भारत सरकार - रेल मंत्रालय
अनुसंधान अभिकल्प और मानक संगठन
लखनऊ - 226 011
EPBX (0522) 2451200
Fax (0522) 2458500

Government of India-Ministry of Railways
Research Designs & Standards Organisation
Lucknow - 226 011
DID (0522) 2450115
DID (0522) 2465310

टीएम/एच एम/एम पी टी पार्ट. III
TM/HM/MPT, Pt- III

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

विषय : यूनिमेट एस एच एम एफ आई मशीन सं॰ 56901-978, 57106-128 & 57250-326 की अनुरक्षण अनुसूची सूची ।

Sub: Maintenance schedule manual of Unimat SH MFI M/C NO. (56901-978, 57106-128 & 57250-326)

यूनिमेट एस एच एम एफ आई मशीन सं॰ 56901-978, 57106-128 & 57250-326 की अनुरक्षण अनुसूची पुस्तिका का मसौदा ओईएम मैनुअल, आइआरटीएमएम–2019 से प्राप्त दिशा निर्देशों एंव पूर्वोत्तर रेलवे से प्राप्त सुझाव के आधार पर तैयार कर टीएम/एच एम/ एम पी टी ,पार्ट– III दि. 05.09.2024 द्वारा 30 दिनों के लिय जारी किया गया था और अनंतिम अनुरक्षण अनुसूची पुस्तिका पत्र सं. टीएम/एच एम/ एम पी टी ,पार्ट– III दि. 01.11..2024 द्वारा 15 दिनों के लिये सभी क्षेत्रीय रेलवे को, जारी किया गया था।,इसके उपरान्त पूर्वोत्तर रेलवे से प्राप्त सुझाव के आधार पर अंतिम रूप से तैयार की गई है, जिसकी एक प्रति आपके सूचनार्थ तथा सभी 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/पत्राचार द्वारा अद्योहस्ताक्षरी को भेजे`।

On the basis of OEM manual, IRTMM-2019 and suggestion received from North Eastern Railway draft of maintenance schedule manual of Unimat SH MFI M/C NO. 56901-978, 57106-128 & 57250-326 had been prepared and circulated vide letter no. TM/HM/MPT/Pt-III dated 05/09/2024 for 30 days and provisional maintenance schedule manual circulated vide letter no. TM/HM/MPT/Pt-III dated 01/11/2024 for 15 days. . After incorporating suggestions/comments received from North Eastern railway maintenance schedule manual has been finalized. A copy of the same is enclosed herewith for your information and guidance of the machine staff working in the field. Every care has been taken during preparation of the above said list, However the discrepancy noticed if any, may be brought to the knowledge of the undersigned through email/post for further improvement.

संलग्नक : उपरोक्त

Email id - hmtmmrdso@gmail.com

10.12.24

(कैलाश नारायण)
(Kailash Narayan)
निदेशक रेल पथ मशीन –I
Director/Track Machine-I

Government of India - Ministry of Railways

Research Designs and Standards Organisation

MAINTENANCE SCHEDULE MANUAL FOR

UNIMAT 275 SH MFI M/C NO.

56901-978, 57106-128 & 57250-326

Report No.TM –305

December-2024

RESEARCH DESIGNS & STANDARDS ORGANISATION

LUCKNOW- 226 011

PREFACE

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

In order to have a uniform maintenance schedule throughout the IR Maintenance Schedule Manual for UNIMAT 275 SH MFI M/C NO. 56901-978, 57106-128 & 57250-326 has been prepared on the basis of maintenance instruction given by OEM. The manual includes the activities which are required for day to day maintenance. Apart from these instructions if any part of machine fails/breakdown that shall be attended immediately by the railway. The oiling and greasing of every moving part shall be done as and when required in addition to instructions prescribed in manual depending on discretion of machine in charge. Some time machine may required for modified/altered on the basis of field experience or OEM suggestion that shall also be undertaken in the maintenance practice. Though care has been taken while preparing maintenance schedule, 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.

(Kailash Narayan)
Director/Track Machine-I
RDSO/Lucknow-226011.

