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संख्याः टीएम/एच एम/एमडीयू/पार्ट–III **दिनांक –As signed**

I-	मुख्य अभियन्ता (ट्रैक मशीन)सभी क्षेत्रिय रेलवे	**Chief Engineer (Track Machines) All Zonal Railways**
II-	मुख्य कार्यशालाप्रबन्धक (ट्रैक मशीन) सी.पी.ओ.एच. कार्यशाला प्रयागराज , रायनापाडु, कंचरापारा, अहमदाबाद,	**Chief Workshop Manager (Track Machines) CPOH Workshop, Prayagraj , Rayanapadu, Kachrapara, Ahmedabad**
III-	प्रधानाचार्य भा.रे.रे.प.म.प्र.के. पीपलगांव प्रयागराज–211011	**Principal, IRTMTC, PipalGaon, Prayagraj-211011**
	Details of addresses are enclosed herewith.	

विषय: एम डी यू प्लाज़र मॉडल एम ऍफ़ एस -120 (मशीन सं. 1201 – 1208 हेतु मान्य) मशीन की अनुरक्षण अनुसूची पुस्तिका।

Sub: Maintenance schedule manual of MDU Plasser model MFS-120 machine (applicable for machine no. 1201-1208).

एम डी यू प्लाज़र मॉडल एम ऍफ़ एस -120 (मशीन सं. 1201 – 1208 हेतु मान्य) मशीन की अनुरक्षण अनुसूची पुस्तिका का मसौदा ओ• ई• एम• द्वारा प्रदत्त अनुरक्षण कैटेलॉग एवम् फील्ड में कार्यरत कर्मचारियों के सुझावों के आधार पर तैयार कर पत्र सं॰ TM/HM/MDU/Pt-III दिनांक 23.06.2023 द्वारा 30 दिनों के लिए और अनंतिम अनुरक्षण अनुसूची पुस्तिका पत्र सं॰ TM/HM/MDU /Pt-III दिनांक 01.02.2024 द्वारा 15 दिनों के लिए सभी क्षेत्रीय रेलवे, सी.पी.ओ.एच. एवं भा.रे.रे.प.म.प्र.के. को जारी किया गया था। परन्तु क्षेत्रीय रेलवे, सी.पी.ओ.एच. एवं भा.रे.रे.प.म.प्र.के से अभी तक कोई भी सुझाव/टिप्पणी प्राप्त नहीं हुई है। अब अनुरक्षण अनुसूची पुस्तिका अतिंम रूप से तैयार किया गया है, जिसकी एक प्रति आपके सूचनार्थ एवम् फील्ड में कार्यरत कर्मचारियों के मार्गदर्शन हेतु संलग्न है। यद्यपि उपरोक्त पुस्तिका बनाते समय सभी सावधानियां बरती गई है, फिर भी यदि कोई त्रुटि हों तो कृपया सुधार हेतु अपने सुझावों/टिप्पणियों को ई–मेल/पत्राचार द्वारा अधोहस्ताक्षरी को अवश्य भेजे।

On the basis of maintenance manuals provided by OEM and suggestions received from field staff, Draft maintenance schedule manual of MDU Plasser model MFS-120 machine (applicable for machine no. 1201-1208) had been prepared and circulated to all zonal railways, C.P.O.Hs & IRTMTC vide letter no, TM/HM/MDU/Pt.-III dated: 23.06.2023 for 30 days and further provisional Maintenance schedule manual circulated vide letter no, TM/HM/MDU/Pt.-III dated: 01.02.2024 for 15 days. No comments have been received from zonal railways, C.P.O.Hs & IRTMTC till date. Now the maintenance schedule manual has been finalized. A copy of the same is enclosed herewith for your kind information and guidance of the machine staff working in the field. Although every care has been taken during preparation of above said manual, however the discrepancy noticed, if any, may kindly be brought to the knowledge of the undersigned for further improvement by e-mail/post.

