



भारत सरकार  
रेल मंत्रालय  
GOVERNMENT OF INDIA  
MINISTRY OF RAILWAYS

**INSPECTION CHECK LIST  
FOR  
BALLAST REGULATING MACHINE  
(USP 2000 SWS)**

**REPORT NO. TM- 204**

**March -2017**

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**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 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 Check list for Inspection of Ballast Regulating Machine (USP 2000 SWS) is prepared as recommended by OEM.

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.

(Anil choudhary)  
Director/Track Machine-III  
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# BALLAST REGULATING MACHINE (USP 2000 SWS)

**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 In charge	
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:**-----  
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**2. Engine Model no.: CUMMINS KTA 1150 L**

**Engine hours on date-**

S.no	Items	Prevailing Condition	
I.	Over-hauling of the Engine As per Main. Schedule	Due <input type="checkbox"/>	Not due <input type="checkbox"/>
II.	Starting problem/misfiring	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"/> Blue <input type="checkbox"/>
IV.	Engine temperature during working a) CUMMINS KTA 1150 L Optimum 75°C to 115°C b) Thermostat working	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.	Leakage of water from water pump, seal hose and radiator	No <input type="checkbox"/>	Required attention <input type="checkbox"/>
IX.	RPM of the Engine (rated 2100)	Actual---	
		Ok <input type="checkbox"/>	Need attention <input type="checkbox"/>
X.	Engine oil pressure (minimum)		
XI.	CUMMINS KTA 1150 L Minimum 1-2 Kg/cm <sup>2</sup> at idle rpm Minimum 3-7 Kg/cm <sup>2</sup> on rated rpm after 2 hours working	Actual--- Actual---	
XII.	Overall condition of Engine	Ok <input type="checkbox"/>	Need attention <input type="checkbox"/>

Remarks

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S. No.	Items	Prevailing Condition	
<b>2.</b>	<b>Working Condition</b>		
I.	Condition of Ballast	Caked <input type="checkbox"/>	Clean <input type="checkbox"/>
II.	Infringement ,if any	Yes <input type="checkbox"/>	No <input type="checkbox"/>
III.	Hydraulic leakage from circuit	Location -----	
IV.	Pneumatic leakage from circuit	Location -----	
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 Direct/ Indirect	Satisfactory <input type="checkbox"/>	Need attention <input type="checkbox"/>
VII.	Application of Emergency brake	Satisfactory <input type="checkbox"/>	Need attention <input type="checkbox"/>
VIII.	Overall Machine working performance	Satisfactory <input type="checkbox"/>	Need attention <input type="checkbox"/>
<b>3.</b>	<b>PLOUGH AND BROOMING UNIT</b>		
I.	Condition of Cross conveyor for wear.	Satisfactory <input type="checkbox"/>	Need attention <input type="checkbox"/>
II.	Condition of centre plough for wear.	Satisfactory <input type="checkbox"/>	Need attention <input type="checkbox"/>
III.	Condition of front plough for wear	Satisfactory <input type="checkbox"/>	Need attention <input type="checkbox"/>
IV.	Condition of shoulder plough for wear.	Satisfactory <input type="checkbox"/>	Need attention <input type="checkbox"/>
V.	Tighten of all nut bolts of wear plate of conveyor	Satisfactory <input type="checkbox"/>	Need attention <input type="checkbox"/>
VI.	Condition of brush sweeping unit.	Satisfactory <input type="checkbox"/>	Need attention <input type="checkbox"/>
VII.	Tighten of all nut bolts of plough	Satisfactory <input type="checkbox"/>	Need attention <input type="checkbox"/>
VIII.	Condition of brush sweeping unit	Satisfactory <input type="checkbox"/>	Need attention <input type="checkbox"/>
IX.	Tighten of all nut bolts of pickup unit	Satisfactory <input type="checkbox"/>	Need attention <input type="checkbox"/>
X.	Tighten of all nut bolts of cross conveyor	Satisfactory <input type="checkbox"/>	Need attention <input type="checkbox"/>
XI.	Tighten of all nut bolts of broom unit	Satisfactory <input type="checkbox"/>	Need attention <input type="checkbox"/>

**Remarks:-**

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S. No.	Items	Agent / Description	Prevailing Condition	
<b>4.</b>	<b>Oil/water/level in Tank/Container</b>			
I.	Hydraulic oil	Shell Tellus 68/HLP 68	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 300hrs)	15W-40 Volvoline/15W40 CF4	Yes <input type="checkbox"/>	No <input type="checkbox"/>
IV.	Pump Drive gear box	Spirax G80W90 (Shell)/ C90	Yes <input type="checkbox"/>	No <input type="checkbox"/>
V.	Axle gear box , 4X	Spirax G80W90 (Shell)/HLP 68	OK <input type="checkbox"/>	Need top up <input type="checkbox"/>
VI.	Hydraulic	Tellus Oil 68 (Shell)	OK <input type="checkbox"/>	Need top up <input type="checkbox"/>
VII.	Engine cooling agent	1/8 cooling agent/water/Antifreeze	OK <input type="checkbox"/>	Need top up <input type="checkbox"/>
VIII.	Grease	Shell Alvania Grease RL2	OK <input type="checkbox"/>	Need top up <input type="checkbox"/>
IX.	Pneumatic Lubricate	Tellus Oil 68 (Shell)/ HLP 68	OK <input type="checkbox"/>	Need top up <input type="checkbox"/>
<b>5.</b>	<b>Filters</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.	Change of engine oil filters (After every 300 hrs )		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"/>
<b>6.</b>	<b>Lubrication (Oiling &amp; Greasing as per maintenance schedule)</b>			
I.	All balls and socket pivot point	Oil by Servo system-100	Done <input type="checkbox"/>	Not done <input type="checkbox"/>
II.	Brake linkage, brake lever bearing & Brake rod	Grease Shell Alvania RL2	Done <input type="checkbox"/>	Not done <input type="checkbox"/>

