भारत सरकार - रेल मंत्रालय
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संख्याः टीएम/एच एम/टी आर टी/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: ट्रैक रिलेइंग ट्रैन (मॉडल- P811S) (मशीन सं. 6122392, 6122402, 6122412, 6122422, 6122432 & 6122442 हेतु मान्य) मशीन की अनुरक्षण अनुसूची पुस्तिका।

Sub: Maintenance schedule manual of Track Relaying Train (TRT) (Model-P811S) (applicable for machine no. 6122392, 6122402, 6122412, 6122422, 6122432 & 6122442).

ट्रैक रिलेइंग ट्रैन (मॉडल-P811S) (मशीन सं. 6122392, 6122402, 6122412, 6122422, 6122432 & 6122442 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/TRT/Pt-III दिनांक 19.06.2023 द्वारा 30 दिनों के लिए और अनंतिम अनुरक्षण अनुसूची पुस्तिका उत्तर रेलवे से प्राप्त सुझाव/टिप्पणी को समाविष्ट करते हुए पत्र सं॰ TM/HM/TRT/Pt-III दिनांक 17.11.2023 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। उसके बाद 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 Track Relaying Train (TRT) (Model-P811S) (applicable for machine no. 6122392, 6122402, 6122412, 6122422, 6122432 & 6122442) had been prepared and circulated to all zonal railways, C.P.O.Hs & IRTMTC vide letter no, TM/HM/TRT/Pt.-III dated: 19.06.2023 for 30 days and further provisional Maintenance schedule manual has been prepared incorporating the recommendations received from Northern Railway circulated vide letter no, TM/HM/TRT/Pt.-III dated: 17.11.2023 for 15 days. After that 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
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(अमर देव मौर्य)
निदेशक रेलपथ मशीन – III

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भारत सरकार
Government of India

रेल मंत्रालय
Ministry of Railways

Maintenance Schedules Manual for

Track Relaying Train-Harsco (TRT) (Model-P811S)

(Applicable for machine no. 6122392, 6122402, 6122412, 6122422, 6122432 & 6122442)

Report No. TM-300
(Feb-2024)

Research Designs & Standards Organisation
Manak Nagar, 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/Allahabad and RDSO/Lucknow. With experience over the years, the Railways 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 Track Relaying Train-Harsco (TRT) 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. Suggestion/instruction given by OEM from time to time also to be followed in addition to above instruction in 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

EXPLANATORY NOTES

While preparing text of schedules for maintenance of Track Relaying Train-Harsco (TRT), 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 Track Relaying Train-Harsco (TRT)

S. N.	Schedule	Periodicity	Duration	Location
1.	Schedule-I	Daily/Before working &running	One hour.	In the TrackMachine Siding
2.	Schedule-II	50 Engine hrs.	Two hours.	-do-
3.	Schedule-III	100 Enginehrs.	One day	-do-
4.	Schedule-IV	200 Engine hrs.	Two days	-do-
5.	Schedule-V	1000 Engine hrs.	Seven days	In Satellite Depot/Zonal Workshop
6.	Schedule-VI (IOH)	2000 Engine hrs.	Forty five days	In Zonal Workshop
7.	Schedule-VII (POH)	1st -8000 Engine hrs, 2nd -14000 Engine hrs. and then at every 4000 Engine hrs	1st POH-seventy days, 2nd POH-Ninety days	In Zonal Workshop /CPOH Workshop