December-2024

EXPLANTORY NOTES

While preparing text of schedules for maintenance of Unimat 275 SH MFI M/C NO. 56901-978 , 57106-128 & 57250-326 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 Unimat 275 SH MFI M/C NO. 56901-978 , 57106-128 & 57250-326

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.	ScheduleIII	100 Engine hrs.	One day	-do-
4.	ScheduleIV	200 Engine hrs.	Two days	-do-
5.	ScheduleV	1000 Engine hrs.	7 days	In Satellite Depot/Zonal Workshop
6.	ScheduleVI	2000 Engine hrs.	30 days	In Zonal Workshop
7.	Schedule VII	8000/6000Engine hrs.	1st POH-60 days, 2nd POH-75days	CPOH Workshop

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SCHEDULE -- I
(TO BE DONE DAILY)
DURATION ONE HOUR

1.0	**Engine (CUMMINS QSN-14L (405 HP @2100 RPM))**
1.1	Check coolant level in radiator and top up if required.
1.2	Check the engine oil level and top up if required.
1.3	Check fuel level and top up if required.
1.4	Visual check the air cleaner chocking indicator. If indicator is red, the outer filter is to be cleaned.
1.5	Check the leakage from hoses, water pump seal etc. and do the needful.
1.6	Visual Check the leakage from fuel pump, injectors, fuel supply and return pipes and do needful.
1.7	Clean the engine and premises.
1.8	Check the engine oil pressure at idle
1.9	Check engine oil pressure on load after two hours working.
1.10	Check the battery charging system.
1.11	Drain the Reservoir after the day's work.
1.12	Record the maximum engine temperature of the day's work.
1.13	Drain sediments from fuel tank.
1.14	Open and clean dust collector/pan of air cleaner.
1.15	Check V-belt tension by finger test, maximum depth of impression 15mm, or use a V-belt tension measuring device.
2.0	**Power Transmission and Gear Box**
2.1	Check ZF pressure at idle and rated at 2100 RPM.
2.2	Check the oil leakage from all gear boxes and do the needful.
3.0	**Tamping Unit**
3.1	Clean the tamping banks.
3.2	Check & fill the reservoir for lubrication of tamping arm bearing (55 mm pin) up to the mark.
3.3	Check working of centralized lubrication unit if used
3.4	Grease guide columns.
3.5	Check tightness of tamping tools.
3.6	Greasing of connecting rod bearing (35mm pin) and vibration shaft bearing is to be done after every 2-3 hours of working in case of manual greasing..
4.0	**Track Lifting & Lining Unit**
4.1	Check locking device of lifting and lining unit.
4.2	Lubricate the clamp carrier pivots with oil.
5.0	**Hydraulic**
5.1	Check and top up hydraulic oil tank.
5.2	Record the maximum temperature of hydraulic fluid during the day's work.
5.3	Check the leakage from hydraulic hoses and do needful.

6.0	**Pneumatic**
6.1	Check air brake pressure.
6.2	Check pneumatic system for any air leakage.
7.0	**Mechanical**
7.1	Grease all lining roller pins.
7.2	Apply lube oil on bush bearing.
7.3	Check oil level of all gear boxes and fill up-to the mark, if required.
8.0	**Underframe**
8.1	Visually examine center pivot mounting bolts and attend if needed.
8.2	Check condition of head stock/sole bar.
8.3	Visually examine the shock absorbers for damages.
8.4	Visually inspect center pivot cover.
8.5	Visually examine and attend safety loops of bolster.
8.6	Check and attend brake shoe head and key & replace if necessary.
8.7	Visually inspect brake hangers, brake gear pins and cotters/split pins and replace if necessary.
8.8	Visually examine buffer plungers for damages/ drooping /stroke length.
8.9	Examine buffer mounting bolts and attend if necessary.
8.10	Examine visually buffer casing for cracks/damages & height.
8.11	Examine visually axle box for grease oozing out, warm box if any
8.12	Visually inspect axle box covers.
9.0	**Electrical**
9.1	Check function of horns,headlight , tail light & marker light.
10.0	**General**
10.1	Check for any unusual sound from tamping units, gear boxes, engine & hydraulic pumps.
10.2	Check all the functions of machine before block working.

