



**GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS**

**CHECKLIST FOR INSPECTION
OF
SHOULDER BALLAST CLEANING MACHINE
(FRM – 85F)**

REPORT NO.TM-136

December--2009

**RESEARCH DESIGNS & STANDARDS ORGANISATION
LUCKNOW-226011**

Name of Inspecting Officer:

Designation :

Date of Inspection :

Machine No. :

Base Station :

Items To Be Checked

S. No.	Item	Agent/Description	Prevailing Condition
1.	Oil/Coolant Levels :		
i)	Coolant level in radiator	-----	Ok / Less
ii)	Hydraulic oil	Shell Tellus-68 or equivalent	Ok / Less
iii)	Diesel tank	HSD	Ok / Less
iv)	Axle gear box	Shell Tellus-68 or equivalent	Ok / Less
v)	Pump gear box	API CF4 15W40 or equivalent	Ok / Less
vi)	Engine lube oil	API CF4 15W40 or equivalent.	Ok / Less
vii)	Main Conveyor gear box	SAE-90 or equivalent	Ok / Less
viii)	Turn table for waste conveyor	Shell Retinex LX2 or equivalent	Ok / Less
ix)	Cutting chain gear box	SAE-90 or equivalent	Ok / Less

S. No.	Item	Prevailing Condition
2.	Engine: As per maintenance schedules	
	Engine Model & No.:	Engine hours:
i)	Starting problem	Yes / No
ii)	Condition of smoke	White/Black/Normal/Grey
iii)	Maximum engine temperature after two hrs.working	°C
iv)	Leakage in head gasket	No/ Yes (Head no.)
v)	Electrolyte level in batteries	Ok / less
vi)	Specific gravity of electrolyte (min 1.24)	Ok / less
vii)	Belt tension	Ok / To be tightened
viii)	Condition of Engine Hoses	Ok / To be attended
ix)	RPM of the Engine	
x)	Battery charging	Ok /To be checked
xi)	Whether working gauges are in order:	
a)	RPM	Yes / no
b)	Oil pressure	Yes / no
c)	Temperature	Yes / no
d)	Battery charging	Yes / no
xii)	Engine oil pressure	
	Actual:	
	Rated at :	
	Idle speed : 1.5 kg/sq cm Rated speed : 2.5 kg/sq cm	
xiii)	Last change of Air Cleaner done on	Dated Engine hrs
xiv)	Last change of engine oil done on	Dated Engine hrs
xv)	Last change of engine oil filters done on	Dated Engine hrs
xvi)	Last change of diesel filters done on	Dated Engine hrs
xvii)	Last change of batteries done on	Dated Engine hrs
xviii)	Last change / repair of	
a)	Self starter done on	Dated Engine hrs
b)	Alternator done on	Dated Engine hrs
xix)	Last over-hauling of the Engine done on	Dated Engine hrs
xx)	Last calibration of fuel injection pump	Dated Engine hrs