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

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SCHEDULE -- I

(TO BE DONE DAILY)
DURATION ONE HOUR

1.0	**Engine: Cummins engine model QSX15, 450 HP @ 2100 rpm**
1.1.	Check coolant level of radiator and top up, as required.
1.2.	Check the fuel level and top up, as required.
1.3.	Check level of engine oil & top up, as required.
1.4.	Check the leakage from fuel pump, injectors, fuel supply and return pipes and do needful.
1.5.	Check the leakage from hoses, water pump etc. and do the needful.
1.6.	Check air cleaner filter choking indicator. Clean the outer air cleaner element, if indicator displays red.
1.7.	Open and clean dust collector/pan.
1.8.	Drain moisture from air filters.
1.9.	Clean the engine & premises.
1.10.	Check engine oil pressure on load after two hours working.
1.11.	Drain fuel water Separator before starting the engine.
1.12.	Check the tension of V-belt and correct, if required.
1.13.	Drain water from air reservoir after day's work.
1.14.	Record the maximum engine temperature of the day's work.
1.15.	Check charging ammeter of batteries (it should be $+^{ve}$)
2.0	**Emergency Power unit: HATZ Diesel 1D81Z, 15HP @ 3600 rpm**
2.1.	Check coolant level of radiator and top up, as required.
2.2.	Check the fuel level and top up, as required.
2.3.	Check level of engine oil & top up, as required.
2.4.	Clean the engine & premises.
2.5.	Check the tension of V-belt and correct, if required.
2.6.	Check the lower part of oil bath air cleaner for correct oil level and freedom from dirt. Replace oil if sludge has formed.
3.0	**Hydraulic:**
3.1.	Check and top up hydraulic oil tank, if required.
3.2.	Check the hydraulic oil level gauge and sight glass.
3.3.	Record the maximum temperature of hydraulic oil during the day's work.
3.4.	Check rubbing of hydraulic hoses and attend, if required.
3.5.	Check all filters for chocking indicator.
3.6.	Check the leakage from hydraulic hoses & pump control and do needful.
4.0	**Pneumatic:**
4.1.	Check all pneumatic gauges for rated settings.
4.2.	Check air brake pressure (3.8 bar on locking condition).
4.3.	Check pneumatic system for any leakage.
4.4.	Check the brake application before entering the block section.
4.5.	Check oil level of air compressor top up, if required.
5.0	**Mechanical:**
5.1.	Check the entire machine for proper locking.
5.2.	Check conveyor chains for looseness and cracks.
5.3.	Check rollers of the sled.

5.4.	Check the sled chain for proper tension.
5.5.	Check sprocket and chains of sled.
5.6.	Lubricate the sled chain with lube oil.
5.7.	Lubricate the NT (New Tie) rubber pad.
5.8.	Check condition of fingers of pick up unit.
5.9.	Check & grease old sleepers pick up mechanism.
5.10.	Check & grease new sleepers drop mechanism.
5.11.	Grease magazine rollers.
5.12.	Check tightness of nut and bolts and recoup the missing ones.
6.0	**Electrical:**
6.1.	Clean alternator and check connections.
6.2.	Check operation of emergency/traction stop switch.
6.3.	Check electrical system for proper functioning.
6.4.	Check auto functioning of relays, limit switches, proximity switches etc.
6.5.	Check electrical cables for wear and fraying.
7.0	**Gantry (Ashok Leyland model- H6E TICRC3R323, 225 hp at 2300 rpm)**
7.1.	Check engine oil level.
7.2.	Check fuel level.
7.3.	Check hydraulic oil level.
7.4.	Check coolant level in radiator.
7.5.	Check the condition and tension of V- belts of engine.
7.6.	Check pick up frame level, if required adjust with turn-buckles.
7.7.	Check brakes application of gantry (after every block).
7.8.	Check the lube oil pressure of engine on load.
7.9.	Check tightness of nuts and bolts.
7.10.	Lubricate the gantry wheel with grease (to be done after every block).
8.0	**Clip Applicator: (If applicable)**
8.1.	Check lube oil level.
8.2.	Check fuel level.
8.3.	Check battery connections.
8.4.	Check the condition and tension of V-belts.
9.0	**Under Frame Maintenance:**
9.1.	**Under Frame:**
9.1.1.	Visually examine center pivot mounting bolts and attend if needed.
9.1.2.	Check condition of head stock/sole bar of transition coupler and joints.
9.1.3.	Visually examine the shock absorbers for damages.
9.1.4.	Visually inspect center pivot cover.
9.1.5.	Visually examine and attend safety loops of bolster.
9.2.	**Brake Rigging & Brake System:**
9.2.1.	Check and attend brake shoe and key & replace if necessary.
9.2.2.	Visually inspect brake hangers, brake gear pins and cotters/split pins and replace if necessary.
9.3.	**Bogie Frame & Suspension:**
9.3.1.	Visually examine the condition of bogie frame and welded locations.
9.4.	**Buffing Gear:**

