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टीएम/एच एम/टि- एक्स०/खंड-III
TM/HM/T-Exp/Pt-III

दिनांक- .03.2021
Date: .03.2021

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|--|--|
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Detailed addresses are enclosed herewith.

विषय: उच्च आउटपुट टैम्पिंग सह स्थिरीकरण (09-3 एक्स) डायनेमिक मशीन की अनुरक्षण अनुसूची पुस्तिका संशोधन-2

Sub:-Maintenance schedule manual (Rev-2) of High Output Tamping cum Stabilizing (09-3X) Dynamic machine.

ओईएम मैनुअल के आधार पर उच्च आउटपुट टैम्पिंग सह स्थिरीकरण (09-3 एक्स) मशीन की अनुरक्षण अनुसूची पुस्तिका संशोधन -2 का मसौदा पत्र सं टीएम/एचएम/टि-एक्स०/पार्ट०-III दि. 22.09.2020 द्वारा और अंतिम अनुरक्षण अनुसूची पुस्तिका संशोधन-2 पत्र सं टीएम/एचएम/टि-एक्स० एक्स० /पार्ट० -III दि 15.12.2020 द्वारा क्रमशः 30 दिनों के लिये एवं 15 दिनों के लिये सभी क्षेत्रिय रेलवे को सुझाव/टिप्पणी हेतु जारी किया गया था। केवल एक क्षेत्रिय रेलवे (पश्चिम-मध्य रेलवे)से सुझाव/टिप्पणी प्राप्त हुआ, जिसके आधार पर अनुरक्षण अनुसूची पुस्तिका संशोधन-2 को अंतिम रूप से तैयार किया गया है।

जिसकी प्रति, आपके सूचनार्थ तथा मशीन के कर्मचारियों जो फील्ड में काम कर रहे हैं के मार्गदर्शन हेतु संलग्न है। यद्यपि उपरोक्त सूची बनाते समय सभी सावधानियाँ बरती गई हैं, फिर भी यदि कोई त्रुटि हो तो कृपया अपने सुझावों/टिप्पणियों को सुधार हेतु ई-मेल/पत्राचार द्वारा अधोहस्ताक्षरी को भेजे।

Based on OEM manual, draft maintenance schedule manual-Rev-2 for High Output Tamping cum Stabilizing (09-3X) Dynamic machine, was circulated to all zonal railways vide letter no.TM/HM/T-Exp/Pt-III dt. 22/09/2020 for 30 days and provisional maintenance schedule manual -Rev-2 was circulated vide letter no. TM/HM/T-Exp/Pt-III dt. 15.12.2020 for 15 days for suggestions/comments. Only one zonal railway (W.C. Railway) has given the suggestions/comments so far. Now the maintenance schedule manual-Rev-2 has been finalized on the basis of suggestions/comments received from W.C. Railway.

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/post.

E-mail Id- hmtmrdso@gmail.com

DA: As above

Signed by Om Prakash
Date: 26-03-2021 12:15:41
Reason: Approved

(ओम प्रकाश)
निदेशक रेलपथ मशीन-III

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भारत सरकार
रेल मंत्रालय

GOVERNMENT OF INDIA

MINISTRY OF RAILWAYS

**MAINTENANCE SCHEDULE
OF
High Output Tamping cum Stabilizing Machine (09-3X)
Dynamic**

Report No.TM – 224

(Revision-01 of 2020)

March-2021

अनुसंधान अभिकल्प और मानक संगठन लखनऊ-226011

RESEARCH DESIGNS & STANDARDS ORGANISATION

LUCKNOW- 226 011

PREFACE

Maintenance of On-Track Machines is a challenging task. Maintenance of these machines is being done by Zonal Railways with the assistance of local trade available, zonal track machine workshops, CPOH/Allahabad, 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.

This maintenance schedule manual for High output tamping cum stabilizing machine (09-3X) dynamic revision-01 has been prepared on the basis of maintenance instructions given by OEM and suggestions received from different railways. The suggestion and feedback from field has been taken and incorporated in this maintenance schedule. Suggestion/instruction given by OEM time to time should also be followed in addition to this manual. The manual is prepared for those items which are required for day to day maintenance. Apart from these instructions, if any part of machine fails/breakdown, that shall be attended immediately by the railway. The oiling and greasing shall be done of every moving part where as required in addition to manual depending on discretion of machine In-charge. Some time machine modified/altered on the basis of experience or OEM suggestion that shall also be undertaken in the maintenance practice.

While every care has been taken to make the maintenance schedules quite exhaustive, there is always scope for further improvement. Suggestions from the railways in this regard will be welcome and may be sent to the undersigned for future improvement.

