

No. 2016/M(N)/951/28 (E-3323079)

Date- 15.05.2025

**The Principal Chief Mechanical Engineers
All Zonal Railways.**

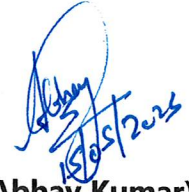
Sub: Review of Codal Life of BRN Variant Wagons
Ref: RDSO letter MW/BRNA dated 24.12.2024

In view of the several cases of train partings in BRN variant wagons, RDSO was advised to review the Codal life and issue suitable instructions in respect of BRN variant wagons.

Based on RDSO's recommendations vide letter under reference, it has been decided that all BRN, BRNA, and BRNAHS wagons which have completed 20 years of age should be thoroughly examined by the workshop during POH. Such wagons, if meeting any of the following criteria, should be processed for condemnation.

1. **Excessive under-frame sagging:** Under frame has lost the specified camber of +13 mm and the sagging beyond -30 mm, and is difficult to restore the specified camber as per RDSO issued guidelines
2. **Excessive CBC height:** CBC height of more than 1135 mm and cannot be restored as per RDSO issued guidelines
3. **Flaw in end centre sill and body bolster joints:** Fitted with non-standard knee joints to connect the end centre sill with the body bolster and has not been repaired as per the RDSO instructions. Internal cracks in the connecting longitudinal knees, centre sill, or body bolster and cannot be repaired properly.
4. **Twisted under frame.**
5. **Excessive corrosion in under frame.**
6. **Cracks in the central girder, longitudes, cross bar, and sole bar:** Which cannot be repaired through RDSO issued repair procedures.

This issue with the approval of Board (MT&RS).



(Abhay Kumar)

Director ME (Freight)

Railway Board

Email: dmef@rb.railnet.gov.in

Copy to:

1. **All CWMs wagon repair workshop**— for kind information and necessary action
2. **PED/RS/RDSO** – for kind information



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No. MW/BRNA

Date: 24.12.2024

EDME (Freight)

Railway Board

New Delhi-110 001

Sub: Review of Codal Life of BRN Variant Wagons, Case of Centre Sill Parting from Bolster.

- Ref.:** (i) Railway Board letter no. 2018/M(N)/951/6(E-3329436) dated 26.11.2024
(ii) Railway Board's letter No.2016/M(N)/951/28 (E-3323079) dated 27.03.2024
(iii) Jamalpur Workshop letter no. F/Condemnation Cell(W)/0FF/07 dated 16.10.2024
(iv) JHSW'S letter no. RS120/BOXNHL/BCNHL/2024 dated 10.04.2024
(v) RDSO Letters no. MW/BRNA dated 01.08.2012, 06.09.2024 & 11.11.2024 regarding corrective and preventive action for knee joints in BRNAHS Wagons.
(vi) RDSO technical pamphlet no. G - 107 (Procedure for Recambering of Bogie Rail Wagon type BRN/BRNA/BRNAHS
(vii) RDSO letters no. BRN dated 03.09.2024 and BRNA dated 27.02.2024
(viii) Railway Board letter no. 2012/M(N)/951/10 dated 17.05.2016

Vide reference (i) above, the Railway Board has directed RDSO to review the codal life of BRNs and its variant wagons. For transportation of steel coils, special wagons such as BFNS 22.9/FLATCOIL3, BFNSM 22.9/BFNSM1 and BFNV have been designed. These wagons have trapezoidal shape groove to accommodate the coils with under frame specifically designed to bear the point load of steel coils. However, due to operational requirements, other wagons, including BRNs and its variants, are being extensively used to carry steel coils.

BRN, BRNA and BRNAHS wagons have been designed to carry uniformly distributed load for the transportation of flat consignments, whereas the loading of steel coils imparts point load on the under frame structure of the wagons. At times impact load during loading/unloading of steel coils is also encountered on the under frame structures. Zonal Railways have been consistently reporting failures in these wagons such as excessive sagging in the under-frame, sole bar & centre sill separation from the bolster etc. SECR, CR, NFR and other Zonal Railways have reported cases of train parting owing to above defects. The reported causes include improper knee joint, inadequate welding of knee and gusset plate, among others. Details are attached at **Annexure 1**.

In response to above, RDSO team visited different workshops for technical study of the reported failures. Based on the findings, guidelines for repair, corrective & preventive actions, and recommendations for condemnation (beyond repair wagons) were issued from time to time vide ref. (v), (vi), (vii) & (viii) above.