Email address: hmtmmrdso@gmail.com

संलग्नक : उपरोक्त।

AMAR DEV MAURYA
Digitally signed by AMAR DEV MAURYA
Date: 2024.02.28 15:45:47 +05'30'

(अमर देव मौर्य)
निदेशक रेलपथ मशीन – III

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भारत सरकार
रेल मंत्रालय

GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS

MAINTENANCE SCHEDULE MANUAL FOR
MUCK DISPOSAL UNIT (MFS-120) (Non-retractable conveyor)

(Applicable for machine no. 1201-1208)

Report No.TM - 303

February-2024

अनुसंधान अभिकल्प और मानक संगठन लखनऊ–226011
RESEARCH DESIGNS & STANDARDS ORGANISATION LUCKNOW- 226011

PREFACE

Maintenance of On-Track Machines is a challenging task. Maintenance of these machines is being done by Zonal Railways with the assistance of local trade available, Zonal Track Machine Workshops, CPOHs and RDSO/Lucknow. With experience over the years, the railway engineers have developed adequate expertise in the maintenance of these machines. However, in absence of approved maintenance instructions, different maintenance practices have come into vogue. Therefore, it has become imperative to have a uniform maintenance standard throughout the Indian Railways.

This Maintenance Schedule manual for MUCK DISPOSAL UNIT (MFS-120) (Non retractable conveyor) has been prepared on the basis of Maintenance instruction given by OEM and IRTMM-2019. Suggestions/instructions given by OEM from time to time shall also be followed in addition to this manual. The manual is prepared for those items which are required for day to day maintenance. Apart from these instructions if any part of machine fails/breakdown that shall be attended immediately by the railway. The oiling and greasing shall be done of every moving part where as required in addition to manual depending on discretion of machine in charge. Sometime, if machine is modified/altered on the basis of experience or OEM suggestion that shall also be undertaken in the maintenance practice.

While every care has been taken to make the maintenance schedules quite exhaustive, there is always scope for further improvement. Suggestions from the railways in this regard will be welcome and may be sent to the undersigned for future improvement.

February -2024

(A.D.Maurya)
Director/Track Machine-III
RDSO/Lucknow- 226011

EXPLANTORY NOTES

While preparing text of schedules for maintenance of Muck Disposal Unit (Non retractable conveyor) (MFS-120), the terms used and their meanings are explained below:-

CHECK - Ensure a specific condition does or does not exist

INSPECT - Look for damage and defects including breakage, distortion, cracks, corrosion and wear, check for leaks, security and that all items are completed

CHANGE - Fit new or overhauled or reconditioned part in place of old parts and missing parts

OVERHAUL - Dismantle, examine, recondition or renew parts as necessary against given specifications, reassemble, inspect and test

Maintenance Schedule for Muck Disposal Unit (Non retractable conveyor) (MFS-120)

S. N	Schedule	Periodicity	Duration	Location
1.	Schedule-I	Daily/ before working and running.	One hour	In the track Machine siding
2.	Schedule-II	50 Engine hrs.	Two hrs.	-do-
3.	Schedule-III	100 Engine hrs.	One day	-do-
4.	Schedule-IV	200 Engine hrs.	Two days	-do-
5.	Schedule-V	1000 Engine hrs.	7 days	In Satellite Depot/Zonal Workshop
6.	Schedule-VI	2000 Engine hrs.	15 days	In Zonal Workshop
7.	Schedule-VII	1st 8000. 2nd 14000 and then @ 4000 Engine hrs.	1st POH-45 days, 2nd POH-60days	Zonal Workshop /CPOH Workshop

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Note: - The entire maintenance schedule includes all previous maintenance schedules.

