

INDIAN RAILWAYS

सत्यमेव जयते

CHECK SHEETS**FOR****BOGIE BRAKE VAN
TYPE – BVCM (DESIGN-B&C)****BROAD GAUGE****(1676 MM)**

S.No.	Month & Year of issue	Revision / Amendment	Page No.	Reason for Amendment
01	April, 2016	First issue	----	----
02	July, 2017	Rev. 1	10.11	RFID data added, width over footboard revised
03	Nov., 2017	Rev. 2	1, 13	Title block and header 'DESIGN-B' changed as 'DESIGN-B&C', Piston stroke revised as 60±10

ISSUED BY

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

July, 2016

CONTENTS

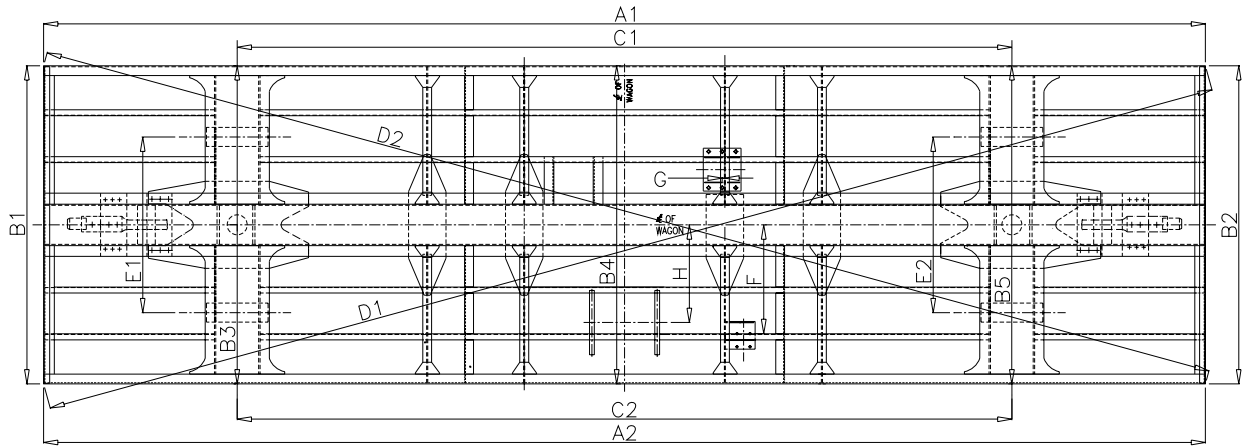
Sr. No.	Description	Page No
Check-sheets pages		
1.	Under-frame	3
2.	Centre Sill	4
3.	Body Side	5
4.	Body End Arrangement	6
5.	Door	7
6.	Roof	8
7.	Final Assembly	9-10
8.	Final Wagon	11
9.	Other Attributes	12-13

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.

