



भारत सरकार  
रेल मंत्रालय  
GOVERNMENT OF INDIA  
MINISTRY OF RAILWAYS

**INSPECTION CHECK LIST  
FOR  
BALLAST REGULATING MACHINE  
(GMAC, Model-SPZ-210k)**

**(Track Machine Organisation)**

**TM-200**

**November-2016**

अनुसंधान अभिकल्प और मानक संगठन लखनऊ-226011  
**RESEARCH DESIGNS & STANDARDS ORGANISATION  
LUCKNOW- 226 011**

## **PREFACE**

Any Machine can only be kept in good condition by regular Inspection of its various assemblies at different levels of inspections. To ensure that the components of On-Track machines are properly working & being maintained and the documentation of the same is being done properly, multi tiered Inspection of On-Track machines is also required. For the purpose IRTMM-2000 includes the duties of different inspecting authorities from Dy. CE/TMC to SSE/TMC with the objective to monitor the health of machines and to ensure that the officials concerned are carrying out their duties satisfactorily. For the guidance of the Track Machine Officials inspecting authorities, RDSO is dealing with the preparation and issuing the list of items to be inspected for a particular type of machine.

In this context, the Inspection check list for Inspection of Ballast Regulating Machine (GMAC, Model-SPZ-210k) is prepared.

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

November 2016

(Anil Choudhary)  
Director/Track Machine-III  
RDSO/Lucknow-226011.

# BALLAST REGULATING MACHINE (GMAC,Model-SPZ-210k)

**Name & Designation of Inspecting Official :**

**Date of Inspection :**

**Machine No. :**

**Base Station /division :**

**Location of working :**

**Block hours :**

**Progress :**

**1. General :**

S. No	Items	Remarks given by inspecting officer
I.	Name of Machine Incharge	
II.	Machine make	
III.	Year of manufacturing	
IV.	First POH of Machine done on	
V.	Last IOH of M/C done on	
VI.	Next IOH of M/C due on	
VII.	Last POH of M/C done on	
VIII.	Next POH of M/C due on	
IX.	Last POH of camping coach done on	
X.	Next POH of camping coach due on	
XI.	All log book filled properly	
XII.	Pending Maintenance Schedule and reasons Schedule I,II,III,IV,V,VI,VII	

**History of Machine:**-----  
 -----  
 -----  
 -----  
 -----  
 -----  
 -----  
 -----  
 -----  
 -----  
 -----

<b>2.</b>	<b>Engine Model no.:</b> DEUTZ F12L513	Engine hours on date-	
<b>S.no</b>	<b>Items</b>	<b>Prevailing Condition</b>	
I.	Over-hauling of the Engine as per Maintenance Schedule	Due <input type="checkbox"/>	Not due <input type="checkbox"/>
II.	Starting problem	No <input type="checkbox"/>	Required attention <input type="checkbox"/>
III.	Condition of smoke	White <input type="checkbox"/> Normal <input type="checkbox"/>	Black <input type="checkbox"/>
IV.	Engine temperature during working Deutz Engine: Optimum 75 to 85°C	Actual ----- °C	
		Ok <input type="checkbox"/>	Required attention <input type="checkbox"/>
V.	Leakage in Head gasket	No <input type="checkbox"/>	Yes <input type="checkbox"/> (Head no.- )
VI.	Compressor leakage	Yes <input type="checkbox"/>	No <input type="checkbox"/>
VII.	Belt condition and tension	Ok <input type="checkbox"/>	Need attention <input type="checkbox"/>
VIII.	RPM of the Engine (rated 2100)	Actual---	
		Ok <input type="checkbox"/>	Need attention <input type="checkbox"/>
IX.	Engine oil pressure (minimum)		
	DeutzEngine Minimum 1.5 Kg/cm <sup>2</sup> at idle rpm Minimum 2.5 Kg/cm <sup>2</sup> on rated rpm after 2 hours working	Actual--- Actual---	
X.	Overall condition of Engine	Ok <input type="checkbox"/>	Need attention <input type="checkbox"/>

