

INDIAN RAILWAYS



सत्यमेव जयते

CHECK SHEETS

FOR

**BOGIE OPEN WAGON (89.28 Tonnes)
TYPE – BOSTHS (DESIGN-C)**

**(FITTED WITH AIR BRAKE SYSTEM)
BROAD GAUGE**

(1676 MM)

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

October, 2011

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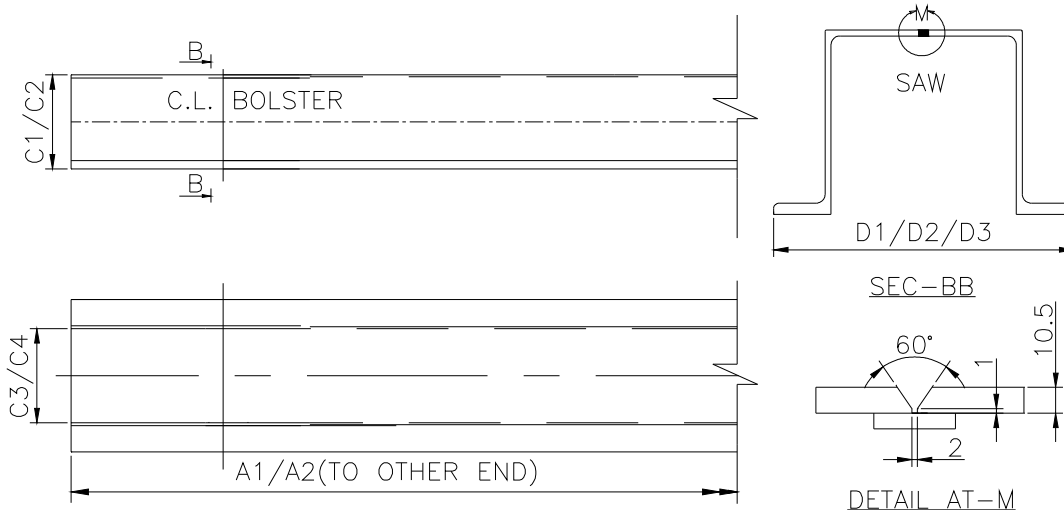
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Note:

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

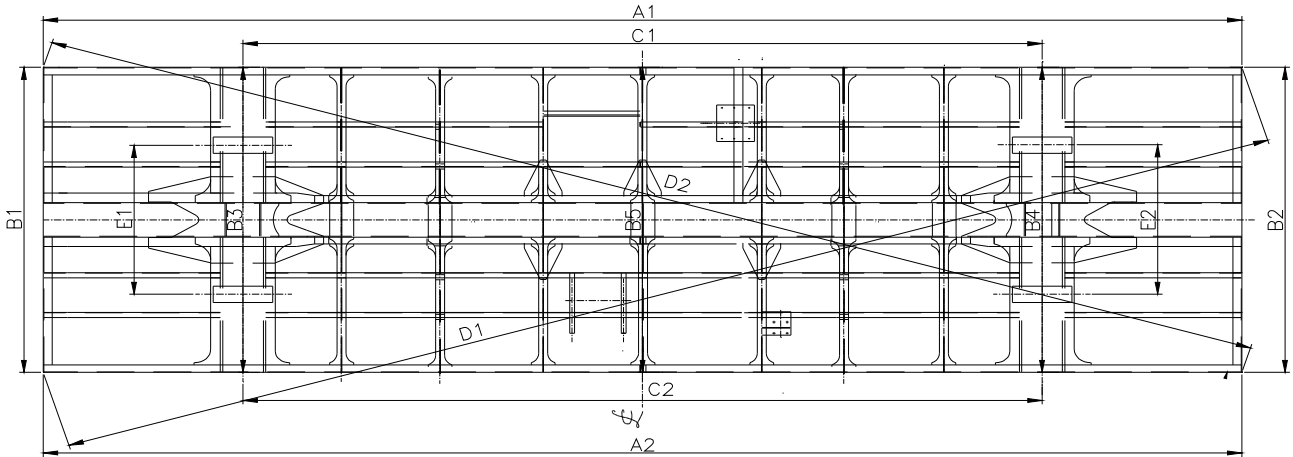


CENTRE SILL NO:			Date:			
SL. NO.	STAGE	Works Inspection		RDSO Inspection		Remarks
2.0	Fabrication of Centre Sill					
2.1	Fitment of all components					
2.2	Welding					
2.3	Dressing					
2.4	Lock Bolting					
3.	Dimensions			As follows		
	LOCATION		Nominal Dimensions & Allowable Deviation	Actual Dimension		Remarks
				Works Inspection	RDSO Inspection	
i.	Length	A1	12800, +2,-2 mm			12800, +7,-3 shall be final dimension of underframe. To take up contraction allowance as well as to ensure squareness of end, length shall be 12800, +7,-3mm
		A2				
ii.	Overall height and inside width of Centre Sill	C1,C2	327, +1.5, -0			
		C3,C4	327, +1.5, -0			
iii.	Overall width of Centre Sill bottom flange	D1	530, +1.5, -0			
		D2	530, +1.5, -0			
		D3	530, +1.5, -0			
iv.	Draft Gear Pocket	X	625.5, +0, -1.5			
		Y	327, +1.5, -0			
v.	Camber		9±3mm			The camber value 9±3mm shall be achieved in final wagon