SCHEDULE -- I

(TO BE DONE DAILY)
DURATION ONE HOUR

1.	**Engine (CUMMINS) QSB 6.7 141 KW with diesel fuel particulate filter @2300 rpm**
1.1.	Visual check coolant level in radiator and top up if required.
1.2.	Visual check the engine oil level and top up if required
1.3.	Check fuel level and top up if required
1.4.	Visual check the air cleaner chocking indicator. If indicator is red, the outer filter is to be cleaned
1.5.	Check the engine for any abnormal sound.
1.6.	Check, if there is excessive consumption of lube oil or water.
1.7.	Check the exhaust of engine, get the engine attended by service engineer if excessive smoke is observed.
1.8.	Check the leakage from hoses, water pump seal etc. and do the needful
1.9.	Visual Check the leakage from fuel pump, injectors, fuel supply and return pipes and do needful
1.10.	Visual check the tension and condition of V-belts and do needful
1.11.	Clean the engine and premises
1.12.	Check the engine oil pressure at idle rpm
1.13.	Check engine oil pressure on load after two hours working
1.14.	Check the battery charging system
1.15.	Drain the air reservoir after the day's work
1.16.	Record the maximum engine temperature of the day's work
1.17.	Drain sediments from fuel tank
1.18.	Drain water separator
1.19.	Empty the dust discharge valve on the air filter of the diesel engine
2.	**Power Transmission and Gear box**
2.1.	Check supply pressure in transmission gear box
2.2.	Check supply pressure in lubrication system
2.3.	Check oil level of axle gear box and do needful
3.	**Conveyor belt**
3.1.	Activate electrical chain lubrication
3.2.	Check wiper
3.3.	Remove dirt deposits near the drive and deflection stations (especially before towing because of material hardening).
3.4.	Unload and check conveyor belts for abnormal damage while idling.
4.	**Hydraulic**
4.1.	Check and top up hydraulic oil tank if required
4.2.	Check hydraulic system for leaks and hydraulic hoses for chafing, deformation, cracks and leaks
4.3.	Record the maximum temperature of hydraulic fluid during the day's work
5.	**Pneumatic**
5.1.	Check air brake pressure at locking position
5.2.	Check pneumatic system for any air leakage

5.3.	Check emergency brake operation
5.4.	Check indirect brake operation
5.5.	Check function of horns
6.	**Mechanical**
6.1.	Lubricate the slewing system and its bushing
6.2.	Grease the sliding pads
6.3.	Grease the hinge pin
6.4.	Grease the dual slide control
6.5.	Apply lube oil on bush bearing
7.	**Under Frame Maintenance**
7.1.	**Under Frame**
7.1.1.	Visually examine center pivot mounting bolts and attend if needed
7.1.2.	Check condition of head stock/sole bar
7.1.3.	Visually examine the shock absorbers for damages
7.1.4.	Visually inspect center pivot cover
7.1.5.	Visually examine and attend safety loops of bolster
7.2.	**Brake Rigging & Brake System**
7.2.1.	Check and attend brake shoe and key & replace if necessary
7.2.2.	Visually inspect brake hangers, brake gear pins and cotters/split pins and replace if necessary
7.3.	**Bogie Frame & Suspension**
7.3.1.	Visually examine the condition of bogie frame and welded locations
7.4.	**Buffing Gear**
7.4.1.	Visually examine buffer plungers for damages/drooping/stroke length
7.4.2.	Examine buffer mounting bolts and attend if necessary
7.4.3.	Examine visually buffer casing for cracks/damages & height
7.5.	**Running Gear And Wheels**
7.5.1.	Examine visually axle box for grease oozing out, warm box if any
7.5.2.	Visually inspect axle box covers
8.	**General**
8.1.	Check for any unusual sound from gear boxes, engine & hydraulic pumps
8.2.	Check all spares & tools for emergency as per Annexure – I
8.3.	Check all the functions of machine before block working

