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TM/HM/MDU/Pt.IV

Date: 10-01-2020

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विषय : प्लासर निर्मित मक डिस्पोजल यूनिट की अनुरक्षण अनुसूची पुस्तिका

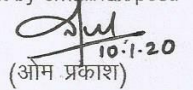
Sub: Maintenance schedule manual of Plasser make MUCK DISPOSAL UNIT (MDU)

प्लासर निर्मित मक डिस्पोजल यूनिट की अनुरक्षण अनुसूची पुस्तिका का अंतिम पत्र सं टीएम/ एचएम/एम.डी.यू./पार्ट.IV दि 24.10.2019 द्वारा जारी किया गया था, परन्तु क्षेत्रिय रेलवे से कोई टिप्पणी प्राप्त नहीं हुई अब अनुरक्षण अनुसूची पुस्तिका को तैयार करने की प्रक्रिया पूर्ण की जा चुकी है । जिसकी प्रति, आपके सूचनार्थ तथा मशीन के कर्मचारियों जो फील्ड में काम कर रहे हैं के मार्गदर्शन हेतु संलग्न है । यद्यपि उपरोक्त संशोधन बनाते समय सभी सावधानियाँ बरती गई है फिर भी यदि कोई त्रुटि हो तो कृपया अपने सुझावों/ टिप्पणियों को सुधार हेतु ई-मेल/ फैंक्स /पत्राचार द्वारा अद्योहस्ताक्षरी को भेजे ।

Provisional Maintenance Schedule Manual for Plasser make MUCK DISPOSAL UNIT (MDU) has been circulated vide letter no. TM/HM/ MDU pt.IV dt.24-10-2019 but no comments received from Zonal Railways. Now procedure of preparation for maintenance schedule is completed. A copy of the same is enclosed herewith for your information and guidance of the machine staff working in the field. However every care has been taken during preparation of the above said list, the discrepancy noticed, if any, may be brought to the knowledge of the undersigned for further improvement by email/fax/post.

Email: hmtmmrdsso@gmail.com

DA: As above


(ओम प्रकाश)

निदेशक रेलपथ मशीन -III

Maintenance schedule Manual of MDU) January,2020



भारत सरकार
रेल मंत्रालय

GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS

MAINTENANCE SCHEDULE MANUAL FOR MUCK DISPOSAL UNIT (MDU)



REPORT NO. TM---234

January-2020

अनुसंधान अभिकल्प और मानक संगठन लखनऊ-226011

RESEARCH DESIGNS & STANDARDS ORGANISATION LUCKNOW- 226 011

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, CPOH / Allahabad 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 (MDU) has been prepared on the basis of maintenance instruction given by OEM. Suggestion/instruction given by OEM time to time also 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. Some time machine modified/alterd 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.

(Om Prakash)
Director/Track Machine-III
RDSO/Lucknow- 226011

January-2020

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EXPLANATORY NOTES

While preparing text of schedules for maintenance of MUCK DISPOSAL UNIT (MDU), 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 (MDU)

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	6000 Engine hrs.	1st POH-45 days, 2nd POH-60days	CPOH Workshop

INDEX

S.N.	DESCRIPTION	PAGE NO.
1.	Engine	1-3
2.	Conveyor belt	3-4
3.	Hydraulic	4-5
4.	Pneumatic	5
5.	Mechanical	6
6.	Electrical	6-7
7.	Under Frame	7-8
8.	General	8
9.	Annexure-I	9
10.	Annexure-II	10
11.	Acknowledgement	11

