



**Government of India
Ministry of Railways**

**CHECKSHEETS
FOR
BOGIE RAIL WAGON (91.6 Tonnes)
TYPE – BRN 22.9 WITH BMBS
BROAD GAUGE
(1676 mm)**

S.No.	Month & Year of issue	Revision / Amendment	Page No.	Reason for Amendment
1.	January 2012	-	-	First issue
2.	February 2015	Amendment-1	3	
3.	July 2015	Corrigendum-1	2	
4.	January 2018	Amendment-2	15	Conversion of Fixed End Arrangement to Foldable Bulkhead
5.	October 2020	Amendment-3	16	Dimensions of S.No. (i),(iii),(iv) and (v) are revised.

ISSUED BY

**RESEARCH DESIGNS AND STANDARDS ORGANISATION
MINISTRY OF RAILWAYS
LUCKNOW-226 011**

January 2012

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CORRIGENDUM No. 1 OF AMENDMENT No. 1 OF February 2015, APPLICABLE TO CHECK SHEET NO. WD-CS-01-BRN22.9-BMBS-DESIGN-C- 2011 FOR BOGIE RAIL WAGON TYPE – ‘BRN22.9 WITH BMBS’

In the **proforma for single wagon Air brake test with BMBS Twin pipe**, the value of specified in Sr.No.12.3, has been corrected and shall be read as “95.5 +1/-0” mm instead of “90.5 +1/-0”.

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AMENDMENT No. 1 OF February,2015 APPLICABLE TO CHECK SHEET NO. WD-CS-01-BRN22.9-BMBS-DESIGN-C- 2011 FOR BOGIE RAIL WAGON TYPE – ‘BRN22.9 WITH BMBS’

In the **proforma for single wagon Air brake test with BMBS Twin pipe**, Sr.No.12.3 to 12.6 has been added and shall be read as follows:-

S.No.	Check	Specified	Actual
12.3	APM arm movement from fully retracted position to Bogie side frame top.	90.5 +1/-0 mm	
12.4	Brake cylinder pressure with unrestricted movement of lever arm of APM Device.	Brake cylinder pressure 2.2± 0.25 kg/sq.cm.	
12.5	Restrict the movement of lever arm of APM Device with 16.5 mm block placed on bogie frame.	Brake cylinder pressure 3.8 ±0.1kg/cm ²	
12.6	Restrict the movement of lever arm of APM Device with 14.5 mm block placed on bogie frame	Brake cylinder pressure 2.2±0.25 kg/sq.cm.	

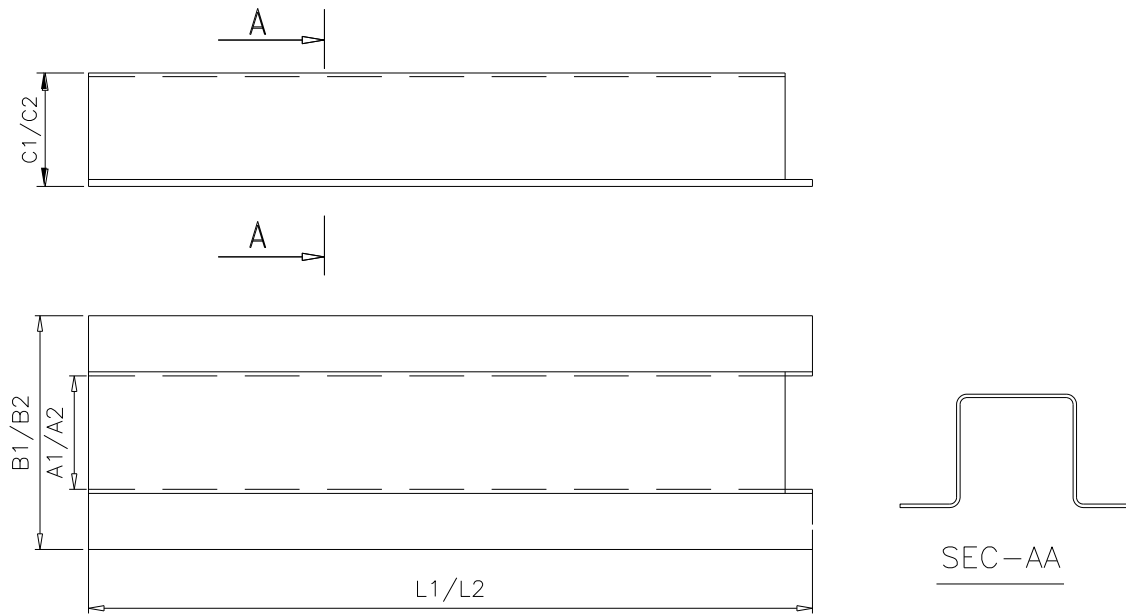
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CONTENTS

