



# उच्च अनुरक्षण प्रौद्योगिकी केन्द्र

रेल मंत्रालय

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(आई.एस.ओ. 9001-2015 प्रमाणित संस्थान)



## CENTRE FOR ADVANCED MAINTENANCE TECHNOLOGY

Ministry of Railways

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PCME

CESE

All Zonal Railways

**Sub:** 11<sup>th</sup> Correction slip of LHB Maintenance Manual version 1.1 July 2022 Volume- II

**Ref:** IRCAMTECH/GWL/MECH/2022-23/LHB/Manual/1.1 JULY, 2022

In view of above following correction slip is being issue in LHB Maintenance Manual version 1.1 July 2022 Volume- II

S.N.	Chapter Number	Para Number	Name of Para	Existing Instruction	Modified/Corrected Instruction
1	13	13.18	MAINTENANCE SCHEDULES OF DIESEL ENGINES FOR CUMMINS MAKE	Deleted	New Maintenance Schedule of Cummins Make Diesel Engines
					13.18.1:- CPCB-4+ Engine Maintenance Schedule (copy attached)
					13.18.2:- CPCB-2 Engine & Underslung Power Car Maintenance Schedule (copy attached)
2	13	13.20	MAINTENANCE SCHEDULES OF DIESEL ENGINES FOR Kiloskar Engine Ltd. (KOEL) MAKE	Deleted	New Maintenance Schedule of KOEL Make Diesel Engines
					13.20.1:- CPCB-4+ Engine Maintenance Schedule (copy attached)
					13.20.2:- CPCB-2 Engine Maintenance Schedule (copy attached)

This has the approval of competent authority.

HIMANSHU MAHESHWARI  
2025.10.07 13:10:08 +05'30'

(Himanshu Maheshwari)  
Director/Electrical

Copy to: (i) PED/CAMTECH for kind information please.

(ii) OSD/EE(G)/Railway Board for kind information please

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## 13.18 MAINTENANCE SCHEDULES OF CUMMINS MAKE DIESEL ENGINES

### 13.18.1 CPCB 4+ Engine

Cummins Diesel Engines (CPCB-4+) Maintenance Schedules Periodicity are as under:

Make	A	B	C	D	E
<b>M/s Cummins</b>	Every Round Trip	12 Months or 500 Hrs.	36 Months or 1500 Hrs.	72 Months or 6000 Hrs.	On condition basis

### MAINTENANCE SCHEDULES ACTIVITY (CPCB-4+) Engine

S.N.	Equipment/ Maintenance Activity	A Check	B Check	C Check	D Check
<b>1.</b>	<b>Air Intake system</b>				
I.	Check vacuum indicator for red band	✓	✓	✓	✓
II.	Clean air filter element if vacuum indicator showing Red band	✓	✓	✓	✓
III.	Check condition of element for chocking/ torn sealing and attend same,	--	✓	✓	✓
IV.	Check and ensure proper condition of Pre-Cleaner	--	✓	✓	✓
V.	Check and change Air cleaner element if required	--	✓	✓	✓
VI.	Check and ensure proper condition of air hose	--	✓	✓	R
VII.	Replacement of air filter (inner & outer).	--	--	✓	✓
VIII.	Check Sealing of the air filter element	--	--	✓	✓
IX.	Replacement of vacuum indicator	--	--	--	✓
X.	Check turbocharger and clearance	--	--	--	✓
XI.	Replacement of all rubber hoses and clamps of air line.	--	--	--	✓
XII.	Cleaning of after Cooler/intake	--	--	--	✓
<b>2.</b>	<b>Exhaust System</b>				
I.	The DEF tank is filled to the normal full level with DEF. ISO-22241-1	✓	✓	✓	✓