March- 2021

Om Prakash
Director/Track Machine
RDSO/Lucknow-226011

EXPLANATORY NOTES

While preparing text of schedules for maintenance (Rev.01) of High output tamping cum stabilizing machine (09-3X) dynamic, 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 High Output Tamping cum Stabilizing Machine (09-3X) Dynamic TM – 224 (Rev. 01 of 2020)

Sr. No.	Name of Schedule	Periodicity	Duration	Location
1.	Schedule I	Daily/ Before working & running	One hour.	In the track machine Siding
2.	Schedule II	50 Engine hrs.	Two hours	-do-
3.	Schedule III	100 Engine hrs.	One day	-do-
4.	Schedule IV	200 Engine hrs.	Two days	-do-
5.	Schedule V	1000 Engine hrs.	7 days	In Satellite Depot/Zonal Workshop
6.	Schedule VI	2000 Engine hrs.	30 days	In Zonal Workshop
7.	Schedule VII	8000/6000 Engine hrs.	1st POH-75 days, 2nd POH-90 days	In CPOH Workshop

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Sr. No.	Items	Sch-I Daily	Sch-II 50 hours.	Sch-III 100 hours.	Sch-IV 200 hours.	Sch-V 1000 hours.	Sch-VI 2000 hours.	Sch-VII 8000/6000 hours.
1.0	Engine Caterpillar C 18 & C 9							
1.1	Check level of engine oil & top up, as required.	√	√	X	X	X	X	X
1.2	Check coolant level of radiator and top up, as required.	√	√	X	X	X	X	X
1.3	Check fuel level & top up, if required.	√	√	X	X	X	X	X
1.4	Check the leakage from hoses, water pump seal etc. and do the needful.	√	√	X	X	X	X	X
1.5	Check the tension of V belt and correct if required.	√	√	X	X	X	X	X
1.6	Check air cleaner filter choking indicator & do the needful.	√	√	X	X	X	X	X
1.7	Check engine oil pressure on load after two hours working.	√	√	X	X	X	X	X
1.8	Record the maximum engine temperature during the day's work.	√	√	X	X	X	X	X
1.9	Drain sediment from Fuel tanks/Fuel Filter/Water Separator.	√	√	X	X	X	X	X
1.10	Check charging ammeter of batteries (it should be +ve)	√	√	X	X	X	X	X
1.11	Clean the engine & premises.	√	√	X	X	X	X	X
1.12	Drain water from air reservoir after day's work.	√	√	X	X	X	X	X
1.13	Clean dust collector of air cleaner.	√	√	X	X	X	X	X
1.14	Check the physical condition & tension of V belt and do the needful.	X	√	√	√	√	√	√
1.15	Check electrolyte level of batteries, top up if required.	X	√	√	√	√	√	√
1.16	Check battery terminal, connection for tightness & apply petroleum jelly on terminals.	X	√	√	√	√	√	√
1.17	Clean the water separator of pneumatic system.	X	√	√	√	√	√	√
1.18	Top up air oiler if required.	X	√	√	√	√	√	√
1.19	Check the safety device at defined water temperature & lube oil pressure.	X	X	√	√	√	√	√

Sr. No.	Items	Sch-I Daily	Sch-II 50 hours.	Sch-III 100 hours.	Sch-IV 200 hours.	Sch-V 1000 hours.	Sch-VI 2000 hours.	Sch-VII 8000/6000 hours.
1.20	Check and clean the throttle control linkages & lubricate.	X	X	√	√	√	√	√
1.21	Examine the mounting bolts of engines.	X	X	√	√	√	√	√
1.22	Change engine oil.	X	√*	√*	√*	√*	√*	√*
1.23	Change engine oil filter.	X	√*	√*	√*	√*	√*	√*
1.24	Check fuel tank breather and clean if required.	X	√*	√*	√*	√*	√*	√*
1.25	Change all fuel filter(HYD-501.10.10/H300W/ES FITTEINSATZ-2 nos.&1R-0749-2nos. for C-18 & 1R-0749-1 no. + 1R-0751-1no.for C-9)	X	√*	√*	√*	√*	√*	√*
1.26	Clean outer air cleaner element.(Cleaned after every 250hrs or on dirt indication)	X	√*	√*	√*	√*	√*	√*
1.27	Clean crank case air breather.	X	X	√**	√**	√**	√**	√**
1.28	Check and change radiator hoses, if required.	X	X	X	√	√	√	√
1.29	Check specific gravity of battery electrolyte if applicable.	X	X	X	√	√	√	√
1.30	Clean diesel tank with lint free cloth.	X	X	X	X	√	√	√
1.31	Change inner air cleaner element.	X	X	X	X	√	√	√
1.32	Change outer air cleaner element.	X	X	X	X	√	√	√
1.33	Change batteries, as applicable (at least after 2 years).	X	X	X	X	√	√	√
1.34	Check Engine timing.	X	X	X	X	√	√	√
1.35	Overhaul self-starter.	X	X	X	X	X	√	√
1.36	Overhaul alternator I	X	X	X	X	X	√	√
1.37	Overhaul alternator II.	X	X	X	X	X	√	√
1.38	Overhaul alternator III	X	X	X	X	X	√	√
1.39	Overhaul alternator IV.	X	X	X	X	X	√	√
*Done after every 250 Engine hour or at least annually ** Done after every 500 Engine hours								