SR.NO.	ITEM	SCH.I Daily	SCH.II 50HRS.	SCH.III 100 HRS.	SCH.IV 200 HRS.	SCH.V 1000 HRS.	SCH.VI 2000 HRS.	SCH.VII 6000 HRS.
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.	√	√	√	√	x	x	x
1.2	Visual check the engine oil level and top up if required.	√	√	√	√	x	x	x
1.3	Check fuel level and top up if required.	√	√	√	√	x	x	x
1.4	Visual check the air cleaner chocking indicator. If indicator is red, the outer filter is to be cleaned.	√	√	√	√	x	x	x
1.5	Check the leakage from hoses, water pump seal etc. and do the needful.	√	√	√	√	x	x	x
1.6	Visual Check the leakage from fuel pump, injectors, fuel supply and return pipes and do needful.	√	√	√	√	x	x	x
1.7	Visual check the tension and condition of V-belts and do needful.	√	√	√	√	x	x	x
1.8	Clean the engine and premises.	√	√	√	√	x	x	x
1.9	Check the engine oil pressure at idle rpm	√	√	√	√	x	x	x
1.10	Check engine oil pressure on load after two hours working.	√	√	√	√	x	x	x
1.11	Check the battery charging system.	√	√	√	√	x	x	x
1.12	Drain the air reservoir after the day's work.	√	√	√	√	x	x	x
1.13	Record the maximum engine temperature of the day's work	√	√	√	√	x	x	x
1.14	Drain sediments from fuel tank.	√	√	√	√	x	x	x
1.15	Drain water separator	√	√	√	√	x	x	x
1.16	Empty the dust discharge valve on the air filter of the engine	√	√	√	√	x	x	x
1.17	Apply petroleum jelly on battery terminal.	x	√	√	√	x	x	x
1.18	Lubricate the radiator fan shaft with grease.	x	√	√	√	x	x	x
1.19	Check the leakage from fuel line.	x	√	√	√	x	x	x
1.20	Check electrolyte level of batteries, top up if required.	x	√	√	√	x	x	x
1.21	Check battery terminal and connection for tightness.	x	√	√	√	x	x	x
1.22	Check injector pipes for any rubbing and do needful.	x	√	√	√	x	x	x
1.23	Top up air oiler if required.	x	√	√	√	x	x	x
1.24	Check engine temperature safety device.	x	x	√	√	x	x	x
1.25	Check air cleaner element restriction .Clean/Change air cleaner element if required.	x	x	x	√	x	x	x
1.26	Check lube oil pressure safety device.	x	x	√	√	x	x	x

SR. NO.	ITEM	SCH.I Daily	SCH.II 50 HRS.	SCH.III 100 HRS.	SCH.IV 200 HRS.	SCH.V 1000 HRS.	SCH.VI 2000 HRS.	SCH.VII 6000 HRS.
1.27	Examine the mounting bolts of the engine.	x	x	√	√	x	x	x
1.28	First time change of lube should be done, 100 hrs after commissioning.	x	x	√	√	x	x	x
1.29	First time change of lube oil filter and by pass filter after commissioning.	x	x	√	√	x	x	x
1.30	Lubricate all the engine pulley bearings with grease.	x	x	x	√	x	x	x
1.31	Check and change radiator hoses, if required.	x	x	x	√	x	x	x
1.32	Check specific gravity of battery electrolyte if applicable.	x	x	x	√	x	x	x
1.33	Change engine lube oil. CI4+ Premium Blue 15W40 (20 Ltrs)	x	x	√*	√*	√*	√*	√*
1.34	Replace lube oil filter & bypass element.	x	x	√*	√*	√*	√*	√*
1.35	Replace fuel filters.	x	x	√*	√*	√*	√*	√*
1.36	Inspect the water separator for proper functioning.	x	x	√	√	√	√	√
1.37	Check the throttle control linkages.	x	x	√	√	√	√	√
1.38	Check fuel tank breather and clean if required.	x	x	√*	√*	√*	√*	√*
1.39	Check/add Coolant additive concentrate	x	x	√*	√*	√*	√*	√*
1.40	Clean/change crank case air breather.	x	x	√*	√*	√*	√*	√*
1.41	Check air piping.	x	x	√*	√*	√*	√*	√*
1.42	Change worn out water hoses.	x	x	x	x	√	√	√
1.43	Check coolant for PH value.	x	x	x	x	√	√	√
1.44	Overhaul the air compressor. If required.	x	x	x	x	√	√	√
1.45	Clean the engine radiator externally.	x	x	x	x	√	√	√
1.46	Clean the diesel tank with lint free cloth.	x	x	x	x	√	√	√
1.47	Clean the cooling coil.	x	x	x	x	√	√	√
1.48	Replace the outer and inner engine air cleaner element.	x	x	x	x	√	√	√
1.49	Check the condition and tightness of V-belt for radiator fan.	x	x	x	x	√	√	√
1.50	Replace minor repair kit for air compressor.	x	x	x	x	√	√	√
1.51	Change coolant of radiator	x	x	x	x	x	√	√
1.52	Check fuel pump calibration	x	x	x	x	x	√	√
1.53	Replace fuel pump filter screen and magnet.	x	x	x	x	x	√	√
1.54	Replace the batteries on condition basis.	x	x	x	x	x	√	√
1.55	Change all the water hoses.	x	x	x	x	x	√	√
*Done after every 300 Engine hours								