Remarks

-----  
-----  
-----

<b>3. Plough &amp; Brooming unit</b>			
<b>S. No.</b>	<b>Items</b>	<b>Prevailing Condition</b>	
I.	Condition of shoulder plough for wear.	Satisfactory <input type="checkbox"/>	Need attention <input type="checkbox"/>
II.	Condition of front plough for wear	Satisfactory <input type="checkbox"/>	Need attention <input type="checkbox"/>
III.	Condition of Centre plough for wear	Satisfactory <input type="checkbox"/>	Need attention <input type="checkbox"/>
IV.	All nut bolts of wear plate of wing unit	Satisfactory <input type="checkbox"/>	Need attention <input type="checkbox"/>
V.	Condition of brush sweeping unit.	Satisfactory <input type="checkbox"/>	Need attention <input type="checkbox"/>
VI.	All nut bolts of plough	Satisfactory <input type="checkbox"/>	Need attention <input type="checkbox"/>
VII.	Condition of brush sweeping unit	Satisfactory <input type="checkbox"/>	Need attention <input type="checkbox"/>
VIII.	All nut bolts of pickup unit	Satisfactory <input type="checkbox"/>	Need attention <input type="checkbox"/>
IX.	All nut bolts of conveyer	Satisfactory <input type="checkbox"/>	Need attention <input type="checkbox"/>
X.	All nut bolts of broom unit	Satisfactory <input type="checkbox"/>	Need attention <input type="checkbox"/>

<b>4. Oil/water/level in Tank/Container</b>			
<b>S. No.</b>	<b>Items</b>	<b>Agent / Description</b>	<b>Prevailing Condition</b>
I.	Hydraulic oil	Shell Tellus T-46	Ok <input type="checkbox"/> Need top up <input type="checkbox"/>
II.	Diesel Oil	HSD	Ok <input type="checkbox"/> Need top up <input type="checkbox"/>
III.	Engine Lube oil on due date (After every 200hrs)	15W-40 CF4 Premium blue	Yes <input type="checkbox"/> No <input type="checkbox"/>
IV.	Compressor lube oil (if used)	SP-100 or equivalent	Ok <input type="checkbox"/> Need top up <input type="checkbox"/>
V.	Lubricate the cylinder pin of shoulder plough.	Grease shell alvania RL2	Ok <input type="checkbox"/> Need top up <input type="checkbox"/>

Remarks

-----  
 -----  
 -----

<b>5. Filters</b>				
<b>S.no</b>	<b>Items</b>		<b>Prevailing Condition</b>	
I.	Cleaning of Air Cleaner filters outer (Cleaned after every 250hrs or on dirt indication and change after 500hrs)		Done <input type="checkbox"/>	Not done <input type="checkbox"/>
II.	Change of air cleaner inner ( after every 500hrs)		Done <input type="checkbox"/>	Not done <input type="checkbox"/>
III.	Cleaning of engine oil filters ( after every 200 hrs ) & change if found damage.		Done <input type="checkbox"/>	Not done <input type="checkbox"/>
IV.	Change of diesel filters (To be done after every 300 hrs)		Done <input type="checkbox"/>	Not done <input type="checkbox"/>
V.	Change of suction filter (after every 500hrs or on choke indication)		Done <input type="checkbox"/>	Not done <input type="checkbox"/>
VI.	Change of air dryer filter if used (after every 500hrs or at least once year)		Done <input type="checkbox"/>	Not done <input type="checkbox"/>
<b>6. Lubrication (Oiling &amp; Greasing as per maintenance schedule)</b>				
<b>S.No.</b>	<b>Item</b>	<b>Agent / Description</b>	<b>Prevailing Condition</b>	
<b>Miscellaneous</b>				
I.	Brake linkage, brake lever bearing & Brake rod	Grease Shell Alvania RL2	Done <input type="checkbox"/>	Not done <input type="checkbox"/>
<b>7. Electrical and Electronics</b>				
<b>S.no</b>	<b>Items</b>		<b>Prevailing Condition</b>	
I.	Condition of battery terminals		Ok <input type="checkbox"/>	Need attention <input type="checkbox"/>
II.	Condition of batteries		Ok <input type="checkbox"/>	Not satisfactory <input type="checkbox"/>
III.	Condition of self starter		Ok <input type="checkbox"/>	Need attention <input type="checkbox"/>
IV.	Condition of alternator		Ok <input type="checkbox"/>	Need attention <input type="checkbox"/>
V.	Safety circuit for Engine		Ok <input type="checkbox"/>	Need attention <input type="checkbox"/>
VI.	Safety circuit for Driving		Ok <input type="checkbox"/>	Need attention <input type="checkbox"/>
VII.	Electrolyte level in batteries (Plates should be embedded in electrolyte)		Ok <input type="checkbox"/>	Need top up <input type="checkbox"/>
VIII.	Specific gravity of electrolyte (min 1.24)		Ok <input type="checkbox"/>	Less <input type="checkbox"/>

