

MAINTENANCE SCHEDULE MANUAL (Rev-1) FOR BALLAST CLEANING MACHINE (RM-80-92U)



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Revision-1

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 & Rayanapadu 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.

Maintenance schedule manual (Rev.-1) for Ballast Cleaning Machine (RM-80-92U) has been prepared on the basis of Maintenance instruction given by OEM and suggestions received from different railways. The suggestion and feedback from field has been taken and incorporated in this maintenance schedules (Rev.-1). Suggestion/instruction given by OEM time to time also followed in addition to this manual. The manual is prepared for those items which is required day to day maintenance. Apart from these instruction 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 be also undertaken in the maintenance practice. If the Engine of machine is under AMC then instruction/maintenance schedule of repairing/alteration of Engine may be followed as per term and condition of this manual.

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.

April-2018

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EXPLANTORY NOTES

While preparing text of schedules for maintenance of Ballast Cleaning Machine (RM-80-92U), 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 Ballast Cleaning Machine (RM-80-92U)

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 IOH	2000 Engine hrs.	15 days	In Zonal Workshop
7.	Schedule VII CPOH	6000 Engine hrs.	1st POH-45 days, 2nd POH-60days	CPOH Workshop

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S. N.	ITEM	SCH.I Daily	SCH.II 50HRS.	SCH.III 100 HRS.	SCH.IV 200 HRS.	SCH.V 1000 HRS.	SCH.VI 2000HRS.	SCH.VII 6000 HRS.
1. ENGINE MODEL NO. DEUTZ-BF 12L 513C								
1.1	Visual check fuel level and top up if required.	√	X	X	X	X	X	X
1.2	Visual Check the leakage from fuel pump, injectors, fuel supply and Return pipes and do needful.	√	X	X	X	X	X	X
1.3	Clean the engine and premises.	√	X	X	X	X	X	X
1.4	Check engine lube oil level, top up if required.	√	X	X	X	X	X	X
1.5	Check the functioning of engine clutch.	√	X	X	X	X	X	X
1.6	Check clutch fluid level in container.	√	X	X	X	X	X	X
1.7	Check the battery charging system.	√	X	X	X	X	X	X
1.8	Visual check the tension and condition of V-belts and do needful.	√	X	X	X	X	X	X
1.9	Open and clean dust collector/pan of air cleaner.	√	X	X	X	X	X	X
1.10	Clean the fins of engines and air charge cooler.	√	X	X	X	X	X	X
1.11	Visual check the air cleaner chocking indicator. If indicator is red, The outer filter is to be cleaned by dry air.	√	X	X	X	X	X	X
1.12	Check the engine oil pressure at idle.	√	X	X	X	X	X	X
1.13	Check engine oil pressure on load after two hours working.	√	X	X	X	X	X	X
1.14	Drain water/sediment from fuel water separator (drive engine 1 and drive engine 2).	X	√	X	X	X	X	X
1.15	Change oil in the wet type air filter.	X	√	X	X	X	X	X
1.16	Check battery terminals and connection for tightness.	X	√	X	X	X	X	X
1.17	Apply petroleum jelly on battery terminals.	X	√	X	X	X	X	X
1.18	Check injector pipes for any rubbing and do needful.	X	√	X	X	X	X	X
1.19	Top up air oiler if required.	X	√	X	X	X	X	X
1.20	Replace lube oil filter.	X	√*	X	X	X	X	X
1.21	Change engine oil. Rimula Super 15 W-40 (Shell)	X	√*	X	X	X	X	X
1.22	Check engine temperature safety device.	X	X	√	X	X	X	X
1.23	Check lube oil pressure safety device.	X	X	√	X	X	X	X
1.24	Examine the mounting bolts of the engine.	X	X	√	X	X	X	X
*Done after every 250 Engine hours.								