UNDERFRAME

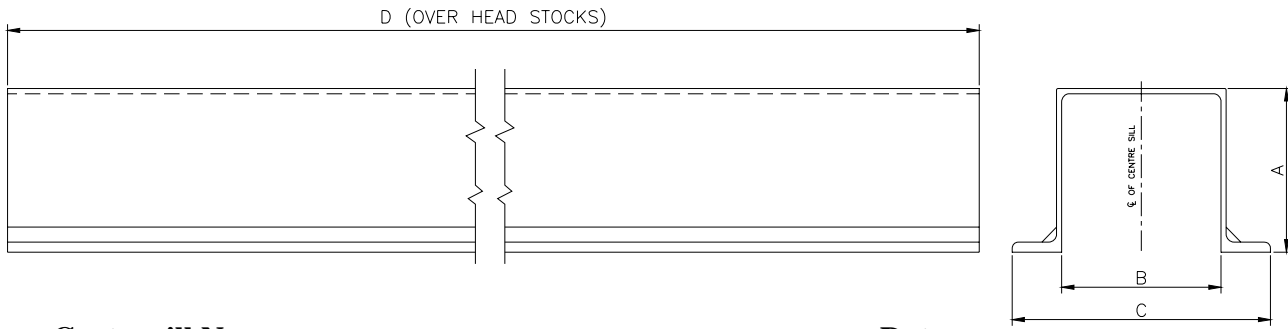


UNDERFRAME NO:		Date:		
S. No.	STAGE	Works Inspection	RDSO Inspection	REMARKS
1.	Fitment of all components			
2.	Welding/Revitting			
3.	Dressing			
4.	Manual cleaning			
5.	Fitment of pipe layout & brake component			
6.	DIMENSIONS	As follows		
	LOCATION		Actual Dimension	Remarks
		Nominal Dimensions & Allowable Deviation	Works Inspection RDSO Inspection	
i.	Length over head stock	A1 A2	9784, +7,-3	
ii.	Width over solebar	B1 B2 B3 B4 B5 B6	2670±3	
iii.	Distance between bolster bogie centre	C1 C2	6524, +5,-2	
iv)	Distance between side bearers centre	E1 E2	1474±2	
v)	Diagonal difference over headstock	D1 D2	≤ 5	
vi)	Difference between side bearer top liner and center pivot top		11,+0,-0.5	

All dimensions are in mm

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

CENTRE SILL



Centre sill No.

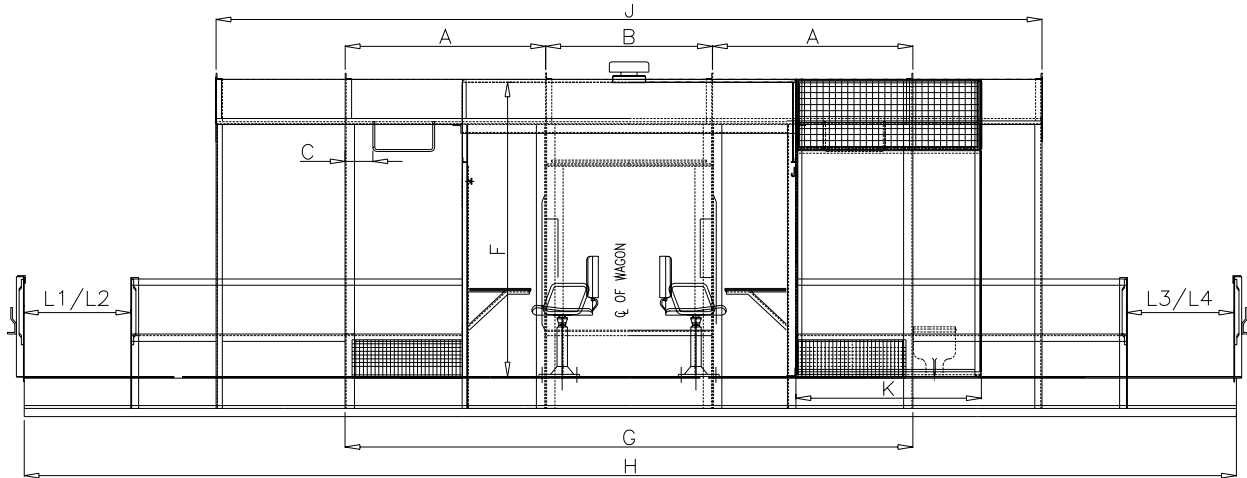
Date:

S.N.	STAGE	REMARKS			
1	Fitment of all component				
2	Welding				
3	Dressing				
Dimensions		As follows			
		NOMINAL DIMENSION	ALLOWABLE DEVIATION	ACTUAL DIMENSION	REMARKS
i.	A	327	±1.5		
ii.	B	327	+1.5 -0		
iii.	C	530	±5		
iv	D	9784	+7 -3		

