सत्यमेव जयते

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Government of India - Ministry of Railways
Research, Designs & Standards Organization, LUCKNOW - 226011

No. EL/3.2.119/3-phase (TBU) Date 31.05.2018

Chief Electrical Engineer,	**मुख्य विद्युत अभियंता**
1. Central Railway, Mumbai, CST-400 001. 2. East Central Railway, Hazipur-844101. 3. East Coast Railway, Chandrashekharpur, Bhubaneshwar-751016. 4. Eastern Railway, Fairlie Place, Calcutta-700001. 5. North Central Railway, Block-A, Subedarganj, Allahabad- 211033. 6. Northern Railway, Baroda House, New Delhi-110001. 7. South Central Railway, Secunderabad-500 071. 8. South East Central Railway, Bilaspur-495004. 9. South Eastern Railway, Garden Reach, Calcutta-700 043. 10. Southern Railway, Park Town, Chennai-600 003. 11. West Central Railway, Jabalpur-482001. 12. Western Railway, Churchgate, Mumbai-400 020 13. Chittaranjan Locomotive Works, Chittaranjan – 713 331	1. मध्य रेलवे, मुंबई सी एस टी - 400001 2. पूर्व मध्य रेलवे, हाजीपुर - 844101 3. पूर्व तटीय रेलवे, चन्द्रशेखरपुर, भुवनेश्वर - 751023 4. पूर्व रेलवे, फेयरली पैलेस-700001 5. उत्तर मध्य रेलवे, ब्लाक ए-2, सूबेदारगंज, इलाहाबाद - 211033 6. उत्तर रेलवे, बड़ौदा हाउस, नई दिल्ली -110001 7. दक्षिण मध्य रेलवे रेल निलयम, सिकंदराबाद - 500371 8. दक्षिण पूर्व मध्य रेलवे, बिलासपुर - 495004 9. दक्षिण पूर्व रेलवे, गार्डनरीच, कोलकता -700043 10. दक्षिण रेलवे, पार्क टाउन, चेन्नई -600003 11. पश्चिम मध्य रेलवे, जबलपुर-482001 12. पश्चिम रेलवे, चर्चगेट, मुंबई- 400020 13. चित्तरंजन रेल इंजन कारखाना, चित्तरंजन - 713331

SPECIAL MAINTENANCE INSTRUCTION No. RDSO/2007/EL/SMI/ 0251, Rev. '2'

1.0 **Title**: Maintenance instructions for Brake Hangers for WAG9/WAG9H Electric Locomotives fitted with TBU/PBU brake rigging arrangement.

2.0 **Background**:

2.1 To address the issue of breakage of brake lever in WAG9/9H Electric Locomotives SMI No. 251 Rev. 0, MS No. 396 Rev. 0 and SMI No. 251 Rev. 1 were issued. However for strengthening of brake lever and its interchangeability between M/s Knorr & M/s Faiveley makes a new design has been developed. There after detailed FEA of brake lever was done which indicated that factor of safety increased from 0.47 to 1.28 with new design. In this regard modification sheet no. RDSO/2016/EL/MS/0455 Rev. '0' dated 22.12.16 has been issued.

2.2 During 38th MSG meeting it was decided that TBU/PBU will be replaced with conventional brake rigging arrangement in WAG9/9H locomotives. This work will be done by CLW in new loco and by POH shop in existing loco. In this regard speed certificate no. WAG9.11 dated 27.07.2017 for WAG9HC class

of locomotives fitted with conventional brake rigging arrangement has been issued.

2.3 This revision aims to update the SMI to incorporate the instructions issued subsequent.

3.0 **Instructions:**

3.1 However as per the decision during 38th MSG conventional brake rigging has to be provided by Railways during POH, but till the time conversion of brake rigging is completed in all existing WAG9/9H Electric Locomotives fitted with TBU/PBU, brake hanger should be provided as per RDSO drawing nos. SKEL-5011, SKEL-5012, SKEL-5013 & SKEL-5014 whenever replacement of brake hanger is required on account of scheduled overhauling or repair.