SCHEDULE -- II

(TO BE DONE AFTER 50 HOURS OF ENGINE RUNNING)
DURATION- TWO HOURS

1.	**Engine (CUMMINS) QSB 6.7 141 KW with diesel fuel particulate filter @2300 rpm**
1.1.	Apply petroleum jelly on battery terminal
1.2.	Lubricate the radiator fan shaft with grease
1.3.	Check the leakage from fuel line
1.4.	Check battery terminal and connection for tightness
1.5.	Check injector pipes for any rubbing and do needful
1.6.	Top up air oiler if required
2.	**Power Transmission and Gear box**
2.1.	Check nut bolts of transmission gear box
2.2.	Lubricate all dirt repelled with grease (Shell Gadus S2).
2.3.	Check leaking oil lines or wet split lines of transmission gear box
2.4.	Grease all brake linkages
2.5.	Lubricate the axle torque support with grease
2.6.	Lubricate the Chain with lubricant (Shell Spirax G 80W-90).
3.	**Conveyor belt**
3.1.	Lubricate the drive stations of the container belt
3.2.	Lubricate the deflection station of the swivel belt
3.3.	Lubricate drive motors for extending / retracting the swivel belt
3.4.	Check the oil level in the drive stations of the container belt
3.5.	Lubricate the support rollers and carriage of the belt support.
4.	**Hydraulic**
4.1.	Check hydraulic system operating pressure
4.2.	Check wear of sliding pads of telescopic cylinder.
5.	**Pneumatic**
5.1.	Check safety devices: emergency stop, emergency brake and system stop
5.2.	Empty drip cup
5.3.	Clean & lubricate all link rods, pivots and rocker bearing of brake assemblies
5.4.	Check the operation of SA-9 valve and reset, if required
6.	**Mechanical**
6.1.	Check condition of hook
6.2.	Check oil level of all gear boxes and fill up-to the mark ,If required
6.3.	Adjust the clearance of all brake shoes
6.4.	Check brake linkage and oil the pivots
7.	**Electrical**
7.1.	Clean alternator and check connections.
8.	**Under Frame Maintenance:**
8.1.	**Brake Rigging & Brake System**
8.1.1.	Check brake gear and adjust so that the piston stroke is within the limit
8.1.2.	Visually examine brake beams breakages/damages
8.1.3.	Examine and attend brake levers
8.1.4.	Visually inspect for damage on brake pipe, replace if required
8.1.5.	Check and attend brake beam safety wire rope/safety straps

8.1.6.	Check and replace worn brake blocks
8.1.7.	Visually check for hand brake chain rope, sprocket & floating lever and attend if needed
8.1.8.	Check cutoff angle cock for leakage, attend if needed
8.2.	**Bogie Frame & Suspension**
8.2.1.	Examine bolster safety straps/loops for damage/broken suspension system/missing
8.3.	**Draw Gear**
8.3.1.	Examine draw hook, draw bars, rubber pads for damages
8.3.2.	Examine visually draft key locking pins
8.3.3.	Check and replace damage/missing split pins
8.4.	**Running Gear And Wheels**
8.4.1.	Inspect wheel tread for shattered rim, spread rim, shelled tread, thermal cracks and heat checks
9.	**General**
9.1.	Clean the complete machine