S.N.	Equipment/ Maintenance Activity	A Check	B Check	C Check	D Check
II.	Check Exhaust Outlet for: a) Exhaust components are secured and not warped. b) The exhaust outlet is unobstructed. c) No combustible materials are near the system. d) Gases are discharged away from openings. e) There are no leaks and that all fittings are tight.	✓	✓	✓	✓
III.	Check exhaust condensation trap	✓	✓	✓	✓
IV.	Check DEF level, Top up if required	✓	✓	✓	✓
V.	After treatment DEF intake Filter replacement	--	✓	✓	✓
VI.	After treatment DEF Dosing unit Filter replacement	--	✓	✓	✓
VII.	Check DEF Fluid concentration	--	✓	✓	✓
VIII.	DEF Tank Check & Cleaning	--	✓	✓	✓
IX.	Check and Replace the Nox-Sensor, if required	--	--	✓	✓
X.	Remove the heat insulation from Exhaust Pipelines and Manifold and replace with new after checking of leakage in exhaust system	--	--	--	✓
<b>3</b>	<b>Fuel system</b>				
I.	Check the engine fuel level and make sure that the correct level is always maintained.	✓	✓	✓	✓
II.	All the valves (Fuel supply) required for operation are open	✓	✓	✓	✓
III.	Check leakage of fuel, lubricating oil and coolant. Attend, if required	✓	✓	✓	✓
IV.	Check all hoses, pipes for any leakage. Arrest all leakages immediately to make Generator Car free from oil & water tracing	✓	✓	✓	R
V.	Check and clean engine & its oil tray to make it free from any oil traces & dust	✓	✓	✓	✓
VI.	Drain water from fuel water separator through drain valve	✓	✓	✓	✓
VII.	Crankcase breather tube/collector, Check for condensed oil. Drain and dispose of in accordance with local legislation.	✓	✓	✓	✓
VIII.	Crankcase breather tube/collector, Check for	✓	✓	✓	✓

S.N.	Equipment/ Maintenance Activity	A Check	B Check	C Check	D Check
	cracks, material deterioration and general damage.				
IX.	Check engine coolant heater, if available	✓	✓	✓	✓
X.	Replace water separator element.	--	✓	✓	✓
XI.	Change fuel filters (Suction & Pressure)	--	✓	✓	✓
XII.	Check hose condition: fuel supply & drain line	--	✓	✓	✓
XIII.	Inspect fuel system & fuel line and attend same, if required	--	✓	✓	✓
XIV.	Check & clean the tank and Non Return Valve and attend the same, if required	--	--	--	✓
XV.	Check fuel Injectors, replace as necessary on condition bases	--	--	--	✓
XVI.	Servicing & calibration of Fuel pump along with replacement of requisite parts on condition basis	--	--	--	✓
XVII.	Replacement of all filters and rubber hoses and clamps of fuel line.	--	--	--	✓
<b>4.</b>	<b>Lubricating system</b>				
I.	Check lube oil level and condition of lube oil. See reason of less oil and top up/refill, if required	✓	✓	✓	✓
II.	Change lube oil filters.	--	✓	✓	✓
III.	Change lube oil.	--	✓	✓	✓
IV.	Change super by pass filters,	--	✓	✓	✓
V.	Check Lube Oil Pressure (LOP) Gauge/Sensor	--	✓	✓	✓
VI.	Check Lube Oil Temperature (LOT) Gauge/Sensor	--	✓	✓	✓
VII.	Check the filter for any metal particles due to wear and tear of any part inside engine.	--	✓	✓	✓
<b>5.</b>	<b>Cooling System</b>				
I.	Check Radiator air flow	✓	✓	✓	✓
II.	Fill the cooling system to the bottom of the fill neck in the radiator fill or expansion tank. Do not check while the engine is hot.	✓	✓	✓	✓
III.	Make sure that the cooling air inlets/outlets are unobstructed	✓	✓	✓	✓
IV.	Visually inspect the fan blades through the	✓	✓	✓	✓