9.4.1.	Visually examine buffer plungers for damages/drooping/stroke length.
9.4.2.	Examine buffer mounting bolts and attend if necessary.
9.4.3.	Examine visually buffer casing for cracks/damages & height.
9.5.	**Running Gear And Wheels:**
9.5.1.	Examine visually axle box for grease oozing out, warm box if any.
9.5.2.	Visually inspect axle box covers.
10.0	**General:**
10.1.	Check the complete machine for worn, damaged or missing parts/components etc., replace if necessary.
10.2.	Check for any unusual sound from gear boxes, engine & hydraulic pumps etc.
10.3.	Check the welding generator set for lube oil, fuel level & water level in radiator if applicable.
10.4.	It is necessary to clean the machine before starting the work.
10.5.	Check all spares & tools for emergency as per Annexure – I.
10.6.	Check all the functions of machine before block working.

SCHEDULE -- II

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

1.0	**Engine: Cummins engine model QSX15, 450 HP @ 2100 rpm.**
1.1.	Grease radiator fan drive.
1.2.	Check electrolyte level & gravity of batteries, top up if required.
1.3.	Check battery terminal and connection for tightness.
1.4.	Apply petroleum jelly on battery terminal.
1.5.	Clean the water separator of fuel supply system.
1.6.	Check injector pipes for any rubbing and do needful.
2.0	**Hydraulic:**
2.1.	Clean and repair the hydraulic oil cooler.
3.0	**Pneumatic:**
3.1.	Check all the pneumatic hoses.
3.2.	Check and clean the air oiler and fill up with the new oil.
3.3.	Check pneumatic cylinders for air leakage.
3.4.	Clean all the cylinder piston rod & lubricate the clevis.
4.0	**Mechanical:**
4.1.	Grease dynamic plow.
4.2.	Grease conveyor shaft bearings.
4.3.	Check & lubricate conveyor chain with oil.
4.4.	Check & lubricate conveyor drive chain with oil.
4.5.	Check & lubricate other points as per requirement.
4.6.	Grease clutch, drive shaft and universals Joints (engine to hyd oil pump drive gear box).
4.7.	Apply lube oil on bush bearing.
4.8.	Inspect N.T. rubber pads on sleeper conveyor chains and replace as per requirement.
4.9.	Check all conveyor chain for wear and tension, replace as per requirement.
4.10.	Lubricate all thread in and thread out rollers with grease.
4.11.	Lubricate linkage on pump control with grease.
4.12.	Check oil level of disconnect gear box and fill up to required level.
4.13.	Check oil level of hydraulic pump drive gear box and fill up to required level.
4.14.	Check oil level of all axle gear boxes and fill up to required level.
4.15.	Check oil level of planetary gear box and fill up to required level.
4.16.	Check condition of rail alignment rollers.
4.17.	Recondition vibration plate of dynamic plow.
4.18.	Recondition wear plate of side plow.
4.19.	Recondition skids.
4.20.	Check universal joints for play and replace, if required.
4.21.	Grease all brake linkages.
4.22.	Check oil level of all gear boxes and fill up-to the mark, if required.
4.23.	Grease flange covers of gear boxes.
4.24.	Check & Lubricate sprocket and chains of sled.
4.25.	Check roller of the sled.
4.26.	Check condition of finger of pickup unit.
5.0	**Electrical:**

5.1.	Check function of horns.
6.0	**Gantry (Ashok Leyland model- H6E TICRC3R323, 225 hp at 2300 rpm)**
6.1.	Check all functions of sleeper gripper.
6.2.	Check oil level of drive gearbox and fill up to required level.
6.3.	Check oil level of hydraulic pump drive gearbox and fill up to required level.
6.4.	Grease the clutch.
6.5.	Clean the battery terminals and apply petroleum jelly.
6.6.	Check electrolyte level and gravity of batteries and top up the electrolyte if required.
6.7.	Grease intermediate gear bearing and gantry wheel bearing.
6.8.	Check condition of sprocket and chain and apply grease.
6.9.	Adjust the brakes and check brake oil level.
6.10.	Check lock pins of all bridges and gantry rails of all BRHs.
7.0	**Clip Applicator: (If applicable)**
7.1.	Check electrolyte level and gravity of batteries and top up the electrolyte, if required.
7.2.	Check battery terminal connections.
7.3.	Clean air cleaner.
7.4.	Check driving chain for tightness.
7.5.	Clean engine and premises.
8.0	**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 components.
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.

