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टीएम/एच एम/एस बी सी एम पार्ट. – III
TM/HM/SBCM/Pt.-III

दिनांक–**27-02-2024**
Date -27-02-2024

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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-	प्रधानाचार्यभा.रे.रे.प.म.प्र.के. पीपलगांव प्रयागराज–211011	**Principal, IRTMTC, Pipalgaon, Prayagraj-211011**
	Details of addresses are enclosed herewith.	

विषय : सोलडर बैलास्ट क्लिीनिंग मशीन माडल –एफ आर एम–85एफ (मशीन क्रम सं– 56794–56806, 57066–57158 और 57331–57334) की अनुरक्षण अनुसूची पुस्तिका।

Sub: Maintenance Schedule Manual of Shoulder Ballast Cleaning Machine (FRM- 85F) (Machine Sr.No. 56794- 56806, 57066-57164 and 57331-57334).

सोलडर बैलास्ट क्लिीनिंग मशीन माडल–एफ आर एम–85एफ (मशीन क्रम सं– 56794–56806 57066–57158 और 57331–57334)की अनुरक्षण अनुसूची पुस्तिका का मसौदा और अंनतिम, ओईएम मैनुअल एवं आइआरटीएमएम–2019 से प्राप्त दिशानिर्देशों तथा पूर्वोत्तर रेलवे से प्राप्त सुझाव के आधार पर तैयार कर टीएम/एच एम/एस बी सी एम /पार्ट– III दि. 07.08.2023 द्वारा 30 दिनो के लिए, मसौदा एव अंनतिम दि 02.11.2023 द्वारा 15 दिनो के लिए सभी क्षेत्रिय रेलवे को सुझाव/ टिप्पणी हेतु जारी किया गया था , परन्तु क्षेत्रिय रेलवे से अभी तक कोई टिप्पणी प्राप्त नही हुई है, अब उपरोक्त सूची को अंतिम रूप मे तैयार किया गया है जिसकी प्रति, आपके सूचनार्थ तथा मशीन के कर्मचारियों जो फील्ड मे काम कर रहे हैं के मार्गदर्शन हेतु संलग्न है। यद्यपि उपरोक्त सूची बनाते समय सभी सावधनियाँ बरती गईं है, फिर भी यदि कोई त्रुटि हो तो कृपया अपने सुझावों/टिप्पणियों को सुधार हेतु ई–मेल/फैक्स/पत्राचार द्वारा अद्योहस्ताक्षरी को भेजे।

Drafts and provisional of maintenance schedule manual of Shoulder Ballast Cleaning Machine (FRM-85F) (Machine Sr.No. 56794- 56806, 57066-57164 and 57331-57334) has been prepared on the basis of OEM manual, IRTMM-2019 and suggestions received from N.E. Railway and circulated vide letter no. TM/HM/SBCM/Pt-III dated 07/08/2023 and dt. 02.11.2023 for 30 and 15 days respectively, but no comments received from Zonal Railways. Hence the maintenance schedule has been finalized.

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.

E-mail Id- hmtmmrdso@gmail.com

संलग्नक : उपरोक्त

AMAR DEV MAURYA
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(A.D.Maurya)
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Government of India - Ministry of Railways

Research Designs and Standards Organisation

MAINTENANCE SCHEDULE MANUAL FOR SHOULDER BALLAST CLEANING MACHINE (FRM-85 F)

(Machine Sr. No. 56794- 56806, 57066-57164 and 57331-57334)

Report No.TM –284

February-2024

इंफ्रास्ट्रक्चर निदेशालय (रेलपथ मशीन एंव मानीटरिंग) अनुसंधान अभिकल्प और मानक संगठन,

लखनऊ–**226011**

DIRECTORATE OF INFRASTRUCTURE (TRACK MACHINE & MONITORING)

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, CPOH/ Prayagraj, Rayanapadu, Kachrapara & Ahmedabad 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 for Shoulder Ballast Cleaning Machine (FRM-85F) Plasser-make for machine Sr.no. 56794- 56806 and 57066-57158 has been prepared on the basis of maintenance instruction given by OEM and suggestions received from different railways. 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 parts where as required in addition to manual depending on discretion of machine in- charge. Some time machine modified/altered 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.

