

248
2



GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS

MAINTENANCE SCHEDULE MANUAL
FOR
DYNAMIC TRACK STABILISER
(DGS - 62N)



REPORT NO. TM --90

AUGUST--2005

RESEARCH DESIGNS AND STANDARDS ORGANISATION
LUCKNOW-226011

07496

PREFACE

Maintenance of On-Track Machines is a challenging task. Presently, about 418 on Track Machines are working over different zonal railways. 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 Points and Crossings Changing Machine (T-28), Plasser Quick Relaying System (PQRS), Multipurpose Tamping Machine (MP), Track Relaying Train (TRT) and 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) and Tamping Express (09-3X) have been issued by RDSO. The preparation of Maintenance Schedule Manual of Dynamic Track Stabilizer (DGS 62N) is also an effort in the same direction.

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.

(VIJAY SHARMA)
Executive Director/Track Machine
RDSO/Lucknow-226011.

August -2005

07497

EXPLANATORY NOTES

While preparing the text of Maintenance Schedule Manual of Dynamic Track Stabilizer (DGS 62N) 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.

INDEX

S.No.	Particulars	Page No.
1.	Schedule -I	1
2.	Schedule - II	2
3.	Schedule - III	3
4.	Schedule - IV	4
5.	Schedule - V	5
6.	Schedule - VI	6
7.	Schedule - VII	7-8
8.	Annexure-I	9
9.	Annexure-II	10-11
10.	Annexure-III	12
11.	Annexure-IV	13
12.	Acknowledgement	14

Schedule --- I

(To be done daily)
(Duration—One hour)

1. ENGINE

1. Check lube oil level and top up, if required.
2. Check HSD oil level and top up if required.
3. Check & correct the tension of all V-belts.
4. Check the contamination indicators for dry type air filters and do the needful.
5. Record the maximum engine temperature of the day.
6. Check coolant level of radiator and top up if required.
7. Check coolant and oil leakage if any and do the needful.
8. Drain air tank and water separator.
9. Check for any fuel leakage from the pump, injectors, fuel supply pipes, filters and do the needful.
10. Check all monitoring gauges for proper functioning.
11. Check engine oil pressure.
 - a) At idle speed (Min. 1 to 2 kg./sq.cm.)
 - b) On load after two hrs. working (Min. 3 to 7 kg./sq.cm.)
12. Check working of flasher lights.
13. Clean engine and its premises.

2. MACHINE GENERAL

1. Check tightness of carbon shaft bolts.
2. Check leakage from all gear boxes and do the needful.
3. Check vibration frequency and adjust it if necessary.
4. Drain water separator.
5. Check air-brake pressure on locking position.
6. Check for any air leakage and do the needful.
7. Check brake system before going into section for its effectiveness.
8. Check leakage in hoses, valves and joints. Rectify if required.
9. Check hydraulic oil level in tank and do the needful.
10. Record the max. hydraulic temperature of the day.
11. Check for any rubbing of hoses, loose clampings etc. and do the needful.
12. Check for any unusual sound from any section of machine.
13. Ensure proper functioning of parking brakes.
14. Clean complete machine.
15. Check all hydraulic and pneumatic pressures.

07500

Schedule II

(To be done after 50 engine hours)
(Duration—Two Hours)

1. ENGINE

1. Drain water/sediments etc. from drain plug of HSD oil tank.
2. Check battery charging system.
3. Clean battery terminal connections and apply petroleum jelly.
4. Check electrolyte level in batteries and its specific gravity.
5. Check the condition of V-belts and do the needful
6. Clean outer element of dry type air cleaner or change if required.

2. MACHINE GENERAL

1. Lubricate the king pin pivots of driving and idle bogies with grease.
2. Check and top up oil of axle gear box, Drive intermediate shaft, ZF gear box, distribution gear box and vibration gear box.
3. Lubricate both axle guides/Stabilizing unit rollers with grease.
4. Lubricate clamp pivot pins with grease.
5. Lubricate link rod bearings with grease.
6. Lubricate roller clamp housing with grease.
7. Lubricate front, middle and rear feeler roller guide bushes and guide pulleys.
8. Check bolts and nuts of all hydraulic cylinders.
9. Check wear on brake shoes and do needful.
10. Adjust the gap between brake shoes and wheels, if required.
11. Check horizontal swing of the unit.
12. Lubricate the stabilising unit guide column.
13. Lubricate axle gearbox flange cover with grease.
14. Lubricate guide pulleys.
15. Lubricate front and rear tightening trolley lifting cylinder pivot.
16. Lubricate front and rear tightening trolley preload cylinder pivot.
17. Check working of stabilising unit derailment protection mechanism.
18. Lubricate the guide rod sleeve of vibration unit.
19. Check all locking devices for proper functioning.