S.N.	Equipment/ Maintenance Activity	A Check	B Check	C Check	D Check
	guarding for signs of wear or damage.				
V.	Visually check water pump belt for evidence of wear or slippage.	✓	✓	✓	✓
VI.	Check coolant lines and radiator hoses for leaks, wear, and cracks	✓	✓	✓	✓
VII.	Check anti-freeze and DCA concentration with test strip	✓	✓	✓	✓
VIII.	Check and ensure proper coolant Ph value,	--	✓	✓	✓
IX.	Coolant filter replacement if applicable	--	✓	✓	✓
X.	Check and replace RFR, if required	--	✓	✓	✓
XI.	Check and ensure proper Cleaning of Breather,	--	✓	✓	✓
XII.	Check and ensure proper Water Temp. Gauge / Sensor	--	✓	✓	✓
XIII.	Check Drive belt tension	--	✓	✓	✓
XIV.	Check Coolant heater if applicable	--	✓	✓	✓
XV.	Check water pump belt tensioner & VEEP hole	--	✓	✓	✓
XVI.	Check after cooler core if clogged	--		✓	✓
XVII.	Replace belt of water pump	--		✓	✓
XVIII.	Check radiator cap sealing if seal is damaged replace it with new one.	--	--	--	✓
XIX.	Servicing & calibration of Water pump along with replacement of requisite parts	--	--	--	✓
XX.	Replace coolant	--	--	--	✓
XXI.	Replacement of all filters and rubber hoses and clamps of water line.	--	--	--	✓
<b>6.</b>	<b>Engine Components</b>				
I.	Replacement of tappet cover gasket.	--	--	✓	✓
II.	Proper tappet setting. if required	--	--	✓	✓
III.	Check and ensure proper condition of accessories drive, Turbo charger and crankshaft end play.	--	--	--	✓
IV.	Check and ensure proper setting of injector.	--	--	--	✓
V.	Servicing of Turbocharger along with replacement of requisite parts	--	--	--	✓
VI.	Servicing & calibration of Injector assembly	--	--	--	✓

S.N.	Equipment/ Maintenance Activity	A Check	B Check	C Check	D Check
	along with replacement of requisite parts				
<b>7</b>	<b>Safety Items</b>				
I.	Make sure that the emergency stop button is fully operational	✓	✓	✓	✓
II.	Take blow by on full load as per manufacturer's guidelines.	--	--	✓	✓
<b>8</b>	<b>Miscellaneous Items</b>				
I.	Check and ensure proper condition of mounting bolts and various vibration dampers/ anti vibration pads etc.	✓	✓	✓	✓
II.	Check and ensure proper cleaning of floor, wall etc. in engine room	✓	✓	✓	✓
III.	Check all engine harness retention/clipping points	✓	✓	✓	✓
IV.	Check operation of control panel	✓	✓	✓	✓
V.	Checking and ensuring that all nut bolts should be tightened as per specified torque by OEMs	--	--	--	✓

### 13.18.2 CPCB 2 Engine

Cummins Diesel Engines (CPCB-2) Maintenance Schedules Periodicity are as under:

Make	A	B	C	D	E
M/s Cummins	Every Round Trip	12 Months or 500 Hrs.	36 Months or 1500 Hrs.	72 Months or 6000 Hrs.	On condition basis

### MAINTENANCE SCHEDULES ACTIVITY (CPCB-2) Engine

S.N.	Equipment/ Maintenance Activity	A Check	B Check	C Check	D Check
<b>1.</b>	<b>Air Intake system</b>				
I.	Check vacuum indicator for red band	✓	✓	✓	✓
II.	Clean air filter element if vacuum indicator showing Red band	✓	✓	✓	✓
III.	Check condition of element for chocking/ torn sealing and attend same,	--	✓	✓	✓
IV.	Check and ensure proper condition of Pre-Cleaner	--	✓	✓	✓
V.	Check and change Air cleaner element if required	--	✓	✓	✓
VI.	Check and ensure proper condition of air hose	--	✓	✓	R
VII.	Replacement of air filter (inner & outer).	--	--	✓	✓
VIII.	Check Sealing of the air filter element	--	--	✓	✓
IX.	Replacement of vacuum indicator	--	--	--	✓
X.	Check turbocharger and clearance	--	--	--	✓
XI.	Replacement of all rubber hoses and clamps of air line.	--	--	--	✓
XII.	Cleaning of after Cooler/intake	--	--	--	✓
<b>2.</b>	<b>Exhaust System</b>				
I.	Check Exhaust Outlet for: a) Exhaust components are secured and not warped. b) The exhaust outlet is unobstructed. c) No combustible materials are near the system. d) Gases are discharged away from openings. e) There are no leaks and that all fittings are tight.	✓	✓	✓	✓

