

INDIAN RAILWAYS



CHECK SHEETS

FOR

**BOGIE COVERED WAGON (91.6 Tonnes)
TYPE – BCNHL(Design-D)**

**(FIITTED WITH AIR BRAKE SYSTEM)
BROAD GAUGE
(1676 MM)**

S.No.	Month & Year of issue	Revision / Amendment	Page No.	Reason for Amendment
01	October, 2011	First issue	----	----
02	April, 2016	Revision-1		Check sheet for centre filler arrangement and special observation (Page-4 & 5) added, page no.-12 revised

ISSUED BY

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

CONTENTS

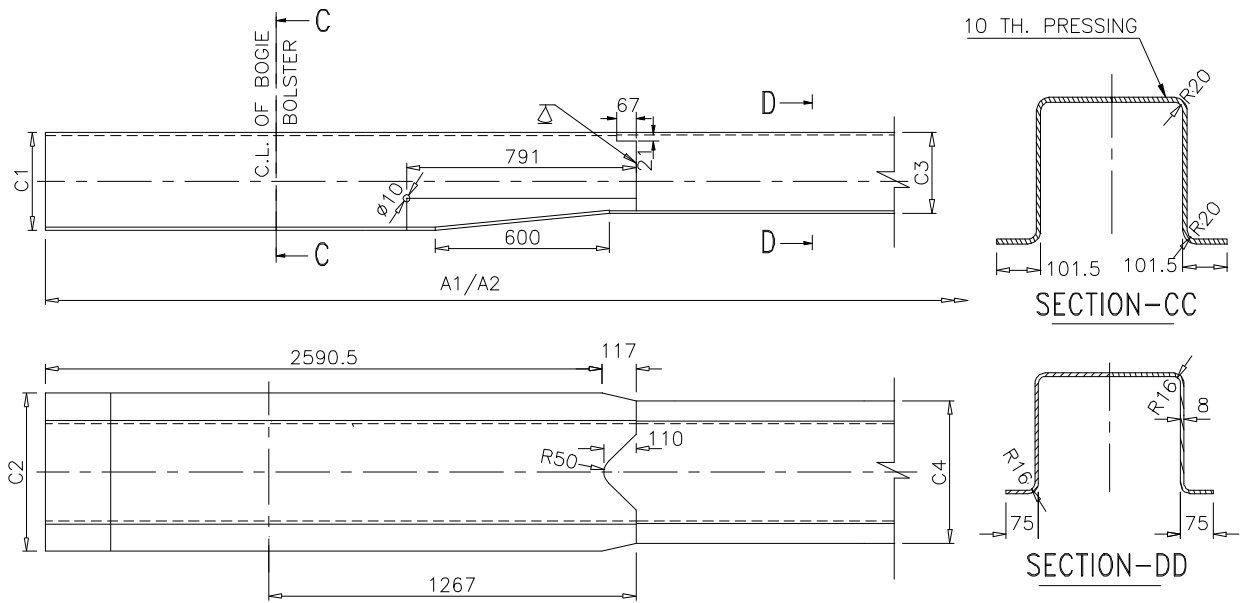
Sr. No.	Description	Page No
Section A		
1.	Centre Sill	3
2.	Centre filler arrangement	4
3.	Special Observation	5
4.	Underframe	6
5.	Body End	7
6.	Body Side	8
7.	Roof	9
8.	Door	10
9.	Final Assembly	11
10.	Final Wagon	12
11.	Other Attributes	13-14

Note:

These check sheets do not detail all the dimensions or technical requirements of respective wagon assemblies/components.

These check sheets are issued only for General Guidance & assistance of inspecting officials. Notwithstanding the above, the inspecting officials are advised to refer to relevant drawings and/or relevant specifications to confirm conformity to the specified dimensions and technical details.