S. No.	Item	Prevailing Condition
xxi)	Last calibration of Fuel Injectors done on	Dated Engine hrs
xxii)	Engine safety circuit	Working / To be attended
3.	MACHINE GENERAL :	
i)	Oil leakage in gear boxes	No/Yes (location)
ii)	Clutch pressure in axle gear boxes	Ok / To be adjusted
iii)	Greasing of all Cardan shaft	Done / To be done
iv)	Condition of Wear plates	Satisfactory /To be attended
v)	Condition of excavating chain	Ok / To be attended
vi)	Function of outer collision device of waste conveyor	Working / not Working
vii)	Condition of ballast distribution chute	Ok / To be attended
viii)	Greasing of screen pads	Ok/To be done
ix)	Last change of screen meshes done on	Dated
x)	Last change of oil in screen drive drum done on	Dated
xi)	Last change of wing plate done on	Dated
xii)	Tension in the conveyor belts	Ok / To be adjusted
xiii)	Greasing of main conveyor bearing	Ok / To be done
xiv)	General condition of conveyor belts	Ok/To be attended (Location)
xv)	Condition of idle rollers of waste and distributing conveyor if provided.	Ok / To be attended
xvi)	Condition of conveyor roller chain, if provided	Ok/To be attended
xvii)	Lubrication arrangement for conveyor roller chains	Working/Not working
xviii)	Condition of driver and driven shaft Sprocket of conveyors	Ok/To be attended
xix)	Any rubbing in hydraulic hoses	No/Yes (Location)
xx)	System pressure for rated settings (380 Bar)	Ok / To be attended
xxi)	Axle clutch pressure (12-15 bar)	Ok / To be attended
xxii)	Charging pressure (30 Bar)	Ok / To be attended
xxiii)	Cutting chain pressure (350-390 bar)	Ok / To be attended
xxiv)	Driving pressure (310 bar)	Ok / To be attended
xxv)	Heavy leakage of hydraulic oil.	No/Yes / (location)
xxvi)	Stock of hoses with the machine	Adequate / less
xxvii)	Stock of hose fittings	Adequate / less
xxviii)	Requirement of PCB if any	Part no.

S. No.	Item	Prevailing Condition
4.	General:	
i)	General cleanliness of the machine	Ok / To be attended
ii)	Spares available on the machine as per Annexure—II	Sufficient/deficient
iii)	All the safety item are present as per annexure –I	Yes / no
iv)	Log books & Schedule registers are filled properly	Yes / No
v)	Locking arrangement of all working units	Ok / To be attended
vi)	Condition of screen meshes & chute plates	Ok / To be attended
vii)	Clearance between brake shoe and wheel	Ok/ To be adjusted
viii)	Electrical lights	Working / Not working
ix)	Hydraulic Oil Temperature after 2 hours of machine working	°C
x)	Competency Certificate of Operator	Current / expired
xi)	All safety system provided on machine	Functioning/Not functioning
xii)	Condition of brake shoes	Ok/ To be replaced
5.	During Block Working:	
i)	Location of working	
ii)	Pre and Post ballast cleaning operation being done	Yes / no
iii)	Duration of block	
iv)	Output of work	
v)	Machine protection is being done by PWI / machine	Yes/no
6.	Staff:	
i)	Strength of staff	Full / deficient
ii)	Group Performance	Excellent / Very Good / Good/ Average
iii)	Cost awareness amongst staff	Excellent / Very Good / Good/ Average
iv)	Safety awareness amongst staff	Excellent / Very Good / Good/ Average
v)	Staff due for Medical	
vi)	General condition of the machine.	Excellent / Very good / Good / Average
vii)	Control Chart of Output	Upward / Normal / Down ward
viii)	Pending maintenance schedules & reasons	
ix)	Any other remarks by Inspecting Officer	

Signature of Inspecting Officer

LIST OF SAFETY ITEMS

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	02 Set
6.	Terfor (2 tonne capacity)	1 No.
7.	50t Jack with traverser	2 Nos.
8.	Wooden blocks off sizes	8 Nos.
9.	Field Telephone	1 set
10.	Skids	4 Nos.
11.	Working Time Table	1 No.
12.	G&SR Book	1 No.
13.	Banner Flag	2 Nos.
14.	Warning hooter	1 Nos.
15.	LV board/ Tail Lamp	01 No. Each
16.	Walkie-Talkie set	01 no.

