



**GOVERNMENT OF INDIA  
MINISTRY OF RAILWAYS**

**MAINTENANCE SCHEDULE MANUAL  
FOR  
DYNAMIC TRACK STABILISER ( METEX)**



**REPORT No - 214**

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**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, CPOHs 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.

Maintenance Schedule manual for Dynamic Track Stabilizer (Metex) has been prepared on the basis of Maintenance instruction given by OEM and suggestions received from NCR Machine Incharge. The suggestion and feedback from field has been taken and incorporated in this maintenance schedules. Suggestions / instructions given by OEM from time to time are to be also followed in addition to in 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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## E XPLANATORY NOTES

While preparing the text of Maintenance Schedule Manual of Dynamic Track Stabilizer (Metex) 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 DTS Machines (Metex)

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
I.	<b>Engine Cummins N14 L2</b>							
1.	Check Fuel level in tank and top up if required	√	√	√	√	√	√	√
2.	Check coolant level of radiator and top up as required.	√	√	√	√	√	√	√
3.	Check level of engine oil & top up, as required.	√	√	√	√	√	√	√
4.	Check the leakage from fuel pump, injectors, fuel supply and return pipes and do needful.	√	√	√	√	√	√	√
5.	Check the leakage from hoses, water pump seal etc, and do the needful.	√	√	√	√	√	√	√
6.	Check air cleaner filter choking indicator.	√	√	√	√	√	√	√
7.	Check the tension and Condition of V belt and correct if required.	√	√	√	√	√	√	√
8.	Drain Water Separator before starting the engine.	√	√	√	√	√	√	√
9.	Check charging ammeter of batteries (it should be +ve)	√	√	√	√	√	√	√
10.	Clean the engine & premises.	√	√	√	√	√	√	√
11.	Drain water from air receiver after day's work.	√	x	x	x	x	x	x
12.	Check engine oil pressure on load after two hours working.(3 to 7 kg/cm <sup>2</sup> )	√	x	x	x	x	x	x
13.	Record the maximum engine temperature of the day's work.	√	x	x	x	x	x	x
14.	Grease radiator fan drive.	x	√	√	√	√	√	√
15.	Check battery terminal and connection for tightness.	x	√	√	√	√	√	√
16.	Apply petroleum jelly on battery terminal.	x	√	√	√	√	√	√
17.	Clean the water separator.	x	√	√	√	√	√	√
18.	Top up air oiler if required.	x	√	√	√	√	√	√
19.	Inspect the water separator for proper functioning .	x	√	√	√	√	√	√
20.	Check water temperature safety device.	x	x	√	√	√	√	√
21.	Check lube oil pressure safety device.	x	x	√	√	√	√	√
22.	Check the throttle control linkages and lubricate.	x	x	√	√	√	√	√
23.	Examine the mounting bolts of engine.	x	x	x	√	√	√	x
24.	Clean outer air cleaner element.( Cleaned after every 250 hrs or on dirt indication)	x	x	x	√	√	√	x
25.	Change Engine oil.	x	x	√*	√*	√*	√*	√*
*To be done on every 300 Engine Hours								