Sr. No.	Description	Page No
1.	Centre Sill	3
2.	Underframe	4
3.	Body End	5
4.	Central Girder	6
5.	Final Assembly	7
6.	BMBS Clearance in assembled wagon(Brake Released)	8
7.	Final Wagon	9
8.	Air Brake Test For Single Wagon With Single Pipe For BRN 22.9(MBS) Wagons	11

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CENTRE SILL (HAT SECTION)



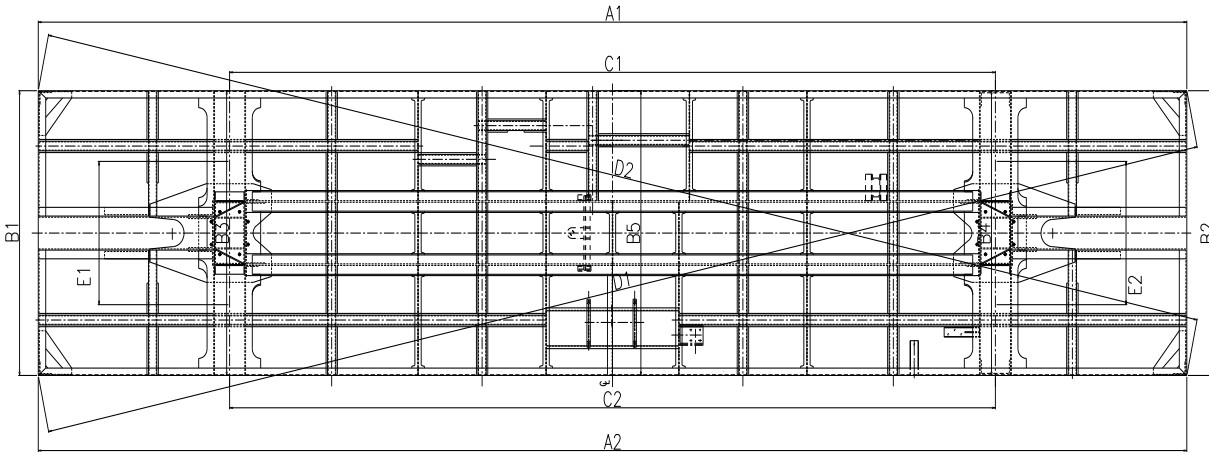
CENTRE SILL NO:			Date:			
SL. NO.	STAGE	Works Inspection	RDSO Inspection		Remarks	
1.	Fitment of center Sill End (CRF section) with Bolster					
1.1	Welding					
1.2	Dressing					
2.0	Fabrication of Centre Sill					
2.1	Fitment of all components					
2.2	Welding					
2.3	Dressing					
2.4	Riveting					
3.	Dimensions		As follows			
	LOCATION		Nominal Dimensions & Allowable Deviation	Actual Dimension		Remarks
				Works Inspection	RDSO Inspection	
i.	Overall Length	L1/L2	2095, +3,-1			
ii.	Inside Width	A1/A2	327, +3, -0			
iii.	Overall Width	B1/B2	674, +3, -3			
iv.	Height of Centre Sill	C1/C2	327, +1.5, -1.5			
v.	Draft Gear Pocket	X	625.5, +0, -1.5			
		Y	327, +3, -0			
vi.	Camber		+/-3.5			
vii.	Bow		+/-3.5			