LIST OF ITEMS TO BE KEPT ON FRM-85F MACHINE

S. No.	Item	Part No.	Qty. Reqd.
I.	ENGINE		
1.	Fuel filter 5 lit. capacity paper type	316655	2 No.
2.	Lube oil filter	316654	2 No.
3.	By pass filter	3873576	01 No.
4.	Set of fuel injection pipes		1 Set
5.	Set of water radiator hoses		1 Set
6.	Set of fuel hoses	i) 6.234.0.939.045.4.L = 700 mm ii) 6.234.0.939.048.4.L = 300 m iii) 6.234.0.939.040. L = 700 mm	1 No. each
7.	V - Belts	A.61, A.52, A.45	2 each
8.	Air cleaner filter (outer)		2
9.	Air cleaner filter (Inner)		2
10.	Set of copper washers		1 Set
11.	Fuel filter 'O' Ring ,fuel filter		2 each
12.	Self starter		1
II.	HYDRAULIC		
1.	Hyd. suction filter	HYS 501.360.150 ES	1
2.	Hyd. suction filter	HYS 501.160.P19 ES	3
3.	Hyd. suction filter	HYS 501.460.150	4
4.	Hyd. return filter	HYR.501.330.104	2
5.	Clutch filter	62.05.1000.113 ES	4
6.	Circulating filter	62.05.1000.293	4
7.	Piston ring for clutch shaft	A.302943/2.4w	3
8.	Modified piston ring for clutch shaft (if modified)		3
9.	Bush for clutch shaft	64.02.2107.00	2
10.	Seal set for hyd. cylinders (for each cylinder)		1 Set

S. No.	Item	Part No.	Qty. Reqd.
11.	Hyd. Return hoses with end connection (5 metre length) dia. 24		1
12.	Hyd. hoses with end connection (length 5 mtrs each)	No. 4,6,8,10,16,20	1
III.	PNEUMATIC		
1.	Pneumatic Hose ¼" dia		10 Mts
2.	Pneumatic Hose ½" dia		10 Mts
3.	Pneumatic Hose clamp 1/4" & 1/2" dia.		6 each
4.	Brake cylinder seal		1
5.	Hose connection (compressor to cooling coil)	90291	1
6.	Brake shoe		4.
IV.	ELECTRICAL/ELECTRONICS		
1.	Head light bulbs		2
2.	Working light bulbs		4
3.	Tail lamp bulbs		4
4.	Micro fuse	5A/272	6
5.	Limit switch complete		2
6.	Battery terminals heavy duty		4
7.	Thimbles off sizes		10
8.	Power supply card	Ek.813 SV002	1
9.	4 Way toggle switch for waste conveyor and cutter unit operation	EL-T1058-24	1
10.	Relay	ELT-7002/S4	10 nos.

S. No.	Item	Part No.	Qty. Reqd.
V.	MECHANICAL AND GENERAL		
1.	Hex bolt with nylon nut 12 x 65 MM		50
2.	Rivets with washer		50
3.	Cutter chain shovels		4
4.	Shovel pin	656 080 1050	2
5.	Roller	SU 127.21.4.1.6B	4
6.	Bush	SU 127.21.4.1.5	4
7.	Clamping bushing	656.080.1040	2
VI.	TOOLS		
1.	Standard Tools provided on the machine		1 set
2.	Mechanical jacks 5 t & 20 t. cap. with traverse		2 each
3.	Drilling machine - Small size		1
4.	Riveting machine		1
5.	Chain hoisting device		1
6.	Multimeter		1
7.	Hand grinder & Bench grinder		1
8.	Bench vice		1
9.	Adjustable wrench		1set
10.	Needle file		1 set
11.	File set big		1 set
12.	Circlip pliers (inner and outer)		01 no.each
13.	Screw driver		01 set

ACKNOWLEDGEMENT

The following officers and staff have made their valuable contribution in finalising the Check list for inspection of Shoulder Ballast Cleaning Machine (FRM-85F).

Railways:

1. S/Sri B.D. Sreenivasa Rao SSE/TMC/SWR

RDSO:

- 1.S/Sri H.C. Pandey Dy. Director/TM
2. “ “ Mahavir Prasad ARE/TM
- 3.” “ M.N. Siddiqui SE/Engg./TM
- 4.” “ A.N. Srivastava SRE/TM