3.2 Sheds to provide double safety sling in cross-wise arrangement as per CLW's drawing no. 1209-01.416-063 to prevent falling of brake unit on line. Modified safety slings should be of 8mm dia., 1100 mm long as per IS 2762:1982, 6x7 construction with steel core, double crimped at both ends and fastened with 16x70 mm hex. head screw (property class 8.8) with nyloc nut and washers on both levers in the existing hole. This has to be ensured by the shed to prevent falling of Brake hanger assembly on line.

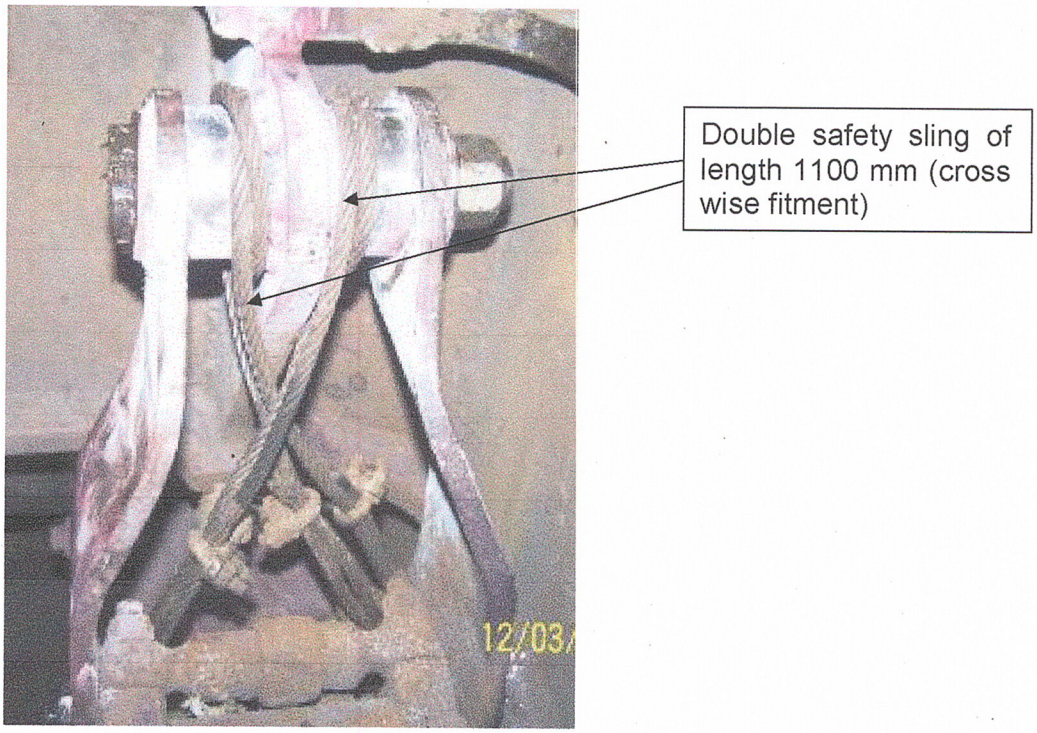


FIG 1: SLING ARRANGEMENT

3.3 Dye Penetrant Test (DPT) to be done in sheds at the welding portion of brake hangers during MOH/Lifting of locomotive to detect any crack.

3.4 Ensure provision of FS lock nuts & sealing compound for Brake hanger top suspension threaded bolt and Brake rod connecting pin.