Vide this office letter no. MW/BRN dated 10/12/2022, RDSO requested workshops (Jhansi, Amritsar, Kharagpur, Raipur, Jagadhari, Jamalpur, and Rynapadu) to provide details of defects found in BRN, BRNA, and BRN22.9 wagons. The defect data for 2700 nos. of BRN and its variant wagons have been collected from these workshops. Currently, 7100 nos. wagons are in operation on Indian Railways as per FMM portal on date.

The following table summarizes the reported defects in various BRN type wagons:

SN	Defect noticed	Type of Wagon	Age profile of defective wagons			Remarks
			Age 5 to 15 years	Age 15 to 25 years	Age 25 to 35 years	
1.	Excessive Sagging in U/F and sole bar / Buffer height excess	BRN	01	12	17	--
		BRNA	2	312	1	--
		BRNAHS	--	427	--	--
2.	Deformation and Twist in underframe	BRN	--	--	1	--
		BRNA	--	1	--	--
		BRNAHS	--	--	--	--
3.	Excessive Corrosion	BRN	--	--	1	--
		BRNA	--	--	--	--
		BRNAHS	--	--	--	--
4.	Crack in Knee joint/ Train Parting	BRN	--	--	1	--
		BRNA	--	--	--	--
		BRNAHS	--	--	--	--
5.	Crack in central girder, longitudes, cross bar and sole bar	BRN	--	1	--	--
		BRNA	--	1	--	--
		BRNAHS	--	1	1	--
6.	Non-standard Knee Joint	BRN	--	--	--	--
		BRNA	--	--	--	--
		BRNAHS	--	521	--	--
7.	Floor defects / Wall defects/ Misc. work	BRN	1	80	--	--
		BRNA	3	199	--	--
		BRNAHS	--	73	--	--
8.	Pillar defect/ End wall	BRN	1	1	--	--
		BRNA	--	117	--	--
		BRNAHS	--	4	--	--
		BRNAHS	--	--	--	--
9.	Minor defect found	BRN	13	141	121	--
		BRNA	--	380	11	--
		BRNAHS	--	336	--	--

Proposal for Revised Codal Life:

Based on the analysis of the above defect data and related issues, it is proposed that condition of BRN, BRNA & BRNAHS wagons be reviewed by the workshop during the POH and wagons having completed 20 years of age and meeting any of the following criteria be condemned on age cum condition criteria on case to case basis:

1. **Excessive under frame sagging:** Under frame has lost the specified camber of +13 mm and the sagging beyond -30 mm and is difficult to restore the specified camber as per RDSO issued guidelines (ref vi)
2. **Excessive CBC height:** CBC height of more than 1135 mm and cannot be restored as per RDSO issued guidelines (ref vi)
3. **Flaw in end center sill and body bolster joints:** Fitted with non-standard knee joints to connect the end centre sill with the body bolster and has not been repaired as per the RDSO instructions vide ref. (v) above. Internal cracks in the connecting longitudinal knees, center sill, or body bolster and cannot be repaired properly.

4. **Twisted under frame.**
5. **Excessive corrosion in under frame.**
6. **Cracks in the central girder, longitudes, cross bar, and sole bar:** Which cannot be repaired through RDSO issued repair procedures (ref vii).





This has approval of the competent authority.

Encl: As above

Digitally Signed by Sanjay
Kumar

(Sanjay Kumar)
Date: 24-12-2024 19:00:34
Reason: Approved
Director Stds./Wagon

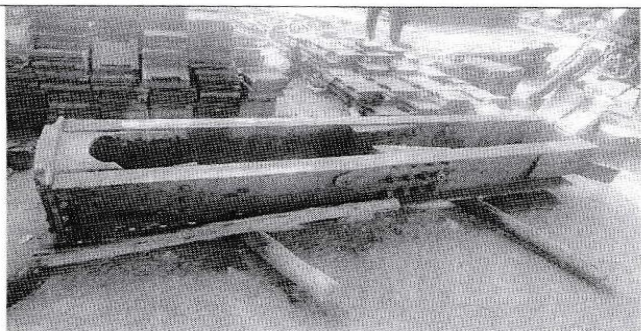
Sub: Train Parting issues in Wagons

S.No.	<u>WAGON Detail</u>	<u>Defects observed by RDSO</u>
1.	<p>SER 55079160537</p> <p>Train parting in SBC Division on 24.02.2022 due to working out of Bolster Centre Pressing of BRN wagon.</p> <p>(i) South Western Railway letter no. 2012/M (N)/951/35 dated 11.03.2022.</p> <p>(ii)SECR letter no. Mech./HQ/008/008/306 dated 02.03.2022.</p>	<p>SECR informed a train parting of train no. PLMD (Loaded BRN wagons) of South Western Railway due to broken bolster centre pressing of wagon no. SER 55079160537. During joint investigation, it was found that the train parting took place due to leading end bolster centre pressing having old crack to the extent of about 80% on the inner side and Bolster centre pressing was found in completely sheared condition from centre sill.</p>
		