Sr. No.	Items	Sch-I Daily	Sch-II 50 hours.	Sch-III 100 hours.	Sch-IV 200 hours.	Sch-V 1000 hours.	Sch-VI 2000 hours.	Sch-VII 8000/6000 hours.
1.40	Overhaul the injectors.	X	X	X	X	X	√	√
1.41	Clean the engine radiator.	X	X	X	X	X	√	√
1.42	Top overhaul or replace the engine on condition basis.	X	X	X	X	X	√	√
1.43	Check bearing and shaft of radiator fan drive and do needful.	X	X	X	X	X	√	√
1.44	Overhaul water pump.	X	X	X	X	X	√	√
1.45	Change the engine mounting pads.	X	X	X	X	X	X	√
1.46	Change engine damper for any damage.	X	X	X	X	X	X	√
1.47	Clean/Replace cooling coil.	X	X	X	X	X	X	√
2.0	Engine Hatz							
2.1	Check level of engine oil & top up, as required.	√	√	√	√	√	√	√
2.2	Change Engine Oil, clean lub oil filter and air cleaner	X	√*	√	√	√	√	√
3.0	Power Transmission and ZF gear box							
3.1	Check ZF pressure at idle and at 2200 rpm for E1 & 1700 rpm for E2.	√	√	√	√	√	√	√
3.2	Check the oil leakage from all gear boxes and do the needful.	√	√	√	√	√	√	√
3.3	Grease torque arm pivots of driving bogie and satellite.	X	√	√	√	√	√	√
3.4	Grease link rods.	X	√	√	√	√	√	√
3.5	Adjust the clearance of all brake shoes.	X	√	√	√	√	√	√
3.6	Grease king pin pivot of driving & idle bogies.	X	√	√	√	√	√	√
3.7	Grease axle gear box flange cover of driving bogie.	X	√	√	√	√	√	√
3.8	Check oil level of power divider/power distribution gear box.	X	√	√	√	√	√	√
3.9	Check the tightness of cordon shaft bolts.	X	√	√	√	√	√	√
*Done after every 50 hrs. According to Hatz Engine hour or at least annually.								

Sr. No.	Items	Sch-I Daily	Sch-II 50 hours.	Sch-III 100 hours.	Sch-IV 200 hours.	Sch-V 1000 hours.	Sch-VI 2000 hours.	Sch-VII 8000/6000 hours.
3.10	Lubricate with grease all dirt repelled.	X	√	√	√	√	√	√
3.11	Check oil level of all gear boxes & top up if required.	X	√	√	√	√	√	√
3.12	Check oil level of ZF gear box (at 1000 rpm), and top up after stopping engine if required.	X	√	√	√	√	√	√
3.13	Grease hand brake gear.	X	√	√	√	√	√	√
3.14	Inspect all cordon shafts for any cracks & bend.	X	√	√	√	√	√	√
3.15	Grease all cordon shafts UJ cross & splince joints.	X	X	√	√	√	√	√
3.16	Change oil of satellite axle gear box.	X	X	√**	√**	√**	√**	√**
3.17	Change oil of intermediate drive shaft.	X	X	√**	√**	√**	√**	√**
3.18	Change oil of axle gear boxes.	X	X	√**	√**	√**	√**	√**
3.19	Change oil of distribution gear box.	X	X	√**	√**	√**	√**	√**
3.20	Change ZF filter.	X	X	√**	√**	√**	√**	√**
3.21	Change gear oil of hydraulic drive reduction gear box.	X	X	√**	√**	√**	√**	√**
3.22	Change ZF oil.	X	X	√**	√**	√**	√**	√**
4.0 TAMPING UNITS								
4.1	Check the condition and tightness of all tamping tools.	√	√	X	X	X	X	X
4.2	Check any abnormal sound of tamping units.	√	√	X	X	X	X	X
4.3	Check & fill the reservoir for lubrication of tamping arm bush (55 mm pin) up to the mark.	√	√	X	X	X	X	X
4.4	Clean the tamping banks.	√	√	X	X	X	X	X
4.5	Check tightness and infringement of tamping tools with one another (LHS+RHS).	√	√	X	X	X	X	X
4.6	Grease of connecting rod bush (35mm pin) and vibration shaft bearing after every 2-3 hours of working (In case of Auto greasing is not functioning & manual greasing is being done.)	√	√	X	X	X	X	X
** Done after every 500 Engine hours								

Sr. No.	Items	Sch-I Daily	Sch-II 50 hours.	Sch-III 100 hours.	Sch-IV 200 hours.	Sch-V 1000 hours.	Sch-VI 2000 hours.	Sch-VII 8000/6000 hours.
4.7	Check tightness of shoe plate bolts of guide Column (LHS+RHS).	X	√	√	√	√	√	√
4.8	Check squeezing cylinder cover plate bolts for tightness (LHS+RHS).	X	√	√	√	√	√	√
4.9	Check tamping unit cylinder holding bracket bolts for tightness (LHS+RHS).	X	√	√	√	√	√	√
4.10	Check tamping unit locking device (LHS+RHS).	X	√	√	√	√	√	√
4.11	Check the nuts of 55 mm and 35 mm pin for tightness (LHS+RHS).	X	√	√	√	√	√	√
4.12	Overhaul/replace tamping unit, if required.	X	X	X	X	√	√	√
5.0	TRACK LIFTING, LINING UNIT & STABILIZER UNIT							
5.1	Check locking device of lifting and lining unit.	√	√	X	X	X	X	X
5.2	Check oil level of stabilizer units.	√	√	X	X	X	X	X
5.3	Check the link rods of stabilizer units.	√	√	X	X	X	X	X
5.4	Lubricate the clamp carrier pivots with oil.	X	√	√	√	√	√	√
5.5	Inspect clamp roller locking bracket bolts for tightness.	X	√	√	√	√	√	√
5.6	Examine the clamp roller for wear and free movement and do the needful.	X	√	√	√	√	√	√
5.7	Grease lining cylinder pivots.	X	√	√	√	√	√	√
5.8	Grease lifting unit guide columns.	X	√	√	√	√	√	√
5.9	Grease roller clamp housing.	X	√	√	√	√	√	√
5.10	Lubricate the track lifting cylinder pivots with lube oil.	X	√	√	√	√	√	√
5.11	Grease rail clamp pivot pins, rollers and link rods of stabilizer unit.	X	√	√	√	√	√	√
5.12	Check gap between chord wire and carrier of lining transducer and do needful.	X	X	√	√	√	√	√
5.13	Check feeler rollers of middle trolley for play.	X	X	√	√	√	√	√
5.14	Check clearance (3-5mm) of lifting roller disc below the rail head in lowered condition.	X	X	√	√	√	√	√

