

INDIAN RAILWAYS



सत्यमेव जयते

CHECK SHEETS

FOR

BOGIE OPEN WAGON (100 Tonnes)

TYPE – BOXNS

S.No.	Month & Year of issue	Revision / Amendment	Page No.	Reason for Revision / Amendment
1.	October, 2015	First issue	-	-
2.	JUN, 2016	Revision - 01	-	Side wall design revised
3.	September, 2016	Amendment -01	4 & 7	Width & Depth of Bolster pocket-1 and End Wall overall height
4.	February, 2017	Revision - 02	3, 4 & 6 to 10	Bogie tolerances revised & RFID data added
5.	April, 2017	Amendment -01	11	Changed acceptance limit of Check paint for thickness & finish
6.	September, 2018	Amendment -02	One new sheet & 8	Due to provision of door
7.	June, 2020	Revision - 03	-	Amendment-01 & 02 incorporated and measuring location of side stanchion pockets revised.

ISSUED BY

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

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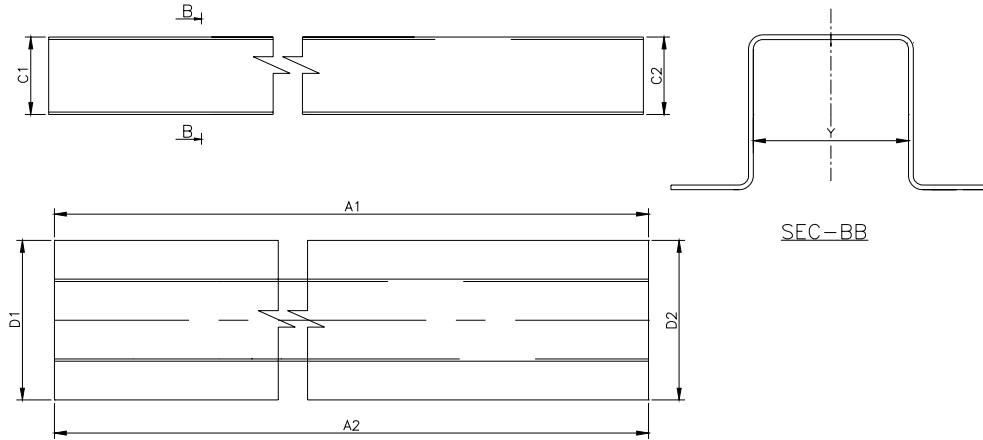
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Note:

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

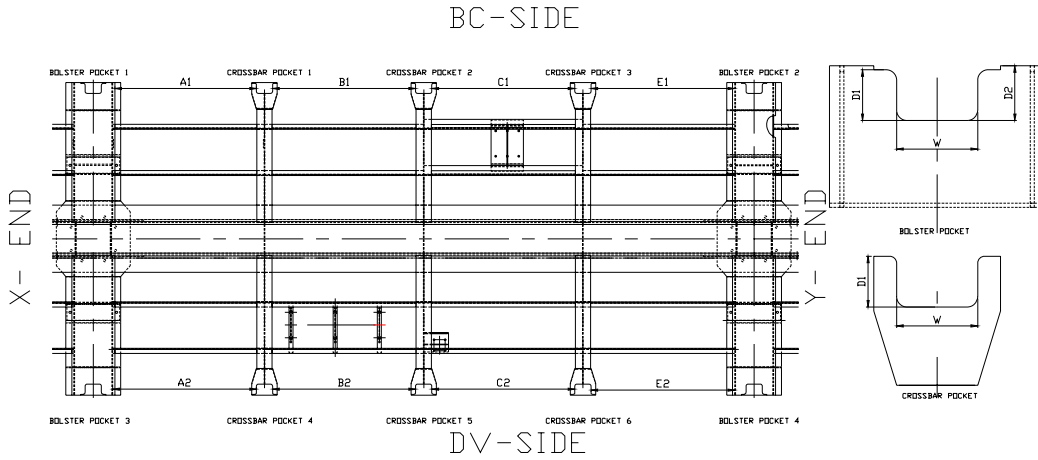


CENTRE SILL NO:			Date:			
SL. NO.	STAGE	Works Inspection	RDSO Inspection		Remarks	
1.	Centre Sill 'Hat' section.					
1.1	Fitment of all components					
1.2	Welding					
1.3	Dressing					
1.4	Lock Bolting					
2.	Dimensions		As follows			
	LOCATION		Nominal Dimensions & Allowable Deviation	Actual Dimension		Remarks
				Works Inspection	RDSO Inspection	
i.	Length	A1	9784, +4,-2			
		A2				
ii.	Height	C1	327, ±1.5			
		C2				
iii.	Width	D1	674, ±3			
		D2				
iv.	Draft Gear Pocket	Y	327, +3, -0			

All dimensions are in mm

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

UNDERFRAME(without sole bar)



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.	Distance between Bolster web outer face to pockets for side stanchions	A1	1418 ±1		
		A2			
		E1	1418 ±1		
		E2			
	Distance between pockets for side stanchions	B1	1412 ±1		
		B2			
C1		1412 ±1			
C2					
ii.	Width & Depth of Bolster pocket -1	W	160 +2/-0		
		D1	102 ±1		
		D2	110 ±1		

Continue

All dimensions are in mm

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

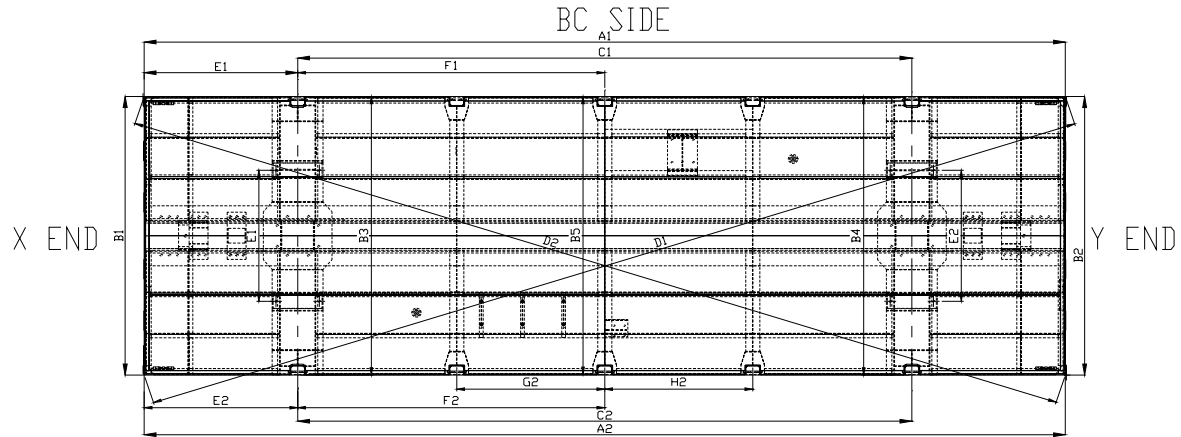
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UNDERFRAME NO:			Date:			
4.	Dimensions	As follows				
	LOCATION		Nominal Dimensions & Allowable Deviation	Actual Dimension		Remarks
				Works Inspection	RDSO Inspection	
iii.	Width & Depth of Bolster pocket -2	W	160 +2/-0			
		D1	102 ±1			
		D2	110 ±1			
iv.	Width & Depth of Bolster pocket -3	W	160 +2/-0			
		D1	102 ±1			
		D2	110 ±1			
v.	Width & Depth of Bolster pocket -4	W	160 +2/-0			
		D1	102 ±1			
		D2	110 ±1			
vi.	Width & Depth of crossbar pocket -1	W	160 +2/-0			
		D1	102 ±1			
vii.	Width & Depth of crossbar pocket -2	W	160 +2/-0			
		D1	102 ±1			
viii.	Width & Depth of crossbar pocket -3	W	160 +2/-0			
		D1	102 ±1			
ix.	Width & Depth of crossbar pocket -4	W	160 +2/-0			
		D1	102 ±1			
x.	Width & Depth of crossbar pocket -5	W	160 +2/-0			
		D1	102 ±1			
xi.	Width & Depth of crossbar pocket -6	W	160 +2/-0			
		D1	102 ±1			