All dimensions are in mm

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

UNDERFRAME

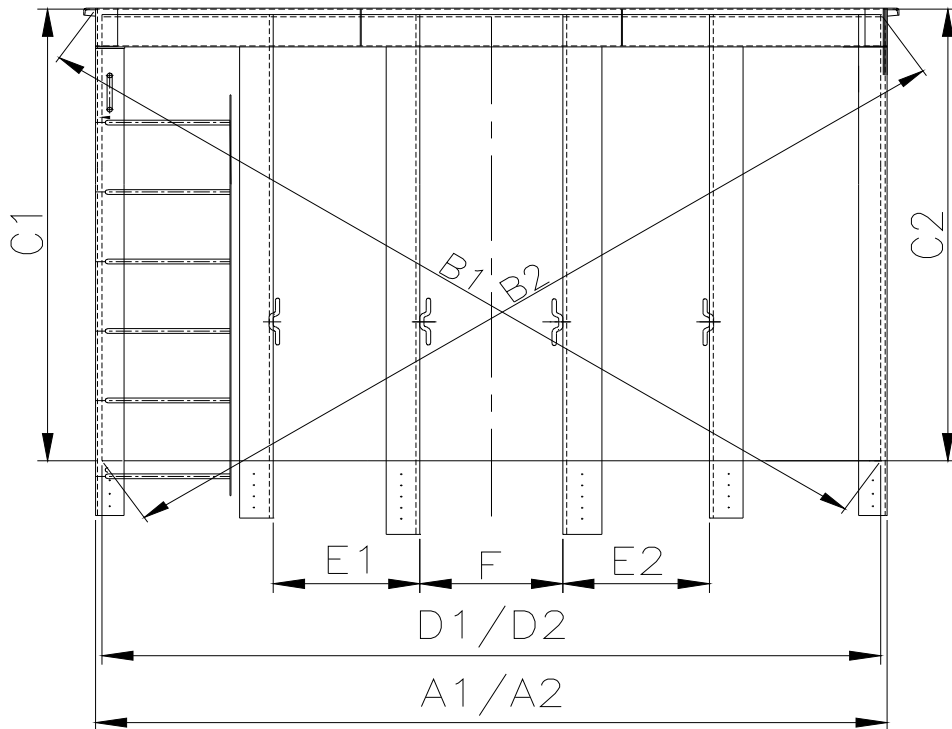


UNDERFRAME NO:		Date:				
SL. NO.	STAGE	Works Inspection		RDSO Inspection	REMARKS	
1.	Fitment of all components					
2.	Welding					
3.	Lock Bolting					
3.	Dressing					
4.	Dimensions	As follows				
	LOCATION		Nominal Dimensions & Allowable Deviation	Actual Dimension		Remarks
				Works Inspection	RDSO Inspection	
i.	Length over head stock	A1	12800, +7,-3			
		A2				
ii.	Width over solebar	B1	2860 ±3			
		B2				
		B3				
		B4				
		B5				
iii.	Distance between bolster bogie centre	C1	8800, +5,-2			
		C2				
iv.	Diagonal difference over head stocks	D1	≤ 5			
		D2				
vi.	Distance between side bearers centre	E1	1474±2			
		E2				
vii.	Draft Gear Pocket	X	625.5, +0,-1.5			
		Y	327, +1.5, -0			
viii.	Camber		9±3mm			The camber value 9±3mm shall be achieved in final wagon

All dimensions are in mm

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

BODY END

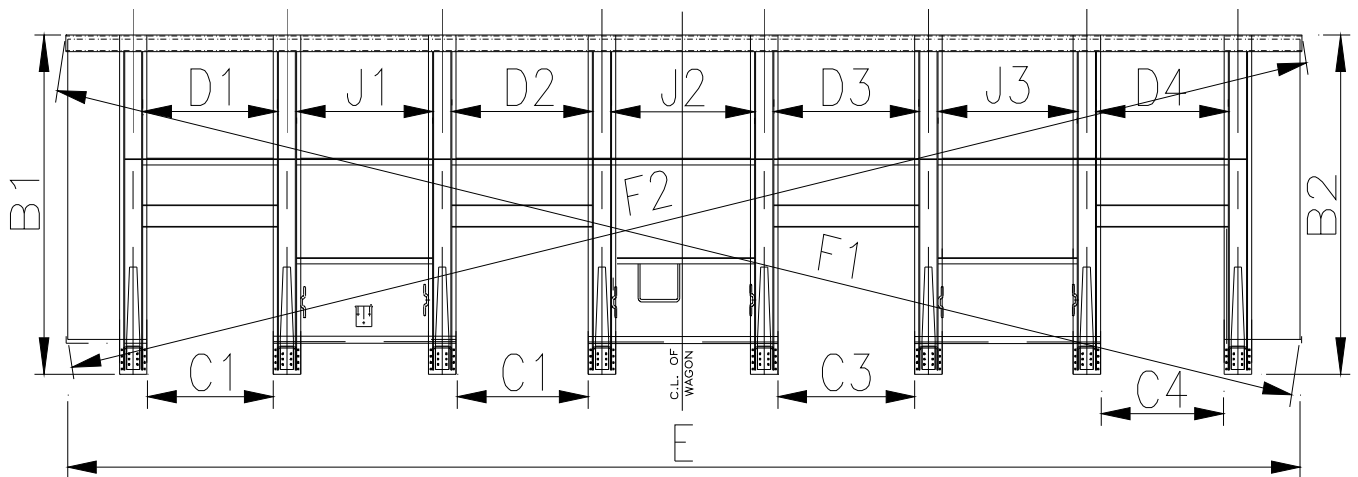


BODY END NO:		Date:				
SL. NO.	STAGE	Works Inspection	RDSO Inspection	Remarks		
1.	Fitment of all components					
2.	Welding					
3.	Dressing					
4.	Dimensions	As follows				
	LOCATION		Nominal Dimensions & Allowable Deviation	Actual Dimension		Remarks
				Works Inspection	RDSO Inspection	
i.	Width over corner stanchion	A1	2880, ± 3			
		A2				
ii.	Overall Height of End plate	C1	1786± 3			
		C2				
iii.	Overall width of End plate	D1	2820± 1.5			
		D2				
iv.	Distance between inner to outer stanchion	E1	550± 1.5			
		E2				
v.	Distance between inner to inner stanchion	F	560± 1.5			
vi.	Diagonal difference over headstock	B1	≤ 5			
		B2				