Sr. No.	Items	Sch-I Daily	Sch-II 50 hours.	Sch-III 100 hours.	Sch-IV 200 hours.	Sch-V 1000 hours.	Sch-VI 2000 hours.	Sch-VII 8000/6000 hours.
5.15	Check guide rod of transducers for bends and tightness of bolts.	X	X	√	√	√	√	√
5.16	Check nuts & bolts of measuring devices for tightness.	X	X	√	√	√	√	√
5.17	Check calibration of lining system.	X	X	√	√	√	√	√
5.18	Check calibration of leveling system.	X	X	√	√	√	√	√
5.19	Check bearing play and clamp bolt and change if necessary.	X	X	√**	√**	√**	√**	√**
5.20	Grease all pendulums bridge pivots.	X	X	X	√	√	√	√
5.21	Check height transducers carrier rod, for wear or damage.	X	X	X	√	√	√	√
5.22	Check all transducers fittings for measuring and lining trolleys.	X	X	X	√	√	√	√
5.23	Check chord wire of all transducers and change if required.	X	X	X	X	√	√	√
5.24	Calibrate the all sensing equipment's.	X	X	X	X	√	√	√
5.25	Overhaul/ replace the lifting unit, if required.	X	X	X	X	X	√	√
*Done after every 250 Engine hour ** Done after every 500 Engine hours								

Sr. No.	Items	Sch-I Daily	Sch-II 50 hours.	Sch-III 100 hours.	Sch-IV 200 hours.	Sch-V 1000 hours.	Sch-VI 2000 hours.	Sch-VII 8000/6000 hours.
6.0	Hydraulic							
6.1	Check and top up all hydraulic oil tanks.	√	√	X	X	X	X	X
6.2	Record the maximum temperature of hydraulic oil during the day's work.	√	√	X	X	X	X	X
6.3	Check the leakage from hydraulic hoses and do needful.	√	√	X	X	X	X	X
6.4	Change all return line filter element.	X	√*	√*	√*	√*	√*	√*
6.5	Change all proportional filters element.	X	√*	√*	√*	√*	√*	√*
6.6	Change all servo filters element.	X	√*	√*	√*	√*	√*	√*
6.7	Change 4 nos. superfine filters (HY R -507.05.01H).	X	X	√**	√**	√**	√**	√**
6.8	Change filter of variable displacement pump.	X	X	√**	√**	√**	√**	√**
6.9	Change suction filters. (HY-S501.560.150ES)	X	X	√**	√**	√**	√**	√**
6.10	Change suction filters. (HY-S501.160.P10H/ES)	X	√*	√*	√*	√*	√*	√*
6.11	Check all pressure controls for rated settings.	X	X	X	√	√	√	√
6.12	Send sample of hydraulic oil for physical & chemical test & if found 'OK' refill through 10u porta filter otherwise with new oil.	X	X	X	X	√	√	√
6.13	Replace the hydraulic hoses which are damaged by external abrasion.	X	X	X	X	X	√	√
6.14	Check the hydraulic motors for proper function and do the needful.	X	X	X	X	X	√	√
6.15	Provide the missing clamps.	X	X	X	X	X	√	√
6.16	Check the D.C. valves for leakage and do needful.	X	X	X	X	X	√	√
6.17	Check the seals of all hydraulic cylinders along with gland bushes /piston and do needful.	X	X	X	X	X	√	√
6.18	Change all hydraulic pumps and motors on condition basis.	X	X	X	X	X	X	√
*Done after every 250 Engine hour ** Done after every 500 Engine hours								

Sr. No.	Items	Sch-I Daily	Sch-II 50 hours.	Sch-III 100 hours.	Sch-IV 200 hours.	Sch-V 1000 hours.	Sch-VI 2000 hours.	Sch-VII 8000/6000 hours.
6.19	Check the hydraulic pumps for proper function and do the needful.	X	X	X	X	X	√	√
6.20	Overhaul/Replace all hydraulic cylinders.	X	X	X	X	X	X	√
6.21	Clean the hydraulic tank, inside to be painted with approved quality of paint.	X	X	X	X	X	X	√
6.22	Clean hydraulic oil cooler external & internal.	X	X	X	X	X	X	√
6.23	Check the hydraulic accumulators and recharge, if required	X	X	X	X	X	X	√
6.24	Replace all hydraulic hoses.	X	X	X	X	X	X	√
6.25	Change all the direct acting and pilot operated D.C. valves on condition basis.	X	X	X	X	X	X	√
6.26	Proportional valves and servo valves may be calibrated/replaced.	X	X	X	X	X	X	√
6.27	Change all the pressure control valves on condition basis.	X	X	X	X	X	X	√
6.28	Replace all the stop cocks and flow control valves.	X	X	X	X	X	X	√
6.29	Flush the complete system.	X	X	X	X	X	X	√