SCHEDULE -- II

(TO BE DONE AFTER EVERY 50 HOURS OF ENGINE RUNNING) DURATION- TWO HOURS
(TO BE DONE IN ADDITION TO SCHEDULE-I)

1.0	**Engine**
1.1	Check the leakage from fuel line.
1.2	Drain water separator.
1.3	Check electrolyte level of batteries, top up if required.
1.4	Check battery terminal and connection for tightness.
1.5	Apply petroleum jelly on battery terminal.
1.6	Check injector pipes for any rubbing and do needful.
2.0	**Power Transmission and Gear Box**
2.1	Grease torque arm pivots of driving bogie
2.2	Grease link rods.
2.3	Adjust the clearance of all brake shoes.
2.4	Check brake linkage and oil the pivots.
2.5	Grease king pin pivot of driving & idle bogies.
2.6	Grease axle gear box flange cover of driving bogie.
2.7	Check oil level of all gear boxes & top up if required.
2.8	Check oil level of ZF gear box (at 1000 rpm), and top up after stopping engine if required.
2.9	Grease hand brake gear.
2.10	Check and tighten cardon shaft bolt.
3.0	**Tamping Unit**
3.1	Check tightness of shoe plate bolts of guide Column .
3.2	Check squeezing cylinder cover plate bolts for tightness (LHS,inner & outer)
3.3	Check squeezing cylinder cover plate bolts for tightness(RHS,inner & outer)
3.4	Check tamping unit cylinder holding bracket bolts for tightness (LHS,inner & outer)
3.5	Check tamping unit cylinder holding bracket bolts for tightness (RHS,inner & outer).
3.6	Check tamping unit locking device (LHS,inner & outer)
3.7	Check tamping unit locking device (RHS,inner & outer)
3.8	Check the nuts of 65mm, 55 mm and 35 mm pin for tightness (LHS).
3.9	Check the nuts of 65mm, 55 mm and 35 mm pin for tightness (RHS).
3.10	Grease Tool tilting cylinder.
3.11	Check lateral locking arrangement of tamping unit.
4.0	**Track Lifting & Lining Unit**
4.1	Lubricate vertical hook guide rod.
4.2	Lubricate horizontal hook guide rod.
4.3	Inspect clamp roller locking bracket bolts for tightness.
4.4	Examine the clamp roller for wear and free movement and do the needful.
4.5	Lubricate lining cylinder pivots with lube oil.
4.6	Grease lifting unit guide columns.
4.7	Grease roller clamp housing.

4.8	Lubricate locking device pivots with lube oil.
4.9	Lubricate the track lifting cylinder pivots with lube oil.
4.10	Lubricate rail clamp pivot pins with lube oil.
4.11	Check and lubricate all moving part of lifting and lining unit.
4.12	Check gap between chord wire and carrier of lining transducer and do needful.
5.0	**Mechanical**
5.1	Check leveling cord tensioning arrangement.
5.2	Check foundation bolts of brake cylinders.
6.0	**Underframe**
6.1	Visually examine brake beams breakages/damages.
6.2	Check brake gear and adjust so that the piston stroke is within the limit.
6.3	Examine and attend brake levers.
6.4	Visually inspect for damage on brake pipe, replace if required
6.5	Check and attend brake beam safety wire rope / safety straps.
6.6	Check and replace worn brake blocks.
6.7	Examine draw hook, draw bars, rubber pads for damages.
6.8	Examine visually draft key locking pins.
6.9	Check and replace damage/missing split pins.
6.10	Check condition of the CBC coupling and its components and replace as required
6.11	Inspect wheel tread for shattered rim, spread rim, shelled tread, thermal cracks, heat checks
7.0	**Electrical**
7.1	Clean the depth transducers for free movement of chord wire carrier.
7.2	Clean alternator and check connections.
7.3	Check Emergency back up system (D.C. Motor).

SCHEDULE III

(TO BE DONE AFTER EVERY 100 HOURS OF ENGINE RUNNING)DURATION- ONE DAY (TO BE DONE IN ADDITION TO SCHEDULE-I & II)