All dimensions are in mm

Works Inspector		BRN Inspector	
Signature:		Signature:	
Name:		Name:	
Designation:		Designation:	
Date:		Date:	

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UNDERFRAME



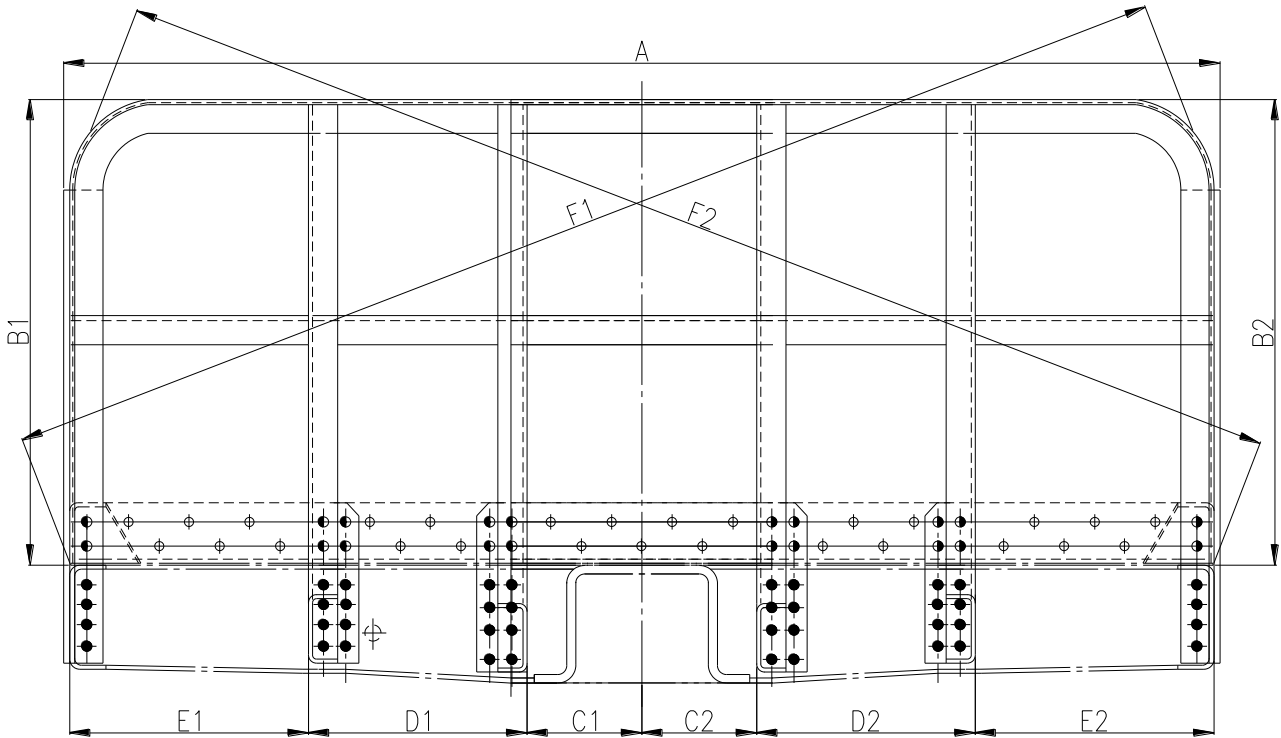
UNDERFRAME NO:		Date:					
SL. NO.	STAGE	Works Inspection		BRN Inspection	REMARKS		
1.	Fitment of all components						
2.	Welding						
3.	Dressing						
4.	Dimensions	As follows					
	LOCATION		Nominal Dimensions & Allowable Deviation	Actual Dimension		Remarks	
				Works Inspection	BRN Inspection		
i.	Length over head stock	A1	13716, +7,-3				
		A2					
ii.	Width over solebar	B1	2930±3				
		B2					
		B3					
		B4					
		B5					
iii.	Distance between bolster bogie centre	C1	9144, +5,-2				
		C2					
iv)	Distance between side bearers centre	E1	1474±2				
		E2					
v)	Diagonal difference over headstock	D1	≤ 5				
		D2					
vi)	Camber		13±2			The camber value 13±2mm shall be achieved in final wagon	