Centre Sill

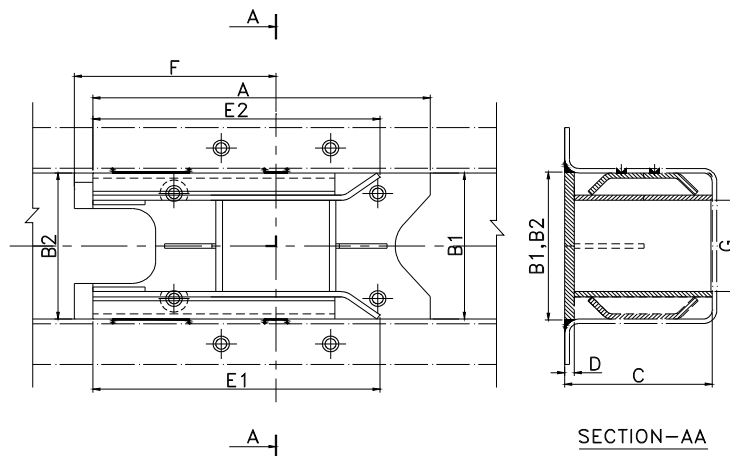


CENTRE SILL NO:			Date:			
SL. NO.	STAGE	Works Inspection		RDSO Inspection		Remarks
1.	Fitment of center Sill End (CRF 'Z' section) with Centre Sill Middle (CRF section)					
1.1	Welding					
1.2	Dressing					
2.0	Fabrication of Centre Sill					
2.1	Fitment of all components					
2.2	Welding					
2.3	Dressing					
3.	Dimensions			As follows		
	LOCATION		Nominal Dimensions & Allowable Deviation	Actual Dimension		Remarks
				Works Inspection	RDSO Inspection	
i.	Length	A1	10034, +7,-3			
		A2				
ii.	Height and width of end Centre Sill	C1	327 ± 1.5			
		C2	530, +1.5, -0			
iii.	Height and width of center Centre Sill	C3	270 ± 1.5			
		C4	477, +1.5, -0			
iv.	Draft Gear Pocket	X	625.5, +0, -1.5			
		Y	327± 1.5			
v.	Bow		1 in 600			

All dimensions are in mm

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

Centre filler Arrangement



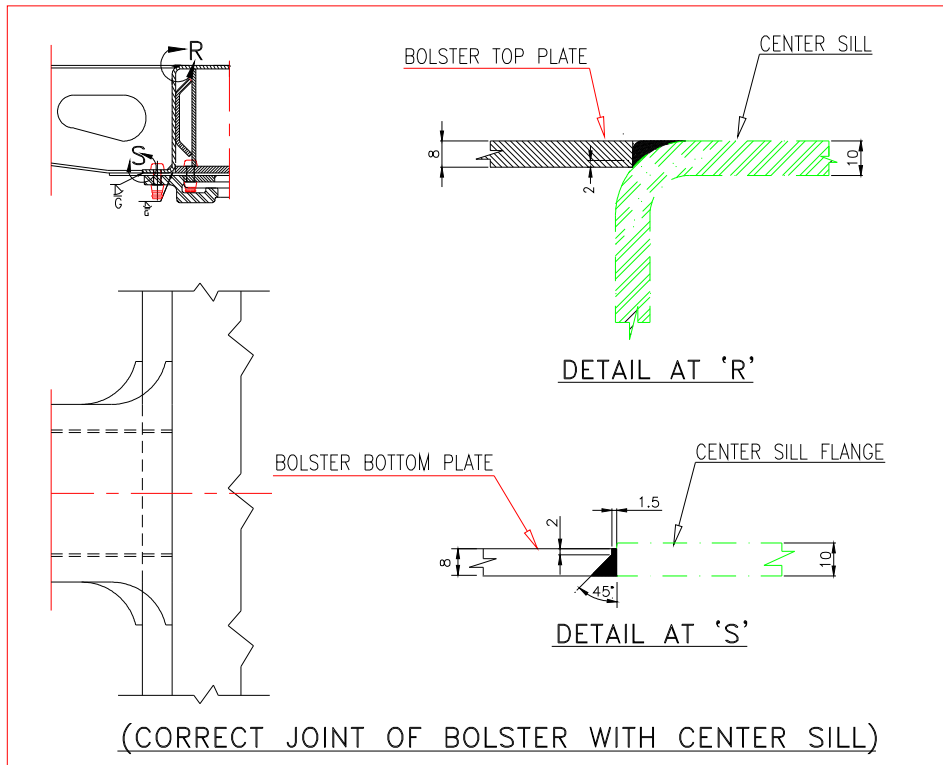
S. No.	STAGE	Works Inspector	RDSO Inspector	Remarks
1	Fitment of all components			
2	Welding			
3	Dressing			
4	Dimensions		As follows	
	LOCATION		Actual Dimension	Remarks
		Nominal Dimensions & Allowable Deviation	Works Inspector RDSO Inspector	
i	Length of base plate	A	725 ±1	
ii	Overall width of base plate at centre position	B1 B2	327 +3, -0	
iii	Assembly height of Pivot filler	C	317 +0, -1	
iv	Thickness of base plate	D	20	
v	Length of Pivot Filler Support web plate at bending condition	E1 E2	617 ±1	
vi	Distance of stopper plate from centre line of bolster	F	433.5	
vii	Flatness of Base Plate of Filler arrangement & Centre Sill after welding	-	Filler Gauge of 0.76 mm. should not pass between the straight edge and mounting surface.	