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1.25	First time change of lube oil is being done, 100 hrs after commissioning.	X	X	√	X	X	X	X
1.26	Clean the fuel pre filter (wire mesh).	X	X	√	X	X	X	X
1.27	First time change fuel pre filters (after 100 hrs).	X	X	√	X	X	X	X
1.28	Clean outer air cleaner element.(Cleaned after every 200 hrs or on dirt indication).	X	X	√	X	X	X	X
1.29	Inspect the water separator for proper functioning of fuel system.	X	X	√	X	X	X	X
1.30	Check the throttle control linkages, clean and lubricate.	X	X	√	X	X	X	X
1.31	Check specific gravity of battery electrolyte if applicable.	X	X	√	X	X	X	X
1.32	Replace the fuel pre filters.	X	X	√*	X	X	X	X
1.33	Replace the outer and inner engine air cleaner element.	X	X	√*	X	X	X	X
1.34	Replace V-Belts on condition basis.	X	X	√*	X	X	X	X
1.35	Check fuel tank breather and clean if required.	X	X	X	√	X	X	X
1.36	Clean the crank case breather element.	X	X	X	X	√	X	X
1.37	Overhaul the air compressor, If required.	X	X	X	X	√	X	X
1.38	Clean the diesel tank with lint free cloth.	X	X	X	X	√	X	X
1.39	Replace minor repair kit for air compressor.	X	X	X	X	√	X	X
1.40	Lubricate the accelerating mechanism with oil.	X	X	X	X	√	X	X
1.41	Check high pressure fuel pipes clamps.	X	X	X	X	√	X	X
1.42	Change shaft seals and bearings of the clutch drive shaft assembly.	X	X	X	X	√	X	X
1.43	Change the batteries on condition basis.	X	X	X	X	X	√	X
1.44	Overhaul self starter on condition basis.	X	X	X	X	X	√	X
1.45	Overhaul alternator I.	X	X	X	X	X	√	X
1.46	Overhaul alternator II.	X	X	X	X	X	√	X
1.47	Overhaul the fuel injection pump.	X	X	X	X	X	√	X
*Done after every 500 Engine hours								

S. N.	ITEM	SCH.I Daily	SCH.II 50HRS.	SCH.III 100 HRS.	SCH.IV 200 HRS.	SCH.V 1000 HRS.	SCH.VI 2000HRS.	SCH.VII 6000 HRS.
1.48	Calibration the fuel injector.	X	X	X	X	X	√	X
1.49	Check engine timing and do needful.	X	X	X	X	X	√	X
1.50	Overhaul the engine, if there is lack of compression on low lube oil pressure otherwise de- carbonize the engine.	X	X	X	X	X	√	X
1.51	Check turbocharger compressor and turbine wheels. Check radial and end clearances & do needful as per condition.	X	X	X	X	X	√	X
1.52	Clean turbocharger and do needful.	X	X	X	X	X	√	X
1.53	Check the air compressor. Overhaul if necessary.	X	X	X	X	X	√	X
1.54	Check anti vibration mounting pads of the engine and change, if required.	X	X	X	X	X	√	X
1.55	Change fuel pump screen filter.	X	X	X	X	X	√	X
1.56	Overhaul or replace the engine.	X	X	X	X	X	X	√
1.57	De – carbonize the engine head (if overhauling is not done).	X	X	X	X	X	X	√
1.58	Check the engine damper for dynamic balance.	X	X	X	X	X	X	√
1.59	Check crank shaft and cam shaft end play.	X	X	X	X	X	X	√
1.60	Overhaul the air compressor.	X	X	X	X	X	X	√
1.61	Change air inlet hoses.	X	X	X	X	X	X	√
1.62	Overhaul blower assembly.	X	X	X	X	X	X	√
1.63	Change all the high pressure fuel pipes, pipe clamp, flexible fuel hoses and rubber hoses.	X	X	X	X	X	X	√
1.64	Overhaul turbocharger.	X	X	X	X	X	X	√
1.65	Check the exhaust manifold for any defect and clean the same.	X	X	X	X	X	X	√
Note: final decision for maintenance of engine may be followed as per OEM guide lines of engine manual. Maintenance of engine shall be exercise as per advice by OEM time to time.								