## DTS (METEX)

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
26.	Change lube oil filter element.	x	x	√*	√*	√*	√*	√*
27.	Change fuel filter element	x	x	√*	√*	√*	√*	√*
28.	Lubricate all the engine pulleys with grease.	x	√	√	x	x	x	√
29.	Replace the super lube oil by- pass filter element .	x	x	√*	√*	√*	√*	√*
30.	Check fuel tank breather and clean if required.	x	x	√*	√*	√*	√*	√*
31.	Check/add Coolant additive concentrate	x	x	x	√*	√*	√*	√*
32.	Check for hub drive pulley and water pump.	x	x	x	√	√	√	√
33.	Clean crank case breather.	x	x	x	√	√	√	√
34.	Check specific gravity of battery electrolyte if applicable.	x	√	√	√	√	√	√
35.	Change damage out water hoses.	x	x	x	x	√	√	√
36.	Replace the rocker cover gaskets.	x	x	x	x	√	√	√
37.	Clean the engine radiator externally.	x	x	x	x	√	√	√
38.	Replace the outer and inner engine air cleaner element.	x	x	√**	√**	√**	√**	√**
39.	Clean the diesel tank with lint free cloth.	x	x	x	x	√	√	√
40.	Check the water pump idler and fan hub idler pulley	x	x	x	x	√	√	√
41.	Clean the cooling coil.	x	x	x	x	√	√	√
42.	Check Engine timing.	x	x	x	x	√	√	√
43.	Overhaul air compressor, if applicable.	x	x	x	x	x	√	√
44.	Check tappet clearance and adjust if required.	x	x	x	x	x	√	√
45.	Replace the batteries as applicable (at least after 2 years)..	x	x	x	x	x	√	√
46.	Overhaul self starter.	x	x	x	x	x	√	√
47.	Overhaul alternator I.	x	x	x	x	x	√	√
48.	Overhaul alternator II.	x	x	x	x	x	√	√
49.	Clean the engine radiator thoroughly.	x	x	x	x	x	√	√
50.	Overhaul the engine, if there is lack of compression on low lube oil pressure otherwise de- carbonize the engine.	x	x	x	x	x	√	√
51.	Overhaul water pump.	x	x	x	x	x	√	√

\*To be done on every 300 Engine Hours . \*\*as 500 Engine Hours

## DTS (METEX)

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
52.	Check the bearing and shaft of radiator fan drive. If found OK. then lubricate it with grease.	x	x	x	x	x	√	√
53.	Overhaul the water separator and air oiler.	x	x	x	x	√	√	√
54.	Overhaul the air unloader.	x	x	x	x	x	√	√
55.	Check turbocharger Impeller and turbine wheels. Check radial and end clearances & do needful if applicable	x	x	x	x	x	√	√
56.	Check crank shaft end clearance & do needful.	x	x	x	x	x	√	√
57.	Check the vibration damper for dynamic balance & do needful.	x	x	x	x	x	√	√
58.	Replace fuel pump screen filter.	x	x	x	x	x	√	√
59.	Overhaul the injectors, fuel injection pump and radiator fan drive assembly	x	x	x	x	x	x	√
60.	Replace the engine mounting pads	x	x	x	x	x	x	√
<b>II. Power Transmission</b>								
1.	Check transmission fastening condition	√	√	√	√	√	√	√
2.	Transmission unit lubrication dribbling absence	x	√	√	√	√	√	√
3.	Grease axle gear box flange cover of driving & idle bogies	x	√	√	√	√	√	√
4.	Grease king pin pivot of driving and idle bogies	x	√	√	√	√	√	√
5.	Check and lubricate brake linkage and pivot	x	√	√	√	√	√	√
6.	Check and top-up oil of axle gear box intermediate gear box	x	√	√	√	√	√	√
7.	Check Safety straps under cardan shafts and brake pull-rods fastening cardan shafts	x	x	√	√	√	√	√
8.	Check and top up oil level of drive intermediate shaft	x	x	√	√	√	√	√
9.	Check and top up vibration gear box oil level	x	x	√	√	√	√	√
10.	Grease all Cardon Shaft	x	x	√	√	√	√	√
11.	Grease roller bearings	x	x	x	√	√	√	√
12.	Change all gear boxes oil	x	x	√**	√**	√**	√**	√**
13.	Grease axle bearing of the bogies	x	x	x	x	√	√	√
14.	Check rubber elements of gear- box	x	x	x	x	√	√	√
**To be done on every 500 Engine Hours								