1.0	**Engine**
1.1	Check engine temperature safety device.
1.2	Check lube oil pressure safety device.
1.3	Examine the mounting bolts of the engine.
1.4	First time change of lube oil(along with filters)is being done, 100 hrs. after commissioning.
2.0	**Power Transmission and Gear Box**
2.1	Grease all cardon shafts.
3.0	**Tamping Unit**
3.1	Check calibration of tamping unit depth transducer.
4.0	**Track Lifting & Lining Unit**
4.1	Check feeler rollers of middle trolley for play.
4.2	Check clearance of lifting roller disc below the rail head in lowered condition.
4.3	Check guide rod of transducers for bends and tightness of bolts.
4.4	Check nuts & bolts of measuring devices for tightness.
4.5	Check calibration of lining.
4.6	Check calibration of leveling.
4.7	Check guide rod of transducers for bends and tightness of bolts.
5.0	**Pneumatic**
5.1	Check brake lining and brake block play.
6.0	**Mechanical**
6.1	Grease all brake linkages.
6.2	Check the condition of brake shoes, replace if required.
7.0	**Underframe**
7.1	Check condition of draw beam and locating pins on it.
7.2	Visually examine wheel tyre profile and thickness of tyre and check with tyre profile gauge if they appear to be near condemning limit
8.0	**Electrical**
8.1	Calibration of Driving circuit.
8.2	Checking of gauges and display.

SCHEDULE IV

(TO BE DONE AFTER EVERY 200 HOURS OF ENGINE RUNNING)
DURATION-TWO DAYS
(TO BE DONE IN ADDITION TO SCHEDULE- I, II AND III)

1.0	**Engine**
1.1	Lubricate all the engine pulley bearings with grease.
1.2	Check and change radiator hoses, if required.
1.3	Check specific gravity of battery electrolyte if applicable.
2.0	**Track Lifting & Lining Unit**
2.1	Check bearing play and clamp bolt and change if necessary.
2.2	Grease pendulum bridge pivots.
2.3	Check height transducer carrier rod, for wear or damage.
2.4	Check transducer fittings for measuring and lining trolleys
2.5	Check calibration of leveling and lining system.
3.0	**Hydraulic**
3.1	Check all pressure controls for rated settings.
4.0	**Pneumatic**
4.1	Check air unloader for proper functioning.
5.0	**Electrical**
5.1	Check/replace all limit switches/Proximity switches and do needful.
	Done after 250 engine hrs. (one day for all these items)
1.0	**Engine**
1.1	Change engine lube oil.
1.2	Replace lube oil filter .
1.3	Replace fuel filters.
1.4	Clean outer air filter.
1.5	Change fuel water separator.
1.6	Change coolant filter.
2.0	**Hydraulic**
2.1	Change proportional valve filter element.
2.2	Change servo valve filter element.
3.0	**Underframe**
3.1	Examine trough floor, turn under and other frame members from underneath for corrosion.
3.2	Check and attend brake block adjuster.
3.3	Visually examine the condition of suspension system (Coil spring) for any damage/loose/breakage.
Done after 500 engine hrs(In addition to Shedule III)	
1.0	**Engine**
1.1	Check fuel tank breather and clean if required.

1.2	Clean/change crank case air breather.
2.0	**Power Transmission and ZF gear box**
2.1	Change oil of intermediate drive shaft.
2.2	Change oil of axle gear boxes.
2.3	Change oil of distribution gear box.
2.4	Change ZF oil & filter.
2.5	Change oil of pump gear box.
3.0	**TRACK LIFTING & LINING UNIT**
3.1	Check bearing play of lifting roller.
4.0	**Hydraulic**
4.1	Change return line filter element ,or if hydraulic oil changed.
4.2	Change suction filters.
5.0	**Underframe**
5.1	Examine condition of the wearing plates.
5.2	Examine corrosion of sole bar and other under frame members with torchlight or inspection lamp.
5.3	Visually examine the cabin and axle support cylinders for leakages/damages.
5.4	Ensure that wear on screw coupling shackle pins, trunion pins, shackle/link holes and draw hook holes should not exceed 3mm.
5.5	Ensure the length of buffing gear is within 584-635 mm.
5.6	Inspect buffer plunger false plate for wear and profile.
5.7	Check with wheel distance gauge for loose or tight wheels.