S. N.	ITEM	SCH.I Daily	SCH.II 50HRS.	SCH.III 100 HRS.	SCH.IV 200 HRS.	SCH.V 1000 HRS.	SCH.VI 2000HRS.	SCH.VII 6000 HRS.
2. HYDRAULIC								
2.1	Check hydraulic oil level in tank and top up if required.	√	X	X	X	X	X	X
2.2	Clean the slots next to the joint of the hydraulic cylinders.	√	X	X	X	X	X	X
2.3	Check hydraulic oil level in auxiliary (emergency) tank and top up if required.	√	X	X	X	X	X	X
2.4	Record the maximum temperature of hydraulic fluid during the day's work.	√	X	X	X	X	X	X
2.5	Visual check filters chocking indication if provided.	√	X	X	X	X	X	X
2.6	Check oil level in vibration screen drum.	√	X	X	X	X	X	X
2.7	Check for any rubbing of hoses & loose clamping etc. and correct it.	√	X	X	X	X	X	X
2.8	Check hydraulic system operating pressure.	√	X	X	X	X	X	X
2.9	First time change the dredger drum gear box filter.	X	√	X	X	X	X	X
2.10	Visual check, cleaning, lubrication of piston rod, bolts, and joints of hydraulic cylinders.	X	√	X	X	X	X	X
2.11	Check leakage in hydraulic circuit and do needful.	X	√	X	X	X	X	X
2.12	Visual check and lubricate of hydraulic cylinder.	X	√	X	X	X	X	X
2.13	Lubricate track lifting cylinder pivots with grease.	X	√	X	X	X	X	X
2.14	Oil the pivot bearings.	X	X	√	X	X	X	X
2.15	Change the filters of axle gear box clutch.	X	X	√*	X	X	X	X
2.16	Replace the filter cartridge of trabold filter.	X	X	√*	X	X	X	X
2.17	Replace the filter cartridge of main gear box filter.	X	X	√*	X	X	X	X
2.18	Change oil of axle gear boxes (axle 1,2,3,4). Tellus Oil –T 68 (Shell)/ equivalent [#]	X	X	√*	X	X	X	X
2.19	Change oil of main gear boxes1 and 2. Tellus Oil –T 68 (Shell)/ equivalent [#]	X	X	√*	X	X	X	X
2.20	Change oil of screen drum. Omala 68 (Shell)	X	X	√*	X	X	X	X
2.21	Change oil of dredger drum gear boxes. Tellus Oil –T 68 (Shell)/ equivalent [#]	X	X	√*	X	X	X	X
2.22	Change oil of Tensioning cylinder. Tellus Oil –T 68 (Shell)/ equivalent [#]	X	X	√*	X	X	X	X
2.23	Visual check and lubrication the lifting cylinder of excavation chain.	X	X	√*	X	X	X	X
*Done after every 500 Engine hours # Approved by RDSO								

S. N.	ITEM	SCH.I Daily	SCH.II 50HRS.	SCH.III 100 HRS.	SCH.IV 200 HRS.	SCH.V 1000 HRS.	SCH.VI 2000HRS.	SCH.VII 6000 HRS.
2.24	Visual check and lubrication the drag bearing of the screen unit.	X	X	√*	X	X	X	X
2.25	Visual check and lubrication the slewing arm bearing of the ballast Distributing conveyor belt.	X	X	√*	X	X	X	X
2.26	Check the condition and position of the hydraulic hoses.	X	X	√*	X	X	X	X
2.27	Check the cover plate bolts of all hydraulic cylinders.	X	X	√*	X	X	X	X
2.28	Check oil level of Tensioning cylinder.	X	X	X	√	X	X	X
2.29	Clean the filler ventilation filter of the hydraulic oil tank.	X	X	X	√	X	X	X
2.30	Check all pressure controls for rated settings.	X	X	X	√	X	X	X
2.31	Clean fins of hydraulic oil cooler.	X	X	X	√	X	X	X
2.32	Change oil in the oil chamber of tension cylinder. Tellus Oil –T 68 (Shell)/equivalent [#]	X	X	X	√	X	X	X
2.33	Check and clean breathing filter of hydraulic tank.	X	X	X	√	X	X	X
2.34	Screen drive ventilation filter: visual check and cleaning.	X	X	X	√	X	X	X
2.35	Replace the dredger drum gear box filter.	X	X	X	√**	X	X	X
2.36	Replace return filter and suction filters.	X	X	X	X	√	X	X
2.37	Test hydraulic oil for quality (viscosity) check and do needful.	X	X	X	X	√	X	X
2.38	Replace the oil of turn table. Tellus Oil –T 68 (Shell)/equivalent [#]	X	X	X	X	√	X	X
2.39	Clean the hydraulic tank before changing hyd. Oil if required.	X	X	X	X	√	X	X
2.40	Check the action of float switch in the hydraulic oil tank.	X	X	X	X	√	X	X
2.41	Slewing conveyor belt live ring: oil level check. Alvania GL 00 (Shell)	X	X	X	X	√	X	X
2.42	Clean the hydraulic oil cooler externally.	X	X	X	X	√	X	X
2.43	Replace the seals of all hydraulic cylinders along with gland bushes /piston.	X	X	X	X	√	X	X
*Done after every 500 Engine hours **Done after every 1200 Engine hours # Approved by RDSO								