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

Feb.-2024

EXPLANTORY NOTES

While preparing text of schedules for maintenance of Shoulder Ballast Cleaning Machine (FRM-85 F) 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 Index for Shoulder Ballast Cleaning Machine (FRM-85 F)

S.N.	Schedule	Periodicity	Duration	Location
1.	Schedule I	Daily/ Before working & running	One hour.	In 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.	2 days	-do-
5.	Schedule V	1000 Engine hrs.	7 days	In Satellite Depot/Zonal Workshop
6.	Schedule VI (IOH)	2000 Engine hrs.	45days	In Zonal Workshop
7.	Schedule VII (POH)	1st - 8000 2nd-14000 and then at 4000 Engine hrs.	1st - 90 days, 2nd - 105 days	In CPOH Workshop

INDEX

S.N.	DESCRIPTION OF SCHEDULE	PAGE NO.
1.	Schedule I	1-2
2.	Schedule II	3-4
3.	Schedule III	5-6
4.	Schedule IV	7-8
5.	Schedule V	9-10
6.	Schedule VI IOH	11-12
7.	Schedule VII POH	13-14
8.	Annexure-I	15
9.	Annexure-II	16
10.	Acknowledgement	17

SCHEDULE - I
(TO BE DONE DAILY) DURATION: 01 HR.

1.0	**ENGINE MODEL-Caterpillar C-18,** 522 kW (700HP) at 2100 rpm working RPM-1800
1.1	Visual check fuel level and top up if required.
1.2	Visual Check the leakage from fuel pump, injectors, fuel supply and Return pipes and do needful.
1.3	Check engine lube oil level, top up if required.
1.4	Visual check the fuel level in the diesel fuel tank.
1.5	Check the level of coolant in radiator and top up, if required.
1.6	Open and clean dust collector/pan.
1.7	Visual check the tension and condition of V-belts and do needful.
1.8	Visual check the air cleaner chocking indicator. If indicator is red, the outer filter is to be cleaned.
1.9	Check the battery charging system.
1.10	Record the maximum engine temperature of the day.
1.11	Check engine oil pressure on load after two hours working- (a) at idle speed (min. 2.5 kg/sq.cm). (b) On rated speed (min. 4.5 kg/sq.cm).
1.12	Check leakage of lube oil, if any.
1.13	Check and prevent water leakage, if any.
1.14	Check all indicative gauges for proper functioning.
1.15	Clean the engine and premises.
1.16	Drain sediment from water Separator.
2.0	**HYDRAULIC**
2.1	Check oil level in Hydraulic oil reservoir and top up if required.
2.2	Clean the slots to the joints of hydraulic cylinders.
2.3	Visual check filters chocking indication if provided.
2.4	Check oil level in vibration screen drum.
2.5	Check oil level in all axle gear box (4 nos.)
2.6	Check leakage in hydraulic circuit and do needful.
2.7	Check for any rubbing of hoses & loose clamping etc. and correct it.
2.8	Record the maximum temperature of hydraulic oil during the day's work
2.9	Check all hydraulic system operating pressures.
3.0	**MECHANICAL**
3.1	Visual check brake system and rubber elements.
3.2	Visual check securing screws, scraper rubber of the excavation chain.
3.3	Visual check fastening and wear plates.
3.4	Visual check the ballast distribution chutes.
3.5	Visual check working of the belts, tension and operation of the scrapers of Conveyor belts look out for damages.
3.6	Check wear of sieve fastening elements and ballast guides.
3.7	Check screening mesh for any damages (Size 80mm, 50mm & 32mm squire)
3.8	Check screen sieve fastening elements, mesh ballast flaps and ballast