All dimensions are in mm.

Note : Centre filler base plate edge preparation should be checked properly

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

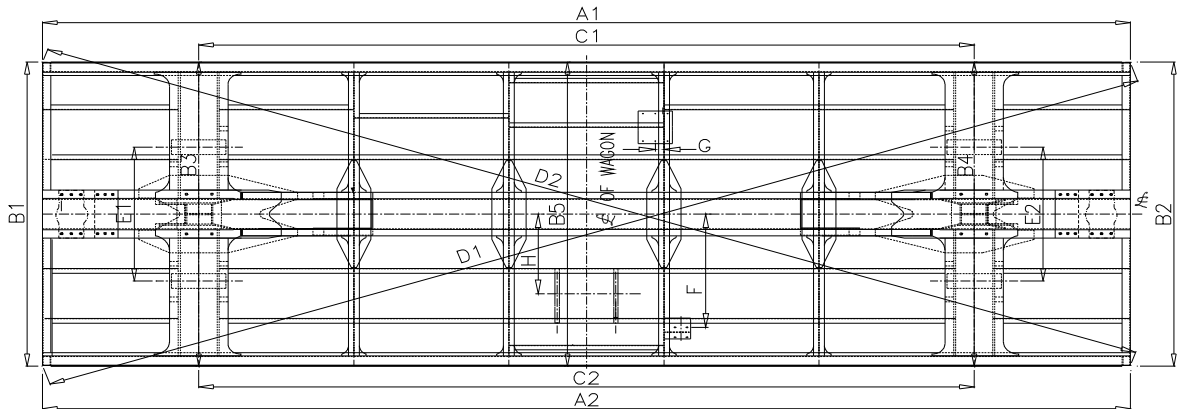
SPECIAL OBSERVATION



UNDERFRAME NO:		Date:			
SL. NO.	LOCATION	Nominal Dimensions & Observation	Actual observation		REMARKS
			Works Inspection	RDSO Inspection	
1.	Joint of bolster bottom plate with centre sill flange	Butt Weld			
2.	Gap between base plate of filler arrangement and bolster bottom gusset plate	Less than 0.76 mm			
3.	Gap between center sill flange and bolster bottom gusset plate	Less than 0.76 mm			
4.	Gap between bottom plate of bolster and bolster bottom gusset plate	Less than 0.76 mm			