S. N.	ITEM	SCH.I Daily	SCH.II 50HRS.	SCH.III 100 HRS.	SCH.IV 200 HRS.	SCH.V 1000 HRS.	SCH.VI 2000HRS.	SCH.VII 6000 HRS.
2.44	Check the hydraulic motors for proper function and do needful.	X	X	X	X	X	√	X
2.45	Check the D.C. valves for leakage and do needful.	X	X	X	X	X	√	X
2.46	Check all pressure settings.	X	X	X	X	X	√	X
2.47	Clean the hydraulic oil tank. Paint the surface of tank with approved quality of paint and fill new oil.	X	X	X	X	X	X	√
2.48	Check all the stop cocks and flow control valves and change if required.	X	X	X	X	X	X	√
2.49	Replace all the hydraulic hoses along-with clamps as required.	X	X	X	X	X	X	√
2.50	Check all hydraulic cylinders, change/repair, need basis.	X	X	X	X	X	X	√

S. N.	ITEM	SCH.I Daily	SCH.II 50HRS.	SCH.III 100 HRS.	SCH.IV 200 HRS.	SCH.V 1000 HRS.	SCH.VI 2000HRS.	SCH.VII 6000HRS.
3. MECHANICAL								
3.1	Inspect wear plates on ascending & descending side and change badly worn-out plates.	√	X	X	X	X	X	X
3.2	Visual check the oil level of the screen drive.	√	X	X	X	X	X	X
3.3	Visual check the entire screen unit.	√	X	X	X	X	X	X
3.4	Visual check the covering cap of excavation chain.	√	X	X	X	X	X	X
3.5	Check proper locking of all units.	√	X	X	X	X	X	X
3.6	Check the function and condition of conveyor belt, tension, safety switch.	√	X	X	X	X	X	X
3.7	Check locking screws, round shaft chisel of excavation chain and do needful.	√	X	X	X	X	X	X
3.8	Excavation chain guide: - check for wear, check the wear strips. - Visual check of the entire chain suspension. - check all locking devices for proper locking and indication. - Operability - check all screws for tightness.	√	X	X	X	X	X	X
3.9	Check the connection between connecting elbow and cutter bar.	√	X	X	X	X	X	X
3.10	Greasing of sliding pads. Grease RETINAX - RL2 (Shell)	√	X	X	X	X	X	X
3.11	Check operation of safety device.	√	X	X	X	X	X	X
3.12	Check anti collision devise of waste conveyors.	√	X	X	X	X	X	X
3.13	Check the functioning of emergency backup system.	√	X	X	X	X	X	X
3.14	Check wear on ballast distribution chutes and control.	X	√	X	X	X	X	X
3.15	Check clearance of lifting roller disc below the rail head in lowered condition.	X	√	X	X	X	X	X
3.16	Lubricate roller clamps housing with grease. Grease RETINAX - RL2 (Shell)	X	√	X	X	X	X	X
3.17	Lubricate lifting unit guide columns with grease. Grease RETINAX - RL2 (Shell)	X	√	X	X	X	X	X
3.18	Lubricate screen guide plates with grease. Grease RETINAX - RL2 (Shell)	X	√	X	X	X	X	X
3.19	Lubricate locking device pivots with grease. Grease RETINAX - RL2 (Shell)	X	√	X	X	X	X	X