SCHEDULE-V

(TO BE DONE AFTER EVERY 1000, HOURS OF ENGINE RUNNING)
DURATION- 7 DAYS
(TO BE DONE IN ADDITION TO SCHEDULE- I, II, III AND IV)

1.0	**Engine**
1.1	Change worn out water hoses.
1.2	Overhaul the air compressor, if required.
1.3	Clean the engine radiator externally.
1.4	Clean the diesel tank with lint free cloth.
1.5	Clean the cooling coil & replace if required.
1.6	Replace the outer and inner engine air cleaner element.
1.7	Check the condition and tightness of V-belt for radiator fan.
1.8	Replace minor repair kit for air compressor.
1.9	Check fuel pump calibration.
2.0	**Power Transmission and Gear Box**
2.1	Overhaul the radiator fan drive assembly.
2.2	Change the engine mounting pads.
2.3	Check cooling coil, replace if required, and otherwise clean it.
2.4	Check and Clean the engine radiator thoroughly and repair/replace if required,
3.0	**Tamping Unit**
3.1	Overhaul/replace tamping unit, if required.
4.0	**Track Lifting & Lining Unit**
4.1	Check electrical wires of all transducers ,proximity switches & sensors and do needful.
5.0	**Hydraulic**
5.1	Clean hydraulic oil through 10 micron porta filter.
5.2	Send sample of hydraulic oil for physical & chemical test.
5.3	Change hydraulic oil if found unserviceable after cleaning tank.
5.4	Replace the hydraulic hoses which are damaged by External abrasion.
5.5	Clean hydraulic and ZF cooler.
6.0	**Pneumatic**
6.1	Overhaul the air unloader.
6.2	Change of air drier filter cartridge, if applicable.
7.0	**Mechanical**
7.1	Check shock absorbers and do needful.
7.2	Check bearings of trolley wheel and grease them.
7.3	Change the brake shoes.
7.4	Grease Draw and Buffing gear at both ends.
8.0	**Underframe**
8.1	Thoroughly examine the centre pivot mounting bolts and replace, if needed.

8.2	Lubricate the bogie pivot with grease.
8.3	Clean the underside of machine, however, at least once a year.
8.4	Visually inspect damaged/missing brake gear bushes,lever hanger pins replace if necessary.
8.5	Fill all axle bearing housing with grease.
9.0	**Electrical**
9.1	Check all lights and do needful.

SCHEDULE VI(IOH)
(TO BE DONE AFTER EVERY 2000 HOURS OF ENGINE RUNNING)
DURATION-30 DAYS
(TO BE DONE IN ADDITION TO SCHEDULE- I, II, III, IV AND V)

1.0	**Engine**
1.1	Descaling cooling system.
1.2	Change coolant of radiator.
1.3	Replace fuel pump filter screen and magnet.
1.4	Clean turbocharger compressor wheel and diffuser if required.
1.5	Check turbocharger bearing clearance.
1.6	Replace the batteries on condition basis.
1.7	Replace the rocker cover gaskets.
1.8	Adjust injectors and valve.
1.9	Change all the water hoses.
1.10	Overhaul/replace the air unloader.
1.11	Check crank shaft end clearance.
1.12	Check the vibration damper for dynamic balance.
1.13	Change fuel pump screen filter.
1.14	Overhaul self-starter.
1.15	Overhaul alternator I.
1.16	Clean and calibrate injectors if required.
1.17	Overhaul the engine, if there is lack of compression on low lube oil pressure otherwise de-carbonize the engine.
1.18	Check bearing and shaft of radiator fan drive and do needful.
1.19	Overhaul water pump.
1.20	Check turbocharger compressor and turbine wheels. Check radial and end clearances & do needful.
1.21	Tighten manifold nuts or cap screws.
2.0	**Power Transmission and Gear Box**
2.1	Replace meggy springs .
2.2	Replace meggy Flexible Washer.
3.0	**Tamping Unit**
3.1	Overhaul/replace tamping unit, if required.
4.0	**Track Lifting & Lining Unit**
4.1	Overhaul/ replace the lifting unit, if required.
5.0	**Hydraulic**
5.1	Check the hydraulic motors for proper function and do the needful.
5.2	Provide the missing clamps.
5.3	Check the hydraulic pumps for proper function and do the needful.
5.4	Check condition of Hook cylinder, Replace if required.
5.5	Check condition of Hook In/out cylinder, Replace if required.
6.0	**Pneumatic**
6.1	Clean the air reservoir.

