

DIRECTORATE GENERAL OF BORDER ROADS
GENERAL MAINTENANCE INSTRUCTION NO.100
ON
MAINTENANCE AND LUBRICATION
OF
CUMMINS DIESEL ENGINES

Introduction

1. Regular servicing and prevently (maintenance are essential to prolongs the life of the equipments, ensure timely repairs to arrest defect from developing into major ones, to work the engine effectively tell times, minimize inopportune breakdowns and down time losses.

Aim

- 2 (a) To enumerate the details of periodic and preventive maintenance and lubrication of CUMMINS DIESEL ENGINES on all vehicles.
- (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 task as laid down.
- (b) Field Workshops (GREF) :
 - (i) To Check the “Record of maintenance and lubrication” in the log book of the vehicles during its inspection and repairs and ensure compliance of Maintenance and Lubrication Schedules given in this instruction.
 - (ii) Advice user units in respect of any discrepancy noticed.
- (c) Mobile Maintenance Team : To ensure that proper maintenance is carried out and report accordingly to OC Field Workshop (GREF) for necessary action.

4. **Details**

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

- END -

Appendix 'A' to HQ DGBR, GMI No. 100
Dated 07 Nov 73

MAINTENANCE AND LUBRICATION OF CUMMINS DIESEL ENGINES

Srl No.	Item/Assembly	Maintenance Instructions	Lubricant	No. of Page
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DAILY MAINTENANCE TASK

1. General
 - (a) Clean the engine assembly from dirt and dust.
 - (b) Check for exhaust smoke and any unusual noise.
 - (c) Check for tightness of nut and bolts..
Check all the gauges and matters.

2. Engine sump (a) Check engine oil level
Engine Oil 1
 - (b) Clean crank case breather. Check dry tupe Element in cleaner.

3. Fuel Tank
 - (a) Check the quantity of fuel.
 - (b) Drain water and sediment from fuel tank.
 - (c) Fill fuel tank at the end of the shift.

4. Air Cleaner 1

Check oil level in the air cleaner. If, necessary Engine Oil change oil.

5. Cooling
 - (a) Fill radiator with clean or treated water.
 - (b) Check for water leaks.
 - (c) Blow air through core in opposite direction to the normal flow of air, if working under extreme dirty condition.

6. Air Lines
 - (a) Check air line connection for leaks.
 - (b) Remove and clean air compressor breather.
 - (c) Drain air receiver tank after day's work and then close the drain cock.

(Note :- Use Compressed air for cleaning from a safe distance minimum 8” – 10”)

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Note :-

ENGINE OIL AIR CLEANER

<u>Srl No.</u>	<u>Name of Oil Supplier</u>	<u>Type of Oil recommended</u>
1.	Indian Oil Company Ltd.,	Delvac Oil 1100 series.
2.	Burmah Shell Oil Storage and Distributing Co. Ltd.	Shell Rotcills T Oils
3.	Esso Standard Eastern Ins	Essolube HDX
4.	Castrol Limited	Castrol CRD Series
5.	Caltex Limited	Super RPM DELO Special
6.	Gulf Oil (India) Pvt Ltd	Gulf lube XHD Oils
7.	Tide Water oil Corporation (I) Ltd	Veedol HDB Oils.

100 HOURS TASK

1.	General	Carry out Daily maintenance task.	
2.	Engine Oil	Change Engine Oil.	Engine Oil 1
3.	Oil filter	Fit new lubricating oil full flow filter element.	
4.	Generator	Lubrication generator bearing.	Engine Oil

5. Aneriod Control Change Oil Engine Oil 1
6. Air Cleaner (a) Remove and clean air cleaner element.
 (b) Remove and clean dust pan.
 Note :- Blow out dust with compressed air. If very dirty, with oil
 And carbon wash in warm water (120° - 140°F) and non subsiding detergent, dry with compressed air.
 Caution :- Excess air pressure will damage paper. Air nozzle must be kept at least 8” from the element.

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- (c) Inspect dry type air cleaner element for holes and tears. Check gasket and 'O' rings for damage.
- (d) Clean Oil both air cleaner screen.
7. Crankcase Breather. Remove and clean crankcase breather.
8. Hydraulic Engine Oil Governor Check oil in hydraulic Governor if required. 1

200 HOURS MAINTENANCE TASK

1. General Carry out daily maintenance task and 100 hour maintenance task.
2. Starter Engine Oil Motor Lubricate starter motor 1
3. Oil filter Change by pass lubricating oil filter element.
4. Fuel tank Clean float tank or main fuel tank breather.

5. Fan belt Check and adjust tension of all drive belts.
6. Coolant Change corrosion resistor element and PH valve is normal or acidic.
P.H. Valve It should be alkaline (Range 8-10.5P.H)

400 HOURS MAINTENANCE TASK

1. General Carry out daily 100 hours and 200 hours maintenance task.
2. Air cleaner Check oil bath air cleaner.
3. Air breather Check Aneroid air breather.
4. Thermostat Check thermostat operation.
Valve

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5. Water Pump (a) Grease Water pump Grease
1
(cavities must be 2/3 full only)
(b) Check water pump bearing.
6. Fan hub (a) Grease fan hub Grease
1
(b) Check mounting belts and bearing play.
7. Corrosion of Resister. Check and clean magnesium waste plate. Replace if More than 50% area is pitted or catch away.
8. Turbo charger Or Super charger Check oil leaks at turbo charger or super charger
9. Generator (a) Blow dust from generator.

- (b) Check generator brushes and commutator.
- 10. Electrical Clean and tighten all electrical connections.
- 11. Starter
 - (a) Blow dust from generator.
 - (b) Check generator brushes and commutator.
- 12. Engine Clean entire engine..

800 HOURS MAINTENANCE TASK

- 1. General Carry out daily, 100 hours, 200 hours and 400 hours maintenance task.
- 2. Engine Check engine blow-by.
- 3. Crankshaft Check crankshaft and float (If in excess of factory limit, engine overhaul is indicated).
- 4. Injectors
 - (a) Clean injectors by using carbon-cleaning solvent only and not by wires.
 - (b) Adjust injector as specified.

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- 5. Valve Final adjustment must be carried out with engine hot, and with correct torque as specified.
- 6. Manifold Check exhaust and inlet manifold nuts and screws.
- 7. Air cleaner Inspect dry type air cleaner, if necessary replace.
- 8. Hydraulic Governor Change Hydraulic Governor oil Engine Oil
- 9. Engine Check engine mounting caps screws.
- 10. Super Check super charger rotor and clean it.

1600 HOURS MAINTENANCE TASK

1. General Carry out daily, 100 hours, 200 hours, 400 hours and 800 hours maintenance task.
2. Injectors Remove injector, inspect, clean and refit or fit spare set of injectors.
3. Fuel filters Change is required, Filters must be changed when limits are exceeded irrespective of the number of hours worked.
4. Turbo charger oil filter Change the turbo charger oil filter when the oil pressure drop across the filter exceeds 10 PSI.
5. Heat
 - (a) Check oil cooler element Engine oil 1
 - (b) Check oil torque convertor cooler element. Engine Oil 1
 - (c) Heat exchanger element (marine) to be cleaned by solvent and never by wires.