Remarks-----  
-----  
-----

<b>8. Gauges and meters working status</b>			
<b>S.no</b>	<b>Items</b>	<b>Prevailing Condition</b>	
I.	Speedometer/Tachometer in Cabin(Digital display).	Ok <input type="checkbox"/>	Need attention <input type="checkbox"/>
II.	Speedometer/Tachometer in Cabin(Digital display).	Ok <input type="checkbox"/>	Need attention <input type="checkbox"/>
III.	Engine Oil Pressure meter(Digital display).	Ok <input type="checkbox"/>	Need attention <input type="checkbox"/>
IV.	Engine Temperature meter	Ok <input type="checkbox"/>	Need attention <input type="checkbox"/>
V.	Battery charging meter(Digital display).	Ok <input type="checkbox"/>	Need attention <input type="checkbox"/>
VI.	Battery voltage meter(Digital display).	Ok <input type="checkbox"/>	Need attention <input type="checkbox"/>
VII.	Hydraulic oil pressure meters(Digital display).	Ok <input type="checkbox"/>	Need attention <input type="checkbox"/>
VIII.	Hydraulic driving pressure meters(Digital display).	Ok <input type="checkbox"/>	Need attention <input type="checkbox"/>
IX.	Pneumatic pressure meter(Digital display).	Ok <input type="checkbox"/>	Need attention <input type="checkbox"/>
<b>9. Pneumatic</b>			
I.	Air Oiler working properly	Yes <input type="checkbox"/>	Need attention <input type="checkbox"/>
II.	Water separator working properly	Yes <input type="checkbox"/>	Need attention <input type="checkbox"/>
III.	Clearance between brake shoes and wheel	Ok <input type="checkbox"/>	To be changed <input type="checkbox"/>
IV.	Working of brake application	Satisfactory <input type="checkbox"/>	To be changed <input type="checkbox"/>
V.	Pneumatic leakage from circuit	Location -----	

Remarks-----  
-----  
-----

<b>10. Hydraulic Pressure and Operation</b>			
S.no	Items	Prevailing Condition	
		Recommended value	Actual value
I.	Working circuit system pressure	16 Mpa(163.15kg/cm <sup>2</sup> )	
II.	Conveyor circuit system pressure	16 Mpa(163.15kg/cm <sup>2</sup> )	
III.	Sleeper surface sweeper roller brush circuit system pressure	16 Mpa(163.15kg/cm <sup>2</sup> )	
IV.	Running circuit system pressure	33 Mpa(336.50kg/cm <sup>2</sup> )	
V.	Running circuit slippage pump pressure	1.8-3.0 Mpa(18.35-30.59kg/cm <sup>2</sup> )	
VI.	Service brake	340kpa-360kpa(3.46-3.67kg/cm <sup>2</sup> )	
VII.	Emergency brake	420-450kpa(4.28-4.58kg/cm <sup>2</sup> )	
VIII.	Bypass brake safety valve active pressure	390±10kpa(3.97±0.1kg/cm <sup>2</sup> )	
IX.	Hydraulic Oil Temperature after working of machine for 2 hrs. (Max limit 76 <sup>0</sup> c)	----- °C	
<b>11. Miscellaneous</b>			
I.	Condition of brake shoes	Ok <input type="checkbox"/>	To be changed <input type="checkbox"/>
II.	Hydraulic leakage from circuit	Location -----	
III.	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	Done <input type="checkbox"/>	Not done <input type="checkbox"/>
IV.	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.	Done <input type="checkbox"/>	Not done <input type="checkbox"/>
V.	Overall condition of the Machine health	Excellent <input type="checkbox"/>	Very good <input type="checkbox"/>
		Good <input type="checkbox"/>	Average <input type="checkbox"/>
VI.	Application of brake	Satisfactory <input type="checkbox"/>	Need attention <input type="checkbox"/>
VII.	Overall Machine working performance	Satisfactory <input type="checkbox"/>	Need attention <input type="checkbox"/>
VIII.	Application of hand brake	Satisfactory <input type="checkbox"/>	Need attention <input type="checkbox"/>