Sr. No.	Items	Sch-I Daily	Sch-II 50 hours.	Sch-III 100 hours.	Sch-IV 200 hours.	Sch-V 1000 hours.	Sch-VI 2000 hours.	Sch-VII 8000/6000 hours.
7.0	PNEUMATIC							
7.1	Check air brake pressure at locking position.	√	√	X	X	X	X	X
7.2	Check pneumatic system for any air leakage.	√	√	X	X	X	X	X
7.3	Top up the air oiler.	√	√	X	X	X	X	X
7.4	Drain all drip cups	X	√	√	√	√	√	√
7.5	Check all brake shoes lining and brake block play.	X	X	√	√	√	√	√
7.6	Check air unloader for proper functioning.	X	X	X	√	√	√	√
7.7	Check all Pn. regulator valves for proper pressure settings.	X	X	X	√	√	√	√
7.8	Change air drier filter cartridge.	X	X	X	X	√	√	√
7.9	Overhaul the air unloader.	X	X	X	X	√	√	√
7.10	Clean the air reservoir.	X	X	X	X	X	√	√
7.11	Check/Replace water separator and air oiler.	X	X	X	X	X	√	√
7.12	Change pneumatic pipes leading to brake cylinders.	X	X	X	X	X	√	√
7.13	Overhaul all pneumatic valves and change the unserviceable ones.	X	X	X	X	X	√	√
7.14	Check/Change the seals of all pneumatic cylinders.	X	X	X	X	X	√	√
7.15	Change the seals of brake cylinders.	X	X	X	X	X	√	√
7.16	Replace air unloader.	X	X	X	X	X	X	√
7.17	Test air tanks for rated pressure.	X	X	X	X	X	X	√
7.18	Replace water separator and air oiler.	X	X	X	X	X	X	√
7.19	Change all pneumatic valves.	X	X	X	X	X	X	√
7.20	Change all pneumatic hoses.	X	X	X	X	X	X	√
7.21	Change all pneumatic cylinders.	X	X	X	X	X	X	√

Sr. No.	Items	Sch-I Daily	Sch-II 50 hours.	Sch-III 100 hours.	Sch-IV 200 hours.	Sch-V 1000 hours.	Sch-VI 2000 hours.	Sch-VII 8000/6000 hours.
8.0	MECHANICAL							
8.1	Grease all lining roller pins.	√	√	X	X	X	X	X
8.2	Grease all guide rollers of satellite.	√	√	X	X	X	X	X
8.3	Check locking device of satellite.	√	√	X	X	X	X	X
8.4	Check tightness of bolts of satellite axle support cylinder.	√	√	X	X	X	X	X
8.5	Check torque support of satellite.	√	√	X	X	X	X	X
8.6	Apply lube oil on bush bearings.	√	√	X	X	X	X	X
8.7	Grease of axle guide & clamp pivot pins of stabilizer unit.	√	√	X	X	X	X	X
8.8	Lubricate link rod of Stabilizer unit with Shell Gedus S2 V100 2	X	√	√	√	√	√	√
8.9	Check oil level in vibration gear box.	X	√	√	√	√	√	√
8.10	Lubricate cardon shaft and stabilizer rollers with Shell Gedus S 2 V 100 2.	X	√	√	√	√	√	√
8.11	Check leveling chord tensioning arrangement.	X	√	√	√	√	√	√
8.12	Check foundation bolts of brake cylinders.	X	√	√	√	√	√	√
8.13	Check universal joints for play and replace, if required.	X	X	√	√	√	√	√
8.14	Check the condition of brake shoes, replace if required.	X	X	√	√	√	√	√
8.15	Check function of satellite axle support cylinder.	X	X	√	√	√	√	√
8.16	Check all allen bolts of clapper bracket distance piece for tightness.	X	X	√	√	√	√	√
8.17	Change oil of Vibration gear box of Stabilizer unit	X	X	√**	√**	√**	√**	√**
8.18	Check & Lubricate coupling bolt with grease.	X	X	√**	√**	√**	√**	√**
8.19	Check shock absorbers and do needful.	X	X	X	√	√	√	√
8.20	Check bearings of all axles and grease them.	X	X	X	X	√	√	√
** Done after every 500 Engine hours								