	guides(2x)
3.9	Lubricate sliding parts, top up lubricators for swivel ring lubrication of axle bogies
3.10	Check cutter chain gear box bolts.
3.11	Check and lubricate chain tension roller.
3.12	Check proper locking of all units.
3.13	Check lubrication system of excavating chain, main conveyor, excavating conveyor and oil level of central lubrication tank
3.14	Check the safety screw, scraper fingers and safety bolts of the excavating chain.
3.15	Check for wear and check the wearing strips of chain guide.
3.16	Covering cap: - Check for wear. - Visual check fastenings telescope Movement scraper. Clean the Tele-scope/sliding strip.
3.17	Check anti-collision device of waste conveyors unit and cutting chain.
3.18	Check ballast regulating, compactor and broom units for proper function.
4.0	**POWER TRANSMISSION AND GEAR BOX**
4.1	Check the oil leakage from all gear boxes and do the needful.
4.2	Check axle gear box suspension, as well as torque converter bearings.
4.3	Check the filter of axle gear boxes.
4.4	Check both cutter chains gear box bolts.
4.5	Check oil level of all gear boxes and fill up-to the mark, If required.
4.6	Check the filter indicators of axle gear box clutch.
4.7	Check for proper axle clutch pressure.
5.0	**ELECTRICAL**
5.1	Check all electrical gauges for proper function and indication.
5.2	Check all lights, parking lights, horns etc.
5.3	Check both sides flasher lights.
5.4	Check all locking indications.
6.0	**PNEUMATIC**
6.1	Check air brake system pressure.
6.2	Check for any air leakage.
6.3	Check function of Pn. horns.
6.4	Drain drip cup of main air piping & top up air lubricator if required.
6.5	Check emergency brake system.
6.6	Drain air reservoirs after the day's work.
7.0	**GENERAL**
7.1	Check all the functions of machine before block working.
7.2	Check for any unusual sound from machine.
7.3	Check safety items, emergency tools & spares.
7.4	Check water level on water tank for dust protection.
7.5	Clean complete machine.
7.6	Examine draw hook, draw bars, rubber pads for damages.

SCHEDULE II,
(TO BE DONE EVERY 50 ERHS.)
DURATION-TWO HRS.
(TO BE DONE IN ADDITION TO SCHEDULE-I)

1.0	**ENGINE MODEL-Caterpillar C-18**
1.1	Drain sediment from fuel filter.
1.2	Check the physical condition & tension of all V belts and do the needful.
1.3	Check electrolyte level of batteries, top up if required.
1.4	Check battery terminals, connection for tightness & apply petroleum jelly on terminals.
1.5	Check the mounting bolts of Self-starter & Alternator.
1.6	***Done after every 250 Engine hour or at least annually.***
1.7	Change engine oil.
1.8	Change engine oil filter.
1.9	Check fuel tank breather and clean if required.
1.10	Change all fuel filter (HYD-501.10.10/H300W/ES FITTEINSATZ-2 nos. & 1R-0749-2nos.)
1.11	Clean outer air cleaner element (Cleaned after every 250 hrs or on dirt indication).
2.0	**HYDRAULIC**
2.1	Clean and lubricate piston rods, bolts, and joints of hydraulic cylinders.
2.2	Check & clean the surfaces radiator for the hydraulic oil and the lubricating oil of the main gear boxes.
2.3	Check leakage in hydraulic circuit and do needful.
2.4	Check the all hydraulic valves, Pumps, Motors for any leakage & defects.
2.5	***Done after every 250 Engine hours.***
2.6	Clean the aeration filter of the hydraulic oil tank.
2.7	***Done after every 500 Engine hours.***
2.8	Change the hydraulic filter of the Screen drive.
2.9	Change the filters of axle gear box clutch.
2.10	Replace suction filters.
2.11	Replace return filters.
3.0	**MECHANICAL**
3.1	Check the functioning of emergency backup system.
3.2	Check brake linkage and lubricate the pivots and gear teeth of hand brake with grease.
3.3	Lubricate screen guide plates with grease.
3.4	Check guide rollers of conveyor belts.
3.5	Lubricate the chain guide of excavating chains.
3.6	Check the tension of excavating conveyor chain and adjust if required.
3.7	Lubricate bearing for main and distributing conveyor chain and adjust the tension if required.
3.8	Check, clean & lubricate tensioning piston rod, joints/clevis.
3.9	Check wear on ballast distribution chutes.

