

**Government of India
Ministry of Railways
Research, Designs & Standards Organisation
Manak Nagar, Lucknow - 226 011**

No. EL/3.2.30

Dated : 27.8.1992

**SPECIAL MAINTENANCE INSTRUCTIONS NO.
RDSO/ELRS/SMI/143**

Maintenance Schedule for Tap Changer Type No. 32

1. Object :

Schedule of maintenance issued by RDSO (EI/LOCO/MS/OOIA) Sept, 1977 does not give details of elaborate maintenance and checks to be done on tap changer. In view of problems on tap changers, study was made by RDSO and elaborate maintenance schedule covering in detail the checks and maintenance during inspection and overhauls has been prepared. The maintenance schedule is being issued as an SMI so that document can be preserved alongwith SMI's and modification sheet issued for tap changers and can be followed by Railways as a standard schedule.

2. Instructions :

The work to be carried out during each inspection and overhaul is given in the maintenance schedule enclosed.

3. Instruction Drawing :

Nil. (BBC manuals for maintenance may be referred for which references are given in the Schedule enclosed).

4. Application :

All electric locomotives fitted with No. 32 tap changers of M/s ABB

5. Agency for implementation :

All electric loco sheds.


6. Periodicity of implementation :

As per maintenance schedule enclosed.

7. Distribution :

All CEE'S of Indian Railways.

DA/Maintenance Schedule
(Elec)


(Mahendra Singh)
for Director General

MAINTENANCE SCHEDULE
INSPECTION CHART FOR TAP CHANGER

Parts to be inspected	Inspection details	IA	IB	IC	AOH	IOH
Tap changer	1) Check the condition of RGR for overhauling/continuity	X	X	X	X	X
	2) Check connection from CGRS to RGR and CGRS to A34	X	X	X	X	X
	3) Check selector oil level, if less than top up	X	X	X	-	-
	4) Check the condition of silica gel and treat if requires.	X	X	X	X	X
	5) Check the condition of RPGR & back plate for crack marks.	X	X	X	X	X
	6) Check connection from double pole bushing to CGR 1 & 3	X	X	X	X	X
	7) Cleaning of tap changer condenser bushing are chute, insulation	-	X	X	X	X
	8) Checking of mounting bolts for tighten and ensure that bolts are high tensile type	-	X	X	X	X
PHGR	9) Check for any oil leakage/air leakage	-	X	X	X	X
	i) Working of oil pump (PHGR) No air bubble in the oil flow indicator permitted	X	X	X	X	X
	ii) Overhaul PHGR, replace rubber component in a	-	-	-	X	X
	iii) Clean the element, replace if necessary	-	-	X	X	X
Tap changer	10) Check the oil leakage from tap changer	-	-	X	X	X
	11) Check drain pipe dummy if missing provide new one	-	-	X	X	X
	12) Lubricate all parts as per RDSO SMI 49	-	-	X	X	X

Parts to be inspected	Inspection details	IA	IB	IC	ID AOH	IOH
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Air Motor	13) i) Dismantle the sub assemblies of air motor	-	-	-	X	X
	ii) Replace the wornout components	-	-	-	X	X
	iii) Replace the rubber components	-	-	-	X	X
	iv) Lubricate assembly the as per RDSO SMI 49	-	-	-	X	X
	v) For the general guidelines for dismantling /ASSY replacement of components follow tap changer Manual. 91001E 91018E HAMT 30076E & Maintenance Manual	-	-	-	X	X
	vi) Control block for stroke 1.6 to 2mm as per manual AM 91001B page 24	-	-	-	X	X
	vii) Setting of lead angle as per RDSO SMI 48	-	-	-	X	X
	viii) Check gap 0.4 to 0.7mm between valve push rod and valve push rod bolt	-	-	-	X	X
	viii) Check gap 0.4 to 0.7mm between valve push rod and valve push rod bolt	-	-	-	X	X
	ix) Check gap 0.4 to 0.7mm between lever and inter wheel.	-	-	-	X	X
	x) Check/eliminate looseness of fly wheel/ wabbling of fly wheel	-	-	-	X	X

Parts to be inspected	Inspection details	IA	IB	IC	AOH	IOH
	xi) Maintain min. 0.7 gap between selector lever and fly wheel	-	-	-	X	X

	xii) Ensure tightness of bolts/fixing screws/locking of parts and assembly	-	-	-	X	X
	xiii) Check leak proofness of Air Motor assembly and air motor.	X	X	X	X	X
Selector	i) Drain the selector oil and fill the fresh oil of 48KV BDV	-	-	X	X	X
	ii) Open the selector cover and do the maintenance as per MI HAMT 30076B	-	-	-	X	X
	iii) Tighten the contact and insulating rings with torque of 2-5m.kg. and 0.5 mkg respectively.	-	-	-	X	X
	iv) Check the making and breaking angles on contacts.	-	-	-	-	X
	v) While fitting the oil ducting ensure the operation of safety valve	-	-	-	X	X
	vi) Fill heat treated silica gel in the breather.	-	-	X	X	X

Parts to be inspected	Inspection details	IA	IB	IC	AOH	IOH
	vii) Change the 'O' ring of safety valve	-	-	-	-	X
	viii) Replace roll pins	-	-	-	-	X
Load Switch/RGR/Control Panel/Manual Drive	i) Carryout the maintenance as per MI HAMT 30076Es	-	-	-	X	X
	ii) Check load switch making and breaking angles	-	-	-	-	X
	iii) Check continuity of 1 lakh ohm resistor	-	-	-	X	X
	iv) Check RGR for element breakage, cutting of mica tube gap between elements, and replace the defective components	-	-	-	X	X
	v) Open the Run Indicator Manual Drive, Lubricate Gear assembly with Bharat MP2 grease and replace wornout components.	-	-	-	X	X
	vi) Replace the taper pin/roll pins of coupling shaft of manual drive	-	-	-	-	X
	vii) Open pressure regulator, clean, set the pressure setting 6.5 kg/cm ² and lock	-	-	X	X	X

Parts to be inspected	Inspection details	IA	IB	IC	AOH	IOH
GR Contacts	1) Check the condition of arc chute of CGR 1, 2 & 3	X	X	X	X	X
	2) Measurement of contacts (new contact gap) 46-48mm condemning limit 38mm.	X	X	X	X	X
	3) Tightness of contacts fixing screw	X	X	X	X	X
	4) Condition of contacts and arc chute	X	X	X	X	X
	5) Tightness of CGR assembly, fixing screws (Check on assembly	X	X	X	X	X
	6) Condition of CGRs buck plate lever and cams	X	X	X	X	X
	7) Conditions for connection of shunts from CGR 1 & 3 to double pole bushing	-	X	X	X	X
	8) Cleaning of assembly with petrol and duster e.g. Condenser bushing, vertical insulting support and arc chutes.	-	X	X	X	X
	9) Check working of CGR's by manual operating the GR	-	-	X	X	X
	10) Tightness of connection (M1-2) (between GR- CGR- RGR of tap changer)	-	-	X	X	X

Parts to be inspected	Inspection details	IA	IB	IC	AOH	IOH
	11) Check the flow of air through 3 way of control panel	-	-	-	X	X
	12) Ensure the proper functioning of foot pedal switch/pacco switch	-	-	-	X	X

- Note :-
1. Do overhauling (POH) as per overhaul (instructions HAH) ?
 2. All the points indicates in IOH and also to be taken care off.
 3. In selector open the contact plate contact stands and replace the rubber component ('O' ring gaskets).
 4. Replace all gaskets/locking/belleville washer/roll pin.