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अनुसंधान अभिकल्प और मानक संगठन
लखनऊ - 226011
Government of India - Ministry of
Railways
Research, Designs & Standards
Organization, LUCKNOW - 226011

No.EL/3.2.13/6

Date: 17-7-2000.

Technical Circular No. ELRS/TC/0063-2000 (Rev '0')

Chief Electrical Engineer,

Central Railway, Mumbai CST- 400 001
Eastern Railway, Fairlie Place, Calcutta - 700 001
Northern Railway, Baroda House, New Delhi-110 001
Southern Railway, Park Town, Chennai -600 003
South Eastern Railway, Garden Reach, Calcutta -700 043
South Central Railway, Rail Nilayam, Secunderabad-500371
Western Railway, Churchgate, Mumbai -400 020

Sub: Comprehensive guideline for improving wheel life of WAG7 and WAP4 class of electric locomotives.

A detailed analysis on wheel wear was conducted in year 1997 by RDSO and a report no. VL.INV.02 of July'1997 was issued indicating action plan to improve the wheel life of WAG7 locomotives. The action-plan was further followed by issue of Modification Sheets/Maintenance Instruction Sheets. These were regularly followed and feedback obtained.

Railways have indicated encouraging trend in improvement of wheel life which is evident from the increase interval between two wheel profile and reduction in biased wear. The average wheel life has increased from average period of 18 months in year 1996-97 to a level of about 42-46 month in case of WAG7 locomotive and about 36 months in case of WAP class of locomotive. It has also been observed that average wheel life is affected by wheel skidding which is contributing to 15-20% loss of wheel material of wheel set.

With a view to achieve further improvement, instructions are summarised and issued in the form of Technical Circular for guidance of Railways.

1. Guideline for WAG7 locomotives:

a) Ensure implementation of following Modification Sheets -

SI No	Modification Sheet No	Subject
1.	MS/WAG7/3 dt 21-1-98	To increase longitudinal clearance between axle box and horn cheek. Minimum 2.0 mm , maximum 4.0 mm service limit 6.0 mm

2.	MS/WAG7/4 dt 20-1-98	To increase clearance in centre pivot from 246 + .046/0.0 mm to 247+.05/0.0 mm
3.	MS/WAG7/5 dt 21-1-98	Lubrication arrangement in the pins and bushes for equaliser and compensating beam for WAG7 locomotive.
4.	MS/WAG7/5 dt 21-1-98	Removal of side stops from existing 4 nos per bogie to 2 nos per bogie.
5.	ELRS/MS/0281 Rev '0' - 2000 dt 30-3-2000	Side stopper arrangement in lieu of tie bar in WAG7 locomotive.

- b) Do not wedge Q51 relay to prevent auto regression due to wheel slip - The setting of wheel slip relay QD should be increased from 125 amp to 150 amp and ensure working of ZQWC circuit.
- c) Follow maintenance instruction for high adhesion bogie as per RDSO's VL.MI-01/96 of Nov'1996.

2. Guideline for WAP1/4 locomotive -

- a) Maintain clearances as per Technical Circular No. ELRS/TC/0059-2000/Rev '0' dt 6-3-2000.
- b) Maintain longitudinal clearances as follows -
Minimum = .35 mm, max = 1.95 mm, service limit = 3.5 mm
- c) Ensure the correct size of horizontal and vertical liner in WAP1/4 locomotive.
- d) Use sleeve as per RDSO's Drg No. SKEL-4549 Alt '0' to arrest problem of brake block jamming. RDSO's Modification Sheet No. ELRS/MS/0285 Rev '0' - 2000 dt 31-5-2000 may also be referred to.

3. Guideline for preventing wheel skidding -

- a) Instructions contained in SMI 197 should be followed meticulously.
- b) C3W should be tested on specified test bench.
- c) Ensure proper working of C2, F1 selector valve.
- d) Counsel the driver to ensure proper brake power of the load.

4. Guideline common for WAG7 & WAP1/4 locomotives--

- a) Checking the condition of all pins and bushes of brake rigging at the time of AOH/IOH/POH and ensure implementation of following Technical Circulars.

Sl No	TC No	Subject
1.	21 dt 19-6-99	Replacement of critical sub-assemblies in every POH/2 nd POH of AC electric locomotives.
2.	29 dt 31-8-99	Replacement of critical components in every IOH of AC electric locomotives.
3.	31 dt 28-9-98	Replacement of critical components in AOH of every AC electric locomotives.

- b) Ensure correct profile of brake shoe.
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- c) Ensure correct fitment of brake block - The taper of 1 in 20 provided in brake block should match with the taper of the wheel. Abnormal wheel wear has been observed where brake blocks were fitted inversely.
- d) Replace the wheel set which is wearing very fast instead of profiling the complete bogie/locomotive.
- e) The initial cut should not be excessive while doing profiling on pit wheel lathe.
- f) Whenever loco is released after schedule the locomotive should be turned on turn table.
- g) The trueness of the template used during the profiling in the shed must be checked periodically after at least 6 months.
- h) Use the correct electrode and follow the welding procedure for welding liner as per Technical Circular No. 0045/Rev '2' dt 21-6-2000.
- i) Ensure implementation of SMI No. RDSO/ELRS/SMI/0214 - 99 Rev '0' dt 25-10-99 for standardisation of gauge and instructions for measuring loco wheel diameter.

REFERENCES:

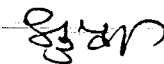
SN	Subject	Reference
1.	Report on improvement in electric loco wheel life	CEE/SE Rly's DO No. CEE/RS/104 dt 16-2-99
2.	Biased wear in loco no. 22233 and 22246	CELE/N Rly's DO. No. 181-Elect/TRS/7 dt 10-2-99.
3.	Biased wear on BG coaching wheels	A study report by P. Thankamany CME/S. Rly Jan'99.
4.	Investigation into the problem of wheel wear on high adhesion bogie fitted on WAG7 locomotive.	RDSO's Report No. VL.INV.02 July 1997.
5.	Improvement in wheel life of WAG7 loco	CELE/C. Rly's DO No. L.253.AC.79 dt 22-6-99.

DA: Nil

(A.K. Gupta)
for Director General/Elect

Copy to:

1. Secretary (Electrical), Railway Board, Rail Bhawan, New Delhi-110001
(Kind Attn: Shri I.C. Sharma, EDEE/RS) for information please. This is in reference to letter no. 98/Elec(TRS)/440/5 dt 2-8-99.
2. As per Standard Mailing List No. EL/M/0028 Ver '0'
TC/63-2000 (Rev. '0')


(A.K. Gupta)
for Director General/Elect