S. N.	ITEM	SCH.I Daily	SCH.II 50HRS.	SCH.III 100 HRS.	SCH.IV 200 HRS.	SCH.V 1000 HRS.	SCH.VI 2000HRS.	SCH.VII 6000HRS.
3.20	Lubricate bearings for main conveyor with grease. Grease RETINAX - RL2 (Shell)	X	√	X	X	X	X	X
3.21	Lubricate bearing for main and distributing conveyor chain and adjust if required.	X	√	X	X	X	X	X
3.22	Check the wear of the turret drum area.	X	√	X	X	X	X	X
3.23	Check guide rollers of conveyor belts.	X	√	X	X	X	X	X
3.24	Check and grease screen unit, guide plates. Grease RETINAX - RL2 (Shell)	X	√	X	X	X	X	X
3.25	Visual check of tensioning cylinder piston rod, cleaning and lubrication.	X	√	X	X	X	X	X
3.26	Clean excavating conveyor sliding frame.	X	√	X	X	X	X	X
3.27	Check the tension of excavating conveyor chain and adjust if required.	X	√	X	X	X	X	X
3.28	Check brake shoe clearance and adjust if required.	X	√	X	X	X	X	X
3.29	Check, cleaning & oiling of Piston rod, joints/clevis.	X	√	X	X	X	X	X
3.30	Check the condition of brake shoes, replace if required.	X	√	X	X	X	X	X
3.31	Lubricate all pivoting bearing and bolt. Rimula Super 15 W-40 (Shell)	X	√*	X	X	X	X	X
3.32	Check lubricates the sleeper scraper.	X	√*	X	X	X	X	X
3.33	Visual check and lubricate the tension bearing of the deflection Pulley of all conveyor belts.	X	√*	X	X	X	X	X
3.34	Check oil level of all gear boxes and fill up-to the mark, If required.	X	X	√	X	X	X	X
3.35	Check movement of sliding plate of chain trough.	X	X	√	X	X	X	X
3.36	Check guide rollers and bushes of cutter chain.	X	X	√	X	X	X	X
3.37	Check foundation bolts of brake cylinder.	X	X	√	X	X	X	X
3.38	Check the excavation chain sprocket and change if required.	X	X	X	√	X	X	X
3.39	Recondition/Replace the cutter bar.	X	X	X	√	X	X	X
3.40	Replace excavating fingers if required.	X	X	X	√	X	X	X
3.41	Repair ballast screens.	X	X	X	√	X	X	X
3.42	Actuate the clutch, check the fluid level.	X	X	X	√	X	X	X
3.43	Check the clutch pressure and adjust if required.	X	X	X	√	X	X	X
3.44	Check rubber bearing fitted under screen meshes and change if broken	X	X	X	√	X	X	X
*Done after every 250 Engine hours								