SCHEDULE -- III

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

1.0	**Engine: Cummins engine model QSX15, 450 HP @ 2100 rpm.**
1.1.	Check water temperature safety device.
1.2.	Check lube oil pressure safety device.
1.3.	Inspect the fuel water separator for proper functioning.
1.4.	Check the throttle control linkages & lubricate.
1.5.	Examine the mounting bolts of engine.
1.6.	Check water hoses of engine. Replace, if required.
1.7.	Clean Air filter outer element.
1.8.	Check all bolts for wear & tension. Replace, if required.
1.9.	Clean dust collector.
2.0	**Mechanical:**
2.1.	Check foundation bolts of brake cylinder.
2.2.	Grease bogie turning pin.
2.3.	Grease torque arm pivot.
2.4.	Grease hand brake gear.
2.5.	Check tension of sled chain.
2.6.	Lubricate drive shaft and universal joint with grease.
2.7.	Lubricate all thread in & thread out rollers with grease.
2.8.	Lubricate linkage of pump control with grease.
2.9.	Lubricate track laying frame stabilizer arms with grease.
3.0	**Electrical:**
3.1.	Check all lights and do needful.
3.2.	Check operation of emergency/traction stop switch.
3.3.	**Hydraulic**
3.4.	Check hydraulic system for leakage.
4.0	**Gantry (Ashok Leyland model- H6E TICRC3R323, 225 hp at 2300 rpm)**
4.1.	Clean outer air filter.
4.2.	Check the tension of V-belts.
4.3.	Check water hoses of engine, replace if required.
4.4.	Check oil level of drive gear box & top up, if required.
4.5.	Check lock pins of all bridges and gantry rails of all BRNs.
5.0	**Under Frame Maintenance:**
5.1.	**Draw Gear:**
5.1.1.	Check condition of draw beam and locating pins on it.
5.2.	**Running Gear and Wheels:**
5.2.1.	Visually examine wheel tyre profile and thickness of tyre and check with tyre profile gauge if they appear to be near condemning limit.
5.2.2.	Visual Inspection of wheels and under gear for any infringement.

SCHEDULE -- IV

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

1.0	**Engine: Cummins engine model QSX15, 450 HP @ 2100 rpm.**
1.1.	Change Engine oil.
1.2.	Change lube oil filter element.
1.3.	Change fuel filter element.
1.4.	Lubricate all the engine pulleys with grease.
1.5.	Replace the super lube oil by-pass filter element.
1.6.	Clean crank case breather.
1.7.	Check for hub drive pulley and water pump.
1.8.	Check fuel tank breather and clean, if required.
1.9.	Check/add coolant additive concentrate.
1.10.	Check specific gravity of battery electrolyte.
1.11.	Check foundation bolts of compressor, if applicable.
1.12.	Replace the outer engine air cleaner element.*
1.13.	Recondition figure boxes and engine weld-T.
2.0	**Emergency Power unit: HATZ Diesel 1D81Z, 15HP @ 3600 rpm**
2.1.	Clean the oil bath air filter.#
2.2.	Check and set the tappet clearance.#
2.3.	Clean the cooling air area.#
2.4.	Check the screw connections.#
2.5.	Change the fuel filter.*
2.6.	Change the air filter cartridge.*
3.0	**Mechanical:**
3.1.	Check condition of rail alignment rollers.
3.2.	Recondition vibration plate of dynamic plow.
3.3.	Recondition wear plate of side plow.
3.4.	Recondition skids.
4.0	**Hydraulic:**
4.1.	Check oil level of reduction gear box and fill up-to required level.
4.2.	Check oil level of conveyor gear box and fill up-to required level.
4.3.	Check oil level of shifter (planetary) gear box and fill up-to required level.
4.4.	Check oil level of all axle gear box and fill up-to required level.
4.5.	Change oil of conveyor gear box*
4.6.	Change oil of hydraulic pump drive gear box*
4.7.	Change the oil of hydraulic working drive reduction box*
4.8.	Change suction filters.
4.9.	Clean the breather filter of hydraulic tank.
4.10.	Check all pressure controls for rated settings.
4.11.	Change return filter element.
4.12.	Change hydraulic high pressure filter element.
5.0	**Pneumatic**

