leaks, check level and bring to full mark.)

Fan Disconnect Cylinder
Linkage (O)
(Mdl RTL10 only)
Front Tie Rod Ends (0) (2 fittings)

Hydraulic Brake Reservoir Level Gage (C) (Check level) (Model RTL10 only) (See Note 13)

Hydraulic Brake Reservoir Fill Cap (0) (See Key) (Model RTL10 only)

Hydraulic Brake Reservoir Drain Plug (0) (Drain and refill) (Model RTL10 only) (See Note 13)

Governor Control Linkage (0)

Fork Shift Chains (0) (Clean and coat) (See Key)

Constant Velocity Joint (0) (Repack with 12 lbs each end)

Hand Brake Linkage (0)

Fork Control Rod (0)

Rear Tie Rod Ends (0) (2 fittings)

Rear Axle Trunnion (0) (Front and rear)
Crankcase Drain Plug (O) (Drain and refill) (See Notes 1 and 7)

Crankcase Oil Fill Cap (O) (See Key)

Output Shaft (O)

Crankcase Oil Level Gage (C) (Check level) CAUTION: When OEA oil is used the level will be checked more often. (See Note 6)

Oil Filter Drain (O) (Drain filter) (See Notes 1 and 8)

Oil Filter (O) (Service) (See Notes 1 and 8)

OC or 100

100 OE/HDO

100 OE/HDO

100 OE/HDO

500

500 OE/HDO

100

Generator (Sealed bearings no lubrication required)

Crankcase Breather (O) (Remove and clean)

Air Cleaner (C) (Dry type) (Change filter when indicator shows red)

Starting Motor (O) (Remove plugs to lubricate) (Sparingly)
<table>
<thead>
<tr>
<th>LUBRICANTS</th>
<th>CAPACITY</th>
<th>EXPECTED TEMPERATURES</th>
<th>INTERVALS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Above +15°F</td>
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<tr>
<td></td>
<td></td>
<td>(Above -9°C)</td>
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<tr>
<td></td>
<td></td>
<td>+40° to -15°F</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>(+4° to -26°C)</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>+40° to -65°F</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(+4° to -54°C)</td>
<td></td>
</tr>
<tr>
<td>OEA - Lubricating Oil, Internal</td>
<td>5 gals.</td>
<td>OE/HDO 30</td>
<td></td>
</tr>
<tr>
<td>Combustion Engine, Tactical</td>
<td>(19 L)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>OEA</td>
<td></td>
</tr>
<tr>
<td>(See Note 2)</td>
<td></td>
<td>(See Note 2)</td>
<td></td>
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<tr>
<td></td>
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<td></td>
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</tr>
<tr>
<td>OEA - Lubricating Oil, Internal</td>
<td>30 qts.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Combustion, Arctic</td>
<td>(28 L)</td>
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<td></td>
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<tr>
<td>- Oil Can Points (See Note 3)</td>
<td></td>
<td></td>
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<tr>
<td>- Engine Crankcase w/filter</td>
<td>6 gals.</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>(23 L)</td>
<td></td>
<td></td>
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<tr>
<td>- Oil Can Points (See Note 4)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Hydraulic Brake Reservoir RTL10</td>
<td>38 gals.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>only</td>
<td>(144 L)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Torque Converter Transmission</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Hydraulic Reservoir</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>OE/HDO 30</td>
<td></td>
</tr>
<tr>
<td>- Oil Can Points (See Note 5)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GO - Lubricating Oil, Gear,</td>
<td>4 qts. ea.</td>
<td>GO 85W/90</td>
<td></td>
</tr>
<tr>
<td>Multipurpose</td>
<td>(3.8 L)</td>
<td>GO 80W/90</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>GO 75W</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Wheel Planetary, Front and</td>
<td>10 qts. ea.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rear</td>
<td>(9.5 L)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Differential, Front and Rear</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*See Note 13 for lubricant specification number.
NOTES:

1. ARMY OIL ANALYSIS PROGRAM (AOAP). For Active Army units, obtain samples from engine and automatic transmission every 50 hours of operation or 60 days (whichever comes first). Reserve and National Guard activities will use 50 hours or 120 days as the prescribed sample intervals. Reserve and National Guard equipment in frequent use during active training period will adhere to the schedule for Active Army units. As a minimum, one sample from each unit’s two week active training period will be submitted for each item of equipment. Send these samples to the nearest AOAP laboratory. Refer to TB 43-0210 for sampling instructions. When or if AOAP laboratory support is unavailable, hard time intervals will apply.

NOTE

Do not hold oil samples. Submit oil samples as soon as they have been taken.

Seasonal oil changes will be made due to expected temperatures. (See Key.)

2. FOR OPERATION OF EQUIPMENT IN PROTRACTED COLD TEMPERATURES BELOW -15°F (-26°C). Remove lubricants prescribed in Key for temperatures above -15°F (-26°C). Relubricate with lubricants specified in Key for temperatures below -15°F (-26°C). If OEA lubricant is required to meet the temperature ranges prescribed in the Key, OEA lubricant is to be used in place of OE/HDO-10 lubricant for all temperature ranges where OE/HDO-10 is specified in the Key.