All dimensions are in mm

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

BODY SIDE

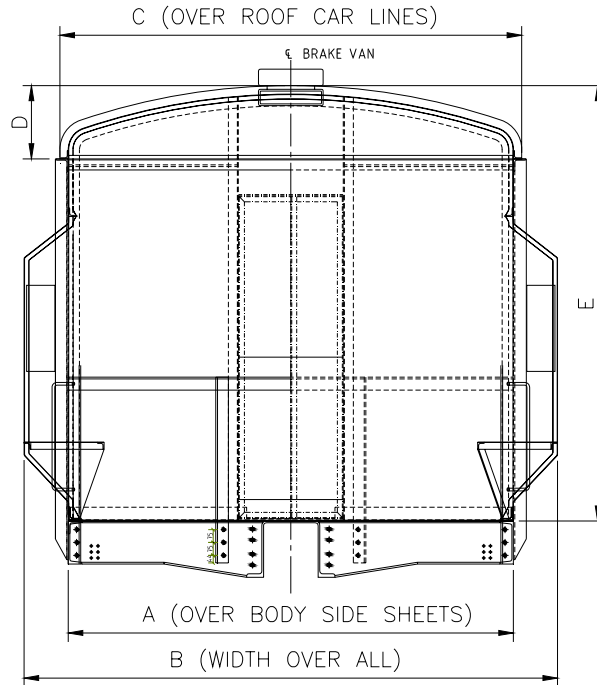


BODY SIDE NO.		DATE.			
S. NO.	STAGE	REMARKS			
1	Fitment of all component				
2	Welding				
3	Dressing				
Dimensions		As follows			
		NOMINAL DIMENSION	ALLOWABLE DEVIATION	ACTUAL DIMENSION	REMARKS
i.	A	1621	±3		
ii.	B	1350	±3		
iii.	C	225	±3		
iv)	F	2448	±3		
v)	G	4592	±3		
vi)	H	9784	+7 -3		
vii)	J	6680	±3		
viii)	K	1512.5	±3		
ix)	L1/L2	862	±2		
X)	L3/L4	862	±2		

All Dimensions in mm

works Inspector		RDSO Inspector	
Signature:		Signature:	
Name:		Name:	
Designation:		Designation:	
Date:		Date:	