* Bolster pocket dimensions D1 & D2 can be measured on separately on bolster top plate.
All dimensions are in mm

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

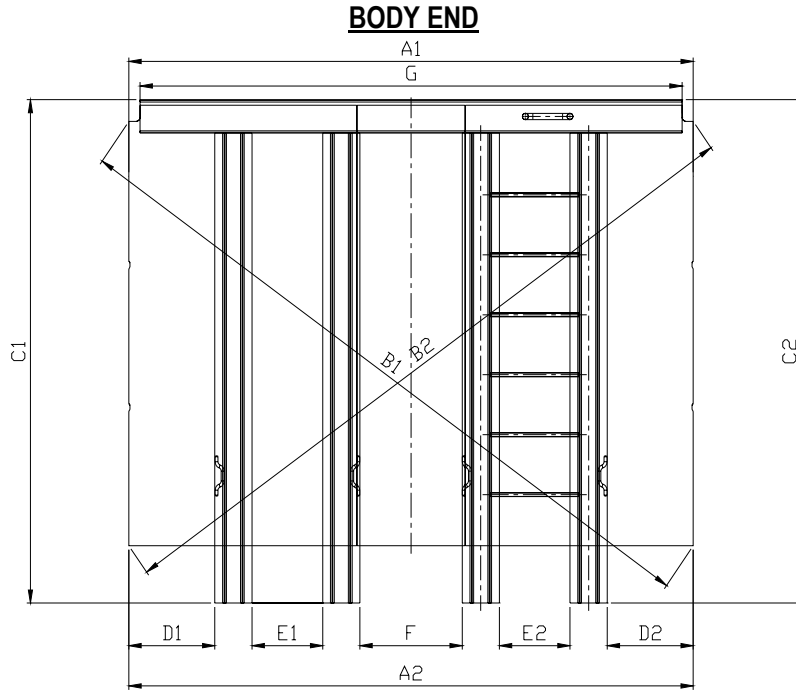
UNDERFRAME



UNDERFRAME NO:		Date:				
SL. NO.	STAGE	Works Inspection		RDSO Inspection	REMARKS	
1.	Fitment of all components					
2.	Welding					
3.	Dressing					
4.	Dimensions	As follows				
	LOCATION		Nominal Dimensions & Allowable Deviation	Actual Dimension		Remarks
				Works Inspection	RDSO Inspection	
i.	Length over corner stanchions	A1	9808, +7,-3			
		A2				
ii.	Width over solebar	B1	3135 ±3			
		B2				
		B3				
		B4				
		B5				
iii.	Distance between bolster bogie centre	C1	6524, +5,-2			
		C2				
iv)	Distance between side bearers centre	E1	1474±2			
		E2				
v)	Diagonal difference over headstock	D1	≤ 5			
		D2				
vi)	Camber		*6 ±2			
vii)	Difference between side bearer top liner and center pivot top		50.5,+0.5,-0			