## DTS (METEX)

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
15.	Grease sliding surface guide column surface and bolts of torque supports	x	x	√	√	√	√	√
16.	Change hand brake grease.	x	x	x	√	√	√	√
III.	<b>Vibration Unit</b>							
1.	Vibration units transport lock fastening condition	√	√	√	√	√	√	√
2.	Vibration units running wheels condition	√	√	√	√	√	√	√
3.	Vibration unit elevation hydro cylinders joint –hinge, clip-on chuck and running	√	√	√	√	√	√	√
4.	Removing sludge and traces of oil from vibration unit rollers and wheels	√	√	√	√	√	√	√
5.	Grease clamp pivot pin	x	√	√	√	√	√	√
6.	Lubricate guide bushing	x	√	√	√	√	√	√
7.	Lubricate guide pulleys	x	√	√	√	√	√	√
8.	Lubricate roller clamp housing	x	√	√	√	√	√	√
9.	Grease Stabilizing roller	x	√	√	√	√	√	√
10.	Check Fastening, condition and work of vibration unit transmitters	x	x	√	√	√	√	√
11.	Check condition of Vibration unit frame	x	x	√	√	√	√	√
12.	Check Condition of vibration units swing joint fingers.	x	x	√	√	√	√	√
13.	Check Vibration units hydro motors fastening	x	x	√	√	√	√	√
14.	Lubricate guide of rail setting device	x	x	x	√	√	√	√
15.	Lubricate front and rear tightening trolley lifting cylinder pivot and preload cylinder pivot	x	x	√	√	√	√	√
16.	Check working of stabilizing unit derailment protection switch	x	x	x	√	√	√	√
17.	Check movement of stabilizing unit	x	x	x	√	√	√	√
18.	Inspect and lubricate clamp and adjustment for fixing brake	x	x	x	√	√	√	√
19.	Clean and lubricate rear and front trolley	x	x	x	x	√	√	√
20.	Test the vibration unit drive hydro motors serviceability	x	x	x	√	√	√	√
21.	Check Condition and joint firmness of hydro pumps suction hoses, false air absence	x	x	x	√	√	√	√

## DTS (METEX)

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
IV.	<b>Hydraulic</b>							
1.	Check hydraulic system leakage.	√	√	√	√	√	√	√
2.	Check Oil level in Transmission gear box top up if required	√	√	√	√	√	√	√
3.	Check Oil level in the hydraulic system tank	√	√	√	√	√	√	√
4.	Check Oil level in the vibration unit crankcase and its after teaming up to necessary level	√	√	√	√	√	√	√
5.	Clean hydraulic oil cooler by blowing air in opposite direction	x	x	x	√	√	√	√
6.	Check bolts and nuts of all hydraulic cylinders	x	√	√	√	√	√	√
7.	Check different system pressure for rated setting as below and adjust if required : Vibration pressure : 250 bar Working pressure : 100-175 bar Cooling pressure : 50 bars	√	√	√	√	√	√	√
8.	Check Stocks and sealing condition of all executive devices hydro-cylinders	x	x	√	√	√	√	√
9.	Check hydraulic hoses condition. At detection of attritions, bulging, surface tears, replace hoses if required.	x	x	√	√	√	√	√
10.	Check hydro-cylinders fastening and stocks joint with moving part of executive devices	x	x	√	√	√	√	√
11.	Check hydro equipment device fastening on panels, of a hydraulic system leakage	x	x	√	√	√	√	√
12.	Clean filters and if necessary replace filtering elements	x	x	√	√	√	√	√
13.	Check oil condition of pump drive gear box	x	x	x	√	√	√	√
14.	Check hydraulic oil cooler by blowing air in opposite direction	x	x	x	√	√	√	√
15.	Clean solenoid valves and relief valves	x	x	x	x	√	√	√
16.	Check condition of pneumatic hoses and replace if required	x	x	x	x	√	√	√
17.	Change hydraulic oil (before replacement, check quality through lab test)	x	x	x	x	√	√	√
18.	Change all filters of hydraulics	x	x	√**	√**	√**	√**	√**
**To be done on every 500 Engine Hours								