3.5 Ensure that the slit in the brake equipment should be in arc of 717 mm radius as given below in fig 2.

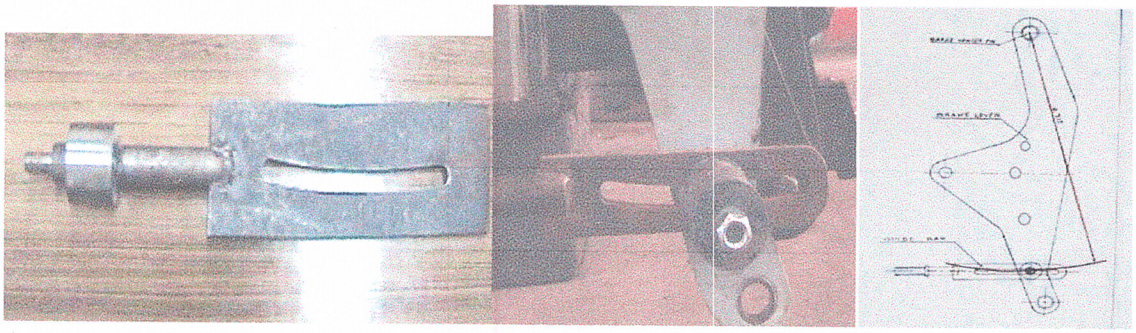


FIG 2: BRAKE EQUIPMENT WITH CURVED SLIT

3.6 Ensure availability of slack adjuster on all units. No loco should be allowed to work without slack adjusters.

3.7 Parallelism of Brake Hangers should be checked using go/no-go Gauge as shown in Fig. 3. This should be done once as a special drive and subsequently during IC.

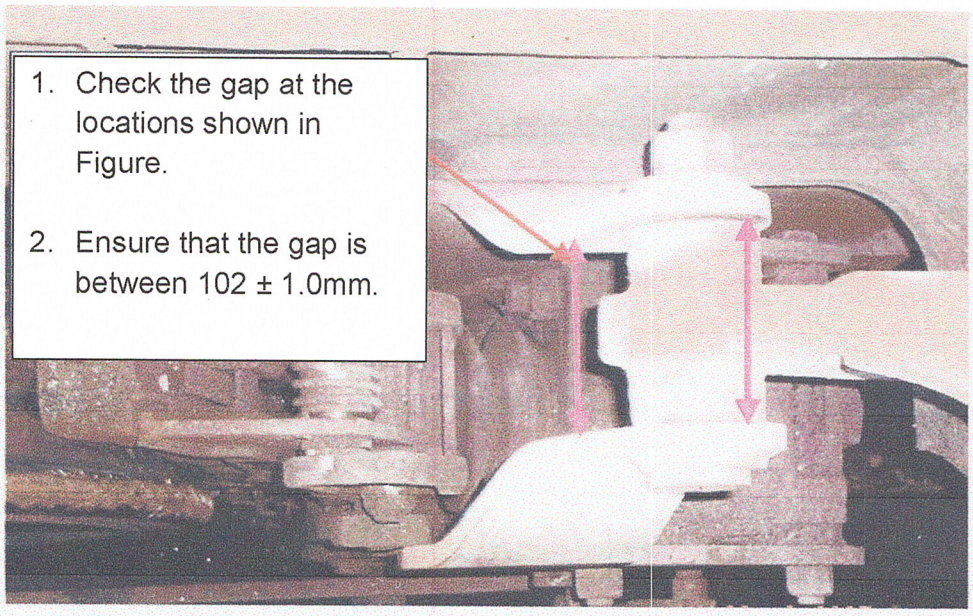


FIG 3: CHECKING FOR PARALLELISM WITHOUT REMOVING BRAKE HANGERS FROM BOGIE

3.8 Parallelism and perpendicularity of brake hangers should be ensured at the time of IOH/POH or replacement of brake hangers on a test jig (To be fabricated as per OEM). The instructions are enclosed as Annexure – A.

3.9 Clearance of 13 mm between bogie frame and brake hanger should be ensured.

3.10 Brake hangers of different makes and design should not be provided in the same assembly.

3.11 In case of failure of brake hanger, both the brake hangers of the assembly should be replaced.

3.12 The locomotives provided with unmodified brake hangers should not be used for passenger services.

3.13 Ensure provision of metallic bush in brake adjusting assembly instead of nylon 6 grade bush.

3.14 Ensure Replacement of 20mm bush during every TOH.

3.15 Check the condition of 20mm length bush and pin of the pivot tube during scheduled/unscheduled lifting of locomotive.