All dimensions are in mm

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

BODY SIDE

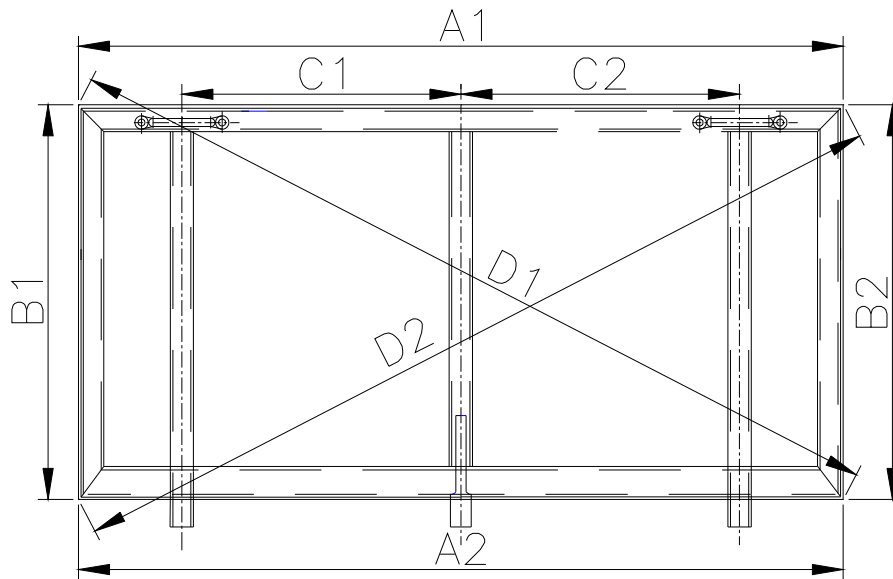


BODY SIDE NO:			Date:			
SL. NO.	STAGE	Works Inspection		RDSO Inspection		Remarks
1.	Fitment of all components					
2.	Welding					
3.	Dressing					
4.	Dimensions			As follows		
	LOCATION		Nominal Dimensions & Allowable Deviation	Actual Dimension		Remarks
				Works Inspection	RDSO Inspection	
i.	Side Wall Overall Height (Stanchion Back plate bottom to top coping)	B1	2051±3			
		B2				
ii.	Door opening (Horizontal)	C1	1460, +0, -3			
		C2				
		C3				
		C4				
iii.	Distance between side plate end to end	E	12730, +7,-3			
iv.	Diagonal difference over corner	F1	≤ 5			
		F2				
v.	Distance between body side stanchion pressings at doorway	D1	1530± 3			
		D2				
		D3				
		D4				
v.	Distance between body side stn. pressing at dummy quarter	J1	1392± 3			
		J2				
		J3				