Sr. No.	Items	Sch-I Daily	Sch-II 50 hours.	Sch-III 100 hours.	Sch-IV 200 hours.	Sch-V 1000 hours.	Sch-VI 2000 hours.	Sch-VII 8000/6000 hours.
8.21	Check meggi springs of satellite bogie and replace, if required.	X	X	X	X	√	√	√
8.22	Check bearings of trolley wheels and grease them.	X	X	X	X	√	√	√
8.23	Change the brake shoes.	X	X	X	X	√	√	√
8.24	Grease Draw and Buffing gear at both ends.	X	X	X	X	√	√	√
8.25	Check grease of Parking brake and filling as required.	X	X	X	X	√	√	√
8.26	Replace the missing and defective hand tools.	X	X	X	X	X	√	√
8.27	Strengthen machine frame where cracks have developed.	X	X	X	X	X	√	√
8.28	Do patch painting where paint has peeled off or blistered and where welding work has been done.	X	X	X	X	X	√	√
8.29	Overhaul the trollies, wheels & feeler rollers.	X	X	X	X	X	X	√
8.30	Replace the axle bearings and grease them.	X	X	X	X	X	X	√
8.31	Overhaul all the gear boxes except ZF gear box.	X	X	X	X	X	X	√
8.32	Replace the shaft holding nuts & bolts.	X	X	X	X	X	X	√
8.33	Overhaul the driving and idle bogies and replace the defective parts.	X	X	X	X	X	X	√
8.34	Check the satellite rollers or replace them, if required.	X	X	X	X	X	X	√
8.35	Complete machine may be painted with approved paint.	X	X	X	X	X	X	√
8.36	Overhaul the X-bearing of all propeller shaft or replace if required.	X	X	X	X	X	X	√
8.37	Check the pivot bearing, replace if required.	X	X	X	X	X	X	√
8.38	Check the bogie coil springs and replace, if broken.	X	X	X	X	X	X	√
8.39	Remove and check the bogie frame and do needful.	X	X	X	X	X	X	√
8.40	Change Tamping unit Up/down cylinders.	X	X	X	X	X	X	√
8.41	Change satellite support cylinder.	X	X	X	X	X	X	√
8.42	Change Axle support cylinders.	X	X	X	X	X	X	√

Sr. No.	Items	Sch-I Daily	Sch-II 50 hours.	Sch-III 100 hours.	Sch-IV 200 hours.	Sch-V 1000 hours.	Sch-VI 2000 hours.	Sch-VII 8000/6000 hours.
9.0	ELECTRICAL							
9.1	Check function of horns.	√	√	√	√	√	√	√
9.2	Check all display for proper functions.	√	√	√	√	√	√	√
9.3	Clean the depth transducers for free movement of chord wire.	X	√	√	√	√	√	√
9.4	Clean alternator and check connections.	X	√	√	√	√	√	√
9.5	Check all limit switches/Proximity switches and do needful.	X	√	√	√	√	√	√
9.6	Checking of gauges and display for proper function.	X	X	√	√	√	√	√
9.7	Check all lights and do needful.	X	X	√	√	√	√	√
9.8	Check calibration of tamping unit depth transducers.	X	X	√	√	√	√	√
9.9	Replacement of Relay/Fuse if required.	X	X	X	√	√	√	√
9.10	Replace defective switches and potentiometers.	X	X	X	X	X	√	√
9.11	Calibrate the machine for lifting, leveling and lining	X	X	X	X	X	√	√
9.12	Provide missing thimbles.	X	X	X	X	X	√	√
9.13	Replace the limit switches/proximity switches.	X	X	X	X	X	X	√
9.14	Repair or replace the defective PCBs.	X	X	X	X	X	X	√
9.15	Replace defective indicative instruments.	X	X	X	X	X	X	√
9.16	Overhaul the pendulums.	X	X	X	X	X	X	√
9.17	Overhaul all the transducers.	X	X	X	X	X	X	√
9.18	Get insulation test of main cables and replace the defective ones.	X	X	X	X	X	X	√
9.19	Overhaul the panel boxes.	X	X	X	X	X	X	√
9.20	Check the LED of all the solenoids.	X	X	X	X	X	X	√
9.21	Check the calibration of digital potentiometers and replace the defective ones.	X	X	X	X	X	X	√

Sr. No.	Items	Sch-I Daily	Sch-II 50 hours.	Sch-III 100 hours.	Sch-IV 200 hours.	Sch-V 1000 hours.	Sch-VI 2000 hours.	Sch-VII 8000/6000 hours.
10.0	UNDER FRAME							
10.1	Under frame							
10.1.1	Visually examine center pivot mounting bolts and attend if needed.	√	√	√	√	X	X	X
10.1.2	Check condition of head stock/sole bar.	√	√	√	√	√	√	√
10.1.3	Visually examine the shock absorbers for damages	√	√	√	√	√	√	√
10.1.4	Examine trough floor, turn under and other frame members from underneath for corrosion.	X	√*	X	X	√	√	√
10.1.5	Visually inspect center pivot cover	√	√	√	√	√	√	√
10.1.6	Visually examine and attend safety loops of bolster.	√	√	√	√	√	√	√
10.1.7	Thoroughly examine the centre pivot mounting bolts and replace, if needed.	X	X	X	X	√	√	√
10.2	Brake rigging & Brake System							
10.2.1	Check and attend brake shoe head and key & replace if necessary.	√	√	√	√	√	√	√
10.2.2	Visually inspect brake hangers, brake gear pins and cotters/split pins and replace if necessary.	√	√	√	√	√	√	√
10.2.3	Visually examine brake beams breakages/damages.	X	√	√	√	√	√	√
10.2.4	Check brake gear and adjust so that the piston stroke is within the limit.	X	√	√	√	√	√	√
10.2.5	Visually inspect damaged/missing brake gear bushes, lever hanger pins replace if necessary.	X	X	X	X	√	√	√
10.2.6	Examine and attend brake levers.	X	√	√	√	√	√	√
10.2.7	Visually inspect for damage on brake pipe, replace if required	X	√	√	√	√	√	√
10.2.8	Check and attend brake beam safety wire rope/safety straps.	X	√	√	√	√	√	√
* To be done after every 250 hrs								