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

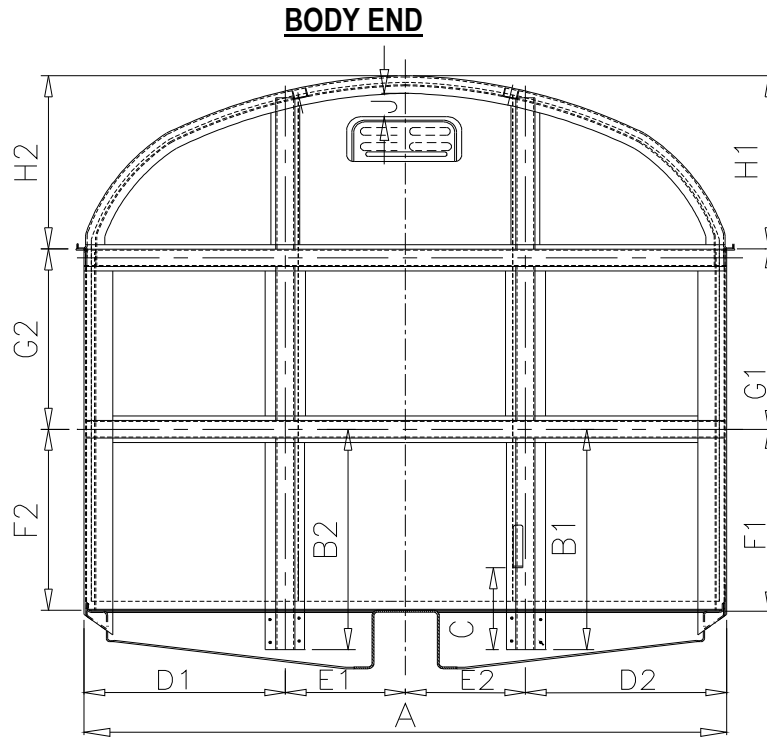
UNDERFRAME



UNDERFRAME NO:		Date:				
SL. NO.	STAGE	Works Inspection		RDSO 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	RDSO Inspection	
i.	Length over head stock	A1	10034, +7,-3			
		A2				
ii.	Width over solebar	B1	3350±3			
		B2				
		B3				
		B4				
		B5				
iii.	Distance between bolster bogie centre	C1	7153, +5, -2			
		C2				
iv)	Distance between side bearers centre	E1	1474±2			
		E2				
v)	Diagonal difference over headstock	D1	≤ 5			
		D2				
vi)	Camber		10, +0, -3			
vii)	Distance between C.L. of centre sill to centre of first hole of D.V. bracket.	F	1097,+0,-2			
viii)	Distance between C.L. of centre sill to centre of Aux. Reservoir centre.	H	728±2			
ix)	Distance between Crossbar centre to centre of middle hole of brake cylinder bracket.	G	70±1			

