

DIRECTOR GENERAL BORDER ROADS
GENERAL MAINTENANCE INSTRUCTION NO. 87
ON
MAINTENANCE AND LUBRICATION
OF
LW 16R WHEELED TRACTORS

Introduction :-

1. Regular servicing and periodical maintenance are essential to prolong the life of the equipment, ensure timely repairs to arrest defects from developing into majors ones, to work the equipment effectively at all times, minimize inopportune breakdowns and downtime losses.

Aim :-

2. (a) To enumerate the details of periodic and preventive maintenance and lubrication of LR 16R WHEELED TRACTORS.
- (b) Issue CHECK CARD for use by Mobile Maintenance Team.

Action By :-

3. (a) User Units :- To carry out periodic Inspection, regular servicing and preventive maintenance tasks as laid down.
- (b) Field Workshops (GREF) :-
 - (i) To check the 'Record of Maintenance and Lubrication' in the log book of the eqpt during its inspection and repairs, if carried out as per Maintenance and Lubrication schedules given in this instruction.
 - (ii) Advise user units in respect of any discrepancy noticed.

Details:-

4. Details of Maintenance and Lubrication alongwith the periodicity have been tabulated in Appendix 'A' to this instruction.

PREVENTIVE MAINTENANCE – LW 16R WHEELED TRACTORS

S/No.	Item/Assys	Maintenance Instruction	Lubrication	No of points
1	2	3	4	5

10 HOURS TASK

1.	General	(a) Check oil, water or gas for leaks. (b) Check for exhaust smoke colour, (c) Read all gauges and meters, (d) Check all bolts and nuts if loose or deficient.		
2.	Engine Sump	Check and top up oil lever as per temperature range.	Engine Oil	1
3.	Air Cleaner	Check oil level. It should be up to full mark.	-do-	1
4.	Cooling system	Check water level in Radiator (Use clean, soft water)	-	1
5.	Fuel Tanks	Check fuel level at the end of each shift, Fill as necessary	-	1
6.	Fuel Filter	Drain sediment from fuel filter bowls	-	1
7.	Hydraulic	Check oil level and fill as necessary	Hyd oil	1
8.	Air Storage tank	Bleed moisture (Drain cock on receiver)	-	1
9.	Air filter	Bleed moisture (Drain cock on filter bowl)	-	1
10.	Hyd arm trunnions	Lubricate	Grease	1
11.	Brake pivot arms	Lubricate (Left and right hand sides)	Grease	2
12.	Tyres	Check air pressure	-	4

Notes:-

1. Engine and air cleaner- Oil grades

- | | | | |
|-----|-------------------------|---|-------------------|
| (a) | Above 32 ⁰ F | - | Use SAE 30 |
| (b) | Below 32 ⁰ F | - | Use SAE 20 or low |

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1	2	3	4	5
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2. Transmission – Oil Grades

- (a) Above 10⁰ F - Use SAE 90
- (b) Below 10⁰ F - Use SAE 80

3. Spiral Bevel Gear and Pinion, Final Drive (L and R)

- (a) Above 32⁰ F - Use SAE 90 EP
- (b) Below 32⁰ F - Use SAE 80 EP

4. Hydraulic system

Use 'C-1' hydraulic Transmission Fluid.

5. Grease Nipples- Grease Grades

- (a) Above 32⁰ F - Use medium chassis grease
- (b) Below 32⁰ F - Use heavy chassis grease.

50 HOURS TASK

- 1. General Carry out 10 Hours Task.
- 2. Air Cleaners Change Oil (more often if conditions warrant) Engine oil
- 3. Batteries Check electrolyte level and top up if necessary with distilled water.

Note:-

1. Engine and Air Cleaner- Oil grades

- (a) Above 32⁰ F - Use SAE 30
- (b) Below 32⁰ F - Use SAE 20 or low

2. Transmission –Oil Grades

- (a) Above 10⁰ F - Use SAE 90
- (b) Below 10⁰ F - Use SAE 80

3. Spiral Bevel Gear and Pinion, Final Drive (L and R)

- (a) Above 32⁰ F - Use SAE 90 EP
- (b) Below 32⁰ F - Use SAE 80 EP

1	2	3	4	5
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4. Hydraulic system

Use 'C-1' Hydraulic Transmission Fluid.

5. Grease Nipples- Grease Grades

(a) Above 32⁰ F - Use medium chassis grease

(b) Below 32⁰ F - Use heavy chassis grease

6. To prevent oil leakage, tighten up all nuts and bolts of the final drive compartment. If not rectified, suggest unit to report to the field Workshop.

7. Refueling of fuel tank must be carried out during LAST PARADE, so as to give enough time for sediments and water to settle into the sediment trap.