All dimensions are in mm

Works Inspector		BRN Inspector	
Signature:		Signature:	
Name:		Name:	
Designation:		Designation:	
Date:		Date:	

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BODY END



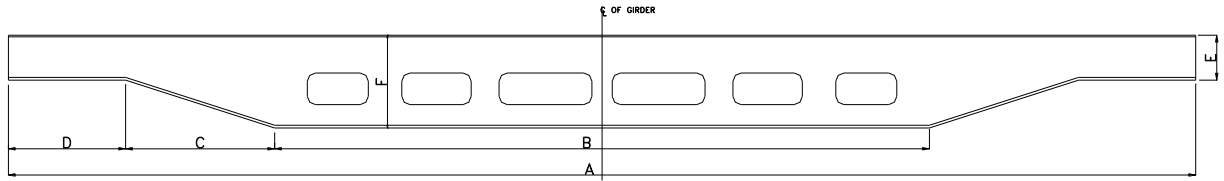
BODY END NO:						
Date:						
SL. NO.	STAGE	Works Inspection	BRN Inspection	Remarks		
1.	Fitment of all components					
2.	Welding					
3.	Dressing					
4.	Dimensions	As follows				
	LOCATION		Nominal Dimensions & Allowable Deviation	Actual Dimension		Remarks
				Works Inspection	BRN Inspection	
i.	Width over corner bend angle	A	2930± 3			
ii.	End Wall overall height	B1	1147± 3			
		B2				
iii.	Distance between center to inner stanchion	C1	290± 1.0			
		C2				
iv.	Distance between inner to outer stanchion	D1	623± 1.5			
		D2				
v.	Distance between corner angle to outer stanchion	E1	552± 1.5			
		E2				
vi.		F1,F2	≤5			

All dimensions are in mm

Works Inspector		BRN Inspector	
Signature:		Signature:	
Name:		Name:	
Designation:		Designation:	
Date:		Date:	

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CENTRAL GIRDER



CENTRAL GIRDER NO.

DATE.

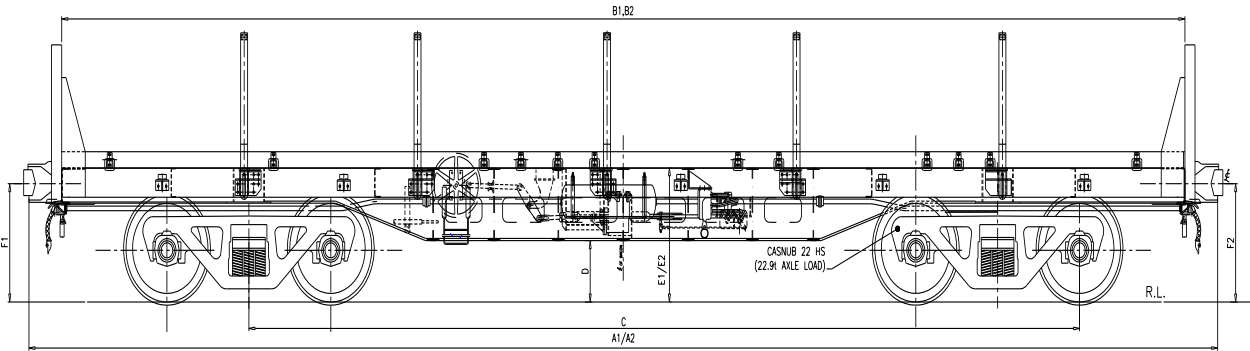
SL. NO.	STAGE		REMARKS		
1.	Fitment of all component				
2.	Welding				
3.	Dressing				
4.	Dimensions		As follows		
		NOMINAL DIMENSION	ALLOWABLE DEVIATION	ACTUAL DIMENSION	REMARKS
i.	A	8762	+ 5 - 2		
ii.	B	4832	+ 3 - 3		
iii.	C	1100	+ 2 - 2		
iv	D	865	+ 1 - 1		
v.	E	327	+ 1 - 1		
vi.	F	675	+ 3 - 3		