SCHEDULE -- III

(TO BE DONE AFTER 100 HOURS OF ENGINE RUNNING)
DURATION- ONE DAY

1.	**Engine (CUMMINS) QSB 6.7 141 KW with diesel fuel particulate filter @2300 rpm**
1.1.	Check engine temperature safety device.
1.2.	Check lube oil pressure safety device.
1.3.	Examine the mounting bolts of the engine.
1.4.	First time change of lube should be done, 100 hrs after commissioning.
1.5.	First time change of lube oil filter and by pass filter after commissioning.
1.6.	Inspect the water separator for proper functioning.
1.7.	Check the throttle control linkages.
2.	**Power Transmission and Gear box**
2.1.	Check the tightness of cardon shaft bolts.
2.2.	Grease the cardon shafts.
2.3.	Grease king pin pivot of driving & idle bogies.
2.4.	Check the transmission shift control linkage and the Directional linkage.
3.	**Conveyor belt**
3.1.	Check the tension of the hollow pin chains located on the conveyor belts
3.2.	Check the sprockets of the drive and reversing stations for wear
3.3.	Check preload of the support strips
3.4.	Lubricate the lifting linkage of the swivel belt
3.5.	Lubricate the guide of the lifting device of the container
3.6.	Lubricate the turntable of the swivel belt
3.7.	**Pneumatic**
3.8.	Check the functioning of backup system
4.	**Mechanical**
4.1.	Check universal joints for play and replace, if required
4.2.	Check foundation bolts of brake cylinder
4.3.	Check the condition of brake shoes, replace if required
4.4.	Grease torque arm pivot
5.	**Electrical**
5.1.	Check all lights and do needful
6.	**Under Frame Maintenance:**
6.1.	**Draw Gear**
6.1.1.	Check condition of draw beam and locating pins on it
6.2.	**Running Gear And Wheels**
6.2.1.	Visually examine wheel tyre profile and thickness of tyre and check with tyre profile gauge if they appear to be near condemning limit

SCHEDULE – IV

(TO BE DONE AFTER 200, 400, and 800 HOURS OF ENGINE RUNNING)
DURATION- TWO DAYS

1.	**Engine (CUMMINS) QSB 6.7 141 KW with diesel fuel particulate filter @2300 rpm**
1.1.	Clean outer air cleaner element, change if required.
1.2.	Lubricate all the engine pulley bearings with grease.
1.3.	Check and change radiator hoses, if required.
1.4.	Check specific gravity of battery electrolyte if applicable.
1.5.	Change engine lube oil. CI4+ Premium Blue 15W40 (20 Ltrs).*
1.6.	Replace lube oil filter & bypass element.*
1.7.	Replace fuel filters.*
1.8.	Replace air drier filter cartridge (if used).*
1.9.	Check fuel tank breather and clean if required.*
1.10.	Check/add Coolant additive concentrate.*
1.11.	Clean/change crank case air breather.*
1.12.	Check air piping.
2.	**Power Transmission and Gear box**
2.1.	Check air breather of gear boxes and clean if required.*
2.2.	Change the oil of transmission gear box.*
2.3.	Change transmission oil filter.*
3.	**Hydraulic**
3.1.	Change return line filter element.*
3.2.	Change suction filter element. *
3.3.	Change the safety cartridge of air filter.
4.	**Pneumatic**
4.1.	Check the mounting bolts of all valves.
4.2.	Check the functioning of auto drain valve.
4.3.	Check air unloader for proper functioning.
5.	**Mechanical**
5.1.	Inspect all cordon shafts for any crack.
5.2.	Check grease filling of Parking brake and do as required.
5.3.	Check shock absorbers and do needful.
6.	**Under Frame Maintenance:**
6.1.	**Under Frame:**
6.1.1.	Examine trough floor, turn under and other frame members from underneath for corrosion #.
6.2.	**Brake Rigging & Brake System:**
6.2.1.	Check and attend brake block adjuster#.
6.3.	**Bogie Frame & Suspension:**
6.3.1.	Visually examine the condition of suspension system (Coil spring) for any damage/loose/breakage#.
6.3.2.	Examine corrosion of sole bar and other under frame members with torch light or inspection lamp*.

6.3.3.	Visually examine the cabin and axle support cylinders for leakages/damages*.
6.4.	**Draw Gear:**
6.4.1.	Ensure that wear on screw coupling shackle pins, trunion pins, shackle/link holes and draw hook holes should not exceed 3mm Examine draw hook, draw bars, rubber pads for damages*.
6.5.	**Buffing Gear:**
6.5.1.	Ensure the length is within 584-635 mm*.
6.5.2.	Inspect buffer plunger false plate for wear and profile*.
6.6.	**Running Gear And Wheels:**
6.6.1.	Check with wheel distance gauge for loose or tight wheels*.
	Note: i) # to be done after 250 hours. ii) * to be done after 500 hour