All dimensions are in mm
*to be measured in final assembly

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

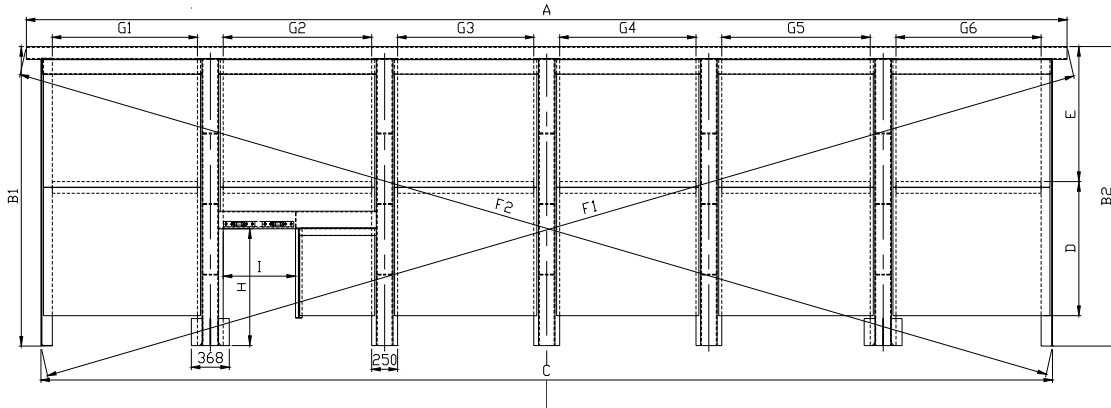


BODY END NO:			Date:			
SL. NO.	STAGE	Works Inspection	RDSO Inspection		Remarks	
1.	Fitment of all components					
2.	Welding					
3.	Dressing					
4.	Dimensions	As follows				
	LOCATION		Nominal Dimensions & Allowable Deviation	Actual Dimension		Remarks
				Works Inspection	RDSO Inspection	
i.	Width over corner stanchions	A1	3035 +3 -0			
		A2				
ii.	Diagonal dimensions	B1	≤ 5			
		B2				
iii.	End Wall overall height	C1	2560 ± 3			
		C2				
iv.	Distance between corner sheet to outer stanchion	D1	462.5 ± 1.5			
		D2				
v.	Distance between inner to outer stanchion	E1	380 ± 1.5			
		E2				
vi.	Distance between inner to inner stanchion	F	550 ± 1.5			
vii.	Length of end top coping	G	2915 ± 1.5			

All dimensions are in mm

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

Body Side

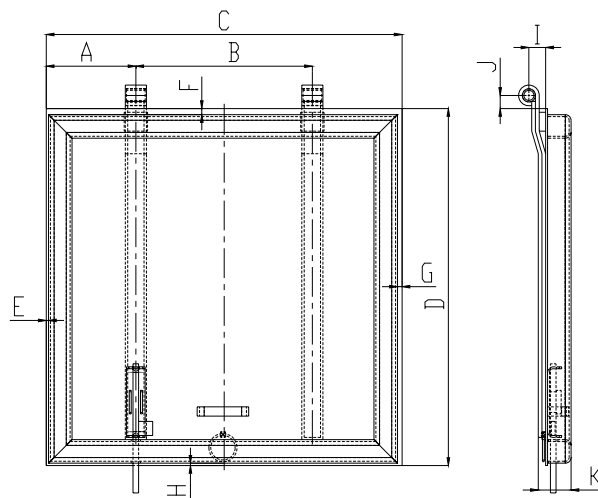


BODY SIDE NO:			Date:		
SL. NO.	STAGE	Works Inspection	RDSO Inspection		Remarks
1.	Fitment of all components				
2.	Welding				
3.	Dressing				
4.	Dimensions		As follows		
	LOCATION	Nominal Dimensions & Allowable Deviation	Actual Dimension		Remarks
			Works Inspection	RDSO Inspection	
i.	Length over side top coping	A 10090 ± 3			
ii.	Side Wall Overall Height	B1 2549 ± 3			
		B2			
iii.	Length over corner stanchions	C1 9808 +0,-3			
		C2			
iv.	Height between middle copings	D 1140.5 ± 1.5			
v.	Distance between ST cop. to M cop.	E 1148.5 ± 1.5			
vi.	Diagonal difference over corner	F1 ≤ 5			
		F2			
vii.	Distance between stanchions	G1 1407 ± 1.5			
		G2 1440 ± 1.5			
		G3 1322 ± 1.5			
		G4 1322 ± 1.5			
		G5 1440 ± 1.5			
viii.	Distance between side ext. bottom to door coping bottom	H 994 ± 1.0			
ix.	Door opening width	I 700 ± 1.0			