S.R. NO.	ITEM	SCH.I Daily	SCH.II 50 HRS.	SCH.III 100 HRS.	SCH.IV 200 HRS.	SCH.V 1000 HRS.	SCH.VI 2000 HRS.	SCH.VII 6000 HRS.
1.56	Replace the rocker cover gaskets(after 1000 hrs. of commissioning/POH)	x	x	x	x	x	√	√
1.57	Adjust injectors and valve (after 1000 hrs. of commissioning/POH)	x	x	x	x	x	√	√
1.58	Overhaul the air unloader.	x	x	x	x	x	√	√
1.59	Check crank shaft end clearance.	x	x	x	x	x	√	√
1.60	Overhaul self starter.	x	x	x	x	x	√	√
1.61	Overhaul alternator.	x	x	x	x	x	√	√
1.62	Overhaul the engine, if there is lack of compression on low lube oil pressure otherwise de- carbonize the engine.	x	x	x	x	x	√	√
1.63	Check bearing and shaft of radiator fan drive and do needful.	x	x	x	x	x	√	√
1.64	Check turbocharger compressor and turbine wheels. Check radial and end clearances & do needful.	x	x	x	x	x	√	√
1.65	Overhaul water pump.	x	x	x	x	x	√	√
1.66	Tighten manifold nuts or cap screws.	x	x	x	x	x	√	√
1.67	Overhaul or replace the engine.	x	x	x	x	x	x	√
1.68	Overhaul the radiator fan drive assembly.	x	x	x	x	x	x	√
1.69	Change the engine mounting pads.	x	x	x	x	x	x	√
1.70	Change the water separator and air oiler	x	x	x	x	x	x	√
1.71	Replace the air unloader on condition basis.	x	x	x	x	x	x	√
1.72	Check & clean the cooling coil. Replace if required.	x	x	x	x	x	x	√
2.	Conveyor belt							
2.1	Activate electrical chain lubrication	√	x	x	x	x	x	x
2.2	Remove dirt deposits near the drive and deflection stations (especially before towing because of material hardening)	√	x	x	x	x	x	x
2.3	Unload and check conveyor belts for abnormal damage while idling	√	x	x	x	x	x	x
2.4	Check the wear and tear of swiveling belt	√	x	x	x	x	x	x
2.5	Lubricate the drive stations of the container belt	x	√	x	x	x	x	x
2.6	Lubricate the deflection station of the swivel belt	x	√	x	x	x	x	x
2.7	Check the oil level in the drive stations of the container belt	x	√	x	x	x	x	x
2.8	Lubricate the support rollers and carriage of the belt support	x	√	x	x	x	x	x

SR. NO.	ITEM	SCH.I Daily	SCH.II 50 HRS.	SCH.III 100 HRS.	SCH.IV 200 HRS.	SCH.V 1000 HRS.	SCH.VI 2000 HRS.	SCH.VII 6000 HRS.
2.9	Lubricate drive motors for extending / retracting the swivel belt	x	√	x	x	x	x	x
2.10	Check the tension of the hollow pin chains located on the conveyor belts	x	x	√	√	√	√	√
2.11	Check the sprockets of the drive and reversing stations for wear	x	x	√	√	√	√	√
2.12	Check preload of the support strips	x	x	√	√	√	√	√
2.13	Lubricate the lifting linkage of the swivel belt	x	x	√	√	√	√	√
2.14	Lubricate the guide of the lifting device of the container	x	x	√	√	√	√	√
2.15	Lubricate the turntable of the swivel belt	x	x	√	√	√	√	√
3.	Hydraulic							
3.1.	Check and top up hydraulic oil tank if required.	√	x	x	x	x	x	x
3.2.	Check hydraulic system for leaks and hydraulic hoses for chafing, deformation, cracks and leaks.	√	x	x	x	x	x	x
3.3.	Record the maximum temperature of hydraulic fluid during the day's work.	√	x	x	x	x	x	x
3.4.	Check hydraulic system operating pressure.	x	√	x	x	x	x	x
3.5.	Change return line filter element.	x	x	√**	√**	√**	√**	√**
3.6.	Send sample of hydraulic oil for physical & chemical test & if found 'OK' refill through 10u sieve filter otherwise with new oil.	x	x	x	x	√	√	√
3.7.	Replace the hydraulic hoses which are damaged by external abrasion.	x	x	x	x	√	√	√
3.8.	Clean the hydraulic tank, inside to be painted with approved quality of paint.	x	x	x	x	x	x	√
3.9.	Replace the seals of all hydraulic cylinders along with gland bushes /piston.	x	x	x	x	x	√	√
3.10.	Provide the missing clamps	x	x	x	x	x	√	√
3.11.	Clean and repair the hydraulic oil cooler, if required.	x	x	x	x	x	√	√
3.12.	Overhaul all pressure controls and replace their kits, if required.	x	x	x	x	x	√	√
3.13.	Check the D.C. valves for leakage and do needful.	x	x	x	x	x	√	√
**Done after every 500 Engine hours								