All dimensions are in mm

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

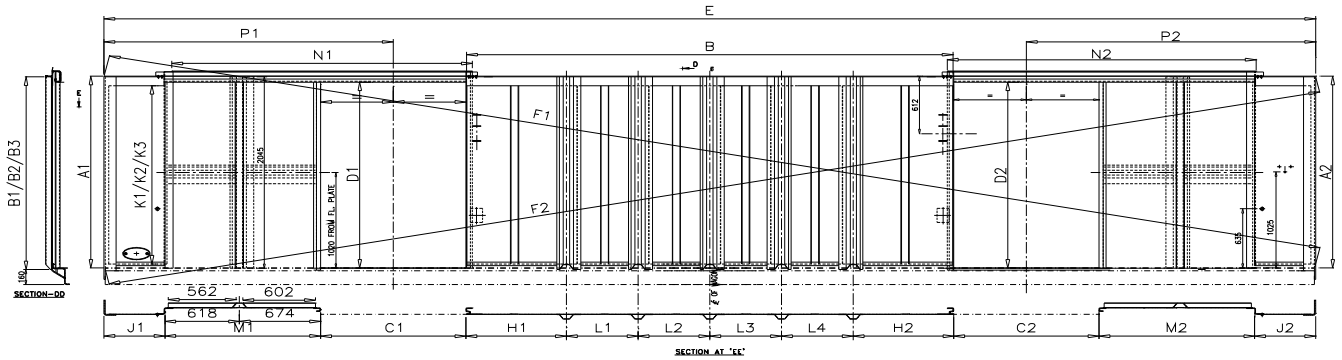


BODY END NO:		Date:				
SL. NO.	STAGE	Works Inspection	RDSO Inspection	Remarks		
1.	Fitment of all components					
2.	Welding					
3.	Dressing					
4.	Dimensions	As follows				
	LOCATION		Nominal Dimensions & Allowable Deviation	Actual Dimension		Remarks
				Works Inspection	RDSO Inspection	
i.	Width over corner stanchion	A	3366± 3			
ii.	Distance between centre line of End stiffening centre to End stanchion (bottom) end	B1	1251± 1.5			
		B2				
iii.	Distance between Tail lamp bracket to End stanchion(bottom) end	C	438± 1.5			
iv.	Distance between corner angle to Vertical stanchion C.L	D1	1054± 1.5			
		D2				
v.	Distance between C.L of body end to Vertical stanchion C.L	E1	629± 1.5			
		E2				
vi.	Distance between floor plate top to center line of end stiffening centre	F1	1023± 1.5			
		F2				
vii.	Distance between end coping to center line of end stiffening centre	G1	1024± 1.5			
		G2				
viii.	Distance between end coping to roof top	H1	985± 1.5			
		H2				
ix.	Distance between corner roof car line edge to ventilator top	J	134± 1.5			

All dimensions are in mm

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

BODY SIDE

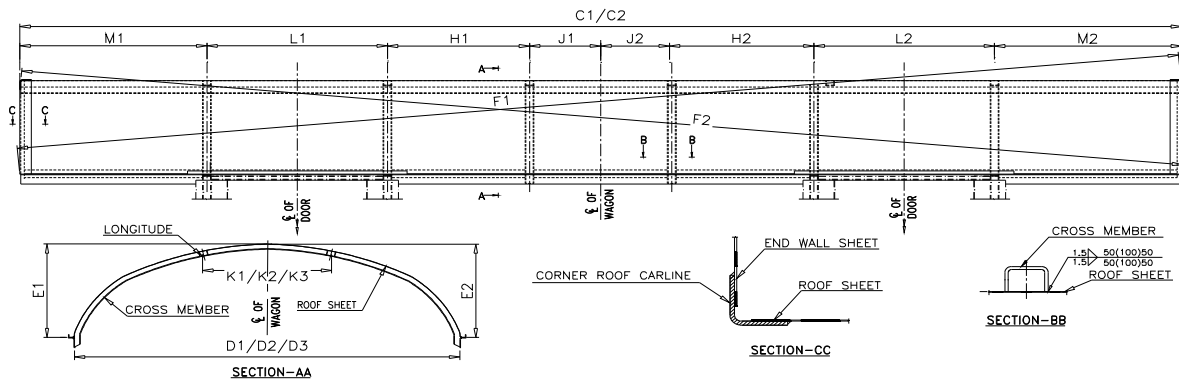


BODY SIDE NO:			Date:		
SL. NO.	STAGE	Works Inspection	RDSO Inspection		Remarks
1.	Fitment of all components				
2.	Welding				
3.	Dressing				
4.	Dimensions		As follows		
	LOCATION	Nominal Dimensions & Allowable Deviation	Actual Dimension		Remarks
			Works Inspection	RDSO Inspection	
i.	Distance between floor sheet top to top of top coping	A1 2047±3			
		A2			
ii.	Overall stanchion Height	B1 2059±3			
		B2			
		B3			
iii.	Door opening horizontal	C1 1204, +0, -3			
		C2			
iv.	Door opening vertical	D1 1985, +0, -3			
		D2			
v.	Distance over corner stanchions	E 10050, +7, -3			
vi.	Diagonal difference over corners	F1 ≤ 5			
		F2			
vii.	Distance between corner stanchion to doorway shut pillar	J1 505 ± 3			
		J2			
viii.	Center to centre distance between side stanchions	L1 595± 3			
		L2			
		L3			
		L4			
ix.	Distance between doorway shut pillar to doorway shut(end) pillar	M1 1292, ± 3			
		M2			
x.	Distance between doorway stop pillar to Side stanchion center	H1 834± 3			
		H2			
xi.	Side sheet height	K1 1905± 3			
		K2			
		K3			
xii.	Door top track	N1 2563 ± 3			
		N2			
xiii.	Distance between corner stanchion to door center	P1 2399 ± 1			
		P2			
xiv.	Length of middle top coping	B 4036 ± 1			