3.10	Inspect wear plates of chain trough.
3.11	Top up the bottle for lubrication of king pin pivots.
3.12	Clean excavating conveyor sliding frame for any restriction.
3.13	Grease plow pivots broom units and sliding planes of cutter unit.
3.14	Check wear tears of ballast regulating system.
3.15	Check broom strikes for any defects.
3.16	Check condition of center plough, shoulder plough, compactor.
3.17	Check brake shoe clearance and adjust if required.
3.18	Check, cleaning & oiling of Piston rod, joints/clevis
3.19	Check the condition of brake shoes, replace if require
4.0	**POWER TRANSMISSION AND GEAR BOX**
4.1	Lubricate axle gearbox flange cover of driving bogie with grease.
4.2	Check the oil level of excavating and waste conveyor belt gear box.
4.3	Check tightness of cardon shaft bolts.
4.4	Visual check the oil level of axle gear boxes.
4.5	Check oil level in turret dredger drum gear box.
4.6	Clean and grease the cardan shafts.
4.7	Visual check and Lubricate the spherical roller bearing of the driving station of all conveyors.
5.0	**ELECTRICAL**
5.1	Check all lights, brake parking lights and do needful.
5.2	Check all indication of LED lights, sensors for proper indications & working.
5.3	Check battery terminals and electrolyte level.
5.4	Check alternator, self-starter connections and proper working.
5.5	Check fire alarm system.
6.0	**PNEUMATIC**
6.1	Clean the water separator of pneumatic system.
6.2	Top up air oiler if required.
6.3	Check Pn. hoses for proper clamping and any defects.
6.4	Check all Pn. cylinders for proper working.
7.0	**GENERAL**
7.1	Check under gear of machine for any defects or any hanging parts.
7.2	Check brake parts of idling bogie and powered bogie.
7.3	Check condition of the CBC/screw coupling and its components and replace as required.
7.4	Visually examine center pivot mounting bolts and attend if needed.
7.5	Visually inspect for damage on brake pipes, replace if required.
7.6	Examine visually axle box for grease oozing out, warm box if any.

SCHEDULE III,
(TO BE DONE EVERY 100 ERHS.)
DURATION- ONE DAY
(TO BE DONE IN ADDITION TO SCHEDULE-I & II)

1.0	**ENGINE MODEL-Caterpillar C 18**
1.1	Check the safety device of water temperature & lube oil pressure.
1.2	Lubricate the accelerating mechanism with lube oil.
1.3	Examine the mounting bolts of engines.
1.4	Clean the fins of engine radiator with air pressure.
1.5	Check engine hose clamps and replace if required
1.6	Inspect the fuel water separator for proper functioning.
1.7	Check inlet and exhaust manifold for any leakages.
1.8	Check specific gravity of battery electrolyte.
1.9	***Done after every 500 Engine hours.***
1.10	Clean crank case air breather.
2.0	**HYDRAULIC**
2.1	Check & lubricate all hyd. cylinders piston rod, bolts, joints & cover plate.
2.2	Check the condition and position of the hydraulic hoses.
2.3	Check the mountings bolts of the oil filter, return oil filter, breathing, apparatus.
2.4	Check adjust both sides cutting chain drive pressure.
3.0	**MECHANICAL**
3.1	Check condition of broom.
3.2	Check all the idler rollers of distribution and discharge conveyor for free rotation.
3.3	Check guide rollers and bushes of cutter chain.
3.4	Check the condition of torque arm rubber.
3.5	Check rubber bearing fitted under screen meshes and change if broken.
3.6	Visual check the screen units for any broken wire and whether the fastening elements are reliably connected.
3.7	Lubricate the cutting chain and excavating conveyor bearing.
3.8	Check the condition of brake shoes, replace if required.
3.9	Check the condition of vibration motor of compacting device.
3.10	Check the condition of rail fastening brushes.
3.11	Check the locking system of compacting device.
3.12	Adjust Height adjusting screw of center plough and stopper.
3.13	Check and adjust all ballast guard devices.
4.0	**POWER TRANSMISSION AND GEAR BOX**
4.1	Check reduction Gear box of cutter chain.
4.2	Check reduction gear box of main conveyor.
4.3	Check and top up the lubrication of all conveyor belt system.
4.4	Check and lubricate locking devices of all conveyor belts.
4.5	Check clean and lubricate swivel/rotating supporter bearings.