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3.45	Inspect all cordon shafts for any crack.	X	X	X	√	X	X	X
3.46	Change hood area wear plates.	X	X	X	X	√	X	X
3.47	Check the functioning of pressure switch of axle clutch and adjust if required.	X	X	X	X	√	X	X
3.48	Clean and grease the axle bearings of the bogies.	X	X	X	X	√	X	X
3.49	Lubricate swiveling bearings with grease. Grease RETINAX - RL2 (Shell)	X	X	X	X	√	X	X
3.50	Clean and lubricate sliding surfaces and bolts of torque supports with oil.	X	X	X	X	√	X	X
3.51	Change the chute wear plates.	X	X	X	X	√	X	X
3.52	Change worn out screen meshes and chute plates, if required.	X	X	X	X	√	X	X
3.53	Check shock absorber for proper functioning and do needful.	X	X	X	X	√	X	X
3.54	Overhaul the complete plow.	X	X	X	X	√	X	X
3.55	Replace the worn out broom sticks, if required.	X	X	X	X	√	X	X
3.56	Change the worn out rubber pads.	X	X	X	X	√	X	X
3.57	Check condition of trough plates and replace if required.	X	X	X	X	√	X	X
3.58	Replace distributing conveyors and waste conveyor belts.	X	X	X	X	√	X	X
3.59	Replace main conveyor and scrapper rubber.	X	X	X	X	√	X	X
3.60	Check condition of roller disc clamp for lifting device and do needful.	X	X	X	X	√	X	X
3.61	Lubricate chain trough bearings with grease. Grease RETINAX - RL2 (Shell)	X	X	X	X	√	X	X
3.62	Check the function of the lifting device, Clean and lubricate.	X	X	X	X	√	X	X
3.63	Check foundation and bracket bolts of compressor.	X	X	X	X	√	X	X
3.64	Check up rubber element of torque plate suspension and do needful.	X	X	X	X	√	X	X
3.65	Check grease filling of Parking brake and do as Required.	X	X	X	X	√	X	X
3.66	Overhauling of screen vibration unit on need basis.	X	X	X	X	X	√	X
3.67	Overhauling/replacement conveyer belt/chain guide.	X	X	X	X	X	√	X
3.68	Change the wing plate of ballast guide.	X	X	X	X	X	√	X
3.69	Change all the brake shoes.	X	X	X	X	X	√	X
3.70	Check the wheels for tyre defects re profile or replace, if required.	X	X	X	X	X	X	√
3.71	Change the rear frame, chute box and wing frame.	X	X	X	X	X	X	√

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3.72	Check the bogie pivot for wear and attend as necessary.	X	X	X	X	X	X	√
3.73	Change the scraper pads and scraper rubbers of all conveyors.	X	X	X	X	X	X	√
3.74	Check the axle bearing and grease them. Change if required.	X	X	X	X	X	X	√
3.75	Overhaul the complete ascending and descending side chain trough.	X	X	X	X	X	X	√
3.76	Provide missing thimbles.	X	X	X	X	X	X	√
3.77	Overhaul the lifting unit.	X	X	X	X	X	X	√
3.78	Strengthen the machine frame where cracks have developed.	X	X	X	X	X	X	√
3.79	Repair/replace screen frame.	X	X	X	X	X	X	√
3.80	Overhaul screen vibration drum and replace bearings.	X	X	X	X	X	X	√
3.81	Replace bearing of excavating unit.	X	X	X	X	X	X	√
3.82	Overhaul the cutting unit.	X	X	X	X	X	X	√

S. N.	ITEM	SCH.I Daily	SCH.II 50HRS.	SCH.III 100 HRS.	SCH.IV 200 HRS.	SCH.V 1000 HRS.	SCH.VI 2000HRS.	SCH.VII 6000HRS.
4. POWER TRANSMISSION AND GEAR BOX								
4.1	Check the oil leakage from all gear boxes and do the needful.	√	X	X	X	X	X	X
4.2	Check for proper axle clutch pressure.	√	X	X	X	X	X	X
4.3	Visual check the oil level of axle gearboxes.	√	X	X	X	X	X	X
4.4	Check the pressure gauges of dredger drum and screen drive while working.	X	√	X	X	X	X	X
4.5	Check the oil level of conveyor belt gear box A1 and B1.	X	√	X	X	X	X	X
4.6	Check and top up the lubrication of all conveyor belt system.	X	√	X	X	X	X	X
4.7	Check the tightness of cardon shaft bolts.	X	√	X	X	X	X	X
4.8	Visual check the oil level of axle gearboxes.	X	√	X	X	X	X	X
4.9	Check oil level in turret dredger drum gear box.	X	√	X	X	X	X	X
4.10	Clean and grease the cardan shafts.	X	√	X	X	X	X	X
4.11	Visual check and Lubricate the spherical roller bearing of the driving station of all conveyor belts.	X	√*	X	X	X	X	X
4.12	Change oil in the main waste conveyor gear box.	X	X	X	√	X	X	X
4.13	Replace scraper shovel and intermediate links, if required.	X	X	X	√	X	X	X
4.14	Remove bushes of axle gear box and check the condition of the piston ring groove.	X	X	X	X	√	X	X
4.15	Oil change in the slewing conveyor belt drive ring.	X	X	X	X	√	X	X
4.16	Replace all conveyor belts and overhaul the driving stations.	X	X	X	X	√	X	X
4.17	Lubricate the drag bearing of the driving station of main conveyor belt.	X	X	X	X	√	X	X
4.18	Lubricate the drag bearing of the driving station of slewing conveyor belt.	X	X	X	X	√	X	X
4.19	Lubricate the drag bearing of the driving station of distributing conveyor belts.	X	X	X	X	√	X	X
4.20	Visual and physical inspection of wheels shall be done once in a year or once after every 1000 engine running hours whichever is earlier.	X	X	X	X	√	X	X
*Done after every 250 Engine hours								