All dimension are in mm

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

ROOF ASSEMBLY

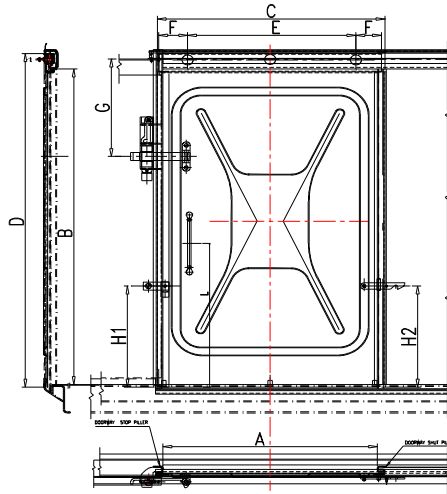


ROOF NO:			Date:			
SL. NO.	STAGE	Works Inspection	RDSO Inspection		Remarks	
1.	Fitment of all components					
2.	Welding					
3.	Dressing					
4.	Dimensions		As follows			
	LOCATION		Nominal Dimensions & Allowable Deviation	Actual Dimension		Remarks
				Works Inspection	RDSO Inspection	
i.	Distance between roof top to top of Side top Coping	E1	985 ± 3			
		E2				
ii.	Distance between corner roof carline	C1	10050, +7, -3			
		C2				
iii.	Distance between side top coping	D1	3338 ± 3			
		D2				
		D3				
iv.	Diagonal difference over corner	F1	≤ 5			
		F2				
v.	Distance between centre line of wagon to centre line of Cross member	J1	615 ± 3			
		J2				
vi.	Distance between centre line of Cross member	L1	1400 ± 3			
		L2				
vii.	Distance between centre line of Cross members	H1	1392 ± 3			
		H2				
viii.	Distance between Cross member centre line to Corner roof carline	M1	1618 ± 3			
		M2				
ix.	Center Distance between Longitude members	K1	1116 ± 3			
		K2				
		K3				