SR. NO.	ITEM	SCH.I Daily	SCH.II 50 HRS.	SCH.III 100 HRS.	SCH.IV 200 HRS.	SCH.V 1000 HRS.	SCH.VI 2000 HRS.	SCH.VII 6000 HRS.
3.14.	Change all hydraulic pumps on condition basis.	x	x	x	x	x	x	√
3.15.	Fill new oil after replacing return line and suction line filters.	x	x	x	x	x	x	√
3.16.	Change all the pressure control valves.	x	x	x	x	x	x	√
3.17.	Flush the complete system.	x	x	x	x	x	x	√
4.	Pneumatic							
4.1	Check air brake pressure at locking position.	√	x	x	x	x	x	x
4.2	Check pneumatic system for any air leakage.	√	x	x	x	x	x	x
4.3	Check emergency brake operation.	√	x	x	x	x	x	x
4.4	Check indirect brake operation.	√	x	x	x	x	x	x
4.5	Check function of horns.	√	x	x	x	x	x	x
4.6	Check safety devices: emergency stop, emergency brake and system stop	x	√	√	√	x	x	x
4.7	Clean & lubricate all link rods, pivots and rocker bearing of brake assemblies.	x	√	√	√	x	x	x
4.8	Check the operation of SA-9 valve and reset, if required.	x	√	√	√	x	x	x
4.9	Check the mounting bolts of all valves.	x	x	x	√	x	x	x
4.10	Check the functioning of auto drain valve.	x	x	x	√	x	x	x
4.11	Check air unloader for proper functioning.	x	x	x	√	x	x	x
4.12	Clean the air reservoir.	x	x	x	x	√	√	x
4.13	Overhaul the air unloader.	x	x	x	x	√	√	x
4.14	Overhaul water separator.	x	x	x	x	x	√	√
4.15	Change the seals of all pneumatic cylinders.	x	x	x	x	x	√	√
4.16	Change all pneumatic hoses.	x	x	x	x	x	x	√
4.17	Overhaul the brake cylinder and replace the seals if required.	x	x	x	x	x	x	√
4.18	Replace air unloader.	x	x	x	x	x	x	√
4.19	Replace water separator.	x	x	x	x	x	x	√
4.20	Replace air oiler	x	x	x	x	x	x	√
4.21	Change all pneumatic cylinders on condition basis, which were creating the frequent trouble. Otherwise replace seals only.	x	x	x	x	x	x	√

SR. NO.	ITEM	SCH.I Daily	SCH.II 50 HRS.	SCH.III 100 HRS.	SCH.IV 200 HRS.	SCH.V 1000 HRS.	SCH.VI 2000 HRS.	SCH.VII 6000 HRS.
5	Mechanical							
5.1	Lubricate the slewing system and its bushing.	√	√	√	√	x	x	x
5.2	Grease the sliding pads.	√	√	√	√	x	x	x
5.3	Grease the hinge pin.	√	√	√	√	x	x	x
5.4	Grease the dual slide control.	√	√	√	√	x	x	x
5.5	Apply lube oil on bush bearing.	√	√	√	√	x	x	x
5.6	Check condition of hook.	x	√	√	√	x	x	x
5.7	Check oil level of Hopper gear boxes and fill up-to the mark, If required (Shell Spirax G80W-90)	x	√	√	√	x	x	x
5.8	Check oil level of Pump gear box and fill up-to the mark, If required (Servo CF4 15W40)	x	√	√	√	x	x	x
5.9	Adjust the clearance of all brake shoes.	x	√	√	√	x	x	x
5.10	Check brake linkage and oil the pivots.	x	√	√	√	x	x	x
5.11	Check universal joints for play and replace, if required	x	x	√	√	x	x	x
5.12	Check foundation bolts of brake cylinder.	x	x	√	√	x	x	x
5.13	Check the condition of brake shoes, replace if required.	x	x	√	√	x	x	x
5.14	Replace the bushing of the hinge pins on condition basis.	x	x	x	x	√	√	x
5.15	Check grease filling of Parking brake and do as required.	x	x	x	√	√	√	x
5.16	Check shock absorbers and do needful.	x	x	x	√	√	√	x
5.17	Check bearings of all axles and lubricate with grease.	x	x	x	x	√	√	x
5.18	Overhaul the suspension assembly	x	x	x	x	x	√	√
5.19	Grease draw and Buffing gear at both ends.	x	x	x	x	x	√	√
5.20	Overhaul Hopper gear box	x	x	x	x	x	x	√
5.21	Overhaul Pump gear box	x	x	x	x	x	x	√
5.22	Overhaul the bogies and replace the defective parts.	x	x	x	x	x	x	√
5.23	Complete machine may be painted with approved paint.	x	x	x	x	x	x	√
5.24	Check the bogie coil springs and replace, if broken.	x	x	x	x	x	x	√
6.	Electrical							
6.1	Clean alternator and check connections.	x	√	√	√	x	x	x