Remarks:-----  
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## 7. Electrical and Electronics

S.no	Items	Prevailing Condition			
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.	Electrolyte level in batteries (Plates should be embedded in electrolyte)	Ok	<input type="checkbox"/>	Need top up	<input type="checkbox"/>
IV.	Specific gravity of electrolyte (min 1.24)	Ok	<input type="checkbox"/>	Less	<input type="checkbox"/>
V.	Condition of self starter	Ok	<input type="checkbox"/>	Need attention	<input type="checkbox"/>
VI.	Condition of alternator	Ok	<input type="checkbox"/>	Need attention	<input type="checkbox"/>
VII.	Safety circuit for Engine	Ok	<input type="checkbox"/>	Need attention	<input type="checkbox"/>
VIII.	Safety circuit for Driving	Ok	<input type="checkbox"/>	Need attention	<input type="checkbox"/>

## 8. Gauges and meters working status

I.	Engine Oil Pressure meter	Ok	<input type="checkbox"/>	Need attention	<input type="checkbox"/>
II.	Engine Temperature meter	Ok	<input type="checkbox"/>	Need attention	<input type="checkbox"/>
III.	Battery charging meter	Ok	<input type="checkbox"/>	Need Attention	<input type="checkbox"/>
IV.	Battery voltage meter	Ok	<input type="checkbox"/>	Need attention	<input type="checkbox"/>
V.	Pneumatic pressure meter	Ok	<input type="checkbox"/>	Need Attention	<input type="checkbox"/>

## 9. Pneumatic

S.no	Items	Prevailing Condition			
I.	Clearance between brake shoes and wheel	Ok	<input type="checkbox"/>	To be changed	<input type="checkbox"/>
II.	Condition of brake shoe	Satisfactory	<input type="checkbox"/>	To be changed	<input type="checkbox"/>

## 10. Hydraulic Pressure and Operation

S.no	Items	Recommended value	Actual value
I.	System Pressure	140-150	
II.	Pressure on friction clutch	11-12.5 Kg/cm <sup>2</sup>	
III.	Air pressure	6-7 Kg/cm <sup>2</sup>	
IV.	Hydraulic Oil Temperature after working of machine for 2 hrs. (Max limit 76 <sup>0</sup> c)	----- °C	

**11. Miscellaneous:**

S.no	Items	Prevailing Condition	
I.	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"/>
II.	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"/>

**12. Safety Items and Staff Matter:**

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"/> Good <input type="checkbox"/>	V. Good <input type="checkbox"/> Average <input type="checkbox"/>
VI.	Staff due for Medical	Yes <input type="checkbox"/>	No <input type="checkbox"/>

Remarks

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**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.
8.	10 t jack	1 no.
9.	Crow bars	4 nos.
10.	Wooden blocks off sizes	8 nos.
11.	Gauge cum level	1 no.
12.	Rail thermometer (dial type)	1 no.
13.	Banner flag	2 nos.
14.	<b>Walkie Talkie Wireless Handset</b>	<b>2 no</b>
15.	First Aid Box	1 no
16.	Skids	2 nos.
18.	Working time table of section where machine working	1 copy
19.	G&SR book with upto date amendment slips	1 copy
20.	4 cell flasher light	1 no.
21.	Petromax /LPG lamps	1 no.
22.	Safety helmets	Machine staff
23.	Protective clothing, safety shoes and safety gloves	Machine staff
24.	Track Machine Manual	1 no.
25.	Accident Manual	1 no.
26.	Fire extinguisher	1 no.
27.	Hotter (manual)	2 nos.)
28.	Hydraulic Hand Pump	1 no.
29.	Emergency pneumatic/Hydraulic hose of sizes suiting to different machines(complete with end fittings)	1 no.

## ACKNOWLEDGEMENT

Following officers and staff have made their valuable contributions in finalization of the Inspection Check List of Ballast Regulating Machine (USP 2000 SWS)

### **RAILWAYS**

- |    |        |               |               |
|----|--------|---------------|---------------|
| 1. | S/SHRI | U.V. Dalvi    | AEN/TM/KYN/CR |
| 2. | “ ”    | M.M Pathare   | SSE/TM/KYN/CR |
| 3. | “ ”    | Sunil Sarokar | SSE/TM/KYN/CR |

### **RDSO**

- |    |        |              |         |
|----|--------|--------------|---------|
| 1. | S/SHRI | Muslim Ahmad | ARE/TM  |
| 2. | “ ”    | Ravi Kumar   | SSRE/TM |