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TM/HM/T-28 /Pt-III

Date: 08 -02-2019

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विषय: प्वाइंट एण्ड क्रॉसिंग चेंजिंग मशीन (टी०-28) अमेका-की अनुरक्षण अनुसूची पुस्तिका (संशोधन-1) एवं निरीक्षण जॉच सूची पुस्तिका (संशोधन-1)

Sub : Maintenance Schedule List and Inspection Check List for Point and crossing changing machine (T-28) AMECA Revision - 1

प्वाइंट एण्ड क्रॉसिंग चेंजिंग मशीन (अमेका-टी०-28) की अनुरक्षण अनु सूची एवं निरीक्षण जॉच सूची (संशोधन-1) तैयार की गयी 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 /फैक्स /पत्राचार द्वारा अद्योहस्ताक्षरी को भेजे।

Maintenance Schedule List and Inspection Check List for Point and crossing changing machine(T-28) Rev-1, has been prepared. However every care has been taken during preparation of the above said list, the discrepancy noticed, if any, then please send your suggestion/comments for the knowledge of the undersigned for further improvement. by email/fax/post.

DA: As above

Copy : 1. Executive Director / Track (MC), Railway Board, Rail Bhawan, New Delhi-110001.
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(ओम प्रकाश)

निदेशक रेलपथ मशीन-III

(ओम प्रकाश)

निदेशक रेलपथ मशीन-III



भारत सरकार
रेल मंत्रालय

**GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS**

**MAINTENANCE SCHEDULE MANUAL FOR POINT AND CROSSING
CHANGING MACHINE (T-28) (AMECA)**



**Report No.-102
(Rev.-1)**

FEBRUARY- 2019

**RESEARCH DESIGNS AND STANDARDS ORGANISATION
LUCKNOW-226011**

PREFACE

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

Revise Maintenance Schedule Manual for Point and Crossing changing Machine T-28 (AMECA) has been prepared on the basis of Maintenance instruction given by OEM and suggestions received from North Central Railway. Suggestions/instructions given by OEM from time to time are to be also followed in addition to this manual. The manual is prepared for those items which is required day to day maintenance. Apart from these instruction if any part of machine fails/breakdown that shall be attended immediately by the Railways. The oiling and greasing shall be done of every moving part where as required in addition to manual depending on discretion of machine In-charge. Some time machine modified/alterd on the basis of experience or OEM suggestion that shall be also undertaken in the maintenance practice. If the engine of machine is under AMC then maintenance/instruction schedule of repairing/alteration of engine may be followed as per term and condition of this manual.

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

(Om Prakash)
Director/Track Machine - III
RDSO/Lucknow-226011

February-2019

EXPLANATORY NOTES

While preparing the text of Maintenance Schedule Manual (Rev-1) of Point and Crossing changing Machine T-28 (AMECA) 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 Manual (Rev.1) for Point and Crossing Changing Machines (T-28)

S. N	Schedule	Periodicity	Duration	Location
1.	Schedule I	Daily/ before working and running	One hour	In the track Machine siding
2.	Schedule II	50 Engine hrs.	Two hrs.	-do-
3.	Schedule III	100 Engine hrs.	One day	-do-
4.	Schedule IV	200 Engine hrs.	Two days	-do-
5.	Schedule V	1000 Engine hrs.	7 days	In Satellite Depot / Zonal Workshop
6.	Schedule VI IOH	2000 Engine hrs.	21 days	In Zonal Workshop
7.	Schedule VII	6000 Engine hrs	1 st - 45 Days 2 nd - 60 Days	In Zonal Workshop /CPOH

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

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SITE - At machine
STMD - Satellite depot
ZTMD - Zonal depot

T-28 (AMECA)