3. OIL CAN POINTS. Each 50 hours lubricate throttle and governor linkage, pins and clevises, door hinges and all exposed adjusting threads with OE/HDO.

4. OIL CAN POINTS. Each 50 hours lubricate accelerator bellcrank, brake and hydraulic valve linkages with OE/HDO 10.

5. OIL CAN POINTS. Each 50 hours lubricate yoke pins, ball and socket joints, pivot pins, door fasteners and control linkages with OE/HDO 30.

6. ENGINE OIL LEVEL HOT OR COLD CHECK. Cold engine, oil level should be at high mark on dipstick. Hot engine, oil level must be between high and low marks on dipstick (allow to set 5 minutes before checking).

7. ENGINE. Oil is to be changed each time an engine oil change is directed by AOAP laboratory. When AOAP laboratory

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*See Note 13 for lubricant specification number.

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<table>
<thead>
<tr>
<th>LUBRICANTS</th>
<th>CAPACITY</th>
<th>EXPECTED TEMPERATURES</th>
<th>INTERVALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CW - Lubricating</td>
<td></td>
<td>Above +15°F (Above -9°C)</td>
<td>CW-II-B</td>
</tr>
<tr>
<td>Oil: Chain, Wire,</td>
<td></td>
<td>+40° to -15°F (+4° to -26°C)</td>
<td></td>
</tr>
<tr>
<td>Rope, Exposed</td>
<td></td>
<td>+40° to -65°F (+4° to -54°C)</td>
<td></td>
</tr>
<tr>
<td>Gear</td>
<td></td>
<td>ALL TEMPERATURES</td>
<td></td>
</tr>
</tbody>
</table>

GAA - Grease, Automotive and Artillery
NOTES - CONTINUED:
support is not available, change oil each
100 hours. Drain when oil is warm.

8. ENGINE OIL FILTER. Filter is to be
replaced each time an engine oil change
is directed by AOAP laboratory. Remove
filter element, clean housing and install
new filter element. After installing new
filter element, fill crankcase, operate
engine 5 minutes, check housing for
leaks, check crankcase oil level and bring
to full mark. When AOAP laboratory sup-
port is not available, install new filter ele-
ment each 100 hours.

9. TRANSMISSION AND TRANSMIS-
SION OIL FILTER. Check level each 10
hours with engine running at 1000 RPM,
oil at operating temperature, and
transmission in neutral. Maintain oil level
to "FULL" mark. Oil and oil filter are to be
changed each time a transmission oil
change is directed by AOAP laboratory.
Remove transmission magnetic strainers,
clean and replace using new gaskets.
Remove filter elements, clean filter hous-
ing, install new filter elements and seals.
After replacement, fill transmission to
low mark. With engine running, oil at
operating temperature, and transmission
in neutral (to fill lines and converter) add
oil to bring to "FULL" mark. Operate for 5
minutes and check for leaks. When AOAP
support is not available, change transmis-
sion oil each 1000 hours, and transmis-
sion oil filter each 500 hours.

10. FRONT AND REAR DIFFERENTIAL.
Check level each 50 hours. Remove plug
and add oil until it flows from level plug
opening. Change lubricant only when re-
quired by maintenance repair action, con-
tamination by water or other foreign
material. After refill, operate for 5
minutes, check for leaks and bring to full
mark.

11. FRONT AND REAR PLANETARY
HUBS. Each 50 hours, rotate wheels un-
til drain plug is at 6 o'clock position,
remove level plug and check level.
Change gear lubricant only when required
by maintenance repair action, contamina-
tion by water or other foreign material. In
order to drain oil, rotate wheels until drain
plug is at 6 o'clock position and remove
both drain and fill plugs. Install drain plug
and fill with GO until oil is at level plug. in-
stall fill and level plugs and operate for 5
minutes, check for leaks and bring oil to
full mark.

12. HYDRAULIC BRAKE RESERVOIR
(Model RTL10 only). Each 50 hours check
level and bring to full mark. Each 1000
hours drain reservoir, clean fill cap and
screen. Fill reservoir with OE/HDO,
operate equipment for 5 minutes, check
for leaks, check level and bring to full
mark.

13. LUBRICANTS. The following is a list
of lubricants with military symbols and
applicable specification numbers.

<table>
<thead>
<tr>
<th>Lubricant</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>OE/HDO</td>
<td>MIL-L-2104</td>
</tr>
<tr>
<td>GO</td>
<td>MIL-L-2105</td>
</tr>
<tr>
<td>GAA</td>
<td>MIL-G-10924</td>
</tr>
<tr>
<td>OEA</td>
<td>MIL-L-46167</td>
</tr>
<tr>
<td>CW</td>
<td>VV-L-751</td>
</tr>
<tr>
<td>(SD), Type II</td>
<td>P-D-680</td>
</tr>
</tbody>
</table>

Copy of this Lubrication Order will remain
with the equipment at all times, instruc-
tions contained herein are mandatory.

By order of the Secretary of the Army:

JOHN A. WICKHAM, JR.
General, United States Army
Chief of Staff

OFFICIAL:

ROBERT M. JOYCE
Major General, United States Army
The Adjutant General

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