S. N.	ITEM	SCH.I Daily	SCH.II 50HRS.	SCH.III 100 HRS.	SCH.IV 200 HRS.	SCH.V 1000 HRS.	SCH.VI 2000HRS.	SCH.VII 6000HRS.
4.21	Ultrasonic examination of axle shall be between 40,000 to 45,000 kms of running or three years, whichever is earlier.	X	X	X	X	X	√	X
4.22	Replace the shaft of gear boxes for which splices have twisted or worn out.	X	X	X	X	X	X	√
4.23	Change mounting pad of all gear boxes.	X	X	X	X	X	X	√
4.24	Overhaul the gear boxes.	X	X	X	X	X	X	√
4.25	Replace bearing of cutting chain drive gearbox if required.	X	X	X	X	X	X	√

S. N.	ITEM	SCH.I Daily	SCH.II 50HRS.	SCH.III 100 HRS.	SCH.IV 200 HRS.	SCH.V 1000 HRS.	SCH.VI 2000HRS.	SCH.VII 6000HRS.
5. ELECTRICAL								
5.1	Check all lights and do needful.	X	√	X	X	X	X	X
5.2	Check function of all limits switches/Proximity switch and do needful.	X	X	X	√	X	X	X
5.3	Clean alternator.	X	X	X	√	X	X	X
5.4	Check the main supply cable.	X	X	X	√	X	X	X
5.5	Check condition of the battery electrolyte level and cable connections.	X	X	X	√	X	X	X
5.6	Check temperature switch and sensor.	X	X	X	X	√	X	X
5.7	Check the LED of all solenoids & replace if required.	X	X	X	X	X	X	√
5.8	Overhaul all the panel boxes.	X	X	X	X	X	X	√
5.9	Replace the defective PCBs.	X	X	X	X	X	X	√
5.10	Change/replace defective cable/wiring.	X	X	X	X	X	X	√
5.11	Replace defective switches and potentiometers.	X	X	X	X	X	X	√

S. N.	ITEM	SCH.I Daily	SCH.II 50HRS.	SCH.III 100 HRS.	SCH.IV 200 HRS.	SCH.V 1000 HRS.	SCH.VI 2000HRS.	SCH.VII 6000HRS.
6. PNEUMATIC								
6.1	Check air brake system pressure.	√	X	X	X	X	X	X
6.2	Check for any air leakage.	√	X	X	X	X	X	X
6.3	Drain air reservoirs/Drip cups after the day's work.	√	X	X	X	X	X	X
6.4	Check the contamination indicators (pilot lamps) for dry type air filter.	√	X	X	X	X	X	X
6.5	Check brake parts of idling bogie and powered bogie.	√	X	X	X	X	X	X
6.6	Check emergency brake operation.	√	X	X	X	X	X	X
6.7	Check function of horns.	√	X	X	X	X	X	X
6.8	Check oil level of pneumatic lubricator (air oiler).	√	X	X	X	X	X	X
6.9	Clean water separator.	X	√	X	X	X	X	X
6.10	Check the pressure setting of relief valve.	X	X	√	X	X	X	X
6.11	Replace the filter cartridge of air dryer.	X	X	√*	X	X	X	X
6.12	Clean filter element of pneumatic system as per required.	X	X	X	√	X	X	X
6.13	Check tightness of foundation bolts of brake cylinders.	X	X	X	√	X	X	X
6.14	Check the mounting bolts of all pneumatic valves.	X	X	X	√	X	X	X
6.15	Check the functioning of auto drain valve.	X	X	X	√	X	X	X
6.16	Clean cooling coil.	X	X	X	√	X	X	X
6.17	Check air unloader for proper functioning.	X	X	X	√	X	X	X
6.18	Check condition of pneumatic hoses and replace as required.	X	X	X	X	√	X	X
6.19	Overhaul the air unloader.	X	X	X	X	√	X	X
6.20	Overhaul the water separator and air oiler.	X	X	X	X	√	X	X
6.21	Replace pneumatic cylinder seals or cylinders as required.	X	X	X	X	X	X	√
6.22	Clean air tank.	X	X	X	X	X	X	√
6.23	Check all pneumatic valves and change if necessary.	X	X	X	X	X	X	√
6.24	All pneumatic pipes to be replaced.	X	X	X	X	X	X	√
6.25	Change the water separator and air oiler.	X	X	X	X	X	X	√
6.26	Replace air unloader, need basis.	X	X	X	X	X	X	√
6.27	Change all the pressure control valves, need basis	X	X	X	X	X	X	√
6.28	Overhaul the brake cylinder and replace the seals if required.	X	X	X	X	X	X	√
6.29	Check the brake system.	X	X	X	X	X	X	√
*Done after every 500 Engine hours								