SCHEDULE – V

(TO BE DONE AFTER 1000, 3000, and 5000 HOURS OF ENGINE RUNNING)
DURATION- SEVEN DAYS

1.	**Engine (CUMMINS) QSB 6.7 141 KW with diesel fuel particulate filter @2300 rpm**
1.1.	Change worn out water hoses.
1.2.	Check coolant for PH value.
1.3.	Overhaul the air compressor. If required.
1.4.	Clean the engine radiator externally.
1.5.	Clean the diesel tank with lint free cloth.
1.6.	Clean the cooling coil.
1.7.	Replace the outer and inner engine air cleaner element.
1.8.	Check the condition and tightness of V-belt for radiator fan.
1.9.	Replace minor repair kit for air compressor.
2.	**Hydraulic**
2.1.	Send sample of hydraulic oil for physical & chemical test & if found 'OK' refill through 10u sieve filter otherwise with new oil.
2.2.	Replace the hydraulic hoses which are damaged by external abrasion.
3.	**Pneumatic**
3.1.	Clean the air reservoir.
3.2.	Overhaul the air unloader.
4.	**Mechanical**
4.1.	Replace the bushing of the hinge pins on condition basis.
4.2.	Check bearings of all axles and lubricate with grease.
5.	**Electrical**
5.1.	Replace the missing or defective lights.
5.2.	Replace defective switches.
5.3.	Replace defective indicative instruments
5.4.	Defective switches and indicative lights may be replaced.
5.5.	Check the wire connections in panel boxes.
6.	**Under Frame Maintenance:**
6.1.	**Under Frame:**
6.1.1.	Thoroughly examine the centre pivot mounting bolts and replace, if needed.
6.2.	**Brake Rigging & Brake System:**
6.2.1.	Visually inspect damaged/missing brake gear bushes, lever hanger pins, replace if necessary.
6.3.	**Running Gear And Wheels:**
6.3.1.	Fill all axles bearing housing with grease.
7.	**General**
7.1.	Strengthen the machine frame, where cracks have developed on condition Basis.

SCHEDULE – VI

(TO BE DONE AFTER 2000, 4000, and 6000 HOURS OF ENGINE RUNNING)
DURATION- FIFTEEN DAYS

1.	**Engine (CUMMINS) QSB 6.7 141 KW with diesel fuel particulate filter @2300 rpm**
1.1.	Change coolant of radiator.
1.2.	Check fuel pump calibration.
1.3.	Replace fuel pump filter screen and magnet
1.4.	Check turbocharger bearing clearance.
1.5.	Replace the batteries on condition basis.
1.6.	Replace the rocker cover gaskets(after 1000 hrs. of commissioning/POH).
1.7.	Adjust injectors and valve (after 1000 hrs. of commissioning/POH)
1.8.	Change all the water hoses.
1.9.	Overhaul the air unloader.
1.10.	Check crank shaft end clearance
1.11.	Overhaul self starter.
1.12.	Overhaul alternator.
1.13.	Overhaul the engine, if there is lack of compression on low lube oil pressure otherwise de- carbonize the engine.
1.14.	Check bearing and shaft of radiator fan drive and do needful.
1.15.	Check turbocharger compressor and turbine wheels. Check radial and end clearances & do needful.
1.16.	Overhaul water pump.
1.17.	Tighten manifold nuts or cap screws.
2.	**Hydraulic**
2.1.	Clean the hydraulic tank, inside to be painted with approved quality of paint
2.2.	Replace the seals of all hydraulic cylinders along with gland bushes /piston
2.3.	Provide the missing clamps
2.4.	Clean and repair the hydraulic oil cooler, if required
2.5.	Overhaul all pressure controls and replace their kits, if required
2.6.	Check the D.C. valves for leakage and do needful
3.	**Pneumatic**
3.1.	Overhaul water separator.
3.2.	Change the seals of all pneumatic cylinders.
4.	**Mechanical**
4.1.	Overhaul the suspension assembly
4.2.	Grease draw and Buffing gear at both ends
4.3.	Change the all cordon shafts on condition basis
5.	**Under Frame Maintenance:**
5.1.	**Brake Rigging & Brake System:**
5.1.1.	Check/replace all types torque arm plates, pins & bushes.
5.1.2.	Check/replace all Meggi flex washer, Meggi/rubber springs/damper rubber.
5.1.3.	Repair/replace all brake drum seals, cylinders & brake linkage rods.
5.1.4.	Replace all brake reversal springs.
5.2.	**Draw Gear:**
5.2.1.	Remove the scale, rust, work hardened layers and surface cracks if any, by light grinding/filing.
5.2.2.	Inspect the draw hook for deformations & cracks. The neck, its pin hole and the slot