BODY END ARRANGEMENT



BODY END NO

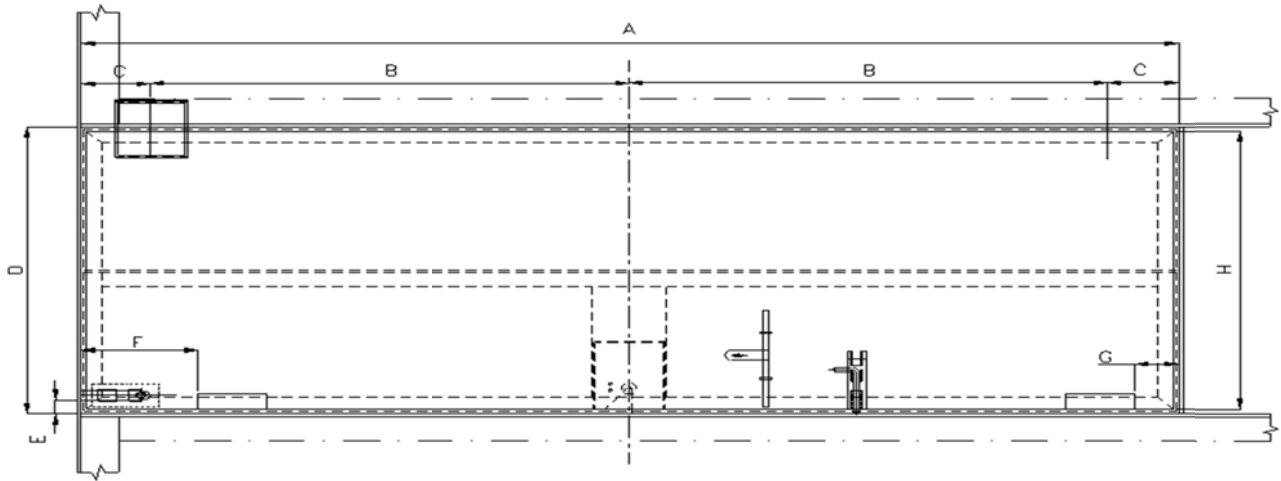
DATE--

S.N.	STAGE	REMARKS			
1.	Fitment of all component				
2.	Welding				
3.	Dressing				
Dimensions		As follows			
		NOMINAL DIMENSION	ALLOWABLE DEVIATION	ACTUAL DIMENSION	REMARKS
i)	A	2670	± 3		
ii)	B	3200	± 3		
iii)	C	2770	± 3		
iv)	D	426	± 3		
v)	E	2526	± 3		

All dimensions are in mm

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

DOOR

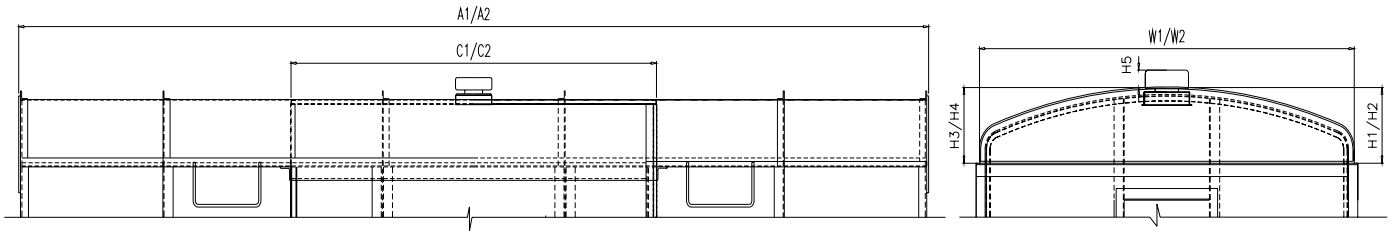


SWING DOOR NO.

SL. NO.	STAGE	REMARKS			
1	Fitment of all component				
2	Welding				
3	Dressing				
Dimensions		As follows			
		NOMINAL DIMENSION	ALLOWABLE DEVIATION	ACTUAL DIMENSION	REMARKS
i.	A	1875	+5 -0		
ii.	B	817.5	+5 -0		
iii.	C	120	+5 -0		
iv)	D	628	+5 -0		
v)	E	30			
vi)	F	200			
vii)	G	75			
viii)	H	608 X 1.6			