Remarks-----  
-----  
-----



<b>12. Safety Items and Staff Matter</b>			
<b>S.no</b>	<b>Items</b>	<b>Prevailing Condition</b>	
I.	Safety equipment as per Annexure-I	Available <input type="checkbox"/>	deficient <input type="checkbox"/>
II.	Working of safety Emergency Braking System of the machine	Ok <input type="checkbox"/>	Defective <input type="checkbox"/>
III.	Competency certificate of operator	Current <input type="checkbox"/>	Expired <input type="checkbox"/>
IV.	Strength of staff	Full <input type="checkbox"/>	deficient <input type="checkbox"/>
V.	Safety awareness	Excellent <input type="checkbox"/>	V. Good <input type="checkbox"/>
		Good <input type="checkbox"/>	Average <input type="checkbox"/>
VI.	Staff due for Medical	Yes <input type="checkbox"/>	No <input type="checkbox"/>

Remarks

-----  
-----  
-----  
-----

**Signature of inspecting authority**

## List of Safety Equipments

S. No.	Description	Quantity
1.	Detonators in a tin case	1 box
2.	H.S. flag red	2 nos.
3.	H.S. flag green	1 nos.
4.	H.S. Tri colour lamps	2 nos.
5.	Chain & Padlock	1 set
6.	Clamp with Padlock	2 nos.
7.	10 t jack	2 nos.
8.	Crow bars	4 nos.
9.	Wooden blocks off sizes	4 nos.
10.	Gauge cum level	1 no.
11.	Rail thermometer (dial type)	1 no.
12.	Banner flag	2 nos.
13.	Portable Control Phone/Walky Takly	1 no
14.	First Aid Box	1 no
15.	Skids	2 nos.
16.	Working time table of section where machine working	1 copy
17.	G&SR book with upto date amendment slips	1 copy
18.	4 cell flasher light	1 no.
19.	Petromax /LPG lamps	1 no.
20.	Safety helmets	For each Machine staff
21.	Protective clothing, safety shoes and safety gloves	For each Machine staff
22.	Track Machine Manual with all CS till date	1 no.
23.	Accident Manual	1 no.
24.	Fire extinguisher	1 no.
25.	Hooter (manual)	2 nos.
26.	Hydraulic Hand Pump	1 no.
27.	Emergency pneumatic/Hydraulic hose of sizes suiting to different machines(complete with end fittings)	1 no.
28.	Wire rope with close loops for both ends 2meters	One each

## ACKNOWLEDGEMENT

Following officers and staff have made their valuable contributions in finalization of the Inspection Check List for Track Machine Officials of Ballast Regulating Machine(GMAC,Model-SPZ-210k).

### RAILWAYS

1. Sri/Shri Brajesh Kumar JE/TMC/ECR'

### RDSO

1. Sri/Shri Muslim Ahmad ARE/TM
2. " " Prem Kumar SSRE/TM
3. " " D.G.Sharma SSE/TM

16-11-2016