	are vulnerable locations
5.2.3.	Use dye-penetrate test for checking surface cracks in case of doubts.
5.3.	**Buffing Gear:**
5.3.1.	Check the draw bar for dimensional distortions and damaged threads.
5.3.2.	Check the castle nuts for damaged threads, worn nut faces visually. Replace castle nuts if required.
5.3.3.	Test all draw bars by magna-glow equipment for surface cracks.
5.4.	**Running Gear And Wheels**
5.4.1.	Repair/replace all wheels, axles bearing housing and bearing.
5.4.2.	Repair/replace all gear boxes, seals & cordon shaft assemblies.
6.	**General:**
6.1.	Thoroughly clean all panel boxes with pressurized air.
6.2.	Check the function of all assemblies after IOH.
6.3.	Calibrate the machine on track for all functions.
6.4.	Replace the missing and defective hand tools.
6.5.	Check the expiry of first Aid box.
6.6.	Check the expiry of fire extinguisher/ may be done on regular basis.
6.7.	Ultrasonic testing of axles of machine shall be done between 40,000 to 45,000 kms of running or three years whichever is earlier.

SCHEDULE – VII

(TO BE DONE AFTER 8000, 14000 AND THEN AT 4000 HOURS ONWARDS OF ENGINE RUNNING)
DURATION- 1st FORTY FIVE DAYS
- 2nd SIXTY DAYS

1.	**Engine (CUMMINS) QSB 6.7 141 KW with diesel fuel particulate filter @2300 rpm**
1.1.	Overhaul or replace the engine
1.2.	Overhaul the radiator fan drive assembly
1.3.	Change the engine mounting pads
1.4.	Change the water separator and air oiler
1.5.	Replace the air unloader on condition basis
1.6.	Check & clean the cooling coil. Replace if required
2.	**Hydraulic:**
2.1.	Replace all the stop cocks and flow control valves
2.2.	Change all hydraulic pumps on condition basis.
2.3.	Fill new oil after replacing return line and suction line filters.
2.4.	Change all the pressure control valves.
2.5.	Flush the complete system.
3.	**Pneumatic:**
3.1.	Change all pneumatic hoses.
3.2.	Overhaul the brake cylinder and replace the seals if required.
3.3.	Replace air unloader.
3.4.	Replace water separator.
3.5.	Change all pneumatic cylinders on condition basis, which were creating the frequent trouble. Otherwise replace seals only.
4.	**Mechanical:**
4.1.	Overhaul all the gear boxes
4.2.	Replace the shaft coupling and holding nuts & bolts
4.3.	Overhaul the bogies and replace the defective parts
4.4.	Complete machine may be painted with approved paint
4.5.	Check the bogie coil springs and replace, if broken
5.	**Electrical:**
5.1.	Overhaul the panel boxes and provide thimbles as required.
6.	**General:**
6.1.	Ultrasonic testing of axles of machine shall be done between 40,000 to 45,000 kms of running or three years whichever is earlier
6.2.	Check the function of all assemblies

Note:

i. All movable parts other than not mentioned in this schedule to be lubricated with grease/ oil.
ii. During POH, Machine Supervisor and CPOH Inspecting Authority jointly inspect the Machine. Any part of Machine is to be repaired or replaced, this decision is taken by CPOH Inspecting authority
iii. Make a arrangement for attending the items for which facilities are not readily available at site.