Sr. No.	Items	Sch-I Daily	Sch-II 50 hours.	Sch-III 100 hours.	Sch-IV 200 hours.	Sch-V 1000 hours.	Sch-VI 2000 hours.	Sch-VII 8000/6000 hours.
10.2.9	Check and replace worn brake blocks	X	√	√	√	√	√	√
10.2.10	Visually check for hand brake chain rope, sprocket & floating lever and attend if needed.	X	√	√	√	√	√	√
10.2.11	Check of MU washer and attend if needed.	X	√	√	√	√	√	√
10.2.12	Check for cutoff angle cock and leakage, attend if needed.	X	√	√	√	√	√	√
10.2.13	Check and attend brake block adjuster.	X	√*	X	X	√	√	√
10.2.14	Check/Replace all types Torque arm plates, pins & bushes.	X	X	X	X	X	√	√
10.2.15	Check/Replace all Maggie flex washer, Maggie/Rubber springs/ Damper rubber.	X	X	X	X	X	√	√
10.2.16	Replace all brake reversal springs.	X	X	X	X	X	√	√
10.2.17	Repair/Replace all brake drum seals, cylinders & brake linkage rods.	X	X	X	X	X	√	√
10.3	Bogie Frame & Suspension							
10.3.1	Visually examine the condition of bogie frame and welded locations.	X	√	√	√	√	√	√
10.3.2	Examine bolster safety straps/loops for damage/broken suspension system /missing	X	√	√	√	√	√	√
10.3.3	Visually examine the condition of suspension system (Coil spring) for any damage/loose/breakage.	X	√*	X	X	√	√	√
10.3.4	Examine condition of the wearing plates.	X	X	√**	X	√	√	√
10.3.5	Examine corrosion of sole bar and other under frame members with torchlight or inspection lamp.	X	X	√**	X	√	√	√
10.3.6	Visually examine the cabin and axle support cylinders for leakages/damages.	X	X	√**	X	√	√	√
* To be done after every 250 hrs ** To be done after every 500 hrs.								

Sr. No.	Items	Sch-I Daily	Sch-II 50 hours.	Sch-III 100 hours.	Sch-IV 200 hours.	Sch-V 1000 hours.	Sch-VI 2000 hours.	Sch-VII 8000/6000 hours.
10.4	Draw Gear							
10.4.1	Examine draw hook, draw bars, rubber pads for damages.	X	√	√	√	√	√	√
10.4.2	Examine visually draft key locking pins.	X	√	√	√	√	√	√
10.4.3	Check and replace damage/missing split pins.	X	√	√	√	√	√	√
10.4.4	Check condition of the CBC coupling and its components and replace as required	X	√	√	√	√	√	√
10.4.5	Check condition of draw beam and locating pins on it.	X	X	√	√	√	√	√
10.4.6	Ensure that wear on screw coupling shackle pins, trunion pins, shackle/link holes and draw hook holes should not exceed 3 mm	X	X	√**	X	√	√	√
10.4.7	Remove the scale, rust, work hardened layers and surface cracks if any, by light grinding/filing	X	X	X	X	X	√	√
10.4.8	Use dye-penetration test for checking surface cracks in case of doubts	X	X	X	X	X	√	√
10.4.9	Inspect the draw hook for deformations & cracks. The neck, its pin hole, and the slot are vulnerable locations	X	X	X	X	X	√	√
10.5	Buffing Gear							
10.5.1	Visually examine buffer plungers for damages/ drooping /stroke length.	√	√	√	√	√	√	√
10.5.2	Examine buffer mounting bolts and attend if necessary.	√	√	√	√	√	√	√
10.5.3	Ensure the length is within 584-635 mm	X	X	√**	X	√	√	√
10.5.4	Inspect buffer plunger false plate for wear and profile.	X	X	√**	X	√	√	√
10.5.5	Check the draw bar for dimensional distortions and damaged threads.	X	X	X	X	X	√	√
10.5.6	Check the castle nuts for damaged threads, worn nut faces visually. Replace castle nuts if needed.	X	X	X	X	X	√	√
** To be done after every 500 hrs.								