S.N.	Equipment/ Maintenance Activity	A Check	B Check	C Check	D Check
II.	Check exhaust condensation trap	✓	✓	✓	✓
III.	Remove the heat insulation from Exhaust Pipelines and Manifold and replace with new after checking of leakage in exhaust system	--	--	--	✓
<b>3.</b>	<b>Fuel system</b>				
I.	Check the engine fuel level and make sure that the correct level is always maintained.	✓	✓	✓	✓
II.	All the valves (Fuel supply) required for operation are open	✓	✓	✓	✓
III.	Check leakage of fuel, lubricating oil and coolant. Attend, if required	✓	✓	✓	✓
IV.	Check all hoses, pipes for any leakage. Arrest all leakages immediately to make Generator Car free from oil & water tracing	✓	✓	✓	R
V.	Check and clean engine & its oil tray to make it free from any oil traces & dust	✓	✓	✓	✓
VI.	Drain water from fuel water separator through drain valve	✓	✓	✓	✓
VII.	Crankcase breather tube/collector, Check for condensed oil. Drain and dispose of in accordance with local legislation.	✓	✓	✓	✓
VIII.	Crankcase breather tube/collector, Check for cracks, material deterioration and general damage.	✓	✓	✓	✓
IX.	Check engine coolant heater, if available	✓	✓	✓	✓
X.	Replace water separator element.	--	✓	✓	✓
XI.	Change fuel filters (Suction & Pressure)	--	✓	✓	✓
XII.	Check hose condition: fuel supply & drain line	--	✓	✓	✓
XIII.	Inspect fuel system & fuel line and attend same, if required	--	✓	✓	✓
XIV.	Check & clean the tank and Non Return Valve and attend the same, if required	--	--	--	✓
XV.	Check fuel Injectors, replace as necessary on condition bases	--	--	--	✓
XVI.	Servicing & calibration of Fuel pump along with replacement of requisite parts	--	--	--	✓
XVII.	Replacement of all filters and rubber hoses and clamps of fuel line.	--	--	--	✓
<b>4.</b>	<b>Lubricating system</b>				
I.	Check lube oil level and condition of lube oil.	✓	✓	✓	✓



S.N.	Equipment/ Maintenance Activity	A Check	B Check	C Check	D Check
	See reason of less oil and top up/refill, if required				
II.	Change lube oil filters.	--	✓	✓	✓
III.	Change lube oil.	--	✓	✓	✓
IV.	Change super by pass filters.	--	✓	✓	✓
V.	Check Lube Oil Pressure (LOP) Gauge/Sensor	--	✓	✓	✓
VI.	Check Lube Oil Temperature (LOT) Gauge/Sensor	--	✓	✓	✓
VII.	Check the filter for any metal particles due to wear and tear of any part inside engine.	--	✓	✓	✓
<b>5.</b>	<b>Cooling System</b>				
I.	Check Radiator air flow	✓	✓	✓	✓
II.	Fill the cooling system to the bottom of the fill neck in the radiator fill or expansion tank. Do not check while the engine is hot.	✓	✓	✓	✓
III.	Make sure that the cooling air inlets/outlets are unobstructed	✓	✓	✓	✓
IV.	Visually inspect the fan blades through the guarding for signs of wear or damage.	✓	✓	✓	✓
V.	Visually check water pump belt for evidence of wear or slippage.	✓	✓	✓	✓
VI.	Check coolant lines and radiator hoses for leaks, wear, and cracks	✓	✓	✓	✓
VII.	Check anti-freeze and DCA concentration with test strip	✓	✓	✓	✓
VIII.	Check and ensure proper coolant Ph value.	--	✓	✓	✓
IX.	Check and replace RFR, if required	--	✓	✓	✓
X.	Check and ensure proper Cleaning of Breather.	--	✓	✓	✓
XI.	Check and ensure proper Water Temp. Gauge / Sensor	--	✓	✓	✓
XII.	Check Drive belt tension	--	✓	✓	✓
XIII.	Check water pump belt tensioner & VEEP hole	--	✓	✓	✓
XIV.	Check coolant heater if applicable.	--	✓	✓	✓
XV.	Check after cooler core if clogged	--	--	✓	✓
XVI.	Replace belt of water pump	--	--	✓	✓
XVII.	Check radiator cap sealing if seal is damaged, replace it with new one.	--	--	--	✓