S. N.	ITEM	SCH.I Daily	SCH.II 50HRS.	SCH.III 100 HRS.	SCH.IV 200 HRS.	SCH.V 1000 HRS.	SCH.VI 2000HRS.	SCH.VII 6000HRS.
7. GENERAL								
7.1	Check for any unusual sound from machine.	√	X	X	X	X	X	X
7.2	Check safety items, emergency tools & spares.	√	X	X	X	X	X	X
7.3	Check all the functions of machine before block working.	√	X	X	X	X	X	X
7.4	Check the expiry of first Aid box.	X	X	√*	X	X	X	X
7.5	Check the expiry of fire extinguisher/ may be done on regular basis.	X	X	√*	X	X	X	X
7.6	Clean complete machine.	X	X	X	X	√	X	X
7.7	Paint the screen area and chain trough.	X	X	X	X	√	X	X
7.8	Thoroughly clean all panel boxes with pressurized air.	X	X	X	X	X	√	X
7.9	Check the function of all assemblies after IOH.	X	X	X	X	X	√	X
7.10	Calibrate the machine on track for all functions	X	X	X	X	X	√	X
7.11	Replace the missing and defective hand tools.	X	X	X	X	X	√	X
7.12	Overhaul the bogies/recondition.	X	X	X	X	X	X	√
7.13	Check the calibration of all the indicative instruments and replace the defective ones.	X	X	X	X	X	X	√
7.14	Flush the complete system.	X	X	X	X	X	X	√
7.15	Check the function of all assemblies.	X	X	X	X	X	X	√
7.16	Test the machine for one week before it is put for actual working in section on regular basis.	X	X	X	X	X	X	√
7.17	Overhaul the A.C. unit.	X	X	X	X	X	X	√
7.18	Complete machine may be painted with approved paint.	X	X	X	X	X	X	√
*Done after every 500 Engine hours								
Note-During CPOH, 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.								

ACKNOWLEDGEMENT

Following officers and staff have made their valuable contributions in finalization of the Maintenance Schedule Manual for Ballast cleaning machine (RM-80-92U).

RAILWAYS

1. SHRI DHANJAY SHAHI SSE/TM/ NER
2. SHRI KAUSHLENDRA KUMAR SSE/TM/ NER
3. SHRI VISHAL DUTTA SHUKLA SSE/TM/ NCR
4. SHRI MADAN NAND THAKUR SSE/TM/ ECR
5. SHRI PRASHANT KUMAR SSE/TM/ NR
6. SHRI VIKASH KUMAR JE/TM/ ECR

RDSO

1. SHRI OM PRAKASH DTM-III
2. SHRI MUSLIM AHMAD ARE/TM
3. SHRI SURENDRA KUMAR SSRE/TM
4. SHRI VED PRAKASH SRIVASTAVA SSE/TM