All dimension are in m.m

Works Inspector		BRN Inspector	
Signature:		Signature:	
Name:		Name:	
Designation:		Designation:	
Date:		Date:	

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FINAL ASSEMBLY



Wagon No.:			U/F No.:			
Date:						
SL. NO	STAGE	Works Inspection	BRN Inspection	Remarks		
1.	Fitment of all components					
2.	Huck Bolting					
3.	Welding					
4.	Operation of Couplers					
5.	Under gear Examination					
6.	Brake test i) Air brake ii) Hand brake					
7.	Painting					
8.	Lettering					
9.	Dimensions					
As follows						
	LOCATION		Nominal Dimensions & Allowable Deviation	Actual Dimension		Remarks
				Works Inspection	BRN Inspection	
i.	Length over coupler face	A1	14645, +7, -3			
		A2				
ii.	Length over Head Stock	B1	13716, +7, -3			
		B2				
iii	Distance between centre pivots pin	C	9144, +5, -2			
iv	Minimum height of U/F from R.L.	D	594, +1, -1			
v.	Height of top of u/f from R.L. at centre	E1	1269,+3, -3			
		E2				
vi.	Coupler height from R.L	F1	1105, +0, -5			
		F2				
vii	Side bearer clearance		Nil			

All dimensions are in mm

Works Inspector		BRN Inspector	
Signature:		Signature:	
Name:		Name:	
Designation:		Designation:	
		Date:	

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BMBS CLEARANCE IN ASSEMBLED CASNUB BOGIE
(BRAKE IN RELEASED CONDITION)
 (Reference BRN Drawing No.-WD-08093-S-02)

Wagon No.
 Bogie No.(1)

Sr. No.	Description	Minimum value (mm)	Measured value.	
			L	R
1.	Clearance between push rod and spring plank.	10	L	
			R	
2.	Total clearance between bell crank levers and wheel face (i.e. Total of left & right side).	80 Min.20(if measured on any one side)	L	
			R	
			Total	
3.	Total clearance(i.e. sum of clearances) between 3.1 Clearance between spring plank & primary brake beam. 3.2 Clearance between spring plank & secondary brake beam.	77	L	
			R	
			Total	
4.	Clearance between brake cylinder & brake beam.	30		

Bogie No.(2)

Sr. No.	Description	Minimum value (mm)	Measured value.	
			L	R
1.	Clearance between push rod and spring plank.	10	L	
			R	
2.	Total clearance between bell crank levers and wheel face (i.e. Total of left & right side).	80 Min.20(if measured on any one side)	L	
			R	
			Total	
3.	Total clearance(i.e. sum of clearances) between 3.1 Clearance between spring plank & primary brake beam. 3.2 Clearance between spring plank & secondary brake beam.	77	L	
			R	
			Total	
4.	Clearance between brake cylinder & brake beam.	30		

Works Inspector		BRN Inspector	
Signature:		Signature:	
Name:		Name:	
Designation:		Designation:	
Date:		Date:	

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FINAL WAGON

BRN

Check Sheet for BRN 22.9 type of Wagon
STR – WD – 01 – BRN 22.9-MBS-2009.