		

S.No.	WAGON Detail	Defects observed by RDSO
02	<p>Head stock worked out in BRNAHS Wagon at Bhopal Division.</p> <p>Wagon No.- ECR 56100858324</p> <p>Wagon Type-BRNAHS</p> <p>MFD. Year – 2008</p> <p>Manufacturer:- TEXMACO</p>	<p>One Longitude worked out from Body Bolster and other Longitude broken found in two pieces. One piece found intact with Body Bolster and other piece workout with CBC assembly. The old crack in centre sill longitude not detected during examination. The preventive measure issued by RDSO vide letter no. MW/BRNA dated 01.08.2012 was not followed during POH. The weld quality of Knee with Body Bolster was found poor (improper fusion of parent metals)</p>
		
		

S.No.	Train Detail	Defects observed
03	<p>Train no. BiZ (BAIHATA/ Rangiya Div/NF), Load-43 ST+BRN/L+AMT, BPC No.50000703707 DSEY 09/10/24, E-E Wagon No.SER BRN/L 55079460194 Manufacturing dt 17.4.1994. Manufacturer - BHARATMK. POH- KGPW 01/09/20, ROH - BIA 20/02/24, R/Dt- 30/04/25</p>	<p>Bottom gusset plate has been broken due to welding failure and knee is completely broken along the bending edge, while rivets with knee are in well intact position. It seems old crack was already existing there and later it propagated to new fresh crack, which is clearly visible. After breakage of bolster end longitudes knee and gusset plate welding failure, the portion of End longitudes (End centre sill) between head stock and body bolster pulled towards the engine end damaging head stocks and all brake gear components installed in affected end</p>
		
		

S.No.	Train Detail	Defects observed
04	<p>Train no.: CON-KAV, ex-TATA (Rear rake) Loco no.-43499 BPC-50000656648, TATA, 05.05.24, INTENSIVE (93.10%) Culprit wagon details Wagon no.-SWR 56150955653 BRNAHS (R-09/24) Manufacturing date: 22.05.2009 (M/s Burn Standard Co. Ltd.) 1st POH- 03.08.2015 (RWS) 2nd POH- 26.02.2020 (RWS) Last ROH-22.11.2023 (GIM)</p>	<p>Following observations have been made by checking culprit wagon at site by Workshop supervisors:• Centre sill assembly along with CBC items was found work out from Bolster joint.</p> <ul style="list-style-type: none"> • All CBC items were found in good condition. • Hand Brake was found in applied condition and J-bracket of hand brake was in broken condition. • This wagon was attached in a rake which was in long Haul operation without DPWCS system



CBC assembly already removed by gas cut at Sick line of Raigarh. Back stop rivets found intact. Striker casting not affected.



Firm name: M/s B.S.Co. LTD Howrah
Build make: 2009



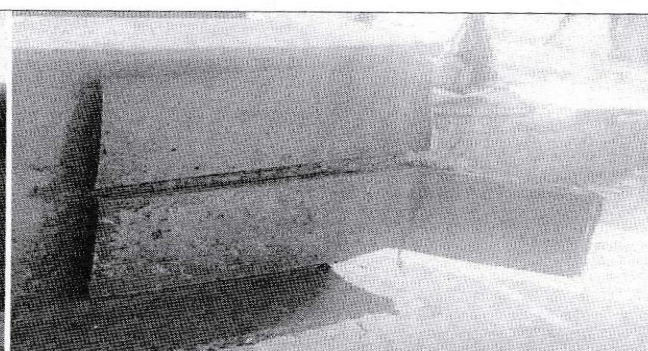
Inside knee flange edges weld with Web of Bolster also plug welded. Plug weld found rusty. Hence plug weld already failed.



Affected BRNAHS Wagon no. 56150955653 at Raigarh (Bilaspur Division-South East Central Railway)



Outer knee found intact with End longitude



Outer knee found intact with other End longitude