5.1.	Check brake lining and brake block play & adjust.
5.2.	Check air un-loader for proper functioning & pressure.
6.0	**Electrical:**
6.1.	Check electrical connections and cables of all remotes for damages.
7.0	**Gantry (Ashok Leyland model- H6E TICRC3R323,225 hp at 2300 rpm)**
7.1.	Replace engine oil.
7.2.	Replace oil filter.
7.3.	Replace fuel filter.
7.4.	Check all belts for tension and wear. Replace as per requirement.
7.5.	Check oil level of hydraulic pump drive gear box and fill up-to required level.
7.6.	Check gantry for any wear and tear.
7.7.	Replace air filter outer element.##
7.8.	Replace all hydraulic filters*.
7.9.	Replace oil of pump drive gear boxes*.
8.0	**Clip Applicator: (If Applicable)**
8.1.	Replace engine oil
8.2.	Replace lube oil filter
8.3.	Replace fuel filter
8.4.	Check battery connection and apply petroleum jelly on terminals.
9.0	**Under Frame Maintenance:**
9.1.	**Under Frame:**
9.1.1.	Examine trough floor, turn under and other frame members from underneath for corrosion#.
9.2.	**Brake Rigging & Brake System:**
9.2.1.	Check and attend brake block adjuster#.
9.3.	**Bogie Frame & Suspension:**
9.3.1.	Visually examine the condition of suspension system (Coil spring) for any damage/loose/breakage#.
9.3.2.	Examine corrosion of sole bar and other under frame members with torch light or inspection lamp*.
9.3.3.	Visually examine the cabin and axle support cylinders for leakages/damages*.
9.4.	**Draw Gear:**
9.4.1.	Ensure that wear on transition coupling shackle pins, trunion pins, shackle/link holes and draw hook holes should not exceed 3mm.
9.4.2.	Examine draw hook, draw bars, rubber pads for damages*.
9.5.	**Buffing Gear:**
9.5.1.	Ensure the length is within 584-635 mm*.
9.5.2.	Inspect buffer plunger false plate for wear and profile*.
9.6.	**Running Gear and Wheels:**
9.6.1.	Check with wheel distance gauge for loose or tight wheels *.
9.6.2.	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.

10.0	**General:**
10.1.	Check the expiry of first Aid box, refill, if required.#
10.2.	Check the expiry of fire extinguisher. Should be done on regular basis #.
10.3.	Replace the missing and defective hand tools or on condition basis.*

Note- i) # to be done after 250 hours.
ii) ## to be done after 300 hours.
iii) * to be done after 500 hours.