6.2	Change pneumatic pipes leading to brake cylinders.
6.3	Overhaul all pneumatic valves and change the unserviceable ones.
6.4	Change the seals of brake cylinders.
6.5	Replace air unloader.
7.0	**Mechanical**
7.1	Replace the missing and defective hand tools.
7.2	Strengthen machine frame where cracks have developed.
7.3	Check the wheels for tyre defects reprofile or replace.
7.4	Do patch painting where paint has peeled off or blistered and where welding work has been done.
7.5	Check the axle bearings and grease them.
7.6	Check the condition of clamp roller, replace if required.
8.0	**Underframe**
8.1	Thoroughly examine the centre pivot mounting bolts and replace, if needed.
8.2	Check/Replace all types Torque arm plates, pins & bushes.
8.3	Replace all brake reversal springs.
8.4	Check/Replace all Maggie flex washer, Maggie/Rubber springs/ Damper rubber.
8.5	Repair/Replace all brake drum seals, cylinders & brake linkage rods.
8.6	Remove the scale, rust, work hardened layers and sur- face cracks if any, by light grinding/filing
8.7	Inspect the draw hook for deformations & cracks. The neck, its pin hole, and the slot are vulnerable locations
8.8	Use dye-penetrant test for checking surface cracks in case of doubts
8.9	Check the draw bar for dimensional distortions and damaged threads.
8.10	Check the castle nuts for damaged threads, worn nut faces visually. Replace castle nuts if needed.
8.11	Test all draw bars by magna-glow equipment for surface cracks.
8.12	Load test draw bar (Stc. 60.61) at 39.5 t and those of (IS 5517 r.35Mn6Mo3) at 60t. There should not be any permanent deformations.
8.13	Repair/replace all wheels, axles bearing housings and bearings.
8.14	Repair/replace all gear boxes, seals & driving shaft assemblies.
9.0	**Electrical**
9.1	Replace defective switches and potentiometers.
9.2	Calibrate all the transducers and replace the transducer chordwire if required.
9.3	Check the condition of camera (IP base, Hook).
9.4	Check calibration of DRP, Data matric & ALC system.
10.0	**General**
10.1	Ultrasonic testing of axles of machine shall be done between 40,000 to 45,000 kms of running or three years whichever is earlier.
10.2	Check the function of all assemblies after IOH.

SCHEDULE VII (POH)

(TO BE DONE AFTER 8000 HOURS OF ENGINE RUNNING)
DURATION-60 DAYS
(TO BE DONE IN ADDITION TO SCHEDULE- I, II, III, IV, V AND VI)

1.0	**Engine**
1.1	Overhaul or replace the engine.
1.2	Overhaul the radiator fan drive assembly.
1.3	Change the engine mounting pads.
1.4	Check cooling coil, replace if required, and otherwise clean it.
1.5	Check and Clean the engine radiator thoroughly and repair/replace if required,
2.0	**Power Transmission and Gear Box**
2.1	Replace Brake block.
2.2	Replace Spring MSW 100.1101.31.
2.3	Replace Brake linkage rod assy set.
2.4	Replace Slide plates.
2.5	Replace Knuckle joint.
3.0	**Tamping Unit**
3.1	Replace Tamping Unit.
4.0	**Track Lifting & Lining Unit**
4.1	Replace the lifting unit.
5.0	**Hydraulic**
5.1	Check the D.C. valves for leakage and do needful.
5.2	Change all hydraulic pumps and motors.
5.3	Replace Tamping unit up/dn cylinder.
5.4	Replace Support cylinder UD 50.550.
5.5	Replace Support cylinder UD 50.2200.
5.6	Replace Rail clamp cylinder
5.7	Overhaul/Replace all other hydraulic cylinders.
5.8	Replace Shock Absorber
5.9	Clean hydraulic oil cooler.
5.10	Clean the hydraulic tank, inside to be painted with approved quality of paint.
5.11	Check the hydraulic accumulators and recharge, if required
5.12	Replace all hydraulic hoses.
5.13	Change all the direct acting and pilot operated D.C. valves.
5.14	Replace Proportional valves and servo valves.
5.15	Change all the pressure control valves.
5.16	Replace all the stop cocks and flow control valves.
5.17	Flush the complete system.
6.0	**Pneumatic**
6.1	Replace all pneumatic cylinder's seals