1.	Wagon No.		2.	Date of offer	
3.	Under frame No.		4.	Name of the Wagon Manufacturer:	
5.	Contract/P.O. placed by		6.	Contract/P.O. No. and date and D.P. (Upto)	
7.	Running Gear				
a)	Bearing Make			Serial Nos.	
b)	Wheel Make			Serial Nos.	
c)	Axle Make			Serial Nos.	
d)	Bogie Make & Sr. Nos.		e)	Air Brake Make (BMBS)	
f)	DV Make & Sr. no.		g)	Date of air brake testing(BMBS)	
h)	Date of SWTR calibration		i)	Coupler Make & Sr. Nos.	
8.	Draft Gear Make, Model & Sr. Nos.		9.	Tare Weight	
10.	CRF section make		11.	Lock Bolt Make	
12.	Brake Cylinder Make & Sr. Nos. 1.Without hand brake 2.With hand brake		13.	D.M. Issue date	
14.	Paint Make		15.	TXR fit memo issue date	

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FINAL WAGON

SL NO.	ATTRIBUTES	ACCEPTANCE LIMIT	WORKS INSPN.	BRN INSPN.
1.	Check for paint. Thickness & Finish	Stainless steel 130 microns after primer and 210 microns after finish paint. Mild steel 120 microns after primer and 200 microns after finish paint. Paint surface to be free from blistering & peeling		
2.	Lettering & marking for size. Location & punch mark.	As per Drg No.WD-09053-S-14		
3.	COUPLER			
3.1	Ht from R.L level Operating of knuckle with operating handle	1105 +0 - 5 Full knuckle throw lock to lock		
3.2	Articulation of coupler body	Free movement		

Works Inspector
Date:-

BRN Inspector
Date:-

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PROFORMA FOR SINGLE WAGON AIR BRAKE TEST WITH BMBS SINGLE PIPE / TWIN PIPE

Wagon No..... Bogie Make.....DV Make.....

S.No.	Check	Specified	Actual
1	Pressure in BP	5 ± 0.1 kg/sq.cm.	
1.a	Pressure in FP	6 ± 0.1 kg/sq.cm.(twin pipe)	
2	Pressure in AR	5 ± 0.1 kg/sq.cm.(for single pipe) 6 ± 0.1 kg/sq.cm.(twin pipe)	
3	Leakage from the system in one minute.	0.1 kg/sq. cm. (max.)	
4	Full service application after charging		
4.1	Brake cylinder filling time a) Empty (Pressure rise from 0 to 2.1 kg/sq.cm.) b) Loaded (Pressure rise from 0 to 3.6 kg/sq.cm.)	18 to 30 sec 18 to 30 sec.	
4.2	Maximum brake cylinder pressure a) Empty b) Loaded	2.2 ± 0.25 kg/sq.cm. 3.8 ± 0.1 kg/sq.cm.	
4.3	Reduction in BP pressure required for full service application.	1.3 to 1.6 kg/sq.cm.	
5	Release after full service application.		
5.1	Draining time (Brake cylinder pressure to fall from 2.2 ± 0.25 kg/sq.cm. to 0.4kg/sq.cm in empty condition and 3.8±0.1kg/sq.cm. to 0.4kg/sq.cm in loaded condition) a) Empty b) Loaded	45 to 60 sec 45 to 60 sec.	
6	Sensitivity of brakes. Isolate brake pipes from mainline. Check the response of brakes when brake pipe pressure is reduced at the most equal to 0.6 kg/sq.cm. in 6 sec.	Brake should apply within 6 sec.	
7	Insensitivity of brakes, isolate brake pipe from mainline. Check the pressure of brakes when brake pipe pressure is reduced at least equal to 0.3 kg/sq.cm. in 60 sec.	Brake should not apply	
8	Emergency application:		
8.1	Brake cylinder filling time a) Empty (Pressure rise from 0 to 2.1 kg/sq.cm.) b) Loaded (Pressure rise from 0 to 3.6 kg/sq.cm.)	18 to 30 sec. 18 to 30 sec.	
8.2	Maximum brake cylinder pressure a) Empty b) Loaded	2.2 ± 0.25 kg/sq.cm. 3.8 ± 0.1 kg/sq.cm.	
9	Piston stroke Empty condition *	54±10 mm	
10	Leakage from brake cylinder after emergency application.	0.1 kg/sq.cm. (max.) within 5 minutes	
11	Automatic exhausting of brake cylinder and control chamber.		