All dimensions are in mm

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

Door

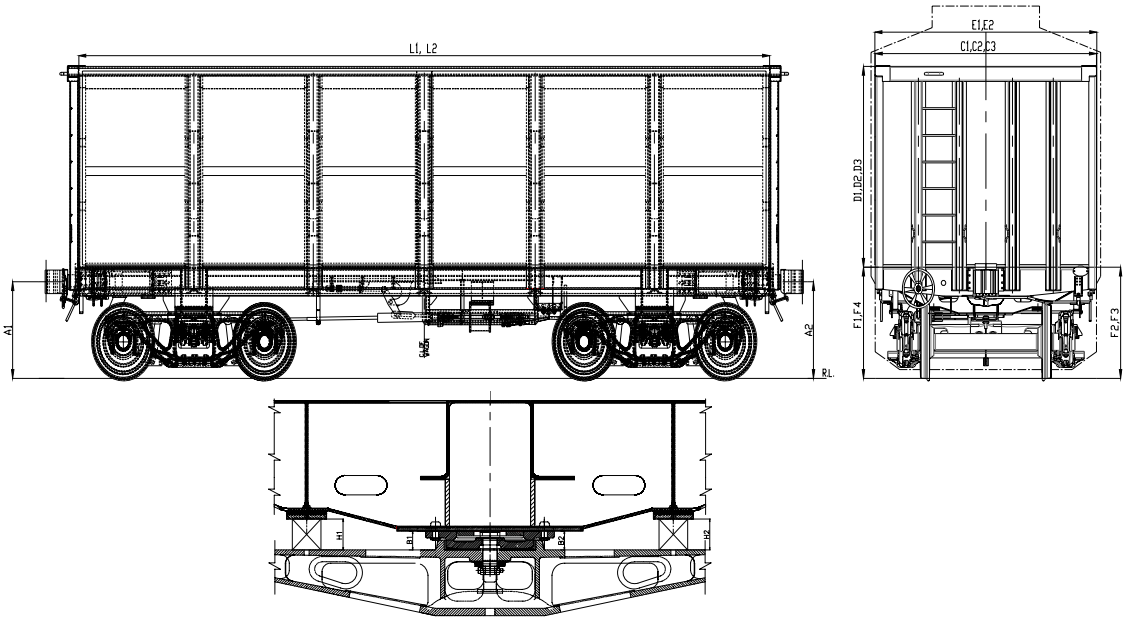


DOOR NO:		Date:				
SL. NO.	STAGE	Works Inspection		RDSO Inspection		Remarks
1.	Fitment of all components					
2.	Welding					
3.	Dressing					
4.	Dimensions			As follows		
	LOCATION	Nominal Dimensions & Allowable Deviation		Actual Dimension		Remarks
				Works Inspection	RDSO Inspection	
i.	Distance between sheet edge to hinge center	A	191.5 ± 1			
ii.	Distance between hinge center	B	377 ± 1			
iii.	Width of sheet	C	760 ± 1			
iv.	Height of sheet	D	760 ± 1			
v.	Distance between door edge to door frame	E	5 ± 0.5			
		F	13 ± 0.5			
		G	10 ± 0.5			
		H	5 ± 0.5			
vi.	Distance between hinge center to door edge (Horizontal)	I	36 ± 0.5			
vii.	Distance between hinge center to door edge (Vertical)	J	28 ± 0.5			
viii.	Door thickness	K	70 ± 0.5			