6.2	Replace Air Regulator.
6.3	Replace Air Drier seal kit
6.4	Replace Water separator.
6.5	Change all pneumatic hoses.
6.6	Change all pneumatic valves.
6.7	Change pneumatic cylinders on need basis..
7.0	**Mechanical**
7.1	Overhaul the trolleys, wheels & feeler rollers.
7.2	Overhaul all the gear boxes except ZF gear box.
7.3	Replace the shaft holding nuts & bolts.
7.4	Complete machine may be painted with approved paint.
7.5	Check the bogie coil springs and replace, if broken.
7.6	Check the pivot, replace if required.
7.7	Remove and check the bogie frame and do needful.
7.8	Change Axle support cylinders.
7.9	Replace Nut UD 65.1177.
7.10	Replace Shim 90x75x1.6BIMS.
7.11	Replace V.Ring V 40.CPD 510.
7.12	Replace Hook bush.
7.13	Replace Hook.
7.14	Replace Lining Roller.
7.15	Replace Clamp Roller.
7.16	Replace Bush MB7560DU.
7.17	Replace Guide Bush UD 252-23A.
7.18	Replace Bearing 6213 2RSR.
8.0	**Underframe**
8.1	Thoroughly examine the centre pivot mounting bolts and replace, if needed.
8.2	Check/Replace all types Torque arm plates, pins & bushes.
8.3	Replace all brake reversal springs.
8.4	Check/Replace all Maggie flex washer, Maggie/Rubber springs/ Damper rubber.
8.5	Repair/Replace all brake drum seals, cylinders & brake linkage rods.
8.6	Remove the scale, rust, work hardened layers and sur- face cracks if any, by light grinding/filing.
8.7	Inspect the draw hook for deformations & cracks. The neck, its pin hole, and the slot are vulnerable locations.
8.8	Use dye-penetrant test for checking surface cracks in case of doubts.
8.9	Check the draw bar for dimensional distortions and damaged threads.
8.10	Check the castle nuts for damaged threads, worn nut faces visually. Replace castle nuts if needed.
8.11	Test all draw bars by magna-glow equipment for surface cracks.
8.12	Load test draw bar (Stc. 60.61) at 39.5 t and those of (IS 5517 r.35Mn6Mo3) at 60t. There should not be any permanent deformations.
8.13	Repair/replace all wheels, axles bearing housings and bearings.
8.14	Repair/replace all gear boxes, seals & driving shaft assemblies.
9.0	**Electrical**
9.1	Check all panel wiring and external cables and change if required.
9.2	Replace Push button EL-T 1050 C4.
9.3	Replace 2 Way Joy stick EL-T 1058.22.

9.4	Replace 4 Way Joy stick EL-T 1058.24.
9.5	Replace Chord wire 2MMX80MLG.
9.6	Replace Solenoid coupler ELT7078/7079.
9.7	Replacement of Relay/Fuse.
9.8	Repair or replace the defective PCBs.
9.9	Replace the limit switches/proximity switches.
9.10	Replace NO/NC Cartridge.
9.11	Replace all working lights.
9.12	Replace All Tail Lights.
9.13	Replace All Head Lights.
9.14	Replace Flasher light.
9.15	Replace Electric horn.
9.16	Replace Hooter 24 Volts.
9.17	Replace Cabin tube light.
9.18	Replace Derailment sensor.
9.19	Replace defective indicative instruments.
9.20	Replace Indication bulbs.
9.21	Overhaul the pendulums.
9.22	Replace Silicon oil.
9.23	Get insulation test of main cables and replace the defective ones.
9.24	Overhaul the panel boxes.
9.25	Defective switches and indicative lights may be replaced.
9.26	Check the LED of all the solenoids.
9.27	Check the calibration of digital potentiometers and replace the defective ones.
9.28	Calibrate the machine for lifting and lining.
9.29	Replace Intercom speaker
9.30	Replace Wiper double arm assembly.
9.31	Replace Wiper single arm assembly.
10.0	**General**
10.1	Thoroughly clean all panel boxes.
10.2	Replace Cabin flooring/matting.
10.3	Replace Cabin Interior.
10.4	Commissioning of machine for one week near the workshop, before it is put for work in regular section.
10.5	Clean the complete machine.

Note-During POH, Machine Supervisor and CPOH Inspecting Authority jointly inspect the Machine. Any part of Machine is to be repaired or replaced; final decision is to be taken by CPOH Inspecting authority.