SCHEDULE -- V

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

1.0	**Engine: Cummins engine model QSX15, 450 HP @ 2100 rpm.**
1.1.	Check and set the tappet clearance.
1.2.	Attend turbo charger, if required.
1.3.	Replace the inner engine air cleaner element.
1.4.	Change worn out water hoses
1.5.	Check coolant for PH value (8.5-10.0)
1.6.	Clean the engine radiator externally.
1.7.	Clean the diesel tank with lint free cloth.
1.8.	Check the water pump idler and fan hub idler pulley
2.0	**Hydraulic:**
2.1.	Check condition of all hydraulic hoses and replace, if required.
2.2.	Check hydraulic system for any leakage.
3.0	**Pneumatic:**
3.1.	Change of air drier filter cartridge, if applicable.
3.2.	Overhaul the air un-loader or replace as required.
3.3.	Replace the damaged and chocked pneumatic pipes.
3.4.	Replace the seals of all pneumatic cylinders.
3.5.	Clean the air reservoir.
3.6.	Change pneumatic pipes leading to brake cylinders.
3.7.	Change the seals of brake cylinders.
3.8.	Change Granulated cartridges.
4.0	**Mechanical:**
4.1.	Check shock absorbers and do needful.
4.2.	Check bearings of all axles and grease them.
4.3.	Check meggie springs and replace, if required.
4.4.	Visually inspect all the welding locations.
4.5.	Change oil of reduction gear box.
4.6.	Change oil of shifter (Planatary) gear box.
4.7.	Replace pin, bearing & bush of all thread in & thread out rollers.
5.0	**Electrical:**
5.1.	Replace defective switches and potentiometers.
5.2.	Repair or replace the defective relays.
5.3.	Replace the limit switches/proximity switches.
5.4.	Replace defective indicative instruments.
5.5.	Get insulation test of main cables and replace the defective ones.
5.6.	Check electrical system for proper functioning.
6.0	**Gantry (Ashok Leyland model- H6E TICRC3R323,225 hp at 2300 rpm)**
6.1.	Reset tappet clearance.
6.2.	Check exhaust vent for leakage.
6.3.	Attend turbocharger if required.
6.4.	Clean engine radiator.
6.5.	Check rope and replace if strands found broken forming bird cage or any core failure noticed.

6.6.	Check drive chains for any developing cracks or excess wear at links, replace, if required.
6.7.	Replace air filter inner element.
6.8.	Replace oil of drive gear box.
7.0	**Clip applicator: (If Applicable)**
7.1.	Replace air cleaner outer element.
7.2.	Clean radiator by pressurized air from opposite side.
8.0	**Under Frame Maintenance:**
8.1.	**Under Frame:**
8.1.1.	Thoroughly examine the centre pivot mounting bolts and replace, if needed.
8.2.	**Brake Rigging & Brake System:**
8.2.1.	Visually inspect damaged/missing brake gear bushes, lever hanger pins, replace if necessary.
8.3.	**Running Gear and Wheels:**
8.3.1.	Fill all axle bearing housing with grease.
9.0	**General:**
9.1.	Do the patch work painting.
9.2.	Inspect parts for replacement limit as given in Annexure-I and replace if required.

SCHEDULE -- VI

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

1.0	**Engine: Cummins engine model QSX15, 450 HP @ 2100 rpm.**
1.1.	Calibrate the fuel injectors.
1.2.	Calibrate the fuel injector pump.
1.3.	Replace all water hoses.
1.4.	Overhaul/replace the engine on condition basis.
2.0	**Hydraulic:**
2.1.	Change oil of drive gear box.
2.2.	Clean the hydraulic reservoir and fill laboratory tested/new oil as required.
3.0	**Mechanical:**
3.1.	Replace the missing and defective hand tools.
3.2.	Overhaul sled.
4.0	**Electrical:**
4.1.	Replace defective switches and potentiometers.
4.2.	Repair or replace the defective relays.
4.3.	Replace the limit switches.
4.4.	Replace defective indicative instruments.
4.5.	Get insulation test of main cables and replace the defective ones.
5.0	**Gantry (Cummins model- 6BT.5.9,152 hp at 2500 rpm)**
5.1.	Replace oil of pump drive gear boxes.
5.2.	Inspect gantry for any wear and tear.
6.0	**Clip applicator: (If applicable)**
6.1.	Reset tappet clearance.
6.2.	Replace V- belts.
7.0	**Under Frame Maintenance:**
7.1.	**Brake Rigging & Brake System:**
7.1.1.	Check/replace all types torque arm plates, pins & bushes.
7.1.2.	Check/replace all Meggi flex washer, Meggi/rubber springs/damper rubber.
7.1.3.	Repair/replace all brake drum seals, cylinders & brake linkage rods.
7.1.4.	Replace all brake reversal springs.
7.2.	**Draw Gear:**
7.2.1.	Remove the scale, rust, work hardened layers and surface cracks if any, by light grinding/filing.
7.2.2.	Inspect the draw hook for deformations & cracks. The neck, its pin hole and the slot are vulnerable locations.
7.2.3.	Use dye-penetrate test for checking surface cracks in case of doubts.
7.3.	**Buffing Gear:**
7.3.1.	Check the draw bar for dimensional distortions and damaged threads.
7.3.2.	Check the castle nuts for damaged threads, worn nut faces visually. Replace castle nuts if required.
7.3.3.	Test all draw bars by magna-glow equipment for surface cracks.
7.4.	**Running Gear and Wheels:**