Sr. No.	Items	Sch-I Daily	Sch-II 50 hours.	Sch-III 100 hours.	Sch-IV 200 hours.	Sch-V 1000 hours.	Sch-VI 2000 hours.	Sch-VII 8000/6000 hours.
10.5.7	Test all draw bars by magna-glow equipment for surface cracks.	X	X	X	X	X	√	√
10.5.8	Load test draw bar (Stc. 60.61) at 39.5 t and those of (IS 5517 Gr. 35Mn6Mo3) at 60t. There should not be any permanent deformations.	X	X	X	X	X	√	√
10.5.9	Examine visually buffer casing for cracks/damages & height.	√	√	√	√	√	√	√
10.6 Running Gear and Wheels								
10.6.1	Examine visually axle box for grease oozing out, warm box if any	√	√	√	√	√	√	√
10.6.2	Visually inspect axle box covers.	√	√	√	√	√	√	√
10.6.3	Inspect wheel tread for shattered rim, spread rim, shelled tread, thermal cracks, heat checks	√	√	√	√	√	√	√
10.6.4	Visually examine wheel tyre profile and thickness of tyre and check with tyre profile gauge if they appear to be near condemning limit	X	X	√	√	√	√	√
10.6.5	Check with wheel distance gauge for loose or tight wheels.	X	X	√**	X	√	√	√
10.6.6	Repair/replace all wheels, axles bearing housings and bearings.	X	X	X	X	X	√	√
10.6.7	Fill all axles bearing housing with grease.	X	X	X	X	√	√	√
10.6.8	Repair/replace all gear boxes, seals & driving shaft assemblies.	X	X	X	X	X	√	√
10.6.9	Examine visually axle box for grease oozing out, warm box if any	√	√	√	√	√	√	√
11.0 GENERAL								
11.1	Check Safety items as per annexure-I.	√	√	X	X	X	X	X
11.2	Check for any unusual sound from tamping units, gear boxes, engine & hydraulic pumps.	√	√	X	X	X	X	X
11.3	Check all the functions of machine before block working.	√	√	X	X	X	X	X
11.4	Clean the complete machine	X	√	√	√	√	√	√
** To be done after every 500 hrs.								

Sr. No.	Items	Sch-I Daily	Sch-II 50 hours.	Sch-III 100 hours.	Sch-IV 200 hours.	Sch-V 1000 hours.	Sch-VI 2000 hours.	Sch-VII 8000/6000 hours.
11.5	Visual and Physical inspection of wheel & axles shall be done at a frequency of once in a year or after every 1000 engine running hours whichever is earlier.	X	X	X	X	√	√	√
11.6	Ultrasonic testing of axles of machine shall be done between 40,000 to 45,000 kms of running or three years, whichever is earlier	X	X	X	X	X	√	√
11.7	Thoroughly clean all panel boxes.	X	X	X	X	X	√	√
11.8	Check the function of all assemblies after IOH.	X	X	X	X	X	√	√
11.9	Test the machine for one week near the workshop, before it is put for work in regular section.	X	X	X	X	X	√	√

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

List of Safety Equipments

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

*List of jacks send to Railway Board vide letter no. TM/HM/01 Vol-II, dated:- 22.08.2019 for approval.

IMPORTANT

- i) Radiator to be filled/top up with approved coolant.
- ii) CAT DEO 15W40 lube oil to be used in engine.
- iii) Engine oil pressure should be minimum 1.5 kg/sq.cm at idle & 2.5 kg/sq.cm on load at rated RPM after two hours working.
- iv) Gear oil Shell Spirax S 2 G 80W 90 for all gear boxes except ZF gear box will be SAE -90.v)
- v) Maximum 20% wear on area basis is permitted for changing the worn out tamping tools.
- vi) Air brake pressure should be Min. 3.8 bar at lock position.
- vii) Clearance of lifting roller disc below the rail head will be 3-5 mm for both rear and front in lowered condition.
- viii) Adjust the brake shoe clearance between 3 to 5 mm.
- ix) Brake shoes will be changed when minimum thickness at any point will become 13 mm or less.
- x) Gap of carrier of lining transducer should be 0.1 mm more than the dia of chord wire.
- xi) RPM of engine radiator fan should not be less than 1600 for proper cooling.
- xii) The length of the hoses between clamps or adopter should be 4% more than required to provide allowance for shortening of hose under pressure.
- xiii) Radiator may be replaced if it is blocked more than 20% during service or badly leaking and not economical to repair.
- xiv) A diesel driven porta filter (10 micron) may be installed on the machine. This will have a small 7.5 HP engine, porta filter and one 5 GPM pump with relief valve. Through this power pack, emergency backup system should also be provided on the machine.
- xv) Tension of V-belt will be checked at center of belt and it should not be more than 15mm.
- xvi) API CF-4 15W40 lube oil will be used in ZF-gear box.
- xvii) 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.
- xviii) Hydraulic oil should be sent for physical and chemical test after every 1000 hrs.

GENERAL SAFETY NOTES

1. The machine has to be operated according to existing Indian Railways Rules & Regulations.
2. The safety of yourself and other people is most important consideration in the operation and maintenance of the machine.
3. Remember, the machine is a working unit, carrying delicate instruments. Therefore, the machine should not be driven at excessive speed over bad track or crossing.
4. Always keep your eyes open for other men working close to the machine.
5. Do not forget to look out for signals, switches and track obstructions.
6. 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.
7. Always keep the machine clean. Excessive oil or grease on the machine can cause you to slip and fall and is also to potential fire hazard.
8. Always lock the machine before you leave. Make sure that the machine is protected in accordance with railway regulations.
9. Whenever you have the opportunity while waiting to get out on a job, do some of the smaller maintenance job, such as tightening loose nuts and bolts and cleaning the machine.
10. Do not permit unauthorized persons to operate the machine.
11. It is prohibited to use fire on or near the machine.
12. When ever going for working on or near the tamping bank area, operate the emergency push button and ensure latching position.
13. Do not tow the machine if the final drive is engaged.

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