100 HOURS TASK

1. Carry out 10 Hours and 50 Hours tasks.

2.	Engine	Drain and refill engine crankcase while engine is warm.	Engine Oil	1
3.	Oil Filter	Replace filter element	-	1
4.	Cranking motor	Lubricate (Do not over lubricate)		1
5.	Dynamo	Lubricate front and rear oil cup (Do not over lubricate)	Engine Oil	2
6.	Emergency shut-off Control cable	Lubricate	Engine Oil	1
7.	Transmission	Check oil level and top up if necessary	Gear Oil	1
8.	Spiral bevel gear and pinion compartment	Check oil level	Gear oil	2
9.	Final drive	Check levels	Gear Oil	2
10.	Batteries	Check specific gravity of each	-	-

1	2	3	4	5
11.	Radiator	Clean air passages in radiator from engine side outward with compressed air.		
12.	Fan belt	Check adjustment		
13.	Clutch Pedal	Check free play and adjust if necessary. It should be ½ ".		
14.	Fuel tank	Drain condensation and sediment.		
15.	Governor air filter	Clean filter in cleaning fluid and lightly oil before replacing.		
16.	Hydraulic tank	Drain condensation and sediment from tank.		
17.	Clutch release shaft	Lubricate	Grease No 2	
18.	Clutch release bearing	Lubricate	Grease No 2	
19.	Clutch pedal shaft	Lubricate	Grease No 2	
20.	Hydraulic pump drive coupling	Lubricate	Grease No 2	
21.	Throttle and Hydraulic control linkage	Lubricate	Engine Oil	
22.	Parking brake control linkage	Lubricate	Grease	
23.	Brake treadle valves	Lubricate	Grease	
24.	Final drive case breathers	Remove, wash and re-oil	Gear Oil	
25.	Engine mounting bolts	Tighten the bolts if necessary		

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Note:-

1. Engine and Air Cleaner-Oil Grades
 - (a) Above 32⁰ F - Use SAE 30
 - (b) Below 32⁰ F - Use SAE 20 or low
2. Transmission –Oil Grades
 - (a) Above 10⁰ F - Use SAE 90
 - (b) Below 10⁰ F - Use SAE 80
3. Spiral Bevel Gear and Pinion, Final Drive (L and R)
 - (a) Above 32⁰ F - Use SAE 90 EP
 - (b) Below 32⁰ F - Use SAE 80 EP
4. Hydraulic system
Use 'C-1' Hydraulic Transmission Fluid.
5. Grease Nipples-Grease Grades
 - (a) Above 32⁰ F - Use medium chassis grease
 - (b) Below 32⁰ F - Use heavy chassis grease

500 HOURS TASK

- | | | | |
|----|-------------------|---|------------------|
| 1. | | Carry out 10 hours, 50 hours and 100 hours tasks. | 1 |
| 2. | Air Cleaner
1 | Clean air filter element with cleaning solvent (not gasoline) | |
| 3. | Fuel tanks
1 | Drain, flush and refill with clean fuel. | |
| 4. | Fuel filter | Replace primary and secondary elements (or more often if necessary) | 1 |
| 5. | Transmission
1 | Change Oil | Transmission Oil |

1	2	3	4	5
6.	Hydraulic system	(a) Change Oil (b) Replace the drain plug in the bottom of the oil reservoir (c) Install strainer in reservoir (d) Install new element in filter		
7.	Cranking motor	Check cranking motor commutator and brushes for wear, dirt and high mica.		
8.	Generator	Check commutator and brushes for wear etc.		

Note:-

1. Engine and Air Cleaner-Oil Grades

- (a) Above 32⁰ F - Use SAE 30
- (b) Below 32⁰ F - Use SAE 20 or low

2. Transmission –Oil Grades

- (a) Above 10⁰ F - Use SAE 90
- (b) Below 10⁰ F - Use SAE 80

3. Spiral Bevel Gear and Pinion, Final Drive (L and R)

- (a) Above 32⁰ F - Use SAE 90 EP
- (b) Below 32⁰ F - Use SAE 80 EP

4. Hydraulic system

Use 'C-1' Hydraulic Transmission Fluid.

5. Grease Nipples-Grease Grades

- (a) Above 32⁰ F - Use medium chassis grease
- (b) Below 32⁰ F - Use heavy chassis grease

6. * Under extremely dirty or dusty conditions, perform more frequent interval.

1	2	3	4	5
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1000 HOURS TASK

1.		Carry out 10 hours, 50 hours, 100 hours and 500 hours tasks.		
2.	@ Transmission	Drain, flush and refill.		1
3.	Cooling system	Drain, flush and refill. Use clean, soft water when refilling.		1
4.	Spiral bevel 2 gear and pinion compartment	Drain, flush and refill		
5.	Final Drives	Drain, flush and refill.		2
6.	Final drive 2 breathers	Remove, wash and re-oil		
7.	Hydraulic 1 system	(a) Drain, flush tank and refill. (b) Replace oil reservoir strainer element		1
8.	Fan bearings	Lubricate with Grease	Grease	2

Note:-

1. Engine and Air Cleaner-Oil Grades
 - (a) Above 32⁰ F - Use SAE 30
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2. Transmission –Oil Grades
 - (a) Above 10⁰ F - Use SAE 90
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3. Spiral Bevel Gear and Pinion, Final Drive (L and R)
 - (a) Above 32⁰ F - Use SAE 90 EP
 - (b) Below 32⁰ F - Use SAE 80 EP
4. Hydraulic system
Use 'C-1' Hydraulic Transmission Fluid.
5. Grease Nipples-Grease Grades
 - (a) Above 32⁰ F - Use medium chassis grease
 - (b) Below 32⁰ F - Use heavy chassis grease
6. @ Change oil every 500 hours in very dusty operating condition.