ENGINE

S.No.	Item	SCH.I Daily	SCH.II 50 Hrs	SCH.III 100 Hrs	SCH.IV 200 Hrs	SCH.V 1000 Hrs	SCH.VI 2000 Hrs	SCH.VII 6000 Hrs
1. ENGINE: SUN/6105-73AO, Air cooled 170 HP @ 2400 rpm								
1.1	Check level of lube oil & fill up, if required	√	√	√	√	X	X	X
1.2	Check fuel level & top up.	√	√	√	√	X	X	X
1.3	Check the tension of V-belt and adjust, if any slackness is noticed	√	√	√	√	X	X	X
1.4	Record max. engine temperature of the day.	√	√	√	√	X	X	X
1.5	Clean engine & premises.	√	√	√	√	X	X	X
1.6	Check the function of emergency stop switch.	√	√	√	√	X	X	X
1.7	Clean air cleaner dust collector	√	√	√	√	X	X	X
1.8	Check leakage from fuel pump, injectors, fuel supply & return pipes.	√	√	√	√	X	X	X
1.9	Check engine oil pressure on load after two hrs. Working.	√	√	√	√	X	X	X
1.10	Check battery charging	√	√	√	√	X	X	X
1.11	Checked Emergency backup engine	√	√	√	√	X	X	X
1.12	Clean air cleaner element outer with dry air (may be cleaned earlier, if red indicator lights up).	X	√	√	√	X	X	X
1.13	Check connection of self starter and alternator	X	√	√	√	X	X	X
1.14	Check engine warning system.	X	√	√	√	X	X	X
1.15	Clean battery terminals and apply petroleum jelly.	X	√	√	√	X	X	X
1.16	Check electrolyte level and specific gravity of battery. (minimum specific gravity 1.24).	X	√	√	√	X	X	X
1.17	Inspect V-belts for any damage, worn-out to be replace	X	√	√	√	X	X	X
1.18	Change engine oil	X	√*	√*	√*	√*	√*	√*
1.19	Clean air cleaner filter	X	√*	√*	√*	√*	√*	√*
1.20	Check engine working system	X	√*	√*	√*	√*	√*	√*

Note: * Will be done 150 Engine hrs. and *** will be done after 500 Engine hrs.

T-28 (AMECA)

ENGINE/MECANICAL

S.No.	Item	SCH.I Daily	SCH.II 50 Hrs	SCH.III 100 Hrs	SCH.IV 200 Hrs	SCH.V 1000 Hrs	SCH.VI 2000 Hrs	SCH.VII 6000 Hrs
1.21	Replace fuel filter.	X	√*	√*	√*	√*	√*	√*
1.22	Replace air filter elements outer and inner.	X	X	√***	√***	√***	√***	√***
1.23	Clean fuel tank.	X	X	X	X	√	√	√
1.24	Recondition / Replace batteries if required.	X	X	X	X	√	√	√
1.25	Overhaul the Self-starter if required.	X	X	X	X	√	√	√
1.26	Overhaul the alternator, if required.	X	X	X	X	√	√	√
1.27	Engine exhaust manifold rewired by asbestos rope	X	X	X	X	√	√	√
1.28	Major overhauling/Replace by new Engine.	X	X	X	X	X	√	√
2. MECHANICAL								
2.1	Check nuts and bolts of crawlers.	√	√	√	√	X	X	X
2.2	Check the all hooks pin	√	√	√	√	X	X	X
2.3	Check the function of motorize trolleys	√	√	√	√	X	X	X
2.4	Greasing of vertical and horizontal sliding cylinders sleeve.	√	√	√	√	X	X	X
2.5	Greasing of rail wheel Up/Down cylinders sleeve.	√	√	√	√	X	X	X
2.6	Greasing of main beam bearing points on frame.	√	√	√	√	X	X	X
2.7	Greasing of Hooks lifting cylinder sleeves	√	√	√	√	X	X	X
2.8	Check for any rubbing of hoses and correct, if necessary.	√	√	√	√	X	X	X
2.9	Greasing of transmission gear of driving rail wheels.	√	√	√	√	X	X	X
2.10	Check the nut bolts of rail wheel cylinder base plate	√	√	√	√	X	X	X
2.11	Check functioning of tank level indicator and tank breather.	X	√	√	√	X	X	X
2.12	Check oil level of crawler motor and top up, if required.	X	√	√	√	X	X	X
2.13	Greasing and oiling of all movable surfaces.	X	√	√	√	X	X	X
2.14	Check crawlers chain tension	X	√	√	√	X	X	X
2.15	Check middle hook and lifting chain.	X	√	√	√	X	X	X

Note: * Will be done 150 Engine hrs. and *** will be done after 500 Engine hrs.