4.0 **Application to**: Brake Arrangement for WAG9/9H Electric locomotives.

5.0 **Agency of Implementation**: Electric Loco sheds and POH workshops.

6.0 **Periodicity of Implementation**: As mentioned above.

7.0 **References:**

(i) SMI No. RDSO/2007/EL/SMI/ 0251, Rev. ('0') of dated 01.01.2008

(ii) SMI No. RDSO/2007/EL/SMI/0251 Rev. '01', Dated 16.8.2016

(iii) MS No. RDSO/2016/EL/MS/0455 Rev. '0'

(iv) Railway board letter no. 2017/Elect(TRS)/138/5 dated 31.08.2017

(v) Motive Power Directorate/RDSO speed certificate no. WAG9.11 dated 27.07.2017

(vi) MS No. RDSO/2011/EL/MS/0369 Rev. 0

31/5/18

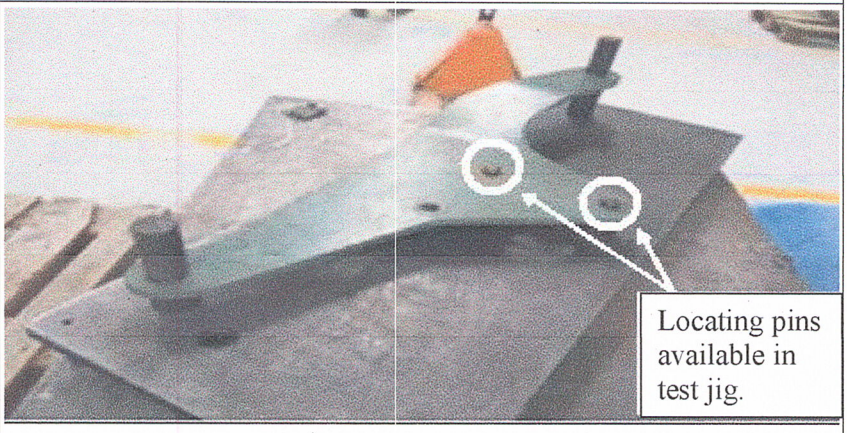
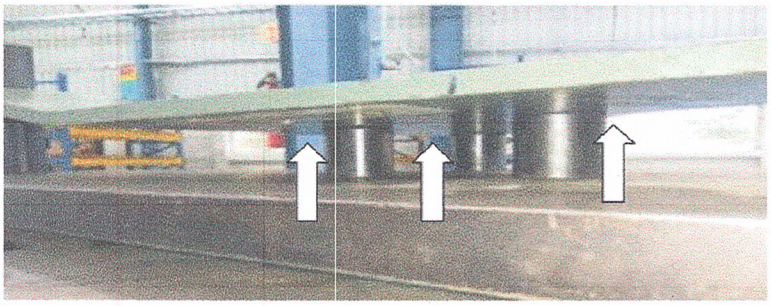
(Pratibha Gupta)
for Director General Electrical

Encl: CLW's drawing no. 1209-01.416-063 for modified (double) safety sling

Copy to: As per Standard mailing list no. EL/M/0019 Version'3'.

Annexure-A

PROCEDURE TO CHECK PARALLELISM AND PERPENDICULARITY OF BRAKE LEVERS

S. No.	Method	Figure
1.	Place the Brake Lever on test jig as shown in picture. Ensure brake lever is located properly in pins	
2.	Ensure brake lever is properly seated in jig.	
3.	Place two locating pins (shown in picture). Ensure locating pins are properly seated. If locating pins are properly seated, gauge is answered and brake lever is meeting the requirement of parallelism and perpendicularity.