Schedule III
(To be done after 100 engine hours)
(Duration— One day)

1. ENGINE

1. Clean engine thoroughly.
2. Clean radiator fins by blowing air from opposite direction.
3. Clean alternators and check connections.

2. MACHINE GENERAL

1. Grease all carbon shafts.
2. Lubricate both brake linkage and torque arm pivot.
3. Clean hydraulic oil cooler by blowing air from opposite direction.
4. Check all working lights, push buttons, switches etc. and do needful.

07501

Schedule IV

(To be done after 200 engine hours)
(Duration-- Two days)

1. ENGINE

1. Change engine oil.
2. Change engine oil filter.
3. Change HSD oil filter.
4. Change super by pass filter.
5. Check PH value of radiator coolant.
6. Check inlet manifolds, turbocharger hoses and air hoses for any leakage and do the needful.
7. Check air unloader for proper functioning.
8. Replace the air cleaner element (outer and inner).

NOTE: i) Item no. 1to 5 will be done after 300 engine hours.
ii) Item no. (8) will be done after 500 hrs.

2. MACHINE GENERAL

1. Change suction and return line filter elements.
2. Change proportional filter element.
3. Check pneumatic valves for proper functioning and change if required.
4. Grease sliding surfaces, guide column surface and bolts of torque supports.
5. Check foundation bolts of brake cylinders. Tighten them if required.
6. Replace the oil of ZF-gear box.
7. Replace the oil filter of ZF-gear box.
8. Change the oil of working drive clutch.
9. Change oil of distributor gear box.
10. Change oil of axle gear box.
11. Change the oil of drive intermediate shaft.
12. Change the oil of vibration gear box.
13. Check all the spares and tools for emergency as per annexure-II.
14. Check for safety items as per annexure-I.

NOTE: i) Item no. 2 will be done after 250 engine hours.
ii) Item no. 1,6,7,8,9,10,11 and 12 will be done after 500 hrs.

Schedule V

(To be done after 1000 engine hours)
(Duration- 7 days)

1. ENGINE

1. Top overhaul the engine on condition basis.
2. Check tappet clearance and adjust if required.
3. Overhaul self starter, if required.
4. Overhaul the alternator, if required.
5. Check and clean air reservoir.
6. Check the air compressor. Overhaul if necessary.
7. Replace the V-belts on condition basis.
8. Clean turbocharger and check for end and radial play.
9. Check functioning of engine safety circuit.
10. Change batteries, if required.
11. Check exhaust manifold, pipes and silencer for any leakage.
12. Calibrate fuel injection pump and injectors.
13. Clean diesel tank.
14. Clean cooling coil and check the fittings.

2. MACHINE GENERAL

1. Change grease of hand brake gear.
2. Grease the axle bearings of the bogies.
3. Change hydraulic oil. (Before replacement, check quality through lab test).
4. Check leakage from all hydraulic cylinders and replace the seals on condition basis.
5. Check condition of roller clamps and do the needful.
6. Check function of opening and closing cylinder for roller clamps.
7. Check function of lifting cylinders of vibration unit.
8. Replace defective lights.
9. Check meggy springs and replace if required.
10. Check wheel tyre defects and do needful.
11. Inspect all electrical connections and do the needful.
12. Check meggy flexi washer of axle gear box, torque plate for damage. Replace if required.
13. Lubricate hand brake gear with grease.
14. Repair the defective hand tools or replace them.

07502

Schedule VI
(To be done after 2000 engine hours)
(Duration- 45 Days)

1. ENGINE

1. Overhaul the air compressor on condition basis.
2. Clean the crank case breather and replace on condition basis.
3. Replace engine wiring with temperature proof wires.
4. Overhaul the radiator.

2. MACHINE GENERAL

1. Replace damaged hoses along with clamps.
2. Clean the hydraulic oil tank. Paint the surface of tank with approved quality of paint.
3. Thoroughly clean all panel boxes.
4. Provide missing thimbles.
5. Replace defective switches and potentiometers.
6. Replace defective indicative instruments.
7. Check the function of all assemblies after maintenance.
8. Test the machine for one week near the workshop before it is put for normal working in section on regular basis.