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.	Lock 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.	RFID (Fitment/Location/Data Entry)				
10.	Dimensions	As follows			
	LOCATION	Nominal Dimensions & Allowable Deviation	Actual Dimension		Remarks
			Works Inspection	RDSO Inspection	
i.	Coupler height from R.L	A1 A2	1105, +0, -5		
ii.	Length Inside	L1 L2	9784, +7, -3		
iii.	Width Inside	C1 C2 C3	3111, ± 3		
iv.	Height Inside	D1 D2 D3	2300, ± 3		
v.	Width over ends	E1 E2	3135, ± 3		
vi.	Centre pivot assembled height	B1 B2	78, +0.8, -0.3		
vii.	Side bearer set up height from bolster seat	H1 H2	128.5, ± 1		
viii.	Overall Width	F1 F2 F3 F4	3135, ± 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)	Date of air brake testing	
h)	Date of SWTR calibration		i)	Coupler Make & Sr. Nos.	
j)	Auxiliary Reservoir Make		k)	P.U. Pad Make	
8.	Draft Gear Make, Model & Sr. Nos.		9.	Tare Weight	
10.	CRF section make		11.	Lock Bolt Make	
12.	Paint Make		13.	D.M. Issue date	
14.	TXR fit memo issue date		15.	CBB make & Sr. Nos.	
16.	Brake Cylinder Make & Sr. Nos.		17.	Shot Blasting	
18.	RFID Tag				

19. RAD availed _____

20. Defects Observed _____

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	One coat of etch primer of DFT 10 microns on IRSM:44 materials. Two coat of primer to minimum DFT 140 microns and two coat of finish paint to minimum DFT 70 microns. Paint surface to be free from blistering & peeling		
2.	Lettering & marking- for legibility, size, location & punch mark.	As per Drg.WD-14014-S-18		
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 x 4)		
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		

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

SINGLE WAGON TEST RIG (SWTR)

PROFORMA FOR SINGLE WAGON AIR BRAKE TEST FOR 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.	
2	Pressure in FP	6 ± 0.1 kg/sq.cm. (twin pipe)	
3	Pressure in AR	5 ± 0.1 kg/sq.cm.(for single pipe) 6 ± 0.1 kg/sq.cm. (for twin pipe)	
4	Leakage from the system in one minute.	0.1 kg/sq. cm.(max.)	
5	FULL SERVICE APPLICATION		
5.1	Brake cylinder filling time a) Empty (Pressure rise from 0 to 3.6 kg/sq.cm.) b) Loaded (Pressure rise from 0 to 3.6 kg/sq.cm.)	18 to 30 sec 18 to 30 sec.	
5.2	Maximum brake cylinder pressure a) Empty b) Loaded	3.8 ± 0.1 kg/sq.cm. 3.8 ± 0.1 kg/sq.cm.	
5.3	Reduction in BP pressure required for full service application.	1.3 to 1.6 kg/sq.cm.	
6	RELEASE AFTER FULL SERVICE APPLICATION.		
6.1	Draining time (Brake cylinder pressure to fall from 3.8 ± 0.1 kg/sq.cm. to 0.4k g/sq.cm.) a) Empty b) Loaded	45 to 60 sec 45 to 60 sec.	
7	SENSITIVITY OF BRAKES		
7.1	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.	
8	INSENSITIVITY OF BRAKES		
8.1	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	
9	EMERGENCY APPLICATION:		
9.1	Brake cylinder filling time a) Empty (Pressure rise from 0 to 3.6 kg/sq.cm.) b) Loaded (Pressure rise from 0 to 3.6 kg/sq.cm.)	18 to 30 sec. 18 to 30 sec.	
9.2	Maximum brake cylinder pressure a) Empty b) Loaded	3.8 ± 0.1 kg/sq.cm. 3.8 ± 0.1 kg/sq.cm.	

Continue ..

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

Continue ..

S.No.	Check	Specified	Actual
10	Piston stroke Empty Condition Loaded Condition	85 ±10 120 ±10	
11	Leakage from brake cylinder after emergency application.	0.1 kg/sq.cm. (max.) within 5 minutes	
12	Automatic exhausting of brake cylinder and control chamber.		
12.1	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.	
13	Hand Brake		
13.1	Apply hand brakes (by one person only and strike all wheels with hammer)	There should not be ringing sound	

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

14.	AR Charging time (Pressure rise from 0 to 5.0 kg/sq.cm.)	175 ± 30 Sec for C3W D.V	
		60 to 120 Sec for KEO D.V.	
15	CR Charging time (Pressure rise from 0 to 4.8 kg/sq.cm.)	165 ± 20 Sec for C3W D.V	
		160 to 210 Sec for KEO D.V	

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