All dimensions are in mm

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

ROOF**ROOF (Guard's Room)**

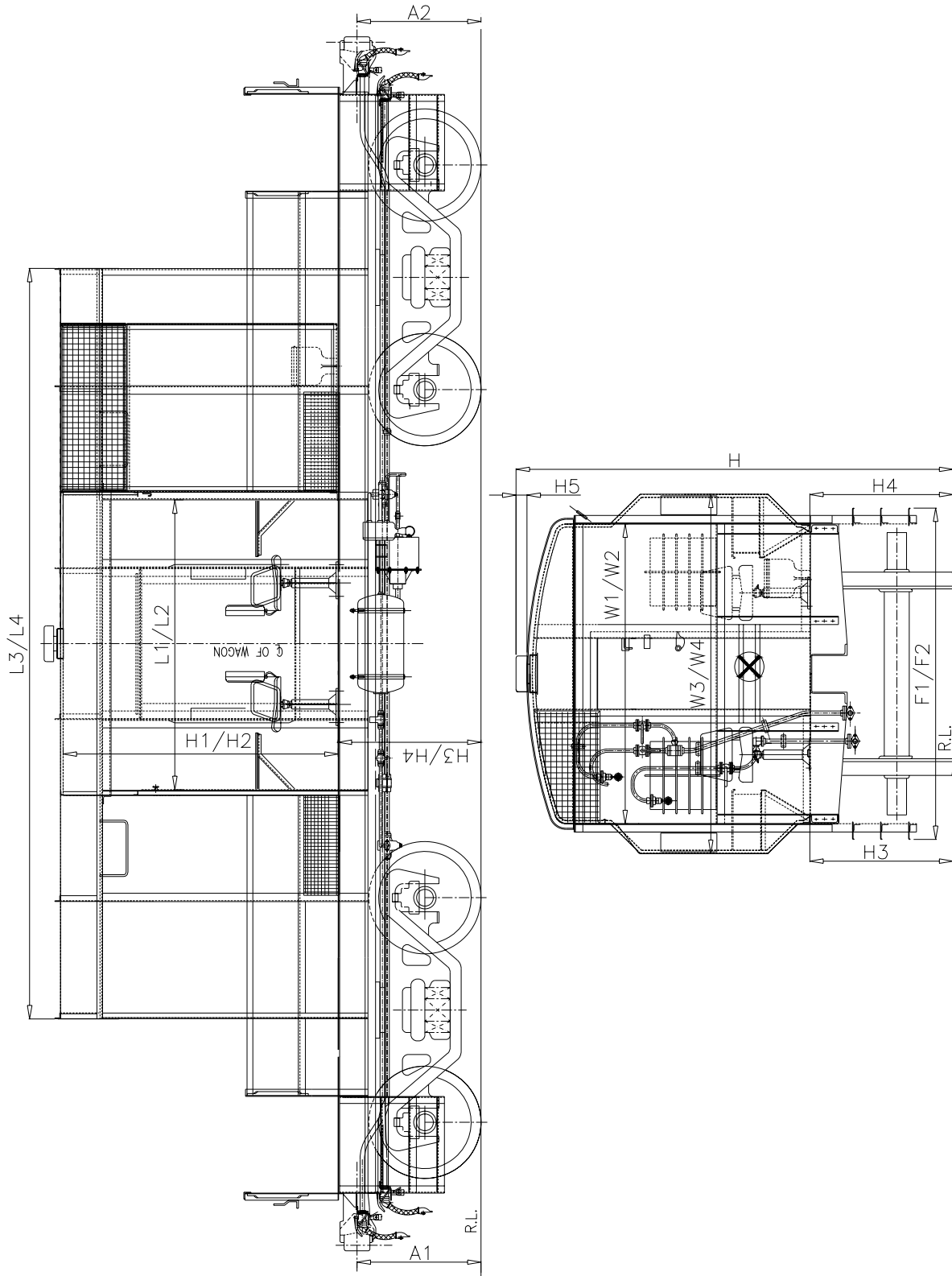
S.N.	STAGE	REMARKS
1	Fitment of all component	
2	Welding	
3	Dressing	
4	Water Tightness (No Leakage)	
5	Clearing before painting	

DIMENSIONS		As follows				
	LOCATION		Nominal Dimension	Allowable Deviation	Actual Dimension	Remarks
i)	Overall Length	A1	6683.2	+7		
		A2		-2		
	Overall Length of main cabin(outer dimension)	C1	2700	+7		
		C2		-2		
ii)	Overall Width	W1	2770	± 3		
		W2				
iii)	Overall Height	H1	426	± 3		
		H2				
		H3				
		H4				
iv)	Height of ventilator from Roof top	H5	94	± 2		

All dimensions are in mm

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

FINAL ASSEMBNLY



FINAL ASSEMBLY

WAGON NO:

UNDERFRAME No.

CENTRE SILL No.

