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भारत सरकार

रेल मंत्रालय

GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS

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

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RESEARCH DESIGNS AND STANDARDS ORGANISATION
LUCKNOW-226011

Maintenance schedule of T-28 (Colmar)

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.

Maintenance Schedule Manual for Point and Crossing changing Machine T-28 (Colmar) 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/altered on the basis of experience or OEM suggestion that shall be also undertaken in the maintenance practice. If the engine of machine is under AMC then 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.

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Maintenance schedule of T-28 (Colmar)

EXPLANATORY NOTES

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

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	1st - 45 Days 2nd - 60 Days	In Zonal Workshop /CPOH

Note: - The entire maintenance schedule includes all previous maintenance schedules (ii)

Maintenance schedule of T-28 (Colmar)

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

Maintenance schedule of T-28 (Colmar)

	SCH.I (TO BE DONE DAILY)
	DURATION=1 Hour
	ENGINE: VOLVO TAD570-72VE , AIR COOLED 170 HP @ 2300 RPM
1.	Check fuel level & top up if required.
2.	Check coolant level and top up if required.
3.	Check the tension of V-belt and adjust, if any slackness is noticed.
4.	Clean engine & premises.
5.	Check Adblue level.
6.	Check the function of emergency stop switch.
7.	Clean air cleaner dust collector.
8.	Check leakage from fuel pump, injectors, fuel supply & return pipes.
9.	Check engine oil pressure on load after two hrs. Working.
10.	Record max. Engine temperature of the day.
11.	Check battery charging.
12.	Checked Emergency backup engine.
	MECHANICAL
1.	Check nuts and bolts of crawlers.
2.	Check the all hooks pin.
3.	Checks the function of motorize trolleys.
4.	Greasing of vertical and horizontal sliding cylinders sleeve.
5.	Greasing of rail wheel Up/Down cylinders sleeve.
6.	Greasing of main beam bearing points on frame.
7.	Greasing of Hooks lifting cylinder sleeves and locking devices.
8.	Check for any rubbing of hoses and correct, if necessary.
9.	Greasing of transmission gear of driving rail wheels.
10.	Check the nut bolts of rail wheel cylinder base plate.

11.	Greasing of vertical, horizontal, railway wheels, clamps lifting extension, sleepers beam support surfaces.
	HYDRAULICS
1.	Check the hydraulic oil level in the tank top up if required.
2.	Check the leakage of hydraulic oil.
3.	Check the hydraulic system pressure & all functions before block.
4.	Check the all hydraulic hoses to avoid for rubbing.
5.	Check the vacuum gauges of hydraulic suction filters.
6.	Check tightness of hydraulic system fittings.
7.	Check clogged drainage pipe.
8.	Check operating and casing pressure.
9.	Check Pump flow rate.
10.	Check correct installation of shell drainage line.
11.	Check hydraulic oil filter clogging indicator.
	ELECTRICAL
1.	Check the all lights and wipers for proper working.
2.	Check the horn.
3.	Check all working functions of remote control system.
	MOTORIZED TROLLEY
1.	Check oil and fuel level top-up if required.
2.	Check all functions before block.

	SCH.II **(TO BE DONE IN ADDITION TO SCH.I AFTER 50 HOURS OF ENGINE RUNNING)**
	DURATION=2 Hours
	ENGINE: VOLVO TAD570-72VE , AIR COOLED 170 HP @ 2300 RPM
1.	Clean air cleaner element outer with dry air (may be cleaned earlier, if red indicator lights up).
2.	Check connection of self starter and alternator.
3.	Check engine warning system.
4.	Clean battery terminals and apply petroleum jelly.
5.	Check electrolyte level and specific gravity of battery.
6.	Inspect V-belts for any damage, worn-out to be replaced.
7.	Change engine oil.
8.	Clean air cleaner filter.
9.	Check engine working system.
	MECHANICAL
1.	Check oil level of crawler motor and top up, if required.
2.	Greasing and oiling of all movable surfaces.
3.	Check crawlers chain tension.
4.	Check middle hook and lifting chain.
5.	Check oil level of crawler reduction gear box and top up if required.
6.	Clean the oil cooler.
7.	Check alignment of hose reel and end coupling.
8.	Check functioning of tank level indicator and tank breather.
	HYDRAULICS
1.	Check flow divider and its valves.
2.	Check functioning of tank level indicator and tank breather.
3.	Check hydraulic solenoid valves.

4.	Check pressure relief valve, check valves and pressure line.
5.	Check hose reel and pipe connections.
	ELECTRICAL
1.	Check the connection of alternator and self-starter.
2.	Check all the gauges for proper working.
3.	Inspect the electric cables.
	MOTORIZED TROLLEY
1.	Clean air cleaner.

SCH.III (TO BE DONE IN ADDITION TO SCH.II AFTER 100 HOURS OF ENGINE RUNNING)	
DURATION=1 Day	
	ENGINE: VOLVO TAD570-72VE , AIR COOLED 170 HP @ 2300 RPM
1.	External cleaning of the radiator/ radiator assembly.
2.	Lubricate the engine accelerator cable.
3.	Replace air filter elements outer and inner.
	MECHANICAL
1.	Clean all the external heat radiators (3).
2.	Check working of height limiter control.
3.	Lubricate all wheel gear with grease.
4.	Grease all pins.
5.	Check crawler pads clamping.
7.	Check all the movable parts for wear and tear.
8.	Check tightness of crawler shoes.
9.	Check wear on crawler components.
	HYDRAULICS
1.	Check the vacuum gauges hydraulic section filter for Ecaton-pump.
2.	Replace hydraulic return filter 300 hrs.
3.	Change both crawler motors oil. 300 hrs.
4.	Change oil of three pad gear box 300 hrs.
	ELECTRICAL
1.	Cleaning of battery terminals; remove any oxide.
2.	Check and top-up electrolyte level.
	MOTORIZED TROLLEY
1.	Change engine oil.
2.	Clean diesel fuel filter.