7.4.1.	Repair/replace all wheels, axles bearing housing and bearing.
7.4.2.	Repair/replace all gear boxes & seals.
8.0	**General:**
8.1.	Change all defective clamps of hoses for proper clamping.
8.2.	Repair/replace missing and defective hand tools.
8.3.	Check function of all assemblies after IOH.
8.4.	Thoroughly clean all panel boxes.
8.5.	Test the machine for one week near the workshop, before it is put for work in regular section.
8.6.	Strengthen the machine frame, where cracks have developed on condition Basis.

SCHEDULE -- VII

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

1.0	**Engine: Cummins engine model QSX15, 450 HP @ 2100 rpm**
1.1.	Overhaul air compressor.
1.2.	Change anti-vibration mounting pads of engine.
1.3.	Change the shut down valve on condition basis.
1.4.	Change inlet hoses.
2.0	**Hydraulic:**
2.1.	Replace all the hydraulic hoses.
2.2.	Check the hydraulic pumps & motors for proper function and do needful.
2.3.	Check the D.C. valves for internal leakage and do needful.
2.4.	Replace the seals of all hydraulic cylinders along with gland seals.
3.0	**Pneumatic:**
3.1.	Replace all pneumatic hoses.
3.2.	Replace all pneumatic regulators valves on need basis.
3.3.	Replace all pneumatic valves on need basis.
3.4.	Replace the pneumatic cylinders on condition basis, which were creating the frequent trouble during work. Otherwise replace seals.
3.5.	Clean and check the air reservoir for rated air pressure.
4.0	**Mechanical:**
4.1.	Strengthen machine frame where cracks have developed.
4.2.	Check the wheels for tyre defects re-profile or replace.
4.3.	Overhaul all the gear boxes.
4.4.	Replace the shaft coupling and holding nuts & bolts.
4.5.	Overhaul the driving and idle bogies and replace the defective parts.
4.6.	Complete machine may be painted with approved paint.
5.0	**Electrical:**
5.1.	Overhaul the panel boxes.
5.2.	Defective switches and indicative lights may be replaced
5.3.	Check the LED of all the solenoids.
5.4.	Replace all head & marker lights.
6.0	**Gantry (Cummins model- 6BT.5.9,152 hp at 2500 rpm)**
6.1.	Replace bearings of pulleys, intermediate gear, toothed wheel and other bearings
6.2.	**Clip Applicator: (If applicable)**
6.3.	Overhaul the engine.
6.4.	Change the hydraulic pump.
6.5.	Replace all hydraulic cylinders.
6.6.	Replace all hydraulic hoses.

7.0	**General:**
7.1.	Check calibration of all the indicative instruments.
7.2.	Check the function of all assemblies.
7.3.	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-

i. All movable parts other than 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 an 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 (each cabin) (valid up to …….)	1 No
6	Hooter (Manually Controlled)	2 Nos.
7	Jack 50 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 machines (complete with end fitting)	-
12	Machine Specific Equipment if any.	-
13	Fog signals (detonators) in a tin case	10 Nos.
14	Tail Lamp	1 No
15	A copy of working time table of this section where the machine is working	1 No
16	G & SR book with up to date amendment slips	1 No.
17	4 cells flasher light LED lamp cum flasher light (rechargeable)	1 No.
18	Banner flags	2 Nos.
19	First aid Box	1 No
20	Skids	10 Nos.
21	Safety Helmet	For all Staff
22	Protection clothing , safety shoes and safety gloves	For all Staff
23	Walkie talkie with frequency of SM, Guard and Loco pilots	2 Nos.
24	Internal communication system (Walkie talkie and/or head mounting system)	For all Staff
25	Track machine manual with up to date correction slips	1 No.
26	Accident manual with up to date correction slips	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

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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Shri	Sunil	SSE/TM/NR/NDLS
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RDSO

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