



**GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS**

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

REPORT NO. TM-102

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**RESEARCH DESIGNS & STANDARDS ORGANISATION
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PREFACE

Maintenance of On-Track Machines is a challenging task. Maintenance of these machines is being done by zonal railways with the assistance of local trade available, zonal track machine workshops, CPOH / Allahabad and RDSO / Lucknow. With experience over the years, the 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. Provisional maintenance schedule manuals for Track Relaying Train (TRT) and final maintenance schedule manuals of CSM (09-32), BCM (RM-80), FRM-80, Unimat, Duomatic machine (DUO), Unomatic machine (UNO), Ballast Regulating Machine (BRM 66-4), Tamping Express (09-3X), Dynamic Track Stabilizer (DGS 62N), Multi purpose track tamping machine (Unimat Compact--M), Plasser's Quick Relaying System (PQRS) and draft maintenance schedule of FRM-85-F have been issued by RDSO.

Provisional maintenance schedule manual of T-28 was earlier issued vide letter no. TM/HM/15 dated 10-08-2001. Maintenance schedule manual of T-28 have been prepared after necessary amendment in provisional manual on the basis of experience and suggestions received from railways.

It is hoped that this manual will be quite useful for the staff maintaining the machines in field.

While every care have 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.

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AUGUST -2006

EXPLANATORY NOTES

While preparing text of maintenance schedule for Point and Crossing Changing machine (T-28), 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 Remove old parts by substituting a new or overhauled or reconditioned part. Fit new or overhauled or reconditioned part in place of missing part.
- OVERHAUL - Dismantle, examine, recondition or renew parts as necessary against given specifications, reassemble, inspect and test.

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PART - A : PORTAL CRANE

SCHEDULE - I (To be done daily) Duration – one hrs.

1.0 ENGINE

1. Check level of lube oil & fill up, if required
2. Check fuel level & top up.
3. Check the tension of V-belt and adjust, if required.
4. Record max. engine temperature of the day.
5. Clean engine & premises.
6. Check starting of Petrol Engine (Emergency engine).
7. Check the function of emergency stop switch.
8. Check leakage from fuel pump, injectors, fuel supply & return pipes
9. Check engine oil pressure on load after two hrs. working
10. Check battery charging.
11. Clean additional fuel oil filters.

2.0 MACHINE GENERAL

1. Check nuts and bolts of crawlers.
2. Grease vertical and horizontal sliding cylinders.
3. Grease rail wheel Up/Down cylinders.
4. Grease main beam bearing points on frame.
5. Grease transmission gear on driving rail wheel.
6. Grease Hooks of hydraulic lifting systems.
7. Check hydraulic hoses and valves for leakage.
8. Check hydraulic oil level in tank and top up, if required.
9. Check for any rubbing of hoses and correct, if necessary.
10. Check Hose Clamps and tighten them, if required.
11. Check vacuum gauge on hydraulic oil filters.
12. Check for any unusual sound from engine & hydraulic circuit.
13. Clean complete machine.
14. Check all functions of working mechanisms before block.

SCHEDULE- II
(To be done after 50 engine hours)
Duration –Two hrs

(All items of Schedule I will also be attended along with this Schedule).

1.0 ENGINE

1. Clean air cleaner element outer with dry air (may be cleaned earlier, if red indicator lights up).
2. Check battery terminals & connections for tightness.
3. Check connection of self starter and alternator.

2.0 MACHINE GENERAL

1. Check functioning of tank level indicator and tank breather.
2. Check oil level of crawler motor and top up, if required.
3. Greasing and oiling on all movable surfaces.
4. Check crawlers belt stretching.
5. Check middle hook and lifting chain.

SCHEDULE- III
(To be done after 100 engine hours)
Duration –One day

[All items of Schedule I & II will also be attended along with this Schedule.]

1. Inspect V-belts for any damage. Worn out belts to be replaced.
2. Replace Mobil oil.
3. Check crawler pads clamping.
4. Check all lights it should be in working order.

Note: Item no.2 will be done at 150 engine hrs.

SCHEDULE -IV
(To be done after 200 engine hours)
Duration –Two day
[All items of previous Schedules will also be attended along
with this Schedule.]

1. ENGINE :

1. Replace engine oil filter.
2. Check engine warning system.
3. Clean battery terminals and apply petroleum jelly.
4. Check electrolyte level and specific gravity of battery.
(minimum specific gravity 1.24).
5. Change fuel filter.
6. Clean diesel tank.
7. Change air filter elements outer and inner.

Note : 1. Item no. 5 will be done after 300 engine hrs.
2. Item no. 7 will be done after 500 engine hrs.

2. MACHINE GENERAL

1. Check oil level of crawler reduction gear and top up if, required.
2. Change return filter of hydraulic system.
3. Change grease of wheel gear.
4. Lubricate valve driving wires with grease.
5. Lubricate variable pump driving wires with grease.
6. Clean the fins of System Oil Coolers, manually.
7. Grease all wheel bearings.
8. Change Suction filter

SCHEDULE - V

(To be done after 1000 engine hours)

Duration –Seven days

[All items of previous Schedule will also be attended along with this Schedule.]

1. ENGINE

1. Clean fuel tank.
2. Recondition /Change batteries if required.
3. Overhaul the Self-starter and alternator, if required.