5.0	**ELECTRICAL**
5.1	No alarm on the display panel. If there is an alarm, check the corresponding element for the reason.
5.2	The locking and unlocking inductive switches have suitable clearance to send correct signals.
5.3	Check emergency pump unit 24VDC.
6.0	**PNEUMATIC**
6.1	Check Pn. Pressure un-loader valve and relief valve for proper working.
6.2	Check the functioning of auto drain valve.
6.3	Check the mounting bolts of all pneumatic valves.
6.4	Check air dryer unit for proper function.
6.5	Check safety brake. (Machine is in self-propelled mode and towing mode)

SCHEDULE-IV
(TO BE DONE EVERY 200 ERHS.)
DURATION- 2 DAYS
(TO BE DONE IN ADDITION TO SCHEDULE-I, II & III)

1.0	**ENGINE MODEL-Caterpillar C 18**
1.1	Check and change radiator hoses, if required.
1.2	Replace V-Belts on condition basis.
1.3	Clean outer air cleaner element.
1.4	Check fuel tank breather and clean if required.
1.5	Check specific gravity of battery electrolyte if applicable.
2.0	**HYDRAULIC**
2.1	Check all pressure settings.
2.2	Check and clean breathing filter of hydraulic tank.
2.3	Check the condition and position of the hydraulic hoses and replace as required.
2.4	Check the mountings bolts of the oil filter, return oil filter, breathing apparatus.
2.5	Check the all hydraulic valves, Pumps, Motors for any leakage & defects.
3.0	**MECHANICAL**
3.1	Check the excavation chain sprocket and change if required.
3.2	Replace excavating fingers if required
3.3	Repair ballast screens.
3.4	Check the clutch pressure and adjust if required.
3.5	Repair the complete plough if required.
3.6	Replace the worn out broom sticks, if required.
3.7	Check wear of brake shoes.
3.8	Check/repair brake lever bearing & brake rods.
3.9	Check and repair all conveyor belts on condition basis and overhaul the driving stations.
3.10	Check condition of trough plates.
3.11	Check excavating belts, supports pipes, chains and acrylic strip of excavating units.
3.12	Check and repair main conveyor support pipes.
3.13	Check guide rollers and bushes of both side excavation devices.
3.14	Lubricate the axle bearings of the bogies with grease.
4.0	**ELECTRICAL**
4.1	Check adjust all limits switches/Proximity switch for proper indication.
4.2	Replace the defective lights.
4.3	Check fire alarm and all alarm system.
4.4	Clean the A.C. units.
4.5	Clean Alternator & Generator.
4.6	Check the main supply cable.
4.7	Check emergency STOPS buttons for proper function.
4.8	Check intercom mike for proper volume and function.

4.9	Check and adjust waste conveyor anti collusion devise for proper working.
4.10	Check by pass switch of driving enable.
4.11	Check engine control module (ECM) for proper function.
5.0	**PNEUMATIC**
5.1	Check tightness of foundation bolts of brake cylinders.
5.2	Check condition of pneumatic hoses and replace as required.
5.3	Check air un-loader and relief valve.
5.4	Check water separator and air oiler.
5.5	Check the functioning of auto drain valve.
5.6	Clean cooling coil.
5.7	Check 4 bar and 6 bar pressure settings.
5.8	Check all brake pressures and check indirect brake system.
6.0	**UNDER FRAME**
6.1	Visually examine wheel tyre profile and thickness of tyre and check with tyre profile gauge if they appear to be near condemning limit.
6.2	Examine visually buffer casing for cracks/damages & height.
6.3	Examine and attend brake levers.
6.4	Check, clean & lubricate draw and buffing gear.

SCHEDULE-V
(TO BE DONE EVERY 1000 ERHS.)
DURATION- 7 DAYS
(TO BE DONE IN ADDITION TO SCHEDULE-I, II,III & IV)