	SCH.IV (TO BE DONE IN ADDITION TO SCH.III AFTER 200,400 and 800 HOURS OF ENGINE RUNNING)
	DURATION=2 DAYS
	ENGINE: VOLVO TAD570-72VE , AIR COOLED 170 HP @ 2300 RPM
1.	Check level of lube oil & fill up, if required.
2.	Replace fuel filter.
	MOTORIZED TROLLEY
1.	Replace air cleaner.
2.	Clean spark plug.
3.	Replace crank case breather.
4.	Replace spark plug.

	SCH.V (TO BE DONE IN ADDITION TO SCH.IV AFTER 1000,3000 and 5000 HOURS OF ENGINE RUNNING)
	DURATION=7 DAYS
	ENGINE: VOLVO TAD570-72VE , AIR COOLED 170 HP @ 2300 RPM
1.	Clean fuel tank.
2.	Overhaul the Self-starter if required.
3.	Overhaul the alternator, if required.
4.	Engine exhaust manifold rewired by asbestos rope.
	MECHANICAL
1.	Repair or replace sprockets for crawler.
	HYDRAULICS
1.	Check the vacuum gauges of hydraulic section filter for Ecaton-pump.
2.	Clean the hydraulic oil tank.
3.	Clean hydraulic oil by prota-filter.
4.	Change the hydraulic oil.
5.	Reconditioning of the hydraulic system if required.
	ELECTRICAL
1.	Replace self-starter and alternator on need basis.
2.	Check wiring and change defective wire and component.
	MOTORIZED TROLLEY
1.	Check cylinders Functioning.

	SCH.VI **(TO BE DONE IN ADDITION TO SCH.V AFTER 2000,4000 and 6000 HOURS OF ENGINE RUNNING)**
	Duration-21 Days
	ENGINE: VOLVO TAD570-72VE , AIR COOLED 170 HP @ 2300 RPM
1.	Replace Air filter, AdBlue®/DEF tank breather.
2.	Replace air filter of air Compressor (if applicable).
3.	Replace AdBlue®/DEF filter, Pump unit.
	EVERY 5000 HOURS
	MECHANICAL
1.	Clean EGR cooler.
2.	Both crawler motor gear box oil replace at 2000 Hours.

	SCH.VII **(TO BE DONE IN ADDITION TO SCH.VI AFTER 8000,14000 then 4000 HOURS OF ENGINE RUNNING)**
	Duration:1ST POH-45 Days,2 nd POH-60 Days
	Every 48 months or 8000 hours whichever occurs first
	ENGINE: VOLVO TAD570-72VE , AIR COOLED 170 HP @2300 RPM
1.	Major overhauling/Replace by new Engine.
2.	Replace Coolant.
	MECHANICAL
1.	Repair or replace crawler motor.
2.	Replace extra lifting cylinders.
3.	Replace P.B. plates.
4.	Replace helical springs.
5.	Replace/repair vertical cylinders.
6.	Replace/repair horizontal cylinders.
7.	Replace guide rollers for crawler chain.
8.	Reconditioning of tubes (Horizontal and Vertical).
9.	Repair/Replace rollers of horizontal and vertical beams.
10.	Replace crawler chains.
11.	Checking/Repairing of all crawler gear boxes.
12.	Replace WRI seal rings.
13.	Replace seal set of horizontal and vertical cylinder of motorized and non motorized trolly.
14.	Clean the oil cooler externally and internally (if required).
	HYDRAULICS
1.	Repair or replace all pumps if required.
2.	Repair or replace rail wheel and motors.
3.	Replace all hydraulic valves.
4.	Replace all hydraulic hoses.
	Motorized Trolley

1.	Replace remote control assembly.
2.	Rail wheels motorized and none motorized with bearing spacer and pins.
	ELECTRICAL
1.	Replace Batteries.
2.	Replace all wiring,lights,sockets and switches.

List of Safety Equipments

S.No.	Description	Quantity	Available Yes (√)/No (x)
1.	Red hand signal flags	2 Nos.	
2.	Green hand signal flag	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	4 Nos.	
9.	Crow bars	4 Nos.	
10.	Hydraulic hand pump	1 No.	
11.	Emergency Pneumatic /Hydraulic hose off size suiting to different machines (complete with end fitting)	-	
12.	Wire rope with close loops at both ends 2 meters and 9 meters long one of each length	-	
13.	Machine Specific Equipment if any.	-	
14.	Fog signals (detonators) in a tin case	10 Nos.	
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	2 Nos.	
21.	Safety Helmet for all machine staff	All machine staff	
22.	Protection clothing , safety shoes and safety gloves	All machine 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	-	
25.	Track machine manual with up to date correction slip	1 No.	
26.	Accident manual	1 No.	
27.	Tail Lamp	1 No.	

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