T-28 (AMECA)**MECHANICAL**

S.No.	Item	SCH.I Daily	SCH.II 50 Hrs	SCH.III 100 Hrs	SCH.IV 200 Hrs	SCH.V 1000 Hrs	SCH.VI 2000 Hrs	SCH.VII 6000 Hrs
2.16	Check oil level of crawler reduction gear box and top up if required.	x	√	√	√	x	x	x
2.17	Clean the oil cooler	x	√	√	√	√	√	√
2.18	Change grease of wheel gear.	x	x	√	√	√	√	√
2.19	Lubricate valve driving wires with grease.	x	x	√	√	√	√	√
2.20	Lubricate variable pump driving wires with grease	x	x	√	√	√	√	√
2.21	Grease all wheel bearings.	x	x	√	√	√	√	√
2.22	Check crawler pads clamping	x	x	√	√	√	√	√
2.23	Both crawler motor gear oil replace	x	x	√**	√**	√**	√**	√**
2.24	Check all the movable parts for wear and tear	x	x	√**	√**	√**	√**	√**
2.25	Replace or repair wheel cylinders	x	x	x	x	√	√	√
2.26	Replace or repair extra lifting cylinders	x	x	x	x	√	√	√
2.27	Replace or repair guide rollers of crawler chain.	x	x	x	x	√	√	√
2.28	Repair or replace sprockets for crawler.	x	x	x	x	√	√	√
2.29	Repair or replace P.B. plates	x	x	x	x	√	√	√
2.30	Repair or replace helical springs.	x	x	x	x	√	√	√
2.31	Repair or replace vertical cylinders	x	x	x	x	√	√	√
2.32	Repair or replace horizontal cylinders	x	x	x	x	√	√	√
2.33	Reconditioning of tubes (horizontal and vertical)	x	x	x	x	√	√	√
2.34	Repair or replace rollers for horizontal and vertical beams.	x	x	x	x	√	√	√
2.35	Repair or replace crawler chains	x	x	x	x	√	√	√
2.36	Repair or replace crawler gear box.	x	x	x	x	√	√	√
2.37	Replace seal rings (WRI)	x	x	x	x	√	√	√

T-28 (AMECA)

HYDRAULICS

S.No.	Item	SCH.I Daily	SCH.II 50 Hrs	SCH.III 100 Hrs	SCH.IV 200 Hrs	SCH.V 1000 Hrs	SCH.VI 2000 Hrs	SCH.VII 6000 Hrs
3. HYDRAULICS								
3.1	Check the hydraulic oil level in the tank top up if required	√	√	√	√	X	X	X
3.2	Check the leakage of hydraulic oil	√	√	√	√	X	X	X
3.3	Check the hydraulic system pressure & all functions before block.	√	√	√	√	X	X	X
3.4	Check the all hydraulic hoses to avoid for rubbing.	√	√	√	√	X	X	X
3.5	Check the vacuum gauges of hydraulic suction filters	√	√	√	√	X	X	X
3.6	Check the vacuum gauges hydraulic filter for Ecaton-pump	X	X	√*	√*	√*	√*	√*
3.7	Replace hydraulic return filter 300 hrs	X	X	√**	√**	√**	√**	√**
3.8	Change Both crawler motors oil. 300 hrs	X	X	√**	√**	√**	√**	√**
3.9	Change oil of three pad gear box 300 hrs	X	X	√**	√**	√**	√**	√**
3.10	Clean the hydraulic oil tank	X	X	X	X	√	√	√
3.11	Clean hydraulic oil by prota-filter	X	X	X	X	√	√	√
3.12	Change the hydraulic oil	X	X	X	X	√	√	√
3.13	Repair or replace all pumps	X	X	X	X	√	√	√
3.14	Repair or replace rail wheel and motors	X	X	X	X	√	√	√
3.15	Repair or replace crawler motor	X	X	X	X	√	√	√
3.16	Replace all hoses	X	X	X	X	√	√	√
3.17	Repair or replace all hydraulic valves	X	X	X	X	√	√	√
3.18	Replace all filters.	X	X	X	X	√	√	√
(*) 150 hrs, (**) 300 hrs								