Annexure-I

LIST OF SAFETY TOOLS

S.No.	Description	Quantity
1	Red hand signal flags	2 Nos
2	Green hand signal flags	1 No
3	Tri- colour hand signal lamps/LED torch	2 Nos
4	Chain With Padlock	2 Nos.
5	Fire Extinguisher (valid up to …….)	1 No
6	Hooter (Manually Controlled)	2 Nos.
7	Jack 10 t Traverse type*	2 Nos.
8	Wooden Blocks	10 Nos.
9	Crow bars	4 Nos.
10	Hydraulic hand pump	1 No.
11	Emergency Hydraulic hose off size suiting to different systems of machine (complete with end fitting)	01 Set
12	Machine Specific Equipment if any.	01 Set
13	Fog signals (detonators) in a tin case	10 Nos.
14	A copy of working time table of this section where the machine is working	1 No
15	G & SR book with up to date amendment slips	1 No.
16	4 cells flasher light LED lamp cum flasher light (rechargeable)	1 No.
17	Banner flags	2 Nos.
18	First aid Box	1 No
19	Skids	10 Nos.
20	Safety Helmet for all machine staff	For each Staff
21	Protection clothing , safety shoes and safety gloves	For each Staff
22	Walkie talkie with frequency of SM, guard and loco pilots	2 Nos.
23	Internal communication system Walkie talkie and/or head mounting system	For each Staff
24	Track machine manual with up to date correction slips	1 No.
25	Accident manual	1 No
26	Tail Lamp	1 No

Note- * Proposal is sent to Railway board vide letter no. TM/HM/1, VOL-2 dated 22/08/2019 for approval of jack (machine wise).

Annexure-II

IMPORTANT

1. Engine oil pressure should be minimum 1.5 kg/sq.cm at idle & 2.5 kg/sq.cm on load at rated RPM after two hours working.
2. Gear oil for pump gear box will be Servo CF4 15W40.
3. Grease for all lubricating parts will be Shell Gadus S2 or equivalent.
4. Adjust the brake shoe clearance between 3 to 5 mm.
5. Brake shoes will be changed when minimum thickness at any point will became 13 mm or less.
6. RPM of engine radiator fan should not be less than 1600 for proper cooling.
7. The length of the hoses between clamps or adopter should be 4% more than required to provide allowance for shortening of hose under pressure.
8. Radiator may be replaced if it is blocked more than 20% during service or badly leaking and not economical to repair.
9. Tension of V-belt will be checked at center of belt and it should not be more than 15mm.
10. Hydraulic oil should be sent for physical and chemical test after every 1000 engine hrs.

Annexure – III

GENERAL SAFETY NOTES

1. The machine has to be operated according to existing Indian Railways rules and regulations.
2. The safety of all machine staff is most important in the operation and maintenance of the machine.
3. Always alert the men working close to the machine.
4. Do not forget to look out for signals and obstructions on track.
5. Make sure that all protection equipment and safety devices are in place on the machine and in working order especially when it is being driven from site to site.
6. Always keep the machine clean. Excessive oil or grease on the machine can make surface slippery and is also potential to fire hazard.
7. Always lock the machine before leaving. Make sure that the machine is protected in accordance with Railways regulations.
8. Wherever there is an opportunity while waiting to go out for a job, do some of the smaller maintenance job, such as tightening loose nut & bolts and cleaning the machine.
9. Do not permit unauthorized persons to operate the machine.
10. It is prohibited to use fire on or near the machine.
11. Always wear proper dress, safety shoes and helmet while operation of the machine.

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