## DTS (METEX)

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
19.	Check seal and gaskets lifting, opening and closing cylinders	x	x	x	x	√	√	√
20.	Clean Hyd. & Hsd . oil tank	x	x	x	x	√	√	√
V.	<b>Mechanical</b>							
1.	Check Condition of bogies, springy elements	√	√	√	√	√	√	√
2.	Check mounted axles condition for revealing of ruptures, dints, cleavage, picky places, on ring and flange of wheel	x	√	√	√	√	√	√
3.	Shift or weakening of wheels on axis	x	x	x	x	√	√	√
4.	Check wheel lubrication	x	√	√	√	√	√	√
5.	Check cooling fluid level in the radiator top up if required	√	√	√	√	√	√	√
6.	Test journal- boxes heating	√	√	√	√	√	√	√
7.	Check clip-on chuck roller condition	√	√	√	√	√	√	√
8.	Check brake tie-rods and shoes condition	√	√	√	√	√	√	√
9.	Check up brakes reliability	√	√	√	√	√	√	√
10.	Check brakes application	√	√	√	√	√	√	√
11.	Test suction filters impurity under indexes on the filter cases	√	√	√	√	√	√	√
12.	Grease machine unit according to lubrication table given in this service manual	√	√	√	√	√	√	√
13.	Cleaning of cabins and working places.	√	√	√	√	√	√	√
14.	Cleaning of dust and mud from cabins glassing and control devices.	√	√	√	√	√	√	√
15.	Cleaning the engine of pollution and sludge of oil, transmission and compressors units.	√	√	√	√	√	√	√
16.	Cleaning of supporting and guide rollers of control and measuring system bogies	√	√	√	√	√	√	√
17.	Check fastening of engine, water and oil cooler to the machine frame	√	√	√	√	√	√	√
18.	Check gas vent system leak resistance and fastening of the silencer	x	x	√	√	√	√	√

## DTS (METEX)

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
19.	Check fuel tank, radiator, engine crankcase oil filler closures fastening reliability, drive serviceability and diesel engine control system	x	x	√	√	√	√	√
20.	Check tightening of needle bearings and flanges basic plates bo.lt fastening	x	x	√	√	√	√	√
21.	Disassemble and wash air filters	x	x	x	√	√	√	√
22.	Check space between brake shoes and wheels roll surface, if necessary adjust the brake cylinder stock moving .	x	x	√	√	√	√	√
23.	Check parking brake drive serviceability, adjust the brake if necessary	x	x	√	√	√	√	√
24.	Check pressure gear serviceability	x	x	√	√	√	√	√
25.	Check Support rollers serviceability	x	x	√	√	√	√	√
26.	Check absence of deformations in metal ware	x	x	√	√	√	√	√
27.	Check work of pendulums	x	x	√	√	√	√	√
28.	Check accuracy of system working, adjustment if necessary	x	x	√	√	√	√	√
29.	Remove air leaks	x	x	√	√	√	√	√
30.	Check bolts and screw nuts tightening of executive devices	x	x	√	√	√	√	√
31.	Check condition of clip-on chuck rollers	x	x	√	√	√	√	√
32.	Check tensioning devices serviceability,	x	x	x	√	√	√	√
VI.	<b>Electrical</b>							
1.	Check generator driving-belt tension and condition	√	√	√	√	√	√	√
2.	Check electrical machines fastening and condition device wiring condition	√	√	√	√	√	√	√
3.	Check end switch fastening and condition.	√	√	√	√	√	√	√
4.	Serviceability of lighting and warning device	x	x	√	√	√	√	√
5.	Check electric battery cleanliness, level and electrolyte density, clean vents in closures.	x	x	√	√	√	√	√
6.	Check fastening reliability and cleanliness of starter and generators	x	x	√	√	√	√	√
7.	Check work of voltage control box and voltage level	x	x	√	√	√	√	√