SR. NO.	ITEM	SCH.I Daily	SCH.II 50 HRS.	SCH.III 100 HRS.	SCH.IV 200 HRS.	SCH.V 1000 HRS.	SCH.VI 2000 HRS.	SCH.VII 6000 HRS.
6.2	Check all lights and do needful.	x	x	√	√	x	x	x
6.3	Replace the missing or defective lights.	x	x	x	x	√	√	x
6.4	Replace defective switches.	x	x	x	x	√	√	x
6.5	Replace defective indicative instruments.	x	x	x	x	√	√	x
6.6	Defective switches and indicative lights may be replaced.	x	x	x	x	√	√	√
6.7	Check the wire connections in panel boxes.	x	x	x	x	√	√	√
6.8	Overhaul the panel boxes and provide thimbles as required.	x	x	x	x	x	x	√
7.	UNDER FRAME							
7.1.	Visually examine the centre pivot mounting bolts and attend as required.	x	√	√	√	x	x	x
7.2.	Visually inspect the centre pivot and do needful.	x	√	√	√	x	x	x
7.3.	Visually inspect all the welding locations.	x	√	√	√	x	x	x
7.4.	Inspect the brake system hanger brackets for damages.	x	√	√	√	x	x	x
7.5.	Visually check the suspension bracket	x	√	√	√	x	x	x
7.6.	Visually examine the equalizing stay rods and pins	x	√	√	√	x	x	x
7.7.	Examine the vertical shock absorbers for damages	x	√	√	√	x	x	x
7.8.	Check the brake-rigging arrangement for any defects/deficiencies	x	√	√	√	x	x	x
7.9.	Visually inspect the brake hangers, brake gear pins and cotters/split pins. Replace, if necessary.	x	√	√	√	x	x	x
7.10.	Check Transition coupling for any damage	x	√	√	√	x	x	x
7.11.	Examine the buffer mounting bolts and attend if necessary.	x	√	√	√	x	x	x
7.12.	Check and attend brake block adjuster on need basis	x	x	√	√	x	x	x
7.13.	Perform intensive cleaning of the machine	x	x	x	x	√	√	x
7.14.	Inspect buffer plunger false plate for wear profile and stroke	x	x	x	x	x	√	√
7.15.	Inspect the wheel tread for shattered rim, spread rim, shelled tread, thermal cracks, heat checks according to the 'procedure for inspection of wheels of 'on' track machines' issued by RDSO.	x	x	x	x	√	√	x
7.16.	Visual and Physical inspection of wheel shall be done at a frequency of once in a year or after every 1000 engine running hours whichever is earlier	x	x	x	x	√	√	x