1.0	**ENGINE MODEL-Caterpillar C 18**
1.1	Clean diesel tank with lint free cloth.
1.2	Change inner air cleaner element.
1.3	Change outer air cleaner element.
1.4	Change batteries, as applicable (at least after 2 years).
1.5	Check Engine timing.
1.6	Clean the diesel tank with lint free cloth.
1.7	Replace minor repair kit for both air compressors.
1.8	Check high pressure fuel pipes lines.
1.9	Check fuel tank breather and clean if required.
2.0	**HYDRAULIC**
2.1	Check the condition and position of the hydraulic hoses and replace as required.
2.2	Test hydraulic oil for quality (viscosity) and clean the hydraulic tank before changing hyd. oil if required.
2.3	Clean the hydraulic oil with the help of hydraulic filtration pump.
2.4	Replace all breather filters.
2.5	Clean the hydraulic oil cooler externally.
2.6	Send sample of hydraulic oil for physical & chemical test.
3.0	**MECHANICAL**
3.1	Clean and lubricate sliding surfaces and bolts of torque supports with oil.
3.2	Change oil in screen drive drum and replace filter element.
3.3	Check the functioning of pressure switch of axle clutch and adjust if required.
3.4	Check shock absorber for proper functioning and do needful.
3.5	Check universal joints for play and replace if required.
3.6	Overhaul the complete plough.
3.7	Replace the worn out broom sticks, if required.
3.8	Repair the missing and defective hand tools.
3.9	Check wear of brake shoes.
3.10	Replace all conveyor belts on condition basis and overhaul the driving stations.
3.11	Check condition of trough plates and replace if required.
3.12	Replace excavating belts, supports pipes, chains and acrylic strip of excavating units.
3.13	Replace main conveyor support pipes, chains and acrylic strip.
3.14	Check and repair both sides shoulder plough, center plough and both sides rail fastening cleaner system.
3.15	Check and repair both sides sleeper end consolidator.
4.0	**ELECTRICAL**
4.1	Check function of all limits switches/Proximity switch and do needful.
4.2	Replace the defective lights, switches and circuit breakers.

4.3	Check temperature switches and sensors.
4.4	Check battery and replace if required.
4.5	Check both sides sleeper consolidator operation by Pedal/Manual/Automatic.
4.6	Check all pressure switches.
5.0	**PNEUMATIC**
5.1	Check tightness of foundation bolts of brake cylinders.
5.2	Check condition of pneumatic hoses and replace as required.
5.3	Overhaul the air un-loader.
5.4	Overhaul the water separator and air oiler.
5.5	Check and adjust all pressure settings.
6.0	**UNDER FRAME**
6.1	Visually inspect brake hangers, brake gear pins and cotters/split pins and replace if necessary
6.2	Visually examine brake beams breakages/damages.
6.3	Examine and attend brake levers.
6.4	Check for cutoff angle cock and leakage, attend if needed.
6.5	Repair/Replace all brake drum seals, cylinders, brake, linkage rods& all brake reversal springs.
6.6	Visually examine the cabin and axle support cylinders for leakages/damages
6.7	Ensure that wear on screw coupling shackle pins, trunion pins, shackle/link holes and draw hook holes should not exceed 3mm.
7.0	**GENERAL**
7.1	Clean complete machine.
7.2	Check emergency backup system.
7.3	Check the air conditioner.
7.4	Clean all coolers externally.

SCHEDULE-VI
(TO BE DONE EVERY 2000 ERHS.)
DURATION- 45 DAYS
(TO BE DONE IN ADDITION TO SCHEDULE-I, II,III,IV & V)

1.0	**ENGINE MODEL-Caterpillar C-18**
1.1	Check and overhaul self-starter if required.
1.2	Check and overhaul both alternators if required.
1.3	Overhaul the injectors if required.
1.4	Clean the engine radiator.
1.5	Top overhaul or replace the engine on condition basis.
1.6	Check bearing and shaft of radiator fan drive and do needful.
1.7	Overhaul water pump if required.
1.8	Check turbo charge.
1.9	Check air compressors. Overhaul if necessary.
1.10	Check anti vibration mounting pads of the engines change if required.
1.11	Check engine damper for any damage.
1.12	Clean/Replace cooling coil.
2.0	**HYDRAULIC**
2.1	Check the air conditioner.
2.2	Check the D.C. valves for hyd. oil leakage and do needful.
2.3	Check/adjust all pressure settings.
2.4	Check all Pumps and Motors for proper working
2.5	Check all hydraulic cylinders replace /repair if required.
3.0	**MECHANICAL**
3.1	Clean and lubricate sliding surfaces and bolts of torque supports with oil.
3.2	Change oil in screen drive drum and replace filter element.
3.3	Check the functioning of pressure switch of axle clutch and adjust if required.
3.4	Check shock absorber for proper functioning and do needful.
3.5	Check universal joints for play and replace if required.
3.6	Overhaul the complete plough.
3.7	Check and repair spoil conveyor.
3.8	Check and repair distribution conveyor.
3.9	Check and repair disposal conveyor.
3.10	Check and repair sweeper unit.
3.11	Check and repair sleeper end consolidator.
3.12	Replace the worn out broom sticks, if required.
3.13	Repair the missing and defective hand tools.
3.14	Check wear of brake shoes.
3.15	Replace all conveyor belts on condition basis and overhaul the driving stations.
3.16	Check condition of trough plates and replace if required.
3.17	Replace excavating belts, supports pipes, chains and acrylic strip of excavating units.
3.18	Replace main conveyor support pipes, chains and acrylic strip.
3.19	Check tightness of foundation bolts of brake cylinders.