S.n.	STAGE		REMARKS			
1	Fitment of all Sub-assemblies					
2	Welding/Rivitting					
3	Dressing					
4	Operation of Doors					
5	Operation of Windows					
6	Fitment of all items in Guard's compartment					
7	Operation of Coupler					
8	Under gear Examination					
9	Brake Test	i)	Air Brake Test			
10	Water Tightness (No Leakage)					
11	Painting in each Coat > 40 micron(DFT)					
12	RFID (Fitment/Location/Data entry)					
13	DIMENSIONS		As follows			
	LOCATION (REF : SHEET 9 of 13)		Nominal Dimension	Allowable Deviation	Actual Dimension	Remarks
i)	Coupler Height from Rail level	A1	1105	+0		
		A2			-5	
ii)	Inside Length of Guard's room	L 1	2641.8	+7		
		L 2			-3	
iii)	Length over roof end cover plate	L3	6683.2	+7		
		L4			-3	
iv)	Inside Width of Guard's room	W1	2611.8	+3		
		W2			-3	
vi)	Width over all	W3	3200	+3		
		W4			-3	
vii)	Inside Height of Guard's room (From floor Level to Top)	H1	2447.8	+3		
		H2			-3	
viii)	Height of floor top from Rail Level	H3	1274	+0		
		H4			-5	
ix)	Height of Ventilator from roof	H5	94	±2		
x)	Height of Wagon from Rail level	H	3894	±3		
xi)	Width over foot board	F1	2982	±3		
		F2				
xii)	Camber		NIL			

All dimensions are in mm

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

FINAL WAGON**INSPECTION CHECK SHEET FOR BVCM GOODS BRAKE VAN**

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 unit calibration		i)	Date of water tightening test	
j)	SAB Make & S.No.				
8.	Coupler Make & Sr. Nos.		9.	Draft Gear Make & Sr. Nos.	
10.	Tare Weight		11.	Shot blasting/manually cleaned	
12.	Paint Make				
13.	D.M. Issue date		14.	TXR fit memo issue date	
15.	RFID Tag				

16. RAD availedled _____

17. Defects Observed _____

* Single wagon test rake

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

Other Attributes (For Conventional Air Bk. System)

Wagon No.:		U/F No.:	Date:	
S.n.	ATTRIBUTES	ACCEPTANCE LIMIT	WORKS INSPN.	RDSO INSPN.
.	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-15009-S-12 of relevant wagon Mechanical Design Code Index drg. no. WD-09107--S-01		
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	555-575 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	Pressure in B.P	5±0.1 Kg/cm ²		
7.2	Pressure in F.P	6±0.1 Kg/cm ²		
7.3	Pressure in A.R	6±0.1 Kg/cm ²		
7.4	Leakage from the system	0.1 Kg/cm ² in 1 minute		
Works Inspector		RDSO Inspector		
Signature:		Signature:		
Name:		Name:		
Designation:		Designation:		
Date:		Date:		

S.n.	ATTRIBUTES	ACCEPTANCE LIMIT	WORKS INSPN.	RDSO INSPN.
7.5	B.C filling time (pressure rise from 0 to 3.6 Kg/cm ²)	Empty 18 to 30 sec.		
7.6	Maximum B.C. pressure in Kg/ cm ²	Empty 3.8 ± 0.1 Kg/ cm ²		
7.7	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	Empty 30 to 45 seconds		
9.	Piston stroke in mm	Empty 60 ± 10		
10.	SENSITIVITY OF BRAKES			
10.1	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		
11.	INSENSITIVITY OF BRAKES			
11.1	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		
12.	EMERGENCY APPLICATION			
12.1	Emergency application- BC filling time (0 to 3.6 Kg/cm ²)	Empty 18 to 30 seconds		
12.2	Maximum B.C pressure in Kg/cm ²	Empty 3.8 ± 0.1 Kg/cm ²		
12.3	Leakage from B.C.	0.1 Kg/cm ² in 5 minutes		
13.	QUICK RELEASE AND ISOLATION			
13.1	After emergency brake application (i.e. BP = 0 Kg/cm ²) Check the brake cylinder pressure after giving a brief pull to release hook	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.		
15.	Hand Brake			
15.1	Apply hand brake(Any one person only)& strike all wheels with hammer	There should not be ringing sound		
16.	A.R charging time (Pressure rise 0 to 5 Kg/cm ²)	175±30 sec C3W DV 60 to 120 sec for KEO DV		
17.	C.R charging time(Pressure rise 0 to 4.8 Kg/cm ²)	165±20 sec C3W DV 160 to 210 sec for KEO DV		

Note: S.No. 16 & 17 to be checked at the time of prototype wagon.

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