All dimension are in mm

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

DOOR

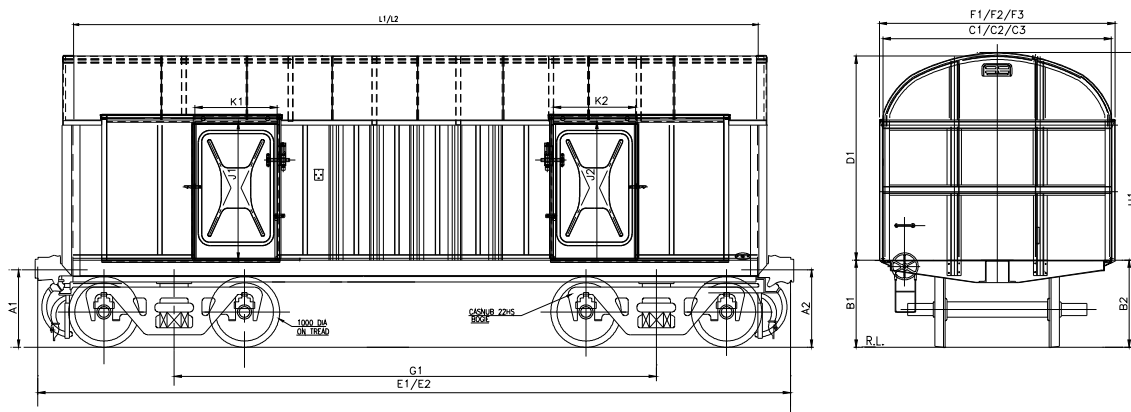


DOOR NO:		DATE:				
SL. NO.	STAGE	Works Inspection	RDSO Inspection		Remarks	
1.	Fitment of all components					
2.	Welding					
3.	Dressing					
4.	Dimensions	As follows				
	LOCATION		Nominal Dimensions & Allowable Deviation	Actual Dimension		Rem arks
				Works Inspection	RDSO Inspection	
i.	Width of Door opening	A	1204, +0, -3			
ii.	Height of Door opening	B	1985, +0, -3			
iii.	Width of Door Flap	C	1278, -0, +5			
iv.	Height of Door	D	2097, -0, +5			
v.	Distance between center of two end Roller	E	1130 ±1.5			
vi.	Distance between door top pressing end to center of end roller	F	55 ±0.5			
vii.	Distance of center line of door fastener from top coping of side wall	G	612 ±1.5			
viii.	Distance of Door sealing bracket from bottom edge of door sheet	H1	635 ±1.5			
		H2				
ix.	Distance of center of handle for sliding door from bottom edge of door sheet	L	803 ±1.5			

All dimensions are in mm

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

FINAL ASSEMBLY



Wagon No.:		U/F No.:		Date:		
SL. NO	STAGE	Works Inspection	RDSO Inspection	Remarks		
1.	Fitment of all components					
2.	Huck Bolting					
3.	Welding					
4.	Operation of Doors					
5.	Operation of Couplers					
6.	Under gear Examination					
7.	Brake test i) Air brake ii) Hand brake					
8.	Painting					
9.	Lettering					
10.	Dimensions	As follows				
	LOCATION		Nominal Dimensions & Allowable Deviation	Actual Dimension		Remarks
				Works Inspection	RDSO Inspection	
i.	Coupler height from R.L	A1	1105, +0, -5			
		A2				
ii.	Floor height from R.L	B1	1273, ± 3			
		B2				
iii.	Length Inside	L1	10034, +7, -3			
		L2				
iv.	Width Inside	C1	3345, ± 3			
		C2				
		C3				
v.	Height Inside (Floor level to top)	D1	3024, ± 3			
vi.	Length over coupler face	E1	10963, +8, -3			
		E2				
vii.	Side bearer clearance	-	Nil			
viii.	Overall Width	F1	3450, ± 3			
		F2				
		F3				
ix	Distance between bogie centres	G1	7153, ± 3			
x.	Overall height from R.L.	H1	4305, ± 3			
xi.	Door opening vertical	J1	1985, +0, -3			
		J2				
xii.	Door opening horizontal	K1	1204, +0, -3			
		K2				

All dimensions are in mm

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

FINAL WAGON

1.	Wagon No.		2.	Date of offer	
3.	Underframe 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	
f)	PU Pad make		g)	Aux. Reservoir make	
h)	DV Make & Sr. no.		i)	SAB Make & Sr. No.	
j)	Date of air brake testing		k)	Date of *SWTR unit calibration	
8.	Coupler Make & Sr. Nos.		9.	Draft Gear Make & Sr. Nos.	
10.	Tare Weight		11.	Shot blasting/manually cleaned	
12.	D.M. Issue date		13.	TXR fit memo issue date	
14.	CRF Section Make		15.	Lock bolt make	
16.	Paint Make				