Schedule VII

(To be done after 6000 engine hours)
(Duration – 90 Days)

1. ENGINE

1. Overhaul or replace the engine on condition basis.
2. Overhaul the fuel injection pump.
3. Overhaul the fuel injectors
4. Overhaul the air compressor.
5. Overhaul the self starter.
6. Overhaul the alternators.
7. Change anti-vibration mounting pads of the engine.
8. Clean diesel tank.
9. Change all the high pressure fuel pipes, pipe clamps, flexible fuel hoses and rubber hoses.
10. Overhaul turbo charger.
11. Change shaft seals and bearings of the clutch drive shaft assembly.
12. Change the shutdown valve.
13. Check engine safety system and do the needful.
14. Replace the air cleaner elements.
15. Change all engine filters along with lube oil.
16. Replace cooling coil on condition basis.
17. Replace air unloader on condition basis.
18. Replace water separator on condition basis.
19. Test air tank for rated pressure.

2 MACHINE GENERAL

1. Replace all the hydraulic hoses along with clamps.
2. Check all hydraulic pumps and motors on the test bench for rated output. Replace if necessary.
3. Check all hydraulic cylinders change if necessary.
4. Clean hydraulic tank, inside surface is to be painted with approved type of paints.
5. Fill new oil after replacing all the hydraulic filters.
6. Clean hydraulic oil cooler. If it is blocked more than 20% during service or badly leaking, it should be replaced.
7. Check all the direct acting and pilot operated direction valves and change if necessary.
8. Check all the pressure control valves and change if necessary.
9. Check all the stop cocks and flow control valves and change if required.
10. Flush the complete system.
11. Change all pneumatic valves.
12. Check all the pneumatic cylinders and change on condition basis.

07503

13. Check brake cylinder bore for corrosion. If corroded, the inner bore should be chrome-plated and ground to standard size.
14. Change all the brake shoes.
15. Strengthen the machine frame where cracks have developed.
16. Check the wheels for any tyre defects. Reprofile or change if required.
17. Check the axle bearing and grease them. Change if required.
18. Change mounting pad of all gear boxes.
19. Overhaul all the gear boxes except ZF-gear box .
20. Replace the cardon shaft or these may be overhauled.
21. Replace the shaft coupling and holding nuts & bolts on condition basis.
22. Overhaul the driving and idle bogies. Replace the defective parts.
23. Replace the defective PCBs.
24. Check the calibration of all the indicative instruments.
25. Arrange insulation test of main cables and replace the defective ones.
26. Overhaul the panel boxes.
27. Change all the defective switches and lights.
28. Check the LED of all solenoids and replace if required.
29. Replace all the limit switches.
30. Check tightness of the frame of stabilizing unit .
31. Change stabilizing unit roller.
32. Check stabilising unit guide column. Change if required.
33. Change clamp pivot pins.
34. Change link rods with their bearings.
35. Overhaul derailment protection mechanism.
36. Check chassis side members, cross frames, buffer beams and welded joints etc. If damaged, it should be repaired.
37. Check bogie side frame, springs, shock absorbers, wheel's torque supports, shackles, brakes and rod linkage. If any damage is noticed, it should be changed.
38. Check all electrical and emergency switches and do the needful.
39. Attend complete painting of the machine.

LIST OF SAFETY TOOLS

S.No.	Description	Quantity
1	Detonators	1 Box
2.	Hand Signal Flag Red	2 Nos
3.	Hand Signal Flag Green	1 Nos
4.	Hand Signal Lamp	2 Nos.
5.	Chain and Pad Lock	1 Set
6.	Terfor (2 tonne capacity)	1 No.
7.	22 t, 10 t and 5t Jacks with traverser	2 Nos.
8.	Crow bars	2 Nos.
9.	Wooden blocks off sizes	8 Nos.
10.	Rail Thermometer (Dial Type)	1 No.
11.	Field Telephone	1 set
12.	Skids	4 Nos.
13.	Working Time Table	1 No.
14.	G&SR Book	1 No.
15.	Banner Flag	2 Nos.