3.20	Lubricate the axle bearings of the bogies with grease.
4.0	**POWER TRANSMISSION AND GEAR BOX**
4.1	Replace all conveyor belts and overhaul the driving stations.
4.2	Repair/replace all wheels, axles bearing housings and bearings.
4.3	Repair/replace clutch pump for proper function.
4.4	Check driving bypass valve.
5.0	**ELECTRICAL**
5.1	Check function of all limits switches/Proximity switch and do needful.
5.2	Replace the defective lights.
5.3	Check all level indications and gauges.
5.4	Check all panel boxes wiring replace if required.
6.0	**PNEUMATIC**
7.1	Check all cylinders repair if required.
7.2	Check condition of pneumatic hoses and replace as required.
7.3	Overhaul the air un-loader.
7.4	Overhaul the water separator and air oiler.
7.0	**GENERAL**
7.1	Thoroughly clean all panel boxes with pressurized air.
7.2	Check the function of all assemblies after IOH.
7.3	Calibrate the machine on track for all functions
7.4	Check all spares & tools.
7.5	Check the function of all assemblies after POH.

SCHEDULE-VII
(EVERY 8000/6000/4000 ENGINE HRS.)
DURATION- 1ST- POH 90 DAYS, 2ND-POH 105 DAYS
(TO BE DONE IN ADDITION TO ABOVE SCHEDULES)

1.0	**ENGINE MODEL-Caterpillar C 18**
1.1	Overhaul self-starter.
1.2	Overhaul alternator I & II
1.3	Overhaul the injectors.
1.4	Clean the engine radiator internally & externally.
1.5	Top overhaul or replace the engine on condition basis.
1.6	Check bearing and shaft of radiator fan drive and do needful.
1.7	Overhaul water pump.
1.8	Change engine damper for any damage.
1.9	Inspect pneumatic cooling coil for leakage and clean for removing the inside carbon.
1.10	Examine the mounting bolt of the engine.
1.11	Check engine hose clamps and replace if required
1.12	Inspect the fuel water separator for proper functioning
2.0	**HYDRAULIC**
2.1	Clean the hydraulic oil tank. Paint the surface of tank with approved quality of paint and fill new oil.
2.2	Check all the stop cocks and flow control valves and change if required.
2.3	Replace all the hydraulic hoses along-with clamps as required.
2.4	Check all hydraulic cylinders, change/repair, need basis.
2.5	Replace all pump, motors on need basis.
2.6	Replace all pressure regulator valves on condition basis.
2.7	Replace all un-loader valves on condition basis.
2.8	Change hydraulic oil if found unserviceable after cleaning tank.
3.0	**MECHANICAL**
3.1	Clean and lubricate sliding surfaces and bolts of torque supports with oil.
3.2	Change oil in screen drive drum and replace filter element.
3.3	Check the functioning of pressure switch of axle clutch and adjust if required.
3.4	Check shock absorber for proper functioning and do needful.
3.5	Check universal joints for play and replace if required.
3.6	Over haul both sides cutting chain troughs.
3.7	Check the bogie pivot for wear and attend as necessary.
3.8	Check the axle bearing and grease them. Change if required.
3.9	Strengthen the machine frame where cracks have developed.
3.10	Strengthen the machine frame where cracks have developed.
3.11	Repair/replace screen frame.
3.12	Overhaul screen vibration drum and replace bearings.
3.13	Replace the worn out broom sticks, if required.
3.14	Repair the missing and defective hand tools.
3.15	Check wear of brake shoes.