2. MACHINE GENERAL

1. Clean hydraulic tank.
2. Clean Hydraulic oil by Porta filter.
3. Change the oil of crawler motors.
4. Check wear and tear of parts of crawler.
5. Change hydraulic oil.
6. Check up wiring and change defective wire and electrical components.

PART - B : JIB CRANE
SCHEDULE-I
(To be done daily)
Duration –One Hrs.

1.0 ENGINE

1. Check level of lube oil & fill up, if required
2. Check fuel level & top up.
3. Check function of V-belts and adjust, if any slackness is noticed.
4. Record max. engine temperature of the day.
5. Check battery charging.
6. Clean engine & premises.
7. Check the function of emergency stop push button
8. Check engine warning system.
9. Check leakage from fuel pump, injectors, fuel supply & return pipes
10. Check engine oil pressure after warming up at idle speed and rated speed. (Minimum 1.5 kg/sq. cm at idle & 2.5 kg/sq. cm on load at rated RPM).

2.0 MACHINE GENERAL

1. Check all lights, should be in working order.
2. Check hydraulic hoses and valves for leakage.
3. Check hydraulic oil level in tank and top up, if required.
4. Check all system pressure for rated settings and adjust, if necessary.
5. Check for any rubbing of hoses and correct, if necessary.
6. Check Hose Clamps and tighten them, if required.
7. Check vacuum gauge on hydraulic oil filters.
8. Check service brakes.
9. Check emergency brake.
10. Check all functions of working mechanisms before block.

SCHEDULE-II

(To be done after 50 engine hours)

Duration –Two hrs.

(All items of Schedule I will also be attended along with this schedule.)

1. Check oil level of Transmission gear box, top up, if necessary.
2. Check the tightness of cordan shaft bolts.

SCHEDULE-III

(To be done after 100 engine hours)

Duration –One day

(All items of previous Schedule will also be attended along with this Schedule.)

1. ENGINE

1. Check battery condition and electrolyte level.
2. Check battery terminals & connections for tightness.
3. Change lube oil.
4. Check V-belt tension and adjust if required.

Note: Item no. 3 will be done at 150 engine hrs.

2. MACHINE GENERAL

1. Grease pins and control levers.
2. Grease on turn table.
3. Check air pressure in tyres.
4. Check the tightness of gearbox bolts and cordan shaft bolts.
5. Grease on rail wheel bearings.

SCHEDULE-IV

(To be done after 200 engine hours)

Duration –Two days

(All items of previous Schedule will also be attended along with this Schedule.)

1. ENGINE

1. Change oil filter.
2. Change fuel filter.
3. Check tightness of screw and joints on engine.

Note: Item no. 1 and 2 will be done at 300 engine hrs.

2. MACHINE GENERAL

1. Check oil level of rotation-reduction gear box.
2. Check oil level of axles.
3. Change all suction filter on hydraulic system.
4. Check bolts on turn table.
5. Change air filter.

SCHEDULE -V

(To be done after 1000 engine hours)

Duration –Seven days

(All items of Previous Schedule will also be attended along with this Schedule.)

1. ENGINE :

1. Clean diesel tank.
2. Change alternate drive V Belts.
3. Calibrate fuel injector.
4. Adjust the engine valve gap.
5. Overhaul the self-starter and alternator on condition basis.

2. MACHINE GENERAL:

1. Change oil of Transmission gearbox.
2. Clean oil tank of hydraulic system.
3. Change oil of hydraulic system.
4. Change oil of axles.

PART - C : MOTORISED TROLLEY

SCHEDULE-I (To be done at 8 hours)

1. Check oil level and top up, if required.

SCHEDULE-II (To be done at 25 hours)

1. Clean air cleaner.

SCHEDULE-III (To be done at 50 hours)

1. Change engine oil.
2. Clean fuel filter.

SCHEDULE-IV (To be done at 100 hours)

1. Change air cleaner.

SCHEDULE-V (To be done at 300 hours)

1. Clean spark plug.

SCHEDULE-VI (To be done at 500 hours)

1. Change crank case breather.
2. Change spark plug.

SCHEDULE-VII (To be done at 1000 hours)

1. Top overhaul the engine
2. Check cylinder functioning.

LIST OF SPARES & TOOLS FOR EMERGENCY

S.No.	Description	Part no.	Quantity
1.	Mobil Oil Filters	41150030A	3
2.	Fuel Filters.	45310059A	3
3.	Hydraulic Return Filters.	FBO 500/3	4
4.	Hydraulic suction filters.	FBO160/3	4
5.	Hydraulic Pipes.		1 set
6.	Air cleaner element	41130007A	3
7.	V Belt	A57	4
8.	Fuses	7.5 Amp, 10 Amp & 15 Amp	5 each
9.	Relay	529.0233 Model T- 1853 Make SIPEA	10
10.	5 pin relay		2
11.	Working light bulbs		5
12.	Stop Valve	6020062	1
13.	Battery fully charged 120 AH or 88AH 12V		1
14.	Alternator 24 V		1
15.	Battery terminal +ve and -ve		2 each
16.	Single core 1.5 mm ² PVC wire.		20 m
17.	Head light and side light bulbs.		4 each
18.	Tool Kit		1 set

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