All dimension are in mm

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

FLAP DOOR

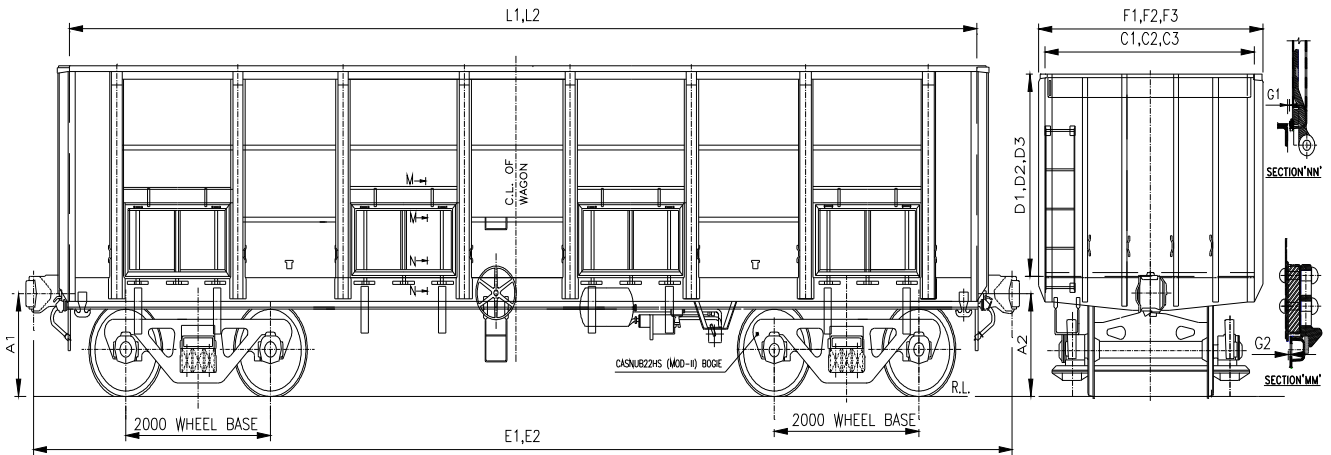


FLAP DOOR NO:			DATE:		
SL. NO.	STAGE	Works Inspection	RDSO Inspection		Remarks
1.	Fitment of all components				
2.	Welding				
3.	Dressing				
4.	Dimensions	As follows			
	LOCATION		Actual Dimension		Remarks
		Nominal Dimensions & Allowable Deviation	Works Inspection	RDSO Inspection	
i.	Overall Length	A1	1480, +5,-0		
		A2			
ii.	Overall height	B1	777, +5,-0		
		B2			
iii.	Distance between door C.L to C.L of door hinge	C1	540±1.5		
		C2			
iv.	Diagonal difference over corner	D1	≤ 3		
		D2			

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.	Lock 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.	Shot Blasting(ExcpLever SAB)					
8.	Painting					
9.	Lettering					
10.	Dimensions	As follows				
i.	LOCATION		Nominal Dimensions & Allowable Deviation	Actual Dimension		Remarks
				Works Inspection	RDSO Inspection	
ii.	Coupler height from R.L	A1	1103, +0, -5			
		A2				
iii.	Length Inside	L1	12800, +7, -3			
		L2				
iv.	Width Inside	C1	2850, ± 3			
		C2				
		C3				
v.	Height Inside (Floor level to top)	D1	1805, ± 3			
		D2				
		D3				
vi.	Length over coupler face	E1	13729, +7, -3			
		E2				
vii.	Side bearer clearance	-	Nil			
viii.	Overall Width	F1	3100, ± 3			
		F2				
		F3				
ix.	Clearance between floor plate & door pressing	G1	5mm±0.5			
x.	Clearance between doorway crossbar & door plate	G2	5mm±0.5			
	Camber (at the both side of centre of wagon)		9, ± 3			

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)	DV Make & Sr. no.		g)	SAB Make & Sr. No.	
h)	Date of air brake testing		i)	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. RAD availed _____

15. Defects Observed _____

16. Remarks _____

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	Thickness >40 micron (DFT for primary paint) > 80 micron (DFT for finish paint). Total DFT after shall be minimum 120 micron. Paint surface to be free from blistering, brush marks & peeling.(As per G-72 Rev.3 or latest Revision)		
2.	Lettering & marking- for legibility, size, location & punch mark.	As per Drg No.WD-00012-S-21 of relevant wagon Mechanical Design Code Index drg. no. WD-00012-S-00		
3. COUPLER				
3.1	Height from Rail Level	1103 , +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	575, ±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				
Full service application				
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 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 ± 0.1 to 0.4 Kg/cm ²	a) Empty 30 to 45 seconds b) Loaded 45 to 65 seconds		
9.	Piston stroke in mm	a) Empty 85 ± 10 b) Loaded 130 ± 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 exhaust automatically.		
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:	