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S.No.	Check	Specified	Actual
11.1	Apply emergency brakes (i.e. BP=0kg/sq.cm). Check the brake cylinder pressure after giving a brief pull to release hook.	Brake cylinder and control reservoirs should exhaust automatically.	
12	Empty load change over by APM Device		
12.1	Unrestricted movement of lever arm APM Device.	Brake cylinder pressure 2.2 ± 0.25 kg/sq.cm.	
12.2	Restrict the movement of lever arm of APM Device by more than 25 mm (by putting a block of 25 mm thickness) from its initial position.	Brake cylinder pressure 3.8 ± 0.1 kg/cm ²	
13	Hand Brake		
13.1	Apply hand brakes (by one person only and strike all wheels with hammer)	There should not be ringing sound	
14.	AR Charging time (Pressure rise from 0 to 5.0 kg/sq.cm.)	175 \pm 30 Sec for C3W D.V	
		60 to 120 Sec for KEO for Knorr D.V.	
15	CR Charging time (Pressure rise from 0 to 4.8 kg/sq.cm.)	165 \pm 20 Sec for C3W D.V	
		160 to 210 Sec for KEO D.V	

* However, if in a few cases, the piston stroke at empty pressure during testing on SWTR exceeds the specified range, the piston stroke is to be tested by locking the wheels with wedges.

S.No. 14 and 15 to be checked at the time of prototype wagon only

Works Inspector

Date: -

RDSO Inspector

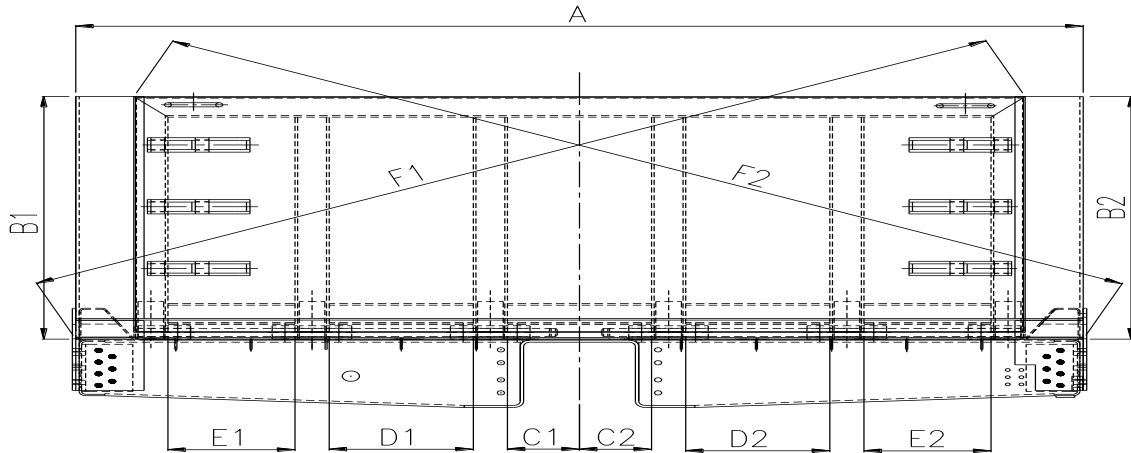
Date:-

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AMENDMENT No. 2 OF January,2018 APPLICABLE TO CHECK SHEET NO. WD-CS-01-BRN22.9-BMBS-DESIGN-C- 2011 FOR BOGIE RAIL WAGON TYPE – ‘BRN22.9 WITH BMBS’

1. All ‘BRN Inspector’ term on every page of the whole document should be read as ‘RDSO Inspector’.
2. Due to conversion of Fixed End Arrangement into Foldable Bulkhead the checksheet for ‘Body End’ at page no.7 Should be read as follows :

BODY END



BODY END NO:						
Date:						
SL. NO.	STAGE	Works Inspection	BRN Inspection	Remarks		
1.	Fitment of all components					
2.	Welding					
3.	Dressing					
4.	Dimensions	As follows				
	LOCATION		Nominal Dimensions & Allowable Deviation	Actual Dimension		Remarks
				Works Inspection	BRN Inspection	
i.	Width over corner stanchion	A	2950± 3			
ii.	End Wall overall height	B1	1178± 3			
		B2				
iii.	Distance between center to inner channel	C1	211± 1.0			
		C2				
iv.	Distance between inner to intermediate channel	D1	422± 1.5			
		D2				
v.	Distance between intermediate channel to outer channel	E1	372± 1.5			
		E2				
vi.		F1,F2	≤5			