17. RAD availed _____

18. Defects Observed _____

* Single wagon test rake

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

Other Attributes:-

Wagon No.:		U/F No.:	Date:	
SL NO.	ATTRIBUTES	ACCEPTANCE LIMIT	WORKS INSPN.	RDSO INSPN.
1.	Check paint- for thickness & finish	Two coat of primer to minimum DFT 120 microns and two coat of finish paint to minimum DFT 80 microns. Paint surface to be free from blistering & peeling		
2.	Lettering & marking- for legibility, size, location & punch mark.	As per Drg No.WD-10068-S-20		
3.	COUPLER			
3.1	Height from Rail Level	1105 +0, - 5		
3.2	Operation of knuckle with operating handle	Full knuckle throw lock to lock		
3.3	Articulation of coupler body	Free movement		
4.	HAND BRAKE			
4.1	Apply hand brake (by one person only and strike all wheels with a Hammer)	There should not be ringing sound		
4.2	Release the hand brake and apply crow bar on one end of brake block to take up all slack	All brake blocks must be released. Gap between the brake block and wheel tread not to be less than 23.6 mm (5.9 x 4)		
5.	EMPTY LOAD BOX.			
5.1	Operate the mechanism from any end in empty and loaded positions	Empty tie rod & loaded tie rod must engage. In loaded position the empty tie rod pins must be loose. In empty position the loaded tie rod pins must be loose		
6.	AIR BRAKE & SLACK ADJUSTER			
6.1	Distance between the control rod head and adjuster barrel (A)	70 +2, - 0		
6.2	Dimension (e) i.e. the distance between the end of protection tube and fixed mark on the slack adjuster pull rod	560 ± 25 mm		
6.3	Apply air brake and then release the same. Apply crow bar on one end of brake block to take up all slack	Gap should not be less than 23.6 mm (5.9 x4)		
6.4	Rotate the brake slack adjuster in clock-wise direction (looking from control rod end) to decrease the slack. Apply and release the air brake twice.	Gap between the brake block and wheel tread as measured should be 23.6 + 1, - 0		
6.5	Now, rotate the barrel in anticlockwise direction. Apply and release the air brake once	Gap between the brake block and wheel tread as measured should be 23.6 + 1, - 0		
7.	AIR BRAKE EQUIPMENT			
7.1	Leakage from the system	0.1 Kg/cm ² in 1 minute		

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

SL NO.	ATTRIBUTES	ACCEPTANCE LIMIT	WORKS INSPN.	RDSO INSPN.
7.2	B.C filling time (pressure rise 0 to 3.6 Kg/cm ²)	Empty 18 to 30 sec. Loaded 18 to 30 seconds		
7.3	Maximum B.C. pressure in Kg/ cm ²	Empty 3.8 ± 0.1 Kg/ cm ² Loaded 3.8 ± 0.1 Kg/ cm ²		
7.4	Decrease in B.P. pressure required for full service application	1.3 to 1.6 Kg/ cm ²		
8.	RELEASE AFTER FULL SERVICE APPLICATION			
8.1	Draining time- B.C pressure to fall from 3.8 to 0.4 Kg/cm ²	a) Empty 45 to 60 seconds b) Loaded 45 to 60 seconds		
9.	Piston stroke in mm	a) Empty 85 ± 10 b) Loaded 120 ± 10		
10.	EMERGENCY APPLICATION			
10.1	Emergency application- BC filling time 0 to 3.6 Kg/cm ²	a) Empty 18 to 30 seconds b) Loaded 18 to 30 seconds		
10.2	Maximum B.C pressure in Kg/cm ²	a) Empty 3.8 ± 0.1 Kg/cm ² b) Loaded 3.8 ± 0.1 Kg/cm ²		
10.3	Leakage from B.C.	0.1 Kg/cm ² in 5 minute		
11.	SENSITIVITY OF BRAKES			
11.1	Isolate brake pipe from main line check the response of brakes when brake pipe pressure is reduced at the most equal to 0.6 Kg/cm ² in 6 seconds	Brake should apply within 6 seconds		
12.	INSENSITIVITY OF BRAKES			
12.1	Isolate brake pipe from main line. Check the response of brakes when brake pipe pressure is reduced at least equal to 0.3 Kg/cm ² in 60 seconds	Brake should not apply		
13.	QUICK RELEASE AND ISOLATION			
13.1	After emergency brake application operate quick release valve	Brake cylinder and control reservoir should also exhaust.		
13.2	Bring isolating valve of distributor to off position.	Auxiliary reservoir should also exhaust.		
14.	APD CHECKING			
14.1	Check any twenty number of APD fittings (refer RDSO Drg. no.4020/24)	Both legs of cotter are split at 90 deg.(approx).Split pin legs are opened at 180 degrees (approx).Tack welding of cotter/split pin with washer/nut with bolts is adequate.		

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