S.N.	Equipment/ Maintenance Activity	A Check	B Check	C Check	D Check
XVIII.	Servicing & calibration of Water pump along with replacement of requisite parts	--	--	--	✓
XIX.	Replace coolant	--	--	--	✓
XX.	Replacement of all filters and rubber hoses and clamps of water line.	--	--	--	✓
<b>6.</b>	<b>Engine Components</b>				
I.	Replacement of tappet cover gasket.	--	--	✓	✓
II.	Proper tappet setting. if required	--	--	✓	✓
III.	Check and ensure proper condition of accessories drive, Turbo charger and crankshaft end play.	--	--	--	✓
IV.	Check and ensure proper setting of injector.	--	--	--	✓
V.	Servicing of Turbocharger along with replacement of requisite parts	--	--	--	✓
VI.	Servicing & calibration of Injector assembly along with replacement of requisite parts	--	--	--	✓
<b>7.</b>	<b>Safety Items</b>				
I.	Make sure that the emergency stop button is fully operational	✓	✓	✓	✓
II.	Take blow by on full load as per manufacturer's guidelines.	--	--	✓	✓
<b>8.</b>	<b>Miscellaneous Items</b>				
I.	Check and ensure proper condition of mounting bolts and various vibration dampers/ anti vibration pads etc.	✓	✓	✓	✓
II.	Check and ensure proper cleaning of floor, wall etc in engine room	✓	✓	✓	✓
III.	Check all engine harness retention/clipping points	✓	✓	✓	✓
IV.	Check operation of control panel	✓	✓	✓	✓
V.	Checking and ensuring that all nut bolts should be tightened as per specified torque by OEMs	--	--	--	✓

### Under-Slung Power Car Mounting schedules

( Schedules for Under slung power car engine and related components is same as Power car engine schedules issued for on board type power car)

S.N.	Equipment/ Maintenance Activity	A Check	B Check	C Check	D Check	Remarks
I.	Visual Check AVM	✓	✓	✓	✓	
II.	Check Spacers on AVM's on both side	✓	✓	✓	✓	
III.	Check Spacer should be aligned to parallel to each other	✓	✓	✓	✓	
IV.	Check safety brackets (RCF CAI No.ED/CAI/042 dated 27.06.2025)	✓	✓	✓	✓	
V.	Check the condition of anti fall arrangement bolt,nut & washer	✓	✓	✓	✓	
VI.	General Check Engine Mounting	✓	✓	✓	✓	
VII.	General Check Engine Support Bracket – Front side	✓	✓	✓	✓	
VIII.	Check J Bracket Torqued	--	✓	✓	✓	
IX.	Remove J-Bracket for inspection and torqueing	--	--	✓	✓	

## 13.20 MAINTENANCE SCHEDULES OF DIESEL ENGINES FOR KILOSKAR ENGINE LTD. (KOEL) MAKE

### 13.20.1 CPCB-4+ Engine

KOEL Diesel Engines (CPCB- 4+) Maintenance Schedules Periodicity are as under:

Make	A	B	C	D	E
<b>M/s Kirloskar Engine Ltd. (KOEL)</b>	Every Round Trip	12 Months or 500 Hrs.	36 Months or 1500 Hrs.	72 Months or 6000 Hrs.	On condition basis

### MAINTENANCE SCHEDULES ACTIVITY (CPCB-4+) Engine

S.N.	Equipment/ Maintenance Activity	A Check	B Check	C Check	D Check
<b>1.</b>	<b>Intake System</b>				
I.	Check air cleaner Restriction/ Vacuum indicator. If it is red, replace outer element	✓	✓	✓	R
II.	Ensure availability of Dust Evacuator Tube & its condition	✓	✓	✓	✓
III.	Check & Replace all rubber hoses and clamps	--	✓	✓	R
IV.	Replace the air cleaner Outer and Inner element	--	--	R	R
V.	Servicing & calibration of Turbocharger along with replacement of requisite parts	--	--	--	✓
<b>2.</b>	<b>Exhaust System</b>				
I.	Check DEF level, Top up if required. (DEF as per ISO -22241-1)	✓	✓	✓	✓
II.	Check DEF for leakage from hoses and joints	✓	✓	✓	✓
III.	Check DEF line pipes for no damage and proper routing	✓	✓	✓	✓
IV.	Check mounting and connectors of EGT (Exhaust Gas Treatment System)	✓	✓	✓	✓
V.	Check for Exhaust Gas Leakage	✓	✓	✓	✓
VI.	Check mounting, connectors Dosing module and supply module	✓	✓	✓	✓
VII.	Check for DEF Sedimentation in DEF tank and Dosing Module	--	✓	✓	✓
VIII.	Clean DEF tank strainer filter	--	✓	✓	✓
IX.	Replace the DEF tank filter and supply module filter	--	✓	✓	✓
X.	Perform De-sox	--	✓	✓	✓
XI.	Check exhaust bellow condition.	--	✓	✓	✓
XII.	Check and adjust valve clearance for Intake /Exhaust valve	--	--	✓	✓
XIII.	Replace DEF tank vent line with filter	--	--	--	✓