All dimensions are in mm

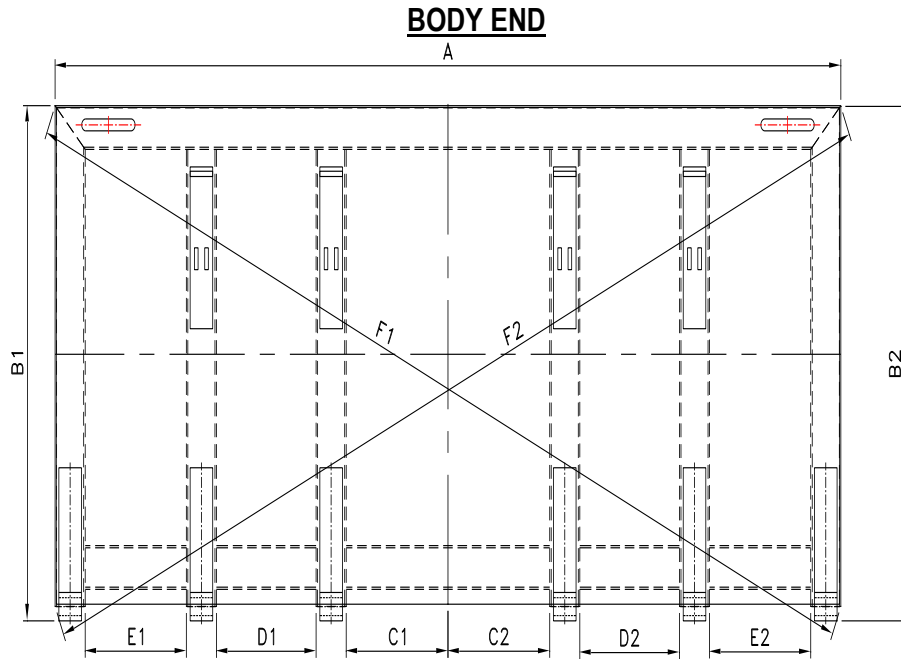
Works Inspector		RDSO Inspector	
Signature:		Signature:	
Name:		Name:	
Designation:		Designation:	
Date:		Date:	

.....

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AMENDMENT No. 3 OF October,2020 APPLICABLE TO CHECK SHEET NO. WD-CS-01-BRN22.9-BMBS-DESIGN-C- 2011 FOR BOGIE RAIL WAGON TYPE – ‘BRN22.9 WITH BMBS’

1. All ‘BRN Inspector’ term on every page of the whole document should be read as ‘RDSO Inspector’.
2. Due to conversion of Fixed End Arrangement into Foldable Bulkhead the checksheet for ‘Body End’ at page no.7 Should be read as follows :



BODY END NO:			Date:			
SL. NO.	STAGE	Works Inspection	BRN Inspection		Remarks	
1.	Fitment of all components					
2.	Welding					
3.	Dressing					
4.	Dimensions	As follows				
	LOCATION		Nominal Dimensions & Allowable Deviation	Actual Dimension		Remarks
				Works Inspection	BRN Inspection	
i.	End Wall overall Width	A	2610± 3			
ii.	End Wall overall height	B1	1178± 3			
		B2				
iii.	Distance between center to inner channel	C1	338± 1.0			
		C2				
iv.	Distance between inner to intermediate channel	D1	331± 1.5			
		D2				
v.	Distance between intermediate channel to outer channel	E1	336± 1.5			
		E2				
vi.		F1,F2	≤5			

All dimensions are in mm

Works Inspector		RDSO Inspector	
Signature:		Signature:	
Name:		Name:	
Designation:		Designation:	
Date:		Date:	

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