SR. NO.	ITEM	SCH.I Daily	SCH.II 50 HRS.	SCH.III 100 HRS.	SCH.IV 200 HRS.	SCH.V 1000 HRS.	SCH.VI 2000 HRS.	SCH.VII 6000 HRS.
7.17.	Examine for corrosion of sole bar and other under frame members with torch light or inspection lamp.	x	x	x	x	x	√	√
7.18.	Ultrasonic testing of axles of machine shall be done between 40,000 to 45,000 kms of running engine hours or three years, whichever is earlier.	x	x	x	x	x	√	√
7.19.	Through repair and maintenance of bogie & transition coupler	x	x	x	x	x	x	√
7.20.	Repair and maintenance of under frame, bogie frame, primary suspension, secondary suspension, brake rigging, draw gear, buffing gear and running gear.	x	x	x	x	x	x	√
8.	General							
8.1.	Check for any unusual sound from engine & hydraulic pumps.	√	√	√	√	x	x	x
8.2.	Check all spares & tools for emergency as per Annexure - I.	√	√	√	√	x	x	x
8.3.	Check all the functions of machine before block working.	√	√	√	√	x	x	X
8.4.	Clean the complete machine	x	√	√	√	x	x	x
8.5.	Strengthen the machine frame, where cracks have developed on condition Basis	x	x	x	x	√	√	x
8.6.	Thoroughly clean all panel boxes with pressurized air.	x	x	x	x	x	√	√
8.7.	Check the function of all assemblies after IOH.	x	x	x	x	x	√	√
8.8.	Calibrate the machine on track for all functions	x	x	x	x	x	√	√
8.9.	Replace the missing and defective hand tools.	x	x	x	x	x	√	√
8.10.	Check the expiry of first Aid box.	x	x	x	x	x	√	√
8.11.	Check the expiry of fire extinguisher/ may be done on regular basis.	x	x	x	x	x	√	√
8.12.	Check the function of all assemblies	x	x	x	x	x	x	√
<p>Note : All movable parts other than not mentioned in this schedule to be lubricated with grease/ oil.</p> <p>Note-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.</p>								

List of Safety Equipments

S.No.	Description	Quantity
1.	Detonators in a tin case	1 box
2.	H.S. flag red	2 nos.
3.	H.S. flag green	1 nos.
4.	H.S. Tri Colour lamps/LED lamps	2 nos.
5.	Chain & Padlock	1 set
6.	Point Clamp with Padlock	2 nos.
7.	10 t jack with trivor	1 no.
8.	Crow bars	2nos.
9.	Wooden blocks off sizes	8 nos.
10.	Rail thermometer (dial type)	1 no.
11.	Banner flag	2 nos.
12.	Walki talki	1 nos.
13.	First Aid Box	1 no
14.	Skids	4 nos.
15.	Working time table of section where machine working	1 copy
16.	G&SR book with up to date amendment slips	1 copy
17.	4 cell flasher light/ LED torch,6watt	1 no.
18.	LED Petromax	1 no.
19.	Safety helmets	Each Machine staff
20.	Protective clothing, safety shoes and safety gloves	Each Machine staff
21.	Track Machine Manual	1 no.
22.	Accident Manual	1 no.
23.	Fire extinguisher	1 no.
24.	Hooter (Manual/ Remote)	2 nos.
25.	Hydraulic Hand Pump	1 no.
26.	Emergency pneumatic/Hydraulic hose off sizes	1 no.

IMPORTANT

- 1) Cummins CI4+ Premium Blue 15W40 lube oil to be used in engine.
- 2) 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
- 3) Hydraulic oil in tank will be Shell Tellus S2 V68 or equivalent
- 4) Gear oil for Pump gear box will be Servo CF4 15W40
- 5) Gear oil for Hopper belt gear boxes will be Shell Spirax G80W-90
- 6) Grease for all lubricating parts will be) Shell Gadus S2 or equivalent.
- 7) Oil in air oiler will be Shell Tellus S2 V68 or equivalent.
- 8) Air brake pressure should be Min. 4 bar at lock position
- 9) Adjust the brake shoe clearance between 3 to 5 mm.
- 10) Brake shoes will be changed when minimum thickness at any point will became 13 mm or less
- 11) Coolant in engine radiator will be DCA4 (Premix)
- 12) RPM of engine radiator fan should not be less than 1600 for proper cooling
- 13) The length of the hoses between clamps or adopter should be 4% more than required to provide allowance for shortening of hose under pressure.
- 14) Radiator may be replaced if it is blocked more than 20% during service or badly leaking and not economical to repair.
- 15) Tension of V-belt will be checked at center of belt and it should not be more than 15mm
- 16) Hydraulic oil should be sent for physical and chemical test after every 1000hrs

ACKNOWLEDGEMENT

Following officers and staff have made their valuable contributions in finalization of the Maintenance Schedule manual or MUCK DISPOSAL UNIT (MDU)

Shri	Upendra Singh	SSE/TM/WR
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RDSO

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|----|--------|----------------|---------|
| 1. | S/Shri | Muslim Ahmad | ARE/TM |
| 2. | “ ” | A.N.Srivastava | SSRE/TM |
| 3. | “ ” | A.K.Srivastava | SSE/TM |