## DTS (METEX)

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
8.	Check fastening reliability and cleanliness of starter and generators	x	x	√	√	√	√	√
9.	Check work of voltage control box and voltage level	x	x	√	√	√	√	√
10.	Check reliability of wires connection to terminals and electric devices	x	x	√	√	√	√	√
11.	Check electrical equipment of control panels, their fastening, contacts condition, rubber shock – absorbers and wires.	x	x	√	√	√	√	√
12.	Check electric control devices soldering places of wires, condition of plug-and –sockets contacts and relay.	x	x	x	√	√	√	√
13.	Check condition of electric machine collector, if necessary rub or replace them, clean and washout collectors	x	x	x	√	√	√	√
14.	Check / Blow electric machines device by compressed air	x	x	x	√	√	√	√
15.	Check end switches' contacts, if necessary clean out and gaps	x	x	x	√	√	√	√
16.	Check executive device' transmitters and control and measuring systems condition	x	x	x	√	√	√	√
17.	Check charge condition of electric batteries under load, at necessities take off the battery from the machine and charge it	x	x	x	√	√	√	√
18.	Check serviceability of transmitter work	x	x	x	√	√	√	√
VII.	<b>Pneumatic</b>							
1.	Check working brake pneumatic joints, electrical facilities plug connectors	√	√	√	√	√	√	√
2.	Check brake and working pneumatic system and electric panels connection hoses	√	√	√	√	√	√	√
3.	Observe of air pressure in feeding and brake pipelines	√	√	√	√	√	√	√
4.	Check pneumatic system leak resistance, if necessary remove air escapes (pressure drop should not be exceed 0.02 MPa (0.2 Kgf/cm <sup>2</sup> ) for 1 minutes)	x	x	√	√	√	√	√
5.	Operating of elevation control pneumatic valves, pressing down bogies to rail, reverse control and machine mode control	x	x	√	√	√	√	√
6.	Check condition of pneumatic hoses and replace if required	x	x	x	x	√	√	√

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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
VIII	<b>General</b>							
1.	Check external surface condition, cabins, railcar, step plates, hand-rail, cabins glassing lighting fixture and signal lamps.	√	√	√	√	√	√	√
2.	Check fastening reliability of executive devices in transport position, bogies and control and measuring system devices.	√	√	√	√	√	√	√
3.	Check fastening bolts latching and intermediate pole brackets condition	√	√	√	√	√	√	√
4.	Serviceability of test devices and control system transmission gear box	√	√	√	√	√	√	√
5.	Watch indication of the devices checking the diesel engine operation and transmission gear box	√	√	√	√	√	√	√
6.	Observe of warning devices serviceability	√	√	√	√	√	√	√
7.	Listen to acrogenic knocks , try to define their emersions reason, and if necessary stop the machine and remove them	√	√	√	√	√	√	√
8.	Check crankshaft rotator speed permanence, oil pressure, cooling fluid temperature and diesel engine drive belt condition .	√	√	√	√	√	√	√
9.	Visual and Physical inspection of wheel 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	√	√	√
10.	Ultrasonic testing of axles of machine shall be done between 40,000 to 45,000 kms of running engine hours or three years, whichever is earlier.	x	x	x	x	x	x	√

**Annexure-I**

**LIST OF SAFETY TOOLS**

<b>S.No.</b>	<b>Description</b>	<b>Quantity</b>
1	Red and hand signal flags	2 Nos
2	Green hand signal flags	1 Nos
3	Tri- colour hand signal lamps/LED torch	2 Nos
4	Chain With Padlock	2 Nos.
5	Fire Extinguisher	1 No.
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 & 9 meters long for BCM one of each length	4 Nos
13	Machine Specific Equipment if any.	-
14	Fog signals ( detonators ) in a tin case	10 No.
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	
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 Helpmate for all machine staff	-
22	Protection clothing , safety shoes and safety gloves	-
23	Willkie talkie with frequency of SM, guard and loco pilots	2
24	Internal communication system Willkie talkie and / or head mounting system	-
25	Track machine manual with up to date correction slip	1
26	Accident manual	1
27	Tail Lamp	1

## **ACKNOWLEDGEMENT**

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