T-28 (AMECA)**ELECTRICAL**

S.No.	Item	SCH.I Daily	SCH.II 50 Hrs	SCH.III 100 Hrs	SCH.IV 200 Hrs	SCH.V 1000 Hrs	SCH.VI 2000 Hrs	SCH.VII 6000 Hrs
4. ELECTRICAL								
4.1	Check the all lights and wipers for proper working	√	√	√	√	x	x	x
4.2	Check the horn	√	√	√	√	x	x	x
4.3	Check the connection of alternator and self-starter	x	√	√	√	x	x	x
4.4	Check all the gauges for proper working	x	√	√	√	x	x	x
4.5	Inspect the electric cables	x	√	√	√	x	x	x
4.6	Replace self-starter and alternator on need basis	x	x	x	x	√	√	√
4.7	Check wiring and change defective wire and component	x	x	x	x	√	√	√
4.8	Replace the batteries	x	x	x	x	√	√	√
4.9	Replace wiring light, sockets and switches	x	x	x	x	√	√	√
5. MOTORIZED TROLLY								
5.1	Check oil and fuel level top-up if required	√	√	√	√	x	x	x
5.2	Check all functions before block.	√	√	√	√	x	x	x
5.3	Clean air cleaner	x	√	√	√	x	x	x
5.4	Change engine oil	x	x	√	√	√	√	√
5.5	Clean fuel filter	x	x	√	√	√	√	√
5.6	Replace air cleaner	x	x	x	√	√	√	√
5.7	Clean spark plug	x	x	x	√	√	√	√
5.8	Replace crank case breather	x	x	x	√	√	√	√
5.9	Replace spark plug	x	x	x	√	√	√	√
5.10	Repair or replace Remote control assembly	x	x	x	x	√	√	√
5.11	Top overhaul/replace the engine	x	x	x	x	√	√	√

T-28 (AMECA)**MOTORIZED TROLLY**

S.No.	Item	SCH.I Daily	SCH.II 50 Hrs	SCH.III 100 Hrs	SCH.IV 200 Hrs	SCH.V 1000 Hrs	SCH.VI 2000 Hrs	SCH.VII 6000 Hrs
5.12	Check cylinders Functioning	x	x	x	x	√	√	√
5.13	Repair or replace rail wheels of motorized and non motorized with bearing spacers and pins	x	x	x	x	√	√	√
5.14	Repair or replace Seal sets for horizontal and vertical cylinder of motorized and non motorized trolley.	x	x	x	x	√	√	√

Remarks : 25 hrs or 3 months interval, 50 hrs or 1 year interval which is earlier.

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	One per cabin
6	Hooter (Manually Controlled)	2 Nos.
7	Jack 10t	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 No.
14	A copy of working time table of this section where the machine is working	1 No
15	G & SR book with up to date amendment slips	1 No.
16	4 cells flasher light LED lamp cum flasher light (rechargeable)	1 No.
17	Banner flags	2 Nos.
18	First aid Box	1 No
19	Skids	2 Nos
20	Safety Helmet for all machine staff	All machine staff
21	Protection clothing , safety shoes and safety gloves	All machine staff
22	Walkie talkie with frequency of SM, guard and loco pilots	2
23	Internal communication system Walkie talkie and / or head mounting system	All machine staff
24	Track machine manual with up to date correction slip	1
25	Accident manual	1
26	Tail Lamp	1
27	Wire rope 2 meters and 9 meters with close loop	01 No each

ACKNOWLEDGEMENT

Following officer and staffs have made valuable contributions in finalization of provisional Maintenance schedule manual (Rev.-1) of Point and Crossing Changing Machine (T-28) (AMECA)

Railways:

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