S.N.	Equipment/ Maintenance Activity	A Check	B Check	C Check	D Check
XIV.	Replace DEF tank strainer filter	--	--	--	✓
<b>3.</b>	<b>Fuel system</b>				
I.	Check fuel level	✓	✓	✓	✓
II.	Drain Water from Fuel Water Separator	✓	✓	✓	✓
III.	Check and arrest the leakage in fuel lines and banjo joints	✓	✓	✓	✓
IV.	Check the flexible fuel pipe/hoses conditions	--	✓	✓	✓
V.	Replace Pre Fuel Filter Cartridge (water separator)	--	R	R	R
VI.	Replace the fuel filter / element	--	R	R	R
VII.	Servicing of centrifugal filter along with replacement of requisite parts	--	✓	✓	✓
VIII.	Servicing of feed pump along with replacement of requisite parts	--	--	--	✓
<b>4.</b>	<b>Lubricating system</b>				
I.	Check for oil leakage	✓	✓	✓	✓
II.	Check the oil level, Top up, when oil level reaches low mark	✓	--	--	--
III.	Replace Lube Oil	--	R	R	R
IV.	Replace the lube oil filter	--	R	R	R
<b>5.</b>	<b>Cooling System</b>				
I.	Check for leakage (hoses condition, clamp tightness)	✓	✓	✓	✓
II.	Visual check Belt/V-Belt for any damages	✓	✓	✓	✓
III.	Check Matchweld coupling of cooling system & Replace if required	--	✓	✓	✓
IV.	Check & Adjust the V-belt tension	--	✓	✓	✓
V.	Check the radiator core earthing Connection	--	✓	✓	✓
VI.	Check residual voltage in engine coolant	--	✓	✓	✓
VII.	Check Water pump weep hole and coolant leakage	--	✓	✓	✓
VIII.	Check the radiator & hoses	--	✓	✓	✓
IX.	Check and replace RFR, If required	--	✓	✓	✓
X.	Check and clean Charge Air Cooler fins	--	✓	✓	✓
XI.	Check and ensure proper coolant Ph value,	--	✓	✓	✓
XII.	Replace V-Belts	--	--	R	R
XIII.	Replace the Coolant	--	--	--	R
<b>6.</b>	<b>Engine operation</b>				
I.	Ensure battery charging system is functioning	✓	✓	✓	✓
II.	Check genset safety system	--	✓	✓	✓
III.	Servicing of Cylinder Head	--	--	--	✓

S.N.	Equipment/ Maintenance Activity	A Check	B Check	C Check	D Check
<b>7.</b>	<b>Electrical System</b>				
I.	Check earthing Connections	--	✓	✓	✓
II.	Servicing & repairing of Self starter.	--	--	--	✓
<b>8.</b>	<b>Miscellaneous Items</b>				
I.	Check operation Emergency stop switch	✓	✓	✓	✓
II.	Check operation and visual inspection of controller unit	✓	✓	✓	✓
III.	Check Fault codes on controller screen	✓	✓	✓	✓
IV.	Check and tighten all external fasteners	--	✓	✓	✓
V.	Replace all Hoses & their Clamps/ Clips	--	--	--	R

### 13.20.2 CPCB-2 Engine

KOEL Diesel Engines (CPCB-2) Maintenance Schedules Periodicity are as under:

Make	A	B	C	D	E
M/s Kirloskar Engine Ltd. (KOEL)	Every Round Trip	12 Months or 500 Hrs.	36 Months or 1500 Hrs.	72 Months or 6000 Hrs.	On condition basis

### MAINTENANCE SCHEDULES ACTIVITY (CPCB-2) Engine

S.N.	Equipment/ Maintenance Activity	A Check	B Check	C Check	D Check
<b>1.</b>	<b>Intake System</b>				
I.	Check air cleaner Restriction/ Vacuum indicator. If it is red replace outer element	✓	✓	✓	R
II.	Ensure availability of Dust Evacuator Tube & its condition	✓	✓	✓	✓
III.	Check & Replace all rubber hoses and clamps	--	✓	✓	R
IV.	Replace the air cleaner Outer and Inner element	--	--	R	R
V.	Servicing & calibration of Turbocharger along with replacement of requisite parts	--	--	--	✓
<b>2.</b>	<b>Exhaust System</b>				
I.	Check exhaust bellow condition.	--	✓	✓	✓
II.	Check and adjust valve clearance for Intake /Exhaust valve	--	--	✓	✓
<b>3</b>	<b>Fuel system</b>				
I.	Check fuel level	✓	✓	✓	✓
II.	Drain Water from Fuel Water Separator	✓	✓	✓	✓
III.	Check and arrest the leakage in fuel lines and banjo joints	✓	✓	✓	✓
IV.	Check the flexible fuel pipe/hoses conditions	--	✓	✓	R
V.	Replace Pre Fuel Filter Cartridge (water separator)	--	R	R	R
VI.	Replace the fuel filter / element	--	R	R	R
VII.	Servicing of centrifugal filter along with replacement of requisite parts	--	✓	✓	✓
VIII.	Servicing & calibration of Fuel pump along with replacement of requisite parts	--	--	--	✓
IX.	Servicing & calibration of Injector assembly along with replacement of requisite parts	--	--	--	✓
X.	Servicing of feed pump along with replacement of requisite parts	--	--	--	✓
<b>4.</b>	<b>Lubricating system</b>				

S.N.	Equipment/ Maintenance Activity	A Check	B Check	C Check	D Check
I.	Check for oil leakage	✓	✓	✓	✓
II.	Check the oil level, Top up, when oil level reaches low mark	✓	--	--	--
III.	Replace lube oil	--	R	R	R
IV.	Replace the lube oil filter	--	R	R	R
<b>5.</b>	<b>Cooling System</b>				
I.	Check for leakage (hoses condition, clamp tightness)	✓	✓	✓	✓
II.	Visual check Belt/V-Belt for any damages	✓	✓	✓	✓
III.	Check Matchweld coupling of cooling system & Replace if required	--	✓	✓	✓
IV.	Check and ensure proper coolant Ph value,	--	✓	✓	✓
V.	Check & Adjust the V-belt tension	--	✓	✓	✓
VI.	Check the radiator core earthing Connection	--	✓	✓	✓
VII.	Check residual voltage in engine coolant	--	✓	✓	✓
VIII.	Check Water pump weep hole and coolant leakage	--	✓	✓	✓
IX.	Check the radiator & hoses	--	✓	✓	✓
X.	Check and replace RFR, If required	--	✓	✓	✓
XI.	Replace V-Belts	--	--	R	R
XII.	Check & clean charge air cooler fins	--	--	✓	✓
XIII.	Replace the coolant	--	--	--	R
<b>6.</b>	<b>Engine operation</b>				
I.	Ensure battery charging system is functioning	✓	✓	✓	✓
II.	Check genset safety system	--	✓	✓	✓
III.	Servicing of Cylinder Head	--	--	--	✓
<b>7.</b>	<b>Electrical System</b>				
I.	Check earthing Connections	--	✓	✓	✓
II.	Servicing & repairing of Self starter.	--	--	--	✓
<b>8.</b>	<b>Miscellaneous Items</b>				
I.	Check operation Emergency stop switch	✓	✓	✓	✓
II.	Check operation and visual inspection of controller unit	✓	✓	✓	✓
III.	Check Fault codes on controller screen	✓	✓	✓	✓
IV.	Check and tighten all external fasteners	--	✓	✓	✓
V.	Replace all Hoses & their Clamps/ Clips	--	--	--	R