Annexure - I

List of Safety Equipments

S.No.	Description	Quantity
1.	10 Detonators in a tin case	1 box
2.	H.S. flag red	2 nos.
3.	H.S. flag green	1 nos.
4.	H.S. Tri colour lamps/LED Torch	2 nos.
5.	Chain with Padlock	2 set
6.	Clamp with Padlock	2 set
7.	50t*jack with traverser	1 no.
8.	20t* jack with traverser	1 no.
9.	Crow bars	4nos.
10.	Wooden blocks off sizes	4nos.
11.	Banner flag	2 nos.
12.	Walky-talky with frequency of SM, Guard and Loco Pilots	2 nos.
13.	First Aid Box	1 no
14.	Skids	2 nos.
15.	Working time table of section where machine is working	1 copy
16.	G&SR book with up to date amendment slips	1 copy
17.	4 cell flasher light/ LED lamp cum flasher light (rechargeable).	1 no.
18.	LED Petromax	1 no.
19.	Safety helmets	For each Machine staff
20.	Protective clothing, safety shoes and safety gloves	For each Machine staff
21.	Track Machine Manual	1 no.
22.	Accident Manual	1 no.
23.	Fire extinguisher	2 no.
24.	Hooter (Manual/ Remote)	2 nos.
25.	Tail Lamp	1 no.
26.	Hydraulic Hand Pump	1 no.
27.	Emergency pneumatic/Hydraulic hose off sizes suiting to different machines(complete with end fittings)	1 no.

Note-*Proposal is sent to Railway board vide letter no. TM/HM/1, VOL-2, dt. 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 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. Always wear proper dress, safety shoes and helmet while operation of the machine.

Annexure- III

IMPORTANT DATA AND INSTRUCTIONS FOR MAINTENANCE OF MACHINE

1. *Working pressure* *130-140bar*
2. *Tamping unit vibration pressure* *185bar*
3. *Squeezing pressure* *100-125bar*
4. *Minimum thickness of brake block* *13mm*
5. Minimum clearance between brake block and wheel 3-5mm.
6. For examination of fire extinguisher check as per instruction of manufacturer (seal should be intact and nozzle should be free from obstructions).
7. Oil used as damping oil in pendulums silicon oil(M200/12500).
8. Never operate the engine with oil level below low mark or above the high mark.
9. Keep the oil level as near high mark as possible.
10. Check the oil level of power shift gear box at1200RPM For lower level at40°cFor upper level at 80°c.
11. When greasing and lubricating, remove excessive grease or oil before re-greasing and re- lubrication the machine parts.
12. 15W 40 CI4/CI-4 Plus or equivalent lube oil to be used in engine.
13. Engine oil pressure should be minimum 0.7 bar at idle & 2.4 to 3.0 bar on load at rated RPM after two hours working.
14. Gear oil for all gear boxes except pump gear box will be SHELL SPIRAX S2 G80W90.
15. Use Oil Shell Spirax S4 TXM-10W30 for ZG Gear box.
16. Gear oil for pump gear box will be SHELL OMALA S4 GXV 150.
17. Maximum 20% wear on area basis is permitted for changing the worn out tamping tools.
18. Air brake pressure should be Min. 4 bar at lock position.
19. Clearance of lifting roller disc below the rail head will be 5 mm for rear and 12 mm for front in lowered condition.
20. Gap of carrier of lining transducer should be 0.1 mm more than the dia of chord wire.
21. RPM of engine radiator fan should not be less than 1600 for proper cooling. 22.The length of the hoses between clamps or adopter should be 4% more than required to provide allowance for shortening of hose under pressure.
22. Radiator may be replaced if it is blocked more than 20% during service or badly leaking and not economical to repair.
23. Tension of V-belt will be checked at center of belt and it should not be more than15mm.
24. Complete set of tamping tools should be changed at a time instead of replacement of individual worn out tools as far as possible to obtain better quality of packing.
25. Hydraulic oil should be sent for physical and chemical test after every1000hrs.

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1.	S/Shri	Mahendra Yadav	SSE/TM/NER
2.	S/Shri	Varun Singh	SSE/TM/NER
3.	S/Shri	Riket Kumar	SSE/TM/NER

RDSO

1.	S/Shri	D S Prajapati	ARE/TM
2.	,, ,,	Prem Kumar	SSRE/TM
3.	,, ,,	Prakhar Gupta	SSRE/TM
4.	,, ,,	Pradip Kumar Shukla	SSRE/TM
5.	,, ,,	D.G.Sharma	SSE/CIVIL

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