07504

LIST OF THE SPARE PARTS TO BE KEPT IN MACHINE'S STORE

S.No.	Description of Part	Part No.	Quantity
1.	A) V-Belt	B-95	Three
	B) V- Belt	A-52	One
	C) V- Belt	A-60	One
2.	HSD Oil Filter	2538234	Two
3.	Lub Oil Filter	158139	Two
4.	Bypass Filter for M. Oil	3873576	One
5.	Air Cleaner		
	a) Outer Element	2237953	Two
	b) Inner Element	3226019	Two
6.	Lube Oil	API CF-4 15W40	110 lts.
7.	H.S.D. Oil		As per requirement
8.	Distilled water for battery		Two bottles
9.	Gear Oil	C-90	50 lts.
10.	Hyd. oil Shell Telus-68		210 lts.
11.	Radiator Hose		One set
12.	Grease		10 kgs
13.	Petroleum Jelly		250 gms
14.	Emery paper fine		Two
15.	ZF filter	Hyd. 501-225-25-ES	One
16.	Hyd. suction filter	Hyd-501-460-150	One
17.	Hyd. Return filter	Hyr501-330-10Es	One
18.	Hyd. Suction filter	Hyd-501-160-P10Es	Two
19.	Hyd. Filter Driving (Proportional Filter)	Hyd-501-32-10Es	Two
20.	Hyd. Pipe	SAE 100 R2A : 04	5 M with end fittings
21.	-do-	: 06	-do-

S.No.	Description of Part	Part No.	Quantity
22.	-do-	: 08	-do-
23.	-do-	: 10	-do-
24.	-do-	: 16	-do-
25.	-do-	: 20	-do-
26	Hyd. pipe.	SAE R5-24	5M with end fittings
27.	Power supply circuit	EK:812:5V:00	One
28.	Cardon shaft	KGW:180:1250:11D:0 0	One
29.	Cardon shaft	LZ:400:LA50/587:30/F L:D:180	One
30.	Cardon shaft	KGV:150:0900:110:00	One
31.	Relay	ELT:7002/S4	Two
32.	Relay	ELT-663	Two
33.	Head light bulbs		Four
34.	Working light bulbs		Six
35.	Fuses (4 amp)		Six
36.	Self starter		One

07505

**PRECAUTIONS WHILE WORKING WITH DYNAMIC TRACK STABILISER
(DGS-62N)**

1. For bridges upto 4 m span with ballasted deck, no restriction is required during stabilising operation with respect to vibration speed and preload values.
2. For bridges with 4-12 m span with ballasted deck, adjustment should be done for a reduced preload (40 bar) and increased frequency (upto 35 Hz).
3. Bridges with span over 12 m with ballasted deck must not be stabilised without permission of the competent authority.
4. Tunnels should not be stabilised.
5. Bridges requiring speed restriction on account of their condition should also be stabilised with reduced adjustments as mentioned in sl. no.2 above (maximum frequency and reduced preload).
6. For structures close to the stabilised track like abutments, casings, retaining walls, edges of platforms etc., no restriction is required if they are in good condition. Otherwise the adjustments should be done for reduced preload and increased frequency as in sl.no.2.
7. For high structures which are at a distance of 5 m and above from the outer rail of the stabilised track, no restrictions are required. For distance less than 5 m, the reduced adjustments are required from 10 m before to 10 m after the length of structure along the track.
8. Stabilising work neither should be started nor to be ended in transition portion of the curve.

Consumables To Be Used

S.N.	Section	Lubricant	Grade	Frequency
1.	Engine Crank Case	Lube oil	APICF4-15W40	300 Hrs
2.	Radiator	Coolant	Premixed coolant or prepared coolant additive concentrate	Daily
3.	ZF-gear box	Lube oil	API CF-4 15W40	500 Hrs
4.	Axle gear boxes	Gear oil	SAE-90	500Hrs
5.	Vibration gear box	Gear oil	SAE-90	500Hrs
6.	Distributor gear box	Gear oil	SAE-90	500Hrs
7.	Working drive clutch	Gear oil	SAE-90	500 Hrs
8.	Drive intermediate shaft	Gear oil	SAE-90	500 Hrs
9.	Hydraulic tank	Hydraulic oil	HLP-68 or equivalent	1000 Hrs.
10.	All greasing points	Grease	MP2 or RR3	As per schedule
11.	All moving parts	Hyd. Oil and grease as applicable	Lube oil and MP2 or RR3	As per schedule otherwise at 50 Hrs



07506

ACKNOWLEDGEMENT

Following officers and staff have made valuable contributions in finalisation of Maintenance schedule manual of DGS (62N).

Railways:

1. S/Sri Dhananjay Shahi JE//TMC/NER
2. " " Swatantra Singh JE//TMC/NER

RDSO:

1. S/Sri A.K. Pandey DTM-V
2. " " Neerendra Prasad ARE/TM
3. " " M.N. Siddiqui SE/Engg./TM
4. " " A.N. Srivastava JRE/I
5. " " Prem Kumar JRE/I