3.16	Replace all conveyor belts on condition basis and overhaul the driving stations.
3.17	Check condition of trough plates and replace if required.
3.18	Replace excavating belts, supports pipes, chains and acrylic strip of excavating units.
3.19	Replace main conveyor support pipes, chains and acrylic strip.
3.20	Repair both shoulder plough.
3.21	Repair compactor unit, Replace broom sticks.
3.22	Repair complete brake assemblies.
4.0	**POWER TRANSMISSION AND GEAR BOX**
4.1	Replace the shaft of gear boxes for which splices have twisted or worn out.
4.2	Change mounting pad of all gear boxes.
4.3	Overhaul the gear boxes.
4.4	Replace bearing of cutting chain drive gearbox if required.
5.0	**ELECTRICAL**
5.1	Check function of all limits switches/Proximity switch and do needful.
5.2	Replace the defective lights, horns, switches.
5.3	Replace all solonids on condition basis.
5.4	Repair/replace defective pressure sencers.
5.5	Repair/replace all defective cables.
6.0	**PNEUMATIC**
5.6	Check condition of pneumatic hoses and replace as required.
5.7	Overhaul the air un-loader and relief valve.
5.8	Overhaul/replace the water separator and air oiler.
5.9	Replace cooling coil, and clean air tanks.
7.0	**UNDER FRAME**
7.1	Through repair and maintenance of bogie & center buffer coupler.
7.2	Repair and maintenance of under frame, bogie frame, primary suspension, secondary suspension, brake rigging, draw gear, buffing gear and running gear.
8.0	**GENERAL**
8.1	Thoroughly clean all panel boxes with pressurized air.
8.2	Thoroughly clean all coolers internally and externally and repair/replace if required.
8.3	Check the function of all assemblies after IOH/POH.
8.4	Calibrate the machine on track for all functions
8.5	Repair water spray system for dust protection.
8.6	Check the wheels for tyre defects re profile or replace, if required
8.7	Change Cabin flooring/matting & Cabin Interior.
8.8	Clean the complete machine.
8.9	Commissioning of machine for one week near the workshop, before it is put forwork in regular section.
8.10	Ultrasonic testing of axles of machine shall be done between 40,000 to 45,000 kms of running or three years whichever is earlier.
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.	

Annexure - I

List of Safety Equipment's

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	2 nos.
5.	Chain & Padlock	1 set
6.	Clamp with Padlock	2 nos.
7.	50 t jack with traverser	2 no.*
8.	Crow bars	4nos.
9.	Wooden blocks of different sizes	4nos.
10.	Gauge cum level	1 no.
11.	Rail thermometer (dial type)	1 no.
12.	Banner flag	2 nos.
13.	Walky talky	2 nos.
14.	First Aid Box	1 no
15.	Skids	4 nos.
16.	Working time table of section where machine working	1 copy
17.	G & SR book with up to date amendment slips	1 copy
18.	4 cell flasher light/ LED torch,6watt	1 no.
19.	LED Petromax	1 no.
20.	Safety helmets	For each Machine staff
21.	Protective clothing, safety shoes and safety gloves	For each Machine staff
22.	Track Machine Manual	1 no.
23.	Accident Manual	1 no.
24.	Fire extinguisher	1 no. (in each cabin)
27.	Hooter (Manually/ Remote)	2 nos.
26.	Hydraulic Hand Pump	1 no.
27.	Emergency pneumatic/Hydraulic hose of sizes suiting to different machines (complete with end fittings)	1 no.

*List of jacks sent to railway bd. vide l no.TM/HM/1, Vol-II dated 22/.08.2019 for approval which is awaited.

Annexure – II

GENERAL SAFETY NOTES

1. The machine has to be operated according to existing Indian Railways rules andregulations.
2. The safety of all machine staffs 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 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. Whenever going to work near cutting chain, operate the emergency push button and ensure latching position.
12. Always wear proper dress, safety shoes and helmet while operation of the machine.

ACKNOWLEDGEMENT

Following officers and staff have made their valuable contributions in finalization of the Maintenance Schedule Manual for **SHOULDER BALLAST CLEANING MACHINE (FRM-85 F)** Machine Sr. No. 56794- 56806, 57066-57164 and 57331-57334.

RAILWAYS

1.	Shri Sada Nand Chaudhary	SSE/TM/NER
1.	Shri Bashishtha Kushwaha	SSE/TM/NER

RDSO

1.	Shri Rakesh Tiwari	ARE/TM
2.	Shri Ved Prakash Srivastava	SSE/TM